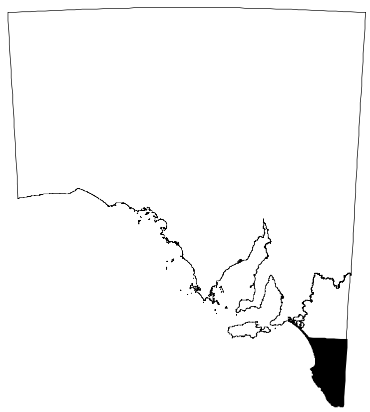
# A BIOLOGICAL SURVEY OF THE SOUTH EAST SOUTH AUSTRALIA 1991 and 1997



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**2003**

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**Photo: L. M. B. Heard**

# PREFACE

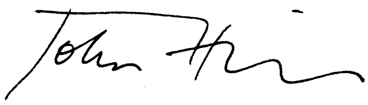
*A Biological Survey of the South East, South Australia* is a further product of the Biological Survey of South Australia.

The program of systematic biological surveys to cover the whole of South Australia arose out of a realisation that an effort was needed to increase our knowledge of the remaining vascular plants and vertebrate fauna of South Australia and to encourage its conservation.

Over the last 18 years, there has been a strong commitment to the Biological Survey by Government and an impressive dedication from hundreds of volunteer biologists.

By 2015, it is anticipated that the Biological Survey will achieve complete statewide coverage.

The Biological Survey of South Australia will be an achievement for which we can be very proud. We will have substantially improved our knowledge of the biodiversity of South Australia to enable biologists in the future to measure the direction of long-term ecological change. This will greatly enhance our ability to adequately manage nature conservation into the future.



**JOHN HILL**
**MINISTER FOR ENVIRONMENT AND CONSERVATION**

# ABSTRACT

A vegetation survey was carried out in the South East in 1991 that sampled 340 quadrats. This was followed by a vertebrate survey in January-February 1997 that sampled a sub-set of 96 quadrats. These sites aimed to sample representative areas of all the remaining natural vegetation in the area in proportion to the broad habitat variability of the total area. In addition, at least one sampling site was located in the majority of the reserves under the National Parks and Wildlife Act (1972) in the study area. The total number of records contributed to the Biological Survey Database as a result of this survey were: 23, 212 plants, 1,579 amphibians, 676 reptiles, 3,168 birds and 1276 mammals.

A combined analysis of the plant quadrat data with a sub-set of Murray Mallee and South East Coast plant data resulted in the description of 29 PATN floristic groups. Using this analysis as a basis, a vegetation map of the South East was produced comprising 54 regional plant communities based on the dominant upper-storey plant. Using these 54 regional communities, 362 unique combinations (pure communities and mosaics of communities) have been identified and mapped.

A combined analysis of the fauna quadrat data and data from eight other fauna surveys was undertaken. PATN analysis of the combined data set comprising 165 quadrats revealed six communities. PATN analyses on reptiles and birds tended to show clear patterning, however some groups were poorly defined. The reptile analysis resulted in the recognition of five communities with definite habitat preferences for species defined. Similarly, five bird communities were recognised, some of which appeared to have more ecological integrity than others.

Of 62 reptile species known from the area, 41 species were recorded during the South East Survey. Populations of the Swamp Skink and Glossy Grass Skink are significant for the overall conservation of these species. There were nine species of amphibians recorded during the survey of the 12 known from the region.

One hundred and sixty eight of the two hundred and fifty-seven species of birds were recorded from the study area during the survey. Eight exotic species were recorded from quadrats during the survey. Bird species of conservation significance include: Malleefowl, Rufous Bristlebird, and Red Tailed Black Cockatoo.

The South East Survey recorded 21 extant mammal species of the 60 recorded from the area. Eleven species were exotic. Native terrestrial mammal captures and observations were low, even of species perceived as common. This raises some serious concerns for the long-term survival of small mammal communities in the South East.

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# ACKNOWLEDGEMENTS

The vegetation survey component of the South East Biological Survey was partially funded through the National Forest Inventory (NFI), Bureau of Rural Sciences (BRS) while the vertebrate fauna component was funded from a capital works allocation to the Biological Survey of South Australia. We would also like to gratefully acknowledge and thank all landowners and land managers (private and public) involved in the survey for allowing access to their properties for the survey duration and the many volunteers, whose names appear amongst those listed in the "people involved" section of this report. These people gave freely of their time and expertise to enable the survey to be successfully completed.

**PEOPLE INVOLVED**

Most aspects of this survey surpassed all those previously carried out in this series of regional surveys. This is particularly notable in the number of people required to accomplish the fieldwork. Considering the great distances it was necessary to travel between the many sites, all are to be commended for completing their allotted sampling tasks with proficiency and dedication.

**Fieldwork**

(a) Vegetation Survey (September 1991 and November 1997)
J. Gillen and S. Kinnear (Pre-survey advice), N. Bonney and D. Kraehenbuehl (advice on vegetation of the region), N. Cundell (datasheet production), E. Lock, L. Malcolm, L. Heard (site selection), L Heard (survey preparation) with assistance from S. Kinnear, L. Malcolm, E. Lock (1991) and K. Graham (1997), L. Heard (survey coordination).
In the 1991, five field teams were formed each week consisting of two people – one person responsible for the vegetation data and the other responsible for the physical data collection. In 1997, two field teams of two people worked on the survey. The combined field survey team members, listed alphabetically, were;
K. Bellette, P. Canty, S. Carruthers, B. Channon, K. Clipstone, N. Cundell, D. Donato, D. Fotheringham, D. Goodwins, K. Graham, L. Heard, S. Kinnear, P. Lang, E. Lock, I. Malcolm, L. Malcolm, N. Neagle, C. Nicolson, K. Nicolson, T. Noyce, D. Peacock, A. Prescott, T. Robinson, M. Steiner, R. Taplin, R. Tuckwell and L. Webb.

(b) Vertebrate Survey (February/March 1997)
D. Armstrong, J. Foulkes (site selection)
Nine field groups were formed, each consisting of three biologists and a general helper, one responsible for each of the taxonomic groups: birds (B), mammals (M), reptiles (R) and general helper (G). They were: D. Armstrong (R), R. Brandle (M), P. Canty (R), G. Carpenter (B), P. Copley (B), M. Daniel (G), M. de Jong (B) J. Foulkes (M, R), T. Herbert (M), D. Hopton (B), I. Hopton (M), L. Kajar (G), S. McKenzie (G, B), J. Mathew (B), H. Owens (R), S. Pillman (M), C. Pryde (R), P. Robertson (R), A. Robinson (R, M), J. Rodriguez (G), H. Stewart (M), R. Storr (B), W. Threlfell (G), J. van Weenen (R), K. Villiers (G)

In addition, a number of other individuals assisted in the field, primarily when help was most appreciated, in the establishing of traplines and selection of sites. They were: G. Armstrong, J. Armstrong, B. Grigg, D. Laslett, and D. Mount

**SPECIMEN IDENTIFICATION**

| | |
|---|---|
| Birds: | P. Horton (SA Museum) and people nominated above |
| Mammals: | C. Kemper, (SA Museum), L. Kajar, J. Foulkes (Hair identification) |
| Reptiles: | A. Edwards, M. Hutchinson (SA Museum) |
| Invertebrates | D. Hirst, E. Matthews, A. McArthur (SA Museum) L. F Queale (SA Museum/DEH) |
| Vegetation: | R. Taplin, P. Lang (DEH) and SA Plant Biodiversity Centre staff |

**COMPUTING**

| | |
|---|---|
| Data Entry Vertebrates: | S. Laver |
| Data Entry, Validation and Editing Vegetation: | L. Webb, D. Donato, Z. Griffiths, D. Wilkins, F. Smith, V. Philpott, K. Bevan, L. Kajar and D. Wallace-Ward and L. Heard (coordination) |

| | |
|---|---|
| Oracle Database Management: | S. Wheldrake, R. Lawrence and T. Calabrese |
| Vegetation Analysis: | L. Heard with assistance from S. Kinnear and D. Goodwins |
| Vegetation Mapping: | L. Heard |

Digital Vegetation Map Capture: J. Phillips, L. Davidson
Vegetation Map Production: O. Eszeki, G. Wise, J. Phillips, and G. Wilkins
Vegetation Figure Production: G. Wilkins

Vertebrate Analyses: J. Foulkes
Vertebrate Mapping H. Owens, R. Brandle, J. Foulkes.

**EDITING**

Tony Robinson, Robert Brandle, Mark Hutchinson, Cath Kemper, Nick Neagle, Tim Croft, Martin O'Leary and Mark Bachmann provided valuable comments on sections of the report.

**ADDITIONAL ASSISTANCE**

Peter Lang and Nick Neagle provided advice and assistance on many aspects contributing to the Vegetation Results chapter. Tim Noyce provided advice and assistance with AML programming and map production for the Floristic Group Summaries. J. Foulkes, P. O'Connor and M. Sherrah provided additional statistical advice on the analysis results and for the collation of Floristic Summaries.

Martin O'Leary, Helen Vonow and Bill Barker provided advice on plant species, taxonomy, nomenclature, historical botanical background and *Acacia* issues.

The staff at the Housing, Environment and Planning Library provided assistance in hunting down and supplying literature references, while Lynne Kajar, Di Wallace-Ward and Kirsty Bevan assisted with the documentation of literature references used throughout the study. Kate Graham and Sue Kenny provided background GIS and database support. Brian Gepp and the staff at Forestry SA provided access to fine scale vegetation mapping in Native Forest Reserves.

P. Rogers, PIRSA, provided access to maps, papers and reports, which assisted in compilation of the geology and geomorphology section. D. Maschmedt, PIRSA, provided advice on soil nomenclature for the Historical Vegetation section. All of this valuable assistance was greatly appreciated and is gratefully acknowledged. In addition a considerable amount of the background work on the vegetation dataset and mapping, including spatial data management and map production, was undertaken while the Environmental Analysis and Research Unit (previously part of the Geographic Analysis and Research Unit) was part of Planning SA. The support of Planning SA for the Biological Survey and Environmental Database of SA from 1995–2001 is gratefully acknowledged.

# INTRODUCTION

By J. N. Foulkes[1] and L. M. B. Heard[2]

## Historical Perspective

The first recorded European sighting of the South East region was in 1800 by Lieutenant James Grant commanding the survey vessel 'The Lady Nelson'. Grant was sent by the British admiralty, at the request of the Governor of New South Wales, to explore the coast of the colony. This request occurred following Bass and Flinders' circumnavigation of the island of Van Dieman's Land, which had been believed to have joined the mainland prior to their explorations. Lieutenant Grant, realising that he was close to land when a 'horse stinger' landed on the mainsail, saw four separate pieces of land among swirling mist. As 'The Lady Nelson' came closer he realised they were two capes and two inland mountains rising out of a flat plain. Lieutenant Grant then named the most distant 'Gambier's Mount' after Lord Gambier who was to become the Admiral of the Fleet (O'Connor and O' Connor 1988). The next official European visitors to the region were Nicholas Baudin and crew in the 'Le Geographe' on their journey westward along the coast following their explorations around Van Dieman's Land. Matthew Flinders in the 'Investigator' in 1802, on their eastward journey charted the coast further west. Many coastal features were named by Baudin, such as Rivoli Bay, Guichen Bay and Lacepede Bay, to name a few, with some features also named by Flinders.

The first inland exploration that came into the region, albeit briefly, was that of Major Thomas Mitchell in 1836. Major Mitchell's journey touched the edge of the region when he boated down 'The Glenelg [River]' to its mouth at Nelson. Prior to this he sighted the distant peak of Mount Gambier from Rifle Range, near his camp (south of the junction of the Wannon and Glenelg Rivers near Casterton, Victoria), on August 12$^{th}$ 1836.

*"On ascending this highest feature, which I named the Rifle Range, I found it commanded an extensive view over a low and woody country. One peak hill alone appeared on the otherwise level horizon, and this bore 68$^{0}$ W. Of S. I supposed this to be Mount Gambier, near Cape Northumberland, which, according to my survey, ought to have appeared in that direction at a distance of forty-five miles. I expected to find the river on reaching the lower country beyond this range; but, instead of the Glenelg and the rich country on its banks, we entered on extensive moors of the most sterile description. ..."* (Mitchell 1839).

Major Mitchell continued his explorations southward following the Glenelg, hoping to discover *"some harbour, which might serve as a port to one of the finest regions upon earth"* (Mitchell 1839). His exploration party had with them 2 boats that Mitchell used to complete the investigation of the Glenelg. In doing this he and his boat party were the first Europeans officially to explore the land in the lower south east of South Australia, recording the scenery of the river's lower reaches. As they boated westward, on August 19$^{th}$ 1836, along the long straighter reach of the Glenelg (in Victoria, just before the border with SA) he records;

*"The scenery on the long reaches was in many places very fine, from the picturesque character of the limestone-rock, and the tints and outline of the trees, shrubs and creepers upon the banks. In places stalactitic-grottoes, covered with red and yellow creepers, overhung or enclosed cascades; at other points, casuarinae and banksia were festooned with creeping vines, whose hues of warm green or brown were relieved by the grey cliffs of more remote reaches, as they successively opened before us. Black swans being numerous, we shot several; and found some eggs which we thought a luxury, among the bulrushes at the waters edge. But we had left, as it seemed, all the good grassy land behind us; for the stringybark and a species of Xanthorrhoea (grass tree), grew to the waters edge, both where the soil looked black and rich, and where it possessed that red colour which distinguishes the best soil in the vicinity of limestone rock."* (Mitchell 1839).

Then as they passed, on August 20$^{th}$, into the section of the Glenelg that was to become South Australia;

*"At length another change took place in the general course of the river, which from west turned east-south-east. The height of the banks appear to diminish rapidly, and a very numerous flock of small sea-swallow or tern indicated our vicinity to the sea."* (Mitchell 1839).

On return from surveying the mouth of the Glenelg River (named by Mitchell after the then Secretary of State for the Colonies, Lord Glenelg), it appears that Mitchell and his party camped on the land that was to become part of South Australia, on the night of August 20$^{th}$ 1836. The area where Mitchell and his party

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camped appears to be the Dry Creek area, north of Donovans just to the west of the SA / Victorian Border when referring to the detailed map of Mitchell's explorations (Mitchell 1839) and his journal.

*"We had encamped in a rather remarkable hollow on the right bank, at the extreme western bend of the river. There was no modern indication, that water either lodged in or ran through the ravine, although the channel resembled in width the bed of some considerable tributary; the rock presenting a section of cliffs in each side, the bottom being broad, but consisting of black earth only, in which grew trees of eucalyptus. I found, on following it some way up, that it led to a low tract of country, which I regretted much I could not examine further."* (Mitchell 1839).

Throughout this journey down the Glenelg, Mitchell had sighted Mt Gambier in the distance twice more. He provided details of the bearing to it in his journal but did not undertake any closer inspection of that area.

Subsequent to Mitchell came some brief descriptions from the convicts Foley and Stone (Oct-Nov 1837), then more extensive explorations in the region and detailed descriptions. The first significant recorded explorations were that of Charles Bonney followed by, brief descriptions by Stephen and Edward Henty (June and November 1839) then more detailed descriptions by Joseph Hawdon and Lieutenant Mundy (July 1839).

Sir J. Jeffcott records Stone's version of their travels from Port Fairy or Portland Bay to Encounter Bay in November 1837 in Stone and Foley (1837).

*"For the first two hundred miles of their journey they did not experience any difficulty from the want of water, as they fell in with several fresh lagoons, the land in the neighbourhood of which, and throughout the whole of this distance was very good both for sheep and cattle – fine hilly ground for the former, and extensive marshy plains for the latter."*

Foley's version, also recorded by Jeffcott differs slightly in the opinion of the land (though apparently Stone was a farmer while Foley was a sailor).

*"The first hundred or hundred and fifty miles the land was tolerably good; but from thence to the lake, in informant's opinion, it was very bad, consisting of swamps and lagoons and nasty barren scrubby ground."* (Stone and Foley 1837)

Exploring the area in search of a route for overlanding stock between the major settlements Charles Bonney pioneered the first overland route between the Port Phillip District (Melbourne, then part of New South Wales) and Adelaide, South Australia (SA). Bonney undertook his overland journey from the Port Phillip District (Melbourne area), in March 1839 (Hawdon 1840) with ten men, 2 native boys, two drays and about three hundred head of cattle. An account of this trip was provided in The Gazette on his arrival in Adelaide in April 1839 (Bonney 1839). On this initial overlanding trip Bonney named Lake Hawdon in honour of Joseph Hawdon who he had overlanded cattle with from "Howlong" (Albury area, New South Wales) along the Murray River (with some deviations around the Ovens, Goulburn and Loddon Rivers in Victoria) to Adelaide in Februrary–March 1838. Bonney describes the country south-south-west of his crossing at the junction of the Wannon and the Glenelg over which he traveled for 2 days as;

*"... of a most singular description - it is a mass of swamps, stretching occasionally across ten miles, and divided by belts of she-oak timber growing on sandy soil, on which there is abundance of fine feed for cattle - the oat grass growing luxuriantly."* (Bonney 1839)

After changing direction of travel and naming Lake Hawdon he describes the country;

*"On leaving the lake the swamps ceased for some time, and the party traveled for about ten miles through a dense forest, in some places of scrubby grass-tree and in others of she-oak, when they came again upon a swamp, where good water was found by digging."* (Bonney 1839)

The Henty Brothers, who had established themselves at Portland Bay in both the whaling and pastoral industry, were inspired by Major Mitchell comments on the country that he had traversed. As a result they explored westward into South Australia in June 1839 though detailed descriptions of the country beyond notes on a map (Peel 1996) and general comments by Stephen Henty of the area, do not appear to have been recorded. The limited descriptions on the map indicate *"Good Land*" around Mt Gambier (Peel 1996), where they subsequently established a cattle-run (McBride 1898). The map also indicates Lake Bonney as *"Lake Brackish"* with *"rushy lagoons"* in the area north of Millicent, Lake Frome as *"Lake Fresh"*, Lake George as *"Lake Brackish"* and hills east of Millicent as *"Very Good Land"* (Peel 1996).

Joseph Hawdon in the company of Lieutenant Mundy followed in Bonney's footsteps exploring this eastern portion of the province of SA. They also had a party of stockmen with *"five thousand sheep and upwards of two hundred head of cattle"* (SA Register 1839). The journey is recorded in The Royal SA Almanac (1840) as a *"rather novel journey in a tandem"*. Hawdon and Mundy left Melbourne July 11th 1839 heading for Adelaide initially via Mt Macedon and central Victoria before dropping down the east side of the Grampians to pick up the Wannon (River) then across toward South Australia at the junction of the Glenelg and the Wannon (near Casterton, Victoria). Below are extracts from Hawdon (1839) describing tracts of the country after they had camped at Lake Mundy.

' *Sunday, 28 [July 1839] - We passed for three miles over a well-grassed forest and entered into a sandy stunted stringy-bark forest, through which we travelled* *for ten miles, passing afterwards through an open flat country, generally of poor soil, though there were occasionally small patches well grassed.'* (Hawdon 1839).

They then came to a limestone area inside the South Australian border, where they explored some caves.

*'Our dog had some sport in killing bandicoots which were numerous, and appeared to be the only inhabitants. Again starting, we entered upon the moor. It was covered in heath and low bush, making the tandem a heavy drag for our horses.'* (Hawdon 1839).

The next day they describe some of the terrain as they continue their course in the west-north-west direction that they had been on since departing Lake Mundy.

*"We proceeded late in the afternoon through a well grassed forest of she-oak and honey–suckle for seven miles; the limestone appearing now and then through the surface as usual.*
*Tuesday, 30 – This forest soon terminated, when we passed through sandy flats of the same character as those previously passed, bounded by the western side by a reedy marsh covered with good water, but so shallow as to permit us a to continue our course straight through it. On the border of this marsh the grass is very good for stock transit. For several miles we crossed a heathy moor, when we again entered a beautiful well-grassed forest, lightly timbered with she-oak and honey-suckle….'* (Hawdon 1839).

After altering their course to be north-west, on July 31st, they came to the Lake Hawdon area.

*'…leaving the forest, we entered upon a marsh which extended as far as the eye could reach in a north easterly direction, but we crossed in about four miles and passing through a small forest, we descried, at the distance of a mile, the lake discovered by Mr Bonney in March last and named by him Lake Hawdon.'* (Hawdon 1839).

After skirting the lakes and they passed over land *'alternately over a thinly timbered forest or she-oak and sandy land, and marshes which we were compelled to outflank'* (Hawdon 1839). Further on in the area of Lacepede Bay, where they caught up with their droving party under Mr Holloway's supervision, Hawdon describes the country;

*'Friday, 2 [August 1839] – We passed over boggy country, and entered into a narrow belt of she oak forest, bordering the coast within three hundred yards of the sea-shore. Here we found Mr Holloway encamped with his party and stock, all well. We proceeded along the coast for fifty miles. The land immediately on the shore was high sand hills, bordered by a narrow grassy belt of she-oak forest – then a plain about a mile wide- and, to the eastward of the plain, a chain of lakes, as we afterwards ascertained, connected with Lake Alexandrina.'* (Hawdon 1839).

Other descriptions of the area are found in George Hamilton's detailed account of his journey in 1839 (Hamilton 1880). He also overlanded stock (800 to 900 head of cattle) through the South East following much the same route as Bonney and Hawdon and Mundy. Latter the Arthur Brothers who settled at Mount Schank in 1843 also gave a detailed account of their trip to the region and local descriptions of the country including;

*"All the land around both these Mounts is of the finest description, being limestone, with a most luxuriant sward of grass on it. The wombat (a very peculiar animal) is found here in great quantities; also, the kangaroo, opossum and enew* [emu?]*."* (Arthur and Arthur circa 1844)

Some of the most detailed early descriptions of the South East area were provided by Grey (1844), Burr (1844) and Angas (1847). Governor Grey, Deputy Surveyor-General Burr, Mr Bonney (Commissioner of Public Lands) and George French Angas were on the same expedition to establish a line of settlement between South Australia and New South Wales, following the overlanding parties that had been moving stock through the area since the earlier explorations of 1839.

Following a route close to the coast Grey (1844) describes as the country;

*"… an almost uninterrupted tract of good country between the rivers Murray and Glenelg. In some places this line of good country thins off to a narrow belt; but in other portions of the route it widens out to a very considerable extent, and on approaching the boundaries of New South Wales* [now Victoria] *it forms one of the most extensive and continuous tracts of good country which is known to exist within the limits of South Australia.*"

Angas (1847) provides extensive detail and observations of the expedition's route, landscape, contact with local aboriginal people and hunting of the wildlife as sport or to supplement the expedition member's diet, from their rendezvous on the Bremer to Mt Gambier. Some quotes from his journal are provided here for the study area starting from the Salt Creek area on the Coorong.

"April 22. – This day's journey brought us to the Salt Creek; a river of salt water flowing out of the Coorong, and running through the desert to the eastward. Open green flats, skirted with she-oaks and a few gum-trees, occur along its margin, and tolerable feed for the cattle was found about our camping-place."

Further a field in search of Cape Bernouilli they came a cross a single granite rock" along the shore where they *" encamped amidst sand-hills, scattered with shrubberies of casuarina and flowering bushes, and carpeted with emerald grass, forming fairy dells and miniature scenery as picturesque as it was curious."*

(Angas 1847). Having spent several days travelling through the Lacepede Bay area they continued south, traversing through *"good cattle country"*, forest and open woodland toward Mt Benson.

**"***Beyond Lacepede Bay, we found a good cattle country, consisting of grassy flats scattered over with banksia or honeysuckle trees. During the days march we passed through a forest, in which were many trees of stringy-bark and blackwood. In some places the underwood was dense, but as the country began to rise, it became more open, and again descended into banksia flats*." (Angas 1847)

*"We ascended the ridges, which were thickly clothed with banksia and she-oak, but had some difficulty in finding Mount Benson, owing to the density of the foliage. The view from the summit was most extensive, and of a peculiar character. It appeared as though we were looking into over a sea of wood, with the blue plains melting away into the invisible distance. The white and rugged limestone of the range was intersected in every direction with wombat holes, that perforated the rock like honeycomb."*

Between Lacepede Bay and Rivoli Bay Angas (1847) notes that the flats are *"covered in many places by limestone tufa, in the shape and appearance resembling biscuits"*. South of Lake Hawdon;

**"***We penetrated thick woods …and we crossed more spongy plains, covered with shells and tufa "biscuits"…some of the swamps were covered with an exceedingly rich, black soil, and produced luxuriant sow-thistles and other rank vegetation: the more solid plains were overspread with beautiful green feed"*. (Angas 1847)

Further south the party undertook a side trip to Rivoli Bay where they explored Pengiun Island aided by the whalers that were camped along the shore and their whale boats. Returning to their depot on the east side of an *"extensive swamp between us and the shore"* (east of Rivoli Bay) they set out for Mt Gambier via Mt Schank the next day. Angas (1847) describes the scenery as they head south easterly.

"*We travelled along between parallel ridges of sand-hills, scattered with she-oaks, forming beautiful vistas carpeted with grass. As we progressed, the sand hills grew larger, almost becoming mountains in aspect; and amidst their intervening dells beautiful magic scenes presented themselves, displaying a character quite different from anything I ever before witnessed*."

After skirting Lake Frome and travelling through the *"beautiful and verdant country"* they headed south easterly to Mt Schank. Crossing this country Mr Burr *"shot a turkey* [Bustard*], which was roasted on a stick"* and later breakfasted on. They *"steered south-east by compass for some miles over a good country, with banksia flats and plenty of grass"* as they headed toward Mt Schank. Angas (1847) describes;

*"The grass was here very thick, like an emerald velvet carpet, and the pyrameles and other small animals were occasionally seen"*. As they continued through the area they move through patches of *"vile scrub, full of dangerous holes half hid by brushwood"* but before arriving at the Messers. Arthurs' station near Mt Schank, Angas describes the country;

*"The scrub terminated as suddenly as it commenced, and we next entered upon an extensive and beautiful country, covered with luxuriant grass and studded with blackwood, wattle, and gum trees like a noblemans park. As far as the eye could reach, this magnificent region presented itself, stretching toward the mouth of the Glenelg* [River] *and the districts of Australia Felix.*" (Angas 1847)

Leaving Mt Schank the party rides north *"through a rich country, thickly studded with stringybark and lofty blackwood trees"* to the foot of Mt Gambier. Here they bivouacked the night in the crater, though Angas (1847) records that *"About three miles from this place there is a cattle station belonging to Messers. Henty of Portland Bay"*. At this hut one of the stockmen has shown Angas *"a quantity of the beautifully spotted skins of the dasyurus, or native cat, which abounds in this locality"*. Angas goes on to record that this appears to be the stockmen's only pastime and the stockmen *"obtains nine shillings a dozen at Portland Bay, whither he goes twice a year"*.

Most early recorded travels appear to be via the coastal route however Angas (1847) records that on the Grey expedition (1844) they met other overlanders that had taken a more northern route "*by the way of Mt Arapiles, in order to find better pasture and a more abundant supply of water"*. This route became more popular with the gold rush when travellers journeyed between stations that provided stepping stones across what was then known as the "100 mile desert" (Ragless 1986).

Early records of the scenery are provided to us today by the illustrations of Angas who was also an accomplished artist. He skilfully depicted the landscape of the region, with his paintings showing the structure and density of the vegetation as well as the abundance of fauna in the area (Figures 1-4).

**Figure 1.**
**Mt Gambier with one of its volcanic lakes (Angas 1847). Illustration courtesy of the State Library of South Australia.**

**Figure 2.**
**The Devils Punchbowl (Angas 1847). Illustration courtesy of the State Library of South Australia. This sinkhole, originally referred to as The Devils Punchbowl by Grey's expedition party, is probably Blacks Sinkhole at 'Barnoolut', south west of Mt Gambier.**

**Figure 3.**
**Arthurs sheep station with volcanic wells. Mt Schank is in the background. (Angas 1847). Illustration courtesy of the State Library of South Australia.**

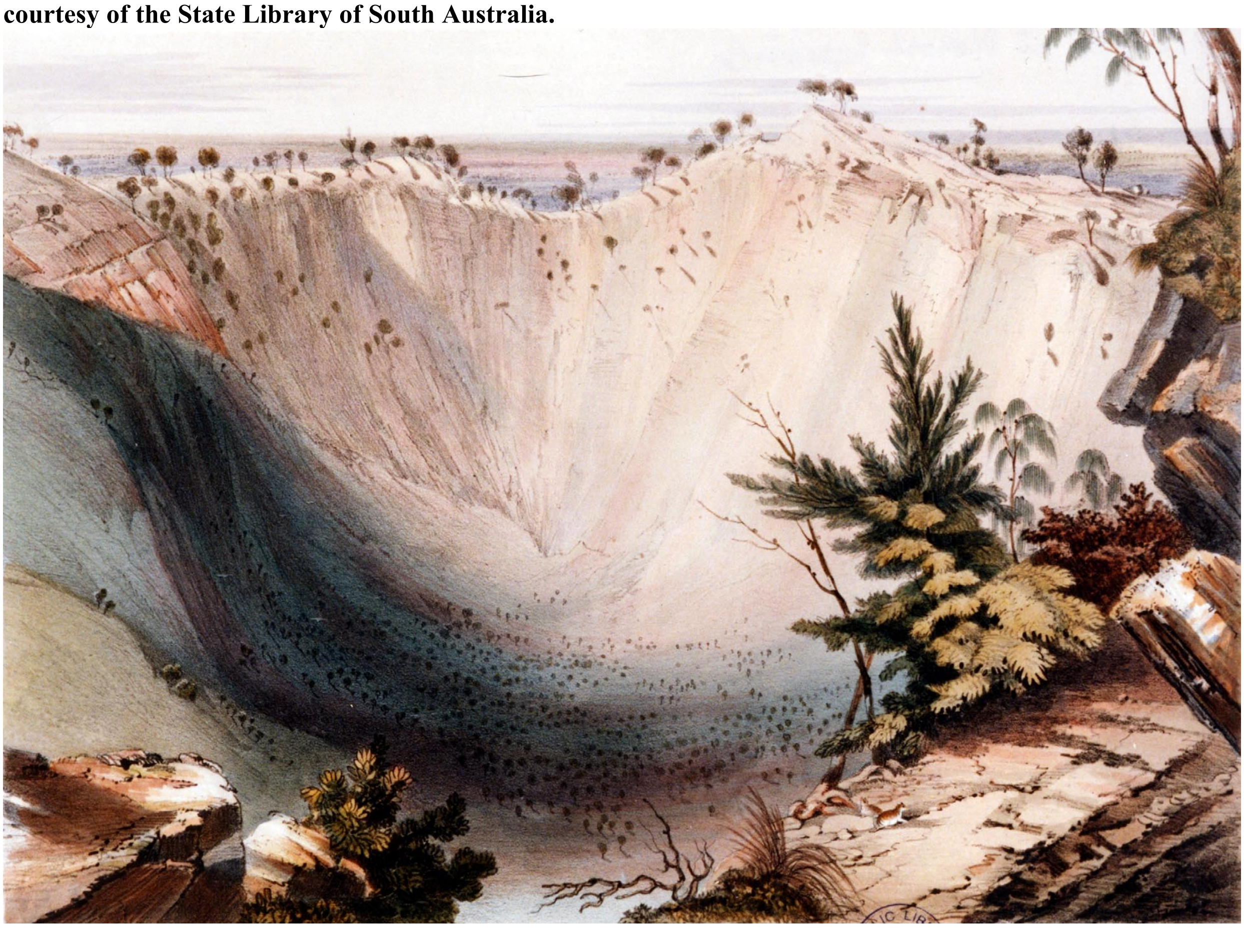


**Figure 4.**
**Crater of Mt Schank. (Angas 1847). Illustration courtesy of State Library of South Australia.**

**Physical Environment**

The South East survey region occupies the South Eastern corner of the state of South Australia defined as the land area south of $36^0$ latitude. Biologically it is a significant region being the western limit of distribution of many species whose distribution is primarily in Victoria and New South Wales. The South East fauna is dominated by the temperate Bassian species with the flora's plant growth predominantly responding to winter rainfall.

The South East lacks major relief but has unique landforms originating from a long, complex geological history. Several hundred thousand years ago, the region was covered by a shallow sea dotted with an archipelago of islands consisting of ancient granite rocks. These can now be seen north and south of the line between Kingston and Keith (into the southern Murray Mallee), protruding above the modern surface as isolated rocky hills (e.g. Christmas Rocks, Mt Monster, Jip Jip).

Fluctuating sea-levels over the last 700,000 years have produced a series of 13 calcarenite ranges 2-10km apart and 20-50m above the plains parallel to the current coast south-west of Naracoorte (i.e. Robe, Woakwine, Dairy, Reedy Creek, West Avenue, East Avenue, Ardune, Baker, Woolumbool, Stewart, Harper, and Naracoorte Ranges and Hynam Dune). These ridges are composed of sand with marine shell fragments. In places the sand has been hardened to rock by percolating ground water.

South-east of Millicent, this pattern has been altered due to the uplifting of Tertiary bedrock and subsequent volcanic activity up to as recently as 1,500 years ago. The associated eruptions deposited ash and scoria which has subsequently become basalt and pumice. See Benbow (this volume) for more detail.

The slope towards the coast is 1:1600, and to the north less than 1:5000 (South Eastern Wetlands Committee 1983). Surface water flows toward the coast until the flow meets a range whereby the range directs it northwards along the eastern side of the ranges. At the time of European settlement, freshwater swamps and lakes were extensively distributed between the range systems. Natural streams such as Mosquito, Naracoorte and Morambro Creeks have catchments originating in western Victoria. Near the coast several streams originate from springs, including Stoney, Benara and Eight Mile Creeks and Piccaninnie Ponds outlet. The establishment of a system of private drains begun in the 1860s and enhanced natural flows. Later, drains were excavated to bisect ranges, which effectively drained interdunal swamps. Holmes and Waterhouse (1983) provide a detailed account of the hydrology of the South East and the locations of the major drainage works.

Inland of the calcarenite ranges north-east of a line between Frances and Keith extends an area of 20,000 year old, mostly east-west trending, windblown, siliceous sand dunes. These dunes are an extension of the Little Desert of western Victoria.

North and south of these inland siliceous sand-dunes are tongues of heavy dark clay soils, extending westward from the east (Victoria). This area of clay soils occurs around Kybybolite – Frances area then Custon – Bordertown – Mundulla area. The area around Bordertown – Keith is known regionally as "Tatiara - the good country".

**Distribution and tenure of remaining native vegetation**

About 278,000 hectares (13%) of remnant native vegetation remain in the South East (Table 1). This vegetation is concentrated in areas less suited to agriculture such as deep sands, saline soils or sheet stone. Most of the remainder of the area only has native vegetation retained along roadsides or as scattered trees in farmland.

Including Heritage Agreements on private land, 162,856 ha or 57% of the native vegetation in the South East now has the conservation of its flora and fauna as the primary management objective. These are either National Parks and Wildlife reserves managed by the Department for Environment and Heritage (100,083 ha contained within 54 reserves), Forestry SA as Native Forest Reserves (10,836 ha within 45 Reserves), or are privately owned Heritage Agreements. As of October 2002, 196 Heritage Agreement areas comprising about 46,536ha (17% of the native vegetation remaining in the South East) have been signed over private land within the region. A comprehensive listing of these reserves is provided in Table 2.

The Department for Environment and Heritage estate contains 44 Conservation Parks, the largest of which is Messent CP comprising 11,604 hectares. There are only 8 Conservation Parks with an area of greater than 1000 hectares, with the remaining 36 lesser in area (17 less than 100ha).

There are three National Parks, however only two are wholly within the South East (Canunda and Naracoorte Caves NP). Part of the Coorong National Park extends into the South East. There are ten Conservation Reserves and four Game Reserves in the region and these are typically small in area.

The 54,000 ha of native vegetation which remains as scrub blocks and areas of scattered trees in farmland are mostly used and managed for primary production purposes. Because these areas are a major part of the remnant vegetation in the region, it is also important to recognise their contribution to the conservation of the region's biological resources.

**Table 1.**
**Tenure of native vegetation in the South East 2002.**

| | Tenure | Approx. Area (ha) | % of remnant native vegetation | % of SE total area |
|---|---|---|---|---|
| Government Land | *National Parks & Wildlife Reserves* (NPW Act, 1972) | 53,701 | 20.0 | *2.5* |
| | Conservation Reserves (*Crown Lands Act, 1929*) | **4,466** | 1.0 | 0.2 |
| | Native Forest Reserves (*Forestry Act, 1950*) | **10,836** | 4.0 | 0.5 |
| *Private Land* | Heritage Agreements | **46,536** | 18.0 | 2.3 |
| | Other | **154,142** | 57.0 | 7.3 |
| | **TOTAL** | **270,000** | **100** | **13.0** |

*Source : GIS State Government maintained datasets: landcover (1987), Forestry areas 1997, Heritage Agreements January 1998, NPWSA Reserves 1999.*

The present study area covers the entire South East Environmental Province (Province 1) and a portion of the Murray Mallee Environmental Province (Province 2 of the Environments of South Australia. Thirty-three Environmental Associations (these are displayed in Figure 5) are contained within this study area. The Environmental Provinces are described in the 'Environments of South Australia' (Laut *et al.* 1977a,b). These reports provide a detailed overview of the climate, landforms, soil types, dominant vegetation, landuse, population and settlement, and conservation measures across the study area. This project divided South Australia into eight Environmental Provinces, each of which were mapped out to Environmental Association level using Landsat Imagery and published accounts. Descriptions of the various land units comprising each Association are detailed in table form for Landform, Surface Water, Soil, Vegetative Cover, Native Vegetation and Land Use, in Laut *et al.* (1977a,b). The native vegetation descriptions provided with the Province descriptions as part of the Environments of South Australia (ENVSA) are possibly the least accurate aspect of these reports because of the reliance on scant published source information and limited ground-truthing. In addition it was not possible to reliably interpret dominant vegetation using the satellite imagery of the 1970's.

More recently (early 1990s) the State has been divided into Bioregions that are derived from the various habitats found across the state from the Environmental Provinces described Laut *et al.* (1977a,b). In relation to bioregions, the study area contains the majority of the Naracoorte Coastal Plain Bioregion and parts of the Murray-Darling Depression and the Victorian Volcanic Plain Bioregions.

**Study Objectives**
This Biological Survey of the South East examined the biology of the region from south of $36^0$ Latitude (Keith area). It forms part of the Biological Survey of South Australia, which aims to systematically document the vascular plants and vertebrate fauna of the region.

To date these surveys have gathered information for South Australia's offshore islands, Kangaroo Island, eastern agricultural lands (Murray Mallee, Mt Lofty Ranges), and large areas of the arid-zone including the Olary Plains, southern Strzelecki Desert, Nullarbor Plain, Gawler Ranges, Yellabinna Region, Stony Deserts, Anangu-Pitjantjatjara Lands and the Flinders Ranges. The vegetation survey component of the Biological Survey of SA has been carried out for the Mid-north, Yorke Peninsula, Eyre Peninsula and River Murray Floodplain. These areas are awaiting the vertebrate survey component to be completed.

The primary aim of the Biological Survey of South Australia is to systematically and consistently sample a representative range of the ecological habitats found in South Australia.

**Table 2.**
**List of National Parks, Conservation Parks, Conservation Reserves and Game Reserves in the South East and their date of proclamation and area (ha).**

| Park Name | Reserve Type | First Proclaimed | Total Area (ha) |
|---|---|---|---|
| Aberdour | CP | 28/02/1991 | 131.6 |
| Bangham | CP | 22/11/1973 | 743.3 |
| Baudin Rocks | CP | 1/1/1965 | 13.9 |
| Beachport | CP | 1/1/1968 | 707. 8 |
| Belt Hill | CP | 27/04/1972 | 9.6 |
| Big Heath | CP | 1/1/1964 | 2371.1 |
| Butcher Gap | CP | 29/03/1990 | 179.8 |
| Calectasia | CP | 1/1/1967 | 14.2 |
| Carpenter Rocks | CP | 06/09/2001 | 30.5 |
| Desert Camp | CP | 1/1/1967 | 50.8 |
| Dingley Dell | CP | 1/1/1922 | 5.9 |
| Douglas Point | CP | 08/05/1997 | 37.8 |
| Ewens Ponds | CP | 09/09/1976 | 35.8 |
| Fairview | CP | 1/1/1960 | 1390.5 |
| Furner | CP | 22/11/1973 | 288.9 |
| Glen Roy | CP | 1/1/1970 | 541.9 |
| Gower | CP | 1/1/1971 | 39.3 |
| Grass Tree | CP | 17/08/1972 | 15.9 |
| Guichen Bay | CP | 1/1/1967 | 102.7 |
| Gum Lagoon | CP | 1/1/1970 | 8430.6 |
| Hacks Lagoon | CP | 1/1/1967 | 201.0 |
| Jip Jip | CP | 1/1/1967 | 145.5 |
| Kelvin Powrie | CP | 27/4/1972 | 17.1 |
| Little Dip | CP | 21/08/1975 | 2173.2 |
| Lower Glenelg River | CP | 04/11/1993 | 131.6 |
| Martin Washpool | CP | 1/1/1969 | 1872.0 |
| Mary Seymour | CP | 18/09/1980 | 343.5 |
| Messent | CP | 1/1/1964 | 11604.3 |
| Mount Monster | CP | 30/09/1976 | 91.6 |
| Mount Scott | CP | 09/11/1972 | 1263.9 |
| Mullinger Swamp | CP | 15/01/1976 | 12.4 |
| Nene Valley | CP | 14/12/1972 | 389.0 |
| Padthaway | CP | 1/1/1971 | 984.8 |
| Penambol | CP | 04/11/1993 | 179.2 |
| Penguin Island | CP | 1/1/1963 | 7.1 |
| Penola | CP | 1/1/1970 | 225.5 |
| Piccaninnie Ponds | CP | 1/1/1969 | 543.5 |
| Pine Hill Soak | CP | 17/09/1987 | 50.6 |
| Reedy Creek | CP | 08/03/1973 | 146.1 |
| Talapar | CP | 02/06/1977 | 489.6 |
| Tantanoola Caves | CP | 1/1/1930 | 13.9 |
| Telford Scrub | CP | 12/03/1987 | 174.8 |
| Tilley Swamp | CP | 04/11/1993 | 1535.7 |
| Wolseley Common | CP | 29/11/2001 | 24.4 |
| Bernouilli | CR | 11/11/1993 | 241.7 |
| Big Heath | CR | 09/12/1993 | 102.9 |

| | | | |
|---|---|---|---|
| Bunbury | CR | 11/11/1993 | 1943.6 |
| Canunda | CR | 11/11/1993 | 1030. 6 |
| Desert Camp | CR | 11/11/1993 | 880.4 |
| Hardings Springs | CR | 24/4/1997 | 6.3 |
| Naracoorte Caves | CR | 02/08/1990 | 70.7 |
| Woakwine | CR | 11/11/1993 | 422.8 |
| Bool Lagoon | GR | 1/1/1967 | 3092.1 |
| Bucks Lake | GR | 1/1/1968 | 137.9 |
| Lake Robe | GR | 04/11/1993 | 404.0 |
| Poocher Swamp | GR | 14/11/1985 | 77.1 |
| Canunda | NP | 1/1/1959 | 9273.8 |
| Coorong | NP | 1/1/1966 | 50804.8 |
| Naracoorte Caves | NP | 27/04/1972 | 460.5 |
| **Total Area** | | | **106,724.0** |

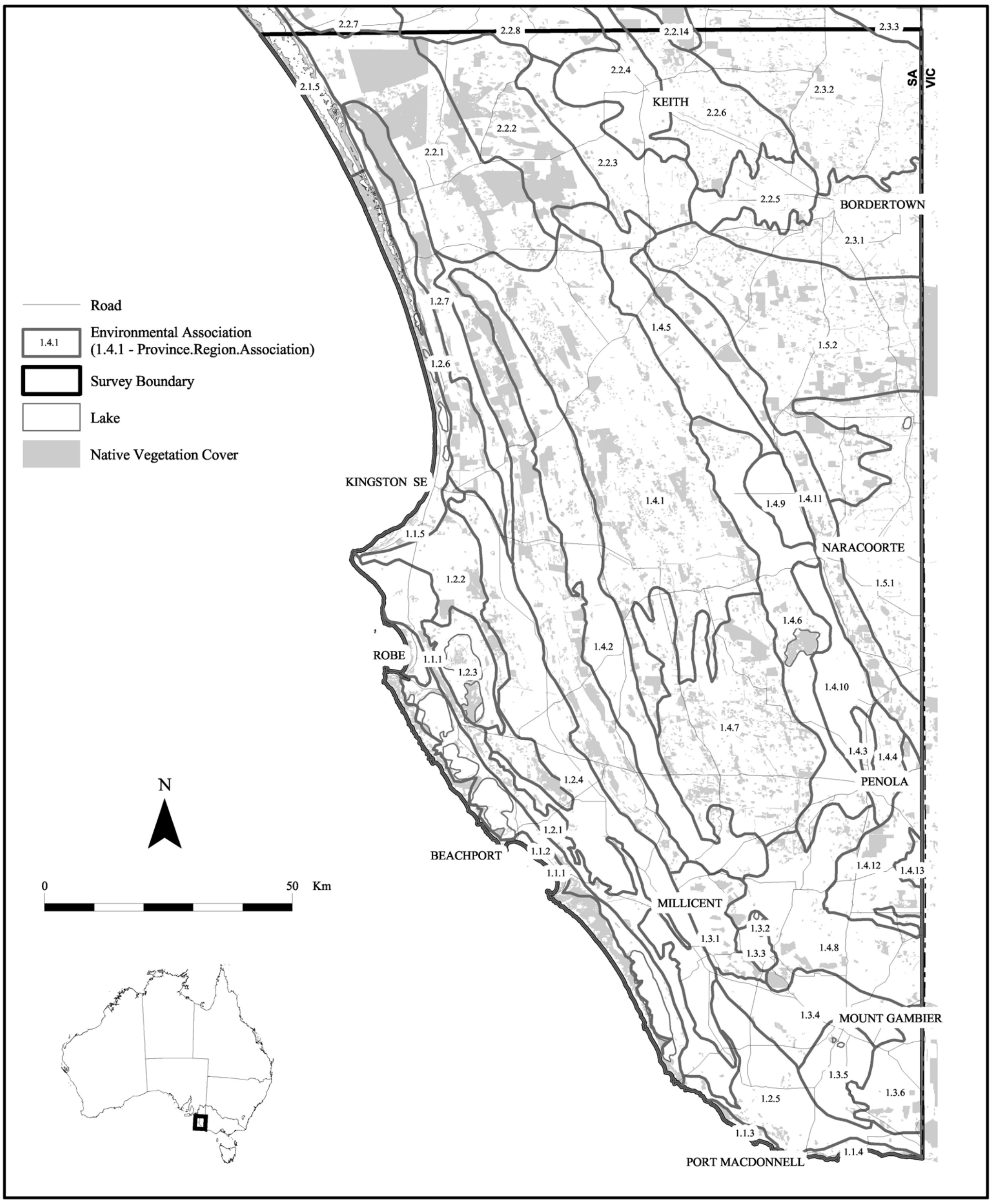



**Figure 5.**
**Environmental Associations (Laut *et al.* 1977a) overlaying the study area. The numbers represent Environmental Province, then Environmental Region, followed by the Environmental Association number.**

This scientific information is collected to enhance integrated natural resource management and to assist in the conservation of South Australia's biological diversity.

The main aim of the Biological Survey of the South East was to conduct both a vegetation and vertebrate survey across the range of habitats comprising the South East and publish the findings in a report. Specific objectives are listed below:

- collate existing information about the flora, fauna and their habitats,
- systematically survey the flora and fauna at selected sample sites throughout the study area and document the physical characteristics of these sites,
- sample the terrestrial invertebrates using standard micro- and macro- pitfall trapping techniques,
- map vegetation associations (floristics and structure) across the South East at a scale of 1:40,000 ,
- analyse the biological survey database to determine floristic communities and the relationship between the fauna and the defined habitats,
- document the biogeography of plant and animal communities with the information obtained from the survey,
- identify characteristic species, communities and habitats of the South East,
- identify potential threats to the region's biological diversity,
- summarise findings in a consolidated report.

Additional objectives associated with the National Forest Inventory were also part of the vegetation survey focus. These objectives were to contribute to the;

- completion of a continental scale study of native forests,
- production of a forest inventory database suitable for local and regional applications, and
- completion of the forest inventory of South Australia's known temperate forests.

# CLIMATE

**By D. Hopton[3]**

The South East region of South Australia has a cool moist climate with long mild dry summers, followed by cool wet winters. The Köppen classification places this region in the temperate climate zone. Mount Gambier, in the south of the study area, has an annual rainfall of 775.4 mm. In comparison, Naracoorte, in the centre of the region, has an annual rainfall of 581.1 mm while in the north Keith has an annual rainfall of 470.6 mm (Table 3 and 4). This decrease in annual rainfall northward and away from the coast causes a graduation of Köppen's classification from Csb for coastal regions to Cfb for inland regions.

**Table 3.**
**Mean Annual Rainfall for eight South East weather stations.**

| Weather Station | Mean Annual Rainfall (mm) |
|---|---|
| Keith | 470.6 |
| Bordertown | 619.0 |
| Padthaway | 525.4 |
| Kingston | 740.4 |
| Robe | 634.1 |
| Naracoorte | 581.1 |
| Penola | 708.8 |
| Mount Gambier | 775.4 |

**Table 4.**
**Mean monthly rainfall (mm) for Keith, Naracoorte and Mount Gambier.**

| | Month | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| Keith | 18.6 | 21.0 | 21.5 | 34.4 | 54.0 | 53.1 | 55.7 | 58.9 | 51.2 | 44.2 | 31.8 | 26.2 |
| Naracoorte | 23.7 | 19.9 | 26.7 | 44.1 | 60.3 | 73.7 | 76.1 | 73.2 | 64.4 | 52.1 | 36.4 | 30.6 |
| Mount Gambier | 32.3 | 29.0 | 35.7 | 63.4 | 84.0 | 96.6 | 107.1 | 99.8 | 77.2 | 63.4 | 45.9 | 41.2 |

The close proximity of the ocean also affects temperature, restricting the seasonal and diurnal temperature ranges of the coastal zone. The average mean maximum temperature increases northward and inland. Mount Gambier has an average mean maximum temperature of 19 $^{o}$C, Naracoorte 20.8 $^{o}$C and Keith 22.1 $^{o}$C (refer to Table 5).

Data from the Bureau of Meteorology are presented for rainfall and temperature for Keith, Naracoorte and Mount Gambier to illustrate the climatic change that occurs moving inland and northward (Tables 3-5 and Figures 6a-c).

[3] Biological Survey and Monitoring, Science and Conservation Directorate, Department for Environment and Heritage, PO Box 1047, ADELAIDE SA 5001.

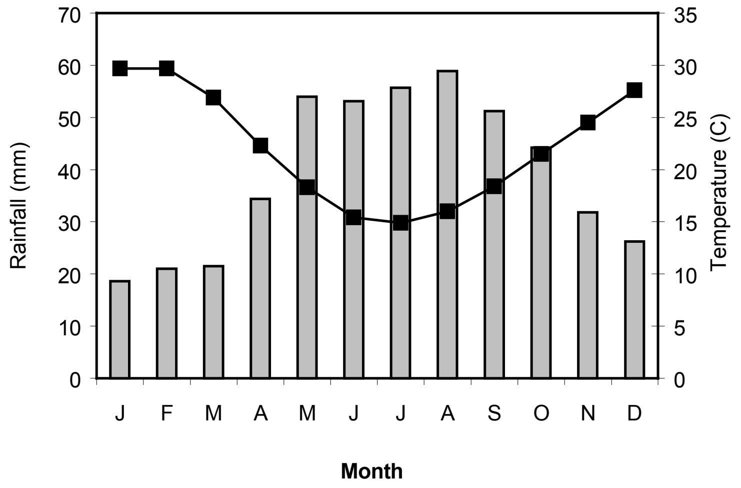
**Table 5.**
**Mean daily maximum temperatures in $^{o}C$ for Keith, Naracoorte and Mount Gambier.**

| | Month | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| Keith | 29.7 | 29.7 | 26.9 | 22.3 | 18.3 | 15.4 | 14.9 | 16 | 18.4 | 21.5 | 24.5 | 27.6 |
| Naracoorte | 27.9 | 28.6 | 25.4 | 21.5 | 17.4 | 14.8 | 14.2 | 15.4 | 17.2 | 20.2 | 22.8 | 25.4 |
| Mount Gambier | 24.3 | 24.8 | 23.0 | 19.5 | 16.5 | 14.2 | 13.6 | 14.7 | 16.4 | 18.6 | 20.6 | 22.7 |

Evaporation is high during the summer. In the south of the study area the median monthly rainfall exceeds the mean monthly evaporation rate for only three months in winter. In the northern inland areas rainfall exceeds evaporation for only one or two months

Wind speed and direction for Robe and Mount Gambier have been published in 'The Environments of South Australia – Province 1 South East (Laut *et al.* 1977a). At Robe, winds are generally south-westerly to south-easterly in summer while being more variable in winter tending to be more from the south-west and north-west. At Mount Gambier winds are generally southerly in summer and again more variable in winter but tending towards northerly or westerly.

a)

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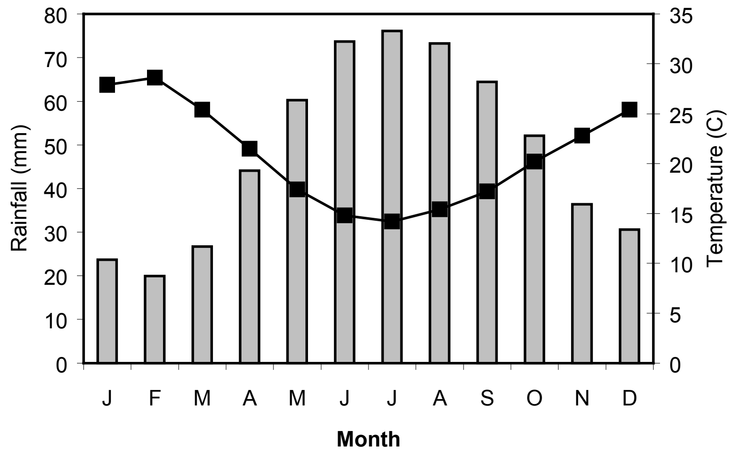


c)

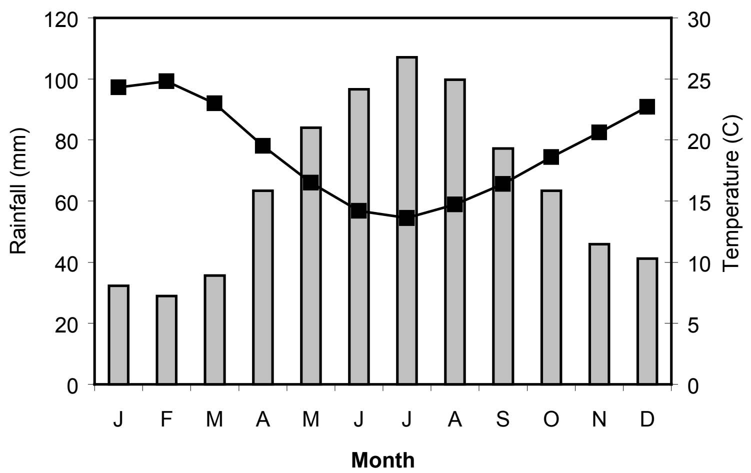


**Figure 6.**
**Mean monthly rainfall and mean monthly temperatures recorded at a) Keith, b) Naracoorte and c) Mount Gambier.**

# PREVIOUS BIOLOGICAL RESEARCH

**By L. M. B. Heard, J. Foulkes, T. Croft and W. Barker**

Prior to this study there had been no attempt to systematically survey the entire South East in a single study for either vegetation or fauna. Since 1939 a number of smaller scale surveys have been conducted that investigated various parts of the area. The previous biological research is summarised under the Vegetation and Fauna sections below.

## PREVIOUS BIOLOGICAL STUDIES

In terms of understanding the dynamics of the region and the flora and fauna biologists, are relative newcomers when compared to the indigenous people and their knowledge at the time of European settlement. Aspects of the intimate biological knowledge that the indigenous people had acquired over thousands of years in the region are recorded here in extracts from Angas (1847).

"About this creek [Ross's Creek] we began to find various indications of natives; the most remarkable being wicker work snares for bird-catching, about four feet high, erected on the flats. Near these snares were formed small covered places, just large enough for one person to squat in; the native, concealing himself in this ambush, with his snaring rod protruded from a small aperture in the side, imitates the voice of the birds, and, as they alight upon the wicker work, dexterously slips the noose around their necks, and snares them into his retreat." Angas (1847)

"On these plains [beyond Lacepede Bay] we met with many tracks of the natives, and their old encampments were numerous. Heaps of the melliferous cones of the banksia were lying round these deserted wirlies. The natives steep the cones in water, which extracts the honey, and produces a sweet beverage." Angas (1847)

The use of intricate bird snares in the region and the use of *Banksia marginata* flowers to make a sweet beverage are just some examples of this knowledge. Pretty *et al.* (1983) discussed a number of aspects of Aboriginal life and customs in more detail.

This section focuses on European knowledge gained on the biological aspects of the region and provides an indication of the type of work conducted in the study region. Some more detailed descriptions of previous work conducted in the study area are presented in the relevant chapters. .

## VEGETATION

### Past Botanical Work

While the South East indigenous communities, prior to European settlement, had developed knowledge of the local flora over thousands of years European knowledge of the flora of the South-east has only developed since the 1840s. This knowledge of the flora has developed in conjunction with that of Australian flora, which began initially as a predominantly European based activity beginning in the late 1700s, but by the early 1900s was increasingly (and is now largely) undertaken by Australian botanists.

Plant collections, in the form of herbarium specimens, are integral to classifying and describing plants and to providing an authentic updateable record of their geographic distribution. Unlike the Far West Coast, Eyre Peninsula, Spencer Gulf, Gulf St Vincent and Kangaroo Island, scientific collecting and documentation of the plants of the South East did not commence with the coastal explorations of Flinders and Baudin in 1802, as neither of these parties made landfalls along the South East coast. Instead plant collections commenced with settlement of the region, the first serious collector possibly being John George Robertson, who, from his base in Portland, where he settled in 1840, made collections in western Victoria through to Penola and Rivoli Bay (Kraehenbuehl 1983a, Kraehenbuehl 1986).

From this start, there have been three notable phases of botanical activity (Barker and Barker 1990). The initial phase, which lasted until the beginning of the $20^{th}$ Century, centred around the activities of Ferdinand von Mueller (1825-1896) who visited South-east in 1848 (collecting localities included Rivoli Bay and Lake Alexandrina). Mueller who was initially based in Adelaide before his move to Melbourne in 1852, was the first serious resident botanist to publish on the Australian flora. He published voluminously and also distributed material globally which enhanced publication by others. He also encouraged a network of people around Australia to collect for him. In the South-east these included his sister Clara Wehl, Dr L.W. Schulzen, F. Osswald, J.W.T.L. Blandowski, and Rev. J.E. Tenison-Woods. Others to botanise in the South East during the later part of Mueller's influence included J.G.O. Tepper, a Miss Allen, K. Ward, Miss N. MacDonald, S.Dixon and Dr R. Brummit. These people collected for a associate of Mueller's, Professor Ralph Tate of the fledgling University of Adelaide. Tate produced the first "Flora of Extratropical South Australia" (Tate 1890) and also made collections in the South East.

The next phase involved the massive contribution of resident South Australian botanist J.M. Black (1855-1951) and his associate collectors such as J.B Cleland, E.C.[and C.D.] Black, E.H. Ising, E. Ashby, A.M. Ashby, H.W. Andrew, S.A. White, R.S. Rogers: J. M. Black also documented the flora in his series 'Flora of South Australia' (Black 1908, 1924-26, 1948-52) and in many scientific publications describing new species and distributional records. Others who made collections at that time included E.S. Alcock, Mrs E.M. Petherick, L.D. Williams. Notable collections underpinning ecological studies by the University of Adelaide from the 1920s were made by T.G.B. Osborn, C.M. Eardley, R.L. Crocker, T.B. Paltridge, H.P.C. Trumble, E.L. Robertson (nee Ashby), R.L. Specht and D.E. Symon.

Finally, with the establishment of the State Herbarium of South Australia in the mid 1950s, there was significant increase in collections by staff and associated individuals and organisations, and a publicatons programme of research work and floristic summaries (e.g. Eichler 1965, Jessop and Toelken 1986, Jessop 1993). Collections in the State Herbarium from the region now number almost 30,000). Notable resident collectors were Doreen Hunt, I.B. Wilson (Forest Research Institute, Mt Gambier) and Kath Alcock.

More detailed information on the contributions made by these collectors is available in Kraehenbuehl (1983a, b, 1986).

**Past Vegetation or Landscape Studies**

The first descriptive information on the landscape and vegetation of the region was found in accounts by overlanders who followed Charles Bonney's exploratory journey from Victoria to Adelaide in March 1939, establishing the early stock route between Melbourne and Adelaide. These overlander accounts include Charles Bonney (Bonney no date), Joseph Hawdon and Alfred Mundy in July 1839 (Hawdon 1839), George Hamilton in mid winter 1839 (Hamilton 1880), and Edward and Fortescue Arthur in February 1843 (Arthur and Arthur circa 1844). Providing more detailed descriptions tied to a more accurately defined route are the accounts of Angas (1847) and Burr (1845) from Governor Grey's 1844 expedition to the region.

With settlement in the area came a more detailed publication describing the natural landscape of the region when Rev J.E. Woods produced a volume focussed on geological observations in the region. In this publication Woods provided descriptions of the landscapes and the dominant soils, landforms and vegetation communities based on his observations as he travelled around the region (Woods 1862).

Further advancements to the knowledge and distribution of native vegetation communities within the region were made by a variety of authors over the last century. In the 1930s – 1940s these included studies of sphagnum bogs near Lake Leake (Crocker and Eardley 1939) and an ecological study of the vegetation of Eight Mile Creek by Eardley (1943).

Major studies attempting to define and map the principal vegetation associations and to research the edaphic and other environmental factors influencing these communities came particularly through the detailed work of Crocker (1944) for the Lower South East; Coaldrake (1951) for part of the Upper South East (Ninety-Mile Plain); Specht (1951) for the Tatiara (Bordertown) district; Litchfield (1956) in the Coonalpyn Downs area (Upper South East); and Specht (1957a-b) for the Dark Island heath (Ninety-Mile Plain). The detailed mapping and vegetation association descriptions provided by Crocker (1944) and Coaldrake (1951) were particularly relevant and useful in completing the regional vegetation mapping resulting from the South East survey work.

Studies by Taylor (1933), Blackburn *et al.* (1953), Blackburn (1959a-b) and Blackburn (1965), though focussed specifically on soils, for various parts of the study region also included observations and commentary on the relationships between native vegetation and soils thereby adding to the vegetation knowledge base. Research into grasslands by Tiver and Crocker (1951) provided some background on the native grasslands or grassy ecosystems for the Kalangadoo and Naracoorte areas and how these had been affected by pasture development activities. Specht (1972) drew on all these sources to produce a broadscale regional map for the South East and to provide detailed descriptions of the major vegetation communities within the state.

In the mid 1970s research by Dodson concentrated on using pollen analysis of lake sediments to describe the vegetation history of Lake Leake (Dodson 1974, Dodson 1975b) and the Mt Gambier region (Dodson 1975a). Dobson's work for the Mt Gambier region using sediments from Brownes Lake revealed that the native vegetation around that area consisted mainly of open grasslands with some sparse woody vegetation (Dobson 1975a). Dobson and Wilson (1975) also investigated the vegetation history and soil development of Marshes Swamp. Other studies in the 1970s included the Nature Conservation Societies (NCSSA) survey work on the Southern Coorong and Lower Younghusband Peninsula. In terms of vegetation work this study involved mapping the vegetation formations for the area and running transects across the area to study the vegetation associations in more detail (Gilbertson and Foale 1977).

Responding to the removal of native vegetation through agricultural development and drainage, Mowling and Barritt (1980) undertook the first work across the whole region as defined by this study. They mapped the location of the large (>100 ha) remnants and describing these areas in terms of their landforms and vegetation types. Barritt (1982) added to this work with a supplementary report on 16 islands of vegetation in the Upper South East (eastern half), providing brief descriptions of the landforms and vegetation within these areas. Another significant addition to the knowledge of specific blocks in the South East came through work by Paton (1983) on Big Heath Conservation Park. This report was commissioned by the South Eastern Wetlands Committee to document the vegetation of the park and predict the likely impact of proposed hydrological changes on the flora and fauna. Paton undertook survey work, that built on the previous survey and mapping work conducted by the NCSSA in 1969, producing detailed mapping and an analysis of the vegetation quadrat data. In the western half of the Upper South East the proposed development of a lignite mine at Kingston prompted a detailed examination of the vegetation for the development area by Lange and Nicolson (1982) for the Environmental Impact Assessment report (Kinhill Stearns 1982).

With the growing awareness of the importance of wetlands in the region and the impact of hydrological changes, specialist studies were undertaken that focussed on wetland areas. Reviewing the wetland resources of the area the South East Wetland Committee (1983) report provided summaries on 78 wetland areas across the a region. This report provided brief descriptions of the vegetation communities at each of these locations, their conservation value and any recommendations for future management. More detailed investigations of the wetlands of the Baker Range and Marcollat watercourse was undertaken by Atkins (1988).

Increasing concern by Local Councils in the lower South East prompted specialist studies into the distribution and management of Coastal Wattle (*Acacia longifolia* var. *sophorae*) along roadsides (Cohen 1981, Stevens 1983).

During the 1980's, further vegetation mapping was carried out by the Remote Sensing Applications Branch, Department of Environment and Planning undertaking vegetation survey and mapping projects for the Coorong National Park and Game Reserve (Remote Sensing Applications Branch 1982a) and the Beachport 1:50,000 map-sheet (Remote Sensing Applications Branch 1982b). This detail mapping used interpretation of photo mosaics in conjunction with ground and aerial survey. This mapping was an important step towards the regional mapping and provided a significant resource to the National Parks and Wildlife Service as did the work by Davies (1982) to assist in park management planning. The report by Davies (1982) on the major plant associations in South Australia was pivotal in assessing the conservation significance of the major plant associations and providing vegetation community descriptions for parks and reserves. While not all park management plans had vegetation maps produced, vegetation community information was compiled in these plans providing a useful addition of specific block based vegetation information to expand the regional vegetation knowledge base.

Sparrow (1991) undertook additional research into the vegetation communities and the environmental influences for the region. A significant part of Sparrow's work was a multivariate analysis of floristic data as part of his larger geo-botanical study of the remnant natural vegetation of temperate South Australia. This was the first regional multivariate analysis for the region. Information from that analysis was used when reviewing the analysis undertaken as part of this South East Biological Survey vegetation analysis.

The proposals for surface and ground water drainage schemes as part of the Upper South East Dryland Salinity and Flood Management Plan (Upper South East Dryland Salinity and Flood Management Plan Steering Committee 1993) resulted in a number of small park-based or specific wetland area biological surveys conducted during the 1990s. These surveys to assess the likely biological impacts of the proposed drains or drainage options included Messent Conservation Park (Owens *et al.* 1995); Deep Swamp (Stewart 1996); Tilley Swamp (Stewart *et al.* 1998); Bunbury Conservation Reserve and Stoneleigh Park Heritage Agreement (Stewart *et al.* 1998); Gum Lagoon Conservation Park (Davies 2000); and West Avenue Range (Stewart *et al.* 2002). These special purpose surveys used the standard sampling techniques as used on the regional surveys but involved a more intense sampling. They contributed specific park or area vegetation site data, analysis of this data and detailed vegetation mapping which either has been incorporated into the regional mapping or requires incorporation. Following on from these specific surveys and in response to the construction of surface water or groundwater drains in these areas, specific programs monitoring the health of vegetation have been implemented. These monitoring programs focus on the health of *Melaleuca* heaths along transects at intervals away from and parallel to the drains. The results are reported in Telfer *et al.* (2000) and Milne and Squire (2001) for the Tilley Swamp area, and Stewart (2001) and Milne *et al.* (2001) for the Deep Swamp area.

Prompted by the release of drainage waters under the new drainage scheme other vegetation studies were also implemented. These included investigation into the location and condition of fresh water soaks along the southern lagoon of the Coorong (Bickerton and Winter 2001). In addition a survey to monitor any significant changes in health of the *Leptospermum lanigerum* community and associated species for the Henry Creek area was also established (Carpenter and Squire 2002).

Apart from targeted biological and monitoring surveys other research in the early 1990s, also focussed on the effects of salinity and rising watertables. Loan (1993) investigated the health of native vegetation relating to rising ground water and salinity levels in the Upper South East. Similarly Webb (1993), investigated the health of low-lying native vegetation (mainly *Melaleuca halmaturorum* and *Melaleuca brevifolia*) affected by rising water tables in the Bunbury Taunta area. More specific and detailed research into the water use strategy of *Melaleuca halmaturorum* in these saline swamps was undertaken by Mensforth (1996).

Away from the salinity and drainage issues of the Upper South East other biological surveys including detailed vegetation work were undertaken. Stokes (1996) concentrated on the significant Box and Buloke grassy woodlands and vegetation associated with the heavy clay soils of the Bordertown – Frances area. This study provided a comprehensive systematic survey of these vegetation communities building on earlier work particularly by Specht (1951). The Nature Conservation Society in conjunction with the SA Farmers Federation undertook a study investigating the possible use of fire as a management tool for remnant vegetation in the Upper South East. The study looked at 14 areas (13 areas north of Bordertown and 1 area to the south west), undertaking extensive flora survey as well as the collection of fuel accumulation data and information on plant species responses to fire (Nature Conservation Society of SA 2000). Stewart *et al.* (2001) undertook a survey of the Lake Hawdon area in response to the need for detailed biological information for the area, which is characterised by large expanses of sedgelands. Eight vegetation quadrats were surveyed and six vegetation communities were recognised (Stewart *et al.* 2001).

Croft and Carpenter (1998) compiled biological data for the region, summarising the major vegetation types provided details of the distribution of the communities, the landforms on which they occur, their condition, understorey features, special habitat features, management issues and conservation priorities. This resource document provided the essential background for the South East Biodiversity Plan (Croft *et al*. 1999), which guides biodiversity work within the region.

Recent work continues to focus on the gaps in knowledge within the region. Specific studies cover threatened species and threatened communities or more broadscale issues such as scattered tree clearance. Craig and Pritchard (2001) investigated three orchid species (*Caladenia richardsiorum*, *Caladenia calcicola* and *Pterostylis tenuissima*) and compiled recovery plans; and Cutten and Squire (2002) have investigated the distribution of *Senecio macrocarpus* within the sedgeland areas of Messent Conservation Park. In terms of threatened communities Bachmann (2002) provides detailed information on the *Leptospermum lanigerum* and *Gahnia trifida* areas visited and assessed in the Lower South East over the 3 year Silky Tea-tree and Cutting Grass Wetland Rehabilitation project.

With regard to scattered trees, clearance assessment guidelines have been developed based on a point scoring system to assist the Native Vegetation Council with its legislative requirements (Cutten and Hodder 2001). In addition, a mapping project has begun that aims to assess the contribution that scattered trees make to overall vegetation cover in the region and their conservation status (Bickerton *et al.* 2002).

**FAUNA**

Prior to this survey there had been no large-scale general vertebrate surveys of the South East. Several biological surveys of vertebrates had been carried out in the survey region prior to the 1997 South East Biological Survey. These included the South East Coast (1980's), South East Fire Study (NCS) (1994), Messent Conservation Park (1994), Gum Lagoon Conservation Park (NCS) (1995, 1996), SE Box and Buloke Woodlands (1995), Deep Swamp (1996) and Tilley Swamp (1996). The Bunbury Conservation Reserve survey was carried out in December 1997 after the main South East survey work had been completed.

Several of these surveys have concentrated on specific areas in response to proposed changes in land management. There have also been a few small-scale surveys targeting specific threatened species such as, Swamp Antechinus (*Antechinus minimus*) Swamp Skink (*Egernia coventryi*) and *Geocrinia laevis.* Much of the work on the ecology of individual species found in the South East has been carried out in the eastern states where populations of these species are more widespread and easier to detect.

South Australian Museum records showed a high number of mammal, reptile and amphibian specimens distributed throughout the South East region prior to the 1997 South East Survey. The specimens came from a variety of sources including a large number of random collections from individuals in the region. Amphibians have been well represented in these collections making up approximately 40% of specimens, however it was not until the 1960s that specific attention was paid to the frog fauna of the South East (Thompson and Tyler 1983). Substantial fauna collections have come from the SA Herpetology Group, Field Naturalist Society of SA Mammal Club, Roseworthy Agricultural College (now Adelaide University), Salisbury College (now University of SA), NPWSA Rangers, Museum collection trips and Department for Environment and Heritage and Nature Conservation Society of SA (NCSSA) Biological surveys.

One other major source of data for frogs in the South East is the South Australian Frog Census. This census is coordinated by the Environment Protection Authority and has been run each September since 1994 (Walker 2002). The census aims to provide a 'snapshot' of frog populations based upon the collection of frog recordings from as many different locations as possible over a one-week period. The South East is well represented and each year valuable data is recorded on the presence and location of different species.

The biological surveys conducted throughout the region have been invaluable in documenting the fauna of the region and have helped define the distributions and habitat preferences of many species. The survey reports have also drawn attention to some of the more threatened species that has helped secure funding for work that is more intensive. Despite this, there is still little known about the distribution and ecology of many species in the region, and with continuing changes in land management practises some of the more apparently threatened species may be disappearing from areas before they have even been detected.

Invertebrates have been surveyed inadequately in the region, with the distribution of most families poorly known. 'The Natural History of the South East' handbook (Tyler *et al.* 1983), provided summaries of knowledge of a number of groups; arachnids (Lee 1983), butterflies (Fisher 1983), myriapods, insects and allied forms (Gross 1983). The freshwater invertebrates are better known than terrestrial invertebrates (Zeidler 1983), however they are not systematically recorded as part of the Biological Survey of South Australia, and as a result are not included in this report.

Fish are not systematically recorded as part of the Biological Survey of South Australia, and as a result are not reported in detail on this report. Recent survey work by Hammer (2002), however, recorded fourteen native species, including three species of national and six species of state conservation significance, and described the South East as a biodiversity 'hotspot' for freshwater fishes. Five introduced species were detected. Five additional native species and a range of introduced species (exotic and native to other regions of Australia) were recorded previously or presumed to occur in the area (Hammer 2002).

The following photographs (Figures 7-15) provide a visual sample of some of the landscapes from the South East.

**Figure 7.**
**Typical eucalypt Stringybark Woodland with Bracken (*Pteridium esculentum*) understorey near Penola.** **Photo: A. Robinson.**

**Figure 8.**
**Dense *Melaleuca* with emergent *Eucalyptus* near Mt. Monster south of Keith. Photo: J. Foulkes.**

**Figure 9.**
**River Red Gum *Eucalyptus camaldulensis* Woodland, west of Kalangadoo. Photo: L. Heard.**

**Figure 10.**
**Swamp in Honans Scrub near Glencoe in the Lower South East.** **Photo: J. Foulkes.**

**Figure 11.**
**Granite outcrop near Willalooka in the Upper South East.** **Photo: T. Croft.**

**Figure 12.**
**Jaffray Swamp northeast of Kingston. Photo: G. Carpenter.**

**Figure 13.**
**Stringybark Woodland with *Xanthorrhoea* understorey, in The Bluff NFR, east of Tantanoola. Photo: L. Heard.**

**Figure 14.**
**SA Blue Gum Woodland (*Eucalyptus leucoxylon*). Photo: A. Robinson.**

**Figure 15.**
**Cutting Grass Swamp in Marshes Swamp NFR with Stringybark Woodland in the background. Photo: D. Kraehenbuehl.**

# GEOLOGY AND GEOMORPHOLOGY

By M.C. Benbow[4]

## INTRODUCTION

The geological and geomorphological setting of the South East region of South Australia is in marked contrast to that of the northern part of the State such as is exemplified by the Sandy and Stony Deserts (e.g. Benbow 1999, 2000). The southern continental margin is a region in which very thick Mesozoic and Tertiary sediments accumulated, a result of the dismemberment of Gondwana, which led to the final separation of Australia from Antarctica (Krieg 1995, Morton 1995). It is because of the region's proximity to the coast after the formation of these continents, that there have been successive transgressions of the sea, resulting in a marine sedimentary record that includes the fossiliferous limestones of the Murray and Gambier Basins. Fossils have enabled these sediments to be placed within a temporal framework and thus allow better insight into the region's geological history.

During the Pliocene, quartz sands deposited during a major episode of transgression and regression gave rise to the formation of a large coastal strand plain on which 157 coastal dunes have been preserved (e.g. Kotsonis 1995 and references therein). This plain is mainly preserved to the north of the study area. A legacy of the rapid fluctuations of sea level and of gradual uplift during the Quaternary, is the unique succession of calcarenitic strandlines or coastal dunes that are a major feature of the region (Sprigg 1952 1979). These have been linked to the Earth's orbital parameters (i.e. eccentricity and ellipticity). The Younghusband Peninsula and The Coorong are the modern analogues of the Quaternary coastal barriers and backbarrier lagoons.

The South East is also unique in the State, because of the record in the Mt Gambier region, of recent volcanic activity (Sheard 1983, 1995). The southern part of the region is also important as a karst province Twidale *et al.* 1983, Grimes *et al.* 1995). This contains a Quaternary record of the changes of climate and biota and of prehistoric man's occupation. In fact the Naracoorte caves collectively contain a fossil record of ~ 500 000 years, a record that is more diverse than anywhere else on the mainland (Moriarty *et al.* 2000, R.T. Wells, personal communication, 2000). The Tertiary and Quaternary limestones that the karst has developed in, are important as unconfined aquifers of good quality water that has various economic uses in a region that is intensely farmed. The sediments of the Mesozoic Otway Basin contain economic reserves of gas, including carbon dioxide, and possibly of oil (Morton and Drexel 1995).

Previous geological compilations of the region are included in various works of the Geological Survey of South Australia, for example the 'handbooks' of Parkin (1958), Glaessner and Parkin, (1969) and more recently that of Drexel and Preiss (1995 and references therein). More specific studies include that of the Otway Basin by Wopfner and Douglas (1971) and the Murray Basin by Brown and Stephenson (1991). The South East was the first area in South Australia to be mapped at 1:250 000 scale by the Geological Survey and includes the map sheets of PENOLA, NARACOORTE and PINAROO (Sprigg 1951, Rockow 1969, 1971, Rogers 1980, 1981). More regional 1:500 000 scale-maps of the entire South East have been published with explanatory notes providing a useful and updated overview and synthesis (e.g. Rogers 1995). Previous studies include those of Sprigg (1952, 1979), Cook *et al.* (1977) and Schwebel (1983) on the stranded coastal dunes of the Mt Gambier coastal plain. Sheard (1983, 1995) published studies on the volcanoes of the Mt Gambier region and of Twidale *et al.* (1983) on other landforms including granite forms, karst and lunettes. More recently, Grimes *et al.* (1995 and references therein) have documented aspects of the karst. Work on the cave history and their deposits and fossil remains continues (e.g. Moriarty *et al.* 2000).

## GEOLOGY

### Early Palaeozoic Stansbury Basin and Delamerian granites

The oldest rocks of the region are Cambrian metasediments, which only occur in the subsurface having been intersected in drillholes (Figures 17,18 and 19). They are unnamed equivalents of the Cambrian Kanmantoo Group of the Kanmantoo Trough, that outcrop in the eastern Mt Lofty Ranges and on northern Kangaroo Island for example. Gravestock (1995, cf Rogers 1995)) regarded the Cambrian rocks of the South East as belonging to the Stansbury Basin whilst the occurrences within the Kanmantoo Trough have been regarded as being part of the Adelaide Geosyncline (e.g. see Preiss 1993). Lithologies include marble and metamorphosed mudstone, sandstone, conglomerate and volcanics. These Kanmantoo Group equivalents that are extensive in the subsurface, range in depth from 100-200m in the north, to 1000-5000m in the south, as in the Mt Gambier region. There is some evidence in the north of still older Cambrian rocks that include basic volcanics and metasediments that pre-date the Kanmantoo Group equivalents. The Cambrian metasediments were deposited within a deep basin that formed because of rifting within older basement rocks, when Australia formed part of a much larger continental mass that lay in an equatorial position.

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There are small and scattered outcrops of a range of acid to basic intrusive rock types, including granite, adamellite, dacite, rhyolite, basalt and gabbro. These are the surface expression of the Padthaway Ridge, an uplifted basement feature that lies to the west of the Dukes Highway and more or less parallels the coast (Figures 17 and 18). These rocks are Ordovician in age and intruded the older Cambrian rocks, at the same time that they were deformed and metamorphosed during the Delamerian Orogeny.

**Late Palaeozoic Troubridge Basin**
This basin formed sub-parallel to the current coast, during the Late Carboniferous and Early Permian approximately 300 million years ago when Australia formed the eastern part of the super-continent of Gondwana (Figures 16 and 18). A large icecap formed over a large part of the super-continent, as high as 1 km in Australia, as it was located in high southern latitudes and as this was a time of more marked equator-polar temperature gradients. The mechanism driving these cooler global climates is believed to be processes within the Earth, when there were large continental masses (the icehouse climate mode of Fischer (1984) and Veevers (1990)). In the study area, glacial sediments of the Cape Jervis Formation, belonging to the Troubridge Basin, occur in scattered pockets and become more extensive toward Adelaide in the north. North-westerly directions of ice movement are indicated by the scoured pavements at Hallet Cove and Inman Valley, both in the Basin.

There is very little documented record of this time from the South East, most of it comes from the more extensive and outcropping occurrences of the Basin in the Fleurieu Peninsula region. In the study area there are drillhole intersections of the Cape Jervis Formation, believed to be preserved in glacial valleys. Rogers (1995) describes these sediments as being diamictites, which contain clasts of granite and metasediment reworked from the Early Palaeozoic rocks.

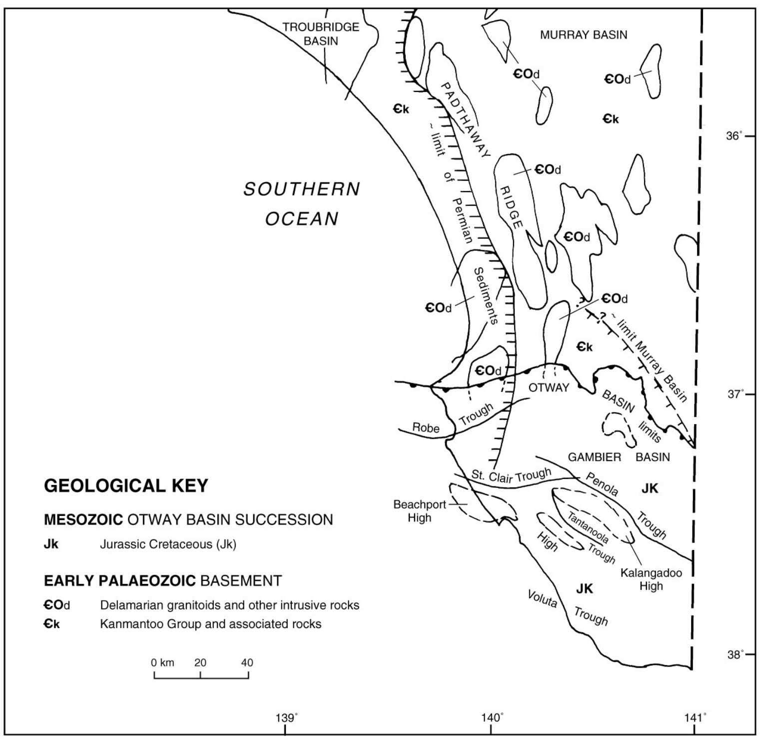



**Figure 16.**
**Geological and tectonic setting of the South East of South Australia.** **(After Rogers (1995)).**

There are also marine, foraminifera-bearing sediments, including sandstones and mudstones that were deposited during a major transgression that occurred after the waning of glaciation, as has also been recorded in the inland Carboniferous-Permian basins.

**Mesozoic Otway Basin**
During the Mesozoic the super-continent of Gondwana, located in high southern latitudes, started to fragment due to internal movements within the Earth. Initial rifting between Australia and Antarctica commenced in the Jurassic some 175 million years ago and gave rise to the formation of a series of basins of the Australian Southern Rift System, including the Otway Basin which straddles the South Australian and Victorian border (Stagg *et al.* 1990, Krieg 1995, Figures 16, 17 and 18). As fragmentation of Gondwana took place, there were increases in volcanic activity, which resulted in distinctly

higher levels of carbon dioxide in the atmosphere. Global climates became generally warmer (the greenhouse climate mode of Fischer (1984) and Veevers (1990), but because of the continent's high southern position climate was generally moist and cool if not cold (e.g. Frakes and Francis 1988, Krieg 1995).

The northern Basin limit, which is orientated approximately east-west, lies just south of the Padthaway Ridge in the Kingston-Naracoorte region and the Basin is made up of a number of similarly orientated troughs or sub-basins and intervening basement highs. A large part of the Basin lies offshore in the Southern Ocean. A considerable thickness of sediment, some 3-5 km in fact, accumulated in the Basin during the Mesozoic. During the rift phase of sedimentation in the Early Cretaceous, much of the sediment was derived from contemporaneous, inland and offshore, volcanic sources, including the Wisanger Basalt of Kangaroo Island. They were deposited in lacustrine and fluvial environments and belong to the lithostratigraphic unit named the Otway Supergroup (e.g. Morton 1995).

Toward the end of the Mesozoic, in the Late Cretaceous around 95 million years ago, crustal extension reached the point that enabled rupture, the formation of new ocean crust and drifting and led to the development of the Southern Ocean (Veevers 1986, Stagg *et al.* 1990). During this post-rift phase of separation, the nature of the sediments deposited in the Otway Basin changed and the focus of deposition moved toward the southwest. Quartz-rich sediments, including mudstones and sandstones of the Sherbrook Group, were deposited in fluvial and deltaic environments. Apparently, a large and deep saline lake formed the focus of deposition, with deltas rimming the lake on both the mainland and Antarctic sides. Marine influence at this time is minor. The 1 km thick, black and carbonaceous, Belfast Mudstone, indicates either a time of maximum basin subsidence or a eustatic sea level peak. Much of the sediment was deposited in the offshore Voluta Trough where most, contemporaneous, basin subsidence occurred. A feature of the Otway Basin, is the large number of faults that accommodated the rapid deposition of a thick pile of sediment (Figures 16 & 18).

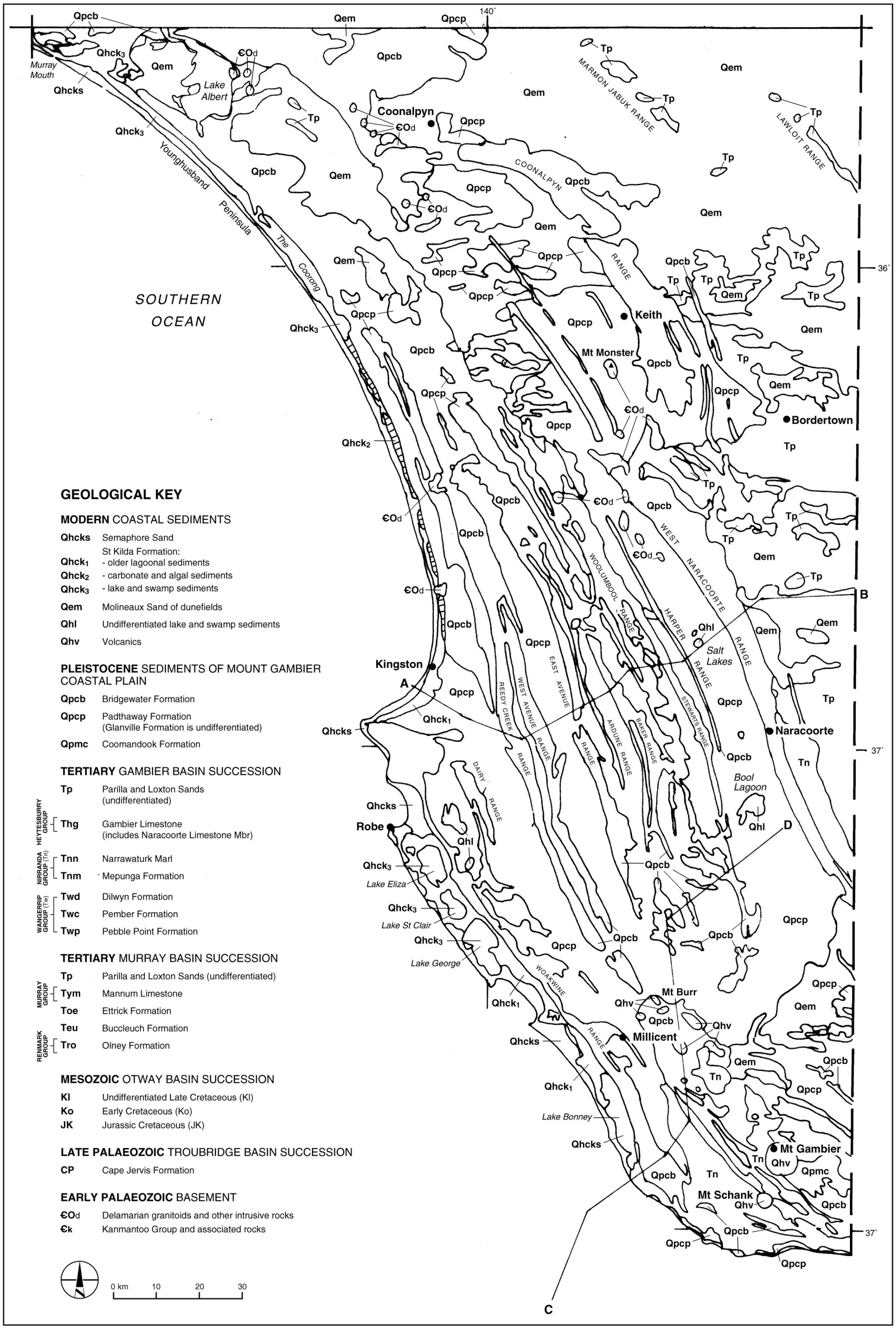
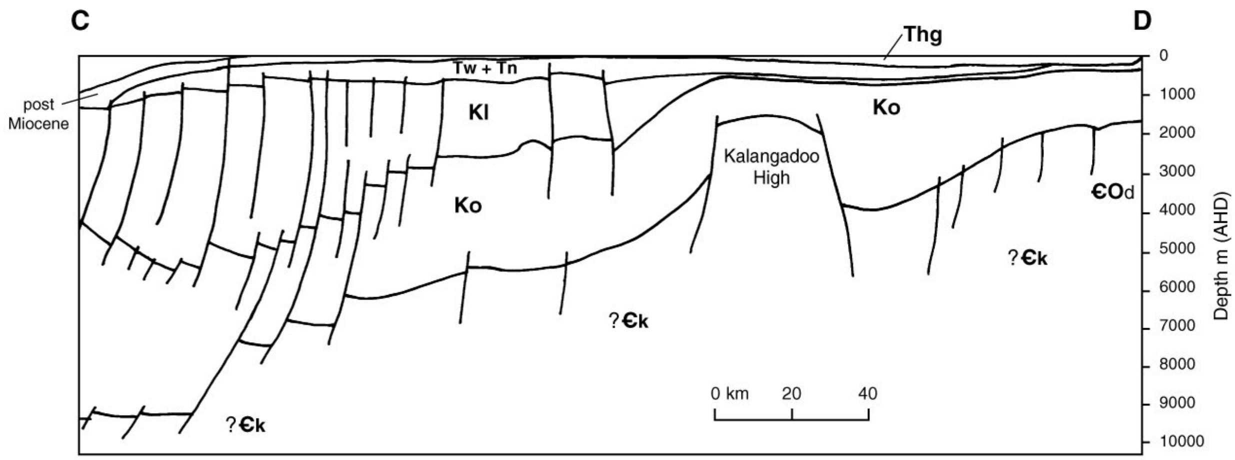



**Figure 17.**
**Geology and geomorphology of the South East.** **Taken from Rogers (1995).**




## GEOLOGICAL KEY

**TERTIARY** GAMBIER BASIN SUCCESSION

| | | |
|---|---|---|
| HEYTESBURRY GROUP | **Thg** | Gambier Limestone (includes Naracoorte Limestone Mbr) |
| NIRRANDA GROUP (Tn) | **Tnn** | Narrawaturk Marl |
| | **Tnm** | Mepunga Formation |
| WANGERRIP GROUP (Tw) | **Twd** | Dilwyn Formation |
| | **Twc** | Pember Formation |
| | **Twp** | Pebble Point Formation |

**MESOZOIC** OTWAY BASIN SUCCESSION

| | |
|---|---|
| **Kl** | Undifferentiated Late Cretaceous (Kl) |
| **Ko** | Early Cretaceous (Ko) |

**EARLY PALAEOZOIC** BASEMENT

| | |
|---|---|
| **€Od** | Delamarian granitoids and other intrusive rocks |
| **€k** | Kanmantoo Group and associated rocks |

pre-Quaternary section across the Otway Basin

**Figure 18.**
**Cross sections through the Otway Basin in the South East of South Australia. Taken from Rogers (1995).**

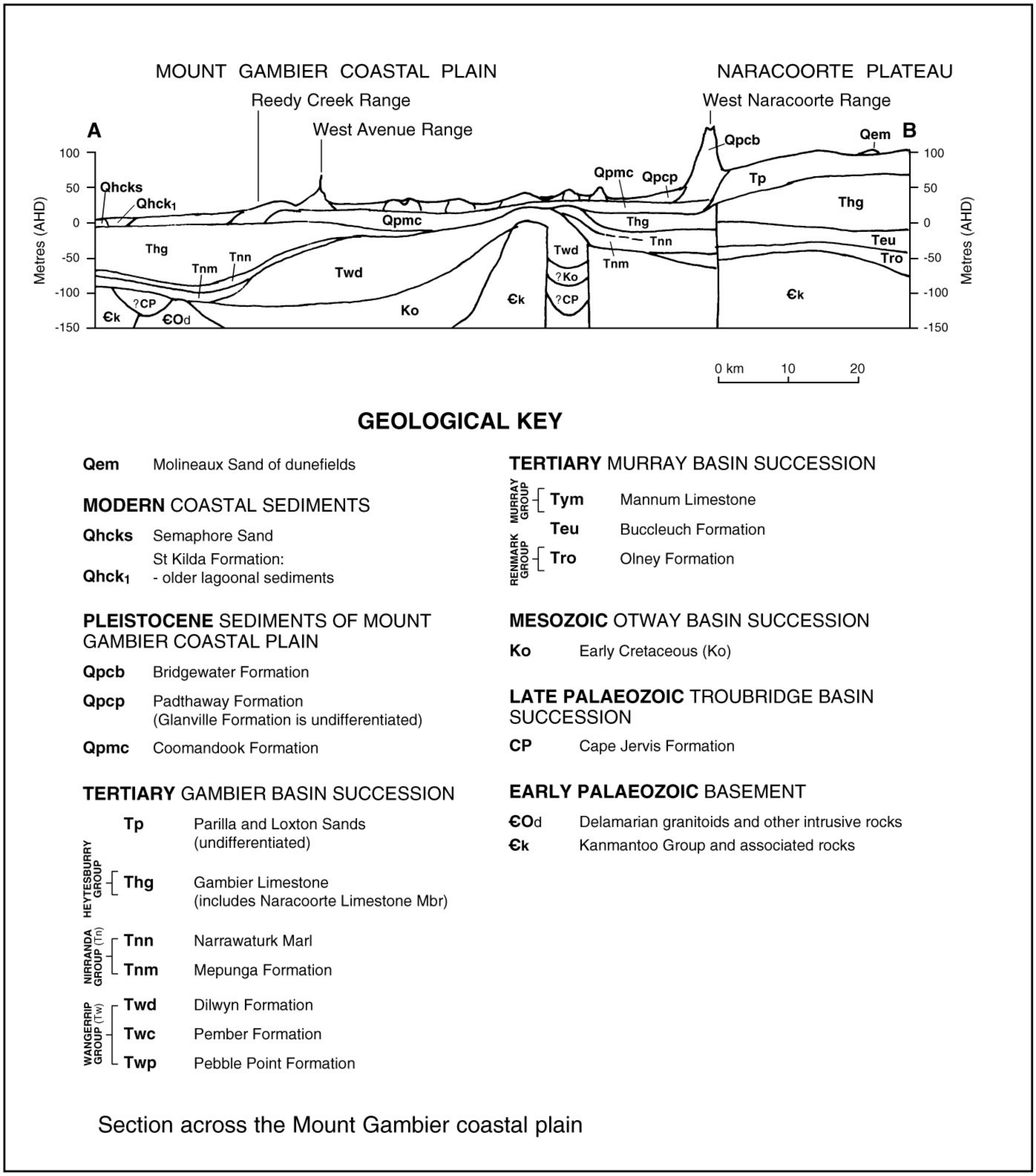



**Figure 19.**
**Cross sections through the Mount Gambier coastal plain in the South East of South Australia. Taken from Rogers (1995).**

**Cainozoic Gambier and Murray Basins**
As Australia began it's northward migration toward the equator, a series of Cainozoic basins formed in the region of the Australian Southern Rift System and beyond (Figures 17 and 19). The Gambier Basin is not included in the Otway Basin, previously being referred to as the Gambier Embayment of the Otway Basin (Wopfner and Douglas 1971). This is because of the change that took place in the Late Cretaceous and Palaeocene, in structure and tectonic style, namely from that of an active rift zone

to that of a passive, drifting continental margin (Smith *et al.* 1995). The pocket of Cainozoic sediments is, in contrast to the Mesozoic sediments, relatively fault-free and flat lying, the upper part of which is a carbonate platform. The thickness of Cainozoic sediments increases from 50-200m near the Basin's inland margin to around 750m offshore. The boundary of the Gambier Basin with the much larger Murray Basin to the north is somewhat arbitrarily placed along the Padthaway Ridge, near Kingston and east to southeast across to Naracoorte. In the Naracoorte area, the margin coincides approximately with the Kanawinka Fault, which also marks the limit of Otway Basin sediments with very shallow Palaeozoic sediments on the northeast side (compare Smith *et al.* (1995) and Rogers (1995)).

The Murray Basin, in contrast to the Gambier Basin is a very large, circular shaped, epicratonic basin, in which similar and equivalent sediments were deposited. The succession is thinner, with maximum thicknesses being of the order of 600m, and the access to the sea was generally more restricted, apart from the time of maximum transgression in the Late Oligocene to Miocene.

Sedimentation commenced in the Gambier Basin at the end of the Palaeocene, 55 million years ago with the terrigenous clastics of the Wangerrip Group (Figures 17 & 18). Thicknesses are up to ~ 800 m. Sediments include mudstones and sands that are in part carbonaceous, and that may contain glauconite. There are also coal seams in the Dilwyn Formation. Environments of deposition included rivers, deltas and inter-distributary bays. The occurrence of the restricted marine *Cyclammina* facies (which includes planktonic foraminifera) indicates the opening of the seaway of the Southern Ocean. The base of the Group is marked by the ~40m thick Pebble Point Formation notable for it's oolitic grits, which Gravestock *et al.* (1986) interpreted as implying little input of detrital sediment in interdistributary bay settings.

To the north, in the southern margin of the Murray Basin, deposition of equivalent sediments, namely the lower part of the Renmark Group, that is, the Olney Formation commenced somewhat later in the Eocene. Sediments include carbonaceous mudstone and sandstone as well as lignite and these were deposited in non-marine, that is floodplain, fluvial, swamp and lake environments.

After a brief hiatus, sedimentation in the Gambier Basin recommenced with a major transgression of the sea, in the Middle Eocene, ~46 million years ago. The seaway had opened sufficiently for the deposition of limestone's for the first time for well over 400 million years and thus commenced the construction of a marine carbonate platform. Sediments deposited in the Middle to Late Eocene are referred to as the Nirranda Group (Figures 16 & 18). The base of the Group is marked by a transgressive, thin (ie ~ 10m) quartz grit, that contains minor amounts of marine fossils and that may have been deposited as a beach barrier. As the sea deepened, fossiliferous and glauconitic calcareous mud of the overlying Narrawaturk Marl was deposited offshore, in low energy environments, that is, below storm-wave base. The thickness of this unit is generally less than 15m. To the north, on the landward side of the Padthaway Ridge, non-marine sediments of the Olney Formation continued to be deposited in the Murray Basin. The laterally equivalent Buccleuch Formation that includes bryozoan limestone and glauconitic marl indicates some marine influence in the western part of the Basin in the Late Eocene.

In the Gambier Basin the Narrawaturk Marl passes upwards and laterally into the Gambier Limestone, reflecting more open marine environments with better circulation and less input of terrigenous clastic sediment from onshore. Deposition of this formation commenced in the Late Eocene in the offshore, ~40 million years ago and later near the Basin's margin in the Early Oligocene, that is ~33 million years ago (Figures 17 & 18). Age of the top of the formation ranges up into the Middle Miocene. Formation thickness increases from around 50m onshore to in excess of 400 m offshore, toward the platform margin. The Gambier Limestone outcrop is limited to the Mt Gambier region and an upfaulted block near Naracoorte.

Lithology is predominantly a bryozoan calcarenite or limestone, with textures including wackestone, packstone, and grainstone. The Gambier Limestone has been subdivided into several members based on differences in lithology. The Greenways Member in the lower part includes marl and is glauconitic at the base making it quite similar to the Narrawaturk Marl. The overlying Camelback Member is a bryozoan carbonate, while the Green Point Member is, as the name denotes, distinctive because of it's colour, but it is also distinctly cherty in nature. In the northern part of the Basin there is the ~6m thick Naracoorte Limestone Member, a coarser grained limestone that contains the remains of molluscs and echinoids. It has also been described as being rubbly because of subsequent partial dissolution.

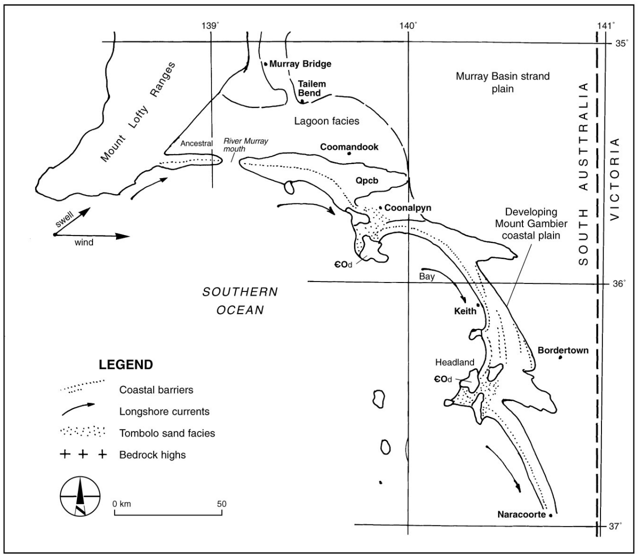



**Figure 20.**
**Stratigraphic column for the Cainozoic of the Gambier and Murray Basins. Taken from Alley (1995).**

In the Murray Basin during the Oligocene, there was an increasing marine influence as can be seen by the fossil content in the upper part of the Olney Formation. As deposition of this formation became more restricted, the Ettrick Formation became the dominant sequence in the Late Oligocene in the southwest of the Basin, indicating a transgression at this time. The latter is a sequence that includes silt and fine-grained sand, and calcareous mud or marl that is both glauconitic and fossiliferous. As marine influence increased in the Late Oligocene and Early Miocene, the Ettrick Formation passed upwards, particularly in the southwest part of the Basin, into the more open marine Mannum Limestone. This unit, that is distinctly sandy in the lower part, is comprised of bryozoan limestone and marl.

Deposition ceased in both the Gambier and Murray Basins in the Middle Miocene, around 12-15 million years ago. The cause of non-deposition is believed to be due to uplift of the continent's southern margin and the fact that there was a drop in sea levels globally. Thus there ensued a time of erosion and weathering, including the development of karst on the Gambier Limestone (see below). Terra rosa soils are commonly associated (Blackburn 1983).

A new phase of sedimentation commenced in both basins at the end of the Miocene and Early Pliocene, around 5 million years ago. In contrast to the marine carbonates and muds of the preceding major episode of deposition, quartz-rich sands, namely the Loxton Sand and Parilla Sand and their equivalents, became the dominant lithology of the Pliocene (Figure 17, 18 & 19). Belperio and Bluck (1990) referred to these sands collectively as the 'Pliocene Sands' as they are difficult to differentiate and they form an onlap-offlap sequence. There is extensive outcropping and sub-cropping Pliocene sands preserved north of Naracoorte where thickness is typically 30-50m. These sands are no longer present beneath the Quaternary coastal plain to southwest, most likely due to marine erosion.

The Loxton Sand is generally fine grained and it is calcareous due to it's detrital component of fossil-derived grains. The formation is also mica bearing. The basal or lower sands are marine and were deposited offshore to near shore on a shallow shelf. The upper part is comprised of beach and aeolian sands, deposited as a series of beach ridges were formed during regression, that is as the coastal plain prograded toward the southwest (see below). Preserved beach ridges on this strand plain include the Lawloit and Marmon Jabuk Ranges east of Coonalpyn, in the northeast corner of the map (Figure 17; see below). The sands of the most southwesterly range are distinctly calcareous, containing numerous fragments of broken shell remains.

In contrast, the Parilla Sand is ferruginous quartz sand that is clayey and fine to medium grained. These sediments form part of a regressive sequence, that is, they were deposited as the sea retreated toward the southwest, by rivers and in lakes. There is also an aeolian or wind-blown component. Belperio and Bluck (1990) believe that there may be remnant transgressive dunes preserved. Much of the unit was derived from reworking of the older Loxton Sand. However since the strandlines are evident over so much of the region outcropping fluvial sands must be very restricted. Sometime in the Late Pliocene after deposition, there was extensive weathering resulting in both ferruginisation and silicification, referred to as the Karoonda Palaeosol (e.g. Firman 1973).

Deposition in the Quaternary commenced with the Coomandook Formation that was deposited because of a major transgression in the Early Pleistocene (Figures 17, 19 & 20). The formation occurs over the extent of the coastal plain, as far inland as the Marmon Jabuk and West Naracoorte Ranges, and is now largely buried beneath the younger Quaternary sediments. Average thickness is 25m or less with a maximum known thickness of around 75m. The exposures southeast of Mt Gambier, are comprised of beach sediments that are both gravelly and shelly. Most of the formation is comprised of clay, sandstone and fossiliferous limestone that were deposited in near shore, marine environments. The source of the formation is believed to have been older sediments that were reworked. The palaeogeography for the time of maximum Early Pleistocene transgression indicates bays and granite headlands (Belperio and Bluck 1990, Figure 20).

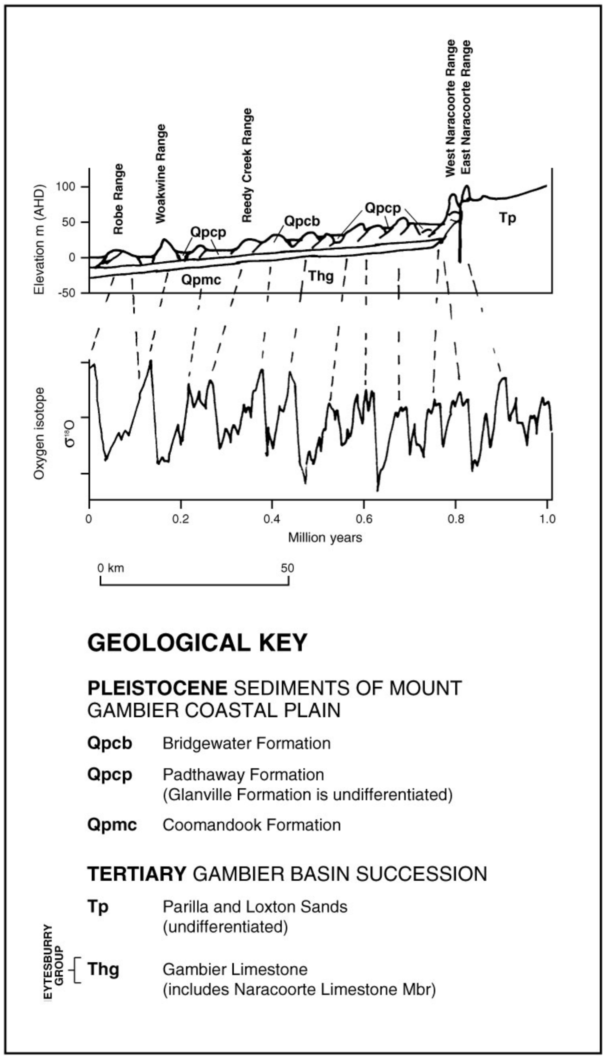



**Figure 21.**
**Cross sections through the Quaternary Mt Gambier coastal plain. Taken from Cook *et al.* (1977), Williams *et al.* (1988) and Huntley *et al.* (1993).**

As the sea retreated after maximum transgression, a unique series of parallel beach ridges or coastal dunes were formed, marking temporary stillstands on the Mt Gambier coastal plain (Sprigg 1952, 1979, see below, Figures 20 & 21). The Bridgewater Formation is the name given to the beach and aeolian calcarenites that were deposited at this time. A number of facies have been recognised in the calcarenites and these can be viewed along the crosscutting road and drain exposures (Belperio 1995). The near shore, transgressive subtidal facies, is coarse-grained lime sand with skeletal fragments derived from shells, coralline algae and foraminifera. Beach calcarenites tend to be a little fine grained and quartz sand bearing. Up to 3m thick, these sediments can be traced into the core of the coastal dunes from their southwest side. The overlying transgressive dune facies forms the bulk of the formation being which can be up to at least 75 thick as in the West Naracoorte Range. These calcarenites are well sorted and fine to medium grained and the skeletal grains are rounded. Large scale cross bedding which can be prominent, dips inland. The source of the calcarenites is from the continental shelf. Soils developed on the calcarenites of the ranges include podzols, humic podzols (i.e. grey sands in the upper part of the profile) and red brown sand-capped terra rosa (Blackburn 1983)

As each beach ridge was successively built, lake and lagoonal, muds, dolomite, limestone and sand of the Padthaway Formation were deposited on their landward side (Figures 2, 5 & 6). The back-barrier lagoonal sediments of the Padthaway Formation are poorly sorted, muddy calcarenites, which contain shells including the bivalves *Andara*, *Katelysia* and *Ostrea*. The commonly overlying lacustrine facies include 1-2m thick calcareous and dolomite mudstone and interbedded green mud clayey sand. Fossil remains of molluscs, ostracods and foraminifera may be present in the mudstones, indicative of fresh to brackish lake waters. Much of the outcropping sediment is mud and marl, on which dark grey, to black soils (i.e. rendzinas) have developed (Blackburn 1983, P.A. Rogers, personal communication, 2000). Where grey sands occur in the upper part of markedly differentiated profiles, solodic and solodized solonetz soils have developed. These sediments were deposited both during coastal dune construction but also at other times as the coastal plain developed. Thickness of this formation is typically 10-15m. The name Glanville Formation is given for the equivalent sediments that were deposited during the last interglacial, around 100,000 to 120,000 years ago. They have been mapped south of Kingston between the Reedy Creek and Woakwine Ranges.

On the coastal plain, outcrops of Bridgewater and Padthaway Formations alternate successively over the coastal plain. When the oldest of the stranded coastal dunes were formed, namely the Coonalpyn and East Naracoorte Ranges, there were wide embayments with granite headlands at Mt Boothby and Willalooka. The orientation of both the Pliocene and Pleistocene coastal dunes indicates prevailing westerly winds not unlike those of today.

The coastal dunes formed during the Pleistocene interglacial peaks, as these were times of globally high sea level, which was related to the melting of the polar ice caps. Thus they can be linked to the ellipticity/eccentricity orbital parameters of the Earth (Figure 5; Sprigg 1952, 1979, Cook *et al.* 1977, Schwebel 1983, Huntley *et al.* 1993, Williams *et al.* 1988). Sea level fluctuated by as much as 130m during the glacial/interglacial cycles. The ridges are preserved because the region has undergone very gentle uplift

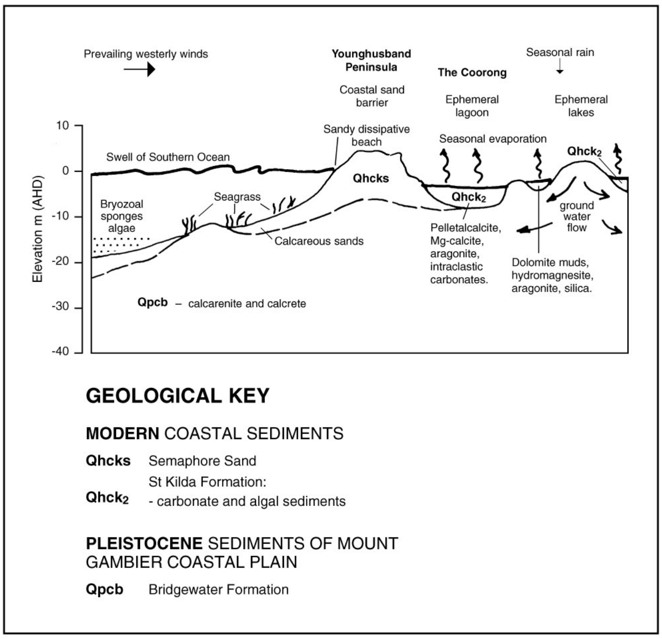



**Figure 22.**
**Depositional environments of The Coorong. After Belperio (1995).**

during the Quaternary, of around 0.07mm per year (Belperio 1995). The coalescence of the dunes toward the northwest is indicative of minimal uplift in that region. Near Mt Schank, the Burleigh Range that formed during the penultimate interglacial around 200,000 years ago, is distinctly higher than it's equivalents to the northwest, indicating significant uplift in this recently volcanically active region. The oldest coastal ranges, namely the Coonalpyn and West Naracoorte Ranges (~870,000 years old) being preserved inland and the youngest, such as the Woakwine Range (~100,000 years old) formed near the modern coast. Dating by various means, including thermoluminescence techniques, of the sediments of the ranges has been carried out. (e.g. Cook *et al.* 1977, Idnurm and Cook 1980, Schwebel 1883, Huntley *et al.* 1993) supporting the model of Sprigg (1952, 1979).

Calcretes or calcium carbonate-rich palaeosols have formed within the calcarenites of the Bridgewater Formation. There may be associated calcified remains of plant and insect material and these formed a number of times. For example, the Formation has been divided into upper and lower members, being separated by the indurated Ripon Calcrete and capped by the Bakara Calcrete (e.g. Firman 1973). Their formation is indicative of arid to semiarid climate conditions, perhaps of the Pleistocene glacial episodes (Estaban and Klappa 1983).

After the last glacial episode peaked 18 000 years ago, sea levels rose to their present level around 6,000 years ago and the Holocene sediments of the coast were deposited (Figure 17). Collectively referred to as the St Kilda Formation they are the modern analogues of the Pleistocene sediments that form the Mt Gambier coastal plain. These include the beach and aeolian sands of the Semaphore Sand of the present day coastal barrier, namely the ~ 180 km long Younghusband Peninsula, that fronts the sea. There is a general increase in the carbonate content and a decrease in grain size of both beach and dune sands, in a direction away from the River Murray Mouth, toward the southeast (e.g. Belperio 1995). Also included in the coastal deposits are the flint pebble and cobble sediments of the Port MacDonnell area and the aeolian, foredune sands of Guichen and Rivoli Bays.

There are a number of lithological facies, that were and continue to be, deposited behind the coastal barriers, in the shallow waters of the narrow Coorong and lagoons and lakes (Figure 22). There are relict sediments, including shelly muds, that were deposited earlier in the Holocene, between the Coorong and Lake Bonney, the Murray mouth and elsewhere. They are relict because of minor uplift. In The Coorong sediments 'consist of bioclastic magnesium calcite and aragonite sand and peletal mud derived from molluscs, ostrocods and foraminifera (Brown 1960)' (Belperio 1995, p235). In the ephemeral and more saline southern Coorong waters, and some of the lakes elsewhere, including Bool Lagoon and Lake Hawdon, mudstones, dolomitic mudstones and algal deposits continue to be formed. South of Salt Creek on the east side of The Coorong there are a number of lakes in which a range of carbonate types are being currently precipitated, including aragonite, dolomite and magnesite (e.g. von der Borch and Loch 1979). There are also coarser grained, clastic carbonates in the Coorong and elsewhere and peat is being formed in the Port MacDonnell area. The life and sedimentary facies of the seasonally hypersaline lakes are described in the work of a number of authors (see Belperio 1995).

Aeolian sands of the dunefield in the northern part of the South East were deposited during the Late

Pleistocene and continue to be reworked in their upper part (Figure 17). They accumulated whilst there was desert expansion in the continental interior during the last glacial ~18,000 years ago. The Molineaux Sand is a pale yellow to grey, quartz-rich sand that was derived from the underlying Parilla Sand and Bridgewater Formation.

Lunettes or leeside mounds have formed around some of the lakes and lagoons during the Holocene and Pleistocene (Twidale *et al.* 1983). The sediment of the lunettes, formerly derived by deflation of the lake floor, varies from sand to clay. As Twidale *et al.* (1983, p35, 36 and references therein) note 'soils on lunettes are generally deeper, more loamy, more fertile and better drained than those of surrounding areas and have consequently been chosen as preferred sites for growing cereal crops (Bool Lagoon), summer pastures (Nellan Swamp) and irrigated pastures'.

Volcanic activity took place in the central and western parts of Victoria during the Pliocene and Quaternary. This extended across to the Mt Gambier region during the Quaternary (referred to as the Newer Volcanics, Walker 1967, Sheard 1983, 1986, 1995, Figure 17 & 23). The volcanoes of the South East are located along a northwest-southeast oriented zone, most likely reflecting the activation of fractures that are related to the formation of the Otway and Gambier Basins. Some 17 main volcanic centres have been recognised. Those of the Mt Burr region occur within an uplifted basement block and have ages ranging from possibly 1 million to 20 000 years. They overly the Tertiary Mt Gambier Limestone and are in turn partly overlain by Bridgewater Limestone. The eruption of the volcanoes of the Mount Schank and Mount Gambier area however, occurred around 4 000 to 5 000 years ago, making them the most recent active volcanoes of the Australian mainland. The volcanics here overly the Bridgewater Formation.

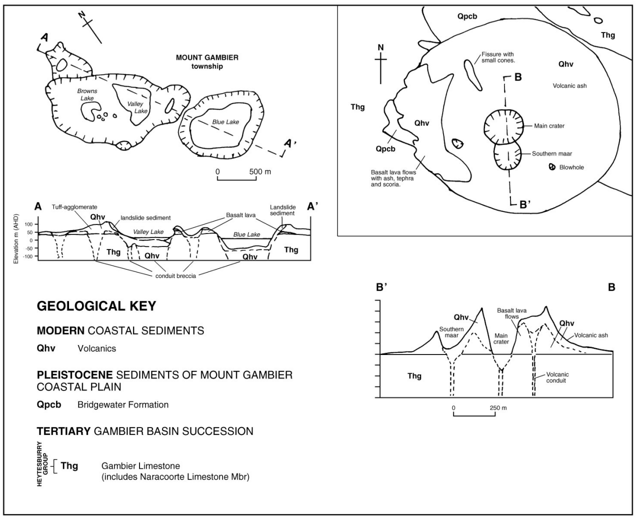



**Figure 23.**
**Geology and geomorphology of Mt Schank. After Sheard (1995).**

The volcanics have an overall basaltic composition and were derived from source rocks in the upper mantle. The older volcanics group are alkaline basaltic in nature and "include 14 fissure-controlled centres with lava flows, composite domes to cones and tuff rings or maars" (Sheard 1995, p 264). Many styles of eruption are indicated for the Mt Burr region and ash covered an area in excess of 110 $km^2$ during a prolonged history. Some of the volcanics contain rock fragments or xenoliths derived from the older country rock, including granodiorite of the upper crustal the basement and Cretaceous sediment of the Otway Basin. Typical volcanic products include lava, ash, agglomerate and scoria, which are in part well bedded. Volcanic bombs are present in some of these sediments. Extrusion took place by way of deep-seated fissures along which volcanic centres developed. Cross bedding, slumping and ripples in the volcanics at Mt Muirhead have been attributed to synchronous coastal marine processes that is during a highstand of Bridgewater time and ash distribution at Mt Schank indicate strong southwesterly winds at the time.

The volcanic province is considered to be dormant rather than extinct as the region is still seismically active and the last eruptions were so recent. Soils formed over the volcanics include chernozems, 'dark grey or dark brown loams' (Blackburn 1983).

In the South East notable karst has formed within and on the Mt Gambier Limestone and the Bridgewater Formation (e.g. Grimes 1995 and references therein, see below). Karst generally forms in carbonate rocks and is the result of the net removal of rock because of dissolution by meteoric and vadose waters. Karst processes have been more active in the wetter South East than on the more arid Nullarbor Plain and has been taking place since emergence of the Miocene carbonates, some ~10 million years ago. The rate and degree of dissolution has been determined by a number a factors, not the least being composition and porosity. Most of the caves are phreatic in origin; that is, they formed at or below the water table.

Numerous caves have developed and several of these are accessible to the public. One such cave, the Victoria Fossil Cave, is a World Heritage site (e.g. Wells *et al.* 1984, Moriarty *et al.* 2000). Cave deposits are varied, including in situ formation of speleothems such as flowstones, stalactites and stalagmites, helictites and forms of aragonite. Sediments have also been washed in from outside and deposited in which there is a remarkable faunal record. Over 90 animal species animals have collected in doline pit traps and lairs, making the Victoria Cave the most diverse fossil cave site in Australia. A considerable amount of work continues in this and other sites. The sediments of the various caves offer snap shots of various times for a potential period of up to around 500 000 years, making this the most important Quaternary fossil region in the continent (Rod Wells, personal communication, 2000). The Victoria Fossil Chamber contains faunas that accumulated during the full range of a number of glacial/interglacial cycles (Moriarty *et al.* 2000).

## ECONOMIC GEOLOGY

### Petroleum

There has been a long exploration history since algal remains (coorongite), found along the coast in the 1890's, was believed to be oil-derived. Robe 1 drillhole was sunk in 1915. Katnook 1 drilled in 1987 intersected the first economic gas find in the Basin and oil was subsequently discovered soon after. Hydrocarbons continue to be explored in the sediments of the Otway Basin with use being made of better quality seismic data that is now available. Economic quantities of gas occur in at least three reservoirs, particularly the Pretty Hill Formation, but there are also occurrences in fractured basement rocks. The reservoirs occur within deeper trough or sub basin regions between parallel, northwest-southeast oriented basement highs and traps include both stratigraphic and structural types. A number of source rocks are indicated (Morton 1995, Morton and Drexel 1995).

Kalangadoo 1 and Caroline 1 wells have intersected $CO_2$ fluids at depth in the volcanic province of the South East, with the latter having produced commercial quantities. The origin of the $CO_2$ is volcanic with a primitive mantle source (e.g. Wopfner and Thornton 1971, Chivas *et al.* 1987).

### Coal

Thin coal seams occur in several Cretaceous formations of the Otway Basin succession but are of possible economic value. The younger Eocene lignites of the Gambier Basin, northeast of Kingston, have been actively explored by Western Mining Corporation. Here there is a trough ~30 km long and 5km wide which contains lignite (~1 000 million tonnes) with cumulative thicknesses of up to eight or so meters. Depths of overburden of 40-75m, high moisture, ash and salt content, together make the deposit uneconomic. The lignite is similar in character to other Tertiary lignites of the State.

### Groundwater

There are significant quantities of good quality ground water in the South East but as there is intense land use in the region, there are considerable pressures on this resource, not the least being the problems of pollution and dry land salination (Waterhouse 1977). There are two main aquifers, the upper one being unconfined whilst the lower one is confined. The former is the more important of the two and occurs in the Cainozoic limestones (e.g. Bridgewater Formation and Mt Gambier Limestone). Water movement in this aquifer is from the east to west and at a rate of ~100m per annum. The water table depth is close to surface over much of the region, particularly between the coastal dunes and recharge is primarily by direct infiltration. There are springs south of Mt Burr in an arcuate line to the coast, and along or near the coast south of Mt Gambier, at which water discharge takes place. Water salinity increases toward the northwest from ~500 mg/L to over 1 4000 mg/L.

The confined aquifer occurs within the older and deeper, Eocene clastic sediments. The Kingston area relies more heavily on the aquifer where salinity is <1500mg/L. There is an increase in salinity toward the northwest where the sands thin and the overlying and inter-tonguing muds become more prominent.

### Building materials

The Gambier Limestone (Camelback Member) has been used since 1844 for the construction of houses and other buildings. The quarries include that of Marte which produce over 11 000 tonnes per year, making them the largest dimension stone producers in Australia.

## GEOMORPHOLOGY

The South East region lies within the Central-Eastern Lowlands, a large low-lying region of Australia (David and Browne 1950, Gentilli and Brown 1963) as can be seen on the DTM of Australia of Moore and Simpson (1982). It can be very broadly divided into two major regions, the low lying Quaternary Mount Gambier coastal plain and the more elevated and older, that is Pliocene, partially dissected and mantled coastal strand plain to the east of the Kanawinka Fault and Escarpment. The latter was referred to as the Pinnaroo Block in the PINNAROO area to the north and as the Naracoorte Plateau in the south (Firman 1973, Twidale *et al.* 1983). In the Mt Burr-Mount Gambier region there is also the local and distinctly more elevated region that is occupied by the Quaternary volcanoes.

### Pliocene coastal strand plain

A digital terrain model of the South East generated from AUSLIG data by PIRSA, shows this area to have elevations that are typically over 100m and up to 184m as in the Mt Shaugh area on the Lawloit Range (Figure 17). The southwest margin drops away to join the Mt Gambier coastal plain at the position of the oldest of the Pleistocene coastal dunes (see below). The variation in relief is attributable to subsequent erosion by water and wind, gentle tectonic warping and the plains original variation in relief, notably the presence of superimposed coastal dunes. Thus, this elevated region had its origins as a stranded coastal dune-mantled plain. Kotsonis (1995, 1999) has recognised 157 stranded dunes on it's surface. Several of these are prominent in the northeast, namely the Marmon-Jabuk Range and the Lawloit Range. Less prominent are the relict ridges recently identified east of Keith and in the region east of Naracoorte, there are parallel ridges, the Joanna and Hynman Ranges (e.g. Rogers 1997).

The Pliocene coastal dunes, which are constructed of quartz sands, are gently arcuate and have an overall northwest-southeast orientation as can be seen on NOAH-AVVR and LANDSAT satellite imagery. They are narrow, that is generally less than 2-3 km wide and stand up to 30m above the intervening plain.

The southwest margin of the Marmon Jabuk Range is marked by a scarp that is believed to have resulted from marine erosion during the Early Pleistocene (Rogers 1980, Figure 17). The two subdued (i.e. 10m high) ranges east of Naracoorte have resulted from the erosion of the Mt Gambier Limestone and thus they are not constructional features. They may mark Pliocene or Early Pleistocene shorelines where erosion took place. Rogers (1997) notes the occurrence of relict Early Pleistocene Coomandook Formation on one of them.

**Quaternary Mount Gambier coastal strand plain**

The Mount Gambier coastal plain is unique because of the succession of superimposed strand lines of Middle to Late Pleistocene age, first documented by Sprigg (1951, 1952, Figures 17 & 21). They are comprised of the calcarenites of the Bridgewater Formation (see above). The coastal plain extends from the Murray River mouth region toward the South East into Victoria. Width of the plain is ~80-95 km and the elevation gradually increases from sea level to around 50-60m adjacent to the West Naracoorte and Coonalpyn Ranges that lie close to the plain's eastern margin. Elevation also decreases toward the northwest, although the region constrained by the Coonalpyn and The Black Ranges is slightly higher.

There are 13 named ranges between Robe and Naracoorte (Figure 19). Individual ranges can be traced for up to 140 km (e.g. Reedy Creek Range). They are straight to slightly curved and are oriented parallel to the modern coast, having an overall northwest-southeast orientation. Toward the northwest, southwest of the West Naracoorte Range and The Black Range, the ranges coalesce; reflecting the fact that uplift in that direction has been rather limited (e.g. Belperio 1995). Thus, in the Big Desolation-Policeman Point region there is a broad region, 15-25 km wide, that is parallel to the coast and that stands 15-25m above the adjacent plain. Average width of most of the dunes in contrast, and height, is ~1-3km and ~15m respectively. The highest coastal dunes lie adjacent to the Kanawinka Fault. Thus the Naracoorte West Range lies up to ~75 m above the coastal plain. Presumably, erosion has diminished the ranges height since their formation. The range morphology, including arcuate forms that reflect palaeo-embayments and headlands. The most obvious example is the Coonalpyn Range, which has granite highs at each end that were once headlands.

Toward the southern end of the Mount Gambier coastal plain, in the region that is slightly more elevated, the coastal dunes in the region of Mount Burr and Mt Gambier, are more dismembered or less well defined and in part show some evidence for coalescence. It is likely that this region did not undergo the same, even, gentle uplift as occurred to the immediate north and northwest. The isolated, linear to irregular shaped, highs that occur southwest of Naracoorte are likely to be relict fragments of coastal dunes.

At the coast, there is the parallel, modern or Holocene, coastal dune that arose as a result of the current interglacial and eustatic sea-level rise to the current position 6 000 years ago. This is the currently active Younghusband Peninsula, which is the latest of the Quaternary coastal dunes of the Mt Gambier coastal plain to have formed. It extends from Lacepede Bay to the Murray River Mouth, ~180km to the northwest. The average width and height are 0.75-1.0 km and < 45 m respectively. The Peninsula faces onto the Encounter and Lacepede Bays and Southern Ocean. Vegetation free (ie mobile) and vegetation-fixed transgressive dune complexes occur on the peninsula, which are up to 40m above the beach and include both parabolic and transverse dune forms and have associated blowouts or depressions. Locally exposed there is evidence of aboriginal occupation including middens of cockleshells. On the east side of The Coorong, there are also a parallel series of low discontinuous foredunes with scattered elongate playa lakes.

To the south there are a series of bays or compartments that may have eroded the Bridgewater Formation that forms the modern headlands or capes as at Cape Jaffa and Cape Dombey (Figure 17). Numerous arcuate shaped and parallel beach ridges are apparent in the strand plains of the compartments, reflecting Holocene progradation of the coast. Thus, Guichen Bay contains over 80 foredune ridges that stand up to 10m above the present beach (Thom *et al.* 1981). This part of the coastline, as does much of the southern margin of Australia, is under the influence of the prevailing westerlies and the high-energy swell regime of the Southern Ocean.

**Modern dunefield**

Draped over part of the coastal plain and Pinnaroo Block landforms, more so in the north and in the Bordertown area, are low aeolian buildups or sand sheets that formed at the end of the Pleistocene (Figure 17). They are the southern "outposts" of the extensive Mallee dunefield. In contrast with the region to the immediate north, as in the Pinnaroo area (e.g. see Rogers 1980) there are very few duneforms recognisable. They include both linear and parabolic forms northeast of Keith. The older linear dunes that occur to the north are not apparent in the South East, indicating that either they are masked by the modern sheets and dunes or that the older dunefield limits were more restricted.

**The Coorong, lakes, lagoons, lunettes and drainage**

The narrow ~ 130km long, shallow Coorong, lies along much of the landward margin of Younghusband Peninsula and is the modern analogue of marine influenced lagoons that once lay behind the previously active, successively older, coastal dunes (Figure 17). Waters become progressively more saline toward the south, as circulation becomes more restricted and where shallow, interconnected basins have developed. Water is derived from a number of sources, namely the

Murray River, the Southern Ocean, groundwater and run-off and consequently, water level and salinity varies seasonally.

To the south of The Coorong, there are also a series of shallow, behind barrier lakes, namely Lakes Eliza, George and Bonney. They are groundwater discharge lakes that do not have a direct link with the ocean and lake-salinity varies enormously. There are also shallow lakes or lagoons in between some of the ranges, such as Bool Lagoon and Salt Lakes.

Drainage is generally poor and the expression of modern drainage is generally limited in the South East region of the State. In fact, drainage is so poor in part of the region that drains have been excavated to gain access to the sea. There are creeks draining off the older coastal plain in a general southwesterly direction, terminating in the lakes and lagoons between the West Naracoorte and Harper Ranges. The coastal dunes of the Quaternary strand plain have the effect of limiting surface drainage and of allowing water to collect and pond in the intervening mud floored flats, as noted for example by Twidale *et al.* (1983). In addition, between the coastal dunes, the groundwater table outcrops locally. Thus, numerous small and often linear shallow mud flats, swamps and lagoons have formed between the dunes, being more evident during times of winter rainfall.

Twidale *et al.* (1983) describe the fact that many of the lakes have low lying lunettes developed on their lee side, that is particularly so on their eastern or southeastern margin. A good example is the lunette of the Bool Lagoon, which stands up to 20 m above the lake floor, is 3km long and ~0.3 km wide. Lunettes may be only centimetres high to >30 m as at Lochaber Swamp. Their cross sectional form is markedly asymmetric, with the lake side portion being distinctly steeper, where wind erosion takes place. It is not understood why some lakes of a particular region have these lee side mounds whilst some others do not.

**Karst**

In the flat, low lying, karstic province of the South East, there is a range of dissolution features and collapse structures, namely dolines, cenotes, uvalas and caves (Twidale *et al.* 1983, Grimes *et al.*1995, Figure 17). Spectacular karst has developed, particularly in the Naracoorte and Mt Gambier regions. There are a number of caves open to the public, namely Tantanoola, 'Little Blue Lake', Victoria Fossil, Umpherston, Engelbrecht and Mitchell Caves and Cave Gardens. The karst of the Mt Gambier Limestone is much more extensive than that of the Bridgewater Formation, having developed over a much longer period. The karst reaches greater depths toward the coast because of the increasing thickness of the limestones in that direction and the lower sea levels and thus water tables, during the Pleistocene glacial periods, the water table is commonly intersected in the caves. There are features such 'Little Blue Lake', 'Hells Hole' and 'The Shaft' which have attracted divers. Many of the caves of the Naracoorte area 'include doline to horizontal passage solution and collapse structures' (Sheard and Smith 1995, p259). Cave form is partly determined by jointing in the limestones.

As Twidale *et al.* (1983, p 30, see their figure 9 taken after Marker (1975) state 'the underlying limestones have imposed some of their characteristics on the relief forms' where there is a thin cover of sediment. Thus enclosed depressions are common, be they single or coalesced sinkholes. Extensive exposed karst occurs south and west of Mt Gambier. Here the Miocene limestones display pavements and solution cups or hummocky karst surface features with karren sculpturing. Along the creeks draining off the old elevated plain east of Naracoorte there are associated shallow circular swamps that may be partially infilled dolines. Swamp dolines or uvulas and circular shallow depressions occur in the Bool Lagoon and Penola regions and around the margin of Dismal Swamp region. Deep funnel dolines have formed on the margins of elevated terrain such as west of the Kanawincka Escarpment and the volcanic terrain as near Glencoe. Along the Gambier Lineament, possibly the surface expression of the Tartwaup Fault there is a string of elongated and deep dolines.

Where the Mt Gambier Limestone has been locally eroded, or where there is a thick cover of younger sediment, there is no obvious surface expression. The Bridgewater Formation karst features include minor caves along the coast, clay pot karst, and pavements with karren and 'flatteners'.

**Granite landforms**

There are outcrops of Ordovician granites of the Padthaway Ridge which display typical granite weathering landforms (Figures 17, 18 & 19). Many of these would have been islands, archipelagos and shallow shoals during the various transgressions of the Cainozoic and thus may be quite old. They stand out above the plain up to heights of at least 20 m. They have been described by Twidale *et al.* (1983, and references therein). Joint pattern and spacing is regarded as being generally more important than lithologic variation in determining the shape of granite landform. Differential weathering related to joint patterns can give rise to inselbergs or steep sided residual hills surrounded by boulder fields at plain level.

Angular blocks have formed on resistant quartz keratophyres as at Bin Bin and Easter Rock. Some granite hills, such as those at Jip Jip and Crotty Nob, are mantled by rounded-boulders. A few boulders may rest on the top of gentle rises. The large radius domes east of Richardson Rocks and at the Granites have a scatter of boulders. Domes may have few or no scattered boulders. The large residual boulders, as at Richardson Rocks, can have slightly flared sides or may be whaleback in form as exposed on the beach near Kingston. Larger granite hills may display many joints and compartments of fresher rock surrounded by a skin of weathered rock. Flat plateau and depressions have formed in places where weathering has occurred at the base of cornerstones of granite compartments. Old plain levels can be reconstructed based on these features. Twidale *et al.* (1983) argue that the stepped larger hills of Kongai and Tolmer Rocks indicate multiple episodes of lowering of the landsurface.

During the various Cainozoic transgressions, tide and wave action is believed to have eroded the domains of weathered granite and thus sped up the process of boulder formation rather than having been important in determining shape.

**Volcanic terrain**

In the region around Millicent and Mt Gambier there are preserved volcanic cones of Quaternary age (Figures 17 & 23). Walker (1967) and Sheard (1983) have characterised the type of volcanic centres as composite, ash-cone, maar (explosion crater), scoria dome and flow. Height above the surrounding plains ranges from 50-168m. Mt Burr, a composite volcanic centre, is at 240.5 m AHD, the highest of the cones. In the older volcanic region of Mt Burr area there are at least 15 volcanic centres, many of which are recognised by the occurrence of cracks in the ground that are the surface expression of deep fissures. Here, there are apparently three main, parallel alignments of these centres. The asymmetry of the some of the older centres, such as Mt Muirhead and The Bluff, is apparently due to aeolian and marine erosion that took place during times of Late Pleistocene high sea levels. Both of the southeastern volcanoes are complex maar-cone structures and formed because of explosive volcanicity. Mount Schank is an ash-mantled volcano that has a main crater, a maar on the southern side and a buried cone on the northern side. The cone is less than 1 km in diameter and it stands 70-80m high above the adjacent plain. Small scoria cones lie in line on the northwestern flank. The craters at Mt Gambier are large and open the result of the 'influx of abundant near-surface ground water into the active vents and conduits' thereby giving rise to steam-induced volcanic explosion (Sheard 1983, p9). The Blue Lake of Mount Gambier is one of a number of fresh water lakes that have formed or mark a series of craters that have an ~ northwest-southeast alignment over a length of ~3.5 km. Remnant cone height is up to at least 130m above the adjacent plains.

Lange (1983) has described the broad outlines of the region's original endemic flora, referring to the earlier work, particularly that of Crocker (1944) and Blackburn (1964). A section across the Mt Gambier coastal plain north of Kingston is instructive and believed to have wider relevance. There is a distinct correlation between coastal range and plain geology and vegetation. The exceptions to this broad pattern is the flora of the aeolian sand plains, the volcanic province and the 'fen or freshwater alkaline peat swamp' (Lange 1983, p101).

# Historical Vegetation Communities

**By T. Croft[1]**

## INTRODUCTION

The map in the back pocket of this report shows the pre-European vegetation communities across the South East mapped and reconstructed from existing remnants, previous literature records, soil maps and early exploration and land survey records. Here details of the vegetation communities mapped are compared with literature references over time to place the current survey in an historical context.

The historical data summarised here take their structural classification from the SA Vegetation Structural Formation categories (Appendix VII), which were derived from Specht (1972) and Muir (1977). Generally the taxonomy and nomenclature follows Jessop (1993) as updated by the SA Flora database 2001. The following communities are listed in the structural formation order (largest lifeform to smallest) according to the SA Vegetation Structural Formations. Where two or more vegetation types occur in the same structural category then these are listed alphabetically. Where references to soil types are made, based on literature sources, these are followed with current Australian Soil Classification terminology, in brackets, according to Isbell (1996).

The South East is fortunate in having a number of historical sources for natural history information, thanks to early settler and traveller accounts from the nineteenth century, and Government reports of the mid twentieth century. These have given us some idea of the appearance of the region prior to artificial drainage and subsequent agricultural development of the region.

Most of the early accounts are of the sub-coastal areas, which gave easier access and good feed for horses. Joseph Hawdon, one of the overlanders pioneering the stock route between Melbourne and Adelaide wrote "… it appears that the whole country from the Glenelg [River] to this point on the Murray is one bed of limestone alternately covered with sand, swamp, and strips of alluvial deposit covered with grass and sheoak" (Hawdon 1840).

In the mid nineteenth century, Government surveyors described the South East as "…very peculiar, no large river exists and there are no high mountains to form a watershed and force the drainage by a strong fall into any particular channel. The consequence of this is a number of lakes, lagoons, and swamps which in winter are of considerable depth and in summer, by evaporation and soakage are nearly dry" (Hanson, Parliamentary Papers 1863). Due to this unique situation, the South East developed the complex mosaic of plant communities, described below.

## FOREST ASSOCIATIONS

In South Australia, open-forests and low open-forests are largely restricted to the Mount Lofty Ranges, Southern Flinders Ranges, western Kangaroo Island, Koppio Hills of southern Eyre Peninsula and the South East. They occur most extensively occur in the South East (Specht 1972).

Crocker (1944) described three types of dry sclerophyll forests in the South East, each characterised by an abundance of sclerophyllous shrubs and undershrubs. These forests reach their maximum development in the Mount Burr Range.

### ***Eucalyptus arenacea/baxteri* (Stringybark) Open Forest**

Early European residents and travellers through the South East noted the generally sandy ridges to be thickly timbered with stringybark (Burr 1845, Woods 1862), which at times were stunted (Hawdon 1840). Crocker (1944) considered *Eucalyptus baxteri/arenacea* and *Eucalyptus obliqua* to form two distinctly different plant communities in the South East of South Australia. Early literature referred only to *E. baxteri*, however subsequently there has been a split, with *E. baxteri* known to occur in the southern wetter areas (around Mt Gambier) and *E. arenacea* in the northern drier areas (around Keith – Bordertown). There appears to be intergrades of these two species in the area between these extremes (M. O'Leary, pers. comm.). For the purposes of this section, *E. arenacea/baxteri* will be used. *Eucalyptus arenacea/baxteri* Open Forest is a widespread association, although more prevalent in the south of the region. It predominates on the sandy ranges with an understorey typically dominated by *Pteridium esculentum*, and sporadically tall shrubs and small trees such as *Banksia marginata*, *Acacia melanoxylon*, *Bursaria spinosa* and *Acacia mearnsii* (Crocker 1944).

Early literature referred only to *Eucalyptus baxteri* however subsequently there has been a split, with *E. baxteri* known to occur in the southern wetter areas (around Mt Gambier) and *E. arenacea* in the northern drier areas (around Keith – Bordertown). In the intervening area between these to extremes there appears to be intergrades between these two species (pers. comm. M. O'Leary, Plant Biodiversity Centre). For the purposes of this section *Eucalyptus arenacea/baxteri* will be used where the references had previously used *E. baxteri*.

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***Eucalyptus viminalis*** **ssp.** ***cygnetensis*** **(Rough-barked Manna Gum) -** ***Eucalyptus arenacea/baxteri*** **(dune stringybark) Open Forest**
*Eucalyptus viminalis* ssp. *cygnetensis* - *Eucalyptus arenacea/baxteri* Open Forest is described by Crocker (1944) as dominating most of the Nangwarry area where the sand is shallower and the habitat is wetter. In this community, understorey shrubs were noted to be more diverse, and include *Acacia melanoxylon*, *A. mearnsii*, *Leptospermum myrsinoides*, *L. continentale*, *Banksia marginata*, *Hibbertia* species and *Pteridium esculentum.*

***Eucalyptus obliqua*** **(Messmate Stringybark) Open Forest**
This association is limited to the Lower South East where it occurs on deeper red clay (terra rossa) soils (Petrocalcic, Red Dermosol); transition soils at the edge of some basaltic hills; and shallow sandy soils over limestone on the ranges and higher country (Crocker 1944). It covered a smaller area of the South East than *E. arenacea/baxteri* Open Forest. The understorey was noted to be more open comprising sclerophyllous shrubs such as *Acacia* species, and with generally lesser cover of *P. esculentum* (Crocker 1944).

***Eucalyptus willisii*** **ssp.** ***willisii*** **(Willis' Peppermint) Low Open Forest**
*Eucalyptus willisii* ssp. *willisii* Low Open Forest is limited to the Lower South East from Compton in the south to nearly Callendale in the north. In this region it is located in small sandy depressions of the range country. It never formed widespread areas, but occurred in small, scattered suitable sites, usually over a dense wet shrubland understorey of *L. continentale*, *Gahnia clarkei* and *G. radula*. It was not a plant community noted in earlier works.

**WOODLAND ASSOCIATIONS**
The woodlands of the most of the South East have been described as savannah communities with predominantly herbaceous and grassy understorey (Wood 1937, Crocker 1944). In South Australia, the savannah woodlands are found on southern Eyre Peninsula, central Yorke Peninsula, southern Flinders Ranges, Mid North, Mount Lofty Ranges, limited areas of Kangaroo Island and the South East (Specht 1972). In the South East, the savannah woodlands were an important, distinctive feature occurring over a large part of the region.

***Eucalyptus camaldulensis*** var. ***camaldulensis*** **(River Red Gum) Woodland**
River Red Gum formed extensive woodlands through a large part of the region, particularly in the Lower South East. In the Upper South East, this woodland community is more restricted to localised areas along water courses (e.g. creeks) and fringing swamps (Specht 1951). It is an association that has been greatly modified due to the artificial drainage system and grazing by domestic stock since European settlement (Crocker 1944). The ground understorey was primarily dominated by grasses, sedges and rushes, but has subsequently been replaced by clovers, perennial rye-grass, phalaris and other introduced pasture species (Crocker 1944).

***Eucalyptus fasciculosa*** **(Pink Gum) Woodland**
*Eucalyptus fasciculosa* woodland is predominantly found in the Upper South East. Here it occurs on sandier soils of lower fertility and water retaining ability (Specht 1951). It was also noted to occur on the lower slopes of the ranges and adjacent strips of the interdunal plains, fringing freshwater swamps or on higher dunes in saline swamps (Litchfield 1956). Specht (1951) recognised the community as *E. fasciculosa – Xanthorrhoea caespitosa* on the "Laffer sands" (Petrocalcic, Brown Chromosol) as part of the "desert" community complex of the "Ninety-Mile Plain". The understorey comprised a variety of sclerophyllous shrubs, including *Acacia myrtifolia* var. *myrtifolia*, *Hibbertia* species, *Hakea* species, *L. myrsinoides and X. caespitosa*. However, on loam soils, the community occurred as distinct savannah woodland over native *Danthonia* and *Stipa* grasses or sedges (Litchfield 1956).

In the Lower South East, the community becomes less frequent, but occurred as far south as County Robe on better loamy soils, with the trees capable of growing much larger (Crocker 1944). Like some areas of the Upper South East, it formed distinct savannah woodland over *Danthonia* and *Stipa* species grasses.

***Eucalyptus largiflorens*** **(River Box) Woodland**
*Eucalyptus largiflorens* Woodland has a limited distribution in the South East. It is restricted to the Upper South East in the vicinity of the Tatiara Creek floodplain from the Victorian border to Bordertown. However, the community becomes more prevalent and extensive east of the border in the Wimmera district of western Victoria. This community is considered to be confined to swampy areas with alkaline, heavy-textured grey soils with a distinct "crabhole" or gilgai characteristic, mostly drying out in summer (Specht 1951).

The community is typically of a grassy woodland, with the understorey composed of grass and herbaceous species, including *Brachycome basaltica* var. *gracilis*, *Calocephalus citreus*, *Carex inversa* var. *inversa*, *Danthonia duttoniana*, *D. linkii* var. *fulva*, *D. setacea* var. *setacea* and *Eryngium vesiculosum*.

***Eucalyptus leucoxylon*** **ssp. (South Australian Blue Gum) Woodland**
*Eucalyptus leucoxylon* ssp. Woodland covered extensive areas of the South East, although it was largely absent from the higher rainfall areas of the southern Lower South East, and lower rainfall areas (below 450 mm) of the Upper South East. The community occurs on a variety of more fertile soil types, including red-brown earths (Calcic, Red Sodosol), solonized woodland soils (Calcic, Brown

Sodosol), and some heavy grey and red soils (Grey and Red Vertosol) extending onto the rendzina (Petrocalcic, Black Dermosol) (Specht 1951). It usually occurs over shallower water tables extending to where *E. fasciculosa* Woodland and the mallee communities occur.

The community is typically a grassy woodland (Crocker 1944, Specht 1951, Litchfield 1956), with *Themeda triandra*, *Danthonia* species and *Stipa* species usually present, as well as some understorey trees of *Banksia marginata* (Crocker 1944). North-east of Naracoorte and south of Bordertown *Allocasuarina luehmannii* becomes a prominent understorey tree.

***Eucalyptus microcarpa* (Grey Box) Woodland**
*Eucalyptus microcarpa* Woodland occurs in the Upper South East between Kybybolite and Bordertown as far west as about Mundulla. The community occurs on grey and red soils of heavy texture, in areas considered to have a longer growing season. There is often *Allocasuarina luehmannii* Low Woodland occurring adjacent to *E. microcarpa* Woodland (Specht 1951).

The understorey of this grassy woodland comprises a sparse low shrub cover and a ground cover of *Stipa* species, *Danthonia* species, *Themeda triandra* and, in spring, herbaceous species.

***Eucalyptus ovata* (Swamp Gum) Woodland**
*Eucalyptus ovata* Woodland is primarily a Lower South East community occurring on low lying meadow podsol (Calcic, Grey Sodosol / Chromosol) and rendzina (Petrocalcic, Black Dermosol) soils (Crocker 1944). Prior to drainage programs in the region it probably occurred in areas inundated in winter and spring (Crocker 1944).

This community is principally a grassy woodland with a sparse low tree and shrub understorey of *A. melanoxylon*, *Allocasuarina verticillata*, *B. marginata*, *Bursaria spinosa*, *X. caespitosa* and groundcover species including *Danthonia* species (e.g. *D. semiannularis*) and *Chorizandra enodis*.

***Eucalyptus viminalis* ssp. *cygnetensis* (Rough-barked Manna Gum) Woodland**
This woodland primarily occurs on shallow sand (e.g. Nangwarry sand) (Aeric Podosol), throughout the region, although its occurrence is more pronounced in the Lower South East (Crocker 1944). It is usually found around the margins of swamps in a transitional zone and in areas with a wetter soil profile. The understorey usually comprises heathy shrubs, including *Melaleuca brevifolia* and *L. continentale*.

***Allocasuarina luehmannii* (Bulloak/Buloke) Low Woodland**
This grassy woodland community is restricted to the Upper South East, north of Naracoorte, principally in the vicinity of Frances and Wolseley. Here it forms the western extension of more extensive areas in the Wimmera district of Western Victoria. The community mainly occurs on heavy textured grey and red soils with lime present in the profile (Specht 1951). It occurs in areas characteristically waterlogged in winter, which rapidly dry out in summer. These conditions combined with soil type, result in the soil forming distinct "crabholes" (gilgais, depressions or cracks) creating different microclimates on the puffs (rises) and in the "crabholes" (Specht 1951).

Generally, the grassy understorey of the Bulloak Low Woodland is dominated by *Danthonia* species (e.g. *D. linkii* var. *fulva, D. racemosa* var. *racemosa*), *Stipa* species (e.g. *S. curticoma, S. scabra* ssp. *falcata*) and *Themeda triandra*. However, the separate microclimates of the "puffs" and the "crabholes" support different ground flora. For instance, *Templetonia stenophylla* is distinctive of the "puffs", while *Swainsona procumbens* and *Carex inversa* var. are distinctive of the "crabholes".

***Allocasuarina verticillata* (Drooping Sheoak) Low Woodland**
The occurrence of grassy *A. verticillata* Woodland in the sub-coastal areas of the South East was a major regional feature observed by early travellers and settlers (Hawdon 1840, Burr 1845, Woods 1862). This community was noted to be on the sub-coastal low ranges with out-cropping calcareous substrate, and to be well grassed and thinly timbered (Burr 1845, Woods 1862). Wood 1937, considered the Sheoak Low Woodland to form the culminating stage of the coastal vegetation in wetter areas of the State, such as the South East.

This low woodland comprised a sparse shrub layer, including *Banksia marginata* and *Bursaria spinosa*. While the understorey was usually described as grassy (Hawdon 1840), including Danthonia species (e.g. *D. caespitosa*, *D. geniculata*) and *Stipa* species (e.g. *S. flavescens*). These grasses provided good feed for stock and horses, and as a result these areas were popular with the first pastoralists and early travellers.

***Banksia marginata* (Silver Banksia / Honeysuckle) Low Woodland**
*Banksia marginata* Low Woodland formed extensive areas on dark-grey pipe clay of the interdunal flats, covered in water in winter and holes in summer (Woods 1862). Woods described the "honeysuckle country" in some detail as thickly studded with *B. marginata*, with "biscuit stones" littering the soil surface in places. These "biscuit stones" were also noted earlier by Burr (1845), and while it is understood that they formed in solution in the wet conditions, little is known about them. *Banksia marginata* Low Woodland is now largely gone through clearance, ploughing and grazing, with the exception of a few remnants along road reserves.

***Eucalyptus arenacea/baxteri* (Stringybark) +/- *E. fasciculosa* (Pink Gum) Low Woodland**

In the Upper South East, the *Eucalyptus arenacea/baxteri* Open Forest gives way to a low woodland over a diverse sclerophyllous shrub understorey. This low woodland community has a wide distribution over the Upper South East sand dunes, and was described as an open stringybark – heath community by Litchfield (1956). In the northern extremes it is found at the tops of the larger sand dunes, for example in the adjacent Murray Mallee region at the Baan Hill district north of Ngarkat Conservation Park. The trees in this community have a more stunted, almost mallee habit, and do not reach the height attained in more southerly districts.

The understorey comprises a diverse array of heathy shrubs about 1.5 metres in height, with prominent *Banksia ornata* and *Leptospermum myrsinoides* coverage.

***Eucalyptus fasciculosa* (Pink Gum) - *Eucalyptus leucoxylon* ssp. (SA Blue Gum) Low Woodland**
Although this community has been considered an ecotone between *E. leucoxylon* ssp. and *E. fasciculosa* Woodlands (Specht 1951), it does occur in extensive areas where both eucalypts coexist (Litchfield 1956). As a result it has been recognised as a distinct community. It is primarily restricted to the Upper South East from Willalooka north to Tintinara (Litchfield 1956). A *E. leucoxylon* ssp. - *E. fasciculosa* Woodland association was also noted in the Bool Lagoon area and in a strip running south from Lucindale (Crocker 1944).

***Eucalyptus porosa* (Mallee Box) Low Woodland**
In the northern extremity of the South East, north of Keith, *E. porosa* Low Woodland can be found, extending patchily north into the adjacent Murray Mallee region. It has only a limited occurrence in the South East on porous sandy loam soils. The understorey is composed of a low grassy groundcover including *Themeda triandra, Danthonia* species and *Kunzea pomifera*. Litchfield (1956) noted the occurrence of *E. porosa* Low Woodland, but generally earlier workers had difficulty in field identification of the box eucalypt species of the region (i.e. *E. microcarpa*, *E. odorata*, *E. porosa*).

***Melaleuca lanceolata* ssp. *lanceolata* (Dryland Tea-tree) Low Woodland**
This community is widely distributed throughout the region occurring on alkaline soils, from its most southerly to northerly extremes. Its distribution is primarily sub-coastal, but it can be found in more inland situations. For instance, the community was considered important on the very shallow soils of the Woakwine Range south of Beachport, and interspersed in the Lower South East belt of *Eucalyptus diversifolia* Mallee between Robe and Beachport (Crocker 1944). The community also occurs in stony localities with exposed calcareous substrate and shallow soils in the Upper South East north of Naracoorte (Specht 1972). In these areas, including where the soils become deeper, *Allocasuarina verticillata* is commonly associated, at times as a co-dominant.

The community is primarily an open grassy woodland, over annual and perennial herbs and grasses. Like the other grassy woodlands, it has been used for domestic stock grazing since the earliest days of settlement (Crocker 1944). Groundcover species included *Stipa flavescens*, *Danthonia* species, *Vittadinia* species and *Cynoglossum* species.

## MALLEE ASSOCIATIONS

The mallee associations form a broad band from east to west across the drier agricultural and southern pastoral areas of South Australia. In the South East, *Eucalyptus diversifolia* Mallee is more prominent towards the coast, and along with other mallee species becomes more extensive in the Upper South East.

***Eucalyptus behriana* (Broad-leaved Box) - *E. dumosa* (White Mallee) - *E. odorata* (Peppermint Box) Mallee.**
This community is strongly linked to heavy gilgai clay soils in the Upper South East, north and west of Bordertown, but occurs more frequently towards the Victorian border (Litchfield 1956). Specht (1951) noted that *E. behriana* was often mixed with *E. dumosa* and an occasional mallee form of *E. odorata*. However in a number of areas, such as following watercourses, *Eucalyptus behriana* forms pure stands on its own. Another variation occurs in the vicinity of “Border Farm”, where *E. behriana* forms a distinct grassy woodland, with *Allocasuarina luehmannii* as an understorey tree.

***Eucalyptus diversifolia* (Coastal White Mallee) Mallee**
*Eucalyptus diversifolia* Mallee occurs as a widespread mallee community of the South East strongly linked to shallow soils over a calcareous substrate. In the Lower South East, it is more restricted to a subcoastal strip between Beachport and Robe, on shallow brown and red-brown soils (terra rossa) (Petrocalcic, Leptic Tenosol) and deeper yellow-brown and yellow sands (Arenic, Bleached-Orthic / Orthic Tenosol) of the Woakwine Range (Crocker 1944). The community becomes more widespread towards the Upper South East, particularly towards the Coorong. There it occurs only on well-drained soils, being entirely absent from poorly drained habitats (Litchfield 1956). In the Upper South East, it is usually found as isolated pockets associated with the calcareous substrate capping the range country, and adjacent sands.

The understorey is typically composed of an open shrub layer of a diverse array of shrubs, including *X. caespitosa*, *Hakea* species (e.g. *H. rostrata*, *H. vittata*), *Hibbertia* species and *Acrotriche cordata*.

***Eucalyptus incrassata* (Ridge-fruited Mallee) Mallee**

This mallee – heath shrubland community is restricted to the Upper South East, where it forms extensive areas on light-textured well-drained soils. It is distributed across the sand belt north of Frances, from western Victoria north into the Murray Mallee (Litchfield 1956). The community is considered to have a high affinity for the wide tracts of sandy solodic soils (Calcic, Brown Sodosol) (Specht 1951, Litchfield 1956).

*Eucalyptus leptophylla* is often closely associated with *E. incrassata* (Litchfield 1956). In other areas, such as between Swede's Flat and the grassy woodlands of the Bordertown district, the community comprises primarily *E. incrassata*, *E. leptophylla* and *Melaleuca uncinata* on shallow sand over mottled clay (Specht 1951).

***Eucalyptus odorata* (Peppermint Box) Mallee**
There has been a long history of confusion relating to the identification of box eucalypts in the Upper South East, with a number of taxonomic names used (as per Litchfield 1956, Specht 1951). However from this confusion and remaining remnants, it can be seen that the mallee form of *Eucalyptus odorata* has a restricted distribution occurring in isolated pockets in the Upper South East. The community distribution centres include the slopes of Mount Monster and Wirrega soils (Calcic, Brown Sodosol) (Litchfield 1956). When present in other areas it is associated with poorly drained and seasonally wet areas.

***Eucalyptus rugosa* (Kingscote Mallee) Mallee**
In the most northerly parts of the Upper South East, *Eucalyptus rugosa* Mallee, like *Eucalyptus diversifolia* Mallee is associated with the range country, and extends north into the Murray Mallee. *Eucalyptus rugosa* Mallee can be found from inland of the Coorong to east of Keith, and in wetter parts of the calcareous ranges, usually where there are deeper clay pockets. This community generally does not occur on poorly drained soils where it is replaced by *E. behriana* - *E. dumosa* - *E. odorata* Mallee.

**SHRUBLANDS**
***Leptospermum lanigerum* (Silky Tea-tree) Tall Shrubland**
This community occurs in freshwater wetlands on fine black peat soil ("Badenoch" friable peat) (Organosol) primarily in the Lower South East (Eardley 1943). Small areas also occur as far north as Henry Creek, north of Kingston. The community forms a closed formation sometimes with *Melaleuca squarrosa* and *Ozothamnus ferrugineus* as co-dominants, so dense that it is at times difficult to penetrate (Eardley 1943).

This sub-coastal plant community has been highly impacted by artificial drainage and agricultural development, particularly since World War Two.

***Melaleuca halmaturorum* ssp. *halmaturorum* (SA Swamp Paperbark) Tall Shrubland**
In both coastal (littoral) and inland areas, this community is closely associated with highly saline habitats with shallow seasonal watertables (Litchfield 1956), such as the interdunal watercourses and fringing saltmarshes and saltlakes of the South East. It can be described as a low open forest, but at other times tall scrub or shrubland (Litchfield 1956), depending on sites.

***Banksia ornata* (Desert Banksia) Shrubland**
*Banksia ornata* Shrubland is a sclerophyllous shrub community growing up to 1.5 metres high found in the Upper South East. It occurs on deep, well-drained sand, where it has formed extensive areas at times. Specht (1972) documented this shrubland community as part of the "sclerophyll land systems". Coaldrake (1951) described the community as *B. ornata* - *Allocasuarina pusilla* – *X. caespitosa* with *B. marginata* (wetter areas), *L. myrsinoides* and *B. behrii* (sandhills) also present. The understorey was recorded as richer than other communities with a variety of genera including *Lepidosperma*, *Adenanthos*, *Correa*, *Cryptandra*, *Hibbertia*, *Baeckea*, *Calytrix*, *Leucopogon* and *Phyllota* (Coaldrake 1951).

***Leptospermum continentale* (Prickly Tea-tree) Shrubland**
This community is more prevalent in the Lower South East restricted to localised freshwater wetlands. It was not a plant community generally described by earlier workers. However, Crocker (1944) noted various heath formations (e.g. *X. caespitosa* - *H. rostrata*) as "difficult associations to name" due to the diversity of plant species occurring. These shrubland communities were generally found on variable low lying acidic podsolised sands of low fertility.

***Melaleuca brevifolia* (Short-leaved Honey-myrtle) Shrubland**
*Melaleuca brevifolia* low shrubland is typically found on brackish, seasonally waterlogged sandplains of the Upper South East (Litchfield 1956). In terms of its distribution this community is known to have occurred as far south as the Conmurra District of the Lower South East. In more saline swamp situations, where *M. halmaturorum* ssp. *halmaturorum* dominates, *M. brevifolia* forms an intermediate band between the *M. halmaturorum* ssp. *halmaturorum* and the adjacent communities on the rising slopes (Litchfield 1956). Since agricultural development of the Upper South East, this community has been severely affected by rising saline water tables, with extensive loss of cover (Croft & Carpenter 1998).

***Melaleuca gibbosa* (Slender Honey-myrtle) - *Hakea rugosa* (Dwarf Hakea) Shrubland**
Crocker (1944) noted this community occurring in a limited area south of Lucindale in the Hundred of Spence, primarily on low-lying areas with shallow grey soils over calcareous substrate. This area becomes very wet in winter and spring (Crocker 1944). Elsewhere the plant community grades to other wetland shrubland

communities such as *L. continentale* and *M. brevifolia*. Both *M. gibbosa* and *H. rugosa* can be found in these communities.

***Olearia axillaris* (Coast Daisy-bush)- *Leucopogon parviflorus* (Coast Beard-heath) Shrubland**

On the stabilised coastal dunes, *O. axillaris-L. parviflorus* Shrubland becomes the dominant community (Woods 1937). This usually begins on the crest and hind face of the foredune, and continues across the flat into the face of the hind dune (Woods 1937). The composition of the coastal shrubland can vary, but is essentially made up of *O. axillaris, L. parviflorus*, and to a lesser extent *Acacia longifolia* var. *sophorae* (Crocker 1944, Specht 1972).

Other plant species associated include *Leucophyta brownii*, *Myoporum insulare*, *Tetragonia implexicoma*, *Muehlenbeckia adpressa* and *Lepidosperma gladiatum* (Wood 1937).

***Halosarcia pergranulata* ssp. *pergranulata* (Samphire) Low Shrubland**

This samphire shrubland community is considered to have increased in area since European settlement of the region, due to rising saline groundwater causing dryland salinity in the Upper South East. The original extent of the community was probably limited to saline areas of the Coorong, in what Angas (1847) described as "a border of red samphire encircling the shores" of a shallow pink lagoon.

**SEDGELAND**

***Gahnia filum* (Thatching Grass) Sedgeland**

Large areas of the interdunal watercourses with dark calcareous friable (rendzina) soils (Melanic, Calcic Calcarosol) contained *G. filum* Sedgeland. The area where the sedgeland occurred was typically waterlogged in winter and dry and cracking in summer (Specht 1972). This sedgeland community was related to the *G. trifida* Sedgeland but is more tolerant of salt and was more prevalent in the Upper South East (Crocker 1944).

***Gahnia trifida* (Cutting Grass) Sedgeland**

Large areas of the interdunal watercourses with rendzina soils contained *G. trifida* Sedgeland. The area where the sedgeland occurred was typically waterlogged with freshwater in winter and dry and cracking in summer (Specht 1972). This sedgeland community is similar to *G. filum* Sedgeland but prefers freshwater and is less tolerant of salt. This community was more prevalent in the Lower South East (Crocker 1944).

***Baumea juncea* (Bare Twig-rush) - *Chorizandra enodis* (Black Bristle-rush) Sedgeland**

Eardley (1943) described this community as a sedge meadow. It occurs in areas where soil is waterlogged for a large portion of the year. This community occurs in small, scattered locations, mainly in the east of the region as far north as Bangham.

**GRASSLANDS**

***Phragmites australis* (Reed) - *Typha domingensis* (Rush) Grassland**

This wetland community typically surrounded the open water of ponds, permanent swamps and banks of drainage lines in the region.

In the Eight Mile Creek area Eardley (1943) described *Phragmites australis* and *Typha domingensis* as the dominants of the reed-swamp formation "surrounding the open water of ponds or banking that of the creeks and rapidly invading the clear channels".

***Themeda triandra* (Kangaroo Grass) Tussock Grassland**

Extensive areas of *T. triandra* Tussock Grassland are known to have existed in parts of south-eastern Australia at the time of European settlement (e.g. basalt plains of Victoria), but have now been nearly all cleared for agriculture. Similar areas of *T. triandra* Tussock Grassland are suspected to have existed in the Lower South East, primarily on basalt soils (e.g. around Mount Schank and Mount Gambier). Early descriptions and maps of these areas described them as extensive "beautiful country" with luxurious grass cover, studded with *Acacia melanoxylon* and gum trees "like a nobleman's park" (Angas 1847). From these descriptions, the trees were probably sparsely distributed, emergent from essentially a grassland. These areas were the first to be settled and developed following European settlement in the region, and the full extent of this community before settlement took place is still uncertain.

# METHODS

By L. M. B. Heard[1] and J. N. Foulkes[2]

## VEGETATION SURVEY

The vegetation survey occurred in two components. The main survey was carried out in September 1991 and an additional survey of a small number of quadrats was carried out in November 1997. The quadrat selection process and nomenclature used for these two components are described in the following sections.

### Quadrat Selection And Nomenclature

Main Survey - 1991

The native vegetation in the South East has been extensively fragmented due to European settlement, agricultural and drainage practices an initial level of stratification had been imposed. Vegetation quadrats were therefore selected from these remnant patches using the Environmental Association (Laut *et al.* 1977a) boundaries as a guide to further stratification. At this stage, the use of aerial photography interpretation was involved in conjunction with knowledge of the area from literature, botanical experts and other resources. Colour aerial photos (1:40,000 scale) were examined under a stereoscope and quadrats were then selected to sample the widest range of different vegetation associations across the Environmental Associations within the study area. Effort was made to pick up as many remnants as possible representing north–south and east–west variations across a map-sheet. This was done to replicate vegetation types, to match across map-sheet boundaries and to provide a roughly even coverage across the study area.

While colour aerial photography at 1:40,000 scale provides a reasonable level of detail, the darker tones (foliage colour) and variety of textures (heights, canopy size and spacing) of dense to mid-dense woody vegetation (forest, woodland, mallee and some shrublands) with dense shrub understoreys were the most readily recognised. This was not the case for those communities dominated by a sparse cover of woody overstorey (grassy woodlands) or non-woody overstorey (low shrublands, sedgelands and grasslands) where the tones were lighter and the textures (through lower heights or smaller canopy size and spacing) were not easily apparent. Effort was made to pick up a cross-section of these communities. However, if these communities only existed as small remnants or linear features then recognition and selection were extremely difficult, and ultimately, only limited examples were selected.

Other factors that influenced quadrat selection were the distribution of existing survey quadrats and requirements to assist in other State Government department work. In terms of existing quadrats, reference was made to the South East Coastal Survey locations. Tones and textures in coastal vegetation associations similar to these survey quadrat locations were avoided to prevent unnecessary duplication of survey effort. In terms of requirements to assist other State Government work, a priority was established to target remnants that were to be assessed by Biodiversity Assessments, DWLBC (formerly the Native Vegetation Management Branch, Department of Environment and Planning) for vegetation clearance or heritage agreement purposes.

Practical survey logistics also had some influence on the selection process. Based on previous survey work in the Murray Mallee, where 5 – 7 quadrats were surveyed per team per day, it was estimated that the five survey teams could sample 10 – 12 quadrats per map-sheet. It was estimated that between 400 – 450 quadrats were required for the 42 map-sheets involved (Figure 24).

In choosing a quadrat, preference was given to quadrats that appeared to be in good condition (minimal disturbance - as perceived from the summer capture aerial photography) and that reflected the range of vegetation tones and textures observed. Quadrat locations were generally selected to be away from ecotones or disturbed areas and placed where access would not be too difficult. As a result, quadrats were generally selected in larger remnants, where less disturbances was perceived, and within 200 metres of access tracks.

The quadrat naming system determined for this survey was designed to be carried out on a 1:50,000 map-sheet basis. Quadrat names identify each quadrat by the map-sheet it was on, the number of the remnant vegetation block to be visited on that map-sheet and the quadrat within that particular block to be surveyed. For example, SAN0202 indicated that the quadrat was on the Santo map-sheet, it was in the second block of remnant vegetation to visit on that map-sheet, and it was the second quadrat within that block to be surveyed. If survey teams put in additional quadrats during the course of a survey, a slight variation to the quadrat selection naming system was used. The prefix by map-sheet name was still used, however the team

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number and field sequence in which the quadrat was recorded made the numeric part of the code. For example, GAM1A12 indicates the quadrat is on the Gambier map-sheet, surveyed by team 1A (survey week 1 and team A) and was the 12th quadrat the team had surveyed for that week.

In the course of quadrat selection, notations were provided on the aerial photographs beside selected quadrats indicating the quadrat code and what it was interpreted to be from aerial photography. This allowed the survey team to make on-ground decisions regarding the best location to reflect the vegetation types selected, while also allowing them the opportunity to add in further quadrats if necessary.

At the completion of the quadrat selection process, 586 quadrats had been selected (excluding coastal quadrats that duplicated those already surveyed by the South East Coastal Survey). This represented approximately 1 quadrat per 460 hectares of native vegetation. This number of selected quadrats was significantly greater than the original estimation of 400 – 450, reflecting the complexity of the vegetation within the study area. The greater number of selected quadrats allowed for some flexibility in situations where quadrats were not accessible (due to weather conditions or lack of access approval from private landholders) and/or where quadrats had inadvertently been selected in severely degraded vegetation.

Additional Survey Quadrats - 1997

For the additional vegetation survey work carried out in November 1997, vegetation quadrats were selected based on gaps identified in the 1991 vegetation survey data set. Gaps had been identified through the floristic vegetation mapping process and through assessment for the vertebrate fauna survey (February 1997).

**LANDHOLDER CONTACT**

Following the actual selection of quadrats, details associated with the quadrat such as its code, hundred name and section number and comments about each quadrat were entered into a “planning” database. This “planning” database was used to store and query collated information to assist in the landholder contact process, determining field logistics (such as allocation of quadrats for survey teams) and, following the survey, to update and download information to the Survey database.

Using the hundred name and section number, details on each quadrat's ownership were collated with the assistance of Local Councils, accessing their ratepayer contact records, and the use of Property Assist[3], DEH and Department of Administrative Information Systems (DAIS). These details were then used to send letters to landholders providing details about the survey and requesting permission to survey vegetation quadrats on their land. Telephone contact was used extensively in the field to contact landholders to clarify if it was possible to survey quadrats on their land and discuss access details.

**DATA COLLECTION**

Each quadrat consisted of a 30 x 30 metre quadrat from which details of the vegetation and physical attributes were recorded. The dimensions of the quadrat could be altered to accommodate the vegetation type, such as a longitudinal dune ridge or a swamp edge (e.g. 90 x 10m), however it was important to maintain the quadrat area (i.e. 900m$^2$). Exceptions were made in situations such as road corridors where the community types to be sampled did not extend for 90m. Surveyors were asked to locate quadrats well within representative vegetation types to avoid ecotones and/or disturbance effects from boundaries. The information collected at each quadrat follows Heard and Channon (1997) with the major exceptions to this listed below in Table 6.

Prior to the survey, a customised Survey Manual[4] documenting the methodology and code descriptions was produced and provided to all team members specifically for this study area. Training in the survey method was provided in a pre-survey meeting.

Interesting plant species observations outside the specified quadrats were only recorded during the 1997 survey. These were recorded on opportunistic data sheets with brief descriptions of the vegetation association and locality details.

[3] formerly Land Ownership Tenure System (LOTS), Department of Lands.

[4] Internal document only, GIS Section, Department for Environment and Planning-Heard (1991).

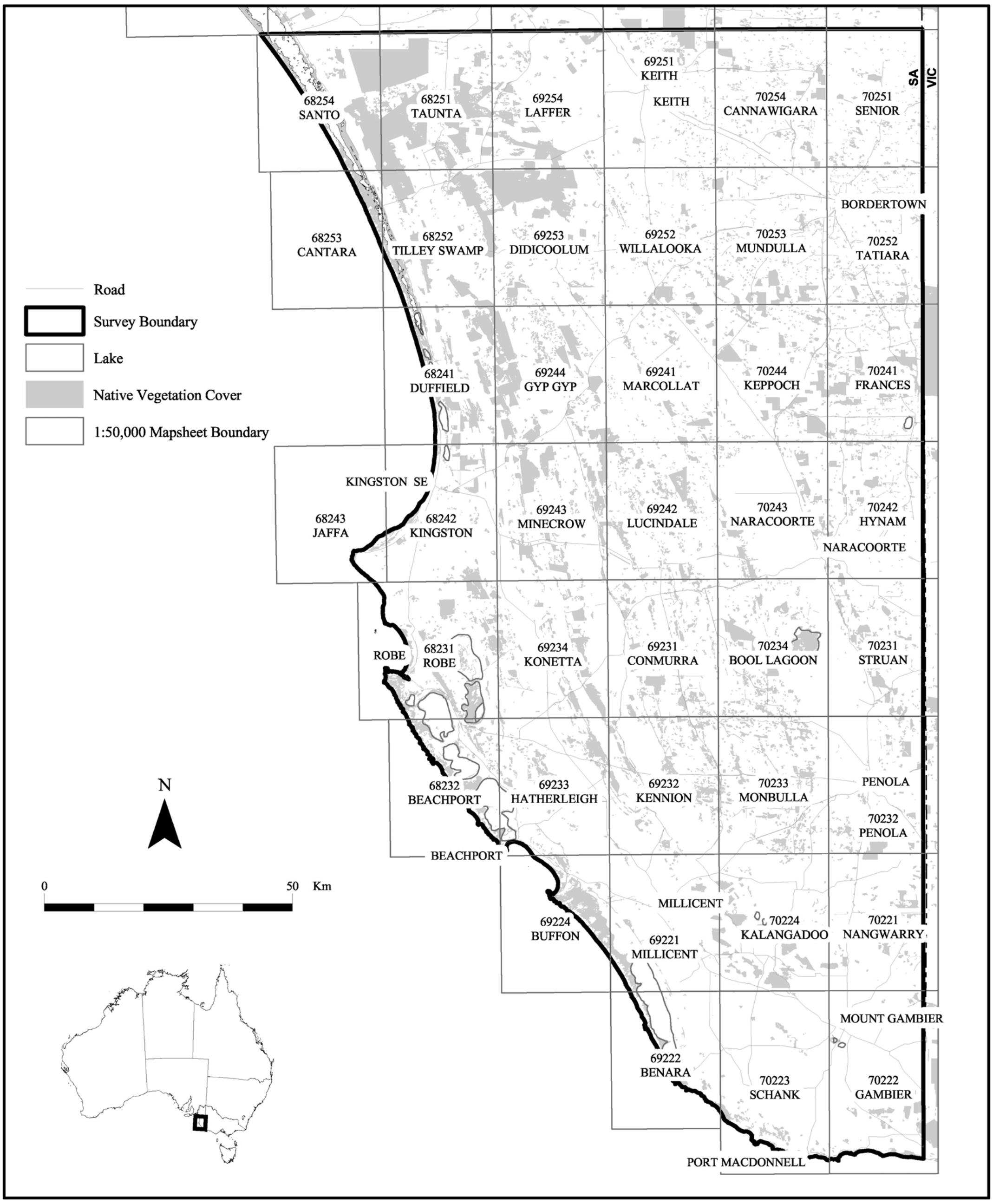


**Figure 24.**
**The titles and extent of 1:50 000 topographic mapsheet coverage across the study area.**

**Table 6.**
**Data Collection differences between South East Vegetation Survey 1991 and Heard and Channon (1997).**

| South East - 1991 | Heard and Channon (1997) |
|---|---|
| Resolution (estimate of precision of the location based on Latitude / Longitude converted to metres) | Reliability (estimate of accuracy of the location based Australian Map Grid - ranges in metres) |
| Not collected | Quadrat Landform Pattern |
| Not collected | Outcrop Cover |
| Not collected | Outcrop Lithology |
| Adjoining land use description | Not collected |
| Vertebrate Impact (presence / absence) | Vertebrate Presence |
| Cover Abundance - Some slight adaptation of Braun-Blanquet code descriptions and inclusion of R – Solitary plants. | Cover Abundance – further refinement / adaptation of Braun-Blanquet code descriptions, removal of Code R and inclusion of N - not many, 1 - 10 individuals. |
| Life cycles | Life stages (refined and improved lifecycle categories and definitions) |
| Five Individual Overstorey Measurements. Five estimates for;<br>-Height,<br>-Crown Depth,<br>-Canopy Diameter, and<br>-Gap. | Ten Individual Overstorey Measurements. Ten estimates for;<br>-Height,<br>-Crown Depth,<br>-Canopy Diameter, and<br>-Gap. |
| Structural Formation (using Muir's table) | Structural Formation (using SA Structural Formation Table) |

**SURVEY LOGISTICS**
The project area was divided into three sub-regions, one for each week of the survey period with a base camp located within a reasonable distance of all quadrats. Each team was allocated 2-3 1:50,000 map-sheets within each survey week's sub-region, depending on the number of selected quadrats per map-sheet and the distances to travel to these quadrats. As a rule, quadrats allocated to teams were within an 80-100 km radius of the base camp.

Each survey week consisted of five consecutive survey days throughout which the survey teams were all based at the same location. The main purpose of centralising the group was to enable all teams with access to the survey plant determiner, who provided advice on plant species identifications at the conclusion of each day's surveying. This significantly increased the accuracy and efficiency of the fieldwork, as well as ensuring consistency in data collection.

**PLANT SPECIES IDENTIFICATION AND DATA MANAGEMENT**
During the course of the survey a plant determiner was present each evening to clarify plant identifications for all vouchered specimens. At the completion of the survey, these identifications were verified by a plant determiner who was able to view all the survey collections together and check any suspect identification thoroughly. Final identifications could then be resolved and appropriate data sheets updated accordingly.

Following this intensive post-survey plant verification process, data sheets were also checked for completeness and clarity. At this stage, identification and taxonomic problems were recognised with some species. Discussions were held with Dr P. Lang, the SA FLORA Database Manager, to resolve these difficulties before data entry, to maintain the integrity and accuracy of the data. All vouchered specimens were lodged with the South Australian State Herbarium at the Plant Biodiversity Centre.

Data collected from the survey was then entered into the Survey database using a series of customised data entry screens.

In addition to manual data entry, some entry was partially automated, such as quadrat codes and Australian Map Grid (AMG) coordinates. After the vegetation survey AMG coordinates were generated using Geographic Information System (GIS) software (ESRI ARC/INFO) after point locations taken from pin-pricked aerial photos were transferred to 1:40,000 mylar films and digitised. This technique was used to avoid transcription error while keeping the quadrats' locations relative to the road features and the remnant vegetation blocks on the standard 1:40,000 aerial photos (which is the base for the standard 1:50,000 map-sheet series). The 1:40,000 aerial photos and the resulting 1:50,000 map-sheet series is the base for the native vegetation cover and floristic vegetation mapping within the agricultural zone.

On completion of the data entry phase, validation reports were produced for each data-sheet and these were checked against the original field data-sheets. Unique listings were also used to check that values were in expected ranges for a number of database fields. Updates were undertaken, and where possible automated, to reduce further error. Computer generated checks were re-run to make sure that updates were completed and that new errors had not been introduced.

Since the 1991 vegetation survey, the Survey database has been upgraded several times to its current Oracle database form.

**DATA ANALYSIS**

The aim of the data analysis process is to find patterns in the distribution of plant species within the study area, reflecting those observed in the field, while providing an objective basis for such floristic groupings. The analysis then forms the basis for floristic vegetation mapping across the study area.

Based on previous analysis work the exploratory data analysis package PATN (Belbin 1991) was selected. Pattern analysis provides an objective, repeatable summary of the data available at each quadrat, by applying, either singly or collectively, analytical procedures to the multivariate dataset. The procedures include sorting, classification and ordination of the data set.

For the South East the original data analysis was carried out in 1992. As the northern and eastern boundaries for this survey region were based on an artificially imposed boundary (1:50,000 map-sheets) not a natural environmental boundary the need for a broader data set, hence larger floristic analysis boundary was chosen. Additional data sets were available for the adjacent Murray Mallee region and along the South East Coast. This resulted in the analysis boundary being expanded to include quadrats in the two southernmost rows of the adjacent Murray Mallee Survey (15 map-sheets – 7026 I-IV, 6926 I-IV, 6826 I-IV and 6726 I-IV)(refer to Figure 32 in the Results Chapter - Vegetation) and to take in the South East Coastal Survey data set. A similar buffer of quadrats along the SA - Victorian boundary was not available. Overall, 762 quadrats were included in the data set (refer to Table 7). A further 18 quadrats were surveyed in 1997 were not included in the analysis.

Data from the individual surveys, indicated in Table 7, were extracted from the Survey database and loaded into INFO (the relational database associated with ESRI ARC/INFO), where data manipulations were conducted on each individual dataset to check for data inconsistencies (i.e. duplicate species) and correct these accordingly.

**Table 7.**
**Biological Survey data used in South East floristic vegetation analysis.**

| Survey Name (Survey Number) | Survey Dates (Approximate) | No. of Quadrats Contributing to the Analysis |
|---|---|---|
| South East (29) | September 1991 | 340 |
| Murray Mallee (16) | July 1990 (majority), April 1990 (minority) | 241 |
| South East Coast (4) | Feb - March 1982, April and August 1983, October - November 1986, July 1987 | 181 |
| | **Total** | **762** |

As these surveys, now combined into one analysis data set, had been conducted at different times, several factors impacted on the data set. These factors were changes in plant taxonomy and nomenclature over time, changes in survey assessment procedures (relative cover collected during the 1980s compared with cover abundance collected in the 1990s) and seasonal effects. Pre-analysis preparation involved aligning all the plant species to (1992) taxonomy and nomenclature and, for the South East Coast survey only, converting relative cover scores to cover abundance codes.

In reference to the seasonal effect, with quadrats surveyed over a number of years and seasons within a year there was the potential for varying degrees of annual species representation. To overcome any bias that may cluster quadrats based on the presence of annual species it was necessary to distinguish between annuals and perennials to allow analyses to include or exclude them. Annuals species were defined as those that were not visible at all times of the year. This definition of annuals was broader than the usual definition, as it included perennial species that dieback over summer. An exception to this was the inclusion of Bridal Creeper (*Myrsiphyllum asparagoides*) as a perennial as it could still be confidently identified. Previous analyses (Southern Mount Lofty Ranges and Murray Mallee) had found that the exclusion of annuals had resulted in the most meaningful floristic groups. Such analyses also had the advantage of producing a classification that is useful in all seasons. Files that tagged species to be either perennial or annual were put together using previous files compiled for the Murray Mallee with reference to Jessop and Toelken (1986), Cunningham *et al.* (1992) and with assistance from Dr P. Lang (refer to Appendix II for perennial/annual species status assigned to each species).

The data could be analysed by either presence/absence of plant species at each quadrat or by the cover abundance score of each plant species. It was preferable to use species cover abundance, as this generally reflects how people perceive the vegetation communities as they observed them in the field. This was also in accordance with previous analyses conducted in South Australia's agricultural zone. To facilitate this cover abundance codes were converted to numeric values, as indicated in Table 8 during the pre-analysis preparation stage.

### Table 8.
### Cover/Abundance codes* with numeric values used in floristic analysis.

| Codes | Definition | Numeric Value |
|---|---|---|
| R | solitary plants | 0.01 |
| T | sparsely or very sparsely present; cover very small | 0.10 |
| 1 | plentiful but of small cover (less than 5%) | 1.0 |
| 2 | very numerous, or covering at least 5% of the area | 2.0 |
| 3 | any number of individuals covering 25-50% of the area | 3.0 |
| 4 | any number of individuals covering 50-75% of the area | 4.0 |
| 5 | covering more than 75% of the area | 5.0 |

*** some adaptation of codes and descriptions from Braun-Blanquet (1965). Note that further refinements and adaptations have since been made. These are provided in Heard and Channon (1997).**

As PATN required the unique quadrat codes to conform to an eight-character (alphanumeric) field length, some alteration to longer quadrat codes was required. In particular, the South East Coastal Survey quadrat codes were abbreviated without altering the meaning of the code and its unique identity. This also provided an opportunity to prefix the South East Coast and Murray Mallee quadrat codes with unique identifiers to make the separate sources of data readily discernible. This was particularly helpful when attempting to draw conclusions at the dendrogram stage of the analysis. The prefix used for the Murray Mallee quadrats was the floristic group codes from the Murray Mallee analysis, while an asterisk prefixed the Coastal Survey quadrats.

The three survey data sets combined to make up the total analysis of 23, 212 plant species records of 954 plant species (including both annual and perennial species).
The data analysis procedures using PATN involved the three main phases of pre-processing, analysis and post-processing. A number of analyses were undertaken considering a range of variations in masks of quadrats and species (annuals included or excluded) and varying cut-off points in the dendrogram. The analysis process that provided the most biologically meaningful results is described in the following paragraphs.

Phase-one, the pre-processing stage involved masking annual species out. In addition to annuals, some selected species, which were only recorded to genus level, were also masked out. In total, 591 perennial species were included in the analysis, including introduced species. Further masking removed species-poor quadrats. A cut-off of less than four perennial species was used to mask out such quadrats. This masking was conducted based on the experience gained during the analysis of the Murray Mallee vegetation data (Foulkes and Gillen 2000). In that study, it was found that species-impoverished quadrats, which had no floristic similarity, clustered together and formed artificial groups. Twenty-nine quadrats were masked out on this basis.

The analytical process chosen within PATN followed that used in previous studies, particularly the Murray Mallee analysis was based on the methodology followed that described by Belbin (1991) with variations consistent with the Murray Mallee analysis.

The PATN module ASO (Association between quadrats) was used to create a Bray-Curtis association matrix which was clustered using the flexible UPGMA fusion option (FUSE module) with a beta value = 0. A dendrogram, using the DEND module, was created illustrating the relationships of the quadrats to each other. At this point, the dendrogram was read into INFO (ARC/INFO) and used as the basis to sort a file of available field survey assessed vegetation descriptions. These were only available for the South East Survey, 1991. A hard copy print out of the vegetation descriptions was produced in the dendrogram order as a tool to aid examination of the dendrogram and assist the determination of the number of groups required to reflect field perceptions.

After this initial process, several more quadrat masks were created, each removing quadrats that were found anomalous, hence problematic to the overall data set. An additional eight quadrats were removed, resulting in data for 725 quadrats contributing to the final determination of floristic groupings.

Following the final dendrogram cut at 29 groups, the group definition (GDEF) module was used to list the quadrat membership of each group. Each group's species composition was determined from the group statistics (GSTA) module for qualitative data for all the perennial species recorded in the group. Even though the data input was quantitative, the group statistics file derived from the qualitative option did provide the average cover abundance score for each species defining the individual groups and the frequency of each species within that group. The in-house program GROUPSTAT was used to re-format GSTA files and provide statistics for each species within each group. This information was sorted in order of floristic group number and proportion of occurrence of species within the group. An indicator value derived from Observed (O) – Expected (E) / E was produced for both the average abundance and proportion of occurrence. GROUPSTAT also collated individual counts of the original cover abundance codes (R, T, 1-5) for each species. This collation of information then provided a comprehensive basis for listing indicator/character species that described these floristic groups. This information was used as the basis for floristic group summaries. In reference to the indicator value calculated for average abundance and proportion of occurrence data, it would have been more appropriate to have O-E/E calculated using Yates Correction. Yates Correction on O-E/E smoothes the out the variations (extremes) that result due to the disparity in membership (number of sites) that occurs between groups (e.g. group 4 has 155 members compared to group 18 that has 5 members.

The final floristic groupings, were examined using Minitab, a statistical software package that produced frequency (count) tables for each of the different environmental variables. These tables were then reviewed to determine trends and general ranges within the environmental variables for each group.

During this stage, structural formation data was also collated to provide average canopy heights and canopy cover estimates based on field assessment. Where adequate height and canopy measurements, including canopy type, were available from fieldwork an average projective foliage cover was calculated for the group. This information plus the environmental variable information was collated and incorporated into each floristic group's summary.

**VEGETATION MAPPING**

Floristic vegetation mapping in the agricultural zone usually involves two major two phases. The initial phase involves compiling a digital landcover layer that indicates the distribution (presence/absence) of remnant native vegetation and provides the foundation for the location of survey quadrats and the production of accurate vegetation maps. The second phase involves the floristic mapping based on colour aerial photography.

In the South East study area the digital landcover layer was composed of six landcover types, namely remnant native vegetation cover, built up areas, plantations, coastal sand-dunes, lakes and areas subject to inundation. The boundaries of these landcover types were digitised from DEH 1:50,000 maps, where they were greater than 15 hectares[5] in area. All data was plotted, on a 1:50,000 map-sheet tile basis, onto transparent mylar sheets at 1:40,000 scale, to match the colour aerial photography. Using the most recent aerial photography available at that time (1987), checks were made with regard to the accuracy of this landcover mapping. Lakes, native vegetation, plantations, areas subject to inundation down to 1 hectare in size were added. These changes were recorded onto the mylar bases, and then corresponding adjustments were made to the digital data. A series of checks followed the digitising to ensure coding was correct and that map-sheet linework and coding matched adjacent map-sheets. An updated set of 1:40,000 mylar bases were then produced to be the foundation for the floristic vegetation mapping.

Analyses of the survey quadrat data generated 29 floristic groups. To test the validity of these groups comparison was made with vegetation groups documented in major literature sources. Major references used in this comparison were Crocker (1944), Coaldrake (1951), Specht (1972), Mowling *et al.* (1980), Davies (1982) and Sparrow (1991). This comparison list was also used to aid mapping.

In addition to this, a variety of vegetation information sources for the study area were collated to assist in the mapping process. Reports were produced, from the data set, on a map-sheet basis summarising for each quadrat the floristic group number and title with physical attributes such as landform, strew type, surface soil type and environmental associations. Using geographic information systems (ARC/INFO) software and the digital coverage of the quadrat locations (AMG coordinates) with the floristic groups from the analysis assigned, maps of each floristic group's distribution across the study area were produced. These maps were useful to consider in conjunction with the floristic group summaries when interpreting the aerial photographs.

Other tools generated using ARC/INFO included a Thiessen analysis and a regional overview map. A Thiessen analysis was used to predict the floristic group for each landcover polygon according to mathematical calculations (triangulation). A reference plot of the results of this provided a handy tool when it was difficult to interpret the tone and textures (particularly for small blocks of native vegetation) on aerial photographs with limited to no other information from literature references or local knowledge. Regional maps with environmental association boundaries (Laut *et al.* 1977), map-sheet boundaries, Forestry SA reserves and NPWSA parks and reserves

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5 This area specification came from the National Wilderness Inventory (Leslie *et al.* 1991) project work, which supplied the first cut of the digital landcover layer.

overlaying landcover were also produced. These provided a study area overview for ready reference.

Further research of the literature was made to locate specific vegetation details on a block basis where available. Of particular use were Davies (1982), Coaldrake (1951), Mowling *et al.* (1980), Neagle (1995), South Eastern Wetlands Committee (1983) and the Coorong vegetation mapping (Remote Sensing Applications Branch 1982c). Vegetation data from the Biodiversity Assessment section's inspection assessments for Clearance Applications and Heritage Agreements, which had been previously collated for this area, were accessed. Other resources included the numerous NPWSA management plans that contained vegetation details for NPWSA parks and reserves, maps of Forestry SA Native Forest Reserves (Woods and Forests Department 1985) and vegetation maps of the coastal area (DEP 1982a,b; Robinson 1983). Other local sources of information for specific areas were also accessed where possible. This included T. Osborne's roadside vegetation data for the Millicent District Council (Osborne 1993). A regional geological map and specific soils maps, where available, were used for reference.

Vegetation information found in the variety of resources indicated above was interpreted and transcribed across onto the mylar film beside the relevant blocks of native vegetation to facilitate mapping. Using stereo pairs of colour aerial photographs, viewed through a stereoscope, the vegetation was mapped extrapolating out from each quadrat. Extrapolation relied heavily on the recognition of the textural (height, canopy size and spacing) and tonal (foliage colour) qualities characteristic of each type of floristic group and any identifiable landform, soil and surface stone characteristics. This information was extrapolated into surrounding blocks of native vegetation (polygons) where no quadrat had been surveyed. Floristic boundaries were mapped onto mylar film, that displayed the digital data of roads and landcover boundaries, where a change of floristic vegetation was perceived and floristic group codes were recorded.

In a large number of situations the vegetation was not homogeneous, but consisted of pockets of up to five floristic groups scattered throughout another floristic group or in some cases a merging of two groups. In either case, it was impossible to map each individual change, and therefore multiple floristic groups were recorded, resulting in a mosaic. For these mosaics up to five groups were recorded, ordered from the most dominant to the least dominant group. Subsequently the data set has been reviewed as part of a program to bring regional data sets together across the state. This has resulted in only the first three floristic groups in a mosaic now being available.

Throughout the mapping, new floristic groups were added to the list of those determined from the PATN analysis. New groups were determined to cover several situations. These included known vegetation communities missing from the survey data set, similar vegetation communities occurring at locations disjunct from their typical distribution or where appropriate floristic groups for highly disturbed areas of vegetation were unable to be readily determined. Examples of the vegetation communities missed in the survey included in the mapping are *Eucalyptus microcarpa* Woodland and *Allocasuarina leuhmannii* Woodland. An example of a new group added due to it appearing to be disjunct from the main distribution occurred for the samphire shrublands, which was represented in the analysis by quadrats only along the Coorong. Where samphire shrublands were present further inland from the Coorong, it was possible that the community was floristically different. To distinguish these areas they were coded differently initially. Subsequently these two samphire groups have been combined. Situations where appropriate floristic groups could not be readily determined were common where timbered areas had been subjected to extensive grazing over many decades. While tree cover was apparent on the aerial photograph it was extremely difficult to estimate what the understorey may have been, particularly when unable to ground truth the individual locations. To attempt to overcome the problem a code was created specifically to represent areas of tree cover with an understorey that now mainly consists of introduced grasses and pasture species.

In the course of the original regional mapping process a further 24 floristic groups were added to the 29 defined by the PATN analysis. A further six groups have been added as a result of mapping updates from other intensive area studies e.g. Bunbury Conservation Reserve. In compiling this regional mapping for the National Vegetation Information System (NVIS) the 59 groups have been reduced to 57 groups.

To aid the mapping process ground truthing was conducted where possible. Unfortunately due to time constraints, the ground-truthing was limited to visual assessment of roadsides, NPWSA parks and reserves accessible to 2WD vehicles and distant observations from roadsides of vegetation within private land. Ground-truthing was particularly useful for recognising and mapping uncommon communities.

On finalisation of the floristic mapping for each map-sheet the floristic boundaries and any changes to landcover boundaries were digitised and coded. Checks were made at this stage only for oddities in coding. On completion of the spatial data entry for the whole study area, the map-sheets were appended into a regional coverage. Customised plots extending beyond an individual map-sheet boundary were then produced to facilitate checking map edges (edge matching) as well as allow complete coding checks.

After checks and updates were completed, the regional coverage was inserted into the appropriate GIS map-library. Appropriate lookup tables providing floristic group descriptions (dominant species and structure) were compiled.

Subsequent updates have occurred to the mapping for four map-sheets in the Bordertown area, the boundary between the South East and Murray Mallee study areas, Tilley Swamp, Stoneleigh Park Heritage Agreement and Bunbury Conservation Reserve. These updates have generally followed the principles of the original mapping methods.

The vegetation data is stored and maintained as part of the Environmental Databases of South Australia (EDBSA) by the Department for Environment and Heritage.

**FAUNA SURVEY**

A sub-set of 96 vegetation survey quadrats were sampled for vertebrate fauna over a period of four weeks using three teams of four workers each week. Each team included a mammalogist, an ornithologist, a herpetologist and a general helper.

Of the 96 quadrats, 78 were a sub-set of quadrats from the South East floristic survey, 10 were a sub-set of the South East Coast Survey that were first sampled in 1982 and eight new quadrats which had not previously been sampled for flora.

Single quadrats were selected from the vegetation quadrats to proportionately represent the vegetation group centroids detected from the 1992 preliminary analysis of the vegetation data. This ensured an even distribution of quadrats across the area and that the geographical distribution of each floristic group was sampled. These quadrats were then field inspected and marked with photo-point posts to finalise the quadrat selection.

At any one vegetation survey quadrat the quadrat used for fauna sampling was generally in the dominant vegetation type, although at some quadrats more minor vegetation types were sampled. In this way, all significant representative habitat types in each geographical area were sampled.

The distribution of the fauna survey quadrats is shown in Figure 25 and individual quadrats are listed in Appendix I. The full methodology for conducting a survey are described in Owens (2000), however, a brief explanation is outlined below.

At each quadrat, reptiles and small mammals were sampled using a single fenced pitfall line, 50m long and comprising six pitfall traps ten metres apart. Each pit was 15cm in diameter and 40cm deep. A separate line of 15 Elliott traps and 2 cage traps was run in association with each pitline, about 20m away. Where water or rock prevented digging of some or all pits, a reduced depth pit was used or extra Elliott traps were set and additional effort put into physical searching and spotlighting. Each quadrat was sampled for four days and four nights.

In addition to the above standard Biological Survey of South Australia trapping effort, a systematic hair tubing study was undertaken for the first time. At each survey quadrat, four 45mm diameter, 200mm long PVC tubes baited with peanut paste and rolled oats were installed at each quadrat: two at ground level and two at 1.5m above ground level. The tubes were collected after five weeks and hair samples were removed from the double-sided tape and stored separately.

Mammals and reptiles were also recorded by active searching for individuals or signs such as burrows and scats. This was carried out for one to two hours at each quadrat. Spotlight searches for mammals and reptiles were made at night where time and habitat permitted. Birds were observed and recorded for one to two hours during early morning or late afternoon at each quadrat. The ornithologist recorded all birds within or flying over the quadrat during the search period.

All information was recorded on standard data sheets. This included location, method of capture or sighting, microhabitat, numbers of individuals and weight for small mammals.

Fauna species encountered outside the specified quadrats were recorded as 'opportunistic' sightings on separate data sheets. These records enabled compilation of a more thorough inventory of the biota of each area, including species' use of smaller or more heterogeneous habitat types not sampled by the quadrats.

Attempts were made to sample bats on or near designated survey quadrats. Specific habitat required for trapping bats were sought to increase the likelihood of success. Suitable bat survey areas consisted of closed woodland of sufficient age for tree hollows to exist, old farm buildings and sheds, or tanks and dams adjacent suitable habitat. Mist nets were erected and monitored for a few hours in the evenings, in suitable weather conditions, and harp traps were left up all night. The locations were trapped for bats for a total of 25 harp trap nights and 36 hours of mist-netting. Bats were also surveyed using the ANABAT system; whereby ultrasonic calls are recorded onto cassette tape in the field and compared with reference calls post-survey.

Generally, one specimen of each small reptile, amphibian and mammal species from each campsite was preserved as a Museum specimen depending on the abundance or rarity of the species and the advice of

Museum curators. Standard collection, killing and preservation methods were employed with approval from the Department for Environment and Heritage Wildlife Animal Ethics Committee. Samples of liver tissue were taken from all specimens collected and stored in liquid nitrogen for the South Australian Museum (Evolutionary Biology Unit). Specimens and samples are permanently stored at the South Australian Museum for future taxonomic studies.

**INVERTEBRATES**

A line of micro-pitfall plastic vials (2cm diameter, 10cm deep, filled with 70% alcohol) was laid parallel to each macro-pitfall line to collect invertebrates for the South Australian Museum. Invertebrates found in the macro-pitfalls were preserved in alcohol for later identification. Invertebrate data did not however form part of the data analysed. Identifications of these samples are not yet available.

A summary of the trapping effort is shown in Table 9 and the daily minimum and maximum air temperatures recorded at each campsite are tabulated in Appendix II. Figures 26-29 illustrate the range of activities undertaken during the fieldwork.

**Table 9.**
**Trapping effort for quadrats surveyed for terrestrial mammals and reptiles during the South East Fauna Survey, February-March 1997.**

| Week | Group | Base Camp | Pit Trap Nights | Elliott Trap Nights | Cage Trap Nights |
|---|---|---|---|---|---|
| 1 | 1 | Nelson | 168 | 480 | 64 |
| | 2 | Penola | 192 | 480 | 64 |
| | 3 | Carpenter Rocks | 192 | 480 | 64 |
| 2 | 1 | Glencoe | 192 | 480 | 64 |
| | 2 | Teates Woolshed | 192 | 480 | 64 |
| | 3 | Southend | 192 | 480 | 64 |
| 3 | 1 | Frances | 192 | 480 | 64 |
| | 2 | Robe | 192 | 480 | 64 |
| | 3 | Lucindale | 192 | 480 | 64 |
| 4 | 1 | Willalooka | 192 | 540 | 72 |
| | 2 | Kingston | 192 | 480 | 64 |
| | 3 | Lucindale | 192 | 480 | 64 |
| **Total** | | | **2256** | **5820** | **776** |

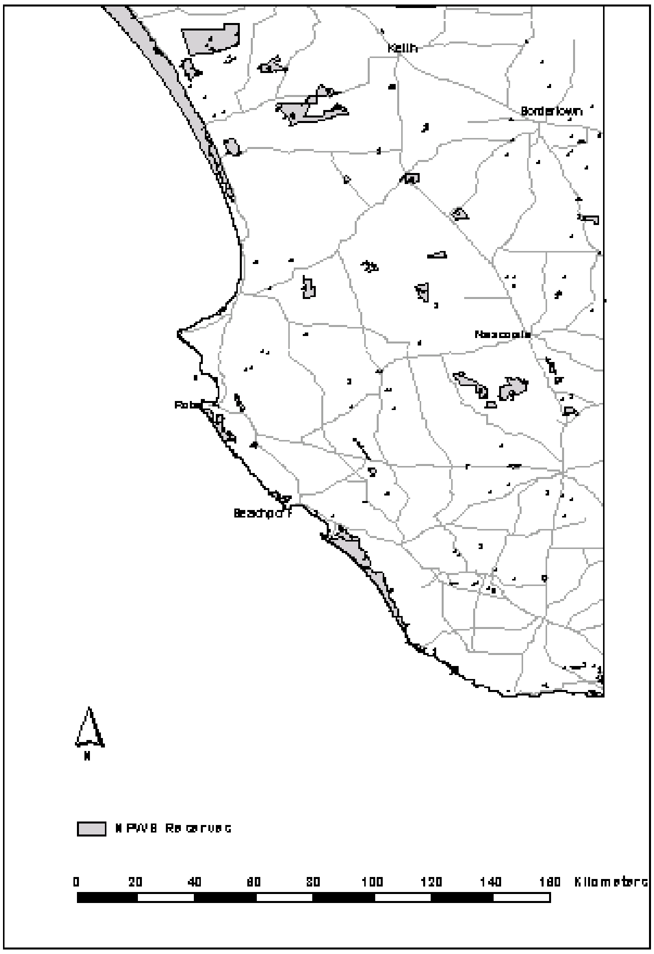


**Figure 25.**
**Location of standard fauna quadrats (black circles) and opportune bat sites (open circles) visited during the South East Survey.**

## PHOTOGRAPHIC MONITORING POINTS

At each fauna survey quadrat, a permanent photographic monitoring point was established according to the South Australian Biological Survey protocol as described in Owens (2000). These photo points consist of two steel droppers driven into the ground, spaced 10 m apart.

Details of the physical environment, vegetation types and locations of all vegetation survey quadrats are shown by 1:100,000 map-sheets in Appendix I, with fauna survey and photo-point quadrats indicated.

## DATA MANAGEMENT AND TAXONOMY

Survey data are stored in the Survey database (an Oracle relational database), accessed via Oracle and MS Access software. Data were extensively crosschecked and edited in an MS Excel spreadsheet prior to importing to PATN.

All taxonomy was thoroughly checked although taxonomy is regularly updated through the database. Dubious records were attributed to 'Genus sp.' if the observer or observation was not considered reliable, and subsequently excluded from the analysis.

## FAUNA

A similar system of voucher number usage to that used for plants enabled later verification or correction of collected fauna specimens' identifications. Vertebrate fauna taxonomy is according to Robinson *et al.* (2000) and updates by the relevant Museum Curators. No sub-specific designations were used in the analysis and reporting as consistent differentiation of certain sub-species is not possible with a range of observers with varying skills.

## DATA ANALYSIS

The dataset used in the analysis consisted not only of the data from this survey but fauna data from a number of other smaller scale surveys conducted in the region upto 1997 (Table 10). These data were combined to enable a comprehensive analysis of the fauna communities present. The fauna quadrat data were analysed by classification techniques using PATN exploratory data analysis software (Belbin 1994) to detect trends and patterns in the data. Vegetation, mammal, bird and reptile data were separately extracted from the survey database as listings of quadrats and species, on which the discussed taxonomic standardizations were performed. These data were then formatted into quadrat by species matrices for input into PATN using a pivot table generated by MS Excel. Data were analysed using PATN (Belbin 1994) with a Kulczynski association measure, then, clustered using unweighted pair-group arithmetic averaging (UPGMA) with beta (β) set at -0.1 (Belbin 1994). The final number of groups was determined by examination of the dendrogram and two-way table. An indicator value was calculated using a Yates Correction for continuity (Zar 1984). Proportional occurrence was also calculated for each species in each group in Microsoft Excel using the following formula;

This indicator value was used to determine which species drove the composition of each group. The members of each fauna PATN group were also matched against the floristic type to aid in the description of habitat preferences or associations with each fauna assemblage.

Amphibian species were recorded too inconsistently to warrant any analysis. Similarly, opportunistic data, being non site-specific, could not be systematically analysed. These additional data are included in the discussion of the results.

**Table 10.**

**Previous biological surveys conducted in the region whose data contributed the overall analysis of the fauna of the South East.**

| Survey Name (Survey No.) | Date | No. Quadrats |
|---|---|---|
| Bunbury Conservation Reserve (99) | December 1997 | 12 |
| Messent Conservation Park (68) | December 1994 | 12 |
| SE Box and Buloke (84) | December 1995 | 18 |
| Deep Swamp (85) | January 1996 | 12 |
| Gum Lagoon Conservation Park (76) | September 1995 and October 1996 | 29 (mammals and reptiles)<br>52 (birds) |
| Tilley Swamp (90) | December 1996 | 16 |
| SE Fire Study (64) | August, September and October 1994 | 10* |

* bird data not included in analysis

Presence/absence data only were used in the fauna analyses, as abundance data were not recorded in a systematic manner.

**Mammals**
The initial mammal matrix contained 201 quadrats and 45 species. A number of species were masked out of the analyses; introduced herbivores, bats, 'Genus sp.' records and species with a frequency of one. Quadrats with a single species after this mask were retained. The final matrix contained records from 165 quadrats and 17 species.

**Reptiles**
The initial reptile matrix contained 195 quadrats and 59 species (676 records). Several species were masked out: large snakes and goannas, legless lizards, blind snakes, 'Genus sp.' records and species with a frequency of one. Quadrats with only one species after this mask were also omitted. Thus, the final matrix contained 162 quadrats and 28 species.

**Birds**
The complete bird matrix contained 3168 records; 102 species and 173 quadrats. Data from the SE Fire Study (Survey 64) was not available at time of preparation of this report. All 'Genus sp.' records were masked out, as were any species that are very mobile, waterbirds and night birds. The final matrix contained 61 species and 173 quadrats.

**Figure 26.**
**Standard survey pit-fall line placed through heathy understorey.** **Photo: J. Foulkes.**

**Figure 27.**
**Volunteer checking Elliot trap line in Stringybark woodland survey quadrat.** **Photo: J. Foulkes.**

**Figure 28.**
**Ornithologist observing birds as part of an afternoon census of birds at each survey quadrat. Photo: J. Foulkes.**

**Figure 29.**
**A hair tube attached to a tree and marked with flagging tape to enable it to be relocated. Photo: J. Foulkes.**

# RESULTS

## VEGETATION

By L. M. B. Heard [1]

### INTRODUCTION

The survey area, bounded to the north by 36 degree latitude, the coastline to the south and west and the border to the east, represents the limit of grassy woodlands, open forests and wetland plant communities more typically associated with south-eastern Australia (Croft *et al.* 1999). This area also represents the southern limit of dryland (inland) mallee plant communities more typically represented in the Murray Mallee, sandy heath communities and is close to the southern limits of some plant communities in South Australia such as *Eucalyptus diversifolia* ssp. *diversifolia* [(2)] Mallee. Detailed background on the major pre-European settlement vegetation communities of the region is provided in the Historical Vegetation Communities chapter.

Edaphic factors (topography, substrate and soils), and climate drive the diversity of floristic communities across this region. Typically, the South East is represented by low relief and a series of stranded ancient coastal ridges (calcarenite ranges and stranded dunes which rise 20-50m above the plains), formed through fluctuations in the sea-level over the last 700,000 years, which parallel today's coastline (Croft *et al.* 1999). These are vegetated mainly with stringybark woodlands (*Eucalyptus obliqua*, *E. arenacea* and *E. baxteri*) in the south grading to Coastal Mallee (*E. diversifolia*) in the north-west. Woodlands of stringybarks and smooth barked eucalypts (*E. fasciculosa*, *E. leucoxylon*) occur on the ridges to the east.

Between the ridges, are broad open interdunes or swales (2-10km wide) (Croft *et al.* 1999) where surface water naturally ponds. Here it percolates through the substrate toward the coast or accumulates in sufficient quantities to flow north to escape around the ridges. Vegetation communities of these interdunal areas consist mainly of once extensive Cutting Grass (*Gahnia trifida*) Sedgelands, Honeysuckle (*Banksia marginata*) Open Woodlands, River Red Gum (*Eucalyptus camaldulensis* var *camaldulensis* Woodlands, Tea-tree (*Leptospermum* spp.) Shrublands, and *Baumea* spp. of freshwater swamps in the south. In the north, they consist of Short-leaf Honey-myrtle (*Melaleuca brevifolia*) Shrublands in the brackish swamps, more saline shrublands (*Melaleuca halmaturorum* with samphire) and Thatching Grass (*Gahnia filum*) Sedgelands. There is a general lack of surface streams and rivers except in the east near the border where creeks come from Western Victoria and in the south along the coast where streams originate from springs (e.g. Eight Mile Creek) (Croft *et al.* 1999).

In the north-east inland portion of the study area, is an area of east-west trending windblown siliceous sand-dunes (Croft *et al.* 1999) extending from the Little Desert in Victoria. Low stunted stringybark woodlands and sandy heath dominate this area. North of this sandy area is a large tongue of grey cracking clay soil contributing to the Tatiara District, around Bordertown (locally referred to as "the good country"), with its Box and Buloke woodlands (*Eucalyptus microcarpa*, *E. odorata*, *E. porosa* and *Allocasuarina luehmannii*) on the heavier soils, and South Australian Blue Gum (*Eucalyptus leucoxylon*) and Pink Gum (*Eucalyptus fasciculosa*) on the loam soils. The Box and Buloke communities are at the western limit of their range and dominate the adjacent Wimmera region in Victoria. Beyond these areas and to the north-west the area becomes drier and sandier with different mallee eucalypt species dominating on both the dunes and the heavier soil flats with sandy heath and Broombush (*Melaleuca uncinata*) also present.

Adding to the diversity of features that characterise the landscape are the extinct volcanoes (e.g. Mt Gambier and Mt Schank) where stringybark forests flourish; exposed areas of limestone where sinkholes and caves have formed (Naracoorte and Mt Gambier areas); and granite outcrops such as Mt Monster and Jip Jip.

This chapter summarises the results of the field survey and the subsequent floristic analysis that occurred with the addition of two flora datasets from other biological surveys in and adjacent to the region (South East Coast and Murray Mallee). Both the survey and the floristic analysis formed the basis for the regional mapping.

While there have been numerous studies of the vegetation within the region, this study has provided the first comprehensive and systematic survey of the native vegetation across the full extent of the region, and complete regional vegetation community mapping

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2. Based on recent taxonomy and nomenclature in Nicolle (1997).

on a 1:50,000 scale. The regional mapping aspect of this study drew on as many literature references and other mapping sources as were available, and attempted to bring all this information into the final regional coverage (refer to the Vegetation Mapping Chapter).

**SURVEY COVERAGE**
**1991- 1997**

At the conclusion of the vegetation survey component of the South East Biological Survey, 358 vegetation sites had been comprehensively surveyed throughout the 270,000 hectares (ha) of native vegetation remaining in the 2,100,000 ha study area (Croft *et al.* 1999). As a result, the average site density within the remnant native vegetation was one site per 754 ha. Figure 30 shows the locations of these sites across the study area. A further 12 locations were visited opportunistically. A list of sites surveyed in both 1991 and 1997, with some associated location and physical data is provided in Appendix I.

In terms of the spatial distribution of the survey coverage compared to the spatial distribution of the native vegetation, there are gaps in the coverage particularly north east, south east and south west of Bordertown. Areas less well represented were north west of Bordertown (north of Cannawigara), south west of Keith including most of Gum Lagoon Conservation Park, east of Mt Tarap across to the Peacock Range and the broad interdune – swale to low rises of Biscuit Flat (west of Kangaroo Inn).

To some extent gaps were due to an over estimation of the number of sites that could reasonably be visited and surveyed by a survey team on a daily basis. Estimations were based on the Murray Mallee Biological Survey which had an average of 24 plant species per site. For the South East Biological Survey the average number of plant species recorded per site was 36 species. This 50% increase resulted in more time being required at sites to adequately record the species present and take appropriate voucher specimens. .

In terms of the representation of the landforms there was reasonable representation of the dunes (total of dune, crest and slope – 32.7%), sandy plains (8.9%) to plains (16.2%) (total of 25.1%), and hills (total of crest to footslope – 15.9%). Swamps were also reasonably represented (11.5%) particularly after the addition of 11 sites in swamps in 1997, having had only 30 (8.4%) sites placed in swamps in 1991 (Figure 31). The landform elements of swales, interdune corridors, open and closed depressions that are also common features of the South East landscape were poorly represented at sites with 7.8%, 0.3%, 2.5% and 2.8% respectively (Figure 31). Current coastline foredunes were not well represented by this survey because they had been surveyed during the South East Coastal Survey (Figure 34). The gaps in coverage of the broad interdune – swales to depression areas are further supported by review of the surface soil textures recorded at sites. The majority of sites occurred on sand (48.3%), sandy loam (34.9%) and loam (10.9%) with poor representation of soils in the silty loam to medium heavy clay range (Figure 33).

Although swamps were considered reasonably represented by 11.5% of sites, this coverage does not adequately reflect their prominence as a landform within the South East where over 76,000 ha of lakes and swamps occur (Croft *et al.* 1999).

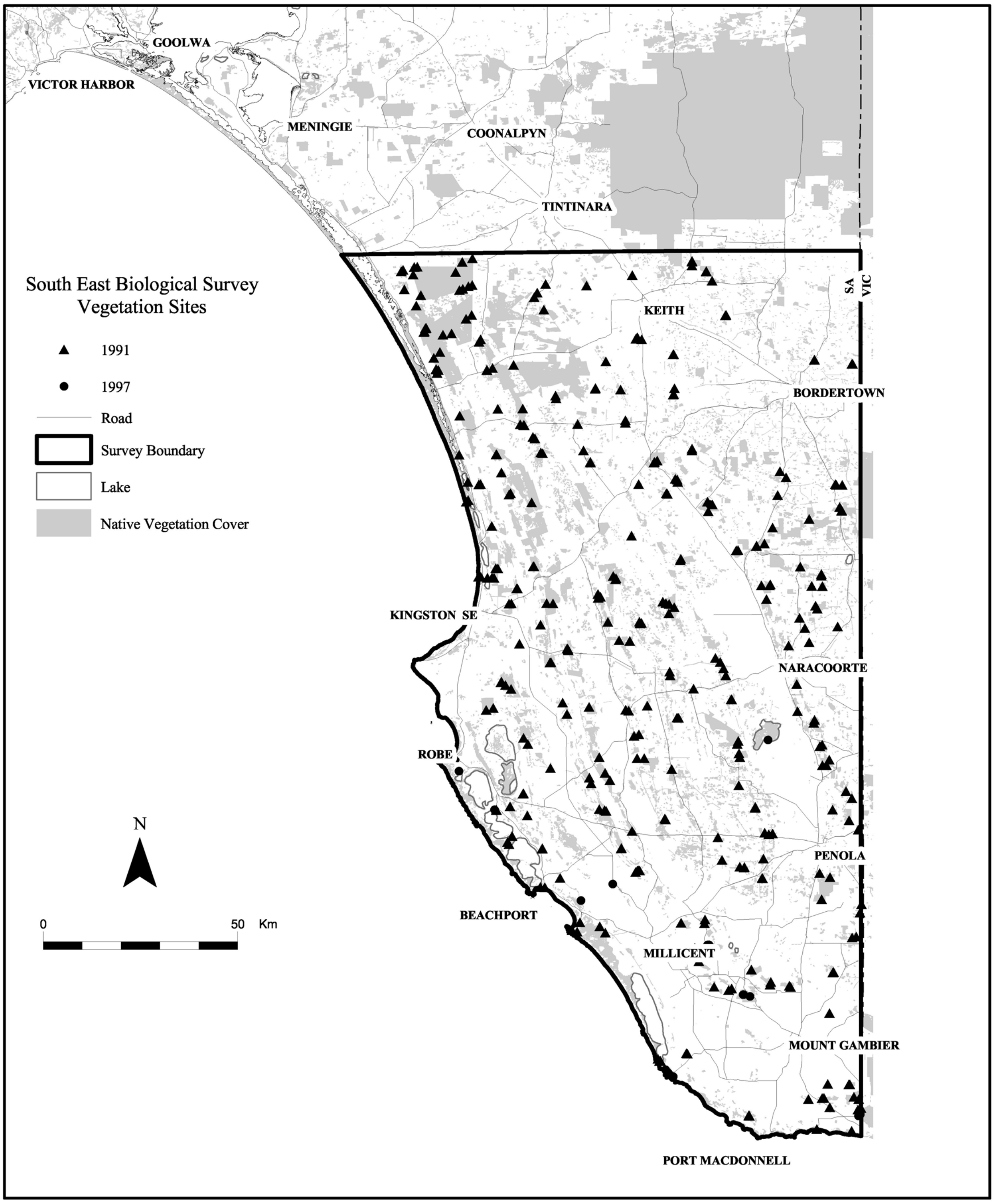



**Figure 30.**
**Map showing boundary of South East Survey, distribution of quadrats and year vegetation quadrats were sampled.**

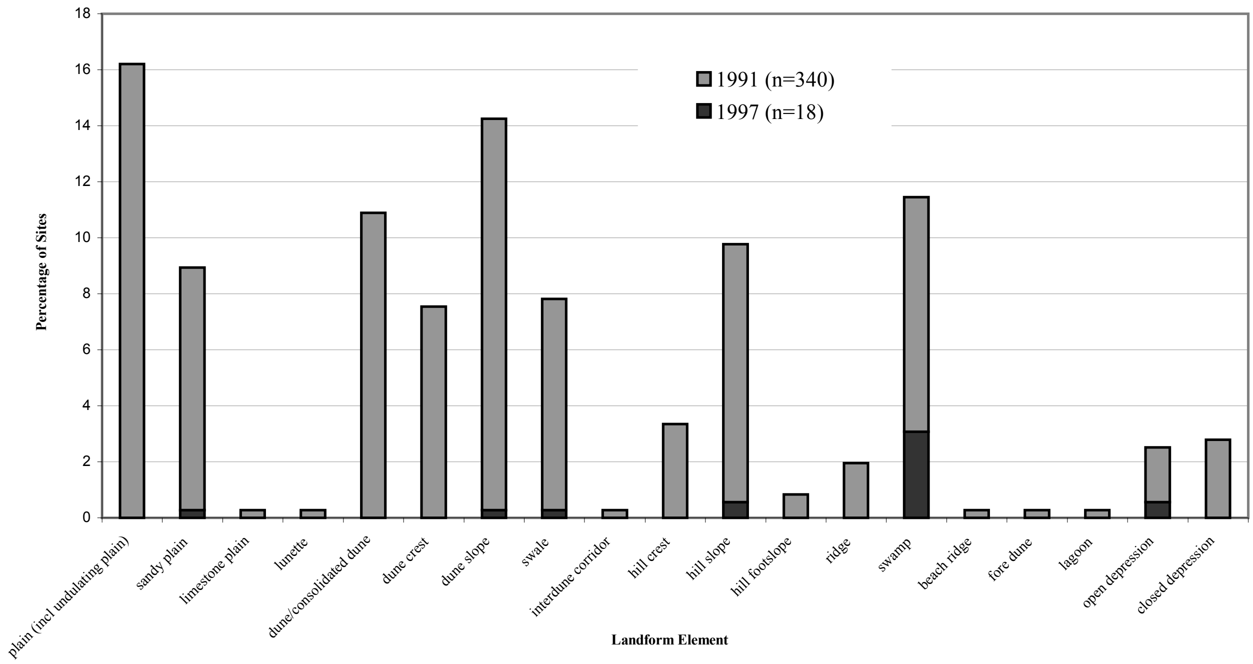



**Figure 31.**
**Percent frequency of landform element types for South East Survey sites (1991 and 1997) .**

In terms of spatial coverage in areas where low lying landforms are features, the gaps that are obvious are the Lake Frome - Millicent to Mt Schank area, the broad interdune – swales extending from Penola north through Bool Lagoon to west of Padthaway and the swamp system from east of Furner south east to Dismal Swamp and these areas having been extensively cleared, or drained and cleared for farming purposes. Gaps in the site coverage of these areas may have resulted due to a lack of significant blocks of native vegetation remaining. The difficulty in recognising remnants of low sedgeland, shrubland and grassland communities on the summer flown aerial photography may have also contributed to a lack of or low numbers of sites selected in these communities. There may be small remnants of the interdunal – swamp vegetation communities that could be surveyed.

**Species Patterns (Floristic Analysis) Coverage**
For the analysis of species patterns across the region, the South East Coastal Survey and part of the Murray Mallee Survey datasets' were combined with this survey's dataset (refer to the Methods Chapter and Table 11). Figure 32 indicates the floristic analysis study boundary and the sites used in the analysis.

## Table 11.
## Number of biological survey sites from three surveys contributing to the South East floristic analysis.

| Survey No. | Survey Name | Date | Sites within floristic analysis study boundary | Sites used in floristic analysis |
|---|---|---|---|---|
| 4 | South East Coastal | 1982 - 1987 | 181 | 167 |
| 16 | Murray Mallee | 1990 | 241 | 230 |
| 29 | South East | 1991 | 340 | 328 |
| **Totals** | | | **762** | **725** |

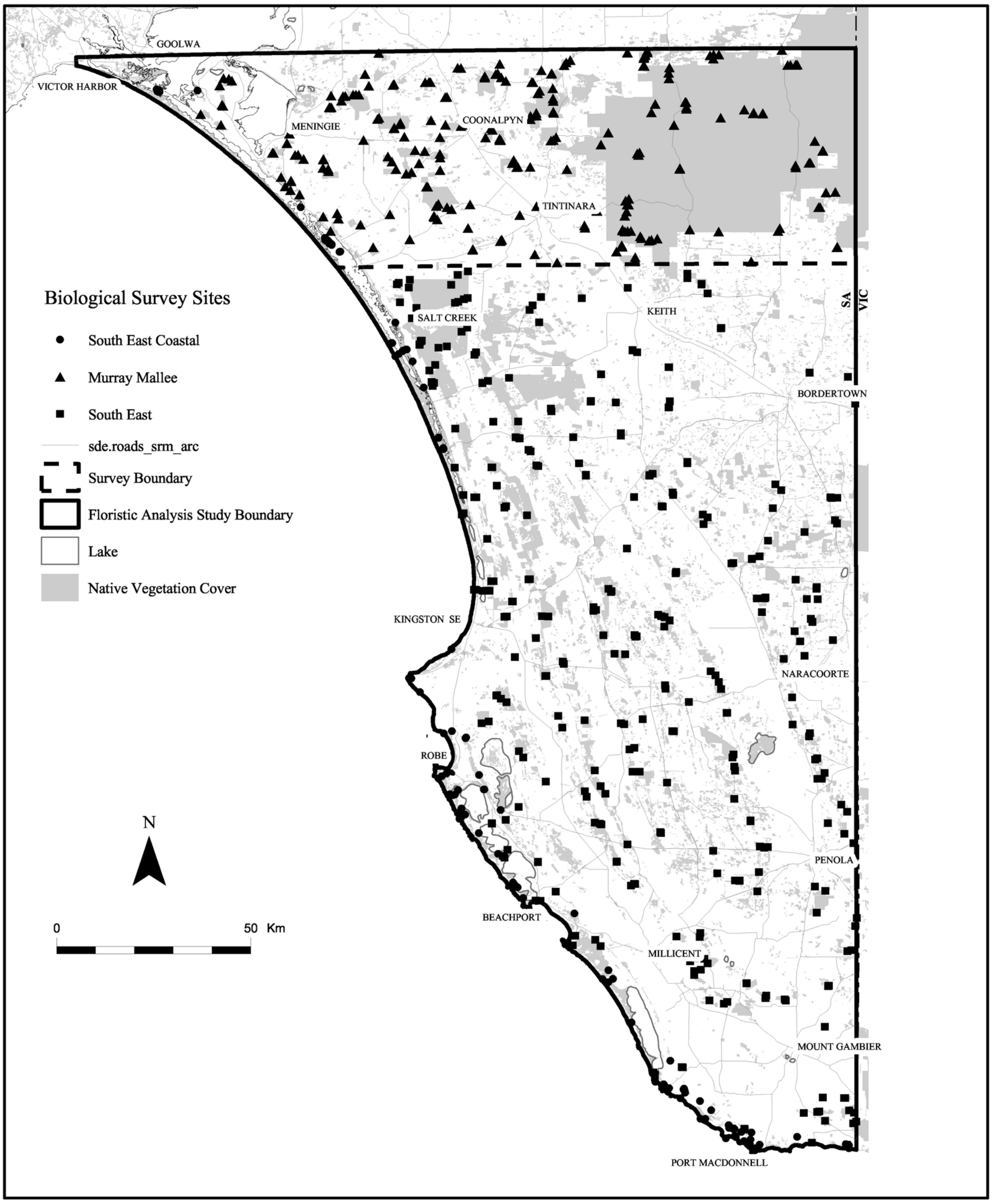



**Figure 32.**
**Map showing South East Survey boundary and distribution and origin of sites used in undertaking the floristic analysis.**

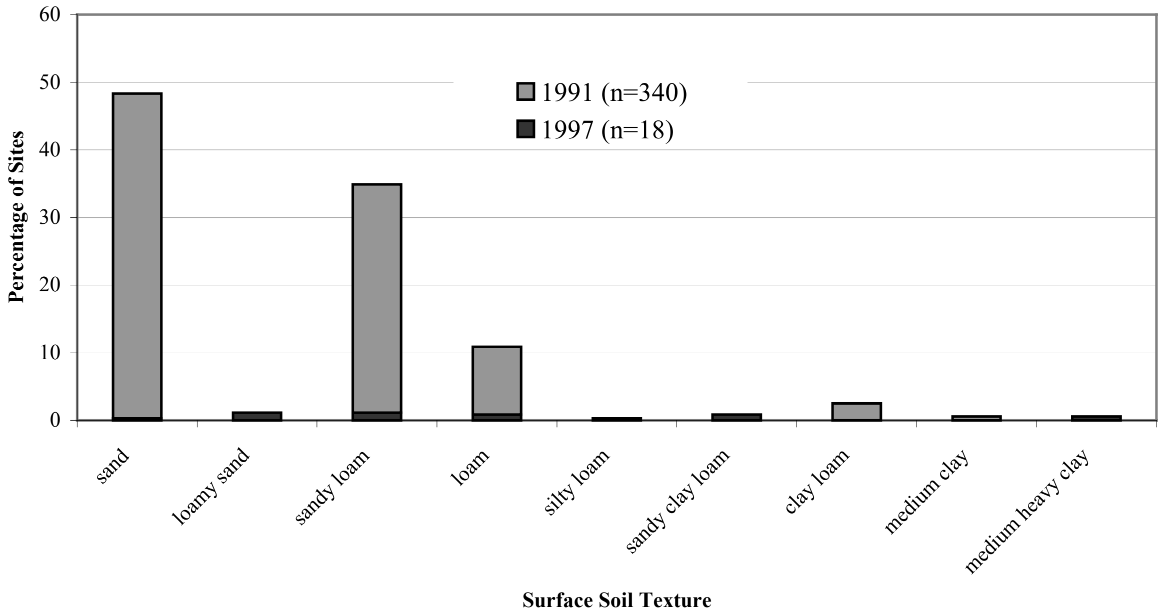



**Figure 33.**
**Percent frequency of surface soil textures for South East Survey sites (1991 and 1997).**

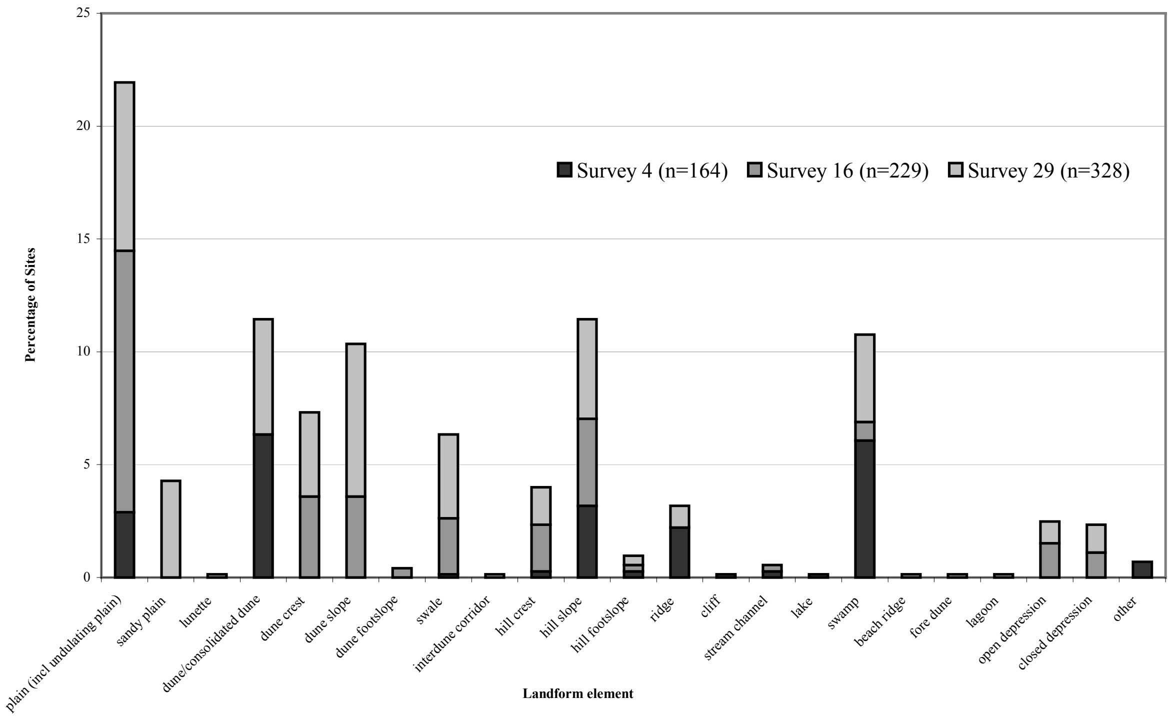



**Figure 34.**
**Percent frequency of landform element types for all survey sites used in the floristic analysis**. No landform data was recorded for 4 sites.

In terms of representation of landforms by the sites in this analysis dataset, the landforms most represented were dunes/consolidated dunes (total of dunes, dune crests to footslopes – 29.1%), plains (total of sandy plain to plain – 26.2%) and hills (total of ridges, crest to footslope – 19.6%). Less well represented were lakes / swamps (10.9%), swales – interdune corridors (6.5%) and open / closed depressions (4.8%). Current coastline foredunes are not distinguished from inland dunes landforms in the South East Coastal Survey dataset. Unfortunately, the pattern of less well represented landforms in the South East survey dataset also occurred in the floristic analysis dataset. This further highlights the combination of the lack of significant blocks of native vegetation remaining in the swale – interdune corridors, the difficulty that exists in recognising these areas from aerial photos and the lack of prioritisation for survey attention these landforms and vegetation communities received. Subsequent swamp surveys have focussed on NPWSA parks and reserves and Heritage Agreements areas affected by salinity drainage schemes in the Upper South East (e.g. Tilley Swamp (Stewart *et al.* 1998a) and Bunbury Conservation Reserve and Stoneleigh Park Heritage Agreement (Stewart *et al.* 1998b).

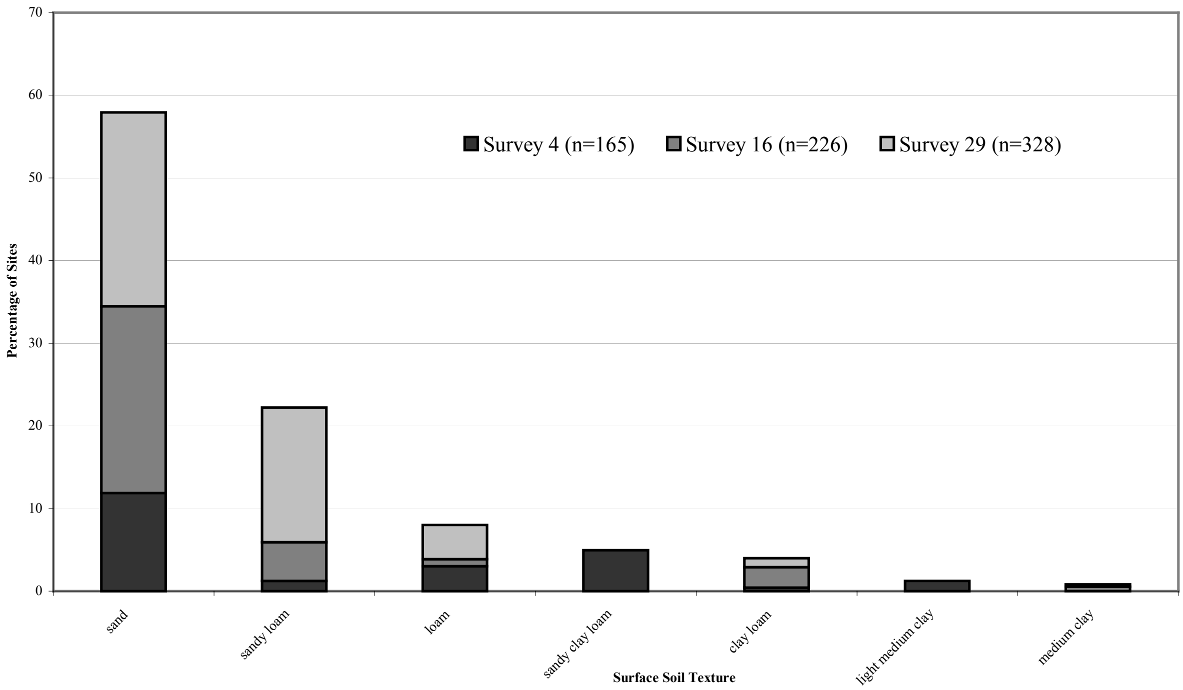



**Figure 35.**
**Percent frequency of surface soil texture for all sites used in the floristic analysis.** No surface soil texture data was recorded for 6 sites.

The representation of the surface soil texture follows a similar pattern to the South East Survey, with strong representation in the sand (57.9%), sandy loam (22.2%) and loam (8.0%). The low representation of surface soil textures with increasing clay content from sandy clay loam to medium clay (Figure 35) highlights the bias toward these areas being developed for agricultural purposes across the region and hence the general lack of representation of the heavier soils in low lying landforms and their associated vegetation communities in the dataset.

**TOTAL PLANT SPECIES**

A total of 12,602 vascular plant records resulted from surveying 358 vegetation sites. A further 53 plant species records were added from opportune sightings at different 12 locations. Of the total 12,655 vascular plant records, 789 taxa (native and naturalised vascular named forms including species, subspecies, varieties and introduced species) were confirmed and recorded. Of the 789 taxa, 778 taxa were recorded at vegetation survey sites, while an additional 11 taxa were recorded only opportunistically within the study area. The 789 taxa, consists of 640 (81.1%) native taxa and 149 (18.9%) introduced taxa. A listing of all the unique plant records for the survey showing the sampling frequency, conservation status and comments on plant taxonomy and nomenclature is provided in Appendix II. A unique listing of the plant records with sampling frequency for other Biological Survey of SA surveys that have occurred in the region is provided in Appendix III.

In relation to the taxa known to occur in the South-Eastern Herbarium Region the total list contains 1,902 distinct plant taxa from records extracted from the SA

FLORA database[1], December 2001. The 1,902 taxa, consists of 1,324 (69.6%) native taxa and 578 (30.4%) introduced taxa. The 789 taxa from the survey represent 42% of the South-Eastern Herbarium Region flora. While this appears to be on the low side, it must be remembered that the South-Eastern Herbarium Region extends beyond the South East Biological Survey up to and including part of the Lower Murray Lakes. As a result, there would be additional taxa found within this area. Other reasons for the difference include the fact that the survey did not cover all seasons and was not targeting maximum number of taxa but rather representation of vegetation communities able to be mapped from 1:40,000 aerial photographs.

In reference to the plant families in the Herbarium Region, 82 families (67.8%) were represented in the survey records. Table 12 provides a summary of the top 20 major families (most species) for the Herbarium Region, the number of taxa per family recorded for the Herbarium Region and the number of taxa per family recorded for the survey.

**Table 12.**
**Major* Plant Families for the South-Eastern Herbarium Region (based on Jessop 1993) and species frequencies recorded for each.**
* - most species
SU = Biological Survey Site records
OP= Opportunistic Sighting records

| FAMILY | Number of species - SE Herbarium Region (Jessop 1993) | Number of species - Survey (both SU and OP records) | Percent of each family recorded (%) |
|---|---|---|---|
| COMPOSITAE | 226 | 87 | 38 |
| GRAMINEAE | 211 | 85 | 40 |
| ORCHIDACEAE | 145 | 45 | 31 |
| LEGUMINOSAE | 134 | 72 | 54 |
| CYPERACEAE | 87 | 47 | 54 |
| LILIACEAE | 57 | 30 | 53 |
| MYRTACEAE | 56 | 39 | 70 |
| CRUCIFERAE | 47 | 7 | 15 |
| CHENOPODIACEAE | 37 | 9 | 24 |
| CARYOPHYLLACEAE | 35 | 9 | 26 |
| SCROPHULARIACEAE | 35 | 8 | 23 |
| UMBELLIFERAE | 35 | 22 | 63 |
| EPACRIDACEAE | 26 | 22 | 85 |
| BORAGINACEAE | 24 | 5 | 21 |
| GOODENIACEAE | 24 | 12 | 50 |
| JUNCACEAE | 24 | 11 | 46 |
| LABIATAE | 24 | 6 | 25 |
| POLYGONACEAE | 24 | 7 | 29 |
| PROTEACEAE | 24 | 18 | 75 |
| RHAMNACEAE | 23 | 9 | 39 |

[1] The SA FLORA database stores and maintains naming and classification details for plant species occurring in the wild in South Australia, together with some related information such as common names, general distribution, life span etc. It is based on the SA Plant Biodiversity Centre CENSAP (plant census) database but is adapted to provide links to both current and past usage of names.

**NEW FLORA RECORDS**

Three species, one native and two introduced, found during the survey appear to be new species records for the South-Eastern Herbarium Region. The presence of a Western Australian native species, not naturalised within the state, found in a block of native vegetation is also noted.

*Templetonia retusa* is the native species collected on the survey, which was not previously recorded in the South-Eastern Herbarium Region. This shrub, to 1-3 high, is characterised by its bright red pea flowers and blunt obovate bluish green leathery leaves (Weber 1986). This species occurs in South Australia and Western Australia. In South Australia, it is recorded for Kangaroo Island, Southern Lofty, Yorke Peninsula, Eyre Peninsula and Flinders Ranges Herbarium regions (Weber 1986) and is known to occur on rocky slopes and sandy soils (Costermans 1992). During the survey it was collected in a *Eucalyptus diversifolia* Low Mallee site north of Salt Creek, inland from the Coorong and immediately west of Messent Conservation Park. The site was located on a consolidated dune with sandy loam soil and outcropping calcareous substrate. *T. retusa* is a popular native plant used in gardens and there is a possibility it could have become established here as a garden escapee. At this site it occurred in relatively undisturbed native area of vegetation in typical habitat and it is valid to conclude that this is an extension of its known range.

The two new introduced species found were *Epilobium ciliatum* and *Glycyrrhiza glabra*. A summary of these species and the new records are presented below.

*Epilobium ciliatum*, an annual to perennial species native to much of North America, is known to occur in moist places generally occurring as a garden weed in South Australia (Toelken 1986). While it is recorded in the Murray, Yorke Peninsula and Southern Lofty Herbarium regions, Toelken (1986) indicates it has not been recorded naturalised outside gardens. During the survey, it was collected in a *Leptospermum lanigerum* Shrubland site on the edge of Mullins Swamp. As this record is unusual for the species, which is known to occur as a garden weed, the voucher specimen should be revisited to confirm the identification. It is possible that this species has invaded from a nearby garden being transferred to the area either by birds or stock.

*Glycyrrhiza glabra* (Liquorice) is an erect perennial with a woody rootstock and long thick rhizomes. This species possibly originates from North Africa and south-east Asia. (Weber 1986). In South Australia it has been recorded in the Northern Lofty and Southern Lofty Herbarium regions. During the survey, this species was collected at a site in the West Avenue Range east of Greenways and recorded at another site nearby to the south. Near both these sites are farm residences where the plant species may have dispersed from, transferred either by birds (as seed) or possibly by earth moving equipment (as root material) during road construction. The same unmade road links these two site locations and these farm residences.

Another unusual find during the survey was the Western Australian species, *Gompholobium knightianum*. This slender erect shrub with pink to lilac pea flowers, flowering from August to November (Marchant *et al.* 1987), is not naturalised within South Australia. In Western Australia, it occurs from Geraldton to east of Esperance, mainly close to the coast on lateritic soils (Western Australian Herbarium FloraBase 2002). The species requires well-drained light to medium soils and access to sunlight, though it will tolerate dappled shade. It tolerates light frosts and can be propagated from seed or cuttings (Elliot and Jones 1986). Elliot and Jones (1986) record that though *G. knightianum* is suitable for cultivation it has only had limited cultivation since being introduced to England in 1830.

During the survey, *G. knightianum* was collected at a *Eucalyptus diversifolia* Mallee site, south-east of Tilley Swamp and west of Peacock Range, on a sandy dune slope adjacent to an access track. As there have been no previous records of this species in native vegetation within the state, it is thought that these plants have either been transferred there by birds or by human intervention. Local information indicates that it is possible this species may have been introduced to the area, in the past, by an individual who had a tendency to want to "brighten up" areas of native vegetation by planting non-local species (B. Clark, pers. comm., National Parks and Wildlife Service SA). Individuals and organisations undertaking native vegetation work throughout the region should be alert for this species, to see if it occurs in other blocks of native vegetation and to check that the species does not become invasive.

**SIGNIFICANT SPECIES**

Of the 789 taxa recorded by the survey, 198 species were recorded to have conservation ratings across all levels (national, state and regional, and including those species rated as uncertain or of possible significance). In addition one taxa (yet to be described) was also recorded that potentially may be rated at state and regional levels but is awaiting a revision of the orchid taxa in South Australia. The 198 rated species make up 28.6% of the rated species within the South-Eastern Herbarium Region. In terms of plant species of conservation significance in the South East, Lang and Kraehenbuehl (1987) noted that although there are fewer regional extinctions than expected (given the region's long agricultural and drainage history) the region exhibited the highest number of endangered and vulnerable taxa and had the highest proportion of threatened flora (15.5% in 1987). This proportion is currently 14.8% as calculated for this report, based on the extraction of data from the SA FLORA Database - December 2001, which is marginally different. (The marginal difference could be due to a combination of changes in plant taxonomy and nomenclature, and increased survey / collection effort).

In reference to regionally endemic species, Lang and Kraehenbuehl (1987) indicate that the South East along with the Murray and Nullarbor Herbarium Regions have low representation. In the case of the South East this is mainly attributed to the region being artificially truncated by the Victorian / SA state border. Many species found in SA only within the South East region occur in South Western (SW) Victoria and reach their western limit in the wetter habitats (similar to SW Victoria) in the South East (P. Lang, pers. comm., DEH). Further review of the species at the western limit of their range, while extremely interesting and important, is outside the scope of this report.

In relation to the 198 rated species found during this survey, five species were recorded to have Australian conservation ratings under the EPBC Act (as at December 2000), 74 were rated only at the State and regional levels and 124 were only rated at the regional level (Appendix II). Of the 198 rated species, 26 species are threatened at the National and State levels (Table 13). The five species threatened at the National level are *Thelymitra epipactoides* (Endangered), *Olearia pannosa* ssp. *pannosa* (Vulnerable), *Pomaderris halmaturina* ssp. *halmaturina* (Vulnerable), *Senecio macrocarpus* (Vulnerable) and *Senecio psilocarpus* (Vulnerable). Of the remaining 20 threatened species at State level, three species are Endangered. These are *Chorizandra australis*, *Dillwynia cinerascens* and *Tricostularia pauciflora*. Brief descriptions of these eight species are summarised below mainly based on information available in Croft *et al.* (1999) and Jessop and Toelken (1986).

**Table 13.**
**Nationally and State Threatened* plant species recorded on the South East Survey and their status categories.**

| Species Name | Common Name | AUS# | SA$ | Regional@ |
|---|---|---|---|---|
| *Thelymitra epipactoides* | Metallic Sun-orchid | E | E | E |
| *Olearia pannosa ssp. pannosa* | Silver Daisy-bush | V | V | T |
| *Pomaderris halmaturina ssp. halmaturina* | Kangaroo Island Pomaderris | V | V | V |
| *Senecio macrocarpus* | Large-fruit Groundsel | V | V | V |
| *Senecio psilocarpus* | | V | V | V |
| *Chorizandra australis* | Bristle-rush | | E | E |
| *Dillwynia cinerascens* | Grey Parrot-pea | | E | E |
| *Tricostularia pauciflora* | Needle Bog-rush | | E | E |
| *Arthropodium milleflorum* | Pale Vanilla-lily | | V | V |
| *Calectasia intermedia* | Eastern Blue Tinsel-lily | | V | V |
| *Cardamine gunnii* | Spade-leaf Bitter-Cress | | V | V |
| *Clematis aristata* | Mountain Clematis | | V | V |
| *Eryngium rostratum* | Blue Devil | | V | T |
| *Eucalyptus* "Carpenter Rocks" | Carpenter Rocks Manna Gum | | V | E |
| *Eucalyptus pauciflora ssp. pauciflora* | Snow Gum | | V | V |
| *Hovea linearis* | Common Hovea | | V | V |
| *Mazus pumilio* | Swamp Mazus | | V | V |
| *Mitrasacme pilosa var. pilosa* | Hairy Mitrewort | | V | V |
| *Poa meionectes* | Fine-leaf Tussock-Grass | | V | K |
| *Pratia puberula* | White-flower Matted Pratia | | V | K |
| *Ranunculus glabrifolius* | Shining Buttercup | | V | V |
| *Ranunculus papulentus* | Large River Buttercup | | V | K |
| *Restio tetraphyllus* | Tassel Cord-rush | | V | V |
| *Stellaria caespitosa* | Starwort | | V | V |
| *Thelionema caespitosum* | Tufted Lily | | V | V |
| *Veronica gracilis* | Slender Speedwell | | V | V |

* Threatened – species with a conservation significance rating of Endangered (E) and Vulnerable (V).
**AUS#** - refers to Environment Protection and Biodiversity Conservation Act 1999 current listing of species (as at December 2000), National conservation status
**SA$** - is based on the Schedules of the National Parks and Wildlife Act 1972 (SA) as amended in 2000, state conservation status
**Regional @ -** refers to South East (SE) Herbarium Region, regional conservation status. Regional ratings are derived from SA FLORA database, December 2002, which provides an update to the original assessments by Lang and Kraehenbuehl (1987).
**Status explanations:** X-Extinct, E-Endangered, T-Threatened, V-Vulnerable, K-Uncertain. Refer to relevant Schedules for full definitions of status codes.

**Species of National Significance**
***Thelymitra epipactoides* (Metallic Sun-orchid)**
This large fleshy sun-orchid, a perennial geophyte to 50 cm high, is characterised by its flowers, which can be a variety of colour forms (greyish – green with pinkish to brown tints) but have a distinctive iridescent lustre to metallic sheen (Weber and Bates 1986, Davies 2000). Flowering time is generally between August and December but mainly in October. The flower is pollinated by a small native bee (Cropper 1993). In terms of ecology, this species is dependent on a common mycorrhizal fungus for germination, growth and flowering (Davies 1992, Cropper 1993). This species is also a post disturbance coloniser and utilises the open spaces created amongst the vegetation. Disturbances creating such open spaces include those resulting from animal scratchings, death of a plant, human activities or fire (Cropper 1993).

This orchid, of fertile loams, is known to occur singly or in small colonies in woodlands over a shrubby heath understorey or heathy shrublands, often near swampy depressions (Croft *et al.* 1999). Calder *et al.* (1989) in their investigations of populations in Victoria show it favours open heathland communities close to the coast. In addition, Calder *et al.* (1989) found that the species occurs on soils that are water logged in winter and dry in summer.
In South Australia, *T. epipactoides* is recorded in the South East and the Lower Murray Mallee with a disjunct population occurring on Lower Eyre Peninsula

(Croft *et al.* 1999). In the South East *T. epipactoides* occurs in a number of NPWSA reserves in the mid to upper South East (Biological Databases of SA August 2002). This species also occurs in Victoria and New South Wales (Davies 2000).

During this survey, this species was recorded four times, three times at survey sites and once as an opportunistic sighting. Of the four locations, two were in *Eucalyptus fasciculosa* Low – Very Low Woodlands with heathy understoreys and two in *Eucalyptus diversifolia* Mallee with heathy understoreys. These locations were in the Upper South East with three within 10 km of the coast between Kingston and Tilley Swamp and one location south east of Keith. While two sites were on rising ground (dunes), all were in reasonably close proximity to low-lying areas which would be likely to be subject to waterlogging in winter. Disturbances at the sites varied from echidna scratchings and stock grazing as well as access tracks and fence lines.

Threats to the species include changes in ground water regimes either through rising saline groundwater (Croft *et al.* 1999) or through changes in the pattern of winter water logging and summer drying (Calder *et al*. 1989). Other factors include continued habitat destruction through domestic stock grazing and herbaceous weed invasion; and grazing by both native and introduced animals (particularly rabbits) that may prevent flowering and exhaust the tubers (Croft *et al.* 1999). Davies (2000) also indicates lack of disturbance, particularly by fire, may cause the species to decline and suggests that localised burning could be undertaken to promote regeneration.

***Olearia pannosa* ssp. *pannosa* (Silver Daisy-bush)**
This daisy is a long-lived spreading undershrub or shrub to 1.5 m high that produces root suckers (Cooke 1986, Cropper 1993). New shoots can come from decumbent stems that have been covered by plant leaf litter and soil (Cropper 1993). Leaf shape and orientation, and colour of the leaf hairs distinguish this species. The leaves are usually greater than twice their width in length, are green and shiny on the upper surface with the lower surface densely covered in appressed short soft hairs that are white to cream or very pale rusty brown (Jessop and Toelken 1986). This species flowers from August to October.

In South Australia, *O. pannosa* ssp. *pannosa* is found in the agricultural zone from Eyre Peninsula and the Flinders Ranges through to the South East, with the exception of Kangaroo Island (Croft *et al.* 1999). In the South East populations are recorded in Big Heath, Mt Scott and Aberdour Conservation Parks, Desert Camp Conservation Reserve and the Water Valley area (Biological Databases of SA[2] August 2002). Croft *et al.* (1999) indicates that the regions largest known populations are restricted to roadside reserves. Cropper (1993) indicates that the prevalence of seedlings close to road verges may indicate that the seedlings may depend on disturbance to become established. In terms of habitat, this species is found in mallee habitat on heavier soils in the Upper South East (Croft *et al.* 1999) and more generally in forest, woodland and mallee communities (Cooke 1986).

During this survey, *O. pannosa* ssp. *pannosa* was found at one location on private property north of Wirrega on the Dukes Highway, north west of Bordertown. This site was located in a *Eucalyptus leptophylla* Mallee over a *Melaleuca uncinata* dominated swale on sandy loam soil.

Threats to the population include weed invasion, grazing by rabbits and incidental road works. Weed invasion, including bridal creeper, may smother or crowd out these shrubs, preventing regeneration. Rabbits may graze seedlings preventing regeneration and encouraging encroachment of weeds. Road maintenance activities such as grading unsealed roads, dumping road building material and upgrading roads may destroy plants and populations on roadsides (Croft *et al*. 1999).

***Pomaderris halmaturina* ssp. *halmaturina* (Kangaroo Island Pomaderris)**
This large shrub, 2-3 metres high, is endemic to South Australia, where it is recorded on Kangaroo Island, with a disjunct population in the Lower South East. In the Lower South East it has been mostly recorded in the Native Forest Reserves (NFR), e.g. Snow Gum Reserve, in *Eucalyptus baxteri* Open Forest on sand and also in the Carpenter Rocks area (Croft *et al.* 1999, Biological Databases of SA August 2002).

During the survey it was recorded at one location, a *Eucalyptus ovata* Open Forest occurring on a slightly undulating plain with calcareous surface strew present in McEacherns NFR north of Donovans Landing.

Croft *et al.* (1999) indicated that the invasion of pine trees (*Pinus radiata*) into remnant native vegetation within the native forest reserves' may eventually result in crowding out these shrubs hence threatening the populations.

***Senecio macrocarpus* (Large-fruited Groundsel)**
This erect narrow leaved rayless daisy, 20-40 cm high, grows from a short perennial rootstock and flowers during September – October (Owens *et al.* 1995, Croft *et al.* 1999). This species is found in South Australia, Victoria and previously occurred in Tasmania where it

[2] Biological Databases of SA refers collectively to the Department of Environment and Heritage Survey, Opportune, Reserve and Plant Population databases.

is now presumed to be extinct (Owens *et al.* 1995). In South Australia it is recorded in Messent and Gum Lagoon Conservation Parks and near Meningie (Biological Databases of SA August 2002). It generally occurs in grassy woodlands on fertile or calcareous soils. In Victoria, it has been recorded in *Themeda* Grasslands on basalt plains (Lawrence and Belcher 1986, Croft *et al.* 1999).

This species was recorded in a *Leptocarpus brownii* – *Tetraria capillaris* Closed Sedgeland in a closed depression in Messent Conservation Park during the survey. The presence of this species in this atypical habitat had been recorded previously and subsequently, during threatened plant population survey work in Messent Conservation Park in 1986, 1992 and 1995 (Owens *et al.* 1995). Owens *et al.* (1995) suggest that the species is able to survive in these sedgeland depressions due to the lack of competition and increased access to light through the open spaces between the taller sedge tussocks, the relatively sparse aerial parts of taller sedges and the species ability to overtop the dense mats of short finer sedges.

Due to the location of this non-wetland species in low lying areas, changes to ground water regimes offer the greatest threat to populations. Further drying out of these depressions may result in encroachment of other shrubs, competing with *S. macrocarpus* while rising saline groundwater may cause loss of the populations (Owens *et al.* 1995, Croft *et al.* 1999). Other threats to the species are degradation of habitat through grazing by domestic stock and weed invasion (Croft *et al.* 1999).

***Senecio psilocarpus***

This erect perennial herb, to 80 cm tall, grows from laterally spreading rhizomes and rooting stem bases. The presence of multiple remnants of the erect stems from previous years growth are often common. *Senecio psilocarpus* flowers from November to March (Belcher and Albrecht 1994). Until recently, this species was included in *Senecio squarrosa*, which it closely resembles.

*Senecio psilocarpus* is known to occur at a limited number of sites within South Australia and Victoria. In South Australia it has been previously recorded in Honans Scrub NFR, Big Heath Conservation Park, Gum Lagoon Conservation Park (Biological Databases of SA August 2002) and Piccaninnie Ponds Conservation Park (Belcher and Albrecht 1994, ADHERB database[3] February 2002).

In terms of habitat preferences, this species is restricted to high quality herb rich wetlands on plains. These locations can be inundated with up to 0.6m or more water in winter but be almost dry in summer (Belcher and Albrecht 1994). Tree canopy is generally absent from most sites but occasionally *Eucalyptus camaldulensis* is present in a woodland formation. The understorey is noted to be rich in grasses, sedges and some aquatic plants. It appears that *S. psilocarpus* is exclusively a plant of wetland areas where *S. squarrosa* occurs in a broader range of wet and dry conditions (Belcher and Albrecht 1994).

During this survey, *S. psilocarpus* was recorded in a swamp in Honans Scrub NFR, where it was occurring in a sedgeland dominated by *Eleocharis acuta* and *Amphibromus nervosus* with emergent *Leptospermum continentale*.

Threats to this wetland plant species would include changes to ground water regimes and degradation of habitat through grazing by domestic stock and weed invasions.

**Species of State Significance**

***Chorizandra australis* (Bristle-rush)**

*Chorizandra australis* is a perennial sedge with a tough rhizome that grows up to two metre in height. It is yellow-green, hollow stemmed (easily compressed) with longitudinal striations and globular flower heads. Previously this species was confused with *C. cymbaria*. This species flowers in spring –summer and is found in swamps and around waterholes (Walsh and Entwistle 1994).

In South Australia, *C. australis* only occurs in the South-Eastern Herbarium Region. It has been collected near Kingston, the Coorong and Glencoe (ADHERB database February 2002). This species has been recorded in Telford Scrub Conservation Park and Honans Scrub NFR (Biological Databases of SA 2002). It also occurs in Tasmania and Victoria.

During this survey, this species was collected once in a swamp fringed by a *Leptospermum continentale* Open Shrubland with *Baumea arthrophylla* as understorey and dominating in the centre of the swamp. This swamp is located in the Dismal Swamp area, south east of Tarpeena.

***Dillwynia cinerascens* (Grey Parrot-pea)**

*Dillwynia cinerascens* is a perennial heath-like shrub, to < 1m high, with soft grey-green foliage and terminal yellow-orange pea flowers in groups of 3-10. It flowers in October to December (Weber 1986).

In South Australia, *D. cinerascens* only occurs in the South-Eastern Herbarium Region where it has been recorded in Honans Scrub NFR, Topperwein NFR and Grundy's Lane NFR (Biological Databases of SA February 2002). This species also occurs in Tasmania, Victoria and Western Australia.

[3] The ADHERB database is the database of the general collections of the State Herbarium of SA located at the SA Plant Biodiversity Centre.

During this survey, this species was collected once at in a *Eucalyptus camaldulensis* Woodland over *Leptospermum continentale*, *Leptocarpus brownii* and *Lepidosperma laterale*. This swamp is located in Penola Forest, east of Nangwarry and just west of the SA/Victoria Border.

***Tricostularia pauciflora* (Needle Bog-rush)**
This small tufted perennial herb-like sedge, to 30cm high, has short rhizomes and flowers from December to February (Jessop and Weber 1986). In South Australia it occurs around swamps and waterholes (Jessop and Weber 1986), while in Victoria it is noted to occur chiefly on damp sandy heathlands (Walsh and Entwisle 1994).

In South Australia, *T. pauciflora* occurs in the Southern Lofty and the South-Eastern Herbarium Regions. This species is conserved in Mt Billy Conservation Park in the Southern Lofty Herbarium region, while in the South-Eastern Herbarium Region it is known from Penola Conservation Park and Boolara NFR (Biological Databases of SA February 2002). This species also occurs in New South Wales, Victoria and Tasmania.

During this survey, this species was collected once in a *Leptospermum continentale* Low Very Open Shrubland with scattered emergent *Eucalyptus viminalis* ssp *cygnetensis* over an understorey of *Epacris impressa*, *Xanthorrhoea caespitosa* and *Leptocarpus tenax* on a plain with sandy loam soils. This site is located in the Red Gum Swamp area south west of Penola.

**Other Significant Species**
A potentially significant white spider orchid (currently included as part of *Caladenia patersonii* complex) was found in a *Eucalyptus leucoxylon* Low Open Woodland with a native grassy understorey, in a rail reserve corridor, near Keith. Clarification of the identity of the species awaits the revision of the orchid taxonomy in South Australia. However it is considered to be an unnamed species which will probably be recognised as a new species in the forthcoming revision of this group (R. Bates pers. comm.). This potentially new species is likely to be rated as vulnerable, at state and regional levels, given the nature of the habitat and current levels of disturbance of such habitats (Dr P. Lang pers. comm., DEH).

**Floristic Groups**
In reference to the number of unique species of conservation significance found within each floristic group, (refer to the Floristic Group section, this chapter), these are provided in the Floristic Group Summaries. It is important to note that this data is based on information current at the time of the compilation of the floristic summaries, in February 1993, and may vary a little from the ratings current at December 2002.

*Eucalyptus diversifolia* Open Mallee has the most Nationally rated species (three species) present followed by *Banksia ornata* Shrubland (2) and *Eucalyptus obliqua* Woodland over *Pteridium esculentum* (2). The group with the greatest number of unique species of conservation significance at a state and regional level is *Eucalyptus arenacea/baxteri* Woodland +/- *Pteridium esculentum* with 31 and 38 respectively. The second greatest at a state level is *Eucalyptus obliqua* Woodland over *Pteridium esculentum* (27) while at a regional level it is *Banksia ornata* Shrubland with 33 species.

**COMMON SPECIES**
A listing of the most common plant species observed during the survey, at greater than 20% of the sites is provided in Table 14. Due to difficulties in the field identification of some species, several species groups required lumping up to a broader taxonomic entity e.g. *Eucalyptus arenacea* and *Eucalyptus baxteri* to a combined group of *Eucalyptus arenacea/baxteri*.

Of the 857 plant species (not taxa as this list includes some plant entities that have only been identified to generic level), 39 species (4.6% - including 5 broader taxonomic entities) occurred at greater than 20% of the sites. Of these, only two species were introduced and 37 species were native.

The most frequently recorded species was *Xanthorrhoea caespitosa* at 56.4% of sites followed by *Banksia marginata* at 47.5% of sites. Two broader taxonomic entities *Hibbertia sericea* var. and *Drosera whittakeri* (NC) (subsequently split to 2 subspecies within the South East region), at 53.1% and 52.0% respectively were also amongst the most frequent species. However, if it were possible to separate these broader entities back to their individual taxa they would have lower frequencies of occurrence. The two introduced species most commonly observed were *Hypochaeris glabra* (46.7%) and *Hypochaeris radicata* (29.1%) (refer to Introduced Species section, this chapter).

Characteristic South East vegetation associations such as *Eucalyptus arenacea/baxteri* Woodlands, *E. fasciculosa* Woodlands, *Xanthorrhoea caespitosa* co-dominated shrubland and *Banksia ornata* Shrubland are represented by their key overstorey dominant species. Similarly, key species reflecting the sandy heath understoreys of *Eucalyptus arenacea/baxteri* Woodlands, *Xanthorrhoea caespitosa* co-dominated shrublands and *Banksia ornata* Shrublands are represented by *Hibbertia* species, *Astroloma* species, *Xanthorrhoea caespitosa*, *Pteridium esculentum*, *Hypolaena fastigiata* and *Leucopogon virgatus*.

Notable absentees from the list in Table 14 are the *Melaleuca* species, particularly those that dominate the brackish - saline swamps and the coastal sand and limestone species such as *Eucalyptus diversifolia*, *Leucopogon parviflorus* and *Olearia axillaris*. *Melaleuca brevifolia* was reasonably frequent at 11.7% of sites while *Melaleuca halmaturorum* ssp. *halmaturorum* occurred at 3.4% of sites (refer to Appendix IV). The lower frequencies of *M. halmaturorum* ssp. *halmaturorum* may reflect the lower number of sites placed in these communities.

The coastal sand and limestone species of *Eucalyptus diversifolia* and *Leucopogon parviflorus* (which now appear to be common species in many vegetation communities in the South East) are reasonably frequent at 17.3% and 19.8% respectively. *Olearia axillaris* at 5.6% of sites was less represented possibly due to less sites being placed in the coastal zone to avoid duplication of areas covered by the earlier South East Coast Survey. While the presence of these species may reflect the ancient coastal history of the region, it is suspected that practises associated with European settlement and agriculture (drainage, soil disturbance, exotic fauna) has created an environment where *Leucopogon parviflorus* and *Olearia axillaris* (coastal colonisers) have been able to increase beyond their original distribution (M. O'Leary, pers. comm. Plant Biodiversity Centre). The floristic vegetation group *Gahnia filum*, *Gahnia trifida* Sedgeland with invading *Olearia axillaris* (refer to the Floristic Group Descriptions section) found at the Bucks Lake Game Reserve (Carpenter Rocks) is an illustration of this.

**SPECIES WITH CHANGING ABUNDANCE**

The Coastal Wattle (*Acacia longifolia* var. *sophorae*), a somewhat controversial native species in the South East. It occurred at nearly a quarter of the sites (24.9% - Table 14) though it was only recorded as having a cover/abundance score >5 % at a third of these sites. The pre-European settlement distribution of *Acacia longifolia* var. *sophorae* is thought to have been confined to coastal dunes, or if elsewhere then only sparsely represented, based on historical research by Cohen (1981). The historic composition of coastal shrublands is described by Croft (this publication – Historical Vegetation chapter) as *Olearia axillaris – Leucopogon parviflorus* Shrubland based on Woods (1937), with *Acacia longifolia* var. *sophorae* occurring to a lesser extent (Specht 1972). Historical records of the South East (Lacepede Bay – southern Coorong area) describe the coastal vegetation as being "a narrow belt of she-oak forest, bordering the coast within 300 yards of the sea-shore" and " the land immediately on the shore was high sand hills, bordered by a narrow grassy belt of she-oak forest; then a plain about a mile wide" (Hawdon 1839).

It should be noted that descriptions of the coastal shrublands since 1937 have generally included a greater emphasis on *Acacia longifolia* var. *sophorae*. Crocker (1944) observed that on the coastal side of the *Eucalyptus diversifolia* Mallee association in the Woakwine Range (Beachport – Robe) area there may be a "considerable admixture of coastal plants like *Acacia longifolia* var. *sophorae* and *Leucopogon parviflorus*". Specht (1972) recorded the coastal shrubland succession moving from *Spinifex sericeus* Tussock Grassland to *Isolepis nodosa* Sedgeland to *Olearia axillaris – Leucopogon parviflorus* Shrubland to *Acacia longifolia* var. *sophorae – L. parviflorus* Shrubland, then to *Melaleuca lanceolata* Shrubland, and finally to *Allocasuarina verticillata – M. lanceolata* Low Woodland as the vegetation progresses inland. In particular Crocker (1944), who provides detailed descriptions of vegetation communities in the lower to mid regions of the South East, does not include *Acacia longifolia* var. *sophorae* as present in other inland vegetation community descriptions implying it was absent or only very sparsely present in these.

## Table 14.
## Plant species recorded in at least 20% of sites during this survey.

(Refer to Appendix IV for the listing of all plant species records for the survey sites in frequency order)
Note - Some plant species records have been lumped up to a broader taxonomic entity due to difficulties recognized in their field identification.
(858 plant species, 358 sites)
Frequency – refers to the frequency of occurrence of the species, during the survey.
Percentage of Sites – refers to the percentage of sites the species was observed in, during the survey.

| Plant Species | Frequency | Percentage of sites (%) | Comments |
|---|---|---|---|
| *Xanthorrhoea caespitosa* | 202 | 56.4 | |
| *Hibbertia sericea* var. | 190 | 53.1 | *Hibbertia sericea* var. - 74; *H. sericea* var. *scabrifolia* - 73; *H. sericea* var. *sericea* - 42; *H. incana* - 1 |
| *Drosera whittakeri* (NC) | 186 | 52.0 | |
| *Banksia marginata* | 170 | 47.5 | |
| **Hypochaeris glabra* | 167 | 46.7 | |
| *Hydrocotyle laxiflora* | 160 | 44.7 | |
| *Astroloma humifusum* | 158 | 44.1 | |
| *Dianella brevicaulis/revoluta* var. *revoluta* | 146 | 40.8 | *Dianella brevicaulis/revoluta* var. - 56; *D. brevicaulis* - 47; *D. revoluta* var. *revoluta* - 43 |
| *Astroloma conostephioides* | 139 | 38.8 | |

| Plant Species | Frequency | Percentage of sites (%) | Comments |
|---|---|---|---|
| *Gonocarpus tetragynus* | 132 | 36.9 | |
| *Lepidosperma concavum/congestum/laterale* | 131 | 36.6 | *Lepidosperma concavum/congestum/laterale* - 79; *L. concavum* - 30; *L. congestum* - 7; *L laterale* - 15 |
| *Hibbertia riparia (glabriuscula)* | 126 | 35.2 | |
| *Pteridium esculentum* | 123 | 34.4 | |
| *Eucalyptus arenacea/baxteri* | 119 | 33.2 | *Eucalyptus arenacea/baxteri* - 81; *E. arenacea* - 9; *E. baxteri* - 29 |
| *Isopogon ceratophyllus* | 119 | 33.2 | |
| *Leptospermum myrsinoides* | 118 | 33.0 | |
| *Oxalis perennans* | 116 | 32.4 | |
| *Lepidosperma carphoides* | 114 | 31.8 | |
| *Pyrorchis nigricans* | 113 | 31.6 | |
| *Hypolaena fastigiata* | 109 | 30.5 | |
| **Hypochaeris radicata* | 104 | 29.1 | |
| *Banksia ornata* | 104 | 29.1 | |
| *Correa reflexa* var. *reflexa* | 100 | 27.9 | |
| *Thysanotus patersonii* | 97 | 27.1 | |
| *Calytrix tetragona* | 96 | 26.8 | |
| *Eucalyptus fasciculosa* | 96 | 26.8 | |
| *Billardiera cymosa* | 94 | 26.3 | |
| *Goodenia geniculata* | 93 | 26.0 | |
| *Clematis microphylla* | 92 | 25.7 | |
| *Chamaescilla corymbosa* var. *corymbosa* | 91 | 25.4 | |
| *Acacia longifolia* var. *sophorae* | 89 | 24.9 | |
| *Drosera macrantha* ssp. *planchonii* | 89 | 24.9 | |
| *Daucus glochidiatus* | 85 | 23.7 | |
| *Acrotriche serrulata* | 81 | 22.6 | |
| *Caladenia carnea* complex | 78 | 21.8 | *Caladenia carnea* complex - 54; *C. carnea* var. *carnea* - 24 |
| *Kunzea pomifera* | 77 | 21.5 | |
| *Cynoglossum australe* | 76 | 21.2 | |
| *Leucopogon virgatus* | 76 | 21.2 | |
| *Acacia myrtifolia* var. *myrtifolia* | 73 | 20.4 | |

* - introduced species
(NC) – non–current species name (based on data an extracted from SA FLORA database, December 2001).

With increased time since European settlement the understanding of the original distributions become more difficult. Recent and ongoing investigations of early literature and Herbaria collections, by O'Leary suggests that *Acacia longifolia* var. *sophorae* only occurred in the coastal zone in the South East of South Australia until approximately 1950 with inland collections only occurring from that date onwards (refer to Table 15). Further review of early collections housed interstate (e.g. Dr F.J.H. Mueller's SA collection in the National Herbarium of Victoria) needs to be undertaken to complete the investigation (M. O'Leary, pers. comm., 2003.).

**Table 15.**
**Summary of SA State Herbarium early collection records (date and location) for *Acacia longifolia* var. *sophorae* and *Acacia longifolia* var. *longifolia*.**

| *Acacia longifolia* var. *sophorae* | | *Acacia longifolia* var. *longifolia* | |
|---|---|---|---|
| **Collection Date** | **Collection Location** | **Collection Date** | **Collection Location** |
| 1913 | Robe | 1960 | Yallum Park, Penola |
| 1918 | Robe | 1962 | Joanna Scrub |
| 1922 | Millicent | 1963 | Naracoorte Ra. Struan, "reported sown by Mr. Hood, the ornithologist. From seed obtained 'at the coast', therefore assume not endemic" |
| 1925 | Beachport | 1963 | Penola Forest, "? introduced to Naracoorte |

| *Acacia longifolia* var. *sophorae* | | *Acacia longifolia* var. *longifolia* | |
|---|---|---|---|
| **Collection Date** | **Collection Location** | **Collection Date** | **Collection Location** |
| | | | Range", |
| 1926 | Kingston | 1966 | Tarpeena |
| 1932 | Kingston | 1975 | 7k.S of Tarpeena |
| 1938 | Robe | 1980 | E. side Kalangadoo |
| 1940 | Coorong | 1982 | Comaum Forest |
| 1948 | Coorong | 1983 | Naracoorte Botanic Park, "infrequent in open scrub" |
| 1950 | Reedy Cr. Range | 1984 | Caroline Forest |
| 1955 | Caroline Forest | | |
| 1958 | 35km NE of Casterton (Victoria) | | |
| 1961 | Malinong | | |
| 1964 | Blue Lake | | |
| 1966 | Furner | | |
| 1982 | Mt. Scott C.P | | |
| 1984 | S. of Keith | | |
| 1985 | Messent C.P | | |

**Source:** Based on an extraction from the ADHerb database, SA Plant Biodiversity Centre, March 2003 (pers. comm. M. O'Leary, Plant Biodiversity Centre).

*Acacia longifolia* var. *sophorae* is now noted for its expanding distribution and invasive nature particularly observed on roadside reserves within the region (Cohen 1981, Stevens 1983, South East Local Government Association 1996). In the last decade and a half it has been noted for its invasion into blocks of remnant native vegetation further inland (pers. comm. T. Croft, DEH; pers. comm. K. Alcock, Naracoorte) and/or into blocks which have had undergone a major change of hydrological regime (pers. comm. M. Bachmann, South East Regional Office, DEH). It would appear that in some coastal areas the beginning of the change from an open *Allocasuarina* Woodland over grassland to an *Acacia longifolia* var. *sophorae* dominated shrubland commenced between the early 1900s and the 1930s (Cohen 1981), with increased occurrence of this species on roadsides since the 1950s –1960s (Stevens 1983).

Stevens (1983) suggests that the reasons for the increase in this colonising species, particularly along roadsides, appears to be a combination of increased soil disturbance; changes from 'firestick' farming to less frequent fires; reduction in grazing pressure (in roadside areas with a decrease of rabbits); and increased drainage allowing areas once too wet to be able to be colonised. M. Bachmann (South East Regional Office, DEH) has observed that the expansion of *Acacia longifolia* var. *sophorae* is related to the drying of the broad flats following drainage. In these areas *Acacia longifolia* var. *sophorae* has been killed out when periods of prolonged inundation have occurred in wetter years (M. Bachmann, pers. comm.). The role of wild fire and change in fire frequency that may also have contributed to the expansion of the species also needs further investigation. Low (2002) records observations of G. Carr in the heathlands of Anglesea (Victoria) where following the Ash Wednesday Fire a huge recruitment of *Acacia longifolia* var. *sophorae* occurred, with other coastal species common to gardens in the area. Seeds are recorded as travelling hundreds of metres in updrafts with thousands of seedlings germinating in the post-fire ash beds.

McMahon *et al.* (1996) also noted increased dispersal of the seeds by birds such as starlings to be a contributor, aided by the prolific seeding capacity of *Acacia longifolia* var. *sophorae*. N. Bonney (pers. comm.) has also observed high frequencies of *Acacia longifolia* var. *sophorae* seed present in the dung of Emus, a highly mobile species, which has benefited from the provision of water for stock as it water every day (Blakers *et al.* 1984). Review of the ranges of avian dispersal vectors by Spennemann and Allen (2000), for feral olives, highlights the Emu's potential in the dispersal of *Acacia longifolia* var. *sophorae*. Spennemann and Allen (2000) found the Emu had a range of up to 50 km, implying that seed could be dispersed up to that distance from the original seed source. Another contributor to the species' expansion is the loss of harvesting by Indigenous people who were recorded as using *Acacia longifolia* var. *sophorae* as a food plant. Local Indigenous people cooked the green pods over a fire before picking out the protein rich seeds to eat, or ground the dried seeds into flour (Bonney and Miles 1994).

Local SE Naturalist (K. Alcock), has observed the invasion of *Acacia longifolia* var. *sophorae* into the inland ranges and flats in the Naracoorte area, has seen this spread occur out from local amenity plantings of this species at the Naracoorte Nature Park. Following a similar theme Baldock *et al.* (no date) reports that one shack owner is recorded as having planted *Acacia longifolia* var *sophorae* at Shipworth Springs sometime prior to 1975 and "that it is possible this planting may have influenced the invasion of coastal wattle in the park [Lower Glenelg National Park] either by introduction of new genetic material, or by providing a new point source for colonisation". In relation to invasions stemming from amenity plantings in the 1960s, the then Department of Roads and Local Councils used *Acacia longifolia* var. *sophorae* as one of the species to assist in the beautification of roadsides popular at that time (pers. comm. N. Bonney, SE Natural Resources Consultant). Further compounding of the planting issue may have also resulted from the use of *Acacia longifolia* in soil conservation or revegetation programs. Voigt (1981) records that *Acacia longifolia* (Sallow wattle) was amongst the native species planted by the Soil Conservation Authority in Victoria to assist in controlling extensive erosion problems in the middle reaches of the Glenelg River catchment. Over 80,000 native trees were planted, between 1962 when works commenced up to 1981, along gully sides and on landslips to assist stabilisation (Voigt 1981). In South Australia revegetation advice in the early 1980s listed *Acacia longifolia* var. *sophorae* as a species to use for 5 types of inland woodland association in addition to in coastal areas, even though it also noted that *Acacia longifolia* var. *sophorae* was "currently spreading beyond its original distribution" (pers comm. Z. Stokes, Revegetation Consultant, Rural Solutions SA).

The issues associated with the increased cover of *Acacia longifolia* var. *sophorae* particularly from a local council perspective are road safety concerns (lateral growth obscuring motorists view and encroaching onto the roadway), fenceline maintenance, displacement of other native vegetation and inhibiting adequate pest control (for rabbits) (South East Local Government Association 1996). Costello *et al.* (2000) in a study of *Acacia longifolia* var. *sophorae* found that there was a strong negative correlation between *Acacia longifolia* var. *sophorae* cover and plant species richness with a loss of 7.5 species after 10 years of invasion and 15 species after 20 years.

The issue of displacement of other native species is of major concern. For some vegetation communities only a few small areas remain which are often only found in roadside reserves. *Acacia longifolia* var. *sophorae* potentially threatens such remnants as it may also threaten individual rare and threatened species. An example of this is in the nearby Portland area (Victoria) where coastal heath is being invaded by *Acacia longifolia* var. *sophorae* and thus threatening the endangered Mellblom's Spider Orchid (*Caladenia hastata*) (Todd 2000).

In the South East there are a number of nationally threatened orchid species (*Caladenia richardsiorum*, *Pterostylis tenuissima*, *Caladenia calcicola*) occurring in areas and habitats that could be or are being invaded by *Acacia longifolia* var. *sophorae*. Such invasion could be particularly problematic for *Caladenia richardsiorum*, which occurs in coastal heaths (pers. comm. A. Pritchard, Threatened Orchid Officer, Department of Sustainability and Environment, Victoria). Examples of other species that could be threatened may include a species that has not been found in the region since it was first collected or a recent orchid discovery. *Chionogentias clelandii,* which has not been found in the region since early type collections, in the 1940s, is noted to have occurred in "a damp heathy grassland" (Adams 1995) based on the collector's description. This confusing habitat description could relate to at least three habitats in the Millicent to Canunda area. These include, for example, swampy *Gahnia* Sedgelands, *Themeda* Tussock Grasslands or dense *Leptospermum lanigerum* Shrublands. These grassland and sedgeland communities are threatened by advancing *Acacia longifolia* var. *sophorae*, which is able to invade communities where hydrological change, resulting from drainage, has created a drier soil environment perfect for this coloniser. Inland in the Naracoorte area the invasion, by *Acacia longifolia* var. *sophorae,* of the Naracoorte Range potentially threatens species and communities of the dryland ranges such those occurring in Stringybark Woodlands. A recent discovery of a new (to South Australia) donkey orchid species (possibly *Diuris dendrobioides*) (pers. comm. K. Alcock; pers. comm. Dr P. Lang, DEH), could be threatened by continued expansion of *Acacia longifolia* var. *sophorae* advancing into its habitat.

Of the floristic groups described from the survey data (refer to the Floristic Group Summaries) *Acacia longifolia* var. *sophorae* occurs in 2 groups at ≥ 40 % of sites. One of these groups is *Leucopogon parviflorus, Acacia longifolia* var. *sophorae, Olearia axillaris* Tall Shrubland (Group 26). The coastal shrubland group includes the species original distribution however the second group is *Eucalyptus fasciculosa, Xanthorrhoea caespitosa* Low Woodland (Group 7). This woodland group is an example of a hinterland woodland community where it is unlikely that *Acacia longifolia* var. *sophorae* originally occurred. The invasion of *Acacia longifolia* var. *sophorae* was observed in this and other neighbouring communities in the Martin's Washpool – Tilley Swamp area, by the author and Dr P. Lang during the 1991 survey.

Three other pecies with changing abundance (increasing or declining) include a range of *Acacia* species (including the non-endemic *Acacia longifolia* var. *longifolia*); the coastal colonisers' *Leucopogon parviflorus* and *Olearia axillaris* (previously mentioned) *Banksia ornata*; *Dodonaea viscosa* ssp. *spatulata;* and salt tolerant species such as *Melaleuca halmaturorum* ssp. *halmaturorum* and samphire species (*Sarcocornia* spp. and *Halosarcia* spp.). These are listed in Table 16.

Those species indicated as increasing or possibly increasing, may or may not have the potential to become problems at some stage in the future if they are not already a problem (e.g. *Acacia longifolia var. sophorae*).

The reasons for the changing abundance is complex and includes a variety of impacts from hydrological changes (drying out of previously wet areas), salinity, increased native and feral vectors for seed dispersal, reduction of harvesting of seed, grazing, increased soil disturbance and changes to fire frequency.

Further investigations are required to research whether changes in the abundance of these species are significant and what the implications may be for regional biodiversity now and in the future.

**Table 16.**
**Species with potentially changing abundance resulting from environmental changes in the region. Includes frequency recorded during the survey.**

| Changing Abundance | Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|---|
| I | *Acacia longifolia* var. *sophorae* | 89 | 24.86 |
| I | *Acacia myrtifolia* var. *myrtifolia* | 73 | 20.39 |
| I | *Acacia pycnantha* | 57 | 15.92 |
| D | *Acacia melanoxylon* | 55 | 15.36 |
| D | *Acacia verticillata* | 40 | 11.17 |
| I | *Acacia paradoxa* | 25 | 6.98 |
| I ? | *Acacia leiophylla* | 17 | 4.75 |
| I | *Acacia mearnsii* | 17 | 4.75 |
| See specific species | *Acacia leiophylla/pycnantha* | 16 | 4.47 |
| D | *Acacia oxycedrus* | 13 | 3.63 |
| I | **Acacia longifolia* var. *longifolia* | 5 | 1.40 |
| I | **Acacia saligna* | 1 | 0.28 |
| See specific varieties | *Acacia longifolia* var. | 1 | 0.28 |
| D | *Acacia mitchellii* | 1 | 0.28 |
| D | *Acacia stricta* | 1 | 0.28 |
| I | *Banksia ornata* | 104 | 29.05 |
| I | *Leucopogon parviflorus* | 71 | 19.83 |
| I | *Dodonaea viscosa* ssp. *spatulata* | 42 | 11.73 |
| I | *Olearia axillaris* | 20 | 5.59 |
| I | *Samolus repens* | 18 | 5.03 |
| I ? | *Juncus kraussii* | 17 | 4.75 |
| I | *Melaleuca halmaturorum* ssp. *halmaturorum* | 12 | 3.35 |
| I ? | *Wilsonia backhousei* | 2 | 0.56 |
| I ? | *Wilsonia rotundifolia* | 2 | 0.56 |
| I ? | *Halosarcia indica* ssp. *leiostachya* | 1 | 0.28 |
| I | *Halosarcia pergranulata* ssp. *pergranulata* | 1 | 0.28 |

I – Increasing.
I ? – Possibly increasing.
D – Declining.
* - Introduced species.

**Source: Appendix ?? and personal communications with M. O'Leary, Plant Biodiversity Centre, T. Croft, DEH and Dr P. Lang, DEH.**

**INTRODUCED SPECIES**
Introduced species[1], particularly those considered to be environmental weeds, pose a threat to native plant species in a variety of ways: through competition for space, sunlight and water; smothering or shading out; changing the nature of the soil or plant litter; and increasing the fire risk to native vegetation (Croft *et al.* 1999).

Of the 789 taxa recorded during the survey, 18.9% (149 taxa) were introduced. Two tables of the introduced species are provided in Appendix V, one which lists the 159 taxonomic categories (of which 13 are only to identified to higher rank, e.g. *Vulpia* sp.) recorded at sites, and the other six taxonomic categories recorded at opportune sighting locations. Both tables are sorted by frequency of occurrence. Three taxa (*Modiola caroliniana*, *Scabiosa atropurpurea* and *Trifolium stellatum*) were recorded only at opportune sighting locations. The species most frequently observed were *Hypochaeris glabra* and

[1] Introduced species can include species native to Australia that do not naturally occur in the region.

*Hypochaeris radicata* at 46.7% and 29.1% of sites respectively. Both these species are native to Europe and have the ability to grow in a wide range of habitats particularly where there is disturbed ground. *Hypochaeris glabra* is noted as one of the earliest invaders of native vegetation along tracks (Cooke 1986).

It is interesting to note that apart from *H. glabra* and *H. radicata* (recorded at >20% of sites) and *Holcus lanatus*, *Cerastium glomeratum*, *Galium murale*, *Sonchus oleraceus*, *Arctotheca calendula*, *Cirsium vulgare* and *Myrsiphyllum asparagoides* (recorded at 10-20% of sites), most of the remaining 150 introduced species occurred at < 5% with the bulk of these at <1% of sites (103 species). From this it can be inferred there is a small group of seven introduced species that have been successful at invading native vegetation. Possible causes for their success may be the combination of: disturbances and changed environmental regime(s) that allow these species to colonise areas, an increase in the vectors that spread these species and these vectors having more contact with introduced plant species. In total a wide diversity of introduced species appear to occur in the native vegetation across the region but most species have low frequencies implying that they may be restricted to a particular disturbance and / or environmental regime. Nevertheless, further investigation is required and on-ground actions are required to halt or reduce the spread of introduced species in areas of native vegetation where possible.

**National and State Significant Weeds (Proclaimed Plants)**

The National Weeds Strategy aims to control weeds of national significance, which most threaten the natural environment and agriculture. A central component of the strategy is the identification of Weeds of National Significance and the resultant inaugural list of Weeds of National Significance was announced in June 1999 (www.weeds.org.au/natsig.htm, Thorp and Lynch 1999). Of the 20 species listed only *Myrsiphyllum asparagoides* was recorded during the survey.

For weeds of state significance, Table 17 provides a listing of the 10 species that were recorded on the survey that are listed as Proclaimed plants under the regulations of the Animal and Plant Control Act 1986. The most frequently recorded of these were *Myrsiphyllum asparagoides* and *Cirsium vulgare* at 10.3% of sites followed by *Carduus tenuiflorus* at 9.5%. Five of the recorded proclaimed plants species require enforced[2] control in most of the SE region and an additional species (*Carduus tenuiflorus*) requires control in the Mt Gambier area.

**Environmental Weeds**

All introduced species, when naturalised can be argued to be environmental weeds however, some are found to have a more significant impact in terms of conservation and ongoing maintenance of native vegetation. Table 17 lists the major environmental weeds recognised for the region by Croft *et al.* (1999). One of these, *Chrysanthemoides monilifera*, was not recorded at survey sites. *Myrsiphyllum asparagoides* was the most frequently observed of the environmental weeds, recorded at 10.3% of sites followed by *Pinus radiata* at 8.7%. As sites are generally surveyed in the best representative native vegetation, the presence of the region's most threatening weed *M. asparagoides* (Croft *et al.* 1999) at 10% of sites is of concern, indicating that this species may be becoming widespread in larger remnants of native vegetation. The presence of *P. radiata* at close to 10% of sites also indicates the potentially invasive nature of this large lifeform long-lived species with the capacity of abundant seed production. While manual removal is undertaken by Forestry SA in Native Forest Reserves, (Croft *et al.* 1999) this may not be the case in other private or public land areas (adjacent to pine plantations). If not checked, the number of *P. radiata* will only increase, threatening the biodiversity of adjacent native vegetation communities.

[2] The Local Animal and Plant Control Board requires landholders to control these specific species.

**Table 17.**
**Frequency of Proclaimed # plants recorded in the South East during this survey.**

| Plant Species | Common Name | Description | Freq | Percent |
|---|---|---|---|---|
| *Myrsiphyllum asparagoides* | Bridal Creeper | | 37 | 10.3 |
| *Cirsium vulgare* | Spear Thistle | Control required in part of the State only | 37 | 10.3 |
| *Carduus tenuiflorus* | Slender Thistle | Control required in part of the State only | 34 | 9.5 |
| *Echium plantagineum* | Salvation Jane | Control required in part of the State only and Notifiable in part of the State | 3 | 0.8 |
| *Lycium ferocissimum* | African Boxthorn | | 3 | 0.8 |
| *Marrubium vulgare* | Horehound | Control required in part of the State only | 2 | 0.6 |
| *Olea europaea* ssp. *europaea* | Olive | | 2 | 0.6 |
| *Oxalis pes-caprae* | Soursob | Control required in part of the State only | 2 | 0.6 |
| *Homeria flaccida* | One-leaf Cape Tulip | Notifiable in part of the State | 1 | 0.3 |
| *Silybum marianum* | Variegated Thistle | Control required in part of the State only | 1 | 0.3 |

-# Proclaimed plants refers to plants that require control for the protection of agriculture, the environment and public safety under the Animal and Plant Control Act 1986. The list of Proclaimed plants is according to the Primary Industries and Resources SA website (www.pir.sa.gov.au) and dated January 2002.
Frequency – refers to the frequency of occurrence of the species recorded during the survey.
Percent – refers to the percentage of sites where this species was recorded during the survey (Total number of sites = 358).

**Table 18.**
**Frequency of occurrence of major environmental weeds# recognised for the South East recorded on this survey.**

| Plant Species | Common Name | Frequency | Percent |
|---|---|---|---|
| *Myrsiphyllum asparagoides* | Bridal Creeper | 37 | 10.3 |
| *Pinus radiata* | Radiata (Monterey) Pine | 31 | 8.7 |
| *Phalaris* sp. | Canary Grass | 4 | 1.1 |
| *Olea europaea* ssp. *europaea* | European Olive | 2 | 0.6 |
| *Phalaris aquatica* | Phalaris | 2 | 0.6 |
| *Rubus* sp. | Blackberry | 2 | 0.6 |
| *Acacia saligna* | Golden Wreath Wattle | 1 | 0.3 |
| *Chamaecytisus palmensis* | Tree Lucerne | 1 | 0.3 |
| *Chrysanthemoides monilifera* | Boneseed | 0 | 0 |

#- Environmental Weeds recognised for the SE region according to Croft *et al.* (1999). (This can include species native to Australia that do not naturally occur in this region such as *Acacia saligna*).
Frequency – refers to the frequency of occurrence of the species recorded during the survey.
Percent – refers to the percentage of sites where this species was recorded during the survey (Total number of sites = 358).

*Phalaris* species (*Phalaris* sp. and *Phalaris aquatica*) though not present at many sites (1.6%) on this survey are considered the most serious environmental weed of grassy woodlands such as degraded *Eucalyptus camaldulensis* Woodlands (Croft *et al.* 1999). Davies (1997) lists *Phalaris aquatica* amongst the most frequent and abundant weed species of temperate grassy ecosystems in South Australia. As the survey did not comprehensively cover these communities, it does not accurately represent the serious problem that *Phalaris* species pose particularly to grassy woodlands in the region.

The European Olive (*Olea europaea* ssp. *europaea*) was only recorded at 0.6% of sites. However, with the revival of the olive industry and the increased establishment of new olive plantations this leaves no room for complacency with regard to control of feral plants. Feral olive plants have a serious impact on threatened grassy woodlands in the Upper South East, such as in the Tatiara area. Increased presence of olives in remnants and on roadsides due to seed being dispersed by birds (e.g. Starlings and some native species) and foxes eating the fruit from old plantations, provides a serious forewarning of the potential problem that will result in the future if development controls are not undertaken in restricting the location of these plantations and prescribing maintenance conditions. Refer to Croft *et al.* (1999) for extensive guidelines regarding the required actions for reducing the impact of environmental weeds.

Blackberry (*Rubus ulmifolius* var. *ulmifolius*), which comes under the umbrella of *Rubus* spp. was only recorded at 0.6% of sites. While not considered as serious a threat in the South East as in the Mt Lofty Ranges, it is also a weed that leaves no room for complacency as it may become a serious threat if it is not controlled or eradicated (Croft *et al.* 1999). Similarly *Acacia saligna* and *Chamaecytisus palmensis*, though only recorded at one site each (0.3%) during the survey, need to be eradicated in areas of native vegetation and discouraged from use in revegetation projects near native vegetation (Croft *et al.* 1999).

Other environmental weed species known to occur in South East which have become more problematic in native vegetation areas since the survey or may become so in the future are *Acacia longifolia* var. *longifolia* (Sallow Wattle), *Chrysanthemoides monilifera* and *Ulex europaeus* (Gorse) (M. Bachmann, South East Regional Office, DEH).

Sallow Wattle, *Acacia longifolia* var *longifolia* poses particular problems as an invasive weed. This species, native to the Eastern states is invasive to native vegetation in the survey area and in the Southern Lofty's Herbarium region (M. O'Leary, M. Bachmann, N. Bonney, pers. comm. 2003). Of particular concern is its apparent ability to hybridise with *A. longifolia* var *sophorae*. Evidence of this comes from field observations of intermediate plants (M. Bachmann, N. Bonney, pers. comm. 2003), and herbarium specimens with intermediate characters (M. O'Leary, pers. comm. 2003). Future studies on the hybridity between the two taxa of *Acacia longifolia* to determine if these hybrids possess extra vigor and potentially a greater habitat invasiveness, and whether there is a threat to the genetic integrity of the local *A. longifolia* var *sophorae* are reccommended.

**Floristic Groups**
Summary statistics on the average number of introduced species per site for each floristic group, and the minimum and maximum ranges of introduced species at sites within each group, are provided in the Floristic Group Summaries under the Species Patterns section, this chapter. These statistics provide only an indication of the presence of introduced species within floristic groups. Of the 29 groups from the analysis *Eucalyptus camaldulensis* var. *camaldulensis* Woodland has the highest average number of introduced species per site at 6 species (5 members). This is followed by *Allocasuarina verticillata, Eucalyptus leucoxylon* ssp. Low Woodland (5. 7% - 3 members), *Eucalyptus leucoxylon* ssp. Low Open Woodland (4.8% - 4 members), *Themeda triandra* Open Tussock Grassland (4.5% - 2 members), *Eucalyptus obliqua, Pteridium esculentum* Woodland (4.4% - 44 members) and *Eucalyptus fasciculosa, Xanthorrhoea caespitosa* Low Woodland (4.1% - 40 members).

It is important to note that this information is not comprehensive as the floristic groups were not sampled evenly, some floristic communities that have been mapped had limited to no sampling and the sampling did not cover all seasons hence is biased to those species present at the time of the survey.

**PLANT TAXONOMY ISSUES**
As indicated in the Methods chapter, the section on Common Species and Table 14, there were a number of field plant identification problems that occurred. These issues were not identified until the post field plant verification process was undertaken. As a result, where voucher specimens were not collected at subsequent sightings for certain species (Table 19), these species had to be combined to form a broader taxonomic entity. Unfortunately, this resulted in a reduction of the level of information available within the database and for any further analysis.

**Table 19.**
**Problematic plant species and broader taxonomic entities used in the floristic analysis.**

| Problematic Plant Species | Broader Taxonomic Entity Used |
|---|---|
| *Acacia leiophylla* | *Acacia leiophylla/ pycnantha* |
| *Acacia pycnantha* | *Acacia leiophylla/ pycnantha* |
| *Dianella brevicaulis* | *Dianella brevicaulis/ revoluta var.* |
| *Dianella revoluta var. revoluta* | *Dianella brevicaulis/ revoluta var.* |
| *Eucalyptus arenacea* | *Eucalyptus arenacea/ baxteri* |
| *Eucalyptus baxteri* | *Eucalyptus arenacea/ baxteri* |
| *Lepidosperma concavum* | *Lepidosperma concavum/ congestum/laterale* |
| *Lepidosperma congestum* | *Lepidosperma concavum/ congestum/laterale* |
| *Lepidosperma laterale* | *Lepidosperma concavum/ congestum/laterale* |
| *Thelymitra nuda* | *Thelymitra nuda/ pauciflora* |
| *Thelymitra pauciflora* | *Thelymitra nuda/ pauciflora* |

Some additional lumping of taxa to broad taxonomic entities was also required in the initial preparation of the total dataset for analysis. This was required to align plant taxonomy and nomenclature that existed because of different names being in use at the time of each survey used in the analysis.

In addition some changes in plant taxonomy and nomenclature since the survey, are recorded in the list of unique plant records in Appendix II. It should be noted however, that this list does not document some more recent changes. The inclusion of more recent changes is dependent on whether these are adopted by the SA Plant Biodiversity Centre and available in an update or new census of vascular plants of SA. The new SA census is expected in the later half of 2003.

**SPECIES PATTERNS (FLORISTIC GROUPS)**

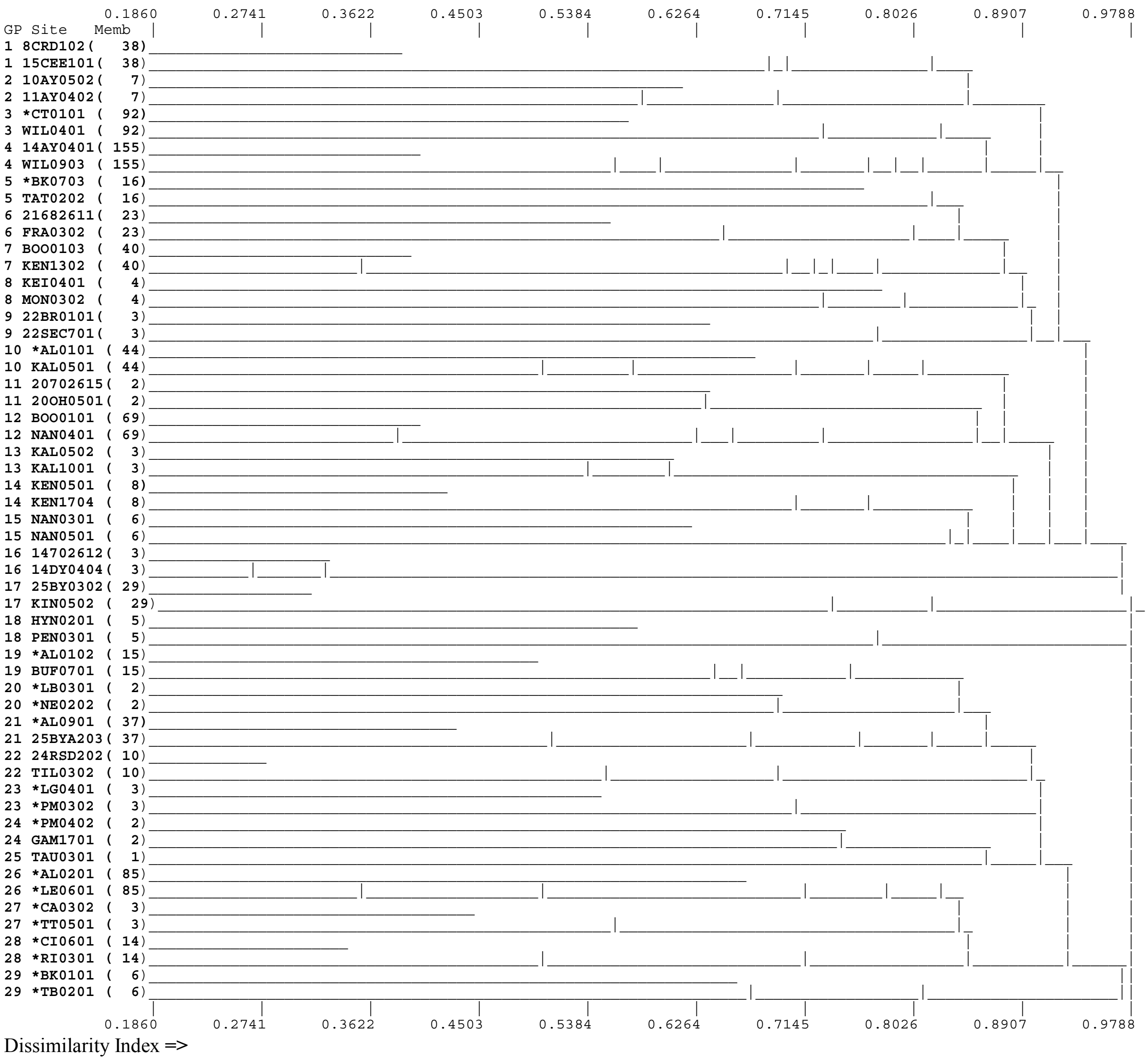
The aim of the data analysis process was to find patterns in the distribution of plant species within the study area, reflecting those observed in the field, while providing an objective basis for such floristic groupings. This then formed the basis from which to map the study areas floristic vegetation. In reality vegetation rarely classifies neatly into discrete groups with each having a unique species composition. Vegetation types grade into each other with ecotone types often separating clearly distinct types within a geographic region. In assessing a classification and using it to map vegetation these factors of intergrading vegetation types and changes in species composition with geographic location must be considered.

In addition, the study boundary used for the analysis, though slightly expanded from the South East Remnant Vegetation Survey, to include vegetation types from the southern mallee at the southern extremity of their range is an artificial boundary. This may have caused misclassification of sites for vegetation types at the extremes of their range, due to insufficient data for comparisons hence clustering into another group.

The number of Biological Survey sites that contributed to the analysis and the number of sites that were masked out are summarised in Table 7 (see Survey Coverage section earlier this chapter). Initially 762 sites were used however 37 sites were masked out leaving 725 sites in final run, the final classification involved perennial species and cover / abundance.

It is important to note, however, that the analysis has no end point and the resulting classification may be one of a number that could equally well summarise the data. This sort of exploratory data analysis is also a technique used to generate hypotheses rather than solve them.

The final analysis resulted in 29 floristic groupings. These were determined to provide the most useful summary of the total dataset. The number of groups chosen is arbitrary, as no two sites in the survey have exactly the same complement of plant species, therefore the number of groups could vary from one to 762 (the total number of sites included in the analysis). Figure 35 illustrates a summarised version of the dendrogram with cut-off produced for the final 29 groups. Table 20 lists the final 29 floristic groups resulting from the PATN analysis.




## Figure 36.
## Floristic groups from PATN – summarised dendrogram of 29 groups (first and last members [sites] for each groups are presented).

Note: Appendix VI provides an index to the site numbers used in the PATN analysis and the corresponding labels used on the field datasheets and in the database.

**Table 20.**
**South East Floristic Groups as determined from the PATN analysis of 762 sites, in dendrogram order.**

| Floristic Group Number | Regional Floristic Descriptions |
|---|---|
| 1 | *Eucalyptus incrassata, E. leptophylla, +/- Melaleuca uncinata* Open Mallee |
| 2 | *Eucalyptus dumosa, E. leptophylla* Mallee |
| 3 | *Eucalyptus diversifolia* Open Mallee |
| 4 | *Banksia ornata* +/- emergent *Eucalyptus incrassata* Shrubland |
| 5 | *Eucalyptus fasciculosa, E. leucoxylon* spp. Low Woodland |
| 6 | *Eucalyptus leucoxylon* ssp., *+/- Acacia pycnantha* Open Woodland |
| 7 | *Eucalyptus fasciculosa, Xanthorrhoea caespitosa* Low Woodland |
| 8 | *Eucalyptus leucoxylon* ssp. Low Open Woodland |
| 9 | *Allocasuarina verticillata, Eucalyptus leucoxylon* ssp. Low Woodland *# |
| 10 | *Eucalyptus obliqua, Pteridium esculentum* Woodland |
| 11 | *Eucalyptus arenacea/baxteri, Baeckea behrii* Low Woodland * # |
| 12 | *Eucalyptus arenacea/baxteri, +/- Pteridium esculentum* Woodland |
| 13 | *Melaleuca squarrosa,* +/- emergent *Eucalyptus ovata* Tall Shrubland # |
| 14 | *Xanthorrhoea caespitosa, Leptospermum continentale* +/- emergent *Eucalyptus obliqua* Open Shrubland |
| 15 | *Leptospermum continentale* Shrubland |
| 16 | *Callitris verrucosa* Tall Shrubland *# |
| 17 | *Melaleuca brevifolia* Low Shrubland |
| 18 | *Eucalyptus camaldulensis* var. *camaldulensis* Woodland |
| 19 | *Leptospermum lanigerum* Tall Shrubland |
| 20 | *Gahnia filum*, *Gahnia trifida* with invading *Olearia axillaris* Sedgeland # |
| 21 | *Gahnia filum, Samolus repens* Sedgeland |
| 22 | *Melaleuca halmaturorum* ssp. *halmaturorum* Tall Shrubland |
| 23 | *Typha domingensis* Closed Sedgeland # |
| 24 | *Themeda triandra* with emergent *Pimelea glauca* Open Tussock Grassland # |
| 25 | *Leptocarpus brownii, Baumea juncea* Closed Sedgeland # |
| 26 | *Leucopogon parviflorus, Acacia longifolia* var. *sophorae, Olearia axillaris* Tall Shrubland |
| 27 | *Spinifex sericeus, Ozothamnus turbinatus, Isolepis nodosa* Tussock Grassland # |
| 28 | *Muehlenbeckia gunnii* Vineland * |
| 29 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland *# |

Floristic Analysis Number – relates to the position of the group in the dendrogram (refer to Methods Chapter for details on the PATN analysis process).

* - refers to groups that were not surveyed in the South East study area, as determined for this survey. The sites comprising these groups were peripheral to or wholly outside the study area.

# - refers to groups that contain less than 0.5% of the 725 sites used in the final analysis. In general these groups require more site representation to check whether they are adequately described.

Historical vegetation associations recorded in the Historical Vegetation Communities Chapter that were not found in the PATN analysis are listed in Table 21. The absence of these communities in the analysis results was due to insufficient survey sites sampling these communities hence inadequate representation in the analysis dataset.

Some physical attribute data was available, from the survey dataset, such as surface soil texture, landform type and strew type. This was collated along with extra data relating to rainfall and surface geology. Unfortunately rainfall data, at the time, could only be provided in broad ranges taken from Laut *et. al* (1977). Surface geology was taken from the 1:1,000,000 scale digital coverage provided by Minerals and Energy Resources, Primary Industries and Resources SA (formerly Department of Mines and Energy).

Minitab, a statistical software package, was used to produce frequency tables for each of the different environmental variables. These tables were then subjectively assessed to indicate trends and general ranges within the environmental variables for each group.

Structural formation data was also collated to provide average canopy heights and canopy cover estimates based on field assessment. Where adequate height and canopy 'measurements', including canopy type, were available from field-work an average percentage foliage cover was calculated for the group. Structural formations used are according to the SA Structural Formation table (refer to Appendix VII).

The following text provides an explanation of the full details provided for each of the floristic groups defined. The floristic group summaries then follow.

**Table 21.**
**Historical Vegetation Associations not found in the PATN analysis but recorded in the Historical Vegetation Communities Chapter.**

| **Historical Vegetation Associations** |
|---|
| *Eucalyptus viminalis* ssp. *cygnetensis* - *Eucalyptus arenacea/baxteri* Open Forest |
| *Eucalyptus willisii* ssp. *willisii* Low Open Forest |
| *Eucalyptus largiflorens* Woodland |
| *Eucalyptus microcarpa* Woodland |
| *Eucalyptus ovata* Woodland |
| *Eucalyptus viminalis* ssp. *cygnetensis* Woodland |
| *Allocasuarina luehmannii* Low Woodland |
| *Banksia marginata* Low Woodland |
| *Eucalyptus arenacea/baxteri* +/- *E. fasciculosa* Low Woodland |
| *Eucalyptus porosa* Low Woodland |
| *Melaleuca lanceolata* ssp. *lanceolata* Low Woodland |
| *Eucalyptus behriana* - *E. dumosa* - *E. odorata* Mallee. |
| *Eucalyptus odorata* (Peppermint Box) Mallee |
| *Eucalyptus rugosa* (Kingscote Mallee) Mallee |
| *Melaleuca gibbosa* - *Hakea rugosa* Shrubland |
| *Gahnia trifida* Sedgeland |
| *Baumea juncea* - *Chorizandra enodis* Sedgeland |
| *Phragmites australis* - *Typha domingensis* Grassland |

**Floristic Group Descriptions for the 29 Groupings defined in the PATN Analysis**

The listing shows the:

- Floristic group number (as they appeared on the dendogram).

- Floristic group name. Structural names used to describe each floristic group are based on the first dominant overstorey species listed. Structural formations are according to the SA Structural Formations table updated from Heard and Channon (1997) (Appendix VII) with one exception being from McDonald *et al.* (1990). Plant taxonomy and nomenclature follows Jessop (1993) as updated by the SA FLORA Database 2002. Common names generally follow the SA FLORA Database 2002.

- Number of members (sites) in each floristic group determined from the PATN analysis.

- Description of Floristic group.

- Distribution map. This shows the location of all sites used in the analysis (small dots) with the sites that are members of the floristic group highlighted (large dots). Major geographic features of the region (e.g. lakes and swamps), land cover, the analysis study boundary (larger than the survey study boundary) and the SA – Victoria Border are shown on each map.

- Dominant / codominant overstorey species. These species were defined by having a proportion of occurrence ≥ 0.50, a large lifeform size and a high "importance index [1]" for average abundance.

- Dominant / codominant understorey species. Up to five species were selected on review of the sites near the centre of the group's membership and were defined by having the highest average abundance within a proportion of occurrence ≥ 0.50 (with occasional exceptions). They are generally listed in lifeform size order (highest to lowest).

- Indicator species. These species are proposed to be indicative of the group as they occur more frequently than expected. They were defined by having a proportion of occurrence ≥ 0.40.and are ranked according to a high "importance index [1]" values, not less than 3.84, for average cover / abundance[4]. Generally only up to the top five species are indicated.

- Possible emergent species[2]. These species were defined only for some communities where species are occasionally present emerging over the dominant overstorey. Only species that had a proportion of occurrence ≥ 0.10 are indicated.

- Native and introduced plant species summary. Average, minimum and maximum number of native perennials, introduced perennials, native annuals and introduced annual taxa per site per group.

- Conservation significant species information is based only on the species recorded during the 1991 vegetation survey, uses February 1993 ratings and. provides the total number of unique conservation significant species for the group. Statistics are provided for those rated at the Australian, South Australian (SA) and the South East Regional levels. The Australian ratings are based on Briggs & Leigh (1988) while the SA and regional ratings are derived from the SA Flora Database February 1993, which provides an update to the original assessments by Lang & Kraehenbuehl (1987).

- Structural summary for the dominant / codominant overstorey species. Where adequate data was available, percentage foliage cover was calculated and used to objectively classify the group in terms of structural formations (refer to floristic group name.) However in cases where inadequate data was available, a subjective assessment, based on canopy cover, was used to select the appropriate structural classification.

- Environmental parameters (ranges / trends for environmental variables). The majority of this information is based on data collected during the 1991 field survey except for the average rainfall information and geological formations.

- Group species list with statistics on the average cover / abundance, "importance index"[1], proportion of occurrence and O-E/E values for proportion of occurrence. Frequency counts are also provided on the Braun-Blanquet cover / abundance scores, from the original data, for each species. Only species that occurred at ≥ to 40 % of sites are listed[5]. Species that are important in describing the group are highlighted in bold.

- Membership of each floristic group by site number (identifier) is provided. The site number used here was specifically customised for each site, in this analysis, from the original site number. In the case of the sites from the Murray Mallee and the South East Coastal Surveys' a prefix was added to the site number after superfluous zeros were removed. The prefix used for the Murray Mallee sites was the floristic group number derived by the original Murray Mallee analysis (see Foulkes & Gillen 2000), while an asterisk prefixed the South East Coast site numbers. The members are listed in dendrogram order reading left to right. Appendix VI provides an index to the site numbers and their corresponding labels used on the field datasheets and in the database.

- Figure. Photograph of the site representing the floristic group. Where possible this was based on the site nearest the centre of the floristic group membership.

**Explanations:**

| | |
|---|---|
| * | Indicates an introduced species. |
| # | Indicates very limited to no data available. |
| var. | variety |
| ssp. | subspecies |
| gp | group |

---

1. Importance index (I.I.) has been derived from O-E/E[3] for average abundance across all groups. Therefore, the higher the value the more departure there is from the expected.
2. An emergent species is defined as a species that emerges above the overstorey and occupies a stratum that has a canopy cover of less than 5% (Heard and Channon 1997).
3. The O-E/E value is an indication of whether the species is likely to occur in the group by chance alone. The higher the value the more likely the species is representative of a group or a number of groups. A species that occurs with the same frequency across all groups has a chi-square value close to 0. A species that occurs more frequently in one or two groups and is absent in all others will have a large O-E/E value and hence is more likely to be a good indicator of that group. O-E/E is not used in a statistical sense, only as a convenient indication of likely deviation from a chance occurrence.
4. Average abundance was used, as a tool to select the suite of indicator species as it is tends to most reflect the way a person would assess and name the type of community in the field situation. That is, generally the most abundant plants with the most obvious presence (usually the larger life forms) are the basis for field naming. The value 3.84 was used as a cut-off as this is the critical value at 1 degree of freedom at the 0.05 (5%) level (Zar 1984).
5. Where the group membership was limited to 2 or less sites and the species lists were greater than 20 species, the group species list was restricted to only include species that occurred at 100% of sites.

**Floristic Group 1** *Eucalyptus incrassata* (Ridge-fruited Mallee), *Eucalyptus leptophylla* (Narrow-leaf Mallee) +/- *Melaleuca uncinata* (Broombush) Open Mallee

38 Members

**Description**
This Open Mallee group is characterised by *Eucalyptus incrassata* and *E. leptophylla* overstorey. *Melaleuca uncinata* may be present as an abundant middle stratum species, however it can be absent at some sites. This group occurs across the northern half of the study area particularly in the southern Murray Mallee and tends to occur on sandy to sandy loam hill or dune slopes. It can also occur on clay loams in the swales. Lower understorey shrubs indicative of the group are *Acacia spinescens*, *Lasiopetalum baueri* and *Hibbertia riparia* with *Lepidosperma carphoides* present in the ground layer. Specht (1972) records this group as occurring in seasonally waterlogged swales where shallow sand occurs over a relatively impermeable sub-soil, as found in the Keith area, and extending into deep infertile sandy soils of hill slopes and undulating plains in the drier parts of the study area.

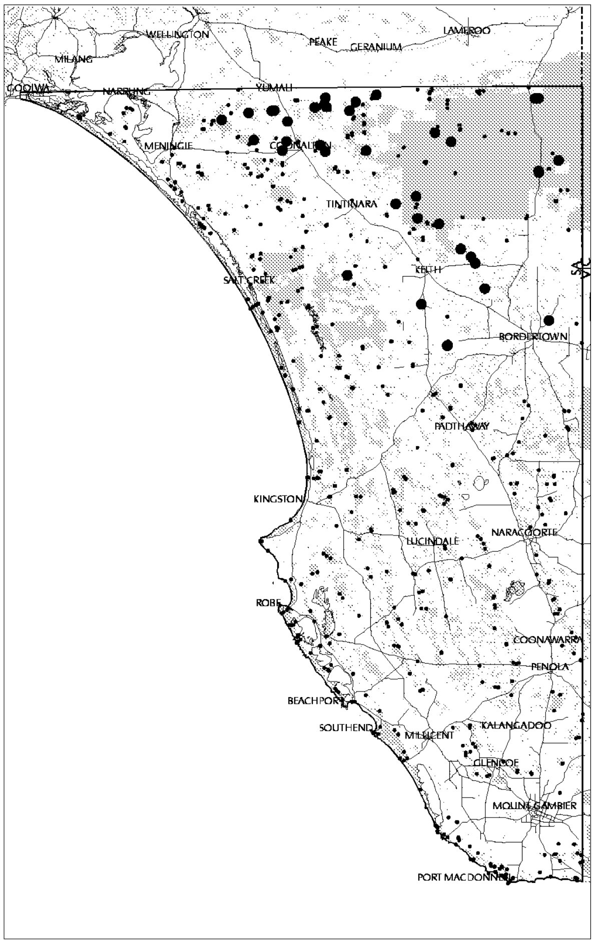
**Dominant /Codominant Overstorey Species**
*Eucalyptus incrassata*, *Eucalyptus leptophylla*.

**Dominant /Codominant Understorey Species**
*Melaleuca uncinata*, *Acacia spinescens*, *Lasiopetalum baueri*, *Hibbertia riparia*, *Lepidosperma carphoides*

**Indicator Species**
*Eucalyptus incrassata*, *Eucalyptus leptophylla*, *Melaleuca uncinata*.

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 27 | Min: 14 | Max: 47 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 6 | Min: 1 | Max: 15 |
| Introduced annual: | 1 | Min: 1 | Max: 4 |
| All taxa: | 33 | Min: 15 | Max: 59 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 1 |
| South Australian: | 13 |
| South East Region: | 27 |

**Structural Summary**
Average Overstorey Height: 3.90 m
Canopy Cover: range sparse to very sparse
Average Percentage Foliage Cover: 14.8 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 301-500 mm, mainly 401-500 mm |
| Typical Landform Types: | hillslopes, undulating plains, swales, depressions |
| Geological Formations: | Aeolian sand-Bridgewater FM |
| Typical Surface Soil Texture: | predominately sand-sandy loam, with some on clay loam |
| Surface Stone Type: | predominately no stone, but when present it is of calcareous nature |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Acacia spinescens*** | 0 | 26 | 5 | 1 | 0 | 0 | 0 | 0.25 | 0.82 | 0.84 | 4.08 |
| ***Hibbertia riparia*** | 0 | 18 | 7 | 5 | 2 | 0 | 0 | 0.65 | 1.61 | 0.84 | 1.41 |
| ***Eucalyptus leptophylla*** | 0 | 11 | 5 | 11 | 2 | 0 | 0 | 0.90 | 4.94 | 0.76 | 4.49 |
| ***Eucalyptus incrassata*** | 0 | 4 | 4 | 13 | 7 | 0 | 0 | 1.35 | 18.65 | 0.74 | 5.43 |
| *Dianella revoluta var.* | 0 | 23 | 1 | 2 | 0 | 0 | 0 | 0.19 | 0.01 | 0.68 | 0.34 |
| ***Lepidosperma carphoides*** | 0 | 14 | 6 | 3 | 1 | 0 | 0 | 0.43 | 0.92 | 0.63 | 0.98 |
| ***Melaleuca uncinata*** | 0 | 0 | 1 | 12 | 5 | 4 | 0 | 1.47 | 19.97 | 0.58 | 2.13 |
| *Astroloma humifusum* | 0 | 19 | 1 | 0 | 0 | 0 | 0 | 0.08 | <0.01 | 0.53 | 0.19 |
| ***Lasiopetalum baueri*** | 0 | 14 | 4 | 1 | 1 | 0 | 0 | 0.27 | 3.30 | 0.53 | 5.96 |
| *Brachyloma ericoides ssp. ericoides* | 0 | 16 | 1 | 2 | 0 | 0 | 0 | 0.17 | 0.77 | 0.50 | 1.59 |
| *Calytrix tetragona* | 1 | 15 | 2 | 1 | 0 | 0 | 0 | 0.14 | 0.19 | 0.50 | 0.73 |
| *Baeckea crassifolia* | 0 | 13 | 3 | 1 | 0 | 0 | 0 | 0.17 | 1.68 | 0.45 | 1.77 |
| *Dampiera rosmarinifolia* | 0 | 13 | 4 | 0 | 0 | 0 | 0 | 0.14 | 1.94 | 0.45 | 3.76 |
| *Danthonia sp.* | 0 | 16 | 1 | 0 | 0 | 0 | 0 | 0.07 | <0.01 | 0.45 | 0.13 |
| *Hakea muelleriana* | 0 | 15 | 2 | 0 | 0 | 0 | 0 | 0.09 | 0.13 | 0.45 | 1.26 |
| *Melaleuca lanceolata* ssp. *lanceolata* | 0 | 9 | 4 | 2 | 2 | 0 | 0 | 0.39 | 0.43 | 0.45 | 0.56 |
| *Billardiera cymosa* | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.07 | 0.42 | 0.81 |
| *Hibbertia sericea* var. *scabrifolia* | 0 | 14 | 1 | 1 | 0 | 0 | 0 | 0.12 | 0.10 | 0.42 | 0.46 |

## Membership

8CRD102, 8SED102, 8KKD102, 15CRD202, 8LND202, 8LND302, 11PED101, 8OH0515, 14OH0537, 10AR0530, 10KKD103, 14702611, 14FK0201, 14FK0202, CAW0301, 14702614, CAW0202, KEI0201, 14OH0507, CAW0602, TAT0101, 15LND401, LAF0602, 15682612, 15CRD401, KEI0602, WIL0402, WIL0403, 9692641, 15SEC201, 15LSF104, 15CAD101, 15LND502, 15KKC201, 15AR0519, 15AR0526, 15JSC201, 15CEE101

**Figure 37.**
***Eucalyptus incrassata*, *Eucalyptus leptophylla* +/- *Melaleuca uncinata* Open Mallee at quadrat CAW0602.**

**Floristic Group 2** *Eucalyptus dumosa* (White Mallee), *Eucalyptus leptophylla* (Narrow-leaf Mallee) Mallee

7 Members

**Description**
This Mallee group tends to be distributed in the extreme north of the study area, principally the southern Murray Mallee, within the rainfall range 300-400 mm. The dominant overstorey species are *Eucalyptus dumosa*, which occurs at 100 % of sites, and *E. leptophylla,* at 80 % of sites. *Eucalyptus calycogona* var. may also be sparsely present in the overstorey at some locations. *Melaleuca uncinata* is either sparsely present or abundant in the middle stratum. *Danthonia* sp. is present at the ground layer. This group tends to occur on undulating plains and in swales with sandy to sandy loam soils.

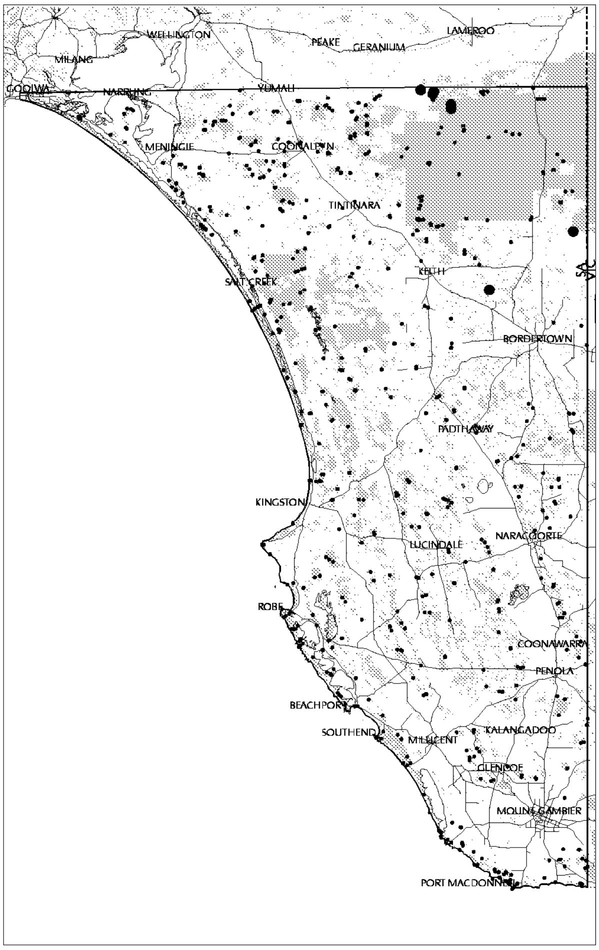
**Dominant /Codominant Overstorey Species**
*Eucalyptus dumosa*, *Eucalyptus leptophylla*

**Dominant /Codominant Understorey Species**
*Melaleuca uncinata*, *Danthonia* sp.

**Indicator Species**
*Eucalyptus dumosa*, *Eucalyptus leptophylla*,
*Eucalyptus calycogona* var., *Melaleuca uncinata*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 13 | Min: 8 | Max: 22 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 4 | Min: 2 | Max: 9 |
| Introduced annual: | 2 | Min: 1 | Max: 3 |
| All taxa: | 17 | Min: 11 | Max: 32 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 0 |
| South East Region: | 2 |

**Structural Summary**
Average Overstorey Height: 4.10 m
Canopy Cover: range mid-dense to very sparse
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 301-400 mm |
| Typical Landform Types: | undulating plains, swales, open depressions |
| Geological Formations: | mainly Aeolian sand (-Bridgewater FM) |
| Typical Surface Soil Texture: | sand-sandy loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Eucalyptus dumosa*** | 0 | 0 | 1 | 3 | 2 | 0 | 1 | 2.57 | 64.78 | 1.00 | 22.85 |
| ***Eucalyptus leptophylla*** | 0 | 1 | 0 | 3 | 2 | 0 | 0 | 1.73 | 21.19 | 0.86 | 5.85 |
| ***Melaleuca uncinata*** | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0.89 | 6.57 | 0.71 | 3.53 |
| ***Danthonia* sp.** | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0.31 | 0.68 | 0.57 | 0.37 |
| *Dianella revoluta* var. | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0.07 | 0.57 | 0.15 |
| *Baeckea behrii* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.01 | 0.43 | 0.74 |
| *Eucalyptus calycogona* var. | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0.59 | 13.24 | 0.43 | 10.71 |
| *Eutaxia microphylla* var. *microphylla* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.18 | 0.43 | 3.02 |
| *Glischrocaryon behrii* | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0.17 | 1.63 | 0.43 | 3.01 |
| *Helichrysum leucopsideum* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.09 | 0.43 | 1.45 |
| *Hibbertia riparia* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.08 | 0.43 | 0.13 |
| *Lepidosperma viscidum* | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0.44 | 1.62 | 0.43 | 1.33 |
| *Melaleuca lanceolata* ssp. *lanceolata* | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0.17 | 0.01 | 0.43 | 0.49 |
| *Stipa mollis* gp. | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.04 | 0.43 | 1.21 |

**Membership**
10AY0502, 10AY0539, 10AY0540, CAW0601, 10SH0301, 10AY0503, 11AY0402

**Figure 38.**
***Eucalyptus dumosa*, *Eucalyptus leptophylla* Mallee at quadrat SH0301.**

**Floristic Group 3** *Eucalyptus diversifolia* (Coastal White Mallee) Open Mallee

92 Members

**Description**

This Open Mallee group, characterised by *Eucalyptus diversifolia*, is distributed across the study area particularly in the Upper South East within a strip up to 80 - 90 km from today's coastline. This group also occurs south of Kingston on both recent and ancient coastal formations. The structural formation of *E. diversifolia* varies from Mallee to Very open mallee. This group invariably associates with calcareous coastal dunes including those stranded inland during the Pleistocene (Specht 1972), and is readily discernible on aerial photos capping consolidated dune ridgelines extending as far inland as just east of Padthaway. The understorey species are *Xanthorrhoea caespitosa*, *Hibbertia sericea* var. *scabrifolia*, *H. riparia*, *Dianella revoluta* var. with *Lepidosperma carphoides* present in the ground layer. The composition of the understorey varies with the geographic location in the landscape and the density of the canopy cover. A sparse herbaceous understorey dominates under a dense canopy cover on calcrete dune crests and a heath understorey dominates where *E. diversifolia* occurs with a sparse canopy on deep sandy soils of dune/hill slopes and undulating plains. This group contained 3 species of conservation significance for Australia, the highest of all the groups.

**Dominant /Codominant Overstorey Species**

*Eucalyptus diversifolia*

**Dominant /Codominant Understorey Species**

*Xanthorrhoea caespitosa*, *Hibbertia sericea* var. *scabrifolia*, *Hibbertia riparia*, *Dianella revoluta* var., *Lepidosperma carphoides*

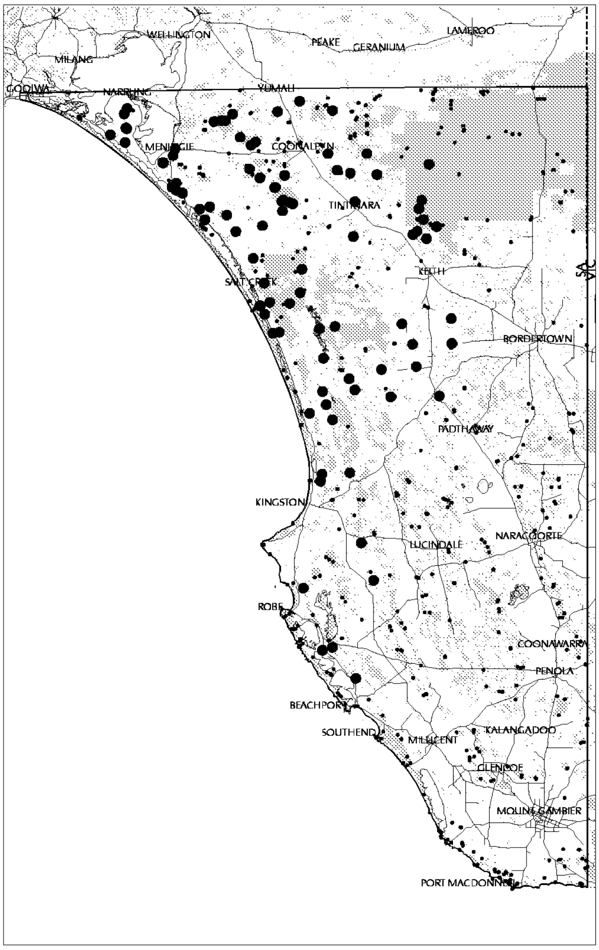
**Indicator Species**

*Eucalyptus diversifolia*, *Acrotriche cordata*, *Allocasuarina muelleriana* ssp. *muelleriana*

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 28 | Min: 4 | Max: 55 |
| Introduced perennial: | 2 | Min: 1 | Max: 5 |
| Native annual: | 7 | Min: 1 | Max: 25 |
| Introduced annual: | 3 | Min: 1 | Max: 10 |
| All taxa: | 37 | Min: 5 | Max: 83 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 3 |
| South Australian: | 16 |
| South East Region: | 28 |

**Structural Summary**

| | |
|---|---|
| Average Overstorey Height: | 4.60 m |
| Canopy Cover: | predominately very sparse, range mid-dense to very sparse |
| Average Percentage Foliage Cover: | 25.0 % |

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 301 -1000 mm, mainly 401-500 |
| Typical Landform Types: | dune/hillslopes crests undulating plains |
| Geological Formations: | mainly Bridgewater FM, some on Aeolian sand |
| Typical Surface Soil Texture: | mainly sand-sandy loam, ranging to medium clay |
| Surface Stone Type: | calcareous substrate may or may not be present. |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Eucalyptus diversifolia*** | 0 | 0 | 6 | 21 | 27 | 28 | 8 | 3.05 | 48.35 | 0.98 | 7.19 |
| ***Xanthorrhoea caespitosa*** | 1 | 32 | 13 | 21 | 6 | 2 | 0 | 0.92 | 1.27 | 0.82 | 0.82 |
| ***Lepidosperma carphoides*** | 0 | 23 | 27 | 10 | 3 | 0 | 0 | 0.63 | 2.46 | 0.68 | 1.24 |
| ***Hibbertia riparia*** | 0 | 26 | 12 | 13 | 6 | 0 | 0 | 0.64 | 1.51 | 0.62 | 0.55 |
| *Acacia spinescens* | 1 | 45 | 8 | 1 | 1 | 0 | 0 | 0.19 | 0.39 | 0.61 | 1.85 |
| *Correa reflexa var. reflexa* | 1 | 46 | 5 | 3 | 0 | 0 | 0 | 0.17 | 0.17 | 0.60 | 0.91 |
| *Billardiera cymosa* | 4 | 46 | 4 | 0 | 0 | 0 | 0 | 0.09 | 0.57 | 0.59 | 1.93 |
| ***Hibbertia sericea* var. *scabrifolia*** | 0 | 38 | 5 | 4 | 2 | 0 | 0 | 0.25 | 0.87 | 0.53 | 0.92 |
| ***Dianella revoluta* var.** | 1 | 31 | 5 | 10 | 1 | 0 | 0 | 0.34 | 0.20 | 0.52 | 0.10 |
| *Allocasuarina muelleriana* ssp. *muelleriana* | 1 | 21 | 6 | 7 | 9 | 1 | 0 | 0.58 | 5.50 | 0.49 | 1.34 |
| *Astroloma humifusum* | 0 | 36 | 4 | 4 | 0 | 0 | 0 | 0.17 | 0.09 | 0.48 | 0.12 |
| *Acrotriche cordata* | 1 | 25 | 7 | 7 | 3 | 0 | 0 | 0.35 | 8.17 | 0.47 | 6.38 |
| *Hakea muelleriana* | 1 | 25 | 6 | 6 | 0 | 0 | 0 | 0.22 | 1.23 | 0.41 | 1.03 |
| *Schoenus breviculmis* | 0 | 23 | 13 | 2 | 0 | 0 | 0 | 0.21 | 1.32 | 0.41 | 1.74 |
| *Clematis microphylla* | 1 | 27 | 6 | 3 | 0 | 0 | 0 | 0.16 | 0.01 | 0.40 | 0.30 |

**Membership**
*CT0101, *TT0401, *TT0701, *TT0402, 18BY0401, 18BYA101, 18BY0501, 18BY0601, 18GEA401, 18BYA201, 18BY0602, 18RSD401, DID0801, 18BYA102, 18GEA701, 18BR0201, 18BR0501, 21BR0301, 21BR0302, 18BR0103, 18BR0401, 18GEA601, *WO0201, HAT0601, KON1101, GYP0802, TIL1001, SAN0501, SAN0805, BEA0502, DID0201, WIL0301, BEA0401, DUF0302, TIL0101, MIN1401, TIL0201, TIL0601, TIL0301, 18CHC503, 18SEC202, 18CHC603, 18SEC102, 18CRC102, SAN0101, 18AR0521, DUF0902, WIL0602, KEI0701, DID0701, WIL0901, DID1001, DID1102, DUF0101, DUF0402, KIN0302, TAU0602, 15CHC502, 15SEB202, 19SEC802, 19AR0524, 19LND501, 18682641, 18FDA101, TAU0402, 18AR0523, 18CED101, 19CHC501, 19LND102, 19LSF103, 19CHC504, 19CRD201, 19CRE101, 19GEA101, 19GEA301, 19SEC602, 19SEC601, 19JSC302, TAU3B12, 19GEA501, 18AR0101, 18AR0201, 18AR0302, 18JSC101, 18KKD101, 18LSE302, 18682642, 18JSC202, 18OH0534, 18LSE201, 18AR0529, WIL0401

**Figure 39.**
***Eucalyptus diversifolia* Open Mallee at quadrat AR0521**.

**Floristic Group 4** *Banksia ornata* (Desert Banksia) +/- emergent *Eucalyptus incrassata* (Ridge-fruited Mallee) Shrubland

155 Members

**Description**
This Shrubland group, often referred to structurally as a heath, is widely distributed across the study area from just south of Lucindale to north of Coonalpyn. *Banksia ornata* shrubs dominate as the overstorey with the occasional emergent such as *Eucalyptus incrassata*. Other emergent eucalypts recorded are *E. diversifolia, E. arenacea/baxteri*, *E. leptophylla*, *E. fasciculosa* and *E. leucoxylon*. Specht (1972) notes that in the Keith area scattered small trees of *E. baxteri* occurred on the sheltered side of the dunes, where more moisture has been deposited and retained and where the soils are deeper. Common dominant / codominant understorey species are *Xanthorrhoea caespitosa*, *Leptospermum myrsinoides*, *Hibbertia riparia*, *Hypolaena fastigiata* and *Lepidosperma carphoides* however the rich understorey can comprise a range of sclerophyllous and heath species, particularly from the Epacridaceae, Proteaceae, Casuarinaceae and Myrtaceae Families. This group tends to occur predominantly on deep sandy soils of undulating plains, dune slopes, dune crests and swales.

**Dominant /Codominant Overstorey Species**
*Banksia ornata*

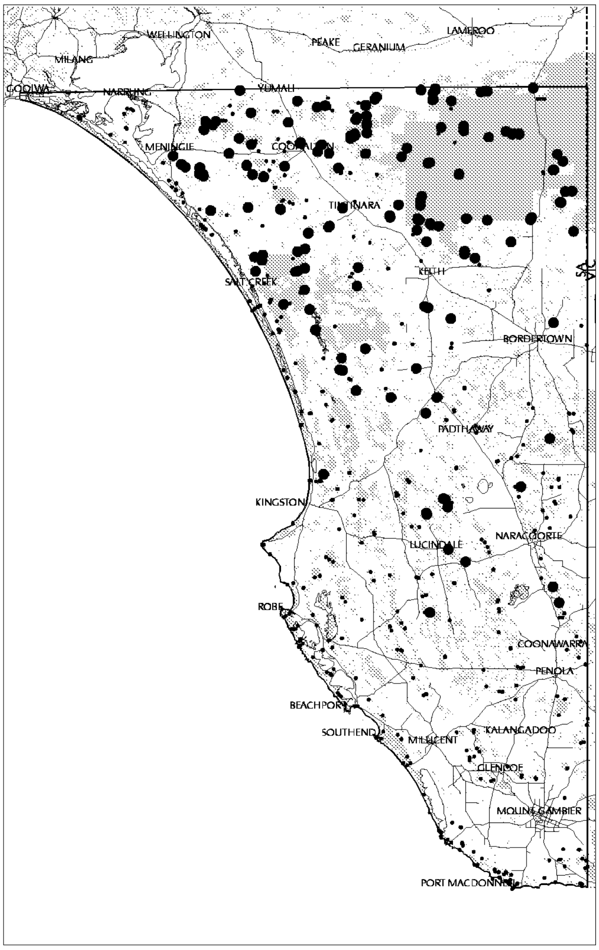
**Dominant /Codominant Understorey Species**
*Xanthorrhoea caespitosa*, *Leptospermum myrsinoides*, *Hibbertia riparia*, *Hypolaena fastigiata*, *Lepidosperma carphoides*

**Indicator Species**
*Banksia ornata, Allocasuarina pusilla*, *Leptospermum coriaceum, Baeckea behrii*, *Leptospermum myrsinoides*

**Possible Emergent Species (+/-)**
*Eucalyptus incrassata* occurs as an emergent at 50% of sites, *E. diversifolia* at 31%, *E. arenacea/ baxteri* at 23%, *E. leptophylla* at 20% and *E. fasciculosa* at 10%. *E. arenacea* and *E. incrassata* occur as an emergent species particularly in the Stoneleigh Park Heritage Agreement and Bunbury Conservation Reserve areas (Stewart *et al.* 1998).

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 29 | Min: 15 | Max: 59 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 6 | Min: 1 | Max: 26 |
| Introduced annual: | 1 | Min: 1 | Max: 5 |
| All taxa: | 35 | Min: 16 | Max: 78 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 2 |
| South Australian: | 21 |
| South East Region: | 33 |

**Structural Summary**
Average Overstorey Height: < 2 m
Canopy Cover: range mid-dense to very sparse
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 301-500 mm, mainly 401-500 mm |
| Typical Landform Types: | undulating plains, crests duneslopes, plains – swales |
| Geological Formations: | mainly Aeolian sand – Bridgewater FM |
| Typical Surface Soil Texture: | sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Hibbertia riparia*** | 0 | 62 | 42 | 33 | 6 | 0 | 0 | 0.85 | 3.17 | 0.92 | 1.82 |
| ***Lepidosperma carphoides*** | 0 | 63 | 58 | 17 | 4 | 0 | 0 | 0.71 | 3.24 | 0.92 | 2.68 |
| *Correa reflexa var. reflexa* | 1 | 113 | 18 | 3 | 0 | 0 | 0 | 0.23 | 0.42 | 0.87 | 2.53 |
| *Astroloma conostephioides* | 1 | 113 | 10 | 2 | 0 | 0 | 0 | 0.16 | 0.16 | 0.81 | 1.76 |
| ***Banksia ornata*** | 1 | 34 | 19 | 39 | 29 | 2 | 0 | 1.26 | 11.55 | 0.80 | 2.39 |
| ***Hypolaena fastigiata*** | 0 | 59 | 50 | 9 | 4 | 0 | 0 | 0.55 | 1.42 | 0.79 | 1.68 |
| ***Xanthorrhoea caespitosa*** | 0 | 48 | 29 | 25 | 18 | 1 | 0 | 0.91 | 1.27 | 0.78 | 0.71 |
| ***Leptospermum myrsinoides*** | 0 | 43 | 27 | 31 | 9 | 1 | 0 | 0.80 | 5.83 | 0.72 | 3.11 |
| *Schoenus breviculmis* | 0 | 72 | 31 | 2 | 0 | 0 | 0 | 0.27 | 2.37 | 0.68 | 5.45 |
| *Calytrix tetragona* | 2 | 73 | 19 | 6 | 1 | 0 | 0 | 0.27 | 0.97 | 0.65 | 1.52 |
| *Allocasuarina muelleriana* ssp. *muelleriana* | 1 | 47 | 15 | 19 | 5 | 3 | 0 | 0.55 | 4.87 | 0.58 | 2.06 |
| *Lepidobolus drapetocoleus* | 0 | 44 | 37 | 4 | 2 | 0 | 0 | 0.36 | 4.89 | 0.56 | 2.84 |
| *Astroloma humifusum* | 4 | 77 | 4 | 1 | 0 | 0 | 0 | 0.09 | <0.01 | 0.55 | 0.23 |
| *Banksia marginata* | 2 | 56 | 12 | 7 | 3 | 0 | 0 | 0.26 | 0.06 | 0.52 | 0.44 |
| *Phyllota pleurandroides* | 2 | 56 | 17 | 4 | 1 | 0 | 0 | 0.22 | 3.38 | 0.52 | 3.64 |
| *Eucalyptus incrassata* | 0 | 28 | 11 | 24 | 14 | 1 | 0 | 0.70 | 4.31 | 0.50 | 2.25 |
| *Isopogon ceratophyllus* | 2 | 64 | 9 | 1 | 0 | 0 | 0 | 0.11 | 0.17 | 0.49 | 1.42 |
| *Baeckea behrii* | 2 | 22 | 11 | 18 | 19 | 3 | 0 | 0.76 | 6.23 | 0.48 | 1.03 |
| *Adenanthos terminalis* | 2 | 57 | 12 | 2 | 0 | 0 | 0 | 0.14 | 2.65 | 0.47 | 5.43 |
| *Cassytha glabella* forma *dispar* | 0 | 60 | 12 | 1 | 0 | 0 | 0 | 0.13 | 0.31 | 0.47 | 1.61 |
| *Allocasuarina pusilla* | 1 | 33 | 12 | 16 | 5 | 2 | 0 | 0.45 | 10.12 | 0.45 | 5.70 |
| *Daviesia brevifolia* | 0 | 66 | 2 | 1 | 0 | 0 | 0 | 0.07 | 0.45 | 0.45 | 3.02 |
| *Hibbertia sericea* var. *scabrifolia* | 0 | 56 | 10 | 2 | 1 | 0 | 0 | 0.15 | 0.21 | 0.45 | 0.54 |
| *Leptospermum coriaceum* | 0 | 26 | 9 | 14 | 14 | 4 | 0 | 0.63 | 6.90 | 0.43 | 1.29 |
| *Lomandra juncea* | 1 | 64 | 1 | 0 | 0 | 0 | 0 | 0.05 | 0.12 | 0.43 | 1.26 |
| *Billardiera cymosa* | 5 | 57 | 1 | 0 | 0 | 0 | 0 | 0.04 | 0.08 | 0.41 | 0.74 |
| *Lepidosperma congestum* | 0 | 17 | 26 | 16 | 3 | 0 | 0 | 0.44 | 2.24 | 0.40 | 2.08 |

**Membership**
14AY0401, 14OH0101, 14CAF603, 14AY0541, 14SH0101, 14OH0505, 14CAF201, 14CAF302, 14CAF301, 14DY0402, 14FK0101, 14OH0516, 19OH0503, 14QE0901, KEI0604, 14CAF502, 19CAF503, 19CRD101, 19CRD301, 19LND201, 19LND101, 14DY0401, 19OH0508, 19AR0518, 19AR0520, 14OH0506, 19JSC301, 19AR0528, 19SH0201, 19AR0525, 19PED102, 19SH0302, 19BYB401, 19MC0102, 19OH0504, 19LSF202, NAR0202, 19AR0202, 19CED201, 19CED202, 19MA0101, 19MC0101, 19OH0302, 19OH0301, 19OH0201, 19JSB401, 19RSD302, 19OH0509, 19OH0511, 19OH0513, TAU0101, TAU3B03, TAU0401, 19AR0303, 19BY0201, 19RSD101, 19RSD203, 19BY0502, 19BYB101, 19CEE102, 19BYB201, 19BYB202, 19GEA502, 19BYB301, 19BYB302, 19BYB303, 19BYB103, 19CHC604, SAN0202, 19AR0532, 19RSD301, 19RSD201, 19SEC101, 19SEB101, 19SEB301, 19FDB201, 19BY0301, 19JSC102, 19SEC801, 19LSF302, DID0601, TIL0303, SAN0102, SAN0301, SAN0201, TIL0701, TIL0801, 19AR0522, 19AR0527, 19AR0531, 19OH0536, CAW0201, LUC0203, TIL0802, TAU0403, TAU0701, TAU0601, TAU0901, TAU3B05, FRA0501, LAF0701, LAF0401, 19AY0538, 19OH0517, 19FK0102, 19DY0403, 19LSF201, 19OH0502, KEI0702, 19OH0512, 19OH0535, KEI0202, KEI0203, 19OH0514, 19SH0102, 19SH0202, 19KKC202, 19AR0533, 19AY0504, 19OH0102, 19CAF602, 19CAF402, 19CG0201, TAT0102, 19AY0501, 19LND402, 19PED103, 19CAF501, 19LSF303, 19CRE102, 19LSF301, 19CHC602, 19CRD103, 19CRD203, 19LSF102, 19CRD302, 19CRD502, 19LND301, 19AY0505, CON0201, LUC0204, STR0502, CON0901, STR0302, DID1002, WIL0601, DID1103, LUC0202, LUC0301, LUC0302, MAR0201, LUC0502, DUF0901, KEI0603, WIL0903


**Figure 40.**
***Banksia ornata* +/- emergent *Eucalyptus incrassata* Shrubland at quadrat BY0301**.

**Floristic Group 5** *Eucalyptus fasciculosa* (Pink Gum), *Eucalyptus leucoxylon* ssp. (South Australian Blue Gum) Low Woodland

16 Members

**Description**
This Low Woodland group is characterised by *Eucalyptus fasciculosa* and *E. leucoxylon* ssp. over a ground layer dominated by a dense mat of *Kunzea pomifera*. Understorey shrubs include *Banksia marginata*, *Xanthorrhoea caespitosa*, *Hibbertia riparia* and *Astroloma humifusum*. This group's distribution is scattered sparsely from the Bordertown – Padthaway area north to near Salt Creek and Coonalpyn. The landform that this group occurs on varies from dunes to hill (dune) slopes and plains with sand - sandy loam soils and no surface stone.

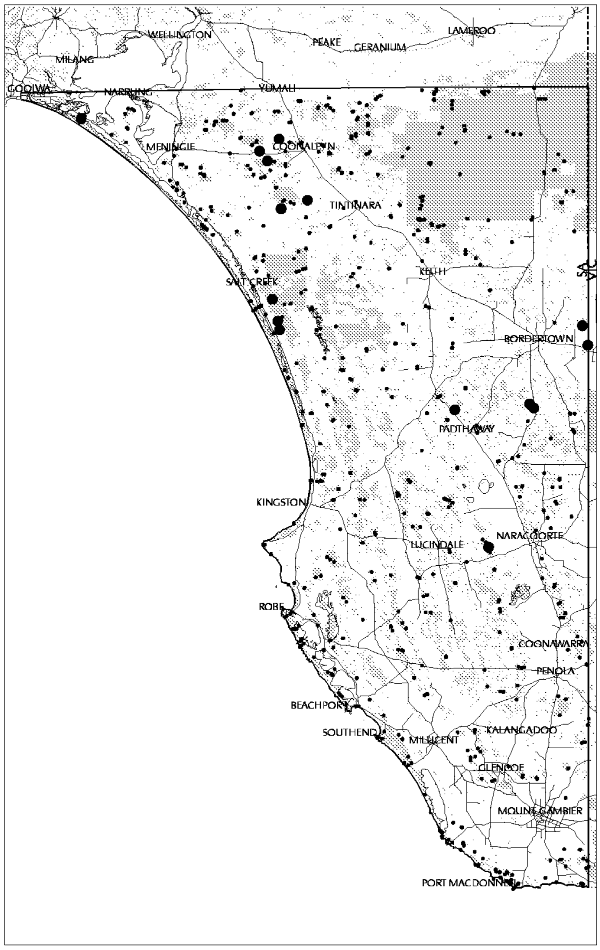
**Dominant /Codominant Overstorey Species**
*Eucalyptus fasciculosa*, *Eucalyptus leucoxylon*

**Dominant /Codominant Understorey Species**
*Banksia marginata*, *Xanthorrhoea caespitosa*, *Hibbertia riparia*, *Astroloma humifusum, Kunzea pomifera*

**Indicator Species**
*Kunzea pomifera*, *Eucalyptus fasciculosa*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 22 | Min: 5 | Max: 44 |
| Introduced perennial: | 1 | Min: 1 | Max: 2 |
| Native annual: | 11 | Min: 3 | Max: 27 |
| Introduced annual: | 4 | Min: 1 | Max: 12 |
| All taxa: | 36 | Min: 5 | Max: 65 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 5 |
| South East Region: | 10 |

**Structural Summary**
Average Overstorey Height: 9.10 m
Canopy Cover: range sparse -very sparse
Average Percentage Foliage Cover: 10.6 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401 -700 mm |
| Typical Landform Types: | dune/hillslopes-plains |
| Geological Formations: | Bridgewater FM Aeolian sand Parilla/Loxton sands |
| Typical Surface Soil Texture: | sand-sandy loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Kunzea pomifera*** | 0 | 0 | 0 | 2 | 4 | 8 | 2 | 3.63 | 59.98 | 1.00 | 5.48 |
| ***Xanthorrhoea caespitosa*** | 3 | 5 | 1 | 3 | 1 | 0 | 0 | 0.66 | 0.43 | 0.81 | 0.81 |
| *Astroloma conostephioides* | 3 | 5 | 3 | 0 | 0 | 0 | 0 | 0.22 | 0.40 | 0.69 | 1.11 |
| ***Astroloma humifusum*** | 1 | 6 | 4 | 0 | 0 | 0 | 0 | 0.29 | 0.51 | 0.69 | 0.53 |
| ***Hibbertia riparia*** | 1 | 4 | 2 | 3 | 0 | 1 | 0 | 0.78 | 2.51 | 0.69 | 0.77 |
| ***Banksia marginata*** | 0 | 4 | 2 | 4 | 0 | 0 | 0 | 0.65 | 1.48 | 0.63 | 0.81 |
| *Danthonia* sp. | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 0.34 | 0.82 | 0.56 | 0.35 |
| *Dianella revoluta var.* | 0 | 8 | 0 | 1 | 0 | 0 | 0 | 0.17 | <0.01 | 0.56 | 0.14 |
| ***Eucalyptus leucoxylon ssp.*** | 0 | 2 | 1 | 4 | 1 | 1 | 0 | 1.01 | 2.42 | 0.56 | 1.05 |
| *Calytrix tetragona* | 1 | 2 | 3 | 2 | 0 | 0 | 0 | 0.45 | 3.32 | 0.50 | 0.73 |
| ***Eucalyptus fasciculosa*** | 0 | 1 | 1 | 4 | 2 | 0 | 0 | 0.94 | 6.44 | 0.50 | 1.53 |
| *Hydrocotyle laxiflora* | 0 | 4 | 3 | 1 | 0 | 0 | 0 | 0.34 | 0.44 | 0.50 | 0.27 |
| *Acacia pycnantha* | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0.21 | 0.26 | 0.44 | 0.97 |
| *Clematis microphylla* | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0.10 | <0.01 | 0.44 | 0.40 |
| *Correa reflexa* var. *reflexa* | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0.21 | 0.34 | 0.44 | 0.34 |
| *Leptospermum myrsinoides* | 0 | 3 | 2 | 2 | 0 | 0 | 0 | 0.39 | 1.07 | 0.44 | 0.89 |

**Membership**
*BK0703, 18CHC601, 19CHC605, MAR0102, 19CHD101, NAR0801, CAN0102, 21SEC301, KEP0101, 21SED101, 21SEC401, TAT0602, KEP0201, SAN0804, SAN0901, TAT0202

**Figure 41.**
***Eucalyptus fasciculosa*, *Eucalyptus leucoxylon* ssp. Low Woodland at quadrat CAN0102.**

**Floristic Group 6** *Eucalyptus leucoxylon* ssp. (South Australian Blue Gum) +/- *Acacia pycnantha* (Golden Wattle) Open Woodland

23 Members

**Description**
This Woodland group is characterised by *Eucalyptus leucoxylon* ssp. in an open structure. *Acacia pycnantha* shrubs to low trees may or may not be present over a low shrub understorey of *Hibbertia riparia* with a ground layer of *Astroloma humifusum*, *Danthonia* sp. and *Kunzea pomifera*. This group is mainly distributed between Bordertown and Naracoorte or scattered between Salt Creek and Yumali in the southern Murray Mallee. The group tends to occur on sandy loam – sandy soils on hill (dune) slopes and plains in the rainfall range of 401 – 700 mm. This group appears to be representative of degraded transitional communities (ecotones) between 'savannah' and 'sclerophyllous' landsystems of intermediate soil fertility as described by Specht (1972).

Difficulties existed in achieving a large representation of this group during the survey, due to the extensive modification of such communities (particularly the understorey) from stock grazing, pasture improvement practises and clearance for cultivation on these more fertile soils. Further survey work targeting remnants of this community may reveal two groups, one characteristic of the periodically wet soils with dense thickets of *Callistemon rugulosus* var. *rugulosus* and the other more typical of the open 'savannah' woodlands with remnants of *Themeda triandra* or *Danthonia* sp. grassland understoreys.

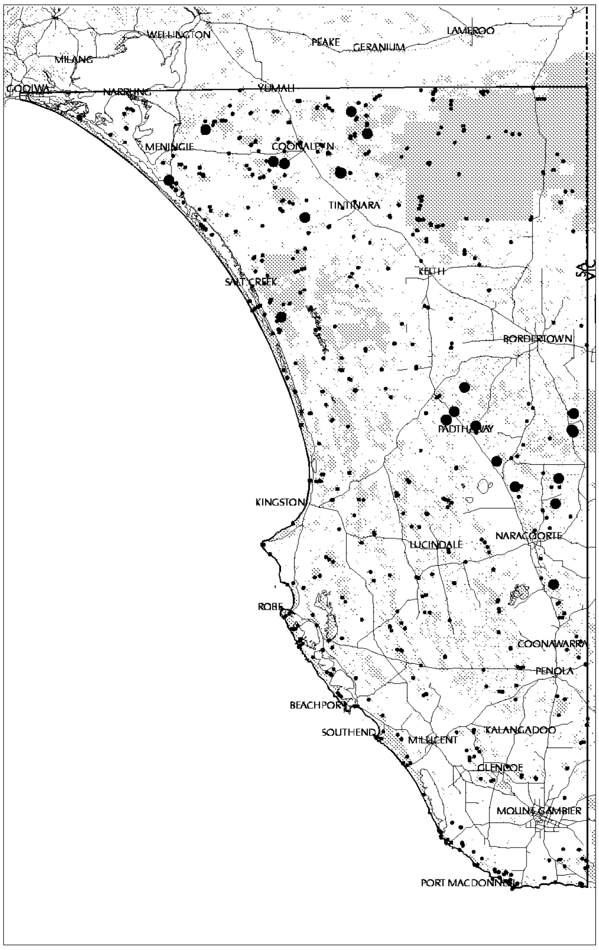
**Dominant /Codominant Overstorey Species**
*Eucalyptus leucoxylon* ssp.

**Dominant /Codominant Understorey Species**
+/- *Acacia pycnantha*, *Hibbertia riparia*, *Danthonia* sp., *Astroloma humifusum*, *Kunzea pomifera*

**Indicator Species**
*Eucalyptus leucoxylon* ssp., *Acacia pycnantha*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 21 | Min: 6 | Max: 36 |
| Introduced perennial: | 1 | Min: 1 | Max: 4 |
| Native annual: | 9 | Min: 2 | Max: 25 |
| Introduced annual: | 3 | Min: 1 | Max: 10 |
| All taxa: | 34 | Min: 15 | Max: 68 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 12 |
| South East Region: | 17 |

**Structural Summary**
Average Overstorey Height: 10.80 m
Canopy Cover: range sparse to very sparse
Average Percentage Foliage Cover: 7 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401 -700 mm |
| Typical Landform Types: | dune/hillslopes-plains |
| Geological Formations: | Bridgewater FM – Aeolian sand |
| Typical Surface Soil Texture: | sandy loam-sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Eucalyptus leucoxylon ssp.*** | 0 | 0 | 1 | 9 | 12 | 0 | 0 | 2.39 | 18.86 | 0.96 | 4.08 |
| ***Astroloma humifusum*** | 1 | 13 | 1 | 2 | 0 | 0 | 0 | 0.27 | 0.45 | 0.74 | 0.68 |
| ***Hibbertia riparia*** | 0 | 7 | 4 | 3 | 2 | 0 | 0 | 0.73 | 2.13 | 0.70 | 0.80 |
| ***Danthonia sp.*** | 0 | 7 | 6 | 2 | 0 | 0 | 0 | 0.47 | 1.84 | 0.65 | 0.59 |
| *Xanthorrhoea caespitosa* | 1 | 7 | 2 | 3 | 1 | 0 | 0 | 0.51 | 0.15 | 0.61 | 0.28 |
| *Dianella revoluta var.* | 5 | 6 | 1 | 1 | 0 | 0 | 0 | 0.16 | <0.01 | 0.57 | 0.15 |
| ***Kunzea pomifera*** | 0 | 5 | 4 | 1 | 1 | 1 | 0 | 0.59 | 0.78 | 0.52 | 1.09 |
| ***Acacia pycnantha*** | 0 | 0 | 4 | 7 | 0 | 0 | 0 | 0.78 | 6.86 | 0.48 | 1.23 |
| *Hydrocotyle laxiflora* | 0 | 7 | 3 | 0 | 0 | 0 | 0 | 0.16 | 0.02 | 0.43 | 0.15 |

**Membership**
21682611, 21LSE101, 21BY0303, 21BYA103, 21CHD201, HYN1101, KEP1101, 21CRD501, 21692642, 21CAF202, 21SEC501, TAU1002, FRA0103, HYN0302, NAR0201, KEP0601, STR0301, FRA0301, MAR0301, MAR0302, MAR0103, WIL0801, FRA0302


**Figure 42.**
***Eucalyptus leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland at quadrat HYN0302.**

**Floristic Group 7** *Eucalyptus fasciculosa* (Pink Gum), *Xanthorrhoea caespitosa* (Sand-heath Yacca) Low Woodland

40 Members

**Description**
This Low Woodland group is characterised by *Eucalyptus fasciculosa* overstorey over an understorey dominated by *Xanthorrhoea caespitosa* as the mid-stratum. Taller shrubs of *Acacia longifolia* var. *sophorae* and *Banksia marginata* are often present contributing to the understorey. The group is distributed centrally within the study area from south of Salt Creek to north of Hatherleigh and appears to be associated with the ancient stranded coastal dunes. This group tends to occur on both plains and hill (consolidated dune) crests with sandy to sandy loam soils. There is usually no surface stone present however, if present, it is of calcareous nature.

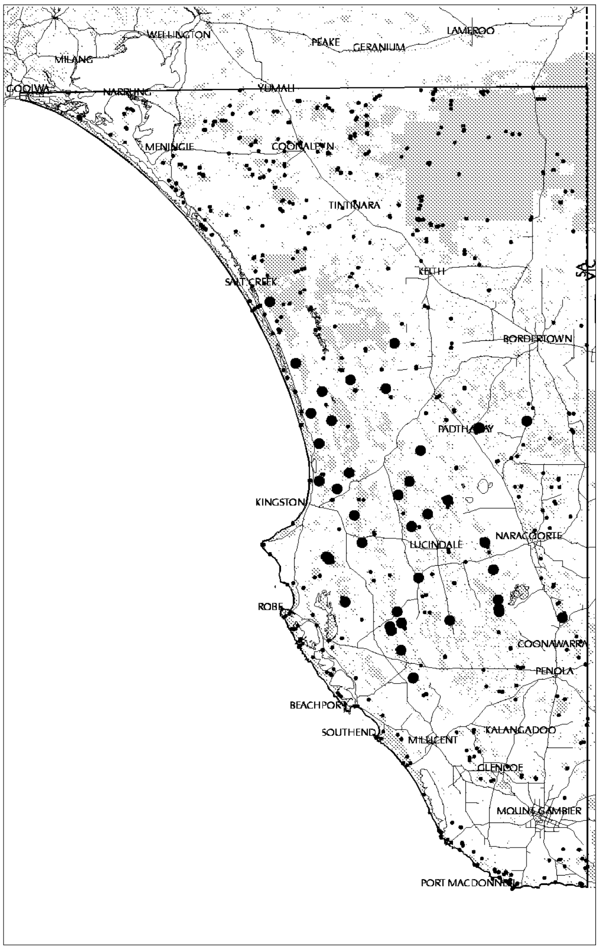
**Dominant /Codominant Overstorey Species**
*Eucalyptus fasciculosa*

**Dominant /Codominant Understorey Species**
*Acacia longifolia* var. *sophorae*, *Banksia marginata*, *Xanthorrhoea caespitosa*

**Indicator Species**
*Xanthorrhoea caespitosa*, *Acacia longifolia* var. *sophorae*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 23 | Min: 12 | Max: 37 |
| Introduced perennial: | 2 | Min: 1 | Max: 3 |
| Native annual: | 11 | Min: 3 | Max: 34 |
| Introduced annual: | 4 | Min: 1 | Max: 15 |
| All taxa: | 39 | Min: 20 | Max: 77 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 1 |
| South Australian: | 16 |
| South East Region: | 23 |

**Structural Summary**
Average Overstorey Height: 9.30 m
Canopy Cover: sparse
Average Percentage Foliage Cover: 14.3 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 501-700 mm |
| Typical Landform Types: | plains-hillcrests |
| Geological Formations: | Bridgewater FM |
| Typical Surface Soil Texture: | sand-sandy loam |
| Surface Stone Type: | predominately no stone, but when present it is of calcareous nature |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Xanthorrhoea caespitosa*** | 0 | 5 | 9 | 15 | 9 | 0 | 0 | 1.66 | 6.21 | 0.95 | 1.31 |
| ***Eucalyptus fasciculosa*** | 1 | 4 | 11 | 13 | 4 | 0 | 0 | 1.24 | 11.72 | 0.82 | 5.06 |
| *Astroloma humifusum* | 1 | 23 | 3 | 2 | 0 | 0 | 0 | 0.23 | 0.27 | 0.72 | 0.64 |
| ***Banksia marginata*** | 0 | 20 | 5 | 2 | 0 | 0 | 0 | 0.28 | 0.08 | 0.68 | 1.02 |
| *Hydrocotyle laxiflora* | 0 | 20 | 7 | 0 | 0 | 0 | 0 | 0.23 | 0.11 | 0.68 | 0.77 |
| ***Acacia longifolia* var. *sophorae*** | 0 | 7 | 7 | 11 | 1 | 0 | 0 | 0.82 | 2.00 | 0.65 | 1.30 |
| *Clematis microphylla* | 2 | 17 | 1 | 0 | 0 | 0 | 0 | 0.07 | 0.02 | 0.50 | 0.61 |
| *Pteridium esculentum* | 0 | 6 | 3 | 4 | 4 | 1 | 0 | 0.69 | 0.42 | 0.45 | 0.25 |
| *Bursaria spinosa* | 0 | 15 | 1 | 1 | 0 | 0 | 0 | 0.11 | 0.28 | 0.42 | 1.81 |
| *Gonocarpus tetragynus* | 1 | 14 | 2 | 0 | 0 | 0 | 0 | 0.09 | <0.01 | 0.42 | 0.51 |
| *Lepidosperma carphoides* | 0 | 12 | 5 | 0 | 0 | 0 | 0 | 0.15 | 0.02 | 0.42 | 0.27 |
| *Hibbertia riparia* | 1 | 9 | 5 | 1 | 0 | 0 | 0 | 0.20 | 0.01 | 0.40 | 0.09 |
| *Thomasia petalocalyx* | 3 | 8 | 4 | 1 | 0 | 0 | 0 | 0.17 | 0.38 | 0.40 | 0.99 |

**Membership**
BOO0103, KIN0401, BOO0701, DUF0601, CON1101, KIN1102, DID0502, KEP0603, BOO0501, CON0402, DID0901, DUF0301, KEP0501, KIN0301, BOO0702, STR0603, HAT0301, TIL1002, NAR0702, LUC0303, MAR0701, DID0802, LUC0201, DUF0401, MIN0701, GYP0801, KON0901, LUC0401, LUC0103, SAN0801, TIL0501, KON0501, MIN1402, KON0701, MIN0501, KON0902, ROB0801, ROB0101, KEN1301, KEN1302

**Figure 43.**
***Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland at quadrat DID0802.**

**Floristic Group 8** *Eucalyptus leucoxylon* ssp. (South Australian Blue Gum) Low Open Woodland

4 Members

**Description**

Due to the low membership of this group and the differences between the species and structural composition of these sites, this group as summarised here may not be valid. Nevertheless a type of *Eucalyptus leucoxylon* ssp. Low Open Woodland with a grassy understorey (e.g. *Themeda triandra*) does occur in the region but is poorly represented due to early settlement targeting this open grassy habitat for stock grazing or cultivation. Further survey work is required concentrating on locating and surveying such open grassy woodland communities. Based on the information presented from this analysis, this low open woodland group is described as dominated by *E. leucoxylon* ssp. overstorey with *Acacia spinescens, Pteridium esculentum* and *Lepidosperma carphoides* as the understorey.

**Dominant /Codominant Overstorey Species**

*Eucalyptus leucoxylon* ssp.

**Dominant /Codominant Understorey Species**

*Acacia spinescens, Pteridium esculentum, Lepidosperma carphoides*

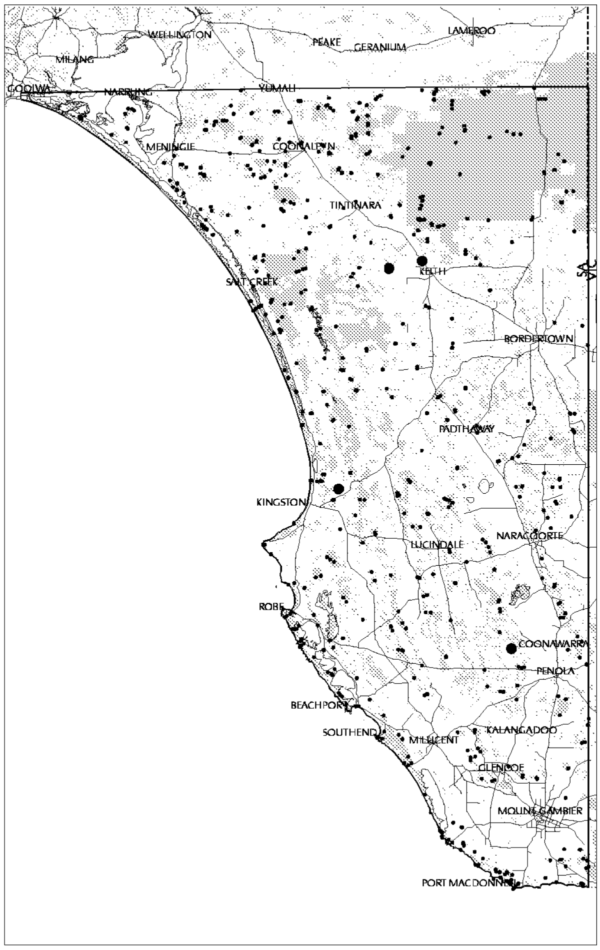
**Indicator Species**

None, as no species rated above 3.84.

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 19 | Min: 7 | Max: 35 |
| Introduced perennial: | 2 | Min: 1 | Max: 2 |
| Native annual: | 11 | Min: 1 | Max: 18 |
| Introduced annual: | 4 | Min: 2 | Max: 4 |
| All taxa: | 34 | Min: 17 | Max: 59 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 3 |
| South East Region: | 5 |

**Structural Summary**

Average Overstorey Height: 7.80 m

Canopy Cover: very sparse

Average Percentage Foliage Cover: 9.9 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-700 mm |
| Typical Landform Types: | dunecrest-plains open, depressions |
| Geological Formations: | Bridgewater FM – Padthaway FM |
| Typical Surface Soil Texture: | range sand to loam |
| Surface Stone Type: | calcareous substrate may or may not be present |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Eucalyptus leucoxylon*** **ssp.** | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1.00 | 2.34 | 1.00 | 4.54 |
| *Xanthorrhoea caespitosa* | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0.08 | 0.16 | 1.00 | 1.52 |
| ***Acacia spinescens*** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.28 | 1.01 | 0.50 | 1.11 |
| *Astroloma humifusum* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.01 | 0.50 | 0.15 |
| *Billardiera cymosa* | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0.02 | 0.50 | 1.28 |
| *Dampiera rosmarinifolia* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.19 | 0.50 | 4.80 |
| *Dianella revoluta var.* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.08 | 0.50 | 0.07 |
| *Eucalyptus fasciculosa* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.28 | 0.26 | 0.50 | 1.53 |
| ***Lepidosperma carphoides*** | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0.53 | 1.54 | 0.50 | 0.48 |
| ***Pteridium esculentum*** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.28 | 0.01 | 0.50 | 0.37 |
| *Vittadinia gracilis* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.20 | 0.50 | 3.63 |

## Membership
KEI0401, LAF0202, KIN0402, MON0302

**Figure 44.**
***Eucalyptus leucoxylon*** **ssp. Low Open Woodland at quadrat LAF0202.**

**Figure 45.**
***Eucalyptus leucoxylon* ssp. Low Open Woodland over a grassy understory at quadrat KEI0401.**

**Floristic Group 9** *Allocasuarina verticillata* (Drooping Sheoak), *Eucalyptus leucoxylon* ssp. (South Australian Blue Gum) Low Woodland

3 Members

**Description**
This Low Woodland group is characterised by an *Allocasuarina verticillata* and *Eucalyptus leucoxylon* ssp. overstorey. Understorey shrub species are *Pomaderris paniculosa* ssp., *Thomasia petalocalyx* and *Hibbertia sericea* var. *scabrifolia* with *Lomandra effusa* present at the ground layer. The introduced species *Myrsiphyllum asparagoides* is also present among the understorey. Even though this group has a small membership, it is appears to be a valid and is restricted to the south-western corner of the Murray Mallee, west of Coonalpyn. This group is recorded on both hill slopes and plains on sand - sandy loam soils where calcareous strew is occasionally present.

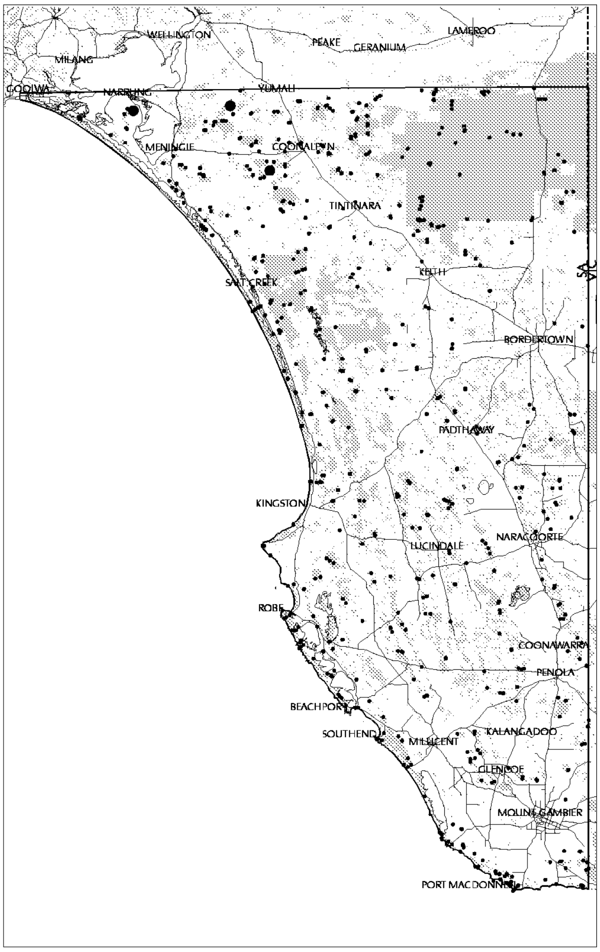
**Dominant /Codominant Overstorey Species**
*Allocasuarina verticillata*, *Eucalyptus leucoxylon* ssp.

**Dominant /Codominant Understorey Species**
*Pomaderris paniculosa* ssp., *Thomasia petalocalyx*, *Hibbertia sericea* var. *scabrifolia*, *Lomandra effusa*, **Myrsiphyllum asparagoides.*

**Indicator Species**
*Allocasuarina verticillata*, *Pomaderris paniculosa* ssp., *Lomandra effusa*, *Eucalyptus leucoxylon* ssp., **Myrsiphyllum asparagoides*.

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 22 | Min: 18 | Max: 27 |
| Introduced perennial: | 3 | Min: 2 | Max: 4 |
| Native annual: | 9 | Min: 5 | Max: 15 |
| Introduced annual: | 4 | Min: 2 | Max: 5 |
| All taxa: | 37 | Min: 29 | Max: 41 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 0 |
| South East Region: | 5 |

**Structural Summary**
Average Overstorey Height: 7.30 m
Canopy Cover: range sparse to very sparse
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-500 mm |
| Typical Landform Types: | hillslopes-plains |
| Geological Formations: | Aeolian sand – Bridgewater FM |
| Typical Surface Soil Texture: | range loam to sandy loam |
| Surface Stone Type: | calcareous substrate may or may not be present |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Allocasuarina verticillata*** | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 2.33 | 49.09 | 1.00 | 11.70 |
| ***Eucalyptus leucoxylon* ssp.** | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1.70 | 8.67 | 1.00 | 4.54 |
| *Helichrysum leucopsideum* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.72 | 1.00 | 10.21 |
| *Stipa elegantissima* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 2.67 | 1.00 | 26.72 |
| ***Thomasia petalocalyx*** | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0.40 | 2.96 | 1.00 | 8.67 |
| *Acacia pycnantha* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | <0.01 | 0.67 | 2.82 |
| *Dianella revoluta* var. | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.05 | 0.67 | 0.31 |
| *Eucalyptus diversifolia* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.06 | 0.67 | 2.97 |
| *Geranium solanderi* var. *solanderi* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.14 | 0.67 | 5.06 |
| ***Hibbertia sericea* var. *scabrifolia*** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.37 | 2.20 | 0.67 | 1.69 |
| *Lomandra densiflora* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 1.80 | 0.67 | 18.02 |
| Lomandra effusa | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0.70 | 12.76 | 0.67 | 6.19 |
| ****Myrsiphyllum asparagoides*** | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0.70 | 5.20 | 0.67 | 4.79 |
| ***Pomaderris paniculosa* ssp.** | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1.33 | 31.84 | 0.67 | 12.78 |
| *Vittadinia gracilis* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.39 | 0.67 | 6.85 |

**Membership**
22BR0101, 22CGD401, 22SEC701


**Figure 46.**
***Allocasuarina verticillata*, *Eucalyptus leucoxylon* ssp. Low Woodland at quadrat CGD401.**

**Floristic Group 10** *Eucalyptus obliqua* (Messmate Stringybark), *Pteridium esculentum* (Bracken Fern) Woodland

44 Members

**Description**

Distributed throughout the southern third of the study area, this group appears to have the most concentrated distribution south of Mt Gambier in the higher rainfall (> 700 mm) zone. The group is characterised by *Eucalyptus obliqua* in the overstorey though this may be replaced mainly by *E. viminalis* ssp. *cygnetensis* or *E. ovata* at some locations. The overstorey structural formation varies from Open Forest to Woodland. *Acacia melanoxylon* is occasionally present as the upper shrub to small tree stratum. The understorey upper to mid-stratum is dominated by *Leucopogon parviflorus* with an abundance of *Pteridium esculentum* while **Hypochoeris radicata* and *Hydrocotyle laxiflora* provide the ground layer. This stringybark woodland occurs on sandy loam (and terra rossa) soils on plains and hill slopes associated with limestone. South of Mt Gambier, near Port MacDonnell the group is observed to occur on shallow soils over limestone where *E. obliqua* grows in a stunted form.

**Dominant /Codominant Overstorey Species**

*Eucalyptus obliqua*

**Dominant /Codominant Understorey Species**

*+/- Acacia melanoxylon*, *Leucopogon parviflorus*, *Pteridium esculentum*, **Hypochoeris radicata*, *Hydrocotyle laxiflora*

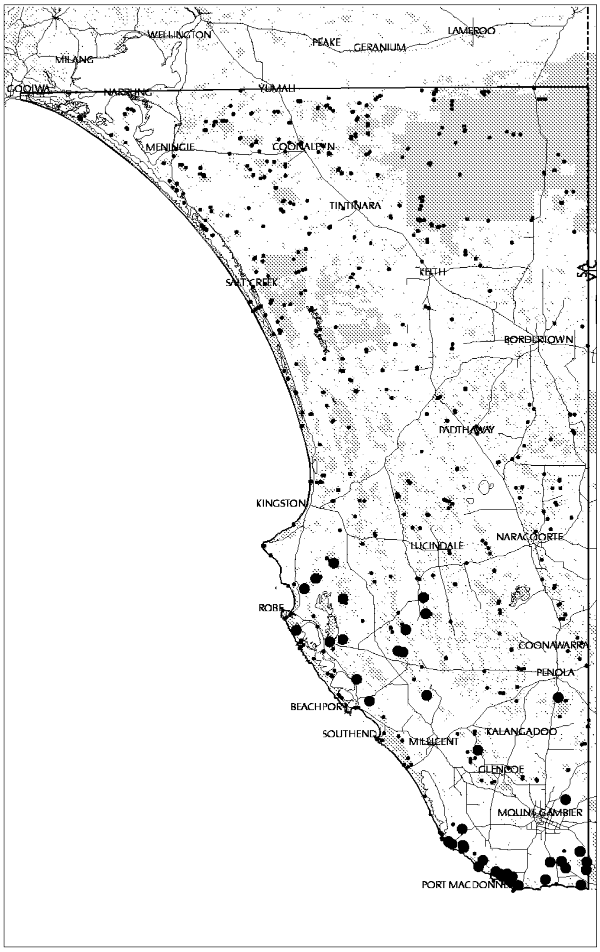
**Indicator Species**

*Eucalyptus obliqua, Pteridium esculentum*, *Acacia melanoxylon*

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 18 | Min: 5 | Max: 35 |
| Introduced perennial: | 2 | Min: 1 | Max: 5 |
| Native annual: | 4 | Min: 1 | Max: 11 |
| Introduced annual: | 4 | Min: 1 | Max: 14 |
| All taxa: | 26 | Min: 9 | Max: 46 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 2 |
| South Australian: | 27 |
| South East Region: | 31 |

**Structural Summary**

Average Overstorey Height: 11.80 m

Canopy Cover: range mid-dense to sparse

Average Percentage Foliage Cover: 28 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 501-1000 m, mainly 701-1000 mm |
| Typical Landform Types: | mainly plains (-hillslopes) |
| Geological Formations: | mainly Bridgewater FM – Nullarbor EQ, with some on St Kilda FM |
| Typical Surface Soil Texture: | mainly sandy loam, sand to loam |
| Surface Stone Type: | predominately no stone, but when present it is of calcareous nature |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Pteridium esculentum*** | 0 | 0 | 5 | 16 | 9 | 8 | 1 | 2.29 | 12.12 | 0.89 | 2.06 |
| ***Leucopogon parviflorus*** | 1 | 7 | 5 | 15 | 4 | 0 | 0 | 1.08 | 3.08 | 0.73 | 1.53 |
| *Acaena novae-zelandiae* | 0 | 9 | 4 | 11 | 0 | 0 | 0 | 0.61 | 1.20 | 0.55 | 0.46 |
| *Dianella revoluta var.* | 1 | 12 | 5 | 6 | 0 | 0 | 0 | 0.41 | 0.40 | 0.55 | 0.12 |
| ***Hydrocotyle laxiflora*** | 0 | 7 | 12 | 5 | 0 | 0 | 0 | 0.52 | 1.42 | 0.55 | 0.38 |
| *Clematis microphylla* | 2 | 9 | 7 | 5 | 0 | 0 | 0 | 0.41 | 0.68 | 0.52 | 0.70 |
| ***Eucalyptus obliqua*** | 0 | 1 | 0 | 4 | 11 | 6 | 1 | 1.59 | 22.04 | 0.52 | 5.59 |
| *Dichondra repens* | 0 | 6 | 14 | 2 | 0 | 0 | 0 | 0.42 | 1.26 | 0.50 | 0.94 |
| ****Hypochoeris radicata*** | 0 | 4 | 14 | 4 | 0 | 0 | 0 | 0.51 | 2.52 | 0.50 | 0.51 |
| ***Acacia melanoxylon*** | 0 | 6 | 4 | 8 | 2 | 0 | 0 | 0.60 | 5.24 | 0.45 | 1.37 |

## Membership

*AL0101, *LB0204, *LB0401, *LE0401, *WO0101, *NE0101, *PM0401, *AL0501, *WO0202, BEN0402, HAT0602, *AL0701, *PM0501, *LB0503, *NE0601, *NE0602, *NE0801, *LB0502, *LB0504, *NE0701, GAM1A12, *AL0801, SCH1801, SCH1802, GAM0801, GAM0902, GAM1002, GAM1101, HAT0701, ROB0402, ROB0601, KEN1702, BEA0302, HAT0302, ROB0201, CON0702, CON1001, PEN0801, HAT0303, KON0702, GAM0101, GAM0702, GAM0701, KAL0501

**Figure 47.**
***Eucalyptus obliqua*, *Pteridium esculentum* Woodland at quadrat SCH1801**.

**Floristic Group 11** *Eucalyptus arenacea/baxteri* (Dune / Brown Stringybark), *Baeckea behrii* (Silver Broombush) Low Woodland

2 Members

**Description**

This Low Woodland group is characterised by *Eucalyptus arenacea/baxteri* overstorey and *Baeckea behrii* in the understorey mid-stratum. Other understorey species include *Leptospermum coriaceum*, *Calytrix alpestris*, *Astroloma conostephioides*, *B. crassifolia* and *A. humifusum*. It is also noted that *E. incrassata* and *E. leptophylla* maybe sparsely present amongst the overstorey also. This group occurs on sandy dune crests in the southern Murray Mallee (northern part of Ngarkat Conservation Park) where the rainfall range is 300 - 400 mm. Even though this group is only represented by two sites it appears to be a valid group. Unfortunately due to time constraints the area between Bordertown and Ngarkat Conservation Park was not adequately covered by the survey. This group may also occur in the drier sandy mallee systems of that area and further sites in this community would assist in better defining this group.

Insufficient voucher specimens were taken to accurately determine presence of *E. baxteri* or *E. arenacea*at quadrats. Morginson and Ladiges (1988) suggest that at sites further inland on drier sandy country, *E. arenacea* would be present.

**Dominant /Codominant Overstorey Species**

*Eucalyptus arenacea/baxteri*

**Dominant /Codominant Understorey Species**

*Baeckea behrii*, *Leptospermum coriaceum*, *Calytrix alpestris*, *Astroloma conostephioides*, *Baeckea crassifolia*, *Astroloma humifusum*

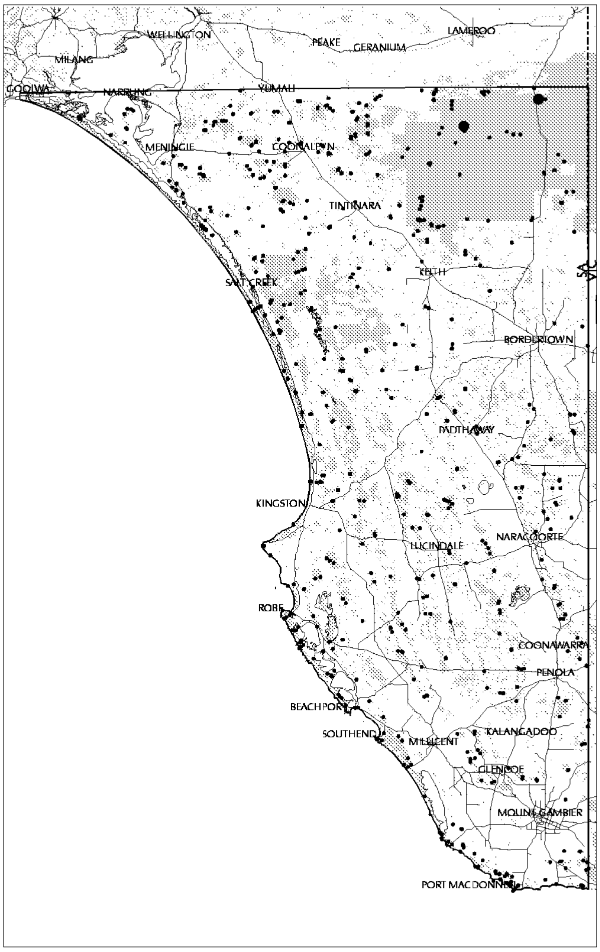
**Indicator Species**

*Banksia marginata*, *Eucalyptus arenacea/baxteri*

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 30 | Min: 29 | Max: 30 |
| Introduced perennial: | 0 | Min: 0 | Max: 0 |
| Native annual: | 3 | Min: 3 | Max: 3 |
| Introduced annual: | 0 | Min: 0 | Max: 0 |
| All taxa: | 31 | Min: 30 | Max: 32 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 1 |
| South East Region: | 1 |

**Structural Summary**

Average Overstorey Height: 6.00 m

Canopy Cover: range sparse to very sparse

Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 301-400 mm |
| Typical Landform Types: | dunecrest |
| Geological Formations: | Aeolian sand |
| Typical Surface Soil Texture: | sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Astroloma conostephioides*** | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.02 | 1.00 | 3.02 |
| *Astroloma humifusum* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | <0.01 | 1.00 | 1.70 |
| ***Baeckea behrii*** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 2.97 | 1.00 | 6.13 |
| *Baeckea crassifolia* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.54 | 1.00 | 10.98 |
| *Calytrix alpestris* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 1.05 | 1.00 | 17.11 |
| *Calytrix tetragona* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.05 | 1.00 | 4.44 |
| *Correa reflexa* var. *reflexa* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.02 | 1.00 | 3.57 |
| ***Eucalyptus arenacea/baxteri*** | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1.00 | 4.65 | 1.00 | 4.39 |
| *Goodenia robusta* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 1.75 | 1.00 | 20.71 |
| *Hypolaena fastigiata* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.01 | 1.00 | 3.14 |
| *Lepidobolus drapetocoleus* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.26 | 1.00 | 10.41 |
| ***Leptospermum coriaceum*** | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.05 | 1.00 | 9.13 |
| *Lomandra juncea* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.69 | 1.00 | 9.24 |
| *Phyllota pleurandroides* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.62 | 1.00 | 15.37 |

**Membership**
20702615, 20OH0501


**Figure 48.**
***Eucalyptus arenacea/baxteri*, *Baeckea behrii* Low Woodland at quadrat 702615.**

**Floristic Group 12** *Eucalyptus arenacea/baxteri* (Dune / Brown Stringybark), +/- *Pteridium esculentum* (Bracken Fern) Woodland

69 Members

**Description**
This stringybark woodland group is evenly distributed throughout the inland southern two thirds of the study area, predominantly in the 500 - 700 mm rainfall range. It is characterised by *Eucalyptus arenacea/baxteri* as the dominant overstorey. Unfortunately, insufficient voucher specimens were taken to accurately determine if *E. arenacea* or *E. baxteri* were present at the sites. However, Marginson and Ladiges (1988) suggested that the southern localities within 40 km of the coast may be *E. baxteri* while the locations further inland into the drier sandy country would be *E. arenacea*. The overstorey structure is generally woodland however in the Lower South East some areas are close to open forest while in the mid region areas tend to be woodlands. In terms of the understorey the dominant mid stratum species are principally *Pteridium esculentum*, which is generally very abundant particularly in the south, *Leptospermum myrsinoides, Banksia marginata*, *Xanthorrhoea caespitosa* and *Astroloma conostephioides*. This group occurs predominantly on sand - sandy loam soils of consolidated dunes, hill slopes and plains. This group contained 31 species of conservation significance in SA, the highest of all the groups.

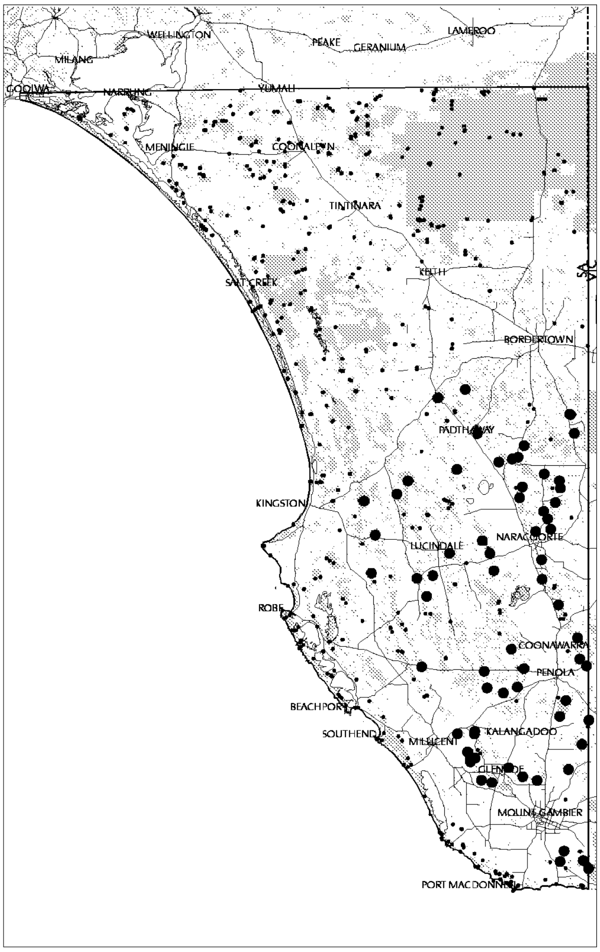
**Dominant /Codominant Overstorey Species**
*Eucalyptus arenacea/baxteri*

**Dominant /Codominant Understorey Species**
*Leptospermum myrsinoides*, *Banksia marginata*, *Xanthorrhoea caespitosa*, *Pteridium esculentum*, *Astroloma conostephioides*

**Indicator Species**
*Eucalyptus arenacea/baxteri*, *Pteridium esculentum*, *Banksia ornata*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 25 | Min: 10 | Max: 45 |
| Introduced perennial: | 1 | Min: 1 | Max: 2 |
| Native annual: | 7 | Min: 1 | Max: 20 |
| Introduced annual: | 2 | Min: 1 | Max: 6 |
| All taxa: | 34 | Min: 15 | Max: 60 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 31 |
| South East Region: | 38 |

**Structural Summary**
Average Overstorey Height: 10.40 m
Canopy Cover: predominately sparse to mid-dense
Average Percentage Foliage Cover: 14.0 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 501-1000 mm, mainly 501-700 mm |
| Typical Landform Types: | dune/hillslope-plain |
| Geological Formations: | mainly Bridgewater FM, also on Aeolian sand & Padthaway FM |
| Typical Surface Soil Texture: | mainly sand-sandy loam |
| Surface Stone Type: | none |

**Group Species List & Statistics;**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Eucalyptus arenacea/baxteri*** | 1 | 1 | 4 | 32 | 24 | 7 | 0 | 2.44 | 33.86 | 1.00 | 4.39 |
| ***Pteridium esculentum*** | 0 | 6 | 9 | 12 | 20 | 4 | 3 | 1.81 | 6.86 | 0.78 | 1.47 |
| *Astroloma humifusum* | 5 | 27 | 13 | 1 | 0 | 0 | 0 | 0.26 | 0.37 | 0.67 | 0.48 |
| *Hydrocotyle laxiflora* | 0 | 32 | 11 | 0 | 0 | 0 | 0 | 0.21 | 0.07 | 0.62 | 0.59 |
| ***Astroloma conostephioides*** | 2 | 22 | 14 | 2 | 2 | 0 | 0 | 0.38 | 1.60 | 0.61 | 0.77 |
| ***Leptospermum myrsinoides*** | 0 | 18 | 12 | 7 | 5 | 0 | 0 | 0.62 | 3.24 | 0.61 | 2.09 |
| *Gonocarpus tetragynus* | 2 | 32 | 7 | 0 | 0 | 0 | 0 | 0.15 | 0.10 | 0.59 | 1.33 |
| *Leucopogon virgatus* | 1 | 24 | 14 | 2 | 0 | 0 | 0 | 0.30 | 1.03 | 0.59 | 2.06 |
| ***Banksia marginata*** | 1 | 19 | 13 | 7 | 0 | 0 | 0 | 0.42 | 0.41 | 0.58 | 0.65 |
| *Hypolaena fastigiata* | 1 | 17 | 13 | 7 | 0 | 0 | 0 | 0.42 | 0.65 | 0.55 | 0.60 |
| *Leucopogon ericoides* | 1 | 18 | 16 | 1 | 1 | 0 | 0 | 0.33 | 3.15 | 0.54 | 2.89 |
| ***Xanthorrhoea caespitosa*** | 2 | 15 | 10 | 9 | 0 | 1 | 0 | 0.49 | 0.12 | 0.54 | 0.16 |
| *Senecio tenuiflorus* | 1 | 30 | 4 | 0 | 0 | 0 | 0 | 0.10 | 0.70 | 0.51 | 2.18 |
| *Danthonia* sp. | 2 | 20 | 11 | 0 | 0 | 0 | 0 | 0.19 | 0.15 | 0.48 | 0.18 |
| *Hibbertia sericea* var. *sericea* | 2 | 17 | 8 | 3 | 0 | 0 | 0 | 0.23 | 0.97 | 0.43 | 2.19 |
| *Isopogon ceratophyllus* | 3 | 23 | 4 | 0 | 0 | 0 | 0 | 0.09 | 0.09 | 0.43 | 1.04 |
| *Acrotriche serrulata* | 1 | 16 | 8 | 4 | 0 | 0 | 0 | 0.26 | 1.78 | 0.42 | 0.98 |
| *Banksia ornata* | 1 | 3 | 6 | 9 | 6 | 4 | 0 | 0.85 | 4.69 | 0.42 | 0.38 |
| *Dianella revoluta* var. | 4 | 20 | 5 | 0 | 0 | 0 | 0 | 0.10 | 0.02 | 0.42 | 0.02 |
| Epacris impressa | 3 | 16 | 8 | 2 | 0 | 0 | 0 | 0.20 | 0.50 | 0.42 | 1.11 |
| **Hypochoeris radicata* | 1 | 23 | 5 | 0 | 0 | 0 | 0 | 0.11 | 0.01 | 0.42 | 0.28 |

**Membership**
BOO0101, CON0701, WIL0902, MON0903, MIL0201, NAN0101, MON0701, PEN0101, PEN1001, PEN0401, PEN0502, FRA0101, FRA0102, FRA0303, MAR1001, WIL0802, FRA0901, HYN0801, MON0303, KEP0602, NAR0802, KEP1102, LUC0102, MIN0503, NAR0701, KON0101, MIN0601, MIN1203, KEP0701, KEP0901, KEP1002, LUC0501, NAR0203, NAR0301, HYN0101, HYN0501, STR2B05, HYN0301, HYN0401, HYN1102, KEP1001, CON0301, MON0801, HYN0701, STR0101, MON1002, STR0501, KAL0201, NAN0601, GAM0601, GAM0901, KAL0202, MON0602, NAN0503, KAL0602, KAL0601, NAN0302, CON0401, GAM1001, MIL0502, GAM1301, KAL0701, MIL0401, MIL0501, KAL0401, KAL0801, KAL1002, KEN0802, NAN0401


**Figure 49.**
***Eucalyptus arenacea/baxteri*, +/- *Pteridium esculentum* Woodland at quadrat LUC0501.**

**Floristic Group 13** *Melaleuca squarrosa* (Bottlebrush Tea-tree) +/- emergent *Eucalyptus ovata* (Swamp Gum) Tall Shrubland

3 Members

## Description

This group is characterised by *Melaleuca squarrosa* as the dominant overstorey and can vary in structure from a Tall Closed Shrubland to a Tall Shrubland. *Eucalyptus ovata* and *Acacia melanoxylon* can either be occasionally present as an emergent or present on the boundaries of the community. Traces of *E. arenacea/baxteri* and *E. viminalis* ssp. *cygnetensis* also occur at these swamps on the boundaries with adjoining vegetation types. The introduced *Pinus radiata* can be present invading into the community. Understorey species include *Leptospermum continentale*, *Pteridium esculentum*, *Schoenus carsei*, *Lepidosperma viscidum* and *Gonocarpus tetragynus*. This tall shrubland group occurs in swampy localities on sandy - sandy loam soils. The group is distributed in the high rainfall zone > 700 mm, near Glencoe. Further surveys of these southern swampy areas are required to provide better coverage and description of this community.

**Dominant /Codominant Overstorey Species**
*Melaleuca squarrosa*

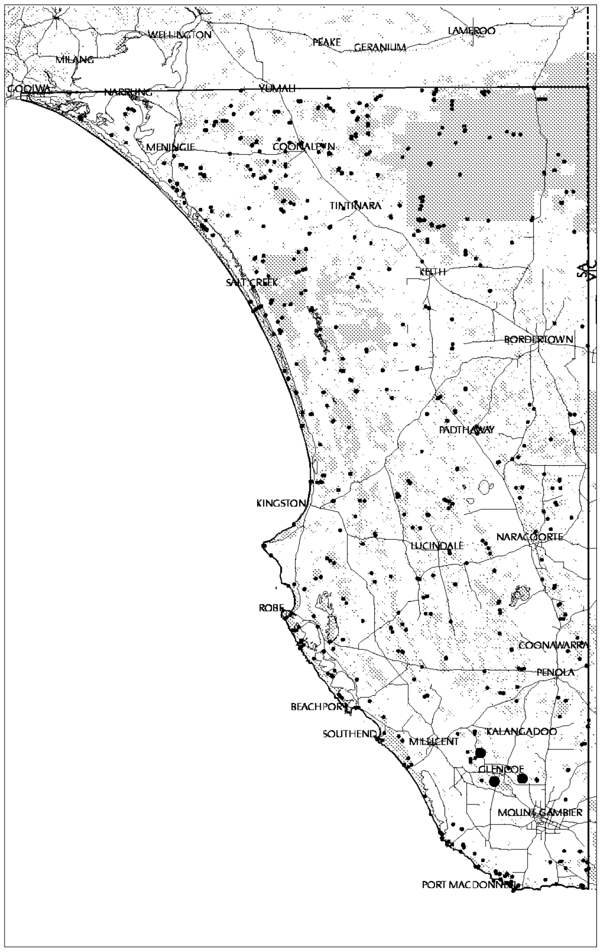
**Dominant /Codominant Understorey Species**
*Leptospermum continentale*, *Pteridium esculentum*, *Lepidosperma viscidum, Gonocarpus tetragynus*, *Schoenus carsei*

**Indicator Species**
*Melaleuca squarrosa*, *Eucalyptus ovata*, *Lepidosperma viscidum*, *Schoenus carsei*, *Gonocarpus tetragynus*, *Leptocarpus tenax*

**Possible Emergent Species (+/-)**
*Eucalyptus ovata* occurs as an emergent at 67% of sites, *Acacia melanoxylon (100%)*, *E. arenacea/baxteri* (100%), *E. viminalis* ssp. *cygnetensis* (67%) and **Pinus radiata* (67%).

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 30 | Min: 26 | Max: 35 |
| Introduced perennial: | 3 | Min: 3 | Max: 3 |
| Native annual: | 1 | Min: 1 | Max: 1 |
| Introduced annual: | 2 | Min: 1 | Max: 2 |
| All taxa: | 33 | Min: 27 | Max: 40 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 15 |
| South East Region: | 15 |

**Structural Summary**
Average Overstorey Height: > 2 m
Canopy Cover: range dense to sparse
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 701-1000 mm |
| Typical Landform Types: | swamp/swale |
| Geological Formations: | Bridgewater FM |
| Typical Surface Soil Texture: | sand-sandy loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Acacia melanoxylon*** | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0.40 | 2.06 | 1.00 | 8.68 |
| *Acrotriche serrulata* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.18 | 1.00 | 7.80 |
| *Epacris impressa* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.06 | 1.00 | 8.60 |
| *Eucalyptus arenacea/baxteri* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.02 | 1.00 | 4.39 |
| ***Gonocarpus tetragynus*** | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0.70 | 5.93 | 1.00 | 4.86 |
| ***Leptospermum continentale*** | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1.00 | 2.31 | 1.00 | 3.52 |
| *Leucopogon virgatus* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.03 | 1.00 | 6.99 |
| ***Melaleuca squarrosa*** | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 2.67 | 33.72 | 1.00 | 9.24 |
| *Pultenaea stricta* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.11 | 1.00 | 13.52 |
| ***Schoenus carsei*** | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0.40 | 6.36 | 1.00 | 23.82 |
| *Xanthorrhoea australis* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.21 | 1.00 | 19.33 |
| *Acaena novae-zelandiae* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.37 | 0.24 | 0.67 | 0.87 |
| *Amperea xiphoclada var. xiphoclada* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.99 | 0.67 | 13.40 |
| *Billardiera scandens var. scandens* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 1.53 | 0.67 | 15.30 |
| ***Eucalyptus ovata*** | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1.03 | 9.57 | 0.67 | 9.21 |
| *Eucalyptus viminalis* ssp. *cygnetensis* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | <0.01 | 0.67 | 4.00 |
| *Gahnia clarkei* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.01 | 0.67 | 8.67 |
| *Geranium potentilloides* var. *potentilloides* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.18 | 0.67 | 6.67 |
| *Hydrocotyle laxiflora* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.02 | 0.67 | 0.74 |
| **Hypochoeris radicata* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.37 | 1.14 | 0.67 | 1.20 |
| *Lagenifera stipitata* var. *stipitata* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.48 | 0.67 | 9.22 |
| ***Lepidosperma viscidum*** | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1.33 | 19.42 | 0.67 | 3.84 |
| *Leptocarpus tenax* | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0.67 | 5.19 | 0.67 | 7.08 |
| *Leucopogon ericoides* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.05 | 0.67 | 4.75 |
| *Lindsaea linearis* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 1.80 | 0.67 | 18.02 |
| **Pinus radiata* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.81 | 0.67 | 6.91 |
| ***Pteridium esculentum*** | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1.00 | 1.43 | 0.67 | 0.93 |
| *Stylidium graminifolium* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 1.08 | 0.67 | 10.84 |

**Membership**
KAL0502, KAL0802, KAL1001

**Figure 50.**
***Melaleuca squarrosa* +/- emergent *Eucalyptus ovata* Tall Shrubland at quadrat KAL1001.**

**Floristic Group 14** *Xanthorrhoea caespitosa* (Sand-heath Yacca), *Leptospermum continentale* (Prickly Tea-tree) +/- emergent *Eucalyptus obliqua* (Messmate Stringybark) Open Shrubland

8 Members

**Description**
This Open Shrubland group is dominated by *Xanthorrhoea caespitosa* and *Leptospermum continentale* in the overstorey. *Eucalyptus obliqua* can occasionally be emergent over the shrubland or occur on the boundaries of the community. *Eucalyptus viminalis* ssp. *cygnetensis*, *E. arenacea/baxteri*, *E. leucoxylon* ssp. and *E. ovata* can also occur as emergents or at boundaries with adjoining vegetation types. Lower stratum understorey species are *Astroloma conostephioides*, *Leucopogon virgatus*, *Epacris impressa*, *Isopogon ceratophyllus* and *Hypolaena fastigiata*. The group tends to occur mainly on sandy loam soils of the plains (interdunal areas) and sites are distributed in the southern half of the study area between Penola and Beachport.

**Dominant /Codominant Overstorey Species**
*Xanthorrhoea caespitosa*, *Leptospermum continentale*

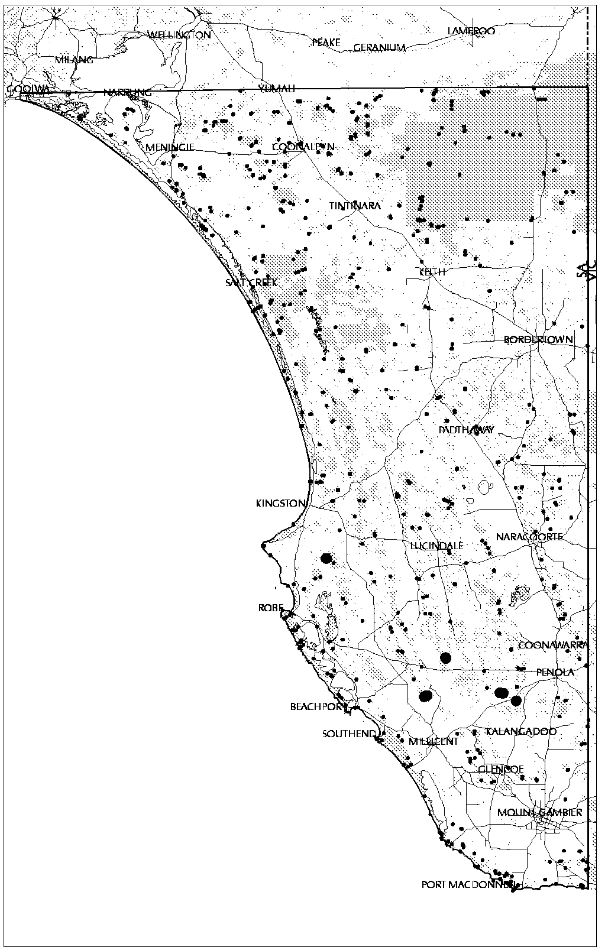
**Dominant /Codominant Understorey Species**
*Astroloma conostephioides*, *Leucopogon virgatus*, *Epacris impressa*, *Isopogon ceratophyllus*, *Hypolaena fastigiata*

**Indicator Species**
*Leucopogon virgatus*, *Epacris impressa*, *Tetratheca ciliata*, *Xanthorrhoea caespitosa*, *Eucalyptus obliqua*, *Isopogon ceratophyllus*

**Possible Emergent Species (+/-)**
*Eucalyptus obliqua* occurs as an emergent at 50% of the sites, *E. viminalis* ssp. *cygnetensis* (38%), *E arenacea/baxteri* (13%), *E. leucoxylon* ssp. (13%) and *E. ovata* (13%).

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 24 | Min: 17 | Max: 33 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 5 | Min: 3 | Max: 8 |
| Introduced annual: | 1 | Min: 1 | Max: 2 |
| All taxa: | 30 | Min: 22 | Max: 41 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 6 |
| South East Region: | 7 |

**Structural Summary**
Average Overstorey Height: < 2 m
Canopy Cover: range sparse - mid-dense
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 501-700 mm |
| Typical Landform Types: | plains-dunes |
| Geological Formations: | Padthaway FM-Bridgewater FM |
| Typical Surface Soil Texture: | mainly sandy loam-sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Hypolaena fastigiata*** | 0 | 4 | 2 | 2 | 0 | 0 | 0 | 0.80 | 3.53 | 1.00 | 3.14 |
| ***Xanthorrhoea caespitosa*** | 0 | 0 | 4 | 1 | 2 | 1 | 0 | 2.00 | 9.66 | 1.00 | 1.52 |
| ***Isopogon ceratophyllus*** | 1 | 3 | 2 | 1 | 0 | 0 | 0 | 0.54 | 7.32 | 0.88 | 5.66 |
| ***Leucopogon virgatus*** | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 1.13 | 20.47 | 0.88 | 5.16 |
| ***Astroloma conostephioides*** | 1 | 2 | 2 | 0 | 1 | 0 | 0 | 0.65 | 5.51 | 0.75 | 1.42 |
| *Banksia marginata* | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0.31 | 0.14 | 0.75 | 1.38 |
| ***Leptospermum continentale*** | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 1.25 | 4.09 | 0.75 | 1.68 |
| *Leptospermum myrsinoides* | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 0.54 | 2.31 | 0.75 | 3.47 |
| *Tetratheca ciliata* | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 0.65 | 10.31 | 0.75 | 9.05 |
| *Calytrix tetragona* | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0.17 | 0.33 | 0.63 | 1.36 |
| *Banksia ornata* | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0.29 | 0.26 | 0.50 | 0.66 |
| *Dianella revoluta var.* | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0.16 | <0.01 | 0.50 | 0.07 |
| ***Epacris impressa*** | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0.75 | 10.71 | 0.50 | 1.72 |
| ***Eucalyptus obliqua*** | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 1.00 | 8.00 | 0.50 | 5.07 |
| *Gonocarpus tetragynus* | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0.28 | 0.64 | 0.50 | 0.83 |

**Membership**
KEN0501, KEN0502, MON1001, MON1003, MON1101, KEN1703, KIN1101, KEN1704

**Figure 51.**
***Xanthorrhoea caespitosa*, *Leptospermum continentale* Open Shrubland +/- emergent *Eucalyptus* spp. at quadrat MON1001**.

**Florsitic Group 15** *Leptospermum continentale* (Prickly Tea-tree) Shrubland

6 Members

**Description**

This Shrubland group occurs on the eastern side of the study area between Mt Gambier and Struan, particularly in swamps or on plains with soils ranging from sand to loam. The overstorey is dominated by *Leptospermum continentale*. Understorey species, dispersed through the thicket of *L. continentale* consists of *Epacris impressa* and *Hibbertia prostrata.* The introduced *Pinus radiata* may occur as an emergent invading the shrubland. *Eucalyptus arenacea/ baxteri, E. viminalis* ssp. *cygnetensis*, *E. camaldulensis* var. *camaldulensis* and *E. ovata* may occur occasionally as emergent species or on the boundary of the shrubland, associated with the adjacent community.

**Dominant /Codominant Overstorey Species**

*Leptospermum continentale*

**Dominant /Codominant Understorey Species**

*Epacris impressa*, *Hibbertia prostrata*

**Indicator Species**

*Leptospermum continentale, Hibbertia prostrata*

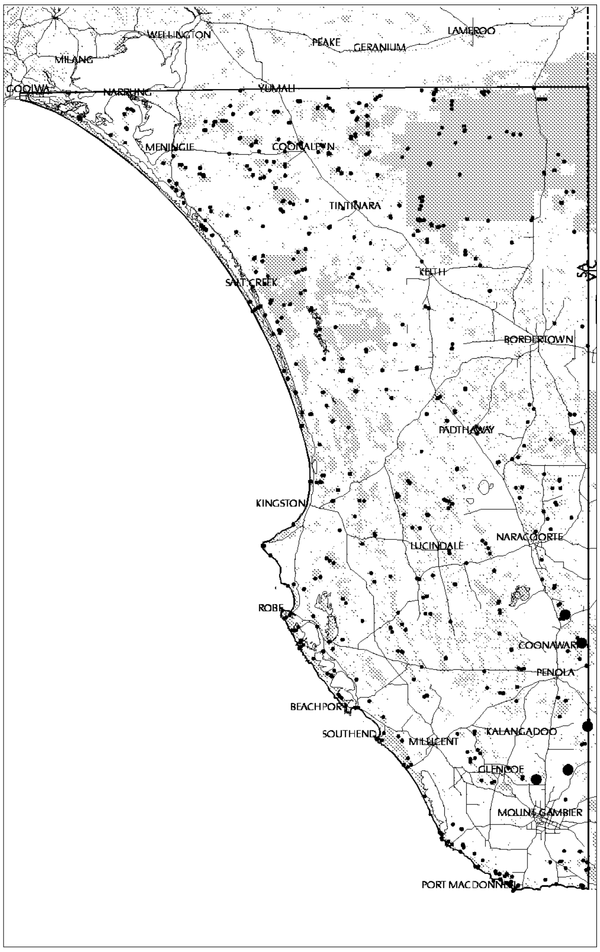
**Possible Emergent Species (+/-)**

**Pinus radiata* may occurs as an emergent at 50% of sites, *Eucalyptus arenacea/ baxteri* (33%), *E. viminalis* ssp. *cygnetensis* (33%), *E. camaldulensis* var. *camaldulensis* (17%) and *E. ovata* (17%).

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 18 | Min: 6 | Max: 29 |
| Introduced perennial: | 2 | Min: 1 | Max: 3 |
| Native annual: | 7 | Min: 1 | Max: 16 |
| Introduced annual: | 3 | Min: 1 | Max: 5 |
| All taxa: | 25 | Min: 7 | Max: 53 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 14 |
| South East Region: | 17 |

**Structural Summary**

Average Overstorey Height: < 2 m
Canopy Cover: range mid-dense to sparse
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 501-1000 mm |
| Typical Landform Types: | plains-swamps |
| Geological Formations: | Padthaway FM-Bridgewater FM |
| Typical Surface Soil Texture: | mainly sand, range sand to loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Leptospermum continentale*** | 0 | 0 | 0 | 1 | 4 | 1 | 0 | 3.00 | 30.81 | 1.00 | 3.52 |
| ***Hibbertia prostrata*** | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0.68 | 11.89 | 0.83 | 8.20 |
| **Hypochoeris radicata* | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0.07 | <0.01 | 0.83 | 2.19 |
| *Dianella revoluta var.* | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.10 | 0.50 | 0.07 |
| ***Epacris impressa*** | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0.18 | 0.42 | 0.50 | 1.72 |
| *Opercularia varia* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.74 | 0.50 | 9.22 |
| **Pinus radiata* | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.19 | 0.50 | 3.66 |
| *Pteridium esculentum* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.23 | 0.50 | 0.37 |

**Membership**
NAN0301, STR0601, NAN0502, NAN0602, PEN0201, NAN0501

**Figure 52.**
***Leptospermum continentale* Shrubland at quadrat PEN0201.**

**Florsitic Group 16** *Callitris verrucosa* (Scrub Cypress Pine) Tall Shrubland

3 Members

**Description**

This Tall Shrubland group is characterised by a mid dense cover of *Callitris verrucosa*. The understorey consists of the shrub species *Leptospermum coriaceum, Leucopogon cordifolius* and *Hibbertia riparia*. This group occurs on sandy dunes to swales and appears to be restricted to Ngarkat Conservation Park in this analysis. Even though this group has a small membership, it is valid on review of the broader Murray Mallee dataset. In the Murray Mallee, this group has a larger membership (27 sites) and is more widely distributed across that region (Foulkes and Gillen 2000).

**Dominant /Codominant Overstorey Species**

*Callitris verrucosa*

**Dominant /Codominant Understorey Species**

*Leptospermum coriaceum*, *Leucopogon cordifolius*, *Brachyloma ericoides* ssp. *ericoides*, *Hibbertia riparia*

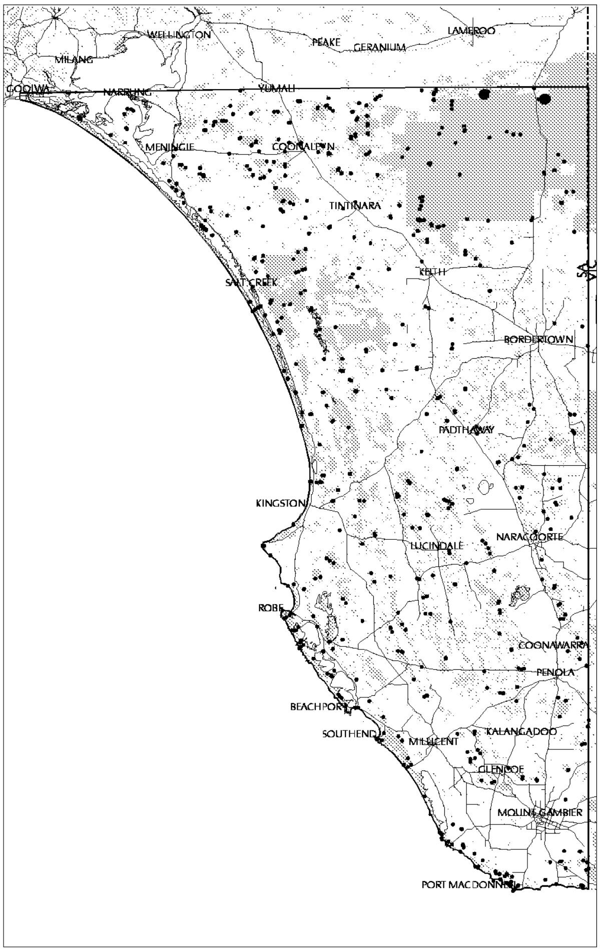
**Indicator Species**

*Callitris verrucosa*

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 15 | Min: 7 | Max: 22 |
| Introduced perennial: | 0 | Min: 0 | Max: 0 |
| Native annual: | 3 | Min: 2 | Max: 3 |
| Introduced annual: | 0 | Min: 0 | Max: 0 |
| All taxa: | 16 | Min: 7 | Max: 24 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 1 |
| South East Region: | 1 |

**Structural Summary**

Average Overstorey Height: 3.80 mm

Canopy Cover: range mid-dense to sparse

Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 301-400 mm |
| Typical Landform Types: | dunes-swales |
| Geological Formations: | Aeolian sand |
| Typical Surface Soil Texture: | sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Brachyloma ericoides ssp. ericoides*** | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.19 | 1.00 | 8.05 |
| ***Callitris verrucosa*** | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3.33 | 82.49 | 1.00 | 18.47 |
| ***Hibbertia riparia*** | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.02 | 1.00 | 2.26 |
| ***Leucopogon cordifolius*** | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.10 | 1.51 | 1.00 | 15.75 |
| *Baeckea behrii* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | <0.01 | 0.67 | 2.35 |
| *Banksia ornata* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.02 | 0.67 | 1.49 |
| ***Leptospermum coriaceum*** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.37 | 2.07 | 0.67 | 3.66 |
| *Melaleuca uncinata* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.01 | 0.67 | 3.00 |
| *Opercularia turpis* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.82 | 0.67 | 9.60 |

**Membership**
14702612, 14702613, 14DY0404


**Figure 53.**
***Callitris verrucosa* Tall Shrubland at quadrat 702613**.

**Florsitic Group 17** *Melaleuca brevifolia* (Short-leaf Honey-myrtle) Low Shrubland

29 Members

**Description**
This group is characterised by *Melaleuca brevifolia* as the dominant overstorey and can vary in structure from low shrubland to tall shrubland. The understorey includes *Leptospermum continentale* with *Leptocarpus brownii* and *Baumea juncea* sedges. This group is found in brackish swamps and depressions on sandy loam to clay loam soils. Sparrow (1991) observed that *M. brevifolia* shrublands tend to occur in slightly saline soils in often inundated areas where the rainfall is generally less than 600 mm per annum. The group is distributed across the study area, mainly within approximately 80 km of the coast and between Salt Creek and Penola.

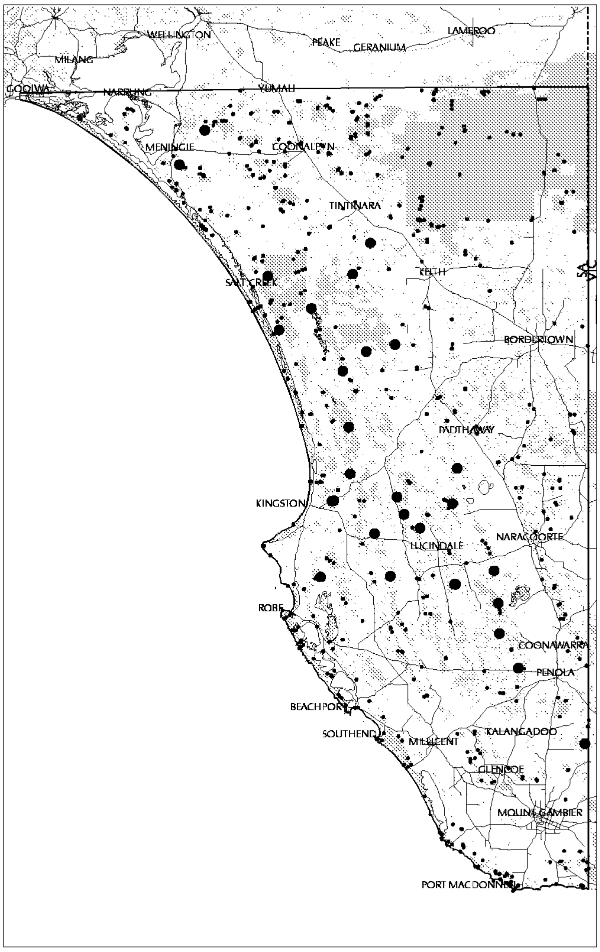
**Dominant /Codominant Overstorey Species**
*Melaleuca brevifolia*

**Dominant /Codominant Understorey Species**
*Leptospermum continentale*, *Leptocarpus brownii*, *Baumea juncea*,

**Indicator Species**
*Melaleuca brevifolia*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 19 | Min: 6 | Max: 51 |
| Introduced perennial: | 2 | Min: 1 | Max: 3 |
| Native annual: | 4 | Min: 1 | Max: 17 |
| Introduced annual: | 2 | Min: 1 | Max: 6 |
| All taxa: | 26 | Min: 7 | Max: 69 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 1 |
| South Australian: | 17 |
| South East Region: | 23 |

**Structural Summary**
Average Overstorey Height: > 0.5 m (height can vary up to 2m)
Canopy Cover: predominately mid-dense, range mid-dense to very sparse)
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-700mm, mainly501-700 mm |
| Typical Landform Types: | swamps-depressions |
| Geological Formations: | mainly Bridgewater FM, with some on Padthaway FM & Aeolian sand |
| Typical Surface Soil Texture: | mainly sandy loam to loam, range sand-clay loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Melaleuca brevifolia*** | 0 | 0 | 6 | 4 | 7 | 7 | 5 | 3.03 | 59.45 | 1.00 | 8.60 |
| ***Leptocarpus brownii*** | 0 | 9 | 5 | 4 | 2 | 0 | 0 | 0.69 | 1.41 | 0.69 | 2.55 |
| ***Baumea juncea*** | 1 | 6 | 6 | 3 | 0 | 0 | 0 | 0.43 | 0.21 | 0.55 | 0.98 |
| ***Leptospermum continentale*** | 1 | 8 | 3 | 4 | 0 | 0 | 0 | 0.41 | 0.11 | 0.55 | 0.71 |
| *Banksia marginata* | 1 | 8 | 3 | 1 | 0 | 0 | 0 | 0.20 | 0.01 | 0.45 | 0.27 |
| *Darwinia micropetala* | 0 | 12 | 1 | 0 | 0 | 0 | 0 | 0.08 | 1.07 | 0.45 | 8.31 |
| *Hydrocotyle laxiflora* | 0 | 8 | 4 | 1 | 0 | 0 | 0 | 0.23 | 0.13 | 0.45 | 0.17 |

**Membership**
25BY0302, 25BYB102, 25CED301, TIL0803, LAF0601, DID0602, LUC0402, LUC0205, MON0601, BOO0601, DID0501, MAR1002, CAN0103, GYP0803, MIN0502, MIN0803, MIN1201, KON0201, GYP0101, NAN0402, ROB0401, SAN0401, TAU0702, BOO0102, CON0502, CON0501, BOO1001, KIN0501, KIN0502

**Figure 54.**
***Melaleuca brevifolia* Low Shrubland at quadrat GYP0803.**

**Florsitic Group 18** *Eucalyptus camaldulensis* var. *camaldulensis* (River Red Gum) Woodland

5 Members

**Description**

*Eucalyptus camaldulensis* var. *camaldulensis* overstorey characterises this woodland community, which chiefly occurs around swamps, on seasonally waterlogged plains and along drainage lines. The understorey consists of *Leptospermum continentale* with *Schoenus apogon*, *Ranunculus robertsonii*, **Hypochoeris radicata* and *Hydrocotyle laxiflora* at the groundcover level. In many instances the original understorey has been significantly impacted and modified through drainage, stock grazing and pasture improvement (Crocker 1944, Tiver and Crocker 1951). As a result some species have been completely removed at sites or significantly reduced hence a low proportion of occurrence or low cover abundance scores for sedge and more palatable species. The presence of a high degree of disturbance in remnants of this community coupled with access difficulties due to wet conditions during the survey period resulted in a limited number of sites being surveyed.

The group, based on the survey data, is distributed on the eastern side of the study area from Mt Gambier to north of Naracoorte, however it is known to occur more broadly across this region from east of Kingston to near Bordertown. In reality probably several *Eucalyptus camaldulensis* var. *camaldulensis* Woodland groups exist (refer to Crocker 1944 and Tiver and Crocker 1951 for examples). These would be differentiated on the basis of their overstorey structure and understorey species composition. Further survey work focussing on remaining remnants of this group and scattered tree River Red Gum areas across the region would assist in providing a better coverage, description and should more clearly identify the variety of River Red Gum communities.

**Dominant /Codominant Overstorey Species**

*Eucalyptus camaldulensis var. camaldulensis*

**Dominant /Codominant Understorey Species**

*Leptospermum continentale*, *Schoenus apogon*, *Ranunculus robertsonii*, **Hypochoeris radicata*, *Hydrocotyle laxiflora*

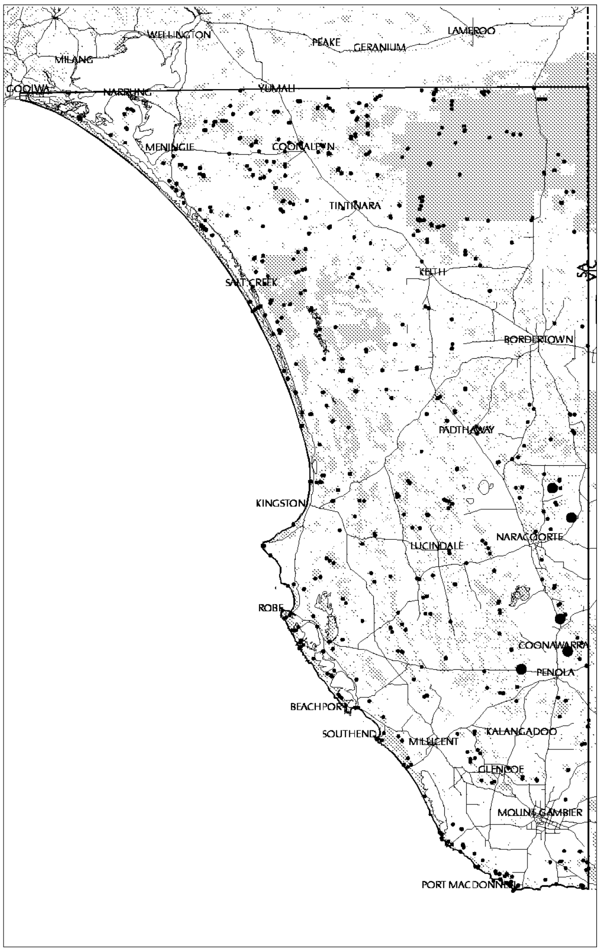
**Indicator Species**

*Eucalyptus camaldulensis* var. *camaldulensis, Ranunculus robertsonii*, *Hypochoeris radicata*

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 14 | Min: 6 | Max: 21 |
| Introduced perennial: | 2 | Min: 1 | Max: 3 |
| Native annual: | 6 | Min: 2 | Max: 9 |
| Introduced annual: | 5 | Min: 1 | Max: 8 |
| All taxa: | 26 | Min: 14 | Max: 39 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 6 |
| South East Region: | 9 |

**Structural Summary**

Average Overstorey Height: 13.70 m
Canopy Cover: sparse
Average Percentage Foliage Cover: 13.3 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 501-700 mm |
| Typical Landform Types: | swamps-plains |
| Geological Formation: | Bridgewater FM- Parilla sands, with some on Padthaway FM |
| Typical Surface Soil Texture: | sandy loam-loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Eucalyptus camaldulensis* var. *camaldulensis*** | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 2.00 | 40.65 | 1.00 | 18.73 |
| ****Hypochoeris radicata*** | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0.62 | 3.97 | 0.80 | 1.97 |
| *Acaena echinata* var. | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0.26 | 0.60 | 3.87 |
| *Rumex brownii* | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0.06 | 1.39 | 0.60 | 13.90 |
| *Banksia marginata* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.22 | 0.02 | 0.40 | 0.17 |
| *Danthonia* sp. | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.22 | 0.24 | 0.40 | 0.07 |
| *Dichondra repens* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.03 | 0.40 | 0.49 |
| *Distichlis distichophylla* | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.02 | 0.40 | 2.46 |
| ***Hydrocotyle laxiflora*** | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0.42 | 0.82 | 0.40 | 0.10 |
| *Juncus pallidus* | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.20 | 0.40 | 5.15 |
| *Juncus subsecundus* | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.29 | 0.40 | 6.37 |
| ***Leptospermum continentale*** | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0.40 | 0.10 | 0.40 | 0.24 |
| ***Ranunculus robertsonii*** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.22 | 5.36 | 0.40 | 6.65 |
| ***Schoenus apogon*** | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0.42 | 0.80 | 0.40 | 0.67 |
| *Senecio glomeratus* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.04 | <0.01 | 0.40 | 0.76 |

**Membership**
HYN0201, MON0603, HYN0601, STR0602, PEN0301

**Figure 55.**
***Eucalyptus camaldulensis* var. *camaldulensis* Woodland at quadrat HYN0601.**

**Florsitic Group 19** *Leptospermum lanigerum* (Silky Tea-tree) Tall Shrubland

15 Members

**Description**

*Leptospermum lanigerum* dominates the overstorey of this Tall Shrubland group, which can very in density from closed to open formation. Shrubs within the understorey such as *Leucopogon parviflorus* and *Ozothamnus ferrugineus* contribute to the dense thicket effect at many locations. *Melaleuca squarrosa* may occur at some locations also contributing to the thicket. *Epilobium billardieranum* ssp. *billardieranum* and *Acaena novae-zelandiae* contribute the lower understorey. The shrubland occurs in swamps mainly on loam soils but these can vary to medium clay soils. The group is distributed in the higher rainfall areas (> 600 mm) and generally within close proximity of the coast.

**Dominant /Codominant Overstorey Species**

*Leptospermum lanigerum*

**Dominant /Codominant Understorey Species**

*Leucopogon parviflorus*, *Ozothamnus ferrugineus*, *Epilobium billardieranum* ssp. *billardieranum*, *Acaena novae-zelandiae*

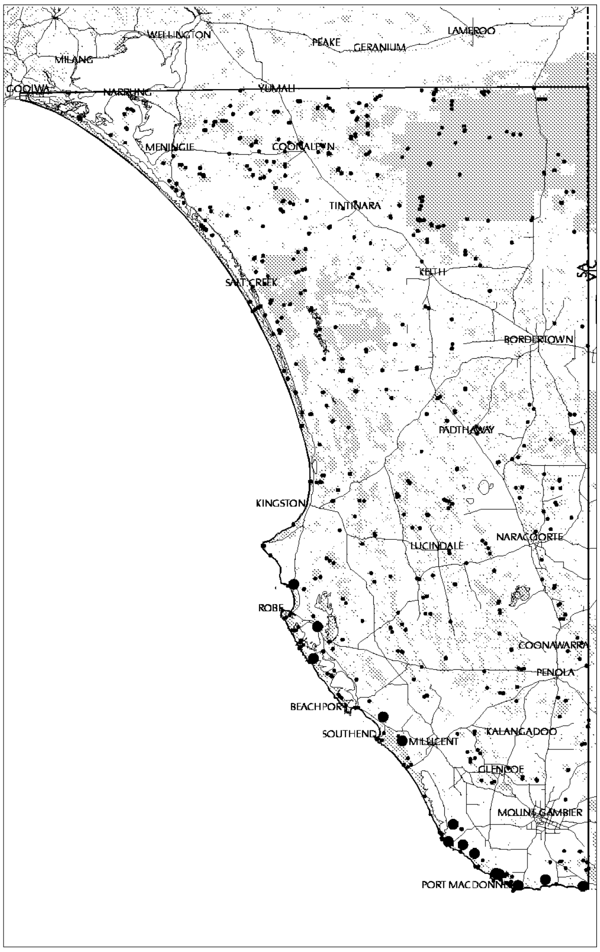
**Indicator Species**

*Leptospermum lanigerum*, *Ozothamnus ferrugineus*, *Epilobium billardieranum* ssp. *billardieranum*, *Melaleuca squarrosa*

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 11 | Min: 4 | Max: 20 |
| Introduced perennial: | 2 | Min: 1 | Max: 3 |
| Native annual: | 1 | Min: 1 | Max: 2 |
| Introduced annual: | 2 | Min: 1 | Max: 4 |
| All taxa: | 13 | Min: 5 | Max: 23 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 14 |
| South East Region: | 14 |

**Structural Summary**

Average Overstorey Height: > 2 m

Canopy Cover: mid-dense

Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 701-1000 mm |
| Typical Landform Types: | swamps |
| Geological Formations: | St Kilda FM, with some on Bridgewater FM |
| Typical Surface Soil Texture: | mainly loam, range loam-light medium clay |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Leptospermum lanigerum*** | 0 | 0 | 0 | 1 | 8 | 5 | 1 | 3.40 | 52.97 | 1.00 | 8.00 |
| ***Ozothamnus ferrugineus*** | 0 | 1 | 0 | 6 | 3 | 2 | 0 | 1.94 | 36.80 | 0.80 | 9.50 |
| ***Acaena novae-zelandiae*** | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0.80 | 2.42 | 0.53 | 0.43 |
| ***Epilobium billardieranum* ssp. *billardieranum*** | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 0.60 | 7.19 | 0.53 | 4.04 |
| ***Leucopogon parviflorus*** | 0 | 1 | 1 | 6 | 0 | 0 | 0 | 0.87 | 1.74 | 0.53 | 0.63 |
| *Melaleuca squarrosa* | 0 | 0 | 0 | 4 | 1 | 2 | 0 | 1.27 | 6.42 | 0.47 | 1.58 |
| *Gahnia filum* | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 1.07 | 1.85 | 0.40 | 0.54 |

**Membership**
*AL0102, *NE0201, *PM0502, *LB0501, *LB0601, *NE0604, *NE0603, *LB0202, *MU0101, *LE0101, *PM0305, *LE0701, *NE0901, *WO0401, BUF0701

**Figure 56.**
***Leptospermum lanigerum* Tall Shrubland at quadrat LB0501.**

**Floristic Group 20** *Gahnia filum* (Smooth Cutting-grass), *Gahnia trifida* (Cutting-grass) with invading *Olearia axillaris* (Coast Daisy-bush) Sedgeland

2 Members

**Description**
This Sedgeland group is dominated by *Gahnia filum* and *G. trifida*, with *Olearia axillaris* shrubs dispersed throughout. *Eleocharis acuta* and *Acaena novae-zelandiae* are the dominant understorey species. This group at first appeared to be ecotonal representing the boundary between the coastal shrublands and swampy sedgelands. However, closer inspection of this group in the Bucks Lake Game Reserve indicated that the group is more likely reflecting an altered *G. filum – G. trifida* sedgeland. In this area, the water regime has been changed with freshwater no longer draining through the area from Lake Bonney (Neville Bonney, pers. comm.). As a result, the sub soil water regime has changed from a wetter fresher regime to a drier saltier regime. It would appear that *O. axillaris* is now able to invade from the adjacent community. *Gahnia filum* may also be able to increase in this situation, as it is more salt tolerant than *G. trifida* (Specht 1972). This poorly represented group generally occurs in swamps or interdunal areas on loam to light medium clay soils and is distributed between Carpenter Rocks and Port MacDonnell. Further survey work concentrating on these sedgelands would assist in better describing this group and understanding what is happening to these remaining areas.

**Dominant /Codominant Overstorey Species**
*Gahnia filum*, *Gahnia trifida*, *Olearia axillaris*

**Dominant /Codominant Understorey Species**
*Eleocharis acuta*, *Acaena novae-zelandiae*

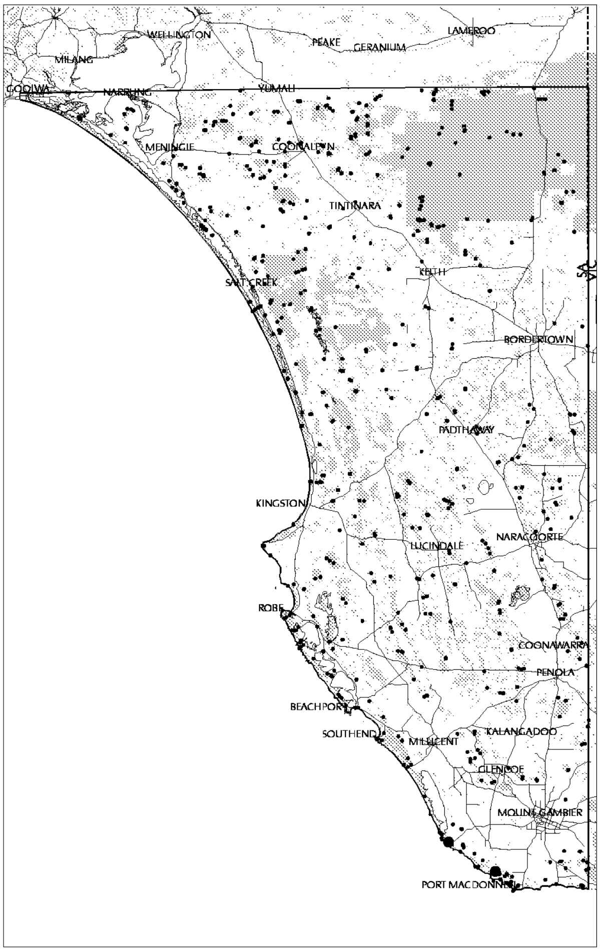
**Indicator Species**

*Gahnia filum*, *Eleocharis acuta*, *Gahnia trifida*, *Olearia axillaries*, *Dichondra repens*

**Possible Emergent Species (+/-)**
*Melaleuca lanceolata* ssp. *lanceolata* may occur as an emergent species at 50% of sites. *Melaleuca halmaturorum* ssp. *halmaturorum* has been noted as an emergent species in the Bucks Lake Game Reserve area.

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 9 | Min: 9 | Max: 9 |
| Introduced perennial: | 0 | Min: 0 | Max: 0 |
| Native annual: | 1 | Min: 1 | Max: 1 |
| Introduced annual: | 3 | Min: 3 | Max: 3 |
| All taxa: | 11 | Min: 9 | Max: 13 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 0 |
| South East Region: | 0 |

**Structural Summary**
Average Overstorey Height: #
Canopy Cover: #
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 701-1000 mm |
| Typical Landform Types: | rise-swamp |
| Geological Formations: | Nullarbor Limestone EQ |
| Typical Surface Soil Texture: | loam-light medium clay |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Acaena novae-zelandiae*** | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1.00 | 4.19 | 1.00 | 2.68 |
| ***Gahnia filum*** | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4.00 | 43.99 | 1.00 | 5.68 |
| ***Olearia axillaris*** | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1.50 | 10.75 | 1.00 | 6.33 |
| *Clematis microphylla* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 6.40 | 0.50 | 0.61 |
| *Dichondra repens* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 9.35 | 0.50 | 0.94 |
| ***Eleocharis acuta*** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 19.80 | 0.50 | 9.38 |
| ***Gahnia trifida*** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 12.12 | 0.50 | 2.88 |
| *Hypolaena fastigiata* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.50 | 1.08 | 0.50 | 0.44 |
| *Leptospermum lanigerum* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.50 | 0.48 | 0.50 | 1.58 |
| *Leucopogon parviflorus* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.50 | 0.30 | 0.50 | 0.51 |
| *Melaleuca lanceolata ssp. lanceolata* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 5.10 | 0.50 | 0.78 |
| *Pelargonium australe* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.50 | 9.19 | 0.50 | 8.90 |
| *Pteridium esculentum* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 1.43 | 0.50 | 0.37 |
| *Rhagodia candolleana* ssp. *candolleana* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.50 | 1.40 | 0.50 | 1.55 |
| *Schoenus apogon* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 6.78 | 0.50 | 1.22 |

**Membership**
*LB0301, *NE0202


**Figure 57.**
***Gahnia filum*, *Gahnia trifida* with invading *Olearia axillaris* Sedgeland at quadrat LB0301.**

**Floristic Group 21** *Gahnia filum* (Thatching Grass), *Samolus repens* (Creeping Brookweed) Sedgeland

37 Members

**Description**
*Gahnia filum* is the dominant overstorey in conjunction with *Samolus repens* which dominates the low groundcover layer between the *G. filum* clumps. *Melaleuca halmaturorum* ssp. *halmaturorum* tends to be found invading from the edges of these swamps where drainage has changed the water regime reducing the frequency of inundation and increasing subsoil salinity. It would appear that with artificial drainage, and in some cases grazing pressure, *G. filum* is declining and *S. repens* increasing. *Selliera radicans* contributes to the ground cover layer also. This group is distributed along the coastline from the Coorong south to Piccaninnie Ponds in seasonally inundated brackish swamps. Relevant to both Groups 20, 21 and 22, Sparrow (1991) noted that the *G. trifida* and *G. filum* tend to occur on the often inundated areas but less saline soils where rainfall tends to exceed 600 mm while *M. halmaturorum* ssp. *halmaturorum* occurs on the highly saline soils that are infrequently inundated.

**Dominant /Codominant Overstorey Species**
*Gahnia filum*

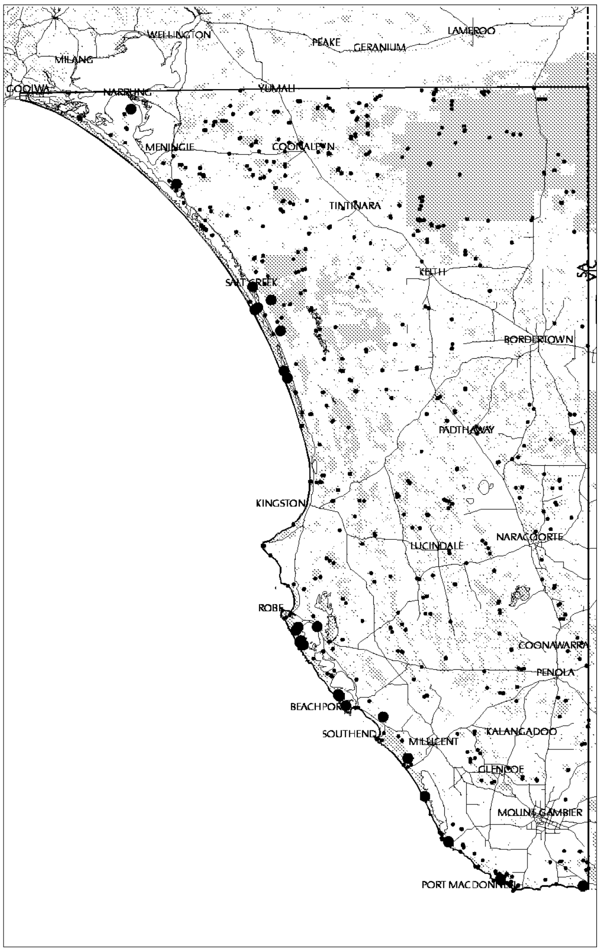
**Dominant /Codominant Understorey Species**
*Samolus repens*, *Selliera radicans*

**Indicator Species**
*Juncus kraussii*, *Samolus repens*, *Tetragonia implexicoma*, *Selliera radicans*, *Gahnia filum*

**Possible Emergent Species (+/-)**
*Melaleuca halmaturorum* ssp. *halmaturorum* occurs as an emergent species at 43% of sites.

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 12 | Min: 4 | Max: 23 |
| Introduced perennial: | 1 | Min: 1 | Max: 3 |
| Native annual: | 3 | Min: 1 | Max: 12 |
| Introduced annual: | 3 | Min: 1 | Max: 7 |
| All taxa: | 16 | Min: 5 | Max: 33 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 1 |
| South Australian: | 10 |
| South East Region: | 13 |

**Structural Summary**
Average Overstorey Height: #
Canopy Cover: #
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 501-1000 mm |
| Typical Landform Types: | swamps |
| Geological Formations: | St Kilda FM - Semaphore sand |
| Typical Surface Soil Texture: | mainly sandy clay loam, range sand-medium clay |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Samolus repens*** | 0 | 1 | 20 | 9 | 3 | 1 | 0 | 1.38 | 7.57 | 0.92 | 3.87 |
| ***Gahnia filum*** | 0 | 0 | 8 | 10 | 6 | 0 | 2 | 1.51 | 4.69 | 0.70 | 2.45 |
| ***Selliera radicans*** | 0 | 0 | 14 | 7 | 1 | 0 | 0 | 0.84 | 6.14 | 0.59 | 2.52 |
| *Tetragonia implexicoma* | 0 | 0 | 6 | 9 | 3 | 1 | 0 | 1.00 | 7.03 | 0.51 | 1.54 |
| *Acaena novae-zelandiae* | 0 | 0 | 12 | 6 | 0 | 0 | 0 | 0.65 | 1.40 | 0.49 | 0.31 |
| *Juncus kraussii* | 0 | 0 | 4 | 11 | 1 | 0 | 0 | 0.78 | 9.17 | 0.43 | 2.30 |
| *Melaleuca halmaturorum ssp. halmaturorum* | 0 | 1 | 1 | 8 | 3 | 1 | 2 | 1.08 | 4.47 | 0.43 | 2.25 |

**Membership**
*AL0901, *NE0302, *BE0501, *LE0303, *LE0702, *CA0104, *LE0302, *MU0102, *LB0201, *LB0304, *LB0303, *PM0201, *PM0301, *BE1001, *LG0402, *TT0601, *PM0202, SAN0802, TIL0104, *CA0102, *CA0103, *LE0403, *LG0102, *LG0302, *LE0201, *LE0301, *LB0302, *LE0402, *LE0304, *CA0501, *CA0502, *CT0301, *CT0402, *TT0101, *TT0201, 24BR0102, 25BYA203


**Figure 58.**
***Gahnia filum*, *Samolus repens* Sedgeland at quadrat LB0201.**

**Floristic Group 22** *Melaleuca halmaturorum* ssp. *halmaturorum* (South Australian Swamp Paper-bark) Tall Shrubland

10 Members

**Description**

This group is characterised *Melaleuca halmaturorum* ssp. *halmaturorum* and can vary in structure from a Tall Shrubland to a Very Low Open Forest. The understorey consists of *Gahnia filum*, *Samolus repens* and the twiner *Comesperma volubile*. This group occurs in saline swamps and appears to have increased where artificial drains have increased salt concentrations (Specht 1972). Sparrow (1991) noted that *M. halmaturorum* ssp. *halmaturorum* predominates on highly saline soils of infrequently inundated areas. This group occurs east of Robe to north of Salt Creek. It would be of value to conduct further survey work within the two major structural forms to explore whether this reflects a difference in the floristic composition of the understorey.

**Dominant /Codominant Overstorey Species**

*Melaleuca halmaturorum ssp. halmaturorum*

**Dominant /Codominant Understorey Species**

*Gahnia filum*, *Samolus repens*, *Comesperma volubile*

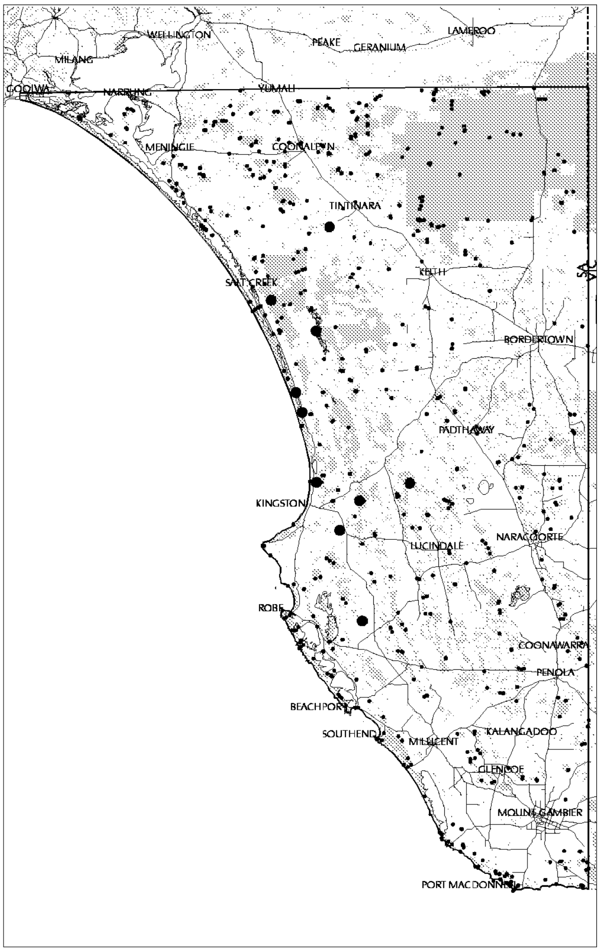
**Indicator Species**

*Melaleuca halmaturorum ssp. halmaturorum*

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 12 | Min: 4 | Max: 21 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 3 | Min: 1 | Max: 10 |
| Introduced annual: | 3 | Min: 1 | Max: 8 |
| All taxa: | 16 | Min: 4 | Max: 38 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 4 |
| South East Region: | 5 |

**Structural Summary**

Average Overstorey Height: 3.70 m

Canopy Cover: mid-dense

Average Percentage Foliage Cover: 35.4 %

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-1000 mm, mainly 501-700 mm |
| Typical Landform Types: | mainly swamps (-plains) |
| Geological Formations: | Bridgewater FM – Padthaway FM |
| Typical Surface Soil Texture: | mainly sandy loam-clay loam, range sand-medium clay |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Melaleuca halmaturorum* ssp. *halmaturorum*** | 0 | 0 | 0 | 3 | 1 | 4 | 2 | 3.50 | 60.54 | 1.00 | 14.38 |
| ***Samolus repens*** | 0 | 5 | 2 | 0 | 0 | 0 | 0 | 0.25 | 0.02 | 0.70 | 1.98 |
| ***Comesperma volubile*** | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0.24 | 1.01 | 0.60 | 2.26 |
| ***Gahnia filum*** | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 0.52 | 0.14 | 0.60 | 1.65 |
| *Selliera radicans* | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0.01 | 0.60 | 2.57 |
| *Leptocarpus brownii* | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0.14 | 0.01 | 0.50 | 1.12 |
| *Acaena novae-zelandiae* | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.10 | 0.40 | 0.14 |
| *Dianella revoluta* var. | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0.10 | 0.40 | 0.01 |
| *Distichlis distichophylla* | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0.22 | 0.51 | 0.40 | 2.46 |

**Membership**
24RSD202, MIN0602, KON0801, LUC0101, TIL1201, DUF0201, KIN0901, KIN0201, SAN0803, TIL0302


**Figure 59.**
***Melaleuca halmaturorum* ssp. *halmaturorum* Tall Shrubland at quadrat LUC0101.**

**Figure 60.**
***Melaleuca halmaturorum* ssp. *halmaturorum* in woodland to open forest formation at quadrat TIL1201.**

**Floristic Group 23** *Typha domingensis* (Narrow-leaf Bulrush) Closed Sedgeland

3 Members

**Description**
*Typha domingensis* Closed Sedgelands occur around freshwater soaks, sinkholes and swamps typically situated in close proximity to the coastline from Salt Creek to Piccaninnie Ponds. *Samolus repens* is found amongst the reeds. This group is poorly represented due to difficulties in distinguishing sedgelands and reedbeds from 1:40,000 aerial photos during site selection and problems with access during the wet spring period when the main survey was conducted. Further survey work concentrating on wetlands, particularly fresh water inland swamps and drainage lines, may increase the representation, description and distribution of this group.

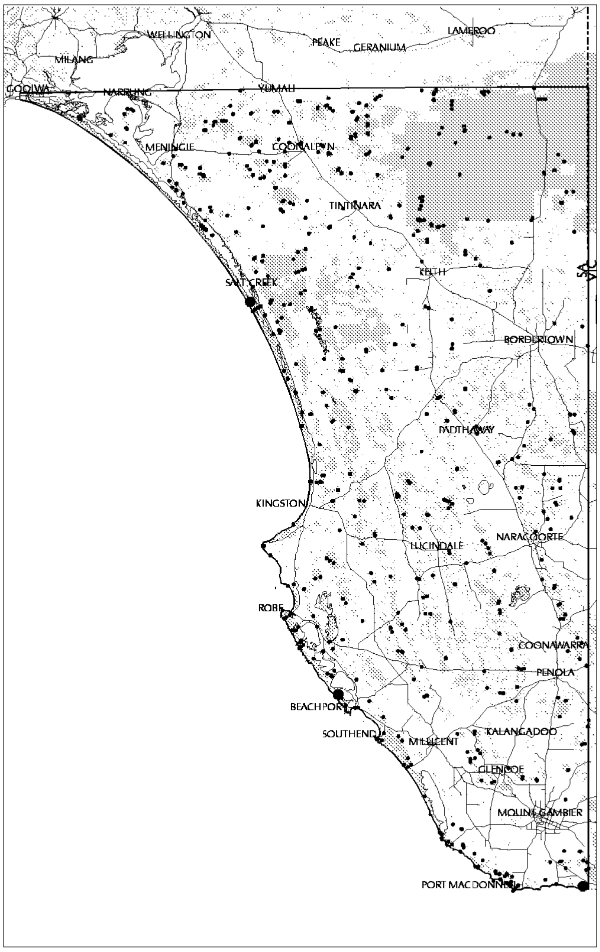
**Dominant /Codominant Overstorey Species**
*Typha domingensis*

**Dominant /Codominant Understorey Species**
*Samolus repens*

**Indicator Species**
*Typha domingensis*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 6 | Min: 3 | Max: 8 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 1 | Min: 1 | Max: 1 |
| Introduced annual: | 1 | Min: 1 | Max: 1 |
| All taxa: | 7 | Min: 5 | Max: 9 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 5 |
| South East Region: | 5 |

**Structural Summary**
Average Overstorey Height: #
Typical Canopy Cover: #
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-1000 mm, mainly 701-1000 mm |
| Typical Landform Types: | swamps-sinkholes/soaks |
| Geological Formations: | Semaphore sand -St kilda FM |
| Typical Surface Soil Texture: | sandy clay loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Typha domingensis* | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 4.67 | 119.68 | 1.00 | 20.59 |
| *Samolus repens* | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1.00 | 3.51 | 0.67 | 1.74 |

**Membership**
*LG0401, *TT0603, *PM0302

**No photograph was available for this group.**

**Floristic Group 24** *Themeda triandra* (Kangaroo Grass) with emergent *Pimelea glauca* (Smooth Riceflower) Open Tussock Grassland

2 Members

**Description**

This Open Tussock Grassland group is characterised by an overstorey of *Themeda triandra* with emergent *Pimelea glauca*. The dominant understorey species is *Schoenus apogon*. This group, as recorded here and in the species list below, has elements that reflect the adjacent vegetation communities. The group is located in Piccaninnie Ponds Conservation Park and found on plains with loam soils with calcareous substrate present. However as this group is only represented by 2 sites, located at the southern extreme of the study area, it is unlikely that this summary adequately represents *T. triandra* Tussock Grasslands found across the region.

Specht (1972) indicated that a *T. triandra – Danthonia* spp. Tussock Grassland was probably supported on the volcanic soils around Mt Gambier and Mt Schank with scattered trees, *Acacia melanoxylon* and *A. mearnsii*, prior to European settlement. While this community is difficult to distinguish from aerial photographs hence limited site selection resulted, it is also a community which would have been affected by a long history of stock grazing and cultivation in the region, hence very few intact remnants would still occur outside conservation areas. Further survey work is required concentrating on locating and surveying such native grassland remnants across the region.

**Dominant /Codominant Overstorey Species**

*Themeda triandra*

**Dominant /Codominant Understorey Species**

*Schoenus apogon*

**Indicator Species**

*Themeda triandra*, *Pimelea glauca*, *Schoenus apogon*, *Acrotriche affinis*, *Asperula conferta*

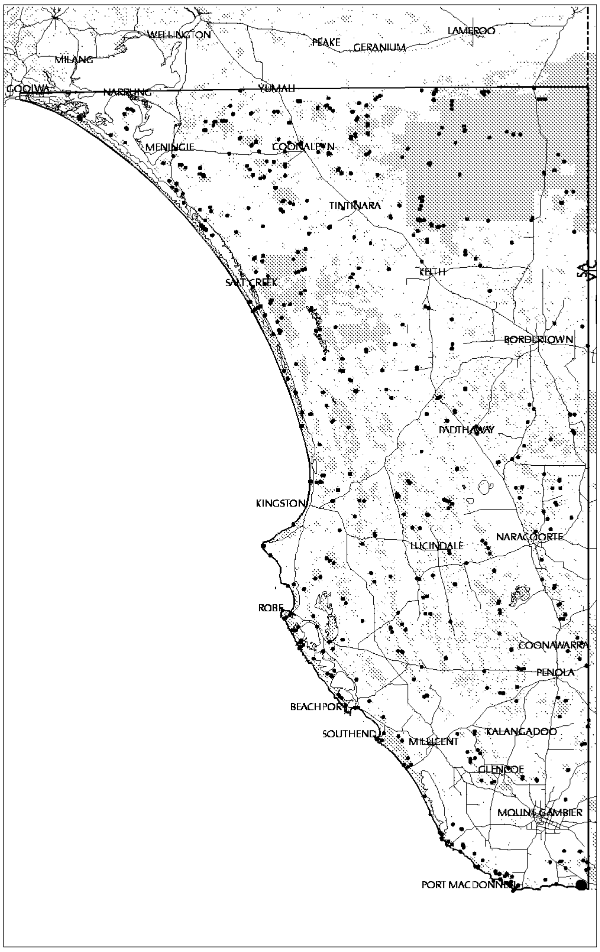
**Possible Emergent Species (+/-)**

*Pimelea glauca* occurs as an emergent at 100% of the sites.

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 35 | Min: 34 | Max: 36 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 3 | Min: 1 | Max: 5 |
| Introduced annual: | 4 | Min: 1 | Max: 7 |
| All taxa: | 43 | Min: 42 | Max: 43 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 6 |
| South East Region: | 7 |

**Structural Summary**

Average Overstorey Height: #

Canopy Cover: #

Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 701-1000 mm |
| Typical Landform Types: | plain (floodplains) |
| Geological Formations: | St Kilda FM |
| Typical Surface Soil Texture: | loam |
| Surface Stone Type: | calcareous substrate |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Acacia verticillata* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 6.36 | 1.00 | 9.59 |
| *Acaena novae-zelandiae* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 0.89 | 1.00 | 2.68 |
| *Acrotriche affinis* | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 18.33 | 1.00 | 6.57 |
| *Asperula conferta* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 14.47 | 1.00 | 26.07 |
| *Astroloma humifusum* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 2.65 | 1.00 | 1.70 |
| *Baumea juncea* | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1.00 | 2.80 | 1.00 | 4.47 |
| *Dianella revoluta* var. | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1.00 | 4.47 | 1.00 | 1.27 |
| *Leptospermum continentale* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 0.38 | 1.00 | 3.52 |
| *Leptospermum lanigerum* | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1.05 | 3.78 | 1.00 | 8.00 |
| *Leucopogon parviflorus* | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1.05 | 2.84 | 1.00 | 3.48 |
| ***Pimelea glauca*** | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1.50 | 38.67 | 1.00 | 17.59 |
| *Pteridium esculentum* | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1.05 | 1.65 | 1.00 | 2.82 |
| *Samolus repens* | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1.00 | 3.51 | 1.00 | 4.74 |
| ***Schoenus apogon*** | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1.50 | 16.60 | 1.00 | 6.54 |
| *Schoenus nitens* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 4.46 | 1.00 | 15.33 |
| *Selliera radicans* | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1.00 | 9.10 | 1.00 | 8.31 |
| ***Themeda triandra*** | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2.50 | 54.41 | 1.00 | 16.11 |
| *Veronica gracilis* | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.55 | 14.87 | 1.00 | 27.03 |

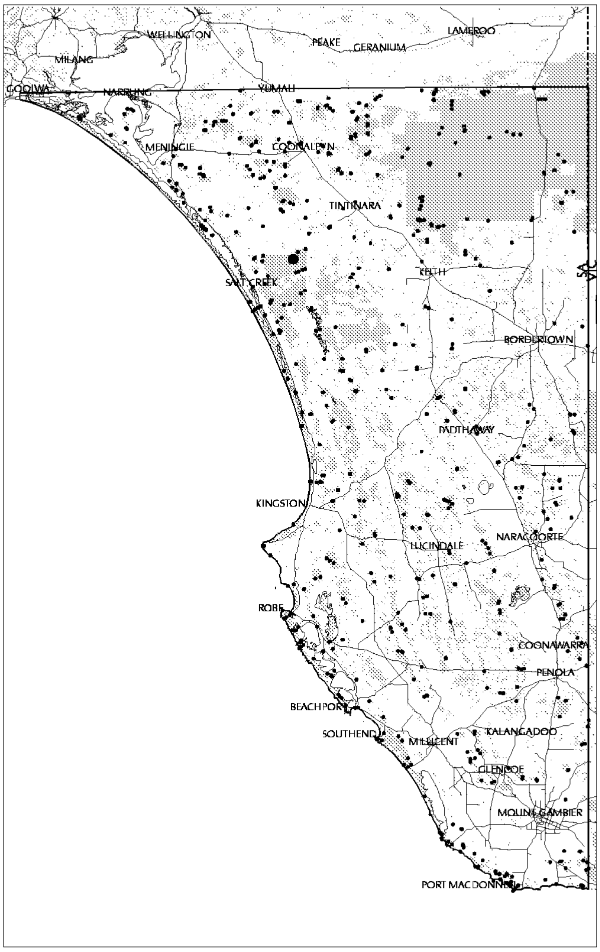
**Membership**
*PM0402, GAM1701

**Figure 61.**
***Themeda triandra* Open Tussock Grassland with emergent *Pimelea glauca* at quadrat GAM1701.**

**Floristic Group 25** *Leptocarpus brownii* (Coarse Twine-rush), *Baumea juncea* (Bare Twig-rush) Closed Sedgeland

1 Member

**Description**
This Closed Sedgeland group is characterised by an overstorey of *Leptocarpus brownii* and *Baumea juncea*. The dominant / codominant understorey species are *Tetraria capillaris*, *Wilsonia backhousei* and *W. rotundifolia*. A variety of species can occur as occasional emergent species, these usually reflecting the adjacent vegetation communities. While this group is represented by only one site during this analysis, the group was represented by 6 sites in a subsequent analysis following further survey work in Messent Conservation Park (Owens *et al.* 1995). This community is found in sandy depressions throughout Messent Conservation Park in the Upper South East. It is likely that this group would be found in other brackish swampy depressions across the South East. For example, a group similar to this community was recorded by Davies (1982) at Talapar Conservation Park. Other fresher *Baumea* Sedgelands dominated by *B. arthrophylla* and / or *B. articulata* may occur in the wetter Lower South East. Further survey work concentrating on sedgeland areas across the South East is required to provide better representation of these communities and their diversity.




**Dominant /Codominant Overstorey Species**
*Leptocarpus brownii*, *Baumea juncea*

**Dominant /Codominant Understorey Species**
*Tetraria capillaries*, *Wilsonia backhousei*, *Wilsonia rotundifolia*

**Indicator Species**
*Tetraria capillaris*, *Wilsonia rotundifolia*, *Wilsonia backhousei*, *Leptocarpus brownii*, *Baumea juncea*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 18 | Min: 18 | Max: 18 |
| Introduced perennial: | 0 | Min: 0 | Max: 0 |
| Native annual: | 3 | Min: 3 | Max: 3 |
| Introduced annual: | 1 | Min: 1 | Max: 1 |
| All taxa: | 22 | Min: 22 | Max: 22 |

**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 1 |
| South Australian: | 2 |
| South East Region: | 2 |

**Structural Summary**
Average Overstorey Height: 0.20 m
Canopy Cover: dense
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-500 mm |
| Typical Landform Types: | closed depressions |
| Geological Formations: | Bridgewater FM |
| Typical Surface Soil Texture: | sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

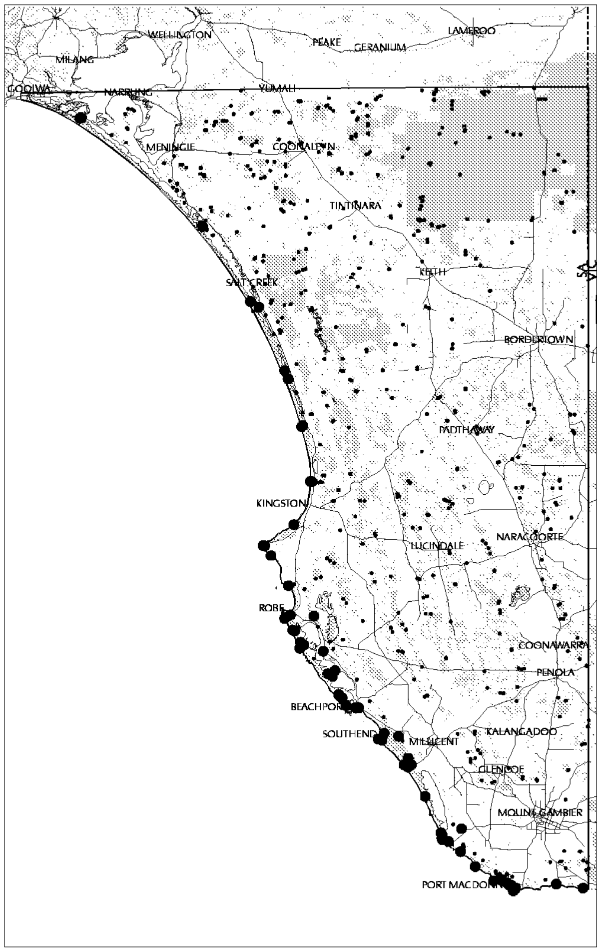
| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Banksia ornata* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | <0.01 | 1.00 | 4.13 |
| ***Baumea juncea*** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.00 | 14.55 | 1.00 | 4.47 |
| *Danthonia* sp. | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | <0.01 | 1.00 | 2.10 |
| *Argentipallium obtusifolium* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 1.86 | 1.00 | 20.61 |
| *Hydrocotyle laxiflora* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | <0.01 | 1.00 | 2.36 |
| *Kennedia prostrata* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.26 | 1.00 | 6.65 |
| *Lawrencia spicata* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 2.70 | 1.00 | 27.03 |
| *Lepidosperma carphoides* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | <0.01 | 1.00 | 3.34 |
| *Lepidosperma concavum* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.31 | 1.00 | 14.00 |
| ***Leptocarpus brownii*** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.00 | 18.27 | 1.00 | 6.12 |
| *Melaleuca brevifolia* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.01 | 1.00 | 8.60 |
| *Melaleuca lanceolata* ssp. *lanceolata* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.12 | 1.00 | 4.66 |
| *Pultenaea tenuifolia* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.17 | 1.00 | 9.16 |
| *Senecio macrocarpus* | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 2.70 | 1.00 | 27.03 |
| *Stipa nitida* gp. | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0.59 | 1.00 | 14.93 |
| ***Tetraria capillaris*** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.00 | 44.61 | 1.00 | 18.45 |
| ***Wilsonia backhousei*** | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.00 | 26.20 | 1.00 | 25.55 |
| ***Wilsonia rotundifolia*** | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.00 | 27.03 | 1.00 | 27.03 |

**Membership**
TAU0301

**Figure 62.**
***Leptocarpus brownii*, *Baumea juncea* Closed Sedgeland at quadrat TAU0301.**

**Floristic Group 26** *Leucopogon parviflorus* (Coast Beard-heath), *Acacia longifolia* var. *sophorae* (Coast Wattle), *Olearia axillaris* (Coast Daisy-bush) Tall Shrubland

85 Members




### Description

A mix of *Leucopogon parviflorus*, *Acacia longifolia* var. *sophorae* and *Olearia axillaris* characterise the overstorey of this Tall Shrubland group. Understorey species are represented by *Pimelea serpyllifolia* ssp. *serpyllifolia*, in the mid strata, *Isolepis nodosa* and *Lepidosperma gladiatum* in the lower strata and at the ground layer *Carpobrotus rossii*. The twiner *Clematis microphylla* also occurs amongst the overstorey and understorey. This group, typical of coastal dune systems (dunes to swales or plains), is evenly distributed along the full length of the coastline with some representation occurring slightly inland on stranded old coastal dunes. The group occurs on mainly sandy soils, though can range from sand to sandy clay loam. Normally there is no surface stone present, however if present it is of calcareous nature. This group is supported by the extensive coastal dune survey and analysis subsequently completed by Oppermann (1999), though it appears that further subdivision of the group may have resulted.

### Dominant /Codominant Overstorey Species

*Leucopogon parviflorus*, *Acacia longifolia* var. *sophorae*, *Olearia axillaris*

### Dominant /Codominant Understorey Species

*Pimelea serpyllifolia ssp. serpyllifolia*, *Isolepis nodosa*, *Lepidosperma gladiatum*, *Clematis microphylla*, *Carpobrotus rossii*

### Indicator Species

*Lepidosperma gladiatum*, *Leucopogon parviflorus*, *Pimelea serpyllifolia* ssp. *serpyllifolia*, *Acacia longifolia* var. *sophorae*, *Carpobrotus rossii*

### Native and Introduced Plant Species Summary

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 13 | Min: 4 | Max: 29 |
| Introduced perennial: | 2 | Min: 1 | Max: 4 |
| Native annual: | 2 | Min: 1 | Max: 4 |
| Introduced annual: | 4 | Min: 1 | Max: 13 |
| All taxa: | 17 | Min: 6 | Max: 38 |

### Conservation Significant Species

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 7 |
| South East Region: | 10 |

### Structural Summary

Average Overstorey Height: 3.70 m
Canopy Cover: mid-dense
Average Percentage Foliage Cover: #

### Environmental Parameters

| | |
|---|---|
| Average Rainfall Range: | 401-1000 mm, mainly 501-1000 mm |
| Typical Landform Types: | mainly dunes, (hillslopes-Plains, swales, swamps) |
| Geological Formations: | mainly Semaphore Sand – St Kilda FM |
| Typical Surface Soil Texture: | mainly sand, range sand-sandy clay loam |
| Surface Stone Type: | predominately no stone, but when present it is of calcareous nature |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Leucopogon parviflorus*** | 0 | 4 | 10 | 37 | 18 | 6 | 1 | 1.97 | 12.84 | 0.89 | 2.63 |
| ***Clematis microphylla*** | 0 | 8 | 34 | 21 | 0 | 0 | 0 | 0.90 | 5.07 | 0.74 | 1.85 |
| ***Acacia longifolia* var. *sophorae*** | 0 | 6 | 12 | 23 | 15 | 4 | 1 | 1.47 | 8.34 | 0.72 | 1.69 |
| ***Olearia axillaris*** | 0 | 8 | 14 | 33 | 4 | 2 | 0 | 1.19 | 6.29 | 0.72 | 2.91 |
| ***Carpobrotus rossii*** | 0 | 6 | 25 | 19 | 0 | 0 | 0 | 0.75 | 6.70 | 0.59 | 5.62 |
| ***Isolepis nodosa*** | 0 | 6 | 16 | 19 | 5 | 3 | 0 | 0.96 | 4.47 | 0.58 | 1.26 |
| ***Pimelea serpyllifolia* ssp. *serpyllifolia*** | 1 | 5 | 28 | 15 | 0 | 0 | 0 | 0.69 | 10.52 | 0.58 | 7.61 |
| ***Lepidosperma gladiatum*** | 1 | 9 | 11 | 24 | 2 | 0 | 0 | 0.78 | 16.24 | 0.55 | 11.68 |
| ***Tetragonia implexicoma*** | 0 | 6 | 25 | 14 | 2 | 0 | 0 | 0.70 | 3.09 | 0.55 | 1.85 |
| *Rhagodia candolleana* ssp. *candolleana* | 0 | 6 | 17 | 18 | 1 | 0 | 0 | 0.67 | 2.83 | 0.49 | 1.50 |
| *Acaena novae-zelandiae* | 0 | 5 | 21 | 7 | 2 | 0 | 0 | 0.49 | 0.63 | 0.41 | 0.16 |

**Membership**
*AL0201, *CT0202, *NE0301, *NE0403, *LB0701, BUF0603, *AL0202, *AL1001, *CA0101, *NE0303, *BE0101, *BE0602, *LB0101, *BE0401, *BE0503, *LG0201, *CA0503, *LE0202, *CA0201, *CA0202, *NE0401, *PM0101, BEN0303, *LB0203, *TT0301, *CJ0103, *CT0201, *KI0101, *BE0102, *BE0301, *BE0601, *LB0102, *NE0402, *CA0301, *PM0102, *PM0103, *AL0302, *AL1101, *LB0103, *BE0801, *CJ0102, *BK0601, *BK0702, *CA0401, *CA0402, *BK0401, *BK0501, *CI0201, *CI0401, *CI0501, *CI0301, *LG0303, DUF0502, KIN0101, KIN0102, *TT0602, *CJ0101, *LG0301, GAM1601, BUF0301, HAT0901, BEA0701, HAT0801, BEA0901, BEA0902, DUF0501, KIN0103, *AL0301, BEN0301, BUF0601, *CT0401, *AL0401, *BE0901, *BE0201, *BE0701, *WO0301, *AL0601, BEN0401, BUF0401, BEA0501, *BE0502, *LG0101, *LG0403, *LE0501, *LE0601


**Figure 63.**
***Leucopogon parviflorus*, *Acacia longifolia* var. *sophorae*, *Olearia axillaris* Tall Shrubland at quadrat NE0401.**

**Floristic Group 27** *Spinifex sericeus* (Rolling Spinifex), *Ozothamnus turbinatus* (Coast Bush-everlasting), *Isolepis nodosa* (Knobby Club-rush) Tussock Grassland

3 Members

**Description**
This group is dominated by *Spinifex sericeus* and *Isolepis nodosa* in a Tussock Grassland formation interspersed with shrubs of *Ozothamnus turbinatus*. Other species that are dispersed through the community as either occasional emergents or understorey are *Olearia axillaris*, **Cakile maritima* ssp. *maritima*, *Leucophyta brownii* and *Apium prostratum* ssp. *prostratum* var. *prostratum*. This community is typical of the coastal foredunes and beach frontages. Although only represented by 3 sites it is commonly found along the South East coastline, as indicated by the extensive sampling and analysis undertaken in the coastal environment by Oppermann (1999). In terms of mapping, this group generally blends into the adjacent *Leucopogon parviflorus*, *Acacia longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland within a short distance inland from the foredune environment.

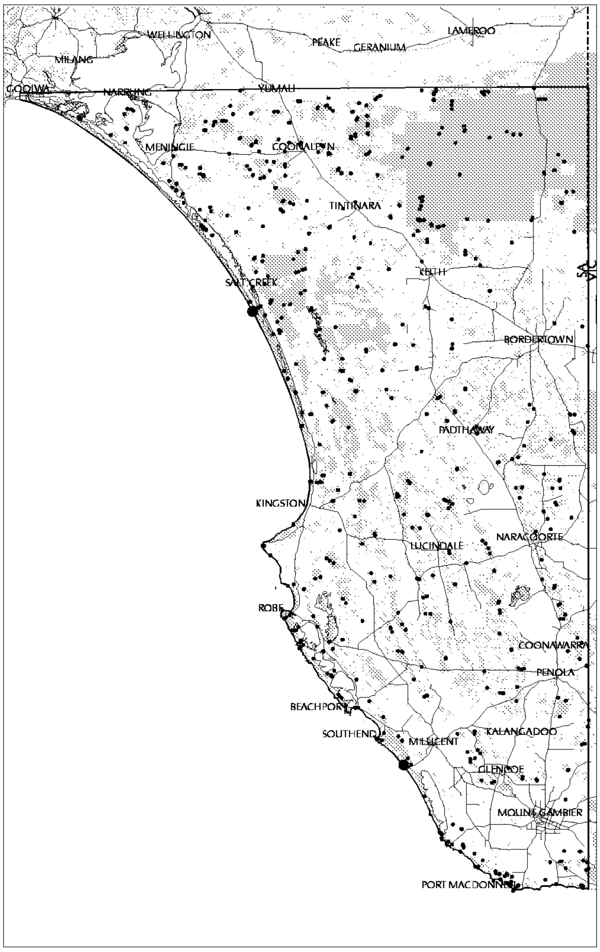
**Dominant /Codominant Overstorey Species**
*Spinifex sericeus*, *Ozothamnus turbinatus*, *Isolepis nodosa*

**Dominant /Codominant Understorey Species**
*Olearia axillaris*, **Cakile maritima* ssp. *maritima*, *Leucophyta brownii*, *Apium prostratum* ssp. *prostratum* var. *prostratum*

**Indicator Species**
*Ozothamnus turbinatus*, *Spinifex sericeus*, *Isolepis nodosa*, *Cakile maritima* ssp. *maritima*, *Leucophyta brownii*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 9 | Min: 8 | Max: 10 |
| Introduced perennial: | 2 | Min: 1 | Max: 2 |
| Native annual: | 0 | Min: 0 | Max: 0 |
| Introduced annual: | 0 | Min: 0 | Max: 0 |
| All taxa: | 10 | Min: 9 | Max: 11 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 2 |
| South East Region: | 2 |

**Structural Summary**
Average Overstorey Height: #
Canopy Cover: #
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-700 mm |
| Typical Landform Types: | dune (coastal foredune) |
| Geological Formations: | Semaphore sand |
| Typical Surface Soil Texture: | sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Ozothamnus turbinatus*** | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2.00 | 50.85 | 1.00 | 25.12 |
| ***Isolepis nodosa*** | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2.00 | 23.23 | 1.00 | 4.96 |
| ***Spinifex sericeus*** | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2.00 | 48.80 | 1.00 | 23.99 |
| ***Apium prostratum* ssp. *prostratum var. prostratum*** | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0.67 | 16.09 | 0.67 | 16.0 |
| ****Cakile maritima* ssp. *maritima*** | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1.33 | 22.94 | 0.67 | 8.27 |
| ***Leucophyta brownii*** | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1.33 | 28.78 | 0.67 | 11.92 |
| ***Olearia axillaris*** | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1.00 | 4.20 | 0.67 | 2.44 |

**Membership**
*CA0302, *TT0502, *TT0501

**No photograph was available for this group**.

**Floristic Group 28** *Muehlenbeckia gunnii* (Coastal Climbing Lignum) Vineland

14 Members

**Description**
A mat of *Muehlenbeckia gunnii* dominants this community draping over shrubs of *Rhagodia candolleana* ssp. *candolleana* and *Enchylaena tomentosa* var. *tomentosa*. Other understorey species that characterise the group are *Senecio lautus* and *Tetragonia implexicoma*. This group, occurs principally in the Coorong on sandy hillslopes and may reflect a shrubland community that has been disturbed in such a way as to promote the dominance of *M. gunnii* however further investigation is required to determine if this is the case.

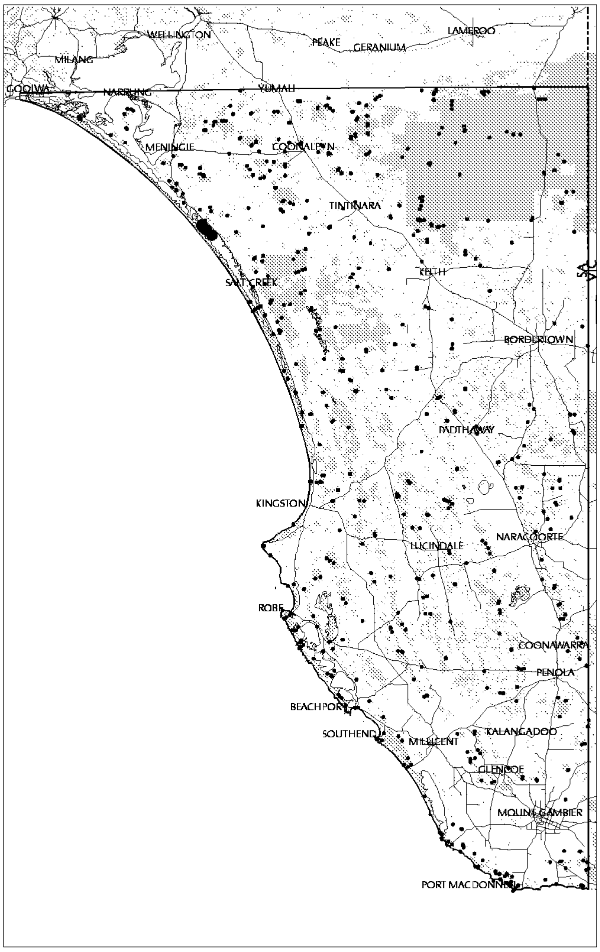
**Dominant /Codominant Overstorey Species**
*Muehlenbeckia gunnii*

**Dominant /Codominant Understorey Species**
*Rhagodia candolleana* ssp. *candolleana*, *Enchylaena tomentosa* var. *tomentosa*, *Senecio lautus*, *Tetragonia implexicoma*

**Indicator Species**
*Enchylaena tomentosa* var. *tomentosa*, *Muehlenbeckia gunnii*, **Avena barbata*, *Sonchus megalocarpus*

**Native and Introduced Plant Species Summary**
Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial | 8 | Min: 4 | Max: 16 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 1 | Min: 1 | Max: 1 |
| Introduced annual: | 1 | Min: 1 | Max: 2 |
| All taxa: | 9 | Min: 6 | Max: 17 |




**Conservation Significant Species**
Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 1 |
| South East Region: | 1 |

**Structural Summary**
Average Overstorey Height: #
Canopy Cover: #
Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-500 mm |
| Typical Landform Types: | mainly hillslopes |
| Geological Formations: | outside geological mapping |
| Typical Surface Soil Texture: | sand |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Muehlenbeckia gunnii*** | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0.71 | 8.25 | 0.71 | 6.04 |
| ***Tetragonia implexicoma*** | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0.71 | 3.23 | 0.71 | 3.43 |
| ***Enchylaena tomentosa* var. *tomentosa*** | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0.50 | 8.84 | 0.50 | 9.98 |
| ***Rhagodia candolleana* ssp. *candolleana*** | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0.50 | 1.40 | 0.50 | 1.55 |
| ***Senecio lautus*** | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0.50 | 2.85 | 0.50 | 1.91 |
| **Avena barbata* | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0.43 | 5.59 | 0.43 | 4.93 |
| *Carpobrotus rossii* | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0.43 | 1.88 | 0.43 | 2.77 |
| *Dianella revoluta* var. | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0.43 | 0.45 | 0.43 | 0.02 |
| *Olearia axillaris* | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0.43 | 0.42 | 0.43 | 0.77 |
| *Poa poiformis* | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0.43 | 3.18 | 0.43 | 4.95 |
| *Sonchus megalocarpus* | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0.43 | 4.51 | 0.43 | 4.64 |

**Membership**
*CI0601, *LI0301, *CI0701, *LI0201, *CI0801, *CI0901, *ST0101, *ST0201, *LI0101, *LI0401, *RI0201, *TB0101, *TB0301, *RI0301

**No photograph was available for this group**.

**Floristic Group 29** *Sarcocornia* sp. (Samphire), *Halosarcia* sp. (Samphire) Low Shrubland

6 Members

**Description**

This Low Shrubland group is characterised by *Sarcocornia* sp. and *Halosarcia* sp. Understorey species are *Distichlis distichophylla*, *Frankenia pauciflora* var., *Samolus repens* and *Suaeda australis*. This group is found on saline sandy clay loam to clay loam flats along the Coorong. A very similar group is likely to represented in the saline flats or swamps found inland within the Upper South East. Further survey work focussing on these samphire shrublands, both coastal and inland, is required to determine if these groups are floristically similar.

**Dominant /Codominant Overstorey Species**

*Sarcocornia* sp., *Halosarcia* sp.

**Dominant /Codominant Understorey Species**

*Distichlis distichophylla*, *Frankenia pauciflora* var., *Samolus repens*, *Suaeda australis*

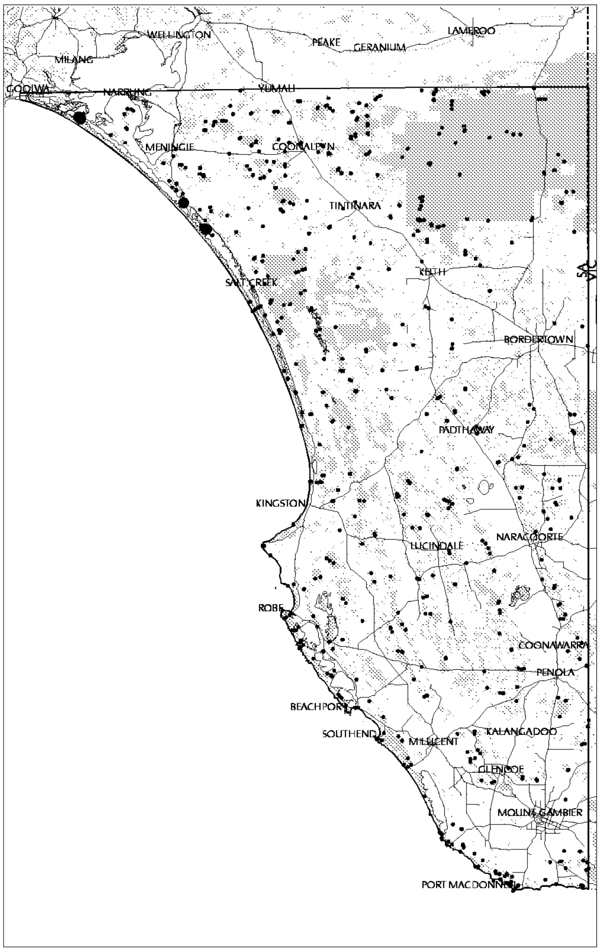
**Indicator Species**

*Sarcocornia* sp., *Distichlis distichophylla*, *Frankenia pauciflora* var., *Suaeda australis*, *Halosarcia* sp.

**Native and Introduced Plant Species Summary**

Average number of taxa at a site:

| | | | |
|---|---|---|---|
| Native perennial: | 5 | Min: 4 | Max: 7 |
| Introduced perennial: | 1 | Min: 1 | Max: 1 |
| Native annual: | 0 | Min: 0 | Max: 0 |
| Introduced annual: | 0 | Min: 0 | Max: 0 |
| All taxa: | 5 | Min: 4 | Max: 8 |




**Conservation Significant Species**

Number of conservation significant species:

| | |
|---|---|
| Australian: | 0 |
| South Australian: | 0 |
| South East Region: | 1 |

**Structural Summary**

Average Overstorey Height: < 1.0 m

Canopy Cover: range mid-dense to very sparse

Average Percentage Foliage Cover: #

**Environmental Parameters**

| | |
|---|---|
| Average Rainfall Range: | 401-500 mm |
| Typical Landform Types: | swamps |
| Geological Formations: | Semaphore sand |
| Typical Surface Soil Texture: | mainly sandy clay loam to clay loam |
| Surface Stone Type: | none |

**Group Species List & Statistics**

| Species Name | R | T | 1 | 2 | 3 | 4 | 5 | Avg Ab. | I.I. | Prop Occ. | O-E/E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Samolus repens*** | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1.33 | 6.97 | 0.67 | 1.74 |
| ***Sarcocornia* sp.** | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 1.50 | 29.09 | 0.67 | 11.82 |
| **Suaeda australis** | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0.83 | 15.44 | 0.67 | 12.08 |
| **Distichlis distichophylla** | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1.17 | 22.79 | 0.50 | 4.07 |
| ***Frankenia pauciflora* var.** | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0.83 | 19.16 | 0.50 | 10.94 |
| ***Halosarcia* sp.** | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0.83 | 13.73 | 0.50 | 8.21 |

**Membership**
*BK0101, *BK0701, *RB0201, *BK0801, *RI0101, *TB0201

**No photograph was available for this group.**

# VEGETATION MAPPING

By L.M.B. Heard [1] and F.M. Smith[1]

**NATIVE VEGETATION COVER MAPPING**

As part of the process to map the floristic vegetation of the region the outer boundaries of the native vegetation cover was first mapped. This mapping in its final form and the subsequent floristic mapping were based on 1:40,000 colour aerial photography (stereo pairs) taken in January – February 1987. For details on the mapping methods refer to the Vegetation Mapping section in the Methods chapter). Table 22 provides statistics summarising the area of each landcover type with in the region. Native vegetation cover within the region was recorded as 278, 799 ha at that time. Table 23 shows the distribution of native vegetation block sizes across the region. The majority (77%) of blocks are less than <100 ha while the largest total area of native vegetation is found in the sum of blocks in the 1000 – 5000 ha and 100-500 ha ranges, 21% and 20 % of the regions native vegetation respectively.

Subsequent analysis of 2001 native vegetation cover for the Upper South East has shown that between January – February 1987 and January 2001 there has been in excess of 10,000 ha of native vegetation lost to this region through a variety of actions and salinity impacts (pers. comm. T. Groves, Environmental Information, DEH). These are preliminary figures based on the analysis of current native vegetation cover in the Upper South East. It is likely that the amount of vegetation lost to the region would increase when the analysis is extended to the whole region.

**Table 22.**
**Summary statistics of landcover types in the South East Region based on the native vegetation cover mapping.**

| Land Cover Type | Estimated Area (ha) | % of Total Region |
|---|---:|---:|
| Urban | 2,673 | <1 |
| Cleared areas | 166,5934 | 78 |
| Salt pan | 1 | <1 |
| Sand dunes | 10,956 | 1 |
| Rock | 10 | <1 |
| Softwood plantation | 100,545 | 5 |
| Hardwood plantation | 3,930 | <1 |
| Irrigated | 10,134 | <1 |
| Olive plantation | 20 | <1 |
| Native vegetation | 278,799 | 13 |
| Perennial Lake | 21,483 | 1 |
| Intermittent lake | 11,153 | 1 |
| Mainly dry lake | 9 | <1 |
| Area subject to inundation | 38,663 | 2 |
| Dam/Tank | 49 | <1 |
| **TOTAL** | 2144360 | 100 |

**Table 23.**
**Area estimates of vegetation block size within the South East Region.**

| Block size range (ha) | Number of Blocks | Blocks as % of Total Numbers | Estimated Area (ha) | Area as % of Total Vegetation |
|---|---:|---:|---:|---:|
| 1-10 | 6,359 | 77 | 21,221 | 8 |
| 10-100 | 1,588 | 19 | 43,252 | 16 |
| 100-500 | 256 | 3 | 54,886 | 20 |
| 500-1000 | 44 | 1 | 30,302 | 11 |
| 1000-5000 | 32 | <1 | 57,626 | 21 |
| 5000-10000 | 4 | <1 | 28,500 | 10 |
| >10000 | 3 | <1 | 43,005 | 15 |
| **TOTAL** | 8286 | 100 | 278791 | 100 |

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**VEGETATION MAPPING GROUPS**

From the PATN analysis of 762 sites, 29 floristic vegetation groups were derived. These groups are described in the Vegetation Results Chapter. The PATN analysis determined the differences and similarities between the species composition recorded at each site, based on the perennial species. This process then provided an objective basis for describing the vegetation floristically, which in turn provided the basis for the floristic mapping across the region.

As the mapping progressed across the region, additional floristic groups were included to describe vegetation communities that existed in the area but had not been represented in the sites surveyed, or had been inadequately surveyed. New groups were also added where there was uncertainty about whether the vegetation group was likely to be the same as one already described. These groups were included because, while the tones and textures appeared similar, the two groups were quite disjunct from one another. Where possible new groups were described on the basis of existing literature, field knowledge and ground truthing. Some new groups were only briefly or generically described. This occurred particularly where there was little or no information available, making it difficult to be definitive about the groups. A further 22 groups were added through this regional mapping process, while another five have since been added as a result of specific localised mapping undertaken in NPWSA reserves affected by recent drainage works. The resultant map is in the back pocket of this report.

A total of 57 vegetation groups were described from the combined PATN analysis, original regional mapping and the more recent specific area mapping process. These groups are provided in Table 23. Of the 57 groups described in the analysis two (group 16 and group 28) were not mapped within the region. This is because the analysis dataset included data from outside the survey and mapping boundary (refer to Figures 29 and 31 in the Vegetation Results chapter). In addition one group (group 70) was only mapped in situations where it occurred as a subdominant with other groups. In total only 54 groups (vegetation communities) are shown in the regional map key.

**Table 24.**
**Summary of mapped vegetation communities from the South East of South Australia, listed by structural formation.**

| MU_250 | Floristic Descriptions | Origin | Comments |
|---|---|---|---|
| | **Woodlands** | | |
| 10 | *Eucalyptus obliqua, Pteridium esculentum* Woodland | A | |
| 12 | *Eucalyptus arenacea/baxteri, +/- Pteridium esculentum* Woodland | A | |
| 18 | *Eucalyptus camaldulensis* var. *camaldulensis* Woodland | A | This group may have 1-2 other subgroups. Requires further survey and investigation. |
| *77* | *Eucalyptus leucoxylon* ssp., *Callistemon rugulosus* var. *rugulosus* Woodland | B | |
| 79 | *Eucalyptus largiflorens* Woodland | B | Understorey mainly grassland and / or herbland. |
| 80 | *Callitris preissii, Eucalyptus arenacea/baxteri* Woodland | B | |
| 81 | *Eucalyptus ovata, E. viminalis* ssp. Woodland | B | Wetland complex. Requires further investigation. |
| 88 | *Eucalyptus microcarpa* Woodland | B | |
| 96 | *Eucalyptus odorat*a, *E. leucoxylon* ssp. Woodland | B | |
| 97 | Degraded *Eucalyptus camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* ssp. or *E. arenacea/baxteri* Woodland | B | Understorey composition, if present, could differ between rise and flats. |
| 6 | *Eucalyptus leucoxylon* ssp., *+/- Acacia pycnantha* Open Woodland | A | |
| | **Woodlands** | | |
| 71 | *Eucalyptus arenacea* Open Woodland | C | |
| 5 | *Eucalyptus fasciculosa, E. leucoxylon* ssp. Low Woodland | A | |
| 7 | *Eucalyptus fasciculosa, Xanthorrhoea caespitosa* Low Woodland | A | |
| 9 | *Allocasuarina verticillata, Eucalyptus leucoxylon* ssp. Low | A | This group is mainly |

| MU_250 | Floristic Descriptions | Origin | Comments |
|---|---|---|---|
| 11 | *Eucalyptus arenacea/baxteri, Baeckea behrii* Low Woodland | A | |
| 84 | *Allocasuarina verticillata* Low Woodland | B | |
| 86 | *Melaleuca lanceolata* ssp. *lanceolata* Low Woodland | B | |
| 87 | *Allocasuarina luehmannii* Low Woodland | B | |
| 8 | *Eucalyptus leucoxylon* ssp. Low Open Woodland | A | |
| | **Mallees** | | |
| 2 | *Eucalyptus dumosa, E. leptophylla* Mallee | A | |
| 89 | *Eucalyptus behriana, +/- E. dumosa* Mallee | B | Understorey species include *Melaleuca wilsonii*, *M. uncinata*. Other emergent species could be +/- *E. odorata, +/- E. leucoxylon* ssp. |
| 92 | *Eucalyptus porosa, E. calycogona* var. *calycogona* Mallee | B | Swamp mallee complex – vegetation group occurring in the low-lying areas. This group requires further investigation. |
| 1 | *Eucalyptus incrassata, E. leptophylla, +/- Melaleuca uncinata* Open Mallee | A | |
| 3 | *Eucalyptus diversifolia* Open Mallee | A | |
| | **Coastal Shrublands** | | |
| 26 | *Leucopogon parviflorus, Acacia longifolia* var. *sophorae, Olearia axillaris* Tall Shrubland | A | |
| | **Heaths generally on sand** | | |
| 4 | *Banksia ornata* +/- emergent *Eucalyptus incrassata* Shrubland | A | A group previously mapped as group 72 by the more recent Stoneleigh Park – Bunbury Swamp mapping (Stewart *et al*. 1998a) has been incorporated into this group. |
| | **Shrublands** | | |
| 16 | *Callitris verrucosa* Tall Shrubland | A, D | This community is recorded in the Murray Mallee but not found or mapped in this survey study area. (Not in regional map key). |
| 15 | *Leptospermum continentale* Shrubland | A | |
| 76 | *Xanthorrhoea caespitosa* Shrubland | C | |
| 78 | *Acacia leiophylla* Shrubland | B | This group is found in the Rocky River NFR. This group may have resulted from disturbance. |
| 14 | *Xanthorrhoea caespitosa, Leptospermum continentale* +/- emergent *E. obliqua* Open Shrubland | A | |
| | **Shrublands of wet areas** | | |
| 19 | *Leptospermum lanigerum* Tall Shrubland | A | |

| MU_250 | Floristic Descriptions | Origin | Comments |
|---|---|---|---|
| 13 | *Melaleuca squarrosa, +/-* emergent *Eucalyptus ovata* Tall Shrubland | A | |
| 22 | *Melaleuca halmaturorum* ssp. *halmaturorum* Tall Shrubland | A | |
| 93 | *Melaleuca brevifolia* or *M. uncinata* Shrubland | B | Damp swales / flats with some emergent *Eucalyptus* spp. (*E. leucoxylon* ssp. or *E. fasciculosa*) present. Could be similar to *Melaleuca uncinata* Shrubland (Group 95). |
| 95 | *Melaleuca uncinata* Shrubland | B | Damp swales / depressions north-east of Keith. |
| 17 | *Melaleuca brevifolia* Low Shrubland | A | |
| 29 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | A | This samphire shrubland was originally based on sites in salty coastal environments in the Coorong area. This group is now mapped more broadly, to include the inland saline areas, previously mapped as group 94 (inland samphires). |
| | **Grasslands** | | |
| 99 | Gramineae spp. Grassland | B | Located in the Coorong area, the grass species dominating this group require investigation. |
| 98 | *Phragmites australis*, *Typha domingensis* Grassland | B | Possible soak areas in the Coorong. Similar areas could be mapped under group 82 (Cyperaceae spp., Gramineae spp. Sedgeland). This group is described as a grassland based on the dominant species. |
| 24 | *Themeda triandra* with emergent *Pimelea glauca* Open Tussock Grassland | A | |
| | **Coastal Tussock Grasslands** | | |
| 27 | *Spinifex sericeus, Ozothamnus turbinatus, Isolepis nodosa* Tussock Grassland | A | |
| | **Sedgelands** | | |
| 23 | *Typha domingensis* Closed Sedgeland | A | |
| 25 | *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | A | |
| 90 | *Baumea juncea*, *Leptocarpus brownii*, *Leptocarpus tenax*, with emergent +/- *Melaleuca brevifolia*, +/- *Leptospermum myrsinoides*, +/- *L. coriaceum* Closed Sedgeland | B | Unsurveyed wetland - gilgia complex in Bordertown – Frances area. This group requires further investigation. |
| | **Sedgelands** | | |
| 20 | *Gahnia filum*, *Gahnia trifida* with invading *Olearia* | A | |

| MU_250 | Floristic Descriptions | Origin | Comments |
|---|---|---|---|
| | *axillaris* Sedgeland | | |
| 21 | *Gahnia filum, Samolus repens* Sedgeland | A | |
| 73 | *Lepidosperma* aff. *congestum* with emergent *Gahnia trifida* Sedgeland | C | |
| 83 | *Baumea juncea* +/- *Gahnia trifida* Sedgeland | B | Lake Frome area and possibly in some Forestry SA areas. |
| 85 | *Juncus* spp*., Isolepis* spp*., Poa* spp. Sedgeland | B | Reedbeds - interdune tussock - grassland / sedgeland complex found along the coast from north of Robe, east to Lake Hawdon and south to Pt Macdonnell area. |
| 82 | Cyperaceae spp., Gramineae spp. Sedgeland | B | This reed / sedge wetland complex group requires further investigation. There may be several swamp communities mapped under this generic group. Some areas may be similar to *Phragmites australis*, *Typha domingensis* Grassland (Group 98), while others may be *Baumea* dominated sedgelands. Depending on dominant species, this group could be described as either a grassland or a sedgeland. |
| | **Herblands** | | |
| 74 | *Selliera radicans* Herbland | C | |
| 75 | *Wilsonia rotundifolia* Herbland | C | |
| | **Fernlands** | | |
| 91 | *Pteridium esculentum,* +/- emergent *Eucalyptus* spp. Closed Fernland | B | Modified degraded community. Emergent *Eucalyptus* spp. could include *E. arenacea/baxteri*, *E. fasciculosa* or *E. obliqua*. |
| | **Vinelands** | | |
| 28 | *Muehlenbeckia gunnii* Vineland | A, D | This group was found on islands in the Coorong north of the study boundary. It has not been mapped in the study area. (Not in regional map key). |
| | **Other** | | |
| 70 | Failed Pine Plantation (*Pinus radiata*) Exotic / Native (non-indigenous) Complex | B | This group covers failed pine areas and non-indigenous plantings or escapes. It is only mapped in mosaic situations where it |

| MU_250 | Floristic Descriptions | Origin | Comments |
|---|---|---|---|
| | | | occurs with other groups. |

**Key to Origin of Mapping Groups**
**A** - South East PATN Analysis Group. Group derived from the original South East PATN Analysis (1992-93).
**B** – Original South East mapping group only. Group derived from literature sources (including previous mapping in the region), unpublished field data, field knowledge and ground truthing.
**C** - Recent South East mapping group. Group derived from further field survey, analysis and vegetation mapping for specific areas in the South East (e.g. particularly NPWSA reserves and wetlands which may be affected by the construction of new drainage schemes).
**D** – Not mapped. Group not recorded or mapped within the survey's study boundary. Group derived from site data outside the survey study boundary but within the floristic analysis boundary.

Despite the extensive sampling and mapping, there is no doubt that some rare community types have been missed. In addition, further investigation is required to clarify some of the mapping groups. It is recognised that some communities have been missed in the mapping process, due either to broadscale clearance, with only small areas remaining, or through the difficulty of distinguishing them on aerial photography. These include: *Eucalyptus willisii* Woodland; *Banksia marginata* Woodland; *Eucalyptus rugosa* Woodland; *Melaleuca gibbosa*, *Hakea rugosa* Shrubland; *Muehlenbeckia florulenta* Shrubland; *Themeda triandra*, *Stipa* spp. Grassland; *Baumea juncea*, *Chorizandra enodis* Sedgeland and Floating waterplant Herbland. This information is based on the comparison of pre-European settlement vegetation mapping and the regional mapping of the existing native vegetation summarised in Appendix IV of Croft *et al.* (1999), and provided here in Table 24. Details of the comparison process are provided in Carruthers *et al.* (1999).

A number of mapping groups require further investigation. These include: *Eucalyptus ovata, E. viminalis* ssp. Woodland (Group 81); *Eucalyptus porosa, E. calycogona* var. *calycogona* Mallee (Group 92); *Acacia leiophylla* Shrubland (Group 78); *Melaleuca brevifolia* or *M. uncinata* Shrubland (Group 93); *Melaleuca uncinata* Shrubland (Group 95); Gramineae spp. Grassland (Group 99); Cyperaceae spp., Gramineae spp. Sedgeland (Group 82); *Baumea juncea*, *Leptocarpus brownii*, *Leptocarpus tenax*, with emergent +/- *Melaleuca brevifolia*, +/- *Leptospermum myrsinoides*, +/- *L. coriaceum* Closed Sedgeland (Group 90); and *Juncus* spp*., Isolepis* spp*., Poa* spp. Sedgeland (Group 85).

Further survey and mapping work focussing specifically on the swamp areas located in the mid to lower South East and broad interdune areas subject to inundation around the coastal lakes (Carpenter Rocks – Robe area) parallelling the coastline is required. This work could review areas mapped under the broad groups of Cyperaceae spp., Gramineae spp. Sedgeland (Group 82) and *Juncus* spp*., Isolepis* spp*., Poa* spp. Sedgeland (Group 85), as well as provide improved descriptions. In the case of Cyperaceae spp., Gramineae spp. Sedgeland it is likely that several different communities have been mapped under this broad group. This group may in reality be split into fresher *Baumea* Sedgelands and *Phragmites australis*, *Typha domingensis* Grassland.

In the central and eastern portions of the Upper South East, some communities were difficult to distinguish in swales, and were not near public roads allowing ready ground truthing. The groups to be investigated in this sub-region would be *Melaleuca uncinata* Shrubland (Group 95) and Group 93, as it is uncertain if this is either *Melaleuca brevifolia* or *M. uncinata* dominated Shrubland, or another vegetation group. Also in this sub-region (Bordertown – Frances area) further investigation is required of Group 90, an unsurveyed gilgai / wetland sedgeland interpreted to be dominated by *Baumea juncea*, *Leptocarpus brownii*, *Leptocarpus tenax* with emergent shrubs.

In addition further survey work needs to be conducted to better understand and document the smooth bark gum communities (i.e. Pink Gum, River Red Gum, SA Blue Gum) and associated native grassland communities across the region. A larger dataset representing the cross section of understory types within each broad group would help determine the variety of communities that remain and may have existed prior to settlement. These are communities that have generally been significantly affected by settlement due to their occurrence on more fertile soils and open nature.

In understanding and using vegetation mapping it is important to note that it is not an exact science. Vegetation mapping involves the use of aerial photography and the extrapolation of available data out from known points. Accuracy depends on the extent of survey site coverage and the ability to interpret subtle variations in colour and texture in the photography. As a result, some mapped vegetation communities may be found to be incorrect when inspected in the field. This highlights the need for further ground truthing and ongoing mapping refinements. It is also important to note that vegetation rarely changes as sharply as a boundary line suggests. The distinction between some floristic groups is often blurred by the gradual transition from one community type to another.

The most under represented vegetation communites are grasslands, sedgelands / reedbeds and some less common or extensively cleared woodlands or open forest communities. Narrow strips of roadside vegetation, small vegetated areas < 1 ha and scattered trees generally have not been mapped.

**Table 25.**
**Comparison of SE Region plant community mapping extents: Pre-European settlement versus current.**
(Source: Croft *et al*. (1999) with minor changes according to updated current mapping)

| **Plant Communities Pre-European mapping** | **Plant Communities Current mapping** | **% remaining of original amount** | **Area (ha) in formal Reserve System** | **% left in formal Reserve System** |
|---|---|---|---|---|
| **WOODLANDS** | | | | |
| #*Eucalyptus arenacea/baxteri, +/- E. obliqua, +/- E. fasciculosa*, +/- *E. viminalis ssp cygnetensis* Open Forest to Woodland **Estimated Original Area 384,704 ha** (a significant portion of this community now represented as *Banksia ornata* Shrubland) | *Eucalyptus arenacea/baxteri, +/- E. obliqua, +/- E. fasciculosa* Low Woodland (7,10,11,12,91) **Estimated Current Area 73,513 ha** | **19.1%** | **27,265** | **7.1%** |
| #*Banksia ornata* Shrubland **Estimated Original Area 8,803 ha** | *Banksia ornata* Shrubland (4) **Estimated Current Area 35,721 ha** | **100%** | **22,347** | |
| *Eucalyptus willisii* ssp. *willisii* Open Forest to Woodland **Estimated Original Area 231 ha** | Not mapped **Estimated Current Area 91 ha** | **17.3** | **39** | **16.9** |
| *Eucalyptus camaldulensis* var. *camaldulensis* Woodland **Estimated Original Area 171,844 ha** | *Eucalyptus camaldulensis* var. *camaldulensis* Woodland (18) **Estimated Current Area 16,777 ha** | **9.8%** | **758** | **0.4%** |
| *Eucalyptus leucoxylon, +/- E. fasciculosa* Woodland **Estimated Original Area 409,406 ha** | *Eucalyptus leucoxylon* spp., +/- *E. fasciculosa* Woodlands (5,6,7,8,9,77,96,97) **Estimated Current Area 31,993 ha** | **7.8%** | **7,402** | **1.8%** |
| *Eucalyptus largiflorens* Woodland **Estimated Original Area 1,163 ha** | *Eucalyptus largiflorens* Woodland (79) **Estimated Current Area 74 ha** | **6.4%** | **9** | **0.8%** |
| *Eucalyptus microcarpa* Woodland **Estimated Original Area 20,538 ha** | *Eucalyptus microcarpa* Woodland (88) **Estimated Current Area 492 ha** | **2.4%** | **0** | **0** |
| *Eucalyptus ovata* Woodland (39,195 ha) or *Eucalyptus viminalis ssp. cygnetensis* Woodland (98,639 ha) **Estimated Original Area 137,834** | *Eucalyptus ovata*, *E. viminalis* Woodland and *Melaleuca squarrosa*, *+/- E. ovata* Tall Shrubland (81,13) **Estimated Current Area 2,464 ha** | **1.8%** | **1,302** | **0.9** |
| *Eucalyptus porosa* Woodland **Estimated Original Area 773 ha** | *Eucalyptus porosa, E. calycogona var. calycogona* Mallee (92) **Estimated Current Area 90 ha** | **11.6%** | **0** | **0** |
| *Allocasuarina luehmannii* Woodland **Estimated Original Area 18,389** | *Allocasuarina luehmannii* Woodland (87) **Estimated Current Area 531 ha** | **2.9%** | **3** | **0.1%** |
| *Allocasuarina verticillata* Woodland **Estimated Original Area 39,957 ha** | *Allocasuarina verticillata* Woodland (84,9) **Estimated Current Area 347 ha** | **0.9%** | **247** | **0.6%** |
| *Banksia marginata* Low woodland **Estimated Original Area 100,960 ha** | Not mapped **Estimated Current Area 334 ha** | **0.3%** | **9** | **0** |
| *Melaleuca lanceolata* ssp. *lanceolata, Allocasuarina verticillata* Low woodland **Estimated Original Area 67,994 ha** | *Melaleuca lanceolata* ssp. *lanceolata* Low woodland (86) **Estimated Current Area 819 ha** | **1.2%** | **164** | **0.2%** |

| Plant Communities<br>Pre-European mapping | Plant Communities<br>Current mapping | % remaining of original amount | Area (ha) in formal Reserve System | % left in formal Reserve System |
|---|---|---|---|---|
| **MALLEE** | | | | |
| *Eucalyptus behriana, +/- E. dumosa, +/- Melaleuca wilsonii, +/- M. uncinata or +/- E. incrassata, +/- E. leptophylla* Mallee<br>**Estimated Original Area 141,083 ha** | *Eucalyptus behriana, +/- E. dumosa, +/- E. incrassata, +/- E. leptophylla* Mallee (1,2,89)<br>**Estimated Current Area 6,947 ha** | **4.9%** | **1,657** | **1.2%** |
| *Eucalyptus diversifolia* Mallee<br>**Estimated Original Area 60,139 ha** | *Eucalyptus diversifolia* Open Mallee (3)<br>**Estimated Current Area 28,893 ha** | **48.0%** | **12,288** | **20.4%** |
| *Eucalyptus odorata* Mallee<br>**Estimated Original Area 3,119 ha** | *Eucalyptus odorata, E. leucoxylon* spp. Woodland (96)<br>**Estimated Current Area 81 ha** | **2.6%** | **17** | **0.5%** |
| *Eucalyptus rugosa* Mallee<br>**Estimated Original Area 1,594 ha** | Not mapped<br>**Estimated Current Area 97 ha** | | **49** | |
| **COASTAL SHRUBLAND** | | | | |
| *#Olearia axillaris, Leucopogon parviflorus* Shrubland<br>**Estimated Original Area 28,359 ha** | *Leucopogon parviflorus, Acacia longifolia* var. *sophorae, Olearia axillaris* Tall Shrubland (26)<br>**Estimated Current Area 19,534 ha** | **68.9%** | **11,612** | **40.9%** |
| **SHRUBLAND** | | | | |
| *#Leptospermum continentale* Shrubland<br>**Estimated Original Area 2,660 ha** | *Leptospermum continentale* Shrubland (15)<br>**Estimated Current Area 842 ha** | **31.7%** | **428** | **16.1%** |
| *Melaleuca gibbosa, Hakea rugosa* Shrubland<br>**Estimated Original Area 1,296 ha** | Cleared<br>**Estimated Current Area 0 ha** | **0** | **0** | **0** |
| *Muehlenbeckia florulenta* Shrubland<br>**Estimated Original Area 454 ha** | Cleared<br>**Estimated Current Area 0 ha** | **0** | **0** | **0** |
| **SHRUBLANDS OF WET AREAS** | | | | |
| *#Leptospermum lanigerum* Tall Closed Shrubland<br>**Estimated Original Area 10,742 ha** | *Leptospermum lanigerum* Tall Shrubland (19)<br>**Estimated Current Area 1,030 ha** | **9.6%** | **400** | **3.7%** |
| *Melaleuca halmaturorum* ssp. *halmaturorum* or *M. brevifolia* Low Open Forest to Shrubland<br>**Estimated Original Area 250,971 ha** | *Melaleuca halmaturorum* ssp. *halmaturorum* or *M. brevifolia* Low Open Forest to Shrubland (17,93,95,22)<br>**Estimated Current Area 50,444 ha** | **20.1%** | **21,809** | **8.7%** |
| *#Halosarcia* spp. Low Shrubland<br>**Estimated Original Area 2,373 ha** | All samphires (29)<br>**Estimated Current Area 4,096 ha** | **100%** | **2,006** | **84.5%** |
| **GRASSLAND** | | | | |
| *Phragmites australis, Typha domingensis* Grassland<br>**Estimated Original Area 762 ha** | *Phragmites australis, Typha domingensis* Grassland, *Typha domingensis* Closed Sedgeland (23, 98)<br>**Estimated Current Area 256 ha** | **33.6%** | **169** | **22.2%** |
| *#Poa* spp., *Stipa stipoides* Tussock Grassland<br>**Estimated Original Area 821 ha** | Gramineae spp. Grasslands (99)<br>**Estimated Current Area 317 ha** | **38.6%** | **237** | **28.9%** |
| *Themeda triandra, Stipa* spp. Tussock Grassland<br>**Estimated Original Area 12,679 ha** | Cleared<br>**Estimated Current Area 0 ha** | **0** | **0** | **0** |

| Plant Communities Pre-European mapping | Plant Communities Current mapping | % remaining of original amount | Area (ha) in formal Reserve System | % left in formal Reserve System |
|---|---|---|---|---|
| **COASTAL TUSSOCK GRASSLAND** | | | | |
| *Spinifex sericeus, Isolepis nodosa* Tussock Grassland **Estimated Original Area 4,172 ha** | Sedgelands to Grassland (85,27) **Estimated Current Area 885 ha** | **21.2%** | **495** | **11.9%** |
| **SEDGELAND** | | | | |
| *#Baumea juncea, Chorizandra enodis* Sedgeland **Estimated Original Area 1,859 ha** | Cleared **Estimated Current Area 0 ha** | **0** | **0** | **0** |
| *#Gahnia filum* Sedgeland (104,964 ha) or *#Gahnia trifida* Sedgeland (96,675 ha) **Estimated Original Area 201,639 ha** | *Gahnia filum, Samolus repens* Sedgeland or *Baumea juncea, Gahnia trifida* Sedgeland (20,21,82,83) **Estimated Current Area 16,338 ha** | **8.1%** | **5,724** | **2.8%** |
| **HERBLAND** | | | | |
| Floating waterplants Herbland **Estimated Original Area 2,845 ha** | **Not mapped** | **n/a** | **n/a** | **n/a** |
| *#Selliera radicans +/- Wilsonia backhousei* Herbland **Estimated Original Area 16,939 ha** | *Selliera radicans* Herbland, *Wilsonia backhousei* Herbland (75,74) **Estimated Current Area 76 ha** | **0.4%** | **76** | **0.4%** |

# indicates plant communities that have been significantly altered in the region since European settlement.
The formal reserve system includes NPWS Parks and Reserves (1999), Conservation Reserves (1999), Heritage Agreements (Jan 2002) and Native Forest Reserves (March 2002).

**DETAILED FLORISTIC DESCRIPTIONS (VEGETATION MOSAICS)**

As native vegetation does not always occur as discrete discernible units that are mappable, but may change gradually through an intergrade zone or occur in small pockets that can not readily be individually mapped, several groups may occur in a delineated area or block (polygon). Where distinct communities can be recognised they have been delineated separately. In situations where the pattern of vegetation is more complex, and not able to be assigned to just one vegetation group, then several floristic groups, in order of dominance, have been indicated to be present within that polygon in the original 1:40,000 scale mapping. This situation is generally referred to as a mosaic.

In the original mapping up to five groups were recognised within a given area. This has subsequently been reduced to three groups for the purposes of creating a seamless vegetation mapping dataset across the State. It is important to note that in these mosaic situations, at any given location some of these groups may or may not be present. For the purposes of regional scale mapping only the dominant (primary) group is displayed and used in calculation of vegetation community area statistics. A future improvement to the mapping of mosaics in this region would be the estimation of the proportion each group contributes to the polygon. This would assist more accurate estimation of the area of each community.

Table 26 provides a listing of the mosaics detected during the aerial photo interpretation stage of the mapping. For most of the 57 regional floristic mapping groups identified there are one or more subgroups. This indicates the presence of mosaic communities. To view this detailed mapping requires the use of finer scale maps, such as 1:50,000. In total 362 unique combinations (single groups and mosaics) were mapped and are listed in Table 26.

Examples of groups which are often recorded with large areas as mosaics are: *Eucalyptus diversifolia* Open Mallee mosaiced with *Banksia ornata* +/- emergent *Eucalyptus incrassata* Shrubland or *Banksia ornata* +/- emergent *Eucalyptus incrassata* Shrubland mosaiced with *Eucalyptus diversifolia* Open Mallee; *Melaleuca brevifolia* Low Shrubland mosaiced with *Melaleuca halmaturorum* Tall Shrubland or *Melaleuca brevifolia* Low Shrubland mosaiced with *Melaleuca halmaturorum* Tall Shrubland mosaiced with *Gahnia filum, Samolus repens* Sedgeland.

Detailed descriptions of the communities and mosaics of communities are presented in Table 26. For each group the following information is provided;

- MU_250 group numbers comprising the vegetation group. The pure vegetation group numbers are bolded in the table while the mosaics (subgroup) numbers are not.
- Floristic description of structural dominants (including mosaics)
- Number of patches (total number of discrete patches or mosaics
- Total area (hectares) of each vegetation group or mosaic
- Protected area (hectares). This figure is the sum of NPWSA, CR, HA and NF reserves
- Percentage of vegetation group protected
- Area of National Parks and Wildlife SA reserves, which includes National Parks, Conservation Parks and Game Reserves (Feb 2002)
- Area of Conservation Reserves (Feb 2002)
- Area of Heritage Agreements (June 2002)
- Area of Native Forest Reserves, Forestry SA (March 2002)
- Area of Locality Forest, Forestry SA under agreement with NVC (March 2002)
- Areas under other types of Forestry SA ownership (March 2002).

**Table 26.**
**Detailed floristic mapping groups and area estimates for each including area protected for the South East of South Australia.**

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Woodlands** | | | | | | | | | | | |
| **10** | *Eucalyptus obliqua*, *Pteridium esculentum* Woodland over +/- *Acacia melanoxylon, Leucopogon parviflorus, *Hypochoeris radicata, Hydrocotyle laxiflora* | 545 | 9,034 | 2,477 | 27.4 | 111 | 19 | 1,297 | 1,050 | 99 | 89 |
| 10/12 | *E. obliqua*, *P. esculentum* Woodland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 6 | 478 | 389 | 81.3 | 111 | *0* | *0* | 277 | 0 | 11 |
| 10/7 | *E. obliqua*, *P. esculentum* Woodland mosaiced with *E. fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 18 | 2,290 | 383 | 16.7 | 0 | 0 | 383 | 0 | 0 | 0 |
| 10/84 | *E. obliqua*, *P. esculentum* Woodland mosaiced with *Allocasuarina verticillata* Low Woodland | 2 | 68 | 54 | 78.3 | 0 | 0 | 0 | 54 | 0 | 7 |
| 10/3 | *E. obliqua*, *P. esculentum* Woodland mosaiced with *E. diversifolia* Open Mallee | 2 | 93 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/14 | *E. obliqua*, *P. esculentum* Woodland mosaiced with *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland | 8 | 874 | 521 | 59.6 | 2 | 0 | 497 | 23 | 0 | 0 |
| **12** | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland over *L. myrsinoides, B. marginata*, *X. caespitosa*, *P. esculentum*, *Astroloma conostephioides* | 1,375 | 28,867 | 12,483 | 43.2 | 1,977 | 50 | 5,281 | 5,176 | 33 | 283 |
| 12/10 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 11 | 1,798 | 1,388 | 77.2 | 17 | 0 | 607 | 764 | 17 | 28 |
| 12/6 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 10 | 1,504 | 512 | 34.1 | 0 | 0 | 452 | 61 | 0 | 2 |
| 12/6/5 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland and *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 1 | 409 | 363 | 88.6 | 0 | 0 | 363 | 0 | 0 | 0 |
| 12/5 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 1 | 89 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/5/6 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 604 | 582 | 96.2 | 0 | 0 | 582 | 0 | 0 | 0 |
| 12/5/3 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland and | 1 | 479 | 438 | 91.6 | 0 | 0 | 438 | 0 | 0 | 0 5 5 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *E. diversifolia* Open Mallee | | | | | | | | | | |
| 12/7 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 17 | 757 | 72 | 9.5 | 0 | 0 | 72 | 0 | 0 | 0 |
| 12/7/3 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland and *E. diversifolia* Open Mallee | 1 | 572 | 456 | 79.7 | 0 | 0 | 456 | 0 | 0 | 0 |
| 12/11 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. arenacea/baxteri*, Baeckea behrii Low Woodland | 1 | 317 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/3 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. diversifolia* Open Mallee | 24 | 3,003 | 1,361 | 45.3 | 441 | 0 | 919 | 0 | 0 | 0 |
| 12/3/7 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. diversifolia* Open Mallee and *E. fasciculosa*, *X. caespitosa* Low Woodland | 5 | 447 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/3/4 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. diversifolia* Open Mallee and *B. ornata* +/- emergent *E. incrassata* Shrubland | 1 | 203 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/3/22 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *E. diversifolia* Open Mallee and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 1 | 73 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/4 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 3 | 296 | 58 | 19.6 | 0 | 39 | 19 | 0 | 0 | 0 |
| 12/4/7 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland and *E. fasciculosa*, *X. caespitosa* Low Woodland | 1 | 162 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/15 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *L. continentale* Shrubland | 2 | 312 | 255 | 81.6 | 0 | 0 | 0 | 255 | 0 | 3 |
| 12/15/70 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *L. continentale* Shrubland and Failed Pine Plantation (*Pinus radiata*) Exotic / Native (non indigenous) Complex | 1 | 41 | 0 | 0.0 | 0 | 0 | 0 | 0 | 37 | 4 |
| 12/14 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland | 42 | 559 | 11 | 1.9 | 0 | 0 | 11 | 0 | 0 | 30 |
| 12/13 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland | 1 | 55 | 52 | 94.7 | 0 | 0 | 0 | 52 | 0 | 3 |
| 12/13/82 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland | 1 | 277 | 259 | 93.4 | 0 | 0 | 0 | 259 | 0 | 1 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | and Cyperaceae spp., Gramineae spp. Sedgeland | | | | | | | | | | |
| 12/17 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *M. brevifolia* Low Shrubland | 5 | 23 | 8 | 37.6 | 3 | 0 | 5 | 0 | 0 | 0 |
| 12/91 | *E. arenacea/baxteri*, +/- *P. esculentum* Woodland mosaiced with *P. esculentum*, +/- emergent *Eucalyptus* spp. Closed Fernland | 2 | 36 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **18** | *E. camaldulensis* var. *camaldulensis* Woodland over *L. continentale*, *Schoenus apogon, Ranunculus robertsonii, *Hypochoeris radicata, Hydrocotyle laxiflora* | 2,053 | 14,755 | 573 | 3.9 | 291 | 0 | 134 | 148 | 37 | 41 |
| 18/10 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 5 | 553 | 2 | 0.4 | 2 | 0 | 1 | 0 | 0 | 0 |
| 18/88 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *E. microcarpa* Woodland | 2 | 25 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/6 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 34 | 443 | 28 | 6.3 | 0 | 0 | 28 | 0 | 0 | 0 |
| 18/7 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 6 | 253 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/87 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *A. luehmannii* Low Woodland | 13 | 72 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/15 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *L. continentale* Shrubland | 15 | 141 | 88 | 62.3 | 0 | 0 | 3 | 84 | 1 | 1 |
| 18/14 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland | 15 | 135 | 28 | 20.4 | 0 | 0 | 28 | 0 | 0 | 12 |
| 18/22 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 2 | 7 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/17 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *M. brevifolia* Low Shrubland | 35 | 243 | 39 | 15.9 | 39 | 0 | 0 | 0 | 0 | 0 |
| 18/17/22 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *M. brevifolia* Low Shrubland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 3 | 32 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/24 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *T. triandra* with emergent *Pimelea glauca* Open Tussock Grassland | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/82 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with Cyperaceae spp., Gramineae spp. Sedgeland | 4 | 37 | 0 | 0.0 | 0 | 0 | 0 | 0 | 6 | 2 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18/90 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *B. juncea*, *L. brownii*, *L. tenax* with emergent +/- *M. brevifolia*, +/- *L. myrsinoides*, +/- *L. coriaceum* Closed Sedgeland | 1 | 12 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/21 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *G. filum*, *S. repens* Sedgeland | 4 | 61 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/83 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *B. juncea*, +/- *G. trifida* Sedgeland | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18/91 | *E. camaldulensis* var. *camaldulensis* Woodland mosaiced with *P. esculentum*, +/- emergent *Eucalyptus* spp. Closed Fernland | 1 | 4 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **77** | *E. leucoxylon* ssp., *Callistemon rugulosus* var. *rugulosus* Woodland | 50 | 98 | 5 | 5.5 | 0 | 0 | 5 | 0 | 0 | 0 |
| **79** | *E. largiflorens* Woodland over *Danthonia* sp., *Eryngium vesiculosum*, *Pratia concolor, Marsilea drummondii* | 17 | 47 | 9 | 19.5 | 0 | 0 | 9 | 0 | 0 | 0 |
| 79/88 | *E. largiflorens* Woodland mosaiced with *E. microcarpa* Woodland | 3 | 13 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 79/87 | *E. largiflorens* Woodland mosaiced with *A. luehmannii* Low Woodland | 1 | 11 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 79/87/6 | *E. largiflorens* Woodland mosaiced with *A. luehmannii* Low Woodland and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 3 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **80** | *Callitris preissii*, *E. arenacea/baxteri* Woodland | 1 | 19 | 5 | 24.8 | 0 | 0 | 5 | 0 | 0 | 0 |
| 80/6 | *Callitris preissii*, *E. arenacea/baxteri* Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 2 | 4 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **81** | *E. ovata, E. viminalis* ssp. Woodland | 58 | 830 | 155 | 18.7 | 0 | 0 | 0 | 155 | 35 | 12 |
| 81/10 | *E. ovata*, *E. viminalis* ssp. Woodland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 3 | 25 | 14 | 56.7 | 0 | 0 | 0 | 14 | 0 | 0 |
| 81/12 | *E. ovata*, *E. viminalis* ssp. Woodland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 1 | 21 | 18 | 86.3 | 0 | 0 | 0 | 18 | 0 | 0 |
| 81/18 | *E. ovata*, *E. viminalis* ssp. Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 3 | 166 | 106 | 63.6 | 0 | 0 | 0 | 106 | 0 | 3 |
| 81/15 | *E. ovata*, *E. viminalis* ssp. Woodland mosaiced with *L. continentale* Shrubland | 14 | 142 | 40 | 28.3 | 5 | 0 | 0 | 35 | 0 | 1 |
| 81/14 | *E. ovata*, *E. viminalis* ssp. Woodland mosaiced with *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open | 18 | 278 | 39 | 14.0 | 19 | 0 | 0 | 20 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Shrubland | | | | | | | | | | |
| 81/13 | *E. ovata*, *E. viminalis* ssp. Woodland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland | 4 | 78 | 59 | 75.7 | 0 | 0 | 0 | 59 | 0 | 7 |
| 81/13/12 | *E. ovata*, *E. viminalis* ssp. Woodland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland and *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 3 | 200 | 197 | 98.5 | 0 | 0 | 0 | 197 | 0 | 2 |
| **88** | *E. microcarpa* Woodland over *Danthonia setacea* var. *setacea, *Avena barbata, Lepidosperma viscidum* | 69 | 261 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/18 | *E. microcarpa* Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 7 | 24 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/18/87 | *E. microcarpa* Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland and *A. luehmannii* Low Woodland | 2 | 9 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/79 | *E. microcarpa* Woodland mosaiced with *E. largiflorens* Woodland | 2 | 8 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/79/87 | *E. microcarpa* Woodland mosaiced with *E. largiflorens* Woodland and *A. luehmannii* Low Woodland | 1 | 3 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/6 | *E. microcarpa* Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 6 | 28 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/6/87 | *E. microcarpa* Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland and *A. luehmannii* Low Woodland | 4 | 54 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/87 | *E. microcarpa* Woodland mosaiced with *A. luehmannii* Low Woodland | 14 | 100 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88/89 | *E. microcarpa* Woodland mosaiced with *E. behriana*, +/- *E. dumosa* Mallee | 2 | 5 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **96** | *E. odorata*, *E. leucoxylon* ssp. Woodland | 10 | 53 | 17 | 32.2 | 17 | 0 | 0 | 0 | 0 | 0 |
| 96/87 | *E. odorata*, *E. leucoxylon* ssp. Woodland mosaiced with *A. luehmannii* Low Woodland | 2 | 6 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96/2 | *E. odorata*, *E. leucoxylon* ssp. Woodland mosaiced with *E. dumosa*, *E. leptophylla* Mallee | 1 | 12 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96/1 | *E. odorata*, *E. leucoxylon* ssp. Woodland mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 2 | 10 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **97** | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa or E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 306 | 1,886 | 48 | 2.5 | 9 | 0 | 39 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 97/18 | Degraded *E. camaldulensis* var. *camaldulensis or E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *E. camaldulensis* var.*camaldulensis* Woodland | 1 | 60 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97/6 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 9 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97/7 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 1 | 43 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97/92 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *E. porosa*, *E. calycogona* var. *calycogona* Mallee | 1 | 16 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97/4 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 1 | 12 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97/22 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 5 | 32 | 24 | 73.9 | 23 | 0 | 1 | 0 | 0 | 0 |
| 97/22/17 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *M. brevifolia* Low Shrubland | 3 | 10 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97/93 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *M. brevifolia* or *M. uncinata* Shrubland | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97/17 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *M. brevifolia* Low Shrubland | 20 | 130 | 4 | 3.3 | 0 | 0 | 4 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 97/17/22 | Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland mosaiced with *M. brevifolia* Low Shrubland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 2 | 48 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **6** | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland over *Hibbertia riparia*, *Danthonia* sp., *Astroloma humifusum*, *Kunzea pomifera* | 1,024 | 7,057 | 1,034 | 14.7 | 243 | 25 | 758 | 9 | 0 | 1 |
| 6/12 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 7 | 106 | 1 | 0.7 | 1 | 0 | 0 | 0 | 0 | 0 |
| 6/18 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 33 | 625 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/18/90 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland and *Baumea juncea*, *Leptocarpus brownii*, *L. tenax* with emergent +/- *M. brevifolia*, +/- *Leptospermum myrsinoides*, +/- *L. coriaceum* Closed Sedgeland | 1 | 20 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/77 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. leucoxylon* ssp., *Callistemon rugulosus* var. *rugulosus* Woodland | 5 | 26 | 4 | 16.9 | 0 | 0 | 4 | 0 | 0 | 0 |
| 6/80 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *Callitris preissii*, *E. arenacea/baxteri* Woodland | 1 | 12 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/88 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. microcarpa* Woodland | 27 | 199 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/88/18 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. microcarpa* Woodland and *E. camaldulensis* var. *camaldulensis* Woodland | 1 | 8 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/97 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa or E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/5 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 3 | 325 | 183 | 56.3 | 0 | 0 | 183 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/7 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 8 | 716 | 604 | 84.4 | 547 | 0 | 58 | 0 | 0 | 0 |
| 6/7/12 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland and *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 1 | 231 | 20 | 8.8 | 0 | 0 | 20 | 0 | 0 | 0 |
| 6/87 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *A. luehmannii* Low Woodland | 16 | 269 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/87/88 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *A. luehmannii* Low Woodland and *E. microcarpa* Woodland | 1 | 21 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/89 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. behriana*, +/- *E. dumosa* Mallee | 2 | 15 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/1 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 12 | 108 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/3 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *E. diversifolia* Open Mallee | 2 | 161 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/4 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 1 | 7 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/93 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *M. brevifolia* or *M. uncinata* Shrubland | 3 | 43 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/17 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *M. brevifolia* Low Shrubland | 3 | 6 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/90 | *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland mosaiced with *B. juncea*, *L. brownii*, *L. tenax* with emergent +/- *M. brevifolia*, +/- *L. myrsinoides*, +/- *L. coriaceum* Closed Sedgeland | 4 | 41 | 16 | 39.5 | 0 | 0 | 16 | 0 | 0 | 0 |
| **71** | *E. arenacea* Open Woodland over *X. caespitosa*, *L. myrsinoides*, *Banksia marginata* | 8 | 103 | 103 | 99.8 | 0 | 17 | 85 | 0 | 0 | 0 |
| **5** | *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland over *Banksia marginata, X. caespitosa, Hibbertia riparia, Astroloma humifusum, Kunzea pomifera* | 149 | 1,076 | 227 | 21.1 | 12 | 49 | 167 | 0 | 0 | 0 |
| 5/6 | *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 2 | 80 | 15 | 18.3 | 0 | 0 | 15 | 0 | 0 | 0 |
| 5/7 | *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland mosaiced | 1 | 115 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | with *E. fasciculosa*, *X. caespitosa* Low Woodland | | | | | | | | | | |
| 5/2 | *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland mosaiced with *E. dumosa*, *E. leptophylla* Mallee | 1 | 8 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/1 | *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 13 | 95 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/3 | *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland mosaiced with *E. diversifolia* Open Mallee | 1 | 205 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/4 | *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 3 | 11 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **7** | *E. fasciculosa*, *X. caespitosa* Low Woodland over *A. longifolia* var. *sophorae*, *Banksia marginata* , *X. caespitosa* | 1,524 | 12,481 | 3,587 | 28.7 | 1,371 | 37 | 2,049 | 130 | 21 | 9 |
| 7/10 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 25 | 2,215 | 210 | 9.5 | 199 | 0 | 11 | 0 | 0 | 0 |
| 7/12 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 15 | 221 | 25 | 11.2 | 24 | 0 | 1 | 0 | 0 | 0 |
| 7/18 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 4 | 70 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/18/12 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland and *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 2 | 63 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/97 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 3 | 15 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/6 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 13 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/5 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 7 | 62 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/8 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. leucoxylon* ssp. Low Open Woodland | 2 | 93 | 24 | 25.5 | 0 | 0 | 24 | 0 | 0 | 0 |
| 7/3 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *E. diversifolia* Open Mallee | 34 | 1,722 | 787 | 45.7 | 0 | 0 | 787 | 0 | 0 | 0 |
| 7/4 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 6 | 235 | 55 | 23.5 | 0 | 0 | 55 | 0 | 0 | 0 |
| 7/22 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | | | | | | | | | | |
| 7/17 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *M. brevifolia* Low Shrubland | 18 | 424 | 328 | 77.3 | 319 | 0 | 9 | 0 | 0 | 0 |
| 7/90 | *E. fasciculosa*, *X. caespitosa* Low Woodland mosaiced with *B. juncea*, *L. brownii*, *L. tenax* with emergent +/- *M. brevifolia*, +/- *L. myrsinoides*, +/- *L. coriaceum* Closed Sedgeland | 1 | 13 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **9** | *A. verticillata*, *E. leucoxylon* ssp. Low Woodland over *Pomaderris paniculosa* ssp., *Thomasia petalocalyx, Hibbertia sericea* var. *scabrifolia, Lomandra effusa, *Myrsiphyllum asparagoides* | 3 | 3 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11** | *E. arenacea/baxteri*, *Baeckea behrii* Low Woodland over *L. coriaceum*, *Calytrix alpestris*, *Astroloma conostephioides*, *Baeckea crassifolia*, *Astroloma humifusum* | 32 | 350 | 104 | 29.8 | 0 | 0 | 104 | 0 | 0 | 0 |
| **84** | *A. verticillata* Low Woodland over *Bursaria spinosa*, *X. caespitosa* | 13 | 333 | 245 | 73.4 | 108 | 0 | 135 | 2 | 0 | 0 |
| 84/10 | *Allocasuarina verticillata* Low Woodland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 1 | 4 | 2 | 57.2 | 0 | 0 | 0 | 2 | 0 | 2 |
| 84/26 | *Allocasuarina verticillata* Low Woodland mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 2 | 7 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **86** | *M. lanceolata* ssp. *lanceolata* Low Woodland | 102 | 665 | 114 | 17.2 | 109 | 3 | 1 | 1 | 0 | 0 |
| 86/26 | *M. lanceolata* ssp. *lanceolata* Low Woodland mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 8 | 109 | 50 | 46.5 | 36 | 0 | 15 | 0 | 0 | 0 |
| 86/22 | *M. lanceolata* ssp. *lanceolata* Low Woodland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 3 | 43 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 86/21 | *M. lanceolata* ssp. *lanceolata* Low Woodland mosaiced with *G. filum*, *S. repens* Sedgeland | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **87** | *A. luehmannii* Low Woodland over *Danthonia setacea* var. *setacea, Calocephalus citreus, *Avena barbata* | 88 | 338 | 13 | 3.9 | 13 | 0 | 0 | 0 | 0 | 0 |
| 87/18 | *A. luehmannii* Low Woodland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 6 | 26 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 87/88 | *A. luehmannii* Low Woodland mosaiced with *E. microcarpa* Woodland | 19 | 132 | 3 | 2.4 | 0 | 0 | 3 | 0 | 0 | 0 |
| 87/88/6 | *A. luehmannii* Low Woodland mosaiced with *E. microcarpa* | 1 | 6 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Woodland and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | | | | | | | | | | |
| 87/6 | *A. luehmannii* Low Woodland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland and | 2 | 23 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 87/24 | *A. luehmannii* Low Woodland mosaiced with *T. triandra* with emergent *Pimelea glauca* Open Tussock Grassland | 1 | 6 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **8** | *E. leucoxylon* ssp. Low Open Woodland over *Acacia spinescens*, *P. esculentum*, *Lepidosperma carphoides* | 25 | 346 | 184 | 53.1 | 0 | 0 | 184 | 0 | 0 | 0 |
| **Mallees** | | | | | | | | | | | |
| **2** | *E. dumosa*, *E. leptophylla* Mallee over *M. uncinata*, *Danthonia* sp. | 78 | 223 | 10 | 4.6 | 0 | 0 | 10 | 0 | 0 | 0 |
| 2/6 | *E. dumosa*, *E. leptophylla* Mallee mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/89 | *E. dumosa*, *E. leptophylla* Mallee mosaiced with *E. behriana*, +/- *E. dumosa* Mallee | 2 | 15 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/1 | *E. dumosa*, *E. leptophylla* Mallee mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 4 | 67 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **89** | *E. behriana*, +/- *E. dumosa* Mallee over *M. uncinata*, *Melaleuca wilsonii* | 68 | 116 | 9 | 7.5 | 0 | 0 | 9 | 0 | 0 | 0 |
| 89/96 | *E. behriana*, +/- *E. dumosa* Mallee mosaiced with *E. odorata*, *E. leucoxylon* ssp. Woodland | 1 | 5 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89/6 | *E. behriana*, +/- *E. dumosa* Mallee mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89/6/88 | *E. behriana*, +/- *E. dumosa* Mallee mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland and *E. microcarpa* Woodland | 1 | 4 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89/2 | *E. behriana*, +/- *E. dumosa* Mallee mosaiced with *E. dumosa*, *E. leptophylla* Mallee | 3 | 17 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89/1 | *E. behriana*, +/- *E. dumosa* Mallee mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 1 | 9 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **92** | *E. porosa*, *E. calycogona* var. *calycogona* Mallee | 13 | 86 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 92/97 | *E. porosa*, *E. calycogona* var. *calycogona* Mallee mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 1 | 4 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee over *Acacia spinescens, Lasiopetalum baueri, Hibbertia riparia, Lepidosperma carphoides* | 504 | 3,928 | 859 | 21.9 | 143 | 7 | 709 | 0 | 0 | 0 |
| 1/6 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 4 | 21 | 9 | 42.7 | 0 | 0 | 9 | 0 | 0 | 0 |
| 1/5 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 3 | 27 | 8 | 29.5 | 0 | 0 | 8 | 0 | 0 | 0 |
| 1/2 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. dumosa*, *E. leptophylla* Mallee | 9 | 108 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/2/5 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. dumosa*, *E. leptophylla* Mallee and *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 2 | 78 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/89 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. behriana*, +/- *E. dumosa* Mallee | 7 | 38 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/3 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. diversifolia* Open Mallee | 4 | 17 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/3/5 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. diversifolia* Open Mallee and *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 1 | 60 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/3/4 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *E. diversifolia* Open Mallee and *B. ornata* +/- emergent *E. incrassata* Shrubland | 1 | 26 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/4 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 33 | 2,050 | 678 | 33.1 | 352 | 0 | 326 | 0 | 0 | 0 |
| 1/4/97 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland and Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 1 | 40 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/17 | *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee mosaiced with *M. brevifolia* Low Shrubland | 2 | 96 | 84 | 87.9 | 84 | 0 | 0 | 0 | 0 | 0 |
| **3** | *E. diversifolia* Open Mallee over *X. caespitosa*, *Hibbertia sericea var. scabrifolia*, *Hibbertia riparia*, *Dianella revoluta* | 2,339 | 17,159 | 5,252 | 30.6 | 1,972 | 201 | 3,042 | 37 | 0 | 10 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | var., *Lepidosperma carphoides* | | | | | | | | | | |
| 3/12 | *E. diversifolia* Open Mallee mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 14 | 163 | 10 | 6.1 | 0 | 0 | 10 | 0 | 0 | 0 |
| 3/6 | *E. diversifolia* Open Mallee mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 3 | 228 | 1 | 0.5 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3/5 | *E. diversifolia* Open Mallee mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 3 | 53 | 18 | 35.1 | 0 | 0 | 18 | 0 | 0 | 0 |
| 3/7 | *E. diversifolia* Open Mallee mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 48 | 1,983 | 898 | 45.3 | 0 | 0 | 898 | 0 | 0 | 0 |
| 3/7/17 | *E. diversifolia* Open Mallee mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland and *M. brevifolia* Low Shrubland | 1 | 8 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/86 | *E. diversifolia* Open Mallee mosaiced with *M. lanceolata* ssp. *lanceolata* Low Woodland | 2 | 30 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/1 | *E. diversifolia* Open Mallee mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 29 | 272 | 65 | 23.9 | 0 | 0 | 65 | 0 | 0 | 0 |
| 3/1/8 | *E. diversifolia* Open Mallee mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee and *E. leucoxylon* ssp. Low Open Woodland | 1 | 97 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/1/4 | *E. diversifolia* Open Mallee mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee and *B. ornata* +/- emergent *E. incrassata* Shrubland | 10 | 326 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/26 | *E. diversifolia* Open Mallee mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 10 | 995 | 418 | 42.0 | 0 | 407 | 11 | 0 | 0 | 0 |
| 3/4 | *E. diversifolia* Open Mallee mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 229 | 7,220 | 5,499 | 76.2 | 1,341 | 116 | 4,043 | 0 | 0 | 0 |
| 3/4/6 | *E. diversifolia* Open Mallee mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 4 | 205 | 2 | 0.9 | 0 | 0 | 2 | 0 | 0 | 0 |
| 3/22 | *E. diversifolia* Open Mallee mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 6 | 149 | 125 | 83.5 | 125 | 0 | 0 | 0 | 0 | 0 |
| 3/91 | *E. diversifolia* Open Mallee mosaiced with *P. esculentum*, +/- emergent *Eucalyptus* spp. Closed Fernland | 1 | 5 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Coastal Shrublands** | | | | | | | | | | | |
| **26** | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland over *Pimelea serpyllifolia*, *Isolepis nodosa*, *Lepidosperma gladiatum*, *Clematis microphylla*, | 267 | 16,813 | 9,796 | 58.3 | 9,120 | 403 | 273 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Carpobrotus rossii* | | | | | | | | | | |
| 26/10 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 3 | 201 | 121 | 60.2 | 121 | 0 | 0 | 0 | 0 | 0 |
| 26/84 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *Allocasuarina verticillata* Low Woodland | 13 | 158 | 30 | 19.1 | 20 | 0 | 10 | 0 | 0 | 0 |
| 26/86 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *M. lanceolata* ssp. *lanceolata* Low Woodland | 4 | 25 | 1 | 4.4 | 0 | 0 | 1 | 0 | 0 | 0 |
| 26/3 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *E. diversifolia* Open Mallee | 12 | 478 | 209 | 43.7 | 207 | 0 | 2 | 0 | 0 | 0 |
| 26/22 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 2 | 50 | 36 | 72.1 | 36 | 0 | 0 | 0 | 0 | 0 |
| 26/29 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 5 | 45 | 45 | 100.0 | 45 | 0 | 0 | 0 | 0 | 0 |
| 26/24 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *T. triandra* with emergent *Pimelea glauca* Open Tussock Grassland | 1 | 2 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26/24/86 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *T. triandra* with emergent *Pimelea glauca* Open Tussock Grassland and *M. lanceolata* ssp. *lanceolata* Low Woodland | 1 | 9 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26/27 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *Spinifex sericeus*, *Ozothamnus turbinatus, Isolepis nodosa* Tussock Grassland | 25 | 1,531 | 1,179 | 77.0 | 1,179 | 0 | 0 | 0 | 0 | 0 |
| 26/21 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland | 1 | 35 | 33 | 95.4 | 33 | 0 | 0 | 0 | 0 | 0 |
| 26/85 | *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland mosaiced with *Juncus* spp., *Isolepis* spp., *Poa* spp. Sedgeland | 3 | 187 | 162 | 86.5 | 106 | 56 | 0 | 0 | 0 | 0 |
| **Heaths generally on sand** | | | | | | | | | | | |
| **4** | *B. ornata* +/- emergent *E. incrassata* Shrubland over *X. caespitosa*, *Leptospermum myrsinoides, Hibbertia riparia,* | 1,040 | 18,453 | 9,057 | 49.1 | 4,117 | 623 | 4,307 | 10 | 0 | 1 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Hypolaena fastigiata, Lepidosperma carphoides* | | | | | | | | | | |
| 4/12 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 20 | 3,045 | 2,212 | 72.7 | 4 | 71 | 2,137 | 0 | 0 | 0 |
| 4/12/6 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 273 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/18 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 1 | 4 | 4 | 92.5 | 0 | 0 | 4 | 0 | 0 | 0 |
| 4/97 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 1 | 14 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/6 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 4 | 75 | 53 | 70.7 | 0 | 0 | 53 | 0 | 0 | 0 |
| 4/71 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E.* arenacea Open Woodland | 1 | 66 | 66 | 100.0 | 0 | 66 | 0 | 0 | 0 | 0 |
| 4/5 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 7 | 187 | 145 | 77.5 | 52 | 0 | 92 | 0 | 0 | 0 |
| 4/7 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 1 | 63 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/7/3 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland and *E. diversifolia* Open Mallee | 1 | 870 | 534 | 61.3 | 0 | 0 | 534 | 0 | 0 | 0 |
| 4/1 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 31 | 871 | 505 | 57.9 | 17 | 0 | 488 | 0 | 0 | 0 |
| 4/1/7 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee and *E. fasciculosa*, *X. caespitosa* Low Woodland | 1 | 103 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/3 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. diversifolia* Open Mallee | 120 | 10,899 | 9,246 | 84.8 | 8,095 | 116 | 1,036 | 0 | 0 | 0 |
| 4/3/6 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. diversifolia* Open Mallee and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 40 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/3/5 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *E. diversifolia* Open Mallee and *E. fasciculosa*, *E.* | 1 | 509 | 329 | 64.6 | 0 | 0 | 329 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *leucoxylon* ssp. Low Woodland | | | | | | | | | | |
| 4/22 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 1 | 34 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/17 | *B. ornata* +/- emergent *E. incrassata* Shrubland mosaiced with *M. brevifolia* Low Shrubland | 2 | 215 | 196 | 91.0 | 196 | 0 | 0 | 0 | 0 | 0 |
| **Shrublands** | | | | | | | | | | | |
| **15** | *L. continentale* Shrubland over *Epacris impressa, Hibbertia prostrata* | 85 | 301 | 120 | 39.9 | 15 | 0 | 10 | 95 | 54 | 13 |
| 15/12 | *L. continentale* Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 1 | 6 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15/18 | *L. continentale* Shrubland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 16 | 183 | 78 | 42.3 | 0 | 0 | 12 | 66 | 0 | 2 |
| 15/81 | *L. continentale* Shrubland mosaiced with *E. ovata*, *E. viminalis* ssp. Woodland | 4 | 100 | 91 | 90.6 | 0 | 0 | 0 | 91 | 2 | 3 |
| 15/13 | *L. continentale* Shrubland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland | 1 | 6 | 6 | 98.1 | 0 | 0 | 0 | 6 | 0 | 0 |
| 15/13/82 | *L. continentale* Shrubland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland and Cyperaceae spp., Gramineae spp. Sedgeland | 1 | 24 | 23 | 98.7 | 23 | 0 | 0 | 0 | 0 | 0 |
| 15/82 | *L. continentale* Shrubland mosaiced with Cyperaceae spp., Gramineae spp. Sedgeland | 5 | 110 | 0 | 0.0 | 0 | 0 | 0 | 0 | 9 | 4 |
| 15/83 | *L. continentale* Shrubland mosaiced with *B. juncea*, +/- *G. trifida* Sedgeland | 1 | 112 | 110 | 98.3 | 0 | 0 | 0 | 110 | 0 | 2 |
| **76** | *X. caespitosa* Shrubland over **Ehrharta calycina* | 16 | 283 | 283 | 99.8 | 0 | 235 | 47 | 0 | 0 | 0 |
| **78** | *Acacia leiophylla* Shrubland | 3 | 24 | 22 | 91.2 | 0 | 0 | 0 | 22 | 0 | 0 |
| **14** | *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland over *Astroloma conostephioides, Leucopogon virgatus, Epacris impressa, Isopogon ceratophyllus, Hypolaena fastigiata* | 157 | 1,239 | 379 | 30.6 | 66 | 0 | 186 | 127 | 19 | 36 |
| 14/10 | *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 5 | 85 | 29 | 33.6 | 0 | 0 | 29 | 0 | 0 | 0 |
| 14/12 | *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 16 | 222 | 29 | 13.0 | 3 | 0 | 26 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14/18 | *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 4 | 40 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14/81 | *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland mosaiced with *E. ovata*, *E. viminalis* ssp. Woodland | 6 | 99 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 14 |
| **Shrublands of wet areas** | | | | | | | | | | | |
| **19** | *L. lanigerum* Tall Shrubland over *L. parviflorus, Ozothamnus ferrugineus, Epilobium billardieranum* ssp. *billardieranum, Acaena novae-zelandiae* | 116 | 755 | 182 | 24.1 | 136 | 46 | 0 | 0 | 0 | 0 |
| 19/21 | *L. lanigerum* Tall Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland | 3 | 194 | 146 | 75.6 | 146 | 0 | 0 | 0 | 0 | 0 |
| 19/83 | *L. lanigerum* Tall Shrubland mosaiced with *B. juncea*, +/- *G. trifida* Sedgeland | 3 | 81 | 72 | 89.1 | 72 | 0 | 0 | 0 | 0 | 0 |
| **13** | *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland over *L. continentale*, *P. esculentum*, *Lepidosperma viscidum, Gonocarpus tetragynus, Schoenus carsei* | 57 | 198 | 165 | 83.2 | 2 | 0 | 0 | 163 | 4 | 4 |
| 13/12 | *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 3 | 36 | 35 | 98.7 | 0 | 0 | 0 | 35 | 0 | 0 |
| 13/12/70 | *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland and Failed Pine Plantation (*Pinus radiata*) Exotic / Native (non indigenous) Complex | 2 | 81 | 79 | 98.0 | 0 | 0 | 0 | 79 | 0 | 2 |
| 13/81 | *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland mosaiced with *E. ovata*, *E. viminalis* ssp. Woodland | 7 | 94 | 81 | 86.3 | 0 | 0 | 0 | 81 | 0 | 0 |
| 13/81/12 | *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland mosaiced with *E. ovata*, *E. viminalis* ssp. Woodland and *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 1 | 32 | 31 | 98.3 | 0 | 0 | 0 | 31 | 0 | 1 |
| 13/15 | *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland mosaiced with *L. continentale* Shrubland | 6 | 235 | 235 | 100.0 | 0 | 0 | 0 | 235 | 0 | 0 |
| 13/82 | *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland mosaiced with Cyperaceae spp., Gramineae spp. Sedgeland | 7 | 48 | 48 | 99.9 | 0 | 0 | 0 | 48 | 0 | 0 |
| **22** | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland over *G. filum*, *S. repens, Comesperma volubile* | 614 | 10,488 | 5,365 | 51.2 | 2,545 | 461 | 2,359 | 0 | 0 | 0 |
| 22/97 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 3 | 29 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | | | | | | | | | | |
| 22/97/17 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland and *M. brevifolia* Low Shrubland | 5 | 69 | 19 | 27.0 | 0 | 0 | 19 | 0 | 0 | 0 |
| 22/97/29 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland and *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 2 | 4 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22/6 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 2 | 12 | 4 | 35.8 | 0 | 0 | 4 | 0 | 0 | 0 |
| 22/5 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 3 | 4 | 3 | 91.4 | 0 | 0 | 3 | 0 | 0 | 0 |
| 22/7 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 8 | 18 | 1 | 5.6 | 0 | 0 | 1 | 0 | 0 | 0 |
| 22/86 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. lanceolata* ssp. *lanceolata* Low Woodland | 1 | 25 | 3 | 10.0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 22/3 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *E. diversifolia* Open Mallee | 1 | 1 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22/26 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 7 | 103 | 46 | 45.0 | 46 | 0 | 0 | 0 | 0 | 0 |
| 22/17 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland | 212 | 2,359 | 351 | 14.9 | 99 | 0 | 253 | 0 | 0 | 0 |
| 22/17/12 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 1 | 71 | 1 | 0.9 | 0 | 0 | 1 | 0 | 0 | 0 |
| 22/17/97 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E.* | 13 | 253 | 62 | 24.5 | 0 | 26 | 36 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *leucoxylon* spp. or *E. arenacea/baxteri* Woodland | | | | | | | | | | |
| 22/17/6 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 2 | 5 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22/17/5 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and *E. fasciculosa*, *E. leucoxylon* ssp. Low Woodland | 1 | 14 | 14 | 100.0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 22/17/86 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and *M. lanceolata* ssp. *lanceolata* Low Woodland | 1 | 55 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22/17/3 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and *E. diversifolia* Open Mallee | 1 | 13 | 13 | 99.7 | 0 | 0 | 13 | 0 | 0 | 0 |
| 22/17/29 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 19 | 406 | 207 | 50.9 | 41 | 0 | 165 | 0 | 0 | 0 |
| 22/17/21 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *M. brevifolia* Low Shrubland and *G. filum*, *S. repens* Sedgeland | 29 | 1,998 | 301 | 15.1 | 0 | 32 | 269 | 0 | 0 | 0 |
| 22/29 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 22 | 300 | 110 | 36.5 | 98 | 0 | 11 | 0 | 0 | 0 |
| 22/29/17 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland and *M. brevifolia* Low Shrubland | 7 | 557 | 388 | 69.6 | 275 | 0 | 112 | 0 | 0 | 0 |
| 22/29/21 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland and *G. filum*, *S. repens* Sedgeland | 2 | 28 | 25 | 91.1 | 25 | 0 | 0 | 0 | 0 | 0 |
| 22/25 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *L. brownii*, *B. juncea* Closed Sedgeland | 2 | 3 | 3 | 100.0 | 3 | 0 | 0 | 0 | 0 | 0 |
| 22/21 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland | 42 | 966 | 428 | 44.3 | 410 | 4 | 15 | 0 | 0 | 0 |
| 22/21/17 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and *M. brevifolia* Low Shrubland | 17 | 465 | 180 | 38.8 | 0 | 85 | 96 | 0 | 0 | 0 |
| 22/21/29 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 5 | 174 | 143 | 82.0 | 143 | 0 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mosaiced with *G. filum*, *S. repens* Sedgeland and *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | | | | | | | | | | |
| 22/83 | *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland mosaiced with *B. juncea*, +/- *G. trifida* Sedgeland | 3 | 5 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **93** | *M. brevifolia* or *M. uncinata* Shrubland | 22 | 134 | 45 | 34.0 | 4 | 0 | 41 | 0 | 0 | 0 |
| 93/12 | *M. brevifolia* or *M. uncinata* Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 1 | 6 | 6 | 94.8 | 6 | 0 | 0 | 0 | 0 | 0 |
| 93/97 | *M. brevifolia* or *M. uncinata* Shrubland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 3 | 51 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 93/22/17 | *M. brevifolia* or *M. uncinata* Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *M. brevifolia* Low Shrubland | 1 | 5 | 5 | 100.0 | 5 | 0 | 0 | 0 | 0 | 0 |
| 93/17 | *M. brevifolia* or *M. uncinata* Shrubland mosaiced with *M. brevifolia* Low Shrubland | 1 | 13 | 13 | 99.5 | 13 | 0 | 0 | 0 | 0 | 0 |
| 93/25 | *M. brevifolia* or *M. uncinata* Shrubland mosaiced with *L. brownii*, *B. juncea* Closed Sedgeland | 1 | 3 | 3 | 93.8 | 3 | 0 | 0 | 0 | 0 | 0 |
| **95** | *M. uncinata* Shrubland | 7 | 33 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **17** | *M. brevifolia* Low Shrubland over *L. continentale*, *L. brownii*, *B. juncea* | 1,017 | 10,062 | 5,044 | 50.1 | 2,853 | 180 | 1,836 | 175 | 0 | 3 |
| 17/10 | *M. brevifolia* Low Shrubland mosaiced with *E. obliqua*, *P. esculentum* Woodland | 1 | 30 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/12 | *M. brevifolia* Low Shrubland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland | 4 | 45 | 20 | 43.0 | 0 | 0 | 20 | 0 | 0 | 0 |
| 17/18 | *M. brevifolia* Low Shrubland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 46 | 280 | 14 | 5.0 | 14 | 0 | 0 | 0 | 0 | 0 |
| 17/18/6 | *M. brevifolia* Low Shrubland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland and *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 29 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/18/22 | *M. brevifolia* Low Shrubland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 3 | 10 | 5 | 49.1 | 0 | 0 | 5 | 0 | 0 | 0 |
| 17/97 | *M. brevifolia* Low Shrubland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 35 | 284 | 10 | 3.4 | 0 | 0 | 10 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17/97/22 | *M. brevifolia* Low Shrubland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 2 | 308 | 233 | 75.6 | 233 | 0 | 0 | 0 | 0 | 0 |
| 17/6 | *M. brevifolia* Low Shrubland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 8 | 70 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/7 | *M. brevifolia* Low Shrubland mosaiced with *E. fasciculosa*, *X. caespitosa* Low Woodland | 13 | 214 | 45 | 20.8 | 34 | 0 | 11 | 0 | 0 | 0 |
| 17/1 | *M. brevifolia* Low Shrubland mosaiced with *E. incrassata*, *E. leptophylla*, +/- *M. uncinata* Open Mallee | 1 | 6 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/3 | *M. brevifolia* Low Shrubland mosaiced with *E. diversifolia* Open Mallee | 1 | 21 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/4 | *M. brevifolia* Low Shrubland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland | 7 | 504 | 144 | 28.5 | 0 | 0 | 144 | 0 | 0 | 0 |
| 17/4/7 | *M. brevifolia* Low Shrubland mosaiced with *B. ornata* +/- emergent *E. incrassata* Shrubland and *E. fasciculosa*, *X. caespitosa* Low Woodland | 1 | 112 | 112 | 100.0 | 0 | 0 | 112 | 0 | 0 | 0 |
| 17/14 | *M. brevifolia* Low Shrubland mosaiced with *X. caespitosa*, *L. continentale* +/- emergent *E. obliqua* Open Shrubland | 3 | 38 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/22 | *M. brevifolia* Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 144 | 7,489 | 2,539 | 33.9 | 538 | 7 | 1,995 | 0 | 0 | 0 |
| 17/22/18 | *M. brevifolia* Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *E. camaldulensis* var. *camaldulensis* Woodland | 1 | 78 | 78 | 100.0 | 78 | 0 | 0 | 0 | 0 | 0 |
| 17/22/97 | *M. brevifolia* Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 2 | 96 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/22/29 | *M. brevifolia* Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 16 | 1,093 | 228 | 20.8 | 156 | 0 | 72 | 0 | 0 | 0 |
| 17/22/21 | *M. brevifolia* Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *G. filum*, *S. repens* Sedgeland | 31 | 6,927 | 2,898 | 41.8 | 1,723 | 33 | 1,142 | 0 | 0 | 0 |
| 17/29 | *M. brevifolia* Low Shrubland mosaiced with *Sarcocornia* | 8 | 119 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **Vegetation Groups (MU 250)** | **Detailed Floristic Description (including Mosaics)** | **No. patches** | **Total Area (ha)** | **Prot Area (ha)** | **% Prot.** | **NPWS Area (ha)** | **CR Area (ha)** | **HA Area (ha)** | **NF Area (ha)** | **LF Area (ha)** | **Other Area (ha)** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | sp., *Halosarcia* sp. Low Shrubland | | | | | | | | | | |
| 17/29/22 | *M. brevifolia* Low Shrubland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 1 | 138 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/29/21 | *M. brevifolia* Low Shrubland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland and *G. filum*, *S. repens* Sedgeland | 1 | 40 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/25 | *M. brevifolia* Low Shrubland mosaiced with *L. brownii*, *B. juncea* Closed Sedgeland | 15 | 656 | 652 | 99.4 | 652 | 0 | 0 | 0 | 0 | 0 |
| 17/25/22 | *M. brevifolia* Low Shrubland mosaiced with *L. brownii*, *B. juncea* Closed Sedgeland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 1 | 2 | 2 | 100.0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 17/25/21 | *M. brevifolia* Low Shrubland mosaiced with *L. brownii*, *B. juncea* Closed Sedgeland and *G. filum*, *S. repens* Sedgeland | 1 | 81 | 81 | 100.0 | 81 | 0 | 0 | 0 | 0 | 0 |
| 17/21 | *M. brevifolia* Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland | 47 | 974 | 463 | 47.5 | 189 | 16 | 258 | 0 | 0 | 0 |
| 17/21/97 | *M. brevifolia* Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 1 | 12 | 12 | 100.0 | 0 | 0 | 12 | 0 | 0 | 0 |
| 17/21/3 | *M. brevifolia* Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and *E. diversifolia* Open Mallee | 1 | 432 | 401 | 92.8 | 401 | 0 | 0 | 0 | 0 | 0 |
| 17/21/22 | *M. brevifolia* Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 20 | 1,557 | 1,061 | 68.2 | 312 | 0 | 750 | 0 | 0 | 0 |
| 17/21/29 | *M. brevifolia* Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 1 | 39 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17/21/25 | *M. brevifolia* Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and *L. brownii*, *B. juncea* Closed Sedgeland | 5 | 28 | 28 | 100.0 | 28 | 0 | 0 | 0 | 0 | 0 |
| **29** | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland over *Distichlis distichophylla, Frankenia pauciflora* var., *S. repens*, *Suaeda australis* | 94 | 2,378 | 1,123 | 47.2 | 800 | 182 | 142 | 0 | 0 | 0 |
| 29/22 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 19 | 300 | 202 | 67.3 | 95 | 0 | 107 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 29/22/97 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 1 | 5 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29/22/17 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *M. brevifolia* Low Shrubland | 5 | 258 | 80 | 30.9 | 0 | 0 | 80 | 0 | 0 | 0 |
| 29/22/21 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *G. filum*, *S. repens* Sedgeland | 1 | 16 | 16 | 100.0 | 16 | 0 | 0 | 0 | 0 | 0 |
| 29/17 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *M. brevifolia* Low Shrubland | 7 | 156 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29/17/22 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *M. brevifolia* Low Shrubland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 3 | 144 | 8 | 5.6 | 0 | 0 | 8 | 0 | 0 | 0 |
| 29/21 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland | 26 | 771 | 509 | 66.0 | 509 | 0 | 0 | 0 | 0 | 0 |
| 29/21/26 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 1 | 37 | 37 | 100.0 | 37 | 0 | 0 | 0 | 0 | 0 |
| 29/21/22 | *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland mosaiced with *G. filum*, *S. repens* Sedgeland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 2 | 31 | 31 | 100.0 | 31 | 0 | 0 | 0 | 0 | 0 |
| **Grasslands** | | | | | | | | | | | |
| **99** | Gramineae spp. Grassland | 19 | 302 | 237 | 78.7 | 202 | 35 | 0 | 0 | 0 | 0 |
| 99/86 | Gramineae spp. Grassland mosaiced with *M. lanceolata* ssp. *lanceolata* Low Woodland | 1 | 15 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **98** | *Phragmites australis, Typha domingensis* Grassland | 3 | 7 | 7 | 100.0 | 7 | 0 | 0 | 0 | 0 | 0 |
| **24** | *T. triandra* with emergent *Pimelea glauca* Open Tussock Grassland over *Schoenus apogon* | 11 | 24 | 5 | 20.0 | 5 | 0 | 0 | 0 | 0 | 0 |
| 24/26 | *T. triandra* with emergent *Pimelea glauca* Open Tussock Grassland mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 1 | 3 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Coastal Tussock Grasslands** | | | | | | | | | | | |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **27** | *Spinifex sericeus, Ozothamnus turbinatus*, *Isolepis nodosa* Tussock Grassland over *O. axillaris*, **Cakile maritima* ssp. *maritima, Leucophyta brownii, Apium prostratum* ssp. *prostratum* var. *prostratum* | 14 | 80 | 7 | 8.3 | 5 | 1 | 0 | 0 | 0 | 0 |
| 27/26 | *Spinifex sericeus, Ozothamnus turbinatus*, *Isolepis nodosa* Tussock Grassland mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 11 | 235 | 209 | 89.0 | 209 | 0 | 0 | 0 | 0 | 0 |
| **Sedgelands** | | | | | | | | | | | |
| **23** | Typha domingensis Closed Sedgeland over *S. repens* | 35 | 249 | 162 | 65.1 | 65 | 98 | 0 | 0 | 4 | 1 |
| **25** | *L. brownii*, *B. juncea* Closed Sedgeland over *Tetraria capillaris, Wilsonia backhousei, Wilsonia rotundifolia* | 12 | 27 | 23 | 85.0 | 3 | 0 | 20 | 0 | 0 | 0 |
| 25/17 | *L. brownii*, *B. juncea* Closed Sedgeland mosaiced with *M. brevifolia* Low Shrubland | 10 | 824 | 822 | 99.8 | 822 | 0 | 0 | 0 | 0 | 0 |
| 25/17/21 | *L. brownii*, *B. juncea* Closed Sedgeland mosaiced with *M. brevifolia* Low Shrubland and *G. filum*, *S. repens* Sedgeland | 1 | 463 | 463 | 100.0 | 463 | 0 | 0 | 0 | 0 | 0 |
| **90** | *B. juncea*, *L. brownii*, *L. tenax* with emergent +/- *M. brevifolia*, +/- *L. myrsinoides*, +/- *L. coriaceum* Closed Sedgeland | 72 | 182 | 81 | 44.7 | 6 | 0 | 75 | 0 | 0 | 0 |
| 90/6 | *B. juncea*, *L. brownii*, *L. tenax* with emergent +/- *M. brevifolia*, +/- *L. myrsinoides*, +/- *L. coriaceum* Closed Sedgeland mosaiced with *E. leucoxylon* ssp., +/- *A. pycnantha* Open Woodland | 1 | 10 | 10 | 99.5 | 0 | 0 | 10 | 0 | 0 | 0 |
| **20** | *G. filum*, *G. trifida* with invading *O. axillaris* Sedgeland over *Eleocharis acuta, Acaena novae-zelandiae* | 1 | 15 | 3 | 21.9 | 0 | 0 | 3 | 0 | 0 | 0 |
| **21** | *G. filum*, *S. repens* Sedgeland over *Selliera radicans* | 443 | 5,131 | 967 | 18.8 | 724 | 6 | 237 | 0 | 0 | 0 |
| 21/18 | *G. filum*, *S. repens* Sedgeland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 1 | 1 | 1 | 100.0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 21/97 | *G. filum*, *S. repens* Sedgeland mosaiced with Degraded *E. camaldulensis* var. *camaldulensis* or *E. fasciculosa* or *E. leucoxylon* spp. or *E. arenacea/baxteri* Woodland | 2 | 24 | 12 | 49.6 | 0 | 0 | 12 | 0 | 0 | 0 |
| 21/26 | *G. filum*, *S. repens* Sedgeland mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 2 | 35 | 35 | 100.0 | 35 | 0 | 0 | 0 | 0 | 0 |
| 21/22 | *G. filum*, *S. repens* Sedgeland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 41 | 498 | 29 | 5.8 | 23 | 0 | 6 | 0 | 0 | 0 |
| 21/22/18 | *G. filum*, *S. repens* Sedgeland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *E.* | 1 | 17 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *camaldulensis* var. *camaldulensis* Woodland | | | | | | | | | | |
| 21/22/17 | *G. filum*, *S. repens* Sedgeland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *M. brevifolia* Low Shrubland | 9 | 202 | 28 | 13.7 | 0 | 0 | 28 | 0 | 0 | 0 |
| 21/22/29 | *G. filum*, *S. repens* Sedgeland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland and *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 2 | 505 | 209 | 41.3 | 209 | 0 | 0 | 0 | 0 | 0 |
| 21/17 | *G. filum*, *S. repens* Sedgeland mosaiced with *M. brevifolia* Low Shrubland | 51 | 1,435 | 415 | 28.9 | 163 | 0 | 252 | 0 | 0 | 0 |
| 21/17/22 | *G. filum*, *S. repens* Sedgeland mosaiced with *M. brevifolia* Low Shrubland and *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 5 | 782 | 69 | 8.8 | 42 | 0 | 27 | 0 | 0 | 0 |
| 21/29 | *G. filum*, *S. repens* Sedgeland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland | 11 | 651 | 575 | 88.3 | 575 | 0 | 0 | 0 | 0 | 0 |
| 21/29/26 | *G. filum*, *S. repens* Sedgeland mosaiced with *Sarcocornia* sp., *Halosarcia* sp. Low Shrubland and *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 1 | 3 | 3 | 77.4 | 3 | 0 | 0 | 0 | 0 | 0 |
| 21/82 | *G. filum*, *S. repens* Sedgeland mosaiced with Cyperaceae spp., Gramineae spp. Sedgeland | 1 | 25 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21/25/17 | *G. filum*, *S. repens* Sedgeland mosaiced with *L. brownii*, *B. juncea* Closed Sedgeland and *M. brevifolia* Low Shrubland | 1 | 5 | 5 | 100.0 | 5 | 0 | 0 | 0 | 0 | 0 |
| 21/83 | *G. filum*, *S. repens* Sedgeland mosaiced with *B. juncea*, +/- *G. trifida* Sedgeland | 2 | 74 | 10 | 13.5 | 10 | 0 | 0 | 0 | 0 | 0 |
| 21/85 | *G. filum*, *S. repens* Sedgeland mosaiced with *Juncus* spp., *Isolepis* spp., *Poa* spp. Sedgeland | 5 | 1,849 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **73** | *Lepidosperma* aff. *congestum* with emergent *G. trifida* Sedgeland over *B. juncea*, *L. brownii* | 10 | 326 | 302 | 92.8 | 0 | 0 | 302 | 0 | 0 | 0 |
| **83** | *B. juncea*, +/- *G. trifida* Sedgeland | 65 | 707 | 78 | 11.1 | 77 | 0 | 0 | 1 | 0 | 3 |
| 83/22 | *B. juncea*, +/- *G. trifida* Sedgeland mosaiced with *M. halmaturorum* ssp. *halmaturorum* Tall Shrubland | 1 | 11 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 83/21 | *B. juncea*, +/- *G. trifida* Sedgeland mosaiced with *G. filum*, *S. repens* Sedgeland | 7 | 611 | 486 | 79.5 | 19 | 467 | 0 | 0 | 0 | 0 |
| **85** | *Juncus* spp., *Isolepis* spp., *Poa* spp. Sedgeland | 42 | 438 | 229 | 52.3 | 229 | 0 | 0 | 0 | 0 | 0 |
| 85/26 | *Juncus* spp., *Isolepis* spp., *Poa* spp. Sedgeland mosaiced with *L. parviflorus*, *A. longifolia* var. *sophorae*, *O. axillaris* Tall Shrubland | 1 | 19 | 19 | 100.0 | 10 | 9 | 0 | 0 | 0 | 0 |

| Vegetation Groups (MU 250) | Detailed Floristic Description (including Mosaics) | No. patches | Total Area (ha) | Prot Area (ha) | % Prot. | NPWS Area (ha) | CR Area (ha) | HA Area (ha) | NF Area (ha) | LF Area (ha) | Other Area (ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 85/21 | *Juncus* spp., *Isolepis* spp., *Poa* spp. Sedgeland mosaiced with *G. filum*, *S. repens* Sedgeland | 5 | 113 | 31 | 27.6 | 31 | 0 | 0 | 0 | 0 | 0 |
| **82** | Cyperaceae spp., Gramineae spp. Sedgeland | 301 | 3,451 | 2,692 | 78.0 | 2,368 | 0 | 1 | 323 | 80 | 22 |
| 82/18 | Cyperaceae spp., Gramineae spp. Sedgeland mosaiced with *E. camaldulensis* var. *camaldulensis* Woodland | 7 | 57 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 82/81 | Cyperaceae spp., Gramineae spp. Sedgeland mosaiced with *E. ovata*, *E. viminalis* ssp. Woodland | 1 | 2 | 2 | 85.6 | 0 | 0 | 0 | 2 | 0 | 0 |
| 82/15 | Cyperaceae spp., Gramineae spp. Sedgeland mosaiced with *L. continentale* Shrubland | 5 | 102 | 8 | 7.6 | 0 | 0 | 0 | 8 | 25 | 2 |
| 82/13 | Cyperaceae spp., Gramineae spp. Sedgeland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland | 6 | 48 | 48 | 99.1 | 0 | 0 | 0 | 48 | 0 | 0 |
| 82/13/81 | Cyperaceae spp., Gramineae spp. Sedgeland mosaiced with *M. squarrosa*, +/- emergent *E. ovata* Tall Shrubland and *E. ovata*, *E. viminalis* ssp. Woodland | 1 | 51 | 49 | 97.3 | 0 | 0 | 0 | 49 | 0 | 0 |
| 82/24 | Cyperaceae spp., Gramineae spp. Sedgeland mosaiced with *T. triandra* with emergent *Pimelea glauca* Open Tussock Grassland | 2 | 28 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 82/23 | Cyperaceae spp., Gramineae spp. Sedgeland mosaiced with *Typha domingensis* Closed Sedgeland | 1 | 18 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Herblands** | | | | | | | | | | | |
| **74** | *Selliera radicans* Herbland | 21 | 72 | 72 | 100.0 | 0 | 0 | 72 | 0 | 0 | 0 |
| **75** | *Wilsonia rotundifolia* Herbland | 1 | 4 | 4 | 100.0 | 0 | 4 | 0 | 0 | 0 | 0 |
| **Fernlands** | | | | | | | | | | | |
| **91** | *P. esculentum*, +/- emergent *Eucalyptus* spp. Closed Fernland | 129 | 1,666 | 23 | 1.4 | 0 | 0 | 7 | 15 | 31 | 9 |
| 91/12/7 | *P. esculentum*, +/- emergent *Eucalyptus* spp. Closed Fernland mosaiced with *E. arenacea/baxteri*, +/- *P. esculentum* Woodland and *E. fasciculosa*, *X. caespitosa* Low Woodland | 1 | 148 | 0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 |

**STRUCTURAL VEGETATION GROUPS**

The structural classification for each floristic vegetation group was determined from averages for the group using the site data where possible. This involved calculating the percentage foliage cover using the crown cover % (taken from a conversion table for the canopy type crown separation ratio (mean gap / mean width [diameter])) multiplied by the canopy type for each site, then calculating the average for the group. The visual estimates of height were also averaged across the group, and used in conjunction with the percentage foliage cover to determine the structural formation using the SA Structural Formation table (refer to Appendix VII). Where there was inadequate data, a subjective assessment based on canopy cover (Muir 1977) and height information was used to select the appropriate structural classification.

To gain an overview of the broad structural groupings across the study region and how these are represented in terms of number of patches (fragments), total area and area protected, the floristic groups have been summarised by the main structurally descriptive groups. This summary is provided in Table 26 and gives an indication of the extent of woodlands compared to other structural groups such as mallees, shrublands, grasslands, sedgelands, herblands and fernlands.

The greatest number of patches are woodland areas with a total of 7,989 patches and a total area of 106,967 ha (34% of the total remaining vegetation in the region). The most protected structural groups, however, are herblands (100%), heaths generally on sand (62.6%) and coastal shrublands (59.4%). It must be noted though, in relation to herblands that these may also exist beyond reserves but are more difficult to distinguish for mapping purpose oustside the reserve system where they are grazed by stock or subject to increased salinity.

**Table 27.**
**Area estimates for vegetation groups based on broad structural groups in the South East study area.**

| Structural Group | Number of patches | Total Area (ha) | % of Total Vegetation | Total area protect (ha) | % of Total structural group protected |
|---|---|---|---|---|---|
| Woodlands | 7,989 | 106,967 | 38.4% | 31,556 | 29.5% |
| Mallee | 3,281 | 35,926 | 12.9% | 13,945 | 38.8% |
| Coastal Shrublands | 276 | 19,535 | 7.0% | 11,613 | 59.4% |
| Heaths generally on sand | 1,173 | 35,721 | 12.8% | 22,346 | 62.6% |
| Shrublands | 297 | 2,834 | 1.0% | 1,170 | 41.3% |
| Shrublands of wet areas | 2,629 | 56,292 | 20.2% | 24,887 | 44.2% |
| Grasslands | 35 | 349 | 0.1% | 249 | 71.3% |
| Coastal Grasslands | 24 | 314 | 0.1% | 215 | 68.5% |
| Sedgelands | 1,126 | 18,990 | 6.8% | 7,864 | 41.4% |
| Herblands | 22 | 76 | <0.1% | 76 | 100.0% |
| Fernlands | 130 | 1,814 | 0.7% | 23 | 1.3% |
| Total | 16,982 | 278,818 | 100.0 | 113,944 | |

*Note:* Protected areas include NPWSA Reserves, Conservation Reserves, Heritage Agreements and Forestry SA Native Forest Reserves. *Source:* South East Floristic Vegetation Mapping (GIS), Environmental Database of SA. Refer to South East Floristic Vegetation Map for mapping details.

**VEGETATION MAPPING UPDATES**

Since the original regional vegetation mapping was completed, a number of smaller individual areas have mapped. Some of these smaller areas have been updated into the regional mapping such as Tilley Swamp, Stoneleigh Park Heritage Agreement and Bunbury Conservation Reserve. A number of areas remain to be incorporated and these include specific mapping for Messent Conservation Park, Deep Swamp, Gum Lagoon Conservation Park and West Avenue Range. In addition to this specific area mapping there is also additional ground truthing information that could be updated into regional mapping. In particular, Bachmann (2002) provides detailed information on areas in the Lower South East where *Leptospermum langierum* Shrublands and *Gahnia trifida* Sedgelands occur which is now available to update the mapping. Other ground truthing that occurred post original mapping in the Kingston area or around the 1997 survey sites should be incorporated. Future mapping products need to include roadside vegetation mapping (where available and completed using the standard SA Roadside Vegetation Sruvey Method) and scattered tree mapping.

# MAMMALS

By J. Foulkes[1], H. Owens[1], T. Croft[1] and G. Carpenter[2]

## INTRODUCTION

The diversity of woodland, forest, grassland, sedgeland and wetland habitats in the South East was inhabited by a wide range of native mammals at the time of European settlement. Unfortunately, the South East's native mammal fauna has drastically declined with severely diminished populations and some extinctions. This has most likely resulted from the combined effects of: habitat clearance for agricultural development, which has resulted in fragmentation of the remaining habitat; drainage of wetlands and watercourses, resulting in considerable changes in the landscape; damage to native vegetation by rabbits (especially between 1870 and 1950) and other introduced herbivores; and direct predation by the introduced fox and cat.

Fifty-four of the 103 taxa of land mammals recorded in South Australia are likely to have occurred in the South East at the time of European settlement (Watts 1990). Of these, 15 have become extinct, 23 are considered Rare or Threatened in South Australia and only 10 are still considered regionally common. At least nine species foreign to Australia have also been introduced to the region.

Additionally, there are three species found in similar habitats of adjacent western Victoria, which may be expected to occur, or formerly occurred, in the region. These three species are the Dusky Antechinus (*Antechinus swainsonii*); White-footed Dunnart (*Sminthopsis leucopus*); and Southern Freetail-bat (*Mormopterus* species). These species may have eluded detection due to their cryptic and/or nocturnal habits, limited surveying, or difficulty in identification. For instance, it is only recently that the bat species Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), formerly suspected to occur in the region, has been confirmed.

The South East is notable for having the highest bat species richness of any region of South Australia. Of the region's mammals, the bat fauna is not considered to have significantly declined since European settlement, which is probably due to the retention of woodland trees in agricultural development and conditions favouring more insects. However, loss of farmland trees in the future, through a combination of senescence, disease and lack of recruitment, causing loss of roosting trees near a food supply in pastured land, may alter this situation.

An annotated list of the mammals of the South East is given in Appendix VIII. Species considered vagrant or stray visitors to the region are excluded from the list. The distribution of South Australian Museum specimen records are shown in Figure 64. Additional information, such as recent extinctions, can come from examination of sub-fossil remains from the many limestone caves in the region, especially the Naracoorte Caves complex. The types of native vegetation inhabited by mammals in the South East have also been collated from various reports, especially Menkhorst and Beardsell (1982) and Bennett *et al.* (1989).

**Table 28.**
**Summary of mammal families recorded from the South East and the number of species recorded from each family. (* introduced species, # contains both native and introduced species.)**

| Family | Common Name | No. Species |
|---|---|---|
| Acrobatidae | Feathertail Glider | 1 |
| *Bovidae | Horned Ruminants | 3 |
| Burramyidae | Pygmy-possums | 3 |
| #Canidae | Dogs, foxes | 2 |
| *Cervidae | Deer | 2 |
| Dasyuridae | Dasyurids | 6 |
| Emballonuridae | Sheathtail-bats | 1 |
| *Equidae | Horses and donkeys | 1 |
| *Felidae | Cats | 1 |
| *Leporidae | Rabbits and hares | 2 |
| Macropodidae | Kangaroos and wallabies | 4 |
| Molossidae | Freetail-bats | 2 |
| #Muridae | Rats and mice | 7 |
| Ornithorhynchidae | Platypus | 1 |
| Peremelidae | Bandicoots and bilbies | 1 |
| Petauridae | Wrist-winged Gliders | 3 |
| Phalangeridae | Brushtail Possum | 1 |
| Phascolarctidae | Koala | 1 |
| Potoroidae | Potoroos | 1 |
| Pseudocheiridae | Ringtail Possum | 1 |
| Pteropidae | Flying Foxes | 1 |
| Tachyglossidae | Echidna | 1 |
| Vespertilionidae | Ordinary Bats | 15 |
| Vombatidae | Wombats | 1 |
| **Total** | | **60** |

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[2] Biodiversity Assessment Services, Department for Water Land and Biodiversity Conservation, GPO Box 2834, ADELAIDE SA 5001

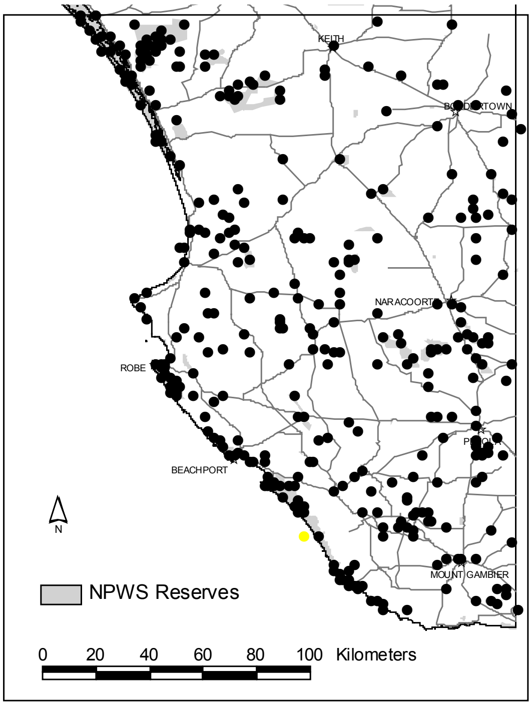



**Figure 64.**
**Distribution of SA Museum mammal specimens prior to 1997.**

**SPECIES PATTERNS**

Of the 201 quadrats that were surveyed for mammals, 165 quadrats and 17 species were included in the analysis, following the masking of single species records, single species quadrats. The resultant dendrogram (Figure 65) shows the relationships or dissimilarities between the quadrats in the analysis. The overall dissimilarity of 5.15 indicates a relatively high degree of difference in the composition of the groups.

The two-way table of species incidence by quadrat (Table 31) combines the results of the quadrat and species analyses into a more easily interpreted form. The species are represented down the left-hand side as the first four letters of the genus and species (e.g, TRICVULP is *Trichosurus vulpecula*)

Descriptions of the groups identified are set out in the following order:

- Mammal assemblage group number
- Number of quadrats comprising the group;
- Number of species recorded in the group;
- Mean number of species recorded in the group;
- Range or minimum and maximum species richness within the group;
- A brief description of the group;
- A table showing species recorded in order of decreasing frequency, indicator value, proportion of total individual species observations represented by each species in that group and the number of groups in which each species is found.
- A table indicating the floristic types represented by the quadrats in each group.
- A map showing the distribution of the quadrats represented in the group relative to quadrats from other groups

**Table 29.**
**Frequency of species records from each survey conducted in the South East. Species indicated with * are introduced and those indicated with # were included in the PATN analysis.**

| | | Survey Number | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Common Name** | **Species** | **4** | **29** | **64** | **68** | **76** | **84** | **85** | **90** | **99** | **Total** |
| **#Yellow-footed Antechinus** | *Antechinus flavipes* | | 5 | | | | | | | | **5** |
| **#Swamp Antechinus** | *Antechinus minimus* | 7 | 4 | | | | | | | | **11** |
| ***Cattle** | **Bos taurus* | | 9 | | | | 2 | 3 | 1 | | **17** |
| ***Feral Goat** | *Capra hircus* | | | | | | | | 1 | | **1** |
| **#Western Pygmy-possum** | *Cercartetus concinnus* | | 13 | 6 | 1 | 23 | | | 5 | 1 | **49** |
| **#Little Pygmy-possum** | *Cercartetus lepidus* | | 4 | 4 | 1 | 9 | | | 3 | 13 | **34** |
| **#Eastern Pygmy-possum** | *Cercartetus nanus* | | 10 | | | | | | | | **10** |
| ***Fallow Deer** | *Cervus dama* | | | | 3 | | | | | 4 | **7** |
| **Gould's Wattled Bat** | *Chalinolobus gouldii* | | | | | | | 6 | | | **6** |
| **Chocolate Wattled Bat** | *Chalinolobus morio* | | | | | | 2 | 17 | | | **19** |
| ***Horse** | **Equus caballus* | | | | | | 1 | | | | **1** |
| ***Feral Cat** | **Felis catus* | 1 | 8 | | | | | | | | **9** |
| **Water Rat** | *Hydromys chrysogaster* | 4 | | | | | | | | | **4** |
| **Southern Brown Bandicoot** | *Isoodon obesulus* | | 10 | | | | | | | | **10** |
| ***European Hare** | **Lepus capensis* | | 9 | | | 2 | 7 | | | | **18** |
| **Western Grey Kangaroo** | *Macropus fuliginosus* | 5 | 133 | | 17 | 1 | 6 | 11 | 6 | 11 | **190** |
| **Eastern Grey Kangaroo** | *Macropus giganteus* | | 1 | | | 1 | | | | | **2** |
| **Red-necked Wallaby** | *Macropus rufogriseus* | 2 | 77 | | | | | 1 | 1 | | **81** |
| **Macropod** | *Macropus* sp. | | 44 | | | 2 | | 1 | 2 | 2 | **53** |
| **Southern Freetail-bat** | *Mormopterus* sp. | | | | | | 1 | 5 | | | **6** |
| **#*House Mouse** | **Mus musculus* | 430 | 198 | 22 | 6 | 20 | 3 | 2 | 24 | 45 | **750** |
| **Mitchell's Hopping Mouse** | *Notomys mitchellii* | | | 2 | | | | | | | **2** |
| **White-striped Mastiff Bat** | *Tadarida australis* | | | | | | 4 | | | | **4** |
| **Gould's Long-eared Bat** | *Nyctophilus geoffroyi* | | 7 | | | | 16 | 22 | | | **45** |
| ***European Rabbit** | **Oryctolagus cuniculus* | 14 | 120 | 1 | 3 | 4 | 12 | 9 | 8 | 11 | **184** |
| ***Sheep** | **Ovis aries* | | 11 | | | | 2 | | | | **13** |
| **#Sugar Glider** | *Petaurus breviceps* | | 30 | | | | | | | | **30** |
| **Koala** | *Phascolarctos cinereus* | | | | | | | 1 | | | **1** |
| **#Common Ringtail Possum** | *Pseudocheirus peregrinus* | 14 | 40 | | | | | | | | **54** |
| **#Silky Mouse** | *Pseudomys apodemoides* | | 27 | 90 | 36 | 202 | | | 1 | 21 | **377** |
| **#Bush Rat** | *Rattus fuscipes* | 145 | 174 | | | | | | | | **319** |
| **#Swamp Rat** | *Rattus lutreolus* | 47 | 27 | | | | | | | | **74** |
| ***#Black Rat** | **Rattus rattus* | 19 | 8 | | | | | | | | **27** |
| **Rat** | *Rattus* sp. | | 5 | | | | | | | | **5** |
| **Fat-tailed Dunnart** | *Sminthopsis crassicaudata* | | | | | | 1 | | | | **1** |
| **#Common Dunnart** | *Sminthopsis murina* | | 2 | | | | | | | | **2** |
| **#Echidna** | *Tachyglossus aculeatus* | 2 | 77 | | 13 | | 6 | 5 | 2 | 8 | **113** |
| **#Common Brushtail Possum** | *Trichosurus vulpecula* | 6 | 91 | | | | 14 | | | | **111** |
| **Southern Forest Bat** | *Vespadelus regulus* | | | | | | | 2 | | | **2** |
| **Little Forest Bat** | *Vespadelus vulturnus* | | 2 | | | | | | | | **2** |
| **#Common Wombat** | *Vombatus ursinus* | 7 | 33 | | 3 | | | 2 | 10 | 1 | **56** |
| ***European Fox** | **Vulpes vulpes* | 4 | 87 | | 3 | 2 | 5 | 5 | 7 | 5 | **118** |
| **Swamp Wallaby** | *Wallabia bicolor* | | 2 | | | | | | | | **2** |
| | **Total** | **707** | **1276** | **125** | **86** | **266** | **82** | **94** | **71** | **122** | **2825** |

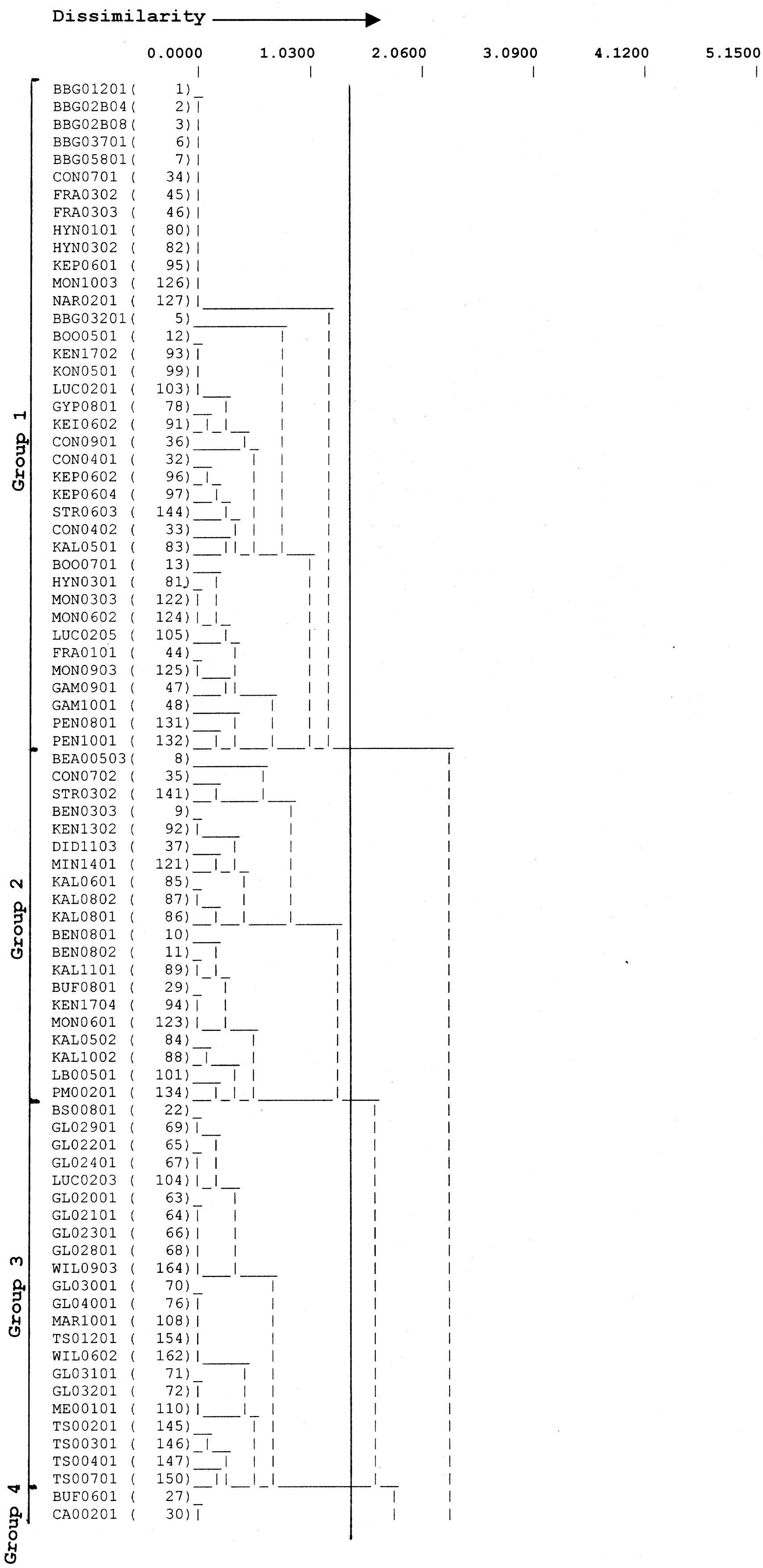
Key to survey numbers; (4) South East Coast, (29) South East, (64) SE Fire Study, (68) Messent Conservation Park, (76) Gum Lagoon Conservation Park, (84) SE Box and Buloke, (85) Deep Swamp Conservation Park, (90) Tilley Swamp, (99) Bunbury Conservation Reserve

Hair tubing was used for the first time on a biological survey in South Australia. A total of 384 tubes was placed at 96 survey quadrats (two at ground level and two at 1.5 m above the ground). Of the 384 tubes placed, 35 (9.1%) contained hair samples that could be identified to at least genus, six (1.6%) had insufficient hair for analysis, 324 (84.4%) contained no hair, 19 (4.9%) failed to have the tape cover removed at time of installation. One tube was not recovered.

Of the 35 samples with sufficient hair samples for analysis, 12 were at ground level and 23 were from trees. The result showed that 11 additional records of three species that were not recorded by other methods at particular sites (e.g. trapping, spotlighting, sign). The additional records were all of medium sized mammals and most notably, three additional locations for *Isoodon obesulus* were recorded. An additional six quadrats were recorded for *Trichosurus vulpecula* and two for *Pseudocheirus peregrinus* (Table 30).

**Table 30.**
**Summary of results from hair tubes placed at quadrats during a four-week period during the 1997 South East Biological Survey.**

| Species | No Samples | Confirmed at quadrats by other techniques | Not confirmed at quadrats by other techniques |
|---|---|---|---|
| No material | 324 | | |
| Unidentifiable material | 6 | | |
| Other | 19 | | |
| *Pseudocheirus peregrinus* | 3 | 1 | 2 |
| *Trichosurus vulpecula* | 11 | 5 | 6 |
| *Isoodon obesulus* | 6 | 3 | 3 |
| *Rattus fuscipes* | 2 | 2 | |
| *Rattus* sp. | 8 | 8 | |
| *Mus musculus* | 2 | 2 | |
| *Vulpes vulpes* | 1 | 1 | |
| *Oryctolagus cuniculus* | 1 | 1 | |
| **Total** | **384** | **24** | **11** |


Dissimilarity
0.0000
1.0300
2.0600
3.0900
4.1200
5.1500
Group 1
Group 2
Group 3
Group 4
BBG01201 ( 1)
BBG02B04 ( 2)
BBG02B08 ( 3)
BBG03701 ( 6)
BBG05801 ( 7)
CON0701 ( 34)
FRA0302 ( 45)
FRA0303 ( 46)
HYN0101 ( 80)
HYN0302 ( 82)
KEP0601 ( 95)
MON1003 ( 126)
NAR0201 ( 127)
BBG03201 ( 5)
BOO0501 ( 12)
KEN1702 ( 93)
KON0501 ( 99)
LUC0201 ( 103)
GYP0801 ( 78)
KEI0602 ( 91)
CON0901 ( 36)
CON0401 ( 32)
KEP0602 ( 96)
KEP0604 ( 97)
STR0603 ( 144)
CON0402 ( 33)
KAL0501 ( 83)
BOO0701 ( 13)
HYN0301 ( 81)
MON0303 ( 122)
MON0602 ( 124)
LUC0205 ( 105)
FRA0101 ( 44)
MON0903 ( 125)
GAM0901 ( 47)
GAM1001 ( 48)
PEN0801 ( 131)
PEN1001 ( 132)
BEA00503 ( 8)
CON0702 ( 35)
STR0302 ( 141)
BEN0303 ( 9)
KEN1302 ( 92)
DID1103 ( 37)
MIN1401 ( 121)
KAL0601 ( 85)
KAL0802 ( 87)
KAL0801 ( 86)
BEN0801 ( 10)
BEN0802 ( 11)
KAL1101 ( 89)
BUF0801 ( 29)
KEN1704 ( 94)
MON0601 ( 123)
KAL0502 ( 84)
KAL1002 ( 88)
LB00501 ( 101)
PM00201 ( 134)
BS00801 ( 22)
GL02901 ( 69)
GL02201 ( 65)
GL02401 ( 67)
LUC0203 ( 104)
GL02001 ( 63)
GL02101 ( 64)
GL02301 ( 66)
GL02801 ( 68)
WIL0903 ( 164)
GL03001 ( 70)
GL04001 ( 76)
MAR1001 ( 108)
TS01201 ( 154)
WIL0602 ( 162)
GL03101 ( 71)
GL03201 ( 72)
ME00101 ( 110)
TS00201 ( 145)
TS00301 ( 146)
TS00401 ( 147)
TS00701 ( 150)
BUF0601 ( 27)
CA00201 ( 30)

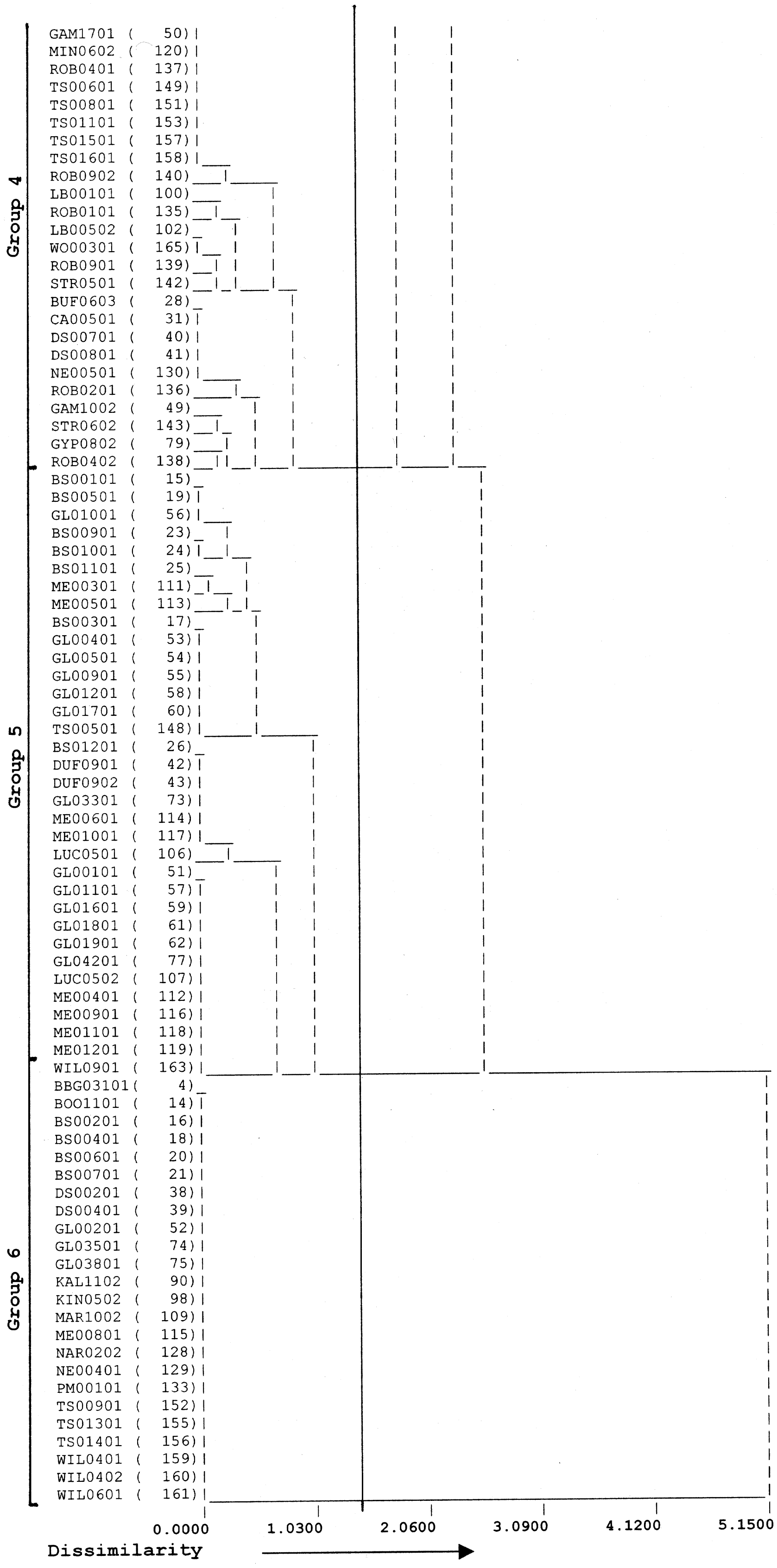



**Figure 65.**
**Dendrogram from PATN analysis of South East Biological Survey mammal data showing quadrat groups.**

**Table 31.**
**Two-way table of mammal species analysis showing groups of quadrats by species. The species are represented down the left-hand side as the first four letters of the genus and species (e.g, TRICVULP is *Trichosurus vulpecula*)**

```
                       Group 1                         Group 2               Group 3                   Group 4                        Group 5                         Group 6
         BBBBBCFFHHKMNBBKKLGKCCKKSCKBHMMLFMGGPP|BCSBKDMKKKBBKBKMKKLP|BGGGLGGGGWGGMTWGGMTTTT|BCGMRTTTTTRLRLWRSBCDDNRGSGR|BBGBBBMMBGGGGGTBDDGMMLGGGGGGLMMMMW|BBBBBBDDGGGKKMMNNPTTTWWW
         BBBBBORRYYEOABOEOUYEOOEETOAOYOOUROAAEE|EOTEEIIAAAEEAUEOAABM|SLLLULLLLILLASILLESSSS|UAAIOSSSSSOBOBOOTUASSEOATYO|SSLSSSEESLLLLLSSUULEEULLLLLLUEEEEI|BOSSSSSSLLLAIAEAEMSSSIII
         GGGGGNAANNPNRGONNCPINNPPRNLONNNCANMMNN|ANRNNDNLLLNNLFNNLL00|0000C0000L00R0L0000000|F0MNB00000B0B00BRF0000BMRPB|00000000000000 00FF000C000000C0000L|G0000000000LNR0R00000LLL
         00000000001000100000000000000000000101|00001110000010100100|0222022220341103300000|001000011100000000000001000|00101100000011 01003010011114000110|010000000331010000011000
         12235733136023575286946664573362199080|07333146888818765052|8924201389000261212347|627646815691153956578520684|15090135345927 52993605116892549129|312467242581508241934446
         2BB78000000000200000000000000000000000|50000000000000000000|0000000000000000000000|000000000000000000000000000|00000000000000 00000000000000000000|100000000000000000000000
         00000123121310121112112432111325131111|02232311211211412211|1111311113111121111111|111211111121121113111112222|11111111111111 11121111111111211111|011111111112221211111121
         14811        1                        |3                   |                      |                           |                                  |1
                                               |                    |                      |                           |                                  |
ANTEFLAV                                   ****|  *                 |                      |                           |                                  |
PETABREV                      *****************|  *                 |                      |                *          |                                  |
TRICVULP ************* ********** ***********  |***                 |                      |            *          ****|                                  |
CERCNANU                     *    *            | **                 |                      |                      *   *|                                  |
RATTRATT                    **                 | **       *         |                      |          *                |                                  |
PSEUAPOD                      *   **       *   |**********          |                      |                       *  *|                                  |
ISOOOBES                          **        *  |       **       **  |                      |                           |                                  |
RATTFUSC                           *       ** *|       ******   ****|                      |           ******          |                                  |
RATTLUTR                           *        *  |          **********|                      |               *           |                                  |
ANTEMINI                                       |*                 * |                      |                           |                                  |
CERCCONC                   **   *              |*                   |**********************|                           |                                  |
CERCLEPI                                       |      *             |  ***             **  |                           |******* *******                   |
PSEUPERE                     *          *      |                    |**********            |                           |***  *****************************|
SMINMURI                            *          |                    |                      |                           |                     *            |
MUSDOME               **************           |     ************   |*****     *****    * *|*****************        **|****** *       *******            |************************
SMINCRAS              *                        |                    |                      |                           |                                  |
VOMBURSI                                 ***   |                    |                  ****|***********  **************|     ***                          |
```

## GROUP NUMBER 1

PATN Group 1 is characterised by the Common Brushtail Possum (Figure 67) and Sugar Glider, which were highly correlated with the Stringybark *Eucalyptus arenacea/baxteri* and Pink Gum *Eucalyptus fasciculosa* Woodlands. The distribution of sites is shown in Figure 66. This is the only group where the Fat-tailed Dunnart was recorded. Notably, 80% of Yellow-footed Antechinus captures were recorded in this group.

| | |
|---|---|
| **Number of quadrats** | **38** |
| **Number of species in group** | **15** |
| **Mean number of species** | **3** |
| **Range** | **1-7** |

| Species | Common Name | Frequency | Prop./Freq | Indicator Value | No. Groups |
|---|---|---|---|---|---|
| ***Trichosurus vulpecula*** | **Common Brushtail Possum** | 34 | 0.72 | **47.50** | 3 |
| ***Petaurus breviceps*** | **Sugar Glider** | 17 | 0.89 | **33.59** | 3 |
| *Mus musculus* | House Mouse | 14 | 0.15 | 3.21 | 5 |
| *Antechinus flavipes* | Yellow-footed Antechinus | 4 | 0.80 | 4.79 | 2 |
| *Pseudomys apodemoides* | Silky Mouse | 4 | 0.24 | 0.04 | 3 |
| *Rattus fuscipes* | Bush Rat | 4 | 0.20 | 0.27 | 3 |
| *Cercartetus concinnus* | Western Pygmy-possum | 3 | 0.12 | 2.03 | 3 |
| *Isoodon obesulus* | Southern Brown Bandicoot | 3 | 0.43 | 0.49 | 2 |
| *Vombatus ursinus* | Common Wombat | 3 | 0.09 | 3.84 | 4 |
| *Cercartetus nanus* | Eastern Pygmy-possum | 2 | 0.33 | 0.01 | 3 |
| *Pseudocheirus peregrinus* | Common Ringtail Possum | 2 | 0.05 | 7.36 | 3 |
| *Rattus lutreolus* | Swamp Rat | 2 | 0.15 | 0.75 | 3 |
| *Rattus rattus* | Black Rat | 2 | 0.33 | 0.01 | 3 |
| *Sminthopsis crassicaudata* | Fat-tailed Dunnart | 1 | 1.00 | 0.32 | 1 |
| *Sminthopsis murina* | Common Dunnart | 1 | 0.50 | 0.00 | 2 |

| Floristic PATN Group | Frequency |
|---|---|
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 12 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 7 |
| *Eucalyptus leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 4 |
| *Eucalyptus microcarpa* Woodland | 3 |
| *Allocasuarina leuhmannii* Woodland | 2 |
| *Eucalyptus obliqua* var. *Pteridium esculentum* Woodland | 2 |
| *Banksia +/- E. ovata, E. viminalis* | 1 |
| *Eucalyptus behriana +/- E. dumosa* Low Open Woodland | 1 |
| *Melaleuca brevifolia* Shrubland | 1 |
| *Xanthorrhoea caespitosa, Leptospermum continentale* Open Shrubland | 1 |
| *Eucalyptus leucoxylon* ssp. Low Open Woodland | 1 |
| *Eucalyptus fasciculosa, E. leucoxylon* Low Woodland | 1 |
| *Banksia ornata* Shrubland | 1 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 1 |

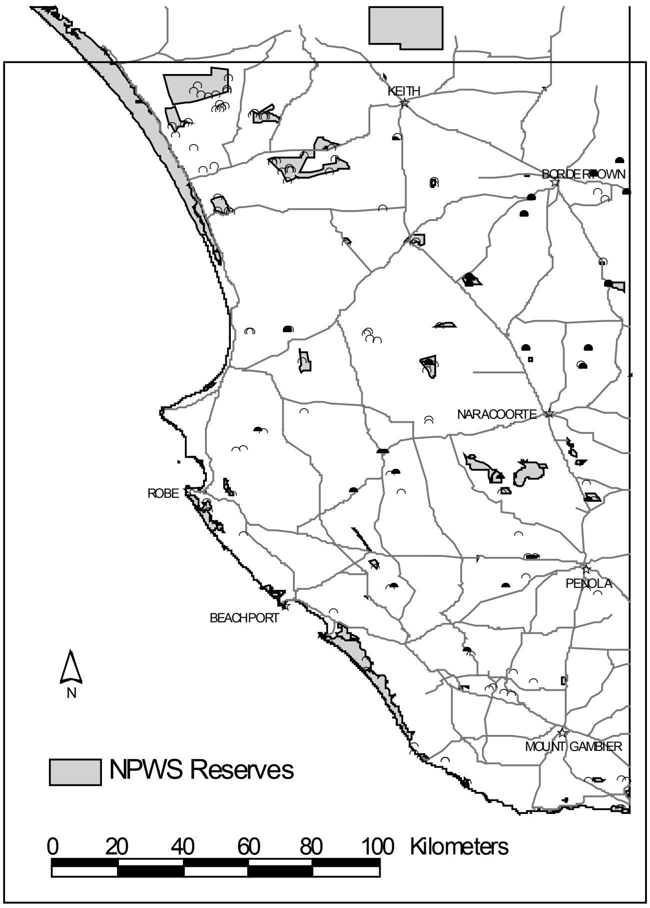



**Figure 66.**
**Distribution of quadrats representing PATN Group 1 (closed circles) and other mammal groups (open circles).**

**Figure 67.**
**The Common Brushtail Possum, *Trichosurus vulpecula,* was closely associated with *Eucalyptus* sp. woodlands throughout the South East. Photo: P. Canty.**

## GROUP NUMBER 2

PATN Group 2 is characterised by the relatively high frequency of three species: Swamp Rat, Bush Rat and Silky Mouse. The presence of Swamp Rat (Figure 69) and Silky Mouse (Figure 70) in the same group indicates that the presence of two sub-groups as these species occupy different habitat types; sedge and *Melaleuca* swamps and sandy woodlands respectively. This is the only group that contains the Swamp Antechinus. Additionally, more than 50% of the Southern Brown Bandicoot captures are represented in this group. The majority of quadrats in this group are in the south-eastern corner of the study area (Figure 68).

| | |
|---|---|
| **Number of quadrats** | **20** |
| **Number of species in group** | **13** |
| **Mean number of species** | **2.6** |
| **Range** | **1-6** |

| Species | Common Name | Frequency | Prop./Freq | Indicator Value | No. Groups |
|---|---|---|---|---|---|
| *Mus musculus* | House Mouse | 12 | 0.13 | <0.01 | 5 |
| ***Pseudomys apodemoides*** | **Silky Mouse** | 11 | 0.65 | **34.56** | 3 |
| ***Rattus fuscipes*** | **Bush Rat** | 10 | 0.50 | **20.65** | 3 |
| ***Rattus lutreolus*** | **Swamp Rat** | 10 | 0.77 | **39.85** | 3 |
| *Trichosurus vulpecula* | Common Brushtail Possum | 8 | 0.17 | 0.57 | 3 |
| *Isoodon obesulus* | Southern Brown Bandicoot | 4 | 0.57 | 8.29 | 2 |
| *Rattus rattus* | Black Rat | 3 | 0.50 | 4.32 | 3 |
| *Cercartetus nanus* | Eastern Pygmy-possum | 2 | 0.33 | 0.82 | 3 |
| *Petaurus breviceps* | Sugar Glider | 1 | 0.05 | 1.41 | 3 |
| *Antechinus flavipes* | Yellow-footed Antechinus | 1 | 0.20 | 0.02 | 2 |
| *Cercartetus concinnus* | Western Pygmy-possum | 1 | 0.04 | 2.23 | 3 |
| *Antechinus minimus* | Swamp Antechinus | 2 | 1.00 | 1.18 | 1 |
| *Cercartetus lepidus* | Little Pygmy-possum | 1 | 0.05 | 1.53 | 3 |

| Floristic PATN Group | Frequency |
|---|---|
| *Gahnia filum, Samolus repens* Sedgeland | 3 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 3 |
| *Leptospermum lanigerum* Tall shrubland | 2 |
| *Melaleuca squarrosa +/- Eucalyptus ovata* Tall Shrubland | 2 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 2 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 1 |
| *Baumea juncea* +/- *Gahnia trifida* Sedgeland | 1 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 1 |
| *Gahnia filum* Sedgeland | 1 |
| *Melaleuca brevifolia* Shrubland | 1 |
| *Xanthorrhoea caespitosa, Leptospermum continentinale*, Open Shrubland | 1 |
| *Eucalyptus obliqua* var., *Pteridium esculentum* Woodland | 1 |
| *Banksia ornata* Shrubland | 1 |

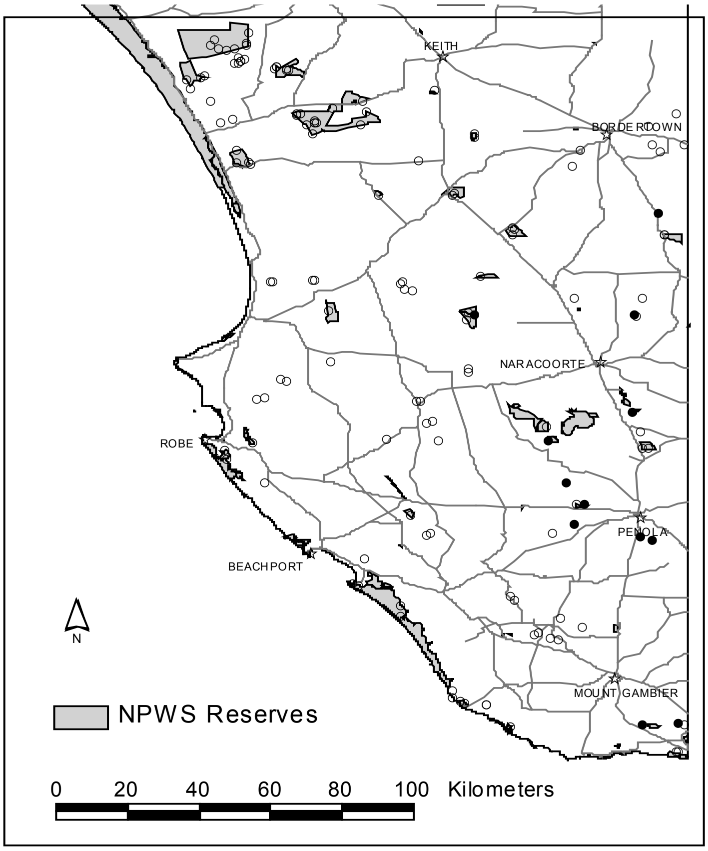



**Figure 68.**
**Distribution of quadrats representing PATN Group 2 (closed circles) and other mammal groups (open circles).**

**Figure 69.**
**The Swamp Rat, *Rattus lutreolus,* was recorded 27 times during the South East survey which reflects the widespread distribution of the species in the region.** **Photo: S. Doyle.**

**Figure 70.**
**In the South East, the Silky Mouse*, Pseudomys apodemoides,* is considered widespread north of Penola where annual rainfall is less than 650mm.** **Photo: A. Robinson**

## GROUP NUMBER 3

The Western Pygmy-possum (Figure 72) was the single species that characterised PATN Group 3. Eighty-five percent of Western Pygmy-possum captures were represented in this group. Habitats characteristic of this group were *Eucalyptus diversifolia* Tall Open Shrubland, Stringybark *Eucalyptus arenacea/baxteri* and Pink Gum *Eucalyptus fasciculosa* woodlands and *Banksia ornata* Shrublands.

| | |
|---|---|
| **Number of quadrats** | **22** |
| **Number of species in group** | **5** |
| **Mean number of species** | **2.4** |
| **Range** | **2-4** |

| Species | Common Name | Frequency | Prop. Freq. | Indicator Value | No. Groups |
|---|---|---|---|---|---|
| ***Cercartetus concinnus*** | **Western Pygmy-possum** | 22 | 0.85 | **93.81** | 3 |
| *Mus musculus* | House Mouse | 12 | 0.13 | 0.11 | 5 |
| *Pseudocheirus peregrinus* | Common Ringtail Possum | 10 | 0.23 | 2.25 | 3 |
| *Cercartetus lepidus* | Little Pygmy-possum | 5 | 0.25 | 1.26 | 3 |
| *Vombatus ursinus* | Common Wombat | 4 | 0.11 | 0.29 | 4 |

| Floristic PATN Group | Frequency |
|---|---|
| *Eucalyptus diversifolia* Tall Open Shrubland | 5 |
| *Eucalyptus arenacea/baxteri* Low Woodland | 4 |
| *Banksia ornata* Shrubland | 3 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 2 |
| *E. leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 2 |
| *Eucalyptus arenacea/baxteri +/- Banksia ornata* Woodland | 1 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 1 |
| *Allocasuarina verticilliata* Woodland | 1 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 1 |
| *Melaleuca brevifolia* Shrubland | 1 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 1 |

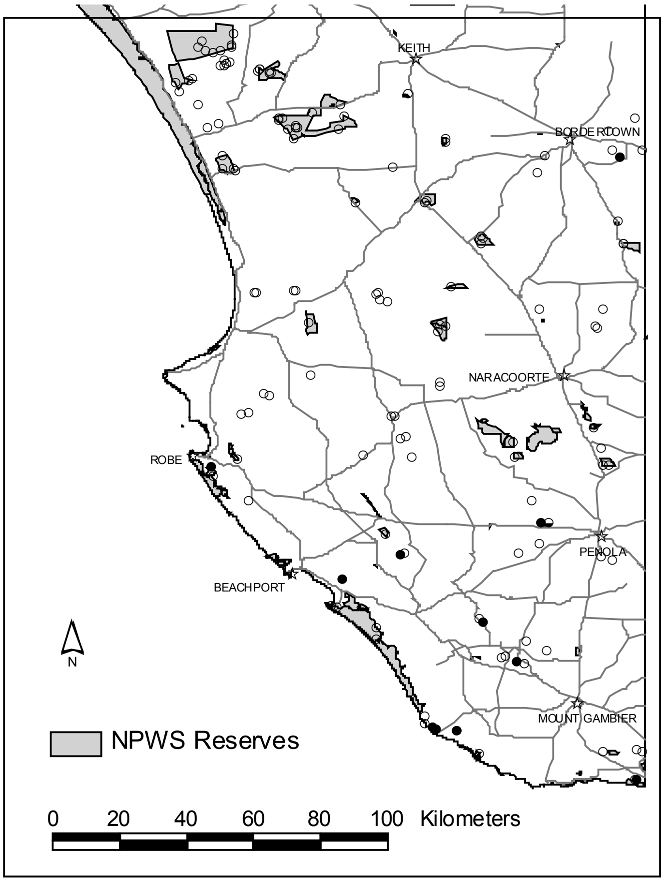



**Figure 71.**
**Distribution of quadrats representing PATN Group 3 (closed circles) and other mammal groups (open circles).**

**Figure 72.**
**Although the Western Pygmy-possum, *Cercartetus concinnus,* is not considered to be of high conservation significance populations are at risk due to habitat fragmentation, predation and wildfire.**
**Photo: A. Robinson.**

## GROUP NUMBER 4

Group 4 is characterised by the presence at high frequency of the Common Wombat (Figure 74) where it appears to prefer coastal shrubland and woodlands *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland, *Eucalyptus obliqua* var., *Pteridium esculentum* Woodland and *Melaleuca brevifolia* Shrubland. Most locations are on the eastern sides of dune ridges in the lower half of the study area (Figure 73).

**Number of quadrats** **27**
**Number of species in group** **9**
**Mean number of species** **2.4**
**Range** **1-5**

| Species | Common Name | Frequency | Prop./Freq | Indicator Value | No. Groups |
|---|---|---|---|---|---|
| ***Vombatus ursinus*** | **Common Wombat** | 25 | 0.71 | **61.53** | 4 |
| *Mus musculus* | House Mouse | 19 | 0.20 | 0.56 | 5 |
| *Rattus fuscipes* | Bush Rat | 6 | 0.30 | 1.52 | 3 |
| *Trichosurus vulpecula* | Common Brushtail Possum | 5 | 0.11 | 1.32 | 3 |
| *Pseudomys apodemoides* | Silky Mouse | 2 | 0.12 | 0.59 | 3 |
| *Cercartetus nanus* | Eastern Pygmy-possum | 2 | 0.33 | 0.27 | 3 |
| *Rattus lutreolus* | Swamp Rat | 1 | 0.08 | 1.24 | 3 |
| *Rattus rattus* | Black Rat | 1 | 0.17 | 0.24 | 3 |
| *Petaurus breviceps* | Sugar Glider | 1 | 0.05 | 2.19 | 3 |

| Floristic PATN Group | Frequency |
|---|---|
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 4 |
| *Eucalyptus obliqua* var., *Pteridium esculentum* Woodland | 4 |
| *Melaleuca brevifolia* Shrubland | 3 |
| Unclassified | 1 |
| *Melaleuca halmaturorum* Tall Shrubland | 1 |
| *Gahnia filum, Samolus repens* Sedgeland | 1 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 1 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 1 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 1 |

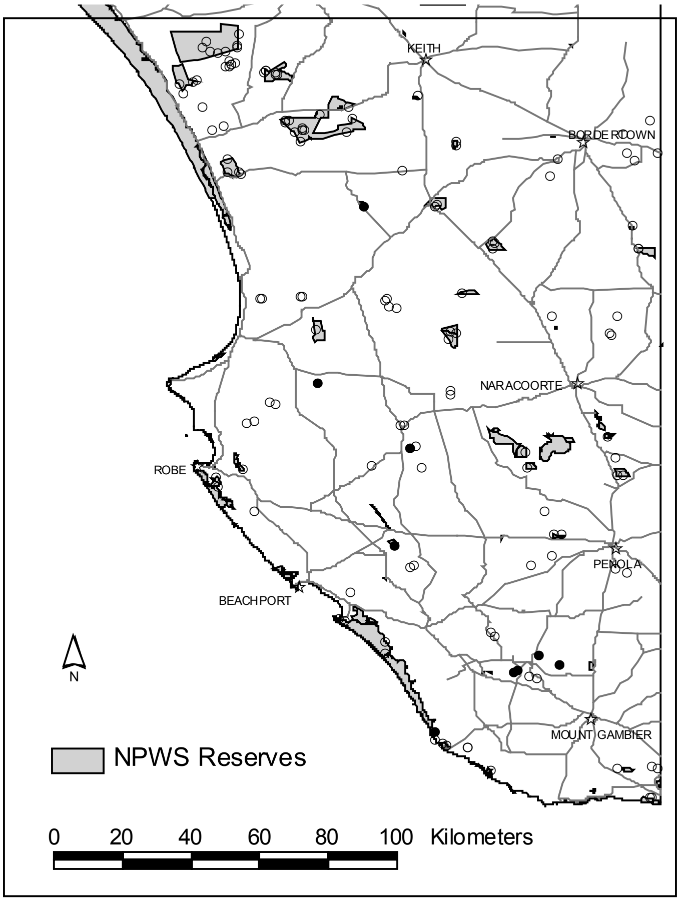



**Figure 73.**
**Distribution of quadrats representing PATN Group 4 (closed circles) and other mammal groups (open circles).**

**Figure 74.**
**In the South East, the Common Wombat, *Vombatus ursinus*, prefers woodland and coastal shrubland, where it burrows on sloping ground on the eastern sides of dune ridges adjacent watercourses and wetlands.. Photo: A. Robinson.**

## GROUP NUMBER 5

This group is characterised by the Common Ring-tail Possum and the Little Pygmy-possum, which are both represented in greater than 70% of the quadrats in this group. The majority of quadrats in this group are in the north-western corner of the South East. Habitats occupied were mostly *Banksia ornata* Shrubland or eucalypt woodlands with a smaller number of *Melaleuca* dominated quadrats.

**Number of quadrats** **34**
**Number of species in group** **5**
**Mean number of species** **1.9**
**Range** **1-4**

| Species | Common Name | Frequency | Prop./Freq. | Indicator Value | No. Groups |
|---|---|---|---|---|---|
| ***Pseudocheirus peregrinus*** | **Common Ringtail Possum** | 32 | 0.73 | **55.51** | 3 |
| *Mus musculus* | House Mouse | 14 | 0.15 | 1.89 | 5 |
| ***Cercartetus lepidus*** | **Little Pygmy-possum** | 14 | 0.70 | **21.34** | 3 |
| *Vombatus ursinus* | Common Wombat | 3 | 0.09 | 3.08 | 4 |
| *Sminthopsis murina* | Common Dunnart | 1 | 0.50 | 0.02 | 2 |

| Floristic Type | Frequency |
|---|---|
| Unclassified | 11 |
| *Banksia ornata* Shrubland | 8 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 3 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 3 |
| *Eucalyptus arenacea/baxteri +/- Banksia ornata* Woodland | 2 |
| *Eucalyptus arenacea/baxteri* Low Woodland | 2 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 2 |
| *Melaleuca lanceolatum* Woodland | 1 |
| *Melaleuca brevifolia* Shrubland | 1 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 1 |

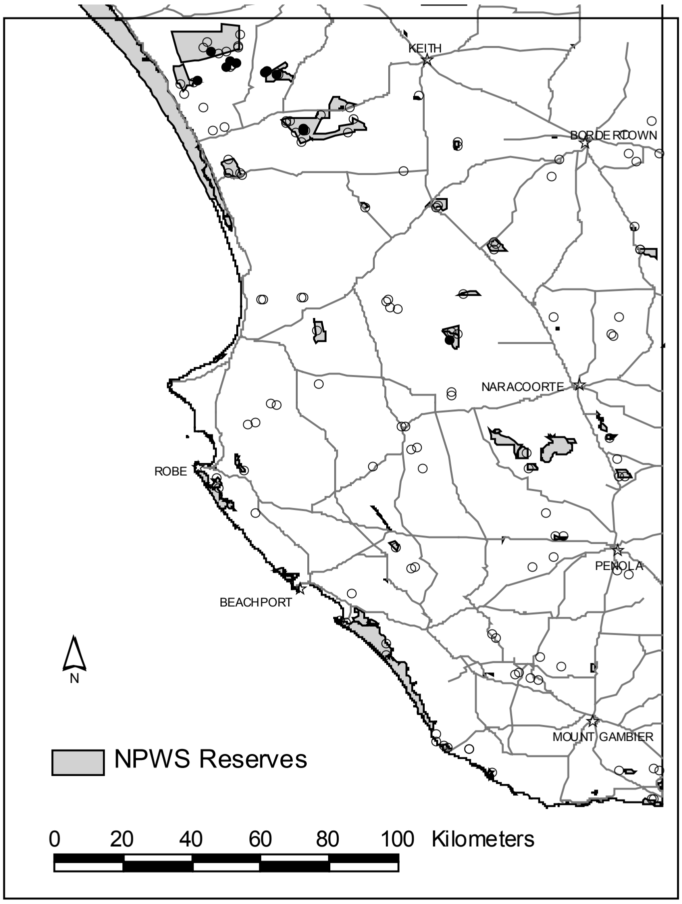



**Figure 75.**
**Distribution of quadrats representing PATN Group 5 (closed circles) and other mammal groups (open circles).**

**Figure 76.**
**The Little Pygmy-possum, *Cercartetus lepidus*, nests in a variety of places including secluded man-made objects and old bird nests. Photo: P. Canty.**

## GROUP NUMBER 6

This group is characterised by the introduced House Mouse which is the sole member of the group. The House Mouse occupies a range of habitats including woodland, shrubland and sedgeland and it is likely that the distribution reflects small, degraded and disturbed patches of native vegetation. Sites representing group 6 are scattered throughout the study area. (Figure 77).

| | |
|---|---|
| **Number of quadrats** | **24** |
| **Number of species in group** | **1** |
| **Mean number of species** | **1** |
| **Range** | **1** |

| Species | Common Name | Frequency | Prop./Freq | Indicator Value | No. Groups |
|---|---|---|---|---|---|
| ***Mus musculus*** | **House Mouse** | 24 | 0.25 | **6.78** | 6 |

| Floristic Type | Frequency |
|---|---|
| *Melaleuca brevifolia* Shrubland | 5 |
| *Melaleuca halmaturorum* Tall shrubland | 3 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 2 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 2 |
| *Banksia ornata* Shrubland | 2 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 2 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 2 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 1 |
| *Gahnia filum* Sedgeland | 1 |
| *Baumea juncea* +/- *Gahnia trifida* Sedgeland | 1 |
| *Allocasuarina leuhmannii* Woodland | 1 |
| Unclassified | 1 |

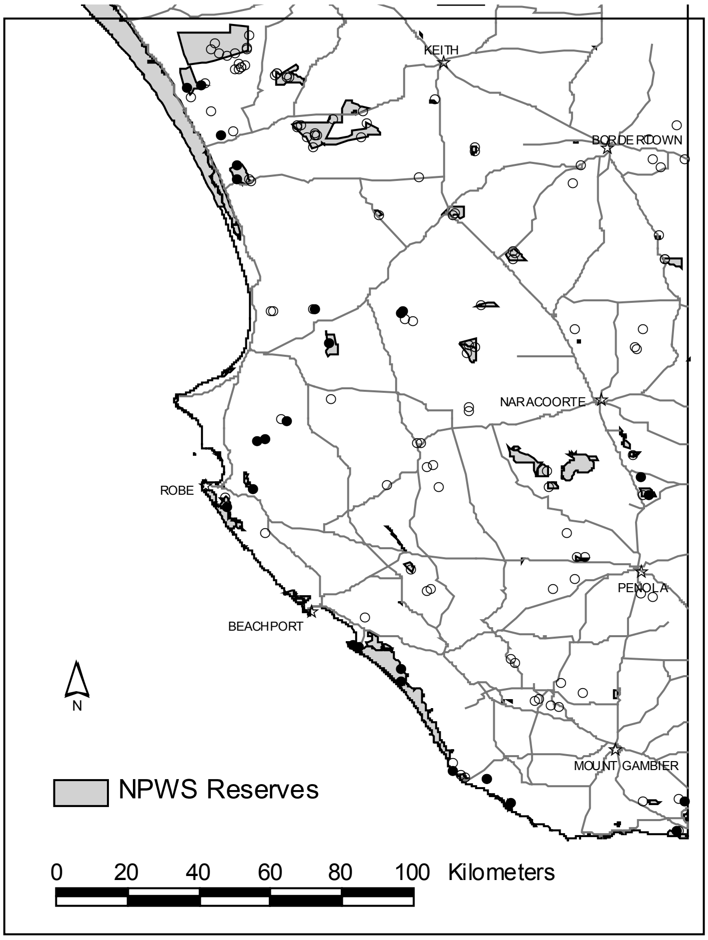



**Figure 77.**
**Distribution of quadrats representing PATN Group 6 (closed circles) and other mammal groups (open circles).**

## SPECIES DESCRIPTIONS

### MONOTREMES

Both of Australia's monotremes (Platypus and Short-beaked Echidna) originally occurred in the South East at the time of European settlement. The Echidna is still widely distributed and frequently observed, including during the day, but the Platypus has not been observed for a considerable length of time and is now considered regionally Extinct.

#### Family ORNITHORHYNCHIDAE (Platypus)

**Platypus (*Ornithorhynchus anatinus*)**

The Platypus is probably extinct in the South East, although it is still found in the lower Glenelg River in Victoria (Menkhorst and Beardsell 1982). This suggests it may still also occur along the short length Glenelg River in South Australia. It is a species associated with permanent freshwater streams and rivers, usually with a stony substrate, from the eastern coastal rim of Australia, including Tasmania. In South Australia, it occurred in creeks and rivers such as the River Torrens and Onkaparinga River and along the River Murray and its tributaries (Hale and Somerville 1942). There are historical reports from the Glenelg River (Hale and Somerville 1942), with one early specimen in the South Australian Museum from Mount Gambier. Its former status elsewhere within the region is unknown. In South Australia, the single remaining (introduced) population on Kangaroo Island is regarded as Vulnerable.

#### Family TACHYGLOSSIDAE (Echidna)

**Short-beaked Echidna (*Tachyglossus aculeatus*)**

The South East is considered to contain strong populations of the Short-beaked Echidna, reflected through regular frequent sightings, particularly from larger native vegetation blocks on heavier soil types. Evidence of their diggings was far more common than sightings of echidnas. Smaller populations occur in coastal areas including sand dunes (e.g. Nene Valley, Nora Creina). It is specialised to feed on ants and termites, which it obtains from nests breached by its forepaws or snout. This results in distinctive diggings in areas of ant and termite nests and around fallen timber.

### POSSUMS and GLIDERS

In the South East possums and gliders are well represented and at least three species (Common Ringtail Possum, Common Brushtail Possum and Western Pygmy-possum) are still widely distributed. Most species with the exception of the Western Pygmy-possum and Brush-tailed Possum are associated with eastern and south-eastern Australian forests and are at or near the limit of their distribution in the region. Most species den and breed in hollow trees or build nests in vegetation. Some species readily adapt to artificial nest sites.

#### Family ACROBATIDAE

**Feathertail Glider (*Acrobates pygmaeus*)**

There are early specimens in the South Australian Museum from Bordertown, Penola, Glenroy, Frances, Lucindale, Joanna and Mount Gambier, but very little recent evidence. It was not recorded during the survey. However, a Feathertail Glider was caught in March 2000 in Dry Creek Native Forest Reserve (B. Grigg, pers. comm, 2000). An arboreal, largely nocturnal species, it is associated with woodland and forest from eastern mainland Australia. It is largely absent in stringybark woodland and forests such as *Eucalyptus arenacea*, *E. baxteri* and *E. obliqua* (Menkhorst and Beardsell 1982). It is difficult to detect without specific trapping effort, and little is known of this species in South Australia where it is considered Endangered. Recent surveys in Victoria have indicated that a combination of spotlighting and use of nest-boxes were effective in detecting the Feathertail Glider (Ward 2000, Goldingay and Sharpe 2001). It feeds on nectar (including *Xanthorrhoea* flower spikes), pollen and insects in the tree canopy, shrub layer and on the ground.

#### Family BURRAMYIDAE

**Western Pygmy-possum (*Cercartetus concinnus*) (Figure 72)**

In the South East it is at the southern limits of its distribution with populations restricted to the Upper South East. The species was the most commonly recorded of the pygmy-possums (13 records). Table 29shows that it has been captured on six surveys in the South East. Its distribution overlaps with the Little Pygmy-possum in the South East and Kangaroo Island. It can be found in a range of habitats including mallee and woodland over heathy shrubs, usually with a prominent *Banksia ornata* understorey (e.g. *Banksia ornata* shrubland and *Eucalyptus arenacea* Low Open Woodland). It largely feeds on a range of invertebrates, and nests in tree hollows, the base of *Xanthorrhoea* spp. clumps or old bird nests. Elsewhere in Australia, the Western Pygmy-possum is found from south-west Western Australia and the agricultural areas of South Australia (Eyre Peninsula, Yorke Peninsula, Kangaroo Island, Murray Mallee, Mt Lofty Ranges, Mid North) extending to adjacent drier areas of western Victoria and south-western New South Wales.

Its conservation significance is considered to be secure, however, there has been loss and fragmentation of habitat through clearance of native vegetation for agriculture. Populations may also be susceptible to predation by introduced predators (i.e. fox and cat), and wildfire.

**Little Pygmy-possum (*Cercartetus lepidus*) (Figure 76)**

The Little Pygmy-possum is a small nocturnal species that occurs from the Upper South East and into adjacent areas of western Victoria. Populations have been recorded from Messent, Gum Lagoon, Martins Washpool, Fairview, south to Mt Scott and Big Heath

Conservation Parks in habitats similar to the Western Pygmy Possum. It feeds largely on a wide range of invertebrates and small lizards, and nests in a variety of places including secluded man-made objects or old bird nests. During the South East Survey, only four captures were made, and the species was captured on five other surveys in the region (Table 29).

It has a restricted distribution that includes only Tasmania, South Australia and western Victoria. On mainland Australia, it was probably overlooked for a long time due to its similarity to *Cercartetus concinnus.* In South Australia, it is recorded from Kangaroo Island (Robinson and Armstrong 2000), and from the mallee and heathy shrublands of the Murray Mallee (Ngarkat Conservation Park) (Foulkes and Gillen 2000).

As the result of further biological survey work in the 1990s, it is no longer considered to be of high conservation significance at the regional level, however there has been loss and fragmentation of habitat through clearance of native vegetation for agriculture. Populations are also susceptible to predation by introduced predators (i.e. fox and cat), and from wildfire.

**Eastern Pygmy-possum (*Cercartetus nanus*)**
In the Lower South East the Eastern Pygmy-possum is on the western limit of its distribution. It is considered Vulnerable in South Australia with ten records from this survey. Prior to 1997, there were only four records from South Australia between Naracoorte and Millicent (Aitken 1983) and a record from Reedy Creek in 1995. In the South East, it has been recorded from *Eucalyptus arenacea*, *E. obliqua, E. baxteri* and *E. viminalis* ssp. *cygnetensis* Open Forest and Woodland. It feeds primarily on nectar and pollen from eucalypts and banksias, and to a lesser extent seed and invertebrate material (Huang *et al* 1987, van Weenen 2002). Currently it is known to occur in seven patches of remnant vegetation in the South East. Van Weenen (2002) determined that records are restricted to a 40km wide belt from Robe, eastward toward Naracoorte and the SA/Vic border, and that populations are restricted to an area of 75km$^2$ within that belt. *Cercartetus nanus* is a largely nocturnal species of the wetter forests in southeastern Australia including Tasmania recorded from southeastern Queensland to the South East of South Australia, where rainfall exceeds 800mm per annum. In adjacent areas of Victoria, it inhabits *Eucalyptus obliqua* and *E. viminalis* ssp. *cygnetensis* open forest, and adjacent *Banksia marginata* low woodland and *E. willissi* Low Open Forest (Menkhorst and Beardsell 1982).

Its numbers are believed to have declined through clearance and fragmentation of habitat in the extensively cleared Lower South East. Consequently, remaining populations of the species are restricted to small (<200 ha.) islands of native vegetation, which are vulnerable to catastrophic events such as fire. As the species spend part of its time on the ground, it is also considered vulnerable to predation by introduced predators (i.e. fox and cat).

**Family PETAURIDAE**
**Yellow-bellied Glider (*Petaurus australis*)**
The Yellow-bellied Glider is a medium-sized (about 590g) arboreal marsupial of old growth eucalypt forests of mainland eastern and southeastern Australia. Small, sparse populations inhabit primarily *Eucalyptus viminalis* ssp. *cygnetensis* Woodland to the east of Mt Gambier, where the species is at the southwestern margin of its distribution. During the survey, characteristic V-shaped feeding notches (Figure 78) of the species were recorded east of Penola. It is likely Yellow-bellied Gliders were no longer present but the feeding sites were kept open by Sugar Gliders. Additional populations occur in adjacent areas of western Victoria, such as Cobboboonee State Forest, Glenelg National Park (adjoining the border) and Rennick State Forest in western Victoria. Yellow-bellied Glider's major feed species in the region is *Eucalyptus viminalis* ssp. *cygnetensis* and in addition, they require tree hollows to nest in. For further information see Carthew and Goldingay (1998).

**Figure 78.**
**V-shaped feeding notch, possibly from a Yellow-bellied Glider. Photo: J. Foulkes.**

The South Australian populations are considered Endangered as a result of clearance and fragmentation of its preferred habitats into small islands of remnant native vegetation. In particular, *Eucalyptus viminalis* ssp. *cygnetensis* Woodland has been selectively cleared for pine plantations. Consequently, remaining areas of intact *E. viminalis* ssp. *cygnetensis* and *E. ovata* woodland are small (< 200 ha). The species is also sensitive to disturbance (e.g. noise, vehicle and people activity).

**Sugar Glider (*Petaurus breviceps*)**
In the South East, Sugar Gliders can be locally common in *Eucalyptus leucoxylon* and larger treed *Eucalyptus viminalis* ssp. *cygnetensis* and *E. ovata* woodlands, particularly where these woodlands are associated with tree form *Banksia marginata* and *Acacia mearnsii* (Carthew and Goldingay 1998). Thirty observations were made of Sugar Gliders during the survey period, and notably, no other surveys in the region have recorded them. Its South East distribution is mostly south of Bordertown and east of Lucindale, but small populations persist further west (e.g. Kingston–Taratap district).

Its distribution is considered to have declined in The South East, as its preferred eucalypt forest and woodland habitats have been selectively cleared and fragmented into small remnants. In the Lower South East, the species most important habitat of *Eucalyptus viminalis* ssp. *cygnetensis* woodland has been one of the major plant communities cleared and extensively planted to pine plantation. In the Upper South East, most of its *Eucalyptus leucoxylon* woodland has been reduced to scattered trees over grazed introduced pasture, which offers only limited, marginal habitat for the species, and little or no regeneration of trees is occurring.

The Sugar Glider is an arboreal species of the coastal margin of eastern and northern Australia from northern Western Australia east around through to the South East of South Australia. It needs hollows for shelter and feeds on gum produced by acacias, sap of eucalypts, invertebrates and invertebrate exudates (Suckling 1995).

**Squirrel Glider (*Petaurus norfolcensis*)**
Little is known of the Squirrel Glider in South Australia, except for one specimen in the South Australian Museum collected in 1939 from near Bordertown. It is considered Extinct in the state, however, given its similarity in appearance to *P. breviceps*, closer investigation of localities where *P. breviceps* has been recorded may reveal populations of *P. norfolcensis*. There are no longer any populations close to the South East in western Victoria (Menkhorst *et al.* 1988) from which recolonisation may occur if there was sufficient suitable habitat present. In eastern Australia it inhabits woodland and forest where it feeds on nectar, pollen, eucalypt sap, acacia gum and insects.

**Family PSEUDOCHEIRIDAE**
**Common Ringtail Possum (*Pseudocheirus peregrinus)***
In the South East it has a widespread distribution where rainfall exceeds 650mm per annum, with more sparse populations in the Upper South East (e.g. Bordertown and north of Kingston SE). Forty observations were made by spotlighting and hair tubing. Four sub-species are recognised, with most of the South Australian population comprising the subspecies *Pseudocheirus peregrinus peregrinus*, but in southern Lower South East *Pseudocheirus peregrinus cooki* may occur. Ringtails feed primarily on leaves, including eucalypt leaves, but also flowers (especially eucalypts) and fruits. It rests during the day in spherical nests in tree hollows, mistletoe or dense undergrowth. The Common Ringtail Possum is widespread in forest, woodland, coastal scrubs, including urban areas, from eastern and southeastern Australia.

**Family PHALANGERIDAE**
**Common Brushtail Possum (*Trichosurus vulpecula*)**
In the South East the Common Brushtail Possum occurs in forest and woodland, including roadside trees and urban areas. It was the most commonly recorded possum during the survey (91 records). It is closely associated with *Eucalyptus camaldulensis* (River Red Gum) throughout the region, including soaks in the Upper South East. Smaller populations are also associated with *Eucalyptus leucoxylon* and *E. fasciculosa* woodlands north to Keith, especially where the mistletoe *Amyema miquellii* is common. It feeds on leaves, including eucalypts, flowers and fruits. The Common Brushtail Possum is a widespread nocturnal arboreal species, formally covering many habitats in tropical, arid and temperate Australia. There are concerns that its abundance and distribution are declining in the South East as has been found in other parts of temperate and tropical Australia (Winter 2001, Kerle 2001) and recent revisions of the NPWS Act Schedules in South Australia have placed this species in the Rare Category using IUCN criteria. Spotlighting during this survey revealed low numbers in habitats where typically one would expect a high number of observations. It dens during the day in a hole in a dead branch hollow, tree trunk, fallen log or rock cavity.

**NATIVE CARNIVORES**
The study area formerly provided habitat for many native carnivores. Two species are thought to be relatively common, the Yellow-footed Antechinus and Fat-tailed Dunnart (Table 29) however numbers of captures do not reflect this.

**Family DASYURIDAE (Antechinus, Dunnarts, Quolls)**
**Agile Antechinus (*Antechinus agilis*)**
The first record of this species for South Australia was from the Lower Glenelg River Conservation Park in June 2001, occupying the same habitat type as *Pseudomys shortridgei* (M. Bachmann, pers. comm. 2001). It is primarily distributed in eastern Australian mainland forest and heath shrublands from southeastern New South Wales to western Victoria. The record from Lower Glenelg CP represents its western limit. The species feeds on a variety of invertebrates, particularly large beetles, cockroaches and spiders. This species was formerly considered part of the Brown Antechinus group (*Antechinus stuartii*)

and is distinguished from *A. stuartii* by its smaller average size, lighter and greyer fur colour and skull characters (Dickman *et al.* 1998).

**Yellow-footed Antechinus (*Antechinus flavipes*)**
The Yellow-footed Antechinus is a small carnivorous marsupial from a variety of habitats of mainland eastern Australia and south-western Western Australia. Separate isolated subspecies are recognised in south-western Australia and northern Queensland, with the South East subspecies belonging to the main population of *Antechinus flavipes flavipes.* It is widespread in eucalypt forest (especially *Eucalyptus viminalis* ssp. *cygnetensis*) south of Naracoorte-Kybybolite and east of Mount Gambier, however only five captures were made during the survey. It is generally nocturnal, however during the breeding period, male Yellow-footed Antechinus are also active during the day. It feeds mostly on insects, but also on flowers, nectar, small birds and house mice. Like other *Antechinus* species, there is a mass die-off of males following mating.

**Swamp Antechinus (*Antechinus minimus*) (Figure 79)**
The Swamp Antechinus is regarded as Endangered in South Australia (van Weenen 1998). It is a small, carnivorous marsupial of southeastern Australia, which has scattered populations recorded from sub-coastal and coastal areas of Victoria from Wilson's Promontory in Victoria through to Robe in the Lower South East of South Australia. In the South East, it is usually associated with *Leptospermum lanigerum* tall shrubland and *Gahnia* spp. and tall herb freshwater swamps. Four captures were made during the survey, including two from new locations. A separate subspecies (*Antechinus minimus minimus*) occurs in Tasmania, with the mainland population recognised as *A. m. maritimus*. It feeds mainly on insects, digging vigorously through soil and vegetation litter for food.

Populations of the Swamp Antechinus are considered under some threat due to selective clearance and drainage of its preferred habitats. This has consequently fragmented remaining habitat areas into small isolated remnants. *Leptospermum lanigerum* tall shrubland and *Gahnia trifida* sedgeland are now considered regionally rare and threatened vegetation types, mostly located on private land subject to grazing pressure by cattle. Such grazing can cause considerable structural damage over time. Additionally, changes in water quantity and quality can also affect the habitat health. Wildfire has been known to cause decline and possible loss of localised populations in Victoria (van Weenen 1998; Bachmann and van Weenen 2001). As the species is terrestrial, predation by introduced predators (i.e. fox and cat) is considered a key threatening process.

**Figure 79.**
**The Swamp Antechinus was recorded at two new locations during the survey. Photo: J. van Weenen**

**Western Quoll (*Dasyurus geoffroii*)**
The Western Quoll is a carnivorous marsupial, which has been recorded from a variety of habitats over most of mainland Australia, excluding the coastal margin of southeastern, eastern and northern Australia. In the South East, there is one early South Australian Museum specimen labelled "South East" with no other details. Since European settlement, its distribution has drastically contracted, becoming extinct in all mainland States except southwestern Western Australia. It is largely nocturnal, foraging on the ground for insects, freshwater crustaceans, reptiles, mammals up to the size of bandicoots, and birds up to the size of parrots.

**Spotted-tailed (Tiger) Quoll (*Dasyurus maculatus*)**
In South Australia, it is now considered Extinct, where it formerly occurred in the South East and southern Murray Mallee to the River Murray. This is the largest mainland marsupial carnivore and it is recorded from a variety of habitats in eastern and southeastern Australia including Tasmania. Since European settlement, its distribution has considerably declined particularly its southeastern population in South Australia and Victoria. There are four early South East specimens in the South Australian Museum from Mt Gambier and Kingston SE, the last in 1897. Populations persist in southwestern Victoria in *Eucalyptus viminalis* ssp. *cygnetensis* woodland and open forest (Menkhorst and Beardsell 1982). It feeds on a range of animals including insects, birds to wallabies, and carrion. A separate, isolated subspecies is recognised from northern Queensland, but the main population, including the South East, is of the subspecies *Dasyurus maculatus maculatus*.

**Eastern Quoll (*Dasyurus viverrinus*)**
The last confirmed sighting of this species in the South East was in 1890 near Mount Gambier (Aitken 1983), and it is now considered Extinct in South Australia. It was recorded from the South East, Murray Mallee, Mount Lofty Ranges and the southern Flinders Ranges. It is also thought to be extinct elsewhere on the Australian mainland, but the Tasmanian populations remain healthy. Quolls, presumably of this species,

were reported as widespread in the region and adjacent parts of Victoria until the 1930s (Menkhorst and Beardsell 1982, Aitken 1983, J. Varcoe pers. comm.). It was an opportunistic carnivore, feeding mostly on insects, but also ground-nesting birds, small mammals such as bandicoots, rabbits and rats, and carrion.

**Brush-tailed Phascogale/Tuan (*Phascogale tapoatafa*)**
The Brush-tailed Phascogale is represented in the region by one specimen in the South Australian Museum from Joanna in 1967 and is now considered as Endangered in South Australia. A small population also occurs at similar latitude in western Victoria (Menkhorst and Beardsell 1982). Mostly arboreal, Brush-tailed Phascogale were found through woodlands from the eastern, northern and southwestern coastal margin of mainland Australia. In South Australia, it was also recorded from the Murray Mallee and the Mount Lofty Ranges. They are largely nocturnal, feeding mainly on a variety of insects (e.g. cockroaches, beetles) and other invertebrates (e.g. centipedes, spiders), but also small vertebrates and birds. It shelters during the day in nests in tree hollows. Specific targeted searches for this species should be conducted in the Joanna-Naracoorte region to determine if a population still persists there.

**Fat-tailed Dunnart (*Sminthopsis crassicaudata*)**
In the South East, the Fat-tailed Dunnart has been recorded from a variety of habitats including grassy woodland, grassland, shrublands and mallee and pasture (Aitken 1983), and from cracking clays and stony substrates. However, most South Australian Museum specimens from the South East are pre-1960 and there is a single recent record from the Upper South East (Stokes 1996). It is a widespread ground dwelling carnivorous marsupial from most of mainland Australia, except the eastern and northern coastal rim. Three sub-species are recognised, with the southeastern Australia sub-species being *Sminthopsis crassicaudata crassicaudata*. This nocturnal species inhabits a variety of habitats, and in South Australia, only the South Eastanimals belong to the nominate subspecies with all others being considered *S. c. centralis??* recorded from all regions except Kangaroo Island. It feeds on a variety of insects and invertebrates. In the day, it shelters under old stumps, fallen timber and large stones (Aitken 1983).

**Common Dunnart (*Sminthopsis murina*) (Figure 80).**
South Australian Museum specimens from the South East are both from south of Naracoorte. Two captures were made during the survey, both close to Naracoorte. Elsewhere in South Australia, it is recorded from the Mount Lofty Ranges, Flinders Ranges, South Olary Plains, Murray Mallee and Murray River floodplain. It is a carnivorous ground dwelling marsupial from southeastern Australia, with a further isolated subspecies located in northern Australia. In the South East of South Australia and in Victoria, it occurs in areas of *Eucalyptus arenacea* and *E. baxteri* woodland and open forest where rainfall is between 550 and 700mm per annum (Menkhorst and Beardsell 1982). Its local distribution can be patchy, and population size and distribution may be related to mid-successional vegetation recovering from wildfire.

A nocturnal species, it feeds on a variety of insects (e.g. cockroaches, beetles) and other invertebrates (e.g. spiders). During the day it shelters in cup-shaped nests of dried grass and leaves built in fallen logs or at the base of *Xanthorrhoea* spp.

**Figure 80.**
**The Common Dunnart was captured at two locations during the survey. Photo: A. Robinson.**

**Family CANIDAE (dogs)**
**Dingo (*Canis lupus dingo*)**
The Dingo is a dog of the sub-species *Canis lupus dingo.* It is a pre-European introduction (approximately 5,000 years BP), and became widespread throughout mainland Australia including the South East. It is carnivorous, feeding on a wide range of animals from insects to much larger vertebrate animals including carrion.

Disease (distemper), human persecution and subsequent interbreeding with domestic dogs have led to its extinction in the South East (Aitken 1983). A wild population of crossbreed dingos persists in the Ngarkat Conservation Park complex in the adjacent part of the southern Murray Mallee (Foulkes and Gillen 2000).

**BANDICOOTS AND BILBIES**

**Family PERAMELIDAE (bandicoots and bilbies)**
Four species from this family have been recorded in the South East however, only one species, the Southern Brown Bandicoot remains extant in the region (Kemper 1990).

**Southern Brown Bandicoot (*Isoodon obesulus*)**
The Southern Brown Bandicoot prefers *Eucalyptus arenacea*, *E. baxteri* and *E. obliqua* stringybark woodlands and open forests of the Lower South East, where there is a prominent bracken understorey and rainfall exceeds 600mm. Historical records are mostly from south of Penola and east of Millicent, within Native Forest Reserves (Paull 1992). During the

survey ten observations were made including three from hair tube sampling. Its status west of Mount Burr is unknown. In South Australia, *Isoodon obesulus obesulus* is also found in isolated populations in the Mt Lofty Ranges, Kangaroo Island and Eyre Peninsula. It is highly endangered in NSW, which led to its national listing. Separate sub-species occur in south-western Western Australia; Cape York, Queensland; Tasmania; and Nuyt's Archipelago (South Australia). Southern Brown Bandicoots feed mainly on insects and earthworms that it finds on the ground surface or through digging its distinctive conical holes.

Its range has drastically contracted since European settlement, particularly in South Australia and Victoria. Due to extensive clearance of native vegetation in the Lower South East, available stringybark habitat has been severely depleted and remaining areas are now mostly small and fragmented. As the species is ground frequenting, predation by introduced predators (i.e. fox and cat) are considered key threatening processes. Care needs to be given also to inappropriate fire regimes (Paull 1995). Its status nationally was upgraded to Endangered in July 2001 as a result of recent severe reductions in numbers and range. In South Australia it is regarded as Vulnerable.

**Greater Bilby (*Macrotis lagotis*)**
The Greater Bilby is considered Extinct in South Australia. Historically it was reported by local residents to have occurred in the South East in the Reedy Creek area. It was formerly recorded from all mainland States but is now extinct over most of its range except for isolated populations in Western Australia, Northern Territory and Queensland. It feeds on insects, seeds, bulbs, fruit and fungi, some of which are obtained by digging (Southgate 1990). In recent years it is being reintroduced to predator-free areas at Thistle Island, Yookamurra Sanctuary, Roxby Downs and Venus Bay CP.

**Western Barred Bandicoot (*Perameles bougainville*)**
An Extinct species represented from the South East by a sub-fossil collection of unknown age from the Coorong (Kemper 1990).

**Eastern Barred Bandicoot (*Perameles gunnii)***
The Eastern Barred Bandicoot inhabited grasslands from southern Victoria through to the Lower South East of South Australia, and Tasmania. In South Australia, it only occurred in the South East, where it is known from three early South Australian Museum collections from the Mt Gambier and Keith districts. Its original mainland distribution drastically declined to a single isolated population at Hamilton, western Victoria, but several reintroduced populations have been established in Victoria. It is now considered Extinct in South Australia.

**POTOROOS AND BETTONGS**
Two of the three species from this family that have been recorded in the South East region are now considered Extinct in the region. The Long-nosed Potoroo was rediscovered in 2002.

**Tasmanian Bettong (*Bettongia gaimardi*)**
There are no records of this species in the South East since European settlement, however there are recent cave deposits and it was known from similar adjacent areas of western Victoria at the time of settlement (Aitken 1983). It is a nocturnal species inhabiting fire-prone forests with a grassy or heath understorey from southeastern Australia including Tasmania. As such, it is likely to have occurred in the region. Like elsewhere on the mainland, it is considered the species has become extinct, but it is still secure on Tasmania. It feeds on seeds, roots, bulbs, and fruiting bodies of underground fungi (symbiotic with forest trees). It makes a nest constructed of dried grass and bark sited under fallen timber or low shrubs, where it shelters during the day.

**Burrowing Bettong (*Bettongia lesueur*)**
The Burrowing Bettong was found in most areas of South Australia, but there are no records of the species in the South East since European settlement. However, as there are recent cave deposits (Aitken 1983), it was probably overlooked, and likely occurred as scattered populations, particularly in the lower rainfall areas of the Upper South East where the vegetation was more sparse. Formerly widespread, this medium sized, ground dwelling marsupial was recorded from all mainland states of Australia except Queensland. It feeds at night on tubers and bulbs largely located by smell and dug up, but also seeds, nuts and green parts of some plants. During the day, it rests in simple burrows.

Since European settlement, the species suffered a dramatic decline, and it is now considered extinct on mainland Australia, with the only populations surviving on offshore islands of Western Australia. The decline has been attributed to the introduction of animals such as the fox, cat and rabbit.

**Long-nosed Potoroo (*Potorous tridactylus*)**
There are four records from a single location of the species in the South East from Lower Glenelg River Conservation Park from April 2002 (M. Bachmann, pers. comm. 2002). Prior to this it was known from recent cave deposits and it was known from similar adjacent areas of western Victoria (Aitken 1983). It is a medium sized, ground dwelling marsupial, associated with higher rainfall (usually > 760mm), from sub-coastal southeastern, eastern and southwestern Australia, including Tasmania. Three sub-species are recognised, with the population of mainland southeastern Australia considered to be *Potorous tridactylus tridactylus*. The Long-nosed Potoroo inhabits areas with thick groundcover in coastal shrublands, and forests inland, particularly on sandier

soils. It feeds after dusk, by digging small holes to reach roots, tubers, fungi, insects and other soft-bodied invertebrate animals living in the soil.
Based on cave deposits, it is considered to have had a much more extensive range in southeastern Australia prior to European settlement.

**WALLABIES AND KANGAROOS**
The study area includes seven species of wallabies and kangaroos, however only four remain extant in the South East.

**Family MACROPODIDAE (wallabies and kangaroos)**

**Eastern Hare-wallaby (*Lagorchestes leporides*)**
Initially described as relatively abundant in the 1830-1850s, after European settlement it suffered a major and dramatic decline throughout its range, and is now considered nationally Extinct. The last report of the species is from New South Wales in 1890. A species of inland south-eastern Australia from central New South Wales, north-western Victoria and adjacent areas of the Murray Mallee and the South East of South Australia. It preferred grasslands, but little is known of its ecology. It is represented in the region by a single early South Australian Museum specimen (skull, age unknown) from Lucindale, and was last recorded in the South East from Naracoorte in 1870 (Aitken 1983).

**Western Grey Kangaroo (*Macropus fuliginosus*)**
A widespread kangaroo of southern Australia occurring from the Indian Ocean to western Victoria, central New South Wales and southwestern Queensland. This species is abundant throughout the South East region, although less so south of Penola, with over 130 observations recorded during the survey. The population in the South East overlaps with the rarer Eastern Grey Kangaroo (*Macropus giganteus*). Western Grey Kangaroos feed by grazing in open areas on grasses and herbs, particularly grasses, in the late afternoon or early morning. During the day, it rests under the shelter of trees and shrubs.

It is likely that the distribution has increased considerably since European settlement due to an increase in food availability, and increased availability of permanent water supplies. Even in the 1850s, local landholders noticed an increase in kangaroo numbers to peak proportions, coinciding with a decline in the Aboriginal population (Yelland 1973).

**Eastern Grey Kangaroo (*Macropus giganteus*)**
In the South East it is locally common in a few locations south of Penola and east of Mt Gambier, mostly in native forest reserves, with further isolated populations in Noolook Forest near Robe, and in The Gap area of the Upper South East. A single observation was made in the Caroline Native Forest Reserve during the survey. The Eastern Grey Kangaroo is a widespread species of forest and woodlands from eastern Australia (including Tasmania), whose distribution extends into the South East where it overlaps with the similar Western Grey Kangaroo (*Macropus fuliginosus*) (Poole 1977). It feeds by grazing in open areas on grasses and herbs, particularly grasses, in the late afternoon or early morning. During the day, it rests under the shelter of trees and shrubs.

Its regional distribution has probably declined and populations have become fragmented into remaining areas of suitable habitat. Historically, clearance of habitat and hunting has probably had a significant impact on its distribution in the South East region and elsewhere in its range.

**Toolache Wallaby (*Macropus greyi*)**
The Toolache Wallaby, now Extinct, was associated with open country. Its distribution was limited in South East South Australia, the southern Murray Mallee as far as the Murray Lakes, and the far southwest of Victoria (Robinson and Young 1983). Early settlers described it as reasonably common, with its largest population occurring in the sedgelands, and open grassy woodlands of the interdunal watercourses in the area between Millicent to Reedy Creek, Robe to Kingston (Biscuit Flat), and Penola to Naracoorte (Mosquito Plain) (Robinson and Young 1983). The most favoured areas it occupied were the narrow strips of grassland formed between the heath shrublands and low open woodlands of the ranges, and the tussock sedgelands of the watercourses (Finlayson 1927). It sheltered in the grassy woodland islands on higher ground in the watercourses. It was recorded throughout the region, however in less favourable habitats it was either in small groups or solitary (Finlayson 1927).

Its rapid and dramatic decline is considered due to loss of habitat resulting from drainage of the interdunal watercourses and their development to grazing land, fox predation, and hunting for sport or for their attractive pelts. The last known Toolache Wallaby died in captivity in 1939, and the last official sighting in the wild was in 1927 (Robinson and Young 1983). It is likely that it persisted in isolated pockets until the 1950s, but has not been recorded since despite extensive searches and biological surveys. It is now considered nationally Extinct. Sightings that are more recent may be pale forms of the Red-necked Wallaby (*M. rufogriseus*).

**Red-necked Wallaby (*Macropus rufogriseus*)**
The South East represents the southwestern limit of Red-necked Wallaby's overall distribution. It extends as far north as Bordertown and west as far as Messent Conservation Park. Although sparse numbers can still be found north of Naracoorte, the distribution of the species in the region is now mostly confined to the larger remnant blocks of native vegetation with a dense understorey south of Naracoorte. In the Lower South East it is also found on the edges of pine forest as well as remnants of the original forest and woodland. It was

the second most commonly recorded macropod during the survey (77 observations). It has a wide distribution in eastern and southeastern Australia, including Tasmania, from southern Queensland along the coast to the South East of South Australia. It prefers eucalypt forests and woodlands with some shrub cover adjacent to open areas nearby for grazing. It is also recorded in tall coastal shrubland. It grazes on grasses and herbs.

The species was formally abundant throughout the region and has suffered a marked decline since European settlement (Aitken 1983), due to clearance and fragmentation of its preferred forest and woodland habitat. Vehicle traffic on roads, particularly major roads, can increase mortality in already sparse and fragmented populations. Fox predation, especially of young animals is also considered a threat.

**Tasmanian/Red-bellied Pademelon (*Thylogale billardierii*)**
The Red-bellied Pademelon is known historically from southeastern Australian dense coastal forests from southern Victoria through to the South East of South Australia, and Tasmania (Johnson and Rose 1995). It is now considered Extinct on the mainland (Menkhorst and Beardsell 1982), but still reasonably common on Tasmania in wet forests, rainforests and tea-tree scrubs. There it feeds on short green grasses and herbs, supplemented by browsing on taller woody plants.

**Swamp Wallaby (*Wallabia bicolor*) (Figure 81)**
The Swamp Wallaby is apparently becoming a more common species in the South East. South Australian Museum specimens are from Tantanoola, Bangham, Beachport and NW of Padthaway. During the survey, only two observations were made in the Caroline Native Forest Reserve. There are also recent observations in Naracoorte Caves NP. The species may have become extinct in the adjacent parts of western Victoria (Menkhorst and Beardsell 1982). In southeastern Australia, it prefers areas with thick undergrowth. It feeds by browsing rather than grazing on both pasture and shrubs.

**Figure 81.**
**The Swamp Wallaby appears to be increasing in abundance in the South East. Photo: A. Robinson.**

**KOALAS AND WOMBATS**
The Koala and one species of wombat occurred in the region. The Koala has been reintroduced, although the origin of all animals currently in the region is unknown.

**Family PHASCOLARCTIDAE (Koalas)**
**Koala (*Phascolarctos cinereus*)**
No observations were made during the survey period. The Koala inhabits forest and woodland habitats from Queensland to the South East of South Australia. Although some of its preferred habitats of *Eucalyptus viminalis* ssp. *cygnetensis* and *E. ovata* woodlands occur in higher rainfall areas of South Australia, it was only known from the South East of the state, which represented the western margin of its natural distribution. Local residents indicate the Koala once occurred in the Hundreds of Bangham, Geegeela, and Hynam but became extinct following an extensive fire in the 1940s. In the 1980s and 1990s, there have been reports of Koalas in areas such as the Ardune Range (Lucindale area) and near Furner, probably from reintroduction east of Avenue in 1969 (Robinson 1978, Aitken 1983). Koalas east of Mt Gambier may be from a re-introduction to the Lower Glenelg National Park in 1970 (Menkhorst and Beardsell 1982).

Due to over population problems leading to loss of feeding habitat on Kangaroo Island, means of reducing the island population were investigated by a special task force in 1996 (Possingham *et al.*1996). Their advice was ignored and consequently, a fertility control program was established for Koalas on the island. Following extensive field habitat assessment, some of the sterilised animals were released in 1997, into selected areas in the South East Region considered to be of sufficient size to viably support small numbers. The areas were also selected so as not to impact on habitat for other important animals in the region, such as the Yellow Bellied Glider. As part of an ongoing monitoring program, Koala release areas have been mapped and the information stored in the State Government's Environmental Database.

Elsewhere in the State, the species has been introduced to Kangaroo Island, the Mt Lofty Ranges, the Riverland and the southern tip of Eyre Peninsula. Koalas inhabit eucalypt forest and woodland feeding predominantly on the foliage of a limited number of eucalypts, such as *Eucalyptus viminalis* ssp *cygnetensis*, *E. ovata*, *E. camaldulensis*, and *E. leucoxylon* which occur in the South East. Koalas also feed on *Eucalyptus globulus* (Tasmanian Blue Gum) that has been widely planted in the region for agroforestry. They are mobile and feed primarily at night.

The original South East population may have become extinct through loss of habitat, particularly clearance of preferred woodland vegetation types, hunting, and increased number of fires.

**Family VOMBATIDAE (Wombats)**
**Common Wombat (*Vombatus ursinus*)**
The Common Wombat is a widespread, territorial, mainly nocturnal, burrowing species found in south-eastern Australia, including Tasmania. It extends from extreme south-eastern Queensland to the Coorong in the South East and southern Murray Mallee of South Australia. The South East is the western margin of its distribution, and they are mostly confined to refugia within 20km of the coast. Further isolated populations occur inland near Lucindale and between Joanna and Comaum (Mallett and Cooke 1986). The species was formerly more widespread in the drier parts of the South East and adjacent parts of western Victoria (Menkhorst and Beardsell 1982, Mallett and Cooke 1986). In the South East, it prefers woodland and coastal shrubland, generally burrowing on sloping ground on the eastern sides of dune ridges adjacent watercourses and wetlands, the latter providing open feeding areas of perennial grasses and sedges. During the survey, 33 observations were made. The species is also known to feed on the roots of trees and shrubs.

Fossil evidence indicates its distribution has contracted eastward and southward since the Pleistocene. This decline has accelerated since European settlement (McIlroy 1995), due to clearance and resultant fragmentation of native vegetation, and drainage of wetlands. Wombat population size appears to be limited by food availability. A further threat comes from competition with introduced grazing animals, particularly rabbits. Vehicle traffic on roads, particularly major roads, can cause mortality of dispersing immature animals seeking new territories.

**NATIVE RODENTS**
Native rodents exploit the range of habitats that occur in the region. The Silky Mouse and Bush Rat are still relatively common. The introduced House Mouse is the most widespread of rodents in the South East.

**Family MURIDAE (native rats and mice)**
**White-footed Tree-rat (*Conilurus albipes*)**
In South Australia, the White-footed Tree-rat was known from the South East as well as the Mount Lofty Ranges and Murray Mallee. The South Australian Museum has several skulls from cave deposits in the South East of unknown age. It was described in early reports as nocturnal, nesting during the day in eucalypt tree hollows. Little is known of its biology as it became extinct shortly after European settlement.

**Water Rat (*Hydromys chrysogaster*)**
In the South East, Water Rats have been found in widespread locations mainly south of Kingston, usually near drains and creeks. It status is considered secure in South Australia (Robinson *et al.* 2000). Although it is widely distributed and can be locally common in the South East, distribution is patchy and restricted to areas of suitable habitat. Its regional distribution was considered to be much more extensive and continuous along watercourses prior to drainage, and its population has subsequently declined (Aitken 1983). There is also increasing demand for water usage in the region, which may further reduce water quality and quantity for this water dependent species.

The Water Rat is an amphibious species usually associated with permanent freshwater and brackish tidal water. It is reasonably clumsy on land, mainly feeding in water on aquatic insects, fish, crustaceans, mussels, but also frogs, lizards, small mammals and waterbirds. It nests at the end of long tunnels in the creek or drain banks or occasionally logs (Olsen 1995).

**Silky Mouse (*Pseudomys apodemoides*) (Figure 70)**
The Silky Mouse has a restricted distribution in South Australia and is known only from the Murray Mallee (Foulkes and Gillen 2000) and the South East. Twenty-seven captures were recorded during the survey and it has been widely captured on other surveys in the region (Table 29). It is a ground dwelling nocturnal species inhabiting heath dominated sandy shrubland and low woodland, such as *Banksia ornata* dominated shrubland and *Eucalyptus arenacea* low woodland of the Upper South East and southern Murray Mallee. In the South East, it is considered widespread north of Penola where annual rainfall is less than 650mm. Numbers have been noted to increase following wildfire (Cockburn 1981a,b). It feeds primarily on seeds and fruits of various plant species, but *Banksia ornata* nectar is an important food source during winter. It shelters during the day in deep complex burrows, whose location is usually conspicuous due to the presence of spoil heaps.

**Heath Mouse/Rat (*Pseudomys shortridgei*)**
A single specimen of the species collected from Kangaroo Island in the 1960s was the only confirmed record for South Australia until three specimens were captured in the Lower Glenelg River National Park in June 2001. One specimen was captured in *Eucalyptus baxteri* damp sandy heath with a diverse understorey (*Xanthorrhoea caespitosa, X. australis, Astroloma* spp. *Hakea* spp. and *Hibbertia* spp.). Two of the specimens were captured on a nearby sandy rise with *E. baxteri* over a less diverse *Xanthorrhoea* spp. dominated understorey (M. Bachmann, pers. comm., 2001). The Heath Mouse is considered Endangered both Nationally and in South Australia. Sub-fossil records are also known from the South East, Kangaroo Island and Eyre and Yorke Peninsulas (Robinson *et al.* 2000).

In southwestern Victoria, this species is associated with *Banksia marginata* and *Leptospermum contintentale* open heaths where rainfall exceeds 650mm per annum (Menkhorst and Beardsell 1982).

**Bush Rat (*Rattus fuscipes*)**
Populations of the Bush Rat are restricted to the Lower South East, where it is considered to have a widespread and sparsely distributed population in eucalypt forest and coastal scrub with a dense understorey, south of a line from Robe to Comaum (Aitken 1983). It was the

most commonly captured native mammal during the survey with 174 captures. It feeds primarily on the ground but it is also a capable climber. Elsewhere in South Australia, it is recorded from the Mount Lofty Ranges, Kangaroo Island and Eyre Peninsula.

It feeds on insects and mycorrhizal fungi, but also fruits and seeds, sheltering during the day in simple shallow burrows. Its population is considered sensitive to disturbance such as fire and logging, probably as this causes loss of shelter and preferred food (Lunney 1995).

**Swamp Rat (*Rattus lutreolus*)**
In the Lower South East, this species is widespread and locally common. It occurs mainly in swampy areas with dense cover (e.g. sedgelands and wet grassland) where rainfall exceeds 650mm per annum. During the survey, 27 captures were recorded. The Swamp Rat is a terrestrial rodent that is found throughout the wetter areas of eastern and southeastern Australia, including Tasmania. Three subspecies are recognised, with the South Australian population belonging to the subspecies *Rattus lutreolus lutreolus* (Lunney 1995).

It feeds mainly on grass and sedge stems, supplemented in summer by fleshy fruits, seeds and invertebrates. It lives in an extensive warren system with conspicuous spoil heaps, and has well marked runways or tunnels through the dense undergrowth to feeding areas. It is most active at dawn and dusk.

**BATS**
The region supports a rich bat diversity with 16 confirmed species, and the strong likelihood of one further species being present. This species richness is the highest of any region in South Australia. During the survey, only three species were captured and only seven species were represented in the combined South East surveys dataset. Most of these species are distributed widely in Australia, although for some, the South East represents the western limit (Churchill 1998). The distribution, status, habitats and life history of the bat fauna of the region are poorly known because limited bat survey work has been undertaken. Most species breed and roost in hollow trees. Some species also use caves and artificial structures. Species such as Little Red Flying-fox (*Pteropus scapulatus*) are vagrant to the South East and South Australia.

**Family PTEROPODIDAE (flying-foxes)**
**Grey-headed Flying-fox (*Pteropus poliocephalus*)**
The Grey-headed Flying Fox is an occasional visitor to the South East of South Australia as it is typically recorded in coastal southeastern and eastern mainland Australia between Melbourne and Rockhampton (Churchill 1998). In exceptional years, when eucalypt flowering is erratic and sparse, Grey-headed Flying-foxes can travel large distances in search of blossoms to eat. In these years, this species has been recorded in far southwestern Victoria, and in 1998 from Mt Gambier and Kingston in the South East. This represented the first records for South Australia, where small groups were observed feeding in pear and apple trees (T. Reardon, pers. comm. 2000). It is possible in the future, Grey-headed Flying-foxes may become regular summer visitors to the region. They feed on a variety of native and introduced flowering and fruiting plants.

**Family EMBALLONURIDAE (sheathtail bats)**

**Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventris*)**
The Yellow-bellied Sheathtail Bat is a medium-sized (up to 60g) bat with a wide distribution from eastern and northern mainland Australia. It may be a regular autumn migrant to South Australia from northern Australia (Reardon and Flavel 1991). It is considered Rare in South Australia. There are only 16 records of this species from all of South Australia, but only one from the South East collected at Salt Creek in May 1969. It is reported to occur in southern Australia between January and June (Churchill 1998). The species is common in northern Australia and may be more common in South Australia than current records indicate, as the species is a high and fast flier not easily collected. It roosts mainly in tree hollows and tends to be solitary for most of the year (Churchill 1998).

**Family MOLOSSIDAE (freetail bats)**

**White-striped Freetail-bat (*Tadarida australis*)**
The White-striped Freetail-bat is a medium sized (36-39g) high-flying bat, common over much of the southern two thirds of mainland Australia. It can be found in all regions of South Australia and in the South East forages in a wide range of habitats. Current collection records are few in the South East, possibly due to limited trapping work. This species is easily recognised in flight because their distinctive echolocation calls are within human hearing range, most commonly heard during the warm months. It feeds on insects, such as high-flying moths, caught on the wing, and occasionally on the ground. Small groups have their day roost in tree hollows, especially in *Eucalyptus camaldulensis*.

**Southern Freetail-bat (*Mormopterus* sp. 4)**
*Mormopterus* species of bats are generally small (9-13g), and are common over much of southeastern Australia. Freetail bats are probably more common than records suggest, reflecting limited bat trapping in the region. Roost sites are usually in tree hollows, but they also roost in buildings, particularly those with stonewall construction. Colonies may exceed 50 individuals. This species forages for insects in a range of habitat types, but most commonly in open woodland. *Mormopterus* sp. 2 is also considered to be in SA, with records from Edenhope and the Glenelg River in Victoria (T. Reardon, pers. comm. 2002).

**Family VESPERTILIONIDAE (evening bats)**

**Gould's Wattled Bat (*Chalinolobus gouldii*) (Figure 82)**

Gould's Wattled Bat is a very widespread, adaptable and common bat (14-20g) that occurs in a wide range of habitats over most of Australia. In the South East it is considered common throughout the region (T. Reardon, pers. comm., 2003). There are few captures from survey work. It mainly roosts in tree hollows, but may be found elsewhere including buildings. It forages for insects (mostly moths) on the wing below the tree canopy and forest edges in most vegetation types, emerging shortly after sunset (Churchill 1998).

**Figure 82.**
**Gould's Wattled Bat is commonly found throughout the South East. Photo: P. Bird.**

**Chocolate Wattled Bat (*Chalinolobus morio*) (Figure 83)**

In southern and eastern Australia, the Chocolate Wattled Bat is a widely distributed, small (8-10g) and generally common bat recorded in a range of habitats. In the South East, it is considered common in most habitats (T. Reardon, pers. comm., 2002). It roosts in tree hollows on watercourses and sometimes in buildings. Chocolate Wattled Bats forage for insects between the top of the understorey and canopy (Churchill 1998). This species appears to be sensitive to the effects of habitat fragmentation and isolation (Law *et al.* 1999).

**Figure 83.**
**The Chocolate Wattled Bat is recorded from a range of habitats in the South East. Photo: T. Reardon.**

**Large Forest Bat (*Vespadelus darlingtoni*)**

The Large Forest Bat is, in fact a very small bat (6-8g) that is adapted to cooler and wetter climates, from southeastern Australia, including Tasmania. Its distribution tends to correspond with the 500mm isohyet. In South Australia, it is found in most habitats in the South East (T. Reardon, pers. comm., 2003) and its distribution extends as far west as the Mount Lofty Ranges, where it is found in heathy shrublands and forests in particular. It roosts in small groups of five or six females or solitary males in tree hollows. Large Forest Bats may roost with other species of bats in buildings and forage on insects.

**Southern Forest Bat (*Vespadelus regulus*) (Figure 84)**

The Southern Forest Bat is a very small bat (5-7g) widely distributed in a range of habitats across southern and southeastern mainland Australia, including southern Western Australia. In South Australia, it is found in all agricultural regions, including the South East, where it is mainly associated with heathy shrublands and forests. It is is considered common throughout the South East region (T. Reardon, pers. comm., 2003). It usually roosts in tree hollows, but is also known to roost in house roofs. Females roost separately from males. It forages on insects, particularly moths, mostly taken between the tree canopy and the shrub layer. This species appears to be sensitive or intolerant to the effects of habitat fragmentation (Law *et al.* 1999).

**Little Forest Bat (*Vespadelus vulturnus*)**

The Little Forest Bat is a similar size to the Southern Forest Bat and is common in woodlands and forests from southeastern Australia. In South Australia, it occurs as far west as the Mount Lofty Ranges, while in the South East it is considered common in most habitats (T. Reardon, pers. comm., 2003), however only two captures were made during the survey. It usually roosts in tree hollows in colonies segregated by sex (Churchill 1998). Little Forest Bats forage on flying insects taken below the tree canopy and fly with great agility. Unlike *V. regulus*, *V. vulturnus* is considered tolerant of habitat fragmentation and not sensitive to isolation effects (Law *et al.* 1999).

**Southern Large Bent-wing Bat (*Miniopterus schreibersii bassanii*)**

The Southern Large Bent-wing Bat is a small bat (15-20g) that has a widespread distribution in more coastal areas of southeastern, eastern and northern Australia. The South Australian form represents a distinct sub-species (Cardinal and Christidis 2000) and it is believed to be in decline (T. Reardon, pers. comm., 2003). The South Australia form gathers in the 'Bat Cave' at Naracoorte Caves Conservation Park. This is the principal maternity cave for the species *M. s. bassanii*

**Figure 84.**
**The tiny Southern Forest Bat forages for insects between the tree canopy and shrub canopy. Photo: T. Reardon**

as determined by Environment Australia to be 'Conservation Dependant' in August 2001. Offspring are born in the warmer months and during autumn they disperse to wintering caves scattered throughout the South East. They forage for small insects above the canopy in heath shrublands, forests and along creek lines.

**Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)**
The Eastern False Pipistrelle is sparsely distributed through the rest of its range in southeastern Australia including Tasmania. It is considered Rare in South Australia and was first recorded in the Naracoorte area of the South East in January 2000, where it is on the western margin of its national distribution. It has subsequently been recorded at Glen Roy Conservation Park (CP), Caroline Native Forest Reserve (NFR), Mt. Meredith, and the Glenelg River CP in the lower South East (T. Reardon, pers. comm., 2003). The biology of this small bat (20g) is poorly known although it has been found roosting in hollows of live eucalypts. It forages within and below the tree canopy in woodland, forest or over water, taking mainly moths and beetles (Churchill 1998).

**Southern Myotis (*Myotis macropus*)**
The Southern Myotis is a small bat (9-15g) confined to the coast and major fresh water rivers in southeastern Australia. *Myotis macropus* is considered Endangered in South Australia. It is known to occur along the Glenelg River in the Lower South East and along the Upper River Murray (Reardon and Flavel 1991). It usually roosts in caves, but outside South Australia, it is known to roost in tree hollows, buildings and under bridges. The species is an aerial feeder concentrating mainly on aquatic insects. It is also known to feed on small fish, obtained by raking the water surface with its large feet. It is possible that this species forages in wetlands, ponds and sinkholes in the South East. (T. Reardon, pers. comm., 2003).

**Lesser Long-eared Bat (*Nyctophilus geoffroyi*)**
In the South East, the Lesser Long-eared Bat is common in most habitats, including urban areas. It was the most commonly captured bat during the survey. The species is widespread and commonly found in a wide range of habitats over most of Australia, including Tasmania. It generally roosts in tree hollows or under bark, but is often found in sheds and in houses. It forages for insects close to and on the ground as well as aerially, beginning just after dark (Churchill 1998).

**Gould's Long-eared Bat (*Nyctophilus gouldi*)**
Gould's Long-eared Bat was first recorded in the South East from the Glenelg River area in 1993, and is possibly restricted to the Lower Glenelg River Conservation Park. Thirty specimens were caught in Warreanga State Forest adjacent to Penambol CP in 2000 (T. Reardon, pers. comm., 2003). A bat of eucalypt woodland and forest from southeastern Australia, including Tasmania, it is considered Endangered in South Australia, however it is locally common in fragmented woodland habitats south of Penola (T. Reardon, pers. comm. 2003). It usually roosts in tree hollows or under bark, and forages for insects in the lower foliage, and sometimes the ground litter. Both *Nyctophilus* species appear to be sensitive to the effects of habitat fragmentation (Law *et al.* 1999).

**Inland Broad-nosed Bat (*Scotorepens balstoni*)**
In the South East, the Inland Broad-nosed Bat is not common but probably widespread, particularly in the north of the study area, associated with open forest and creek lines. Reardon (pers. comm., 2003) was surprised by its absence during his surveys in the region. This small species is largely confined to most of the drier areas of mainland Australia, where it can be locally common. In South Australia, it is also found in the agricultural districts east of Yorke Peninsula. It usually roosts in tree hollows, and forages for insects.

**ADDITIONAL NATIVE MAMMAL SPECIES THAT MAY OCCUR OR MAY HAVE OCCURRED IN THE SOUTH EAST:**

**Dusky Antechinus (*Antechinus swainsonii*)**
A mammal of tall forest over a dense understorey of ferns or shrubs in south-eastern Australia, from the

extreme south east of Queensland to western Victoria, and including Tasmania. Three taxa are recognised, with one of two possibly occurring in the South East. *Antechinus swainsonii insulanus* has an isolated population associated with the Grampians of western Victoria, and *Antechinus swainsonii mimetes* forms the main Australian mainland population, including that found population in southwestern Victoria. These Antechinus feed on a variety of soil invertebrates that they dig out of the ground, supplemented by fruits (including blackberries).

**White-footed Dunnart (*Sminthopsis leucopus)***
The White-footed Dunnart occurs from southeastern New South Wales to southwestern Victoria, and including Tasmania. In southwestern Victoria, it is associated with *Eucalyptus arenacea*/*E. baxteri* open forest where rainfall exceeds 700mm per annum (Menkhorst and Beardsell 1982). It feeds mainly on invertebrates and occasionally skinks. It has not been recoded in South Australia but it may occur in wetter stringbark woodlands.

**Eastern Mastiff Bat (*Mormopterus* sp.)**
A small bat of eastern Australia, ranging from Cooktown in Queensland to southern Victoria (Churchill 1998). It has been more recently recorded from far western Victoria, about 40 km from the South Australian border (T. Reardon, pers. comm.). It is likely to occur in the South East, probably in open woodland or associated with creek lines. It is known to roost in tree hollows.

Two additional species of rodent: Broad–toothed Rat (*Mastacomys fuscus*) *and* Smoky Mouse (*Pseudomys fumeus*) are known from sub-fossil material from Naracoorte but not from living animals. Both are still extant in southeastern Australia (Robinson *et al.* 2000).

**INTRODUCED MAMMALS**
Several introduced mammals are now common in the study area, being able to exploit the agricultural habitats created by man. Feral populations of goats and deer have become established due to both escapees of domestic animals and ongoing deliberate introductions. Species of deer other than those listed have been released into the wild but have not established feral populations.

*** Black Rat (*Rattus rattus*)**
The Black Rat is widespread in coastal dunes and swamps and near human habitation further inland.

*** House Mouse (*Mus musculus)***
The House Mouse is widespread throughout the region and was the most frequently captured small mammal during the survey (198 captures). Occasional plagues occur in the cereal growing districts of the South East. This species also occurs within remnant blocks of native vegetation, particularly where seed is abundant because of a recent disturbance such as fire.

*** Brown Hare (*Lepus capensis*)**
The Brown Hare is a widespread species in open woodlands and pastures, generally in small numbers. Nine observations were made at quadrats during the survey.

*** Rabbit (*Oryctolagus cuniculus*)**
Rabbits became widespread in the South East by the 1870's and occurred in large numbers in many areas until the introduction of the myxoma virus in the 1950s. In the South East the calici-virus appears not to have been as effective at reducing rabbit numbers as it has been in the arid parts of the state. Rabbits are still locally abundant in coastal areas and further inland in sandy areas with native vegetation such as roadsides (120 observations were made at survey quadrats alone).

*** Fox (*Vulpes vulpes*)**
The Fox is widespread and common in the region with 87 sightings of animals or their sign made during the survey period. Numbers appear to be higher in the lower South East, and they have probably increased in recent years due to reduced hunting pressure because of the low value of skins to hunters.

*** Cat (*Felis catus*)**
Feral cats are widespread and locally numerous, especially in coastal areas, but unlike foxes and rabbits are not readily seen during the day. Eight observations of cats or their sign were made during the survey.

*** Goat (*Capra hircus*)**
Low numbers of feral goats occur in the northwestern part of the South East. Populations have established mainly due to deliberate introductions or escape of domestic animals.

*** Fallow Deer (*Cervus dama*)**
Populations of Fallow Deer occur in several areas of native vegetation north of Kingston and south of Penola, mostly because of deliberate introductions for recreational hunting. More recently, animals have been liberated in the northwest of the region.

*** Red Deer (*Cervus elaphus*)**
Former introductions of this species south of Penola subsequently became extinct. However, the species along with other deer species are being farmed in the Upper South East, where occasional deer are escaping. It is not known whether a population has become established in remnant native vegetation in the region. Scats of *Cervus* sp. were recorded at The Marshes Native Forest Reserve during the survey.

# BIRDS

By D. Hopton[1], T. Croft[1], G. Carpenter[2] and J. N. Foulkes[1]

## INTRODUCTION

There is little historical documentation of the avifauna of the South East and the majority of information available mainly takes the form of sight records. Information available was compiled by Parker and Reid in the "Natural History of the South East" (Tyler *et al*. 1983) and Robinson *et al.* (2000) in "Vertebrates of South Australia".

The borders of the South East are generally accepted as being the limit of Woodland habitat to the north and the coast to the west and south. The eastern border, however, is quite artificial and adjoins the Wimmera and Western Districts of Victoria. The bird fauna of the South East and Western District is very similar and a few species are restricted to this area. They include the south-eastern subspecies of the Red-tailed Black Cockatoo, Long-billed Corella and Rufous Bristlebird. Other species such as the Olive Whistler and Blue-winged Parrot have a major part of their known breeding distribution in Western Victoria.

Biologically, the South East is considered the most diverse and complex of the temperate areas of the State. The South East of South Australia comprises only 1.6% of the state's area but 73.7% of the States bird species have been reported there. This clearly demonstrates the diversity of the avifauna present. Of the State's total bird species, 79.2% of its non-breeding migrants (mainly seabirds and waders) occur here as well as 63.9% of its native breeding species (Parker and Reid 1983).

The wetlands, which are the most extensive by far in southern South Australia, are an important component of the natural habitats in the South East and play an important role in the conservation of waterfowl. Australias rarest species of waterfowl, the Freckled Duck, breeds in the inland lagoons near Naracoorte and the area also provides a stronghold for the Musk Duck and Blue-billed Duck. The high percentage of non-breeding migrants found in the area also reflects the South East's importance as a migratory stopover for many species of wader. In times of drought its importance increases as the area becomes a refuge for all wetland species driven south (Laut *et al.* 1977).

The high and consistent winter rainfall enjoyed by the South East, in an otherwise exceptionally dry state, has meant that it has always been seen as an area of exceptional agricultural and forestry potential. The conservation value of the area, however, has been comparatively neglected. The drainage of almost 90% of the wetlands in this area and clearance of 90% of the native vegetation has placed many species under risk (Parker and Reid 1983).

The fragmentation and isolation of the remaining pockets of vegetation have made them increasingly vulnerable to fire, introduced plants and animals, dieback, the dumping of rubbish, grazing, tracks and illegal firewood collection. The practice of prescribed burning also has a negative impact on many bird species that rely on dense shrub and ground litter. These factors have placed increasing pressure on the remaining bird populations by reducing their breeding and feeding habitats as well as isolating gene pools.

The Azure Kingfisher, Magpie Goose, Red-tailed Black Cockatoo (south-eastern subspecies), Orange-bellied Parrot, Ground Parrot, King Quail and Regent Honeyeater have been recorded in the South East and are listed as Endangered in South Australia. Another 36 species that occur in the South East are listed as Vulnerable and 37 are listed as Rare. The Spotted Quailthrush is considered Extinct in the South East (Robinson *et al.* 2000).

The various vegetation associations in the South East have been described by Parker and Reid (1983), Mowling and Barritt (1980) and Laut *et al.* (1977).

The EAR Unit, DEH (previously within Department of Transport Urban Planning and the Arts) carried out a vegetation survey of the South East in 1991. This information was used in conjunction with the information collected on Biological Surveys to correlate survey quadrats with various vegetation associations. Bird communities tend to be intrinsically tied to vegetation, both floristically and structurally. This association tends to govern the distribution of bird species across Australia. The analysis of habitat and bird species identified during the surveys allowed the quadrats to be grouped according to bird communities. This in turn enabled the qualitative assessment of bird-habitat relationships across the study area.

## TOTAL SPECIES

The vertebrate component of the South East Biological Survey was carried out in 1997. Data from seven other surveys, which fell in the study area, was also included in the analysis. These were the South East Coast (unpublished), Messent Conservation Park (Owens *et al.* 1995), Gum Lagoon Conservation Park (Davies

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2000), Deep Swamp (Stewart 1996), Tilley Swamp (Stewart *et al.* 1998), Southeast Box and Buloke Woodlands (Stokes 1996) and Bunbury Conservation Reserve (Stewart *et al*. 1998).

A total of 181 bird species were recorded from 188 quadrats visited during these surveys (Appendix IX). An additional 151 species have been recorded from opportunistic sightings, South Australian Museum records (Figure 85) or other departmental databases making a total of 332 bird species recorded for the South East. Of these, eight species are introduced to Australia, ten are of National conservation significance and 62 are of State conservation significance.

Species of conservation significance, recognised as occurring (or having once occurred) in the South East region, but not recorded on departmental databases are also included in the discussion. Species not listed in the Appendix that fall into this category are the Square-tailed Kite, Azure Kingfisher, Little Tern, Little Friarbird, Regent Honeyeater, Olive-backed Oriole, Australian Bustard, King Quail and Ground Parrot.

**COMMON SPECIES**

The most commonly recorded species at survey quadrats in the South East are presented in Table 32. The New Holland Honeyeater was by far the most common, accounting for 9.9% of all observations. Other common species included the Superb Fairy Wren (5.3%), Galah (3.1%), Tree Martin (3.1%) and Silvereye (3%).

Due to habitat preferences and differences in behaviour, some species are more likely to be recorded opportunistically. Common species recorded opportunistically in the South East are presented in Table 33 and include the Australian Magpie, White-faced Heron and Wedge-tailed Eagle.

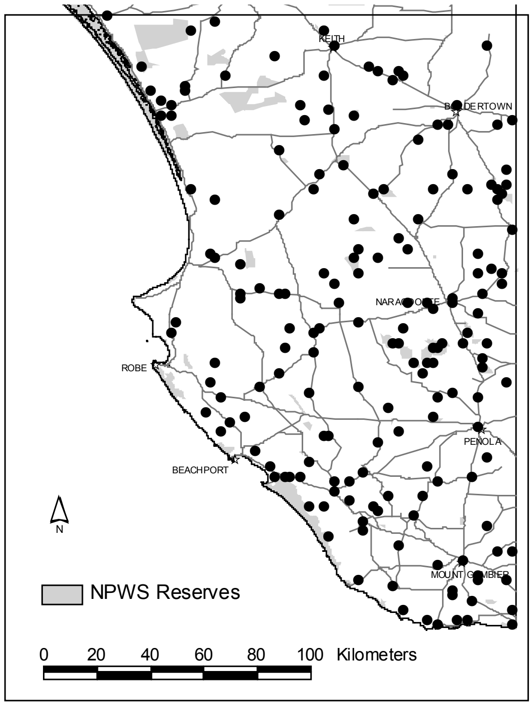



**Figure 85.**
**Distribution of SA Museum bird specimens prior to the 1997 survey.**

**Table 32.**
**Common birds recorded in survey quadrats in the South East Surveys.** Only species recorded at 10% or more of quadrats are shown. Asterisk denotes introduced species and + indicates included in PATN analysis.

| Scientific Name | Common Name | Number of individuals | % of total observations | % of quadrats where recorded |
|---|---|---|---|---|
| +*Phylidonyris novaehollandiae* | New Holland Honeyeater | 531 | 9.9 | 82 |
| +*Malurus cyaneus* | Superb Fairy Wren | 344 | 5.3 | 53 |
| +*Rhipidura albiscapa* | Grey Fantail | 267 | 1.9 | 41 |
| +*Acanthiza pusilla* | Brown Thornbill | 252 | 2.9 | 39 |
| +*Sericornis frontalis* | White-browed Scrubwren | 208 | 2.1 | 32 |
| +*Platycercus elegans* | Crimson Rosella | 175 | 1.9 | 27 |
| +*Gymnorhina tibicen* | Australian Magpie | 169 | 1.8 | 26 |
| +*Anthochaera carunculata* | Red Wattlebird | 160 | 2.4 | 25 |
| +*Cormobates leucophaea* | White-throated Treecreeper | 157 | 0.7 | 24 |
| +*Zosterops lateralis* | Silvereye | 144 | 3.0 | 22 |
| +*Anthochaera chrysoptera* | Little Wattlebird | 136 | 1.2 | 21 |
| +*Colluricincla harmonica* | Grey Shrike-thrush | 136 | 0.9 | 21 |
| +*Acanthiza lineata* | Striated Thornbill | 128 | 2.2 | 20 |
| +*Lichenostomus chrysops* | Yellow-faced Honeyeater | 110 | 0.8 | 17 |
| +*Pardalotus striatus* | Striated Pardalote | 109 | 1.0 | 17 |
| *Corvus mellori* | Little Raven | 108 | 1.8 | 17 |
| +*Cacatua roseicapilla* | Galah | 89 | 3.1 | 14 |
| +*Psephotus haematonotus* | Red-rumped Parrot | 88 | 1.3 | 14 |
| +*Strepera versicolor* | Grey Currawong | 87 | 0.5 | 13 |
| *Dromaius novaehollandiae* | Emu | 79 | 0.3 | 12 |
| +*Pardalotus punctatus* | Spotted Pardalote | 78 | 0.9 | 12 |
| +*Calyptorhynchus funereus* | Yellow-tailed Black-cockatoo | 77 | 1.9 | 12 |
| +*Corvus coronoides* | Australian Raven | 76 | 0.9 | 12 |
| *Petrochelidon nigricans* | Tree Martin | 76 | 3.1 | 12 |
| +*Lichenostomus penicillatus* | White-plumed Honeyeater | 74 | 0.9 | 11 |
| +*Melithreptus lunatus* | White-naped Honeyeater | 71 | 0.8 | 11 |
| +*Eopsaltria australis* | Eastern Yellow Robin | 68 | 0.5 | 11 |
| *Artamus cyanopterus* | Dusky Woodswallow | 66 | 1.3 | 10 |
| +*Melithreptus brevirostris* | Brown-headed Honeyeater | 64 | 0.1 | 10 |
| +*Platycercus eximius* | Eastern Rosella | 64 | 0.6 | 10 |
| +*Pardalotus xanthopygus* | Yellow-rumped Pardalote | 60 | 0.2 | 10 |

**Table 33.**
**Frequency of sightings (not total number of individuals) for opportune bird species from the South East Biological Surveys**. Asterisk denotes introduced species and only species with ten or more records are shown.

| Scientific Name | Common Name | Frequency |
|---|---|---|
| *Gymnorhina tibicen* | Australian Magpie | 57 |
| *Egretta novaehollandiae* | White-faced Heron | 35 |
| *Aquila audax* | Wedge-tailed Eagle | 29 |
| *Falco berigora* | Brown Falcon | 28 |
| *Dromaius novaehollandiae* | Emu | 26 |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | 23 |
| *Anas superciliosa* | Pacific Black Duck | 21 |
| *Rhipidura leucophrys* | Willie Wagtail | 21 |
| *Vanellus miles (NC)* | Masked Lapwing, (Spur-winged Plover) | 21 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | 20 |
| *Psephotus haematonotus* | Red-rumped Parrot | 20 |
| *Grallina cyanoleuca* | Magpie-lark | 20 |
| *Cygnus atratus* | Black Swan | 20 |
| *Cacatua roseicapilla* | Galah | 19 |
| **Sturnus vulgaris* | Common Starling | 19 |
| *Sericornis frontalis* | White-browed Scrubwren | 17 |
| *Falco cenchroides* | Nankeen Kestrel | 16 |
| *Acanthiza pusilla* | Brown Thornbill | 15 |
| *Malurus cyaneus* | Superb Fairy Wren | 15 |
| *Rhipidura albiscapa* | Grey Fantail | 15 |
| *Platycercus eximius* | Eastern Rosella | 15 |
| *Corcorax melanorhamphos* | White-winged Chough | 14 |
| *Hirundo neoxena* | Welcome Swallow | 14 |
| *Fulica atra* | Eurasian Coot | 14 |
| *Anas gracilis* | Grey Teal (Australasian Grey Teal) | 13 |
| *Tadorna tadornoides* | Australian Shelduck | 13 |
| *Corvus mellori* | Little Raven | 13 |
| *Anthochaera carunculata* | Red Wattlebird | 12 |
| *Circus approximans* | Swamp Harrier, (Marsh Harrier) | 12 |
| *Anas castanea* | Chestnut Teal | 11 |
| *Threskiornis molucca (NC)* | Australian White Ibis (Sacred Ibis) | 11 |
| *Pomatostomus superciliosus* | White-browed Babbler | 11 |
| *Colluricincla harmonica* | Grey Shrike-thrush | 11 |
| *Ninox novaeseelandiae* | Southern Boobook (Boobook Owl) | 11 |
| *Ocyphaps lophotes* | Crested Pigeon | 11 |
| *Podargus strigoides* | Tawny Frogmouth | 11 |
| *Leipoa ocellata* | Malleefowl | 11 |
| *Anthus novaeseelandiae* | Richard's Pipit | 11 |
| *Artamus cyanopterus* | Dusky Woodswallow | 10 |
| *Petrochelidon nigricans* | Tree Martin | 10 |
| *Neophema chrysostoma* | Blue-winged Parrot | 10 |
| *Falco longipennis* | Australian Hobby (Little Falcon) | 10 |
| *Calyptorhynchus funereus* | Yellow-tailed Black-cockatoo | 10 |

## SPECIES PATTERNS

PATN analysis (Belbin 1994) was applied to presence/absence data of 98 species from 188 quadrats. This process enabled the quadrats to be grouped according to the similarity of bird species present.

Several species groups were masked from the data prior to analysis. Waterbirds and seabirds were excluded as they have little correlation with native vegetation while raptors are highly mobile and generally not restricted to a specific habitat type. Emus were excluded for this reason also. Nocturnal species were not targeted during the survey and were infrequently encountered. Migratory species were also masked as the various surveys were carried out at different times of the year resulting in inconsistent recordings of these species. Species recorded to genus only were also excluded as were species only recorded once.

The Spotted Pardalote (*Pardalotus punctatus*) and Yellow-rumped Pardalote (*Pardalotus xanthopygus*) were combined by Robinson *et al.* (2000). However, they have been dealt with here as separate species as the analysis shows a clear delineation between the two types, the Spotted Pardalote preferring woodland in the higher rainfall zones and the Yellow-tailed Pardalote preferring the drier mallee habitats. Blakers *et al.* (1984) state that the Spotted Pardalote inhabits eucalypt forest and woodland while the Yellow-rumped Pardalote inhabits mallee and does not usually venture into eucalypt forest and woodland. The two species are only likely to mix in areas where pockets of one habitat occur within another.

Congregations of large numbers of nectivorous birds were noted during the South East surveys especially in areas of flowering SA Blue Gums (*Eucalyptus leucoxylon*) in spring. New Holland Honeyeaters, Red Wattlebirds, Yellow-faced Honeyeaters, Silvereyes and lorikeet species were the most notable occurring in large flocks in these areas. These species tend to be nomadic and their presence would be dependent upon the flowering of certain plant species. This may have produced a bias in the results.

The groups were defined using PATN analysis and are therefore likely to be only representative of the seasons in which the data was collected and the clustering of some quadrats to a particular group may be affected by weather, observer skill and variation in sampling effort between sites.

The complex topography of the South East and frequent presence of wetlands has resulted in a high diversity of vegetation types which are in close proximity to one another resulting in less distinct results. The great mobility of bird species would also produce a less distinct result in the analysis.

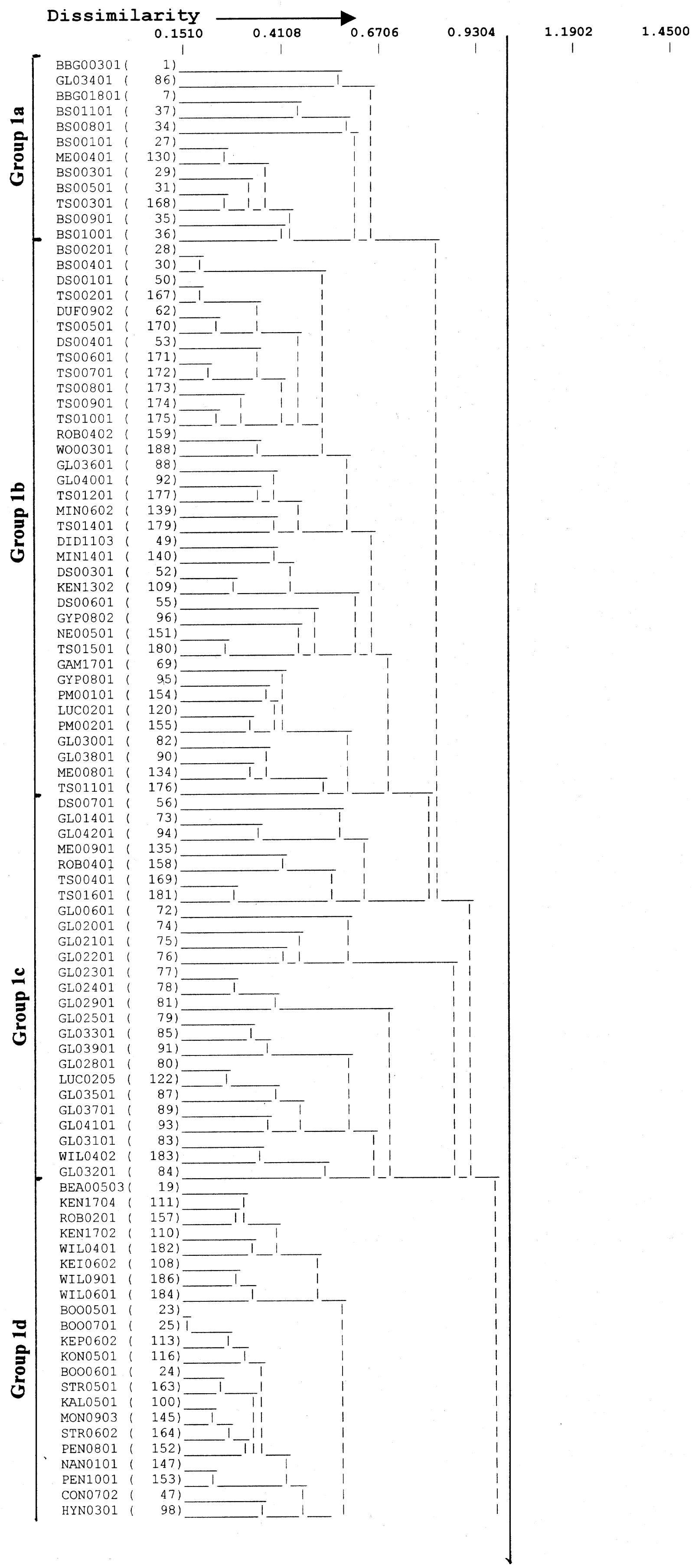
The dendrogram of quadrat dissimilarity (Figure 86) produced by the analysis of the data indicates a primary division into three groups reflecting the distinction between woodland communities, dense coastal shrublands and the more open swamps and grasslands. Further division of the dendrogram produces a division of the quadrats into eight groups. The first four groups are comprised of the closely related woodland/mallee communities. Group 1A appears to represent the species inhabiting the drier mallee/heath region in the north of the study area. Species inhabiting low woodland/shrubland are represented in Group 1B and mallee species in Group 1C. The fourth group, 1D, is comprised of mainly woodland birds and is strongly supported by the habitat data. Group 2 includes birds of the coastal/wet shrubland regions, Group 3 birds of open woodland/grassland, Group 4 birds of sedgeland and Group 5 represents birds from wet shrubland habitats.

Details of group compositions are given below.

The two-way table of species incidence by quadrat (Table 34) combines the results of the quadrat and species analyses into a more easily interpreted form. The species are represented down the left-hand side as the first four letters of the genus and species (e.g, PHYLNOVA is *Phylidonyris novaehollandiae*, New Holland Honeyeater)

Descriptions of the groups identified are set out in the following order:

- Bird assemblage group number
- Number of quadrats comprising the group;
- Number of species recorded in the group;
- Mean number of species recorded in the group;
- A brief description of the group;
- A table showing species recorded in order of decreasing frequency, indicator value, proportion of total individual species observations represented by each species in that group and the number of groups in which each species is found.
- A table indicating the floristic types represented by the quadrats in each group.
- A map showing the distribution of the quadrats represented in the group relative to quadrats from other groups



Dissimilarity
0.1510
0.4108
0.6706
0.9304
1.1902
1.4500
Group 1a
Group 1b
Group 1c
Group 1d
BBG00301 ( 1)
GL03401 ( 86)
BBG01801 ( 7)
BS01101 ( 37)
BS00801 ( 34)
BS00101 ( 27)
ME00401 ( 130)
BS00301 ( 29)
BS00501 ( 31)
TS00301 ( 168)
BS00901 ( 35)
BS01001 ( 36)
BS00201 ( 28)
BS00401 ( 30)
DS00101 ( 50)
TS00201 ( 167)
DUF0902 ( 62)
TS00501 ( 170)
DS00401 ( 53)
TS00601 ( 171)
TS00701 ( 172)
TS00801 ( 173)
TS00901 ( 174)
TS01001 ( 175)
ROB0402 ( 159)
WO00301 ( 188)
GL03601 ( 88)
GL04001 ( 92)
TS01201 ( 177)
MIN0602 ( 139)
TS01401 ( 179)
DID1103 ( 49)
MIN1401 ( 140)
DS00301 ( 52)
KEN1302 ( 109)
DS00601 ( 55)
GYP0802 ( 96)
NE00501 ( 151)
TS01501 ( 180)
GAM1701 ( 69)
GYP0801 ( 95)
PM00101 ( 154)
LUC0201 ( 120)
PM00201 ( 155)
GL03001 ( 82)
GL03801 ( 90)
ME00801 ( 134)
TS01101 ( 176)
DS00701 ( 56)
GL01401 ( 73)
GL04201 ( 94)
ME00901 ( 135)
ROB0401 ( 158)
TS00401 ( 169)
TS01601 ( 181)
GL00601 ( 72)
GL02001 ( 74)
GL02101 ( 75)
GL02201 ( 76)
GL02301 ( 77)
GL02401 ( 78)
GL02901 ( 81)
GL02501 ( 79)
GL03301 ( 85)
GL03901 ( 91)
GL02801 ( 80)
LUC0205 ( 122)
GL03501 ( 87)
GL03701 ( 89)
GL04101 ( 93)
GL03101 ( 83)
WIL0402 ( 183)
GL03201 ( 84)
BEA00503 ( 19)
KEN1704 ( 111)
ROB0201 ( 157)
KEN1702 ( 110)
WIL0401 ( 182)
KEI0602 ( 108)
WIL0901 ( 186)
WIL0601 ( 184)
BOO0501 ( 23)
BOO0701 ( 25)
KEP0602 ( 113)
KON0501 ( 116)
BOO0601 ( 24)
STR0501 ( 163)
KAL0501 ( 100)
MON0903 ( 145)
STR0602 ( 164)
PEN0801 ( 152)
NAN0101 ( 147)
PEN1001 ( 153)
CON0702 ( 47)
HYN0301 ( 98)

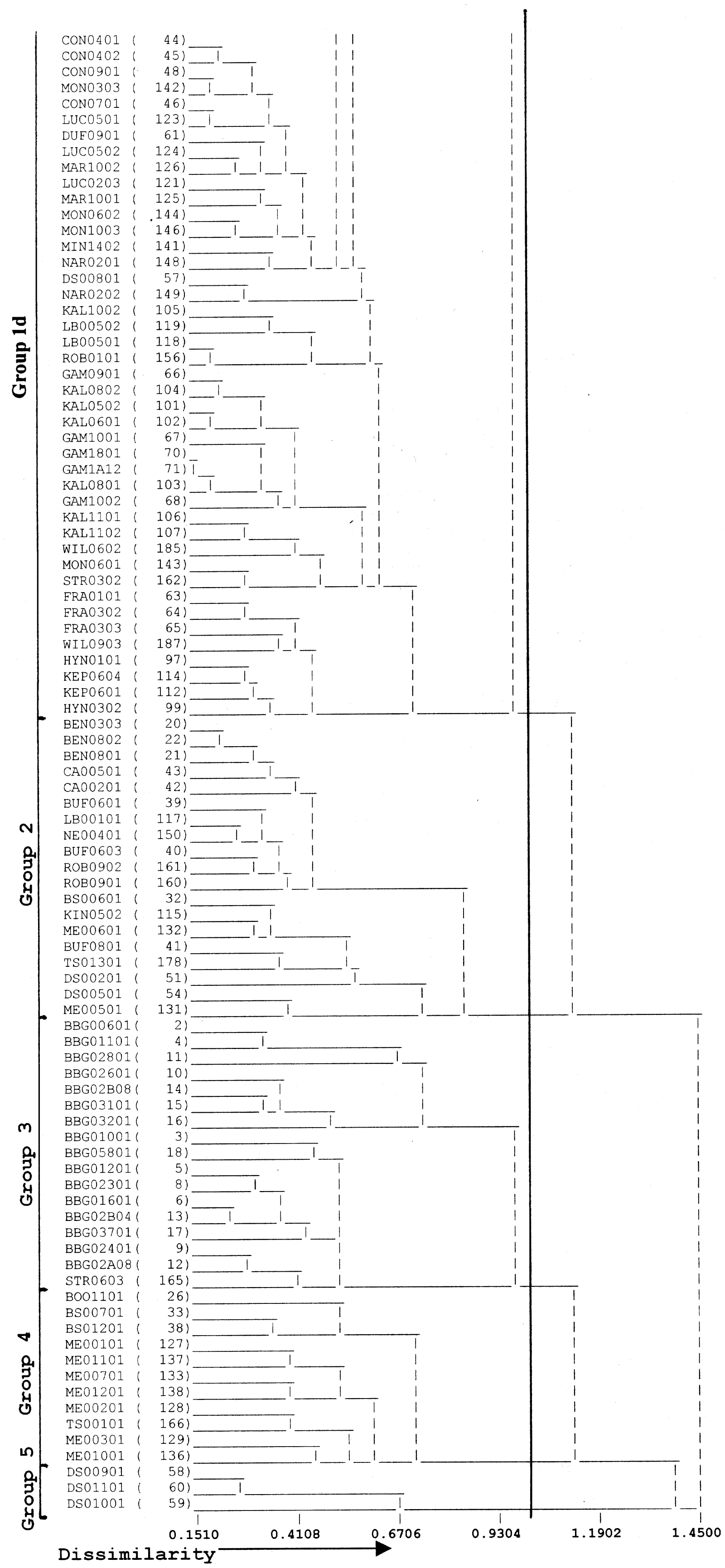
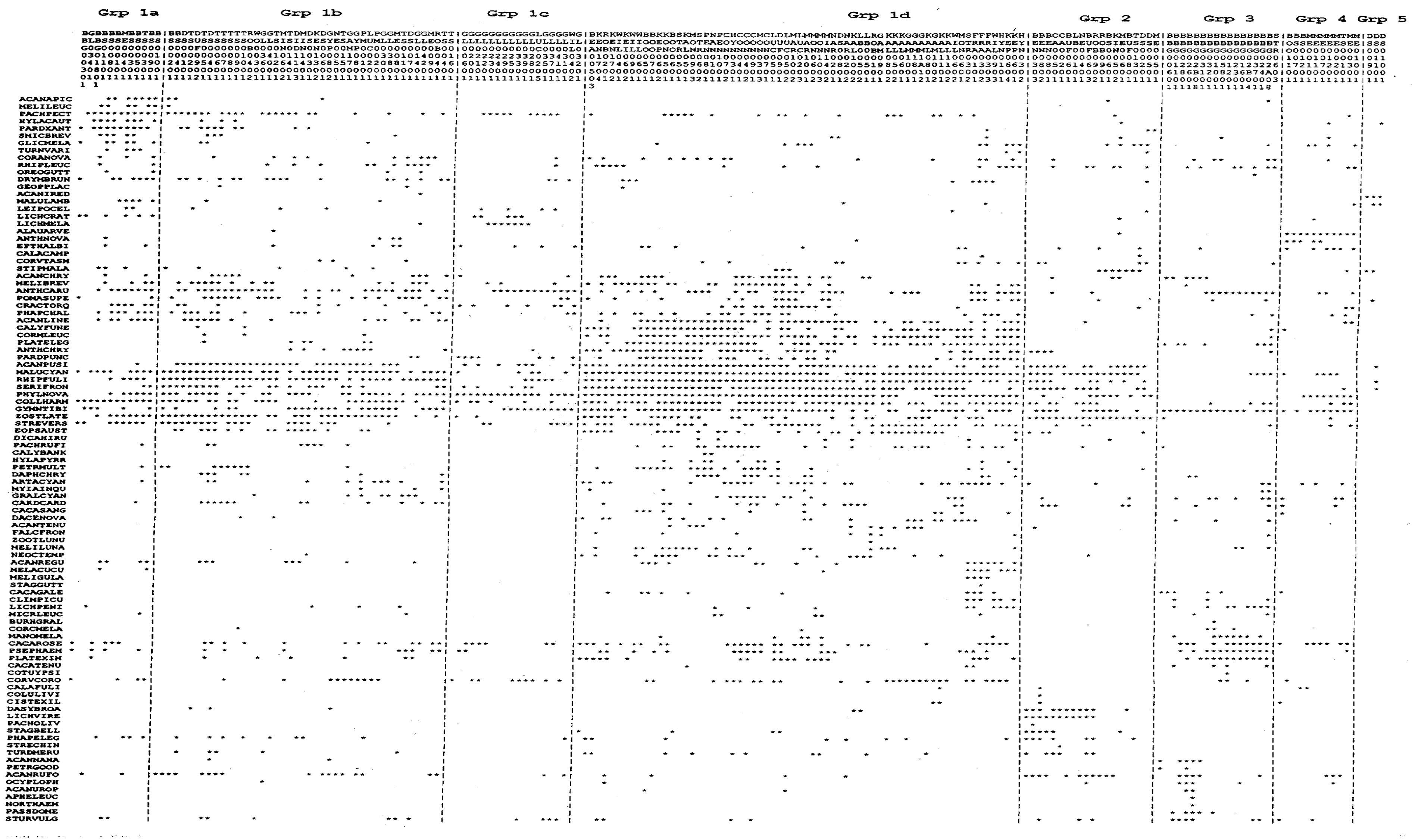


**Figure 86.**
**Dendrogram from PATN analysis of South East Biological Survey bird data showing quadrat groups.**

**Table 34.**
**Two-way table of South East Biological Survey bird species analysis showing groups of quadrats by species.**



## GROUP 1A

**Birds of low woodland and mallee with a heathy understorey**
**Number of quadrats 12**
**Number of species in group 47**
**Mean number of species 21.5**

The most common indicator species in this group include the Shy Heathwren (Figure 87), Yellow-tailed Pardalote, Inland Brown Thornbill and to a lesser degree the Purple-gaped Honeyeater, Painted Button-quail and Variegated Wren. The quadrats are confined to the drier northern section of the study area and centred mainly on Bunbury Conservation Reserve and Stoneleigh Park Heritage Agreement (Figure 86).

| Species | Common Name | Frequency | Indicator value. | Propn. | No. Groups |
|---|---|---|---|---|---|
| *Colluricincla harmonica* | Grey Shrikethrush | 12 | 2.5 | 0.11 | 7 |
| *Pachycephala pectoralis* | Golden Whistler | 11 | 9.7 | 0.17 | 6 |
| ***Pardalotus xanthopygus*** | **Yellow-tailed Pardalote** | 10 | **43.9** | 0.43 | 4 |
| *Malurus cyaneus* | Superb Blue Wren | 9 | <0.01 | 0.06 | 7 |
| *Anthochaera carunculata* | Red Wattlebird | 8 | 0.3 | 0.08 | 7 |
| ***Calamanthus cautus*** | **Shy Heathwren (Shy Hylacola)** | 8 | **48.8** | 0.57 | 5 |
| *Strepera versicolor* | Grey Currawong | 8 | 0.9 | 0.10 | 7 |
| *Zosterops lateralis* | Silvereye | 8 | 0.3 | 0.08 | 7 |
| ***Acanthiza apicalis*** | **Inland Brown Thornbill** | 7 | **42.9** | 0.58 | 4 |
| *Acanthiza lineata* | Striated Thornbill | 7 | 1.0 | 0.10 | 5 |
| *Drymodes brunneopygia* | Southern Scrub-robin | 7 | 7.7 | 0.19 | 5 |
| *Phaps chalcoptera* | Common Bronzewing | 7 | 3.9 | 0.15 | 6 |
| *Cracticus torquatus* | Grey Butcherbird | 6 | 4.2 | 0.16 | 6 |
| *Gliciphila melanops* | Tawny-crowned Honeyeater | 6 | 7.2 | 0.21 | 6 |
| ***Lichenostomus cratitius*** | **Purple-gaped Honeyeater** | 6 | **26.3** | 0.46 | 4 |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | 6 | 0.9 | 0.05 | 6 |
| *Cacatua roseicapilla* | Galah | 5 | <0.01 | 0.07 | 6 |
| *Gymnorhina tibicen* | Australian Magpie | 5 | 1.6 | 0.04 | 7 |
| ***Malurus lamberti*** | **Variegated Wren** | 5 | **18.2** | 0.42 | 5 |
| *Rhipidura fuliginosa* | Grey Fantail | 5 | 1.3 | 0.04 | 6 |
| *Smicrornis brevirostris* | Weebill | 5 | 13.1 | 0.33 | 6 |
| *Acanthiza reguloides* | Buff-rumped Thornbill | 4 | 1.8 | 0.15 | 3 |
| *Corvus coronoides* | Australian Raven | 4 | <0.01 | 0.07 | 6 |
| *Melithreptus brevirostris* | Brown-headed Honeyeater | 4 | <0.01 | 0.08 | 5 |
| *Phaps elegans* | Brush Bronzewing | 4 | 1.6 | 0.14 | 5 |
| *Psephotus haematonotus* | Red-rumped Parrot | 4 | 0.1 | 0.09 | 6 |
| ***Turnix varia*** | **Painted Button-quail** | 4 | **20.9** | 0.57 | 3 |
| *Coracina novaehollandiae* | Black-faced Cuckooshrike | 3 | 0.1 | 0.09 | 7 |
| *Stipiturus malachurus* | Southern Emu-wren | 3 | 1.0 | 0.14 | 6 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | 2 | 0.6 | 0.05 | 6 |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | 2 | 0.6 | 0.05 | 7 |
| *Epthianura albifrons* | White-fronted Chat | 2 | <0.01 | 0.08 | 7 |
| *Leipoa ocellata* | Malleefowl | 2 | 0.9 | 0.18 | 5 |
| *Melanodryas cucullata* | Hooded Robin | 2 | 1.2 | 0.20 | 2 |
| *Oreoica gutturalis* | Crested Bellbird | 2 | 4.4 | 0.40 | 3 |
| *Rhipidura leucophrys* | Willie Wagtail | 2 | 0.5 | 0.05 | 7 |
| *Sericornis frontalis* | White-browed Scrubwren | 2 | 3.7 | 0.02 | 7 |
| **Sturnus vulgaris* | Common Starling | 2 | <0.01 | 0.07 | 7 |
| *Acanthiza pusilla* | Brown Thornbill | 1 | 5.9 | 0.01 | 6 |
| *Anthus novaeseelandiae* | Richard's Pipit | 1 | <0.01 | 0.10 | 4 |
| *Artamus cyanopterus* | Dusky Woodswallow | 1 | 2.0 | 0.02 | 6 |
| **Carduelis carduelis* | Goldfinch | 1 | 1.6 | 0.03 | 6 |
| *Lichenostomus penicillatus* | White-plumed Honeyeater | 1 | 0.5 | 0.05 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| *Microeca leucophaea* | Jacky Winter | 1 | <0.01 | 0.11 | 4 |
| *Pachycephala rufiventris* | Rufous Whistler | 1 | 1.3 | 0.03 | 5 |
| *Petroica multicolor* | Scarlet Robin | 1 | 1.2 | 0.03 | 4 |
| *Platycercus eximius* | Eastern Rosella | 1 | 1.6 | 0.03 | 4 |

| Floristic PATN Group | Frequency |
|---|---|
| *Eucalyptus arenacea/baxteri* +/- *Banksia ornata* Woodland | 3 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 2 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 2 |
| *Allocasuarina leuhmannii* Woodland | 1 |
| *Banksia ornata* Shrubland | 1 |
| *Eucalyptus arenacea/baxteri* Low Woodland | 1 |
| *Eucalyptus behriana* +/- *E. dumosa* Low Open Woodland | 1 |
| *Melaleuca halmaturorum* Tall Shrubland | 1 |

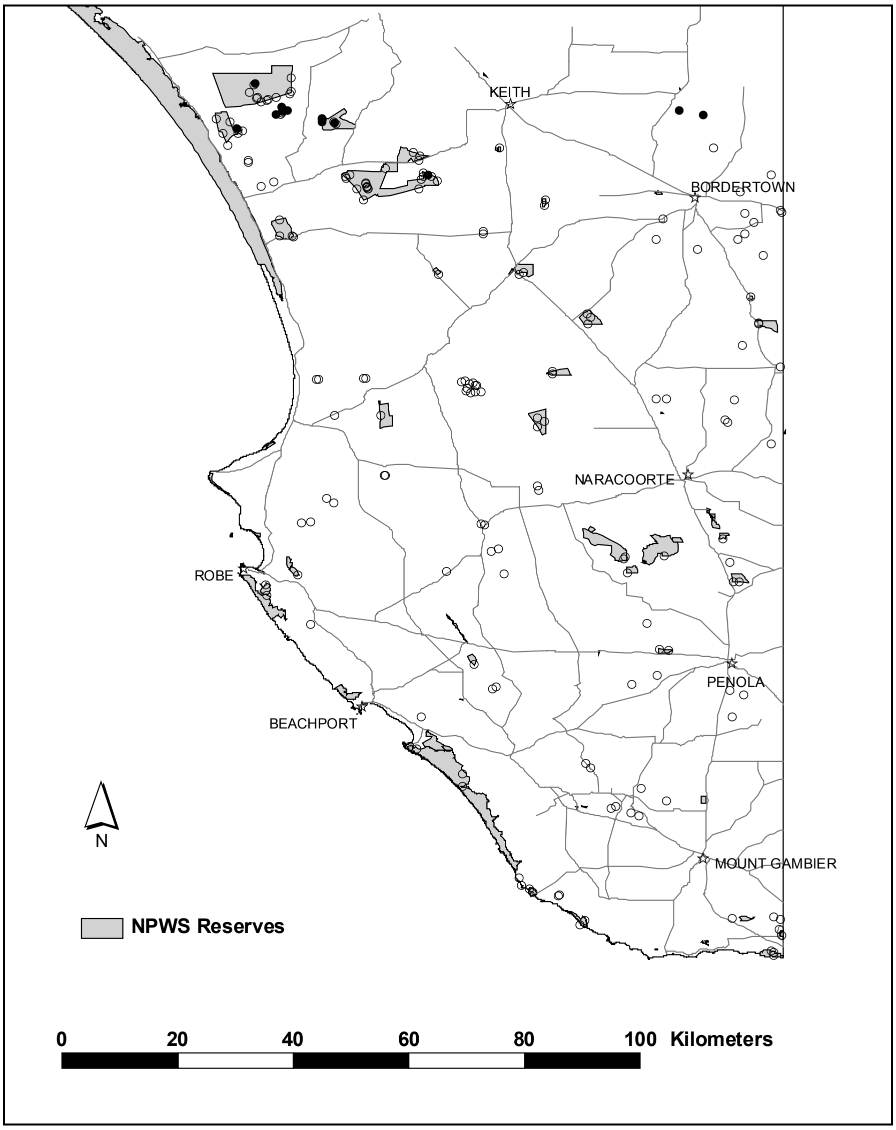



**Figure 86.**
**Distribution of quadrats representing PATN group 1A (closed circles) and other bird PATN groups (open circles).**

**Figure 87.**
**The Shy Heathwren was a species characteristic of drier habitats around Bunbury Conservation Reserve and Stoneleigh Park Heritage Agreement.** **Photo: T. Bradley.**

**GROUP 1B**

**Birds of low woodland and shrubland**
**Number of quadrats** 43
**Number of species in group** 63
**Mean number of species** 20.5

Indicator species in this group include the Southern Scrub-robin (Figure 89), Yellow-tailed Black-cockatoo, White-throated Treecreeper, Spotted Pardalote and Silvereye. The relatively low Indicator Values for birds in this group show that this bird community is poorly defined. These quadrats are located centrally in the study area tending to the coastal region rather than inland (Figure 88).

| Species | Common Name | Frequency | Indicator Value | Propn. | No Groups |
|---|---|---|---|---|---|
| *Rhipidura fuliginosa* | Grey Fantail | 39 | 4.45 | 0.33 | 6 |
| *Malurus cyaneus* | Superb Blue Wren | 37 | 0.70 | 0.27 | 7 |
| ***Zosterops lateralis*** | **Silvereye** | 34 | **6.38** | 0.36 | 7 |
| *Acanthiza pusilla* | Brown Thornbill | 31 | 1.36 | 0.29 | 6 |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | 29 | 0.03 | 0.22 | 6 |
| *Anthochaera carunculata* | Red Wattlebird | 28 | 1.40 | 0.29 | 7 |
| *Colluricincla harmonica* | Grey Shrikethrush | 26 | 0.01 | 0.23 | 7 |
| *Gymnorhina tibicen* | Australian Magpie | 24 | 1.14 | 0.19 | 7 |
| *Pachycephala pectoralis* | Golden Whistler | 23 | 3.92 | 0.35 | 6 |
| *Sericornis frontalis* | White-browed Scrubwren | 23 | 0.01 | 0.23 | 7 |
| *Strepera versicolor* | Grey Currawong | 21 | 0.12 | 0.25 | 7 |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | 17 | 4.12 | 0.39 | 7 |
| ***Drymodes brunneopygia*** | **Southern Scrub-robin** | 17 | **8.30** | 0.47 | 5 |
| *Eopsaltria australis* | Eastern Yellow Robin | 17 | 1.78 | 0.33 | 3 |
| *Acanthiza lineata* | Striated Thornbill | 15 | 0.10 | 0.22 | 5 |
| *Melithreptus brevirostris* | Brown-headed Honeyeater | 15 | 0.57 | 0.29 | 5 |
| *Phaps chalcoptera* | Common Bronzewing | 14 | 0.58 | 0.29 | 6 |
| *Cacatua roseicapilla* | Galah | 13 | 0.96 | 0.18 | 6 |
| **Carduelis carduelis* | Goldfinch | 13 | 1.44 | 0.33 | 6 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | 10 | 0.03 | 0.23 | 6 |
| *Artamus cyanopterus* | Dusky Woodswallow | 10 | 0.06 | 0.22 | 6 |
| *Corvus coronoides* | Australian Raven | 10 | 0.75 | 0.18 | 6 |
| *Pardalotus xanthopygus* | Yellow-tailed Pardalote | 10 | 3.42 | 0.43 | 4 |
| *Rhipidura leucophrys* | Willie Wagtail | 10 | <0.01 | 0.24 | 7 |
| *Anthochaera chrysoptera* | Little Wattlebird | 9 | 1.08 | 0.17 | 5 |
| *Coracina novaehollandiae* | Black-faced Cuckooshrike | 9 | 0.07 | 0.26 | 7 |
| *Petroica multicolor* | Scarlet Robin | 9 | 0.19 | 0.28 | 4 |
| *Acanthiza reguloides* | Buff-rumped Thornbill | 8 | 0.28 | 0.30 | 3 |
| *Grallina cyanoleuca* | Magpie-lark | 8 | 0.00 | 0.25 | 5 |
| *Phaps elegans* | Brush Bronzewing | 8 | 0.19 | 0.29 | 5 |
| *Psephotus haematonotus* | Red-rumped Parrot | 8 | 0.87 | 0.17 | 6 |
| *Cracticus torquatus* | Grey Butcherbird | 7 | 0.46 | 0.19 | 6 |
| *Daphoenositta chrysoptera* | Varied Sittella | 7 | 0.29 | 0.30 | 3 |
| *Pachycephala rufiventris* | Rufous Whistler | 7 | 0.21 | 0.21 | 5 |
| *Platycercus elegans* | Crimson Rosella and Yellow Rosella | 6 | 5.51 | 0.10 | 3 |
| *Platycercus eximius* | Eastern Rosella | 6 | 1.31 | 0.15 | 4 |
| **Sturnus vulgaris* | Common Starling | 6 | 0.07 | 0.22 | 7 |
| *Stipiturus malachurus* | Southern Emu-wren | 5 | 0.02 | 0.24 | 6 |
| **Turdus merula* | Blackbird | 5 | 0.02 | 0.24 | 3 |
| *Epthianura albifrons* | White-fronted Chat | 4 | 1.01 | 0.15 | 7 |
| *Smicrornis brevirostris* | Weebill | 4 | <0.01 | 0.27 | 6 |
| *Acanthiza apicalis* | Inland Brown Thornbill | 3 | 0.02 | 0.25 | 4 |
| *Anthus novaeseelandiae* | Richard's Pipit | 3 | 0.02 | 0.30 | 4 |
| *Calamanthus cautus* | Shy Heathwren (Shy Hylacola) | 3 | 0.15 | 0.21 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| *Cormobates leucophaea* | White-throated Treecreeper | 3 | **7.64** | 0.06 | 3 |
| *Corvus tasmanicus* | Forest Raven | 3 | 0.50 | 0.18 | 4 |
| *Dasyornis broadbenti* | Rufous Bristlebird | 3 | 0.37 | 0.19 | 3 |
| *Gliciphila melanops* | Tawny-crowned Honeyeater | 3 | 2.58 | 0.10 | 6 |
| *Leipoa ocellata* | Malleefowl | 3 | <0.01 | 0.27 | 5 |
| *Lichenostomus penicillatus* | White-plumed Honeyeater | 3 | 1.10 | 0.14 | 4 |
| *Myiagra inquieta* | Restless Flycatcher | 3 | 0.25 | 0.38 | 3 |
| *Acanthiza nana* | Yellow (Little) Thornbill | 2 | 0.01 | 0.29 | 2 |
| *Calyptorhynchus funereus* | Yellow-tailed Black Cockatoo | 2 | **7.96** | 0.04 | 4 |
| *Dacelo novaeguineae* | Laughing Kookaburra | 2 | 2.90 | 0.08 | 3 |
| *Geopelia placida* | Peaceful Dove | 2 | 0.97 | 0.67 | 2 |
| *Malurus lamberti* | Variegated Wren | 2 | 0.56 | 0.17 | 5 |
| *Oreoica gutturalis* | Crested Bellbird | 2 | 0.11 | 0.40 | 3 |
| *Pardalotus punctatus* | Spotted Pardalote | 2 | **6.62** | 0.05 | 3 |
| *Acanthiza iredalei* | Slender-billed (Samphire) Thornbill | 1 | 0.19 | 0.25 | 2 |
| **Alauda arvensis* | Skylark | 1 | 2.06 | 0.08 | 3 |
| *Corcorax melanorhamphos* | White-winged Chough | 1 | 0.36 | 0.20 | 3 |
| *Microeca leucophaea* | Jacky Winter | 1 | 1.18 | 0.11 | 4 |
| *Ocyphaps lophotes* | Crested Pigeon | 1 | 0.97 | 0.13 | 5 |

| **Floristic PATN Group** | **Frequency** |
|---|---|
| *Melaleuca halmaturorum* Tall Shrubland | 7 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 6 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 4 |
| *Banksia ornata* Shrubland | 3 |
| Unclassified | 3 |
| *Allocasuarina verticilliata* Woodland | 2 |
| *E. leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 2 |
| *Eucalyptus arenacea/baxteri* Low Woodland | 2 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Tall Shrubland | 2 |
| *Melaleuca brevifolia* Shrubland | 2 |
| *Melaleuca lanceolatum* Woodland | 2 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 1 |
| *Eucalyptus camaldulensis, or E fasciculosa /or E.leucoxylon or E. baxteri* Woodland | 1 |
| *Eucalyptus camaldulensis*, Woodland | 1 |
| *Eucalyptus obliqua* var. *Pteridium esculentum* Woodland | 1 |
| *Gahnia filum, Samolus repens* Sedgeland | 1 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 1 |
| *Melaleuca brevifolia* or *M. uncinata* Shrubland | 1 |
| *Themeda triandra* Open Grassland | 1 |

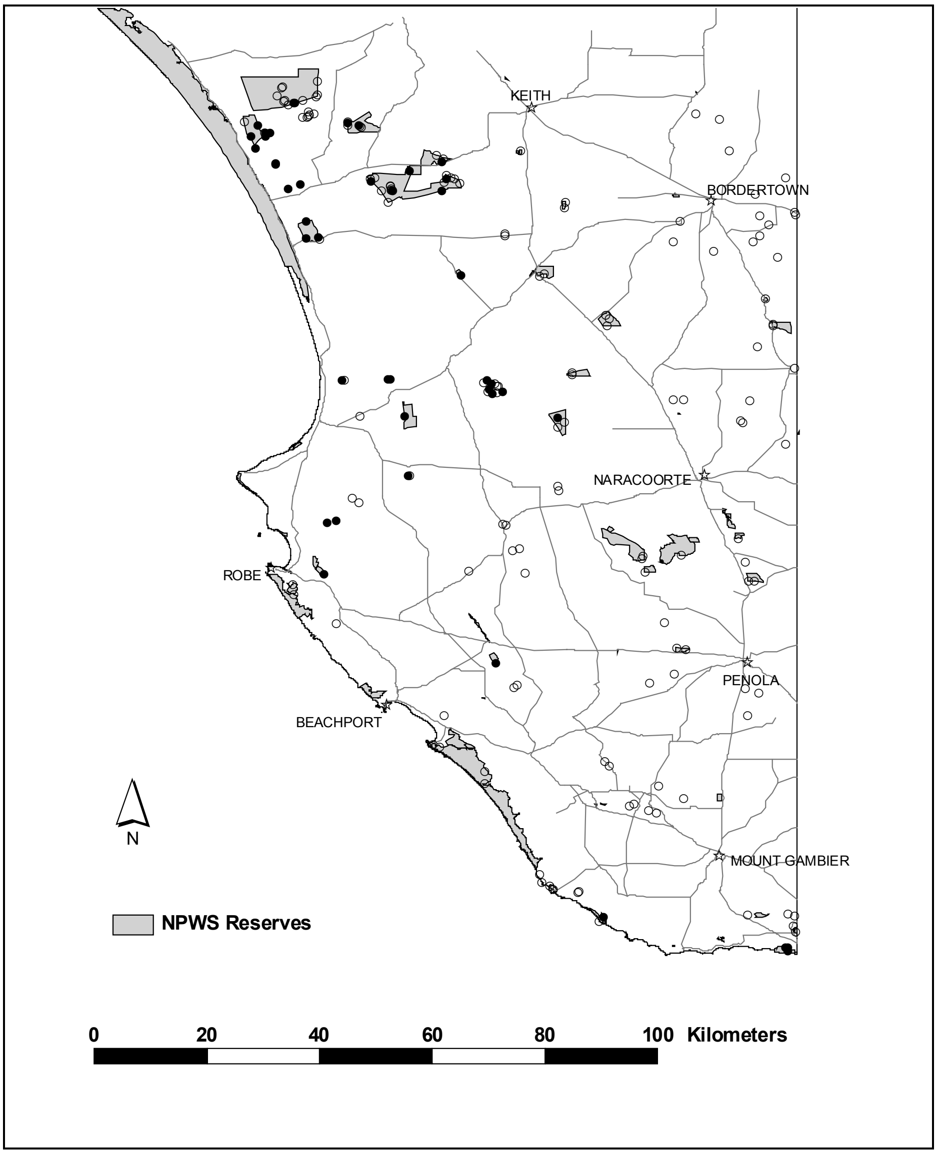



**Figure 88.**
**Distribution of quadrats representing PATN group 1B (closed circles) and other bird PATN groups (open circles).**

**Figure 89.**
**The Southern Scrub Robin was characteristic of group 1B and inhabited low woodland and Shrubland habitats.** **Photo: B. Furby.**

**GROUP 1C**

**Birds of mallee with an open understorey**
**Number of quadrats 18**
**Number of species in group 30**
**Mean number of species 11.8**

The indicator species in this group include the Purple-gaped Honeyeater (Figure 91), Silvereye, Superb Blue Wren and Malleefowl. Again their respective Indicator Values are relatively low suggesting a poorly defined group. The quadrats are confined to Gum Lagoon Conservation Park with the exception of two, one in Aberdour Conservation Park and the other in Fairview Conservation Park (Figure 90). It is interesting to note the difference in bird species between the two Mallee bird groups, Groups 1A and 1C. Group 1C included the Superb Blue Wren and the Spotted Pardalote while in Group 1A these species were replaced by the Variegated Wren and Yellow-rumped Pardalote which are the dryland equivalents for these species. Other group specific species include the Little Wattlebird for group 1C and the Shy Heathwren, Inland Brown Thornbill and Hooded Robin for group 1A. These species also support the interpretation that the species from Group 1A inhabit a drier habitat than those in group 1C (Blakers *et al.* 1984, Schodde and Tidemann 1986).

| Species | Common Name | Frequency | Indicator Value | Propn. | No Groups |
|---|---|---|---|---|---|
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | 17 | 1.39 | 0.13 | 6 |
| *Anthochaera carunculata* | Red Wattlebird | 13 | 1.19 | 0.14 | 7 |
| *Gymnorhina tibicen* | Australian Magpie | 11 | 0.25 | 0.09 | 7 |
| *Pachycephala pectoralis* | Golden Whistler | 10 | 1.73 | 0.15 | 6 |
| *Corvus coronoides* | Australian Raven | 9 | 1.99 | 0.16 | 6 |
| *Acanthiza pusilla* | Brown Thornbill | 7 | 1.43 | 0.06 | 6 |
| *Cracticus torquatus* | Grey Butcherbird | 7 | 2.47 | 0.19 | 6 |
| *Pardalotus punctatus* | Spotted Pardalote | 7 | 1.69 | 0.17 | 3 |
| *Cacatua roseicapilla* | Galah | 6 | 0.28 | 0.08 | 6 |
| *Colluricincla harmonica* | Grey Shrikethrush | 6 | 2.69 | 0.05 | 7 |
| *Strepera versicolor* | Grey Currawong | 6 | 0.75 | 0.07 | 7 |
| ***Lichenostomus cratitius*** | **Purple-gaped Honeyeater** | 5 | **8.51** | 0.38 | 4 |
| ***Malurus cyaneus*** | **Superb Blue Wren** | 5 | **5.83** | 0.04 | 7 |
| *Rhipidura fuliginosa* | Grey Fantail | 5 | 4.25 | 0.04 | 6 |
| *Sericornis frontalis* | White-browed Scrubwren | 5 | 2.69 | 0.05 | 7 |
| *Epthianura albifrons* | White-fronted Chat | 4 | 0.41 | 0.15 | 7 |
| ***Leipoa ocellata*** | **Malleefowl** | 4 | **5.68** | 0.36 | 5 |
| **Sturnus vulgaris* | Common Starling | 4 | 0.32 | 0.15 | 7 |
| *Drymodes brunneopygia* | Southern Scrub-robin | 3 | 0.26 | 0.08 | 5 |
| *Melithreptus brevirostris* | Brown-headed Honeyeater | 3 | 1.23 | 0.06 | 5 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | 2 | 1.75 | 0.05 | 6 |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | 2 | 1.75 | 0.05 | 7 |
| *Phaps chalcoptera* | Common Bronzewing | 2 | 2.09 | 0.04 | 6 |
| *Psephotus haematonotus* | Red-rumped Parrot | 2 | 1.92 | 0.04 | 6 |
| ***Zosterops lateralis*** | **Silvereye** | 2 | **6.34** | 0.02 | 7 |
| *Anthochaera chrysoptera* | Little Wattlebird | 1 | 4.12 | 0.02 | 5 |
| *Coracina novaehollandiae* | Black-faced Cuckooshrike | 1 | 2.33 | 0.03 | 7 |
| *Lichenostomus leucotis* | White-eared Honeyeater | 1 | 0.96 | 0.05 | 3 |
| *Phaps elegans* | Brush Bronzewing | 1 | 1.77 | 0.04 | 5 |
| *Rhipidura leucophrys* | Willie Wagtail | 1 | 2.99 | 0.02 | 7 |

| Floristic PATN Group | Frequency |
|---|---|
| *Eucalyptus arenacea/baxteri* Low Woodland | 4 |
| *Eucalyptus incrassata, E. leptophylla* Tall Open Shrubland | 4 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 3 |
| *Melaleuca brevifolia* Shrubland | 2 |
| *E. leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 1 |
| *Eucalyptus arenacea/baxteri+/- Pteridium esculentum* Woodland | 1 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 1 |
| *Melaleuca halmaturorum* Tall Shrubland | 1 |
| *Melaleuca lanceolata* Woodland | 1 |

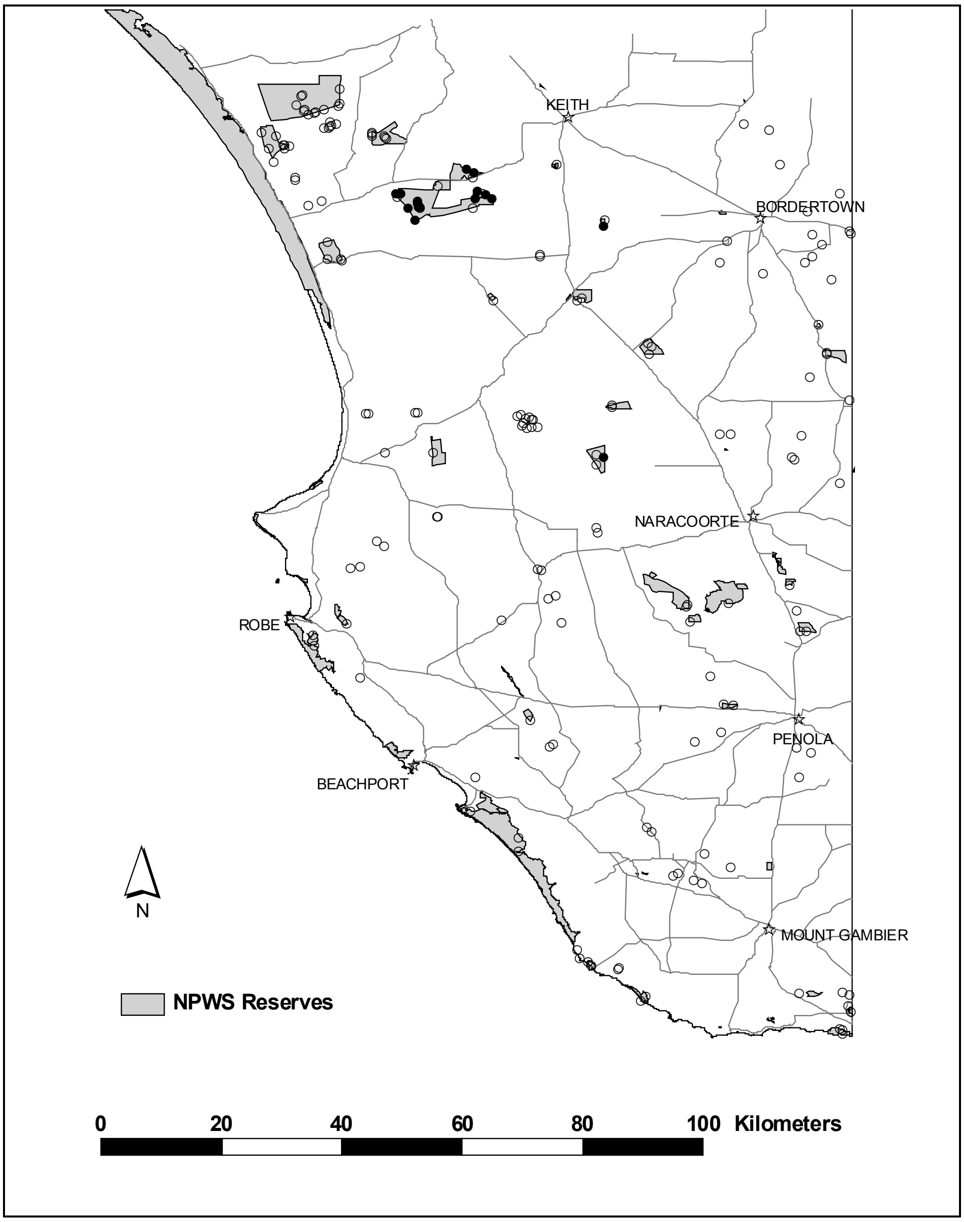



**Figure 90.**
**Distribution of quadrats representing PATN Group 1C (closed circles) and other bird PATN groups (open circles).**

**Figure 91.**
**The Purple Gaped Honeyeater is characteristic of Group 1C which are in mallee habitats with an open understorey.** Photo: B. Furby.

**GROUP 1D**

**Birds of woodlands**
**Number of quadrats** **65**
**Number of species in group** **78**
**Mean number of species** **22.7**

The most common indicators species for this group include White-throated Treecreeper (Figure 93), Yellow-tailed Black Cockatoo Crimson Rosella and to a lesser degree the Spotted Pardalote, Little Wattlebird, Striated Thornbill, White-naped Honeyeater, White-eared Honeyeater and White-browed Scrubwren. Other species occurring in low numbers but restricted to this habitat type include the Chestnut-rumped Heathwren, Black-chinned Honeyeater, Red-tailed Black Cockatoo, Ground Thrush and Diamond firetail. This group is the most diverse, containing the highest number of species. These quadrats are spread over the lower two thirds of the study area and reflect quadrats situated in wetter areas with larger trees (Figure 92). An interesting fact about this group was that 58% of all the quadrats in Group 1D contained Bracken *Pteridium esculentum* while only 5% of all other quadrats surveyed contained this species. Bracken is considered a common plant in high rainfall zones (Cunningham *et al.* 1992).

| Species | Common Name | Frequency | Indicator Value | Propn. | No Groups |
|---|---|---|---|---|---|
| *Malurus cyaneus* | Superb Blue Wren | 63 | 4.34 | 0.45 | 7 |
| *Rhipidura fuliginosa* | Grey Fantail | 61 | 8.71 | 0.51 | 6 |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | 60 | 4.98 | 0.47 | 6 |
| ***Sericornis frontalis*** | **White-browed Scrubwren** | 56 | **12.66** | 0.56 | 7 |
| *Colluricincla harmonica* | Grey Shrikethrush | 55 | 5.77 | 0.48 | 7 |
| *Acanthiza pusilla* | Brown Thornbill | 54 | 6.99 | 0.50 | 6 |
| *Gymnorhina tibicen* | Australian Magpie | 52 | 1.19 | 0.41 | 7 |
| ***Platycercus elegans*** | **Crimson Rosella and Yellow Rosella** | 50 | **35.27** | 0.79 | 3 |
| ***Cormobates leucophaea*** | **White-throated Treecreeper** | 49 | **49.69** | 0.92 | 3 |
| ***Acanthiza lineata*** | **Striated Thornbill** | 44 | **16.17** | 0.64 | 5 |
| ***Calyptorhynchus funereus*** | **Yellow-tailed Black Cockatoo** | 43 | **42.40** | 0.91 | 4 |
| *Strepera versicolor* | Grey Currawong | 42 | 5.71 | 0.51 | 7 |
| ***Anthochaera chrysoptera*** | **Little Wattlebird** | 38 | **20.07** | 0.72 | 5 |
| ***Pardalotus punctatus*** | **Spotted Pardalote** | 32 | **21.17** | 0.78 | 3 |
| *Anthochaera carunculata* | Red Wattlebird | 31 | 0.22 | 0.32 | 7 |
| *Eopsaltria australis* | Eastern Yellow Robin | 31 | 8.72 | 0.60 | 3 |
| *Cacatua roseicapilla* | Galah | 30 | 0.85 | 0.42 | 6 |
| *Zosterops lateralis* | Silvereye | 30 | 0.34 | 0.32 | 7 |
| *Melithreptus brevirostris* | Brown-headed Honeyeater | 29 | 6.16 | 0.56 | 5 |
| *Corvus coronoides* | Australian Raven | 28 | 3.79 | 0.51 | 6 |
| *Artamus cyanopterus* | Dusky Woodswallow | 27 | 7.69 | 0.60 | 6 |
| *Pachycephala rufiventris* | Rufous Whistler | 24 | 11.73 | 0.71 | 5 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | 21 | 1.84 | 0.48 | 6 |
| *Petroica multicolor* | Scarlet Robin | 21 | 8.05 | 0.66 | 4 |
| *Phaps chalcoptera* | Common Bronzewing | 21 | 0.92 | 0.44 | 6 |
| *Platycercus eximius* | Eastern Rosella | 20 | 2.68 | 0.51 | 4 |
| *Dacelo novaeguineae* | Laughing Kookaburra | 19 | 12.54 | 0.79 | 3 |
| ***Melithreptus lunatus*** | **White-naped Honeyeater** | 19 | **15.60** | 0.86 | 2 |
| *Pachycephala pectoralis* | Golden Whistler | 19 | 0.70 | 0.29 | 6 |
| *Psephotus haematonotus* | Red-rumped Parrot | 19 | 0.42 | 0.41 | 6 |
| ***Lichenostomus leucotis*** | **White-eared Honeyeater** | 17 | **15.01** | 0.89 | 3 |
| *Carduelis carduelis* | Goldfinch | 16 | 0.30 | 0.41 | 6 |
| *Acanthiza reguloides* | Buff-rumped Thornbill | 15 | 2.86 | 0.56 | 3 |
| *Coracina novaehollandiae* | Black-faced Cuckooshrike | 14 | 0.26 | 0.41 | 7 |
| *Cracticus torquatus* | Grey Butcherbird | 14 | 0.04 | 0.38 | 6 |
| *Daphoenositta chrysoptera* | Varied Sittella | 14 | 3.87 | 0.61 | 3 |
| *Grallina cyanoleuca* | Magpie-lark | 13 | 0.19 | 0.41 | 5 |
| *Rhipidura leucophrys* | Willie Wagtail | 13 | 0.20 | 0.32 | 7 |
| *Acanthorhynchus tenuirostris* | Eastern Spinebill | 11 | 9.72 | 0.92 | 2 |
| *Cacatua galerita* | Sulphur-crested Cockatoo | 10 | 2.85 | 0.63 | 3 |
| *Cacatua sanguinea* | Little Corella | 10 | 8.53 | 0.91 | 2 |

| | | | | | |
|---|---|---|---|---|---|
| *Calamanthus pyrrhopygius* | Chestnut-rumped Heathwren (Chestnut-rumped Hylacola) | 10 | 10.56 | 1.00 | 1 |
| *Gliciphila melanops* | New Holland Honeyeater | 10 | 0.03 | 0.34 | 6 |
| **Turdus merula* | Blackbird | 10 | 0.69 | 0.48 | 3 |
| *Corvus tasmanicus* | Forest Raven | 9 | 1.17 | 0.53 | 4 |
| *Lichenostomus penicillatus* | White-plumed Honeyeater | 9 | 0.21 | 0.43 | 4 |
| *Drymodes brunneopygia* | Southern Scrub-robin | 8 | 1.97 | 0.22 | 5 |
| *Melanodryas cucullata* | Hooded Robin | 8 | 4.73 | 0.80 | 2 |
| *Phaps elegans* | Brush Bronzewing | 8 | 0.49 | 0.29 | 5 |
| *Falcunculus frontatus* | Crested Shrike-tit | 7 | 5.04 | 0.88 | 2 |
| *Climacteris picumnus* | Brown Treecreeper | 6 | 1.83 | 0.67 | 2 |
| *Dicaeum hirundinaceum* | Mistletoebird | 6 | 3.92 | 0.86 | 2 |
| *Epthianura albifrons* | White-fronted Chat | 6 | 1.35 | 0.23 | 7 |
| *Manorina melanocephala* | Noisy Miner | 6 | 0.09 | 0.43 | 2 |
| *Microeca leucophaea* | Jacky Winter | 5 | 0.62 | 0.56 | 4 |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | 4 | 9.02 | 0.09 | 7 |
| *Melithreptus gularis* | Black-chinned Honeyeater | 4 | 3.24 | 1.00 | 1 |
| *Stagnopleura bella* | Beautiful Firetail | 4 | 0.01 | 0.40 | 2 |
| **Sturnus vulgaris* | Common Starling | 4 | 3.65 | 0.15 | 7 |
| *Cacatua tenuirostris* | Long-billed Corella | 3 | 0.01 | 0.43 | 2 |
| *Myiagra inquieta* | Restless Flycatcher | 3 | 0.03 | 0.38 | 3 |
| *Smicrornis brevirostris* | Weebill | 3 | 1.39 | 0.20 | 6 |
| *Stipiturus malachurus* | Southern Emu-wren | 3 | 3.12 | 0.14 | 6 |
| *Acanthiza uropygialis* | Chestnut-rumped Thornbill | 2 | 0.01 | 0.50 | 2 |
| *Calyptorhynchus banksii* | Red-tailed Black Cockatoo | 2 | 0.95 | 1.00 | 1 |
| *Cisticola exilis* | Golden-headed Cisticola | 2 | 0.01 | 0.50 | 3 |
| *Dasyornis broadbenti* | Rufous Bristlebird | 2 | 2.94 | 0.13 | 3 |
| *Malurus lamberti* | Variegated Wren | 2 | 1.69 | 0.17 | 5 |
| *Turnix varia* | Painted Button-quail | 2 | 0.35 | 0.29 | 3 |
| *Anthus novaeseelandiae* | Richard's Pipit | 1 | 2.53 | 0.10 | 4 |
| *Calamanthus fuliginosus* | Striated Fieldwren (Eastern Fieldwren) | 1 | 0.56 | 0.25 | 3 |
| *Corcorax melanorhamphos* | White-winged Chough | 1 | 0.87 | 0.20 | 3 |
| *Geopelia placida* | Peaceful Dove | 1 | 0.28 | 0.33 | 2 |
| *Leipoa ocellata* | Malleefowl | 1 | 2.87 | 0.09 | 5 |
| *Ocyphaps lophotes* | Crested Pigeon | 1 | 1.86 | 0.13 | 5 |
| *Pardalotus xanthopygus* | Yellow-tailed Pardalote | 1 | 6.98 | 0.04 | 4 |
| *Stagnopleura guttata* | Diamond Firetail | 1 | 0.07 | 1.00 | 1 |
| *Zoothera lunulata* | Bassian Thrush (Ground Thrush, White's Thrush, Mountain Thrush) | 1 | 0.07 | 1.00 | 1 |

| Floristic PATN Group | Frequency |
|---|---|
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 20 |
| *Banksia ornata* Shrubland | 8 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 6 |
| *Eucalyptus obliqua* var. *Pteridium esculentum* Woodland | 6 |
| *E. leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 4 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 3 |
| *Melaleuca brevifolia* Shrubland | 3 |
| *Baumea juncea +/- Gahnia trifida* Sedgeland | 2 |
| *Melaleuca sqarrosa +/- Eucalyptus ovata* Tall Shrubland | 2 |
| *Xanthorrhoea caespitosa, Leptospermum continetinale* Open Shrubland | 2 |
| *Banksia ornata +/- E.ovata, E. viminalis* | 1 |
| *E. leucoxylon* ssp. Low Open Woodland | 1 |

| | |
|---|---|
| *Eucalyptus camaldulensis*, Woodland | 1 |
| *Eucalyptus fasciculosa, E. leucoxylon* Low Woodland | 1 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 1 |
| *Gahnia filum, Samolus repens* Sedgeland | 1 |
| *Leptospermum lanigerum* Tall Shrubland | 1 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* | 1 |

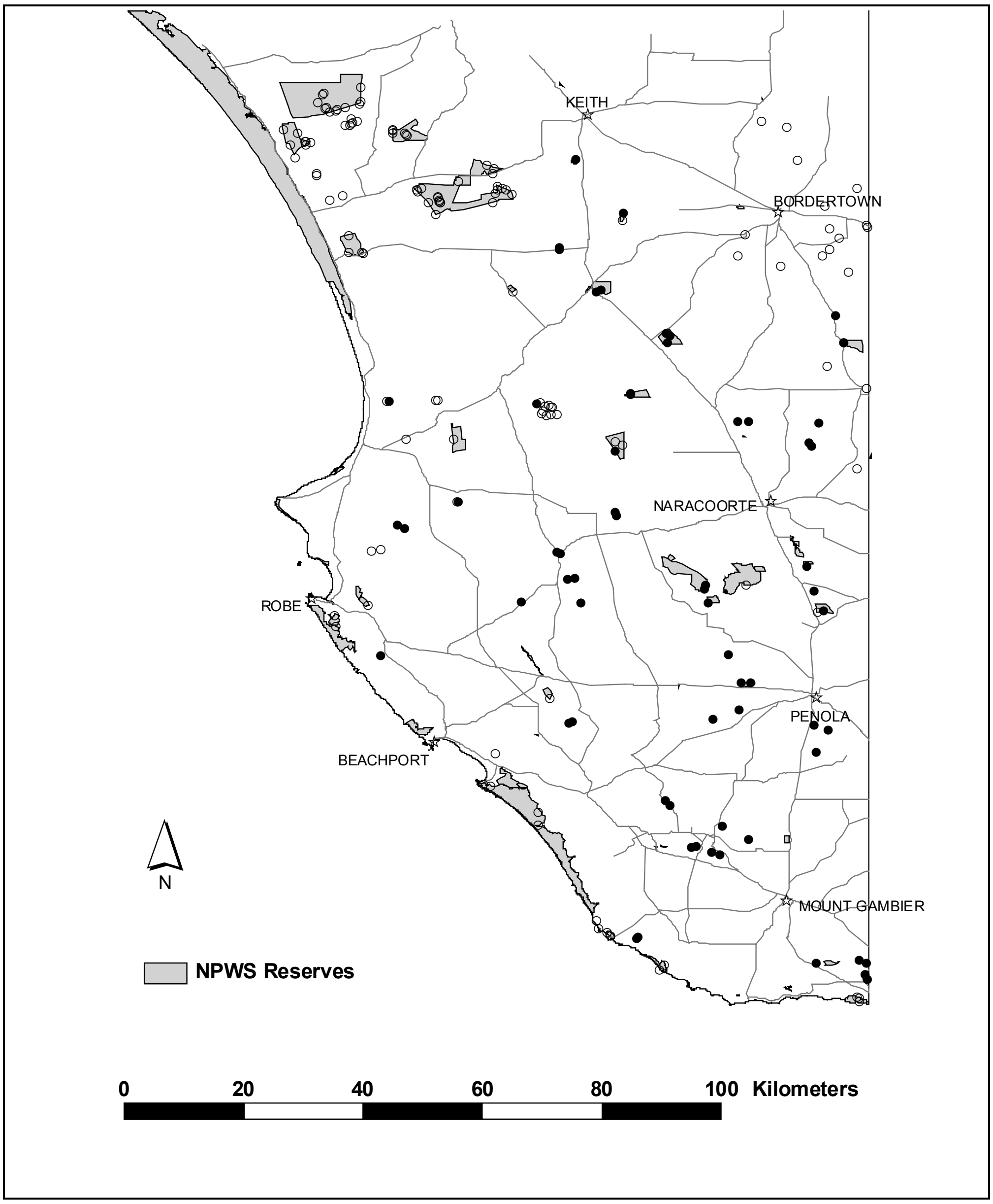



**Figure 92.**
**Distribution of quadrats representing PATN Group 1D (closed circles) and other bird PATN groups (open circles).**

**Figure 93.**
**The White-throated tree Creeper was strongly represented in woodland habitats in the lower two thirds of the study area. Photo: B. Furby.**

**GROUP 2**

**Birds of coastal shrublands**
**Number of quadrats 19**
**Number of species in group 52**
**Mean number of species 15.5**

The most important indicator species in this group are the Singing Honeyeater (Figure 95) and Rufous Bristlebird. Other indicator species include the Beautiful Firetail, Southern Emu-wren, Silvereye and Spiny-cheeked Honeyeater. The Singing Honeyeater was recorded only in this group of quadrats as was the Western Fieldwren, Olive Whistler, Feral Pigeon and Spotted Turtledove. Most quadrats in this group were immediately adjacent the coast with the other quadrats being closely associated with swamps (Figure 94).

| Species | Common Name | Frequency | Indicator Value | Propn. | No Groups |
|---|---|---|---|---|---|
| ***Zosterops lateralis*** | **Silvereye** | 19 | **8.25** | 0.20 | 7 |
| *Malurus cyaneus* | Superb Blue Wren | 16 | 0.15 | 0.12 | 7 |
| *Acanthiza pusilla* | Brown Thornbill | 14 | 0.61 | 0.13 | 6 |
| *Sericornis frontalis* | White-browed Scrubwren | 12 | 0.19 | 0.12 | 7 |
| ***Acanthagenys rufogularis*** | **Spiny-cheeked Honeyeater** | 11 | **8.24** | 0.25 | 7 |
| ***Dasyornis broadbenti*** | **Rufous Bristlebird** | 11 | **48.80** | 0.69 | 3 |
| *Gymnorhina tibicen* | Australian Magpie | 11 | 0.46 | 0.09 | 7 |
| ***Lichenostomus virescens*** | **Singing Honeyeater** | 11 | **79.28** | 1.00 | 1 |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | 9 | 1.58 | 0.07 | 6 |
| *Rhipidura fuliginosa* | Grey Fantail | 9 | 1.09 | 0.08 | 6 |
| *Colluricincla harmonica* | Grey Shrikethrush | 8 | 1.40 | 0.07 | 7 |
| *Phaps elegans* | Brush Bronzewing | 7 | 4.76 | 0.25 | 5 |
| ***Stipiturus malachurus*** | **Southern Emu-wren** | 7 | **9.03** | 0.33 | 6 |
| *Rhipidura leucophrys* | Willie Wagtail | 6 | 0.44 | 0.15 | 7 |
| ***Stagnopleura bella*** | **Beautiful Firetail** | 6 | **19.94** | 0.60 | 2 |
| **Turdus merula* | Blackbird | 6 | 5.38 | 0.29 | 3 |
| **Carduelis carduelis* | Goldfinch | 5 | 0.08 | 0.13 | 6 |
| *Gliciphila melanops* | Tawny-crowned Honeyeater | 5 | 0.84 | 0.17 | 6 |
| *Anthochaera chrysoptera* | Little Wattlebird | 4 | 0.64 | 0.08 | 5 |
| *Corvus tasmanicus* | Forest Raven | 4 | 1.85 | 0.24 | 4 |
| *Eopsaltria australis* | Eastern Yellow Robin | 4 | 0.59 | 0.08 | 3 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | 3 | 0.85 | 0.07 | 6 |
| *Epthianura albifrons* | White-fronted Chat | 3 | 0.01 | 0.12 | 7 |
| *Strepera versicolor* | Grey Currawong | 3 | 4.13 | 0.04 | 7 |
| **Sturnus vulgaris* | Common Starling | 3 | 0.02 | 0.11 | 7 |
| *Anthochaera carunculata* | Red Wattlebird | 2 | 6.93 | 0.02 | 7 |
| *Artamus cyanopterus* | Dusky Woodswallow | 2 | 2.04 | 0.04 | 6 |
| *Grallina cyanoleuca* | Magpie-lark | 2 | 0.93 | 0.06 | 5 |
| *Pardalotus xanthopygus* | Yellow-tailed Pardalote | 2 | 0.29 | 0.09 | 4 |
| *Acanthiza apicalis* | Inland Brown Thornbill | 1 | 0.42 | 0.08 | 4 |
| *Acanthiza lineata* | Striated Thornbill | 1 | 6.01 | 0.01 | 5 |
| *Acanthorhynchus tenuirostris* | Eastern Spinebill | 1 | 0.42 | 0.08 | 2 |
| **Alauda arvensis* | Skylark | 1 | 0.50 | 0.08 | 3 |
| *Calamanthus campestris* | Rufous Fieldwren (Western Fieldwren) | 1 | 1.57 | 1.00 | 1 |
| *Calamanthus cautus* | Shy Heathwren (Shy Hylacola) | 1 | 0.59 | 0.07 | 5 |
| *Calamanthus fuliginosus* | Striated Fieldwren (Eastern Fieldwren) | 1 | 0.02 | 0.25 | 3 |
| *Cisticola exilis* | Golden-headed Cisticola | 1 | 0.02 | 0.25 | 3 |
| **Columba livia* | Rock Dove (Feral Pigeon) | 1 | 1.57 | 1.00 | 1 |
| *Coracina novaehollandiae* | Black-faced Cuckooshrike | 1 | 2.51 | 0.03 | 7 |
| *Cracticus torquatus* | Grey Butcherbird | 1 | 2.81 | 0.03 | 6 |
| *Dicaeum hirundinaceum* | Mistletoebird | 1 | 0.06 | 0.14 | 2 |
| *Drymodes brunneopygia* | Southern Scrub-robin | 1 | 2.71 | 0.03 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| *Leipoa ocellata* | Malleefowl | 1 | 0.34 | 0.09 | 5 |
| *Lichenostomus cratitius* | Purple-gaped Honeyeater | 1 | 0.50 | 0.08 | 4 |
| *Ocyphaps lophotes* | Crested Pigeon | 1 | 0.12 | 0.13 | 5 |
| *Pachycephala olivacea* | Olive Whistler | 1 | 1.57 | 1.00 | 1 |
| *Pachycephala pectoralis* | Golden Whistler | 1 | 5.61 | 0.02 | 6 |
| *Pachycephala rufiventris* | Rufous Whistler | 1 | 2.51 | 0.03 | 5 |
| *Petroica multicolor* | Scarlet Robin | 1 | 2.31 | 0.03 | 4 |
| *Smicrornis brevirostris* | Weebill | 1 | 0.68 | 0.07 | 6 |
| **Streptopelia chinensis* | Spotted Turtle-dove | 1 | 1.57 | 1.00 | 1 |
| *Turnix varia* | Painted Button-quail | 1 | 0.06 | 0.14 | 3 |

| **Floristic PATN Group** | **Frequency** |
|---|---|
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Tall Shrubland | 6 |
| *Melaleuca brevifolia* Shrubland | 5 |
| *Gahnia filum, Samolus repens* Sedgeland | 2 |
| *Banksia ornata* Shrubland | 1 |
| *Gahnia filum* Sedgeland | 1 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 1 |
| *Leptospermum lanigerum* Tall Shrubland | 1 |
| *Melaleuca halmaturorum* Tall Shrubland | 1 |
| Unclassified | 1 |

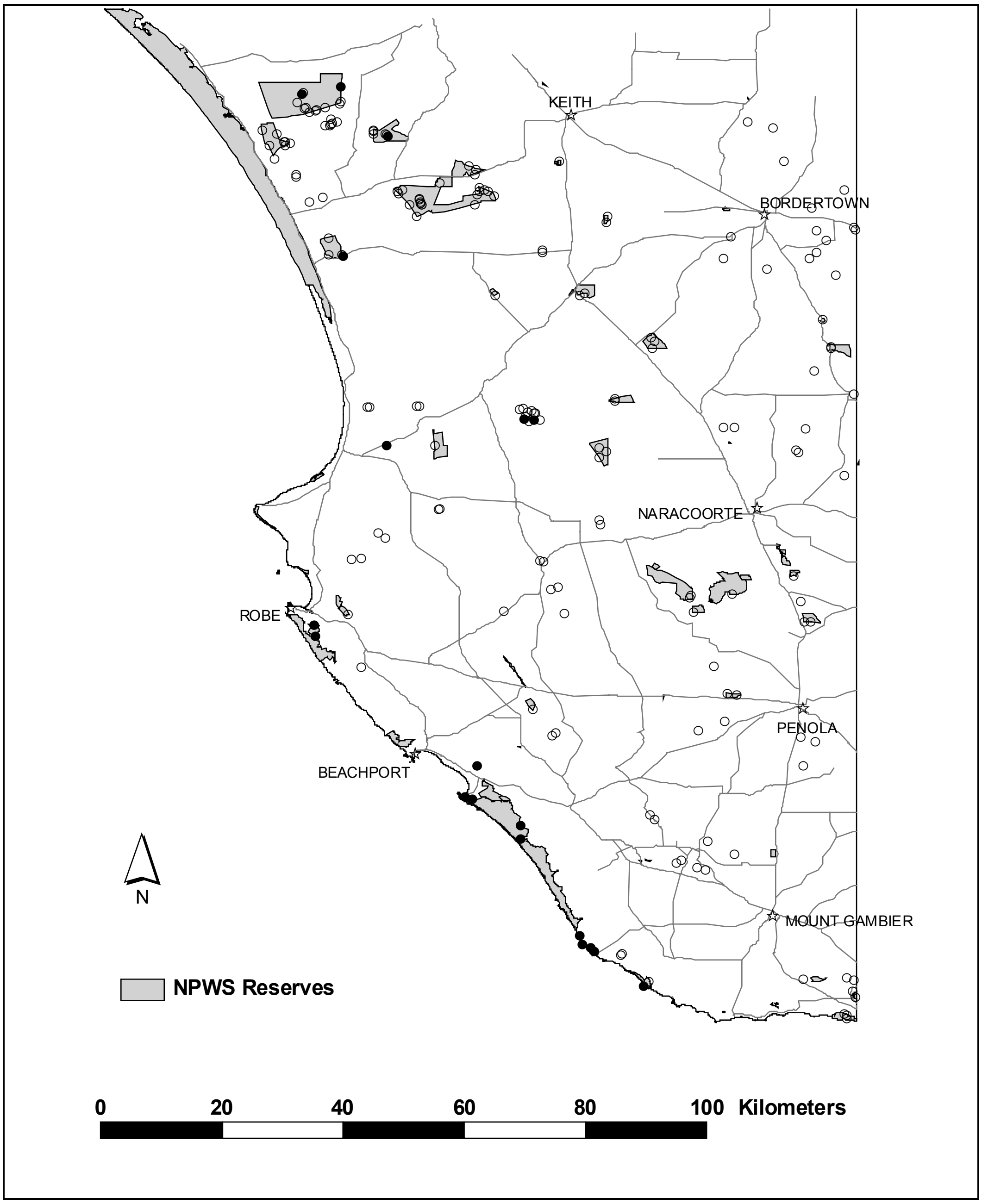



**Figure 94.**
**Distribution of quadrats representing PATN Group 2 (closed circles) and other bird PATN groups (open circles).**

**Figure 95.**
**The Singing Honeyeater was recorded exclusively in Group 2 quadrats which were immediately adjacent the coast or closely associated with swamps. Photo: B. Furby.**

**GROUP 3**

**Birds of open woodlands and grasslands**
**Number of quadrats** **17**
**Number of species in group** **53**
**Mean number of species** **16.4**

The indicator species in this group include the House Sparrow (Figure 97), Noisy Miner, Little Thornbill, Eastern Rosella, Long-billed Corella, White-plumed Honeyeater and Red-rumped Parrot. The House Sparrow was recorded only from this habitat type as was the Red-capped Robin, Bluebonnet, Brown Quail, Bush Stone-curlew and Southern Whiteface. The quadrats in this group were situated mainly around the Bordertown area where there is little undisturbed native vegetation remaining (Figure 96). The indicator species in this group tend to be more closely related to rural paddocks than native vegetation.

| Species | Common Name | Frequency | Indicator Value | Propn. | No Groups |
|---|---|---|---|---|---|
| *Gymnorhina tibicen* | Australian Magpie | 16 | 1.33 | 0.13 | 7 |
| ***Platycercus eximius*** | **Eastern Rosella** | 12 | **18.03** | 0.31 | 4 |
| ***Psephotus haematonotus*** | **Red-rumped Parrot** | 12 | **12.95** | 0.26 | 6 |
| *Anthochaera carunculata* | Red Wattlebird | 11 | 0.38 | 0.11 | 7 |
| *Cacatua roseicapilla* | Galah | 11 | 2.44 | 0.15 | 6 |
| ***Lichenostomus penicillatus*** | **White-plumed Honeyeater** | 8 | **16.52** | 0.38 | 4 |
| ***Manorina melanocephala*** | **Noisy Miner** | 8 | **30.70** | 0.57 | 2 |
| *Platycercus elegans* | Crimson Rosella and Yellow Rosella | 7 | 0.11 | 0.11 | 3 |
| *Rhipidura leucophrys* | Willie Wagtail | 7 | 2.10 | 0.17 | 7 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | 6 | 0.58 | 0.14 | 6 |
| *Grallina cyanoleuca* | Magpie-lark | 6 | 2.35 | 0.19 | 5 |
| **Sturnus vulgaris* | Common Starling | 6 | 3.83 | 0.22 | 7 |
| ***Acanthiza nana*** | **Yellow (Little) Thornbill** | 5 | **23.62** | 0.71 | 2 |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | 5 | 0.07 | 0.11 | 7 |
| *Cacatua galerita* | Sulphur-crested Cockatoo | 5 | 6.44 | 0.31 | 3 |
| *Coracina novaehollandiae* | Black-faced Cuckooshrike | 5 | 0.66 | 0.15 | 7 |
| ****Passer domesticus*** | **House Sparrow** | 5 | **36.24** | 1.00 | 1 |
| ***Cacatua tenuirostris*** | **Long-billed Corella** | 4 | **12.99** | 0.57 | 2 |
| *Colluricincla harmonica* | Grey Shrikethrush | 4 | 4.50 | 0.04 | 7 |
| *Malurus cyaneus* | Superb Blue Wren | 4 | 6.54 | 0.03 | 7 |
| *Ocyphaps lophotes* | Crested Pigeon | 4 | 10.66 | 0.50 | 5 |
| *Climacteris picumnus* | Brown Treecreeper | 3 | 3.49 | 0.33 | 2 |
| *Corcorax melanorhamphos* | White-winged Chough | 3 | 9.28 | 0.60 | 3 |
| *Corvus coronoides* | Australian Raven | 3 | 1.23 | 0.05 | 6 |
| *Dacelo novaeguineae* | Laughing Kookaburra | 3 | 0.05 | 0.13 | 3 |
| *Melithreptus lunatus* | White-naped Honeyeater | 3 | 0.13 | 0.14 | 2 |
| *Acanthiza uropygialis* | Chestnut-rumped Thornbill | 2 | 3.58 | 0.50 | 2 |
| *Artamus cyanopterus* | Dusky Woodswallow | 2 | 1.62 | 0.04 | 6 |
| **Carduelis carduelis* | Goldfinch | 2 | 1.16 | 0.05 | 6 |
| *Daphoenositta chrysoptera* | Varied Sittella | 2 | 0.16 | 0.09 | 3 |
| *Microeca leucophaea* | Jacky Winter | 2 | 0.58 | 0.22 | 4 |
| *Myiagra inquieta* | Restless Flycatcher | 2 | 0.83 | 0.25 | 3 |
| *Petroica goodenovii* | Red-capped Robin | 2 | 9.62 | 1.00 | 1 |
| *Phaps chalcoptera* | Common Bronzewing | 2 | 1.86 | 0.04 | 6 |
| *Acanthiza apicalis* | Inland Brown Thornbill | 1 | 0.32 | 0.08 | 4 |
| *Anthochaera chrysoptera* | Little Wattlebird | 1 | 3.84 | 0.02 | 5 |
| *Aphelocephala leucopsis* | Southern Whiteface | 1 | 1.86 | 1.00 | 1 |
| *Burhinus grallarius* | Bush Stone-curlew | 1 | 1.86 | 1.00 | 1 |
| *Calyptorhynchus funereus* | Yellow-tailed Black Cockatoo | 1 | 3.31 | 0.02 | 4 |
| *Cormobates leucophaea* | White-throated Treecreeper | 1 | 3.84 | 0.02 | 3 |
| *Corvus tasmanicus* | Forest Raven | 1 | 0.70 | 0.06 | 4 |
| *Coturnix ypsilophora* | Brown (Swamp) Quail | 1 | 1.86 | 1.00 | 1 |
| *Epthianura albifrons* | White-fronted Chat | 1 | 1.46 | 0.04 | 7 |
| *Falcunculus frontatus* | Crested Shrike-tit | 1 | 0.07 | 0.13 | 2 |

| | | | | | |
|---|---|---|---|---|---|
| *Gliciphila melanops* | Tawny-crowned Honeyeater | 1 | 1.72 | 0.03 | 6 |
| *Lichenostomus leucotis* | White-eared Honeyeater | 1 | 0.86 | 0.05 | 3 |
| *Melithreptus brevirostris* | Brown-headed Honeyeater | 1 | 3.76 | 0.02 | 5 |
| *Northiella haematogaster* | Bluebonnet | 1 | 1.86 | 1.00 | 1 |
| *Oreoica gutturalis* | Crested Bellbird | 1 | 0.01 | 0.20 | 3 |
| *Pachycephala rufiventris* | Rufous Whistler | 1 | 2.16 | 0.03 | 5 |
| *Smicrornis brevirostris* | Weebill | 1 | 0.54 | 0.07 | 6 |
| *Strepera versicolor* | Grey Currawong | 1 | 6.54 | 0.01 | 7 |
| *Zosterops lateralis* | Silvereye | 1 | 7.62 | 0.01 | 7 |

| Floristic PATN Group | Frequency |
|---|---|
| *Allocasuarina leuhmannii* Woodland | 6 |
| *Eucalyptus microcarpa* Woodland | 5 |
| *Eucalyptus behriana* +/- *E. dumosa* Low Open Woodland | 2 |
| *E. leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 1 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 1 |
| *Eucalyptus ovata/ E. viminalis* Woodland | 1 |
| Unclassified | 1 |

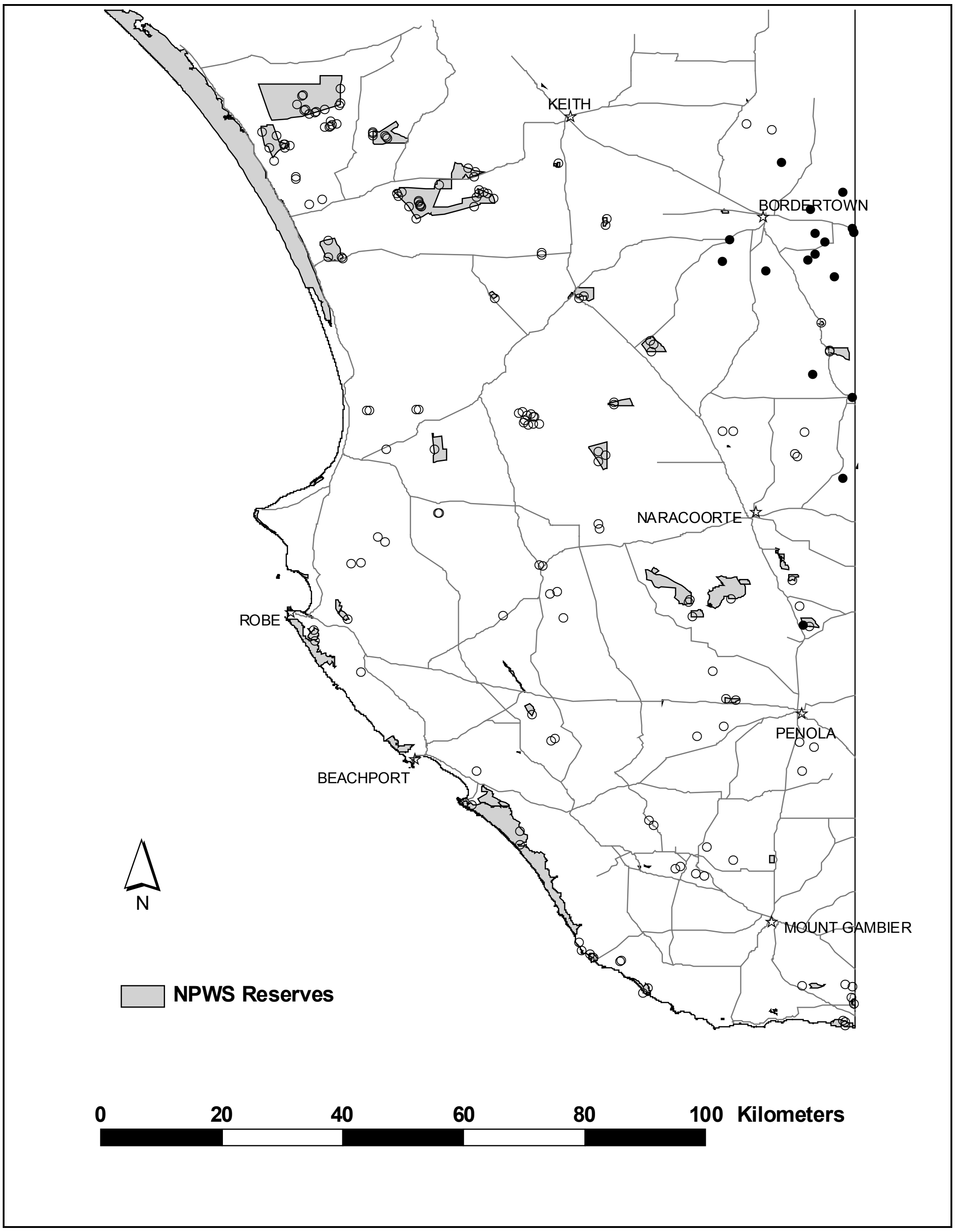



**Figure 96.**
**Distribution of quadrats representing PATN Group 3 (closed circles) and other bird PATN groups (open circles).**

**Figure 97.**
**The House Sparrow was recorded in low numbers from disturbed quadrats in the drier open woodlands and grasslands of the north eastern corner of the study area.** **Photo: B. Furby.**

**GROUP 4**

**Birds of sedgeland**
**Number of quadrats 11**
**Number of species in group 37**
**Mean number of species 14**

The indicator species for this group are birds of open grasslands and include the Skylark (Figure 99), Richard's Pipit and White-fronted Chat. The Skylark and the Pipit in particular are strongly associated with open grasslands and sedgelands. The quadrats in this group were all situated in and around Messent Conservation Park with one quadrat in Bool Lagoon (Figure 98) where this habitat is also common.

| Species | Common Name | Frequency | Indicator Value | Propn. | No Groups |
|---|---|---|---|---|---|
| ***Alauda arvensis** | **Skylark** | 11 | **124.70** | 0.85 | 3 |
| *Gymnorhina tibicen* | Australian Magpie | 9 | 0.14 | 0.07 | 7 |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | 8 | <0.01 | 0.06 | 6 |
| *Cacatua roseicapilla* | Galah | 7 | 1.24 | 0.10 | 6 |
| ***Epthianura albifrons*** | **White-fronted Chat** | 6 | **10.41** | 0.23 | 7 |
| ***Anthus novaeseelandiae*** | **Richard's Pipit** | 5 | **26.19** | 0.50 | 4 |
| *Malurus cyaneus* | Superb Blue Wren | 5 | 1.62 | 0.04 | 7 |
| *Gliciphila melanops* | Tawny-crowned Honeyeater | 4 | 1.92 | 0.14 | 6 |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | 3 | <0.01 | 0.07 | 7 |
| *Anthochaera carunculata* | Red Wattlebird | 3 | 1.73 | 0.03 | 7 |
| *Artamus cyanopterus* | Dusky Woodswallow | 3 | 0.01 | 0.07 | 6 |
| *Colluricincla harmonica* | Grey Shrikethrush | 3 | 2.61 | 0.03 | 7 |
| *Grallina cyanoleuca* | Magpie-lark | 3 | 0.21 | 0.09 | 5 |
| *Acanthiza lineata* | Striated Thornbill | 2 | 1.59 | 0.03 | 5 |
| *Calamanthus fuliginosus* | Striated Fieldwren | 2 | 6.85 | 0.50 | 3 |
| **Carduelis carduelis* | Goldfinch | 2 | 0.27 | 0.05 | 6 |
| *Cracticus torquatus* | Grey Butcherbird | 2 | 0.20 | 0.05 | 6 |
| *Phaps chalcoptera* | Common Bronzewing | 2 | 0.61 | 0.04 | 6 |
| *Rhipidura leucophrys* | Willie Wagtail | 2 | 0.34 | 0.05 | 7 |
| *Strepera versicolor* | Grey Currawong | 2 | 2.32 | 0.02 | 7 |
| **Sturnus vulgaris* | Common Starling | 2 | <0.01 | 0.07 | 7 |
| *Cacatua galerita* | Sulphur-crested Cockatoo | 1 | 0.20 | 0.06 | 3 |
| *Cacatua sanguinea* | Little Corella | 1 | 0.03 | 0.09 | 2 |
| *Calamanthus cautus* | Shy Heathwren (Shy Hylacola) | 1 | 0.12 | 0.07 | 5 |
| *Calyptorhynchus funereus* | Yellow-tailed Black Cockatoo | 1 | 1.84 | 0.02 | 4 |
| *Cisticola exilis* | Golden-headed Cisticola | 1 | 0.30 | 0.25 | 3 |
| *Coracina novaehollandiae* | Black-faced Cuckooshrike | 1 | 1.12 | 0.03 | 7 |
| *Corvus coronoides* | Australian Raven | 1 | 2.30 | 0.02 | 6 |
| *Lichenostomus cratitius* | Purple-gaped Honeyeater | 1 | 0.09 | 0.08 | 4 |
| *Malurus lamberti* | Variegated Wren | 1 | 0.06 | 0.08 | 5 |
| *Ocyphaps lophotes* | Crested Pigeon | 1 | <0.01 | 0.13 | 5 |
| *Pachycephala pectoralis* | Golden Whistler | 1 | 2.87 | 0.02 | 6 |
| *Psephotus haematonotus* | Red-rumped Parrot | 1 | 1.78 | 0.02 | 6 |
| *Sericornis frontalis* | White-browed Scrubwren | 1 | 4.89 | 0.01 | 7 |
| *Smicrornis brevirostris* | Weebill | 1 | 0.16 | 0.07 | 6 |
| *Stipiturus malachurus* | Southern Emu-wren | 1 | 0.43 | 0.05 | 6 |
| *Zosterops lateralis* | Silvereye | 1 | 4.60 | 0.01 | 7 |

| Floristic PATN Group | Frequency |
|---|---|
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 6 |
| *Banksia ornata* Shrubland | 2 |
| *Gahnia filum* Sedgeland | 1 |
| *Melaleuca brevifolia* Shrubland | 1 |
| *Sarcornia* sp. *Halosarcia* sp. Low Shrubland | 1 |

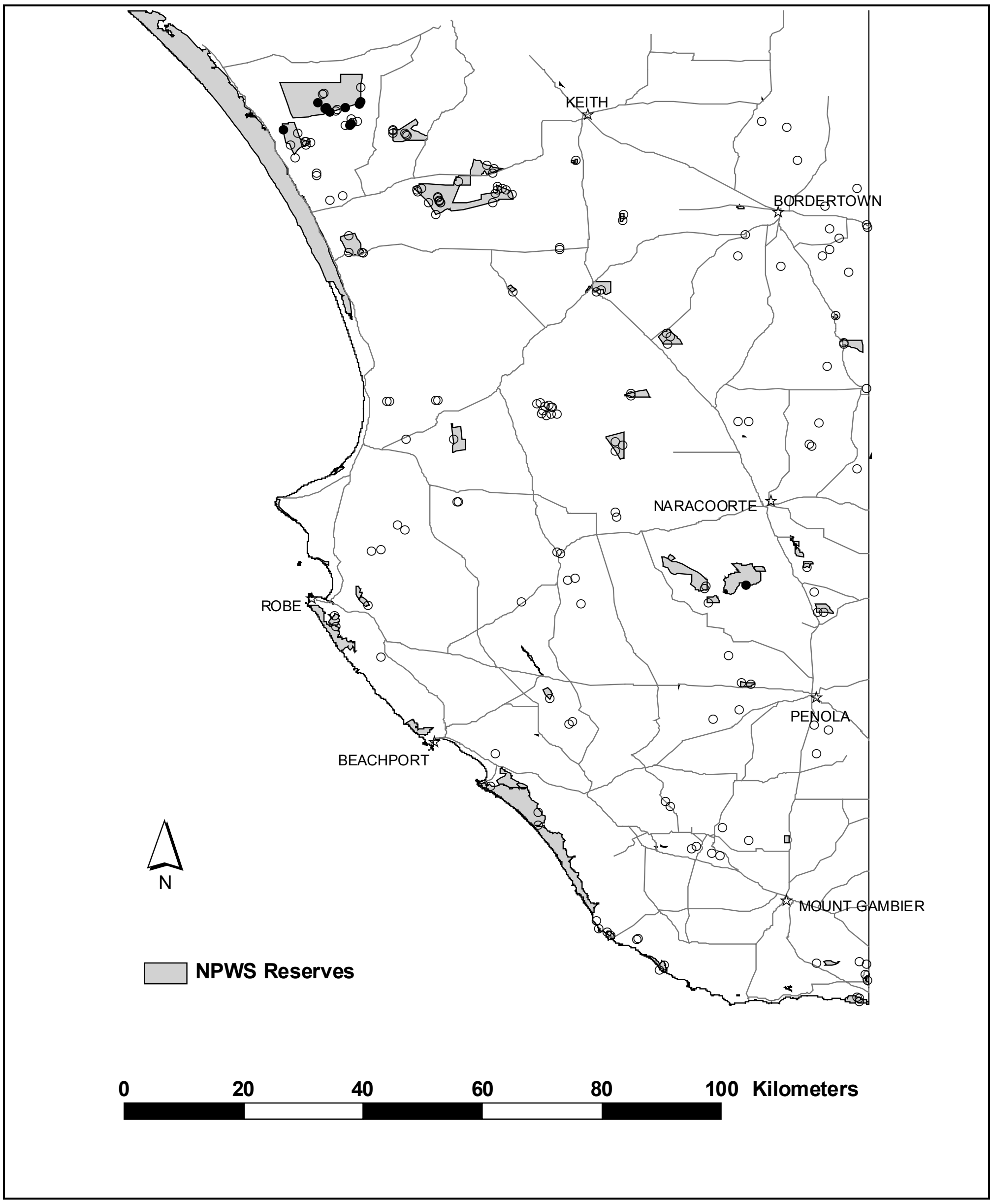



**Figure 98.**
**Distribution of quadrats representing PATN group 4 (closed circles) and other bird PATN groups (open circles).**

**Figure 99.**
**The Skylark was strongly associated with open grasslands and sedgelands in and around Messent Conservation Park. Photo: B. Furby.**

**GROUP 5**

**Birds of wet shrublands**
**Number of quadrats** 3
**Number of species in group** 7
**Mean number of species** 2.4

Group 8 is a small but well-defined group associated swampy ground. The Slender-billed Thornbill (Figure 101) occurred in all three of these quadrats and was found in only one other quadrat out of the total 188. All of these quadrats were situated in Gum Lagoon Conservation Park (Figure 100) and were dominated by *Melaleuca.*

| Species | Common Name | Frequency | Indicator Value | Propn. | No. Groups |
|---|---|---|---|---|---|
| *Acanthiza iredalei* | Slender-billed (Samphire) Thornbill | 3 | **92.98** | 0.75 | 2 |
| *Malurus lamberti* | Variegated Wren | 2 | 8.94 | 0.17 | 5 |
| *Stipiturus malachurus* | Southern Emu-wren | 2 | 4.05 | 0.10 | 6 |
| *Acanthiza pusilla* | Brown Thornbill | 1 | 0.87 | 0.01 | 6 |
| *Calamanthus cautus* | Shy Heathwren (Shy Hylacola) | 1 | 0.34 | 0.07 | 5 |
| *Rhipidura fuliginosa* | Grey Fantail | 1 | 1.05 | 0.01 | 6 |
| *Sericornis frontalis* | White-browed Scrubwren | 1 | 0.75 | 0.01 | 7 |

| Floristic PATN Group | Frequency |
|---|---|
| *Melaleuca halmaturorum* Tall Shrubland | 2 |
| *Melaleuca brevifolia* Shrubland | 1 |

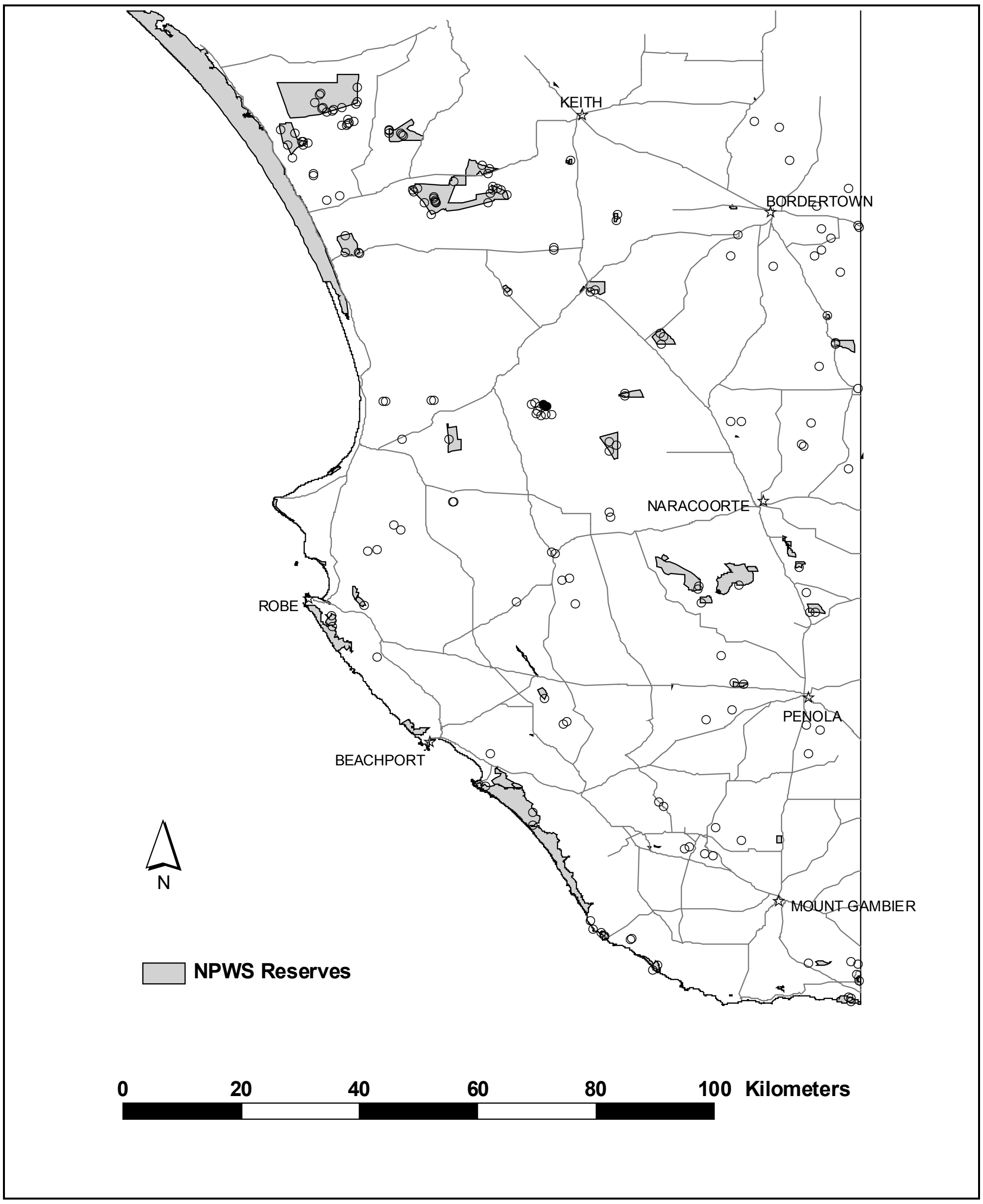



**Figure 100.**
**Distribution of quadrats representing PATN Group 5 (closed circles) and other bird PATN groups (open circles).**

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**Figure 101.**
**The Slender Billed (Samphire) Thornbill was recorded primarily in *Melaleuca* spp. Shrublands.**
**Photo: B. Furby.**

**SPECIES OF CONSERVATION SIGNIFICANCE**

Taxonomy and National and State conservation ratings follow Robinson *et al*. (2000). Seabirds and migratory waders are not discussed as they were not systematically surveyed, however species known to occur in the region are listed in Appendix IX.

**Species of National Conservation Significance**

**Malleefowl (*Leipoa ocellata*)**

The Malleefowl is sparsely but widely distributed across southern Australia and is considered vulnerable to extinction at both a State and National level (Robinson *et al.* 2000). The main reasons given for this species decline are clearance and fragmentation of habitat, high fire frequency and competition with exotic herbivores such as sheep and rabbits. Predation by foxes and cats has been shown to be a major factor in continuing decline for this ground dwelling species (Blakers *et al.* 1984, Garnett 1992, Benshemesh 1999).

Isolated populations of this species have become extinct in the South East. The population in Fairview Conservation Park is an example, which at 1000ha appeared to have been too small for medium term survival of the species.

This species was recorded in low densities at 11 quadrats during the eight surveys and was found in Mallee and Woodland habitats as well as one quadrat in *Melaleuca halmaturorum* shrubland. There have been a number of documentations of Malleefowl utilising *Melaleuca* shrublands and this shows evidence of their wide use of habitats (Possingham 1983, Stewart 1996, Stewart *et al.* 1998). All but three of these sightings were in conservation reserves. An encouraging sign was the sighting of a newly emerged chick, only a few days old, near a mound in a private reserve.

**Plains Wanderer (*Pedionomus torquatus*)**

The endemic Plains-wanderer prefers flat sparsely grassed plains but has also been found in fallow and stubble fields (Shodde and Tiddeman 1986). It is considered Vulnerable at a National level and Endangered within South Australia.

The decline of this species is due primarily to clearance of its habitat for agriculture and to overgrazing of remaining habitat by stock and rabbits. Spraying for locusts is also thought to have a detrimental effect (Garnett 1992).

The Plains Wanderer was not seen in the South East during the compilation of “The Atlas of Australian Birds” (Blakers *et al.* 1984) but there is a reliable report of two birds seen at Lake Hawdon some 10 km east of Robe. These birds were seen in a 5200ha reclaimed swamp and it was suggested that the drainage of the swamp might have produced more suitable habitat for this species (Bonnin and Angove 1989). None were seen during the survey period.

**Hooded Plover (*Charadrius rubricollis*)**

The Hooded Plover is endemic to southern Australia and it has declined over the last 50 years in both numbers and range. The increased use of beaches by humans has been a major reason for the decline (Blakers *et al.* 1984). This species is listed as Vulnerable for South Australia.

Parent birds will leave the nest if approached and generally will not return until the people have left. This leaves the eggs exposed to predators such as Silver Gulls as well as extremes of temperature. Off-road vehicles may also run over nests and chicks while dogs brought onto the beach cause additional disturbance. Foxes and cats are also considered a serious threat. This species was not recorded during the survey period but breeding populations of this species occur at intervals along the ocean beach from the Murray Mouth to south of Kingston SE.

**Little Tern (*Sterna albifrons*)**

The Little Tern has a worldwide distribution with the Australian sub-species also occurring in Asia. Fewer than 500 breeding pairs are thought to remain in Australia. The Little Terns decline has been caused by the excessive rate of nest failure due to human disturbance, dogs, predation and off-road vehicles (Garnett 1992). These threats contribute to its Endangered status at a National level and Vulnerable status in South Australia. There are no records on the Environmental Databases of SA.

Breeding occurs on the coast of Australia from the Spencer Gulf in South Australia to eastern Northern Territory. Although the main breeding areas are centred on the east coast, the Little Tern has been recorded as breeding in the Coorong (Blakers *et al.* 1984). Little Terns were not recorded during the survey period.

**Red-tailed Black Cockatoo (*Calyptorhynchus banksi graptogyne*)**

The endemic Red-tailed Black Cockatoo is considered secure in Australia. The South East population is considered to be a separate sub-species (*Calyptorhynchus banksii graptogyne*), which is confined to the south-east of South Australia and south-western Victoria. This subspecies is listed as Endangered both at a National and State level. It was only recorded in five one-degree blocks in the Australian Bird Atlas, 2 in South Australia and 3 in Victoria (Blakers *et al.* 1984). It is also listed as endangered by Garnett (1992) and it is thought that less than 1,000 individuals exist. Clearance, fire, poaching, nest site disturbance as well as degradation and lack of regeneration of fragmented feeding and breeding habitat are thought to be the main reasons for the decline of this species.

Predation by cats may also be contributing to their decline in the South East as studies in Western Australia showed an average of 6.5% (and up to 17.2%) of nests of Red-tailed Black Cockatoos failed due to cats predating the chicks or breeding female (Saunders 1991). A total of 19 birds were seen at two locations, both of which were in the Nangwarry Native Forest Reserve.

**Orange-bellied Parrot (*Neophema chrysogaster*)**
There are only about 150 individual birds of the Orange-bellied Parrot remaining, which places this species in imminent risk of extinction. It is listed as Endangered at both a State and National level. The Orange-bellied Parrot is known to breed only in south-west Tasmania. Birds generally winter on the mainland between Adelaide and south Gippsland in areas of coastal saltmarshes and dunes. The change in the fire regime in the breeding habitat in Tasmania has caused a decline in numbers but the main reason for this species decline on the mainland appears to be the degradation of habitat by grazing and urban development. Competition with introduced birds for food may also be a contributing factor (Garnett 1992).

**Regent Honeyeater (*Xanthomyza phrygia*)**
The Regent Honeyeater is an inhabitant of eucalypt woodlands and drier open forests in south-eastern Australia. It was once found from Adelaide through to south-eastern Queensland but is now restricted to an area from north-eastern Victoria to the far south-east of Queensland (Garnett 1982).

This species visits a succession of woodland patches during the year as it follows various flowering plants. In Victoria, it is often seen feeding on ironbark flowers *Eucalyptus sideroxylon* but it's food sources may be limited by the clearance of other species such as white box E. *albens*, which has been disproportionately cleared for agriculture (Ford *et al.* 2000).

Franklin and Menkhorst (1988) found most recorded sightings were centred around Adelaide, however, there were 3 records from the South East: one from Salt Creek in the 1920s, one from Naracoorte in the 1950s and one from Comaum Forest in the 1970s. The last recorded sighting from South Australia was during September and October 1977 at Rostrevor, Adelaide.

The reasons for this species decline are not fully understood but are attributed to the clearance of habitat and degradation of remaining areas. It is suspected that there are fewer than 1,000 individuals remaining. It is endangered at both State and National levels (Garnett 1982).

**Species of South Australian Conservation Significance**

**King Quail *(Coturnix chinensis*)**
The King Quail prefers very dense grassland habitats, especially around swamp edges, and the draining and clearance of habitat has seriously reduced their numbers in the southern part of its range. Another threat to this species is posed by the release of the Chinese race by the acclimatisation Society in the 1860s. The introduced birds can potentially destroy the genetic integrity of the Australian populations.

It is thought that the isolated population of King Quail from the Mount Lofty Ranges has already become extinct and the South East population may also have disappeared (Blakers *et al.* 1984). This species is not recorded on the Environmental Databases of SA and is considered Endangered within South Australia. Garnett (1992), however, lists this species as extinct in South Australia.

**Brown Quail (*Coturnix australis*)**
The Brown Quail prefers pockets of tussock grass and sedgeland especially in low-lying swampy ground around creeks and lakes. Drainage of swamps and the development of close-grazed pasture have reduced this species habitat and its' numbers have declined in the lower South East Region (Schodde and Tidemann 1986). As a result, the species is listed as Vulnerable in South Australia. Brown Quail were sighted opportunistically during the South East surveys.

**Magpie Goose (*Anseranas semipalmata*)**
The Magpie Goose was driven to extinction in South Australia and Victoria by the drainage of swamps, degradation of habitat and by the poisoning and shooting of birds, which grazed crops. This combined with severe droughts lead to the extermination of this species from southern Australia (Schodde and Tiddeman 1986). Attempts were made to re-establish this species at Bool Lagoon and to-date this program appears to have been successful although the species is still considered Endangered at a State level. Magpie Geese were observed at Bool Lagoon during the South East survey.

**Blue-billed Duck (*Oxyura australis*)**
The Blue-billed Duck is endemic to Australia inhabiting large deep permanent lakes and swamps. It is rarely found on farm dams or other small stretches of water. This species feeds by both dabbling at the surface and diving (Blakers *et al.* 1984). It is considered Rare at a State level and was only observed opportunistically during the survey period.

**Musk Duck (*Biziura lobata*)**
The Musk Ducks preferred habitat is deep, sheltered, permanent, freshwater lakes and swamps in southern Australia. They are also occasionally observed in the sea around the southern coast and in bays and estuaries. This species is aquatic and the drainage of swamps in the South East is likely to have a detrimental effect on it (Blakers *et al.* 1984). The Musk Duck breeds in the South East (Parker and Reid 1983) and was recorded during the survey. It is considered Rare within South Australia.

**Freckled Duck (*Stictonetta naevosa*)**
The endemic Freckled Duck is regarded as one of the rarest waterfowl in the world and little is known of their movements. It has been recorded in low numbers in most areas of Australia but breeding appears to be centred in the Murray-Darling and South-West Regions. This species is dependent on dense vegetation in large shallow swamps for breeding and on permanent waters for refuge in drought. The drainage program in the South East has placed

increasing pressure on this species within South Australia. It is considered Vulnerable. Even its protected status does not ensure its survival during hunting season when high proportions of Freckled Duck have sometimes been shot by indiscriminate shooters. In March 1980, about 500 of an estimated 700 present were shot on Bool Lagoon (Blakers *et al.* 1984). It was recorded opportunistically during the South East Survey at Bool Lagoon.

**Cape Barren Goose (*Cereopsis novaehollandiae*)**
The Cape Barren Goose breeds on small islands around southern Australia, which are vegetated with tussock grassland and heath. The species is listed as Rare within South Australia. It occurs occasionally in the South East of the State but is not known to breed there. It was not observed during the survey period.

**Australasian Shoveler (*Anas rhynchotis*)**
There are two sub-species of the Australasian Shoveller, one occurring in New Zealand and one in Australia. The breeding range of the Australasian Shoveler in eastern Australia appears to have declined this century. It prefers heavily vegetated, permanent swamps.

The South East is considered the breeding stronghold for this species in South Australia. In some years Bool Lagoon may hold up to 10 000 birds (Blakers *et al.* 1984). Despite this, the species is considered Rare at a State level. The decline in its population is considered to be due to the drainage of wetlands.

It was observed both opportunistically and at quadrats during the survey period.

**Great Crested Grebe (*Podiceps cristatus*)**
The Great Crested Grebe generally inhabits fresh water but on occasions gathers in large flocks in estuaries, bays and inland lakes. It's movements in Australia are frequent and erratic (Blakers *et al*. 1984). This species has been recorded breeding in the South East of South Australia (Parker and Reid 1983) but is considered Rare within the State. It was not recorded during the survey period.

**Australasian Bittern (*Botaurus poiciloptilus*)**
The Australasian Bittern occurs in south-western and south-eastern mainland Australia as well as Tasmania and New Zealand. It inhabits dense reedbeds in swamps and is rarely seen. No attempt has been made to survey the population in South Australia so the total numbers remaining of this species are unknown. In Western Australia, this species is known to have declined and there are probably fewer than 100 pairs remaining. Reasons for its decline are attributed to the drainage and salinization of swamps and the overgrazing of swamp vegetation (Garnett 1992). It is considered Vulnerable to extinction within South Australia.

**Eastern Reef Egret (*Egretta sacra*)**
This is a widespread species occurring through South East Asia, New Guinea, New Zealand and rocky coastlines around Australia. In the South East, it is limited to the area between Robe and Beachport where it feeds on small fish, marine invertebrates and insects. It is rated as Rare in South Australia.

**Little Bittern (*Ixobrychus minutus dubius*)**
This rarely seen species inhabits dense vegetation around swamps, lakes and rivers. It is thought to migrate north in winter.

The Little Bittern has only been reported occasionally from South Australia and has a State conservation rating of Rare. Bransbury (1984) reports a sighting of the species in Bool Lagoon Game Reserve in 1979 and it is also know to breed in this area (Blakers *et al*. 1984).

Thorough searches were made of the Bool Lagoon area in 1984, 1985 and 1986 breeding seasons for Little Bittern nests (Jaensch 1989). A total of 11 nests were found at nine quadrats in reeds, bullrush and tea-trees. A maximum of six nests were found in one year and four adults sighted. It was stated that more nests were probably missed due to lack of time and the difficulty in locating them. It is suggested that Little Bitterns occur and breed regularly at Bool Lagoon and that the use of methodical searches may reveal that this species is more abundant than currently thought. There were no sightings of the Little Bittern during the survey period.

**Glossy Ibis (*Plegadis falcinellus*)**
The Glossy Ibis inhabits lake margins and shallow flooded areas throughout its range feeding primarily on insects. In South Australia it is considered Rare and breeds in the Bool Lagoon area and Watervalley Wetlands.

**White-bellied Sea-eagle (*Haliaeetus leucogaster*)**
The White-bellied Sea-eagle occurs in India, south-eastern Asia, New Guinea and Australia. This species is considered extinct in the South East. Blakers *et al* also did not record it for this region despite the fact that it was reported from the coast to the north and south of the study region. The Sea-eagle lives along most of the mainland coast and also inhabits lakes and rivers. It is considered vulnerable in South Australia.

**Square-tailed Kite (*Lophoictinia isura*)**
Found in open eucalypt forests, woodlands and sandplains this Australian endemic species is rarely reported from South Australia. Possibly the first record for the South East occurred in 1983 in Nangwarry Forestry Reserve (Reid 1984). It has a Vulnerable status in South Australia.

**Peregrine Falcon (*Falco peregrinus*)**
The Peregrine Falcon is a cosmopolitan species and there are estimated to be 3000-5000 pairs in Australia and perhaps only a total of 12, 000 – 18, 000 in the world, which makes Australia its stronghold. The use of pesticides has reduced the Peregrine's reproductive capabilities throughout the world, Australia being no exception. In the Victorian population there has been a 20.4% reduction in eggshell thickness since the introduction of chlorinated hydrocarbons in the 1940's

(Blakers *et al*. 1984). The Peregrine Falcon is listed as Rare within South Australia. In the South East, it has been recorded nesting in large remnant trees left in paddocks and swamps. The Peregrine Falcon was recorded both opportunistically and at quadrats during the survey period.

**Brolga (*Grus rubicundus*)**
Brolgas range widely from central Australia to the coast requiring areas of shallow swamplands for breeding. At a State level, the Brolga is considered Vulnerable. Blakers *et al*. (1984) notes a decline of this species in the South East region over the last century. Their dependence on wetland habitats for breeding and susceptibility to disturbance may account for the decline in numbers in the South East as many previously inhabited swamps have been drained. They were not observed during the survey period.

**Baillon's Crake (*Porzana pusilla*)**
Baillon's Crake inhabits well-vegetated swamps and edges of reed beds as well as lakes with an abundance of floating vegetation (Blakers *et al*. 1984). In South Australia it is considered Rare and was not observed during the survey period.

**Lewin's Rail (*Rallus pectoralis*)**
The Lewin's Rail is a very rarely seen inhabitant of dense vegetation around marshes, wet heaths and swamps. Its secretive nature may contribute to the rarity of records, however, habitat degradation such as the draining of swamps and marshes in the South East have a detrimental effect on the species (Schodde and Tidemann 1986) and leave it Vulnerable to extinction. Disturbance through domestic stock grazing, repeated burning, predation by feral animals as well as increasing salinity rendering habitat unsuitable are also thought to be contributing factors to its decline. This species was not recorded during the survey period.

**Australian Bustard (*Ardeotis australis*)**
Before 1900, this ground nesting species was widespread in both the Murray-Darling and South East regions but today is rarely recorded from either. The Australian Bustard favours open wooded grass plains and shrub steppe. It is thought that the alteration of its grassland habitat by the grazing of sheep and rabbits, predation by the fox and widespread illegal shooting are the reasons for its decline (Schodde and Tidemann 1986). It is listed as Vulnerable in South Australia and there are no records from the South East on Environmental Databases of SA.

**Red-chested Button-quail (*Turnix pyrrhothorax*)**
This elusive, Australian endemic species is found in crops and stubble as well as native pastures. It has been recorded for the Mount Lofty Ranges, southern Murray Mallee and Mid North but is not considered common in these areas. It is also present in low numbers in the South East especially around the Bool Lagoon district. This Rare species was not seen during the South East surveys.

**Painted Buttonquail (*Turnix varia*)**
In Australia, the Painted Buttonquail is sparsely distributed in a range of eucalypt associations with abundant leaf litter. Cleared or grazed areas are never frequented. Habitat clearance, grazing and the effects of introduced predators have resulted in a decline in their numbers resulting in its Vulnerable status in South Australia.

This species was observed on several occasions during the survey but its presence was more often noted by the occurrence of the distinctive circular depressions that it leaves while feeding.

**Painted Snipe (*Rostratula benghalensis*)**
Breeding reports for this species are confined to the Murray-Darling, Mount Lofty Ranges and swamps in the South East. This species also occurs in northern Australia, Tasmania and the south-west of Western Australia. As this species is cryptic and crepuscular, it is seldom seen and although its present status is considered Rare, this is still unclear. It is suspected that the drainage of shallow swamps, which it requires for breeding, and grazing or other degradation of habitat has led to some decline in numbers (Garnett 1992). This species was not encountered during the surveys.

**Bush Thick-knee (*Burhinus grallarius*)**
The Bush Thick-knee is a sedentary, ground dwelling species favouring a range of woodland habitats with a grassy understorey. The only record of its occurrence outside of Australia is from southern New Guinea. Although secure in most areas of Australia, it is listed as Vulnerable in South Australia. The main contributing factor to the decline of this species is the clearance of habitat for urban development, cultivation, burning and overgrazing (Blakers *et al*. 1984).

The isolation of remnant native vegetation islands is also considered a serious long-term threat to this largely sedentary, sparsely distributed species. Predation by feral species such as cats and foxes may also have contributed to their decline.

The Mundulla Common contains an important large remnant patch of *Eucalyptus microcarpa* woodland. This was the only quadrat where this species was encountered during the survey (Stokes 1996).

**Fairy Tern (*Sterna nereis*)**
The Fairy Tern is similar to the Little Tern in appearance and habits, sometimes breeding in mixed colonies and occasionally hybridising. Mixed breeding colonies have been recorded on the Coorong, which is where Fairy Terns are most commonly seen in the South East. The encroachment of vegetation into breeding sites, storm damage, human disturbance and the expansion of Silver Gull colonies impact on Fairy Tern numbers (Blakers *et al*. 1984). The Fairy Tern is considered Vulnerable within South Australia and was not encountered during the survey period.

**Common Tern (*Sterna hirundo*)**
The Common Tern breeds in North America, Europe, Asia and Africa. This species is a regular summer visitor to Australia with some birds remaining throughout the winter. Found near shallow estuaries, tidal flats, harbours and beaches it is classified as Rare in South Australia (Blakers *et al.* 1984). It was not encountered during the survey period.

**Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*)**
The Yellow-tailed Black-Cockatoo lives in flocks in woodland and is commonly seen in pine plantations where it feeds on the seeds. While the Radiata Pine plantations in the South East of South Australia provide an abundance of food for this species, they provide nothing in the way of breeding habitat. This species is considered Vulnerable in South Australia. The loss of suitable tree hollow breeding sites through land clearance, fire and an increased incidence of disease are thought to be the main contributing factors to its decline. An increased incidence of disease is also thought to be contributing to its decline (Blakers *et al.* 1984).

Other factors, which may have a detrimental effect on this species, include competition from other hollow nesting species such as Corellas as well as feral bees. This species was encountered relatively frequently at the survey quadrats.

**Little Lorikeet (*Glossopsitta pusilla*)**
The Little Lorikeet is nomadic and is dependent on flowering eucalypts for food. The South Australian records represent the south-western edge of the species range although this appears to be retracting. Originally extending as far west as the Mount Lofty Ranges, and considered an autumn visitor, it is now only occasionally encountered in the far South East. In South Australia, the species is justifiably considered Vulnerable. The last breeding record for this species in South Australia was from Naracoorte in 1951 (Blakers *et al* 1984).

The major threat to the Little Lorikeet appears to have been the selective loss of woodland habitat especially of tree species favoured for feeding.

**Swift Parrot (*Lathamus discolor*)**
The Swift Parrot inhabits eucalypt forest and woodland, occurring in small flocks where eucalypts are flowering in profusion. This species is known to breed only in the east and midlands of Tasmania. After breeding, most birds appear to disperse to western Tasmania before migrating to the mainland in autumn (Blakers *et al.* 1984).

Large areas of suitable breeding habitat (two-thirds) and non-breeding habitat have been cleared for agriculture and timber resulting in a decline in numbers of this species and it is listed as Vulnerable at both a National and State level. (Garnett 1992).

In the South East, the Swift Parrot feeds on winter flowering *Eucalyptus ovata* and *E. leucoxylon*. Both of these species have been extensively cleared for agriculture with only 5% of *Eucalyptus ovata* woodland remaining.

It is interesting to note that this species was positively correlated with flowering Golden Wattles, *Acacia pycnantha,* in Victoria, which may suggest that the species require a diverse range of habitats and resources (Ford *et al*. 2001).

The appearances of Swift Parrots in South Australia cannot be easily predicted. More than six Swift Parrots were observed in *Eucalyptus baxteri* near Bangham Conservation Park in September 1979 and one other was recorded in 1944 at Naracoorte (Houston 1982). This species was not recorded during the survey.

**Blue-winged Parrot (*Neophema chrysostoma*)**
The endemic Blue-winged Parrot undertakes a regular migration in autumn moving northwards as far as 26 degrees. It inhabits a wide range of habitats including eucalypt woodland, saltbush, coastal dunes and salt marshes. The South East of South Australia is a major stronghold for this species although the clearance of breeding and feeding habitats are likely to have a detrimental effect (Blakers *et al.* 1984). These threats leave the species Vulnerable to extinction within South Australia. This species was recorded during the survey on quadrats and opportunistically.

**Ground Parrot (*Pezoporus wallicus*)**
The endemic Ground Parrot is listed as Endangered in South Australia but could possibly be extinct within the State. Its range elsewhere in Australia has also contracted considerably. This species inhabits only dense coastal heath and the frequency and intensity of fire determines whether the habitat is suitable. Some populations are believed to have been forced to extinction by the draining and clearing of swamps and trampling by cattle, and these threats caused its decline in the South East (Blakers *et al.* 1984).

The last reported sighting of a Ground Parrot in South Australia was from the Port MacDonnell district in 1945 (Parker and Reid 1983).

**Shining Bronze-cuckoo (*Chrysococcyx lucidus*)**
There are two sub-species of the Shining Bronze-cuckoo, one of which breeds in Australia and one in New Zealand. Both sub-species overwinter in New Guinea, adjacent islands and parts of Indonesia. In Australia, the Shining Bronze-cuckoo occurs in the south-western, eastern and south-eastern regions including Tasmania. Within South Australia, it is considered Rare. Its habitat in the South East includes *Eucalyptus arenacea, E. obliqua* and *E. viminalis* woodland and open forest. It has also been recorded in *Melaleuca halmaturorum* low open forest and *Eucalyptus diversifolia* mallee.

This species parasitises the nests of at least 65 other species of bird, although it favours thornbills, gerygones, fairy-wrens and scrub-wrens as hosts. It feeds on caterpillars, larvae and insects such as beetles and ants (Schodde and Tidemann 1986).

**Barking Owl (*Ninox connivens*)**
The Barking Owl is found in both forest and woodland throughout Australia, as well as in New Guinea and adjacent islands, but is rarely seen in South Australia. The most recent record for the South East is from Naracoorte in 1952 (Blakers *et al.* 1984). This bird is relatively common throughout most of its range and its Rare status in South Australia is most likely due to the area being the extremity of its range.

**Azure Kingfisher (*Alcedo azurea*)**
This species lives along rivers and streams as well as tidal estuaries and mangroves through Indonesia, New Guinea and Australia. The Azure Kingfisher was known to breed in the southern Mount Lofty Ranges prior to 1950, but the most recent Atlas record is from 1965. The apparently isolated population in the ranges is now considered extinct. It may still be possible to see it on the Victorian border along the Glenelg River, which now represents its south-eastern range limit (Blakers *et al.* 1984). It is considered Endangered in South Australia.

**Southern Emu-wren (*Stipiturus malachurus*)**
The endemic Southern Emu-wren occurs in wet shrublands in south-eastern (including Tasmania) and south-western Australia. Highly dependent on large tracts of habitat with dense understorey, the clearance and fragmentation of habitat is considered the main cause for this species decline. Grazing by stock of remaining habitat and predation by feral animals are also important contributing factors. The isolation of populations in remnant habitat islands is also considered a long-term threat for this species. Despite the Rare status given to this species in South Australia, it was recorded at twenty-one quadrats during the survey.

**Rufous Bristlebird (*Dasyornis broadbenti*)**
The distribution of this endemic species may be underestimated due to its' cryptic nature and preference for dense coastal shrublands. Clearance of habitat is seen as the major cause of this species decline. The linear coastal habitat, which this species occupies, makes this species particularly vulnerable to fragmentation by bushfires and degradation of habitat. Predation by feral animals of this ground frequenting species is a further threat (Blakers *et al.* 1984; Garnett 1992).

Studies on the closely related Eastern Bristlebird have shown that they avoid areas of regenerating low vegetation. In one study they were found to occur at up to five times the density in old fire-age habitat (9-15 years) compared with young fire-age habitat (3 years). Fire is blamed for the local extinctions of numerous populations of this species (Baker 2000).

The Rufous Bristlebird was confined to only one bird group identified in which it was an important indicator species. The coastal habitat preference for this species was confirmed by the survey sightings, all being within 10 kilometres of the coast.

**Slender-billed Thornbill (*Acanthiza iredalei*)**
This species is restricted to South Australia and Western Australia in areas dominated by saltbush and samphire. It is considered Vulnerable at a State level. The recently recognised subspecies occurring in the South East is *Acanthiza iredalei hedleyi,* which is isolated from other subspecies and prefers low shrubland heaths. This subspecies is also listed as vulnerable.

In the South East, the Slender-billed Thornbill has been recorded from low *Melaleuca brevifolia* and *Darwinia micropetala* heaths (Possingham 1983, Parker 1985). The clearance and fragmentation of its preferred habitats, which are prone to periodic fire, are thought to have reduced its numbers. Isolation in fragmented habitat patches is also considered a long-term threat.

The only sightings of this species during the survey were in Deep Swamp Conservation Park and Gum Lagoon Conservation Park in habitats dominated by *Melaleuca* species.

**Chestnut-rumped Heathwren (*Calamanthus pyrrhopygius*)**
The inconspicuous Chestnut-rumped Heathwren requires large areas of dense cover in heath eucalypt woodland and forest. Urbanisation is blamed for displacing it from some localities where it was recorded before 1950 (Blakers *et al.* 1984).

The isolation of localised populations in small areas of remnant native vegetation is considered a long-term threat to the survival of this species. Fire and predation by feral animals are also considered detrimental to its survival. These threats make the species Vulnerable to extinction within South Australia.

This species occurred in only one group in the analysis and was seen at 10 quadrats where it was confined to woodland communities with dense undergrowth.

**Blue-faced Honeyeater (*Entomyzon cyanotis*)**
The Blue-faced Honeyeater prefers eucalypt woodland especially along watercourses, along the fringes of rainforest, mallee and farmland. This species is sparsely distributed in the South East where a large percentage of its preferred habitat of woodlands has been cleared for agriculture. This species was not encountered during the survey and is listed as Rare at the State level.

**Black-chinned Honeyeater (*Melithreptus gularis*)**
This species favours open eucalypt woodland although it range extends into spinifex scrubs in the north of its range. Nectar is gathered mainly from eucalypts but *Banksia* flowers are also utilised. Insects and honeydew form important parts of its diet when nectar is unavailable (Blakers *et al.* 1984).

The Black-chinned Honeyeater lives in small colonies ranging over large territories to feed. Clearance of woodland in this region is likely to adversely affect the species and contributes to its Vulnerable rating at a State level. The Black-chinned Honeyeater's large territory size may indicate that it is unable to adapt to small patches of remnant scrub (Schodde and Tidemann 1986). This species was seen at one quadrat at Willalooka and three at Frances during the survey.

**Little Friarbird (*Philemon citreogularis*)**
The Little Friarbird lives in southern New Guinea, adjacent islands and Australia where it inhabits eucalypt woodland and farmland, feeding on nectar, insects and fruit. In the Upper South East, it has been recorded at Naracoorte (Parker and Reid 1983) and north-west of Bordertown (Condon 1969). It is rated as rare in South Australia but is considered secure throughout the rest of its range.

**Flame Robin (*Petroica phoenicea*)**
This migratory species breeds in the highlands and far south coasts of mainland south-eastern Australia and Tasmania. Snow gum, *Eucalyptus pauciflora,* and associated woodlands are favoured on the mainland. In winter, they disperse to southern Queensland and the South Australian gulfs to open lower country and pastures. These birds return to the same field each winter (Schodde and Tidemann 1986). The species has rated as Rare in South Australia

**Grey-crowned Babbler (*Pomatostomus temporalis*)**
The Grey-crowned Babbler inhabits *Acacia* scrub, woodland and farmland. It was once commonly found along the coast from Melbourne to the Mount Lofty Ranges but it now considered Rare in South Australia. It has not been recorded from the Coorong since the 1930's. This species is now only occasionally recorded from Bangham Conservation Park, which represents the western end of its range (Blakers *et al.* 1984).

The clearance and fragmentation of their woodland habitats and domestic stock grazing of remnant areas are probable reasons for their decline.

**Spotted Quailthrush (*Cinclosoma punctatum*)**
The endemic Spotted Quailthrush is found in eucalypt forest preferring high ridges in hilly country. A small population of the sub-species *C. punctatum anachoreta* still occurs in the Mount Lofty Ranges but its range has contracted considerably. The sub-species recorded from the South East *C. punctatum punctatum* is considered extinct in the State.
This species is wary and elusive making it difficult to observe. Its dependence on forests with heavily debris littered ground may be the reason for its decline since European settlement as clearance and altered fire regimes have reduced this habitat. The ground nesting habits of this species would also make it susceptible to predation by foxes, cats and dogs (Schodde and Tidemann 1986).

**Crested Shrike-tit (*Falcunculus frontatus*)**
An endemic bird of eucalypt forest and woodland this species has a large feeding territory often covering more than 50 hectares. It feeds on a large range of invertebrates often tearing bark from the trees while searching (Schodde and Tidemann 1986).

New Holland Honeyeaters, an aggressive species, have been observed actively driving away Crested Shrike-tits from Manna Gums in which they both feed (Blakers *et al.* 1984). Increased New Holland Honeyeater numbers combined with the Crested Shrike-tits need for a large territory may reduce its numbers in the South East where urbanisation and clearance for agriculture have reduced habitat availability. Similar threats make the species vulnerable to extinction throughout South Australia. It was observed at eight quadrats during the survey.

**Olive Whistler (*Pachycephala olivacea*)**
In the north of its range the endemic Olive Whistler occurs in temperate rainforests while in the south it spreads into eucalypt forests and into coastal heaths in Victoria, Tasmania and the far south-east of South Australia. It has a tendency to stick to dense vegetation and is difficult to observe. The South East represents the western limit of its range (Blakers *et al.* 1984).

Drainage, agricultural development and fragmentation of habitat are considered threats to the South East population and as a result, the species is considered Vulnerable within South Australia. The Olive Whistler was recorded only at one quadrat in Canunda National Park.

**Satin Flycatcher (*Myiagra cyanoleuca*)**
This species occurs in eastern Australia with occasional reports from New Guinea and New Zealand. The South East represents the western limit of the Satin Flycatchers range with vagrants occasionally appearing in the Mount Lofty Ranges. In the South East, small numbers of Satin Flycatcher's breed in open forests in spring/summer. The species is considered Rare in South Australia and numbers are thought to have declined throughout its range due to clearance of preferred habitats. This species was not observed during the survey.

**Golden-headed Cisticola (*Cisticola exillis*)**
The Golden-headed Cisticola inhabits lowland swamps, dense stands of native grass along rivers and grain crops. It has expanded its range in the Murray-Darling region where irrigation has produced suitable habitat. Populations occur in the Mount Lofty Ranges, Lake Alexandrina and the swamps of the South East (Blakers *et al.* 1984). It is considered Rare throughout the State.

**Beautiful Firetail (*Stagonopleura bella*)**
A sedentary species occurring at low densities, the Beautiful Firetail mainly inhabits thick vegetation in forests and heath. It is considered Rare within South Australia. Its decline in numbers is thought to be due to predation by cats, changes in fire regime and loss of habitat (Blakers *et al.* 1984). This species mainly inhabits thick vegetation in forests and heath in south-eastern Australia. It is listed as Rare in South Australia. Its decline in numbers is thought to be due to predation by cats, changes in fire regime and loss of

habitat (Blakers *et al.* 1984). This species was seen at nine quadrats and it was an important indicator for the coastal shrubland community. This species was found in swamp quadrats near Glencoe, Carpenter Rocks and Bool Lagoon during the survey.

**White-bellied Cuckoo-shrike (*Coracina papuensis*)**
This species occurs in mainland eastern and northern Australia as well as New Guinea. The South East of South Australia is the south-western range limit of the White-bellied Cuckoo-shrike. It also occurs as an occasional visitor to the Mount Lofty Ranges (Blakers *et al.* 1984)., It is rated as Rare for the State. This species was observed at a quadrat near Penola.

**Olive-backed Oriole (*Oriolus sagittatus*)**
The Olive-backed Oriole ranges from New Guinea and adjacent islands to Australia. It has been recorded occasionally from the Mount Lofty Ranges and a pair was reported to have bred there in 1968 and 1969. There are old records from the South East however its present status in the region is unknown. It lives in eucalypt forest and woodland. The South East may now be the western limit of its range in the south. It is considered Rare in South Australia.

**Bassian Thrush (*Zoothera lunulata*)**
The Bassian Thrush is considered Rare within South Australia. It has been recorded from the South East in damp forested areas with isolated populations occurring in the Mount Lofty Ranges, Southern Flinders Ranges and Kangaroo Island. This species was observed at one quadrat near Nelson.

**Diamond Firetail (*Stagonopleura guttata*)**
The endemic Diamond Firetail appears to have declined in the northern parts of its range and in Victoria. The illegal trapping of this species and the clearance of habitat may be responsible for its decline. It occurs in eucalypt forest and woodland, mallee and farmland (Blakers *et al.* 1984).

It has suffered a serious decline in the South East and is considered in danger of becoming extinct in the region. At a State level, it is also considered Vulnerable. This decline has been attributed to clearance and fragmentation of its preferred habitat of woodland and native grasslands.

This species was only observed at one quadrat near Frances.

**VAGRANTS AND SPECIES AT LIMIT OF RANGE**
Species that occur in the South East but are considered vagrants or are at the extreme limit of their range are listed in Appendix IX. Interesting sightings are listed in the footnotes.
Species with conservation significance that fall under this heading are listed below.
Cape Barren Goose R
Intermediate Egret R
Osprey R
Gang-gang Cockatoo R
Rock Parrot R
White-browed Treecreeper R
White-throated Gerygone R
Striped Honeyeater R
Rose Robin R

**REGIONAL STATUS**
In addition to the above-mentioned species, the following are considered Threatened or Rare only in the South East of South Australia (Croft and Carpenter in prep.).

Peaceful Dove *Geopelia placida* R
Powerful Owl *Ninox strenua* R
Southern Whiteface *Aphelocephala leucopsis* E
Yellow Thornbill *Acanthiza nana* V
Chestnut-rumped Thornbill *Acanthiza uropygialis* V
Crested Bellbird *Oreoica gutturalis* V
Blue Bonnet *Northiella haematogaster* V
Spotted Nightjar *Eurostopodus argus* V
Rufous Fieldwren *Calamanthus campestris* R
White-winged Chough *Corcorax melanorhamphos* V

**INTRODUCED SPECIES**
Seven species encountered during these surveys were introduced. Both the Feral Pigeon and the Spotted turtledove were represented at only one quadrat each and both occurred in Group 2; the coastal/wet shrubland habitats.

The Feral Pigeon was sighted close to coastal cliffs near Cape Banks, which was also close to a quarry. This would be typical of this species, which are cliff dwellers and prefer to nest on rock ledges (Schodde and Tidemann 1986).

The Spotted Turtledove was sighted near the township of Southend on the edge of Canunda Conservation Park. This is also in keeping with this species' habits as it tends to be closely associated with towns and well-developed agricultural lands (Schodde and Tidemann 1986).

The Blackbird was more widespread but tended to be restricted to the wetter but well vegetated habitats of PATN Groups 1B, 1D and 2. The European Goldfinch was quite widespread, occurring in all but the driest and the wettest habitats. The Skylark was closely associated to the grassy woodland habitat as was the House Sparrow. The European Starling was the most widespread of all the introduced species occurring in all groups except the wet shrublands group.

The European Greenfinch was not encountered during the surveys, but is known to occur in the South East region, primarily in habitats adjacent the coast (Robinson *et al.* 2000).

All of these species are closely associated with man-made habitats and are unlikely to spread far into natural bush. The fragmentation of natural habitat in the South East and the relative scarcity of undisturbed areas would account for the high number of introduced species encountered.

**CONCLUSION**

The analysis of the data collected during the survey of the South East revealed eight habitat groups. Represented habitats were coastal shrubland, open woodland/grassland, sedgeland, wet shrubland and four woodland/mallee habitats.

The groups of birds identified in the analysis have similarities with bird communities found during other surveys. For instance the South East PATN Group 1A has some similarities with the Murray Mallee PATN Group 4 (Foulkes and Gillen 2000). The vegetation in both these groups was mallee with a heathy understorey. Although the species composition of the mallee varied between the groups there were a number of similarities. *Eucalyptus diversifolia* and *E. incrassata* open mallees, for instance, were well represented in both groups. Significant bird species, which both groups had in common, included the Shy Heathwren, Yellow-tailed Pardalote, Purple-gaped Honeyeater and Golden Whistler.

PATN Group 3 (birds of open woodlands and grasslands) corresponded strongly with birds found in Grey Box (*Eucalyptus microcarpa*) woodlands in the Box and Buloke Grassy Woodlands survey (Stokes 1996).

Group 2 (birds of coastal shrublands) compared favourably with Kangaroo Island PATN Group 5 (birds of coastal heaths) (Robinson and Armstrong 1999). Both had Southern Emu-wrens and Silvereyes as important indicator species. While Group 1C (birds of mallee with an open understorey) had common indicator species with both Kangaroo Island PATN groups 1 (birds of woodlands and low woodlands with an open understorey) and 4 (birds of low open forests and open forests with an open understorey). The Purple-gaped Honeyeater and Superb Fairy-wren were common indicator species in Group 1 and the Grey Fantail, Superb Fairy-wren and Silvereye in Group 4. The important aspect of the habitats apparently being an open understorey. It is interesting to note, however, that other groups such as the birds of low woodlands and mallee with a heathy understorey had no common indicator species between Kangaroo Island and South East groups but frequencies of birds in both groups were both relatively high.

A number of similarities were also noted with work done in the north west of Victoria (Emison and Bren 1989). In the Victorian group "birds of the heaths and mallee shrublands", the Shy Heathwren and the Inland Thornbill were important indicator species as they were in the South East PATN group 1A (birds of low woodland and mallee with a heathy understorey). The Malleefowl was also an important indicator species for South East PATN group 1C (birds of mallee with an open understorey and the northwestern Victorian group "Birds of the mallee shrublands".

Some vegetation types provide habitat for more threatened bird species than others. In the South East, where extensive clearing has occurred, these vegetation types tend to be those that were once widespread and now occur only as fragmented and isolated remnants. Only about 13% of the original native vegetation remains and most of this occurs in areas not suitable for agriculture. Many types of habitats are restricted to roadside verges or scattered remnants in farmland. Of the 13% of native vegetation remaining only 25% is conserved in Government reserves while a further 15% is private land under Heritage Agreement (Croft *et al.* 1999).

The mallee is considered by Schodde (1990) to be the most threatened Australian environment for birds. The Malleefowl, Black-eared Miner, Mallee Emu-wren, and Red-lored Whistler are all threatened species dependant on the mallee for survival. Rainforests can support many species within a few hectares but mallee requires many square kilometres to support its bird communities. This habitat supports a significant proportion of the Australian avifauna, which tend to be sedentary and hold a permanent territory. These requirements decrease the chance of survival for dispersing young in fragmented habitat, which in turn create the potential for inbreeding depression and lower chance of patch recolonization.

Robinson and Traill (1996), however, argue that the temperate woodlands are the most threatened ecosystem in Australia. They state that 80% of this habitat has been cleared (up to 95% in some areas) and that much of that remaining has been significantly degraded. At least 25 species in the woodland regions are threatened while at least a quarter are in decline. The Paradise Parrot has already become extinct and as 2% of the remaining habitat is being cleared every year this scenario is likely to get worse.

Many vulnerable or threatened species favour various types of Woodland habitat, which are poorly conserved in Government reserves. *Eucalyptus microcarpa, E. largiflorens*, *E. viminalis, E. camaldulensis, E. leucoxlon, E. fasiculosa, E. porosa, Melaleuca lanceolata, Allocasuarina verticillata* and *Allocasuarina luehmannii* woodlands are all considered rare or threatened in the South East (Croft *et al.* 1999).

Coastal habitats are far better preserved with about 49% being conserved in a series of coastal National Parks and Wildlife SA reserves. The Olive Whistler, Hooded Plover and Orange-bellied Parrot, which favour these habitats, although still under threat from other factors such as predation, have a good proportion of their habitat conserved. The Coorong National Park is a particularly important area providing habitat for at least 85 species of waterbirds, 20 of which are migratory (Croft *et al.* 1999).

Habitat fragmentation leads to problems caused by the isolation of small populations of birds. A succession of local extinctions caused by factors such as fire could lead to the regional loss of the species. There are many recorded instances of local losses, regional declines and even extinctions of bird species that can be directly attributed to habitat fragmentation. The Hooded Robin, Brown Treecreeper and Crested Bellbird have all suffered from local extinctions in various parts of their distribution (Ford *et al.* 2001).

Edge effects, such as increased pressure from introduced species are also increased by habitat fragmentation. The Noisy Miner is one native species that has benefited from habitat fragmentation and degradation. This species aggressively excludes many other species. Ford *et al*., 2000, states that where Noisy Miners are present there are few other birds and small insectivorous passerines and honeyeaters are particularly poorly represented. This may be applicable to PATN group 3.

The introduction of exotic plants has also led to an imbalance of native bird species. Currawongs favour berries from exotic shrubs and have apparently increased in rural and urban areas. Successful breeding pairs of Pied Currawongs (*Strepera graculina*) were estimated to predate at least 40 broods of small birds such as Fairy-wrens (*Malurus*), and Scrub-wrens (*Sericornis*) in Canberra (Prawiradilaga 1996).

Grazing of remnant scrub alters the composition and structure of the vegetation, removing shrubs and grasses, which are important food sources and nesting habitats for some birds. For instance the Yellow-faced Honeyeater (*Lichenostomus chrysops*) and the White-eared Honeyeater (*L. leucotis*) nest in shrubs while the Painted Button-quail (*Turnix varia*) and Rufous Songlark (*Cincloramphus mathewsi*) nest at the base of grass tussocks (Ford *et al.* 2001).

Vegetation clearance combined with the introduction of the European honeybee has also served to disrupt the bird-plant pollinating system. Many species of plants reliant on birds for pollination have suffered serious declines in seed production. As well as competing with birds for nesting hollows, honeybees reduce the amount of nectar and pollen available to birds without providing effective pollination for some species. Much of the remaining vegetation occurs on poor quality soils, which tends to support winter and spring flowering plant species. Nectivorous birds congregate in these areas during these times but the selective clearance of vegetation from arable land, which tends to support summer and autumn flowering plants, has resulted in a decline in food sources for birds at these times (Paton 2000).

The decline of the Regent Honeyeater and the Swift parrot in south-eastern Australia is attributed to the loss of one or more seasonal sequences of nectar or other food sources (Ford *et al*. 2000).

The removal of large hollow bearing trees for firewood collection reduces available nesting quadrats for species such as the Red-tailed Black Cockatoo and Barking Owl. Increased illegal collection of eggs and chicks of some species may also be a problem as the fragmentation of scrub allows easier access to remaining large nesting trees.

Dramatically altered fire regimes have also produced some complex changes. In general, fire has been suppressed which may ultimately result in very hot fires, which kill old and mature trees, especially those with hollows. Fire in small isolated patches may lead to the extinction of species from those areas. While the suppression of fires also reduce opportunities for species benefiting from fire such as robins and other ground foraging insectivores. Fuel reduction burns carried out too frequently also alter the composition of the vegetation removing the grass and shrub layers and therefore negatively impacting on species reliant on these species for food, nesting and shelter (Ford *et al.* 2001).

Rising ground water and the resultant salinisation is the direct result of vegetation clearance. In the eastern woodlands the rate of increase of salt-affected drylands is 2-5% per year, and this is likely to increase dramatically as rising groundwaters reach the subsoil 30-100 years after initial clearance of vegetation (Robinson and Traill 1996).

A more far-reaching effect of the clearance of vegetation is the effect on greenhouse gas emissions and climatic changes. It is estimated that 27% of Australia's net emissions of greenhouse gases come from the clearance of vegetation. The removal of deep-rooted native vegetation is also thought to decrease rainfall and increase temperatures.

The South East wetlands are of vital importance in providing feeding and breeding habitat for waterbirds in the region. They also act as an important drought refuge for waterbirds from the more arid regions as well as a stop over for migratory waders. The internationally significant wetlands of Bool Lagoon and Hacks Lagoon are particularly important. The extensive drainage of these areas and subsequent agricultural development has resulted in many of the plant communities associated with wetlands becoming rare and threatened. This in turn has placed considerable pressure on the birdlife reliant on these habitats.

The clearance of 91.7% of the original native vegetation has led to a decline in most species, many of which are now threatened at a regional or State level. The maintenance and management of the remnant vegetation is of utmost importance to ensure the long-term survival of many of the States endangered species of avifauna.

# REPTILES AND AMPHIBIANS

By J. N. Foulkes[1], H. M. Owens[1], T. Croft[1] and G. Carpenter[2]

**Introduction**

South Australian Museum records showed a high number of reptile and amphibian specimens distributed throughout the South East region prior to the 1997 South East Survey (Figures 101 and 102). The specimens came from a variety of sources including a large number of random collections from individuals in the region. Amphibians have been well represented in these collections making up approximately 40% of specimens (Figure 102). Substantial collections have come from the SA Herpetology Group, Field Naturalist sSociety of SA Mammal club, Roseworthy Agricultural College (now Adelaide University), Salisbury College (now University of SA), NPWSA Rangers, Museum collection trips and DEH and NCSSA Biological surveys. Ninety five percent of these specimens have been collected in the last 40 years reflecting the lack of historical specimens and data available for reptiles and amphibians in the region.

Several biological surveys of vertebrates had been carried out in the survey region prior to the 1997 South East Biological Survey. They are the South East Coast (1980's), South East Fire Study (NCS) (1994), Messent Conservation Park (1994), Gum Lagoon Conservation Park (NCS) (1995, 1996), SE Box and Buloke Woodlands (1995), Deep Swamp (1996) and Tilley Swamp (1996). The Bunbury Conservation Reserve survey was carried out in December 1997 after the main South East survey work had been completed. Several of these surveys have concentrated on specific areas in response to proposed changes in land management. There have also been a few small-scale surveys targeting specific threatened species such as *Delma impar*, *Egernia coventryi* and *Geocrinia laevis.* Much of the work on the ecology of individual species found in the South East has been carried out in the eastern states where populations of these species are more widespread and easier to detect.

One other major source of data for frogs in the South East is the South Australian Frog Census. This census is coordinated by the Environment Protection Authority and has been run each September since 1994 (Walker 2002). The census aims to provide a 'snapshot' of frog populations based upon the collection of frog recordings from as many different locations as possible over a one-week period. The census is limited to spring breeding species and tends to under record rare species. The South East is well represented and each year valuable data is recorded on the presence and location of different species.

The biological surveys conducted throughout the region have been invaluable in documenting the herpetofauna of the region and have helped define the distributions and habitat preferences of many species. The survey reports have also drawn attention to some of the more threatened species that has helped secure funding for work that is more intensive. Despite this, there is still little known about the distribution and ecology of many species in the region, and with continuing changes in land management practises some of the more apparently threatened species may be disappearing from areas before they have even been detected.

**Total Species**

Sixty-one reptile and amphibian species have been recorded in the South East of South Australia. All but one of these species, *Emydura macquarii*, has been collected and registered at the South Australia Museum. Ten of these species have a State conservation rating and one has a National rating (Appendix X). The species represent nine families (10 Subfamilies).

**Table 35.**
**Summary of species richness within reptile and amphibian families recorded in the South East.**

| Family | Common Name | No. Species |
|---|---|---|
| **Reptiles** | | |
| Agamidae | Dragon Lizards | 7 |
| Chelidae | Side-necked Tortoises | 2 |
| Elapidae | Elapid Snakes | 8 |
| Gekkonidae | Geckos | 3 |
| Pygopidae | Legless Lizards | 4 |
| Scincidae | Skinks | 23 |
| Varanidae | Goannas | 1 |
| Typhlopidae | Blind Snakes | 1 |
| **Amphibians** | | |
| Hylidae | Tree Frogs | 3 |
| Myobatrachidae | Southern Frogs | 10 |
| Total | | 62 |

Skinks were by far the most diverse group of reptiles in the region with 23 species compared to Blind snakes and Goannas, which were the least diverse and were represented by only one species each. Only two species of Tree Frog have been recorded in the South East compared to the Southern Frogs group, which is represented by ten species.

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Forty-six of the 61 species have been recorded at survey sites established during biological surveys conducted in the South East between 1982 to 1997. An additional four species were recorded from either the Opportune or Reserves database. Ten species were represented by SA Museum specimens only. The 14 species that were not detected by standard biological survey techniques are considered very uncommon in the region and are only known from a few specimens or locations. This survey collected 249 reptile and amphibian specimens from across the region.

No new species were recorded for the region during the 1997 survey, however ten new species have been documented in the region since standard biological survey work began in 1982. The frequency of all reptile and amphibian taxa recorded at survey quadrats are listed in Table 36 and Table 38 respectively. Genus-only designations are shown in normal rather than italic typeface. The list shows all species included in the analysis (See Methods chapter for detail of analysis). A full list of list of scientific names and common names of reptiles and amphibians recorded from the South East and the source of the records is in Appendix X. The reptile and amphibian species recorded from opportunistic observations are listed in Table 37 and 39 respectively.

The effort put in to collecting opportune records differs considerably between surveys. The reptile species observed tended to be those not readily captured by standard trapping methods or observed on quadrats, and include the larger elapid snakes and larger scincid lizards (*Tiliqua* spp.). Notably, two additional species not recorded on quadrats were recorded opportunistically (*Pogona vitticeps* and *Pseudemoia pagenstecheri*). Considerably less effort was put into opportunistic amphibian records as this was dictated by the prevalence of wet conditions during the survey period.

The distribution and relative abundance of individual species recorded in the region are discussed later in the chapter.

**SPECIES PATTERNS**

Of the 195 sites that were surveyed for reptiles, 162 sites and 28 species were included in the analysis, following the masking of single species records, single species quadrats, snakes, pygopids and goannas. The resultant dendrogram (Figure 104) shows the relationships or dissimilarities between the sites in the analysis. The overall dissimilarity of 3.04 indicates a relatively moderate degree of difference in the composition of the groups.

The two-way table of species incidence by quadrat (Table 40) combines the results of the quadrat and species analyses into a more easily interpreted form. The species are represented down the left-hand side as the first four letters of the genus and species (e.g, AMPHMURI is *Amphibolurus muricatus*)

Descriptions of the groups identified are set out in the following order:

- Reptile assemblage group number
- Number of sites comprising the group;
- Number of species recorded in the group;
- Mean number of species recorded in the group;
- Range or minimum and maximum species richness within the group;
- A brief description of the group;
- A table showing species recorded in order of decreasing frequency, indicator value, proportion of total individual species observations represented by each species in that group and the number of groups in which each species is found.
- A table indicating the floristic types represented by the sites in each group.
- A map showing the distribution of the sites represented in the group relative to sites from other groups

**Table 36.**
**Frequency of reptile species recorded from surveys conducted in the South East. Species indicated with # were included in PATN analysis.**

| Common Name | Scientific Name | Survey Number 4 | 29 | 64 | 68 | 76 | 84 | 85 | 90 | 99 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #Jacky Lizard | *Amphibolurus muricatus* | | 5 | | | | | | | | 5 |
| #Mallee Tree-dragon | *Amphibolurus norrisi* | | 7 | | | 7 | | 1 | 1 | 2 | 18 |
| Lined Worm-lizard | *Aprasia striolata* | 1 | 17 | | 3 | 4 | | | 1 | 3 | 29 |
| Lowland Copperhead | *Austrelaps superbus* | 2 | 2 | | | | | 1 | | | 5 |
| #Eastern Three-lined Skink | *Bassiana duperreyi* | | 73 | | 19 | 22 | | 1 | 5 | 7 | 127 |
| Common Long-necked Tortoise | *Chelodina longicollis* | 4 | 6 | | | | | 2 | | | 12 |
| #Marbled Gecko | *Christinus marmoratus* | | 20 | | | | 6 | | | | 26 |
| #Painted Dragon | *Ctenophorus pictus* | 4 | | 1 | | | 3 | | | | 8 |
| #Eastern Spotted Ctenotus | *Ctenotus orientalis* | 9 | 39 | | 20 | 3 | 2 | | 6 | 16 | 95 |
| #Eastern Striped Skink | *Ctenotus robustus* | 2 | 16 | | | 1 | | 8 | | 2 | 29 |
| | *Ctenotus* sp. | | 5 | | 1 | | 3 | | | | 9 |
| Olive Snake-lizard | *Delma inornata* | | | | | | 1 | | | | 1 |
| White-lipped Snake | *Drysdalia coronoides* | 1 | 7 | | | | | | | | 8 |
| Master's Snake | *Drysdalia mastersii* | | | | 1 | | | | | | 1 |
| #Swamp Skink | *Egernia coventryi* | | 3 | | | | | | | | 3 |
| #White's Skink | *Egernia whitii* | | 7 | | | | | | | | 7 |
| Southern Water Skink | *Eulamprus tympanum* | 1 | | | | | | | | | 1 |
| #Four-toed Earless Skink | *Hemiergis peronii* | 11 | 39 | | 3 | 12 | | 7 | 7 | 9 | 88 |
| #Delicate Skink | *Lampropholis delicata* | | 23 | | 4 | 17 | 1 | 3 | 14 | 7 | 69 |
| #Garden Skink | *Lampropholis guichenoti* | 1 | 24 | 1 | | | | | | | 26 |
| | *Lampropholis sp.* | | 10 | | | | | | | | 10 |
| #Bougainville's Skink | *Lerista bougainvillii* | 4 | 53 | | 3 | 1 | 2 | 4 | 14 | 5 | 86 |
| Southern Four-toed Slider | *Lerista dorsalis* | 5 | | | | | | | | | 5 |
| #Dwarf Skink | *Menetia greyii* | 4 | | 2 | | | 1 | | | | 7 |
| #Adelaide Snake-eye | *Morethia adelaidensis* | 2 | | | | | 4 | | | | 6 |
| #Common Snake-eye | *Morethia boulengeri* | | | 14 | | | | | | | 14 |
| #Mallee Snake-eye | *Morethia obscura* | 3 | 27 | | 4 | 45 | 1 | | 10 | 13 | 103 |
| | *Morethia* sp. | | 1 | | | | | | | | 1 |
| Eastern Tiger Snake | *Notechis scutatus* | 3 | 16 | | 1 | 1 | | 2 | 2 | 2 | 27 |
| #Eastern Bearded Dragon | *Pogona barbata* | 1 | 3 | 1 | | 3 | 3 | | 2 | | 13 |
| #Southern Grass Skink | *Pseudemoia entrecasteauxii* | 14 | 27 | | | | | | | | 51 |
| #Glossy Grass Skink | *Pseudemoia rawlinsoni* | | 5 | | | | | | | | 5 |
| Eastern Brown Snake | *Pseudonaja textilis* | 3 | 2 | | | 1 | 1 | | | | 7 |
| Common Scaly-foot | *Pygopus lepidopodus* | | | | 3 | 6 | | | | 1 | 10 |
| Mitchell's Short-tailed Snake | *Suta nigriceps* | | | | | 1 | | | | | 1 |
| #Blotched Bluetongue | *Tiliqua nigrolutea* | | 4 | | | | | | | | 4 |
| #Sleepy Lizard | *Tiliqua rugosa* | 12 | 12 | 12 | 4 | 8 | 19 | 2 | 8 | 6 | 83 |
| #Eastern Bluetongue | *Tiliqua scincoides* | | 3 | | | 1 | | 2 | | | 6 |
| #Five-lined Earless Dragon | *Tympanocryptis lineata* | | | | 4 | | | | | | 4 |
| Heath Goanna | *Varanus rosenbergi* | | 1 | | | | | 2 | | | 3 |
| Goanna | *Varanus* sp. | | | | 1 | | | | | | 1 |
| | Grand Total | 87 | 467 | 31 | 71 | 133 | 47 | 35 | 70 | 73 | 1014 |

Key to survey numbers; (4) South East Coast, (29) South East, (64) SE Fire Study, (68) Messent Conservation Park, (76) Gum Lagoon Conservation Park, (84) SE Box and Buloke, (85) Deep Swamp Conservation Park, (90) Tilley Swamp, (99) Bunbury Conservation Reserve.

**Table 37.**
**Frequency of opportune reptile records collected on surveys conducted in the South East.**

| | | Survey Number | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | **29** | **64** | **76** | **84** | **90** | **99** | **Total** |
| Jacky Lizard | *Amphibolurus muricatus* | 1 | | | | | | 1 |
| Mallee Tree-dragon | *Amphibolurus norrisi* | | | | | | 1 | 1 |
| Lowland Copperhead | *Austrelaps superbus* | 18 | | | | | | 18 |
| Eastern Three-lined Skink | *Bassiana duperreyi* | 4 | | 2 | | | | 6 |
| Common Long-necked Tortoise | *Chelodina longicollis* | 3 | | 1 | 2 | 1 | 1 | 8 |
| Marbled Gecko | *Christinus marmoratus* | | | | 1 | | | 1 |
| Painted Dragon | *Ctenophorus pictus* | | | | 2 | | | 2 |
| Eastern Spotted Ctenotus | *Ctenotus orientalis* | | | 2 | 2 | | 1 | 5 |
| Eastern Striped Skink | *Ctenotus robustus* | 3 | | | | | | 3 |
| White-lipped Snake | *Drysdalia coronoides* | 1 | | | | | | 1 |
| Swamp Skink | *Egernia coventryi* | 1 | | | | | | 1 |
| White's Skink | *Egernia whitii* | 2 | | | | | | 2 |
| Southern Water Skink | *Eulamprus tympanum* | 3 | | | | | | 3 |
| Four-toed Earless Skink | *Hemiergis peronii* | 3 | 1 | 4 | | | | 8 |
| Delicate Skink | *Lampropholis delicata* | 1 | | | | | | 1 |
| Garden Skink | *Lampropholis guichenoti* | 1 | | | | | | 1 |
| Mallee Snake-eye | *Morethia obscura* | 3 | | 1 | | | | 4 |
| Eastern Tiger Snake | *Notechis scutatus* | 22 | | 2 | | 1 | 4 | 29 |
| Eastern Bearded Dragon | *Pogona barbata* | 4 | | 4 | 5 | 1 | | 14 |
| Central Bearded Dragon | *Pogona vitticeps* | 1 | 2 | | | | 1 | 4 |
| Southern Grass Skink | *Pseudemoia entrecasteauxii* | 6 | | | | | | 6 |
| Tussock Skink | *Pseudemoia pagenstecheri* | 1 | | | | | | 1 |
| Eastern Brown Snake | *Pseudonaja textilis* | 4 | | 1 | 1 | 1 | 1 | 8 |
| Mitchell's Short-tailed Snake | *Suta nigriceps* | | | 5 | | | | 5 |
| Blotched Bluetongue | *Tiliqua nigrolutea* | 5 | | | | | | 5 |
| Sleepy Lizard | *Tiliqua rugosa* | 17 | 2 | 3 | 2 | | 1 | 25 |
| Eastern Bluetongue | *Tiliqua scincoides* | 19 | | 2 | 4 | 3 | 1 | 29 |
| Heath Goanna | *Varanus rosenbergi* | 2 | 3 | | | 1 | | 6 |
| | Grand Total | 126 | 8 | 27 | 19 | 8 | 11 | 199 |

Key to survey numbers; (29) South East, (64) SE Fire Study, (76) Gum Lagoon Conservation Park, (84) SE Box and Buloke, (90) Tilley Swamp, (99) Bunbury Conservation Reserve.

**Table 38.**
**Total numbers of frogs captured from survey quadrats during surveys conducted in the South East.**

| | | Survey Number | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | **4** | **29** | **64** | **76** | **84** | **85** | **90** | **99** | **Total** |
| Common Froglet | *Crinia signifera* | 12 | 386 | | | 4 | 2 | 3 | | 407 |
| Smooth Frog | *Geocrinia laevis* | 1 | 1 | | | | | | | 2 |
| Bull Frog | *Limnodynastes dumerili* | 3 | 348 | | 79 | | | 8 | 33 | 471 |
| Striped Marsh Frog | *Limnodynastes peroni* | 1 | 652 | | | | | | | 653 |
| Spotted Grass Frog | *Limnodynastes tasmaniensis* | 13 | 21 | | | 10 | | | | 44 |
| Brown Tree Frog | *Litoria ewingi* | 1 | 124 | | | | | | | 125 |
| Golden Bell Frog | *Litoria raniformis* | 1 | | | | | | | | 1 |
| Painted Frog | *Neobatrachus pictus* | 39 | 19 | 23 | 104 | 3 | | 3 | 7 | 198 |
| Sudell's Frog | *Neobatrachus sudelli* | | 28 | | | 4 | | | | 32 |
| Brown Toadlet | *Pseudophryne bibroni* | 9 | | 1 | 2 | | | | | 12 |
| Marbled Toadlet | *Pseudophryne semimarmorata* | 3 | | | | | | | | 3 |
| | Grand Total | 83 | 1579 | 24 | 185 | 21 | 2 | 14 | 40 | 1948 |

Key to survey numbers; (4) South East Coast, (29) South East, (64) SE Fire Study, (76) Gum Lagoon Conservation Park, (84) SE Box and Buloke, (85) Deep Swamp Conservation Park, (90) Tilley Swamp, (99) Bunbury Conservation Reserve.

**Table 39.**
**Frequency of opportune frog records from surveys conducted in the South East.**

| | | Survey Number | | |
|---|---|---|---|---|
| **Common Name** | **Scientific Name** | **29** | **76** | **Total** |
| Common Froglet | *Crinia signifera* | 7 | 2 | 9 |
| Bull Frog | *Limnodynastes dumerili* | 1 | 1 | 2 |
| Striped Marsh Frog | *Limnodynastes peroni* | 4 | | 4 |
| Spotted Grass Frog | *Limnodynastes tasmaniensis* | 2 | | 2 |
| Brown Tree Frog | *Litoria ewingi* | 8 | 1 | 9 |
| Painted Frog | *Neobatrachus pictus* | | 7 | 7 |
| Sudell's Frog | *Neobatrachus sudelli* | 2 | | 2 |
| | Grand Total | 24 | 11 | 35 |

Key to survey numbers; (29) South East, (76) Gum Lagoon Conservation Park.

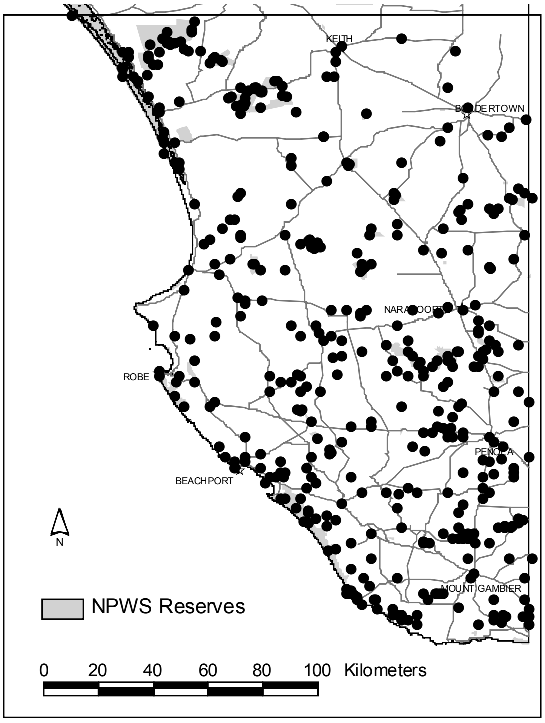



**Figure 102.**
**Distribution of SA Museum reptile specimen records prior to the 1997 survey.**

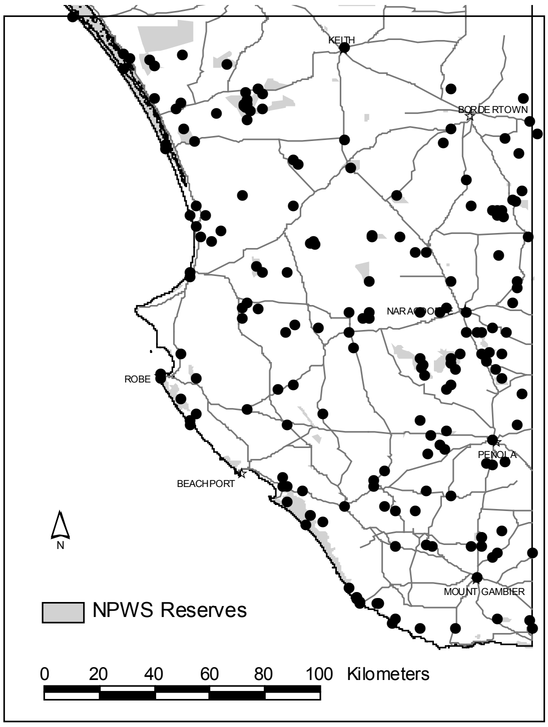
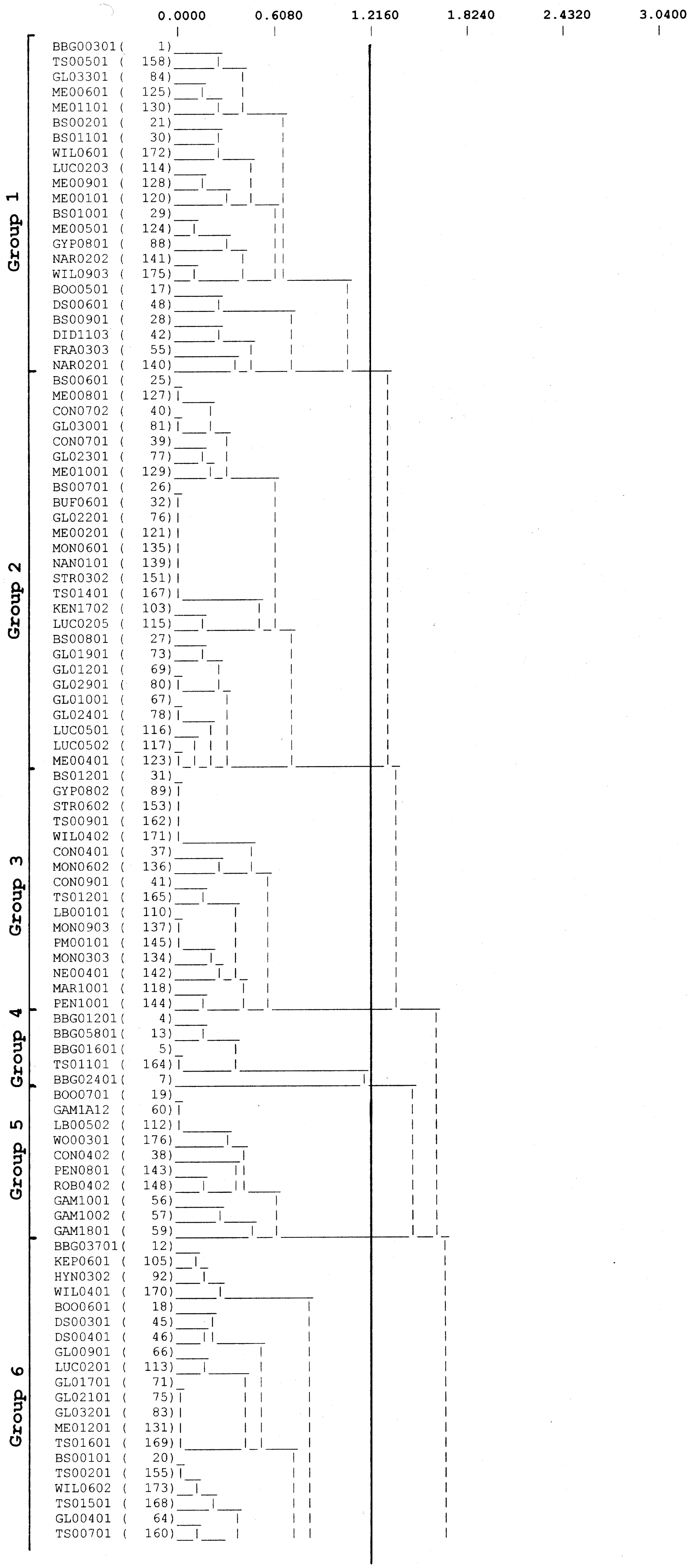



**Figure 103.**
**Distribution of SA Museum frog specimen records prior to the 1997 survey.**


0.0000
0.6080
1.2160
1.8240
2.4320
3.0400
Group 1
Group 2
Group 3
Group 4
Group 5
Group 6
BBG00301( 1)
TS00501 ( 158)
GL03301 ( 84)
ME00601 ( 125)
ME01101 ( 130)
BS00201 ( 21)
BS01101 ( 30)
WIL0601 ( 172)
LUC0203 ( 114)
ME00901 ( 128)
ME00101 ( 120)
BS01001 ( 29)
ME00501 ( 124)
GYP0801 ( 88)
NAR0202 ( 141)
WIL0903 ( 175)
BOO0501 ( 17)
DS00601 ( 48)
BS00901 ( 28)
DID1103 ( 42)
FRA0303 ( 55)
NAR0201 ( 140)
BS00601 ( 25)
ME00801 ( 127)
CON0702 ( 40)
GL03001 ( 81)
CON0701 ( 39)
GL02301 ( 77)
ME01001 ( 129)
BS00701 ( 26)
BUF0601 ( 32)
GL02201 ( 76)
ME00201 ( 121)
MON0601 ( 135)
NAN0101 ( 139)
STR0302 ( 151)
TS01401 ( 167)
KEN1702 ( 103)
LUC0205 ( 115)
BS00801 ( 27)
GL01901 ( 73)
GL01201 ( 69)
GL02901 ( 80)
GL01001 ( 67)
GL02401 ( 78)
LUC0501 ( 116)
LUC0502 ( 117)
ME00401 ( 123)
BS01201 ( 31)
GYP0802 ( 89)
STR0602 ( 153)
TS00901 ( 162)
WIL0402 ( 171)
CON0401 ( 37)
MON0602 ( 136)
CON0901 ( 41)
TS01201 ( 165)
LB00101 ( 110)
MON0903 ( 137)
PM00101 ( 145)
MON0303 ( 134)
NE00401 ( 142)
MAR1001 ( 118)
PEN1001 ( 144)
BBG01201( 4)
BBG05801( 13)
BBG01601( 5)
TS01101 ( 164)
BBG02401( 7)
BOO0701 ( 19)
GAM1A12 ( 60)
LB00502 ( 112)
WO00301 ( 176)
CON0402 ( 38)
PEN0801 ( 143)
ROB0402 ( 148)
GAM1001 ( 56)
GAM1002 ( 57)
GAM1801 ( 59)
BBG03701( 12)
KEP0601 ( 105)
HYN0302 ( 92)
WIL0401 ( 170)
BOO0601 ( 18)
DS00301 ( 45)
DS00401 ( 46)
GL00901 ( 66)
LUC0201 ( 113)
GL01701 ( 71)
GL02101 ( 75)
GL03201 ( 83)
ME01201 ( 131)
TS01601 ( 169)
BS00101 ( 20)
TS00201 ( 155)
WIL0602 ( 173)
TS01501 ( 168)
GL00401 ( 64)
TS00701 ( 160)

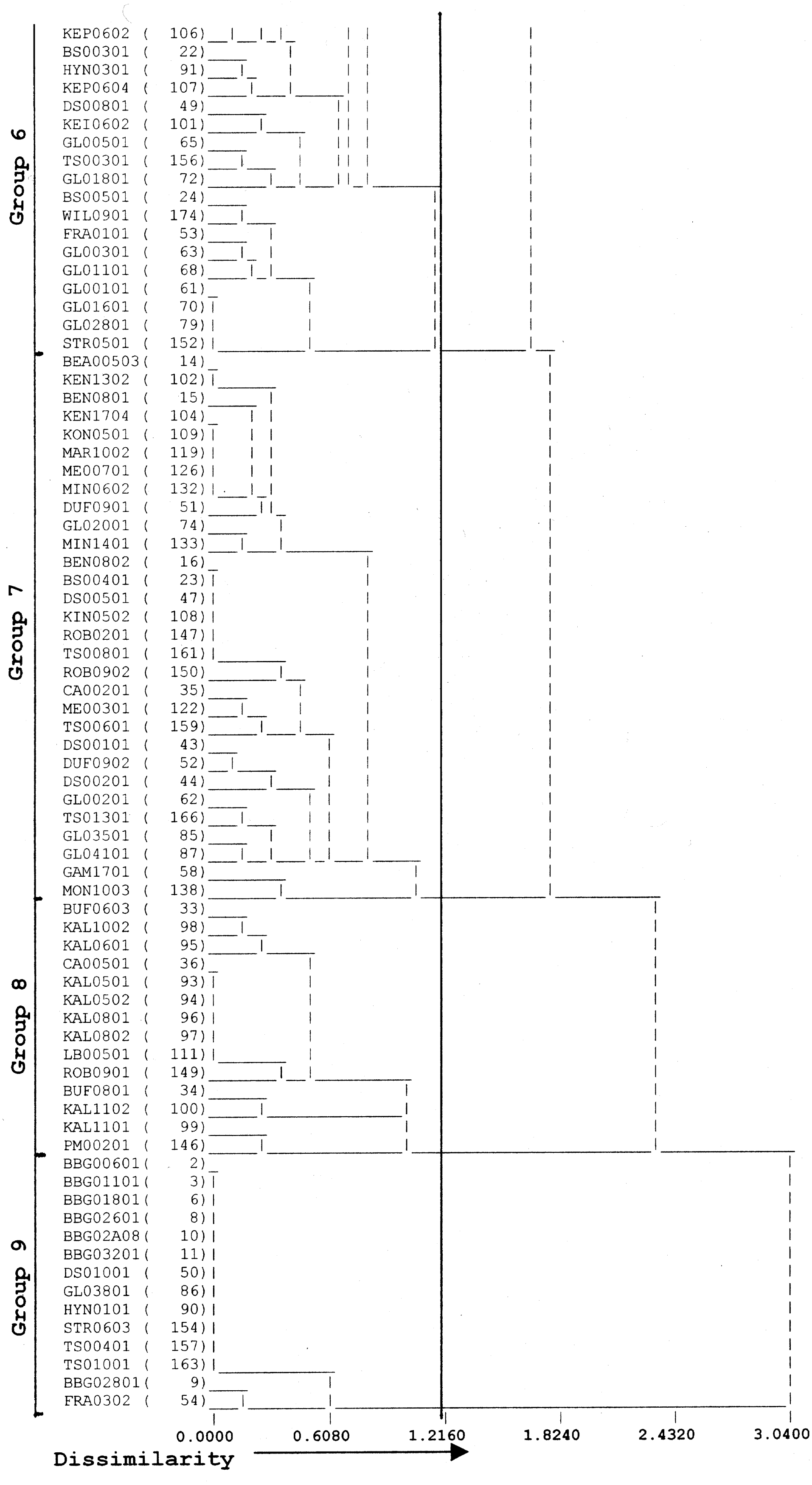



**Figure 104.**
**Dendrogram from PATN analysis of reptile data showing quadrat groups.**

**Table 40.**
**Two-way table of reptile species analysis showing groups of quadrats by species.**

```
                 Grp 1                      Grp2                  Grp 3       Grp 4  Grp 5                  Grp 6                                  Grp 7                   Grp 8          Grp 9
         BTGMMBBWLMMBMGNWBDBDFN|BMCGCGMBBGMMNSTKLBGGGGGLLM|BGSTWCMCTLMPMNMP|BBBTB|BGLWCPRGGG|BKHWBDDGLGGGMTBTWTGTGKBHKDKGTGBWFGG GGGS|BKBKKMMMDGMBBDKRTRCMTDDDGTGGGM|BKKCKKKKLRBKKP|BBBBBBDGHSTTBF
         BSLEESSIUEESEYAIOSSIRA|SEOLOLESULEOATSEUSLLLLLUUE|SYTSIOOOSBOMOEAE|BBBSB|OABOOEOAAA|BEYIOSSLULLLESSSISLSLESYESELSLSIRLL LLLT|EEEEOAEIULIESSIOSOAESSUSLSLLAO|UAAAAAAABOUAAM|BBBBBBSLYTSSBR
         G000000LC0000PRLO00DAR|00N0N000F00NNR0NC000000CC0|0PR0LNNN00N0N0RN|GGG0G|OM00NNBMMM|GPNL000C0000000L0000P0NP0I0000LA00 000R|ANNNNR0NF0NN00NB0B0000F00000MN|FLL0LLLL0BFLL0|GGGGGG00NR00GA
         0030101000010000000100|00030210020000110011212000|1000000010000011|00010|0100000111|00000000123110001003000000000100001 0120|010101000210000000000000013411|01000000000110|00000013000100
         0536121629105829569132|68707307622613472892904554|2869446921913400|15112|7A53484008|36346349271226126547163368653859131 1685|038750769048455289236192235170|60655588598112|01122308164023
         3000000000000000000000|00000000000000000000000000|0000000000000000|28604|0100000000|70000000000000000000000000000000000 0000|500000000000000000000000000000|00000000000000|6186A200000080
         0111111131111123111331|11211111111112125111111121|1221212111313111|00010|1221212121|01211111111111121111211412111111111 1111|021412121112112112111121111113|32111212111211|00000011131102
         1                     |                          |                |111 1|          |1                                       |3                             |              |111181      1
                               |                          |                |     |          |                                        |                              |              |
AMPHMURI         *             |                          |              **|     |         *|                                        |                              |              |
BASSDUPE  *  * **** ** **      |**************************|     * *********|     |    ***  *|                              *         |***********          **      * |              |
LAMPGUIC                       |                          |     **         |     |**********|                                        |          *                   |              |
POGOBARB                       |                       *  |        *       |**** |         *|       **                               |                        *     |              |
AMPHNORR        *          ****|                  *       |                |     |          |                   *      ******* *     |                              |              |
LAMPDELI                       |*******              *****|       **       |     |    *     |** ****************************         |                              |              |
MOREOBSC     *      ***        |                 *********|              * |     |          |***            *********** ******** ****|         **               **  |              |
CTENROBU            * * ***** *|                *         |                |     |          | * ****          *   **   *     *       |        *             *       |              |
HEMIPERO      ***     *     *  |    ***                   |                |     |   *  *   |     ***       ********       *         |***************************** |*             |
TILISCIN                 *     |                          |                |     |    *     |                                        |                     ***  *   |              |
CTENPICT *                     |                          |                |     |          |                                        |                              |              |
TILIRUGO ***** *               |**  *          **         |                |**   |          |               ***         *   *****    |                    *** ****  |         *    |**************
LERIBOUG **         *****  *   |                          |****************|     |       *  |****  *        ****       ** *  ***     |**                ***         |              |
CTENUBER ****************  *** |      *          **    ***|     *          |     |          |               *** ** ***      **       |                              |              |
TYMPLINE    **                 |                          |                |     |          |                                        |                              |              |
MENEGREY                       |                          |                |     |          |                                        |                              |              |            *
PHYLMARM               **    **|                          |                |*    |          |****                    *               |                              |              |            **
EGERCOVE                       |                          |                |     |          |                                        |  *                           |            **|
MOREADEL                       |                          |                |    *|          |                                        |                              |              |
EGERWHIT                       |                          |            *   |     |          |                                        |                            **|***           |
TILINIGR                       |                          |                |     |       *  |                                        |                            **|  *           |
PSEUENTR                       |                          |             *  |     |       ***|                                        |                 **           |********** ** |
PSEURAWL                       |                          |                |     |          |                                        |                              |          **  |
```

**GROUP NUMBER 1**

| | |
|---|---|
| **Number of sites** | **22** |
| **Number of species in group** | **13** |
| **Mean number of species** | **3.4** |
| **Range** | **1-5** |

Group 1 is characterised by *Ctenotus orientalis* (Figure 105) and *Ctenotus robustus*, both of which are represented in other groups. This group shares the highest species richness with group 7. The majority of sites in this group are in the Messent-Gum Lagoon area in the northern half of the survey region in dryer shrubland and heath (Figure 104). Both *Tympanocryptis lineata* and *Ctenophorus pictus* were found only within this group and probably reflects the limits of their distribution.

| Species | Common Name | Frequency | Indicator Value. | Prop. Occur | No.Groups |
|---|---|---|---|---|---|
| ***Ctenotus orientalis*** | **Eastern Spotted Skink** | 19 | **43.56** | 0.53 | 4 |
| *Bassiana duperreyi* | Eastern Three-lined Skink | 10 | 0.23 | 0.15 | 6 |
| ***Ctenotus robustus*** | **Eastern Striped Skink** | 8 | **9.05** | 0.38 | 4 |
| *Lerista bougainvillii* | Bougainville's Skink | 8 | 0.63 | 0.18 | 5 |
| *Tiliqua rugosa* | Sleepy Lizard | 6 | <0.01 | 0.14 | 7 |
| *Amphibolurus nobbi* | Nobbi Dragon | 5 | 3.68 | 0.33 | 3 |
| *Hemiergis peronii* | Four-toed Earless Skink | 5 | 0.62 | 0.10 | 6 |
| *Morethia obscura* | Mallee-Snake-eye | 4 | 0.73 | 0.09 | 5 |
| *Christinus marmoratus* | Marbled Gecko | 4 | 2.67 | 0.33 | 4 |
| *Tympanocryptis lineata* | Five-lined Earless Dragon | 2 | 6.25 | 1.00 | 1 |
| *Amphibolurus muricatus* | Jacky Lizard | 1 | 0.01 | 0.25 | 3 |
| *Ctenophorus pictus* | Painted Dragon | 1 | 1.13 | 1.00 | 1 |
| *Tiliqua scincoides* | Eastern Bluetongue | 1 | 0.08 | 0.17 | 3 |

| Floristic Type | Frequency |
|---|---|
| *Banksia ornata* Shrubland | 6 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 3 |
| *Eucalyptus arenacea/baxteri* Low woodland | 2 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 2 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 2 |
| *Allocasuarina leuhmannii* Woodland | 1 |
| *Eucalyptus leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 1 |
| *Eucalyptus arenacea/baxteri +/- Banksia ornata* Woodland | 1 |
| *Eucalyptus camaldulensis, or E. fasciculosa or E. leucoxylon or E. baxteri* Woodland | 1 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 1 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 1 |
| *Melaleuca halmaturorum* Tall Shrubland | 1 |

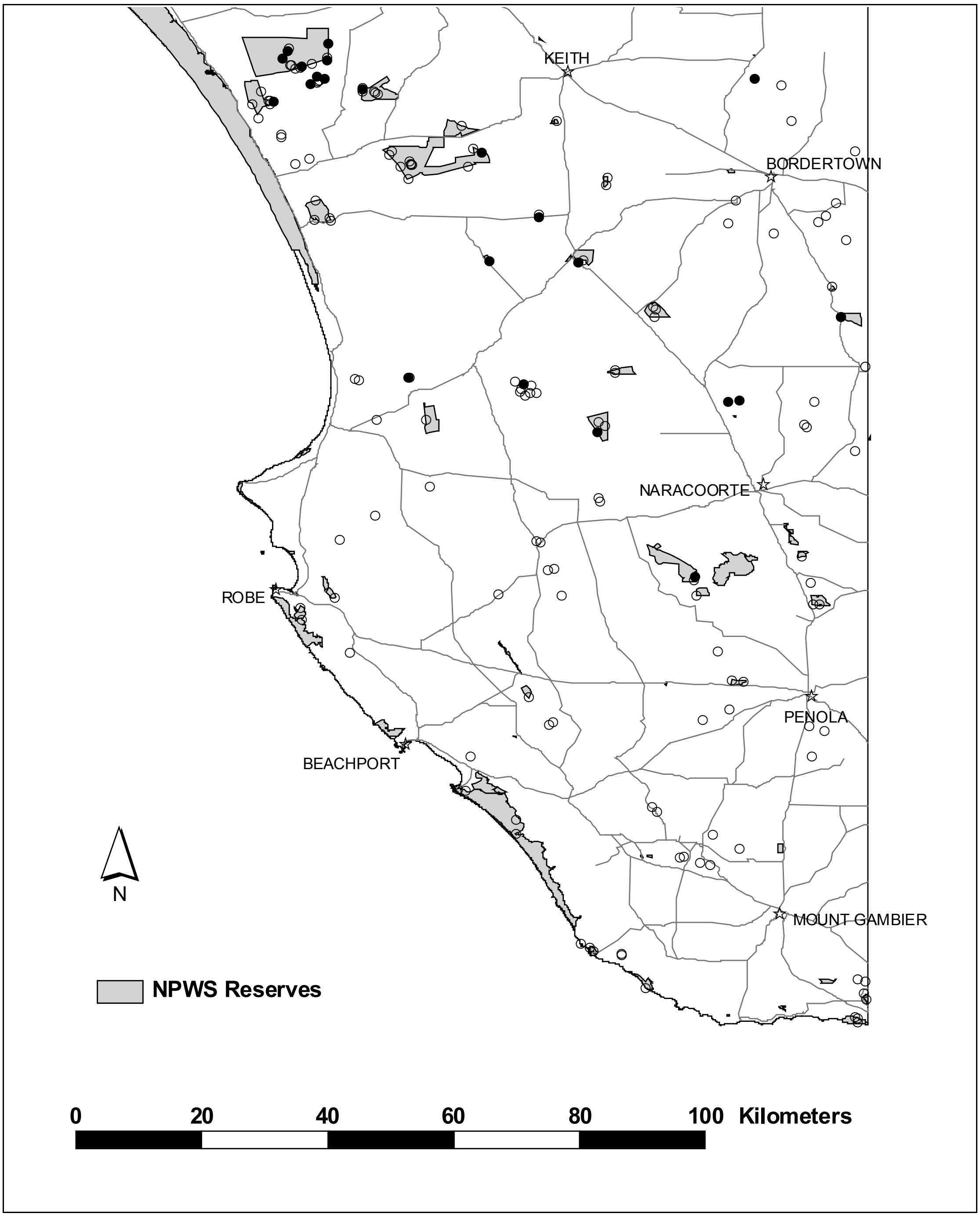



**Figure 104.**
**Distribution of sites representing PATN Group 1 (closed circles) and other reptile groups (open circles).**

**Figure 105.**
**The Eastern Spotted Skink *Ctenotus orientalis* is characteristic of the heathy woodlands and shrublands of the Upper South East. Photo: A. Robinson.**

**GROUP NUMBER 2**

| | |
|---|---|
| **Number of sites** | **26** |
| **Number of species in group** | **9** |
| **Mean number of species** | **2.4** |
| **Range** | **1-5** |

*Bassiana duperreyi* (Figure 107) is the characteristic species of this group and it is typically found in a range of woodland and grassland habitats. It was regularly observed on or near fallen logs and in leaf litter. All species represented in the group are generalists found throughout open heath, shrubland and woodland habitats and are present in several other groups, however most sites are in the north-eastern corner of the study area (Figure 106).

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No. Groups |
|---|---|---|---|---|---|
| ***Bassiana duperreyi*** | **Eastern Three-lined Skink** | 26 | **26.32** | 0.40 | 6 |
| *Lampropholis delicata* | Delicate Skink | 12 | 3.85 | 0.27 | 4 |
| *Morethia obscura* | Mallee-Snake-eye | 9 | 0.62 | 0.20 | 5 |
| *Ctenotus orientalis* | Eastern Spotted Skink | 6 | 0.01 | 0.17 | 4 |
| *Tiliqua rugosa* | Sleepy Lizard | 5 | 0.62 | 0.11 | 7 |
| *Hemiergis peronii* | Four-toed Earless Skink | 3 | 3.50 | 0.06 | 6 |
| *Amphibolurus nobbi* | Nobbi Dragon | 1 | 1.33 | 0.07 | 3 |
| *Ctenotus robustus* | Eastern Striped Skink | 1 | 2.18 | 0.05 | 4 |
| *Pogona barbata* | Eastern Bearded Dragon | 1 | 0.65 | 0.10 | 6 |

| Floristic Type | Frequency |
|---|---|
| *Banksia ornata* Shrubland | 4 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 4 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 3 |
| *Melaleuca brevifolia* Shrubland | 3 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 2 |
| *Eucalyptus obliqua* var. *Pteridium esculentum* Woodland | 2 |
| *E. leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 1 |
| *Eucalyptus arenacea/baxteri* Low Woodland | 1 |
| *Eucalyptus arenacea/baxteri +/- Banksia ornata* Woodland | 1 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 1 |
| *Melaleuca halmaturorum* Tall Shrubland | 1 |

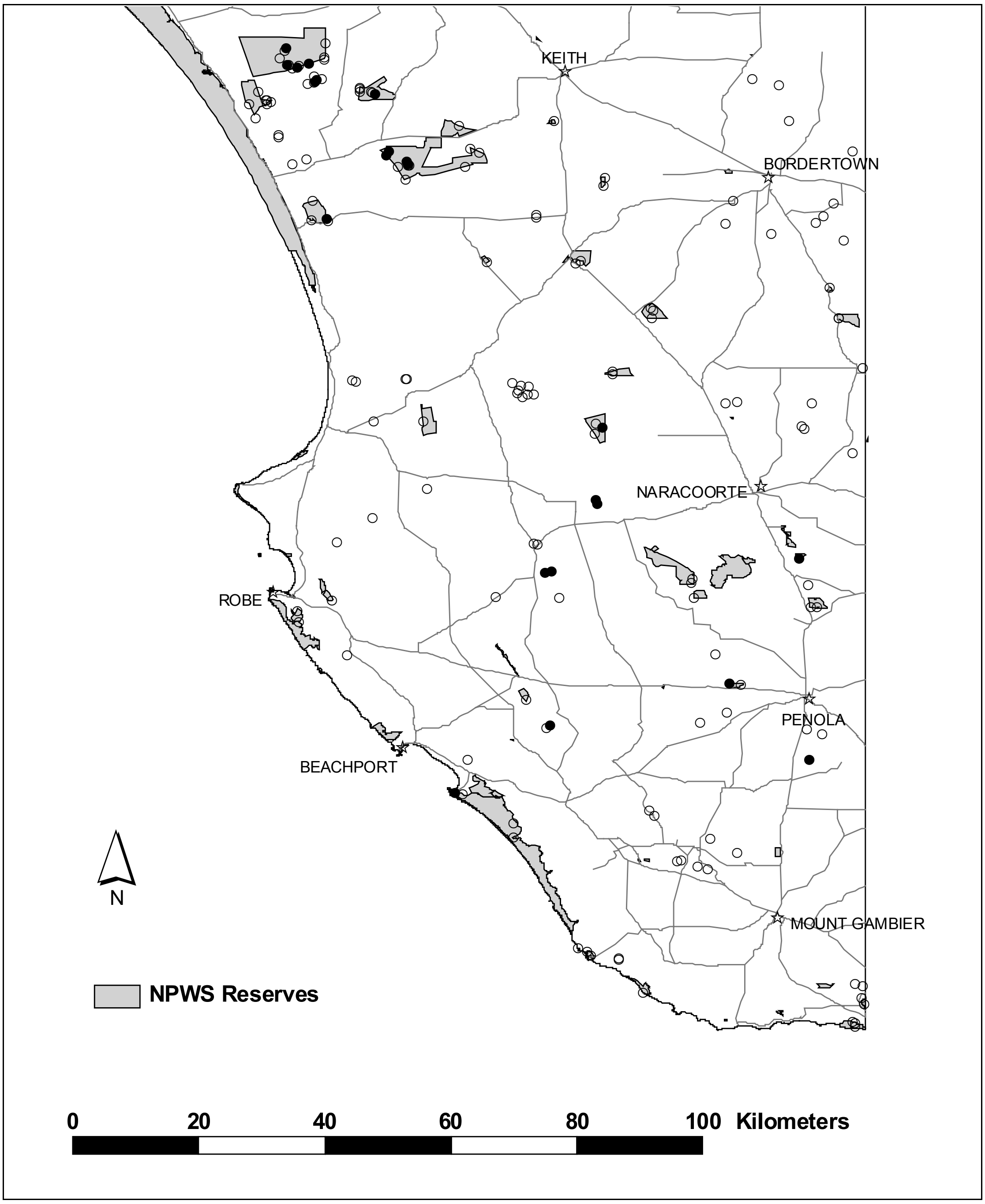



**Figure 106.**
**Distribution of sites representing PATN Group 2 (closed circles) and other reptile groups (open circles).**

**Figure 107.**
***Bassiana duperreyi*, Eastern Three-lined Skink was recorded in plant litter from a range of woodland and grassland habitats.** **Photo: A. Robinson.**

**GROUP NUMBER 3**

| | |
|---|---|
| **Number of sites** | **16** |
| **Number of species in group** | **10** |
| **Mean number of species** | **2.3** |
| **Range** | **1-4** |

Group 3 is characterised by *Lerista bougainvillii* (Figure 109), with the remaining species other than *Bassiana duperreyi* recorded at less than three quadrats. The species recorded are primarily from quadrats in woodland habitats with fallen timber, leaf litter and rocks. Quadrats represented in this group are spread throughout the survey region (Figure 108).

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No.Groups |
|---|---|---|---|---|---|
| ***Lerista bougainvillii*** | **Bougainville's Skink** | 16 | **31.82** | 0.36 | 5 |
| *Bassiana duperreyi* | Eastern Three-lined Skink | 10 | 2.18 | 0.15 | 6 |
| *Amphibolurus muricatus* | Jacky Lizard | 2 | 3.55 | 0.50 | 3 |
| *Lampropholis delicata* | Delicate Skink | 2 | 1.56 | 0.05 | 4 |
| *Lampropholis guichenoti* | Garden Skink | 2 | 0.09 | 0.15 | 3 |
| *Ctenotus orientalis* | Eastern Spotted Skink | 1 | 2.35 | 0.03 | 4 |
| *Egernia whitii* | White's Skink | 1 | <0.01 | 0.17 | 3 |
| *Morethia obscura* | Mallee-Snake-eye | 1 | 3.06 | 0.02 | 5 |
| *Pogona barbata* | Eastern Bearded Dragon | 1 | 0.18 | 0.10 | 6 |
| *Pseudemoia entrecasteauxii* | Southern Grass Skink | 1 | 0.79 | 0.06 | 4 |

| Floristic Type | Frequency |
|---|---|
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 5 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 3 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 2 |
| *Banksia ornata* Shrubland | 1 |
| *Eucalyptus leucoxylon* ssp. Low Open Woodland | 1 |
| *Eucalyptus arenacea/baxteri* Low Woodland | 1 |
| *Eucalyptus camaldulensis* Woodland | 1 |
| *Eucalyptus incrassata, E. leptophylla* Tall Open Shrubland | 1 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 1 |

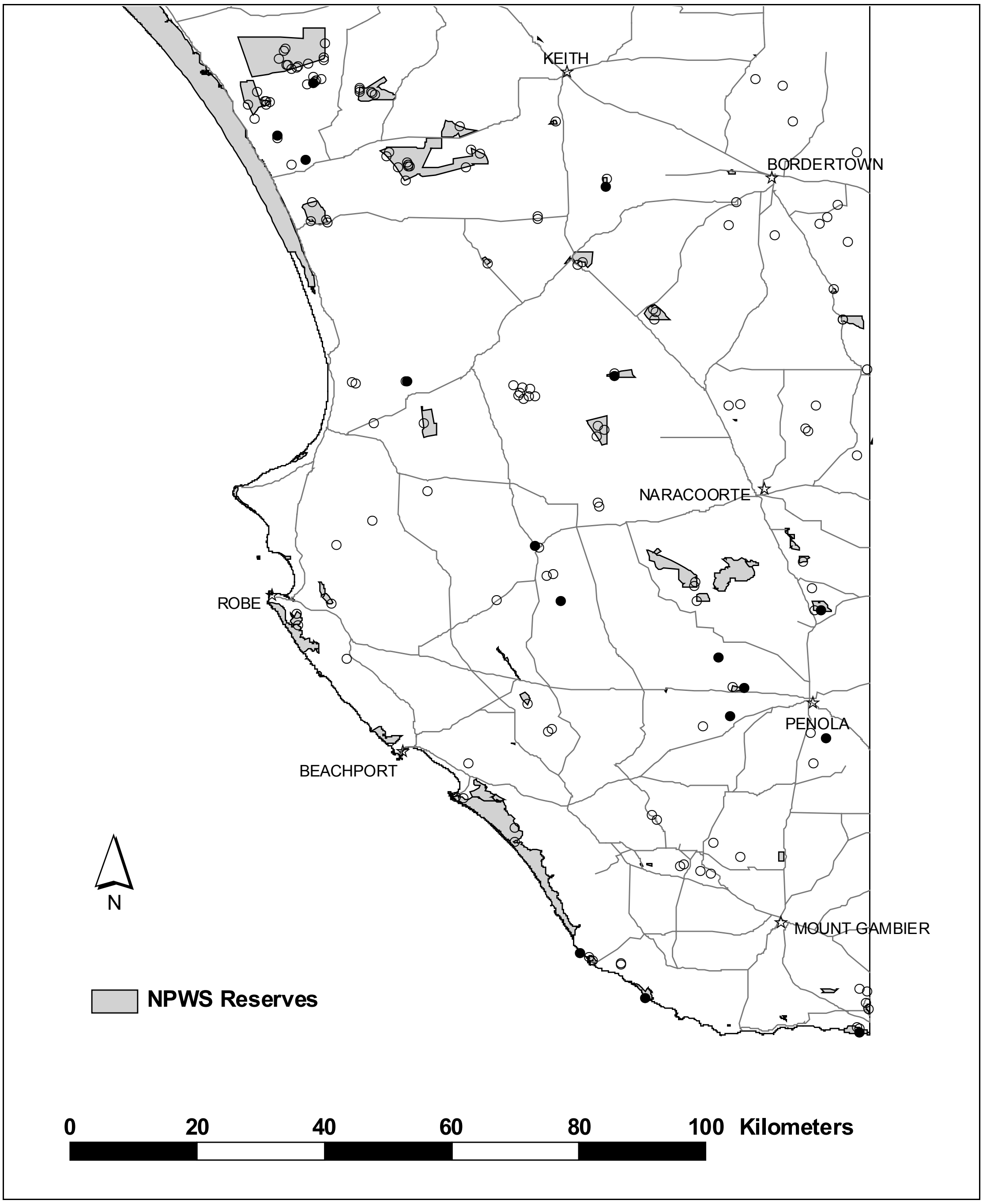



**Figure 108.**
**Distribution of sites representing PATN Group 3 (closed circles) and other reptile groups (open circles).**


**Figure 109.**
***Lerista bougainvillii*** **were characteristic of group 3 and were primarily recorded from woodland habitats with fallen timber, leaf litter and rocks that are spread throughout the survey region. Photo: A. Robinson.**

**GROUP NUMBER 4**

| | |
|---|---|
| **Number of sites** | **5** |
| **Number of species in group** | **4** |
| **Mean number of species** | **1.6** |
| **Range** | **1-4** |

This group contains the lowest number of sites. The group is characterised by *Pogona barbata* (Figure 111) and includes the only occurrence of *Morethia adelaidensis*. Most records were from *Eucalyptus microcarpa* Woodland and most sites were restricted to the northern margin of the survey region around Bordertown in the northeast of the study area (Figure 110).

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No.Groups |
|---|---|---|---|---|---|
| ***Pogona barbata*** | **Eastern Bearded Dragon** | 4 | **36.40** | 0.40 | 6 |
| *Tiliqua rugosa* | Sleepy Lizard | 2 | 0.05 | 0.05 | 7 |
| ***Morethia adelaidensis*** | **Adelaide Snake-eye** | 1 | **7.83** | 1.00 | 1 |
| *Christinus marmoratus* | Marbled Gecko | 1 | 0.07 | 0.08 | 4 |

| Floristic Type | Frequency |
|---|---|
| *Eucalyptus microcarpa* Woodland | 3 |
| *Eucalyptus behriana* +/- *E. dumosa* Low Open Woodland | 1 |
| *Melaleuca halmaturorum* Tall Shrubland | 1 |

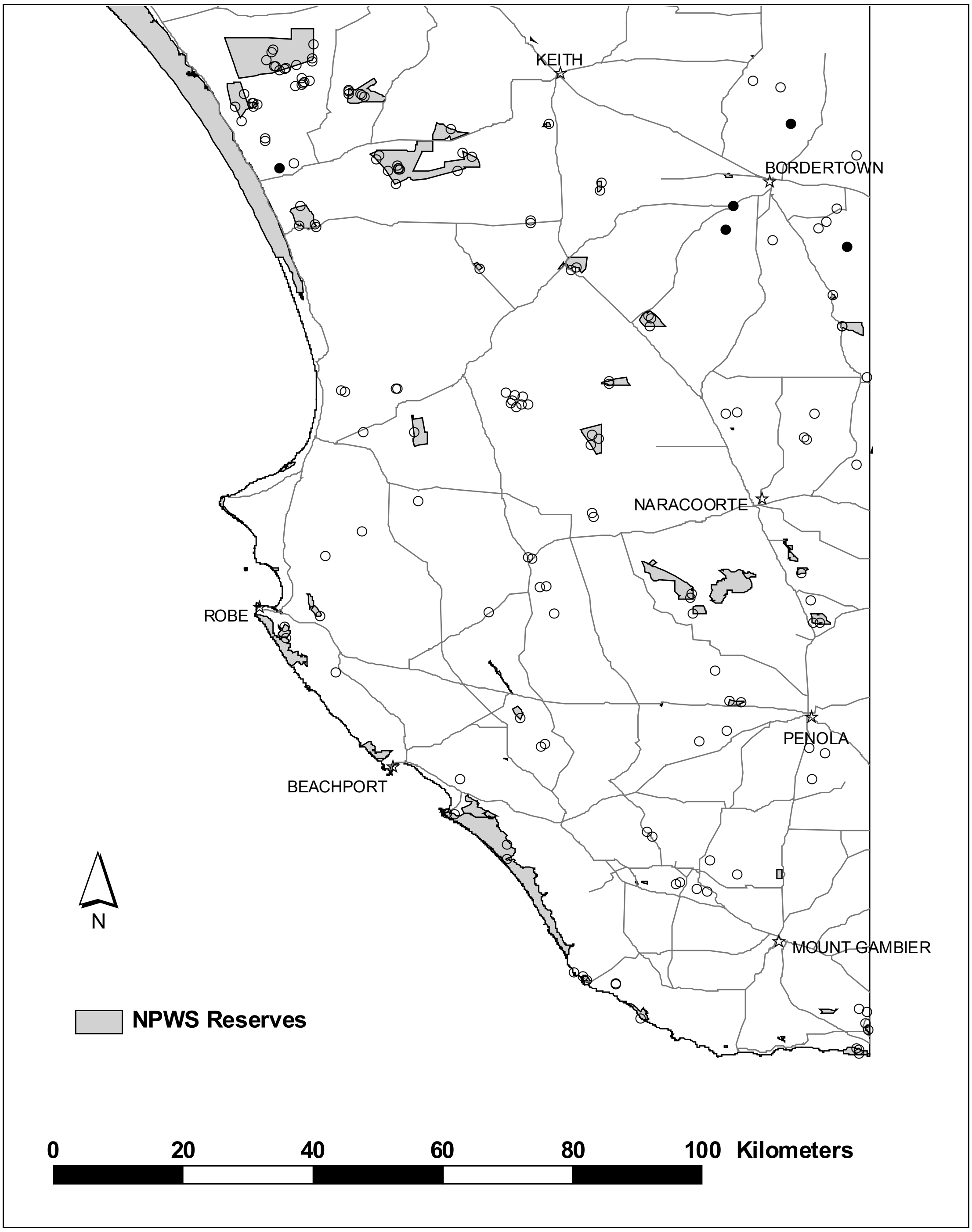



**Figure 110.**
**Distribution of sites representing PATN Group 4 (closed circles) and other reptile groups (open circles).**

**Figure 111.**
**Most records of the Eastern Bearded Dragon *Pogona barbata* were from woodland sites on the northern margin of the study area.** **Photo: A. Robinson.**

**GROUP NUMBER 5**

| | |
|---|---|
| **Number of sites** | **10** |
| **Number of species in group** | **10** |
| **Mean number of species** | **2.5** |
| **Range** | **1-5** |

This group is characterised by *Lampropholis guichenoti* (Figure 113) with almost 80% of its captures represented in this group. Sites are generally restricted to the southern half of the survey region (south of Robe) and are mostly in close proximity to the coast (Figure 112). Most sites occur in eucalypt woodland habitats with a dense leaf litter layer.

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No. Groups |
|---|---|---|---|---|---|
| ***Lampropholis guichenoti*** | **Garden Skink** | 10 | **103.92** | 0.77 | 3 |
| *Bassiana duperreyi* | Eastern Three-lined Skink | 4 | 0.01 | 0.06 | 6 |
| *Pseudemoia entrecasteauxii* | Southern Grass Skink | 3 | 2.13 | 0.17 | 4 |
| *Hemiergis peronii* | Four-toed Earless Skink | 2 | 0.72 | 0.04 | 6 |
| *Amphibolurus muricatus* | Jacky Lizard | 1 | 0.33 | 0.25 | 3 |
| *Lampropholis delicata* | Delicate Skink | 1 | 1.60 | 0.02 | 4 |
| *Lerista bougainvillii* | Bougainville's Skink | 1 | 1.65 | 0.02 | 5 |
| *Pogona barbata* | Eastern Bearded Dragon | 1 | 0.01 | 0.10 | 6 |
| *Tiliqua nigrolutea* | Blotched Bluetongue | 1 | 0.33 | 0.25 | 3 |
| *Tiliqua scincoides* | Eastern Bluetongue | 1 | 0.07 | 0.17 | 3 |

| Floristic Type | Frequency |
|---|---|
| *Eucalyptus obliqua* var. *Pteridium esculentum* Woodland | 4 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 2 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 2 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 1 |
| *Eucalyptus fasciculosa, E. leucoxylon* Low Woodland | 1 |

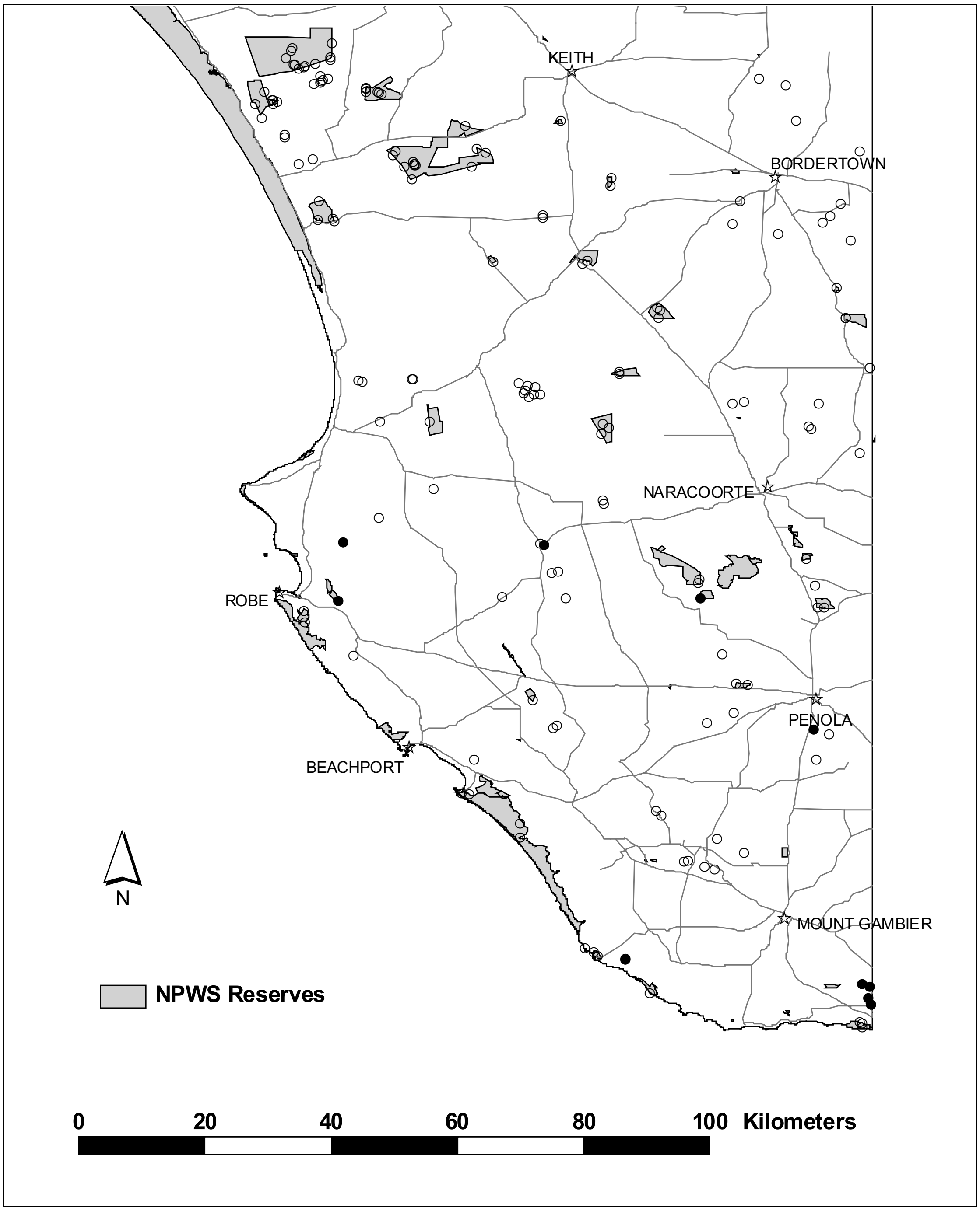



**Figure 112.**
**Distribution of sites representing PATN group 5 (closed circles) and other reptile groups (open circles).**

**Figure 113.**
***Lampropholis guichenoti* was predominantly found in eucalypt woodland habitats close to the coast with a dense leaf litter layer.** **Photo: A. Robinson.**

**GROUP NUMBER 6**

| | |
|---|---|
| **Number of sites** | **39** |
| **Number of species in group** | **11** |
| **Mean number of species** | **3.3** |
| **Range** | **1-6** |

This group contains the highest number of sites and the majority of these are distributed mainly in the north western corner of the survey region (Figure 114). The species that characterise the group include the small skinks *Lampropholis delicata* and *Morethia obscura* (Figure 115). Sixty percent of *Amphibolurus nobbi* captures are also represented in this group. The broad habitat types are eucalypt woodlands and shrublands.

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No.Groups |
|---|---|---|---|---|---|
| ***Lampropholis delicata*** | **Delicate Skink** | **29** | **36.06** | **0.66** | **4** |
| ***Morethia obscura*** | **Mallee-Snake-eye** | **26** | **25.44** | **0.59** | **5** |
| *Lerista bougainvillii* | Bougainville's Skink | 15 | 2.06 | 0.33 | 5 |
| *Hemiergis peronii* | Four-toed Earless Skink | 12 | <0.01 | 0.23 | 6 |
| *Ctenotus robustus* | Eastern Striped Skink | 10 | 5.05 | 0.48 | 4 |
| *Ctenotus orientalis* | Eastern Spotted Skink | 10 | 0.29 | 0.28 | 4 |
| *Amphibolurus nobbi* | Nobbi Dragon | 9 | 8.06 | 0.60 | 3 |
| *Tiliqua rugosa* | Sleepy Lizard | 9 | 0.16 | 0.20 | 7 |
| *Christinus marmoratus* | Marbled Gecko | 5 | 1.27 | 0.42 | 4 |
| *Pogona barbata* | Eastern Bearded Dragon | 2 | 0.23 | 0.20 | 6 |
| *Bassiana duperreyi* | Eastern Three-lined Skink | 1 | 1.42 | 0.02 | 6 |

| Floristic Type | Frequency |
|---|---|
| *Eucalyptus diversifolia* Tall Open Shrubland | 6 |
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 5 |
| *Eucalyptus leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 4 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 3 |
| *Allocasuarina verticilliata* Woodland | 2 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 2 |
| *Melaleuca brevifolia* Shrubland | 2 |
| *Banksia ornata* Shrubland | 1 |
| *Banksia ornata +/- E. ovata, E. viminalis* Woodland | 1 |
| *Eucalyptus arenacea/baxteri* Low Woodland | 1 |
| *Eucalyptus arenacea/baxteri +/- Banksia ornata* Woodland | 1 |
| *Eucalyptus behriana +/- E. dumosa* Low Open Woodland | 1 |

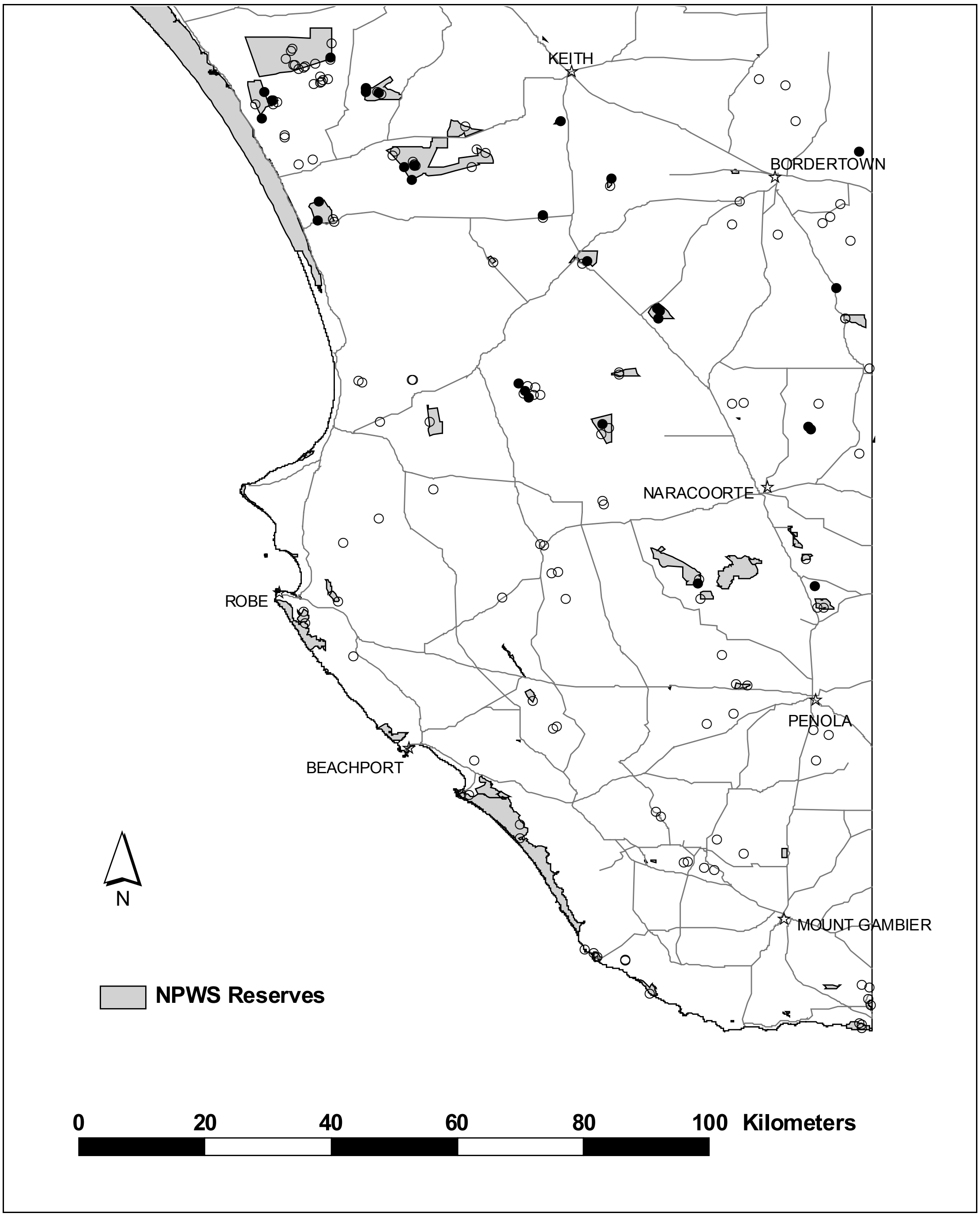



**Figure 114.**
**Distribution of sites representing reptile PATN Group 6 (closed circles) and other reptile groups (open circles).**

**Figure 115.**
**Although widespread, *Morethia obscura* was characteristic of eucalypt woodlands and shrublands from the north east of the study area. Photo: A. Robinson (NPWSA).**

**GROUP NUMBER 7**

| | |
|---|---|
| **Number of sites** | **30** |
| **Number of species in group** | **13** |
| **Mean number of species** | **2.5** |
| **Range** | **1-4** |

Group 7 shares the highest reptile species richness with Group 1. This group is characterised by *Hemiergis peronii* (Figure 117), which typically occupies coastal shrublands and heathland. Sixty seven percent of the captures of *Tiliqua scincoides* are represented in this group. Group 7 is one of two groups containing the endangered *Egernia coventryi.* The dominant habitats are *Melaleuca* spp. shrublands and eucalypt woodlands and shrublands in close proximity to the coast (Figure 116).

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No.Groups |
|---|---|---|---|---|---|
| ***Hemiergis peronii*** | **Four-toed Earless Skink** | 29 | **43.50** | 0.56 | 6 |
| *Bassiana duperreyi* | Eastern Three-lined Skink | 14 | 0.53 | 0.22 | 6 |
| *Tiliqua rugosa* | Sleepy Lizard | 7 | 0.13 | 0.16 | 7 |
| *Lerista bougainvillii* | Bougainville's Skink | 5 | 1.31 | 0.11 | 5 |
| *Morethia obscura* | Mallee-Snake-eye | 4 | 2.13 | 0.09 | 5 |
| *Tiliqua scincoides* | Eastern Bluetongue | 4 | 6.00 | 0.67 | 3 |
| *Ctenotus robustus* | Eastern Striped Skink | 2 | 1.21 | 0.10 | 4 |
| *Egernia whitii* | White's Skink | 2 | 0.22 | 0.33 | 3 |
| *Pseudemoia entrecasteauxii* | Southern Grass Skink | 2 | 0.80 | 0.11 | 4 |
| *Tiliqua nigrolutea* | Blotched Bluetongue | 2 | 0.98 | 0.50 | 3 |
| *Egernia coventryi* | Swamp Skink | 1 | 0.01 | 0.33 | 2 |
| *Lampropholis guichenoti* | Garden Skink | 1 | 1.33 | 0.08 | 3 |
| *Pogona barbata* | Eastern Bearded Dragon | 1 | 0.85 | 0.10 | 6 |

| Floristic Type | Frequency |
|---|---|
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 4 |
| *Melaleuca brevifolia* Shrubland | 4 |
| *Melaleuca halmaturorum* Tall Shrubland | 4 |
| *Banksia ornata* Shrubland | 3 |
| *Xanthorrhoea caespitosa, Leptospermum continentale*, Open Shrubland | 2 |
| *Eucalyptus diversifolia* Tall Open Shrubland | 1 |
| *Eucalyptus incrassata, E. leptophylla,* Tall Open Shrubland | 1 |
| *Eucalyptus obliqua* var. *Pteridium esculentum* Woodland | 1 |
| *Gahnia filum* Sedgeland | 1 |
| *Gahnia filum, Samolus repens* Sedgeland | 1 |
| *Leptocarpus brownii, Baumea juncea* Closed Sedgeland | 1 |
| *Leptospermum lanigerum* Tall Shrubland | 1 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 1 |
| *Melaleuca brevifolia* or *M. uncinata* Shrubland | 1 |
| *Melaleuca lanceolatum* Woodland | 1 |
| *Themeda triandra* Open Grassland | 1 |
| Unclassified | 1 |

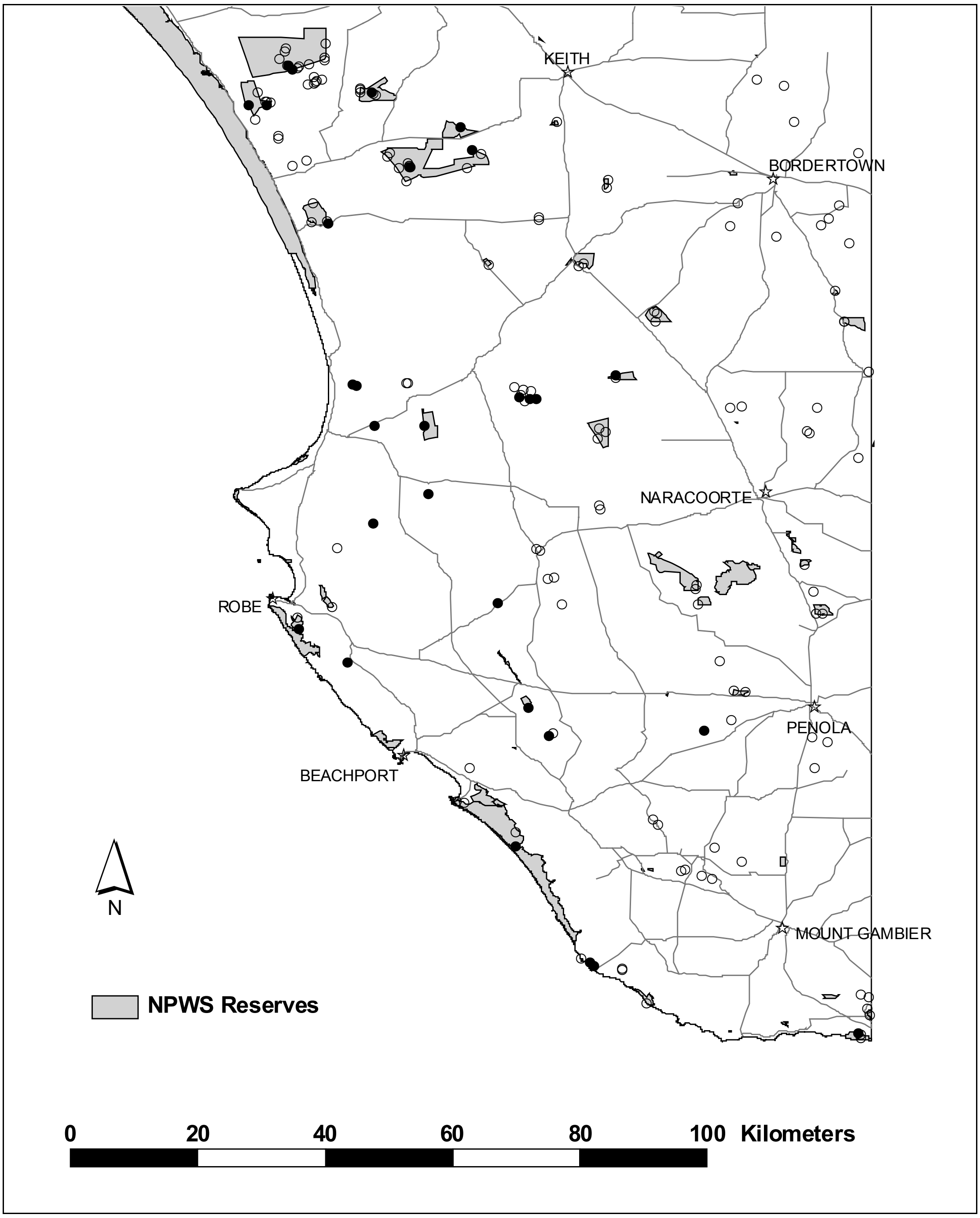



**Figure 116.**
**Distribution of sites representing PATN Group 7 (closed circles) and other reptile groups (open circles).**

**Figure 117.**
***Hemiergis peronii* is characteristic of PATN group seven and is commonly found in *Melaleuca* spp. shrublands and coastal woodlands.** **Photo: S. Doyle.**

**GROUP NUMBER 8**

| | |
|---|---|
| **Number of sites** | **14** |
| **Number of species in group** | **7** |
| **Mean number of species** | **1.4** |
| **Range** | **1-3** |

This group is characterised by *Pseudemoia entrecasteauxii* (Figure 119) and is the only group containing the endangered *Pseudemoia rawlinsoni* (Figure 125). This is also the main group for the endangered *Egernia coventryi*. All the sites in this group are restricted to the Lower South East of the survey area in *Gahania* and *Baumea* dominated sedgelands, *Melaleuca* and *Leptospermum* Shrublands and *Eucalyptus* woodlands (Figure 118).

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No. Groups |
|---|---|---|---|---|---|
| ***Pseudemoia entrecasteauxii*** | **Southern Grass Skink** | 12 | **70.80** | 0.67 | 4 |
| *Egernia whitii* | White's Skink | 3 | 8.57 | 0.50 | 3 |
| *Egernia coventryi* | Swamp Skink | 2 | 6.67 | 0.67 | 2 |
| ***Pseudemoia rawlinsoni*** | **Glossy Grass Skink** | 2 | **11.30** | 1.00 | 1 |
| *Hemiergis peronii* | Four-toed Earless Skink | 1 | 3.20 | 0.02 | 6 |
| *Tiliqua nigrolutea* | Blotched Bluetongue | 1 | 0.10 | 0.25 | 3 |
| *Tiliqua rugosa* | Sleepy Lizard | 1 | 2.57 | 0.02 | 7 |

| Floristic Type | Frequency |
|---|---|
| *Eucalyptus arenacea/baxteri +/- Pteridium esculentum* Woodland | 3 |
| *Gahnia filum, Samolus repens* Sedgeland | 3 |
| *Baumea juncea +/- Gahnia trifida* Sedgeland | 2 |
| *Melaleuca squarrosa +/- Eucalyptus ovata* Tall Shrubland | 2 |
| *Eucalyptus obliqua* var., *Pteridium esculentum* Woodland | 1 |
| *Leptospermum lanigerum* Tall Shrubland | 1 |
| *Leucopogon parviflorus, Acacia longifolia* var *sophorae, Olearia axillaris* Shrubland | 1 |
| *Melaleuca brevifolia* Shrubland | 1 |

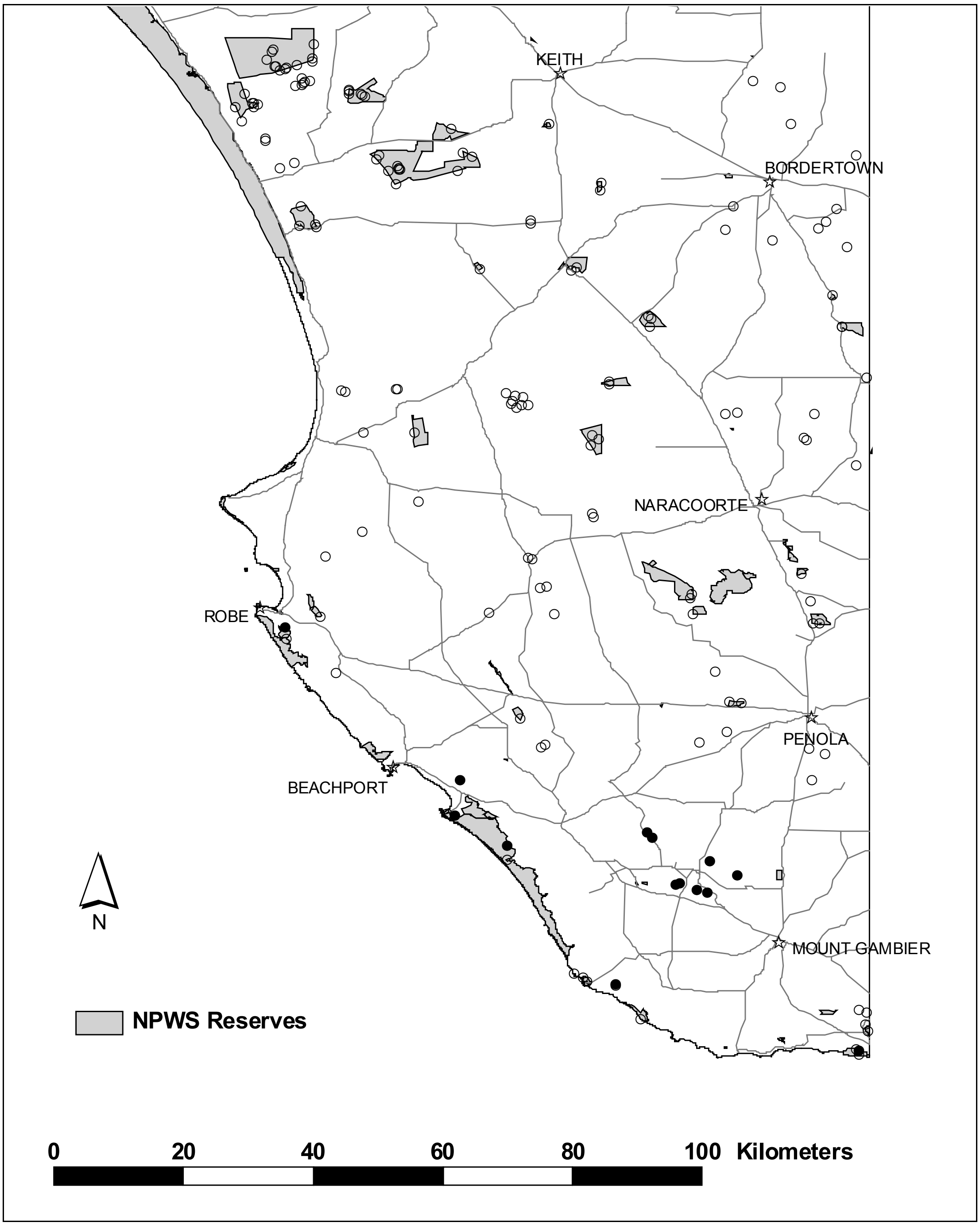



**Figure 118.**
**Distribution of sites representing PATN group 8 (closed circles) and other reptile groups (open circles).**

**Figure 119.**
**The Southern Grass Skink *Pseudemoia entrecasteauxii* is restricted to the lower south east of the survey area in wetter sedgelands, shrublands and woodlands.** **Photo: M. Hutchinson.**

**GROUP NUMBER 9**

| | |
|---|---|
| **Number of sites** | **14** |
| **Number of species in group** | **3** |
| **Mean number of species** | **1.2** |
| **Range** | **1-3** |

Group 9 had the lowest species richness for any group. The group was characterised by *Tiliqua rugosa* (Figure 121), which was also recorded in six other groups. It contains the single occurrence of *Menetia greyi*. The majority of sites were located mainly in the north-eastern portion of the survey region (Figure 122) in dry *Allocasuarina leuhmannii* and *Eucalyptus* spp. woodlands.

| Species | Common Name | Frequency | Indicator Value | Prop. Occur | No. Groups |
|---|---|---|---|---|---|
| ***Tiliqua rugosa*** | **Sleepy Lizard** | 14 | **28.57** | 0.32 | 7 |
| *Christinus marmoratus* | Marbled Gecko | 2 | 0.31 | 0.17 | 4 |
| *Menetia greyi* | Dwarf Skink | 1 | 2.22 | 1.00 | 1 |

| Floristic Type | Frequency |
|---|---|
| *Allocasuarina leuhmannii* Woodland | 3 |
| *Melaleuca halmaturorum* Tall Shrubland | 2 |
| *Eucalyptus leucoxylon* ssp. +/- *Acacia pycnantha* Open Woodland | 1 |
| *Eucalyptus arenacea/baxteri* +/- *Pteridium esculentum* Woodland | 1 |
| *Eucalyptus behriana* +/- *E. dumosa* Low Open Woodland | 1 |
| *Eucalyptus fasciculosa*, *Xanthorrhoea caespitosa* Low Woodland | 1 |
| *Eucalyptus microcarpa* Woodland | 1 |
| *Eucalyptus ovata/ E. viminalis* Woodland | 1 |
| *Melaleuca brevifolia* Shrubland | 1 |

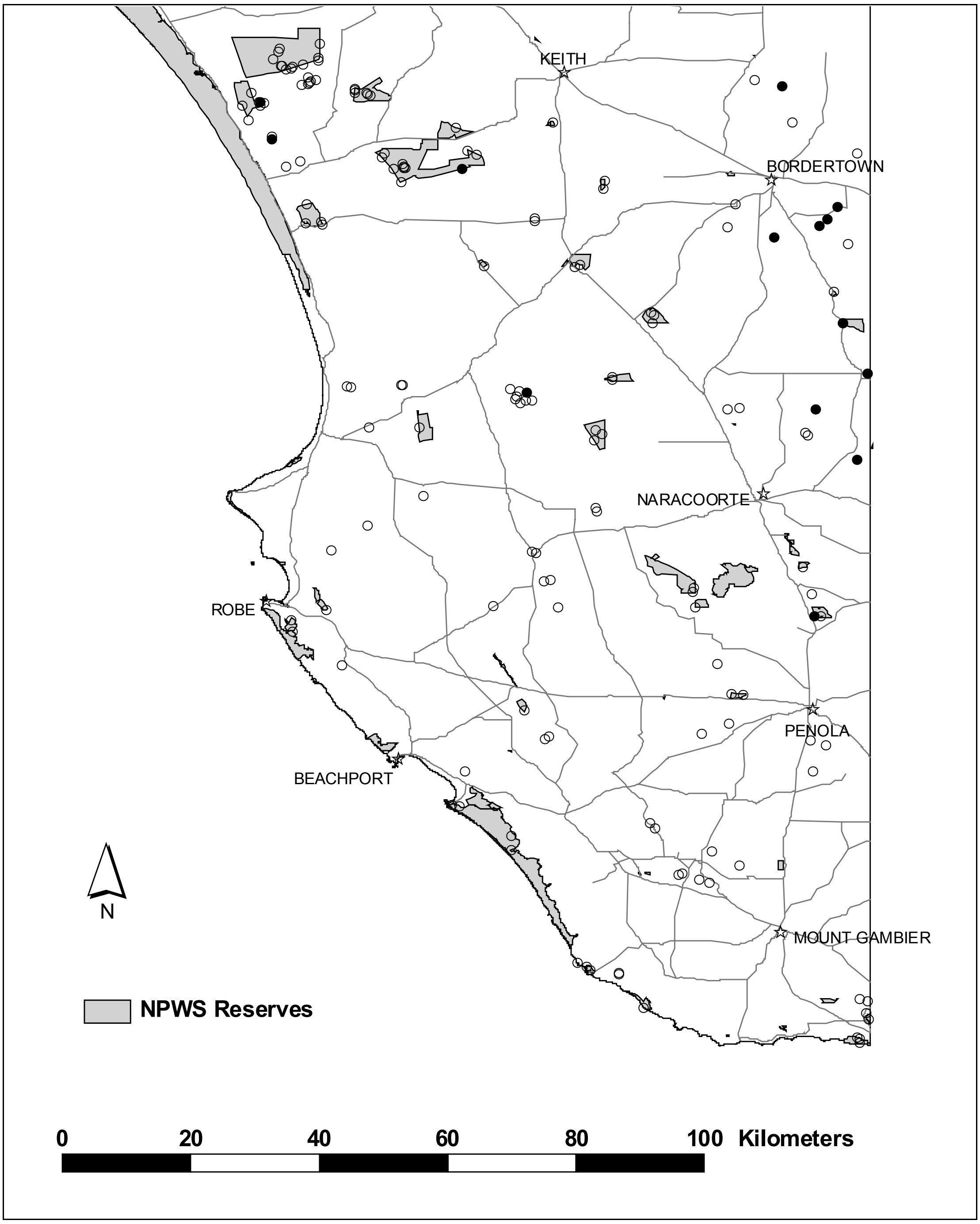



**Figure 120.**
**Distribution of sites representing PATN Group 9 (closed circles) and other reptile groups (open circles).**

**Figure 121.**
**The majority of sites where *Tiliqua rugosa* were located mainly in the north-eastern portion of the survey region in dry *Allocasuarina leuhmannii* and *Eucalyptus* spp. woodlands. Photo: A. Robinson.**

**Species of Particular Interest**

The following species are listed as species of conservation concern in the South East region on a State basis. The Striped Snake Lizard is the only species in the region that has a National conservation status rating (Vulnerable). Accounts of these species and other species recorded from the region are provided in the following sections.

**Endangered**
*Delma impar* (**Striped Snake-lizard**)
*Egernia coventryi* (**Swamp Skink**)
*Pseudemoia rawlinsoni* (**Glossy Grass Skink**)
*Nannoscincus maccoyi*

**Vulnerable**
*Litoria raniformis* (**Golden Bell Frog**)

**Rare**
*Amphibolurus muricatus* (**Jacky Lizard**)
*Echiops curta* (**Bardick**)
*Delma inornata* (**Olive Snake-lizard**)
*Pseudemoia pagenstecheri* (**Tussock Skink**)
*Varanus rosenbergi* (**Heath Goanna**)
*Geocrinia laevis* (**Smooth Frog**)

**TURTLES AND TORTOISES:**

**Family CHELIDAE (side-necked tortoise)**
**Eastern Snake-necked Tortoise (*Chelodina longicollis*)**
The Eastern Snake-necked Tortoise prefers swamps, lakes, lagoons, and slow moving creeks and rivers. It is widespread in the South East south of Bordertown, particularly along the network of drains, however only six observations were made during the survey. It feeds on various aquatic animals including molluscs, crustaceans, tadpoles and small fish. Extensive migrations are known to occur in summer. Elsewhere in Australia it occurs along the eastern coastal margin.

**LIZARDS**
**Family AGAMIDAE (dragon lizards)**

**Jacky Lizard (*Amphibolurus muricatus*)**
Prior to the 1997 South East Biological Survey, *A. muricatus* was only represented by three specimens in South Australian Museum, and consequently is regarded as Rare. A further six captures were made of *A. muricatus* during the survey. In South Australia, *A. muricatus* is associated with woodland habitats and is considered rare due to its restricted range and the fragmentation and disturbance of suitable habitats within this range in the lower South East. This species is restricted to the eastern margin of Australia from southern Queensland around to the lower South East of South Australia where it is replaced by a similar species *A. norrisi*.

**Mallee Tree-dragon (*Amphibolurus norrisi*)**
The Mallee Tree-dragon is a diurnal, dragon lizard of mallee and coastal heath shrublands of the Upper South East. It is found in heathy mallee associations with an intact understorey. It has mostly been recorded from the Upper South East, although there is one record from the Lower South East. Seven captures were recorded during the survey. It is also found through coastal southern Australia, from Western Australia to Eyre Peninsula, with a separate isolated population in the South East, southern Murray Mallee, and adjacent areas of western Victoria.

**Painted Dragon (*Ctenophorus pictus*)**
The Painted Dragon is a diurnal, dragon lizard, which occupies a wide variety of more open habitat in southern Australia, from eastern Western Australia, southern Northern Territory, south-western Queensland, western New South Wales and Victoria, and most of South Australia. In the South East, it is only recorded on sandier soils of the Upper South East, particularly mallee and stringybark over dense heath shrubs. However, there is one unusual record from the Lower South East (Hundred Benara) at the South Australian Museum. It prefers areas with consolidated sand bound by the shrub roots, and shelters in burrows, commonly in the soil at the base of shrubs.

**Bearded Dragon (*Pogona barbata*) (Figure 111)**
The Bearded Dragon is a diurnal, semi-arboreal dragon lizard that is widely distributed in the woodlands of the South East, however only four observations were made during the survey. It persists in areas largely developed for agriculture but it usually shelters in dense vegetation and generally does not burrow except to lay eggs. It feeds on various insects, spiders, small lizards, flowers, fruits and green shoots. They also occur in eastern Australia, with separate populations in the higher rainfall areas of South Australia. Elsewhere in South Australia, it is found primarily in woodlands of lower Eyre Peninsula, Mount Lofty Ranges, foot of Yorke Peninsula, Murray Mallee and Kangaroo Island.

**Bearded Dragon (*Pogona vitticeps*)**
In the South East, *P. vitticeps* was first recorded by biological surveys in the early 1990's, in the Upper South East areas of Messent Conservation Park and east of Keith. In can occur in a variety of open habitats, but in this region, occurs in sandy areas with mallee over a heath shrub understorey. A single opportune record was made during this survey. The South East and neighbouring southern Murray Mallee supports a distinctly dwarfish population (Houston 1998). It feeds primarily on insects. Elsewhere in Australia, this diurnal, semi-arboreal dragon lizard occurs in drier habitats from south-eastern Northern Territory, south-west Queensland, western New South Wales, north-west Victoria, into the eastern half of South Australia.

**Five-lined Earless Dragon (*Tympanocryptis lineata*)** . In the South East, there is an unusual, apparently isolated population, with the species on the southern extent of its distribution. It has been poorly recorded in the region, the most recent record in November 1999 from open *Melaleuca halmaturorum* tall shrubland. There were no observations made on this survey. The southern population is considered to prefer grassy habitats. This species is better known from arid and semi-arid regions of Australia, recorded from south-west Queensland, western New South Wales, north-west Victoria, into the eastern half of South Australia. Populations of this species from across Australia have decline. This may be due to its sensitivity to habitat disturbance (M. Hutchinson, pers. comm., 2003). It can be found in a variety of habitats from rocky hills to sandy areas

**Family GEKKONIDAE (geckos)**

**Beaded Gecko (*Diplodactylus damaeus*)**
South East records are from atypical habitats in the Lower South East (both from the Hundred of Mingbool near Mt Meridith). It was not recorded on this on this survey or on any of the recent surveys in the Upper South East. The Beaded Gecko is a nocturnal, strictly ground-living gecko recorded from more inland areas of New South Wales, Victoria, Northern Territory, Western Australia and South Australia. It can be found in a variety of habitats, but usually sandy mallee. It feeds on a variety of insects and spiders.

**Eastern Stone/Wood Gecko (*Diplodactylus vittatus*)**
The Eastern Stone Gecko is a nocturnal gecko of eastern Australia. It prefers stony ground, and heavier soils, sheltering by day in a short burrow under rocks. It is widely distributed in South Australia in all regions (Watts 1990), however, the only South East records are from the Hundred of Robertson near Bool Lagoon (1982) and near Salt Creek (1983). It feeds on a variety of insects and spiders. It was not recorded on this survey or on any of the recent surveys in the Upper South East.

**Marbled Gecko (*Christinus marmoratus*)**.
The Marbled Gecko is a nocturnal and arboreal species and is widely distributed in South Australia, recorded from most agricultural regions of South Australia, including scattered localities in the South East. It was the only gecko species captured on the survey, with 20 captures/observations made. It prefers dry sclerophyll forest and woodland habitats, and is usually found under the bark of eucalypts, especially *Eucalyptus camaldulensis* (River Red Gum). It can also be readily found around farm buildings and houses where it feeds on moths, flies and other insects.

**Family PYGOPODIDAE (legless lizards)**

**Lined Worm Lizard (*Aprasia striolata*)**
In the South East, *Aprasia striolata* has a wide distribution with 17 captures made during the survey period. This burrowing legless lizard is commonly found in southern Australia, from western Victoria, southern areas of South Australia, with a further isolated population in southern Western Australia. It can be found in a wide variety of habitats, especially with sandy and loam soils, where it lives in litter and fallen timber. It feeds primarily on ant larvae.

**Striped Snake-lizard (*Delma impar*) (Figure122)**
All the records of *Delma impar* in South Australia have come from the Naracoorte region with most being collected at Bool Lagoon Game Reserve. The species is a southern temperate grassland specialist and is known to utilise grass tussocks and cracks in the ground for shelter and foraging sites. It is estimated that only 1% of temperate native grassland remains in the South East region (Croft *et al.* 1999). A similar story for grasslands throughout the rest of its range has lead to a National conservation rating of Vulnerable and South Australian rating of Endangered. Much effort has been put into refining trapping techniques for *D. impar* as the species is hard to detect in an area using conventional trapping techniques. No specimens have been recorded at the 300 biological survey sites despite standard trapping and foraging effort. Some of the most recent specimens were recorded near Bool Lagoon when preparing a site for revegetation. Its cryptic nature may mean that it more widely distributed than is currently recorded.

**Figure 122.**
***Delma impar* is best known from sites in the vicinity of Bool Lagoon Game Reserve. Photo: J. Van Weenen.**

**Olive Snake-lizard (*Delma inornata*)**
This species is known from the south-eastern Mt Lofty ranges in South Australia but was only recently recorded (1993 and 1995) in the South East from Gum Lagoon Conservation Park. Although more widespread in the eastern states it is considered Rare in South Australia and populations particularly in the South East appear extremely vulnerable. The species is found in a range of habitats generally with a mixture of woodland or mallee with a grassland understorey. The widespread degradation of grasslands in the South East is a likely explanation for the restricted distribution of both *D. impar* and *D. inornata*.

**Common Scaly-foot (*Pygopus lepidopodus*)**
The Common Scaly-foot is a diurnal legless lizard of southern and eastern mainland Australia. In South Australia it has been recorded from most southern regions (Robinson *et al*. 2000) and most recently it has been captured on biological surveys in Messent Conservation Park, Gum Lagoon Conservation Parks and Bunbury Conservation Reserve. It can be found in a variety of habitats including woodland and forest, coastal shrublands and dunes, and mallee. It usually forages under low vegetation, fallen timber and other ground litter primarily for spiders, but sometimes insects.

**Family SCINCIDAE (skinks)**

**Eastern Three-lined Skink (*Bassiana duperreyi*)**
The Eastern Three-lined Skink was the most commonly recorded reptile during the survey with 73 captures recorded. It is common and widespread throughout the region and prefers grassy habitats including open woodland and shrubland, and feeds on insects and spiders. This small, diurnal, ground-living skink is common throughout south-eastern Australia from south-eastern New South Wales, through to the Mount Lofty Ranges. In South Australia, it is also recorded from Kangaroo Island, Mount Lofty Ranges and southern Murray Mallee.

**Eastern Spotted Ctenotus (*Ctenotus orientalis*)**
The South East distribution of *C. orientalis* is primarily restricted to *Eucalyptus arenacea* (dune brown stringybark) and *Eucalyptus fasciculosa* (hill/pink gum) low woodlands with a heath shrub understorey in the Upper South East. It was the third most commonly recorded reptile species on the survey (39 captures). This medium sized, diurnal skink is widely distributed through southern Australia, Western Australia to western new South Wales and south-west Victoria. It is widely distributed in all regions of South Australia. It shelters in burrows, and feeds on insects, spiders, centipedes and small lizards.

**Eastern Striped Skink (*Ctenotus robustus*)**
In the South East the Eastern Striped Skink is considered common and widespread with 19 captures recorded during the survey. Most captures were recorded from the Upper South east in shrubland and woodland habitats. . It can also be found amongst the rocks of granite outcrops. It often shelters in short, shallow burrows under ground debris, and feeds on insects and spiders. A diurnal species, it occupies wide variety of habitats in south-eastern, eastern and northern Australia. It is widely distributed in most eastern regions of South Australia, including Eyre Peninsula

**Swamp Skink (*Egernia coventryi*) (Figure 123)**
This species was recorded in the state for the first time during the 1982 South East Coast Biological Survey and then not again until the 1997 South East Biological Survey when three specimens were collected from three separate locations all in the lower South East of South Australia. It is regarded as Endangered in South Australia. Within this region, it is restricted to pockets of dense sedge and Tea tree associated with freshwater swamps. Vegetation clearance, artificial drainage and habitat degradation has reduced much of this habitat to small isolated pockets along what was probably a much more extensive distribution.

**Figure 123.**
***Egernia coventryi* is restricted to pockets of dense sedgeland and Tea-tree swamps. Photo: J. van Weenen.**

**Bull Skink (*Egernia multiscutata*)**
In the South East there is one record of this diurnal skink in the South Australian Museum form Princess Soak, Coorong National Park in 1985. It prefers open woodlands and coastal heath shrublands. A number of isolated populations occur from western Victoria, through the agricultural regions of South Australia to coastal southern Western Australia. The closest populations to the South East occur in the Murray Mallee.

**White's Skink (*Egernia whitii*)**
White's Skink can be found in a wide range of habitats, including coastal heath shrublands and grassland, and eucalypt woodlands in the Lower South East. Seven captures were recorded during the survey. It is often associated with rocky areas where it digs a burrow system under rocks and crevices, but also fallen timber and other ground litter. It feeds on various insects, spiders, flowers and small fruits. White's Skink is a diurnal species that occurs in south-eastern Australia from south-east Queensland to southern Eyre Peninsula and is found in most agricultural regions of South Australia.

**Southern Water Skink (*Eulamprus tympanum*)**
The Southern Water Skink is a diurnal species and is restricted to the Lower South East in South Australia, where it is on the western limit of its range. It prefers small creeklines, sheltering in burrows usually under or in fallen timber or rocks. It feeds on various insects, spiders, snails, tadpoles and small frogs. It was not recorded on the survey.

**Three-toed Earless Skink (*Hemiergis decresiensis*)**
In the South East there are records from Naracoorte, all from 1967, however, it has not been recorded on any

subsequent surveys. It prefers eucalypt woodland and forest, usually with a well-developed shrub layer. It shelters under fallen timber and rocks, and feeds on various insects including ants and termites, spiders, mites and slaters. It is similar in appearance to *Hemiergis peronii*. A small diurnal species it is found south-eastern Australia, from eastern New South Wales, northern Victoria through to the agricultural regions of South Australia. In South Australia, it is recorded from the Mid North, Southern Flinders Ranges, Yorke Peninsula, Mount Lofty Ranges, Murray Mallee and Kangaroo Island.

**Four-toed Earless Skink (*Hemiergis peronii*)**
*Hemiergis peronii* is considered common and widespread particularly in the Lower South East, and 39 captures were recorded from the survey. It is found often in drier habitats than *H. decresiensis*, such as coastal heath shrublands and samphire. It is a burrowing species usually sheltering under fallen timber and rocks, feeding on various insects including ants, spiders, mites, snails and small lizards. *Hemiergis peronii* is a small diurnal skink of southern Australia, from south-west Victoria extending westwards to south-west Western Australia.

**Delicate Skink (*Lampropholis delicata*)**
Most South East records of this species held at the South Australian Museum, are from the Naracoorte-Lucindale-Padthaway districts. It was found in a variety of habitats, including heathy shrublands. It forages among leaf litter and other debris for spiders, various insects including ants and insect larvae, centipedes and amphipods. With the adjacent western Victoria population, the South East populations form an isolated population from the rest of its eastern Australia distribution. Twenty three records were made of this species during the survey. The Delicate Skink is a species of more coastal areas of eastern Australia, from north Queensland to Victoria, including Tasmania.

**Garden Skink (*Lampropholis guichenoti*)**
In the South East, most South Australian Museum records are from the Lower South East. This distribution was confirmed during the survey with 24 captures recorded mainly from coastal sites in the lower South East. It was often found foraging in leaf litter, grass, rock piles in eucalypt forest and woodland. It has been recorded feeding on various insects including ants and termites, spiders, mites and slaters. *Lampropholis guichenoti* is a small, diurnal skink found in more coastal areas of south-eastern mainland Australia, from south-eastern Queensland to South Australia. In south Australia, it is found in the Mid North, Northern and Southern Mount Lofty ranges, Kangaroo Island and southern Murray Mallee.

**Bougainville's Skink (*Lerista bougainvillii*)**
In the South East, *Lerista bougainvillii* is widespread and found in a variety of habitats with loose soil or sand. It is often found under logs, rocks and leaf litter, foraging for soft-bodied insects, and spiders. Bougainville's Skink was the second most frequently recorded reptile species during the survey (53 captures). It is a small diurnal, burrowing skink found through south-eastern Australia, from New South Wales, Victoria into South Australia, including Tasmania. In South Australia, it is found in most agricultural regions, including Kangaroo Island and the Flinders Ranges, but not Yorke Peninsula.

**Dwarf Skink (*Menetia greyi*)**
In South Australia, the Dwarf Skink is found in all regions of the State, but in the South East is confined to the northern edge of the survey area in the vicinity of Bordertown. It can be found in a wide variety of habitats and soils, including mallee and eucalypt woodland and forest, usually amongst leaf litter or grasses. It is very small, diurnal skink recorded from almost all of mainland Australia, and is only absent from the more coastal areas of south-eastern Australia and Cape York Peninsula, Queensland. It is also believed to be part of a species complex and is currently undergoing revision.

**Adelaide Snake-eye (*Morethia adelaidensis*)**
In the South East *Morethia adelaidensis* is mainly confined to the Upper South East and was most recently caught in 1995 near Bordertown. It was not captured on this survey. It can be usually found in ground litter and fallen timber in a wide variety of habitats, however it tends to be more common on heavier soils with a grassy strata. *Morethia adelaidensis* is a very small skink commonly found in southern Australia, from south-west Queensland, western New South Wales, north-west Victoria, most of mainland South Australia to south-east Western Australia.

**Common Snake-eye (*Morethia boulengeri*)**
In South Australia, it is found in all agricultural regions and in the South East is confined to the north-eastern areas of the Upper South East. It was not recorded during the survey. The Common Snake-eye is a very small, diurnal skink from inland mainland south-eastern Australia, generally absent from the more coastal areas. It can be usually found in ground litter and fallen timber in a wide variety of habitats, but typically tall mallee.

**Mallee Snake-eye (*Morethia obscura*)**
In the South East, *Morethia obscura* is considered common and widespread with 27 captures made during the survey. It prefers a variety of habitats, including mallee, coastal shrublands, and woodland in the South East, often found in dense leaf litter, where it feeds on moths, isopods, termites, and spiders. Typically it is found in mallee/*Triodia* associations on coastal soft sands (M. Hutchinson, pers. comm., 2003). It is very small diurnal skink of southern Australia, from western New South Wales, north-west Victoria, southern regions of South Australia into southern Western Australia.

***Nannoscincus maccoyi* (Figure 124)**
This monotypic genus of tiny skink had never been recorded in South Australia prior to March 2001 when it was captured as part of a program monitoring the recovery of cutting grass from grazing at Canunda Crossing Swamp near Millicent. The site trapped was located on a peaty mound, with patches of Silky Tea-tree (*Leptospermum lanigerum*), some rushes and sedges and a dense and diverse herbaceous ground cover. Typically, *N. maccoyi* is an inhabitant of the cooler and wetter areas in south-eastern New South Wales and southern and eastern Victoria. It is extremely sensitive to temperature and desiccation, having one of the lowest preferred body temperatures (21°C) and the highest rate of desiccation known from any Australian skink. The Canunda Crossing swamp is subject to a much warmer and drier climate than any other known habitats, so this may represent an important outlier population. The digital formula of the two individuals captured (four fingers and three toes) also differs from all other populations of *N. maccoyi*; most have five fingers and toes, while some western Victorian animals have four fingers and five toes. The capture of *N. maccoyi* at the Canunda Crossing swamp further highlights the importance of these lower South East swamp remnants in maintaining the biological diversity of the region, and serves as further emphasis of the need to protect and rehabilitate the few remnants we have left. It is also a reminder that we still know very little about the biodiversity or ecology of these ecosystems (Steve Milne, pers. comm.. 2001).

**Figure 124.**
***Nannoscincus maccoyi* was first recorded in South Australia in March 2001. Photo: M. Hutchinson.**

**Tussock Skink (*Pseudemoia pagenstecheri*)**
This elusive species is confined almost solely to tussock grassland habitats in south-eastern Australia. The handful of records in the lower South East of South Australia represent the western edge of its distribution which stretches in a band across the alpine and subalpine grasslands of Victoria and up to northern New South Wales (Hutchinson and Donnellan 1992). The remains of a single specimen were found near Nene Valley during the recce for the 1997 survey, however none were recorded on the survey. Lack of suitable habitat and degradation of suitable habitat in the South East, combined with its secretive nature, account for the Rare status attributed to this species in South Australia.

**Glossy Grass Skink (*Pseudemoia rawlinsoni*) (Figure 125)**
The Glossy Grass Skink is confined to the lower South East of South Australia representing the western edge of its range. It has recently been recorded at a few sites around Naracoorte where *Delma impar* populations were being investigated. Five captures were made of this species during the survey. The species appears to be a grassland/sedgeland specialist often found on the edges of swamps and lakes. Land management practices, which alter the natural filling and draining of lakes in the South East, along with degradation of grasslands, may threaten the survival of remaining populations. It is considered Endangered in South Australia.

**Figure 125.**
**The Glossy Grass Skink *Pseudemoia rawlinsoni* is often found in grasslands/sedgelands on the margin of swamps. Photo: M. Hutchinson.**

**Southern Grass Skink (*Pseudemoia entrecasteauxii*)**
In the South East, most South Australian Museum records of the Southern Grass Skink are from the Lower South East. Most of the 37 captures of this species were made at sites in the lower half of the survey area. It prefers grassy woodland habitats and sometimes grassland, usually found around fallen timber or foraging in leaf litter and logs for insects and spiders. A small, diurnal skink of south-eastern Australia, from New South Wales, Tasmania, Victoria, into South Australia. In South Australia, it can be found in the more coastal areas, including offshore islands off Eyre Peninsula and western Kangaroo Island.

**Blotched Bluetongue (*Tiliqua nigrolutea*)**
The Blotched Bluetongue is on the western limit of its distribution in the lower South East of South Australia. Only ten observations were made of this species during the survey. Its habitat preferences include coastal heath and shrubland, forest and woodland but it can tolerate lower temperatures, preferring shrubby vegetation near swamps in eucalypt woodlands and forest and coastal shrublands. It shelters in hollow logs and under rocks or under deep leaf litter in cooler

higher rainfall areas, feeding on snails, slugs, fungi, insects (especially beetles and cicadas), soft plant material (fruits, flowers, leaves), spiders and carrion. Elsewhere in Australia, *Tiliqua nigrolutea* is found from south-eastern New South Wales, Tasmania, Victoria

**Western Bluetongue (*Tiliqua occipitalis*)**
In the South East, *Tiliqua occipitalis* was recorded in the 1990s from a Nature Conservation Society of SA biological survey in the Upper South East, east of Keith. It prefers drier areas, including mallee over *Triodia* spp. hummock grass and heathy shrubland habitats, where it shelters in shallow burrows beneath dead vegetation and surface debris. It was not, however, captured during this survey as it is likely that much of the survey area does not contain suitable habitat. The Western Bluetongue is a large, diurnal, ground dwelling skink of southern Australia, and occurs through western New South Wales, southern Northern Territory, north-west Victoria, through most of South Australia to southern Western Australia.

**Shingle Back or Sleepy Lizard (*Tiliqua rugosa*)**
In the South East, Sleepy Lizards are conspicuously common and distributed across a wide variety of habitats, preferring open low understorey to treeless areas. They shelter under fallen timber, in animal burrows, deep in leaf litter, and under shrubs, feeding on fruits (berries), soft vegetation, flowers, fungi carrion and insects. It was the most commonly encountered *Tiliqua* species during the survey, being caught or observed on 30 occasions. Sleepy Lizards are large, diurnal, ground dwelling skinks occurring in southern and semi-arid areas of south-eastern Australia, from south-western Queensland, New South Wales, western Victoria, southern South Australia into southern Western Australia. In South Australia, it is recorded from all regions except the far north of the State.

**Eastern Bluetongue (*Tiliqua scincoides*)**
In the South East, *Tiliqua scincoides* is widely, but sparsely distributed in a wide variety of habitats, except the sandier eastern part of the region. Only three were observed during the survey period. Its habitats include coastal heath shrubland, forest and woodland. It shelters in hollow logs, animal burrows and deep under leaf litter, feeding on snails, carrion, insects, flowers, fruits, soft plant material and fungi. *Tiliqua scincoides* is a large, diurnal, ground dwelling lizard of northern, eastern and south-eastern mainland Australia.

**Family: VARANIDAE (goannas)**

**Heath/Rosenberg's Goanna (*Varanus rosenbergi*) (Figure 126)**
In the South East, it has generally been rarely recorded, but has been regularly recorded in biological surveys in the western half of the Upper South East. It is considered Rare in South Australia. A goanna of more coastal areas of southern Australia, from Perth, Western Australia to western Victoria, with further isolated populations in eastern New South Wales. In South Australia, it is recorded from southern Eyre Peninsula, Mount Lofty Ranges, South East, but its most abundant population is on Kangaroo Island. It prefers heath shrublands and eucalypt woodland and forest and woodland with a heathy shrub understorey. It shelters in burrows including those made in termite mounds, hollow logs and rock crevices. It feeds on reptiles and their eggs, large insects, spiders, scorpions, centipedes, mice and carrion.

Its population has generally been considered to have declined in the mainland agricultural areas, including the South East.

**Figure 126.**
***Varanus rosenbergi* was recorded on four occasions during the survey. Photo: J. Foulkes.**

**SNAKES**

**Family: ELAPIDAE (elapid snakes)**
**Lowland Copperhead (*Austrelaps superbus*)**
In the South East the Lowland Copperhead is widespread, but more commonly found in the Lower South East where it was observed on quadrats on two occasions during the survey, and a further 18 opportune observations were made. It is active both day and night, but most active on warmer nights and it prefers the vicinity of wetlands, such as swamps, bogs, and vegetated watercourses, but also eucalypt woodland and forest, heath shrublands and tussock grasslands. The Lowland Copperhead shelters under fallen timber, burrows, flat rocks and deep in tussock vegetation, and feeds mainly on frogs, but also on lizards, other snakes, small mammals, and birds. It occurs through south-eastern Australia, from New South Wales, Victoria, Tasmania into the South East of South Australia.

**White-lipped Snake (*Drysdalia coronoides*)**
The White-lipped Snake is a mainly nocturnal elapid snake that prefers open woodland and forest, shrubland (especially heath), tussock grassland and sedgeland of the lower South East. It was recorded at seven locations during the survey and was found sheltering under rocks, logs, litter and grass tussocks. It is known to feed on skinks and their eggs, as well as frogs.

**Master's Snake (*Drysdalia mastersii*)**
Master's Snake has been recorded in the Upper South East where it is on the southern limit of its distribution, and none were recorded on this survey. It prefers areas of mallee, usually with a heathy shrub understorey, and coastal shrubland. It shelters under fallen timber, litter, rocks, and feeds on skinks. Master's Snake is a mainly diurnal, elapid snake of southern Australia, from western Victoria, coastal South Australia and coastal south-eastern Western Australia. In South Australia, it is also recorded from Eyre Peninsula and the Nullarbor, with a further isolated population in the Murray Mallee and adjacent areas of western Victoria.

**Bardick (*Echiops curta*)**
The Bardick is a very elusive species only known in the South East from one specimen recorded in the 1940s near Salt Creek on the Coorong. This specimen represents the southern most record for the eastern South Australian population that is considered under threat (Cogger *et al.* 1993). Although the species is more widespread in western South Australia it is considered to be Rare on a statewide scale.

**Eastern Tiger Snake (*Notechis scutatus*) (Figure 127)**
In the South East the Eastern Tiger Snake is a well known widespread and common snake and was observed on almost 40 occasions during the survey. It prefers a variety of wetland habitats, such as swamps and watercourses, but also eucalypt woodland and forest, heath shrublands and tussock grassland. It shelters under fallen timber, rocks, leaf litter and animal burrows, and feeds mainly on frogs, but also lizards, nestling birds, and small mammals. Eastern Tiger Snake is a mainly diurnal, elapid snake, which can be active on warmer nights. The olive-brown form pictured (Figure 127) is rarer than the more characteristic striped form. Elsewhere in South Australia, it is recorded from the Mount Lofty Ranges, Kangaroo Island and the Upper River Murray valley. It is also common in south-eastern mainland Australia, from south-east Queensland, eastern New South Wales and Victoria.

**Figure 127.**
**The Eastern Tiger Snake was the most commonly encountered elapid snake during the survey. Photo: A. Robinson.**

**Eastern Brown Snake (*Pseudonaja textilis*)**
In the South East, the Eastern Brown Snake is common and widespread. . It uses a wide variety of habitats including introduced grassy pastures and cropping land. It in agricultural areas shelters in fallen logs, rock crevices, earth cracks, disused burrows and rubbish. Despite the apparent abundance of suitable habitat, only six observations were made during the survey. Eastern Brown Snakes feed opportunistically on small lizards and mammals (particularly mice), and occasionally tadpoles and frogs.

Elsewhere in South Australia, it is also recorded from Yorke Peninsula, Mid North, Flinders Ranges, Murray Mallee, Northern and Southern Mount Lofty Ranges.

**Little Whip Snake (*Suta flagellum*)**
In the South East, there are South Australian Museum records from Naracoorte-Lucindale-Penola districts. It was not recorded on the South East survey or any other recent surveys in the region. In South Australia, there is an isolated population in the Mount Lofty Ranges, while the South East population is contiguous with that of Victoria. It is a nocturnal, elapid snake an is present through south-eastern mainland Australia, from south-eastern New South Wales, Victoria into South Australia. It prefers eucalypt woodland and grassland, and shelters under rocks and rock crevices, and fallen timber, and is believed to feed on skinks.

**Mitchell's Short-tailed Snake (*Suta nigriceps*)**
The few South East records are from a range of inland localities (Robinson *et al.* 2000). It was not recorded on this survey and there is a single recent record from Messent Conservation Park. Elsewhere in South Australia, it is recorded from Eyre Peninsula, Flinders Ranges, Mid North and Murray Mallee. *Suta nigriceps* is a nocturnal, elapid of southern mainland Australia, from south-west New South Wales, north-west Victoria, southern South Australia, and southern Western Australia. It prefers mallee, and myall low woodland in drier areas. It shelters under leaf litter, fallen timber, in *Triodia* species clumps, feeding on skinks, and other smaller snakes.

**Family: TYPHLOPIDAE (blind snakes)**
**Southern Blind snake (*Ramphotyphlops australis*)**
In the South East, it is only recorded from the Upper South East (Robinson *et al* 2000) and has not been recorded on recent surveys. In South Australia it is known from all mainland agricultural regions and adjacent pastoral areas. The Southern Blind Snake is also found through southern Australia, from western New South Wales, western Victoria, South Australia, southern Northern Territory, and southern Western Australia. It occupies a wide variety of habitats, feeding on ant and termite pupae, larvae, and eggs.

**FROGS**
**Family: HYLIDAE (tree frogs)**
**Brown Tree Frog (*Litoria ewingi*) (Figure 128)**
The Brown Tree Frog is common and widespread in the region, with the Lower South East and adjacent

western Victoria population distinctly bright green compared with pale brown elsewhere. There were more than 120 records made of this species during the survey. Elsewhere in South Australia, it is recorded from Northern and Southern Mount Lofty Ranges, southern Flinders Ranges, Kangaroo Island and the southern coastal Murray Mallee. It prefers moist, low growing vegetation in wetlands, such as swamps, ponds, dams and drains, but also gardens. The Brown Tree Frog is also known from throughout south-eastern Australia, from south-west New South Wales and Victoria.

**Peron's Tree Frog (*Litoria peroni*)**
In South Australia, Peron's Tree Frog is found along the River Murray valley and Lower Lakes, with an isolated population associated with a few swamps in the Lower South East between Nangwarry and Mt Gambier. It was not recorded on the survey. Typically, it is found in a wide variety of habitats, often at some

**Figure 128.**
**The Brown Tree Frog is common and widespread in the region. Photo: A. Robinson.**

distance from water. Away from water, it lives in trees, but forages on the ground on humid nights. Peron's Tree Frog has been recorded in eastern mainland Australia, from southern Queensland, New South Wales, and the River Murray valley in northern Victoria into South Australia.

**Golden Bell Frog (*Litoria raniformis*)**
The Golden Bell Frog has only been recorded on two occasions in the last ten years in the South East despite extensive trapping and searching. An additional population was recorded from a swamp near Naracorte in 2001. The South Australian populations could be experiencing a decline in numbers as suggested for the whole species in the 1997 Action Plan for Australian Frogs. This species is dependant on permanent water making it vulnerable to any land management practises such as regulation of wetland flooding and drainage and use of pesticides, which affect the quality and levels of fresh water. It is also under threat from introduced predators such as mosquito fish preying on eggs and tadpoles.

**Family LEPTODACTYLIDAE (southern frogs)**
**Eastern Sign Bearing Frog (*Crinia parinsignifera*)**
In South Australia, it is primarily recorded from the River Murray valley, with one South Australian Museum record from Lower South East near Kalangadoo (1990). It was not recorded on the South East Survey or any of the recent surveys conducted in the region. It prefers areas fringing temporary inundated wetlands, usually found after rain. A frog of eastern mainland Australia, from southern Queensland, western New South Wales, and the River Murray valley in northern Victoria into South Australia.

**Brown Froglet (*Crinia signifera*)**
The Brown Froglet is common and widespread in the South East with almost 400 captures made during the survey. It can be found in wide range of wetland habitats, including roadside pools after rain. In dry periods, it shelters under rocks, fallen timber, vegetation, emerging to breed after rains, where it prefers static water for breeding. Elsewhere it is found throughout the agricultural areas of South Australia (except Yorke Peninsula) and south-eastern Australia, from south-eastern Queensland, eastern New South Wales, Victoria and Tasmania.

**Bull Frog/Eastern Banjo Frog (*Limnodynastes dumerili*)**
In the South East *Limnodynastes dumerili* is common and widely recorded with almost 350 captured recorded during the survey. It usually occurs around permanent water such as slow moving streams, swamps, marshes, dams, ponds. In South Australia, it is also recorded from the Southern and Northern Mount Lofty Ranges, southern Flinders Ranges, Kangaroo Island and Murray Mallee.

**Brown-striped Frog (*Limnodynastes peroni*)**
The Brown-striped Frog was the most commonly recorded amphibian on the survey with more than 650 individuals captured. The Lower South East of South Australia forms the western limit of its distribution. Elsewhere in eastern Australia it is found from coastal Queensland, New South Wales, Victoria and Tasmania. It usually occurs around permanent water with dense vegetation such as slow moving streams, swamps, marshes, dams, ponds.

**Smooth Frog (*Geocrinia laevis*)**
This species was first recorded in South Australia in 1966 at Mount Burr, in the lower South East. An additional eight specimens have been registered at the SA Museum in the last 30 years all from different locations between Millicent and Mount Gambier or along the coast between Southend and Port MacDonnell. The broad-scale survey carried out in 1997 only located one specimen that fell within the known distribution. Woodruff and Tyler (1968) suggest that the disjunct populations of *G. laevis* may reflect a more extensive distribution in the past and that environmental factors are limiting their distribution today. The 2001 Frog Census (Walker 2002) show three records for the census period.

*Geocrinia laevis* is known to breed in autumn/winter around swamps (but not in water) and is generally found sheltering under logs, litter or stones making it unlikely to favour areas cleared for agriculture. Walker and Goonan (2000) suggest that it is locally abundant and is under no obvious threat of decline, however it is considered Rare in South Australia.

**Marbled Frog/Spotted Grass Frog (*Limnodynastes tasmaniensis*)**
The Marbled Frog was captured in low numbers during the survey, with 21 captured, mostly from the lowers half of the study area. It prefers a wide variety of wetland habitats, usually sheltering under logs and rocks on the edge of permanent and temporary swamps, lagoons and creeks.

The Marbled Frog is a medium sized frog found through eastern Australia, from Queensland, New South Wales, Victoria, Tasmania, eastern Northern Territory, and eastern South Australia.

**Painted Frog (*Neobatrachus pictus*)**
In the South East the Painted Frog is considered common and widespread. Nineteen were recorded on the South East Survey and it has been widely recorded on other surveys in the region. It is usually found after summer rain, and breeds in a variety of wetlands, including grassy marshes, lagoons, claypans and temporary roadside pools. The Painted Frog is a burrowing species and has been recorded the from agricultural regions of South Australia, including the Flinders Ranges and Kangaroo Island, and adjacent areas of New South Wales and Victoria.

**Sudell's Frog (*Neobatrachus sudelli*)**
During the 1997 survey, 28 records were made of Sudell's Frog. Frog Census data for 2001 (Walker 2002) recorded 20 recordings from a variety of habitats in the South East. It is a larger, burrowing frog which typically occurs in more inland south-eastern Australia, from southern Queensland to eastern South Australia. In South Australia, it is found in the Murray Mallee and the South East. It is usually found after summer rain, and breeds in a variety of wetlands, including grassy marshes, lagoons, claypans and temporary roadside pools.

**Brown Toadlet (*Pseudophryne bibronii*) (Figure 129)**
The Brown Toadlet was not recorded during the survey period and is known from a small number of survey records from the region. There are Frogwatch records from scattered locations in the South East from 1995 and 1996 (Walker 2002). Elsewhere in South Australia, it has been recorded from the Flinders Ranges, Northern and Southern Mount Lofty Ranges, Kangaroo Island and southern Murray Mallee. It is usually found under rocks and fallen timber, including away from water, including eucalypt woodland and forest. The Brown Toadlet is a terrestrial species, which occurs through south-eastern Australia, from south-east Queensland, New South Wales, Victoria to eastern agricultural areas of South Australia.

**Figure 129.**
**The Brown Toadlet has not been recorded in the region since 1996. Photo: A. Robinson**

**Marbled Toadlet (*Pseudophyrne semimarmorata*)**
This species was not recorded during this survey. The Marbled Toadlet has a restricted range in south-eastern Australia from Tasmania, southern Victoria, and the Lower South East of South Australia. There have been no Frogwatch records since the 1997 census, when one record was made (Walker 2002). It can be found under fallen timber and leaf litter, where there is adequate ground cover of leaf litter or other material that retains moisture, in eucalypt woodland and forest.

**Additional species that may occur or may have occurred in the South East:**

*Aprasia inaurita* (Red-tailed Worm-lizard)

*Delma australis* (Barred Snake-lizard)

*Lialis burtonis* (Burton's Legless Lizard)

*Lerista dorsalis* (Southern Four-toed Slider)

*Ramphotyphlops bituberculatus* (Rough-nosed Blind Snake)

Mallee Dragon (*Ctenophorus fordi*)

**Discussion**
The reptile and amphibian data-set available for the South East region is considered to provide a good representation of the regions herpetofauna. Biological surveys in the region have been carried out over a 15 year period representing a variety of environmental conditions over a range of seasons. Although the rate of discovery of new species has almost ceased, new populations of species and the apparent disappearance of some populations are still ongoing. Notably, the additional species listed above are all from the northern margin of the study area and all have specific understorey preferences and consequently, they are

The reptile fauna of the South East is characterised by a comparatively low diversity, compared to other regions of the State, with 49 species recorded compared to 71 from the Murray Mallee study area to the north (Foulkes and Gillen 2000) and 79 species in the South Olary Plains (Forward and Robinson 1996). Although there is a comparatively low diversity, populations of most of the more generalist species remain widespread and common, as indicated in biological surveys. However, the more habitat specialist species, particularly those associated with wetlands, are less common and in a number of cases are considered to have threatened populations.

For amphibians, the abundance of swamps has provided larger areas of suitable habitat for frogs, with 12 of the State's 27 species recorded in the study area. This compares with five species in the Murray Mallee (Foulkes and Gillen 2000) and ten from the South Olary Plains region (Forward and Robinson 1996). Populations of frogs are capable of fluctuating from year to year, depending on climatic conditions, making it more difficult to accurately determine their conservation status. However frogs can be highly sensitive to environmental factors.

Many of the species identified in the region appear to be cryptic in nature and are hard to detect even in areas where they are known to occur. More research needs to be carried out on these species to provide the basic distributional and ecological information required for ensuring their conservation.

Despite low species richness overall nine PATN groups were identified for reptile species in the South East compared to five in both the Murray Mallee and the South Olary Plains indicating a diverse range of assemblages.

The average number of reptile species recorded per site/per assemblage was lower possibly reflecting the disappearance of some species due to changes in land management or a characteristic of this bioregion.

**Biogeographical Considerations**

The South Eastern area of South Australia lies on the edge of the Bassian zoogeographic subregion, comprising temperate southern and eastern Australia. Many of the reptile and amphibian species that are widespread and common throughout this subregion are actually patchy and uncommon in South Australia's South East as they approach the western edge of their range. The gradient towards drier mallee habitats to the north results in a gradual transition to a whole new array of species that are more adapted to the arid and semi-arid environments of the northern Eyrean subregion. As Bassian adapted species move north their populations tend to become more disjunct and may persist in sub-optimal habitats before they disappear altogether. These distribution patterns characterise the western boundary of the Bassian subregion and are seen in a variety of organisms (Woodruff and Tyler 1968). These peripheral populations are of ecological and evolutionary significance in that they represent the present day adaptational limits of Bassian taxa (Woodruff and Tyler 1968).

Some species such as *Ctenophorus fordi*, *Pogona vitticeps* and *Diplodactylus damaeus* are more typical of the Eyrean subregion and have only been recorded occasionally in the far north of the study region. Genera such as *Lerista* are missing from the South East reflecting the predominantly Bassian affinities of the region.

**Conservation Considerations**

The South East region represents some of the most developed areas in South Australia and claims to have suffered some of the highest levels of native vegetation clearance for the state. This has had major impact on the herpetofauna as it has with all native species, leaving many populations isolated and forced to live in sub-optimal habitat. Ongoing clearance and changes in land management practices leave most species susceptible to further declines.

The status and specific habitat requirements of several species are still uncertain and need to be investigated so guidelines for land management practises can be implemented.

The reptile fauna of the South East is not known well enough to determine the status of most species with certainty. Although some species like the elapid snakes are considered to remain common, the region has two nationally threatened species, the Striped Legless-lizard (*Delma impar*) and the Golden Bell Frog (*Litoria raniformis*), both listed as Vulnerable.

# Terrestrial Invertebrates

By L. Queale[1]

## Introduction

This was one of the first Biological Survey of SA surveys where invertebrates were sampled systematically, primarily using micro pit-fall traps. As a result, the trapping methods biased samples toward ground dwelling invertebrates as no light trapping or hand netting was carried out. The low diversity of species collected (other than beetles) reflects the level of low level of specialist presence and collecting intensity during the survey.

## Results

Numbers of invertebrates recorded on this survey were very low. At least 39 species of macro-insects were collected from macro and micro pitfall traps set at 77 of the 96 vertebrate survey quadrats sampled. These represented 7 orders of which the Coleoptera (beetles) were the most widespread and abundant groups with 212 specimens (refer to Table 41). Since many of Australian insects have not been named, it can be difficult to give precise details about their ecology, however information is provided where possible. Agricultural activity is a likely contributor to the disturbance of the habitats in the area surveyed. Coastal dunes showed limited species richness, which reflects low plant diversity. No introduced species were found.

**Table 41.**
**Numbers of specimens of insects pit trapped at quadrats during the South East Biological Survey.**

| Order | Total | No. quadrats |
|---|---|---|
| DIPTERA | 18 | 11 |
| ORTHOPTERA | 9 | 11 |
| COLEOPTERA | 212 | 10 |
| HYMENOPTERA | 64 | 7 |
| DERMAPTERA | 0 | 6 |
| HEMIPTERA | 81 | 5 |
| BLATTODEA | 1 | 1 |
| MANTODEA | 1 | 1 |
| ODONATA | 1 | 1 |
| PSOCOPTERA | 1 | 1 |
| THYSANURA | 1 | 1 |
| TRICHOPTERA | 1 | 1 |
| **Grand Total** | 290 | 61 |

Yields of insects and spiders from the survey were very low suggesting that there are factors influencing this result. e.g. lack of invertebrate specialist presence, weather and habitat alteration and clearance. The low numbers of most Orders mean that few conclusions can be drawn between insects and soil or plant associations.

The most widespread and abundant of the 21 Families trapped were the Carabidae (ground beetles) with 10 species recorded. The Cydnidae (burrowing bugs) which were present at 11 quadrats and represented by at least one species. The most species rich family was the Carabidae, which are usually the most species rich family collected on surveys, largely because of the bias towards ground dwelling animals. Coleopteran Families expected to have yielded more species were the Tenebrionidae (piedish beetles), however only four species were recorded. Similarly, the Acrididae (grasshoppers) with species unidentified because many were juveniles and the taxonomy of group is unclear.

**Habitat patterns**

Quadrats with sandy substrates appeared to be more species rich (sand and sandy loam 22-26 taxa) than either quadrats with low sand content (average 6 taxa). Landforms yielding the highest number of specimens were the plains and dune crests (see Appendix LANDF). There were no clear trends with vegetation structure except that the quadrats with a significant “woodland” component were amongst the most species rich quadrats (5 quadrats with 6 species): BO00601, CA00501, CON00401, GAM01001, NAN00101. The latter 3 quadrats were found to be in the vegetation PATN Group12, which yielded the highest number of invertebrate specimens. These quadrats, dominated by *Eucalyptus arenacea/baxteri* with *Pteridium esculentum* understorey, occurred on sand – sandy loams were the most diverse for insect diversity. Because they are less disturbed or more prevalent, they are more likely to provide more stable habitat.

Other moderately yielding quadrats were *Eucalyptus diversifolia* (Coastal White Mallee) Open Mallee, and *Eucalyptus obliqua* and *Pteridium esculentum* Woodland that had a greater diversity of plant species providing invertebrate feeding and breeding habitat.

Quadrats in *Melaleuca brevifolia* and *Gahnia filum* dominated habitats also had higher than average invertebrate diversity. These vegetation communities showed a structural diversity, which was also reflected in the insect diversity. Particular insect families also prefer these wetter plant communities. For example, sedgelands are well known as preferred habitats for lepidoptera larvae.

Species lists comparing landform elements, soil surface texture, vegetation structure and floristic groups are presented in Appendices XI a, b and c.

**INSECTA:**

**Cockroaches** : Blattodea

Three species of cockroach were recorded during the survey. *Calolampra* sp. frequently occurred at quadrats

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and is widespread throughout the southern half of the state. This species prefers to hide in undisturbed leaf litter during the day and is active at night. Two Blattellids, one unidentified and the other *Blatella germanica* German Cockroach (also widespread worldwide) were collected.

**Beetles**: Coleoptera
Several carabids were collected on a variety of soil types. These are commonly found with tenebrionids (piedish beetles) on surveys. Carabids are predatory and tenebrionids are usually herbivorous. Some species are found throughout the state and can be related more closely to soil type than to climatic conditions. These two families usually dominate collections made on surveys along with Scarabaeidae (Dung Beetles), however Scarabaeidae were absent from collections on this survey.

Archeocrypticidae
These beetles live in leaf litter and are generally small with few distinguishing features. Very little is known of other aspects of their ecology.

Carabidae
The more abundant species from Carabidae found on this survey (*Carenum* sp*.*, *Platycoelus* sp., *Promecoderus* sp. and *Secatophus* sp.) are similar to those collected during the survey of the Southern Mount Lofty Ranges (Queale *et al.* 2003). These species are reported by Matthews (1980) to be found in "dry sclerophyll" regions.

Tenebrionidae
Tenebrionids were represented by four species, dominated by the genus *Metistete*. Members of this genus and are known to prefer mallee habitats. Most species of this family are black and are generally inactive during the day. In sandy areas they often live in burrows and leave distinctive "tyre-like tracks" in the sand. *Brises* sp. have been collected frequently on sand dunes across the state in large numbers and dig burrows in the side of dunes. *Nyctozoilus* sp. have not been collected regularly in the South East. They are large round flightless beetles.

Silphidae
This family is represented here by the species *Ptomaphila lachrymosa*, which is easily recognisable by the "tear drop" markings on its dorsum/elytra/ back. This species is also interesting because various taxa in this family have specific food preferences, which range from carrion to plant material or even snails!

Curculionidae
Known more commonly as weevils, this group is difficult to identify as there are more than 6,000 species in Australia. They are usually herbivorous and some can be highly specialised in their feeding habits. The genus *Leptopius* has a very large membership and belong to a group called "elephant weevils". They frequent eucalypt dominated habitats. The Amycterinae (ground weevils) have a short rostrum ("nose"). The ground weevil often prefer plants from the pea or lily families as a food source.

There tends to be a suite of species in each beetle family found in a particular area and this varies from area to area with similarities between similar areas. This seems to reflect rainfall and soil type more than particular plant associations.

**Bugs** : Hemiptera
The Cydnidae (burrowing bugs) were the most abundant family in this group on this survey.

Lygaeidae
Two species from this family were collected in leaf litter during the survey. Most species tend to feed on seeds, however *Euander lacertosus* is widespread in the Bassian region and can be a pest of strawberries. The second species, *Cryptorhampus orbus* is small and brown, blending in with leaf litter. Little else is known of their ecology.

Pentatomidae/Scutelleridae
Twenty-one Pentatomid juveniles and 13 Scutelleridae were collected on the survey. The species *Choerocoris paganus,* which feeds on *Dodonea* spp. Foliage was the most common. These two families are well known as "stink bugs". They all use their probosci to extract nutrients from plant tissues, (probably from the phloem).

**Flies**: Diptera
Dipterans were collected at some quadrats. The usual suite of families found on surveys was collected in the micropitfalls in low numbers (eg Phoridae and Chloropidae). One Sepsid was collected and typically they are not seen often or collected. They are very small and mimic ants in body shape. The distribution of fly species is difficult to comment on, as the extent of fly taxonomy in Australia is limited.

**Grasshoppers**: Orthoptera
Quadrats and plant communities with plentiful grasses yield higher numbers of grasshoppers than quadrats with lower grasses abundance and diversity. A number of juvenile acridids (short-horned grasshoppers) were collected. This group appears to favour silty/clay loamy soils, especially the Catantopinae species (including *Ailopus* sp.) and gryllids. In April 2003, numerous Trigonidiine crickets were observed in the weedy areas surrounding Lake George. Several species of acridids were collected at quadrats.

Not collected during the survey, but expected to occur, were large numbers of black crickets (*Teleogryllus commodus*). This species is found commonly in gardens in Adelaide and in cracking soils in agricultural areas. They were collected in the Mount Lofty Ranges (Queale *et al.* 2003) and Hindmarsh Island (Brandle 2002) surveys and have recently been collected at Lake George near Beachport.

**Lacewings**: Neuroptera
One specimen of *Ithone* sp. was collected. These were also collected on the Flinders Ranges survey but are infrequently observed. They have an appearance similar to a moth as the wings have scales but other taxonomic features place them in this group.

**Butterflies**: Lepidoptera
The Lepidoptera of the region are discussed in a separate chapter in "The natural history of the South East" (Fisher 1983).

Common butterfly species known in the area are: the cabbage white (introduced*) Pieris rapae* (Pieridae); *Danaus* spp, *Heteronympha* spp., *Vanessa* spp. and *Geitoneura klugii* (Nymphalidae); *Oyris olane* and *Zizina labradus* (Lycaenidae).

**Ants**: **H**ymeoptera (part)
Among the common ant (Formicidae) species expected in the survey area are the genera: *Camponotus, Iridomyrmex* and *Rhytidiponera*. See also Shattuck (1999) and Greenslade (1979).

**Spiders**: Arachnida
The SE Fauna Survey yielded a number of good specimens of Arachnids that are not well represented in the SA Museum collection including the Wolf spiders *Venatrix funesta* and *V. penola* (Lycosidae). The latter featured in the description of this new species from a total of just 5 specimens (D. Hirst, pers. comm, 2003). Also of note was a juvenile *Cyrioctea* (Zodariidae) of which there are only a handful of specimens in the SA Museum collection and of four known localities in South Australia, two are in the South-East.

Two species of Triaenonychidae (Opiliones), harvestmen, were collected and prove to be different to the two described South Australian species, both those being from the Mt Lofty Ranges (Queale *et al.* 2003). Most species collected are undescribed and many of these have been sent to researchers interstate and overseas for description. Most species were not represented by many adult individuals or of both sexes and indicates that much more collecting of Arachnids needs to be done in the South-East.

**Mites**: Acarina
Eight erythraeid mites were found. These are relatively large for mites, red and with long legs. They are often associated with Eucalypts.

**Slaters and Amphipods**: Crustacea
Unidentified slaters and three unidentified amphipods were collected.

# CONCLUSIONS AND CONSERVATION RECCOMMENDATIONS

**By J. N. Foulkes and L. M. B. Heard**

## THE SOUTH EAST STUDY AREA

The 2,100,000 hectare area that constitutes the South East study encompasses a range of environments and includes the transition zone between three biogeographic regions in South Australia: Naracoorte Coastal Plain, Murray Darling Depression and the Volcanic Plains. Flora and fauna species found in the area generally have affinities with one of these regions. There is high variability in species richness in the South East with species from all three regions being found.

The South East also straddles the boundary between two major Australian zoogeographic regions: the Bassian region of temperate southern and eastern Australia and the Eyrean region of the semi-arid inland, although most of the survey area is in the Bassian zone. Thus, the vertebrate fauna of the survey area comprises species with generally Bassian affinities. Hence, many species that are associated with these regions are occurring at the edge of their Australian range in the survey area.

## BIOLOGICAL COMMUNITIES

Twenty-seven different floristic PATN groups were identified in the South East survey study area in South Australia, with eight major communities extending over large parts of the area:

- *Eucalyptus arenacea/baxteri* +/- *Pteridium esculentum* Woodland;
- *Banksia ornata* Shrubland of the dune crests, swales and undulating plains;
- *Eucalyptus fasciculosa, Xanthorrhoea caespitosa* Low Woodland
- *Eucalyptus diversifolia* Open Mallee
- *Eucalyptus camaldulensis* var. *camaldulensis* Woodland
- *Leucopogon parviflorus, Acacia longifolia* var. *sophorae, Olearia axillaris* Tall Shrubland
- *Melaleuca halmaturorum* ssp. *halmaturorum* Tall Shrubland
- *Melaleuca brevifolia* Low Shrubland

Floristic vegetation mapping of the area, was determined from survey sites, PATN analysis, aerial photography, literature review and field checking. Twenty-nine groups were identified from the survey data, for a slightly broader study area via PATN analysis, with twenty–seven as South East regional vegetation communities. An additional 27 groups were identified as part of the mapping process. These groups were either poorly represented in the survey data or were not represented at all. Their absence in the survey data is mainly a reflection of the high diversity of vegetation types in the region and the difficulty of being able to have adequate time and resources to under take a survey to the level needed to adequately represent all vegetation communities.

Bird species of the area tend to occur in one of five habitat-specific groups. These include the majority of sites that occur in woodland habitats (low woodland and mallee with a heathy understorey, low woodlands and shrubland, mallee with open understorey and woodlands), coastal shrublands, open woodlands and grasslands, sedgelands and wet shrublands.

Reptile species similarly exhibit habitat-linked groups: those of mixed woodlands in the north and north-west of the study area, open mallee woodland communities with a heath understorey in the southern half of the study area and, open mallee of the north-eastern corner of the study area.

Native mammal species richness is moderate and there was insufficient data to detect clear patterns. Amongst the small terrestrial species, the two most common species (Silky Mouse, Western Pygmy Possum) seem to be specific to mallee heath and woodland habitats.

## SPECIES RICHNESS

The combined field surveys (1991 and 1997), with over (12,655 plant records) observations of flora and fauna, recorded a moderate proportion of the total species richness for the area with 789 plant taxa, 39 mammals, 181 birds, 49 reptiles and 12 amphibians. Using the data from the biological survey sites can therefore provide a reliable indication of potential areas with high species richness within the range of environments sampled and so provide pointers to areas of particular conservation significance. The decline in numbers of the now endangered, vulnerable or rare flora and fauna species and communities in the South East can be attributed to a number of factors. Stephens (1992) has compiled a list of causes of decline and ongoing threats to the environment for the Murray Darling Basin mallee and Copley (in Stephens 1992) provides a more detailed assessment of the threats applicable to the mallee in South Australia and the processes required to achieve conservation objectives in the South East region. More recently, the biodiversity plan for the South East (Croft *et al.* 1999) provides details of the known biodiversity assets, knowledge gaps and conservation issues.

The identification of priorities for the conservation of threatened species and communities in the South East requires a comprehensive understanding of the distribution of species, their biology and threats to their survival across all species of plants and animals (vertebrates and invertebrates). Our knowledge of some of these groups, such as birds and mammals is good, whereas for others, such as invertebrates (terrestrial and aquatic) it is poor or non-existent.

Management and research priorities are usually species-based rather than community or habitat based and they correlate with the degree of endangerment or threat for a species with a perceived degree of rarity. Many species have suffered major reductions in abundance and range as shown by the survey data, and some may be in danger of extinction in the near future.

Some of these threatened species may now have reached a new equilibrium. Other species perceived to be common and/or widespread may, in fact be under threat through long-term decline or chance effects such as fire. For example, habitat fragmentation has increased the probabilities of extinction through the effects of fire, drought, flood, grazing and predation. Fragmentation and the large distances between fragments has also decreased the chance of species recolonising and increased the probabilities of inbreeding depression of remaining populations.

The presence of many species at low densities in a range of relatively small habitat fragments may give a false impression of their abundance and persistence.

From the accounts for significant species in each of the preceding chapters, the major threats within the region are readily recognised. These threats and possible remedial actions are summarised below: and are discussed in detail in Croft *et al.* (1999).

The main conservation threats to native vegetation, fauna and ecosystems of the South East of South Australia include:

- Habitat isolation and fragmentation
- Changes to hydrology
- Salinity
- Altered fire frequency and intensity
- Loss of scattered trees
- Grazing by domestic stock (cattle, sheep, deer)
- Environmental weeds
- Introduced predators
- Problem native animals
- *Phytopthera* spp. and Mundulla Yellows causing loss of trees and shrubs

## HABITAT LOSS AND FRAGMENTATION

Widespread clearance for agriculture, cropland, pastures, agroforestry and horticulture has resulted in the loss of extensive areas of habitat, and fragmentation of the remaining native vegetation into "islands" within agricultural land. The fragmentation of native vegetation into many small, isolated patches is detrimental to the long term survival of fauna populations and has increased the risk of populations becoming extinct through events such as disease, fire, predation and the long term effects of genetic isolation. Fragmentation also decreases the probability of species re-colonizing, particularly after fire.

Habitat fragmentation also causes degradation of native vegetation through increased edge effects, with agricultural, horticultural and forestry practises contributing weed infestations and higher pest animal populations (native and non-native). Larger remnant areas with a low area/edge ratio, tend to have reduced weed and pest animal populations.

In a number of locations, (e.g. Bangham CP and Aberdour CP) broad power-line easements have created barriers to movement of fauna (see Oxley *et al.* 1974, Mader 1984, Swihart and Slade 1984). These easements and similar features such as roads, fire-breaks and to a lesser extent seismic lines can inhibit movement of fauna species, particularly mammals (Carthew and Kubach 2002 and references therein). The establishment of drains produces the most extreme barrier effect, even with the establishment of wildlife bridges. As well as inhibition of daily movements, gene flow between habitat fragments will be reduced with implications for long-term survival and gene flow of populations (Forman and Alexander 1998).

**Actions**

- Prevent further clearance of habitats
- Encourage establishment of native vegetation corridors to link remnant blocks of native vegetation, e.g. re-establish native vegetation on road reserves to create links between remnant blocks.
- Encourage routing of power-lines around large remnant areas of natural vegetation wherever possible
- Provide incentives and support programmes for fencing existing remnants to prevent further degradation by stock grazing

## CHANGES TO HYDROLOGY

Extensive drainage of interdunal swamps, wetlands and watercourses in the region has allowed agriculture to develop, however it has had a severe impact on the region's biodiversity. A number of the region's rare and threatened species and plant communities are associated with the wetlands and watercourses e.g. Swamp Antechinus, Swamp Skink, Swamp Greenhood (*Pterostylis tenuissima*), *Banksia marginata* Low Woodland. The drying out and increased brackishness of the soil profile has reduced the available niches for vegetation communities (e.g. *Leptospermum lanigerum*) that had evolved to flourish in wetter and fresher soil conditions.

This has resulted in reduction in habitats for native fauna species that rely on these areas for food and shelter.

Additionally, the drying out of the interdunal country has altered the distribution of plant communities in the remaining natural areas, facilitating the increase of some species and communities (e.g. samphire, *Melaleuca halmaturorum*, *M. brevifolia* shrublands) at the expense of others (tussock grasslands, freshwater sedgelands and freshwater herblands). An example of this occurs in Martin's Washpool Conservation Park where melaleuca's are now encroaching into drier and brackish areas that once were fresher seasonal wetlands dominated by herblands and sedgelands. A similar example occurs in the Carpenter Rocks area (Buck's Lake Game Reserve), where freshwater no longer drains from Lake Bonney through the low land just behind the coastline but instead is redirected to the coast via a drain. As a result this area now has a drier and saltier regime which is favouring the invasion of coastal shrubs such as *Olearia axillaris* and an increased dominance of *Gahnia filum,* which is more salt tolerant, over the original *Gahnia trifida* sedgeland.

The expansion of *Acacia longifolia* var. *sophorae* is also an example of a species now able to invade areas that have been drained (interdunal flats both near coastal and further inland) due to the drier soil regime. This leads to effects such as reduction of diversity (Costello *et al.* 2000) due to the invading species sprawling and dense habit before it becomes a dominant species both structurally and floristically in the now changed vegetation community.

Surface drains through remnant native vegetation can act as physical barriers to movement of small fauna, or spread disease and weed species. The drainage affects the hydrology of an area, which can have both a beneficial (alleviate salinity problems, divert water for reinstatement of wetlands) or detrimental (remove water that was previously available to wetlands) effects on some plant communities and species adjacent to the drains.

**Actions**

- Avoid drain construction through remnant native vegetation.
- Construct substantial fauna crossings, if drains are constructed through remnant blocks of native vegetation.
- Carry out biological surveys focussed on fresh and brackish wetlands for the whole region to gain a more complete understanding of the flora and fauna species (including invertebrates) and vegetation communities present and their distribution, to assist in the assessment of any proposals that will cause any further hydrological change.
- Carry out detailed investigations into the affects of previous drainage works to gain a better understanding of processes to assist with processing new drainage proposals
- Carry out detailed monitoring surveys in areas affected if proposals causing significant hydrological change are approved.
- Avoid areas of rare and threatened species.

**SALINITY**

Due to clearance of the deep-rooted perennial native vegetation, rising saline water tables have become a major problem in the Upper South East, west of the Dukes Highway, and mostly north of the Kingston to Keith road.

Higher saline water tables change the plant communities to a more saline tolerant community such as samphire low shrubland, and in extremes, leave the area as bare salt scald in summer and autumn.

**Actions**

- Retain and maintain remnant native vegetation in ground water recharge areas;
- Increase the presence of deep rooted perennial vegetation by revegetating with local native species, to increase water uptake, reducing run-off into low lying areas and raising water tables;
- Investigating the vegetation communities and associated fauna that are being impacted by increased salinity to aid in planning to ameliorate the effects

**FIRE**

Altered fire frequencies and scale have affected the distribution and abundance of many species of plants and communities. The role of fire in the maintenance of flora and fauna communities is complex. It is required for plant and animal succession and maintenance of a diversify of habitats, but it can also disadvantage species. Fires have either become too frequent or on too large a scale for fire-sensitive species or too infrequent for fire-adapted species. In addition, seasonality of fire influences recovery and species composition in regeneration communities. For example, a number of threatened mallee bird species are believed to be in that situation because of fires occurring too frequently through their preferred habitat(s). Other species may also be threatened by infrequent fires. For more detailed discussion on fire see Croft *et al.* (1999).

Fire management of bush remnants is predominantly based on the prevention of fires. Habitat fragmentation has reduced the options for many remnants, which means that fire management must become more proactive than reactive. A major management objective should be to map and record the region's fire histories then analyse these based on a fire history classification, such as;

- all long-unburnt habitats (40+ years)
- all habitats approaching this successional stage (approx. 20-40 years)
- all habitats burnt 10-20 years ago and

- all habitats burnt within the past 10 years.

This will allow rapid preparation of fire management plans to exclude and/or suppress fires in key areas. This in combination with both the pre-European settlement vegetation mapping and current floristic mapping would help identify key areas for research as well as facilitate further research into the fire ecology of key flora species and the region's vegetation communities in general.

**Actions**

- Map, record and access all fire history information across the region (including Forestry SA's, CFS and DEH information).
- Develop a fire history classification system that will facilitate analysis of the fire history information and allow rapid preparation of fire management plans.
- Undertake research into the fire ecology of key flora species and vegetation communities for the region.
- Investigate, develop and trial strategies to use fire as a conservation management tool to maintain or improve the health of the vegetation communities and reduce the risk of wild fire destroying isolated flora and fauna populations.
- Identify vegetation communities and areas where fire is required for maintenance of flora and fauna populations.
- Undertake further investigation into the role of fire in the ecology of threatened flora species and develop appropriate management strategies;
- Undertake further investigation into fires role in the increase of environmental weed species including species increasing in the region such as *Acacia longifolia* var. *sophorae*.

**LOSS OF SCATTERED TREES**

The significant increase in the development of viticultural, horticultural, silvicultural and agricultural (broad acre cropping) activities in the region has increased the pressure to clear areas of scattered trees (Bickerton 2001). Scattered trees appear to be seen by members of these industries as taking up land required for production, not compatible with large machinery or centre-pivot irrigation systems, competing with crops for available moisture and nutrients and providing habitat for fauna that eat or vandalise viticultural, horticultural and agricultural crops. As a result many areas of scattered trees have been removed legally or illegally. The removal of scattered trees particularly impacts on the hydrology of the area and the remaining populations of woodland birds (Robinson and Traill 1996) that utilise these trees for feeding, shelter and nesting (e.g. Red-tailed Black Cockatoo). As the number of scattered trees removed increases, this impacts significantly on the role these trees play as available nesting sites (tree hollows) and linkages between isolated blocks of native vegetation. Removal of nesting sites impacts on the populations ability to reproduce and can ultimately lead to extinction while removal of the trees as links (stepping stones) between blocks of native vegetation reduces the gene flow between populations leading to either unsuccessful breeding (hence extinction in the long term) or increased vulnerability to catastrophic events (e.g. wild fire or disease).

**Actions**

- Continue research into the distribution and composition of scattered trees and value as fauna habitat to assist assessment of clearance proposals.
- Prevent further clearance of scattered trees.
- Encourage recruitment of scattered trees in areas where the age-class is skewed to only mature trees.
- Establish patches of native vegetation in areas where scattered trees are removed to provide stepping stones between isolated remnant blocks of native vegetation
- Encourage vineyard, plantation and irrigation development designs to accommodate and maintain populations of scattered trees for biodiversity and landscape amenity (tourism) values.

**GRAZING**

Grazing by domestic stock in areas of remnant vegetation causes damage by selectively grazing palatable native plant species and as a consequence, depleting availability of food and shelter for a wide range of fauna species. Other impacts include trampling and compaction of the soil surface and crust by livestock, preventing regeneration by selective grazing; distributing weed seeds into native vegetation; ringbarking trees and altering soil nutrient status through concentration of livestock faeces and urine.

The physical impact on the soil by stock can have severe impacts on the cryptogram layer, which binds the soil surface.

**Actions**

- Legislation or regulation to remove grazing pressures.
- Encourage landholders to fence and de-stock remnant areas of native vegetation via incentives.
- Encourage and assist landholders with protecting threatened plant communities.

**ENVIRONMENTAL WEEDS**

Competition for space, light, water and nutrients and displacement (shading and altering soil chemistry) by introduced pasture and weeds has had a severe impact on plant communities throughout the region.

Environmental weeds have the potential to replace a diverse native plant community with a less diverse weedy community, capable of supporting a smaller number of native vertebrate and invertebrate species. Weedy communities can also make native communities more susceptible to fire. Environmental weeds, including native weed species, tend to be fast growing, and able spread rapidly. They also appear to colonize more open areas within native vegetation where soil disturbances have occurred and invade from the edges of remnants

Much of the remnant areas of native vegetation in the South East tend to be free of serious environmental weeds, however prevention of weeds becoming established in native vegetation is essential.

**Actions**

- Investigate use of biological control agents for some species.
- Actively promote and resource control programs where biological controls are available (e.g. rust, leaf hoppers for Bridal Creeper)
- Keep disturbance to a minimum (e.g. minimise tracks, firebreaks).
- Control introduced grazing animals.

The following species are considered the most threatening of the environmental weed species in the South East and their significance is described in more detail by Croft *et al.* (1999).

Monterey Pine (*Pinus radiata)*
European Olive (*Olea europaea* ssp.)
Bridal Creeper (*Myrsiphyllum asparagoides*)
Phalaris (*Phalaris* species especially *P. aquatica*)
Blackberry (*Rubus* spp.)
Golden Wreath Wattle (*Acacia saligna*)
Tagasaste/Tree Lucerne (*Chamaecytisus palmensis*)
Golden Dodder (*Cuscuta campestris*)

**Native Plants**

Altered conditions and disturbance of the region's native vegetation has resulted in some native plant species, including *Acacia. longifolia* var. *sophorae* (Coastal Wattle), *A. longifolia* var. *longifolia* (Sallow Wattle), *Dodonaea viscosa* var. *spatulata* (Sticky Hopbush), *Melaleuca halmaturorum* ssp. *halmaturorum* (South Australian Swamp Paperbark), and samphire species, extending their range into new areas. In most cases, this has resulted in changed native vegetation floristics and structure.

The increase of species such as *A. longifolia* var. *sophorae*, is particularly problematic as its sprawling habit smothers other plant species, changing the community structurally and floristically, to a dense tall shrubland or a dense tall shrub understorey layer, and reducing the diversity of species present. Similarly this type of change also occurs with *Dodonaea viscosa* var. *spatulata* shrubs taking over the original grassy understorey layer in *Eucalyptus leucoxylon* woodlands. Other examples of species increasing to dominate and alter plant communities are *Melaleuca halmaturorum* ssp. *halmaturorum*, and samphires species.

**Actions**

- Investigate the causes for spread of these problem native species, determine strategies for control, conduct trials and implement control measures.
- Actively exclude these species from being planted in revegetation works, except in original habitats if it poses no problems..
- Keep disturbances to a minimum (e.g. minimise tracks, firebreaks, grazing).

**PROBLEM ANIMALS**

High abundance of both introduced and native animals (vertebrates and invertebrates) can cause threats to the region's biodiversity by preventing regeneration of native vegetation, altering vegetation and soil structure by trampling and grazing/browsing; spreading weed seeds; predation on native fauna; and displacing and competing for food and shelter with other native fauna.

Year round water supply for livestock and extensive areas of pastures, has improved conditions for both domestic and some native fauna species such as Grey Kangaroos and Long-billed Corellas.

Competition for nesting or roosting sites for birds, bats and other mammal species, in particular, hollows in trees is a major issue. Since European settlement, the introduced Common Starling and feral honeybee and native species such as Galah, Little Corella and Crested Pigeon have colonized habitats in the South East. The increase in these species has increased the competition with the "resident" fauna for a declining resource. Other introduced species such as the fox and cat have had a severe impact on populations of native fauna. Similarly, rabbits and goats have had a severe impact on native plants and plant communities.

Control programs need to be in place at an appropriate level and scale to assist in recovery of threatened species and habitats, such as fox control in priority areas where susceptible species occur (e.g. Malleefowl). Coordinated district level fox control has been successful in the Upper Murray Mallee, increasing both agricultural productivity and the breeding success of ground dwelling fauna, especially the Malleefowl.

Listed below are a number of animal species, both introduced and native, which can severely impact the biodiversity of the region.

**Introduced Animals**

**Grazing Animals**

The South East contains populations of several feral grazing mammals, of most concern being the rabbit. Goats and Red Deer are also found in the region but are more restricted in their distribution. Deer, in particular, are becoming an increasing problem.

Rabbit (*Oryctolagus cuniculus*)
Goat (*Capra hircus*)
Deer (*Cervus* spp.)

**Predators**
Cat (*Felis catus*)
Fox (*Vulpes vulpes*)
Dog (*Canis lupis familiaris*)

**Problem Native Animals**
Western Grey Kangaroo (*Macropus fuliginosus*)
Long-billed Corrella (*Cacatua tenuirostris*)

**PLANT PATHOGENS**
Disease of native species can be a serious threat to both scattered trees and remnant areas of native vegetation. Such scattered trees and small, isolated areas of native vegetation are particularly susceptible to disease.

***Phytophthora* spp. (Root-rot Fungi)**
Phytophthora refers to a group of parasitic soil-borne root-rot "fungi" or water moulds (most commonly *P. cinnamomi*) causing decline in plant health and eventual death in a number of native plant species by invading the living roots and stems of susceptible species. It is considered a key threatening process to species and communities by the Federal Government.

*Phytophthora cinnamomi* is native to South East Asia and symptoms were first noticed in Western Australia around 1900. In South Australia, it first appeared in the Mount Lofty Ranges around 1970. All areas of the State with annual rainfall above 500mm are considered at risk.

There are no known means of eradication, and infestations are considered permanent once they occur. *Phytophthora* spp. proliferates when soils are moist and warm, but will persist in the soil in a wide range of conditions. It is most commonly spread through microscopic mycelia (microscopic threads) and spores being transported to new areas in soil from infected areas. Species most at risk belong to the plant families Proteaceae, Epacridaceae, Leguminosae and Myrtaceae.

**Actions**
- Wash down vehicles and equipment working in infected areas, to prevent spread of infected soil. This includes vehicles and equipment from other regions coming into the South East and is particularly relevant to earth moving equipment, logging vehicles and fire fighting equipment.
- Prevent infected plant material entering the region.
- Undertake an education programme to inform the community and industry in the region of the risks.

**Mundulla Yellows**
"Mundulla Yellows" is a term applied to a disease currently of unknown origin causing decline and death in trees and shrubs, primarily in the Upper South-East. Some research by the University of Adelaide has been conducted into the cause and distribution of the disease. This work indicates the disease may be caused by a virus-like organism that invades plant tissue by means of an insect vector (Randles 1999). Other biological or chemical agents responsible for the symptoms are possible and modes of transmission are yet to be investigated.

Mundulla Yellows is most noticeable on roadside vegetation, watercourse/riparian vegetation and in scattered trees in paddocks. Its distinctive symptoms begin with yellowing of the foliage on several branches, gradually spreading within the crown. Usually at this stage, there is substantial epicormic shoot growth and sometimes deformed growth. In later stages of infection, the plant shows typical dieback symptoms. Symptoms are similar to lime induced chlorosis. However, with "Mundulla Yellows", only a few leaves are initially affected rather than all turning yellow simultaneously.

The disease was first noticed in the late 1970s around Mundulla. Similar symptoms have been noticed in plants in other States and in the Flinders Ranges, Eyre Peninsula, Yorke Peninsula and Kangaroo Island (Dorr *et al.* 2001) and around Adelaide, and in New Zealand. All eucalypts appear susceptible, however, other non-eucalypt vegetation can also be infected.

In view of similar symptoms of the disease being recorded in several States and recently New Zealand, the Australian and New Zealand Environment and Conservation Council (ANZECC) is taking an interest in this issue and may be able to provide an avenue for research funding.

**Actions**
- Investigate sources of funding for research into the pathogen.
- Undertake research into the pathogen, distribution, cause / vectors of transmission and species at risk.
- Develop and implement control measures to minimise and control the impact of the pathogen.

**ADDITIONAL STUDY RECOMMENDATIONS**
Analysis of the results of the Biological Survey of the South East highlights both the now achieved extent of knowledge as well as the outstanding gaps. There are number of aspects that still require further research, most having been mentioned in the sections above. However in addition to this there is the need to;
- Target surveys to vegetation communities that were missed or poorly represented in the survey or require more detailed survey, such as;
    - smooth barked woodlands (Red Gum, Pink Gum and Blue Gum) communities.
    - sedgelands (fresh and brackish) in all areas subject to inundation including narrow watercourses throughout the region.
    - Grasslands
    - *Eucalyptus viminalis* ssp. cyntensis and *Eucalyptus ovata* communities
    - *Melaleuca gibbosa - Hakea rostrata* heaths

  - *Banksia ornata* Low woodlands
  - Inselberg vegetation and sinkhole vegetation

  (This sort of targeted survey has been completed for the Box and Bulloak communities, after it was recognised from the 1991 survey that these communities were inadequately covered).
- Continue to undertake roadside vegetation surveys to highlight important remnants, provide tools for management and conservation of roadside vegetation and locate areas for revegetation to establish corridors.
- Undertake additional vegetation survey work in the north-east corner (north of Bordertown) due to limited survey coverage.
- Undertake research on the impact of climate change on the region's flora and fauna, and investigate strategies to mitigate against detrimental long-term effects of climate change
- Update the current vegetation mapping with any outstanding localised NPWS park and reserve mapping (e.g. Messent CP and Gum Lagoon CP mapping), ground truthing notes or individual swamp mapping (e.g. Deep Swamp mapping of *Leptospermum lanigerum* and *Gahnia trifida* areas (Bachmann 2000)).
- Develop mechanisms to facilitate regular updates of the vegetation mapping, by regional staff, as better details about the vegetation of individual blocks becomes available.
- Develop time series updates of the vegetation mapping (i.e. complete the 2000 native vegetation cover mapping update for the remainder of the South East).
- Capture any known native grassland extent with standard details from any grassland projects occurring in the region to assist collation of the native vegetation cover and floristic mapping layer.
- Undertake more research and survey of rare and threatened species within the region.
- Investigate native species that appear to have expanding distributions within the region, communities at risk and appropriate control measures.

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# Appendix I

**List of all survey sites in the South East Floristic Analysis.**
**Sites are listed in 1:100,000 mapsheets and further divided into 1:50,000 mapsheets.**

**Survey # (Biological Survey Number)**
**4 = SE Coast Survey**
**16 = Murray Mallee Survey**
**29 = South East Survey**

**PATN Group = 0, indicates sites that were masked out of the floristic analysis.**
**PATN Group = 99, indicates sites that were not in the PATN analysis. These sites were surveyed in 1997.**

***indicates a landform category that was discontinued in September 1994.**

**Note: Easting and Northing coordinates are based on the Geocentric Datum of Australia (GDA94).**

## Encounter Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6626-01 GOOLWA** | | | | | | | | | |
| BK00101 | 4 | 316822 | 6061078 | 54 | 10.9 SSE of Clayton | swamp | clay loam | 0 | 29 |
| BK00102 | 4 | 316822 | 6060978 | 54 | 10.9 SSE of Clayton | stream channel | sandy clay loam | 0 | 0 |
| BK00201 | 4 | 316722 | 6060978 | 54 | 10.9 SSE of Clayton | stream channel | clay loam | 0 | 0 |
| BK00301 | 4 | 316922 | 6060978 | 54 | 11.0 SSE of Clayton | swamp | sandy clay loam | 0 | 0 |
| BK00401 | 4 | 317022 | 6060578 | 54 | 11.4 SSE of Clayton | dune/consolidated dune | sand | 1 | 26 |
| BK00501 | 4 | 317122 | 6060678 | 54 | 11.4 SSE of Clayton | dune/consolidated dune | sand | 3 | 26 |
| BK00601 | 4 | 317322 | 6060778 | 54 | 11.4 SSE of Clayton | dune/consolidated dune | sand | 3 | 26 |
| BK00701 | 4 | 317322 | 6060878 | 54 | 11.3 SSE of Clayton | swamp | clay loam | 1 | 29 |
| BK00702 | 4 | 317522 | 6060678 | 54 | 11.6 SSE of Clayton | dune/consolidated dune | sand | 4 | 26 |
| BK00703 | 4 | 317422 | 6060378 | 54 | 11.8 SSE of Clayton | dune/consolidated dune | sand | 4 | 5 |
| BK00801 | 4 | 317522 | 6060378 | 54 | 11.8 SSE of Clayton | swamp | sandy clay loam | 0 | 29 |
| BK00901 | 4 | 317622 | 6060678 | 54 | 11.6 SSE of Clayton | swamp | clay loam | 0 | 0 |

## Meningie Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6726-01 MENINGIE** | | | | | | | | | |
| MG00101 | 16 | 350322 | 6047228 | 54 | 2.2 SSE of Meningie | stream channel | sand | 10 | 3 |
| MG00201 | 16 | 352433 | 6044166 | 54 | 5.9 SSE of Meningie | swamp | clay loam | 5 | 17 |
| MG01001 | 16 | 361679 | 6059454 | 54 | 3.7 ENE of Waltowa | plain (incl undulating plain) | sand | 5 | 4 |
| MG01101 | 16 | 361239 | 6056418 | 54 | 2.5 ESE of Waltowa | dune slope | sand | 4 | 4 |
| MG01201 | 16 | 361417 | 6056363 | 54 | 2.6 ESE of Waltowa | swamp | clay loam | 4 | 17 |
| MG01301 | 16 | 351022 | 6049678 | 54 | 1.4 ENE of Meningie | hill slope | sand | 30 | 3 |
| MG01401 | 16 | 350322 | 6047178 | 54 | 2.3 SSE of Meningie | plain (incl undulating plain) | sand | 10 | 4 |
| MG01501 | 16 | 346644 | 6044759 | 54 | 5.5 SSW of Meningie | dune slope | sand | 15 | 3 |
| MG01601 | 16 | 346842 | 6044680 | 54 | 5.4 SSW of Meningie | closed depression | sand | 10 | 3 |
| MG01701 | 16 | 354632 | 6043145 | 54 | 7.9 SSE of Meningie | dune slope | sand | 10 | 4 |
| MG01801 | 16 | 353215 | 6044196 | 54 | 6.2 SSE of Meningie | dune footslope | sand | 10 | 4 |
| MG01901 | 16 | 359822 | 6042978 | 54 | 12.0 SE of Meningie | swale | sand | 10 | 4 |
| MG02001 | 16 | 359672 | 6043028 | 54 | 11.8 ESE of Meningie | dune crest | sand | 12 | 4 |
| YU00501 | 16 | 361779 | 6056459 | 54 | 3.0 ESE of Waltowa | plain (incl undulating plain) | sand | 4 | 6 |
| **6726-02 MAGRATH FLAT** | | | | | | | | | |
| CI00101 | 4 | 360522 | 6022278 | 54 | 7.8 SSE of Magrath Flat | swamp | sandy clay loam | 1 | 0 |
| CI00201 | 4 | 360422 | 6022278 | 54 | 7.8 SSE of Magrath Flat | hill footslope | sand | 2 | 26 |
| CI00301 | 4 | 360322 | 6022178 | 54 | 7.8 SSE of Magrath Flat | hill slope | sand | 3 | 26 |
| CI00401 | 4 | 360222 | 6022478 | 54 | 7.5 SSE of Magrath Flat | hill slope | sand | 4 | 26 |
| CI00501 | 4 | 360122 | 6022578 | 54 | 7.4 SSE of Magrath Flat | hill slope | sand | 7 | 26 |
| CI00601 | 4 | 360122 | 6022678 | 54 | 7.3 SSE of Magrath Flat | hill slope | sand | 8 | 28 |
| CI00701 | 4 | 360122 | 6022778 | 54 | 7.2 SSE of Magrath Flat | hill slope | sand | 9 | 28 |
| CI00801 | 4 | 360222 | 6022778 | 54 | 7.3 SSE of Magrath Flat | hill slope | sand | 9 | 28 |
| CI00901 | 4 | 360222 | 6022578 | 54 | 7.4 SSE of Magrath Flat | hill slope | sand | 7 | 28 |
| LI00101 | 4 | 360822 | 6021878 | 54 | 8.3 SSE of Magrath Flat | hill slope | sand | 6 | 28 |
| LI00201 | 4 | 360822 | 6022078 | 54 | 8.2 SSE of Magrath Flat | hill crest | sand | 10 | 28 |
| LI00301 | 4 | 360922 | 6022178 | 54 | 8.1 SSE of Magrath Flat | hill slope | sand | 6 | 28 |
| LI00401 | 4 | 360922 | 6022078 | 54 | 8.2 SSE of Magrath Flat | hill slope | sand | 6 | 28 |
| LI00501 | 4 | 361022 | 6022178 | 54 | 8.2 SSE of Magrath Flat | swamp | sandy clay loam | 1 | 0 |
| MF00101 | 4 | 356822 | 6028378 | 54 | 0.8 SSE of Magrath Flat | swamp | sandy clay loam | 1 | 0 |
| MF00101 | 16 | 363276 | 6029128 | 54 | 6.5 ESE of Magrath Flat | hill crest | sand | 20 | 3 |
| MF00201 | 16 | 361568 | 6024535 | 54 | 6.7 SSE of Magrath Flat | dune slope | sand | 10 | 3 |
| MF00601 | 16 | 359672 | 6028278 | 54 | 3.0 ESE of Magrath Flat | dune crest | sand | 30 | 3 |
| MF00701 | 16 | 363601 | 6027753 | 54 | 7.0 ESE of Magrath Flat | swale | sand | 10 | 4 |
| MG00301 | 16 | 348822 | 6038478 | 54 | 10.9 SSW of Meningie | plain (incl undulating plain) | sand | 10 | 6 |
| MG00401 | 16 | 351396 | 6037356 | 54 | 9.8 NNW of Magrath Flat | swamp | medium clay | 10 | 21 |
| MG00501 | 16 | 351272 | 6035078 | 54 | 8.1 NNW of Magrath Flat | hill crest | sand | 10 | 3 |
| MG00601 | 16 | 353634 | 6033971 | 54 | 5.7 NNW of Magrath Flat | dune slope | sandy loam | 10 | 3 |
| MG00701 | 16 | 349864 | 6036087 | 54 | 9.8 NNW of Magrath Flat | hill slope | sand | 10 | 3 |
| MG00801 | 16 | 351396 | 6037534 | 54 | 9.9 NNW of Magrath Flat | hill slope | sand | 10 | 3 |
| MG00901 | 16 | 351325 | 6037464 | 54 | 9.9 NNW of Magrath Flat | swamp | sand | 10 | 0 |
| MG02101 | 16 | 361019 | 6039991 | 54 | 11.7 NNE of Magrath Flat | swale | sand | 10 | 4 |
| MG02201 | 16 | 360991 | 6040584 | 54 | 12.2 NNE of Magrath Flat | dune crest | sand | 10 | 4 |
| MG02301 | 16 | 359583 | 6040834 | 54 | 12.0 NNE of Magrath Flat | dune slope | sand | 10 | 4 |
| RB00101 | 4 | 354022 | 6030578 | 54 | 3.1 WNW of Magrath Flat | swamp | sandy clay loam | 1 | 0 |
| RB00201 | 4 | 353922 | 6030678 | 54 | 3.2 WNW of Magrath Flat | swamp | sandy clay loam | 1 | 29 |
| RB00301 | 4 | 353722 | 6030578 | 54 | 3.3 WNW of Magrath Flat | hill slope | sand | 7 | 0 |
| RB00401 | 4 | 353522 | 6030578 | 54 | 3.5 WNW of Magrath Flat | hill slope | sand | 8 | 0 |
| RB00501 | 4 | 353522 | 6030678 | 54 | 3.6 WNW of Magrath Flat | hill slope | sand | 8 | 0 |
| RI00101 | 4 | 361422 | 6021578 | 54 | 8.9 SSE of Magrath Flat | swamp | sandy clay loam | 1 | 29 |
| RI00201 | 4 | 361322 | 6021378 | 54 | 9.0 SSE of Magrath Flat | hill slope | sand | 5 | 28 |
| RI00301 | 4 | 361222 | 6021578 | 54 | 8.8 SSE of Magrath Flat | hill slope | sand | 4 | 28 |
| ST00101 | 4 | 364122 | 6019278 | 54 | 12.3 SSE of Magrath Flat | hill slope | sand | 3 | 28 |
| ST00201 | 4 | 363922 | 6019178 | 54 | 12.3 SSE of Magrath Flat | hill slope | sand | 6 | 28 |
| TB00101 | 4 | 361922 | 6020978 | 54 | 9.7 SSE of Magrath Flat | ridge | sand | 4 | 28 |
| TB00201 | 4 | 361922 | 6021078 | 54 | 9.6 SSE of Magrath Flat | dune/consolidated dune | sand | 5 | 29 |
| TB00301 | 4 | 361922 | 6021178 | 54 | 9.5 SSE of Magrath Flat | hill slope | sand | 4 | 28 |
| **6726-04 NARRUNG** | | | | | | | | | |
| NA00101 | 16 | 335357 | 6063837 | 54 | 5.8 SSE of Narwellawar | swamp | medium clay | 10 | 21 |
| NA00201 | 16 | 336152 | 6063291 | 54 | 6.7 SSE of Narwellawar | plain (incl undulating plain) | sandy loam | 20 | 9 |

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| NA00301 | 16 | 333611 | 6057084 | 54 | 3.6 NNW of Campbell Park | plain (incl undulating plain) | sand | 10 | 3 |
| NA00401 | 16 | 328122 | 6054678 | 54 | 7.9 WNW of Campbell Park | hill slope | sand | 10 | 3 |
| NA00501 | 16 | 333322 | 6051928 | 54 | 3.7 WSW of Campbell Park | hill crest | sandy loam | 20 | 3 |
| NA00601 | 16 | 334022 | 6063978 | 54 | 5.2 SSE of Narwellawar | dune crest | sand | 10 | 3 |
| NA00701 | 16 | 333004 | 6062070 | 54 | 7.0 SSW of Narwellawar | plain (incl undulating plain) | sand | 9 | 3 |
| NA00801 | 16 | 333901 | 6056805 | 54 | 3.2 NNW of Campbell Park | plain (incl undulating plain) | sandy loam | 10 | 3 |

## Robe Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6823-01 ROBE** | | | | | | | | | |
| BE00101 | 4 | 414632 | 5852068 | 54 | 2.0 ENE of Beachport | plain (incl undulating plain) | sand | 0 | 26 |
| BE00102 | 4 | 414632 | 5852068 | 54 | 2.0 ENE of Beachport | dune/consolidated dune | sand | 10 | 26 |
| BE00601 | 4 | 390782 | 5895238 | 54 | 3.7 WNW of Wooripa | dune/consolidated dune | sand | 6 | 26 |
| BE00602 | 4 | 390782 | 5895238 | 54 | 3.7 WNW of Wooripa | dune/consolidated dune | sand | 10 | 26 |
| BE00701 | 4 | 390222 | 5884178 | 54 | 1.8 SSE of Robe | dune/consolidated dune | sand | 10 | 26 |
| BE00801 | 4 | 389422 | 5883678 | 54 | 2.4 SSW of Robe | dune/consolidated dune | sand | 10 | 26 |
| BE00901 | 4 | 391472 | 5884878 | 54 | 1.3 SSW of Robe | dune/consolidated dune | sandy loam | 20 | 26 |
| BE01001 | 4 | 394422 | 5880658 | 54 | 5.7 SSE of Robe | lake | clay loam | 1 | 21 |
| LE00401 | 4 | 393672 | 5879508 | 54 | 6.6 SSE of Robe | plain (incl undulating plain) | loam | 7 | 10 |
| LE00402 | 4 | 393672 | 5879508 | 54 | 6.6 SSE of Robe | plain (incl undulating plain) | sandy clay loam | 8 | 21 |
| LE00403 | 4 | 393672 | 5879508 | 54 | 6.6 SSE of Robe | other | sandy clay loam | 6 | 21 |
| LE00501 | 4 | 393042 | 5879298 | 54 | 6.7 SSE of Robe | dune/consolidated dune | sand | 10 | 26 |
| LE00601 | 4 | 392322 | 5879568 | 54 | 6.4 SSW of Robe | dune/consolidated dune | sand | 10 | 26 |
| LE00701 | 4 | 401222 | 5880778 | 54 | 10.4 ESE of Robe | swamp | light medium clay | 2 | 19 |
| LE00702 | 4 | 401122 | 5880778 | 54 | 10.3 ESE of Robe | swamp | light medium clay | 1 | 21 |
| ROB0101 | 29 | 405490 | 5904182 | 54 | 10.2 ENE of Murraup | plain (incl undulating plain) | sandy loam | 20 | 7 |
| ROB0201 | 29 | 406894 | 5903238 | 54 | 11.2 ENE of Murraup | plain (incl undulating plain) | sandy loam | 20 | 10 |
| ROB0401 | 29 | 402320 | 5898305 | 54 | 6.3 ESE of Murraup | plain (incl undulating plain) | loam | 10 | 17 |
| ROB0402 | 29 | 400522 | 5897804 | 54 | 4.8 ESE of Murraup | plain (incl undulating plain) | loam | 10 | 10 |
| ROB0601 | 29 | 410130 | 5890628 | 54 | 16.4 ESE of Wooripa | plain (incl undulating plain) | sandy loam | 12 | 10 |
| ROB0801 | 29 | 411244 | 5889037 | 54 | 15.8 WNW of Greenways | dune slope | sand | 10 | 7 |
| ROB0901 | 29 | 393482 | 5882028 | 54 | 4.1 SSE of Robe | swamp | sandy clay loam | 5 | 99 |
| WO00201 | 4 | 396422 | 5893978 | 54 | 2.5 ESE of Wooripa | hill slope | sandy clay loam | 30 | 3 |
| WO00202 | 4 | 396522 | 5894178 | 54 | 2.4 ESE of Wooripa | hill slope | sandy loam | 10 | 10 |
| WO00301 | 4 | 399822 | 5884478 | 54 | 7.7 ESE of Robe | hill slope | sandy loam | 25 | 26 |
| WO00401 | 4 | 392872 | 5895778 | 54 | 1.6 WNW of Wooripa | swamp | sandy clay loam | 5 | 19 |
| **6823-02 BEACHPORT** | | | | | | | | | |
| BE00201 | 4 | 404722 | 5864178 | 54 | 7.7 ESE of Nora Creina | dune/consolidated dune | sand | 15 | 26 |
| BE00301 | 4 | 394792 | 5873178 | 54 | 5.9 NNW of Nora Creina | swamp | sand | 12 | 26 |
| BE00401 | 4 | 395322 | 5873718 | 54 | 6.1 NNW of Nora Creina | other | sand | 12 | 26 |
| BE00501 | 4 | 395052 | 5875258 | 54 | 7.6 NNW of Nora Creina | swamp | sand | 12 | 21 |
| BE00502 | 4 | 395052 | 5875258 | 54 | 7.6 NNW of Nora Creina | dune/consolidated dune | sand | 15 | 26 |
| BE00503 | 4 | 395052 | 5875258 | 54 | 7.6 NNW of Nora Creina | ridge | sand | 12 | 26 |
| BEA0301 | 29 | 410150 | 5876256 | 54 | 8.8 WNW of Chinaman Wells | plain (incl undulating plain) | loam | 10 | 0 |
| BEA0302 | 29 | 410019 | 5876248 | 54 | 8.9 WNW of Chinaman Wells | plain (incl undulating plain) | loam | 10 | 10 |
| BEA0401 | 29 | 406682 | 5872976 | 54 | 9.6 ENE of Nora Creina | ridge | sandy loam | 60 | 3 |
| BEA0501 | 29 | 403125 | 5872093 | 54 | 6.1 ENE of Nora Creina | plain (incl undulating plain) | loam | 10 | 26 |
| BEA0502 | 29 | 403164 | 5871984 | 54 | 6.0 ENE of Nora Creina | plain (incl undulating plain) | loam | 10 | 3 |
| BEA0503 | 29 | 402658 | 5872074 | 54 | 5.7 ENE of Nora Creina | open depression | loam | 0 | 99 |
| BEA0601 | 29 | 411140 | 5870588 | 54 | 7.2 WSW of Chinaman Wells | plain (incl undulating plain) | sandy loam | 10 | 0 |
| BEA0701 | 29 | 407169 | 5865264 | 54 | 9.4 ESE of Nora Creina | dune slope | sand | 15 | 26 |
| BEA0901 | 29 | 406370 | 5863188 | 54 | 9.6 ESE of Nora Creina | swale | sandy loam | 10 | 26 |
| BEA0902 | 29 | 406013 | 5863695 | 54 | 9.0 SE of Nora Creina | dune crest | sand | 15 | 26 |
| LE00101 | 4 | 399812 | 5869548 | 54 | 1.9 ENE of Nora Creina | stream channel | light medium clay | 2 | 19 |
| LE00201 | 4 | 396242 | 5874338 | 54 | 6.3 NNW of Nora Creina | plain (incl undulating plain) | loam | 3 | 21 |

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| LE00202 | 4 | 396242 | 5874338 | 54 | 6.3 NNW of Nora Creina | plain (incl undulating plain) | loam | 5 | 26 |
| LE00301 | 4 | 395362 | 5875878 | 54 | 8.1 NNW of Nora Creina | swamp | sand | 6 | 21 |
| LE00302 | 4 | 395362 | 5875878 | 54 | 8.1 NNW of Nora Creina | swamp | sand | 4 | 21 |
| LE00303 | 4 | 395362 | 5875878 | 54 | 8.1 NNW of Nora Creina | swamp | sand | 4 | 21 |
| LE00304 | 4 | 395362 | 5875878 | 54 | 8.1 NNW of Nora Creina | stream channel | sand | 5 | 21 |
| LG00101 | 4 | 411232 | 5852858 | 54 | 2.1 NNW of Beachport | ridge | loam | 10 | 26 |
| LG00102 | 4 | 411232 | 5852858 | 54 | 2.1 NNW of Beachport | swamp | sand | 8 | 21 |
| LG00201 | 4 | 409762 | 5855578 | 54 | 5.2 NNW of Beachport | other | loam | 8 | 26 |
| LG00301 | 4 | 409022 | 5856198 | 54 | 6.1 NNW of Beachport | ridge | sand | 5 | 26 |
| LG00302 | 4 | 409022 | 5856198 | 54 | 6.1 NNW of Beachport | swamp | sandy clay loam | 4 | 21 |
| LG00303 | 4 | 409022 | 5856198 | 54 | 6.1 NNW of Beachport | dune/consolidated dune | sand | 6 | 26 |
| LG00401 | 4 | 408582 | 5856828 | 54 | 6.9 NNW of Beachport | other | sandy clay loam | 4 | 23 |
| LG00402 | 4 | 408582 | 5856828 | 54 | 6.9 NNW of Beachport | other | sand | 4 | 21 |
| LG00403 | 4 | 408582 | 5856828 | 54 | 6.9 NNW of Beachport | ridge | sand | 10 | 26 |
| WO00101 | 4 | 405422 | 5875478 | 54 | 10.1 ENE of Nora Creina | hill crest | sand | 15 | 10 |

## Kingston Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6824-01 DUFFIELD** | | | | | | | | | |
| DUF0101 | 29 | 404449 | 5958991 | 54 | 8.8 WNW of Bald Hill | dune slope | sand | 30 | 3 |
| DUF0201 | 29 | 395815 | 5956573 | 54 | 12.9 NNW of Sandy Hut | swamp | clay loam | 2 | 22 |
| DUF0301 | 29 | 399103 | 5955988 | 54 | 11.1 NNW of Sandy Hut | swale | sand | 10 | 7 |
| DUF0302 | 29 | 398636 | 5955952 | 54 | 11.2 NNW of Sandy Hut | dune crest | sand | 20 | 3 |
| DUF0401 | 29 | 406415 | 5953308 | 54 | 9.1 NNE of Sandy Hut | swale | sand | 25 | 7 |
| DUF0402 | 29 | 406768 | 5953659 | 54 | 9.5 NNE of Sandy Hut | swale | sand | 20 | 3 |
| DUF0501 | 29 | 395851 | 5951876 | 54 | 9.1 NNW of Sandy Hut | swale | sand | 10 | 26 |
| DUF0502 | 29 | 395441 | 5951527 | 54 | 9.1 NNW of Sandy Hut | dune slope | sand | 10 | 26 |
| DUF0601 | 29 | 401968 | 5945229 | 54 | 0.2 WSW of Sandy Hut | dune slope | sand | 15 | 7 |
| DUF0901 | 29 | 403546 | 5934328 | 54 | 10.6 NNE of Lacepede | swale | sand | 8 | 4 |
| DUF0902 | 29 | 403017 | 5934350 | 54 | 10.3 NNE of Lacepede | dune crest | sand | 9 | 3 |
| **6824-02 KINGSTON** | | | | | | | | | |
| KI00101 | 4 | 392722 | 5916878 | 54 | 2.5 WSW of Wyomi | dune/consolidated dune | sand | 5 | 26 |
| KIN0101 | 29 | 398570 | 5932120 | 54 | 7.1 NNE of Lacepede | fore dune | sand | 2 | 26 |
| KIN0102 | 29 | 398640 | 5932190 | 54 | 7.1 NNE of Lacepede | swale | sand | 10 | 26 |
| KIN0103 | 29 | 399111 | 5932107 | 54 | 7.1 NNE of Lacepede | dune crest | sand | 10 | 26 |
| KIN0201 | 29 | 400864 | 5931848 | 54 | 7.2 NNE of Lacepede | swamp | clay loam | 2 | 22 |
| KIN0301 | 29 | 402004 | 5931948 | 54 | 7.7 NNE of Lacepede | swale | sand | 7 | 7 |
| KIN0302 | 29 | 402522 | 5931895 | 54 | 7.9 NNE of Lacepede | dune crest | sand | 7 | 3 |
| KIN0401 | 29 | 408370 | 5929134 | 54 | 10.7 ENE of Lacepede | sandplain * | sand | 19 | 7 |
| KIN0402 | 29 | 408532 | 5929126 | 54 | 10.8 ENE of Lacepede | dune crest | sand | 19 | 8 |
| KIN0501 | 29 | 406388 | 5925230 | 54 | 7.8 ENE of Rosetown | swamp | sandy loam | 9 | 17 |
| KIN0502 | 29 | 406955 | 5925301 | 54 | 8.4 ENE of Rosetown | swamp | sandy loam | 8 | 17 |
| KIN0901 | 29 | 409077 | 5914861 | 54 | 5.0 WNW of Reedy Creek | swamp | sandy loam | 5 | 22 |
| KIN1101 | 29 | 404292 | 5904931 | 54 | 9.5 ENE of Murraup | sandplain * | sand | 10 | 14 |
| KIN1102 | 29 | 404466 | 5905110 | 54 | 9.8 ENE of Murraup | sandplain * | sand | 10 | 7 |
| **6824-03 JAFFA** | | | | | | | | | |
| CJ00101 | 4 | 382422 | 5909378 | 54 | 1.4 SSW of Kings Camp | dune/consolidated dune | sand | 7 | 26 |
| CJ00102 | 4 | 381822 | 5909478 | 54 | 1.7 WSW of Kings Camp | dune/consolidated dune | sand | 1 | 26 |
| CJ00103 | 4 | 384622 | 5905878 | 54 | 4.9 SSE of Kings Camp | dune/consolidated dune | sand | 1 | 26 |

## Santo Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6825-01 TAUNTA** | | | | | | | | | |
| TAU0101 | 29 | 396992 | 6014209 | 54 | 17.1 SSW of Reedy Wells | sandy plain | sandy loam | 11 | 4 |
| TAU0301 | 29 | 392678 | 6010717 | 54 | 17.0 ENE of Salt Creek | closed depression | sand | 10 | 25 |
| TAU0401 | 29 | 396888 | 6007322 | 54 | 19.3 ENE of Salt Creek | sandplain * | sand | 20 | 4 |
| TAU0402 | 29 | 395938 | 6007002 | 54 | 18.3 ENE of Salt Creek | dune crest | sand | 30 | 3 |
| TAU0403 | 29 | 394483 | 6006346 | 54 | 16.8 ENE of Salt Creek | dune slope | sand | 30 | 4 |
| TAU0601 | 29 | 396815 | 5999645 | 54 | 18.0 ENE of Chinaman Wells | dune slope | sand | 30 | 4 |
| TAU0602 | 29 | 395318 | 5998661 | 54 | 16.2 NNE of Chinaman Wells | dune slope | sand | 20 | 3 |
| TAU0701 | 29 | 398661 | 5992712 | 54 | 15.3 ENE of Chinaman Wells | dune slope | sand | 30 | 4 |
| TAU0702 | 29 | 399065 | 5993336 | 54 | 16.0 ENE of Chinaman Wells | dune slope | sand | 20 | 17 |
| TAU0901 | 29 | 389378 | 5994546 | 54 | 9.4 NNE of Chinaman Wells | sandplain * | sand | 10 | 4 |
| TAU1002 | 29 | 388583 | 5990071 | 54 | 5.3 ENE of Chinaman Wells | ridge | sand | 10 | 6 |
| TAU3B03 | 29 | 394361 | 6013276 | 54 | 18.4 SSW of Reedy Wells | dune/consolidated dune | sand | 12 | 4 |
| TAU3B05 | 29 | 393649 | 6006052 | 54 | 15.9 ENE of Salt Creek | dune slope | sand | 30 | 4 |
| TAU3B12 | 29 | 391589 | 5994853 | 54 | 10.9 NNE of Chinaman Wells | dune crest | sand | 30 | 3 |
| **6825-02 TILLEY SWAMP** | | | | | | | | | |
| TIL0101 | 29 | 387919 | 5984676 | 54 | 3.7 ESE of Chinaman Wells | dune slope | sand | 20 | 3 |
| TIL0104 | 29 | 388196 | 5985447 | 54 | 3.7 ESE of Chinaman Wells | closed depression | loam | 10 | 21 |
| TIL0201 | 29 | 407593 | 5986751 | 54 | 21.6 WSW of Eden | dune slope | sand | 30 | 3 |
| TIL0301 | 29 | 402116 | 5985963 | 54 | 17.5 ESE of Chinaman Wells | dune crest | sand | 30 | 3 |
| TIL0302 | 29 | 400720 | 5985395 | 54 | 16.1 ESE of Chinaman Wells | lagoon | sandy loam | 20 | 22 |
| TIL0303 | 29 | 400681 | 5985513 | 54 | 16.1 ESE of Chinaman Wells | dune/consolidated dune | sand | 30 | 4 |
| TIL0501 | 29 | 393695 | 5973675 | 54 | 3.5 NNE of Coolatoo | dune/consolidated dune | sandy loam | 10 | 7 |
| TIL0601 | 29 | 403521 | 5975448 | 54 | 12.9 ENE of Coolatoo | hill slope | sand | 30 | 3 |
| TIL0701 | 29 | 409927 | 5975526 | 54 | 19.0 ENE of Coolatoo | dune/consolidated dune | sand | 20 | 4 |
| TIL0801 | 29 | 410302 | 5971153 | 54 | 18.9 ESE of Coolatoo | dune/consolidated dune | sandy loam | 20 | 4 |
| TIL0802 | 29 | 409288 | 5971433 | 54 | 17.9 ESE of Coolatoo | dune slope | sand | 20 | 4 |
| TIL0803 | 29 | 410144 | 5971237 | 54 | 18.7 ESE of Coolatoo | swamp | loam | 20 | 17 |
| TIL1001 | 29 | 403222 | 5963699 | 54 | 13.8 SE of Coolatoo | dune slope | sand | 15 | 3 |
| TIL1002 | 29 | 403078 | 5963691 | 54 | 13.7 SE of Coolatoo | dune crest | sand | 20 | 7 |
| TIL1201 | 29 | 393608 | 5963585 | 54 | 7.7 SSE of Coolatoo | swamp | sand | 10 | 22 |
| **6825-03 CANTARA** | | | | | | | | | |
| CAN0102 | 29 | 387661 | 5985545 | 54 | 3.1 ESE of Chinaman Wells | dune slope | sandy loam | 20 | 5 |
| CAN0103 | 29 | 387618 | 5985706 | 54 | 3.0 ESE of Chinaman Wells | closed depression | loam | 10 | 17 |
| CT00101 | 4 | 385622 | 5984278 | 54 | 2.4 SSE of Chinaman Wells | plain (incl undulating plain) | sandy clay loam | 3 | 3 |
| CT00201 | 4 | 390722 | 5968478 | 54 | 2.6 SSW of Coolatoo | dune/consolidated dune | sand | 10 | 26 |
| CT00202 | 4 | 390722 | 5968378 | 54 | 2.7 SSW of Coolatoo | dune/consolidated dune | sand | 5 | 26 |
| CT00301 | 4 | 390622 | 5968678 | 54 | 2.4 SSW of Coolatoo | plain (incl undulating plain) | sandy clay loam | 1 | 21 |
| CT00401 | 4 | 389422 | 5971378 | 54 | 2.1 WNW of Coolatoo | plain (incl undulating plain) | sandy clay loam | 5 | 26 |
| CT00402 | 4 | 389422 | 5971278 | 54 | 2.1 WNW of Coolatoo | | | 1 | 21 |
| **6825-04 SANTO** | | | | | | | | | |
| SAN0101 | 29 | 378677 | 6010858 | 54 | 9.2 ENE of Wataleera | dune/consolidated dune | sandy loam | 40 | 3 |
| SAN0102 | 29 | 379119 | 6011257 | 54 | 9.8 ENE of Wataleera | swale | sand | 40 | 4 |
| SAN0201 | 29 | 381763 | 6010019 | 54 | 9.3 NNE of Salt Creek | dune slope | sand | 30 | 4 |
| SAN0202 | 29 | 382028 | 6012024 | 54 | 11.2 NNE of Salt Creek | other | sand | 10 | 4 |
| SAN0203 | 29 | 382769 | 6012034 | 54 | 11.5 NNE of Salt Creek | swamp | loam | 10 | 0 |
| SAN0301 | 29 | 379480 | 6006234 | 54 | 5.0 NNE of Salt Creek | dune slope | sand | 20 | 4 |
| SAN0401 | 29 | 383696 | 6004754 | 54 | 6.2 ENE of Salt Creek | open depression | sand | 10 | 17 |
| SAN0501 | 29 | 382555 | 6002065 | 54 | 4.1 ENE of Salt Creek | dune/consolidated dune | sandy loam | 10 | 3 |
| SAN0801 | 29 | 384599 | 5995408 | 54 | 8.5 SSE of Salt Creek | dune slope | sandy loam | 20 | 7 |
| SAN0802 | 29 | 384855 | 5996260 | 54 | 8.2 ESE of Salt Creek | open depression | loam | 10 | 21 |
| SAN0803 | 29 | 384866 | 5996181 | 54 | 8.2 ESE of Salt Creek | open depression | sandy loam | 10 | 22 |

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| SAN0804 | 29 | 385088 | 5996313 | 54 | 8.3 ESE of Salt Creek | dune/consolidated dune | sandy loam | 20 | 5 |
| SAN0805 | 29 | 384515 | 5995243 | 54 | 8.6 SSE of Salt Creek | dune/consolidated dune | sandy loam | 20 | 3 |
| SAN0901 | 29 | 387017 | 5988609 | 54 | 3.2 ENE of Chinaman Wells | dune/consolidated dune | sandy loam | 20 | 5 |
| TT00101 | 4 | 378322 | 6000978 | 54 | 0.4 SSW of Salt Creek | swamp | sandy clay loam | 5 | 21 |
| TT00201 | 4 | 380122 | 5993578 | 54 | 7.9 SSE of Salt Creek | plain (incl undulating plain) | sandy clay loam | 1 | 21 |
| TT00301 | 4 | 380322 | 5993778 | 54 | 7.8 SSE of Salt Creek | plain (incl undulating plain) | sandy clay loam | 6 | 26 |
| TT00401 | 4 | 381022 | 5994078 | 54 | 7.7 SSE of Salt Creek | plain (incl undulating plain) | sand | 6 | 3 |
| TT00402 | 4 | 381222 | 5994078 | 54 | 7.8 SSE of Salt Creek | ridge | sand | 6 | 3 |
| TT00501 | 4 | 378322 | 5992278 | 54 | 8.6 NNW of Chinaman Wells | dune/consolidated dune | sand | 2 | 27 |
| TT00502 | 4 | 378372 | 5992278 | 54 | 8.6 NNW of Chinaman Wells | dune/consolidated dune | sand | 1 | 27 |
| TT00601 | 4 | 379122 | 5992878 | 54 | 8.5 NNW of Chinaman Wells | swamp | sandy clay loam | 1 | 21 |
| TT00602 | 4 | 377322 | 5995778 | 54 | 5.7 SSW of Salt Creek | dune/consolidated dune | sand | 2 | 26 |
| TT00603 | 4 | 377522 | 5995678 | 54 | 5.8 SSW of Salt Creek | swamp | sandy clay loam | 1 | 23 |
| TT00701 | 4 | 382722 | 5990978 | 54 | 4.9 NNW of Chinaman Wells | ridge | sandy clay loam | 5 | 3 |

## Coonalpyn Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6826-01 COONALPYN** | | | | | | | | | |
| CA00701 | 16 | 404648 | 6065197 | 54 | 4.6 NNW of Tauragat | swale | sand | 35 | 1 |
| CA02401 | 16 | 394322 | 6066638 | 54 | 4.8 ENE of Ki Ki | dune crest | sand | 50 | 4 |
| CA02501 | 16 | 395122 | 6066568 | 54 | 5.4 ENE of Ki Ki | swale | sand | 40 | 3 |
| CA02601 | 16 | 391072 | 6059034 | 54 | 4.3 SSW of Ki Ki | plain (incl undulating plain) | sand | 30 | 4 |
| CA02701 | 16 | 391567 | 6059091 | 54 | 4.3 SSE of Ki Ki | hill slope | loam | 50 | 1 |
| CA02801 | 16 | 401322 | 6064498 | 54 | 6.5 WNW of Tauragat | dune crest | sand | 50 | 4 |
| CA02901 | 16 | 401312 | 6064108 | 54 | 6.3 WNW of Tauragat | swale | clay loam | 30 | 1 |
| CA03001 | 16 | 404122 | 6064998 | 54 | 4.8 NNW of Tauragat | dune crest | sand | 60 | 4 |
| CA03101 | 16 | 406722 | 6063258 | 54 | 2.1 NNW of Tauragat | swale | sand | 40 | 3 |
| CA03201 | 16 | 405547 | 6064172 | 54 | 3.3 NNW of Tauragat | swale | sand | 40 | 1 |
| CA03501 | 16 | 405122 | 6067598 | 54 | 6.7 NNW of Tauragat | plain (incl undulating plain) | sand | 30 | 1 |
| CN00101 | 16 | 387314 | 6062880 | 54 | 3.6 WSW of Ki Ki | plain (incl undulating plain) | clay loam | 40 | 3 |
| CN00301 | 16 | 401462 | 6048678 | 54 | 4.9 ESE of Coonalpyn | dune crest | sand | 40 | 4 |
| CN00401 | 16 | 387450 | 6053132 | 54 | 8.0 ENE of Binnie Well | swale | sand | 20 | 5 |
| CN00601 | 16 | 389722 | 6048758 | 54 | 6.9 WSW of Coonalpyn | plain (incl undulating plain) | sandy loam | 20 | 1 |
| CN01001 | 16 | 389752 | 6044398 | 54 | 8.5 WSW of Coonalpyn | plain (incl undulating plain) | sandy loam | 30 | 6 |
| CN01001 | 16 | 386927 | 6062983 | 54 | 4.0 WSW of Ki Ki | plain (incl undulating plain) | clay loam | 40 | 1 |
| CN01301 | 16 | 403222 | 6050658 | 54 | 6.7 ENE of Coonalpyn | plain (incl undulating plain) | sandy loam | 20 | 1 |
| CN01401 | 16 | 402902 | 6051108 | 54 | 6.5 ENE of Coonalpyn | plain (incl undulating plain) | sand | 20 | 4 |
| CN01501 | 16 | 405147 | 6047968 | 54 | 8.6 ESE of Coonalpyn | dune slope | sand | 40 | 3 |
| CN01601 | 16 | 405052 | 6048315 | 54 | 8.5 ESE of Coonalpyn | swale | sandy loam | 30 | 1 |
| CN01701 | 16 | 405435 | 6048048 | 54 | 8.9 ESE of Coonalpyn | swale | sand | 25 | 4 |
| CN01801 | 16 | 395162 | 6051638 | 54 | 2.7 NNW of Coonalpyn | dune crest | sand | 30 | 4 |
| CN01901 | 16 | 395476 | 6051967 | 54 | 2.9 NNW of Coonalpyn | plain (incl undulating plain) | sand | 20 | 4 |
| CN02001 | 16 | 389782 | 6043488 | 54 | 9.0 WSW of Coonalpyn | dune slope | sand | 20 | 4 |
| CN02101 | 16 | 391182 | 6051968 | 54 | 6.1 WNW of Coonalpyn | plain (incl undulating plain) | sandy loam | 30 | 1 |
| **6826-02 CULBURRA** | | | | | | | | | |
| BB00101 | 16 | 389313 | 6031542 | 54 | 0.6 ENE of Mount Boothby | hill slope | sand | 100 | 3 |
| BB00201 | 16 | 391538 | 6030678 | 54 | 2.7 ESE of Mount Boothby | swale | loam | 20 | 3 |
| BB00301 | 16 | 388162 | 6028418 | 54 | 2.8 SSW of Mount Boothby | plain (incl undulating plain) | sand | 20 | 5 |
| BB00701 | 16 | 392706 | 6030212 | 54 | 5.1 WSW of Reedy Wells | plain (incl undulating plain) | sandy loam | 20 | 3 |
| BB00801 | 16 | 388821 | 6031032 | 54 | 0.1 SSW of Mount Boothby | hill crest | clay loam | 130 | 3 |
| BB00901 | 16 | 388222 | 6028478 | 54 | 2.8 SSW of Mount Boothby | hill slope | sandy loam | 30 | 5 |
| BB01001 | 16 | 388297 | 6028265 | 54 | 2.9 SSW of Mount Boothby | closed depression | sand | 20 | 4 |
| BB01101 | 16 | 389043 | 6027598 | 54 | 3.6 SSW of Mount Boothby | hill crest | sandy loam | 20 | 3 |
| BB01201 | 16 | 388383 | 6028187 | 54 | 3.0 SSW of Mount Boothby | plain (incl undulating plain) | sand | 20 | 4 |
| BB01301 | 16 | 397522 | 6031428 | 54 | 0.2 WNW of Reedy Wells | hill crest | sand | 20 | 5 |
| BB01401 | 16 | 396982 | 6025328 | 54 | 6.0 SSW of Reedy Wells | hill crest | sandy loam | 30 | 6 |
| CA03601 | 16 | 409517 | 6041057 | 54 | 5.6 NNE of Culburra | swale | sandy loam | 45 | 6 |
| CN00901 | 16 | 389859 | 6040494 | 54 | 11.2 SSW of Coonalpyn | swale | sandy loam | 30 | 0 |
| CN03101 | 16 | 389822 | 6040258 | 54 | 11.4 SSW of Coonalpyn | hill crest | sandy loam | 50 | 3 |
| TT00101 | 16 | 408756 | 6042873 | 54 | 7.1 NNE of Culburra | dune slope | sand | 30 | 4 |
| TT00501 | 16 | 405413 | 6022143 | 54 | 11.5 WSW of Tintinara | swamp | clay loam | 15 | 22 |
| TT00601 | 16 | 408364 | 6042103 | 54 | 6.2 NNE of Culburra | dune crest | sand | 50 | 3 |
| TT01101 | 16 | 405258 | 6021942 | 54 | 11.7 WSW of Tintinara | dune crest | sand | 20 | 4 |
| TT01201 | 16 | 405668 | 6022330 | 54 | 11.1 WSW of Tintinara | plain (incl undulating plain) | sand | 15 | 4 |
| TT01301 | 16 | 398222 | 6019928 | 54 | 11.4 S of Reedy Wells | dune crest | sand | 20 | 4 |
| TT01401 | 16 | 398152 | 6019728 | 54 | 11.6 SSW of Reedy Wells | closed depression | sand | 15 | 4 |
| **6826-03 WOODS WELL** | | | | | | | | | |
| CN00801 | 16 | 384390 | 6042038 | 54 | 6.9 SSE of Binnie Well | hill slope | loam | 70 | 9 |
| CN02701 | 16 | 386569 | 6035993 | 54 | 7.2 ENE of Field | hill slope | sand | 60 | 3 |
| CN02801 | 16 | 386250 | 6035971 | 54 | 6.8 ENE of Field | dune crest | | 50 | 3 |
| CN02901 | 16 | 382396 | 6039717 | 54 | 5.6 NNE of Field | dune crest | sand | 60 | 4 |
| CN03001 | 16 | 381026 | 6039350 | 54 | 4.7 NNE of Field | dune slope | sand | 20 | 3 |

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| CN03301 | 16 | 377372 | 6042478 | 54 | 6.8 SSW of Binnie Well | plain (incl undulating plain) | sand | 20 | 3 |
| CN03401 | 16 | 378456 | 6040533 | 54 | 5.7 NNW of Field | plain (incl undulating plain) | sand | 10 | 4 |
| CN03501 | 16 | 381948 | 6022402 | 54 | 12.7 SSE of Field | hill crest | sandy loam | 20 | 3 |
| CN03601 | 16 | 376857 | 6028855 | 54 | 6.6 SSW of Field | plain (incl undulating plain) | sand | 20 | 4 |
| MF00301 | 16 | 367473 | 6018240 | 54 | 14.5 NNW of Wataleera | open depression | sand | 10 | 0 |
| MF00401 | 16 | 372518 | 6020373 | 54 | 15.9 NNE of Wataleera | hill slope | sand | 20 | 3 |
| MF00501 | 16 | 369289 | 6026171 | 54 | 12.9 ESE of Magrath Flat | dune crest | sand | 30 | 3 |
| **6826-04 BINNIE** | | | | | | | | | |
| CN00201 | 16 | 385936 | 6062898 | 54 | 5.0 WSW of Ki Ki | closed depression | sandy loam | 40 | 1 |
| CN00501 | 16 | 379447 | 6052088 | 54 | 1.7 ENE of Binnie Lookout | hill slope | clay loam | 110 | 3 |
| CN00701 | 16 | 383308 | 6045377 | 54 | 3.4 SSE of Binnie Well | open depression | sand | 50 | 5 |
| CN01101 | 16 | 377903 | 6062453 | 54 | 7.9 ESE of Hawksnest | dune crest | sand | 40 | 4 |
| CN01201 | 16 | 377672 | 6062178 | 54 | 7.8 ESE of Hawksnest | plain (incl undulating plain) | clay loam | 40 | 1 |
| CN02201 | 16 | 377985 | 6051233 | 54 | 0.1 ESE of Binnie Lookout | dune crest | sand | 160 | 4 |
| CN02301 | 16 | 377930 | 6051000 | 54 | 0.3 S of Binnie Lookout | hill slope | clay loam | 150 | 3 |
| CN02401 | 16 | 379522 | 6052478 | 54 | 2.0 ENE of Binnie Lookout | closed depression | sandy loam | 100 | 1 |
| CN02501 | 16 | 380561 | 6048892 | 54 | 1.0 NNW of Binnie Well | hill slope | sand | 40 | 5 |
| CN02601 | 16 | 385822 | 6045128 | 54 | 5.5 ESE of Binnie Well | closed depression | sand | 30 | 6 |
| CN03201 | 16 | 376326 | 6043787 | 54 | 6.5 WSW of Binnie Well | plain (incl undulating plain) | sandy loam | 10 | 4 |
| MG02401 | 16 | 364369 | 6058117 | 54 | 5.6 ENE of Waltowa | dune slope | sand | 20 | 4 |
| YU00201 | 16 | 370428 | 6065003 | 54 | 0.4 SSW of Hawksnest | plain (incl undulating plain) | loam | 60 | 9 |
| YU00301 | 16 | 368106 | 6059715 | 54 | 6.2 SSW of Hawksnest | plain (incl undulating plain) | sand | 20 | 1 |
| YU00401 | 16 | 368882 | 6059689 | 54 | 5.9 SSW of Hawksnest | plain (incl undulating plain) | sand | 30 | 3 |
| YU01101 | 16 | 373969 | 6070400 | 54 | 3.1 ENE of Two Sisters | swale | sand | 40 | 4 |
| YU01301 | 16 | 370090 | 6048047 | 54 | 11.1 WNW of Binnie Well | plain (incl undulating plain) | sand | 10 | 4 |
| YU01401 | 16 | 364804 | 6059343 | 54 | 6.4 ENE of Waltowa | hill slope | clay loam | 20 | 3 |
| YU01501 | 16 | 365330 | 6059378 | 54 | 6.9 ENE of Waltowa | dune crest | sand | 50 | 4 |
| YU01601 | 16 | 373672 | 6053428 | 54 | 4.8 WNW of Binnie Lookout | plain (incl undulating plain) | sand | 40 | 4 |
| YU01701 | 16 | 374080 | 6053763 | 54 | 4.6 WNW of Binnie Lookout | plain (incl undulating plain) | sand | 60 | 3 |
| YU01801 | 16 | 367388 | 6059709 | 54 | 6.5 SSW of Hawksnest | plain (incl undulating plain) | clay loam | 30 | 3 |
| YU01901 | 16 | 371422 | 6062028 | 54 | 3.5 SSE of Hawksnest | hill slope | clay loam | 60 | 3 |

## Millicent Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6922-01 MILLICENT** | | | | | | | | | |
| CA00401 | 4 | 434322 | 5831978 | 54 | 4.5 WSW of The Wyrie | dune/consolidated dune | sand | 25 | 26 |
| CA00402 | 4 | 434322 | 5831978 | 54 | 4.5 WSW of The Wyrie | dune/consolidated dune | sand | 25 | 26 |
| MIL0201 | 29 | 450671 | 5842901 | 54 | 2.4 SSW of Mount Burr | dune/consolidated dune | sandy loam | 90 | 12 |
| MIL0401 | 29 | 454219 | 5836472 | 54 | 1.6 SSW of Mount Burr | dune/consolidated dune | sandy loam | 90 | 12 |
| MIL0501 | 29 | 455231 | 5834021 | 54 | 6.1 ENE of Snuggery | dune/consolidated dune | sandy loam | 90 | 12 |
| MIL0502 | 29 | 455256 | 5832978 | 54 | 5.7 ENE of Snuggery | dune/consolidated dune | sandy loam | 80 | 12 |
| **6922-02 BENARA** | | | | | | | | | |
| BEN01B03 | 29 | 448676 | 5803291 | 54 | 1.6 ESE of Carpenter Rocks | hill slope | sandy clay loam | 10 | 99 |
| BEN0301 | 29 | 445129 | 5807273 | 54 | 4.2 NNW of Carpenter Rocks | dune/consolidated dune | sandy loam | 0 | 26 |
| BEN0302 | 29 | 445407 | 5807368 | 54 | 4.1 NNW of Carpenter Rocks | swamp | clay loam | 0 | 0 |
| BEN0303 | 29 | 444715 | 5807898 | 54 | 4.9 NNW of Carpenter Rocks | dune/consolidated dune | sandy loam | 10 | 26 |
| BEN0401 | 29 | 452059 | 5809283 | 54 | 5.3 WNW of Neechy Flat | dune/consolidated dune | sandy loam | 30 | 26 |
| BEN0402 | 29 | 452288 | 5809182 | 54 | 5.1 WNW of Neechy Flat | dune/consolidated dune | sandy loam | 30 | 10 |
| BEN0801 | 29 | 446712 | 5805038 | 54 | 1.5 NNW of Carpenter Rocks | swamp | loamy sand | 3 | 99 |
| BEN0802 | 29 | 447432 | 5804208 | 54 | 0.7 NNE of Carpenter Rocks | swamp | loamy sand | 0 | 99 |
| CA00101 | 4 | 439122 | 5820778 | 54 | 9.3 S of Eagle Corner | ridge | sand | 20 | 26 |
| CA00102 | 4 | 439122 | 5820778 | 54 | 9.3 S of Eagle Corner | swamp | sandy clay loam | 20 | 21 |
| CA00103 | 4 | 439122 | 5820778 | 54 | 9.3 S of Eagle Corner | swamp | sand | 20 | 21 |
| CA00104 | 4 | 439122 | 5820778 | 54 | 9.3 S of Eagle Corner | swamp | sandy clay loam | 20 | 21 |
| LB00101 | 4 | 445122 | 5805988 | 54 | 3.1 NNW of Carpenter Rocks | dune/consolidated dune | sand | 10 | 26 |
| LB00102 | 4 | 445122 | 5805988 | 54 | 3.1 NNW of Carpenter Rocks | dune/consolidated dune | sand | 8 | 26 |
| LB00103 | 4 | 445222 | 5805478 | 54 | 2.7 NNW of Carpenter Rocks | ridge | sand | 10 | 26 |
| LB00201 | 4 | 447432 | 5804828 | 54 | 1.3 NNE of Carpenter Rocks | swamp | loam | 8 | 21 |
| LB00202 | 4 | 447432 | 5804828 | 54 | 1.3 NNE of Carpenter Rocks | swamp | loam | 8 | 19 |
| LB00203 | 4 | 447432 | 5804828 | 54 | 1.3 NNE of Carpenter Rocks | ridge | loam | 8 | 26 |
| LB00204 | 4 | 447432 | 5804828 | 54 | 1.3 NNE of Carpenter Rocks | ridge | sandy clay loam | 8 | 10 |
| LB00301 | 4 | 447522 | 5804638 | 54 | 1.1 NNE of Carpenter Rocks | | loam | 8 | 20 |
| LB00302 | 4 | 447522 | 5804638 | 54 | 1.1 NNE of Carpenter Rocks | ridge | loam | 8 | 21 |
| LB00303 | 4 | 447522 | 5804638 | 54 | 1.1 NNE of Carpenter Rocks | swamp | sandy clay loam | 8 | 21 |
| LB00304 | 4 | 447522 | 5804638 | 54 | 1.1 NNE of Carpenter Rocks | swamp | light medium clay | 8 | 21 |
| LB00401 | 4 | 448762 | 5803838 | 54 | 1.7 ENE of Carpenter Rocks | ridge | loam | 8 | 10 |
| LB00501 | 4 | 452622 | 5803678 | 54 | 3.4 ENE of Carpenter Rocks | swamp | loam | 2 | 19 |
| LB00502 | 4 | 452522 | 5803478 | 54 | 3.2 ENE of Carpenter Rocks | hill slope | sand | 2 | 10 |
| LB00503 | 4 | 452922 | 5802678 | 54 | 2.9 NNW of Blackfellows Caves | ridge | sand | 10 | 10 |
| LB00504 | 4 | 452822 | 5803078 | 54 | 3.3 ENE of Carpenter Rocks | hill slope | sand | 8 | 10 |
| LB00601 | 4 | 449122 | 5810878 | 54 | 6.7 WSW of Snake Paddock | swamp | loam | 5 | 19 |
| LB00701 | 4 | 451722 | 5801228 | 54 | 2.1 ESE of Carpenter Rocks | dune/consolidated dune | sand | 2 | 26 |
| **6922-04 BUFFON** | | | | | | | | | |
| BUF0301 | 29 | 424638 | 5843075 | 54 | 2.8 ENE of Southend | beach ridge | sandy loam | 0 | 26 |
| BUF0401 | 29 | 429763 | 5842030 | 54 | 2.4 SSW of Rendelsham | dune/consolidated dune | loam | 10 | 26 |
| BUF0601 | 29 | 422602 | 5841035 | 54 | 0.4 SSE of Southend | dune/consolidated dune | sandy loam | 10 | 26 |
| BUF0603 | 29 | 423952 | 5840631 | 54 | 1.7 ESE of Southend | swale | sandy loam | 20 | 26 |
| BUF0701 | 29 | 431156 | 5840389 | 54 | 3.4 SSW of Rendelsham | swamp | loam | 0 | 19 |
| BUF0801 | 29 | 424922 | 5848678 | 54 | 4.0 SSE of Biscuit Flat | swamp | loam | 4 | 99 |
| CA00201 | 4 | 433172 | 5831128 | 54 | 5.6 WNW of Eagle Corner | dune/consolidated dune | sand | 25 | 26 |
| CA00202 | 4 | 433172 | 5831128 | 54 | 5.6 WNW of Eagle Corner | swale | | 25 | 26 |
| CA00301 | 4 | 431672 | 5831928 | 54 | 7.1 WSW of The Wyrie | dune/consolidated dune | sand | 15 | 26 |
| CA00302 | 4 | 431672 | 5831928 | 54 | 7.1 WSW of The Wyrie | dune/consolidated | sand | 10 | 27 |

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | dune | | | |
| CA00501 | 4 | 433172 | 5834238 | 54 | 5.4 WNW of The Wyrie | swamp | sandy clay loam | 3 | 21 |
| CA00502 | 4 | 433172 | 5834238 | 54 | 5.4 WNW of The Wyrie | ridge | sandy clay loam | 5 | 21 |
| CA00503 | 4 | 433172 | 5834238 | 54 | 5.4 WNW of The Wyrie | dune/consolidated dune | sand | 10 | 26 |
| MU00101 | 4 | 424432 | 5848848 | 54 | 3.5 SSE of Biscuit Flat | swamp | light medium clay | 0 | 19 |
| MU00102 | 4 | 424432 | 5848848 | 54 | 3.5 SSE of Biscuit Flat | swamp | light medium clay | 5 | 21 |

## Conmurra Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6923-01 CONMURRA** | | | | | | | | | |
| CON0201 | 29 | 453855 | 5903305 | 54 | 11.0 ESE of Lucindale | swale | sand | 40 | 4 |
| CON0301 | 29 | 441975 | 5898888 | 54 | 7.8 ENE of Conmurra | dune/consolidated dune | sand | 40 | 12 |
| CON0401 | 29 | 436387 | 5897861 | 54 | 4.7 N of Conmurra | swale | sandy loam | 30 | 12 |
| CON0402 | 29 | 437197 | 5897591 | 54 | 4.5 NNE of Conmurra | hill slope | sandy loam | 30 | 7 |
| CON0501 | 29 | 449633 | 5895823 | 54 | 13.3 ENE of Conmurra | plain (incl undulating plain) | sandy loam | 40 | 17 |
| CON0502 | 29 | 450042 | 5895756 | 54 | 13.7 ENE of Conmurra | plain (incl undulating plain) | loam | 40 | 17 |
| CON0701 | 29 | 439841 | 5891525 | 54 | 3.5 ENE of Conmurra | dune/consolidated dune | sand | 30 | 12 |
| CON0702 | 29 | 438606 | 5891108 | 54 | 2.2 ENE of Conmurra | hill slope | sandy loam | 30 | 10 |
| CON0901 | 29 | 441174 | 5885366 | 54 | 6.7 SSE of Conmurra | plain (incl undulating plain) | sand | 25 | 4 |
| CON1001 | 29 | 439384 | 5885386 | 54 | 5.6 SSE of Conmurra | plain (incl undulating plain) | sandy loam | 30 | 10 |
| CON1101 | 29 | 448239 | 5882556 | 54 | 13.9 ESE of Conmurra | plain (incl undulating plain) | sand | 40 | 7 |
| **6923-02 KENNION** | | | | | | | | | |
| KEN0501 | 29 | 446521 | 5869816 | 54 | 11.6 NNE of Furner | ridge | sand | 50 | 14 |
| KEN0502 | 29 | 446682 | 5869557 | 54 | 11.4 NNE of Furner | closed depression | sandy loam | 35 | 14 |
| KEN0802 | 29 | 438049 | 5866583 | 54 | 4.6 ESE of Kangaroo Inn | dune/consolidated dune | sandy loam | 40 | 12 |
| KEN1301 | 29 | 435265 | 5862093 | 54 | 1.6 WNW of Gillap Corner | dune/consolidated dune | sandy loam | 30 | 7 |
| KEN1302 | 29 | 435336 | 5862227 | 54 | 1.5 WNW of Gillap Corner | swale | sandy loam | 20 | 7 |
| KEN1701 | 29 | 439415 | 5856379 | 54 | 1.5 SSE of Sandy Gate | dune/consolidated dune | sandy loam | 30 | 0 |
| KEN1702 | 29 | 439774 | 5856496 | 54 | 1.6 SSE of Sandy Gate | dune/consolidated dune | sandy loam | 30 | 10 |
| KEN1703 | 29 | 440019 | 5856409 | 54 | 1.8 SSE of Sandy Gate | dune/consolidated dune | sandy loam | 30 | 14 |
| KEN1704 | 29 | 438960 | 5856025 | 54 | 1.7 SSE of Sandy Gate | dune/consolidated dune | sandy loam | 20 | 14 |
| **6923-03 HATHERLEIGH** | | | | | | | | | |
| HAT01B04 | 29 | 433101 | 5852941 | 54 | 3.6 NW of Hatherleigh | swale | sandy loam | 20 | 99 |
| HAT0301 | 29 | 430966 | 5871961 | 54 | 5.2 NNW of Kangaroo Inn | hill crest | sandy loam | 30 | 7 |
| HAT0302 | 29 | 429612 | 5872249 | 54 | 5.2 ENE of Clay Wells | dune slope | sandy loam | 30 | 10 |
| HAT0303 | 29 | 431355 | 5871765 | 54 | 4.8 NNW of Kangaroo Inn | dune crest | sandy loam | 30 | 10 |
| HAT0601 | 29 | 414987 | 5862019 | 54 | 10.9 NNE of Beachport | dune crest | sandy loam | 40 | 3 |
| HAT0602 | 29 | 414998 | 5862177 | 54 | 10.8 SSW of Chinaman Wells | swale | loam | 20 | 10 |
| HAT0701 | 29 | 419556 | 5854483 | 54 | 4.0 NNW of Biscuit Flat | plain (incl undulating plain) | loam | 10 | 10 |
| HAT0801 | 29 | 414427 | 5852181 | 54 | 1.9 ENE of Beachport | swamp | sandy loam | 5 | 26 |
| HAT0901 | 29 | 415639 | 5852108 | 54 | 3.0 ENE of Beachport | dune/consolidated dune | sand | 10 | 26 |
| **6923-04 KONETTA** | | | | | | | | | |
| KON0101 | 29 | 420228 | 5899705 | 54 | 14.6 SSE of Reedy Creek | hill slope | sand | 30 | 12 |
| KON0201 | 29 | 427000 | 5898608 | 54 | 11.1 WNW of Conmurra | closed depression | sandy loam | 20 | 17 |
| KON0501 | 29 | 429632 | 5885667 | 54 | 4.7 ENE of Paynes | dune crest | sand | 50 | 7 |
| KON0701 | 29 | 431149 | 5881603 | 54 | 4.9 ESE of Paynes | hill crest | sand | 60 | 7 |
| KON0702 | 29 | 432383 | 5879680 | 54 | 6.7 ESE of Paynes | hill slope | sand | 60 | 10 |
| KON0801 | 29 | 417058 | 5882804 | 54 | 8.4 WNW of Greenways | plain (incl undulating plain) | medium clay | 20 | 22 |
| KON0901 | 29 | 427081 | 5880327 | 54 | 2.2 SSE of Paynes | open depression | sandy loam | 20 | 7 |
| KON0902 | 29 | 427534 | 5878919 | 54 | 3.7 SSE of Paynes | dune crest | sand | 20 | 7 |
| KON1101 | 29 | 421287 | 5896736 | 54 | 15.2 NNW of Paynes | hill crest | sand | 60 | 3 |

## Lucindale Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6924-01 MARCOLLAT** | | | | | | | | | |
| MAR0101 | 29 | 449161 | 5957353 | 54 | 7.2 ESE of Granite Rocks | plain (incl undulating plain) | loam | 35 | 0 |
| MAR0102 | 29 | 449702 | 5957190 | 54 | 7.8 ESE of Granite Rocks | dune slope | sand | 40 | 5 |
| MAR0103 | 29 | 449857 | 5956572 | 54 | 8.0 ESE of Granite Rocks | plain (incl undulating plain) | loam | 35 | 6 |
| MAR0201 | 29 | 439769 | 5956016 | 54 | 2.4 WSW of Granite Rocks | ridge | sandy loam | 40 | 4 |
| MAR0301 | 29 | 447150 | 5953554 | 54 | 6.4 ESE of Granite Rocks | plain (incl undulating plain) | clay loam | 30 | 6 |
| MAR0302 | 29 | 446913 | 5953670 | 54 | 6.1 ESE of Granite Rocks | plain (incl undulating plain) | clay loam | 30 | 6 |
| MAR0701 | 29 | 437922 | 5942756 | 54 | 15.0 SSW of Granite Rocks | hill/mountain (discontinued May, 1995) | sandy loam | 40 | 7 |
| MAR1001 | 29 | 450502 | 5936400 | 54 | 12.3 WNW of Keppoch | dune slope | sandy loam | 50 | 12 |
| MAR1002 | 29 | 450595 | 5936797 | 54 | 12.3 WNW of Keppoch | swamp | sandy loam | 40 | 17 |
| **6924-02 LUCINDALE** | | | | | | | | | |
| LUC0101 | 29 | 433833 | 5931513 | 54 | 20.3 NNE of Avenue | swamp | clay loam | 30 | 22 |
| LUC0102 | 29 | 433196 | 5932365 | 54 | 21.1 NNE of Avenue | dune slope | sand | 30 | 12 |
| LUC0103 | 29 | 433920 | 5931777 | 54 | 20.6 NNE of Avenue | ridge | sandy loam | 30 | 7 |
| LUC0201 | 29 | 447586 | 5925137 | 54 | 17.4 WSW of Keppoch | hill footslope | sandy loam | 40 | 7 |
| LUC0202 | 29 | 446728 | 5925348 | 54 | 17.6 NNE of Lucindale | hill footslope | sandy loam | 40 | 4 |
| LUC0203 | 29 | 447523 | 5922704 | 54 | 15.2 NNE of Lucindale | dune crest | sand | 40 | 4 |
| LUC0204 | 29 | 445952 | 5925716 | 54 | 17.9 NNE of Lucindale | dune slope | sand | 40 | 4 |
| LUC0205 | 29 | 448905 | 5924309 | 54 | 16.7 WSW of Keppoch | swamp | sandy loam | 35 | 17 |
| LUC0301 | 29 | 439923 | 5920586 | 54 | 12.5 ENE of Avenue | dune slope | sand | 40 | 4 |
| LUC0302 | 29 | 440113 | 5920090 | 54 | 12.3 ENE of Avenue | dune slope | sand | 40 | 4 |
| LUC0303 | 29 | 440443 | 5920245 | 54 | 12.6 ENE of Avenue | ridge | sandy loam | 40 | 7 |
| LUC0401 | 29 | 434736 | 5915762 | 54 | 5.5 NNE of Avenue | ridge | sandy loam | 40 | 7 |
| LUC0402 | 29 | 437460 | 5915622 | 54 | 7.4 ENE of Avenue | swale | loam | 20 | 17 |
| LUC0501 | 29 | 447883 | 5906723 | 54 | 4.1 ESE of Lucindale | dune/consolidated dune | sand | 50 | 12 |
| LUC0502 | 29 | 447741 | 5907662 | 54 | 3.8 ESE of Lucindale | interdune corridor | sandy loam | 40 | 4 |
| **6924-03 MINECROW** | | | | | | | | | |
| MIN0501 | 29 | 429976 | 5926997 | 54 | 15.7 NNW of Avenue | hill crest | sand | 50 | 7 |
| MIN0502 | 29 | 429342 | 5926686 | 54 | 15.5 NNW of Avenue | swamp | sandy loam | 50 | 17 |
| MIN0503 | 29 | 429307 | 5927707 | 54 | 16.5 NNW of Avenue | dune/consolidated dune | sand | 50 | 12 |
| MIN0601 | 29 | 417701 | 5925257 | 54 | 13.2 NNE of Reedy Creek | hill slope | sand | 35 | 12 |
| MIN0602 | 29 | 416076 | 5925345 | 54 | 12.9 NNE of Reedy Creek | plain (incl undulating plain) | sandy loam | 15 | 22 |
| MIN0701 | 29 | 414485 | 5919776 | 54 | 7.2 NNE of Reedy Creek | hill crest | sand | 20 | 7 |
| MIN0803 | 29 | 431842 | 5920502 | 54 | 9.2 NNE of Avenue | closed depression | loam | 25 | 17 |
| MIN1201 | 29 | 421393 | 5913719 | 54 | 7.9 ENE of Reedy Creek | closed depression | sand | 20 | 17 |
| MIN1202 | 29 | 421549 | 5913515 | 54 | 8.0 ENE of Reedy Creek | dune/consolidated dune | sand | 20 | 0 |
| MIN1203 | 29 | 421661 | 5913145 | 54 | 8.1 E of Reedy Creek | swale | sand | 20 | 12 |
| MIN1401 | 29 | 416900 | 5910007 | 54 | 4.3 ESE of Reedy Creek | dune crest | sand | 50 | 3 |
| MIN1402 | 29 | 417171 | 5910080 | 54 | 4.4 ESE of Reedy Creek | dune slope | sand | 30 | 7 |
| **6924-04 GYP GYP** | | | | | | | | | |
| GYP0101 | 29 | 412227 | 5951334 | 54 | 7.2 SSW of Bald Hill | open depression | sand | 20 | 17 |
| GYP0801 | 29 | 412580 | 5934810 | 54 | 14.8 SSE of Sandy Hut | hill footslope | sand | 30 | 7 |
| GYP0802 | 29 | 412813 | 5934849 | 54 | 15.0 SSE of Sandy Hut | hill crest | loam | 40 | 3 |
| GYP0803 | 29 | 412697 | 5934819 | 54 | 14.9 SSE of Sandy Hut | open depression | sandy loam | 20 | 17 |

## Keith Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6925-01 KEITH** | | | | | | | | | |
| KEI0201 | 29 | 453464 | 6013569 | 54 | 14.5 ENE of Keith | swale | sand | 55 | 1 |
| KEI0202 | 29 | 453479 | 6013367 | 54 | 14.4 ENE of Keith | dune slope | sand | 60 | 4 |
| KEI0203 | 29 | 453480 | 6012391 | 54 | 13.9 ENE of Keith | sandplain * | sand | 55 | 4 |
| KEI0401 | 29 | 438108 | 6009925 | 54 | 0.9 ESE of Baneallа | plain (incl undulating plain) | sand | 30 | 8 |
| KEI0601 | 29 | 439063 | 5993482 | 54 | 0.3 NNE of Mount Monster | hill slope | loam | 50 | 0 |
| KEI0602 | 29 | 439406 | 5993901 | 54 | 0.8 NNE of Mount Monster | hill slope | sand | 30 | 1 |
| KEI0603 | 29 | 440549 | 5993363 | 54 | 1.5 ENE of Mount Monster | plain (incl undulating plain) | sand | 30 | 4 |
| KEI0604 | 29 | 439351 | 5993828 | 54 | 0.7 NNE of Mount Monster | hill slope | sand | 30 | 4 |
| KEI0701 | 29 | 448772 | 5989512 | 54 | 8.8 SSW of Brimbago | hill slope | sand | 40 | 3 |
| KEI0702 | 29 | 448637 | 5989506 | 54 | 8.9 SSW of Brimbago | hill crest | sand | 40 | 4 |
| **6925-02 WILLALOOKA** | | | | | | | | | |
| WIL0301 | 29 | 435088 | 5980413 | 54 | 10.6 NNW of Willalooka | dune/consolidated dune | sandy loam | 50 | 3 |
| WIL0401 | 29 | 448965 | 5980729 | 54 | 3.7 WNW of Carew | hill slope | sand | 50 | 3 |
| WIL0402 | 29 | 448651 | 5979113 | 54 | 4.3 WSW of Carew | hill crest | clay loam | 80 | 1 |
| WIL0403 | 29 | 448807 | 5979238 | 54 | 4.1 WSW of Carew | hill slope | clay loam | 80 | 1 |
| WIL0601 | 29 | 436377 | 5971825 | 54 | 5.4 WSW of Willalooka | dune slope | sand | 30 | 4 |
| WIL0602 | 29 | 436361 | 5972480 | 54 | 5.4 WNW of Willalooka | hill crest | sandy loam | 30 | 3 |
| WIL0801 | 29 | 453484 | 5965139 | 54 | 3.8 WNW of Swede Flat | hill slope | sand | 90 | 6 |
| WIL0802 | 29 | 453476 | 5964713 | 54 | 3.6 WNW of Swede Flat | dune crest | sand | 100 | 12 |
| WIL0901 | 29 | 444513 | 5962073 | 54 | 5.6 NNE of Granite Rocks | plain (incl undulating plain) | sandy loam | 40 | 3 |
| WIL0902 | 29 | 443793 | 5961744 | 54 | 5.0 NNE of Granite Rocks | plain (incl undulating plain) | sand | 40 | 12 |
| WIL0903 | 29 | 443699 | 5961558 | 54 | 4.8 NNE of Granite Rocks | plain (incl undulating plain) | sand | 40 | 4 |
| **6925-03 DIDICOOLUM** | | | | | | | | | |
| DID0201 | 29 | 431288 | 5987664 | 54 | 9.6 WSW of Mount Monster | hill crest | loam | 50 | 3 |
| DID0501 | 29 | 428587 | 5980593 | 54 | 15.6 WNW of Willalooka | swamp | loam | 20 | 17 |
| DID0502 | 29 | 428633 | 5980771 | 54 | 15.7 WNW of Willalooka | plain (incl undulating plain) | sandy loam | 25 | 7 |
| DID0601 | 29 | 418351 | 5978823 | 54 | 19.7 NNW of Jip Jip Rocks | hill slope | sand | 30 | 4 |
| DID0602 | 29 | 418469 | 5978094 | 54 | 19.0 NNW of Jip Jip Rocks | swamp | loam | 20 | 17 |
| DID0701 | 29 | 424065 | 5971486 | 54 | 10.5 NNW of Jip Jip Rocks | hill slope | loam | 30 | 3 |
| DID0801 | 29 | 412573 | 5968202 | 54 | 9.8 ENE of Bald Hill | swamp | sand | 20 | 3 |
| DID0802 | 29 | 413082 | 5967804 | 54 | 9.4 NNE of Bald Hill | swale | sandy loam | 20 | 7 |
| DID0901 | 29 | 425586 | 5964703 | 54 | 3.9 NNW of Jip Jip Rocks | hill slope | sandy loam | 20 | 7 |
| DID1001 | 29 | 414598 | 5964203 | 54 | 6.0 NNE of Bald Hill | dune slope | sand | 50 | 3 |
| DID1002 | 29 | 415047 | 5963987 | 54 | 5.9 NNE of Bald Hill | dune slope | sand | 60 | 4 |
| DID1102 | 29 | 427356 | 5961771 | 54 | 1.0 WSW of Jip Jip Rocks | hill crest | sandy loam | 70 | 3 |
| DID1103 | 29 | 427376 | 5961551 | 54 | 1.0 WSW of Jip Jip Rocks | hill slope | sand | 35 | 4 |
| **6925-04 LAFFER** | | | | | | | | | |
| LAF0202 | 29 | 426333 | 6007241 | 54 | 2.0 WSW of Two Wells | sandplain * | sandy loam | 19 | 8 |
| LAF0401 | 29 | 415809 | 6007607 | 54 | 0.1 ESE of Mount Charles | hill slope | sand | 50 | 4 |
| LAF0601 | 29 | 413646 | 6005410 | 54 | 3.0 WSW of Mount Charles | swamp | clay loam | 20 | 17 |
| LAF0602 | 29 | 412878 | 6004241 | 54 | 4.4 SSW of Mount Charles | dune crest | sand | 16 | 1 |
| LAF0701 | 29 | 415356 | 6001029 | 54 | 8.5 WNW of Eden | dune slope | sand | 20 | 4 |

## Tintinara Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **6926-01 PRURA** | | | | | | | | | |
| BV00201 | 16 | 442250 | 6069115 | 54 | 8.3 WSW of Baan Hill | open depression | sand | 90 | 2 |
| BV00301 | 16 | 443072 | 6070978 | 54 | 7.2 WNW of Baan Hill | plain (incl undulating plain) | sand | 90 | 4 |
| BV00901 | 16 | 438069 | 6070460 | 54 | 14.9 SSE of Parrakie | hill crest | sand | 90 | 4 |
| BV01001 | 16 | 437972 | 6070528 | 54 | 14.8 SSE of Parrakie | plain (incl undulating plain) | sand | 90 | 2 |
| BV01101 | 16 | 442322 | 6069428 | 54 | 8.1 WSW of Baan Hill | dune crest | sand | 100 | 4 |
| BV01201 | 16 | 442622 | 6069928 | 54 | 7.7 WSW of Baan Hill | open depression | sandy loam | 80 | 2 |
| BV01301 | 16 | 443172 | 6070528 | 54 | 7.1 WSW of Baan Hill | plain (incl undulating plain) | sand | 90 | 4 |
| BV01501 | 16 | 445197 | 6057278 | 54 | 14.6 SSW of Baan Hill | | | 100 | 4 |
| BV01601 | 16 | 448722 | 6063878 | 54 | 7.3 SSW of Baan Hill | plain (incl undulating plain) | sand | 100 | 2 |
| BV01701 | 16 | 448672 | 6065328 | 54 | 5.9 SSW of Baan Hill | plain (incl undulating plain) | sand | 90 | 2 |
| BV01801 | 16 | 448822 | 6066668 | 54 | 4.6 SSW of Baan Hill | plain (incl undulating plain) | sand | 100 | 4 |
| CA01801 | 16 | 433122 | 6049928 | 54 | 15.2 ENE of Gum Flat | dune footslope | sand | 60 | 4 |
| NG00201 | 16 | 452913 | 6057790 | 54 | 13.5 SSE of Baan Hill | dune crest | sand | 110 | 11 |
| NG00301 | 16 | 453227 | 6056522 | 54 | 14.8 SSE of Baan Hill | plain (incl undulating plain) | sand | 100 | 4 |
| NG00401 | 16 | 444214 | 6055128 | 54 | 17.0 SSW of Baan Hill | hill slope | sandy loam | 90 | 1 |
| NG01201 | 16 | 442385 | 6067115 | 54 | 8.8 WSW of Baan Hill | dune slope | sand | 90 | 4 |
| NG01301 | 16 | 442147 | 6067068 | 54 | 9.0 WSW of Baan Hill | hill slope | sand | 90 | 4 |
| NG01601 | 16 | 453174 | 6057780 | 54 | 13.5 SSE of Baan Hill | plain (incl undulating plain) | sand | 100 | 4 |
| NG01701 | 16 | 453237 | 6056061 | 54 | 15.2 SSE of Baan Hill | plain (incl undulating plain) | sand | 100 | 4 |
| NG02501 | 16 | 450022 | 6051878 | 54 | 19.1 SSW of Baan Hill | closed depression | sandy loam | 100 | 1 |
| NG02801 | 16 | 440872 | 6044178 | 54 | 23.3 ESE of Gum Flat | hill crest | sand | 70 | 3 |
| NG02901 | 16 | 441146 | 6044830 | 54 | 23.4 ESE of Gum Flat | plain (incl undulating plain) | sand | 70 | 4 |
| NG03001 | 16 | 440522 | 6044568 | 54 | 22.9 ESE of Gum Flat | plain (incl undulating plain) | sand | 70 | 4 |
| **6926-02 RESCUE** | | | | | | | | | |
| BV01401 | 16 | 441872 | 6071428 | 54 | 8.4 WNW of Baan Hill | open depression | sandy loam | 90 | 0 |
| CB00101 | 16 | 436714 | 6020520 | 54 | 7.2 ESE of Coombe | hill slope | clay loam | 60 | 3 |
| CB00201 | 16 | 435182 | 6019278 | 54 | 5.7 ESE of Coombe | plain (incl undulating plain) | loam | 40 | 3 |
| CB00301 | 16 | 436572 | 6020878 | 54 | 7.1 ENE of Coombe | dune slope | sand | 60 | 4 |
| CB00401 | 16 | 437622 | 6018128 | 54 | 7.6 NNE of Banealla | swale | clay loam | 60 | 0 |
| CB00501 | 16 | 440004 | 6017832 | 54 | 7.8 NNE of Banealla | hill slope | medium clay | 50 | 3 |
| CB00601 | 16 | 440021 | 6016811 | 54 | 4.5 NNE of Sugarloaf Hill | open depression | sandy loam | 30 | 4 |
| MR00101 | 16 | 438322 | 6031378 | 54 | 14.2 NNE of Coombe | hill crest | sand | 40 | 3 |
| MR00201 | 16 | 438943 | 6024596 | 54 | 3.9 WNW of Gosse Hill | plain (incl undulating plain) | sandy loam | 0 | 3 |
| MR00301 | 16 | 445722 | 6022578 | 54 | 3.5 ESE of Gosse Hill | plain (incl undulating plain) | sand | 60 | 1 |
| MR00401 | 16 | 438373 | 6032882 | 54 | 15.5 NNE of Coombe | plain (incl undulating plain) | sand | 60 | 4 |
| MR00501 | 16 | 437522 | 6032378 | 54 | 14.6 NNE of Coombe | hill footslope | sandy loam | 60 | 1 |
| MR00601 | 16 | 437922 | 6031378 | 54 | 14.0 NNE of Coombe | plain (incl undulating plain) | sand | 50 | 4 |
| MR00701 | 16 | 437822 | 6029608 | 54 | 8.3 NNW of Gosse Hill | plain (incl undulating plain) | sand | 50 | 4 |
| MR00801 | 16 | 437372 | 6028478 | 54 | 7.6 NNW of Gosse Hill | hill footslope | sandy loam | 60 | 3 |
| MR00901 | 16 | 443618 | 6022093 | 54 | 1.5 ESE of Gosse Hill | plain (incl undulating plain) | sand | 75 | 3 |
| MR01001 | 16 | 444222 | 6022278 | 54 | 2.0 ESE of Gosse Hill | plain (incl undulating plain) | sand | 60 | 4 |
| MR01101 | 16 | 441664 | 6022758 | 54 | 0.6 WNW of Gosse Hill | closed depression | sand | 100 | 4 |
| MR01201 | 16 | 441322 | 6023178 | 54 | 1.1 WNW of Gosse Hill | hill slope | sand | 95 | 4 |
| MR01301 | 16 | 438044 | 6024554 | 54 | 4.6 WNW of Gosse Hill | hill slope | | 0 | 1 |
| MR01401 | 16 | 437416 | 6024448 | 54 | 5.2 WNW of Gosse Hill | hill slope | sand | 70 | 4 |
| MR01501 | 16 | 436748 | 6024722 | 54 | 8.5 ENE of Coombe | hill crest | sand | 80 | 4 |
| MR01601 | 16 | 436772 | 6024938 | 54 | 8.7 ENE of Coombe | plain (incl undulating plain) | sand | 90 | 4 |
| NG01001 | 16 | 454092 | 6024948 | 54 | 6.8 SSE of Mount Rescue | dune slope | sand | 90 | 4 |

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| NG01101 | 16 | 452582 | 6024378 | 54 | 7.1 SSW of Mount Rescue | plain (incl undulating plain) | clay loam | 70 | 0 |
| NG02601 | 16 | 451502 | 6040768 | 54 | 9.3 NNW of Mount Rescue | hill crest | sand | 100 | 4 |
| NG02701 | 16 | 451502 | 6040578 | 54 | 9.1 NNW of Mount Rescue | plain (incl undulating plain) | sand | 100 | 4 |
| **6926-03 TINTINARA** | | | | | | | | | |
| CB00301 | 16 | 414622 | 6030978 | 54 | 2.2 N of Tintinara | plain (incl undulating plain) | loam | 20 | 3 |
| CB00401 | 16 | 427124 | 6025403 | 54 | 5.7 NNW of Coombe | dune slope | sand | 40 | 4 |
| CB00501 | 16 | 426972 | 6026028 | 54 | 6.3 ENE of Kumorna | dune slope | sand | 50 | 4 |
| CB00601 | 16 | 419926 | 6016462 | 54 | 6.1 SSW of Kumorna | swamp | clay loam | 20 | 17 |
| TT00201 | 16 | 412994 | 6041076 | 54 | 7.9 ENE of Culburra | dune slope | sandy loam | 60 | 3 |
| TT00301 | 16 | 422342 | 6040578 | 54 | 8.9 SSE of Gum Flat | plain (incl undulating plain) | loam | 90 | 0 |
| TT00401 | 16 | 430096 | 6029819 | 54 | 9.6 NNE of Coombe | dune slope | sand | 50 | 4 |
| TT00701 | 16 | 409788 | 6041156 | 54 | 5.9 NNE of Culburra | open depression | sand | 50 | 6 |
| TT00801 | 16 | 422482 | 6040528 | 54 | 9.0 SSE of Gum Flat | hill slope | medium clay | 95 | 3 |
| TT00901 | 16 | 430236 | 6029693 | 54 | 9.5 NNE of Coombe | open depression | clay loam | 40 | 1 |
| TT01001 | 16 | 410307 | 6028670 | 54 | 4.4 WNW of Tintinara | dune slope | sand | 20 | 4 |
| TT01501 | 16 | 414142 | 6018578 | 54 | 8.7 WSW of Kumorna | plain (incl undulating plain) | sand | 20 | 3 |
| **6926-04 CARCUMA** | | | | | | | | | |
| CA00101 | 16 | 422272 | 6068028 | 54 | 3.6 WSW of One Tree Hill | hill crest | | 70 | 4 |
| CA00101 | 16 | 423322 | 6068578 | 54 | 2.4 SW of One Tree Hill | open depression | sandy loam | 60 | 1 |
| CA00201 | 16 | 421722 | 6067278 | 54 | 4.5 WSW of One Tree Hill | hill slope | sand | 70 | 4 |
| CA00201 | 16 | 419058 | 6065483 | 54 | 7.7 WSW of One Tree Hill | open depression | sand | 60 | 0 |
| CA00301 | 16 | 418422 | 6065078 | 54 | 8.4 WSW of One Tree Hill | open depression | sand | 60 | 4 |
| CA00401 | 16 | 418212 | 6061456 | 54 | 13.1 NNE of Gum Flat | plain (incl undulating plain) | clay loam | 60 | 0 |
| CA00501 | 16 | 418765 | 6061362 | 54 | 13.1 NNE of Gum Flat | plain (incl undulating plain) | sand | 60 | 4 |
| CA00601 | 16 | 418916 | 6048005 | 54 | 1.0 ESE of Gum Flat | dune slope | sand | 60 | 3 |
| CA00801 | 16 | 419072 | 6054978 | 54 | 6.8 NNE of Gum Flat | swale | sand | 40 | 6 |
| CA00801 | 16 | 418922 | 6055328 | 54 | 7.1 NNE of Gum Flat | dune crest | sand | 70 | 4 |
| CA00901 | 16 | 418879 | 6058710 | 54 | 10.4 NNE of Gum Flat | dune slope | sand | 70 | 4 |
| CA01001 | 16 | 418915 | 6058071 | 54 | 9.8 NNE of Gum Flat | dune slope | sand | 60 | 4 |
| CA01101 | 16 | 414522 | 6055028 | 54 | 7.5 NNW of Gum Flat | open depression | sand | 50 | 4 |
| CA01201 | 16 | 414972 | 6060028 | 54 | 12.1 NNW of Gum Flat | dune footslope | sand | 50 | 4 |
| CA01301 | 16 | 415372 | 6060678 | 54 | 12.6 NNW of Gum Flat | dune crest | sand | 70 | 4 |
| CA01401 | 16 | 418522 | 6065178 | 54 | 8.3 WSW of One Tree Hill | hill slope | sand | 70 | 4 |
| CA01501 | 16 | 418272 | 6048328 | 54 | 0.3 ESE of Gum Flat | open depression | medium clay | 30 | 0 |
| CA01601 | 16 | 418372 | 6047878 | 54 | 0.6 SSE of Gum Flat | plain (incl undulating plain) | sand | 40 | 4 |
| CA01701 | 16 | 419672 | 6048728 | 54 | 1.7 ENE of Gum Flat | plain (incl undulating plain) | sand | 50 | 1 |
| CA01901 | 16 | 431201 | 6046820 | 54 | 13.3 ESE of Gum Flat | dune crest | sand | 70 | 4 |
| CA02001 | 16 | 414622 | 6054278 | 54 | 6.8 NNW of Gum Flat | plain (incl undulating plain) | sand | 40 | 4 |
| CA02101 | 16 | 413022 | 6053378 | 54 | 7.1 NNW of Gum Flat | swale | sand | 40 | 4 |
| CA02201 | 16 | 413044 | 6054217 | 54 | 7.7 NNW of Gum Flat | plain (incl undulating plain) | sand | 40 | 4 |
| CA03301 | 16 | 415872 | 6065978 | 54 | 10.1 WSW of One Tree Hill | plain (incl undulating plain) | sandy loam | 40 | 1 |
| CA03701 | 16 | 413722 | 6062928 | 54 | 7.1 ENE of Tauragat | hill slope | sandy loam | 40 | 1 |
| CA03801 | 16 | 413372 | 6062878 | 54 | 6.7 ENE of Tauragat | hill slope | sand | 40 | 6 |

## Gambier Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **7022-01 NANGWARRY** | | | | | | | | | |
| NAN0101 | 29 | 486826 | 5849020 | 54 | 4.3 NNW of Gum Paddock | sandplain * | sand | 70 | 12 |
| NAN0301 | 29 | 496711 | 5845553 | 54 | 4.6 ESE of Kilbride | sandplain * | sandy loam | 70 | 15 |
| NAN0302 | 29 | 497113 | 5847691 | 54 | 4.3 ESE of Kilbride | sandplain * | sand | 70 | 12 |
| NAN0401 | 29 | 494674 | 5839132 | 54 | 7.4 NNE of The Magpie | sandplain * | sand | 70 | 12 |
| NAN0402 | 29 | 495729 | 5839402 | 54 | 7.8 NNE of The Magpie | sandplain * | sand | 70 | 17 |
| NAN0501 | 29 | 489747 | 5830091 | 54 | 4.4 ESE of Blackwood Island | swamp | loam | 70 | 15 |
| NAN0502 | 29 | 489834 | 5830181 | 54 | 4.4 ESE of Blackwood Island | plain (incl undulating plain) | sand | 70 | 15 |
| NAN0503 | 29 | 489936 | 5830226 | 54 | 4.5 ESE of Blackwood Island | plain (incl undulating plain) | sand | 70 | 12 |
| NAN0601 | 29 | 478849 | 5826360 | 54 | 3.1 WNW of The Ridge | sandplain * | sand | 70 | 12 |
| NAN0602 | 29 | 478561 | 5826722 | 54 | 3.5 WNW of The Ridge | sandplain * | sand | 70 | 15 |
| **7022-02 GAMBIER** | | | | | | | | | |
| GAM0101 | 29 | 488902 | 5819634 | 54 | 5.0 NNE of Worrolong | plain (incl undulating plain) | sand | 70 | 10 |
| GAM01B08 | 29 | 496344 | 5793134 | 54 | 0.1 ESE of Donovans | hill slope | sand | 40 | 99 |
| GAM0601 | 29 | 488390 | 5801425 | 54 | 3.4 NNE of Pond Flat | dune/consolidated dune | sand | 50 | 12 |
| GAM0701 | 29 | 494119 | 5801275 | 54 | 6.7 ENE of Pond Flat | sandplain * | sand | 40 | 10 |
| GAM0702 | 29 | 493872 | 5801268 | 54 | 6.5 ENE of Pond Flat | sandplain * | sand | 40 | 10 |
| GAM0801 | 29 | 483458 | 5797450 | 54 | 2.7 WSW of Caveton | sandplain * | sandy loam | 50 | 10 |
| GAM0901 | 29 | 486960 | 5797719 | 54 | 1.4 WSW of Pond Flat | plain (incl undulating plain) | sand | 40 | 12 |
| GAM0902 | 29 | 487423 | 5797800 | 54 | 0.9 WSW of Pond Flat | sandplain * | sandy loam | 40 | 10 |
| GAM1001 | 29 | 495159 | 5798064 | 54 | 5.0 NNW of Donovans | dune crest | sand | 50 | 12 |
| GAM1002 | 29 | 496411 | 5797483 | 54 | 4.3 NNE of Donovans | sandplain * | sand | 50 | 10 |
| GAM1101 | 29 | 488941 | 5795391 | 54 | 2.7 SSE of Pond Flat | dune crest | sand | 40 | 10 |
| GAM1301 | 29 | 497013 | 5795205 | 54 | 2.2 NNE of Donovans | dune crest | sand | 30 | 12 |
| GAM1601 | 29 | 485591 | 5789760 | 54 | 3.3 ESE of Eight Mile Creek | swale | sand | 10 | 26 |
| GAM1701 | 29 | 494570 | 5789278 | 54 | 4.3 SSW of Donovans | plain (incl undulating plain) | loam | 10 | 24 |
| GAM1801 | 29 | 496766 | 5793541 | 54 | 0.6 ENE of Donovans | dune slope | sandy clay loam | 30 | 99 |
| GAM1A12 | 29 | 496194 | 5794780 | 54 | 1.6 NNE of Donovans | plain (incl undulating plain) | sandy loam | 40 | 10 |
| PM00101 | 4 | 495072 | 5788328 | 54 | 5.0 SSW of Donovans | dune/consolidated dune | sand | 3 | 26 |
| PM00102 | 4 | 495072 | 5788328 | 54 | 5.0 SSW of Donovans | dune/consolidated dune | sand | 2 | 26 |
| PM00103 | 4 | 495072 | 5788328 | 54 | 5.0 SSW of Donovans | dune/consolidated dune | sand | 5 | 26 |
| PM00201 | 4 | 495072 | 5789108 | 54 | 4.3 SSW of Donovans | swamp | sandy clay loam | 5 | 21 |
| PM00202 | 4 | 495072 | 5789108 | 54 | 4.3 SSW of Donovans | plain (incl undulating plain) | sandy clay loam | 6 | 21 |
| PM00301 | 4 | 495042 | 5788968 | 54 | 4.4 SSW of Donovans | swamp | sandy clay loam | 5 | 21 |
| PM00302 | 4 | 495042 | 5788968 | 54 | 4.4 SSW of Donovans | swamp | sandy clay loam | 4 | 23 |
| PM00303 | 4 | 495042 | 5788968 | 54 | 4.4 SSW of Donovans | swamp | sandy clay loam | 5 | 0 |
| PM00304 | 4 | 495042 | 5788968 | 54 | 4.4 SSW of Donovans | swamp | sandy clay loam | 2 | 0 |
| PM00305 | 4 | 495042 | 5788968 | 54 | 4.4 SSW of Donovans | plain (incl undulating plain) | sandy clay loam | 8 | 19 |
| PM00401 | 4 | 494332 | 5789408 | 54 | 4.3 SSW of Donovans | hill footslope | loam | 8 | 10 |
| PM00402 | 4 | 494332 | 5789408 | 54 | 4.3 SSW of Donovans | plain (incl undulating plain) | loam | 9 | 24 |
| PM00501 | 4 | 481762 | 5791308 | 54 | 1.1 NNW of Eight Mile Creek | plain (incl undulating plain) | loam | 8 | 10 |
| PM00502 | 4 | 481762 | 5791308 | 54 | 1.1 NNW of Eight Mile Creek | swamp | | 6 | 19 |
| **7022-03 SCHANK** | | | | | | | | | |
| AL00101 | 4 | 472122 | 5789278 | 54 | 1.9 WNW of Port Macdonnell | plain (incl undulating plain) | sandy clay loam | 5 | 10 |
| AL00102 | 4 | 472122 | 5789278 | 54 | 1.9 WNW of Port Macdonnell | swamp | sandy clay loam | 3 | 19 |
| AL00201 | 4 | 468122 | 5790178 | 54 | 6.0 WNW of Port Macdonnell | | sand | 5 | 26 |
| AL00202 | 4 | 469022 | 5789378 | 54 | 4.9 WNW of Port Macdonnell | dune/consolidated dune | sand | 10 | 26 |
| AL00301 | 4 | 470972 | 5787918 | 54 | 2.9 WSW of Port Macdonnell | dune/consolidated dune | sandy loam | 9 | 26 |
| AL00302 | 4 | 470372 | 5787328 | 54 | 3.6 WSW of Port Macdonnell | cliff | sandy clay loam | 10 | 26 |

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| AL00401 | 4 | 471122 | 5788378 | 54 | 2.7 WNW of Port Macdonnell | hill slope | sandy loam | 16 | 26 |
| AL00501 | 4 | 469722 | 5790578 | 54 | 4.7 WNW of Port Macdonnell | plain (incl undulating plain) | sandy loam | 10 | 10 |
| AL00601 | 4 | 469622 | 5789328 | 54 | 4.3 WNW of Port Macdonnell | dune/consolidated dune | sandy loam | 10 | 26 |
| AL00701 | 4 | 470022 | 5792378 | 54 | 4.7 WSW of Allendale East | plain (incl undulating plain) | sandy clay loam | 12 | 10 |
| AL00801 | 4 | 467422 | 5792528 | 54 | 7.2 WSW of Allendale East | plain (incl undulating plain) | sandy clay loam | 9 | 10 |
| AL00901 | 4 | 465922 | 5791478 | 54 | 8.5 WNW of Port Macdonnell | swamp | sandy loam | 2 | 21 |
| AL01001 | 4 | 465722 | 5791478 | 54 | 8.7 WNW of Port Macdonnell | dune/consolidated dune | sand | 4 | 26 |
| AL01101 | 4 | 463422 | 5790928 | 54 | 7.1 ESE of Nene Valley | dune/consolidated dune | sand | 9 | 26 |
| NE00101 | 4 | 464242 | 5794138 | 54 | 6.4 ESE of Nene Valley | plain (incl undulating plain) | loam | 8 | 10 |
| NE00201 | 4 | 464272 | 5793568 | 54 | 6.6 ESE of Nene Valley | swamp | light medium clay | 4 | 19 |
| NE00202 | 4 | 464124 | 5794268 | 54 | 6.3 ESE of Nene Valley | swamp | light medium clay | 4 | 20 |
| NE00301 | 4 | 465982 | 5791248 | 54 | 8.4 WNW of Port Macdonnell | swamp | sandy clay loam | 8 | 26 |
| NE00302 | 4 | 465982 | 5791248 | 54 | 8.4 WNW of Port Macdonnell | swamp | light medium clay | 4 | 21 |
| NE00303 | 4 | 465982 | 5791248 | 54 | 8.4 WNW of Port Macdonnell | dune/consolidated dune | sand | 8 | 26 |
| NE00401 | 4 | 456902 | 5795938 | 54 | 1.2 WNW of Nene Valley | dune/consolidated dune | sand | 2 | 26 |
| NE00402 | 4 | 456902 | 5795938 | 54 | 1.2 WNW of Nene Valley | dune/consolidated dune | sand | 3 | 26 |
| NE00403 | 4 | 456902 | 5795938 | 54 | 1.2 WNW of Nene Valley | swamp | sand | 2 | 26 |
| NE00501 | 4 | 457722 | 5797028 | 54 | 1.7 NNW of Nene Valley | swamp | sandy loam | 5 | 0 |
| NE00601 | 4 | 465522 | 5793428 | 54 | 7.9 ESE of Nene Valley | hill slope | sandy loam | 8 | 10 |
| NE00602 | 4 | 465622 | 5793328 | 54 | 8.0 ESE of Nene Valley | hill slope | loam | 6 | 10 |
| NE00603 | 4 | 465422 | 5793278 | 54 | 7.8 ESE of Nene Valley | swamp | loam | 2 | 19 |
| NE00604 | 4 | 465422 | 5793228 | 54 | 7.8 ESE of Nene Valley | swamp | loam | 1 | 19 |
| NE00701 | 4 | 459622 | 5798128 | 54 | 3.3 NNE of Nene Valley | ridge | sandy clay loam | 14 | 10 |
| NE00801 | 4 | 458122 | 5795928 | 54 | 0.7 NNE of Nene Valley | plain (incl undulating plain) | loam | 8 | 10 |
| NE00901 | 4 | 456722 | 5800528 | 54 | 3.5 ENE of Blackfellows Caves | swamp | loam | 10 | 19 |
| SCH1801 | 29 | 468267 | 5793148 | 54 | 6.3 WSW of Allendale East | closed depression | loam | 10 | 10 |
| SCH1802 | 29 | 468168 | 5793372 | 54 | 6.3 WSW of Allendale East | plain (incl undulating plain) | loam | 10 | 10 |
| SCH1803 | 29 | 468052 | 5793235 | 54 | 6.5 WSW of Allendale East | other | loam | 10 | 0 |
| **7022-04 KALANGADOO** | | | | | | | | | |
| KAL01103 | 29 | 466779 | 5824438 | 54 | 1.0 WSW of Honans Scrub | open depression | medium heavy clay | 70 | 99 |
| KAL01A04 | 29 | 458972 | 5836230 | 54 | 6.8 NNW of Glencoe West | swamp | loamy sand | 76 | 99 |
| KAL01B05 | 29 | 457912 | 5837190 | 54 | 3.6 ESE of Mount Burr | swamp | sandy loam | 80 | 99 |
| KAL01B06 | 29 | 457860 | 5837225 | 54 | 3.6 ESE of Mount Burr | swamp | sandy loam | 80 | 99 |
| KAL01B07 | 29 | 457467 | 5837214 | 54 | 3.2 ESE of Mount Burr | swamp | loam | 80 | 99 |
| KAL0201 | 29 | 456821 | 5843787 | 54 | 2.1 ESE of Mopoke Corner | dune slope | sand | 120 | 12 |
| KAL0202 | 29 | 456700 | 5842799 | 54 | 2.4 ESE of Mopoke Corner | dune slope | sand | 110 | 12 |
| KAL0401 | 29 | 456915 | 5834324 | 54 | 5.8 NNW of The Old Wombat Holes | dune crest | sand | 130 | 12 |
| KAL0501 | 29 | 457846 | 5837147 | 54 | 3.6 ESE of Mount Burr | swamp | sand | 80 | 10 |
| KAL0502 | 29 | 458730 | 5836000 | 54 | 6.7 NNW of The Old Wombat Holes | swamp | sandy loam | 80 | 13 |
| KAL0601 | 29 | 468786 | 5830851 | 54 | 2.9 NNE of Medhurst | swale | sand | 70 | 12 |
| KAL0602 | 29 | 468705 | 5830798 | 54 | 2.8 NNE of Medhurst | dune slope | sand | 80 | 12 |
| KAL0701 | 29 | 459184 | 5826455 | 54 | 3.1 WSW of Bluff North Gate | dune slope | sand | 100 | 12 |
| KAL0801 | 29 | 462901 | 5825610 | 54 | 1.6 SSE of Bluff North Gate | dune slope | sand | 140 | 12 |
| KAL0802 | 29 | 463714 | 5826020 | 54 | 1.7 NNW of The Old Woolwash | swale | sandy loam | 80 | 13 |
| KAL1001 | 29 | 473587 | 5826998 | 54 | 6.1 NNW of Dartboogie | swamp | sand | 70 | 13 |
| KAL1002 | 29 | 473782 | 5827708 | 54 | 6.7 NNW of Dartboogie | dune/consolidated dune | sand | 80 | 12 |
| KAL1101 | 29 | 466652 | 5824448 | 54 | 1.1 WSW of Honans Scrub | swamp | medium heavy clay | 20 | 99 |
| KAL1102 | 29 | 468372 | 5823938 | 54 | 1.4 SSE of Honans Scrub | swamp | sandy loam | 70 | 99 |

## Penola Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **7023-01 STRUAN** | | | | | | | | | |
| STR0101 | 29 | 480602 | 5897504 | 54 | 2.9 NNW of Struan | hill slope | sand | 60 | 12 |
| STR0301 | 29 | 485044 | 5895278 | 54 | 1.5 ENE of Dairy Flat | plain (incl undulating plain) | sandy loam | 90 | 6 |
| STR0302 | 29 | 484813 | 5894451 | 54 | 1.1 ESE of Dairy Flat | swale | sand | 60 | 4 |
| STR0501 | 29 | 486383 | 5888464 | 54 | 5.8 SSW of Joanna | dune slope | sand | 70 | 12 |
| STR0502 | 29 | 486952 | 5888849 | 54 | 5.3 SSW of Joanna | sandplain * | sand | 70 | 4 |
| STR0601 | 29 | 488812 | 5885008 | 54 | 4.7 NNE of Father Woods Broom | sandplain * | sand | 70 | 15 |
| STR0602 | 29 | 487019 | 5883526 | 54 | 2.9 NNE of Father Woods Broom | plain (incl undulating plain) | sandy loam | 50 | 18 |
| STR0603 | 29 | 488096 | 5883520 | 54 | 3.1 NNE of Father Woods Broom | sandplain * | sand | 75 | 7 |
| STR2B05 | 29 | 480446 | 5904483 | 54 | 6.5 SSE of Naracoorte | dune/consolidated dune | sandy loam | 120 | 12 |
| **7023-02 PENOLA** | | | | | | | | | |
| PEN0101 | 29 | 493137 | 5876886 | 54 | 2.7 SSW of Comaum | sandplain * | sand | 70 | 12 |
| PEN0201 | 29 | 494620 | 5875021 | 54 | 4.5 SSE of Comaum | swamp | sand | 75 | 15 |
| PEN0301 | 29 | 489666 | 5872113 | 54 | 0.3 SSE of Rocky Castle | plain (incl undulating plain) | loam | 60 | 18 |
| PEN0401 | 29 | 493909 | 5869359 | 54 | 5.3 ESE of Rocky Castle | plain (incl undulating plain) | sandy loam | 60 | 12 |
| PEN0502 | 29 | 496294 | 5866907 | 54 | 8.7 ESE of Rocky Castle | plain (incl undulating plain) | sandy loam | 75 | 12 |
| PEN0801 | 29 | 486320 | 5855734 | 54 | 4.3 ESE of Millers Crossing | plain (incl undulating plain) | sandy loam | 65 | 10 |
| PEN1001 | 29 | 489033 | 5854688 | 54 | 7.2 ESE of Millers Crossing | plain (incl undulating plain) | sandy loam | 70 | 12 |
| **7023-03 MONBULLA** | | | | | | | | | |
| MON0302 | 29 | 469756 | 5872544 | 54 | 8.8 WSW of Magpie Corner | hill slope | loam | 60 | 8 |
| MON0303 | 29 | 469750 | 5872832 | 54 | 8.8 WSW of Magpie Corner | hill slope | sandy loam | 70 | 12 |
| MON0601 | 29 | 472192 | 5866118 | 54 | 6.5 NNE of Emu Flat | swamp | sandy loam | 60 | 17 |
| MON0602 | 29 | 474212 | 5865944 | 54 | 6.7 NNE of Emu Flat | sandplain * | sandy loam | 70 | 12 |
| MON0603 | 29 | 473262 | 5865741 | 54 | 6.3 NNE of Emu Flat | swamp | sandy loam | 60 | 18 |
| MON0701 | 29 | 460163 | 5864994 | 54 | 12.7 NNW of Sixteen Mile Well | hill slope | sandy loam | 50 | 12 |
| MON0801 | 29 | 461192 | 5859146 | 54 | 6.8 NNW of Sixteen Mile Well | hill slope | sandy loam | 55 | 12 |
| MON0903 | 29 | 471886 | 5859478 | 54 | 0.2 SSW of Emu Flat | plain (incl undulating plain) | sandy loam | 60 | 12 |
| MON1001 | 29 | 465771 | 5857361 | 54 | 5.3 NNE of Sixteen Mile Well | plain (incl undulating plain) | sandy loam | 55 | 14 |
| MON1002 | 29 | 466933 | 5857350 | 54 | 5.5 WSW of Emu Flat | plain (incl undulating plain) | sandy loam | 55 | 12 |
| MON1003 | 29 | 466894 | 5857200 | 54 | 5.6 WSW of Emu Flat | plain (incl undulating plain) | sandy loam | 55 | 14 |
| MON1101 | 29 | 471519 | 5854507 | 54 | 5.2 SSW of Emu Flat | plain (incl undulating plain) | sandy loam | 60 | 14 |
| MON1102 | 29 | 471695 | 5854344 | 54 | 5.3 SSW of Emu Flat | plain (incl undulating plain) | loam | 60 | 0 |
| **7023-04 BOOL LAGOON** | | | | | | | | | |
| BOO0101 | 29 | 463579 | 5900526 | 54 | 16.4 WSW of Naracoorte | dune slope | sand | 50 | 12 |
| BOO0102 | 29 | 463666 | 5900544 | 54 | 16.3 WSW of Naracoorte | plain (incl undulating plain) | sandy loam | 45 | 17 |
| BOO0103 | 29 | 463717 | 5900503 | 54 | 16.3 WSW of Naracoorte | plain (incl undulating plain) | medium clay | 45 | 7 |
| BOO0501 | 29 | 465381 | 5889807 | 54 | 6.9 WNW of Maaoope | sandy plain | sand | 60 | 7 |
| BOO0601 | 29 | 465113 | 5889033 | 54 | 6.7 WNW of Maaoope | swamp | sandy loam | 50 | 17 |
| BOO0701 | 29 | 465757 | 5885613 | 54 | 5.1 WNW of Maaoope | dune slope | sandy loam | 60 | 7 |
| BOO0702 | 29 | 465595 | 5886639 | 54 | 5.3 WNW of Maaoope | plain (incl undulating plain) | sandy loam | 60 | 7 |
| BOO1001 | 29 | 465545 | 5878361 | 54 | 8.9 SSW of Maaoope | swamp | sandy loam | 50 | 17 |
| BOO1101 | 29 | 473042 | 5890098 | 54 | 5.1 NNE of Maaoope | swamp | silt loam | 50 | 99 |

## Naracoorte Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **7024-01 FRANCES** | | | | | | | | | |
| FRA0101 | 29 | 490357 | 5955979 | 54 | 11.9 SSW of Custon | swale | sand | 100 | 12 |
| FRA0102 | 29 | 490638 | 5955800 | 54 | 12.0 SSW of Custon | dune crest | sand | 105 | 12 |
| FRA0103 | 29 | 492122 | 5955820 | 54 | 11.9 SSW of Custon | swale | sandy loam | 98 | 6 |
| FRA0301 | 29 | 491474 | 5950102 | 54 | 14.0 NNW of Frances | closed depression | sandy loam | 99 | 6 |
| FRA0302 | 29 | 492010 | 5949297 | 54 | 13.0 NNW of Frances | swamp | sandy loam | 92 | 6 |
| FRA0303 | 29 | 492014 | 5949174 | 54 | 12.9 NNW of Frances | dune slope | sand | 100 | 12 |
| FRA0501 | 29 | 483643 | 5947029 | 54 | 11.7 SSE of Western Flat | sandplain * | sand | 98 | 4 |
| FRA0901 | 29 | 481366 | 5934773 | 54 | 9.4 NNW of Cadgee | dune slope | sand | 90 | 12 |
| **7024-02 HYNAM** | | | | | | | | | |
| HYN0101 | 29 | 487069 | 5929736 | 54 | 5.5 NE of Cadgee | dune slope | sandy loam | 95 | 12 |
| HYN0201 | 29 | 484265 | 5929763 | 54 | 4.2 NNE of Cadgee | swamp | sandy loam | 100 | 18 |
| HYN0301 | 29 | 485288 | 5924672 | 54 | 2.1 ESE of Cadgee | sandplain * | sandy loam | 88 | 12 |
| HYN0302 | 29 | 485710 | 5923922 | 54 | 2.9 ESE of Cadgee | dune/consolidated dune | sandy loam | 88 | 6 |
| HYN0401 | 29 | 481139 | 5921517 | 54 | 4.7 SSW of Cadgee | sandplain * | sandy loam | 80 | 12 |
| HYN0501 | 29 | 482558 | 5918926 | 54 | 5.6 WNW of Walla Walla | lunette | sandy loam | 80 | 12 |
| HYN0601 | 29 | 490988 | 5919290 | 54 | 2.3 WNW of Kybybolite | plain (incl undulating plain) | loam | 86 | 18 |
| HYN0701 | 29 | 483639 | 5915239 | 54 | 3.7 WSW of Walla Walla | dune/consolidated dune | sandy loam | 90 | 12 |
| HYN0801 | 29 | 478330 | 5914430 | 54 | 4.7 NNE of Naracoorte | dune slope | sand | 80 | 12 |
| HYN1101 | 29 | 486800 | 5932857 | 54 | 8.0 NNE of Cadgee | open depression | sandy loam | 95 | 6 |
| HYN1102 | 29 | 486756 | 5932369 | 54 | 7.5 NNE of Cadgee | dune slope | sand | 100 | 12 |
| **7024-03 NARACOORTE** | | | | | | | | | |
| NAR0201 | 29 | 471361 | 5929911 | 54 | 9.8 ESE of Keppoch | hill slope | sand | 90 | 6 |
| NAR0202 | 29 | 473415 | 5929941 | 54 | 10.9 WNW of Cadgee | hill slope | sand | 90 | 4 |
| NAR0203 | 29 | 473634 | 5930196 | 54 | 10.8 WNW of Cadgee | hill slope | sand | 85 | 12 |
| NAR0301 | 29 | 472678 | 5926364 | 54 | 10.8 WNW of Cadgee | hill slope | sand | 100 | 12 |
| NAR0701 | 29 | 459515 | 5911209 | 54 | 15.9 ENE of Lucindale | hill crest | sand | 50 | 12 |
| NAR0702 | 29 | 460716 | 5910185 | 54 | 16.2 WNW of Naracoorte | hill slope | sand | 50 | 7 |
| NAR0801 | 29 | 461610 | 5908508 | 54 | 15.4 WSW of Naracoorte | hill slope | sand | 50 | 5 |
| NAR0802 | 29 | 462156 | 5906674 | 54 | 15.2 WSW of Naracoorte | hill slope | sand | 50 | 12 |
| **7024-04 KEPPOCH** | | | | | | | | | |
| KEP0101 | 29 | 476144 | 5959315 | 54 | 2.8 NNW of Western Flat | plain (incl undulating plain) | sandy loam | 90 | 5 |
| KEP0201 | 29 | 477672 | 5957807 | 54 | 0.7 NNW of Western Flat | hill slope | sand | 90 | 5 |
| KEP0501 | 29 | 475529 | 5953192 | 54 | 4.9 SSW of Western Flat | sandy plain | sand | 90 | 7 |
| KEP0601 | 29 | 457452 | 5951511 | 54 | 2.8 ENE of Padthaway East | dune/consolidated dune | loam | 55 | 6 |
| KEP0602 | 29 | 457670 | 5949045 | 54 | 2.8 ESE of Padthaway East | dune crest | sandy loam | 80 | 12 |
| KEP0603 | 29 | 458719 | 5950787 | 54 | 3.7 ENE of Padthaway East | dune slope | sand | 80 | 7 |
| KEP0604 | 29 | 458072 | 5950778 | 54 | 3.1 ENE of Padthaway East | sandy plain | loamy sand | 60 | 99 |
| KEP0701 | 29 | 474251 | 5944806 | 54 | 13.1 SSW of Western Flat | dune slope | sandy loam | 90 | 12 |
| KEP0901 | 29 | 472118 | 5940735 | 54 | 11.8 ENE of Keppoch | plain (incl undulating plain) | sand | 80 | 12 |
| KEP1001 | 29 | 470066 | 5940050 | 54 | 9.7 ENE of Keppoch | plain (incl undulating plain) | sand | 70 | 12 |
| KEP1002 | 29 | 470132 | 5940151 | 54 | 9.8 ENE of Keppoch | plain (incl undulating plain) | sand | 70 | 12 |
| KEP1101 | 29 | 464852 | 5938919 | 54 | 5.5 NNE of Keppoch | plain (incl undulating plain) | sandy loam | 75 | 6 |
| KEP1102 | 29 | 465336 | 5939033 | 54 | 5.8 NNE of Keppoch | hill slope | sand | 65 | 12 |

## Cannawigara Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **7025-02 TATIARA** | | | | | | | | | |
| TAT0101 | 29 | 484990 | 5988146 | 54 | 8.3 NE of Bordertown | dune slope | sand | 100 | 1 |
| TAT0102 | 29 | 484961 | 5988050 | 54 | 8.2 NE of Bordertown | dune slope | sand | 100 | 4 |
| TAT0201 | 29 | 494622 | 5987010 | 54 | 10.4 WNW of Dinyarrak | closed depression | sandy loam | 110 | 0 |
| TAT0202 | 29 | 494835 | 5986986 | 54 | 10.2 WNW of Dinyarrak | dune crest | sand | 120 | 5 |
| TAT0601 | 29 | 495900 | 5979946 | 54 | 5.8 NNE of Wolseley | dune slope | sand | 105 | 0 |
| TAT0602 | 29 | 496761 | 5980084 | 54 | 6.1 NNW of Serviceton | sandplain * | sandy loam | 118 | 5 |
| **7025-04 CANNAWIGARA** | | | | | | | | | |
| CAW0201 | 29 | 457150 | 6010981 | 54 | 14.2 NNE of Brimbago | dune crest | sand | 60 | 4 |
| CAW0202 | 29 | 457122 | 6010812 | 54 | 14.1 NNE of Brimbago | swale | sand | 60 | 1 |
| CAW0301 | 29 | 458686 | 6008492 | 54 | 12.8 NNE of Brimbago | swale | sand | 70 | 1 |
| CAW0601 | 29 | 462253 | 5999626 | 54 | 6.5 NNE of Wirrega | swale | sandy loam | 80 | 2 |
| CAW0602 | 29 | 462076 | 5999485 | 54 | 6.4 NNE of Wirrega | dune crest | sand | 80 | 1 |

## McCallum Mapsheet

| SITEID | Survey # | Easting | Northing | MGA Zone | Distance (km) Direction Nearest Location | Landform | Surface soil texture | Altitude (m) | PATN group |
|---|---|---|---|---|---|---|---|---|---|
| **7026-01 QUONDONG BORE** | | | | | | | | | |
| NG00101 | 16 | 479308 | 6067344 | 54 | 28.3 SSE of Parilla | stream channel | sand | 130 | 11 |
| NG00601 | 16 | 486305 | 6047759 | 54 | 14.0 NNW of Mount Shaugh | plain (incl undulating plain) | sand | 120 | 4 |
| NG00701 | 16 | 488333 | 6045286 | 54 | 10.8 NNW of Mount Shaugh | plain (incl undulating plain) | sand | 100 | 4 |
| NG02001 | 16 | 488431 | 6045201 | 54 | 10.7 NNW of Mount Shaugh | plain (incl undulating plain) | sand | 120 | 1 |
| NG02101 | 16 | 486232 | 6047853 | 54 | 14.1 NNW of Mount Shaugh | plain (incl undulating plain) | sand | 130 | 0 |
| NG03401 | 16 | 480017 | 6067371 | 54 | 28.5 SSE of Parilla | open depression | clay loam | 120 | 1 |
| NG03501 | 16 | 481753 | 6067391 | 54 | 28.9 SSW of Chandos | dune crest | sand | 140 | 16 |
| NG03601 | 16 | 481447 | 6067388 | 54 | 28.9 SSW of Chandos | swale | sand | 135 | 16 |
| NG03701 | 16 | 481311 | 6067384 | 54 | 28.9 SSW of Chandos | dune crest | sand | 130 | 1 |
| SS01701 | 16 | 477776 | 6071231 | 54 | 24.1 SSE of Parilla | hill slope | sand | 105 | 4 |
| **7026-02 SHAUGH** | | | | | | | | | |
| MR01701 | 16 | 489160 | 6034523 | 54 | 5.5 WSW of Mount Shaugh | dune slope | sand | 130 | 4 |
| MR01801 | 16 | 491592 | 6034628 | 54 | 3.3 WSW of Mount Shaugh | plain (incl undulating plain) | sand | 130 | 4 |
| MR02001 | 16 | 487672 | 6030678 | 54 | 8.8 WSW of Mount Shaugh | plain (incl undulating plain) | sand | 120 | 4 |
| MR02101 | 16 | 487272 | 6030728 | 54 | 9.1 WSW of Mount Shaugh | plain (incl undulating plain) | sand | 120 | 4 |
| MR02201 | 16 | 491963 | 6020400 | 54 | 16.5 NNE of Alice Park | plain (incl undulating plain) | sandy loam | 120 | 2 |
| MR02301 | 16 | 492097 | 6020448 | 54 | 16.6 NNE of Alice Park | dune crest | sand | 120 | 4 |
| NG00801 | 16 | 485092 | 6042208 | 54 | 11.0 WNW of Mount Shaugh | plain (incl undulating plain) | sand | 130 | 4 |
| NG03101 | 16 | 484792 | 6042148 | 54 | 11.2 WNW of Mount Shaugh | plain (incl undulating plain) | sand | 130 | 4 |
| NG03201 | 16 | 481392 | 6040948 | 54 | 13.8 WNW of Mount Shaugh | plain (incl undulating plain) | sandy loam | 120 | 1 |
| NG03301 | 16 | 481284 | 6041478 | 54 | 14.1 WNW of Mount Shaugh | plain (incl undulating plain) | clay loam | 120 | 1 |
| **7026-03 MCCALLUM** | | | | | | | | | |
| NG00901 | 16 | 477243 | 6025314 | 54 | 21.0 NNW of Alice Park | plain (incl undulating plain) | sand | 110 | 4 |
| NG01401 | 16 | 461527 | 6024422 | 54 | 11.6 ESE of Mount Rescue | plain (incl undulating plain) | sand | 90 | 4 |
| NG03401 | 16 | 469920 | 6016639 | 54 | 18.4 WNW of Alice Park | swale | sandy loam | 100 | 4 |
| OH0301 | 16 | 476822 | 6024578 | 54 | 20.5 NNW of Alice Park | plain (incl undulating plain) | sand | 110 | 4 |
| SD00101 | 16 | 469892 | 6016728 | 54 | 18.5 WNW of Alice Park | dune slope | sandy loam | 110 | 4 |
| **7026-04 BAINTON** | | | | | | | | | |
| NG01801 | 16 | 462022 | 6053758 | 54 | 20.9 SSE of Baan Hill | dune slope | sand | 115 | 4 |
| NG01901 | 16 | 468137 | 6055837 | 54 | 23.4 ESE of Baan Hill | plain (incl undulating plain) | sand | 100 | 4 |
| NG02201 | 16 | 472864 | 6054832 | 54 | 39.2 SSE of Parilla | plain (incl undulating plain) | sand | 110 | 4 |
| NG02301 | 16 | 470522 | 6055058 | 54 | 38.1 SSE of Lameroo | plain (incl undulating plain) | sand | 110 | 4 |
| NG02401 | 16 | 470410 | 6054861 | 54 | 38.3 SSE of Lameroo | plain (incl undulating plain) | sand | 110 | 4 |
| OH00512 | 16 | 472879 | 6054929 | 54 | 39.1 SSE of Parilla | | | 110 | 4 |
| QB00301 | 16 | 461589 | 6070041 | 54 | 11.3 ESE of Baan Hill | plain (incl undulating plain) | sand | 105 | 4 |
| QB00801 | 16 | 460244 | 6070050 | 54 | 10.0 ESE of Baan Hill | plain (incl undulating plain) | sand | 100 | 4 |
| QB00901 | 16 | 459275 | 6069849 | 54 | 9.1 ESE of Baan Hill | open depression | sand | 100 | 4 |
| QB01001 | 16 | 460133 | 6068999 | 54 | 10.0 ESE of Baan Hill | dune slope | sand | 130 | 16 |

# Appendix II

**PLANT SPECIES RECORDED FOR THE SOUTH EAST**
List of vascular plant taxonomic categories recorded on biological surveys within the South East Biological Survey study boundary showing conservation status and sampling frequency.

Generally plant taxonomy and nomenclature follows Jessop (1993) as updated by the SA FLORA Database up to 2001. However, this information excludes many new names and combinations that have been published since the survey e.g. *Austrostipa*. Such changes have not been included, because details about these names and whether they will be adopted by the SA Plant Biodiversity Centre are not readily available until the release of the new SA census of vascular plants which is expected in 2004. Common names are from Jessop and Toelken (1986) and/or SA FLORA Database.

**KEY**

**I** Indigenous/alien designation. Naturalised alien species are designated by an asterisk (*).

**SU 29** Total number of Survey site (quadrat) records for each taxa from the South East Biological Survey (Survey 29).

**All SU** Total number of Survey site (quadrat) records for each taxa from all Biological Surveys# conducted in the region.

**OP** Total number of Opportunistic records for each taxa from all Biological Surveys# conducted in the region. This includes Opportunistic records collected during Survey 29.

(NC) Designated as a non-current name in the SA FLORA Database 2003. A non-current name represents a previous taxonomic circumscription corresponding to one or more currently recognised taxa. Non-current names are linked to one or more current species names.

# Biological Surveys [Survey name (survey number)] for this region included in this summary are;
South East Coast (4), South East (29), Temperate Grasslands – WWF (46), Grassy Woodlands (MK Hyde) (54), Heritage Agreement Sites (59), SE Fire Study (NCS) (64), Messent Conservation Park (68), Gum Lagoon Conservation Park (NCS) (76), Coastal Dune & Clifftop (82), SE Box & Buloke Woodlands (84), Deep Swamp (85), Tilley Swamp (90), Bunbury Conservation Reserve (99), West Avenue Range (118) and Lake Hawdon (119).

**CONSERVATION STATUS**

**AUS** Australian status according to Environment Protection and Biodiversity Conservation Act 1999 current listing of species (as at December 2000).
**SA** South Australian status is based on the Schedules of the National Parks and Wildlife Act 1972 (SA) as amended in 2000.
**SE** Regional status for the South East Herbarium region. Regional ratings are derived from SA FLORA database, December 2002, which provides an update to the original assessments by Lang and Kraehenbuehl (1983).

**STATUS EXPLANATIONS**

**Australian Status Codes**

**E Endangered**
**V Vulnerable**
*Note that there is no Rare category under the EPBC Act.*

**South Australian Status Codes**

**E Endangered** (Schedule 7, Part 2)
*Note that there is no category specifically for species that are presumed to be extinct. Instead these are included in the Endangered category.*
**V Vulnerable** (Schedule 8, Part 2)
**R Rare** (Schedule 9, Part 2)

**Regional Status Codes**

**X** **Extinct**/Presumed extinct: not located despite thorough searching of all known and likely habitats; known to have been eliminated by the loss of localised population(s); or not recorded for more than 50 years from an area where substantial habitat modification has occurred.
**E** **Endangered**: rare and in danger of becoming extinct in the wild.
**T** **Threatened**: likely to be either Endangered or Vulnerable but insufficient data available for more precise assessment.
**V** **Vulnerable**: rare and at risk from potential threats or long term threats that could cause the species to become endangered in the future.
**K** **Uncertain**: likely to be either Threatened or Rare but insufficient data available for a more precise assessment.
**R** **Rare**: has a low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant or widespread threats, but warrants monitoring and protective measures to prevent reduction of population sizes.
**U** **Uncommon**: less common species of interest but not rare enough to warrant special protective measures.
**Q** Not yet assessed but flagged as being **of possible significance**.

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Acacia acinacea* | Wreath Wattle | | | U | 4 | 29 | 1 | 30 | |
| | *Acacia* aff. *Halliana* | Hall's Wattle | | V | K | | 3 | | 3 | = *Acacia simmonsiana* [New species for SA which is currently in press (pers. omm.., M. Oleary, SA Plant Biodiversity Centre)]. |
| * | *Acacia baileyana* | Cootamundra Wattle | | | | 3 | 3 | | 3 | |
| | *Acacia brachybotrya* | Grey Mulga-bush | | | U | 7 | 12 | 2 | 14 | |
| | *Acacia cupularis* | Cup Wattle | | | | 2 | 6 | | 6 | |
| | *Acacia dodonaeifolia* | Hop-bush Wattle | | R | K | | 0 | 1 | 1 | |
| | *Acacia farinosa* | Mealy Wattle | | | | 3 | 14 | 3 | 17 | = *Acacia simmonsiana* |
| | *Acacia hakeoides* | Hakea Wattle | | | U | | 2 | | 2 | |
| | *Acacia halliana* (NC) | Hall's Wattle | | | | | 1 | | 1 | |
| | *Acacia leiophylla* | Coast Golden Wattle | | | | 17 | 55 | 4 | 59 | |
| | *Acacia leiophylla/pycnantha* | | | | | 16 | 16 | | 16 | Broader taxonomic entity used, when specimens not collected, due to difficulties recognised in the field identification. |
| | *Acacia longifolia* var. | Sallow Wattle | | | | 1 | 1 | | 1 | |
| * | *Acacia longifolia* var. *longifolia* | Sallow Wattle | | | | 5 | 6 | 1 | 7 | |
| | *Acacia longifolia* var. *sophorae* | Coastal Wattle | | | | 89 | 269 | 17 | 286 | |
| | *Acacia mearnsii* | Black Wattle | | | | 17 | 19 | 8 | 27 | |
| | *Acacia melanoxylon* | Blackwood | | | | 55 | 63 | 14 | 77 | |
| | *Acacia microcarpa* | Manna Wattle | | | | | 2 | | 2 | |
| | *Acacia mitchellii* | Mitchell's Wattle | | R | R | 1 | 1 | 1 | 2 | |
| | *Acacia myrtifolia* (NC) | Myrtle Wattle | | | | 72 | 76 | | 76 | = *Acacia myrtifolia* var. *myrtifolia* |
| | *Acacia myrtifolia* var. | Myrtle Wattle | | | | | 6 | 3 | 9 | = *Acacia myrtifolia* var. *myrtifolia* |
| | *Acacia myrtifolia* var. *myrtifolia* | Myrtle Wattle | | | | 1 | 9 | 4 | 13 | |
| | *Acacia oxycedrus* | Spike Wattle | | | U | 13 | 13 | 12 | 25 | |
| | *Acacia paradoxa* | Kangaroo Thorn | | | | 25 | 27 | 1 | 28 | |
| | *Acacia pycnantha* | Golden Wattle | | | | 57 | 84 | 11 | 95 | |
| | *Acacia rigens* | Nealie | | | | | 2 | | 2 | |
| | *Acacia rupicola* | Rock Wattle | | | R | 2 | 2 | | 2 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| * | *Acacia saligna* | Golden Wreath Wattle | | | | 1 | 1 | | 1 | |
| | *Acacia spinescens* | Spiny Wattle | | | | 64 | 114 | 2 | 116 | |
| | *Acacia stricta* | Hop Wattle | | R | R | 1 | 1 | 3 | 4 | |
| | *Acacia suaveolens* | Sweet Wattle | | V | V | | 0 | 1 | 1 | |
| | *Acacia trineura* | Three-nerve Wattle | | E | E | | 1 | | 1 | |
| | *Acacia verticillata* | Prickly Moses | | | | 40 | 52 | 11 | 63 | |
| | *Acaena agnipila* var. | Downy Sheep's Burr | | | R | 2 | 2 | | 2 | |
| | *Acaena echinata* var. | Sheep's Burr | | | | 41 | 65 | 5 | 70 | |
| | *Acaena echinata* var. *subglabricalyx* | Sheep's Burr | | | | | 1 | | 1 | |
| | *Acaena novae-zelandiae* | Biddy-biddy | | | | 61 | 186 | 3 | 189 | |
| | *Acaena* sp. | Sheep's Burr | | | | | 1 | | 1 | |
| | *Acaena* x *anserovina* | Hybrid Burr | | | | 1 | 1 | 2 | 3 | |
| * | *Acetosella vulgaris* | Sorrel | | | | 7 | 7 | | 7 | |
| | *Acianthus caudatus* var. | Mayfly Orchid | | | | 1 | 2 | | 2 | |
| | *Acianthus pusillus* | Mosquito Orchid | | | | 22 | 25 | | 25 | |
| | *Acianthus* sp. | Mosquito Orchid | | | | 1 | 7 | | 7 | |
| | *Acrotriche affinis* | Ridged Ground-berry | | | | 41 | 58 | 2 | 60 | |
| | *Acrotriche cordata* | Blunt-leaf Ground-berry | | | | 26 | 43 | 3 | 46 | |
| | *Acrotriche depressa* | Native Currant | | | E | | 1 | | 1 | |
| | *Acrotriche serrulata* | Cushion Ground-berry | | | | 81 | 101 | 18 | 119 | |
| | *Actinobole uliginosum* | Flannel Cudweed | | | U | 9 | 9 | | 9 | |
| | *Adenanthos terminalis* | Yellow Gland-flower | | | | 25 | 63 | | 63 | |
| | *Adriana klotzschii* | Coast Bitter-bush | | | | 6 | 28 | 2 | 30 | |
| | *Agrostis aemula* | Blown-grass | | | | 6 | 10 | 3 | 13 | |
| | *Agrostis avenacea* var. | Common Blown-grass | | | | 3 | 3 | | 3 | |
| | *Agrostis avenacea* var. *avenacea* | Common Blown-grass | | | | 1 | 16 | 3 | 19 | |
| | *Agrostis billardieri* var. | Blown-grass | | | | | 2 | | 2 | |
| | *Agrostis billardieri* var. *billardieri* | Coast Blown-grass | | | | | 3 | 1 | 4 | |
| | *Agrostis billardieri* var. *filifolia* | Narrow-leaf Blown-grass | | R | Q | 1 | 9 | 2 | 11 | |
| * | *Agrostis capillaris* var. *capillaris* | Brown-top Bent | | | | | 0 | 1 | 1 | |
| | *Agrostis* sp. | Blown-grass/Bent Grass | | | | | 0 | 1 | 1 | |
| * | *Aira caryophyllea* | Silvery Hair-grass | | | | 1 | 6 | | 6 | |
| * | *Aira cupaniana* | Small Hair-grass | | | | 3 | 28 | 7 | 35 | |
| * | *Aira elegantissima* ssp. *elegantissima* | Delicate Hair-grass | | | | 2 | 4 | | 4 | |
| * | *Aira* sp. | Hair-grass | | | | 1 | 27 | 1 | 28 | |
| | *Ajuga australis* form | Australian Bugle | | | | 4 | 4 | | 4 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Ajuga australis* form A | Australian Bugle | | | U | 4 | 9 | 1 | 10 | |
| | *Ajuga australis* form B | Lesser Bugle | | | | 8 | 9 | 2 | 11 | |
| * | *Albizia lophantha* | Cape Leeuwin Wattle | | | | 1 | 1 | | 1 | |
| | *Allocasuarina luehmannii* | Bull Oak | | | U | 2 | 33 | 4 | 37 | |
| | *Allocasuarina mackliniana* ssp. | Macklin's Oak-bush | | | | 5 | 6 | | 6 | |
| | *Allocasuarina mackliniana* ssp. *mackliniana* | Macklin's Oak-bush | | | | 4 | 6 | | 6 | |
| | *Allocasuarina mackliniana* ssp. *xerophila* | Macklin's Oak-bush | | | | 1 | 10 | 1 | 11 | |
| | *Allocasuarina muelleriana* ssp. | Common Oak-bush | | | | | 11 | 2 | 13 | |
| | *Allocasuarina muelleriana* ssp. *muelleriana* | Common Oak-bush | | | | 55 | 77 | 1 | 78 | |
| | *Allocasuarina paludosa* | Swamp Oak-bush | | | | 3 | 3 | 4 | 7 | |
| | *Allocasuarina pusilla* | Dwarf Oak-bush | | | | 30 | 63 | | 63 | |
| | *Allocasuarina* sp. | Sheoak/Oak-bush | | | | | 1 | | 1 | |
| | *Allocasuarina verticillata* | Drooping Sheoak | | | | 16 | 29 | 6 | 35 | |
| | *Alternanthera denticulata* | Lesser Joyweed | | | V | | 2 | | 2 | |
| | *Alyxia buxifolia* | Sea Box | | | | | 25 | | 25 | |
| * | *Ammophila arenaria* | Marram Grass | | | | | 11 | | 11 | |
| | *Amperea xiphoclada* var. *xiphoclada* | Broom Spurge | | | U | 7 | 7 | 2 | 9 | |
| | *Amphibromus archeri* | Pointed Swamp Wallaby-grass | | R | R | 1 | 1 | 1 | 2 | |
| | *Amphibromus macrorhinus* | Long-nosed Swamp Wallaby-grass | | R | R | | 2 | 1 | 3 | |
| | *Amphibromus nervosus* | Veined Swamp Wallaby-grass | | | U | 1 | 3 | | 3 | |
| | *Amphibromus recurvatus* | Dark Swamp Wallaby-grass | | R | R | 3 | 3 | | 3 | |
| | *Amphipogon caricinus* var. *caricinus* | Long Grey-beard Grass | | | R | | 1 | | 1 | |
| | *Amphipogon strictus* var. *setifer* | Spreading Grey-beard Grass | | | | 3 | 4 | | 4 | |
| | *Amyema linophyllum* ssp. *orientale* | Casuarina Mistletoe | | | T | | 8 | | 8 | |
| | *Amyema melaleucae* | Tea-tree Mistletoe | | | Q | 3 | 15 | 3 | 18 | |
| | *Amyema miquelii* | Box Mistletoe | | | | 26 | 30 | | 30 | |
| | *Amyema pendulum* ssp. *pendulum* | Drooping Mistletoe | | | | 21 | 25 | | 25 | |
| | *Amyema* sp. | Mistletoe | | | | 1 | 1 | | 1 | |
| * | *Anagallis arvensis* | Pimpernel | | | | 31 | 148 | 8 | 156 | |
| * | *Anagallis minima* | Chaffweed | | | | 1 | 1 | | 1 | |
| * | *Anagallis* sp. | | | | | 2 | 2 | | 2 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| * | *Anchusa arvensis* ssp. *arvensis* | Bugloss | | | | | 3 | | 3 | |
| | *Angianthus preissianus* | Salt Angianthus | | | | 4 | 38 | 5 | 43 | |
| | *Angianthus tomentosus* | Hairy Angianthus | | | Q | | 2 | | 2 | |
| * | *Anthoxanthum odoratum* | Sweet Vernal Grass | | | | 1 | 1 | | 1 | |
| | *Aphanes australiana* | Australian Piert | | | | 8 | 14 | | 14 | |
| | *Aphelia pumilio* | Dwarf Aphelia | | | R | 2 | 4 | | 4 | |
| | *Apium annuum* | Annual Celery | | | | 2 | 11 | | 11 | |
| * | *Apium graveolens* | Celery | | | | 2 | 2 | | 2 | |
| | *Apium prostratum* ssp. *prostratum* var | Native Celery | | | | | 1 | | 1 | |
| | *Apium prostratum* ssp. *prostratum* var. *filiforme* | Native Celery | | | | 2 | 5 | 1 | 6 | |
| | *Apium prostratum* ssp. *prostratum* var. *prostratum* | Native Celery | | | | | 35 | | 35 | |
| | *Apium* sp. | Celery | | | | | 13 | | 13 | |
| * | *Arctotheca calendula* | Cape Weed | | | | 40 | 62 | | 62 | |
| * | *Arctotheca populifolia* | Beach Daisy | | | | | 1 | | 1 | |
| | *Argentipallium blandowskianum* | Woolly Everlasting | | | | 10 | 15 | 3 | 18 | |
| | *Argentipallium obtusifolium* | Blunt Everlasting | | | | 22 | 33 | 1 | 34 | |
| * | *Argyranthemum frutescens* ssp. *foeniculaceum* | Teneriffe Daisy | | | | | 4 | | 4 | |
| | *Arthropodium fimbriatum* | Nodding Vanilla-lily | | | | 7 | 36 | 4 | 40 | |
| | *Arthropodium milleflorum* | Pale Vanilla-lily | | V | V | 2 | 2 | | 2 | |
| | *Arthropodium minus* | Small Vanilla-lily | | | T | | 9 | 2 | 11 | |
| | *Arthropodium* sp. | Vanilla-lily | | | | | 1 | | 1 | |
| | *Arthropodium strictum* | Common Vanilla-lily | | | | 23 | 44 | 5 | 49 | |
| * | *Arum italicum* | Italian Arum | | | | | 1 | | 1 | |
| * | *Asclepias rotundifolia* | Broad-leaf Cotton-bush | | | | | 1 | | 1 | |
| | *Asperula conferta* | Common Woodruff | | | | 5 | 14 | 2 | 16 | |
| * | *Asphodelus fistulosus* | Onion Weed | | | | | 1 | | 1 | |
| | *Asplenium flabellifolium* | Necklace Fern | | | V | | 0 | 2 | 2 | |
| * | *Aster subulatus* | Aster-weed | | | | | 1 | | 1 | |
| | *Astroloma conostephioides* | Flame Heath | | | | 139 | 194 | 18 | 212 | |
| | *Astroloma humifusum* | Cranberry Heath | | | | 158 | 218 | 15 | 233 | |
| | *Atriplex acutibractea* ssp. | Pointed Saltbush | | | | | 1 | | 1 | |
| | *Atriplex cinerea* | Coast Saltbush | | | | | 6 | | 6 | |
| * | *Atriplex prostrata* | Creeping Saltbush | | | | 1 | 6 | 1 | 7 | |
| | *Atriplex semibaccata* | Berry Saltbush | | | U | | 4 | 1 | 5 | |
| | *Austrofestuca littoralis* | Coast Fescue | | | | | 18 | | 18 | |
| * | *Avellinia michelii* | Avellinia | | | | 5 | 39 | | 39 | |
| * | *Avena barbata* | Bearded Oat | | | | 4 | 40 | 4 | 44 | |
| * | *Avena* sp. | Oat | | | | 1 | 3 | 1 | 4 | |
| | *Azolla* sp. | Azolla | | | | | 1 | | 1 | |
| | *Baeckea behrii* | Silver Broombush | | | | 19 | 50 | 1 | 51 | |
| | *Baeckea crassifolia* | Desert Baeckea | | | | 9 | 22 | | 22 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Baeckea ericaea* | Mat Baeckea | | | | 10 | 17 | 1 | 18 | |
| | *Banksia marginata* | Silver Banksia | | | | 170 | 227 | 43 | 270 | |
| | *Banksia ornata* | Desert Banksia | | | | 104 | 159 | 8 | 167 | |
| * | *Batrachium trichophyllum* | Water Buttercup | | | | 1 | 1 | | 1 | |
| | *Baumea acuta* | Pale Twig-rush | | R | R | 2 | 2 | | 2 | |
| | *Baumea arthrophylla* | Swamp Twig-rush | | | | 5 | 12 | 6 | 18 | |
| | *Baumea articulata* | Jointed Twig-rush | | | U | 1 | 4 | | 4 | |
| | *Baumea juncea* | Bare Twig-rush | | | | 41 | 97 | 19 | 116 | |
| | *Baumea laxa* | Lax Twig-rush | | R | V | | 1 | | 1 | |
| | *Baumea rubiginosa* | Soft Twig-rush | | | | | 1 | | 1 | This species is not found in this region. Most likely *Baumea arthrophylla*. |
| | *Bertya mitchellii* | Mitchell's Bertya | | | | | 3 | | 3 | |
| * | *Berula erecta* | Water Parsnip | | | | 1 | 1 | | 1 | |
| | *Beyeria lechenaultii* | Pale Turpentine Bush | | | | 4 | 32 | 1 | 33 | |
| | *Billardiera cymosa* | Sweet Apple-berry | | | | 94 | 173 | 6 | 179 | |
| | *Billardiera scandens* var. *scandens* | Eastern Apple-berry | | R | R | 9 | 9 | | 9 | |
| | *Billardiera sericophora* | Silky Apple-berry | | | | | 11 | | 11 | This species is not in this region. Most likely *Billardiera cymosa* or *B. versicolor*. |
| | *Billardiera* sp. | Apple-berry | | | | 3 | 8 | 1 | 9 | |
| * | *Blackstonia perfoliata* | Yellow-wort | | | | | 1 | | 1 | |
| | *Blechnum wattsii* | Hard Water-fern | | R | V | | 1 | | 1 | |
| | *Blennospora drummondii* | Dwarf Button-flower | | | | 12 | 14 | | 14 | |
| | *Bolboschoenus caldwellii* | Salt Club-rush | | | | | 1 | | 1 | |
| | *Boraginaceae* sp. | Borage Family | | | | | 3 | | 3 | |
| | *Boronia coerulescens* ssp. *coerulescens* | Blue Boronia | | | | 30 | 56 | 1 | 57 | |
| | *Boronia filifolia* | Slender Boronia | | | U | 3 | 5 | | 5 | |
| | *Boronia nana* | Dwarf Boronia | | | U | 6 | 6 | 9 | 15 | |
| | *Boronia parviflora* | Swamp Boronia | | R | R | | 0 | 1 | 1 | |
| | *Boronia pilosa* | Hairy Boronia | | R | R | 3 | 3 | 3 | 6 | |
| | *Bossiaea cinerea* | Showy Bossiaea | | | U | 18 | 18 | 7 | 25 | |
| | *Bossiaea prostrata* | Creeping Bossiaea | | | | 19 | 21 | 3 | 24 | |
| | *Bossiaea* sp. | Bossiaea | | | | | 0 | 1 | 1 | |
| | *Bothriochloa macra* | Red-leg Grass | | V | R | | 0 | 1 | 1 | |
| | *Brachycome basaltica* var. *gracilis* | Swamp Daisy | | R | E | | 1 | 2 | 3 | |
| | *Brachycome cardiocarpa* | Swamp Daisy | | R | R | | 1 | | 1 | |
| | *Brachycome ciliaris* var. | Variable Daisy | | | | 3 | 4 | | 4 | |
| | *Brachycome ciliaris* var. *ciliaris* | Variable Daisy | | | | | 0 | 1 | 1 | |
| | *Brachycome cuneifolia* | Wedge-leaf Daisy | | | E | | 1 | | 1 | |
| | *Brachycome exilis* | Slender Daisy | | | R | | 6 | | 6 | |
| | *Brachycome goniocarpa* | Dwarf Daisy | | | | 10 | 13 | | 13 | |
| | *Brachycome leptocarpa* | Small Hairy Daisy | | | R | 2 | 2 | 1 | 3 | |
| | *Brachycome lineariloba* | Hard-head Daisy | | | U | 4 | 6 | | 6 | |
| | *Brachycome parvula* var. *parvula* | Coast Daisy | | R | R | | 1 | 5 | 6 | |
| | *Brachycome perpusilla* | Tiny Daisy | | | | 11 | 13 | | 13 | |
| | *Brachycome* sp. | Native Daisy | | | | | 2 | | 2 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Brachycome uliginosa* | Wet-heath Daisy | | R | R | 10 | 11 | | 11 | |
| | *Brachyloma ciliatum* | Fringed Brachyloma | | | | 32 | 39 | 9 | 48 | |
| | *Brachyloma daphnoides* | Daphne Heath | | | | 11 | 13 | 1 | 14 | |
| | *Brachyloma ericoides* ssp. | Brush Heath | | | | | 32 | | 32 | = *Brachyloma ericoides* ssp. *ericoides* |
| | *Brachyloma ericoides* ssp. *ericoides* | Brush Heath | | | | 39 | 52 | 3 | 55 | |
| * | *Brachypodium distachyon* | False Brome | | | | | 13 | | 13 | |
| * | *Brassica tournefortii* | Wild Turnip | | | | | 1 | | 1 | |
| * | *Briza maxima* | Large Quaking-grass | | | | 3 | 4 | 2 | 6 | |
| * | *Briza minor* | Lesser Quaking-grass | | | | 12 | 52 | 4 | 56 | |
| | *Bromus arenarius* | Sand Brome | | | R | 1 | 1 | | 1 | |
| * | *Bromus diandrus* | Great Brome | | | | 3 | 39 | 2 | 41 | |
| * | *Bromus hordeaceus* ssp. *hordeaceus* | Soft Brome | | | | 3 | 28 | 1 | 29 | |
| * | *Bromus madritensis* | Compact Brome | | | | 4 | 17 | | 17 | |
| * | *Bromus rigidus* | Rigid Brome | | | | | 8 | | 8 | |
| * | *Bromus rubens* | Red Brome | | | | 1 | 12 | 1 | 13 | |
| | *Bromus* sp. | Brome | | | | 1 | 15 | | 15 | |
| | *Brunonia australis* | Blue Pincushion | | | | 12 | 15 | 1 | 16 | |
| * | *Buglossoides arvensis* | Sheepweed | | | | | 1 | | 1 | |
| | *Bulbine bulbosa* | Bulbine-lily | | | | 2 | 5 | 2 | 7 | |
| | *Burchardia umbellata* | Milkmaids | | | | 52 | 70 | 9 | 79 | |
| | *Bursaria spinosa* | Sweet Bursaria | | | | 50 | 85 | 8 | 93 | |
| | *Caesia calliantha* | Blue Grass-lily | | | | 30 | 33 | | 33 | |
| | *Caesia parviflora* var. *minor* | Pale Grass-lily | | R | R | | 0 | 1 | 1 | |
| * | *Cakile maritima* ssp. *maritima* | Two-horned Sea Rocket | | | | 2 | 44 | | 44 | |
| | *Caladenia cardiochila* | Heart-lip Spider-orchid | | | | 9 | 10 | | 10 | |
| | *Caladenia cardiochila* x *reticulata* (NC) | Hybrid Spider-orchid | | | | 1 | 1 | | 1 | Putative hybrid. |
| | *Caladenia carnea* complex | Pink Fingers Caladenia | | | | 54 | 54 | | 54 | |
| | *Caladenia carnea* var. *carnea* | Pink Fingers | | | | 24 | 30 | | 30 | |
| | *Caladenia congesta* | Black-tongue Caladenia | | R | R | | 0 | 1 | 1 | |
| | *Caladenia dilatata* complex | Green-comb Spider-orchid | | | | 4 | 4 | | 4 | |
| | *Caladenia latifolia* | Pink Caladenia | | | | 22 | 36 | | 36 | |
| | *Caladenia patersonii* complex | White Spider-orchid | | | | 11 | 12 | | 12 | |
| | *Caladenia prolata* | Shy Caladenia | | | | 1 | 1 | | 1 | |
| | *Caladenia reticulata* | Veined Spider-orchid | | | K | 3 | 3 | | 3 | |
| | *Caladenia* sp. | Spider-orchid | | | | 9 | 14 | | 9 | |
| | *Caladenia vulgaris* | Plain Caladenia | | R | R | 1 | 2 | | 2 | |
| | *Calandrinia brevipedata* | Short-stalked Purslane | | | U | 1 | 22 | | 22 | |
| | *Calandrinia calyptrata* | Pink Purslane | | | U | 2 | 4 | | 4 | |
| | *Calandrinia eremaea* | Dryland Purslane | | | R | 2 | 5 | | 5 | |
| | *Calandrinia granulifera* | Pigmy Purslane | | | Q | 7 | 10 | | 10 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Calandrinia* sp. | Purslane/Parakeelya | | | | 4 | 5 | | 5 | |
| | *Calectasia intermedia* | Eastern Blue Tinsel-lily | | V | V | 1 | 1 | | 1 | |
| | *Callistemon rugulosus* var. | Scarlet Bottlebrush | | | | | 1 | | 1 | *Callistemon rugulosus* var. *rugulosus* |
| | *Callistemon rugulosus* var. *rugulosus* | Scarlet Bottlebrush | | | | 4 | 7 | 2 | 9 | |
| | *Callitris preissii* | Southern Cypress Pine | | | R | 2 | 3 | 1 | 4 | |
| | *Callitris rhomboidea* | Oyster Bay Pine | | | R | 1 | 1 | | 1 | |
| | *Calocephalus citreus* | Lemon Beauty-heads | | | V | | 20 | 1 | 21 | |
| | *Calotis scabiosifolia* var. *scabiosifolia* | Rough Burr-daisy | | | E | | 1 | | 1 | |
| | *Calytrix alpestris* | Snow Heath-myrtle | | | | 16 | 47 | | 47 | |
| | *Calytrix tetragona* | Common Fringe-myrtle | | | | 96 | 149 | 12 | 161 | |
| | *Cardamine gunnii* | Spade-leaf Bitter-cress | | V | V | 1 | 1 | | 1 | |
| | *Cardamine paucijuga* | Annual Bitter-cress | | R | R | 2 | 2 | 1 | 3 | |
| * | *Carduus tenuiflorus* | Slender Thistle | | | | 34 | 66 | 4 | 70 | |
| | *Carex appressa* | Tall Sedge | | | | | 3 | 1 | 4 | |
| | *Carex breviculmis* | Short-stem Sedge | | | U | 1 | 2 | | 2 | |
| | *Carex fascicularis* | Tassel Sedge | | | R | | 2 | 1 | 3 | |
| | *Carex gaudichaudiana* | Fen Sedge | | | R | 1 | 1 | | 1 | |
| | *Carex inversa* var. | Knob Sedge | | | | 1 | 1 | | 1 | |
| | *Carex inversa* var. *inversa* | Knob Sedge | | R | T | 1 | 15 | | 15 | |
| | *Carex* sp. | Sedge | | | | | 1 | | 1 | |
| | *Carex tereticaulis* | Rush Sedge | | | | 2 | 3 | | 3 | |
| | *Carpobrotus modestus* | Inland Pigface | | | | 4 | 6 | | 6 | |
| | *Carpobrotus rossii* | Native Pigface | | | | 11 | 163 | | 163 | |
| | *Carpobrotus* sp. | Pigface | | | | 2 | 5 | | 5 | |
| * | *Carthamus lanatus* | Saffron Thistle | | | | | 11 | | 11 | |
| | *Cassinia uncata* | Sticky Cassinia | | | | | 1 | | 1 | |
| | *Cassytha glabella* forma *dispar* | Slender Dodder-laurel | | | | 57 | 100 | 5 | 105 | |
| | *Cassytha glabella* forma *glabella* | Slender Dodder-laurel | | | | | 7 | | 7 | |
| | *Cassytha melantha* | Coarse Dodder-laurel | | | | 10 | 25 | | 25 | |
| | *Cassytha pubescens* | Downy Dodder-laurel | | | | 51 | 100 | 6 | 106 | |
| | *Cassytha* sp. | Dodder-laurel | | | | 2 | 29 | 2 | 31 | |
| | *Caustis pentandra* | Thick Twist-rush | | | | 8 | 12 | 1 | 13 | |
| * | *Centaurea melitensis* | Malta Thistle | | | | | 6 | | 6 | |
| * | *Centaurea erythraea* | Common Centaury | | | | 24 | 31 | 23 | 54 | |
| * | *Centaurium* sp. | Centaury | | | | 1 | 10 | 1 | 11 | |
| * | *Centaurium spicatum* | Spike Centaury | | | | | 3 | | 3 | |
| * | *Centaurium tenuiflorum* | Branched Centaury | | | | 9 | 29 | 1 | 30 | |
| | *Centella cordifolia* (NC) | | | | | 3 | 3 | | 3 | Used in the broad sense according to Jessop (1993). Now may include either *Centella cordifolia* s. str or **Centella asiatica*. |
| | *Centella cordifolia* s.str. | Native Centella | | | U | 1 | 1 | 2 | 3 | |
| | *Centipeda cunninghamii* | Common Sneezeweed | | | | 1 | 7 | | 7 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Centipeda* sp. | Sneezeweed | | | | | 1 | | 1 | |
| * | *Centranthus macrosiphon* | | | | | | 1 | | 1 | |
| | *Centrolepis aristata* | Pointed Centrolepis | | | | 5 | 21 | | 21 | |
| | *Centrolepis cephaloformis* ssp. | Cushion Centrolepis | | | | | 1 | | 1 | = *Centrolepis cephaloformis* ssp. *cephaloformis* |
| | *Centrolepis cephaloformis* ssp. *cephaloformis* | Cushion Centrolepis | | R | E | 3 | 4 | | 4 | |
| | *Centrolepis polygyna* | Wiry Centrolepis | | | | 2 | 19 | | 19 | |
| | *Centrolepis strigosa* | Hairy Centrolepis | | | | 24 | 39 | | 39 | |
| * | *Cerastium balearicum* | Chickweed | | | | | 46 | | 46 | |
| * | *Cerastium glomeratum* | Common Mouse-ear Chickweed | | | | 48 | 98 | | 98 | |
| | *Cerastium semidecandrum* | Small Mouse-ear Chickweed | | | | 1 | 1 | | 1 | |
| * | *Cerastium semidecandrum* (NC) | Small Mouse-ear Chickweed | | | | 1 | 1 | | 1 | Used in the broad sense according to Jessop & Toelken (1986). Now may include either **Cerastium pumilum* or **C. balearicum*. |
| * | *Cerastium* sp. | Chickweed | | | | 7 | 8 | | 8 | |
| * | *Chamaecytisus palmensis* | Tree Lucerne | | | | 1 | 1 | | 1 | |
| | *Chamaescilla corymbosa* var. *corymbosa* | Blue Squill | | | | 91 | 102 | 3 | 105 | |
| | *Cheilanthes austrotenuifolia* | Annual Rock-fern | | | | 3 | 5 | | 5 | |
| | *Cheiranthera alternifolia* | Hand-flower | | | R | | 1 | 1 | 2 | |
| | *Chenopodium desertorum* ssp. *microphyllum* | Small-leaf Goosefoot | | | U | | 5 | | 5 | |
| * | *Chenopodium glaucum* | Glaucous Goosefoot | | | | 1 | 1 | 2 | 3 | |
| | *Chenopodium pumilio* | Clammy Goosefoot | | | | | 1 | | 1 | |
| | *Chenopodium* sp. | Goosefoot | | | | | 1 | | 1 | |
| | *Chloris truncata* | Windmill Grass | | | U | | 6 | 1 | 7 | |
| | *Choretrum glomeratum* var. | Sour-bush | | | | | 1 | | 1 | |
| | *Choretrum glomeratum* var. *glomeratum* | White Sour-bush | | | | 7 | 11 | | 11 | |
| | *Chorizandra australis* | Bristle-rush | | E | E | 1 | 1 | | 1 | |
| | *Chorizandra enodis* | Black Bristle-rush | | | | 5 | 16 | 4 | 20 | |
| | *Chrysocephalum apiculatum* | Common Everlasting | | | | 9 | 17 | 1 | 18 | |
| | *Chrysocephalum baxteri* | White Everlasting | | | | 2 | 3 | 1 | 4 | |
| | *Chrysocephalum semipapposum* | Clustered Everlasting | | | Q | | 3 | | 3 | |
| * | *Cicendia filiformis* | Slender Cicendia | | | | 2 | 4 | | 4 | |
| * | *Cirsium* sp. | Thistle | | | | | 1 | | 1 | |
| * | *Cirsium vulgare* | Spear Thistle | | | | 37 | 54 | 9 | 63 | |
| | *Cladium procerum* | Leafy Twig-rush | | R | R | | 1 | | 1 | |
| | *Clematis aristata* | Mountain Clematis | | V | V | 1 | 1 | 1 | 2 | |
| | *Clematis microphylla* | Old Man's Beard | | | | 92 | 302 | 5 | 307 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Comesperma calymega* | Blue-spike Milkwort | | | | 5 | 16 | 6 | 22 | |
| | *Comesperma polygaloides* | Mauve Milkwort | | | U | 4 | 21 | 2 | 23 | |
| | *Comesperma scoparium* | Broom Milkwort | | | K | | 1 | | 1 | |
| | *Comesperma volubile* | Love Creeper | | | | 54 | 114 | 4 | 118 | |
| | *Compositae* sp. | Daisy Family | | | | 1 | 4 | | 4 | |
| | *Conospermum patens* | Slender Smoke-bush | | | | 2 | 5 | 2 | 7 | |
| | *Convolvulus* aff. *erubescens* "linear lobes" | Grassland Bindweed | | | U | | 21 | 1 | 22 | |
| | *Convolvulus erubescens* | Australian Bindweed | | | | 1 | 2 | 2 | 4 | |
| | *Convolvulus erubescens* (NC) | Australian Bindweed | | | | 9 | 11 | | 11 | Used in the broad sense according to Jessop (1993). Now may include either *Convolvulus erubescens* or *C.* aff. *erubscens* "linear lobes". |
| | *Convolvulus remotus* | Grassy Bindweed | | | | | 3 | 1 | 4 | |
| | *Convolvulus* sp. | Bindweed | | | | | 2 | | 2 | |
| * | *Conyza albida* | Tall Fleabane | | | | 6 | 6 | | 6 | |
| * | *Conyza bonariensis* | Flax-leaf Fleabane | | | | 1 | 2 | | 2 | |
| * | *Conyza* sp. | Fleabane | | | | 1 | 2 | | 2 | |
| * | *Coprosma repens* | New Zealand Mirror-bush | | | | | 5 | | 5 | |
| | *Correa alba* var. *pannosa* | White Correa | | R | R | | 2 | | 2 | |
| | *Correa reflexa* | Common Correa | | | | | 36 | 2 | 38 | |
| | *Correa reflexa* var. *reflexa* | Common Correa | | | | 100 | 149 | 9 | 158 | |
| | *Corybas despectans* | Coast Helmet-orchid | | | R | | 1 | | 1 | |
| | *Corybas incurvus* | Slaty Helmet-orchid | | | U | | 1 | | 1 | |
| | *Corybas* sp. | Helmet-orchid | | | | 55 | 61 | | 61 | |
| | *Cotula australis* | Common Cotula | | | | 10 | 13 | 1 | 14 | |
| * | *Cotula coronopifolia* | Water Buttons | | | | 1 | 5 | 4 | 9 | |
| | *Cotula reptans* | Creeping Cotula | | R | R | 1 | 1 | | 1 | |
| | *Cotula vulgaris* var. *australasica* | Slender Cotula | | | | 3 | 7 | | 7 | |
| | *Craspedia glauca* | Billy-buttons | | | | 29 | 32 | | 32 | |
| | *Craspedia* sp. (NC) | Billy-buttons | | | | | 1 | | 1 | Used in the broad sense according to Jessop (1993). Now may include either *Craspedia* sp. or *Pycnosorus* sp. |
| * | *Crassula alata* var. *alata* | Three-part Crassula | | | | 2 | 2 | | 2 | |
| | *Crassula closiana* | Stalked Crassula | | | | 5 | 32 | 1 | 33 | |
| | *Crassula colorata* var. | Dense Crassula | | | | 34 | 35 | | 35 | |
| | *Crassula colorata* var. *acuminata* | Dense Crassula | | | | | 3 | | 3 | |
| | *Crassula colorata* var. *colorata* | Dense Crassula | | | | | 3 | | 3 | |
| | *Crassula decumbens* var. *decumbens* | Spreading Crassula | | | | 60 | 93 | | 93 | |
| * | *Crassula natans* var. *minus* | Water Crassula | | | | 3 | 4 | 1 | 5 | |
| | *Crassula sieberiana* ssp. | Australian Stonecrop | | | | | 1 | | 1 | |
| | *Crassula sieberiana* ssp. *sieberiana* | Sieber's Crassula | | E | | | 2 | | 2 | This species is not in this region. Most likely *Crassula sieberiana* ssp. *tetramera*. |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Crassula sieberiana* ssp. *tetramera* | Australian Stonecrop | | | | 16 | 131 | 1 | 132 | |
| * | *Crepis* sp. | Hawksbeard | | | | | 0 | 1 | 1 | |
| * | *Crepis vesicaria* ssp. *haenseleri* | Bladder Hawksbeard | | | | 1 | 1 | | 1 | |
| * | *Critesion marinum* | Sea Barley-grass | | | | | 17 | 4 | 21 | |
| * | *Critesion murinum* ssp. | Barley-grass | | | | | 2 | | 2 | |
| * | *Critesion murinum* ssp. *glaucum* | Blue Barley-grass | | | | 6 | 10 | 1 | 11 | |
| * | *Critesion murinum* ssp. *leporinum* | Wall Barley-grass | | | | | 4 | | 4 | |
| * | *Critesion* sp. | Barley-grass | | | | | 5 | | 5 | |
| | *Cruciferae* sp. | Cress Family | | | | | 1 | | 1 | |
| | *Cryptandra tomentosa* | Heath Cryptandra | | | | 21 | 59 | 1 | 60 | |
| * | *Cuscuta campestris* | Golden Dodder | | | | | 1 | | 1 | |
| * | *Cuscuta planiflora* | Small-seed Alfalfa-dodder | | | | | 0 | 1 | 1 | |
| | *Cyanicula deformis* | Bluebeard Orchid | | | | 4 | 6 | | 6 | |
| | *Cymbonotus preissianus* | Austral Bear's-ear | | | R | 5 | 5 | 1 | 6 | |
| * | *Cynodon dactylon* | Couch | | | | | 2 | 1 | 3 | |
| | *Cynoglossum australe* | Australian Hound's-tongue | | | | 76 | 110 | 1 | 111 | |
| | *Cynoglossum suaveolens* | Sweet Hound's-tongue | | | Q | 3 | 7 | 1 | 8 | |
| * | *Cynosurus echinatus* | Rough Dog's-tail Grass | | | | 11 | 15 | 3 | 18 | |
| | *Cyperaceae* sp. | Sedge Family | | | | | 11 | | 11 | |
| | *Cyperus gymnocaulos* | Spiny Flat-sedge | | | | | 1 | | 1 | |
| | *Cyperus* sp. | Flat-sedge | | | | 1 | 5 | | 5 | |
| | *Cyperus tenellus* | Tiny Flat-sedge | | | | 1 | 7 | | 7 | |
| | *Cyperus vaginatus* | Stiff Flat-sedge | | | | | 0 | 1 | 1 | |
| | *Cyrtostylis reniformis* | Small Gnat-orchid | | | | 34 | 34 | 1 | 35 | |
| | *Cyrtostylis robusta* | Robust Gnat-orchid | | | | 18 | 20 | | 20 | |
| | *Cyrtostylis* sp. | Gnat-orchid | | | | 8 | 10 | | 10 | |
| * | *Dactylis glomerata* | Cocksfoot | | | | 6 | 9 | | 9 | |
| | *Damasonium minus* | Star-fruit | | | V | | 2 | 1 | 3 | |
| | *Dampiera dysantha* | Shrubby Dampiera | | | | 8 | 13 | | 13 | |
| | *Dampiera marifolia* | Velvet Dampiera | | | | | 3 | 1 | 4 | |
| | *Dampiera rosmarinifolia* | Rosemary Dampiera | | | | 8 | 8 | | 8 | |
| | *Dampiera* sp. | Dampiera | | | | | 1 | | 1 | |
| | *Danthonia caespitosa* | Common Wallaby-grass | | | | 13 | 22 | 5 | 27 | |
| | *Danthonia duttoniana* | Brown-back Wallaby-grass | | R | U | | 5 | 1 | 6 | |
| | *Danthonia eriantha* | Hill Wallaby-grass | | | K | 1 | 2 | | 2 | |
| | *Danthonia geniculata* | Kneed Wallaby-grass | | | | 61 | 101 | 8 | 109 | |
| | *Danthonia linkii* var. *fulva* | Leafy Wallaby-grass | | | R | | 20 | 5 | 25 | |
| | *Danthonia pilosa* var. *pilosa* | Velvet Wallaby-grass | | | | 3 | 6 | | 6 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Danthonia racemosa* var. *racemosa* | Slender Wallaby-grass | | | U | | 1 | 1 | 2 | |
| | *Danthonia semiannularis* | Wetland Wallaby-grass | | | U | 3 | 7 | 1 | 8 | |
| | *Danthonia setacea* var. *setacea* | Small-flower Wallaby-grass | | | | 4 | 82 | 33 | 115 | |
| | *Danthonia* sp. | Wallaby-grass | | | | 27 | 46 | 2 | 48 | |
| | *Danthonia tenuior* | Short-awn Wallaby-grass | | R | R | | 1 | | 1 | |
| | *Darwinia micropetala* | Small Darwinia | | | | | 19 | 7 | 26 | |
| | *Darwinia micropetala* (NC) | Small Darwinia | | | | 20 | 20 | | 20 | = *Darwinia micropetala* |
| | *Daucus glochidiatus* | Native Carrot | | | | 85 | 223 | 6 | 229 | |
| | *Daviesia arenaria* | Sand Bitter-pea | | | E | 2 | 2 | | 2 | |
| | *Daviesia benthamii* ssp. *humilis* | Mallee Bitter-pea | | R | T | | 6 | 2 | 8 | |
| | *Daviesia brevifolia* | Leafless Bitter-pea | | | | 63 | 103 | 6 | 109 | |
| | *Daviesia ulicifolia* (NC) | Gorse Bitter-pea | | | | 5 | 5 | 1 | 6 | = *Daviesia ulicifolia* ssp. *ulicifolia* |
| | *Daviesia ulicifolia* ssp. *ulicifolia* | Gorse Bitter-pea | | | | | 0 | 1 | 1 | |
| | *Derwentia decorosa* | Showy Speedwell | | R | | | 1 | | 1 | |
| * | *Desmazeria rigida* | Rigid Fescue | | | | 2 | 26 | | 26 | |
| | *Deyeuxia quadriseta* | Reed Bent-grass | | | | 3 | 3 | 6 | 9 | |
| | *Dianella brevicaulis* | Short-stem Flax-lily | | | | 47 | 124 | 5 | 129 | |
| | *Dianella brevicaulis/revoluta* var. | Black-anther Flax-lily | | | | 56 | 70 | 1 | 71 | Broader taxonomic entity used, when specimens not collected, due to difficulties recognised in the field identification |
| | *Dianella longifolia* var. *grandis* | Pale Flax-lily | | R | E | | 2 | 2 | 4 | |
| | *Dianella revoluta* var. | | | | | | 7 | 2 | 9 | |
| | *Dianella revoluta* var. *revoluta* | Black-anther Flax-lily | | | | 43 | 106 | 25 | 131 | |
| | *Dianella* sp. | Flax-lily | | | | | 2 | | 2 | |
| | *Dichelachne crinita* | Long-hair Plume-grass | | | U | 16 | 25 | 16 | 41 | |
| | *Dichondra repens* | Kidney Weed | | | | 70 | 167 | 6 | 173 | |
| | *Dillwynia cinerascens* | Grey Parrot-pea | | E | E | 1 | 1 | 2 | 3 | |
| | *Dillwynia glaberrima* | Smooth Parrot-pea | | | | 13 | 13 | 9 | 22 | |
| | *Dillwynia hispida* | Red Parrot-pea | | | | 25 | 51 | 2 | 53 | |
| | *Dillwynia sericea* | Showy Parrot-pea | | | | 24 | 36 | 2 | 38 | |
| | *Dillwynia* sp. | Parrot-pea | | | | 1 | 2 | | 2 | |
| * | *Diplotaxis tenuifolia* | Lincoln Weed | | | | | 1 | | 1 | |
| | *Dipodium* sp. | Hyacinth Orchid | | | | | 0 | 2 | 2 | |
| | *Dischisma arenarium* | Sand Dichisma | | | | | 4 | | 4 | |
| | *Distichlis distichophylla* | Emu-grass | | | | 12 | 19 | 3 | 22 | |
| * | *Dittrichia graveolens* | Stinkweed | | | | 2 | 7 | | 7 | |
| | *Diuris* aff. *corymbosa* | Wallflower Donkey-orchid | | | | 4 | 4 | | 4 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Diuris palustris* | Little Donkey-orchid | | | U | 3 | 3 | | 3 | |
| | *Diuris pardina* | Spotted Donkey-orchid | | | | 25 | 28 | | 28 | |
| | *Diuris* sp. | Donkey Orchid | | | | 1 | 1 | | 1 | |
| | *Dodonaea bursariifolia* | Small Hop-bush | | | | | 2 | | 2 | |
| | *Dodonaea humilis* | Dwarf Hop-bush | | | | | 1 | | 1 | |
| | *Dodonaea viscosa* ssp. | Sticky Hop-bush | | | | 12 | 16 | 1 | 17 | |
| | *Dodonaea viscosa* ssp. *spatulata* | Sticky Hop-bush | | | | 42 | 53 | 6 | 59 | |
| | *Drosera auriculata* | Tall Sundew | | | | 59 | 65 | 4 | 69 | |
| | *Drosera glanduligera* | Scarlet Sundew | | | | 28 | 42 | | 42 | |
| | *Drosera macrantha* ssp. *planchonii* | Climbing Sundew | | | | 89 | 104 | | 104 | |
| | *Drosera peltata* | Pale Sundew | | | | 21 | 34 | 1 | 35 | |
| | *Drosera pygmaea* | Tiny Sundew | | | | 4 | 9 | | 9 | |
| | *Drosera* sp. | Sundew | | | | 13 | 15 | 2 | 17 | |
| | *Drosera whittakeri* (NC) | Scented Sundew | | | | 186 | 222 | | 222 | Used in the broad sense according to Jessop (1993). Now may include either *Drosera whittakeri* ssp. *whittakeri* or *Drosera whittakeri* ssp. *aberrans*. |
| * | *Echium plantagineum* | Salvation Jane | | | | 3 | 12 | 3 | 15 | |
| | *Eclipta platyglossa* | Yellow Twin-heads | | | E | | 2 | | 2 | |
| * | *Ehrharta calycina* | Perennial Veldt Grass | | | | 10 | 23 | 1 | 24 | |
| * | *Ehrharta longiflora* | Annual Veldt Grass | | | | 14 | 41 | 1 | 42 | |
| | *Einadia nutans* ssp. | Climbing Saltbush | | | | 1 | 2 | | 2 | = *Einadia nutans* ssp. *nutans* |
| | *Einadia nutans* ssp. *nutans* | Climbing Saltbush | | | | | 8 | 1 | 9 | |
| | *Eleocharis acuta* | Common Spike-rush | | | | 2 | 10 | 5 | 15 | |
| | *Eleocharis pusilla* | Small Spike-rush | | | R | | 0 | 1 | 1 | |
| * | *Elymus farctus* | Sea Wheat-grass | | | | | 6 | | 6 | |
| | *Elymus scabrus* var. *scabrus* | Native Wheat-grass | | | | 3 | 21 | 4 | 25 | |
| | *Enchylaena tomentosa* var. | Ruby Saltbush | | | | | 1 | | 1 | = *Enchylaena tomentosa* var. *tomentosa* |
| | *Enchylaena tomentosa* var. *tomentosa* | Ruby Saltbush | | | | 1 | 5 | | 5 | |
| | *Epacris impressa* | Common Heath | | | | 60 | 61 | 16 | 77 | |
| | *Epilobium billardierianum* ssp. | Robust Willow-herb | | | | | 1 | | 1 | |
| | *Epilobium billardierianum* ssp. *billardierianum* | Robust Willow-herb | | | | 3 | 24 | 8 | 32 | |
| | *Epilobium billardierianum* ssp. *cinereum* | Variable Willow-herb | | | | | 3 | 1 | 4 | |
| | *Epilobium billardierianum* ssp. *x intermedium* | Variable Willow-herb | | | | 3 | 30 | 1 | 31 | |
| * | *Epilobium ciliatum* | Glandular Willow-herb | | | | 1 | 1 | | 1 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Epilobium pallidiflorum* | Showy Willow-herb | | | K | | 2 | | 2 | |
| | *Epilobium* sp. | Willow-herb | | | | 1 | 5 | | 5 | |
| | *Eragrostis infecunda* | Barren Cane-grass | | R | R | | 1 | | 1 | |
| | *Eriochilus cucullatus* | Parson's Bands | | | | 7 | 7 | | 7 | |
| | *Eriostemon pungens* | Prickly Wax-flower | | | | 1 | 1 | | 1 | |
| * | *Erodium botrys* | Long Heron's-bill | | | | 3 | 9 | | 9 | |
| * | *Erodium cicutarium* | Cut-leaf Heron's-bill | | | | 9 | 11 | | 11 | |
| | *Erodium crinitum* | Blue Heron's-bill | | | | 1 | 1 | | 1 | |
| * | *Erodium moschatum* | Musky Herons-bill | | | | 1 | 1 | | 1 | |
| | *Erodium* sp. | Heron's-bill/Crowfoot | | | | 3 | 5 | | 5 | |
| | *Eryngium rostratum* | Blue Devil | | V | T | 1 | 3 | 1 | 4 | |
| | *Eryngium vesiculosum* | Prostrate Blue Devil | | R | U | 1 | 8 | 3 | 11 | |
| | *Eucalyptus* "Carpenters Rocks" | Carpenters Rocks Manna Gum | | V | E | 1 | 1 | | 1 | = *Eucalyptus splendens* ssp. *arcana* [New name Nicolle & Brooker (1998)]. |
| | *Eucalyptus arenacea* | Dune Stringybark | | | | 9 | 44 | 6 | 50 | |
| | *Eucalyptus arenacea/baxteri* | Brown Stringybark | | | | 81 | 82 | | 82 | Broader taxonomic entity used, when specimens not collected, due to difficulties recognised in the field identification |
| | *Eucalyptus baxteri* | Brown Stringybark | | | | 29 | 30 | 27 | 57 | |
| | *Eucalyptus behriana* | Broad-leaf Box | | R | R | 1 | 15 | 1 | 16 | |
| | *Eucalyptus behriana* x *largiflorens* | Broad-leaf/Black Box Hybrid | | | | | 0 | 1 | 1 | |
| | *Eucalyptus calycogona* var. | Square-fruit Mallee | | | | | 1 | | 1 | It is most likely that these records would be the new subspecies recognised as *Eucalyptus calygona* ssp. 'Eastern' (Nicolle 1997). |
| | *Eucalyptus calycogona* var. *calycogona* | Square-fruit Mallee | | | | | 2 | | 2 | |
| | *Eucalyptus camaldulensis* var. | River Red Gum | | | | | 1 | 1 | 2 | = *Eucalyptus camaldulensis* var. *camaldulensis* |
| | *Eucalyptus camaldulensis* var. *camaldulensis* | River Red Gum | | | | 13 | 18 | 5 | 23 | |
| | *Eucalyptus diversifolia* | Coastal White Mallee | | | | 62 | 109 | 9 | 118 | |
| | *Eucalyptus dumosa* | White Mallee | | | | 1 | 10 | | 10 | |
| | *Eucalyptus fasciculosa* | Pink Gum | | | | 96 | 120 | 5 | 125 | |
| | *Eucalyptus incrassata* | Ridge-fruited Mallee | | | | 26 | 70 | 1 | 71 | |
| | *Eucalyptus largiflorens* | River Box | | | V | | 4 | | 4 | |
| | *Eucalyptus largiflorens* x *leucoxylon* subsp. *pruinosa* | Black Box/Blue Gum Hybrid | | | | | 0 | 1 | 1 | |
| | *Eucalyptus leptophylla* | Narrow-leaf Red Mallee | | | | 19 | 48 | 3 | 51 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Eucalyptus leucoxylon* ssp. | South Australian Blue Gum | | | | 37 | 47 | 8 | 55 | |
| | *Eucalyptus leucoxylon* ssp. *leucoxylon* | South Australian Blue Gum | | | | | 0 | 3 | 3 | |
| | *Eucalyptus leucoxylon* ssp. *megalocarpa* | Large-fruit Blue Gum | | R | R | 6 | 7 | | 7 | |
| | *Eucalyptus leucoxylon* ssp. *pruinosa* | Inland South Australian Blue Gum | | | | | 14 | 5 | 19 | |
| | *Eucalyptus leucoxylon* ssp. *pruinosa* (NC) | | | | | 11 | 11 | | 11 | Used in the broad sense according to Jessop & Toelken (1986). Now may include either *Eucalyptus leucoxylon* ssp. *pruinosa* or *E. leucoxylon* ssp. *stephanie*. |
| | *Eucalyptus leucoxylon* ssp. *stephaniae* | Scrubby Blue Gum | | | | | 11 | 5 | 16 | |
| | *Eucalyptus microcarpa* | Grey Box | | | V | | 18 | 2 | 20 | |
| | *Eucalyptus microcarpa* x *odorata* | Grey Box Intergrade | | | | | 2 | | 2 | |
| | *Eucalyptus obliqua* | Messmate Stringybark | | | | 3 | 3 | 13 | 16 | |
| | *Eucalyptus obliqua* var. (NC) | Messmate Stringybark | | | | 26 | 26 | | 26 | = *Eucalyptus obliqua* |
| | *Eucalyptus obliqua* var. *obliqua* (NC) | Messmate Stringybark | | | | | 10 | | 10 | = *Eucalyptus obliqua* |
| | *Eucalyptus odorata* | Peppermint Box | | | R | 4 | 13 | | 13 | |
| | *Eucalyptus ovata* | Swamp Gum | | | | 11 | 18 | 6 | 24 | |
| | *Eucalyptus pauciflora* ssp. *pauciflora* | Snow Gum | | V | V | 1 | 1 | 1 | 2 | |
| | *Eucalyptus porosa* | Mallee Box | | | | 1 | 2 | | 2 | |
| | *Eucalyptus rugosa* | Coastal White Mallee | | | U | 3 | 5 | | 5 | |
| | *Eucalyptus viminalis* ssp. | Manna Gum | | | | | 0 | 2 | 2 | |
| | *Eucalyptus viminalis* ssp. *cygnetensis* | Rough-bark Manna Gum | | | | 48 | 49 | 13 | 62 | |
| | *Eucalyptus willisii* ssp. *willisii* | Willis' Peppermint | | | U | 1 | 1 | 1 | 2 | |
| | *Eucalyptus wimmerensis* | Wimmera Mallee | | R | K | | 1 | | 1 | |
| | *Euchiton gymnocephalus* | Creeping Cudweed | | | | 2 | 5 | | 5 | |
| | *Euchiton gymnocephalus* (NC) | Creeping Cudweed | | | | 1 | 1 | | 1 | = *Euchiton gymnocephalus* |
| | *Euchiton involucratus* | Star Cudweed | | | | 5 | 5 | 6 | 11 | |
| | *Euchiton sphaericus* | Annual Cudweed | | | | 1 | 7 | | 7 | |
| | *Euphorbia drummondii* | Caustic Weed | | | | | 5 | 2 | 7 | |
| * | *Euphorbia paralias* | Sea Spurge | | | | 3 | 50 | | 50 | |
| * | *Euphorbia peplus* | Petty Spurge | | | | 5 | 21 | | 21 | |
| * | *Euphorbia terracina* | False Caper | | | | | 7 | | 7 | |
| | *Euphrasia collina* ssp. *collina* | Purple Eyebright | | V | K | | 3 | | 3 | |
| | *Euphrasia collina* ssp. *tetragona* | Coast Eyebright | | | | 2 | 3 | | 3 | |
| | *Euphrasia* sp. | Eyebright | | | | | 1 | | 1 | |
| | *Eutaxia diffusa* | Large-leaf Eutaxia | | | K | | 2 | 1 | 3 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Eutaxia microphylla* var. *microphylla* | Common Eutaxia | | | | 6 | 28 | 3 | 31 | |
| | *Eutaxia microphylla* var. *microphylla* (erect*)* | Common Eutaxia | | | | | 6 | 1 | 7 | |
| | *Eutaxia microphylla* var. *microphylla* (prostrate) | Common Eutaxia | | | K | | 12 | | 12 | |
| | *Eutaxia* sp. | Eutaxia | | | | | 4 | | 4 | |
| | *Exocarpos aphyllus* | Leafless Cherry | | | | | 2 | | 2 | |
| | *Exocarpos cupressiformis* | Native Cherry | | | | 17 | 24 | 5 | 29 | |
| | *Exocarpos sparteus* | Slender Cherry | | | | 12 | 24 | | 24 | |
| | *Exocarpos syrticola* | Coast Cherry | | | | 5 | 75 | 1 | 76 | |
| * | *Festuca arundinacea* | Tall Meadow Fescue | | | | 2 | 6 | | 6 | |
| * | *Festuca pratensis* | Meadow Fescue | | | | 2 | 2 | | 2 | |
| | *Frankenia pauciflora* var. *fruticulosa* | Southern Sea-heath | | | | | 2 | | 2 | |
| | *Frankenia pauciflora* var. *gunnii* | Southern Sea-heath | | | | | 1 | | 1 | |
| * | *Fumaria capreolata* ssp. *capreolata* | White-flower Fumitory | | | | 1 | 2 | | 2 | |
| * | *Fumaria muralis* ssp. *muralis* | Wall Fumitory | | | | | 1 | | 1 | |
| | *Fungus* sp. | | | | | | 2 | | 2 | |
| | *Gahnia clarkei* | Tall Saw-sedge | | R | R | 4 | 9 | 3 | 12 | |
| | *Gahnia deusta* | Limestone Saw-sedge | | | | 1 | 2 | | 2 | |
| | *Gahnia filum* | Smooth Cutting-grass | | | | 18 | 81 | 6 | 87 | |
| | *Gahnia lanigera* | Black Grass Saw-sedge | | | | 3 | 6 | | 6 | |
| | *Gahnia radula* | Thatch Saw-sedge | | R | R | 1 | 1 | | 1 | |
| | *Gahnia sieberiana* | Red-fruit Cutting-grass | | | | | 1 | | 1 | |
| | *Gahnia* sp. | Saw-sedge | | | | | 3 | | 3 | |
| | *Gahnia trifida* | Cutting Grass | | | | 21 | 35 | 10 | 45 | |
| * | *Galium aparine* | Cleavers | | | | 5 | 8 | | 8 | |
| | *Galium australe* | Tangled Bedstraw | | | | | 0 | 4 | 4 | |
| | *Galium compactum* | Compact Bedstraw | | | | 4 | 4 | 1 | 5 | |
| | *Galium gaudichaudii* | Rough Bedstraw | | | | 2 | 5 | | 5 | |
| | *Galium migrans* | Loose Bedstraw | | | | 6 | 14 | | 14 | |
| * | *Galium murale* | Small Bedstraw | | | | 44 | 129 | | 129 | |
| | *Galium* sp. | Bedstraw | | | | 1 | 7 | | 7 | |
| * | *Gastridium phleoides* | Nit-grass | | | | | 0 | 2 | 2 | |
| | *Gastrodia sesamoides* | Potato Orchid | | R | K | 1 | 1 | 6 | 7 | |
| | *Genoplesium rufum* | Red Midge-orchid | | | | 2 | 5 | | 5 | |
| | *Genoplesium* sp. | Midge Orchid | | | | 1 | 1 | | 1 | |
| | *Gentianella diemensis* | Mountain Gentian | | | V | | 1 | | 1 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| * | *Geranium molle* var. *molle* | Soft Geranium | | | | 13 | 29 | | 29 | |
| | *Geranium potentilloides* var. *potentilloides* | Downy Geranium | | | | 37 | 89 | | 89 | |
| | *Geranium retrorsum* | Grassland Geranium | | | | 8 | 29 | | 29 | |
| | *Geranium solanderi* var. *solanderi* | Austral Geranium | | | | 18 | 34 | 3 | 37 | |
| | *Geranium* sp. | Geranium | | | | 14 | 38 | 3 | 41 | |
| | *Glischrocaryon behrii* | Golden Pennants | | | | 8 | 17 | | 17 | |
| | *Glossodia major* | Purple Cockatoo | | | | 69 | 76 | | 76 | |
| | *Glyceria australis* | Australian Sweet-grass | | | | 2 | 2 | | 2 | |
| | *Glycine clandestina* var. *clandestina* | Twining Glycine | | | | 2 | 2 | | 2 | |
| | *Glycine latrobeana* | Clover Glycine | V | V | V | | 1 | | 1 | |
| | *Glycyrrhiza glabra* | Liquorice | | | | 2 | 2 | | 2 | |
| | *Gnaphalium indutum* | Tiny Cudweed | | | | 4 | 27 | | 27 | |
| | *Gnaphalium* sp. | Cudweed | | | | | 1 | | 1 | |
| | *Gnaphalium* sp. (NC) | | | | | 4 | 4 | | 4 | Used in the broad sense according to Jessop & Toelken (1986). Now may include several genera eg. *Euchiton* sp., *Gamochaeta* sp. |
| * | *Gnaphalium spicatum* (NC) | | | | | 1 | 1 | | 1 | = *Gamochaeta spicata* |
| | *Gnephosis drummondii* | Slender Golden-tip | | | R | | 5 | | 5 | |
| | *Gompholobium ecostatum* | Dwarf Wedge-pea | | | | 10 | 20 | 1 | 21 | |
| | *Gompholobium knightianum* (NC) | Knight's Wedge-pea | | | | 1 | 1 | | 1 | Not naturalised in South Australia. |
| | *Gonocarpus elatus* | Hill Raspwort | | | | | 6 | | 6 | |
| | *Gonocarpus humilis* | Shade Raspwort | | R | R | 1 | 2 | | 2 | |
| | *Gonocarpus mezianus* | Broad-leaf Raspwort | | | | 5 | 5 | | 5 | |
| | *Gonocarpus micranthus* ssp. *micranthus* | Creeping Raspwort | | R | R | | 0 | 1 | 1 | |
| | *Gonocarpus* sp. | Raspwort | | | | | 6 | | 6 | |
| | *Gonocarpus tetragynus* | Small-leaf Raspwort | | | | 132 | 177 | 5 | 182 | |
| | *Goodenia blackiana* | Native Primrose | | | | 3 | 18 | 3 | 21 | |
| | *Goodenia geniculata* | Bent Goodenia | | | | 93 | 113 | 2 | 115 | |
| | *Goodenia heteromera* | Spreading Goodenia | | | V | | 3 | | 3 | |
| | *Goodenia humilis* | Swamp Goodenia | | | U | 7 | 7 | 1 | 8 | |
| | *Goodenia pinnatifida* | Cut-leaf Goodenia | | | V | | 18 | 1 | 19 | |
| | *Goodenia robusta* | Woolly Goodenia | | | | 2 | 6 | | 6 | |
| | *Goodenia* sp. | Goodenia | | | | 1 | 7 | 1 | 8 | |
| | *Goodenia varia* | Sticky Goodenia | | | | 1 | 6 | | 6 | |
| | *Goodenia willisiana* | Silver Goodenia | | | | 1 | 2 | | 2 | |
| | *Goodia lotifolia* var. (NC) | Golden-tip | | | | 4 | 4 | | 4 | = *Goodia medicaginea* |
| | *Goodia lotifolia* var. *lotifolia* (NC) | Golden-tip | | | | | 1 | | 1 | = *Goodia medicaginea* |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Goodia medicaginea* | Western Golden-tip | | | K | | 0 | 1 | 1 | |
| | *Gramineae* sp. | Grass Family | | | | 55 | 105 | 2 | 107 | |
| | *Gratiola peruviana* | Austral Brooklime | | | R | 6 | 6 | 3 | 9 | |
| | *Grevillea aquifolium* | Prickly Grevillea | | R | R | 5 | 5 | | 5 | |
| | *Grevillea ilicifolia* var. | Holly-leaf Grevillea | | | | 3 | 3 | 2 | 5 | |
| | *Grevillea ilicifolia* var. *angustiloba* | Dissected Holly-leaf Grevillea | | | | 1 | 2 | | 2 | |
| | *Grevillea ilicifolia* var. *ilicifolia* | Holly-leaf Grevillea | | | | 3 | 10 | 2 | 12 | |
| | *Grevillea ilicifolia* var. *lobata* | Lobed Holly-leaf Grevillea | | | | 5 | 10 | | 10 | |
| | *Grevillea lavandulacea* var. *lavandulacea* | Spider-flower | | | | 1 | 1 | | 1 | |
| | *Grevillea lavandulacea* var. *sericea* | Spider-flower | | | U | 1 | 5 | | 5 | |
| * | *Gynandriris setifolia* | Thread Iris | | | | | 4 | | 4 | |
| | *Gyrostemon australasicus* | Buckbush Wheel-fruit | | | | 1 | 3 | 1 | 4 | |
| | *Hainardia cylindrica* | Common Barb-grass | | | | 1 | 6 | 1 | 7 | |
| | *Hakea muelleriana* | Heath Needlebush | | | | 28 | 63 | 1 | 64 | |
| | *Hakea nodosa* | Yellow Hakea | | | | 7 | 13 | 5 | 18 | |
| | *Hakea repullulans* | Furze Hakea | | | U | 3 | 5 | 1 | 6 | |
| | *Hakea rostrata* | Beaked Hakea | | | | 66 | 85 | 9 | 94 | |
| | *Hakea rugosa* | Dwarf Hakea | | | | 26 | 40 | 5 | 45 | |
| | *Hakea vittata* | Limestone Needlebush | | | | 39 | 51 | 5 | 56 | |
| | *Haloragaceae* sp. | Raspwort | | | | 4 | 4 | | 4 | |
| | *Haloragis acutangula* forma | Smooth Raspwort | | | | | 3 | | 3 | |
| | *Haloragis aspera* | Rough Raspwort | | | U | | 22 | 3 | 25 | |
| | *Haloragis brownii* | Swamp Raspwort | | R | R | 1 | 2 | | 2 | |
| | *Haloragis eichleri* | Eichler's Raspwort | | R | R | | 1 | | 1 | |
| | *Haloragis heterophylla* | Variable Raspwort | | | U | 4 | 4 | 1 | 5 | |
| | *Halosarcia indica* ssp. *leiostachya* | Brown-head Samphire | | | | 1 | 5 | | 5 | |
| | *Halosarcia lepidosperma* | | | R | K | | 3 | | 3 | |
| | *Halosarcia pergranulata* ssp. | Black-seed Samphire | | | | | 2 | | 2 | = *Halosarcia pergranulata* ssp. *pergranulata* |
| | *Halosarcia pergranulata* ssp. *pergranulata* | Black-seed Samphire | | | | 1 | 3 | | 3 | |
| | *Halosarcia* sp. | Samphire | | | | | 6 | | 6 | |
| | *Halosarcia syncarpa* | Fused Samphire | | | K | | 1 | | 1 | |
| | *Hardenbergia violacea* | Native Lilac | | | U | 1 | 1 | | 1 | |
| * | *Hedypnois rhagadioloides* | Cretan Weed | | | | 1 | 2 | | 2 | |
| | *Helichrysum leucopsideum* | Satin Everlasting | | | | 4 | 49 | 1 | 50 | |
| | *Helichrysum scorpioides* | Button Everlasting | | | | 36 | 44 | 7 | 51 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Helichrysum* sp. (NC) | | | | | | 2 | | 2 | Used in the broad sense according to Jessop & Toelken (1986). Now includes either genera, *Chrysocephalum* or *Ozothamnus*. |
| * | *Helminthotheca echioides* | Ox-tongue | | | | 11 | 18 | 3 | 21 | |
| | *Hemarthria uncinata* var. *uncinata* | Mat Grass | | | | 7 | 7 | | 7 | |
| | *Hemichroa diandra* | Mallee Hemichroa | | | | | 1 | | 1 | |
| | *Hemichroa pentandra* | Trailing Hemichroa | | | | 2 | 3 | | 3 | |
| | *Herb* sp. | | | | | 12 | 23 | | 23 | Herbaceous material unable to be identified to family level |
| | *Hibbertia exutiacies* | Prickly Guinea-flower | | | K | | 0 | 1 | 1 | |
| | *Hibbertia incana* | | | | | 1 | 1 | | 1 | |
| | *Hibbertia prostrata* | Bundled Guinea-flower | | | | 28 | 28 | 6 | 34 | |
| | *Hibbertia riparia* | Guinea-flower | | | | | 38 | 5 | 43 | Used in the broad sense according to Jessop (1993). Now may include several taxa being recognised in the new revision. |
| | *Hibbertia riparia* (glabriuscula) | Smooth Guinea-flower | | | | 126 | 172 | 3 | 175 | |
| | *Hibbertia riparia* (long-leaved aff. *H. stricta*) | Bristly Guinea-flower | | | Q | | 1 | | 1 | |
| | *Hibbertia sericea* var. | Silky Guinea-flower | | | | 74 | 89 | 22 | 111 | |
| | *Hibbertia sericea* var. *scabrifolia* | Rough-leaf Guinea-flower | | | | 73 | 125 | 3 | 128 | |
| | *Hibbertia sericea* var. *sericea* | Silky Guinea-flower | | | | 42 | 61 | 4 | 65 | |
| | *Hibbertia* sp. | Guinea-flower | | | | 1 | 2 | 2 | 4 | |
| | *Hibbertia stricta* (NC) | | | | U | 11 | 11 | | 11 | Used in the broad sense according to Jessop & Toelken (1986). The meaning is ambiguous now, as this species has been split into a variety of *Hibbertia* species. |
| | *Hibbertia stricta* var. *stricta* | Stalked Guinea-flower | | | | | 0 | 6 | 6 | |
| | *Hibbertia virgata* | Twiggy Guinea-flower | | | | 20 | 42 | 1 | 43 | |
| * | *Holcus lanatus* | Yorkshire Fog | | | | 58 | 78 | 22 | 100 | |
| * | *Homeria flaccida* | One-leaf Cape Tulip | | | | 1 | 1 | | 1 | |
| | *Homopholis proluta* | Rigid Panic | | | | | 15 | 2 | 17 | |
| * | *Hordeum* sp. (NC) | | | | | | 3 | | 3 | Most likely all records now belong to **Critesion* sp. |
| | *Hovea linearis* | Common Hovea | | V | V | 4 | 4 | | 4 | |
| | *Hyalosperma demissum* | Dwarf Sunray | | | | 22 | 27 | | 27 | |
| | *Hybanthus floribundus* ssp. *floribundus* | Shrub Violet | | | | 1 | 3 | | 3 | |
| | *Hydrocotyle callicarpa* | Tiny Pennywort | | | | 30 | 39 | | 39 | |
| | *Hydrocotyle capillaris* | Thread Pennywort | | | | 4 | 14 | | 14 | |
| | *Hydrocotyle foveolata* | Yellow Pennywort | | | | 3 | 6 | 1 | 7 | |
| | *Hydrocotyle hirta* | Hairy Pennywort | | | R | 3 | 4 | | 4 | |
| | *Hydrocotyle laxiflora* | Stinking Pennywort | | | | 160 | 246 | 4 | 250 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Hydrocotyle medicaginoides* | Medic Pennywort | | | K | | 6 | 1 | 7 | |
| | *Hydrocotyle muscosa* | Mossy Pennywort | | | | 2 | 4 | | 4 | |
| | *Hydrocotyle pilifera* var. *glabrata* | Buttercup Pennywort | | | | | 1 | | 1 | |
| | *Hydrocotyle plebeya* | | | | U | 1 | 5 | 1 | 6 | |
| | *Hydrocotyle pterocarpa* | Wing Pennywort | | | | 1 | 2 | | 2 | |
| | *Hydrocotyle* sp. | Pennywort | | | | | 46 | | 46 | |
| | *Hydrocotyle tripartita* | Three-part Pennywort | | | | 2 | 2 | | 2 | |
| * | *Hymenolobus procumbens* | Oval Purse | | | | 1 | 2 | | 2 | |
| | *Hypericum gramineum* | Small St John's Wort | | | | 14 | 15 | | 15 | |
| * | *Hypochaeris glabra* | Smooth Cat's Ear | | | | 167 | 246 | 11 | 257 | |
| * | *Hypochaeris radicata* | Rough Cat's Ear | | | | 104 | 150 | 15 | 165 | |
| * | *Hypochaeris* sp. | Cat's Ear | | | | | 14 | | 14 | |
| | *Hypolaena fastigiata* | Tassel Rope-rush | | | | 109 | 173 | 15 | 188 | |
| | *Hypoxis glabella* var. *glabella* | Tiny Star | | | | 6 | 13 | | 13 | |
| | *Hypoxis vaginata* var. *vaginata* | Yellow Star | | | U | 21 | 22 | 1 | 23 | |
| | *Imperata cylindrica* | Blady Grass | | | | | 2 | 1 | 3 | |
| | *Indigofera australis* var. *australis* | Austral Indigo | | | Q | 2 | 2 | | 2 | |
| | *Ipomoea* sp. | Morning-glory/Cow-vine | | | | | 1 | | 1 | No *Ipomoea* species are currently listed as naturalised or native in the SE. |
| | *Iris* sp. | Iris | | | | | 0 | 1 | 1 | |
| | *Isoetes drummondii* ssp. | Plain Quillwort | | | | 1 | 1 | | 1 | |
| | *Isoetopsis graminifolia* | Grass Cushion | | | | 1 | 1 | | 1 | |
| | *Isolepis cernua* | Nodding Club-rush | | | | 2 | 5 | 2 | 7 | |
| | *Isolepis fluitans* | Floating Club-rush | | | U | 3 | 6 | | 6 | |
| | *Isolepis hookeriana* (NC) | Grassy Club-rush | | | R | | 1 | | 1 | Used in the broad sense according to Jessop & Toelken (1986). Now may include either *Isolepis hookeriana* or *I.* aff. *hookeriana* |
| | *Isolepis inundata* | Swamp Club-rush | | | U | 1 | 1 | | 1 | |
| | *Isolepis marginata* | Little Club-rush | | | | 13 | 60 | | 60 | |
| | *Isolepis nodosa* | Knobby Club-rush | | | | 66 | 238 | 28 | 266 | |
| | *Isolepis platycarpa* | Flat-fruit Club-rush | | | | 1 | 14 | | 14 | |
| | *Isolepis* sp. | Club-rush | | | | 1 | 4 | | 4 | |
| | *Isolepis stellata* | Star Club-rush | | | R | | 3 | | 3 | |
| | *Isopogon ceratophyllus* | Horny Cone-bush | | | | 119 | 156 | 17 | 173 | |
| | *Isotoma fluviatilis* ssp. *australis* | Swamp Isotome | | R | R | 1 | 1 | | 1 | |
| | *Ixodia achillaeoides* ssp. *alata* | Hills Daisy | | | U | | 1 | 1 | 2 | |
| | *Ixodia achillaeoides* ssp. *arenicola* | Sand Ixodia | V | E | E | | 0 | 1 | 1 | |
| | *Juncus amabilis* | | | V | K | | 1 | | 1 | |
| | *Juncus australis* | Austral Rush | | R | K | | 5 | | 5 | |
| | *Juncus bufonius* | Toad Rush | | | | 3 | 16 | | 16 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Juncus caespiticius* | Grassy Rush | | | | 1 | 1 | 2 | 3 | |
| * | *Juncus capitatus* | Dwarf Rush | | | | 2 | 6 | | 6 | |
| | *Juncus flavidus* | Yellow Rush | | | K | | 1 | | 1 | |
| | *Juncus holoschoenus* | Joint-leaf Rush | | | | 8 | 8 | 3 | 11 | |
| | *Juncus kraussii* | Sea Rush | | | | 17 | 55 | 7 | 62 | |
| | *Juncus pallidus* | Pale Rush | | | | 13 | 14 | 4 | 18 | |
| | *Juncus pauciflorus* | Loose-flower Rush | | | | | 1 | | 1 | |
| | *Juncus planifolius* | Broad-leaf Rush | | | U | 1 | 1 | | 1 | |
| | *Juncus procerus* | Tall Rush | | R | R | 3 | 3 | | 3 | |
| | *Juncus radula* | Hoary Rush | | V | V | | 5 | 1 | 6 | |
| | *Juncus* sp. | Rush | | | | | 8 | | 8 | |
| | *Juncus subsecundus* | Finger Rush | | | | 6 | 16 | 2 | 18 | |
| | *Kennedia prostrata* | Scarlet Runner | | | | 61 | 85 | 7 | 92 | |
| | *Kunzea pomifera* | Muntries | | | | 77 | 155 | 2 | 157 | |
| * | *Lactuca serriola* | Prickly Lettuce | | | | | 6 | | 6 | |
| | *Lagenifera huegelii* | Coarse Bottle-daisy | | | R | 8 | 11 | | 11 | |
| | *Lagenifera stipitata* var. *stipitata* | Spreading Bottle-daisy | | | | 19 | 20 | | 20 | |
| * | *Lagurus ovatus* | Hare's Tail Grass | | | | 9 | 108 | 8 | 116 | |
| | *Lasiopetalum baueri* | Slender Velvet-bush | | | | 9 | 18 | 1 | 19 | |
| | *Lasiopetalum behrii* | Pink Velvet-bush | | | | | 10 | 1 | 11 | |
| | *Lasiopetalum discolor* | Coast Velvet-bush | | | U | | 11 | | 11 | |
| | *Lasiopetalum schulzenii* | Drooping Velvet-bush | | | U | 1 | 6 | | 6 | |
| | *Lavatera plebeia* | Australian Hollyhock | | | | | 0 | 1 | 1 | |
| | *Lawrencia glomerata* | Clustered Lawrencia | | | | | 5 | | 5 | |
| | *Lawrencia spicata* | Salt Lawrencia | | | U | 4 | 8 | 2 | 10 | |
| | *Lawrencia squamata* | Thorny Lawrencia | | | | | 5 | | 5 | |
| | *Laxmannia orientalis* | Dwarf Wire-lily | | | | 17 | 26 | 2 | 28 | |
| | *Lemna disperma* | Common Duckweed | | | | | 3 | | 3 | |
| | *Lemna* sp. | Duckweed | | | | | 1 | | 1 | |
| * | *Leontodon taraxacoides* ssp. *taraxacoides* | Lesser Hawkbit | | | | 10 | 16 | 2 | 18 | |
| * | *Lepidium africanum* | Common Peppercress | | | | | 6 | 1 | 7 | |
| | *Lepidobolus drapetocoleus* | Scale Shedder | | | | 35 | 70 | | 70 | |
| | *Lepidosperma* aff. *congestum* | | | | | | 1 | 1 | 2 | |
| | *Lepidosperma canescens* | Hoary Rapier-sedge | | | U | 3 | 3 | 2 | 5 | |
| | *Lepidosperma carphoides* | Black Rapier-sedge | | | | 114 | 178 | 6 | 184 | |
| | *Lepidosperma concavum* | Spreading Sword-sedge | | | | 30 | 70 | 2 | 72 | |
| | *Lepidosperma concavum/congestum/laterale* | Sword-sedge | | | | 79 | 79 | 1 | 80 | Broader taxonomic entity used, when specimens not collected, due to difficulties recognised in the field identification |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Lepidosperma congestum* | Clustered Sword-sedge | | | | 7 | 14 | 2 | 16 | |
| | *Lepidosperma curtisiae* | Little Sword-sedge | | | T | 1 | 2 | 1 | 3 | |
| | *Lepidosperma gladiatum* | Coast Sword-sedge | | | | 14 | 121 | 2 | 123 | |
| | *Lepidosperma laterale* (NC) | Sharp Sword-sedge | | | | 15 | 35 | | 35 | Used in the broad sense according to Jessop & Toelken (1986). Previously this was misapplied to other taxa including *L. congestum* and *L. concavum*. |
| | *Lepidosperma laterale* s.str. | Tall Sword-sedge | | | R | | 3 | 4 | 7 | |
| | *Lepidosperma longitudinale* | Pithy Sword-sedge | | | | 5 | 5 | 4 | 9 | |
| | *Lepidosperma semiteres* | Wire Rapier-sedge | | | | 11 | 11 | | 11 | |
| | *Lepidosperma* sp. | Sword-sedge/Rapier-sedge | | | | 2 | 21 | | 21 | |
| | *Lepidosperma viscidum* | Sticky Sword-sedge | | | | 12 | 56 | 3 | 59 | |
| | *Lepilaena cylindrocarpa* | Long-fruit Water-mat | | | | | 1 | | 1 | |
| | *Leporella fimbriata* | Fringed Hare-orchid | | | | 26 | 30 | | 30 | |
| | *Leptocarpus brownii* | Coarse Twine-rush | | | | 39 | 88 | 11 | 99 | |
| | *Leptocarpus* sp. | Twine-rush | | | | | 2 | 1 | 3 | |
| | *Leptocarpus tenax* | Slender Twine-rush | | | | 15 | 18 | 5 | 23 | |
| | *Leptoceras menziesii* | Hare Orchid | | | U | 2 | 2 | | 2 | |
| | *Leptomeria aphylla* | Leafless Currant-bush | | | U | 5 | 5 | 1 | 6 | |
| | *Leptorhynchos squamatus* | Scaly Buttons | | | | 4 | 9 | 3 | 12 | |
| | *Leptospermum continentale* | Prickly Tea-tree | | | | 70 | 88 | 34 | 122 | |
| | *Leptospermum coriaceum* | Dune Tea-tree | | | | | 4 | 1 | 5 | |
| | *Leptospermum lanigerum* | Silky Tea-tree | | | | 7 | 40 | 4 | 44 | |
| | *Leptospermum myrsinoides* | Heath Tea-tree | | | | 118 | 178 | 30 | 208 | |
| | *Leptospermum* sp. | Tea-tree | | | | 1 | 2 | | 2 | |
| | *Lepyrodia muelleri* | Erect Scale-rush | | | | 2 | 2 | 4 | 6 | |
| | *Leucophyta brownii* | Coast Cushion Bush | | | | 1 | 34 | | 34 | |
| | *Leucopogon clelandii* | Cleland's Beard-heath | | R | R | 1 | 14 | 6 | 20 | |
| | *Leucopogon cordifolius* | Heart-leaf Beard-heath | | | | | 1 | | 1 | |
| | *Leucopogon costatus* | Twiggy Beard-heath | | | | 23 | 56 | | 56 | |
| | *Leucopogon ericoides* | Pink Beard-heath | | | | 63 | 66 | 18 | 84 | |
| | *Leucopogon glacialis* | Twisted Beard-heath | | | | 8 | 10 | 1 | 11 | |
| | *Leucopogon lanceolatus* | Lance Beard-heath | | | U | 5 | 6 | | 6 | |
| | *Leucopogon parviflorus* | Coast Beard-heath | | | | 71 | 296 | 15 | 311 | |
| | *Leucopogon rufus* | Ruddy Beard-heath | | | U | 1 | 2 | 1 | 3 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Leucopogon* sp. | Beard-heath | | | | 1 | 2 | | 2 | |
| | *Leucopogon virgatus* | Common Beard-heath | | | | 76 | 77 | 16 | 93 | |
| | *Leucopogon woodsii* | Nodding Beard-heath | | | U | 8 | 19 | 2 | 21 | |
| | *Levenhookia dubia* | Hairy Stylewort | | | | 12 | 20 | | 20 | |
| | *Levenhookia pusilla* | Tiny Stylewort | | | | 20 | 32 | | 32 | |
| | *Lichen* sp. | | | | | 69 | 95 | | 95 | |
| | *Lilaeopsis polyantha* | Australian Lilaeopsis | | | R | 1 | 3 | | 3 | |
| | *Liliaceae* sp. | Lily Family | | | | | 2 | | 2 | |
| * | *Limonium binervosum* | Dwarf Sea-lavender | | | | | 1 | | 1 | |
| * | *Limonium companyonis* | Sea-lavender | | | | | 2 | | 2 | |
| * | *Limonium* sp. | Sea-lavender | | | | 2 | 4 | | 4 | |
| | *Limosella australis* | Australian Mudwort | | | U | | 2 | | 2 | |
| | *Lindsaea linearis* | Screw Fern | | | R | 4 | 4 | 1 | 5 | |
| | *Linum marginale* | Native Flax | | | | 2 | 13 | 4 | 17 | |
| | *Lissanthe strigosa* | Peach Heath | | | R | 2 | 2 | | 2 | |
| | *Lobelia alata* | Angled Lobelia | | | | 4 | 8 | 2 | 10 | |
| | *Lobelia gibbosa* | Tall Lobelia | | | | | 1 | 1 | 2 | |
| | *Lobelia pratioides* | Poison Lobelia | | R | R | | 0 | 1 | 1 | |
| | *Lobelia* sp. | Lobelia | | | | 1 | 1 | | 1 | |
| | *Logania crassifolia* | Coast Logania | | | | | 3 | | 3 | |
| | *Logania linifolia* | Flax-leaf Logania | | | | 12 | 21 | 1 | 22 | |
| | *Logania ovata* | Oval-leaf Logania | | | | 1 | 2 | | 2 | |
| * | *Lolium loliaceum* | Stiff Ryegrass | | | | | 1 | | 1 | |
| | *Lolium multiflorum* | Italian Ryegrass | | | | | 1 | | 1 | |
| * | *Lolium perenne* | Perennial Ryegrass | | | | | 4 | | 4 | |
| * | *Lolium perenne* x *rigidum* | Hybrid Ryegrass | | | | | 6 | | 6 | |
| * | *Lolium rigidum* | Wimmera Ryegrass | | | | 5 | 47 | 2 | 49 | |
| * | *Lolium* sp. | Ryegrass | | | | | 4 | | 4 | |
| | *Lomandra collina* | Sand Mat-rush | | | | 6 | 11 | 2 | 13 | |
| | *Lomandra effusa* | Scented Mat-rush | | | Q | 3 | 10 | 1 | 11 | |
| | *Lomandra filiformis* ssp. *coriacea* | Wattle Mat-rush | | R | R | 2 | 2 | | 2 | |
| | *Lomandra juncea* | Desert Mat-rush | | | | 26 | 46 | | 46 | |
| | *Lomandra longifolia* | Spiny-headed Mat-rush | | | | 12 | 14 | 4 | 18 | |
| | *Lomandra micrantha* ssp. | Small-flower Mat-rush | | | | 22 | 23 | 2 | 25 | |
| | *Lomandra micrantha* ssp. *micrantha* | Small-flower Mat-rush | | | | 2 | 22 | 4 | 26 | |
| | *Lomandra micrantha* ssp. *tuberculata* | Small-flower Mat-rush | | | U | 2 | 3 | | 3 | |
| | *Lomandra nana* | Small Mat-rush | | | | 28 | 43 | 2 | 45 | |
| | *Lomandra sororia* | Sword Mat-rush | | | U | 8 | 33 | 2 | 35 | |
| | *Lotus australis* | Austral Trefoil | | | | | 18 | | 18 | |
| | *Lotus* sp. | Lotus | | | | 1 | 1 | | 1 | |
| * | *Lupinus cosentinii* | Blue Lupin | | | | 3 | 3 | | 3 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Luzula densiflora* | Dense Wood-rush | | | U | 2 | 2 | | 2 | |
| | *Luzula meridionalis* | Common Wood-rush | | | | 8 | 10 | | 10 | |
| | *Luzula* sp. | Wood-rush | | | | 3 | 3 | | 3 | |
| * | *Lycium ferocissimum* | African Boxthorn | | | | 3 | 23 | 2 | 25 | |
| | *Lysiana exocarpi* ssp. *exocarpi* | Harlequin Mistletoe | | | | | 5 | 1 | 6 | |
| | *Lythrum hyssopifolia* | Lesser Loosestrife | | | | 3 | 15 | 1 | 16 | |
| | *Maireana enchylaenoides* | Wingless Fissure-plant | | | U | | 21 | 2 | 23 | |
| | *Maireana oppositifolia* | Salt Bluebush | | | | | 1 | | 1 | |
| * | *Marrubium vulgare* | Horehound | | | | 2 | 10 | 1 | 11 | |
| | *Marsilea drummondii* | Common Nardoo | | | V | | 2 | 1 | 3 | |
| | *Marsilea* sp. | Nardoo | | | | | 1 | | 1 | |
| | *Mazus pumilio* | Swamp Mazus | | V | V | 1 | 1 | | 1 | |
| * | *Medicago lupulina* | Black Medic | | | | 2 | 2 | | 2 | |
| * | *Medicago minima* var. *minima* | Little Medic | | | | 1 | 3 | 1 | 4 | |
| * | *Medicago polymorpha* var. *polymorpha* | Burr-medic | | | | 3 | 5 | | 5 | |
| * | *Medicago* sp. | Medic | | | | 2 | 7 | | 7 | |
| * | *Medicago truncatula* | Barrel Medic | | | | 1 | 1 | | 1 | |
| | *Melaleuca acuminata* | Mallee Honey-myrtle | | | | 1 | 6 | | 6 | |
| | *Melaleuca brevifolia* | Short-leaf Honey-myrtle | | | | 42 | 77 | 16 | 93 | |
| | *Melaleuca decussata* | Totem-poles | | | | | 1 | | 1 | |
| | *Melaleuca gibbosa* | Slender Honey-myrtle | | | R | 6 | 9 | 8 | 17 | |
| | *Melaleuca halmaturorum* ssp. *halmaturorum* | Swamp Paper-bark | | | | 12 | 54 | 11 | 65 | |
| | *Melaleuca lanceolata* ssp. *lanceolata* | Dryland Tea-tree | | | | 28 | 75 | 10 | 85 | |
| | *Melaleuca squamea* | Swamp Honey-myrtle | | R | K | 2 | 2 | 1 | 3 | |
| | *Melaleuca squarrosa* | Bottlebrush Tea-tree | | R | U | 7 | 21 | 5 | 26 | |
| | *Melaleuca uncinata* | Broombush | | | | 27 | 61 | | 61 | |
| | *Melaleuca wilsonii* | Wilson's Honey-myrtle | | R | R | | 6 | | 6 | |
| * | *Melilotus indica* | King Island Melilot | | | | 6 | 19 | 2 | 21 | |
| | *Mentha diemenica* | Slender Mint | | R | R | 4 | 4 | 1 | 5 | |
| | *Mentha satureioides* | Native Pennyroyal | | R | E | | 1 | | 1 | |
| | *Mentha* sp. | Mint | | | | | 1 | | 1 | |
| * | *Mesembryanthemum crystallinum* | Common Iceplant | | | | | 1 | | 1 | |
| | *Microlaena stipoides* var. *stipoides* | Weeping Rice-grass | | | | 2 | 3 | 1 | 4 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Microseris lanceolata* | Yam Daisy | | | | 31 | 45 | 2 | 47 | |
| | *Microtis arenaria* | Notched Onion-orchid | | | | 2 | 2 | | 2 | |
| | *Microtis frutetorum* | | | | | | 4 | | 4 | |
| | *Microtis parviflora* | Slender Onion-orchid | | | U | 1 | 4 | | 4 | |
| | *Microtis* sp. | Onion-orchid | | | | 28 | 40 | 1 | 41 | |
| | *Microtis unifolia* | Common Onion-orchid | | | | | 1 | 1 | 2 | |
| | *Microtis unifolia* (NC) | Common Onion-orchid | | | | 1 | 3 | | 3 | = *Microtis unifolia* complex |
| | *Microtis unifolia* complex | Onion-orchid | | | | 18 | 29 | 4 | 33 | |
| | *Microtis/Prasophyllum* sp. | Onion Orchid/Leek-orchid | | | | | 1 | | 1 | |
| | *Millotia muelleri* | Common Bow-flower | | | | 21 | 32 | 1 | 33 | |
| | *Millotia myosotidifolia* | Broad-leaf Millotia | | | R | | 0 | 1 | 1 | |
| | *Millotia tenuifolia* var. | Soft Millotia | | | | 67 | 78 | | 78 | |
| | *Millotia tenuifolia* var. *tenuifolia* | Soft Millotia | | | | | 2 | | 2 | |
| | *Mimulus gracilis* | Slender Monkey-flower | | | E | | 1 | | 1 | |
| | *Mimulus repens* | Creeping Monkey-flower | | | | | 1 | 3 | 4 | |
| * | *Minuartia mediterranea* | Slender Sandwort | | | | | 24 | | 24 | |
| | *Minuria leptophylla* | Minnie Daisy | | | K | | 1 | | 1 | |
| | *Mitrasacme paradoxa* (NC) | Wiry Mitrewort | | | | 3 | 19 | | 19 | = *Phyllangium divergens* |
| | *Mitrasacme pilosa* var. *pilosa* | Hairy Mitrewort | | V | V | 1 | 1 | | 1 | |
| | *Mitrasacme* sp. | Mitrewort | | | | | 1 | | 1 | |
| * | *Modiola caroliniana* | Red-flowered Mallow | | | | | 0 | 2 | 2 | |
| * | *Moenchia erecta* | Erect Chickweed | | | | 2 | 5 | | 5 | |
| * | *Molineriella minuta* | Small Hair-grass | | | | 1 | 3 | | 3 | |
| | *Monotoca scoparia* | Prickly Broom-heath | | | U | 5 | 6 | 10 | 16 | |
| | *Montia australasica* | White Purslane | | R | R | 1 | 1 | 2 | 3 | |
| | Moss sp. | | | | | 108 | 209 | | 209 | |
| | *Muehlenbeckia adpressa* | Climbing Lignum | | | | 22 | 67 | 2 | 69 | |
| | *Muehlenbeckia gunnii* | Coastal Climbing Lignum | | | | 16 | 87 | 3 | 90 | |
| | *Muellerina eucalyptoides* | Creeping Mistletoe | | | U | 2 | 2 | | 2 | |
| | *Myoporum insulare* | Common Boobialla | | | | 4 | 64 | 2 | 66 | |
| | *Myoporum montanum* | Native Myrtle | | | | | 1 | | 1 | |
| | *Myoporum parvifolium* | Creeping Boobialla | | R | R | | 3 | 1 | 4 | |
| | *Myoporum platycarpum* (NC) | False Sandalwood | | | | 1 | 1 | | 1 | Used in the broad sense according to Jessop & Toelken (1986). Now may include either *Myoporum platycarpum* ssp. *perbellum* or *M. platycarpum* ssp. *platycarpum*. |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Myoporum platycarpum* ssp. *perbellum* | Mallee Sandalwood | | | | | 1 | | 1 | |
| | *Myoporum* sp. | | | | | | 1 | | 1 | |
| | *Myosotis australis* | Austral Forget-me-not | | | | 7 | 43 | 1 | 44 | |
| * | *Myosotis discolor* ssp. *discolor* | Yellow-and-blue Forget-me-not | | | | 5 | 10 | | 10 | |
| | *Myriocephalus rhizocephalus* var. *rhizocephalus* | Woolly-heads | | | U | | 1 | | 1 | |
| | *Myriophyllum integrifolium* | Tiny Milfoil | | R | R | 1 | 1 | | 1 | |
| | *Myriophyllum simulans* | Amphibious Milfoil | | | Q | 1 | 1 | | 1 | |
| | *Myriophyllum* sp. | Milfoil | | | | 1 | 1 | | 1 | |
| | *Myriophyllum variifolium* | Varied Milfoil | | R | K | 2 | 2 | 2 | 4 | |
| | *Myriophyllum verrucosum* | Red Milfoil | | | R | | 1 | 1 | 2 | |
| * | *Myrsiphyllum asparagoides* | Bridal Creeper | | | | 37 | 75 | 5 | 80 | |
| | *Neurachne alopecuroidea* | Fox-tail Mulga-grass | | | | 37 | 60 | 3 | 63 | |
| * | *Nicotiana glauca* | Tree Tobacco | | | | | 1 | | 1 | |
| * | *Oenothera stricta* ssp. *stricta* | Common Evening Primrose | | | | | 1 | | 1 | |
| * | *Olea europaea* ssp. | Olive | | | | 2 | 3 | | 3 | = **Olea europaea* ssp. *europaea* |
| | *Olearia axillaris* | Coast Daisy-bush | | | | 20 | 201 | 3 | 204 | |
| | *Olearia ciliata* var. *ciliata* | Fringed Daisy-bush | | | | 16 | 22 | 1 | 23 | |
| | *Olearia floribunda* var. *floribunda* | Heath Daisy-bush | | | | | 2 | 2 | 4 | |
| | *Olearia glandulosa* | Swamp Daisy-bush | | V | V | | 2 | | 2 | |
| | *Olearia lanuginosa* | Woolly Daisy-bush | | | U | 1 | 4 | 1 | 5 | |
| | *Olearia pannosa* ssp. *pannosa* | Silver Daisy-bush | V | V | T | 1 | 1 | | 1 | |
| | *Olearia ramulosa* | Twiggy Daisy-bush | | | | 5 | 9 | 2 | 11 | |
| | *Olearia* sp. | Daisy-bush | | | | | 1 | | 1 | |
| * | *Onopordum acaulon* | Horse Thistle | | | | | 1 | | 1 | |
| | *Opercularia ovata* | Broad-leaf Stinkweed | | | R | 3 | 3 | | 3 | |
| | *Opercularia scabrida* | Stalked Stinkweed | | | | 2 | 4 | | 4 | |
| | *Opercularia turpis* | Twiggy Stinkweed | | | | 13 | 22 | 3 | 25 | |
| | *Opercularia varia* | Variable Stinkweed | | | | 20 | 24 | 1 | 25 | |
| | *Ophioglossum lusitanicum* | Austral Adder's-tongue | | | U | 7 | 7 | | 7 | |
| | *Orchidaceae* sp. | Orchid Family | | | | | 4 | | 4 | |
| | *Orthoceras strictum* | Horned Orchid | | | R | | 1 | | 1 | |
| * | *Oxalis corniculata* ssp. *corniculata* | Creeping Wood-sorrel | | | | | 18 | | 18 | |
| | *Oxalis perennans* | Native Sorrel | | | | 116 | 173 | 5 | 178 | |
| * | *Oxalis pes-caprae* | Soursob | | | | 2 | 4 | | 4 | |
| | *Oxalis* sp. | Sorrel | | | | | 1 | 1 | 2 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Ozothamnus ferrugineus* | Tree Everlasting | | | U | 14 | 34 | 2 | 36 | |
| | *Ozothamnus retusus* | Notched Bush-everlasting | | | | | 2 | | 2 | |
| | *Ozothamnus turbinatus* | Coast Bush-everlasting | | | U | | 54 | | 54 | |
| * | *Parapholis incurva* | Curly Ryegrass | | | | 2 | 21 | 2 | 23 | |
| * | *Parentucellia latifolia* | Red Bartsia | | | | 3 | 3 | | 3 | |
| * | *Parentucellia viscosa* | Yellow Bartsia | | | | 4 | 4 | 2 | 6 | |
| | *Parietaria debilis* | Smooth-nettle | | | | 13 | 101 | | 101 | |
| * | *Paspalum dilatatum* | Paspalum | | | | 1 | 1 | | 1 | |
| | *Patersonia fragilis* | Short Purple-flag | | | U | 5 | 5 | 4 | 9 | |
| | *Patersonia occidentalis* | Long Purple-flag | | | R | 1 | 1 | 2 | 3 | |
| | *Pelargonium australe* | Australian Pelargonium | | | | 4 | 77 | 1 | 78 | |
| | *Pelargonium littorale* | Native Pelargonium | | | | 10 | 25 | 5 | 30 | |
| | *Pelargonium rodneyanum* | Magenta Pelargonium | | | | 36 | 41 | 4 | 45 | |
| * | *Pennisetum clandestinum* | Kikuyu | | | | | 1 | 1 | 2 | |
| * | *Pentaschistis airoides* | False Hair-grass | | | | | 4 | | 4 | |
| | *Persicaria prostrata* | Creeping Knotweed | | | U | 1 | 1 | | 1 | |
| | *Persoonia juniperina* | Prickly Geebung | | | | 17 | 36 | 2 | 38 | |
| * | *Phalaris aquatica* | Phalaris | | | | 2 | 14 | 1 | 15 | |
| * | *Phalaris minor* | Lesser Canary-grass | | | | 1 | 2 | | 2 | |
| * | *Phalaris paradoxa* | Paradox Canary-grass | | | | | 6 | 2 | 8 | |
| * | *Phalaris* sp. | Canary Grass | | | | 4 | 5 | | 5 | |
| | *Phebalium stenophyllum* | Narrow-leaf Phebalium | | | E | | 0 | 1 | 1 | |
| | *Phragmites australis* | Common Reed | | | | | 15 | 3 | 18 | |
| | *Phyllangium distylis* | Tiny Mitrewort | | R | R | 1 | 2 | | 2 | |
| | *Phyllangium divergens* | Wiry Mitrewort | | | | | 2 | 1 | 3 | |
| | *Phyllota pleurandroides* | Heathy Phyllota | | | | 35 | 67 | | 67 | |
| | *Phyllota remota* | Slender Phyllota | | | U | 5 | 22 | | 22 | |
| | *Picris angustifolia* ssp. *angustifolia* | Coast Picris | | | Q | | 2 | | 2 | |
| | *Picris* sp. | Picris | | | | | 1 | | 1 | |
| | *Pilularia novae-hollandiae* | Austral Pillwort | | R | R | | 1 | | 1 | |
| | *Pimelea curviflora* var. *gracilis* | Curved Riceflower | | | | | 2 | 2 | 4 | |
| | *Pimelea flava* ssp. *flava* | Yellow Riceflower | | | Q | 1 | 1 | | 1 | |
| | *Pimelea glauca* | Smooth Riceflower | | | | 11 | 29 | 9 | 38 | |
| | *Pimelea humilis* | Low Riceflower | | | | 46 | 51 | 6 | 57 | |
| | *Pimelea linifolia* ssp. *linifolia* | Slender Riceflower | | | | 1 | 1 | 3 | 4 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Pimelea micrantha* | Silky Riceflower | | | | | 2 | | 2 | |
| | *Pimelea octophylla* | Woolly Riceflower | | | | 8 | 16 | 3 | 19 | |
| | *Pimelea phylicoides* | Heath Riceflower | | | | 4 | 6 | | 6 | |
| | *Pimelea serpyllifolia* ssp. *serpyllifolia* | Thyme Riceflower | | | | 9 | 158 | | 158 | |
| | *Pimelea* sp. | Riceflower | | | | | 1 | | 1 | |
| | *Pimelea stricta* | Erect Riceflower | | | | 1 | 7 | | 7 | |
| * | *Pinus pinaster* | Maritime Pine | | | | | 0 | 1 | 1 | |
| * | *Pinus radiata* | Radiata Pine | | | | 31 | 31 | 7 | 38 | |
| * | *Piptatherum miliaceum* | Rice Millet | | | | 1 | 1 | | 1 | |
| | *Pittosporum phylliraeoides* var. *microcarpa* | Native Apricot | | | E | 1 | 2 | 5 | 7 | |
| | *Plantago* aff. *debilis* | Shade Plantain | | | R | 1 | 1 | | 1 | |
| * | *Plantago bellardii* | Hairy Plantain | | | | 2 | 5 | | 5 | |
| * | *Plantago coronopus* ssp. | Bucks-horn Plantain | | | | 1 | 1 | 3 | 4 | |
| * | *Plantago coronopus* ssp. *coronopus* | Bucks-horn Plantain | | | | 2 | 4 | | 4 | |
| | *Plantago gaudichaudii* | Narrow-leaf Plantain | | | | 4 | 15 | | 15 | |
| | *Plantago hispida* | Hairy Plantain | | | | 3 | 11 | | 11 | |
| * | *Plantago lanceolata* var. | Ribwort | | | | | 5 | 1 | 6 | = **Plantago lanceolata* var. *lanceolata* |
| * | *Plantago lanceolata* var. *lanceolata* | Ribwort | | | | 3 | 8 | 1 | 9 | |
| | *Plantago* sp. | Plantain | | | | 1 | 4 | | 4 | |
| | *Plantago* sp. B | Little Plantain | | | | 6 | 8 | 1 | 9 | |
| | *Plantago varia* | Variable Plantain | | | | 2 | 4 | | 4 | |
| | *Platysace heterophylla* var. *heterophylla* | Slender Platysace | | | | 2 | 2 | 1 | 3 | |
| * | *Poa annua* | Winter Grass | | | | 13 | 14 | | 14 | |
| * | *Poa bulbosa* | Bulbous Meadow-grass | | | | | 2 | | 2 | |
| | *Poa clelandii* | Matted Tussock-grass | | | K | 1 | 1 | | 1 | |
| | *Poa crassicaudex* | Thick-stem Tussock-grass | | | | 17 | 26 | 4 | 30 | |
| | *Poa fax* | Scaly Poa | | R | R | | 1 | | 1 | |
| | *Poa labillardieri* var. *labillardieri* | Common Tussock-grass | | | | 18 | 19 | 1 | 20 | |
| | *Poa meionectes* | Fine-leaf Tussock-grass | | V | K | 6 | 6 | 1 | 7 | |
| | *Poa morrisii* | Soft Tussock-grass | | R | R | 3 | 3 | 2 | 5 | |
| | *Poa poiformis* | Coast Tussock-grass | | | | 1 | 80 | | 80 | |
| * | *Poa pratensis* | Kentucky Blue-grass | | | | 4 | 4 | | 4 | |
| | *Poa rodwayi* | Velvet Tussock-grass | | R | R | 1 | 4 | 7 | 11 | |
| | *Poa sieberiana* var. *hirtella* | Grey Tussock Grass | | R | R | | 1 | | 1 | |
| | *Poa* sp. | Meadow-grass/Tussock-grass | | | | 15 | 27 | | 27 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Poa tenera* | Slender Tussock-grass | | | U | 9 | 10 | | 10 | |
| | *Podolepis canescens* | Grey Copper-wire Daisy | | | R | | 7 | 1 | 8 | |
| | *Podotheca angustifolia* | Sticky Long-heads | | | | 9 | 21 | 2 | 23 | |
| | *Pogonolepis muelleriana* | Stiff Cup-flower | | | | | 1 | | 1 | |
| * | *Polycarpon tetraphyllum* | Four-leaf Allseed | | | | | 1 | | 1 | |
| * | *Polygala monspeliaca* | Annual Milkwort | | | | 1 | 1 | 2 | 3 | |
| * | *Polygala myrtifolia* | Myrtle-leaf Milkwort | | | | | 0 | 1 | 1 | |
| * | *Polygonum aviculare* | Wireweed | | | | | 5 | | 5 | |
| * | *Polypogon maritimus* | Coast Beard-grass | | | | 1 | 29 | 1 | 30 | |
| * | *Polypogon monspeliensis* | Annual Beard-grass | | | | 2 | 18 | 4 | 22 | |
| | *Pomaderris halmaturina* ssp. | Glenelg Pomaderris | | | | 2 | 2 | 1 | 3 | |
| | *Pomaderris halmaturina* ssp. *halmaturina* | Kangaroo Island Pomaderris | V | V | V | 1 | 1 | 1 | 2 | |
| | *Pomaderris obcordata* | Wedge-leaf Pomaderris | | | | 6 | 14 | 1 | 15 | |
| | *Pomaderris oraria* (NC) | Coast Pomaderris | | | | | 7 | | 7 | Used in the broad sense according to Jessop & Toelken (1986). Now may be either *P. paniculosa* ssp. *paralia* or *P. paniculosa* ssp. *paniculosa*. |
| | *Pomaderris paniculosa* ssp. | | | | | 4 | 4 | | 4 | |
| | *Pomaderris paniculosa* ssp. *paniculosa* | Mallee Pomaderris | | | | | 12 | | 12 | |
| | *Pomaderris paniculosa* ssp. *paralia* | Coast Pomaderris | | | | 1 | 3 | | 3 | |
| | *Pomaderris* sp. | Pomaderris | | | | | 3 | | 3 | |
| | *Poranthera microphylla* | Small Poranthera | | | | 20 | 41 | 3 | 44 | |
| | *Poranthera triandra* | Three-petal Poranthera | | | K | | 1 | 1 | 2 | |
| | *Potamogeton ochreatus* | Blunt Pondweed | | R | R | 3 | 3 | | 3 | |
| | *Potamogeton tricarinatus* | Floating Pondweed | | | | 2 | 6 | 2 | 8 | |
| | *Prasophyllum fitzgeraldii* | Fitzgerald's Leek-orchid | | | R | | 1 | | 1 | |
| | *Prasophyllum odoratum* | Scented Leek-orchid | | | | 1 | 4 | | 4 | |
| | *Prasophyllum* sp. | Leek-orchid | | | | 8 | 12 | | 12 | |
| | *Pratia concolor* | Poison Pratia | | | V | | 4 | | 4 | |
| | *Pratia pedunculata* | Matted Pratia | | | U | 4 | 4 | | 4 | |
| | *Pratia platycalyx* | Salt Pratia | | | U | | 7 | 3 | 10 | |
| | *Pratia puberula* | White-flower Matted Pratia | | V | K | 2 | 2 | | 2 | |
| | *Pseudognaphalium luteoalbum* | Jersey Cudweed | | | | 1 | 2 | 1 | 3 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Pteridium esculentum* | Bracken Fern | | | | 123 | 155 | 32 | 187 | |
| | *Pteris tremula* | Tender Brake | | R | R | | 1 | | 1 | |
| | *Pterostylis* aff. *rufa* | Rufous Greenhood | | | | 1 | 1 | | 1 | |
| | *Pterostylis alata* | Tall Shell-orchid | | | R | | 1 | | 1 | |
| | *Pterostylis curta* | Blunt Greenhood | | R | V | 1 | 1 | | 1 | |
| | *Pterostylis longifolia* | Tall Greenhood | | | | 8 | 9 | | 9 | |
| | *Pterostylis nana* | Dwarf Greenhood | | | | 39 | 51 | | 51 | |
| | *Pterostylis nutans* | Nodding Greenhood | | | U | 5 | 5 | | 5 | |
| | *Pterostylis pedunculata* | Maroon-hood | | | | 37 | 42 | 2 | 44 | |
| | *Pterostylis plumosa* | Bearded Greenhood | | | | 16 | 23 | | 23 | |
| | *Pterostylis sanguinea* | Blood Greenhood | | | | 12 | 15 | 1 | 16 | |
| | *Pterostylis* sp. | Greenhood | | | | 6 | 7 | 1 | 8 | |
| | *Pterostylis tenuissima* | Swamp Greenhood | V | V | V | | 1 | | 1 | |
| | *Ptilotus erubescens* | Hairy-tails | | R | E | | 1 | 1 | 2 | |
| | *Ptilotus exaltatus* var. *semilanatus* | Lamb's Tails | | E | E | | 2 | 1 | 3 | |
| | *Ptilotus macrocephalus* | Feather-heads | | | U | | 0 | 1 | 1 | |
| | *Ptilotus spathulatus* forma *spathulatus* | Pussy-tails | | | K | | 4 | | 4 | |
| * | *Puccinellia fasciculata* | Borrer's Saltmarsh-grass | | | | | 6 | | 6 | |
| | *Puccinellia stricta* var. *stricta* | Australian Saltmarsh-grass | | | | | 1 | | 1 | |
| | *Pultenaea acerosa* | Bristly Bush-pea | | | U | 8 | 15 | 1 | 16 | |
| | *Pultenaea canaliculata* var. *canaliculata* | Soft Bush-pea | | | | | 1 | | 1 | |
| | *Pultenaea densifolia* | Dense Bush-pea | | | U | 1 | 1 | | 1 | |
| | *Pultenaea hispidula* | Rusty Bush-pea | | | U | 2 | 3 | 1 | 4 | |
| | *Pultenaea laxiflora* | Loose-flower Bush-pea | | | V | 1 | 3 | | 3 | |
| | *Pultenaea pedunculata* | Matted Bush-pea | | | | | 4 | 1 | 5 | |
| | *Pultenaea prostrata* | Silky Bush-pea | | | | 16 | 25 | 3 | 28 | |
| | *Pultenaea scabra* | Rough Bush-pea | | R | R | 2 | 2 | | 2 | |
| | *Pultenaea* sp. | Bush-pea | | | | | 1 | | 1 | |
| | *Pultenaea stricta* | Erect Bush-pea | | | U | 5 | 11 | 3 | 14 | |
| | *Pultenaea tenuifolia* | Narrow-leaf Bush-pea | | | | 27 | 71 | 3 | 74 | |
| | *Pultenaea vestita* | Feather Bush-pea | | | R | 1 | 5 | | 5 | |
| | *Pycnosorus chrysanthes* | | | E | E | | 1 | 1 | 2 | |
| | *Pyrorchis nigricans* | Black Fire-orchid | | | | 113 | 135 | | 135 | |
| | *Quinetia urvillei* | Quinetia | | | R | 7 | 8 | | 8 | |
| | *Ranunculus glabrifolius* | Shining Buttercup | | V | V | 1 | 1 | | 1 | |
| | *Ranunculus inundatus* | River Buttercup | | R | R | 1 | 1 | | 1 | |
| | *Ranunculus pachycarpus* | Thick-fruit Buttercup | | | R | 5 | 7 | | 7 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Ranunculus papulentus* | Large River Buttercup | | V | K | 1 | 1 | | 1 | |
| | *Ranunculus pumilio* var. *pumilio* | Ferny Buttercup | | | R | 3 | 3 | | 3 | |
| * | *Ranunculus repens* | Creeping Buttercup | | | | | 1 | | 1 | |
| | *Ranunculus robertsonii* | Slender Buttercup | | R | R | 4 | 4 | | 4 | |
| | *Ranunculus sessiliflorus* var. | Annual Buttercup | | | | 20 | 22 | | 22 | |
| | *Ranunculus sessiliflorus* var. *sessiliflorus* | Annual Buttercup | | | | 1 | 9 | | 9 | |
| | *Ranunculus* sp. | Buttercup | | | | 2 | 2 | | 2 | |
| * | *Raphanus raphanistrum* | Wild Radish | | | | 3 | 3 | | 3 | |
| * | *Rapistrum rugosum* ssp. *rugosum* | Turnip Weed | | | | 2 | 2 | | 2 | |
| * | *Reichardia tingitana* | False Sowthistle | | | | | 5 | | 5 | |
| * | *Reseda luteola* | Wild Mignonette | | | | | 1 | | 1 | |
| | *Restio tetraphyllus* | Tassel Cord-rush | | V | V | 3 | 3 | 1 | 4 | |
| | *Rhagodia candolleana* ssp. | Sea-berry Saltbush | | | | 17 | 20 | 2 | 22 | = *Rhagodia candolleana* ssp. *candolleana* |
| | *Rhagodia candolleana* ssp. *candolleana* | Sea-berry Saltbush | | | | | 154 | 1 | 155 | |
| | *Rhodanthe pygmaea* | Pigmy Daisy | | | | 2 | 3 | | 3 | |
| * | *Ricinus communis* | Castor Oil Plant | | | | | 3 | | 3 | |
| * | *Romulea minutiflora* | Small-flower Onion-grass | | | | | 20 | 2 | 22 | |
| * | *Romulea rosea* var. *australis* | Common Onion-grass | | | | 1 | 4 | 1 | 5 | |
| * | *Romulea* sp. | Onion-grass | | | | | 1 | | 1 | |
| * | *Rorippa microphylla* | One-row Watercress | | | | | 1 | | 1 | |
| * | *Rorippa nasturtium-aquaticum* | Watercress | | | | 1 | 1 | | 1 | |
| * | *Rosa* sp. | Wild Rose/Briar | | | | | 1 | | 1 | |
| * | *Rostraria cristata* | Annual Cat's-tail | | | | 8 | 54 | | 54 | |
| * | *Rostraria pumila* | Tiny Bristle-grass | | | | 1 | 2 | | 2 | |
| * | *Rubus fruticosus* (NC) | Blackberry | | | | | 1 | | 1 | = *Rubus* sp. complex (Blackberries). No specimen in SA has been identified as *R. fruticosus* in the narrow sense (Jessop & Toelken 1986). |
| | *Rubus parvifolius* | Native Raspberry | | | R | 1 | 1 | | 1 | |
| * | *Rubus ulmifolius* var. *ulmifolius* | Blackberry | | | | 2 | 2 | | 2 | |
| | *Rumex brownii* | Slender Dock | | | | 1 | 1 | 1 | 2 | |
| | *Rumex brownii* (NC) | Slender Dock | | | | 5 | 13 | | 13 | = *Rumex brownii* |
| * | *Rumex conglomeratus* | Clustered Dock | | | | 2 | 2 | | 2 | |
| * | *Rumex crispus* | Curled Dock | | | | 1 | 6 | 1 | 7 | |
| | *Rumex dumosus* var. | Wiry Dock | | R | | | 1 | | 1 | |
| | *Rumex dumosus* var. *dumosiformis* | Wiry Dock | | | | | 1 | | 1 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | *Rumex dumosus* var. *dumosus* | Wiry Dock | | | | | 2 | 1 | 3 | |
| * | *Rumex pulcher* ssp. *pulcher* | Fiddle Dock | | | | | 2 | 1 | 3 | |
| | *Rumex* sp. | Dock | | | | 15 | 20 | | 20 | |
| | *Rutidosis multiflora* | Small Wrinklewort | | | | 17 | 25 | | 25 | |
| * | *Sagina apetala* | Annual Pearlwort | | | | | 1 | | 1 | |
| * | *Sagina maritima* | Sea Pearlwort | | | | 3 | 43 | | 43 | |
| * | *Salvia verbenaca* form | Wild Sage | | | | 1 | 1 | 1 | 2 | |
| * | *Salvia verbenaca* form A | Wild Sage | | | | 1 | 9 | 1 | 10 | |
| * | *Sambucus gaudichaudiana* | White Elderberry | | | | 3 | 8 | 1 | 9 | |
| | *Samolus repens* | Creeping Brookweed | | | | 18 | 91 | 5 | 96 | |
| | *Santalum acuminatum* | Quandong | | | R | | 0 | 1 | 1 | |
| | *Santalum murrayanum* | Bitter Quandong | | | U | 1 | 3 | 1 | 4 | |
| | *Sarcocornia blackiana* | Thick-head Samphire | | | | | 1 | | 1 | |
| | *Sarcocornia quinqueflora* | Beaded Samphire | | | | | 17 | 2 | 19 | |
| | *Sarcocornia* sp. | Samphire | | | | | 1 | | 1 | |
| * | *Scabiosa atropurpurea* | Pincushion | | | | | 4 | 1 | 5 | |
| | *Scaevola aemula* | Fairy Fanflower | | | | | 2 | | 2 | |
| | *Scaevola albida* var. *albida* | Pale Fanflower | | | | 1 | 2 | | 2 | |
| | *Scaevola albida* var. *pallida* | Coast Fanflower | | | U | 3 | 3 | | 3 | |
| | *Scaevola calendulacea* | Dune Fanflower | | V | V | | 5 | | 5 | |
| | *Scaevola crassifolia* | Cushion Fanflower | | | | | 9 | | 9 | |
| * | *Schismus barbatus* | Arabian Grass | | | | 9 | 10 | | 10 | |
| | *Schoenoplectus litoralis* | Shore Club-rush | | | R | | 1 | | 1 | |
| | *Schoenoplectus pungens* | Spiky Club-rush | | | | | 4 | 2 | 6 | |
| | *Schoenus apogon* | Common Bog-rush | | | | 53 | 67 | 3 | 70 | |
| | *Schoenus breviculmis* | Matted Bog-rush | | | | 36 | 85 | 3 | 88 | |
| | *Schoenus carsei* | Wiry Bog-rush | | | K | 4 | 4 | | 4 | |
| | *Schoenus deformis* | Small Bog-rush | | | | 17 | 21 | 2 | 23 | |
| | *Schoenus fluitans* | Floating Bog-rush | | | U | 5 | 5 | | 5 | |
| | *Schoenus laevigatus* | | | R | R | | 1 | | 1 | |
| | *Schoenus lepidosperma* ssp. *lepidosperma* | Slender Bog-rush | | R | R | 1 | 1 | 2 | 3 | |
| | *Schoenus maschalinus* | Leafy Bog-rush | | | R | 1 | 1 | | 1 | |
| | *Schoenus nitens* | Shiny Bog-rush | | | | 15 | 42 | 4 | 46 | |
| | *Schoenus sculptus* | Gimlet Bog-rush | | R | V | | 3 | | 3 | |
| | *Schoenus* sp. | Bog-rush | | | | | 1 | | 1 | |
| | *Schoenus tesquorum* | Grassy Bog-rush | | R | R | 1 | 2 | | 2 | |
| | *Scirpus* sp. (NC) | | | | | | 2 | | 2 | Used in the broad sense according to Black (1922-1978). Now may include several genera in Cyperaceae. |
| * | *Scorzonera laciniata* | Scorzonera | | | | 1 | 1 | | 1 | |
| | *Sebaea albidiflora* | White Sebaea | | | U | 1 | 5 | | 5 | |
| | *Sebaea ovata* | Yellow Sebaea | | | | 4 | 25 | 4 | 29 | |
| | *Selaginella gracillima* | Tiny Selaginella | | | U | | 2 | | 2 | |
| | *Selliera radicans* | Shiny Swamp-mat | | | | 17 | 60 | 7 | 67 | |
| | *Senecio anethifolius* | Feathery Groundsel | | | | | 5 | | 5 | |
| | *Senecio biserratus* | Jagged Groundsel | | | U | | 38 | 1 | 39 | |
| | *Senecio cunninghamii* var. *cunninghamii* | Shrubby Groundsel | | | K | | 4 | | 4 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| * | *Senecio elegans* | Purple Groundsel | | | | 4 | 105 | | 105 | |
| | *Senecio glomeratus* | Swamp Groundsel | | | | 51 | 64 | 1 | 65 | |
| | *Senecio glossanthus* | Annual Groundsel | | | | 9 | 17 | 3 | 20 | |
| | *Senecio lautus* | Variable Groundsel | | | | 33 | 167 | 1 | 168 | |
| | *Senecio macrocarpus* | Large-fruit Groundsel | V | V | V | 1 | 10 | | 10 | |
| | *Senecio minimus* var. *minimus* | Fine-tooth Groundsel | | | U | 2 | 3 | 1 | 4 | |
| | *Senecio odoratus* var. *odoratus* | Scented Groundsel | | | Q | 3 | 13 | 7 | 20 | |
| | *Senecio picridioides* | Purple-leaf Groundsel | | | | 28 | 49 | 3 | 52 | |
| | *Senecio psilocarpus* | | V | V | V | 1 | 1 | | 1 | |
| * | *Senecio pterophorus* var. *pterophorus* | African Daisy | | | | 1 | 1 | 2 | 3 | |
| | *Senecio quadridentatus* | Cotton Groundsel | | | | 17 | 30 | 14 | 44 | |
| | *Senecio* sp. | Groundsel | | | | 1 | 12 | 2 | 14 | |
| | *Senecio squarrosus* | Squarrose Groundsel | | | | 10 | 17 | 4 | 21 | |
| | *Senecio tenuiflorus* | Woodland Groundsel | | | | 70 | 72 | 2 | 74 | |
| * | *Sherardia arvensis* | Field Madder | | | | 1 | 3 | | 3 | |
| | *Sida corrugata* var. *angustifolia* | Grassland Sida | | | V | | 9 | 1 | 10 | |
| * | *Silene nocturna* | Mediterranean Catchfly | | | | 1 | 2 | | 2 | |
| * | *Silene* sp. | Catchfly | | | | 2 | 3 | | 3 | |
| * | *Silybum marianum* | Variegated Thistle | | | | 1 | 1 | | 1 | |
| * | *Sisymbrium erysimoides* | Smooth Mustard | | | | | 1 | | 1 | |
| * | *Sisymbrium* sp. | Wild Mustard | | | | | 3 | | 3 | |
| * | *Solanum aviculare* | Kangaroo Apple | | | | | 5 | | 5 | |
| | *Solanum laciniatum* | Cut-leaf Kangaroo-apple | | | | 5 | 17 | 2 | 19 | |
| * | *Solanum nigrum* | Black Nightshade | | | | 6 | 12 | | 12 | |
| | *Solanum simile* | Kangaroo Apple | | | | 1 | 2 | | 2 | |
| | *Solenogyne dominii* | Smooth Solenogyne | | | R | 4 | 13 | 2 | 15 | |
| * | *Sonchus asper* ssp. | Rough Sow-thistle | | | | 7 | 7 | | 7 | |
| * | *Sonchus asper* ssp. *glaucescens* | Rough Sow-thistle | | | | 4 | 9 | | 9 | |
| | *Sonchus hydrophilus* | Native Sow-thistle | | | | 1 | 26 | 1 | 27 | |
| | *Sonchus megalocarpus* | Coast Sow-thistle | | | | | 71 | | 71 | |
| * | *Sonchus oleraceus* | Common Sow-thistle | | | | 44 | 165 | 9 | 174 | |
| | *Sonchus* sp. | Sow-thistle | | | | 4 | 20 | | 20 | |
| * | *Sorghum halepense* | Johnson Grass | | | | 3 | 3 | | 3 | |
| * | *Spergularia marina* | Salt Sand-spurrey | | | | | 2 | | 2 | |
| * | *Spergularia media* | Coast Sand-spurrey | | | | | 3 | 1 | 4 | |
| * | *Spergularia* sp. | Sand-spurrey | | | | | 3 | | 3 | |
| | *Sphaerolobium minus* | Leafless Globe-pea | | R | R | 1 | 2 | 2 | 4 | |
| | *Spinifex sericeus* | Rolling Spinifex | | | | 2 | 49 | | 49 | |
| | *Spiranthes sinensis* ssp. *australis* | Austral Lady's Tresses | | R | R | | 0 | 1 | 1 | |
| | *Sporobolus indicus* var. *capensis* | Rat-tail Grass | | | | | 1 | | 1 | |
| | *Sporobolus* sp. | | | | | | 1 | | 1 | |
| | *Sporobolus virginicus* | Salt Couch | | | | | 15 | 1 | 16 | |
| | *Sporobolus virginicus* (NC) | Salt Couch | | | | 1 | 8 | | 8 | = *Sporobolus virginicus* |
| | *Spyridium eriocephalum* var. | Heath Spyridium | | | | | 2 | | 2 | = *Spyridium eriocephalum* var. *eriocephalum* |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Spyridium eriocephalum* var. *eriocephalum* | Heath Spyridium | | | | 1 | 2 | | 2 | |
| | *Spyridium nitidum* | Shining Spyridium | | | R | | 2 | | 2 | |
| | *Spyridium parvifolium* | Dusty Miller | | | K | 1 | 1 | | 1 | |
| | *Spyridium subochreatum* var. | Velvet Spyridium | | | | 18 | 22 | | 22 | |
| | *Spyridium subochreatum* var. *laxiusculum* | Velvet Spyridium | | | | | 1 | | 1 | |
| | *Spyridium subochreatum* var. *subochreatum* | Velvet Spyridium | | | | | 13 | | 13 | |
| | *Spyridium thymifolium* | Thyme-leaf Spyridium | | | E | 1 | 1 | 1 | 2 | |
| | *Spyridium vexilliferum* var. | Winged Spyridium | | | | 2 | 2 | | 2 | |
| | *Spyridium vexilliferum* var. *latifolium* | Winged Spyridium | | | | 14 | 21 | | 21 | |
| | *Spyridium vexilliferum* var. *vexilliferum* | Winged Spyridium | | | | | 9 | 1 | 10 | |
| | *Stackhousia aspericocca* (NC) | | | | | 9 | 9 | | 9 | = *Stackhousia aspericocca* ssp. May be one of the 2 subspecies in the SE. |
| | *Stackhousia aspericocca* ssp. | Bushy Candles | | | | | 7 | 4 | 11 | |
| | *Stackhousia aspericocca* ssp. "Cylindrical inflorescence"(W.R.Barker 1418) | Bushy Candles | | | | 4 | 6 | 3 | 9 | |
| | *Stackhousia aspericocca* ssp. "One-sided inflorescence"(W.R.Barker 697) | One-sided Candles | | | | 10 | 10 | 1 | 11 | |
| | *Stackhousia monogyna* | Creamy Candles | | | | 5 | 11 | 1 | 12 | |
| | *Stackhousia spathulata* | Coast Candles | | | | 1 | 43 | | 43 | |
| | *Stellaria caespitosa* | Starwort | | V | V | 1 | 1 | | 1 | |
| * | *Stellaria media* | Chickweed | | | | 12 | 50 | | 50 | |
| | *Stellaria palustris* var. | Swamp Starwort | | | | 2 | 2 | | 2 | |
| | *Stellaria pungens* | Prickly Starwort | | R | R | 4 | 4 | | 4 | |
| | *Stellaria* sp. | Starwort | | | | | 1 | | 1 | |
| | *Stenopetalum lineare* | Narrow Thread-petal | | | K | | 2 | | 2 | |
| * | *Stenotaphrum secundatum* | Buffalo Grass | | | | | 0 | 1 | 1 | |
| | *Stipa acrociliata* | Graceful Spear-grass | | | R | 1 | 2 | | 2 | |
| | *Stipa blackii* | Crested Spear-grass | | | V | | 14 | 4 | 18 | |
| | *Stipa curticoma* | Short-crest Spear-grass | | | V | | 6 | | 6 | |
| | *Stipa drummondii* | Cottony Spear-grass | | | | 5 | 5 | | 5 | |
| | *Stipa elegantissima* | Feather Spear-grass | | | R | | 10 | | 10 | |
| | *Stipa eremophila* | Rusty Spear-grass | | | R | | 1 | | 1 | |
| | *Stipa exilis* | Heath Spear-grass | | | R | | 16 | 1 | 17 | |
| | *Stipa flavescens* | Coast Spear-grass | | | | 3 | 45 | 5 | 50 | |
| | *Stipa gibbosa* | Swollen Spear-grass | | R | E | | 2 | 1 | 3 | |
| | *Stipa hemipogon* | Half-beard Spear-grass | | | | | 27 | | 27 | |
| | *Stipa macalpinei* | Annual Spear-grass | | | R | | 0 | 2 | 2 | |
| | *Stipa mollis* | Soft Spear-grass | | | | 3 | 25 | 5 | 30 | |
| | *Stipa mollis* group | Soft Spear-grass | | | | 46 | 46 | | 46 | |
| | *Stipa mundula* | Neat Spear-grass | | | U | 1 | 5 | 1 | 6 | |
| | *Stipa nitida* | Balcarra Spear-grass | | | | | 1 | | 1 | |
| | *Stipa nodosa* | Tall Spear-grass | | | R | 1 | 3 | 1 | 4 | |
| | *Stipa puberula* | Fine-hairy Spear-grass | | R | | | 5 | | 5 | |
| | *Stipa pubinodis* | Long-shaft Spear-grass | | | R | | 1 | 1 | 2 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Stipa scabra* ssp. *falcata* | Slender Spear-grass | | | | 14 | 38 | 2 | 40 | |
| | *Stipa semibarbata* | Fibrous Spear-grass | | | | | 2 | | 2 | |
| | *Stipa* sp. | Spear-grass | | | | 25 | 76 | 1 | 77 | |
| | *Stipa stipoides* | Coast Spear-grass | | | | 2 | 10 | | 10 | |
| | *Stipa trichophylla* | | | | R | | 3 | | 3 | |
| | *Stuartina muelleri* | Spoon Cudweed | | | | 8 | 8 | | 8 | |
| | *Stylidium calcaratum* | Spurred Trigger-plant | | | R | | 1 | | 1 | |
| | *Stylidium graminifolium* | Grass Trigger-plant | | | | 20 | 32 | 13 | 45 | |
| | *Stylidium inundatum* | Hundreds And Thousands | | | | 1 | 2 | | 2 | |
| | *Styphelia adscendens* | Golden Heath | | | U | 10 | 11 | 2 | 13 | |
| | *Styphelia exarrhena* | Desert Heath | | | | 7 | 23 | 1 | 24 | |
| | *Suaeda australis* | Austral Seablite | | | | 2 | 9 | | 9 | |
| | *Swainsona lessertiifolia* | Coast Swainson-pea | | | | 11 | 83 | 1 | 84 | |
| | *Swainsona procumbens* | Broughton Pea | | V | V | | 11 | 1 | 12 | |
| * | *Taraxacum erythrospermum* | Red-seed Dandelion | | | | 1 | 2 | | 2 | |
| * | *Taraxacum officinale* | Dandelion | | | | 13 | 14 | 3 | 17 | |
| | *Templetonia retusa* | Cockies Tongue | | | | 1 | 1 | | 1 | |
| | *Templetonia stenophylla* | Leafy Templetonia | | V | E | | 13 | 4 | 17 | |
| | *Tetragonia implexicoma* | Bower Spinach | | | | 19 | 188 | 2 | 190 | |
| | *Tetraria capillaris* | Hair Sedge | | | | 8 | 31 | 3 | 34 | |
| | *Tetratheca ciliata* | Pink-bells | | | | 53 | 54 | 9 | 63 | |
| | *Tetratheca pilosa* ssp. *pilosa* | Hairy Pink-bells | | | | 3 | 3 | | 3 | |
| | *Teucrium racemosum* | Grey Germander | | | | | 6 | 2 | 8 | |
| | *Thelionema caespitosum* | Tufted Lily | | V | V | | | 1 | 1 | |
| | *Thelymitra antennifera* | Lemon Sun-orchid | | | | 54 | 63 | 1 | 64 | |
| | *Thelymitra aristata* | Great Sun-orchid | | | | 1 | 1 | | 1 | |
| | *Thelymitra benthamiana* | Leopard Sun-orchid | | | R | 7 | 10 | | 10 | |
| | *Thelymitra canaliculata* | Azure Sun-orchid | | | U | | 1 | | 1 | |
| | *Thelymitra epipactoides* | Metallic Sun-orchid | E | E | E | 3 | 3 | 1 | 4 | |
| | *Thelymitra grandiflora* | Great Sun-orchid | | | | | 1 | | 1 | |
| | *Thelymitra juncifolia* | Spotted Sun-orchid | | | U | | 1 | | 1 | |
| | *Thelymitra luteocilium* | Yellow-tuft Sun Orchid | | | | 1 | 1 | | 1 | |
| | *Thelymitra nuda* | Scented Sun-orchid | | | | 13 | 19 | 1 | 20 | |
| | *Thelymitra nuda/pauciflora* | Sun-orchid | | | | 27 | 27 | 1 | 28 | Broader taxonomic entity used, when specimens not collected, due to difficulties recognised in the field identification |
| | *Thelymitra pauciflora* | Slender Sun-orchid | | | | 11 | 13 | 1 | 14 | |
| | *Thelymitra rubra* | Salmon Sun-orchid | | | | 1 | 3 | | 3 | |
| | *Thelymitra* sp. | Sun-orchid | | | | 14 | 24 | | 24 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Themeda triandra* | Kangaroo Grass | | | | 4 | 14 | 6 | 20 | |
| | *Thomasia petalocalyx* | Paper-flower | | | | 55 | 76 | 5 | 81 | |
| | *Threlkeldia diffusa* | Coast Bonefruit | | | | 2 | 45 | | 45 | |
| | *Thysanotus baueri* | Mallee Fringe-lily | | | K | | 0 | 2 | 2 | |
| | *Thysanotus juncifolius* | Rush Fringe-lily | | | | 1 | 19 | 4 | 23 | |
| | *Thysanotus patersonii* | Twining Fringe-lily | | | | 97 | 134 | 5 | 139 | |
| | *Thysanotus* sp. | Fringe-lily | | | | 1 | 1 | | 1 | |
| | *Thysanotus tuberosus* ssp. *parviflorus* | Tuber Fringe-lily | | | | 1 | 1 | 1 | 2 | |
| | *Trachymene cyanopetala* | Purple Trachymene | | | | | 1 | | 1 | |
| | *Trachymene pilosa* | Dwarf Trachymene | | | R | 3 | 6 | | 6 | |
| | *Trachymene* sp. | Trachymene | | | | | 0 | 1 | 1 | |
| * | *Tribolium acutiflorum* | | | | | | 1 | | 1 | |
| | *Tricoryne elatior* | Yellow Rush-lily | | | | | 10 | | 10 | |
| | *Tricoryne elatior* (NC) | Yellow Rush-lily | | | | 14 | 14 | | 14 | Used in the broad sense according to Jessop & Toelken (1986). Now may include either *Tricoryne elatior* or *T. tenella*. |
| | *Tricoryne tenella* | Tufted Yellow Rush-lily | | | | 1 | 16 | 3 | 19 | |
| | *Tricostularia pauciflora* | Needle Bog-rush | | E | E | 1 | 1 | | 1 | |
| * | *Trifolium angustifolium* | Narrow-leaf Clover | | | | 2 | 27 | 3 | 30 | |
| * | *Trifolium arvense* var. *arvense* | Hare's-foot Clover | | | | 7 | 28 | 3 | 31 | |
| * | *Trifolium campestre* | Hop Clover | | | | 5 | 31 | 4 | 35 | |
| * | *Trifolium dubium* | Suckling Clover | | | | | 7 | | 7 | |
| * | *Trifolium fragiferum* var. *fragiferum* | Strawberry Clover | | | | 3 | 3 | 1 | 4 | |
| * | *Trifolium glomeratum* | Cluster Clover | | | | 3 | 8 | 1 | 9 | |
| * | *Trifolium repens* | White Clover | | | | 1 | 2 | | 2 | |
| * | *Trifolium resupinatum* var. | Shaftal Clover | | | | | 0 | 2 | 2 | |
| * | *Trifolium scabrum* | Rough Clover | | | | | 13 | 1 | 14 | |
| * | *Trifolium* sp. | Clover | | | | 15 | 20 | | 20 | |
| * | *Trifolium stellatum* | Star Clover | | | | | 0 | 1 | 1 | |
| * | *Trifolium subterraneum* | Subterranean Clover | | | | 21 | 29 | 1 | 30 | |
| * | *Trifolium tomentosum* | Woolly Clover | | | | 1 | 4 | | 4 | |
| | *Triglochin alcockiae* | Alcock's Water-ribbons | | R | R | 3 | 3 | | 3 | |
| | *Triglochin calcitrapum* | Spurred Arrowgrass | | | R | 2 | 4 | | 4 | |
| | *Triglochin centrocarpum* | Dwarf Arrowgrass | | | | 22 | 38 | | 38 | |
| | *Triglochin mucronatum* | Prickly Arrowgrass | | | | 1 | 6 | | 6 | |
| | *Triglochin procerum* | Water-ribbons | | | | 2 | 2 | 2 | 4 | |
| | *Triglochin procerum* var. *procerum* (NC) | Water-ribbons | | | | 2 | 4 | | 4 | Used in the broad sense according to Jessop & Toelken (1986). Now may include either *Triglochin procerum* or *T. alcockiae*. |
| | *Triglochin* sp. | Arrowgrass/Water-ribbons | | | | | 7 | | 7 | |
| | *Triglochin striatum* | Streaked Arrowgrass | | | | 2 | 12 | 4 | 16 | |
| | *Triglochin trichophorum* | | | | | | 1 | | 1 | |
| | *Triodia irritans* | Spinifex | | | | | 1 | | 1 | |
| | *Triodia irritans* var. (NC) | | | | | 1 | 1 | | 1 | = *Triodia scariosa* ssp. *scariosa* |
| | *Trithuria submersa* | Trithuria | | | | | 1 | | 1 | |
| | *Typha domingensis* | Narrow-leaf Bulrush | | | | 2 | 12 | | 12 | |
| | *Typha orientalis* | Broad-leaf Bulrush | | | | | 0 | 1 | 1 | |
| | *Umbelliferae* sp. | Celery Family | | | | | 1 | | 1 | |
| | *Urtica incisa* | Scrub Nettle | | | U | 2 | 13 | 2 | 15 | |
| | *Urtica* sp. | Nettle | | | | | 2 | | 2 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| * | *Urtica urens* | Small Nettle | | | | | 9 | | 9 | |
| | *Utricularia dichotoma* | Purple Bladderwort | | | U | | 2 | 1 | 3 | |
| | *Utricularia tenella* | Pink Bladderwort | | | U | | 2 | | 2 | |
| | *Utricularia violacea* | Violet Bladderwort | | R | R | | 0 | 1 | 1 | |
| * | *Verbascum thapsus* ssp. *thapsus* | Great Mullein | | | | | 0 | 1 | 1 | |
| * | *Verbascum virgatum* | Twiggy Mullein | | | | | 2 | | 2 | |
| | *Veronica calycina* | Hairy Speedwell | | | U | 20 | 21 | 6 | 27 | |
| | *Veronica gracilis* | Slender Speedwell | | V | V | 1 | 3 | 1 | 4 | |
| | *Veronica gracilis* (NC) | Slender Speedwell | | | | 1 | 2 | | 2 | Used in the broad sense according to Jessop & Toelken (1986). Some records now may include either *Veronica gracilis* or *V*. sp. A. |
| | *Veronica hillebrandii* | Rigid Speedwell | | | K | | 2 | | 2 | |
| | *Veronica* sp. | Speedwell | | | | | 1 | | 1 | |
| * | *Vicia sativa* ssp. *nigra* | Narrow-leaf Vetch | | | | | 2 | | 2 | |
| * | *Vicia tetrasperma* | Slender Vetch | | | | 3 | 3 | | 3 | |
| | *Villarsia reniformis* | Running Marsh-flower | | | | 12 | 16 | 1 | 17 | |
| | *Villarsia* sp. | Marsh-flower | | | | 1 | 1 | | 1 | |
| | *Villarsia umbricola* var. | Lax Marsh-flower | | | | 2 | 2 | | 2 | |
| | *Villarsia umbricola* var. *beaugleholei* | Beauglehole's Marsh-flower | | V | V | | 1 | | 1 | |
| | *Villarsia umbricola* var. *umbricola* | Lax Marsh-flower | | | R | | 4 | | 4 | |
| | *Viminaria juncea* | Native Broom | | R | V | 1 | 1 | | 1 | |
| | *Viola cleistogamoides* | Shy Violet | | | R | 5 | 5 | | 5 | |
| | *Viola cleistogamoides/sieberana* | Native Violet | | | | 13 | 13 | 1 | 14 | |
| | *Viola hederacea* | Ivy-leaf Violet | | | | 18 | 26 | 3 | 29 | |
| | *Viola sieberiana* | Tiny Violet | | | | 7 | 7 | | 7 | |
| | *Vittadinia australasica* var. | Sticky New Holland Daisy | | | | 7 | 7 | | 7 | |
| | *Vittadinia australasica* var. *australasica* | Sticky New Holland Daisy | | | | 1 | 17 | 2 | 19 | |
| | *Vittadinia cuneata* var. | Fuzzy New Holland Daisy | | | | | 1 | | 1 | |
| | *Vittadinia cuneata* var. *cuneata* forma *cuneata* | Fuzzy New Holland Daisy | | | | 2 | 4 | 3 | 7 | |
| | *Vittadinia dissecta* var. *hirta* | Dissected New Holland Daisy | | | | 1 | 2 | | 2 | |
| | *Vittadinia gracilis* | Woolly New Holland Daisy | | | | 6 | 25 | 2 | 27 | |
| | *Vittadinia pterochaeta* | Rough New Holland Daisy | | | E | | 1 | | 1 | |
| | *Vittadinia* sp. | New Holland Daisy | | | | 1 | 2 | 1 | 3 | |
| * | *Vulpia bromoides* | Squirrel-tail Fescue | | | | 1 | 7 | 2 | 9 | |
| * | *Vulpia fasciculata* | Sand Fescue | | | | | 11 | | 11 | |
| * | *Vulpia muralis* | Wall Fescue | | | | 2 | 8 | 5 | 13 | |
| * | *Vulpia myuros* forma *megalura* | Fox-tail Fescue | | | | 1 | 10 | | 10 | |
| * | *Vulpia myuros* forma *myuros* | Rat's-tail Fescue | | | | 7 | 61 | 1 | 62 | |
| * | *Vulpia* sp. | Fescue | | | | 10 | 25 | 1 | 26 | |
| | *Wahlenbergia communis* | Tufted Bluebell | | | | | 11 | 1 | 12 | |
| | *Wahlenbergia gracilenta* | Annual Bluebell | | | | 19 | 38 | 1 | 39 | |
| | *Wahlenbergia litticola* | Coast Bluebell | | | | 2 | 3 | 1 | 4 | |

| I | Scientific Name | Common Name | AUS | SA | SE | SU 29 | All SU | OP | Total | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Wahlenbergia luteola* | Yellow-wash Bluebell | | | K | 1 | 2 | 1 | 3 | |
| | *Wahlenbergia* sp. | Native Bluebell | | | | 40 | 44 | | 44 | |
| | *Wahlenbergia stricta* ssp. *stricta* | Tall Bluebell | | | | 2 | 5 | 1 | 6 | |
| | *Westringia eremicola* | Slender Westringia | | | U | 1 | 1 | | 1 | |
| | *Wilsonia backhousei* | Narrow-leaf Wilsonia | | | | 2 | 19 | 2 | 21 | |
| | *Wilsonia humilis* var. *humilis* | Silky Wilsonia | | | U | | 8 | 1 | 9 | |
| | *Wilsonia rotundifolia* | Round-leaf Wilsonia | | | | 2 | 10 | 6 | 16 | |
| | *Wilsonia* sp. | Wilsonia | | | | | 1 | | 1 | |
| | *Wurmbea dioica* ssp. *dioica* | Early Nancy | | | | | 1 | | 1 | |
| | *Wurmbea dioica* ssp. *dioica* (NC) | Early Star-lily | | | | 21 | 23 | | 23 | Used in the broad sense according to Jessop (1993). Now may include either *Wurmbea dioica* ssp. *dioica* or *W. dioica* ssp. *lacunaria*. |
| | *Xanthorrhoea australis* | Austral Grass-tree | | | | 28 | 29 | 4 | 33 | |
| | *Xanthorrhoea caespitosa* | Sand-heath Yacca | | | | 202 | 274 | 30 | 304 | |
| | *Xanthorrhoea semiplana* ssp. | Yacca | | | | | 0 | 3 | 3 | |
| | *Xanthorrhoea* sp. | Yacca/Grass-tree | | | | 1 | 1 | | 1 | |
| | *Xanthosia dissecta* (NC) | | | | | 24 | 24 | | 24 | = *Xanthosia dissecta* var. *floribunda* |
| | *Xanthosia dissecta* var. *floribunda* | Cut-leaf Xanthosia | | | | | 23 | 1 | 24 | |
| | *Xanthosia pusilla* | Hairy Xanthosia | | | | 22 | 29 | | 29 | |
| | *Xanthosia* sp. | Xanthosia | | | | | 1 | | 1 | |
| * | *Zaluzianskya divaricata* | Spreading Night-phlox | | | | 4 | 4 | | 4 | |
| | *Zoysia matrella* | Manila Grass | | R | R | 1 | 4 | | 4 | |
| | *Zygophyllum billardierei* (NC) | Coast Twinleaf | | | | | 2 | | 2 | = *Zygophyllum billardierei* |
| | *Zygophyllum* sp. | Twinleaf | | | | 1 | 1 | | 1 | |

# Appendix III

**PLANT SPECIES RECORDED FOR THE SOUTH EAST**
List of vascular plant taxonomic categories recorded on biological surveys within the South East Biological Survey study boundary showing sampling frequency.

Generally plant taxonomy and nomenclature follows Jessop (1993) as updated by the SA FLORA Database up to 2001. However, this information excludes many new names and combinations that have been published since the survey e.g. *Austrostipa*. Such changes have not been included, because details about these names and whether they will be adopted by the SA Plant Biodiversity Centre are not readily available until the release of the new SA census of vascular plants which is expected in 2004. Common names are from Jessop and Toelken (1986) and/or SA FLORA Database.

**KEY**

**I** Indigenous/alien designation. Naturalised alien species are designated by an asterisk (*).

**Biological Survey Numbers** included in this summary are;

| Survey No. | Survey Name | Survey No. | Survey Name |
|---|---|---|---|
| **4** | South East Coast | **82** | Coastal Dune & Clifftop |
| **29** | South East | **84** | SE Box & Buloke Woodlands |
| **46** | Temperate Grasslands – WWF | **85** | Deep Swamp |
| **54** | Grassy Woodlands (MK Hyde) | **90** | Tilley Swamp |
| **59** | Heritage Agreement Sites | **99** | Bunbury Conservation Reserve |
| **64** | SE Fire Study (NCS) | **118** | West Avenue Range |
| **68** | Messent Conservation Park | **119** | Lake Hawdon |
| **76** | Gum Lagoon Conservation Park (NCS) | | |

**All SU** Total number of Survey site (quadrat) records for each taxa from all Biological Surveys conducted in the region.

**All OP** Total number of Opportunistic records for each taxa from all Biological Surveys conducted in the region.

**Total** Total number of records for each taxa from Survey sites and Opportunistic collections for the region. This includes Opportunistic records collected during Survey 29.

**No. of Surveys** Total number of Biological Surveys conducted in the region where each taxa has been recorded.

(NC) Designated as a non-current name in the SA FLORA Database 2003. A non-current name represents a previous taxonomic circumscription corresponding to one or more currently recognised taxa. Non-current names are linked to one or more current species names.

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Acacia acinacea* | Wreath Wattle | | 4 | | 3 | | 5 | | 1 | | 16 | | | | | | 29 | 1 | 30 | 5 |
| | *Acacia* aff. *halliana* | Hall's Wattle | | | | | | | | | | 3 | | | | | | 3 | | 3 | 1 |
| * | *Acacia baileyana* | Cootamundra Wattle | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Acacia brachybotrya* | Grey Mulga-bush | | 7 | | | | | | 5 | | | | | | | | 12 | 2 | 14 | 2 |
| | *Acacia cupularis* | Cup Wattle | 2 | 2 | | | | 1 | | | 1 | | | | | | | 6 | | 6 | 4 |
| | *Acacia dodonaeifolia* | Hop-bush Wattle | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Acacia farinosa* | Mealy Wattle | | 3 | | | 1 | | | 2 | | 8 | | | | | | 14 | 3 | 17 | 4 |
| | *Acacia hakeoides* | Hakea Wattle | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| | *Acacia halliana* (NC) | Hall's Wattle | | | | | | 1 | | | | | | | | | | 1 | | 1 | 1 |
| | *Acacia leiophylla* | Coast Golden Wattle | 26 | 17 | | | | | | 4 | 8 | | | | | | | 55 | 4 | 59 | 4 |
| | *Acacia leiophylla/pycnantha* | | | 16 | | | | | | | | | | | | | | 16 | | 16 | 1 |
| | *Acacia longifolia* var. | Sallow Wattle | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Acacia longifolia* var. *longifolia* | Sallow Wattle | | 5 | | | | | | | | | 1 | | | | | 6 | 1 | 7 | 2 |
| | *Acacia longifolia* var. *sophorae* | Coastal Wattle | 64 | 89 | | | | | 1 | 4 | 96 | | 5 | 6 | | 4 | | 269 | 17 | 286 | 8 |
| | *Acacia mearnsii* | Black Wattle | 2 | 17 | | | | | | | | | | | | | | 19 | 8 | 27 | 2 |
| | *Acacia melanoxylon* | Blackwood | 8 | 55 | | | | | | | | | | | | | | 63 | 14 | 77 | 2 |
| | *Acacia microcarpa* | Manna Wattle | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| | *Acacia mitchellii* | Mitchell's Wattle | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Acacia myrtifolia* (NC) | Myrtle Wattle | 4 | 72 | | | | | | | | | | | | | | 76 | | 76 | 2 |
| | *Acacia myrtifolia* var. | Myrtle Wattle | | | | | | 2 | | 4 | | | | | | | | 6 | 3 | 9 | 2 |
| | *Acacia myrtifolia* var. *myrtifolia* | Myrtle Wattle | | 1 | | | 1 | | 3 | 2 | | | | 1 | 1 | | | 9 | 4 | 13 | 6 |
| | *Acacia oxycedrus* | Spike Wattle | | 13 | | | | | | | | | | | | | | 13 | 12 | 25 | 1 |
| | *Acacia paradoxa* | Kangaroo Thorn | 1 | 25 | | | | | | | | 1 | | | | | | 27 | 1 | 28 | 3 |
| | *Acacia pycnantha* | Golden Wattle | 4 | 57 | | | | 3 | 4 | 6 | 2 | 6 | 1 | | | 1 | | 84 | 11 | 95 | 9 |
| | *Acacia rigens* | Nealie | | | | | | 1 | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Acacia rupicola* | Rock Wattle | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Acacia saligna* | Golden Wreath Wattle | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Acacia spinescens* | Spiny Wattle | 1 | 64 | 1 | | 1 | 12 | 10 | 12 | | 3 | 1 | 4 | 3 | 2 | | 114 | 2 | 116 | 12 |
| | *Acacia stricta* | Hop Wattle | | 1 | | | | | | | | | | | | | | 1 | 3 | 4 | 1 |
| | *Acacia suaveolens* | Sweet Wattle | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Acacia trineura* | Three-nerve Wattle | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Acacia verticillata* | Prickly Moses | 8 | 40 | | | | | | 1 | | | 1 | 2 | | | | 52 | 11 | 63 | 5 |
| | *Acaena agnipila* var. | Downy Sheep's Burr | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Acaena echinata* var. | Sheep's Burr | | 41 | | 1 | | | | 1 | | 20 | 1 | | | 1 | | 65 | 5 | 70 | 6 |
| | *Acaena echinata* var. *subglabricalyx* | Sheep's Burr | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Acaena novae-zelandiae* | Biddy-biddy | 69 | 61 | | | | | 2 | | 49 | | 1 | 1 | | 3 | | 186 | 3 | 189 | 7 |
| | *Acaena* sp. | Sheep's Burr | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Acaena* x *anserovina* | Hybrid Burr | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| * | *Acetosella vulgaris* | Sorrel | | 7 | | | | | | | | | | | | | | 7 | | 7 | 1 |
| | *Acianthus caudatus* var. | Mayfly Orchid | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| | *Acianthus pusillus* | Mosquito Orchid | 1 | 22 | | | | | | 2 | | | | | | | | 25 | | 25 | 3 |
| | *Acianthus* sp. | Mosquito Orchid | 3 | 1 | | | | | | 3 | | | | | | | | 7 | | 7 | 3 |
| | *Acrotriche affinis* | Ridged Ground-berry | 2 | 41 | | | | 2 | | 7 | 1 | 1 | | 3 | | 1 | | 58 | 2 | 60 | 8 |
| | *Acrotriche cordata* | Blunt-leaf Ground-berry | | 26 | | | | | 3 | 5 | 3 | | | 4 | | 2 | | 43 | 3 | 46 | 6 |
| | *Acrotriche depressa* | Native Currant | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Acrotriche serrulata* | Cushion Ground-berry | 1 | 81 | | | | 5 | 6 | 1 | | | | 3 | 2 | 2 | | 101 | 18 | 119 | 8 |
| | *Actinobole uliginosum* | Flannel Cudweed | | 9 | | | | | | | | | | | | | | 9 | | 9 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Adenanthos terminalis* | Yellow Gland-flower | | 25 | | | | 10 | 13 | 8 | | | | 2 | 5 | | | 63 | | 63 | 6 |
| | *Adriana klotzschii* | Coast Bitter-bush | 8 | 6 | | | | | | | 14 | | | | | | | 28 | 2 | 30 | 3 |
| | *Agrostis aemula* | Blown-grass | | 6 | | 1 | | | | | 3 | | | | | | | 10 | 3 | 13 | 3 |
| | *Agrostis avenacea* var. | Common Blown-grass | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Agrostis avenacea* var. *avenacea* | Common Blown-grass | | 1 | | | | | | 1 | | 8 | 5 | 1 | | | | 16 | 3 | 19 | 5 |
| | *Agrostis billardieri* var. | Blown-grass | | | | | | | 2 | | | | | | | | | 2 | | 2 | 1 |
| | *Agrostis billardieri* var. *billardieri* | Coast Blown-grass | 1 | | | | | | | | | | | 2 | | | | 3 | 1 | 4 | 2 |
| | *Agrostis billardieri* var. *filifolia* | Narrow-leaf Blown-grass | | 1 | | | | | | | | | | | | 2 | 6 | 9 | 2 | 11 | 3 |
| * | *Agrostis capillaris* var. *capillaris* | Brown-top Bent | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Agrostis* sp. | Blown-grass/Bent Grass | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Aira caryophyllea* | Silvery Hair-grass | | 1 | | | | | | | | | 4 | | | | 1 | 6 | | 6 | 3 |
| * | *Aira cupaniana* | Small Hair-grass | | 3 | 1 | | | | | 3 | 8 | 10 | | | 2 | 1 | | 28 | 7 | 35 | 7 |
| * | *Aira elegantissima* ssp. *elegantissima* | Delicate Hair-grass | | 2 | | | | | | | | | 1 | | | 1 | | 4 | | 4 | 3 |
| * | *Aira* sp. | Hair-grass | 11 | 1 | | | | | | | | 1 | 2 | 8 | | 4 | | 27 | 1 | 28 | 6 |
| | *Ajuga australis* form | Australian Bugle | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Ajuga australis* form A | Australian Bugle | 1 | 4 | | | | | | | | | 2 | 1 | | 1 | | 9 | 1 | 10 | 5 |
| | *Ajuga australis* form B | Lesser Bugle | | 8 | | | | | | | | | | | | 1 | | 9 | 2 | 11 | 2 |
| * | *Albizia lophantha* | Cape Leeuwin Wattle | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Allocasuarina luehmannii* | Bull Oak | | 2 | | 3 | | | | | | 28 | | | | | | 33 | 4 | 37 | 3 |
| | *Allocasuarina mackliniana* ssp. | Macklin's Oak-bush | | 5 | | | | | | | | | | 1 | | | | 6 | | 6 | 2 |
| | *Allocasuarina mackliniana* ssp. *mackliniana* | Macklin's Oak-bush | | 4 | | | | | | 1 | | | | | 1 | | | 6 | | 6 | 3 |
| | *Allocasuarina mackliniana* ssp. *xerophila* | Macklin's Oak-bush | | 1 | | | | | 9 | | | | | | | | | 10 | 1 | 11 | 2 |
| | *Allocasuarina muelleriana* ssp. | Common Oak-bush | | | | | | 6 | | 4 | | | | 1 | | | | 11 | 2 | 13 | 3 |
| | *Allocasuarina muelleriana* ssp. *muelleriana* | Common Oak-bush | | 55 | | | | | 8 | 6 | | | 1 | 3 | 4 | | | 77 | 1 | 78 | 6 |
| | *Allocasuarina paludosa* | Swamp Oak-bush | | 3 | | | | | | | | | | | | | | 3 | 4 | 7 | 1 |
| | *Allocasuarina pusilla* | Dwarf Oak-bush | | 30 | | | | 8 | 14 | 7 | | | | 1 | 3 | | | 63 | | 63 | 6 |
| | *Allocasuarina* sp. | Sheoak/Oak-bush | | | | | | | 1 | | | | | | | | | 1 | | 1 | 1 |
| | *Allocasuarina verticillata* | Drooping Sheoak | 7 | 16 | | | | | | | 4 | | | 2 | | | | 29 | 6 | 35 | 4 |
| | *Alternanthera denticulata* | Lesser Joyweed | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| | *Alyxia buxifolia* | Sea Box | 4 | | | | | | | | 21 | | | | | | | 25 | | 25 | 2 |
| * | *Ammophila arenaria* | Marram Grass | 2 | | | | | | | | 9 | | | | | | | 11 | | 11 | 2 |
| | *Amperea xiphoclada* var. *xiphoclada* | Broom Spurge | | 7 | | | | | | | | | | | | | | 7 | 2 | 9 | 1 |
| | *Amphibromus archeri* | Pointed Swamp Wallaby-grass | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Amphibromus macrorhinus* | Long-nosed Swamp Wallaby-grass | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| | *Amphibromus nervosus* | Veined Swamp Wallaby-grass | | 1 | | | | | | | | 2 | | | | | | 3 | | 3 | 2 |
| | *Amphibromus recurvatus* | Dark Swamp Wallaby-grass | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Amphipogon caricinus* var. *caricinus* | Long Grey-beard Grass | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Amphipogon strictus* var. *setifer* | Spreading Grey-beard Grass | | 3 | | | | | 1 | | | | | | | | | 4 | | 4 | 2 |
| | *Amyema linophyllum* ssp. *orientale* | Casuarina Mistletoe | | | | | | | | | | 8 | | | | | | 8 | | 8 | 1 |
| | *Amyema melaleucae* | Tea-tree Mistletoe | 2 | 3 | | | | | | 3 | 1 | | 1 | 3 | | 2 | | 15 | 3 | 18 | 7 |
| | *Amyema miquelii* | Box Mistletoe | | 26 | | | | | | | | | 2 | 1 | | 1 | | 30 | | 30 | 4 |
| | *Amyema pendulum* ssp. *pendulum* | Drooping Mistletoe | 1 | 21 | | | | 1 | | | | | | 1 | 1 | | | 25 | | 25 | 5 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Amyema* sp. | Mistletoe | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Anagallis arvensis* | Pimpernel | 20 | 31 | 1 | | | | 2 | 7 | 62 | 4 | 6 | 8 | | 5 | 2 | 148 | 8 | 156 | 11 |
| * | *Anagallis minima* | Chaffweed | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Anagallis* sp. | | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Anchusa arvensis* ssp. *arvensis* | Bugloss | | | | | | | | | 3 | | | | | | | 3 | | 3 | 1 |
| | *Angianthus preissianus* | Salt Angianthus | 1 | 4 | | | | | 4 | 8 | | | 6 | 4 | 2 | 3 | 6 | 38 | 5 | 43 | 9 |
| | *Angianthus tomentosus* | Hairy Angianthus | | | | | | | | | | | | 2 | | | | 2 | | 2 | 1 |
| * | *Anthoxanthum odoratum* | Sweet Vernal Grass | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Aphanes australiana* | Australian Piert | | 8 | | | | | | | 6 | | | | | | | 14 | | 14 | 2 |
| | *Aphelia pumilio* | Dwarf Aphelia | | 2 | | | | | | | 2 | | | | | | | 4 | | 4 | 2 |
| | *Apium annuum* | Annual Celery | | 2 | | | | | | 1 | 3 | | 1 | 2 | | 1 | 1 | 11 | | 11 | 7 |
| * | *Apium graveolens* | Celery | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Apium prostratum* ssp. *prostratum* var. | Native Celery | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Apium prostratum* ssp. *prostratum* var. *filiforme* | Native Celery | | 2 | | | | | | | 3 | | | | | | | 5 | 1 | 6 | 2 |
| | *Apium prostratum* ssp. *prostratum* var. *prostratum* | Native Celery | 7 | | | | | | | | 27 | | 1 | | | | | 35 | | 35 | 3 |
| | *Apium* sp. | Celery | 13 | | | | | | | | | | | | | | | 13 | | 13 | 1 |
| * | *Arctotheca calendula* | Cape Weed | | 40 | | | | 5 | | 8 | 2 | 7 | | | | | | 62 | | 62 | 5 |
| * | *Arctotheca populifolia* | Beach Daisy | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Argentipallium blandowskianum* | Woolly Everlasting | | 10 | | | | | 1 | | | | | | 4 | | | 15 | 3 | 18 | 3 |
| | *Argentipallium obtusifolium* | Blunt Everlasting | | 22 | | | | | 6 | 2 | | | | | 3 | | | 33 | 1 | 34 | 4 |
| * | *Argyranthemum frutescens* ssp. *foeniculaceum* | Teneriffe Daisy | 1 | | | | | | | | 3 | | | | | | | 4 | | 4 | 2 |
| | *Arthropodium fimbriatum* | Nodding Vanilla-lily | | 7 | 1 | | | | | 1 | | 26 | 1 | | | | | 36 | 4 | 40 | 5 |
| | *Arthropodium milleflorum* | Pale Vanilla-lily | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Arthropodium minus* | Small Vanilla-lily | | | | | | | | | | 9 | | | | | | 9 | 2 | 11 | 1 |
| | *Arthropodium* sp. | Vanilla-lily | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Arthropodium strictum* | Common Vanilla-lily | 5 | 23 | 1 | | | | | 2 | 1 | 8 | 1 | 2 | | 1 | | 44 | 5 | 49 | 9 |
| * | *Arum italicum* | Italian Arum | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Asclepias rotundifolia* | Broad-leaf Cotton-bush | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| | *Asperula conferta* | Common Woodruff | 2 | 5 | | | | | | | | 7 | | | | | | 14 | 2 | 16 | 3 |
| * | *Asphodelus fistulosus* | Onion Weed | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| | *Asplenium flabellifolium* | Necklace Fern | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| * | *Aster subulatus* | Aster-weed | | | | | | | | | | | 1 | | | | | 1 | | 1 | 1 |
| | *Astroloma conostephioides* | Flame Heath | | 139 | | | 1 | 20 | 12 | 10 | | | | 5 | 6 | 1 | | 194 | 18 | 212 | 8 |
| | *Astroloma humifusum* | Cranberry Heath | 10 | 158 | 1 | | 2 | 12 | 12 | 10 | | 2 | 1 | 3 | 4 | 3 | | 218 | 15 | 233 | 12 |
| | *Atriplex acutibractea* ssp. | Pointed Saltbush | | | | 1 | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Atriplex cinerea* | Coast Saltbush | 2 | | | | | | | | 4 | | | | | | | 6 | | 6 | 2 |
| * | *Atriplex prostrata* | Creeping Saltbush | | 1 | | | | | | | | | 4 | | | | 1 | 6 | 1 | 7 | 3 |
| | *Atriplex semibaccata* | Berry Saltbush | 2 | | | | | | | | | 2 | | | | | | 4 | 1 | 5 | 2 |
| | *Austrofestuca littoralis* | Coast Fescue | 3 | | | | | | | | 15 | | | | | | | 18 | | 18 | 2 |
| * | *Avellinia michelii* | Avellinia | 1 | 5 | | | | | | 9 | 24 | | | | | | | 39 | | 39 | 4 |
| * | *Avena barbata* | Bearded Oat | | 4 | 1 | 3 | | | | | 2 | 28 | | | | 1 | 1 | 40 | 4 | 44 | 7 |
| * | *Avena* sp. | Oat | 2 | 1 | | | | | | | | | | | | | | 3 | 1 | 4 | 2 |
| | *Azolla* sp. | Azolla | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Baeckea behrii* | Silver Broombush | | 19 | | | | 16 | 1 | 11 | | | | | 3 | | | 50 | 1 | 51 | 5 |
| | *Baeckea crassifolia* | Desert Baeckea | | 9 | | | | 13 | | | | | | | | | | 22 | | 22 | 2 |
| | *Baeckea ericaea* | Mat Baeckea | | 10 | | | | 1 | 4 | 2 | | | | | | | | 17 | 1 | 18 | 4 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Banksia marginata* | Silver Banksia | 6 | 170 | | | 3 | 7 | 12 | 14 | 3 | | 2 | 4 | 4 | 2 | | 227 | 43 | 270 | 11 |
| | *Banksia ornata* | Desert Banksia | | 104 | | | 1 | 13 | 19 | 9 | | | 2 | 3 | 7 | 1 | | 159 | 8 | 167 | 9 |
| * | *Batrachium trichophyllum* | Water Buttercup | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Baumea acuta* | Pale Twig-rush | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Baumea arthrophylla* | Swamp Twig-rush | 2 | 5 | | | | | | 1 | | | | | | | 4 | 12 | 6 | 18 | 4 |
| | *Baumea articulata* | Jointed Twig-rush | 3 | 1 | | | | | | | | | | | | | | 4 | | 4 | 2 |
| | *Baumea juncea* | Bare Twig-rush | 19 | 41 | | | 1 | | 13 | 10 | 1 | | 4 | 2 | 3 | 1 | 2 | 97 | 19 | 116 | 11 |
| | *Baumea laxa* | Lax Twig-rush | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Baumea rubiginosa* | Soft Twig-rush | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Bertya mitchellii* | Mitchell's Bertya | | | | | | 2 | | 1 | | | | | | | | 3 | | 3 | 2 |
| * | *Berula erecta* | Water Parsnip | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Beyeria lechenaultii* | Pale Turpentine Bush | 6 | 4 | | | | | | | 21 | | | 1 | | | | 32 | 1 | 33 | 4 |
| | *Billardiera cymosa* | Sweet Apple-berry | 1 | 94 | 1 | | 1 | 11 | 7 | 21 | 15 | 4 | 3 | 9 | 6 | | | 173 | 6 | 179 | 12 |
| | *Billardiera scandens* var. *scandens* | Eastern Apple-berry | | 9 | | | | | | | | | | | | | | 9 | | 9 | 1 |
| | *Billardiera sericophora* | Silky Apple-berry | 11 | | | | | | | | | | | | | | | 11 | | 11 | 1 |
| | *Billardiera* sp. | Apple-berry | 1 | 3 | | | | | | 2 | | 1 | | | | 1 | | 8 | 1 | 9 | 5 |
| * | *Blackstonia perfoliata* | Yellow-wort | | | | | | | | | | | | | | | 1 | 1 | | 1 | 1 |
| | *Blechnum wattsii* | Hard Water-fern | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Blennospora drummondii* | Dwarf Button-flower | | 12 | 1 | | | | | 1 | | | | | | | | 14 | | 14 | 3 |
| | *Bolboschoenus caldwellii* | Salt Club-rush | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Boraginaceae* sp. | Borage Family | | | | | | | | | 3 | | | | | | | 3 | | 3 | 1 |
| | *Boronia coerulescens* ssp. *coerulescens* | Blue Boronia | | 30 | | | | | 14 | 9 | | | | | 3 | | | 56 | 1 | 57 | 4 |
| | *Boronia filifolia* | Slender Boronia | | 3 | | | | | | 2 | | | | | | | | 5 | | 5 | 2 |
| | *Boronia nana* | Dwarf Boronia | | 6 | | | | | | | | | | | | | | 6 | 9 | 15 | 1 |
| | *Boronia parviflora* | Swamp Boronia | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Boronia pilosa* | Hairy Boronia | | 3 | | | | | | | | | | | | | | 3 | 3 | 6 | 1 |
| | *Bossiaea cinerea* | Showy Bossiaea | | 18 | | | | | | | | | | | | | | 18 | 7 | 25 | 1 |
| | *Bossiaea prostrata* | Creeping Bossiaea | | 19 | | | | | | 1 | | | 1 | | | | | 21 | 3 | 24 | 3 |
| | *Bossiaea* sp. | Bossiaea | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Bothriochloa macra* | Red-leg Grass | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Brachycome basaltica* var. *gracilis* | Swamp Daisy | | | | | | | | | | 1 | | | | | | 1 | 2 | 3 | 1 |
| | *Brachycome cardiocarpa* | Swamp Daisy | | | | | | | | | | | 1 | | | | | 1 | | 1 | 1 |
| | *Brachycome ciliaris* var. | Variable Daisy | | 3 | | | | | | 1 | | | | | | | | 4 | | 4 | 2 |
| | *Brachycome ciliaris* var. *ciliaris* | Variable Daisy | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Brachycome cuneifolia* | Wedge-leaf Daisy | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| | *Brachycome exilis* | Slender Daisy | | | | | | | | | | | 4 | 2 | | | | 6 | | 6 | 2 |
| | *Brachycome goniocarpa* | Dwarf Daisy | | 10 | 1 | | | | | 2 | | | | | | | | 13 | | 13 | 3 |
| | *Brachycome leptocarpa* | Small Hairy Daisy | | 2 | | | | | | | | | | | | | | 2 | 1 | 3 | 1 |
| | *Brachycome lineariloba* | Hard-head Daisy | | 4 | | | | | | 2 | | | | | | | | 6 | | 6 | 2 |
| | *Brachycome parvula* var. *parvula* | Coast Daisy | | | | | | | | | | | | | | 1 | | 1 | 5 | 6 | 1 |
| | *Brachycome perpusilla* | Tiny Daisy | | 11 | | | | | | 2 | | | | | | | | 13 | | 13 | 2 |
| | *Brachycome* sp. | Native Daisy | | | | | | 2 | | | | | | | | | | 2 | | 2 | 1 |
| | *Brachycome uliginosa* | Wet-heath Daisy | | 10 | | | 1 | | | | | | | | | | | 11 | | 11 | 2 |
| | *Brachyloma ciliatum* | Fringed Brachyloma | | 32 | | | 1 | | | 4 | | | 2 | | | | | 39 | 9 | 48 | 4 |
| | *Brachyloma daphnoides* | Daphne Heath | | 11 | | | 1 | 1 | | | | | | | | | | 13 | 1 | 14 | 3 |
| | *Brachyloma ericoides* ssp. | Brush Heath | | | | | | 21 | | 8 | | | | | 3 | | | 32 | | 32 | 3 |
| | *Brachyloma ericoides* ssp. *ericoides* | Brush Heath | | 39 | | | 2 | | | 8 | | 2 | 1 | | | | | 52 | 3 | 55 | 5 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * | *Brachypodium distachyon* | False Brome | | | | 2 | | | | | | 11 | | | | | | 13 | | 13 | 2 |
| * | *Brassica tournefortii* | Wild Turnip | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| * | *Briza maxima* | Large Quaking-grass | | 3 | | | | | | | | 1 | | | | | | 4 | 2 | 6 | 2 |
| * | *Briza minor* | Lesser Quaking-grass | 5 | 12 | 1 | 1 | 1 | | | 8 | 3 | 9 | 5 | 2 | | 4 | 1 | 52 | 4 | 56 | 12 |
| | *Bromus arenarius* | Sand Brome | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Bromus diandrus* | Great Brome | 6 | 3 | | 2 | | | | 2 | 13 | 12 | | 1 | | | | 39 | 2 | 41 | 7 |
| * | *Bromus hordeaceus* ssp. *hordeaceus* | Soft Brome | 3 | 3 | | | | | | | 1 | 20 | 1 | | | | | 28 | 1 | 29 | 5 |
| * | *Bromus madritensis* | Compact Brome | | 4 | | | | | | | | 13 | | | | | | 17 | | 17 | 2 |
| * | *Bromus rigidus* | Rigid Brome | | | | 1 | | | | | | 5 | | | 1 | | 1 | 8 | | 8 | 4 |
| * | *Bromus rubens* | Red Brome | | 1 | 1 | 1 | | | | 1 | | 2 | 1 | 2 | | 3 | | 12 | 1 | 13 | 8 |
| | *Bromus* sp. | Brome | 3 | 1 | | | | | | 2 | 3 | 5 | | 1 | | | | 15 | | 15 | 6 |
| | *Brunonia australis* | Blue Pincushion | | 12 | | | | | | 3 | | | | | | | | 15 | 1 | 16 | 2 |
| * | *Buglossoides arvensis* | Sheepweed | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Bulbine bulbosa* | Bulbine-lily | | 2 | | | | | | 3 | | | | | | | | 5 | 2 | 7 | 2 |
| | *Burchardia umbellata* | Milkmaids | 3 | 52 | 1 | | 1 | | | 9 | | | 3 | 1 | | | | 70 | 9 | 79 | 7 |
| | *Bursaria spinosa* | Sweet Bursaria | 12 | 50 | | 1 | | 3 | 1 | 3 | 1 | 8 | 3 | 3 | | | | 85 | 8 | 93 | 10 |
| | *Caesia calliantha* | Blue Grass-lily | | 30 | | | | 3 | | | | | | | | | | 33 | | 33 | 2 |
| | *Caesia parviflora* var. *minor* | Pale Grass-lily | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Cakile maritima* ssp. *maritima* | Two-horned Sea Rocket | 13 | 2 | | | | | | | 29 | | | | | | | 44 | | 44 | 3 |
| | *Caladenia cardiochila* | Heart-lip Spider-orchid | | 9 | | | | | | 1 | | | | | | | | 10 | | 10 | 2 |
| | *Caladenia cardiochila* x *reticulata* (NC) | Hybrid Spider-orchid | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Caladenia carnea* complex | Pink Fingers Caladenia | | 54 | | | | | | | | | | | | | | 54 | | 54 | 1 |
| | *Caladenia carnea* var. *carnea* | Pink Fingers | | 24 | | | 1 | | | 5 | | | | | | | | 30 | | 30 | 3 |
| | *Caladenia congesta* | Black-tongue Caladenia | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Caladenia dilatata* complex | Green-comb Spider-orchid | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Caladenia latifolia* | Pink Caladenia | | 22 | | | | | | 1 | 12 | | | 1 | | | | 36 | | 36 | 4 |
| | *Caladenia patersonii* complex | White Spider-orchid | | 11 | | | | | 1 | | | | | | | | | 12 | | 12 | 2 |
| | *Caladenia prolata* | Shy Caladenia | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Caladenia reticulata* | Veined Spider-orchid | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Caladenia* sp. | Spider-orchid | 3 | 9 | | | | | | 1 | 1 | | | | | | | 14 | | 14 | 4 |
| | *Caladenia vulgaris* | Plain Caladenia | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| | *Calandrinia brevipedata* | Short-stalked Purslane | | 1 | | | | | | | 21 | | | | | | | 22 | | 22 | 2 |
| | *Calandrinia calyptrata* | Pink Purslane | | 2 | | | | | | 2 | | | | | | | | 4 | | 4 | 2 |
| | *Calandrinia eremaea* | Dryland Purslane | | 2 | | | | | | 2 | 1 | | | | | | | 5 | | 5 | 3 |
| | *Calandrinia granulifera* | Pigmy Purslane | | 7 | | | | | | 3 | | | | | | | | 10 | | 10 | 2 |
| | *Calandrinia* sp. | Purslane/Parakeelya | | 4 | | | | | | 1 | | | | | | | | 5 | | 5 | 2 |
| | *Calectasia intermedia* | Eastern Blue Tinsel-lily | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Callistemon rugulosus* var. | Scarlet Bottlebrush | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Callistemon rugulosus* var. *rugulosus* | Scarlet Bottlebrush | | 4 | | | | 1 | | | | 1 | 1 | | | | | 7 | 2 | 9 | 4 |
| | *Callitris preissii* | Southern Cypress Pine | | 2 | | | | | | | | 1 | | | | | | 3 | 1 | 4 | 2 |
| | *Callitris rhomboidea* | Oyster Bay Pine | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Calocephalus citreus* | Lemon Beauty-heads | | | | 2 | | | | | | 18 | | | | | | 20 | 1 | 21 | 2 |
| | *Calotis scabiosifolia* var. *scabiosifolia* | Rough Burr-daisy | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Calytrix alpestris* | Snow Heath-myrtle | | 16 | | | | 8 | 7 | 9 | | | | 1 | 4 | 2 | | 47 | | 47 | 7 |
| | *Calytrix tetragona* | Common Fringe-myrtle | | 96 | | | 2 | 20 | 5 | 20 | | 1 | 2 | 1 | 2 | | | 149 | 12 | 161 | 9 |
| | *Cardamine gunnii* | Spade-leaf Bitter-cress | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Cardamine paucijuga* | Annual Bitter-cress | | 2 | | | | | | | | | | | | | | 2 | 1 | 3 | 1 |
| * | *Carduus tenuiflorus* | Slender Thistle | 24 | 34 | | | | | | | 4 | | 1 | 2 | | 1 | | 66 | 4 | 70 | 6 |
| | *Carex appressa* | Tall Sedge | 3 | | | | | | | | | | | | | | | 3 | 1 | 4 | 1 |
| | *Carex breviculmis* | Short-stem Sedge | | 1 | | | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Carex fascicularis* | Tassel Sedge | 2 | | | | | | | | | | | | | | | 2 | 1 | 3 | 1 |
| | *Carex gaudichaudiana* | Fen Sedge | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Carex inversa* var. | Knob Sedge | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Carex inversa* var. *inversa* | Knob Sedge | | 1 | | | | | | | | 14 | | | | | | 15 | | 15 | 2 |
| | *Carex* sp. | Sedge | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Carex tereticaulis* | Rush Sedge | 1 | 2 | | | | | | | | | | | | | | 3 | | 3 | 2 |
| | *Carpobrotus modestus* | Inland Pigface | | 4 | | | | | 1 | 1 | | | | | | | | 6 | | 6 | 3 |
| | *Carpobrotus rossii* | Native Pigface | 38 | 11 | | | | | | | 114 | | | | | | | 163 | | 163 | 3 |
| | *Carpobrotus* sp. | Pigface | | 2 | | | | | | 3 | | | | | | | | 5 | | 5 | 2 |
| * | *Carthamus lanatus* | Saffron Thistle | 9 | | | | | | | | | 2 | | | | | | 11 | | 11 | 2 |
| | *Cassinia uncata* | Sticky Cassinia | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Cassytha glabella* forma *dispar* | Slender Dodder-laurel | 1 | 57 | | | | 2 | 22 | 8 | | | | 4 | 6 | | | 100 | 5 | 105 | 7 |
| | *Cassytha glabella* forma *glabella* | Slender Dodder-laurel | | | | | | 7 | | | | | | | | | | 7 | | 7 | 1 |
| | *Cassytha melantha* | Coarse Dodder-laurel | | 10 | | | | 4 | | 5 | | 5 | 1 | | | | | 25 | | 25 | 5 |
| | *Cassytha pubescens* | Downy Dodder-laurel | 11 | 51 | | | 1 | 2 | 7 | 4 | 17 | | | 3 | 3 | 1 | | 100 | 6 | 106 | 10 |
| | *Cassytha* sp. | Dodder-laurel | 21 | 2 | | | | | | 6 | | | | | | | | 29 | 2 | 31 | 3 |
| | *Caustis pentandra* | Thick Twist-rush | | 8 | | | | | 1 | 1 | | | | | 1 | 1 | | 12 | 1 | 13 | 5 |
| * | *Centaurea melitensis* | Malta Thistle | | | | | | | | | | 1 | | 4 | | 1 | | 6 | | 6 | 3 |
| * | *Centaurium erythraea* | Common Centaury | 3 | 24 | | | | | | | | | 1 | | 1 | 2 | | 31 | 23 | 54 | 5 |
| * | *Centaurium* sp. | Centaury | 4 | 1 | | | 2 | | | 1 | | | | 1 | | 1 | | 10 | 1 | 11 | 6 |
| * | *Centaurium spicatum* | Spike Centaury | | | | | | | | | 2 | | 1 | | | | | 3 | | 3 | 2 |
| * | *Centaurium tenuiflorum* | Branched Centaury | | 9 | | | | | 4 | 3 | | 3 | 4 | 2 | 1 | | 3 | 29 | 1 | 30 | 8 |
| | *Centella cordifolia* (NC) | | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Centella cordifolia* s.str. | Native Centella | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| | *Centipeda cunninghamii* | Common Sneezeweed | | 1 | | | | | | | | 6 | | | | | | 7 | | 7 | 2 |
| | *Centipeda* sp. | Sneezeweed | | | | | | | | | | | 1 | | | | | 1 | | 1 | 1 |
| * | *Centranthus macrosiphon* | | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Centrolepis aristata* | Pointed Centrolepis | | 5 | | | | | | 9 | 2 | | 2 | 2 | 1 | | | 21 | | 21 | 6 |
| | *Centrolepis cephaloformis* ssp. | Cushion Centrolepis | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Centrolepis cephaloformis* ssp. *cephaloformis* | Cushion Centrolepis | | 3 | | | | | | 1 | | | | | | | | 4 | | 4 | 2 |
| | *Centrolepis polygyna* | Wiry Centrolepis | | 2 | 1 | | | | | 8 | 5 | | 1 | | | 1 | 1 | 19 | | 19 | 7 |
| | *Centrolepis strigosa* | Hairy Centrolepis | | 24 | | | | 1 | | 9 | 2 | | 2 | 1 | | | | 39 | | 39 | 6 |
| * | *Cerastium balearicum* | Chickweed | | | | | | | | | 44 | | | 2 | | | | 46 | | 46 | 2 |
| * | *Cerastium glomeratum* | Common Mouse-ear Chickweed | 15 | 48 | | | | | | 2 | 33 | | | | | | | 98 | | 98 | 4 |
| | *Cerastium semidecandrum* | Small Mouse-ear Chickweed | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Cerastium semidecandrum* (NC) | Small Mouse-ear Chickweed | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Cerastium* sp. | Chickweed | | 7 | | | | | | | 1 | | | | | | | 8 | | 8 | 2 |
| * | *Chamaecytisus palmensis* | Tree Lucerne | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Chamaescilla corymbosa* var. *corymbosa* | Blue Squill | 1 | 91 | 1 | | 2 | | | 5 | | | 2 | | | | | 102 | 3 | 105 | 6 |
| | *Cheilanthes austrotenuifolia* | Annual Rock-fern | | 3 | | | | | | | 1 | | 1 | | | | | 5 | | 5 | 3 |
| | *Cheiranthera alternifolia* | Hand-flower | | | | | | | | | | 1 | | | | | | 1 | 1 | 2 | 1 |
| | *Chenopodium desertorum* ssp. *microphyllum* | Small-leaf Goosefoot | | | | | | | | | | 5 | | | | | | 5 | | 5 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * | *Chenopodium glaucum* | Glaucous Goosefoot | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| | *Chenopodium pumilio* | Clammy Goosefoot | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Chenopodium* sp. | Goosefoot | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Chloris truncata* | Windmill Grass | | | | | | | | | | 6 | | | | | | 6 | 1 | 7 | 1 |
| | *Choretrum glomeratum* var. | Sour-bush | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Choretrum glomeratum* var. *glomeratum* | White Sour-bush | | 7 | | | | | 3 | 1 | | | | | | | | 11 | | 11 | 3 |
| | *Chorizandra australis* | Bristle-rush | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Chorizandra enodis* | Black Bristle-rush | | 5 | | 1 | 1 | | | 2 | | 6 | 1 | | | | | 16 | 4 | 20 | 6 |
| | *Chrysocephalum apiculatum* | Common Everlasting | | 9 | 1 | 1 | | | | | | 6 | | | | | | 17 | 1 | 18 | 4 |
| | *Chrysocephalum baxteri* | White Everlasting | | 2 | | | | | | 1 | | | | | | | | 3 | 1 | 4 | 2 |
| | *Chrysocephalum semipapposum* | Clustered Everlasting | | | | | | | | | | 3 | | | | | | 3 | | 3 | 1 |
| * | *Cicendia filiformis* | Slender Cicendia | | 2 | | | | | | 2 | | | | | | | | 4 | | 4 | 2 |
| * | *Cirsium* sp. | Thistle | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Cirsium vulgare* | Spear Thistle | | 37 | | | | | 2 | 7 | 1 | | 2 | 1 | | | 4 | 54 | 9 | 63 | 7 |
| | *Cladium procerum* | Leafy Twig-rush | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Clematis aristata* | Mountain Clematis | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Clematis microphylla* | Old Man's Beard | 75 | 92 | | | | 9 | 1 | 4 | 101 | 6 | 3 | 8 | | 3 | | 302 | 5 | 307 | 10 |
| | *Comesperma calymega* | Blue-spike Milkwort | | 5 | | | | | 2 | 6 | | | | | 3 | | | 16 | 6 | 22 | 4 |
| | *Comesperma polygaloides* | Mauve Milkwort | | 4 | | | | | | 1 | | 13 | 1 | 2 | | | | 21 | 2 | 23 | 5 |
| | *Comesperma scoparium* | Broom Milkwort | | | | | | | | | | | | | 1 | | | 1 | | 1 | 1 |
| | *Comesperma volubile* | Love Creeper | 17 | 54 | | | | | | 9 | 23 | | 2 | 6 | 1 | 2 | | 114 | 4 | 118 | 8 |
| | *Compositae* sp. | Daisy Family | | 1 | | | | | | 1 | 1 | | 1 | | | | | 4 | | 4 | 4 |
| | *Conospermum patens* | Slender Smoke-bush | | 2 | | | | | 1 | 1 | | | | | 1 | | | 5 | 2 | 7 | 4 |
| | *Convolvulus* aff. *erubescens* "linear lobes" | Grassland Bindweed | | | | | | | | | | 21 | | | | | | 21 | 1 | 22 | 1 |
| | *Convolvulus erubescens* | Australian Bindweed | | 1 | | | | | | 1 | | | | | | | | 2 | 2 | 4 | 2 |
| | *Convolvulus erubescens* (NC) | Australian Bindweed | | 9 | | 1 | 1 | | | | | | | | | | | 11 | | 11 | 3 |
| | *Convolvulus remotus* | Grassy Bindweed | | | | | | | | | | 2 | | 1 | | | | 3 | 1 | 4 | 2 |
| | *Convolvulus* sp. | Bindweed | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Conyza albida* | Tall Fleabane | | 6 | | | | | | | | | | | | | | 6 | | 6 | 1 |
| * | *Conyza bonariensis* | Flax-leaf Fleabane | | 1 | | | | | | | 1 | | | | | | | 2 | | 2 | 2 |
| * | *Conyza* sp. | Fleabane | | 1 | | | | | | | 1 | | | | | | | 2 | | 2 | 2 |
| * | *Coprosma repens* | New Zealand Mirror-bush | 4 | | | | | | | | 1 | | | | | | | 5 | | 5 | 2 |
| | *Correa alba* var. *pannosa* | White Correa | | | | | | | | | 2 | | | | | | | 2 | | 2 | 1 |
| | *Correa reflexa* | Common Correa | | | | | | 20 | | 10 | 6 | | | | | | | 36 | 2 | 38 | 3 |
| | *Correa reflexa* var. *reflexa* | Common Correa | 15 | 100 | | | 1 | | 15 | 6 | | | 1 | 3 | 7 | 1 | | 149 | 9 | 158 | 9 |
| | *Corybas despectans* | Coast Helmet-orchid | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Corybas incurvus* | Slaty Helmet-orchid | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Corybas* sp. | Helmet-orchid | | 55 | | | | | | 3 | 3 | | | | | | | 61 | | 61 | 3 |
| | *Cotula australis* | Common Cotula | | 10 | | | | | | 2 | | | | | | 1 | | 13 | 1 | 14 | 3 |
| * | *Cotula coronopifolia* | Water Buttons | 1 | 1 | | | | | | | | | 3 | | | | | 5 | 4 | 9 | 3 |
| | *Cotula reptans* | Creeping Cotula | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Cotula vulgaris* var. *australasica* | Slender Cotula | | 3 | | | | | | 3 | | | 1 | | | | | 7 | | 7 | 3 |
| | *Craspedia glauca* | Billy-buttons | | 29 | | | 1 | 1 | | 1 | | | | | | | | 32 | | 32 | 4 |
| | *Craspedia* sp. (NC) | Billy-buttons | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| * | *Crassula alata* var. *alata* | Three-part Crassula | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Crassula closiana* | Stalked Crassula | | 5 | | | | | | 3 | 24 | | | | | | | 32 | 1 | 33 | 3 |
| | *Crassula colorata* var. | Dense Crassula | | 34 | | | | | | | | | | 1 | | | | 35 | | 35 | 2 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Crassula colorata* var. *acuminata* | Dense Crassula | | | | | | | | | | 3 | | | | | | 3 | | 3 | 1 |
| | *Crassula colorata* var. *colorata* | Dense Crassula | | | | | | | | 1 | | 2 | | | | | | 3 | | 3 | 2 |
| | *Crassula decumbens* var. *decumbens* | Spreading Crassula | | 60 | | | | 6 | | | 23 | 4 | | | | | | 93 | | 93 | 4 |
| * | *Crassula natans* var. *minus* | Water Crassula | | 3 | | | | | | | | 1 | | | | | | 4 | 1 | 5 | 2 |
| | *Crassula sieberiana* ssp. | Australian Stonecrop | | | | | | 1 | | | | | | | | | | 1 | | 1 | 1 |
| | *Crassula sieberiana* ssp. *sieberiana* | Sieber's Crassula | | | | | | 2 | | | | | | | | | | 2 | | 2 | 1 |
| | *Crassula sieberiana* ssp. *tetramera* | Australian Stonecrop | 10 | 16 | | | | 6 | | 8 | 85 | 2 | | 2 | 2 | | | 131 | 1 | 132 | 8 |
| * | *Crepis* sp. | Hawksbeard | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Crepis vesicaria* ssp. *haenseleri* | Bladder Hawksbeard | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Critesion marinum* | Sea Barley-grass | | | | | | | | 1 | | 9 | 1 | 2 | | 1 | 3 | 17 | 4 | 21 | 6 |
| * | *Critesion murinum* ssp. | Barley-grass | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| * | *Critesion murinum* ssp. *glaucum* | Blue Barley-grass | | 6 | | | | | | 1 | 1 | 2 | | | | | | 10 | 1 | 11 | 4 |
| * | *Critesion murinum* ssp. *leporinum* | Wall Barley-grass | 3 | | | | | | | | | 1 | | | | | | 4 | | 4 | 2 |
| * | *Critesion* sp. | Barley-grass | | | | | | | | | | 5 | | | | | | 5 | | 5 | 1 |
| | *Cruciferae* sp. | Cress Family | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Cryptandra tomentosa* | Heath Cryptandra | | 21 | | | | 14 | 10 | 8 | | | | 1 | 5 | | | 59 | 1 | 60 | 6 |
| * | *Cuscuta campestris* | Golden Dodder | | | | | | | | | | | | | | | 1 | 1 | | 1 | 1 |
| * | *Cuscuta planiflora* | Small-seed Alfalfa-dodder | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Cyanicula deformis* | Bluebeard Orchid | | 4 | | | 1 | 1 | | | | | | | | | | 6 | | 6 | 3 |
| | *Cymbonotus preissianus* | Austral Bear's-ear | | 5 | | | | | | | | | | | | | | 5 | 1 | 6 | 1 |
| * | *Cynodon dactylon* | Couch | | | | | | | | | 1 | 1 | | | | | | 2 | 1 | 3 | 2 |
| | *Cynoglossum australe* | Australian Hound's-tongue | 6 | 76 | | | | 1 | 1 | | 16 | | 3 | 5 | | 2 | | 110 | 1 | 111 | 8 |
| | *Cynoglossum suaveolens* | Sweet Hound's-tongue | | 3 | | | | | | 1 | 2 | | | | | 1 | | 7 | 1 | 8 | 4 |
| * | *Cynosurus echinatus* | Rough Dog's-tail Grass | | 11 | | | | | | | | 4 | | | | | | 15 | 3 | 18 | 2 |
| | *Cyperaceae* sp. | Sedge Family | 11 | | | | | | | | | | | | | | | 11 | | 11 | 1 |
| | *Cyperus gymnocaulos* | Spiny Flat-sedge | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Cyperus* sp. | Flat-sedge | 4 | 1 | | | | | | | | | | | | | | 5 | | 5 | 2 |
| | *Cyperus tenellus* | Tiny Flat-sedge | | 1 | | | | | | 2 | | 4 | | | | | | 7 | | 7 | 3 |
| | *Cyperus vaginatus* | Stiff Flat-sedge | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Cyrtostylis reniformis* | Small Gnat-orchid | | 34 | | | | | | | | | | | | | | 34 | 1 | 35 | 1 |
| | *Cyrtostylis robusta* | Robust Gnat-orchid | | 18 | | | | | | 2 | | | | | | | | 20 | | 20 | 2 |
| | *Cyrtostylis* sp. | Gnat-orchid | | 8 | | | | | | 2 | | | | | | | | 10 | | 10 | 2 |
| * | *Dactylis glomerata* | Cocksfoot | | 6 | | | | | | | 1 | 2 | | | | | | 9 | | 9 | 3 |
| | *Damasonium minus* | Star-fruit | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| | *Dampiera dysantha* | Shrubby Dampiera | | 8 | | | | | | 3 | | 2 | | | | | | 13 | | 13 | 3 |
| | *Dampiera marifolia* | Velvet Dampiera | | | | | | 1 | 1 | | | | | | 1 | | | 3 | 1 | 4 | 3 |
| | *Dampiera rosmarinifolia* | Rosemary Dampiera | | 8 | | | | | | | | | | | | | | 8 | | 8 | 1 |
| | *Dampiera* sp. | Dampiera | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Danthonia caespitosa* | Common Wallaby-grass | | 13 | | 2 | | | | | | 5 | | 2 | | | | 22 | 5 | 27 | 4 |
| | *Danthonia duttoniana* | Brown-back Wallaby-grass | | | | | | | | | | 5 | | | | | | 5 | 1 | 6 | 1 |
| | *Danthonia eriantha* | Hill Wallaby-grass | | 1 | | | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Danthonia geniculata* | Kneed Wallaby-grass | 1 | 61 | | | | 6 | 3 | 4 | 1 | 12 | 4 | 4 | 1 | 4 | | 101 | 8 | 109 | 11 |
| | *Danthonia linkii* var. *fulva* | Leafy Wallaby-grass | | | | 2 | | | | | | 18 | | | | | | 20 | 5 | 25 | 2 |
| | *Danthonia pilosa* var. *pilosa* | Velvet Wallaby-grass | | 3 | | | | | | | | 1 | 1 | | | 1 | | 6 | | 6 | 4 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Danthonia racemosa* var. *racemosa* | Slender Wallaby-grass | | | | | | | | | | 1 | | | | | | 1 | 1 | 2 | 1 |
| | *Danthonia semiannularis* | Wetland Wallaby-grass | | 3 | | | | | | | | | 1 | | | | 3 | 7 | 1 | 8 | 3 |
| | *Danthonia setacea* var. *setacea* | Small-flower Wallaby-grass | | 4 | | 3 | | | 11 | 7 | 1 | 44 | 3 | 5 | 3 | 1 | | 82 | 33 | 115 | 10 |
| | *Danthonia* sp. | Wallaby-grass | 1 | 27 | | | 2 | 9 | 2 | 3 | 1 | | | 1 | | | | 46 | 2 | 48 | 8 |
| | *Danthonia tenuior* | Short-awn Wallaby-grass | | | | | | | 1 | | | | | | | | | 1 | | 1 | 1 |
| | *Darwinia micropetala* | Small Darwinia | | | | | | | | 10 | | | 2 | 4 | 2 | 1 | | 19 | 7 | 26 | 5 |
| | *Darwinia micropetala* (NC) | Small Darwinia | | 20 | | | | | | | | | | | | | | 20 | | 20 | 1 |
| | *Daucus glochidiatus* | Native Carrot | 11 | 85 | 1 | | 1 | 5 | | 14 | 100 | 2 | 1 | 2 | | 1 | | 223 | 6 | 229 | 11 |
| | *Daviesia arenaria* | Sand Bitter-pea | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Daviesia benthamii* ssp. *humilis* | Mallee Bitter-pea | | | | | | | | | | 6 | | | | | | 6 | 2 | 8 | 1 |
| | *Daviesia brevifolia* | Leafless Bitter-pea | | 63 | | | 2 | 5 | 14 | 11 | | | | 1 | 6 | 1 | | 103 | 6 | 109 | 8 |
| | *Daviesia ulicifolia* (NC) | Gorse Bitter-pea | | 5 | | | | | | | | | | | | | | 5 | 1 | 6 | 1 |
| | *Daviesia ulicifolia* ssp. *ulicifolia* | Gorse Bitter-pea | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Derwentia decorosa* | Showy Speedwell | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Desmazeria rigida* | Rigid Fescue | 5 | 2 | | | | | | | 19 | | | | | | | 26 | | 26 | 3 |
| | *Deyeuxia quadriseta* | Reed Bent-grass | | 3 | | | | | | | | | | | | | | 3 | 6 | 9 | 1 |
| | *Dianella brevicaulis* | Short-stem Flax-lily | 8 | 47 | | | | | 1 | | 54 | | 1 | 10 | | 3 | | 124 | 5 | 129 | 7 |
| | *Dianella brevicaulis/revoluta* var. | Black-anther Flax-lily | | 56 | | 3 | | 4 | | 5 | | | 2 | | | | | 70 | 1 | 71 | 5 |
| | *Dianella longifolia* var. *grandis* | Pale Flax-lily | | | | | | | | | | 2 | | | | | | 2 | 2 | 4 | 1 |
| | *Dianella revoluta* var. | | | | | | | | | 7 | | | | | | | | 7 | 2 | 9 | 1 |
| | *Dianella revoluta* var. *revoluta* | Black-anther Flax-lily | 28 | 43 | 1 | | | 1 | 1 | 5 | 1 | 23 | | 2 | 1 | | | 106 | 25 | 131 | 10 |
| | *Dianella* sp. | Flax-lily | | | | | | 1 | | 1 | | | | | | | | 2 | | 2 | 2 |
| | *Dichelachne crinita* | Long-hair Plume-grass | 1 | 16 | | | | | 2 | 1 | 2 | | | 2 | | 1 | | 25 | 16 | 41 | 7 |
| | *Dichondra repens* | Kidney Weed | 32 | 70 | | | | | | | 57 | | 2 | 4 | | 2 | | 167 | 6 | 173 | 6 |
| | *Dillwynia cinerascens* | Grey Parrot-pea | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| | *Dillwynia glaberrima* | Smooth Parrot-pea | | 13 | | | | | | | | | | | | | | 13 | 9 | 22 | 1 |
| | *Dillwynia hispida* | Red Parrot-pea | | 25 | | | | 1 | 9 | 10 | | | | | 5 | 1 | | 51 | 2 | 53 | 6 |
| | *Dillwynia sericea* | Showy Parrot-pea | | 24 | | | 1 | 4 | | 6 | | | | | 1 | | | 36 | 2 | 38 | 5 |
| | *Dillwynia* sp. | Parrot-pea | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| * | *Diplotaxis tenuifolia* | Lincoln Weed | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Dipodium* sp. | Hyacinth Orchid | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| * | *Dischisma arenarium* | Sand Dichisma | | | | | | | | | 4 | | | | | | | 4 | | 4 | 1 |
| | *Distichlis distichophylla* | Emu-grass | 3 | 12 | | | | | | 3 | | | | 1 | | | | 19 | 3 | 22 | 4 |
| * | *Dittrichia graveolens* | Stinkweed | 4 | 2 | | | | | | | | | 1 | | | | | 7 | | 7 | 3 |
| | *Diuris* aff. *corymbosa* | Wallflower Donkey-orchid | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Diuris palustris* | Little Donkey-orchid | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Diuris pardina* | Spotted Donkey-orchid | | 25 | | | | | | 3 | | | | | | | | 28 | | 28 | 2 |
| | *Diuris* sp. | Donkey Orchid | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Dodonaea bursariifolia* | Small Hop-bush | | | | | | 2 | | | | | | | | | | 2 | | 2 | 1 |
| | *Dodonaea humilis* | Dwarf Hop-bush | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Dodonaea viscosa* ssp. | Sticky Hop-bush | | 12 | | | | | | | 1 | | 3 | | | | | 16 | 1 | 17 | 3 |
| | *Dodonaea viscosa* ssp. *spatulata* | Sticky Hop-bush | 1 | 42 | | | 1 | 2 | | 2 | 4 | 1 | | | | | | 53 | 6 | 59 | 7 |
| | *Drosera auriculata* | Tall Sundew | 6 | 59 | | | | | | | | | | | | | | 65 | 4 | 69 | 2 |
| | *Drosera glanduligera* | Scarlet Sundew | | 28 | 1 | | 1 | | | 12 | | | | | | | | 42 | | 42 | 4 |
| | *Drosera macrantha* ssp. *planchonii* | Climbing Sundew | | 89 | 1 | | | 4 | | 10 | | | | | | | | 104 | | 104 | 4 |
| | *Drosera peltata* | Pale Sundew | | 21 | | | 1 | | | 6 | 2 | 2 | 2 | | | | | 34 | 1 | 35 | 6 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Drosera pygmaea* | Tiny Sundew | 1 | 4 | | | | | | 2 | | | 1 | | | | 1 | 9 | | 9 | 5 |
| | *Drosera* sp. | Sundew | 1 | 13 | | | | | | 1 | | | | | | | | 15 | 2 | 17 | 3 |
| | *Drosera whittakeri* (NC) | Scented Sundew | 2 | 186 | 1 | | 2 | 24 | | 7 | | | | | | | | 222 | | 222 | 6 |
| * | *Echium plantagineum* | Salvation Jane | | 3 | | | | | 1 | | | | | 6 | | 2 | | 12 | 3 | 15 | 4 |
| | *Eclipta platyglossa* | Yellow Twin-heads | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| * | *Ehrharta calycina* | Perennial Veldt Grass | | 10 | | | | | 1 | 1 | | 10 | | | 1 | | | 23 | 1 | 24 | 5 |
| * | *Ehrharta longiflora* | Annual Veldt Grass | 3 | 14 | | | | | | 1 | 20 | 1 | | 2 | | | | 41 | 1 | 42 | 6 |
| | *Einadia nutans* ssp. | Climbing Saltbush | | 1 | | 1 | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Einadia nutans* ssp. *nutans* | Climbing Saltbush | | | | | | | | | | 8 | | | | | | 8 | 1 | 9 | 1 |
| | *Eleocharis acuta* | Common Spike-rush | 4 | 2 | | | | | | | | 4 | | | | | | 10 | 5 | 15 | 3 |
| | *Eleocharis pusilla* | Small Spike-rush | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Elymus farctus* | Sea Wheat-grass | | | | | | | | | 6 | | | | | | | 6 | | 6 | 1 |
| | *Elymus scabrus* var. *scabrus* | Native Wheat-grass | | 3 | | 2 | | | | | | 16 | | | | | | 21 | 4 | 25 | 3 |
| | *Enchylaena tomentosa* var. | Ruby Saltbush | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| | *Enchylaena tomentosa* var. *tomentosa* | Ruby Saltbush | 2 | 1 | | | | | | | 1 | | 1 | | | | | 5 | | 5 | 4 |
| | *Epacris impressa* | Common Heath | | 60 | | | | | | 1 | | | | | | | | 61 | 16 | 77 | 2 |
| | *Epilobium billardierianum* ssp. | Robust Willow-herb | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Epilobium billardierianum* ssp. *billardierianum* | Robust Willow-herb | 19 | 3 | | | | | | | 1 | | 1 | | | | | 24 | 8 | 32 | 4 |
| | *Epilobium billardierianum* ssp. *cinereum* | Variable Willow-herb | 2 | | | | | | | | | | 1 | | | | | 3 | 1 | 4 | 2 |
| | *Epilobium billardierianum* ssp. *x intermedium* | Variable Willow-herb | 4 | 3 | | | | | | 4 | 16 | | 2 | 1 | | | | 30 | 1 | 31 | 6 |
| * | *Epilobium ciliatum* | Glandular Willow-herb | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Epilobium pallidiflorum* | Showy Willow-herb | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Epilobium* sp. | Willow-herb | 4 | 1 | | | | | | | | | | | | | | 5 | | 5 | 2 |
| | *Eragrostis infecunda* | Barren Cane-grass | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Eriochilus cucullatus* | Parson's Bands | | 7 | | | | | | | | | | | | | | 7 | | 7 | 1 |
| | *Eriostemon pungens* | Prickly Wax-flower | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Erodium botrys* | Long Heron's-bill | | 3 | | | | 1 | | | | 5 | | | | | | 9 | | 9 | 3 |
| * | *Erodium cicutarium* | Cut-leaf Heron's-bill | 1 | 9 | | | | | | | 1 | | | | | | | 11 | | 11 | 3 |
| | *Erodium crinitum* | Blue Heron's-bill | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Erodium moschatum* | Musky Herons-bill | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Erodium* sp. | Heron's-bill/Crowfoot | 1 | 3 | | | | | | | | | | 1 | | | | 5 | | 5 | 3 |
| | *Eryngium rostratum* | Blue Devil | | 1 | | | | | | | | 2 | | | | | | 3 | 1 | 4 | 2 |
| | *Eryngium vesiculosum* | Prostrate Blue Devil | | 1 | | | | | | | | 3 | 4 | | | | | 8 | 3 | 11 | 3 |
| | *Eucalyptus* "Carpenter Rocks" | Carpenters Rocks Manna Gum | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Eucalyptus arenacea* | Dune Stringybark | | 9 | | | 1 | 15 | 5 | 6 | | | | 2 | 5 | 1 | | 44 | 6 | 50 | 8 |
| | *Eucalyptus arenacea/baxteri* | Brown Stringybark | | 81 | | | | | | | | | 1 | | | | | 82 | | 82 | 2 |
| | *Eucalyptus baxteri* | Brown Stringybark | 1 | 29 | | | | | | | | | | | | | | 30 | 27 | 57 | 2 |
| | *Eucalyptus behriana* | Broad-leaf Box | | 1 | | | | 2 | | | | 12 | | | | | | 15 | 1 | 16 | 3 |
| | *Eucalyptus behriana* x *largiflorens* | Broad-leaf/Black Box Hybrid | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Eucalyptus calycogona* var. | Square-fruit Mallee | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Eucalyptus calycogona* var. *calycogona* | Square-fruit Mallee | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| | *Eucalyptus camaldulensis* var. | River Red Gum | | | | | | | | 1 | | | | | | | | 1 | 1 | 2 | 1 |
| | *Eucalyptus camaldulensis* var. *camaldulensis* | River Red Gum | | 13 | | | | | | 2 | | 1 | 2 | | | | | 18 | 5 | 23 | 4 |
| | *Eucalyptus diversifolia* | Coastal White Mallee | 16 | 62 | | | | 1 | 4 | 8 | 5 | | 2 | 5 | 4 | 2 | | 109 | 9 | 118 | 10 |
| | *Eucalyptus dumosa* | White Mallee | | 1 | | | | 2 | | | | 7 | | | | | | 10 | | 10 | 3 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Eucalyptus fasciculosa* | Pink Gum | 3 | 96 | | | 1 | 1 | 5 | 4 | | | 3 | 4 | 1 | 2 | | 120 | 5 | 125 | 10 |
| | *Eucalyptus incrassata* | Ridge-fruited Mallee | | 26 | | | | 14 | 9 | 15 | | 1 | | | 5 | | | 70 | 1 | 71 | 6 |
| | *Eucalyptus largiflorens* | River Box | | | | | | | | | | 4 | | | | | | 4 | | 4 | 1 |
| | *Eucalyptus largiflorens* x *leucoxylon* subsp. *pruinosa* | Black Box/Blue Gum Hybrid | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Eucalyptus leptophylla* | Narrow-leaf Red Mallee | | 19 | | | | 14 | 7 | 6 | | 1 | | | 1 | | | 48 | 3 | 51 | 6 |
| | *Eucalyptus leucoxylon* ssp. | South Australian Blue Gum | 2 | 37 | 1 | 1 | 1 | | | 4 | | | 1 | | | | | 47 | 8 | 55 | 7 |
| | *Eucalyptus leucoxylon* ssp. *leucoxylon* | South Australian Blue Gum | | | | | | | | | | | | | | | | 0 | 3 | 3 | 0 |
| | *Eucalyptus leucoxylon* ssp. *megalocarpa* | Large-fruit Blue Gum | | 6 | | | | | | | 1 | | | | | | | 7 | | 7 | 2 |
| | *Eucalyptus leucoxylon* ssp. *pruinosa* | Inland South Australian Blue Gum | | | | | | 2 | | | | 12 | | | | | | 14 | 5 | 19 | 2 |
| | *Eucalyptus leucoxylon* ssp. *pruinosa* (NC) | | | 11 | | | | | | | | | | | | | | 11 | | 11 | 1 |
| | *Eucalyptus leucoxylon* ssp. *stephaniae* | Scrubby Blue Gum | | | | | | 4 | | 4 | | | | 2 | | 1 | | 11 | 5 | 16 | 4 |
| | *Eucalyptus microcarpa* | Grey Box | | | | 2 | | | | | | 16 | | | | | | 18 | 2 | 20 | 2 |
| | *Eucalyptus microcarpa* x *odorata* | Grey Box Intergrade | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| | *Eucalyptus obliqua* | Messmate Stringybark | | 3 | | | | | | | | | | | | | | 3 | 13 | 16 | 1 |
| | *Eucalyptus obliqua* var. (NC) | Messmate Stringybark | | 26 | | | | | | | | | | | | | | 26 | | 26 | 1 |
| | *Eucalyptus obliqua* var. *obliqua* (NC) | Messmate Stringybark | 10 | | | | | | | | | | | | | | | 10 | | 10 | 1 |
| | *Eucalyptus odorata* | Peppermint Box | | 4 | | 1 | | | | | | 8 | | | | | | 13 | | 13 | 3 |
| | *Eucalyptus ovata* | Swamp Gum | 7 | 11 | | | | | | | | | | | | | | 18 | 6 | 24 | 2 |
| | *Eucalyptus pauciflora* ssp. *pauciflora* | Snow Gum | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Eucalyptus porosa* | Mallee Box | | 1 | | 1 | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Eucalyptus rugosa* | Coastal White Mallee | | 3 | | | | 1 | | 1 | | | | | | | | 5 | | 5 | 3 |
| | *Eucalyptus viminalis* ssp. | Manna Gum | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| | *Eucalyptus viminalis* ssp. *cygnetensis* | Rough-bark Manna Gum | | 48 | | | 1 | | | | | | | | | | | 49 | 13 | 62 | 2 |
| | *Eucalyptus willisii* ssp. *willisii* | Willis' Peppermint | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Eucalyptus wimmerensis* | Wimmera Mallee | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Euchiton gymnocephalus* | Creeping Cudweed | | 2 | | | | | | | | 1 | 2 | | | | | 5 | | 5 | 3 |
| | *Euchiton gymnocephalus* (NC) | Creeping Cudweed | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Euchiton involucratus* | Star Cudweed | | 5 | | | | | | | | | | | | | | 5 | 6 | 11 | 1 |
| | *Euchiton sphaericus* | Annual Cudweed | | 1 | | | | | | 3 | 1 | 1 | | 1 | | | | 7 | | 7 | 5 |
| | *Euphorbia drummondii* | Caustic Weed | | | | | | | | | 2 | 3 | | | | | | 5 | 2 | 7 | 2 |
| * | *Euphorbia paralias* | Sea Spurge | 6 | 3 | | | | | | | 41 | | | | | | | 50 | | 50 | 3 |
| * | *Euphorbia peplus* | Petty Spurge | 10 | 5 | | | | | | | 6 | | | | | | | 21 | | 21 | 3 |
| * | *Euphorbia terracina* | False Caper | 5 | | | | | | | | 2 | | | | | | | 7 | | 7 | 2 |
| | *Euphrasia collina* ssp. *collina* | Purple Eyebright | | | | | | | | 3 | | | | | | | | 3 | | 3 | 1 |
| | *Euphrasia collina* ssp. *tetragona* | Coast Eyebright | | 2 | | | | | | | | | | | | | 1 | 3 | | 3 | 2 |
| | *Euphrasia* sp. | Eyebright | | | | | | | | | | | | | | | 1 | 1 | | 1 | 1 |
| | *Eutaxia diffusa* | Large-leaf Eutaxia | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| | *Eutaxia microphylla* var. *microphylla* | Common Eutaxia | | 6 | | 2 | 1 | 2 | | 6 | | 9 | | 1 | | 1 | | 28 | 3 | 31 | 8 |
| | *Eutaxia microphylla* var. *microphylla* (erect) | Common Eutaxia | | | | | | | | | | 6 | | | | | | 6 | 1 | 7 | 1 |
| | *Eutaxia microphylla* var. *microphylla* (prostrate) | Common Eutaxia | | | | | | | | | | 12 | | | | | | 12 | | 12 | 1 |
| | *Eutaxia* sp. | Eutaxia | | | | | | 4 | | | | | | | | | | 4 | | 4 | 1 |
| | *Exocarpos aphyllus* | Leafless Cherry | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Exocarpos cupressiformis* | Native Cherry | 7 | 17 | | | | | | | | | | | | | | 24 | 5 | 29 | 2 |
| | *Exocarpos sparteus* | Slender Cherry | | 12 | | | | 2 | 4 | 5 | | | | | 1 | | | 24 | | 24 | 5 |
| | *Exocarpos syrticola* | Coast Cherry | 7 | 5 | | | | | | | 63 | | | | | | | 75 | 1 | 76 | 3 |
| * | *Festuca arundinacea* | Tall Meadow Fescue | 2 | 2 | | | | | | | 2 | | | | | | | 6 | | 6 | 3 |
| * | *Festuca pratensis* | Meadow Fescue | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Frankenia pauciflora* var. *fruticulosa* | Southern Sea-heath | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Frankenia pauciflora* var. *gunnii* | Southern Sea-heath | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| * | *Fumaria capreolata* ssp. *capreolata* | White-flower Fumitory | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| * | *Fumaria muralis* ssp. *muralis* | Wall Fumitory | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Fungus* sp. | | | | | | | | | 2 | | | | | | | | 2 | | 2 | 1 |
| | *Gahnia clarkei* | Tall Saw-sedge | 5 | 4 | | | | | | | | | | | | | | 9 | 3 | 12 | 2 |
| | *Gahnia deusta* | Limestone Saw-sedge | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Gahnia filum* | Smooth Cutting-grass | 37 | 18 | | | | | 2 | 7 | | | 4 | 4 | 2 | 3 | 4 | 81 | 6 | 87 | 9 |
| | *Gahnia lanigera* | Black Grass Saw-sedge | | 3 | | | | | | 3 | | | | | | | | 6 | | 6 | 2 |
| | *Gahnia radula* | Thatch Saw-sedge | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Gahnia sieberiana* | Red-fruit Cutting-grass | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Gahnia* sp. | Saw-sedge | 2 | | | | | | | 1 | | | | | | | | 3 | | 3 | 2 |
| | *Gahnia trifida* | Cutting Grass | 5 | 21 | | | | | 2 | | 1 | | | 2 | 1 | 1 | 2 | 35 | 10 | 45 | 8 |
| * | *Galium aparine* | Cleavers | 3 | 5 | | | | | | | | | | | | | | 8 | | 8 | 2 |
| | *Galium australe* | Tangled Bedstraw | | | | | | | | | | | | | | | | 0 | 4 | 4 | 0 |
| | *Galium compactum* | Compact Bedstraw | | 4 | | | | | | | | | | | | | | 4 | 1 | 5 | 1 |
| | *Galium gaudichaudii* | Rough Bedstraw | | 2 | | | | | | | 2 | 1 | | | | | | 5 | | 5 | 3 |
| | *Galium migrans* | Loose Bedstraw | 8 | 6 | | | | | | | | | | | | | | 14 | | 14 | 2 |
| * | *Galium murale* | Small Bedstraw | 9 | 44 | 1 | | | 3 | | 6 | 64 | | 1 | | | 1 | | 129 | | 129 | 8 |
| | *Galium* sp. | Bedstraw | 6 | 1 | | | | | | | | | | | | | | 7 | | 7 | 2 |
| * | *Gastridium phleoides* | Nit-grass | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| | *Gastrodia sesamoides* | Potato Orchid | | 1 | | | | | | | | | | | | | | 1 | 6 | 7 | 1 |
| | *Genoplesium rufum* | Red Midge-orchid | | 2 | | | | | | 3 | | | | | | | | 5 | | 5 | 2 |
| | *Genoplesium* sp. | Midge Orchid | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Gentianella diemensis* | Mountain Gentian | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Geranium molle* var. *molle* | Soft Geranium | 7 | 13 | | | | | | | 8 | | | 1 | | | | 29 | | 29 | 4 |
| | *Geranium potentilloides* var. *potentilloides* | Downy Geranium | 1 | 37 | | | | | | | 51 | | | | | | | 89 | | 89 | 3 |
| | *Geranium retrorsum* | Grassland Geranium | 2 | 8 | | | 1 | | | | 18 | | | | | | | 29 | | 29 | 4 |
| | *Geranium solanderi* var. *solanderi* | Austral Geranium | 11 | 18 | | | | | | 2 | 2 | 1 | | | | | | 34 | 3 | 37 | 5 |
| | *Geranium* sp. | Geranium | 22 | 14 | | | | | | | 2 | | | | | | | 38 | 3 | 41 | 3 |
| | *Glischrocaryon behrii* | Golden Pennants | | 8 | | | | 8 | | 1 | | | | | | | | 17 | | 17 | 3 |
| | *Glossodia major* | Purple Cockatoo | | 69 | | | 3 | | | 4 | | | | | | | | 76 | | 76 | 3 |
| | *Glyceria australis* | Australian Sweet-grass | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Glycine clandestina* var. *clandestina* | Twining Glycine | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Glycine latrobeana* | Clover Glycine | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Glycyrrhiza glabra* | Liquorice | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Gnaphalium indutum* | Tiny Cudweed | | 4 | | | | | | 2 | 21 | | | | | | | 27 | | 27 | 3 |
| | *Gnaphalium* sp. | Cudweed | | | | | 1 | | | | | | | | | | | 1 | | 1 | 1 |
| | *Gnaphalium* sp. (NC) | | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| * | *Gnaphalium spicatum* (NC) | | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Gnephosis drummondii* | Slender Golden-tip | | | | | | | | 5 | | | | | | | | 5 | | 5 | 1 |
| | *Gompholobium ecostatum* | Dwarf Wedge-pea | | 10 | | | | | 2 | 4 | | | | | 4 | | | 20 | 1 | 21 | 4 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Gompholobium knightianum* (NC) | Knight's Wedge-pea | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Gonocarpus elatus* | Hill Raspwort | | | | | | | | 6 | | | | | | | | 6 | | 6 | 1 |
| | *Gonocarpus humilis* | Shade Raspwort | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Gonocarpus mezianus* | Broad-leaf Raspwort | | 5 | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Gonocarpus micranthus* ssp. *micranthus* | Creeping Raspwort | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Gonocarpus* sp. | Raspwort | 6 | | | | | | | | | | | | | | | 6 | | 6 | 1 |
| | *Gonocarpus tetragynus* | Small-leaf Raspwort | | 132 | | | 1 | 8 | 13 | 7 | | | 3 | 4 | 7 | 2 | | 177 | 5 | 182 | 9 |
| | *Goodenia blackiana* | Native Primrose | | 3 | | | | 5 | 1 | 5 | | | 1 | 3 | | | | 18 | 3 | 21 | 6 |
| | *Goodenia geniculata* | Bent Goodenia | | 93 | 1 | | | 2 | | 10 | | | | | 5 | 2 | | 113 | 2 | 115 | 6 |
| | *Goodenia heteromera* | Spreading Goodenia | | | | | | | | | | 3 | | | | | | 3 | | 3 | 1 |
| | *Goodenia humilis* | Swamp Goodenia | | 7 | | | | | | | | | | | | | | 7 | 1 | 8 | 1 |
| | *Goodenia pinnatifida* | Cut-leaf Goodenia | | | | | | | | | | 18 | | | | | | 18 | 1 | 19 | 1 |
| | *Goodenia robusta* | Woolly Goodenia | | 2 | | | | 4 | | | | | | | | | | 6 | | 6 | 2 |
| | *Goodenia* sp. | Goodenia | | 1 | | | 1 | | | 5 | | | | | | | | 7 | 1 | 8 | 3 |
| | *Goodenia varia* | Sticky Goodenia | | 1 | | | | | | | 3 | 2 | | | | | | 6 | | 6 | 3 |
| | *Goodenia willisiana* | Silver Goodenia | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| | *Goodia lotifolia* var. (NC) | Golden-tip | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Goodia lotifolia* var. *lotifolia* (NC) | Golden-tip | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Goodia medicaginea* | Western Golden-tip | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Gramineae* sp. | Grass Family | 19 | 55 | | | | 16 | | 1 | 13 | | | 1 | | | | 105 | 2 | 107 | 6 |
| | *Gratiola peruviana* | Austral Brooklime | | 6 | | | | | | | | | | | | | | 6 | 3 | 9 | 1 |
| | *Grevillea aquifolium* | Prickly Grevillea | | 5 | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Grevillea ilicifolia* var. | Holly-leaf Grevillea | | 3 | | | | | | | | | | | | | | 3 | 2 | 5 | 1 |
| | *Grevillea ilicifolia* var. *angustiloba* | Dissected Holly-leaf Grevillea | | 1 | | | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Grevillea ilicifolia* var. *ilicifolia* | Holly-leaf Grevillea | | 3 | | | 1 | | 1 | 3 | | 2 | | | | | | 10 | 2 | 12 | 5 |
| | *Grevillea ilicifolia* var. *lobata* | Lobed Holly-leaf Grevillea | | 5 | | | | 5 | | | | | | | | | | 10 | | 10 | 2 |
| | *Grevillea lavandulacea* var. *lavandulacea* | Spider-flower | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Grevillea lavandulacea* var. *sericea* | Spider-flower | | 1 | | | | 1 | | 3 | | | | | | | | 5 | | 5 | 3 |
| * | *Gynandriris setifolia* | Thread Iris | | | 1 | | | | | | | 3 | | | | | | 4 | | 4 | 2 |
| | *Gyrostemon australasicus* | Buckbush Wheel-fruit | | 1 | | | | | | | | | | | 2 | | | 3 | 1 | 4 | 2 |
| * | *Hainardia cylindrica* | Common Barb-grass | 1 | 1 | | | | | | | | 3 | | | | | 1 | 6 | 1 | 7 | 4 |
| | *Hakea muelleriana* | Heath Needlebush | 1 | 28 | | | | 14 | 11 | 4 | | 1 | | 1 | 2 | 1 | | 63 | 1 | 64 | 9 |
| | *Hakea nodosa* | Yellow Hakea | 1 | 7 | | | | | | 4 | | | | 1 | | | | 13 | 5 | 18 | 4 |
| | *Hakea repullulans* | Furze Hakea | | 3 | | | | | 1 | 1 | | | | | | | | 5 | 1 | 6 | 3 |
| | *Hakea rostrata* | Beaked Hakea | | 66 | | | 1 | 1 | 2 | 6 | | | 2 | 2 | 3 | 2 | | 85 | 9 | 94 | 9 |
| | *Hakea rugosa* | Dwarf Hakea | | 26 | | | 2 | | | 6 | | 3 | 1 | 2 | | | | 40 | 5 | 45 | 6 |
| | *Hakea vittata* | Limestone Needlebush | | 39 | | | | | 4 | 4 | 1 | | | 3 | | | | 51 | 5 | 56 | 5 |
| | *Haloragaceae* sp. | Raspwort | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Haloragis acutangula* forma | Smooth Raspwort | | | | | | | | | 3 | | | | | | | 3 | | 3 | 1 |
| | *Haloragis aspera* | Rough Raspwort | | | | | 1 | | | | | 21 | | | | | | 22 | 3 | 25 | 2 |
| | *Haloragis brownii* | Swamp Raspwort | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Haloragis eichleri* | Eichler's Raspwort | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Haloragis heterophylla* | Variable Raspwort | | 4 | | | | | | | | | | | | | | 4 | 1 | 5 | 1 |
| | *Halosarcia indica* ssp. *leiostachya* | Brown-head Samphire | | 1 | | | | | | 4 | | | | | | | | 5 | | 5 | 2 |
| | *Halosarcia lepidosperma* | | | | | | | | | 3 | | | | | | | | 3 | | 3 | 1 |
| | *Halosarcia pergranulata* ssp. | Black-seed Samphire | | | | | | | | | | | | | 2 | | | 2 | | 2 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Halosarcia pergranulata* ssp. *pergranulata* | Black-seed Samphire | | 1 | | | | | | | | | | 2 | | | | 3 | | 3 | 2 |
| | *Halosarcia* sp. | Samphire | 5 | | | | | | | | | | 1 | | | | | 6 | | 6 | 2 |
| | *Halosarcia syncarpa* | Fused Samphire | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Hardenbergia violacea* | Native Lilac | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Hedypnois rhagadioloides* | Cretan Weed | | 1 | | | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Helichrysum leucopsideum* | Satin Everlasting | | 4 | | | | 11 | | 6 | 25 | 1 | | 2 | | | | 49 | 1 | 50 | 6 |
| | *Helichrysum scorpioides* | Button Everlasting | 1 | 36 | | | | | | 5 | | | 1 | 1 | | | | 44 | 7 | 51 | 5 |
| | *Helichrysum* sp. (NC) | | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Helminthotheca echioides* | Ox-tongue | | 11 | | | | | | | | 7 | | | | | | 18 | 3 | 21 | 2 |
| | *Hemarthria uncinata* var. *uncinata* | Mat Grass | | 7 | | | | | | | | | | | | | | 7 | | 7 | 1 |
| | *Hemichroa diandra* | Mallee Hemichroa | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Hemichroa pentandra* | Trailing Hemichroa | 1 | 2 | | | | | | | | | | | | | | 3 | | 3 | 2 |
| | *Herb* sp. | | 11 | 12 | | | | | | | | | | | | | | 23 | | 23 | 2 |
| | *Hibbertia exutiacies* | Prickly Guinea-flower | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Hibbertia incana* | | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Hibbertia prostrata* | Bundled Guinea-flower | | 28 | | | | | | | | | | | | | | 28 | 6 | 34 | 1 |
| | *Hibbertia riparia* | Guinea-flower | 1 | | | | | 26 | | 8 | | 1 | | | | 2 | | 38 | 5 | 43 | 5 |
| | *Hibbertia riparia* (glabriuscula) | Smooth Guinea-flower | | 126 | | | 3 | | 16 | 13 | | 1 | 2 | 4 | 7 | | | 172 | 3 | 175 | 8 |
| | *Hibbertia riparia* (long-leaved aff. *H. stricta*) | Bristly Guinea-flower | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Hibbertia sericea* var. | Silky Guinea-flower | | 74 | | | | 5 | | 8 | | | 2 | | | | | 89 | 22 | 111 | 4 |
| | *Hibbertia sericea* var. *scabrifolia* | Rough-leaf Guinea-flower | | 73 | 1 | | 1 | 18 | 15 | 3 | | | 1 | 6 | 7 | | | 125 | 3 | 128 | 9 |
| | *Hibbertia sericea* var. *sericea* | Silky Guinea-flower | 9 | 42 | | | | | | 4 | 3 | | | | | 3 | | 61 | 4 | 65 | 5 |
| | *Hibbertia* sp. | Guinea-flower | | 1 | | | 1 | | | | | | | | | | | 2 | 2 | 4 | 2 |
| | *Hibbertia stricta* (NC) | | | 11 | | | | | | | | | | | | | | 11 | | 11 | 1 |
| | *Hibbertia stricta* var. *stricta* | Stalked Guinea-flower | | | | | | | | | | | | | | | | 0 | 6 | 6 | 0 |
| | *Hibbertia virgata* | Twiggy Guinea-flower | | 20 | | | | 19 | 2 | 1 | | | | | | | | 42 | 1 | 43 | 4 |
| * | *Holcus lanatus* | Yorkshire Fog | 17 | 58 | | | | | | | 2 | | | | | | 1 | 78 | 22 | 100 | 4 |
| * | *Homeria flaccida* | One-leaf Cape Tulip | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Homopholis proluta* | Rigid Panic | | | | 1 | | | | | | 14 | | | | | | 15 | 2 | 17 | 2 |
| * | *Hordeum* sp. (NC) | | 3 | | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Hovea linearis* | Common Hovea | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Hyalosperma demissum* | Dwarf Sunray | | 22 | 1 | | 1 | | | 2 | 1 | | | | | | | 27 | | 27 | 5 |
| | *Hybanthus floribundus* ssp. *floribundus* | Shrub Violet | | 1 | | | | 2 | | | | | | | | | | 3 | | 3 | 2 |
| | *Hydrocotyle callicarpa* | Tiny Pennywort | | 30 | | | | | | 5 | 3 | | | | | | 1 | 39 | | 39 | 4 |
| | *Hydrocotyle capillaris* | Thread Pennywort | | 4 | | | | | | 7 | 1 | | 1 | | | | 1 | 14 | | 14 | 5 |
| | *Hydrocotyle foveolata* | Yellow Pennywort | | 3 | 1 | | | | | | 2 | | | | | | | 6 | 1 | 7 | 3 |
| | *Hydrocotyle hirta* | Hairy Pennywort | 1 | 3 | | | | | | | | | | | | | | 4 | | 4 | 2 |
| | *Hydrocotyle laxiflora* | Stinking Pennywort | 19 | 160 | | | | 4 | | 2 | 49 | | 2 | 7 | | 3 | | 246 | 4 | 250 | 8 |
| | *Hydrocotyle medicaginoides* | Medic Pennywort | 1 | | | | | | | 4 | | | | 1 | | | | 6 | 1 | 7 | 3 |
| | *Hydrocotyle muscosa* | Mossy Pennywort | | 2 | | | | | | | | | 2 | | | | | 4 | | 4 | 2 |
| | *Hydrocotyle pilifera* var. *glabrata* | Buttercup Pennywort | | | | | 1 | | | | | | | | | | | 1 | | 1 | 1 |
| | *Hydrocotyle plebeya* | | 4 | 1 | | | | | | | | | | | | | | 5 | 1 | 6 | 2 |
| | *Hydrocotyle pterocarpa* | Wing Pennywort | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Hydrocotyle* sp. | Pennywort | 44 | | | | | | | 2 | | | | | | | | 46 | | 46 | 2 |
| | *Hydrocotyle tripartita* | Three-part Pennywort | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Hymenolobus procumbens* | Oval Purse | | 1 | | | | | | | 1 | | | | | | | 2 | | 2 | 2 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Hypericum gramineum* | Small St John's Wort | 1 | 14 | | | | | | | | | | | | | | 15 | | 15 | 2 |
| * | *Hypochaeris glabra* | Smooth Cat's Ear | 5 | 167 | 1 | | | 5 | 2 | 17 | 9 | 17 | 7 | 10 | 1 | 5 | | 246 | 11 | 257 | 12 |
| * | *Hypochaeris radicata* | Rough Cat's Ear | 15 | 104 | | | 2 | 8 | 1 | 3 | 3 | 6 | 2 | 3 | 2 | 1 | | 150 | 15 | 165 | 12 |
| * | *Hypochaeris* sp. | Cat's Ear | 3 | | | | | | | 2 | 7 | 2 | | | | | | 14 | | 14 | 4 |
| | *Hypolaena fastigiata* | Tassel Rope-rush | 4 | 109 | | | 1 | 16 | 12 | 19 | | | 1 | 3 | 7 | 1 | | 173 | 15 | 188 | 10 |
| | *Hypoxis glabella* var. *glabella* | Tiny Star | 1 | 6 | | | | 1 | | 4 | 1 | | | | | | | 13 | | 13 | 5 |
| | *Hypoxis vaginata* var. *vaginata* | Yellow Star | | 21 | | | 1 | | | | | | | | | | | 22 | 1 | 23 | 2 |
| | *Imperata cylindrica* | Blady Grass | 1 | | | | | | | | 1 | | | | | | | 2 | 1 | 3 | 2 |
| | *Indigofera australis* var. *australis* | Austral Indigo | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Ipomoea* sp. | Morning-glory/Cow-vine | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Iris* sp. | Iris | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Isoetes drummondii* ssp. | Plain Quillwort | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Isoetopsis graminifolia* | Grass Cushion | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Isolepis cernua* | Nodding Club-rush | 1 | 2 | | | | | | 1 | | | | | | 1 | | 5 | 2 | 7 | 4 |
| | *Isolepis fluitans* | Floating Club-rush | | 3 | | | | | | | | 1 | 2 | | | | | 6 | | 6 | 3 |
| | *Isolepis hookeriana* (NC) | Grassy Club-rush | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Isolepis inundata* | Swamp Club-rush | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Isolepis marginata* | Little Club-rush | 2 | 13 | | | | | | 6 | 37 | 1 | 1 | | | | | 60 | | 60 | 6 |
| | *Isolepis nodosa* | Knobby Club-rush | 57 | 66 | | | | | 1 | 4 | 104 | | 3 | 1 | | 2 | | 238 | 28 | 266 | 8 |
| | *Isolepis platycarpa* | Flat-fruit Club-rush | 3 | 1 | | | | | | 4 | | 1 | 3 | 2 | | | | 14 | | 14 | 6 |
| | *Isolepis* sp. | Club-rush | 3 | 1 | | | | | | | | | | | | | | 4 | | 4 | 2 |
| | *Isolepis stellata* | Star Club-rush | | | | | | | | 1 | | 1 | 1 | | | | | 3 | | 3 | 3 |
| | *Isopogon ceratophyllus* | Horny Cone-bush | | 119 | | | 1 | 3 | 10 | 9 | | | 2 | 3 | 7 | 2 | | 156 | 17 | 173 | 9 |
| | *Isotoma fluviatilis* ssp. *australis* | Swamp Isotome | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Ixodia achillaeoides* ssp. *alata* | Hills Daisy | | | | | | | | 1 | | | | | | | | 1 | 1 | 2 | 1 |
| | *Ixodia achillaeoides* ssp. *arenicola* | Sand Ixodia | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Juncus amabilis* | | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Juncus australis* | Austral Rush | | | | | | | | | | 5 | | | | | | 5 | | 5 | 1 |
| | *Juncus bufonius* | Toad Rush | 1 | 3 | | | | | | 3 | | 4 | 2 | 2 | | 1 | | 16 | | 16 | 7 |
| | *Juncus caespiticius* | Grassy Rush | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| * | *Juncus capitatus* | Dwarf Rush | | 2 | | | | | | 1 | 2 | | 1 | | | | | 6 | | 6 | 4 |
| | *Juncus flavidus* | Yellow Rush | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Juncus holoschoenus* | Joint-leaf Rush | | 8 | | | | | | | | | | | | | | 8 | 3 | 11 | 1 |
| | *Juncus kraussii* | Sea Rush | 24 | 17 | | | | | | | 5 | | 4 | | | | 5 | 55 | 7 | 62 | 5 |
| | *Juncus pallidus* | Pale Rush | | 13 | | | | | | | | | 1 | | | | | 14 | 4 | 18 | 2 |
| | *Juncus pauciflorus* | Loose-flower Rush | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Juncus planifolius* | Broad-leaf Rush | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Juncus procerus* | Tall Rush | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Juncus radula* | Hoary Rush | | | | | | | | | | 5 | | | | | | 5 | 1 | 6 | 1 |
| | *Juncus* sp. | Rush | 2 | | | | | | | | | 6 | | | | | | 8 | | 8 | 2 |
| | *Juncus subsecundus* | Finger Rush | | 6 | | | 1 | | | | | 9 | | | | | | 16 | 2 | 18 | 3 |
| | *Kennedia prostrata* | Scarlet Runner | 6 | 61 | 1 | | 2 | | | 2 | 10 | | | 2 | 1 | | | 85 | 7 | 92 | 8 |
| | *Kunzea pomifera* | Muntries | 12 | 77 | | | 3 | 9 | 10 | 6 | 28 | | 1 | 6 | 1 | 2 | | 155 | 2 | 157 | 11 |
| * | *Lactuca serriola* | Prickly Lettuce | | | | | | | | | | 6 | | | | | | 6 | | 6 | 1 |
| | *Lagenifera huegelii* | Coarse Bottle-daisy | | 8 | | | 1 | | | | | 2 | | | | | | 11 | | 11 | 3 |
| | *Lagenifera stipitata* var. *stipitata* | Spreading Bottle-daisy | 1 | 19 | | | | | | | | | | | | | | 20 | | 20 | 2 |
| * | *Lagurus ovatus* | Hare's Tail Grass | 17 | 9 | | | | 3 | 2 | 4 | 60 | 3 | | 5 | 2 | 2 | 1 | 108 | 8 | 116 | 11 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Lasiopetalum baueri* | Slender Velvet-bush | | 9 | | | | 4 | | 2 | | 2 | | 1 | | | | 18 | 1 | 19 | 5 |
| | *Lasiopetalum behrii* | Pink Velvet-bush | | | | | | 6 | | 1 | | 3 | | | | | | 10 | 1 | 11 | 3 |
| | *Lasiopetalum discolor* | Coast Velvet-bush | 1 | | | | | | | | 10 | | | | | | | 11 | | 11 | 2 |
| | *Lasiopetalum schulzenii* | Drooping Velvet-bush | 4 | 1 | | | | | | | 1 | | | | | | | 6 | | 6 | 3 |
| | *Lavatera plebeia* | Australian Hollyhock | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Lawrencia glomerata* | Clustered Lawrencia | 2 | | | | | | 1 | | | | | | 2 | | | 5 | | 5 | 3 |
| | *Lawrencia spicata* | Salt Lawrencia | | 4 | | | | | 2 | | | | 1 | | 1 | | | 8 | 2 | 10 | 4 |
| | *Lawrencia squamata* | Thorny Lawrencia | 2 | | | | | | | 2 | | | | | 1 | | | 5 | | 5 | 3 |
| | *Laxmannia orientalis* | Dwarf Wire-lily | | 17 | | | 1 | 1 | 1 | 2 | | | | | 4 | | | 26 | 2 | 28 | 6 |
| | *Lemna disperma* | Common Duckweed | 3 | | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Lemna* sp. | Duckweed | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Leontodon taraxacoides* ssp. *taraxacoides* | Lesser Hawkbit | | 10 | | | | | | | | 1 | 1 | | | | 4 | 16 | 2 | 18 | 4 |
| * | *Lepidium africanum* | Common Peppercress | | | | 1 | | | | | | 5 | | | | | | 6 | 1 | 7 | 2 |
| | *Lepidobolus drapetocoleus* | Scale Shedder | 1 | 35 | | | | 4 | 8 | 13 | | | | 2 | 6 | 1 | | 70 | | 70 | 8 |
| | *Lepidosperma* aff. *congestum* | | | | | | | | | | | | | | 1 | | | 1 | 1 | 2 | 1 |
| | *Lepidosperma canescens* | Hoary Rapier-sedge | | 3 | | | | | | | | | | | | | | 3 | 2 | 5 | 1 |
| | *Lepidosperma carphoides* | Black Rapier-sedge | | 114 | | | | 14 | 21 | 14 | | | 2 | 3 | 8 | 2 | | 178 | 6 | 184 | 8 |
| | *Lepidosperma concavum* | Spreading Sword-sedge | | 30 | | 1 | 2 | 12 | 13 | 5 | 1 | | 1 | 3 | | 2 | | 70 | 2 | 72 | 10 |
| | *Lepidosperma concavum/congestum/laterale* | Sword-sedge | | 79 | | | | | | | | | | | | | | 79 | 1 | 80 | 1 |
| | *Lepidosperma congestum* | Clustered Sword-sedge | | 7 | | | | | | 3 | | 3 | | 1 | | | | 14 | 2 | 16 | 4 |
| | *Lepidosperma curtisiae* | Little Sword-sedge | | 1 | | | | | | | | 1 | | | | | | 2 | 1 | 3 | 2 |
| | *Lepidosperma gladiatum* | Coast Sword-sedge | 36 | 14 | | | | | | | 71 | | | | | | | 121 | 2 | 123 | 3 |
| | *Lepidosperma laterale* (NC) | Sharp Sword-sedge | 4 | 15 | | | | | 15 | | | | 1 | | | | | 35 | | 35 | 4 |
| | *Lepidosperma laterale* s.str. | Tall Sword-sedge | | | | | | | | | | | | | 3 | | | 3 | 4 | 7 | 1 |
| | *Lepidosperma longitudinale* | Pithy Sword-sedge | | 5 | | | | | | | | | | | | | | 5 | 4 | 9 | 1 |
| | *Lepidosperma semiteres* | Wire Rapier-sedge | | 11 | | | | | | | | | | | | | | 11 | | 11 | 1 |
| | *Lepidosperma* sp. | Sword-sedge/Rapier-sedge | 2 | 2 | | | | 3 | | 8 | | 1 | 1 | 3 | 1 | | | 21 | | 21 | 8 |
| | *Lepidosperma viscidum* | Sticky Sword-sedge | | 12 | | 3 | | 7 | | 13 | | 12 | 1 | 1 | 6 | 1 | | 56 | 3 | 59 | 9 |
| | *Lepilaena cylindrocarpa* | Long-fruit Water-mat | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Leporella fimbriata* | Fringed Hare-orchid | | 26 | | | | | | 4 | | | | | | | | 30 | | 30 | 2 |
| | *Leptocarpus brownii* | Coarse Twine-rush | 1 | 39 | | | 1 | | 19 | 9 | 1 | 1 | 6 | 4 | 4 | 2 | 1 | 88 | 11 | 99 | 12 |
| | *Leptocarpus* sp. | Twine-rush | | | | | | | | 1 | | | | | | 1 | | 2 | 1 | 3 | 2 |
| | *Leptocarpus tenax* | Slender Twine-rush | | 15 | | | 1 | | | | | | | | | 1 | 1 | 18 | 5 | 23 | 4 |
| | *Leptoceras menziesii* | Hare Orchid | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Leptomeria aphylla* | Leafless Currant-bush | | 5 | | | | | | | | | | | | | | 5 | 1 | 6 | 1 |
| | *Leptorhynchos squamatus* | Scaly Buttons | | 4 | 1 | | | | | | | 4 | | | | | | 9 | 3 | 12 | 3 |
| | *Leptospermum continentale* | Prickly Tea-tree | 8 | 70 | | | 1 | | 4 | | | | 1 | 2 | 2 | | | 88 | 34 | 122 | 7 |
| | *Leptospermum coriaceum* | Dune Tea-tree | | | | | | 1 | | 3 | | | | | | | | 4 | 1 | 5 | 2 |
| | *Leptospermum lanigerum* | Silky Tea-tree | 32 | 7 | | | | | | | 1 | | | | | | | 40 | 4 | 44 | 3 |
| | *Leptospermum myrsinoides* | Heath Tea-tree | | 118 | | | 2 | 15 | 15 | 14 | | | 2 | 4 | 7 | 1 | | 178 | 30 | 208 | 9 |
| | *Leptospermum* sp. | Tea-tree | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Lepyrodia muelleri* | Erect Scale-rush | | 2 | | | | | | | | | | | | | | 2 | 4 | 6 | 1 |
| | *Leucophyta brownii* | Coast Cushion Bush | 7 | 1 | | | | | | | 26 | | | | | | | 34 | | 34 | 3 |
| | *Leucopogon clelandii* | Cleland's Beard-heath | | 1 | | | 1 | 1 | 8 | 1 | | | 1 | | 1 | | | 14 | 6 | 20 | 7 |
| | *Leucopogon cordifolius* | Heart-leaf Beard-heath | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Leucopogon costatus* | Twiggy Beard-heath | | 23 | | | | 8 | 15 | 8 | | | | | 2 | | | 56 | | 56 | 5 |
| | *Leucopogon ericoides* | Pink Beard-heath | | 63 | | | 2 | | | | | | 1 | | | | | 66 | 18 | 84 | 3 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Leucopogon glacialis* | Twisted Beard-heath | | 8 | | | 1 | | | | | | | | | 1 | | 10 | 1 | 11 | 3 |
| | *Leucopogon lanceolatus* | Lance Beard-heath | 1 | 5 | | | | | | | | | | | | | | 6 | | 6 | 2 |
| | *Leucopogon parviflorus* | Coast Beard-heath | 96 | 71 | | | | | | 1 | 121 | | | 5 | | 2 | | 296 | 15 | 311 | 6 |
| | *Leucopogon rufus* | Ruddy Beard-heath | | 1 | | | | 1 | | | | | | | | | | 2 | 1 | 3 | 2 |
| | *Leucopogon* sp. | Beard-heath | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Leucopogon virgatus* | Common Beard-heath | | 76 | | | | | | | | | 1 | | | | | 77 | 16 | 93 | 2 |
| | *Leucopogon woodsii* | Nodding Beard-heath | | 8 | | | | 1 | 7 | 2 | | | | | | 1 | | 19 | 2 | 21 | 5 |
| | *Levenhookia dubia* | Hairy Stylewort | | 12 | 1 | | | | | 6 | 1 | | | | | | | 20 | | 20 | 4 |
| | *Levenhookia pusilla* | Tiny Stylewort | | 20 | | | | | | 11 | | | | | | 1 | | 32 | | 32 | 3 |
| | *Lichen* sp. | | | 69 | | | | | 4 | 8 | 11 | | 2 | | | | 1 | 95 | | 95 | 6 |
| | *Lilaeopsis polyantha* | Australian Lilaeopsis | | 1 | | | | | | | | | | | | | 2 | 3 | | 3 | 2 |
| | *Liliaceae* sp. | Lily Family | | | | | | 1 | | 1 | | | | | | | | 2 | | 2 | 2 |
| * | *Limonium binervosum* | Dwarf Sea-lavender | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Limonium companyonis* | Sea-lavender | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Limonium* sp. | Sea-lavender | 2 | 2 | | | | | | | | | | | | | | 4 | | 4 | 2 |
| | *Limosella australis* | Australian Mudwort | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| | *Lindsaea linearis* | Screw Fern | | 4 | | | | | | | | | | | | | | 4 | 1 | 5 | 1 |
| | *Linum marginale* | Native Flax | 1 | 2 | | | | | | 4 | | 1 | | 3 | 1 | 1 | | 13 | 4 | 17 | 7 |
| | *Lissanthe strigosa* | Peach Heath | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Lobelia alata* | Angled Lobelia | 3 | 4 | | | | | | | | | | | | | 1 | 8 | 2 | 10 | 3 |
| | *Lobelia gibbosa* | Tall Lobelia | | | | | | | | | | | | | 1 | | | 1 | 1 | 2 | 1 |
| | *Lobelia pratioides* | Poison Lobelia | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Lobelia* sp. | Lobelia | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Logania crassifolia* | Coast Logania | | | | | | | | | 3 | | | | | | | 3 | | 3 | 1 |
| | *Logania linifolia* | Flax-leaf Logania | | 12 | | | | | 4 | 5 | | | | | | | | 21 | 1 | 22 | 3 |
| | *Logania ovata* | Oval-leaf Logania | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| * | *Lolium loliaceum* | Stiff Ryegrass | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| * | *Lolium multiflorum* | Italian Ryegrass | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Lolium perenne* | Perennial Ryegrass | | | | | | | | | 4 | | | | | | | 4 | | 4 | 1 |
| * | *Lolium perenne* x *rigidum* | Hybrid Ryegrass | | | | | | | | | | 1 | 3 | 2 | | | | 6 | | 6 | 3 |
| * | *Lolium rigidum* | Wimmera Ryegrass | 1 | 5 | | | | | | 4 | | 36 | | | | | 1 | 47 | 2 | 49 | 5 |
| * | *Lolium* sp. | Ryegrass | | | | 2 | | | | 2 | | | | | | | | 4 | | 4 | 2 |
| | *Lomandra collina* | Sand Mat-rush | | 6 | | | | 3 | | 2 | | | | | | | | 11 | 2 | 13 | 3 |
| | *Lomandra effusa* | Scented Mat-rush | | 3 | | 1 | | | | 1 | | 5 | | | | | | 10 | 1 | 11 | 4 |
| | *Lomandra filiformis* ssp. *coriacea* | Wattle Mat-rush | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Lomandra juncea* | Desert Mat-rush | | 26 | | | | 6 | 5 | 4 | | | | | 5 | | | 46 | | 46 | 5 |
| | *Lomandra longifolia* | Spiny-headed Mat-rush | 2 | 12 | | | | | | | | | | | | | | 14 | 4 | 18 | 2 |
| | *Lomandra micrantha* ssp. | Small-flower Mat-rush | | 22 | | | | | | | | | | 1 | | | | 23 | 2 | 25 | 2 |
| | *Lomandra micrantha* ssp. *micrantha* | Small-flower Mat-rush | | 2 | | 3 | 2 | 6 | | 5 | | 4 | | | | | | 22 | 4 | 26 | 6 |
| | *Lomandra micrantha* ssp. *tuberculata* | Small-flower Mat-rush | | 2 | | | 1 | | | | | | | | | | | 3 | | 3 | 2 |
| | *Lomandra nana* | Small Mat-rush | | 28 | | | 2 | | | | | 11 | 1 | | | 1 | | 43 | 2 | 45 | 5 |
| | *Lomandra sororia* | Sword Mat-rush | | 8 | | | | | | 3 | | 19 | 1 | 1 | | 1 | | 33 | 2 | 35 | 6 |
| | *Lotus australis* | Austral Trefoil | 2 | | | | | | | | 16 | | | | | | | 18 | | 18 | 2 |
| | *Lotus* sp. | Lotus | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Lupinus cosentinii* | Blue Lupin | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Luzula densiflora* | Dense Wood-rush | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Luzula meridionalis* | Common Wood-rush | 2 | 8 | | | | | | | | | | | | | | 10 | | 10 | 2 |
| | *Luzula* sp. | Wood-rush | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| * | *Lycium ferocissimum* | African Boxthorn | 10 | 3 | | | | | | | 8 | | | 2 | | | | 23 | 2 | 25 | 4 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Lysiana exocarpi* ssp. *exocarpi* | Harlequin Mistletoe | | | | | | | | | | 5 | | | | | | 5 | 1 | 6 | 1 |
| | *Lythrum hyssopifolia* | Lesser Loosestrife | | 3 | | | | | | | | 8 | 3 | | | | 1 | 15 | 1 | 16 | 4 |
| | *Maireana enchylaenoides* | Wingless Fissure-plant | | | | 2 | | | | | | 19 | | | | | | 21 | 2 | 23 | 2 |
| | *Maireana oppositifolia* | Salt Bluebush | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| * | *Marrubium vulgare* | Horehound | 3 | 2 | | | | | 1 | | | 2 | | 2 | | | | 10 | 1 | 11 | 5 |
| | *Marsilea drummondii* | Common Nardoo | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| | *Marsilea* sp. | Nardoo | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Mazus pumilio* | Swamp Mazus | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Medicago lupulina* | Black Medic | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Medicago minima* var. *minima* | Little Medic | | 1 | 1 | | | | | 1 | | | | | | | | 3 | 1 | 4 | 3 |
| * | *Medicago polymorpha* var. *polymorpha* | Burr-medic | 1 | 3 | | | | | | | | 1 | | | | | | 5 | | 5 | 3 |
| * | *Medicago* sp. | Medic | 5 | 2 | | | | | | | | | | | | | | 7 | | 7 | 2 |
| * | *Medicago truncatula* | Barrel Medic | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Melaleuca acuminata* | Mallee Honey-myrtle | | 1 | | | | 1 | | | | 4 | | | | | | 6 | | 6 | 3 |
| | *Melaleuca brevifolia* | Short-leaf Honey-myrtle | | 42 | | | 1 | | 11 | 12 | 1 | | 4 | 3 | 1 | 2 | | 77 | 16 | 93 | 9 |
| | *Melaleuca decussata* | Totem-poles | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Melaleuca gibbosa* | Slender Honey-myrtle | 1 | 6 | | | | | | 1 | | | 1 | | | | | 9 | 8 | 17 | 4 |
| | *Melaleuca halmaturorum* ssp. *halmaturorum* | Swamp Paper-bark | 17 | 12 | | | | | 1 | 6 | | | 5 | 7 | 2 | 2 | 2 | 54 | 11 | 65 | 9 |
| | *Melaleuca lanceolata* ssp. *lanceolata* | Dryland Tea-tree | 22 | 28 | | | | 3 | 2 | 6 | 5 | 6 | 1 | 1 | | 1 | | 75 | 10 | 85 | 10 |
| | *Melaleuca squamea* | Swamp Honey-myrtle | | 2 | | | | | | | | | | | | | | 2 | 1 | 3 | 1 |
| | *Melaleuca squarrosa* | Bottlebrush Tea-tree | 13 | 7 | | | | | | | 1 | | | | | | | 21 | 5 | 26 | 3 |
| | *Melaleuca uncinata* | Broombush | | 27 | | 1 | | 13 | | 10 | | 8 | 1 | | 1 | | | 61 | | 61 | 7 |
| | *Melaleuca wilsonii* | Wilson's Honey-myrtle | | | | | | 3 | | | | 3 | | | | | | 6 | | 6 | 2 |
| * | *Melilotus indica* | King Island Melilot | 3 | 6 | | | | | | | 8 | | 1 | 1 | | | | 19 | 2 | 21 | 5 |
| | *Mentha diemenica* | Slender Mint | | 4 | | | | | | | | | | | | | | 4 | 1 | 5 | 1 |
| | *Mentha satureioides* | Native Pennyroyal | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Mentha* sp. | Mint | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Mesembryanthemum crystallinum* | Common Iceplant | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Microlaena stipoides* var. *stipoides* | Weeping Rice-grass | | 2 | | | | | | | | | | | | 1 | | 3 | 1 | 4 | 2 |
| | *Microseris lanceolata* | Yam Daisy | | 31 | | | 1 | | | 10 | 1 | | | 1 | | 1 | | 45 | 2 | 47 | 6 |
| | *Microtis arenaria* | Notched Onion-orchid | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Microtis frutetorum* | | | | | | | | | 4 | | | | | | | | 4 | | 4 | 1 |
| | *Microtis parviflora* | Slender Onion-orchid | 1 | 1 | | | | | | 2 | | | | | | | | 4 | | 4 | 3 |
| | *Microtis* sp. | Onion-orchid | | 28 | | | | | 1 | 7 | 3 | | | 1 | | | | 40 | 1 | 41 | 5 |
| | *Microtis unifolia* | Common Onion-orchid | | | | | | | | | | | 1 | | | | | 1 | 1 | 2 | 1 |
| | *Microtis unifolia* (NC) | Common Onion-orchid | 2 | 1 | | | | | | | | | | | | | | 3 | | 3 | 2 |
| | *Microtis unifolia* complex | Onion-orchid | | 18 | 1 | | | | | | 2 | | 1 | 3 | 2 | 2 | | 29 | 4 | 33 | 7 |
| | *Microtis/Prasophyllum* sp. | Onion Orchid/Leek-orchid | | | | | 1 | | | | | | | | | | | 1 | | 1 | 1 |
| | *Millotia muelleri* | Common Bow-flower | | 21 | | | 1 | | | 7 | 1 | | | 1 | 1 | | | 32 | 1 | 33 | 6 |
| | *Millotia myosotidifolia* | Broad-leaf Millotia | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Millotia tenuifolia* var. | Soft Millotia | | 67 | | | | 3 | | 7 | | | | | 1 | | | 78 | | 78 | 4 |
| | *Millotia tenuifolia* var. *tenuifolia* | Soft Millotia | | | | | | | | 2 | | | | | | | | 2 | | 2 | 1 |
| | *Mimulus gracilis* | Slender Monkey-flower | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Mimulus repens* | Creeping Monkey-flower | | | | | | | | | | | | | | | 1 | 1 | 3 | 4 | 1 |
| * | *Minuartia mediterranea* | Slender Sandwort | 4 | | | | | | | | 20 | | | | | | | 24 | | 24 | 2 |
| | *Minuria leptophylla* | Minnie Daisy | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Mitrasacme paradoxa* (NC) | Wiry Mitrewort | | 3 | | | | | | 9 | 3 | 1 | 2 | 1 | | | | 19 | | 19 | 6 |
| | *Mitrasacme pilosa* var. *pilosa* | Hairy Mitrewort | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Mitrasacme* sp. | Mitrewort | | | | | | | | | | | | | | 1 | | 1 | | 1 | 1 |
| * | *Modiola caroliniana* | Red-flowered Mallow | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| * | *Moenchia erecta* | Erect Chickweed | | 2 | | | | 1 | | | 1 | 1 | | | | | | 5 | | 5 | 4 |
| * | *Molineriella minuta* | Small Hair-grass | | 1 | | | | 2 | | | | | | | | | | 3 | | 3 | 2 |
| | *Monotoca scoparia* | Prickly Broom-heath | | 5 | | | | | | | | | 1 | | | | | 6 | 10 | 16 | 2 |
| | *Montia australasica* | White Purslane | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| | Moss sp. | | 60 | 108 | | | | | 2 | 4 | 32 | 1 | 1 | | | | 1 | 209 | | 209 | 8 |
| | *Muehlenbeckia adpressa* | Climbing Lignum | 34 | 22 | | | | | | 2 | 8 | | | 1 | | | | 67 | 2 | 69 | 5 |
| | *Muehlenbeckia gunnii* | Coastal Climbing Lignum | 8 | 16 | | | | | 1 | | 57 | | 1 | 3 | | 1 | | 87 | 3 | 90 | 7 |
| | *Muellerina eucalyptoides* | Creeping Mistletoe | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Myoporum insulare* | Common Boobialla | 17 | 4 | | | | | 1 | | 42 | | | | | | | 64 | 2 | 66 | 4 |
| | *Myoporum montanum* | Native Myrtle | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| | *Myoporum parvifolium* | Creeping Boobialla | | | | | | | 2 | 1 | | | | | | | | 3 | 1 | 4 | 2 |
| | *Myoporum platycarpum* (NC) | False Sandalwood | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Myoporum platycarpum* ssp. *perbellum* | Mallee Sandalwood | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Myoporum* sp. | | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Myosotis australis* | Austral Forget-me-not | 1 | 7 | | | | | | 1 | 34 | | | | | | | 43 | 1 | 44 | 4 |
| * | *Myosotis discolor* ssp. *discolor* | Yellow-and-blue Forget-me-not | 4 | 5 | | | | | | | 1 | | | | | | | 10 | | 10 | 3 |
| | *Myriocephalus rhizocephalus* var. *rhizocephalus* | Woolly-heads | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Myriophyllum integrifolium* | Tiny Milfoil | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Myriophyllum simulans* | Amphibious Milfoil | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Myriophyllum* sp. | Milfoil | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Myriophyllum variifolium* | Varied Milfoil | | 2 | | | | | | | | | | | | | | 2 | 2 | 4 | 1 |
| | *Myriophyllum verrucosum* | Red Milfoil | | | | | | | | | | 1 | | | | | | 1 | 1 | 2 | 1 |
| * | *Myrsiphyllum asparagoides* | Bridal Creeper | 3 | 37 | | | | | | 1 | 19 | 8 | 2 | 2 | | 3 | | 75 | 5 | 80 | 8 |
| | *Neurachne alopecuroidea* | Fox-tail Mulga-grass | | 37 | | | | 5 | 1 | 8 | | 1 | 3 | 3 | 1 | 1 | | 60 | 3 | 63 | 9 |
| * | *Nicotiana glauca* | Tree Tobacco | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Oenothera stricta* ssp. *stricta* | Common Evening Primrose | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| * | *Olea europaea* ssp. | Olive | | 2 | | | | | | | | 1 | | | | | | 3 | | 3 | 2 |
| | *Olearia axillaris* | Coast Daisy-bush | 55 | 20 | | | | | 2 | | 123 | | | | 1 | | | 201 | 3 | 204 | 5 |
| | *Olearia ciliata* var. *ciliata* | Fringed Daisy-bush | | 16 | | | | | 2 | 3 | | | | | | 1 | | 22 | 1 | 23 | 4 |
| | *Olearia floribunda* var. *floribunda* | Heath Daisy-bush | 1 | | | | | | | | | 1 | | | | | | 2 | 2 | 4 | 2 |
| | *Olearia glandulosa* | Swamp Daisy-bush | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Olearia lanuginosa* | Woolly Daisy-bush | | 1 | | | | | 1 | 2 | | | | | | | | 4 | 1 | 5 | 3 |
| | *Olearia pannosa* ssp. *pannosa* | Silver Daisy-bush | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Olearia ramulosa* | Twiggy Daisy-bush | 1 | 5 | | | | | | 1 | | 1 | | | 1 | | | 9 | 2 | 11 | 5 |
| | *Olearia* sp. | Daisy-bush | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Onopordum acaulon* | Horse Thistle | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Opercularia ovata* | Broad-leaf Stinkweed | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Opercularia scabrida* | Stalked Stinkweed | | 2 | | | | | | | | | | | 2 | | | 4 | | 4 | 2 |
| | *Opercularia turpis* | Twiggy Stinkweed | | 13 | | | | 1 | | 5 | | 1 | | 2 | | | | 22 | 3 | 25 | 5 |
| | *Opercularia varia* | Variable Stinkweed | | 20 | | | 1 | | | | | | 2 | | | 1 | | 24 | 1 | 25 | 4 |
| | *Ophioglossum lusitanicum* | Austral Adder's-tongue | | 7 | | | | | | | | | | | | | | 7 | | 7 | 1 |
| | *Orchidaceae* sp. | Orchid Family | 3 | | | | | | | 1 | | | | | | | | 4 | | 4 | 2 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Orthoceras strictum* | Horned Orchid | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| * | *Oxalis corniculata* ssp. *corniculata* | Creeping Wood-sorrel | 18 | | | | | | | | | | | | | | | 18 | | 18 | 1 |
| | *Oxalis perennans* | Native Sorrel | 1 | 116 | | 1 | 1 | 3 | | 3 | 6 | 33 | 2 | 4 | | 3 | | 173 | 5 | 178 | 11 |
| * | *Oxalis pes-caprae* | Soursob | | 2 | | | | | | | 2 | | | | | | | 4 | | 4 | 2 |
| | *Oxalis* sp. | Sorrel | 1 | | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Ozothamnus ferrugineus* | Tree Everlasting | 20 | 14 | | | | | | | | | | | | | | 34 | 2 | 36 | 2 |
| | *Ozothamnus retusus* | Notched Bush-everlasting | | | | | | | | | | 2 | | | | | | 2 | | 2 | 1 |
| | *Ozothamnus turbinatus* | Coast Bush-everlasting | 9 | | | | | | | | 45 | | | | | | | 54 | | 54 | 2 |
| * | *Parapholis incurva* | Curly Ryegrass | 5 | 2 | | | | | | 1 | 9 | | | 3 | | 1 | | 21 | 2 | 23 | 6 |
| * | *Parentucellia latifolia* | Red Bartsia | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| * | *Parentucellia viscosa* | Yellow Bartsia | | 4 | | | | | | | | | | | | | | 4 | 2 | 6 | 1 |
| | *Parietaria debilis* | Smooth-nettle | 19 | 13 | | | | | | | 68 | | | 1 | | | | 101 | | 101 | 4 |
| * | *Paspalum dilatatum* | Paspalum | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Patersonia fragilis* | Short Purple-flag | | 5 | | | | | | | | | | | | | | 5 | 4 | 9 | 1 |
| | *Patersonia occidentalis* | Long Purple-flag | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| | *Pelargonium australe* | Australian Pelargonium | 17 | 4 | | | | | | | 56 | | | | | | | 77 | 1 | 78 | 3 |
| | *Pelargonium littorale* | Native Pelargonium | | 10 | | | 2 | 2 | | 8 | | | 1 | | 1 | 1 | | 25 | 5 | 30 | 7 |
| | *Pelargonium rodneyanum* | Magenta Pelargonium | 1 | 36 | | | | | | | | 1 | 2 | 1 | | | | 41 | 4 | 45 | 5 |
| * | *Pennisetum clandestinum* | Kikuyu | | | | | | | | | 1 | | | | | | | 1 | 1 | 2 | 1 |
| * | *Pentaschistis airoides* | False Hair-grass | | | | | | | | 3 | | 1 | | | | | | 4 | | 4 | 2 |
| | *Persicaria prostrata* | Creeping Knotweed | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Persoonia juniperina* | Prickly Geebung | | 17 | | | 1 | 3 | 6 | 6 | | | | 1 | 2 | | | 36 | 2 | 38 | 7 |
| * | *Phalaris aquatica* | Phalaris | | 2 | | | | | | | | 12 | | | | | | 14 | 1 | 15 | 2 |
| * | *Phalaris minor* | Lesser Canary-grass | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| * | *Phalaris paradoxa* | Paradox Canary-grass | | | | 1 | | | | | | 5 | | | | | | 6 | 2 | 8 | 2 |
| * | *Phalaris* sp. | Canary Grass | 1 | 4 | | | | | | | | | | | | | | 5 | | 5 | 2 |
| | *Phebalium stenophyllum* | Narrow-leaf Phebalium | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Phragmites australis* | Common Reed | 14 | | | | | | | | 1 | | | | | | | 15 | 3 | 18 | 2 |
| | *Phyllangium distylis* | Tiny Mitrewort | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| | *Phyllangium divergens* | Wiry Mitrewort | | | | | | | | | | | | | | 2 | | 2 | 1 | 3 | 1 |
| | *Phyllota pleurandroides* | Heathy Phyllota | | 35 | | | | 9 | 7 | 6 | | | | 3 | 6 | 1 | | 67 | | 67 | 7 |
| | *Phyllota remota* | Slender Phyllota | | 5 | | | | 5 | 11 | 1 | | | | | | | | 22 | | 22 | 4 |
| | *Picris angustifolia* ssp. *angustifolia* | Coast Picris | | | | | | | | | 2 | | | | | | | 2 | | 2 | 1 |
| | *Picris* sp. | Picris | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Pilularia novae-hollandiae* | Austral Pillwort | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Pimelea curviflora* var. *gracilis* | Curved Riceflower | | | | | | | | | | 2 | | | | | | 2 | 2 | 4 | 1 |
| | *Pimelea flava* ssp. *flava* | Yellow Riceflower | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Pimelea glauca* | Smooth Riceflower | 1 | 11 | | | | 1 | 1 | 5 | 3 | 5 | | 1 | | 1 | | 29 | 9 | 38 | 9 |
| | *Pimelea humilis* | Low Riceflower | | 46 | | | 1 | 2 | | | | 1 | | | | 1 | | 51 | 6 | 57 | 5 |
| | *Pimelea linifolia* ssp. *linifolia* | Slender Riceflower | | 1 | | | | | | | | | | | | | | 1 | 3 | 4 | 1 |
| | *Pimelea micrantha* | Silky Riceflower | | | | 2 | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Pimelea octophylla* | Woolly Riceflower | | 8 | | | | 1 | 4 | 1 | | | | | 2 | | | 16 | 3 | 19 | 5 |
| | *Pimelea phylicoides* | Heath Riceflower | | 4 | | | | | 1 | | | | | | 1 | | | 6 | | 6 | 3 |
| | *Pimelea serpyllifolia* ssp. *serpyllifolia* | Thyme Riceflower | 42 | 9 | | | | 1 | | | 106 | | | | | | | 158 | | 158 | 4 |
| | *Pimelea* sp. | Riceflower | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Pimelea stricta* | Erect Riceflower | | 1 | | | | 2 | | 2 | | 2 | | | | | | 7 | | 7 | 4 |
| * | *Pinus pinaster* | Maritime Pine | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * | *Pinus radiata* | Radiata Pine | | 31 | | | | | | | | | | | | | | 31 | 7 | 38 | 1 |
| * | *Piptatherum miliaceum* | Rice Millet | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Pittosporum phylliraeoides* var. *microcarpa* | Native Apricot | | 1 | | | | | | | | 1 | | | | | | 2 | 5 | 7 | 2 |
| | *Plantago* aff. *debilis* | Shade Plantain | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Plantago bellardii* | Hairy Plantain | | 2 | 1 | | | | | | | 2 | | | | | | 5 | | 5 | 3 |
| * | *Plantago coronopus* ssp. | Bucks-horn Plantain | | 1 | | | | | | | | | | | | | | 1 | 3 | 4 | 1 |
| * | *Plantago coronopus* ssp. *coronopus* | Bucks-horn Plantain | 1 | 2 | | | | | | | | | | | | | 1 | 4 | | 4 | 3 |
| | *Plantago gaudichaudii* | Narrow-leaf Plantain | 1 | 4 | | | | | | 1 | | 9 | | | | | | 15 | | 15 | 4 |
| | *Plantago hispida* | Hairy Plantain | | 3 | | | | | | 2 | 3 | 3 | | | | | | 11 | | 11 | 4 |
| * | *Plantago lanceolata* var. | Ribwort | | | | | | | | | | 5 | | | | | | 5 | 1 | 6 | 1 |
| * | *Plantago lanceolata* var. *lanceolata* | Ribwort | 2 | 3 | | | | | | | 3 | | | | | | | 8 | 1 | 9 | 3 |
| | *Plantago* sp. | Plantain | 2 | 1 | | | | | | | | | | 1 | | | | 4 | | 4 | 3 |
| | *Plantago* sp. B | Little Plantain | | 6 | | | | | | 2 | | | | | | | | 8 | 1 | 9 | 2 |
| | *Plantago varia* | Variable Plantain | 2 | 2 | | | | | | | | | | | | | | 4 | | 4 | 2 |
| | *Platysace heterophylla* var. *heterophylla* | Slender Platysace | | 2 | | | | | | | | | | | | | | 2 | 1 | 3 | 1 |
| * | *Poa annua* | Winter Grass | | 13 | | | | | | 1 | | | | | | | | 14 | | 14 | 2 |
| * | *Poa bulbosa* | Bulbous Meadow-grass | | | | 1 | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Poa clelandii* | Matted Tussock-grass | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Poa crassicaudex* | Thick-stem Tussock-grass | 3 | 17 | | | | | | | | 5 | | | | 1 | | 26 | 4 | 30 | 4 |
| | *Poa fax* | Scaly Poa | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Poa labillardieri* var. *labillardieri* | Common Tussock-grass | 1 | 18 | | | | | | | | | | | | | | 19 | 1 | 20 | 2 |
| | *Poa meionectes* | Fine-leaf Tussock-grass | | 6 | | | | | | | | | | | | | | 6 | 1 | 7 | 1 |
| | *Poa morrisii* | Soft Tussock-grass | | 3 | | | | | | | | | | | | | | 3 | 2 | 5 | 1 |
| | *Poa poiformis* | Coast Tussock-grass | 33 | 1 | | | | | | | 46 | | | | | | | 80 | | 80 | 3 |
| * | *Poa pratensis* | Kentucky Blue-grass | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Poa rodwayi* | Velvet Tussock-grass | | 1 | | | | | | 3 | | | | | | | | 4 | 7 | 11 | 2 |
| | *Poa sieberiana* var. *hirtella* | Grey Tussock Grass | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| | *Poa* sp. | Meadow-grass/Tussock-grass | 5 | 15 | | | | 1 | | | 5 | | | 1 | | | | 27 | | 27 | 5 |
| | *Poa tenera* | Slender Tussock-grass | 1 | 9 | | | | | | | | | | | | | | 10 | | 10 | 2 |
| | *Podolepis canescens* | Grey Copper-wire Daisy | | | | | | | 5 | 2 | | | | | | | | 7 | 1 | 8 | 2 |
| | *Podotheca angustifolia* | Sticky Long-heads | 1 | 9 | | | | | 1 | 3 | 4 | | | 2 | 1 | | | 21 | 2 | 23 | 7 |
| | *Pogonolepis muelleriana* | Stiff Cup-flower | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| * | *Polycarpon tetraphyllum* | Four-leaf Allseed | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| * | *Polygala monspeliaca* | Annual Milkwort | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| * | *Polygala myrtifolia* | Myrtle-leaf Milkwort | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Polygonum aviculare* | Wireweed | | | | | | | | | | 5 | | | | | | 5 | | 5 | 1 |
| * | *Polypogon maritimus* | Coast Beard-grass | 1 | 1 | | | | | 2 | | 18 | | 1 | | | 3 | 3 | 29 | 1 | 30 | 7 |
| * | *Polypogon monspeliensis* | Annual Beard-grass | | 2 | | | | | | 3 | | 1 | 6 | 4 | 1 | | 1 | 18 | 4 | 22 | 7 |
| | *Pomaderris halmaturina* ssp. | Glenelg Pomaderris | | 2 | | | | | | | | | | | | | | 2 | 1 | 3 | 1 |
| | *Pomaderris halmaturina* ssp. *halmaturina* | Kangaroo Island Pomaderris | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Pomaderris obcordata* | Wedge-leaf Pomaderris | | 6 | | | | | | 5 | 2 | | | | | 1 | | 14 | 1 | 15 | 4 |
| | *Pomaderris oraria* (NC) | Coast Pomaderris | 7 | | | | | | | | | | | | | | | 7 | | 7 | 1 |
| | *Pomaderris paniculosa* ssp. | | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Pomaderris paniculosa* ssp. *paniculosa* | Mallee Pomaderris | | | | | | | | | 12 | | | | | | | 12 | | 12 | 1 |
| | *Pomaderris paniculosa* ssp. *paralia* | Coast Pomaderris | | 1 | | | | | | | 2 | | | | | | | 3 | | 3 | 2 |
| | *Pomaderris* sp. | Pomaderris | 3 | | | | | | | | | | | | | | | 3 | | 3 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Poranthera microphylla* | Small Poranthera | 1 | 20 | | | | | | 6 | 5 | | 1 | 4 | | 4 | | 41 | 3 | 44 | 7 |
| | *Poranthera triandra* | Three-petal Poranthera | | | | | | | | 1 | | | | | | | | 1 | 1 | 2 | 1 |
| | *Potamogeton ochreatus* | Blunt Pondweed | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Potamogeton tricarinatus* | Floating Pondweed | 1 | 2 | | | | | | | | 3 | | | | | | 6 | 2 | 8 | 3 |
| | *Prasophyllum fitzgeraldii* | Fitzgerald's Leek-orchid | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Prasophyllum odoratum* | Scented Leek-orchid | | 1 | | | | | | 2 | | | | | | | 1 | 4 | | 4 | 3 |
| | *Prasophyllum* sp. | Leek-orchid | | 8 | | | | | | 1 | | | 3 | | | | | 12 | | 12 | 3 |
| | *Pratia concolor* | Poison Pratia | | | | | | | | | | 4 | | | | | | 4 | | 4 | 1 |
| | *Pratia pedunculata* | Matted Pratia | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Pratia platycalyx* | Salt Pratia | | | | | | | | | | | 5 | | | | 2 | 7 | 3 | 10 | 2 |
| | *Pratia puberula* | White-flower Matted Pratia | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Pseudognaphalium luteoalbum* | Jersey Cudweed | | 1 | | | | | | | | | | | | | 1 | 2 | 1 | 3 | 2 |
| | *Pteridium esculentum* | Bracken Fern | 27 | 123 | | | | | 1 | 1 | | | 2 | | | 1 | | 155 | 32 | 187 | 6 |
| | *Pteris tremula* | Tender Brake | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Pterostylis* aff. *rufa* | Rufous Greenhood | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Pterostylis alata* | Tall Shell-orchid | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Pterostylis curta* | Blunt Greenhood | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Pterostylis longifolia* | Tall Greenhood | 1 | 8 | | | | | | | | | | | | | | 9 | | 9 | 2 |
| | *Pterostylis nana* | Dwarf Greenhood | | 39 | | | 1 | 4 | | 7 | | | | | | | | 51 | | 51 | 4 |
| | *Pterostylis nutans* | Nodding Greenhood | | 5 | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Pterostylis pedunculata* | Maroon-hood | | 37 | | | | | | 2 | 3 | | | | | | | 42 | 2 | 44 | 3 |
| | *Pterostylis plumosa* | Bearded Greenhood | | 16 | | | | | | 7 | | | | | | | | 23 | | 23 | 2 |
| | *Pterostylis sanguinea* | Blood Greenhood | | 12 | | | | 1 | | 1 | | | | 1 | | | | 15 | 1 | 16 | 4 |
| | *Pterostylis* sp. | Greenhood | 1 | 6 | | | | | | | | | | | | | | 7 | 1 | 8 | 2 |
| | *Pterostylis tenuissima* | Swamp Greenhood | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Ptilotus erubescens* | Hairy-tails | | | | | | | | | | 1 | | | | | | 1 | 1 | 2 | 1 |
| | *Ptilotus exaltatus* var. *semilanatus* | Lamb's Tails | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| | *Ptilotus macrocephalus* | Feather-heads | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Ptilotus spathulatus* forma *spathulatus* | Pussy-tails | | | | | | | | | | 4 | | | | | | 4 | | 4 | 1 |
| * | *Puccinellia fasciculata* | Borrer's Saltmarsh-grass | | | | | | | | | 4 | | | 2 | | | | 6 | | 6 | 2 |
| | *Puccinellia stricta* var. *stricta* | Australian Saltmarsh-grass | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Pultenaea acerosa* | Bristly Bush-pea | | 8 | | | | | 1 | 4 | 2 | | | | | | | 15 | 1 | 16 | 4 |
| | *Pultenaea canaliculata* var. *canaliculata* | Soft Bush-pea | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Pultenaea densifolia* | Dense Bush-pea | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Pultenaea hispidula* | Rusty Bush-pea | 1 | 2 | | | | | | | | | | | | | | 3 | 1 | 4 | 2 |
| | *Pultenaea laxiflora* | Loose-flower Bush-pea | | 1 | | | | | | | | 2 | | | | | | 3 | | 3 | 2 |
| | *Pultenaea pedunculata* | Matted Bush-pea | | | | | | | | | | 4 | | | | | | 4 | 1 | 5 | 1 |
| | *Pultenaea prostrata* | Silky Bush-pea | | 16 | | | 1 | 8 | | | | | | | | | | 25 | 3 | 28 | 3 |
| | *Pultenaea scabra* | Rough Bush-pea | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Pultenaea* sp. | Bush-pea | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Pultenaea stricta* | Erect Bush-pea | 6 | 5 | | | | | | | | | | | | | | 11 | 3 | 14 | 2 |
| | *Pultenaea tenuifolia* | Narrow-leaf Bush-pea | 1 | 27 | | | | 1 | 16 | 15 | 6 | | 1 | 1 | 2 | 1 | | 71 | 3 | 74 | 10 |
| | *Pultenaea vestita* | Feather Bush-pea | | 1 | | | | | 2 | 2 | | | | | | | | 5 | | 5 | 3 |
| | *Pycnosorus chrysanthes* | | | | | | | | | | | 1 | | | | | | 1 | 1 | 2 | 1 |
| | *Pyrorchis nigricans* | Black Fire-orchid | | 113 | | | 2 | 11 | | 9 | | | | | | | | 135 | | 135 | 4 |
| | *Quinetia urvillei* | Quinetia | | 7 | | | | | | 1 | | | | | | | | 8 | | 8 | 2 |
| | *Ranunculus glabrifolius* | Shining Buttercup | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Ranunculus inundatus* | River Buttercup | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Ranunculus pachycarpus* | Thick-fruit Buttercup | | 5 | | | 2 | | | | | | | | | | | 7 | | 7 | 2 |
| | *Ranunculus papulentus* | Large River Buttercup | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Ranunculus pumilio* var. *pumilio* | Ferny Buttercup | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| * | *Ranunculus repens* | Creeping Buttercup | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Ranunculus robertsonii* | Slender Buttercup | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Ranunculus sessiliflorus* var. | Annual Buttercup | | 20 | | | | | | | 2 | | | | | | | 22 | | 22 | 2 |
| | *Ranunculus sessiliflorus* var. *sessiliflorus* | Annual Buttercup | | 1 | | | | 2 | | 4 | 2 | | | | | | | 9 | | 9 | 4 |
| | *Ranunculus* sp. | Buttercup | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Raphanus raphanistrum* | Wild Radish | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| * | *Rapistrum rugosum* ssp. *rugosum* | Turnip Weed | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Reichardia tingitana* | False Sowthistle | | | | | | | | | 5 | | | | | | | 5 | | 5 | 1 |
| * | *Reseda luteola* | Wild Mignonette | | | | | | | | | | | | 1 | | | | 1 | | 1 | 1 |
| | *Restio tetraphyllus* | Tassel Cord-rush | | 3 | | | | | | | | | | | | | | 3 | 1 | 4 | 1 |
| | *Rhagodia candolleana* ssp. | Sea-berry Saltbush | | 17 | | | | | | 3 | | | | | | | | 20 | 2 | 22 | 2 |
| | *Rhagodia candolleana* ssp. *candolleana* | Sea-berry Saltbush | 44 | | | | | | 1 | | 105 | | | 4 | | | | 154 | 1 | 155 | 4 |
| | *Rhodanthe pygmaea* | Pigmy Daisy | | 2 | | | | | | 1 | | | | | | | | 3 | | 3 | 2 |
| * | *Ricinus communis* | Castor Oil Plant | 3 | | | | | | | | | | | | | | | 3 | | 3 | 1 |
| * | *Romulea minutiflora* | Small-flower Onion-grass | | | | 1 | | | | | | 19 | | | | | | 20 | 2 | 22 | 2 |
| * | *Romulea rosea* var. *australis* | Common Onion-grass | | 1 | | | | | | | | | | | | 1 | 2 | 4 | 1 | 5 | 3 |
| * | *Romulea* sp. | Onion-grass | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| * | *Rorippa microphylla* | One-row Watercress | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Rorippa nasturtium-aquaticum* | Watercress | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Rosa* sp. | Wild Rose/Briar | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Rostraria cristata* | Annual Cat's-tail | 5 | 8 | | | | | | | 39 | 1 | | 1 | | | | 54 | | 54 | 5 |
| * | *Rostraria pumila* | Tiny Bristle-grass | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| * | *Rubus fruticosus* (NC) | Blackberry | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Rubus parvifolius* | Native Raspberry | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Rubus ulmifolius* var. *ulmifolius* | Blackberry | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Rumex brownii* | Slender Dock | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Rumex brownii* (NC) | Slender Dock | | 5 | | | | | | | | 5 | 1 | 2 | | | | 13 | | 13 | 4 |
| * | *Rumex conglomeratus* | Clustered Dock | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Rumex crispus* | Curled Dock | 1 | 1 | | | | | | | 1 | 2 | | | | | 1 | 6 | 1 | 7 | 5 |
| | *Rumex dumosus* var. | Wiry Dock | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Rumex dumosus* var. *dumosiformis* | Wiry Dock | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Rumex dumosus* var. *dumosus* | Wiry Dock | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| * | *Rumex pulcher* ssp. *pulcher* | Fiddle Dock | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| | *Rumex* sp. | Dock | 5 | 15 | | | | | | | | | | | | | | 20 | | 20 | 2 |
| | *Rutidosis multiflora* | Small Wrinklewort | | 17 | | | | | | 6 | 2 | | | | | | | 25 | | 25 | 3 |
| * | *Sagina apetala* | Annual Pearlwort | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| * | *Sagina maritima* | Sea Pearlwort | | 3 | | | | | | | 40 | | | | | | | 43 | | 43 | 2 |
| * | *Salvia verbenaca* form | Wild Sage | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| * | *Salvia verbenaca* form A | Wild Sage | | 1 | | | | | | | | 8 | | | | | | 9 | 1 | 10 | 2 |
| * | *Sambucus gaudichaudiana* | White Elderberry | | 3 | | | | | | | 5 | | | | | | | 8 | 1 | 9 | 2 |
| | *Samolus repens* | Creeping Brookweed | 44 | 18 | | | | | | 5 | 5 | | 3 | 7 | 2 | 1 | 6 | 91 | 5 | 96 | 9 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Santalum acuminatum* | Quandong | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Santalum murrayanum* | Bitter Quandong | | 1 | | | | | | 1 | | | | | 1 | | | 3 | 1 | 4 | 3 |
| | *Sarcocornia blackiana* | Thick-head Samphire | | | | | | | | | | | | | 1 | | | 1 | | 1 | 1 |
| | *Sarcocornia quinqueflora* | Beaded Samphire | 5 | | | | | | | 3 | | | 4 | 2 | 1 | 1 | 1 | 17 | 2 | 19 | 7 |
| | *Sarcocornia* sp. | Samphire | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Scabiosa atropurpurea* | Pincushion | | | | | | | | | | 4 | | | | | | 4 | 1 | 5 | 1 |
| | *Scaevola aemula* | Fairy Fanflower | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Scaevola albida* var. *albida* | Pale Fanflower | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Scaevola albida* var. *pallida* | Coast Fanflower | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Scaevola calendulacea* | Dune Fanflower | 1 | | | | | | | | 4 | | | | | | | 5 | | 5 | 2 |
| | *Scaevola crassifolia* | Cushion Fanflower | 5 | | | | | | | | 4 | | | | | | | 9 | | 9 | 2 |
| * | *Schismus barbatus* | Arabian Grass | | 9 | | | | | | 1 | | | | | | | | 10 | | 10 | 2 |
| | *Schoenoplectus litoralis* | Shore Club-rush | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Schoenoplectus pungens* | Spiky Club-rush | 4 | | | | | | | | | | | | | | | 4 | 2 | 6 | 1 |
| | *Schoenus apogon* | Common Bog-rush | 4 | 53 | 1 | | 1 | | | 3 | 2 | 2 | | 1 | | | | 67 | 3 | 70 | 8 |
| | *Schoenus breviculmis* | Matted Bog-rush | | 36 | | | | 6 | 16 | 13 | | 2 | 1 | 4 | 6 | 1 | | 85 | 3 | 88 | 9 |
| | *Schoenus carsei* | Wiry Bog-rush | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Schoenus deformis* | Small Bog-rush | | 17 | | | | | 2 | 1 | | | | 1 | | | | 21 | 2 | 23 | 4 |
| | *Schoenus fluitans* | Floating Bog-rush | | 5 | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Schoenus laevigatus* | | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Schoenus lepidosperma* ssp. *lepidosperma* | Slender Bog-rush | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| | *Schoenus maschalinus* | Leafy Bog-rush | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Schoenus nitens* | Shiny Bog-rush | 9 | 15 | | | | | 1 | 6 | 3 | | 1 | 2 | | | 5 | 42 | 4 | 46 | 8 |
| | *Schoenus sculptus* | Gimlet Bog-rush | | | | | | | | 3 | | | | | | | | 3 | | 3 | 1 |
| | *Schoenus* sp. | Bog-rush | | | | | | | | | 1 | | | | | | | 1 | | 1 | 1 |
| | *Schoenus tesquorum* | Grassy Bog-rush | | 1 | | | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Scirpus* sp. (NC) | | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Scorzonera laciniata* | Scorzonera | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Sebaea albidiflora* | White Sebaea | 1 | 1 | | | | | | | | | | | | | 3 | 5 | | 5 | 3 |
| | *Sebaea ovata* | Yellow Sebaea | | 4 | 1 | | | | | 7 | | | 2 | 8 | | 3 | | 25 | 4 | 29 | 6 |
| | *Selaginella gracillima* | Tiny Selaginella | | | | | | | | | | | | | | | 2 | 2 | | 2 | 1 |
| | *Selliera radicans* | Shiny Swamp-mat | 27 | 17 | | | | | 1 | 3 | 2 | | 3 | | | 1 | 6 | 60 | 7 | 67 | 8 |
| | *Senecio anethifolius* | Feathery Groundsel | 5 | | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Senecio biserratus* | Jagged Groundsel | 18 | | | | | | | | 20 | | | | | | | 38 | 1 | 39 | 2 |
| | *Senecio cunninghamii* var. *cunninghamii* | Shrubby Groundsel | | | | | | | | | | | | | | | 4 | 4 | | 4 | 1 |
| * | *Senecio elegans* | Purple Groundsel | 21 | 4 | | | | | | | 80 | | | | | | | 105 | | 105 | 3 |
| | *Senecio glomeratus* | Swamp Groundsel | 4 | 51 | | | | | 1 | 1 | 1 | | 6 | | | | | 64 | 1 | 65 | 6 |
| | *Senecio glossanthus* | Annual Groundsel | | 9 | | | | | | 7 | | | | | | 1 | | 17 | 3 | 20 | 3 |
| | *Senecio lautus* | Variable Groundsel | 32 | 33 | | | | | | | 102 | | | | | | | 167 | 1 | 168 | 3 |
| | *Senecio macrocarpus* | Large-fruit Groundsel | | 1 | | | | | 9 | | | | | | | | | 10 | | 10 | 2 |
| | *Senecio minimus* var. *minimus* | Fine-tooth Groundsel | 1 | 2 | | | | | | | | | | | | | | 3 | 1 | 4 | 2 |
| | *Senecio odoratus* var. *odoratus* | Scented Groundsel | 1 | 3 | | | | | | | 9 | | | | | | | 13 | 7 | 20 | 3 |
| | *Senecio picridioides* | Purple-leaf Groundsel | | 28 | | | 1 | 1 | | 6 | 3 | 2 | 1 | 5 | | 2 | | 49 | 3 | 52 | 9 |
| | *Senecio psilocarpus* | | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Senecio pterophorus* var. *pterophorus* | African Daisy | | 1 | | | | | | | | | | | | | | 1 | 2 | 3 | 1 |
| | *Senecio quadridentatus* | Cotton Groundsel | 2 | 17 | | | 1 | 4 | 1 | 1 | | 2 | | | 1 | 1 | | 30 | 14 | 44 | 9 |
| | *Senecio* sp. | Groundsel | 7 | 1 | | | | 1 | | 1 | | | | | | | 2 | 12 | 2 | 14 | 5 |
| | *Senecio squarrosus* | Squarrose Groundsel | | 10 | | | | | | 3 | | 1 | 1 | 1 | 1 | | | 17 | 4 | 21 | 6 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Senecio tenuiflorus* | Woodland Groundsel | | 70 | | | | | | | | 1 | 1 | | | | | 72 | 2 | 74 | 3 |
| * | *Sherardia arvensis* | Field Madder | 2 | 1 | | | | | | | | | | | | | | 3 | | 3 | 2 |
| | *Sida corrugata* var. *angustifolia* | Grassland Sida | | | | | | | | | | 9 | | | | | | 9 | 1 | 10 | 1 |
| * | *Silene nocturna* | Mediterranean Catchfly | | 1 | | | | | | | 1 | | | | | | | 2 | | 2 | 2 |
| * | *Silene* sp. | Catchfly | 1 | 2 | | | | | | | | | | | | | | 3 | | 3 | 2 |
| * | *Silybum marianum* | Variegated Thistle | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Sisymbrium erysimoides* | Smooth Mustard | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Sisymbrium* sp. | Wild Mustard | 3 | | | | | | | | | | | | | | | 3 | | 3 | 1 |
| * | *Solanum aviculare* | Kangaroo Apple | 5 | | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Solanum laciniatum* | Cut-leaf Kangaroo-apple | 9 | 5 | | | | | | | 2 | | | | | 1 | | 17 | 2 | 19 | 4 |
| * | *Solanum nigrum* | Black Nightshade | 5 | 6 | | | | | | | | 1 | | | | | | 12 | | 12 | 3 |
| | *Solanum simile* | Kangaroo Apple | | 1 | | | | | 1 | | | | | | | | | 2 | | 2 | 2 |
| | *Solenogyne dominii* | Smooth Solenogyne | | 4 | | | | | | | | 9 | | | | | | 13 | 2 | 15 | 2 |
| * | *Sonchus asper* ssp. | Rough Sow-thistle | | 7 | | | | | | | | | | | | | | 7 | | 7 | 1 |
| * | *Sonchus asper* ssp. *glaucescens* | Rough Sow-thistle | | 4 | | | | | | 1 | 2 | 1 | | | | | 1 | 9 | | 9 | 5 |
| | *Sonchus hydrophilus* | Native Sow-thistle | 25 | 1 | | | | | | | | | | | | | | 26 | 1 | 27 | 2 |
| | *Sonchus megalocarpus* | Coast Sow-thistle | 12 | | | | | | | | 59 | | | | | | | 71 | | 71 | 2 |
| * | *Sonchus oleraceus* | Common Sow-thistle | 41 | 44 | 1 | | 1 | | | 6 | 35 | 23 | 4 | 6 | 1 | 2 | 1 | 165 | 9 | 174 | 12 |
| | *Sonchus* sp. | Sow-thistle | 2 | 4 | | | | | | 2 | 9 | | 1 | | | | 2 | 20 | | 20 | 6 |
| * | *Sorghum halepense* | Johnson Grass | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| * | *Spergularia marina* | Salt Sand-spurrey | | | | | | | | 2 | | | | | | | | 2 | | 2 | 1 |
| * | *Spergularia media* | Coast Sand-spurrey | | | | | | | | 1 | | | 2 | | | | | 3 | 1 | 4 | 2 |
| * | *Spergularia* sp. | Sand-spurrey | 1 | | | | | | | | | | 2 | | | | | 3 | | 3 | 2 |
| | *Sphaerolobium minus* | Leafless Globe-pea | | 1 | | | | | | 1 | | | | | | | | 2 | 2 | 4 | 2 |
| | *Spinifex sericeus* | Rolling Spinifex | 11 | 2 | | | | | | | 36 | | | | | | | 49 | | 49 | 3 |
| | *Spiranthes sinensis* ssp. *australis* | Austral Lady's Tresses | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Sporobolus indicus* var. *capensis* | Rat-tail Grass | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Sporobolus* sp. | | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Sporobolus virginicus* | Salt Couch | | | | | | | | | 3 | | 5 | 1 | | 1 | 5 | 15 | 1 | 16 | 5 |
| | *Sporobolus virginicus* (NC) | Salt Couch | 7 | 1 | | | | | | | | | | | | | | 8 | | 8 | 2 |
| | *Spyridium eriocephalum* var. | Heath Spyridium | | | | | | | | 2 | | | | | | | | 2 | | 2 | 1 |
| | *Spyridium eriocephalum* var. *eriocephalum* | Heath Spyridium | | 1 | | | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| | *Spyridium nitidum* | Shining Spyridium | | | | | | | 2 | | | | | | | | | 2 | | 2 | 1 |
| | *Spyridium parvifolium* | Dusty Miller | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Spyridium subochreatum* var. | Velvet Spyridium | | 18 | | | | 4 | | | | | | | | | | 22 | | 22 | 2 |
| | *Spyridium subochreatum* var. *laxiusculum* | Velvet Spyridium | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Spyridium subochreatum* var. *subochreatum* | Velvet Spyridium | | | | | | 2 | 9 | | | | | | 2 | | | 13 | | 13 | 3 |
| | *Spyridium thymifolium* | Thyme-leaf Spyridium | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Spyridium vexilliferum* var. | Winged Spyridium | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Spyridium vexilliferum* var. *latifolium* | Winged Spyridium | | 14 | | | | | 6 | | | | | 1 | | | | 21 | | 21 | 3 |
| | *Spyridium vexilliferum* var. *vexilliferum* | Winged Spyridium | 1 | | | | | | | 6 | | | | | 2 | | | 9 | 1 | 10 | 3 |
| | *Stackhousia aspericocca* (NC) | | | 9 | | | | | | | | | | | | | | 9 | | 9 | 1 |
| | *Stackhousia aspericocca* ssp. | Bushy Candles | | | | | | | 1 | 6 | | | | | | | | 7 | 4 | 11 | 2 |
| | *Stackhousia aspericocca* ssp. "Cylindrical inflorescence"(W.R.Barker | Bushy Candles | | 4 | | | | | | 2 | | | | | | | | 6 | 3 | 9 | 2 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1418) | | | | | | | | | | | | | | | | | | | | |
| | *Stackhousia aspericocca* ssp. "One-sided inflorescence"(W.R.Barker 697) | One-sided Candles | | 10 | | | | | | | | | | | | | | 10 | 1 | 11 | 1 |
| | *Stackhousia monogyna* | Creamy Candles | | 5 | 1 | | | | | | | 5 | | | | | | 11 | 1 | 12 | 3 |
| | *Stackhousia spathulata* | Coast Candles | 8 | 1 | | | | | | | 34 | | | | | | | 43 | | 43 | 3 |
| | *Stellaria caespitosa* | Starwort | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Stellaria media* | Chickweed | | 12 | | | | | | 2 | 36 | | | | | | | 50 | | 50 | 3 |
| | *Stellaria palustris* var. | Swamp Starwort | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Stellaria pungens* | Prickly Starwort | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Stellaria* sp. | Starwort | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Stenopetalum lineare* | Narrow Thread-petal | | | | | | | | 2 | | | | | | | | 2 | | 2 | 1 |
| * | *Stenotaphrum secundatum* | Buffalo Grass | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Stipa acrociliata* | Graceful Spear-grass | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| | *Stipa blackii* | Crested Spear-grass | | | | 3 | | | | | | 11 | | | | | | 14 | 4 | 18 | 2 |
| | *Stipa curticoma* | Short-crest Spear-grass | | | | | | | | | | 6 | | | | | | 6 | | 6 | 1 |
| | *Stipa drummondii* | Cottony Spear-grass | | 5 | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Stipa elegantissima* | Feather Spear-grass | | | | 2 | | | | 1 | | 7 | | | | | | 10 | | 10 | 3 |
| | *Stipa eremophila* | Rusty Spear-grass | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Stipa exilis* | Heath Spear-grass | | | | | | | | 2 | 9 | 3 | | | | 2 | | 16 | 1 | 17 | 4 |
| | *Stipa flavescens* | Coast Spear-grass | 1 | 3 | | | | | | 1 | 25 | 6 | 1 | 6 | | 2 | | 45 | 5 | 50 | 8 |
| | *Stipa gibbosa* | Swollen Spear-grass | | | | | | | | | | 2 | | | | | | 2 | 1 | 3 | 1 |
| | *Stipa hemipogon* | Half-beard Spear-grass | | | | | | | 18 | 1 | | 5 | | 1 | 2 | | | 27 | | 27 | 5 |
| | *Stipa macalpinei* | Annual Spear-grass | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| | *Stipa mollis* | Soft Spear-grass | | 3 | | | | | | 6 | | 5 | | 4 | 6 | 1 | | 25 | 5 | 30 | 6 |
| | *Stipa mollis* group | Soft Spear-grass | | 46 | | | | | | | | | | | | | | 46 | | 46 | 1 |
| | *Stipa mundula* | Neat Spear-grass | 1 | 1 | | | | | | 1 | | 2 | | | | | | 5 | 1 | 6 | 4 |
| | *Stipa nitida* | Balcarra Spear-grass | | | | 1 | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Stipa nodosa* | Tall Spear-grass | | 1 | | | | | | | | 2 | | | | | | 3 | 1 | 4 | 2 |
| | *Stipa puberula* | Fine-hairy Spear-grass | | | | | | | | | | 5 | | | | | | 5 | | 5 | 1 |
| | *Stipa pubinodis* | Long-shaft Spear-grass | 1 | | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Stipa scabra* ssp. *falcata* | Slender Spear-grass | | 14 | | | | | | 2 | | 20 | 1 | 1 | | | | 38 | 2 | 40 | 5 |
| | *Stipa semibarbata* | Fibrous Spear-grass | | | | 2 | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Stipa* sp. | Spear-grass | 22 | 25 | | | 1 | 11 | | 8 | 4 | 3 | 1 | 1 | | | | 76 | 1 | 77 | 9 |
| | *Stipa stipoides* | Coast Spear-grass | 2 | 2 | | | | | | 1 | 5 | | | | | | | 10 | | 10 | 4 |
| | *Stipa trichophylla* | | | | | | | | | | | 1 | | | | 2 | | 3 | | 3 | 2 |
| | *Stuartina muelleri* | Spoon Cudweed | | 8 | | | | | | | | | | | | | | 8 | | 8 | 1 |
| | *Stylidium calcaratum* | Spurred Trigger-plant | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Stylidium graminifolium* | Grass Trigger-plant | | 20 | | | | | 3 | 2 | | | | 2 | 5 | | | 32 | 13 | 45 | 5 |
| | *Stylidium inundatum* | Hundreds And Thousands | | 1 | | | | | | 1 | | | | | | | | 2 | | 2 | 2 |
| | *Styphelia adscendens* | Golden Heath | | 10 | | | 1 | | | | | | | | | | | 11 | 2 | 13 | 2 |
| | *Styphelia exarrhena* | Desert Heath | | 7 | | | | 2 | 7 | 3 | | | | | 4 | | | 23 | 1 | 24 | 5 |
| | *Suaeda australis* | Austral Seablite | 7 | 2 | | | | | | | | | | | | | | 9 | | 9 | 2 |
| | *Swainsona lessertiifolia* | Coast Swainson-pea | 21 | 11 | | | | | | | 51 | | | | | | | 83 | 1 | 84 | 3 |
| | *Swainsona procumbens* | Broughton Pea | | | | | | | | | | 11 | | | | | | 11 | 1 | 12 | 1 |
| * | *Taraxacum erythrospermum* | Red-seed Dandelion | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| * | *Taraxacum officinale* | Dandelion | | 13 | | | | | | 1 | | | | | | | | 14 | 3 | 17 | 2 |
| | *Templetonia retusa* | Cockies Tongue | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Templetonia stenophylla* | Leafy Templetonia | | | | 2 | | | | | | 11 | | | | | | 13 | 4 | 17 | 2 |
| | *Tetragonia implexicoma* | Bower Spinach | 54 | 19 | | | | | | | 111 | | | 3 | | 1 | | 188 | 2 | 190 | 5 |
| | *Tetraria capillaris* | Hair Sedge | | 8 | | | | | 8 | 8 | | | | 5 | 1 | 1 | | 31 | 3 | 34 | 6 |
| | *Tetratheca ciliata* | Pink-bells | | 53 | | | 1 | | | | | | | | | | | 54 | 9 | 63 | 2 |
| | *Tetratheca pilosa* ssp. *pilosa* | Hairy Pink-bells | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Teucrium racemosum* | Grey Germander | | | | | | | | | | 6 | | | | | | 6 | 2 | 8 | 1 |
| | *Thelionema caespitosum* | Tufted Lily | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Thelymitra antennifera* | Lemon Sun-orchid | | 54 | | | 2 | | | 7 | | | | | | | | 63 | 1 | 64 | 3 |
| | *Thelymitra aristata* | Great Sun-orchid | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Thelymitra benthamiana* | Leopard Sun-orchid | | 7 | | | | | 2 | 1 | | | | | | | | 10 | | 10 | 3 |
| | *Thelymitra canaliculata* | Azure Sun-orchid | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Thelymitra epipactoides* | Metallic Sun-orchid | | 3 | | | | | | | | | | | | | | 3 | 1 | 4 | 1 |
| | *Thelymitra grandiflora* | Great Sun-orchid | | | | | | | | | | | | | 1 | | | 1 | | 1 | 1 |
| | *Thelymitra juncifolia* | Spotted Sun-orchid | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Thelymitra luteocilium* | Yellow-tuft Sun Orchid | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Thelymitra nuda* | Scented Sun-orchid | 1 | 13 | 1 | | | | | 3 | | | | 1 | | | | 19 | 1 | 20 | 5 |
| | *Thelymitra nuda/pauciflora* | Sun-orchid | | 27 | | | | | | | | | | | | | | 27 | 1 | 28 | 1 |
| | *Thelymitra pauciflora* | Slender Sun-orchid | | 11 | | | | | | 1 | | 1 | | | | | | 13 | 1 | 14 | 3 |
| | *Thelymitra rubra* | Salmon Sun-orchid | | 1 | | | | | | 2 | | | | | | | | 3 | | 3 | 2 |
| | *Thelymitra* sp. | Sun-orchid | | 14 | | | | 1 | 1 | 1 | | 1 | 3 | | 1 | 2 | | 24 | | 24 | 8 |
| | *Themeda triandra* | Kangaroo Grass | 2 | 4 | 1 | | | | | | | 7 | | | | | | 14 | 6 | 20 | 4 |
| | *Thomasia petalocalyx* | Paper-flower | 1 | 55 | | | | | 7 | 9 | | | 2 | 1 | 1 | | | 76 | 5 | 81 | 7 |
| | *Threlkeldia diffusa* | Coast Bonefruit | 8 | 2 | | | | | | 3 | 31 | | | 1 | | | | 45 | | 45 | 5 |
| | *Thysanotus baueri* | Mallee Fringe-lily | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| | *Thysanotus juncifolius* | Rush Fringe-lily | | 1 | | | | | 9 | | | | 1 | 3 | 5 | | | 19 | 4 | 23 | 5 |
| | *Thysanotus patersonii* | Twining Fringe-lily | | 97 | 1 | | 1 | 7 | | 11 | | 1 | 1 | 6 | 5 | 4 | | 134 | 5 | 139 | 10 |
| | *Thysanotus* sp. | Fringe-lily | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Thysanotus tuberosus* ssp. *parviflorus* | Tuber Fringe-lily | | 1 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 |
| | *Trachymene cyanopetala* | Purple Trachymene | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Trachymene pilosa* | Dwarf Trachymene | | 3 | | | | | | 3 | | | | | | | | 6 | | 6 | 2 |
| | *Trachymene* sp. | Trachymene | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Tribolium acutiflorum* | | | | | | | | | | | | | | | | 1 | 1 | | 1 | 1 |
| | *Tricoryne elatior* | Yellow Rush-lily | | | | | | 2 | | 4 | | 4 | | | | | | 10 | | 10 | 3 |
| | *Tricoryne elatior* (NC) | Yellow Rush-lily | | 14 | | | | | | | | | | | | | | 14 | | 14 | 1 |
| | *Tricoryne tenella* | Tufted Yellow Rush-lily | | 1 | | | | | 3 | 3 | | 1 | | 4 | 2 | 2 | | 16 | 3 | 19 | 7 |
| | *Tricostularia pauciflora* | Needle Bog-rush | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Trifolium angustifolium* | Narrow-leaf Clover | | 2 | | | | | | | | 25 | | | | | | 27 | 3 | 30 | 2 |
| * | *Trifolium arvense* var. *arvense* | Hare's-foot Clover | | 7 | 1 | 2 | | | | 3 | | 10 | | 3 | 1 | 1 | | 28 | 3 | 31 | 8 |
| * | *Trifolium campestre* | Hop Clover | | 5 | | | | | | 2 | | 16 | | 4 | | 4 | | 31 | 4 | 35 | 5 |
| * | *Trifolium dubium* | Suckling Clover | 4 | | | | | | | 1 | 1 | | 1 | | | | | 7 | | 7 | 4 |
| * | *Trifolium fragiferum* var. *fragiferum* | Strawberry Clover | | 3 | | | | | | | | | | | | | | 3 | 1 | 4 | 1 |
| * | *Trifolium glomeratum* | Cluster Clover | 1 | 3 | | | | | | 1 | | 3 | | | | | | 8 | 1 | 9 | 4 |
| * | *Trifolium repens* | White Clover | | 1 | | | | | | | | 1 | | | | | | 2 | | 2 | 2 |
| * | *Trifolium resupinatum* var. | Shaftal Clover | | | | | | | | | | | | | | | | 0 | 2 | 2 | 0 |
| * | *Trifolium scabrum* | Rough Clover | | | | | | | | | | 13 | | | | | | 13 | 1 | 14 | 1 |
| * | *Trifolium* sp. | Clover | 1 | 15 | 1 | | 1 | | | | | 1 | 1 | | | | | 20 | | 20 | 6 |
| * | *Trifolium stellatum* | Star Clover | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Trifolium subterraneum* | Subterranean Clover | | 21 | | | | 5 | | 2 | | 1 | | | | | | 29 | 1 | 30 | 4 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * | *Trifolium tomentosum* | Woolly Clover | | 1 | | | | | | | | 2 | | | | | 1 | 4 | | 4 | 3 |
| | *Triglochin alcockiae* | Alcock's Water-ribbons | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Triglochin calcitrapum* | Spurred Arrowgrass | | 2 | | | | 1 | | 1 | | | | | | | | 4 | | 4 | 3 |
| | *Triglochin centrocarpum* | Dwarf Arrowgrass | | 22 | | | | | | 8 | 8 | | | | | | | 38 | | 38 | 3 |
| | *Triglochin mucronatum* | Prickly Arrowgrass | | 1 | | | | | | 2 | | | 1 | 2 | | | | 6 | | 6 | 4 |
| | *Triglochin procerum* | Water-ribbons | | 2 | | | | | | | | | | | | | | 2 | 2 | 4 | 1 |
| | *Triglochin procerum* var. *procerum* (NC) | Water-ribbons | 2 | 2 | | | | | | | | | | | | | | 4 | | 4 | 2 |
| | *Triglochin* sp. | Arrowgrass/Water-ribbons | 5 | | | | | 1 | | 1 | | | | | | | | 7 | | 7 | 3 |
| | *Triglochin striatum* | Streaked Arrowgrass | 2 | 2 | | | | | | 1 | | | 2 | | | 1 | 4 | 12 | 4 | 16 | 6 |
| | *Triglochin trichophorum* | | | | | | | | | | | | 1 | | | | | 1 | | 1 | 1 |
| | *Triodia irritans* | Spinifex | | | | | | 1 | | | | | | | | | | 1 | | 1 | 1 |
| | *Triodia irritans* var. (NC) | | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Trithuria submersa* | Trithuria | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Typha domingensis* | Narrow-leaf Bulrush | 10 | 2 | | | | | | | | | | | | | | 12 | | 12 | 2 |
| | *Typha orientalis* | Broad-leaf Bulrush | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| | *Umbelliferae* sp. | Celery Family | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Urtica incisa* | Scrub Nettle | 10 | 2 | | | | | | | | | | | | | 1 | 13 | 2 | 15 | 3 |
| | *Urtica* sp. | Nettle | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Urtica urens* | Small Nettle | 8 | | | | | | | | | | | | | | 1 | 9 | | 9 | 2 |
| | *Utricularia dichotoma* | Purple Bladderwort | | | | | | | | 1 | | | 1 | | | | | 2 | 1 | 3 | 2 |
| | *Utricularia tenella* | Pink Bladderwort | | | | | | | | 2 | | | | | | | | 2 | | 2 | 1 |
| | *Utricularia violacea* | Violet Bladderwort | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Verbascum thapsus* ssp. *thapsus* | Great Mullein | | | | | | | | | | | | | | | | 0 | 1 | 1 | 0 |
| * | *Verbascum virgatum* | Twiggy Mullein | | | | | | | 1 | | | | | 1 | | | | 2 | | 2 | 2 |
| | *Veronica calycina* | Hairy Speedwell | | 20 | | | | | | | | 1 | | | | | | 21 | 6 | 27 | 2 |
| | *Veronica gracilis* | Slender Speedwell | | 1 | | | | | | | 2 | | | | | | | 3 | 1 | 4 | 2 |
| | *Veronica gracilis* (NC) | Slender Speedwell | 1 | 1 | | | | | | | | | | | | | | 2 | | 2 | 2 |
| | *Veronica hillebrandii* | Rigid Speedwell | | | | | | | | | 2 | | | | | | | 2 | | 2 | 1 |
| | *Veronica* sp. | Speedwell | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| * | *Vicia sativa* ssp. *nigra* | Narrow-leaf Vetch | 2 | | | | | | | | | | | | | | | 2 | | 2 | 1 |
| * | *Vicia tetrasperma* | Slender Vetch | | 3 | | | | | | | | | | | | | | 3 | | 3 | 1 |
| | *Villarsia reniformis* | Running Marsh-flower | | 12 | | | | | | | | 1 | 2 | | | | 1 | 16 | 1 | 17 | 4 |
| | *Villarsia* sp. | Marsh-flower | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Villarsia umbricola* var. | Lax Marsh-flower | | 2 | | | | | | | | | | | | | | 2 | | 2 | 1 |
| | *Villarsia umbricola* var. *beaugleholei* | Beauglehole's Marsh-flower | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Villarsia umbricola* var. *umbricola* | Lax Marsh-flower | 2 | | | | | | | 2 | | | | | | | | 4 | | 4 | 2 |
| | *Viminaria juncea* | Native Broom | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Viola cleistogamoides* | Shy Violet | | 5 | | | | | | | | | | | | | | 5 | | 5 | 1 |
| | *Viola cleistogamoides/sieberana* | Native Violet | | 13 | | | | | | | | | | | | | | 13 | 1 | 14 | 1 |
| | *Viola hederacea* | Ivy-leaf Violet | 8 | 18 | | | | | | | | | | | | | | 26 | 3 | 29 | 2 |
| | *Viola sieberiana* | Tiny Violet | | 7 | | | | | | | | | | | | | | 7 | | 7 | 1 |
| | *Vittadinia australasica* var. | Sticky New Holland Daisy | | 7 | | | | | | | | | | | | | | 7 | | 7 | 1 |
| | *Vittadinia australasica* var. *australasica* | Sticky New Holland Daisy | | 1 | | | | | 4 | | | 12 | | | | | | 17 | 2 | 19 | 3 |
| | *Vittadinia cuneata* var. | Fuzzy New Holland Daisy | | | | 1 | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Vittadinia cuneata* var. *cuneata* forma *cuneata* | Fuzzy New Holland Daisy | | 2 | | | | | | | | 2 | | | | | | 4 | 3 | 7 | 2 |
| | *Vittadinia dissecta* var. *hirta* | Dissected New Holland Daisy | | 1 | | | 1 | | | | | | | | | | | 2 | | 2 | 2 |

| I | Scientific Name | Common Name | 4 | 29 | 46 | 54 | 59 | 64 | 68 | 76 | 82 | 84 | 85 | 90 | 99 | 118 | 119 | All SU | All OP | Total | No. of Surveys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Vittadinia gracilis* | Woolly New Holland Daisy | | 6 | | | 1 | | | | | 16 | 1 | | | 1 | | 25 | 2 | 27 | 5 |
| | *Vittadinia pterochaeta* | Rough New Holland Daisy | | | | | | | | | | 1 | | | | | | 1 | | 1 | 1 |
| | *Vittadinia* sp. | New Holland Daisy | | 1 | | | | 1 | | | | | | | | | | 2 | 1 | 3 | 2 |
| * | *Vulpia bromoides* | Squirrel-tail Fescue | | 1 | | | | | | 1 | 2 | 1 | 2 | | | | | 7 | 2 | 9 | 5 |
| * | *Vulpia fasciculata* | Sand Fescue | | | | | | | | 3 | 8 | | | | | | | 11 | | 11 | 2 |
| * | *Vulpia muralis* | Wall Fescue | | 2 | | | | | | 2 | 1 | 1 | | | 1 | 1 | | 8 | 5 | 13 | 6 |
| * | *Vulpia myuros* forma *megalura* | Fox-tail Fescue | 2 | 1 | | | | | | 3 | 3 | 1 | | | | | | 10 | | 10 | 5 |
| * | *Vulpia myuros* forma *myuros* | Rat's-tail Fescue | 5 | 7 | | 1 | | | | 5 | 16 | 27 | | | | | | 61 | 1 | 62 | 6 |
| * | *Vulpia* sp. | Fescue | | 10 | | | | | 2 | 2 | 1 | | 3 | 5 | | 2 | | 25 | 1 | 26 | 7 |
| | *Wahlenbergia communis* | Tufted Bluebell | | | | | | | | | | 11 | | | | | | 11 | 1 | 12 | 1 |
| | *Wahlenbergia gracilenta* | Annual Bluebell | | 19 | | | | | 1 | 11 | 2 | | 2 | 3 | | | | 38 | 1 | 39 | 6 |
| | *Wahlenbergia litticola* | Coast Bluebell | | 2 | | | | | | | | | | 1 | | | | 3 | 1 | 4 | 2 |
| | *Wahlenbergia luteola* | Yellow-wash Bluebell | | 1 | 1 | | | | | | | | | | | | | 2 | 1 | 3 | 2 |
| | *Wahlenbergia* sp. | Native Bluebell | | 40 | | | 1 | 2 | | | | | | 1 | | | | 44 | | 44 | 4 |
| | *Wahlenbergia stricta* ssp. *stricta* | Tall Bluebell | | 2 | | | | | | 3 | | | | | | | | 5 | 1 | 6 | 2 |
| | *Westringia eremicola* | Slender Westringia | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Wilsonia backhousei* | Narrow-leaf Wilsonia | 1 | 2 | | | | | 5 | 1 | | | | 4 | 2 | 1 | 3 | 19 | 2 | 21 | 8 |
| | *Wilsonia humilis* var. *humilis* | Silky Wilsonia | | | | | | | 3 | | | | | 3 | 1 | 1 | | 8 | 1 | 9 | 4 |
| | *Wilsonia rotundifolia* | Round-leaf Wilsonia | | 2 | | | | | 2 | 1 | | | 2 | | 1 | 1 | 1 | 10 | 6 | 16 | 7 |
| | *Wilsonia* sp. | Wilsonia | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Wurmbea dioica* ssp. *dioica* | Early Nancy | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| | *Wurmbea dioica* ssp. *dioica* (NC) | Early Star-lily | | 21 | 1 | | 1 | | | | | | | | | | | 23 | | 23 | 3 |
| | *Xanthorrhoea australis* | Austral Grass-tree | 1 | 28 | | | | | | | | | | | | | | 29 | 4 | 33 | 2 |
| | *Xanthorrhoea caespitosa* | Sand-heath Yacca | 4 | 202 | | | 3 | 13 | 12 | 15 | | | 4 | 9 | 7 | 5 | | 274 | 30 | 304 | 10 |
| | *Xanthorrhoea semiplana* ssp. | Yacca | | | | | | | | | | | | | | | | 0 | 3 | 3 | 0 |
| | *Xanthorrhoea* sp. | Yacca/Grass-tree | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |
| | *Xanthosia dissecta* (NC) | | | 24 | | | | | | | | | | | | | | 24 | | 24 | 1 |
| | *Xanthosia dissecta* var. *floribunda* | Cut-leaf Xanthosia | | | | | | | 15 | 5 | | | | | 3 | | | 23 | 1 | 24 | 3 |
| | *Xanthosia pusilla* | Hairy Xanthosia | | 22 | | | | | 1 | 3 | | | | 1 | 2 | | | 29 | | 29 | 5 |
| | *Xanthosia* sp. | Xanthosia | | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 |
| * | *Zaluzianskya divaricata* | Spreading Night-phlox | | 4 | | | | | | | | | | | | | | 4 | | 4 | 1 |
| | *Zoysia matrella* | Manila Grass | | 1 | | | | | | | | | | | | | 3 | 4 | | 4 | 2 |
| | *Zygophyllum billardierei* (NC) | Coast Twinleaf | | | | | | | | | 2 | | | | | | | 2 | | 2 | 1 |
| | *Zygophyllum* sp. | Twinleaf | | 1 | | | | | | | | | | | | | | 1 | | 1 | 1 |

# Appendix IV

### Listing of all plant species records (by frequency) for survey quadrats from this survey.

Note - 873 plant species, 358sites
Refer to Table 14 in the Vegetation Results Chapter for the table of species occurring in at least 20% of all sites. Some species in Table 14 have been lumped up to a broader taxonomic entity due to difficulties recognized in field identification.
Frequency – refers to the frequency of occurrence of the species, during the survey.
Percentage of Sites – refers to the percentage of sites the species was observed in, during the survey.

* - introduced species (This can include species native to Australia that do not naturally occur in this region such as *Acacia saligna*).
(NC) – non–current species name (based on data an extracted from SA FLORA database, December 2001).

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Xanthorrhoea caespitosa* | 202 | 56.42 |
| *Drosera whittakeri* (NC) | 186 | 51.96 |
| *Banksia marginata* | 170 | 47.49 |
| **Hypochaeris glabra* | 167 | 46.65 |
| *Hydrocotyle laxiflora* | 160 | 44.69 |
| *Astroloma humifusum* | 158 | 44.13 |
| *Astroloma conostephioides* | 139 | 38.83 |
| *Gonocarpus tetragynus* | 132 | 36.87 |
| *Hibbertia riparia (glabriuscula)* | 126 | 35.20 |
| *Pteridium esculentum* | 123 | 34.36 |
| *Isopogon ceratophyllus* | 119 | 33.24 |
| *Leptospermum myrsinoides* | 118 | 32.96 |
| *Oxalis perennans* | 116 | 32.40 |
| *Lepidosperma carphoides* | 114 | 31.84 |
| *Pyrorchis nigricans* | 113 | 31.56 |
| *Hypolaena fastigiata* | 109 | 30.45 |
| **Hypochaeris radicata* | 104 | 29.05 |
| *Banksia ornata* | 104 | 29.05 |
| *Correa reflexa* var. *reflexa* | 100 | 27.93 |
| *Thysanotus patersonii* | 97 | 27.09 |
| *Calytrix tetragona* | 96 | 26.82 |
| *Eucalyptus fasciculosa* | 96 | 26.82 |
| *Billardiera cymosa* | 94 | 26.26 |
| *Goodenia geniculata* | 93 | 25.98 |
| *Clematis microphylla* | 92 | 25.70 |
| *Chamaescilla corymbosa* var. *corymbosa* | 91 | 25.42 |
| *Acacia longifolia* var. *sophorae* | 89 | 24.86 |
| *Drosera macrantha* ssp. *planchonii* | 89 | 24.86 |
| *Daucus glochidiatus* | 85 | 23.74 |
| *Acrotriche serrulata* | 81 | 22.63 |
| *Eucalyptus arenacea/baxteri* | 81 | 22.63 |
| *Lepidosperma concavum/congestum/laterale* | 79 | 22.07 |
| *Kunzea pomifera* | 77 | 21.51 |
| *Cynoglossum australe* | 76 | 21.23 |
| *Leucopogon virgatus* | 76 | 21.23 |
| *Hibbertia sericea* var. | 74 | 20.67 |
| *Acacia myrtifolia* var. *myrtifolia* | 73 | 20.39 |
| *Hibbertia sericea* var. *scabrifolia* | 73 | 20.39 |
| *Leucopogon parviflorus* | 71 | 19.83 |
| *Dichondra repens* | 70 | 19.55 |
| *Leptospermum continentale* | 70 | 19.55 |
| *Senecio tenuiflorus* | 70 | 19.55 |
| *Glossodia major* | 69 | 19.27 |
| *Millotia tenuifolia* var. | 67 | 18.72 |
| *Hakea rostrata* | 66 | 18.44 |
| *Isolepis nodosa* | 66 | 18.44 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Acacia spinescens* | 64 | 17.88 |
| *Daviesia brevifolia* | 63 | 17.60 |
| *Leucopogon ericoides* | 63 | 17.60 |
| *Eucalyptus diversifolia* | 62 | 17.32 |
| *Acaena novae-zelandiae* | 61 | 17.04 |
| *Danthonia geniculata* | 61 | 17.04 |
| *Kennedia prostrata* | 61 | 17.04 |
| *Crassula decumbens* var. *decumbens* | 60 | 16.76 |
| *Epacris impressa* | 60 | 16.76 |
| *Drosera auriculata* | 59 | 16.48 |
| **Holcus lanatus* | 58 | 16.20 |
| *Acacia pycnantha* | 57 | 15.92 |
| *Cassytha glabella* forma *dispar* | 57 | 15.92 |
| *Dianella brevicaulis/revoluta* var. | 56 | 15.64 |
| *Acacia melanoxylon* | 55 | 15.36 |
| *Allocasuarina muelleriana* ssp. *muelleriana* | 55 | 15.36 |
| *Corybas* sp. | 55 | 15.36 |
| *Gramineae* sp. | 55 | 15.36 |
| *Thomasia petalocalyx* | 55 | 15.36 |
| *Caladenia carnea complex* | 54 | 15.08 |
| *Comesperma volubile* | 54 | 15.08 |
| *Thelymitra antennifera* | 54 | 15.08 |
| *Schoenus apogon* | 53 | 14.80 |
| *Tetratheca ciliata* | 53 | 14.80 |
| *Burchardia umbellata* | 52 | 14.53 |
| *Cassytha pubescens* | 51 | 14.25 |
| *Senecio glomeratus* | 51 | 14.25 |
| *Bursaria spinosa* | 50 | 13.97 |
| **Cerastium glomeratum* | 48 | 13.41 |
| *Eucalyptus viminalis* ssp. *cygnetensis* | 48 | 13.41 |
| *Dianella brevicaulis* | 47 | 13.13 |
| *Pimelea humilis* | 46 | 12.85 |
| *Stipa mollis group* | 46 | 12.85 |
| **Galium murale* | 44 | 12.29 |
| **Sonchus oleraceus* | 44 | 12.29 |
| *Dianella revoluta* var. *revoluta* | 43 | 12.01 |
| *Dodonaea viscosa* ssp. *spatulata* | 42 | 11.73 |
| *Hibbertia sericea* var. *sericea* | 42 | 11.73 |
| *Melaleuca brevifolia* | 42 | 11.73 |
| *Acaena echinata* var. | 41 | 11.45 |
| *Acrotriche affinis* | 41 | 11.45 |
| *Baumea juncea* | 41 | 11.45 |
| **Arctotheca calendula* | 40 | 11.17 |
| *Acacia verticillata* | 40 | 11.17 |
| *Wahlenbergia* sp. | 40 | 11.17 |
| *Brachyloma ericoides* ssp. *ericoides* | 39 | 10.89 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Hakea vittata* | 39 | 10.89 |
| *Leptocarpus brownii* | 39 | 10.89 |
| *Pterostylis nana* | 39 | 10.89 |
| **Cirsium vulgare* | 37 | 10.34 |
| **Myrsiphyllum asparagoides* | 37 | 10.34 |
| *Eucalyptus leucoxylon* ssp. | 37 | 10.34 |
| *Geranium potentilloides* var. *potentilloides* | 37 | 10.34 |
| *Neurachne alopecuroidea* | 37 | 10.34 |
| *Pterostylis pedunculata* | 37 | 10.34 |
| *Pelargonium rodneyanum* | 36 | 10.06 |
| *Schoenus breviculmis* | 36 | 10.06 |
| *Helichrysum scorpioides* | 35 | 9.78 |
| *Lepidobolus drapetocoleus* | 35 | 9.78 |
| *Phyllota pleurandroides* | 35 | 9.78 |
| **Carduus tenuiflorus* | 34 | 9.50 |
| *Crassula colorata* var. | 34 | 9.50 |
| *Cyrtostylis reniformis* | 34 | 9.50 |
| *Senecio lautus* | 33 | 9.22 |
| *Brachyloma ciliatum* | 32 | 8.94 |
| **Anagallis arvensis* | 31 | 8.66 |
| **Pinus radiata* | 31 | 8.66 |
| *Microseris lanceolata* | 31 | 8.66 |
| *Allocasuarina pusilla* | 30 | 8.38 |
| *Boronia coerulescens* ssp. *coerulescens* | 30 | 8.38 |
| *Caesia calliantha* | 30 | 8.38 |
| *Hydrocotyle callicarpa* | 30 | 8.38 |
| *Lepidosperma concavum* | 30 | 8.38 |
| *Craspedia glauca* | 29 | 8.10 |
| *Eucalyptus baxteri* | 29 | 8.10 |
| *Eucalyptus obliqua* | 29 | 8.10 |
| *Drosera glanduligera* | 28 | 7.82 |
| *Hakea muelleriana* | 28 | 7.82 |
| *Hibbertia prostrata* | 28 | 7.82 |
| *Lomandra nana* | 28 | 7.82 |
| *Melaleuca lanceolata* ssp. *lanceolata* | 28 | 7.82 |
| *Microtis* sp. | 28 | 7.82 |
| *Senecio picridioides* | 28 | 7.82 |
| *Xanthorrhoea australis* | 28 | 7.82 |
| *Danthonia* sp. | 27 | 7.54 |
| *Melaleuca uncinata* | 27 | 7.54 |
| *Pultenaea tenuifolia* | 27 | 7.54 |
| *Thelymitra nuda/pauciflora* | 27 | 7.54 |
| *Acrotriche cordata* | 26 | 7.26 |
| *Amyema miquelii* | 26 | 7.26 |
| *Eucalyptus incrassata* | 26 | 7.26 |
| *Hakea rugosa* | 26 | 7.26 |
| *Leporella fimbriata* | 26 | 7.26 |
| *Lomandra juncea* | 26 | 7.26 |
| *Acacia paradoxa* | 25 | 6.98 |
| *Adenanthos terminalis* | 25 | 6.98 |
| *Dillwynia hispida* | 25 | 6.98 |
| *Diuris pardina* | 25 | 6.98 |
| *Stipa* sp. | 25 | 6.98 |
| **Centaurium erythraea* | 24 | 6.70 |
| *Caladenia carnea var carnea* | 24 | 6.70 |
| *Centrolepis strigosa* | 24 | 6.70 |
| *Dillwynia sericea* | 24 | 6.70 |
| *Xanthosia dissecta* var. *floribunda* | 24 | 6.70 |
| *Arthropodium strictum* | 23 | 6.42 |
| *Leucopogon costatus* | 23 | 6.42 |
| *Acianthus pusillus* | 22 | 6.15 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Argentipallium obtusifolium* | 22 | 6.15 |
| *Caladenia latifolia* | 22 | 6.15 |
| *Hyalosperma demissum* | 22 | 6.15 |
| *Lomandra micrantha* ssp. | 22 | 6.15 |
| *Muehlenbeckia adpressa* | 22 | 6.15 |
| *Triglochin centrocarpum* | 22 | 6.15 |
| *Xanthosia pusilla* | 22 | 6.15 |
| **Trifolium subterraneum* | 21 | 5.87 |
| *Amyema pendulum* ssp. *pendulum* | 21 | 5.87 |
| *Cryptandra tomentosa* | 21 | 5.87 |
| *Drosera peltata* | 21 | 5.87 |
| *Gahnia trifida* | 21 | 5.87 |
| *Hypoxis vaginata* var. *vaginata* | 21 | 5.87 |
| *Millotia muelleri* | 21 | 5.87 |
| *Wurmbea dioica* ssp. *dioica* | 21 | 5.87 |
| *Darwinia micropetala* | 20 | 5.59 |
| *Hibbertia virgata* | 20 | 5.59 |
| *Levenhookia pusilla* | 20 | 5.59 |
| *Olearia axillaris* | 20 | 5.59 |
| *Opercularia varia* | 20 | 5.59 |
| *Poranthera microphylla* | 20 | 5.59 |
| *Ranunculus sessiliflorus* var. | 20 | 5.59 |
| *Stylidium graminifolium* | 20 | 5.59 |
| *Veronica calycina* | 20 | 5.59 |
| *Baeckea behrii* | 19 | 5.31 |
| *Bossiaea prostrata* | 19 | 5.31 |
| *Eucalyptus leptophylla* | 19 | 5.31 |
| *Lagenifera stipitata* var. *stipitata* | 19 | 5.31 |
| *Microtis unifolia complex* | 19 | 5.31 |
| *Tetragonia implexicoma* | 19 | 5.31 |
| *Wahlenbergia gracilenta* | 19 | 5.31 |
| *Bossiaea cinerea* | 18 | 5.03 |
| *Cyrtostylis robusta* | 18 | 5.03 |
| *Gahnia filum* | 18 | 5.03 |
| *Geranium solanderi* var. *solanderi* | 18 | 5.03 |
| *Poa labillardieri* var. *labillardieri* | 18 | 5.03 |
| *Samolus repens* | 18 | 5.03 |
| *Spyridium subochreatum* var. | 18 | 5.03 |
| *Viola hederacea* | 18 | 5.03 |
| *Acacia leiophylla* | 17 | 4.75 |
| *Acacia mearnsii* | 17 | 4.75 |
| *Exocarpos cupressiformis* | 17 | 4.75 |
| *Juncus kraussii* | 17 | 4.75 |
| *Laxmannia orientalis* | 17 | 4.75 |
| *Persoonia juniperina* | 17 | 4.75 |
| *Poa crassicaudex* | 17 | 4.75 |
| *Rhagodia candolleana* ssp. *candolleana* | 17 | 4.75 |
| *Rutidosis multiflora* | 17 | 4.75 |
| *Schoenus deformis* | 17 | 4.75 |
| *Selliera radicans* | 17 | 4.75 |
| *Senecio quadridentatus* | 17 | 4.75 |
| *Acacia leiophylla/pycnantha#* | 16 | 4.47 |
| *Allocasuarina verticillata* | 16 | 4.47 |
| *Calytrix alpestris* | 16 | 4.47 |
| *Crassula sieberiana* ssp. *tetramera* | 16 | 4.47 |
| *Dichelachne crinita* | 16 | 4.47 |
| *Muehlenbeckia gunnii* | 16 | 4.47 |
| *Olearia ciliata* var. *ciliata* | 16 | 4.47 |
| *Pterostylis plumosa* | 16 | 4.47 |
| *Pultenaea prostrata* | 16 | 4.47 |
| **Trifolium* sp. | 15 | 4.19 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Lepidosperma laterale* | 15 | 4.19 |
| *Leptocarpus tenax* | 15 | 4.19 |
| *Poa* sp. | 15 | 4.19 |
| *Rumex* sp. | 15 | 4.19 |
| *Schoenus nitens* | 15 | 4.19 |
| **Ehrharta longiflora* | 14 | 3.91 |
| *Geranium* sp. | 14 | 3.91 |
| *Hypericum gramineum* | 14 | 3.91 |
| *Lepidosperma gladiatum* | 14 | 3.91 |
| *Ozothamnus ferrugineus* | 14 | 3.91 |
| *Spyridium vexilliferum* var. *latifolium* | 14 | 3.91 |
| *Stipa scabra* ssp. *falcata* | 14 | 3.91 |
| *Thelymitra* sp. | 14 | 3.91 |
| *Tricoryne elatior* (NC) | 14 | 3.91 |
| **Geranium molle* var. *molle* | 13 | 3.63 |
| **Poa annua* | 13 | 3.63 |
| **Taraxacum officinale* | 13 | 3.63 |
| *Acacia oxycedrus* | 13 | 3.63 |
| *Danthonia caespitosa* | 13 | 3.63 |
| *Dillwynia glaberrima* | 13 | 3.63 |
| *Drosera* sp. | 13 | 3.63 |
| *Eucalyptus camaldulensis* var. *camaldulensis* | 13 | 3.63 |
| *Isolepis marginata* | 13 | 3.63 |
| *Juncus pallidus* | 13 | 3.63 |
| *Opercularia turpis* | 13 | 3.63 |
| *Parietaria debilis* | 13 | 3.63 |
| *Thelymitra nuda* | 13 | 3.63 |
| *Viola cleistogamoides/sieberana* | 13 | 3.63 |
| **Briza minor* | 12 | 3.35 |
| **Stellaria media* | 12 | 3.35 |
| *Blennospora drummondii* | 12 | 3.35 |
| *Brunonia australis* | 12 | 3.35 |
| *Distichlis distichophylla* | 12 | 3.35 |
| *Dodonaea viscosa* ssp. | 12 | 3.35 |
| *Exocarpos sparteus* | 12 | 3.35 |
| *Herb* sp. | 12 | 3.35 |
| *Lepidosperma viscidum* | 12 | 3.35 |
| *Levenhookia dubia* | 12 | 3.35 |
| *Logania linifolia* | 12 | 3.35 |
| *Lomandra longifolia* | 12 | 3.35 |
| *Melaleuca halmaturorum* ssp. *halmaturorum* | 12 | 3.35 |
| *Pterostylis sanguinea* | 12 | 3.35 |
| *Villarsia reniformis* | 12 | 3.35 |
| **Cynosurus echinatus* | 11 | 3.07 |
| **Helminthotheca echioides* | 11 | 3.07 |
| *Brachycome perpusilla* | 11 | 3.07 |
| *Brachyloma daphnoides* | 11 | 3.07 |
| *Caladenia patersonii complex* | 11 | 3.07 |
| *Carpobrotus rossii* | 11 | 3.07 |
| *Eucalyptus leucoxylon* ssp. *pruinosa* (NC) | 11 | 3.07 |
| *Eucalyptus ovata* | 11 | 3.07 |
| *Hibbertia stricta* (NC) | 11 | 3.07 |
| *Lepidosperma semiteres* | 11 | 3.07 |
| *Pimelea glauca* | 11 | 3.07 |
| *Swainsona lessertiifolia* | 11 | 3.07 |
| *Thelymitra pauciflora* | 11 | 3.07 |
| **Ehrharta calycina* | 10 | 2.79 |
| **Leontodon taraxacoides* ssp. *taraxacoides* | 10 | 2.79 |
| **Vulpia* sp. | 10 | 2.79 |
| *Argentipallium blandowskianum* | 10 | 2.79 |
| *Baeckea ericaea* | 10 | 2.79 |
| *Brachycome goniocarpa* | 10 | 2.79 |
| *Brachycome uliginosa* | 10 | 2.79 |
| *Cassytha melantha* | 10 | 2.79 |
| *Cotula australis* | 10 | 2.79 |
| *Gompholobium ecostatum* | 10 | 2.79 |
| *Pelargonium littorale* | 10 | 2.79 |
| *Senecio squarrosus* | 10 | 2.79 |
| *Stackhousia aspericocca* ssp. "One-sided inflorescence"(W.R.Barker 697) | 10 | 2.79 |
| *Styphelia adscendens* | 10 | 2.79 |
| **Centaurium tenuiflorum* | 9 | 2.51 |
| **Erodium cicutarium* | 9 | 2.51 |
| **Lagurus ovatus* | 9 | 2.51 |
| **Schismus barbatus* | 9 | 2.51 |
| *Actinobole uliginosum* | 9 | 2.51 |
| *Baeckea crassifolia* | 9 | 2.51 |
| *Billardiera scandens* var. *scandens* | 9 | 2.51 |
| *Caladenia cardiochila* | 9 | 2.51 |
| *Caladenia* sp. | 9 | 2.51 |
| *Chrysocephalum apiculatum* | 9 | 2.51 |
| *Convolvulus erubescens* (NC) | 9 | 2.51 |
| *Eucalyptus arenacea* | 9 | 2.51 |
| *Lasiopetalum baueri* | 9 | 2.51 |
| *Pimelea serpyllifolia* ssp. *serpyllifolia* | 9 | 2.51 |
| *Poa tenera* | 9 | 2.51 |
| *Podotheca angustifolia* | 9 | 2.51 |
| *Senecio glossanthus* | 9 | 2.51 |
| *Stackhousia aspericocca* ssp. | 9 | 2.51 |
| **Rostraria cristata* | 8 | 2.23 |
| *Ajuga australis* form *B* | 8 | 2.23 |
| *Aphanes australiana* | 8 | 2.23 |
| *Caustis pentandra* | 8 | 2.23 |
| *Cyrtostylis* sp. | 8 | 2.23 |
| *Dampiera dysantha* | 8 | 2.23 |
| *Dampiera rosmarinifolia* | 8 | 2.23 |
| *Geranium retrorsum* | 8 | 2.23 |
| *Glischrocaryon behrii* | 8 | 2.23 |
| *Juncus holoschoenus* | 8 | 2.23 |
| *Lagenifera huegelii* | 8 | 2.23 |
| *Leucopogon glacialis* | 8 | 2.23 |
| *Leucopogon woodsii* | 8 | 2.23 |
| *Lomandra sororia* | 8 | 2.23 |
| *Luzula meridionalis* | 8 | 2.23 |
| *Pimelea octophylla* | 8 | 2.23 |
| *Prasophyllum* sp. | 8 | 2.23 |
| *Pterostylis longifolia* | 8 | 2.23 |
| *Pultenaea acerosa* | 8 | 2.23 |
| *Stuartina muelleri* | 8 | 2.23 |
| *Tetraria capillaris* | 8 | 2.23 |
| **Acetosella vulgaris* | 7 | 1.96 |
| **Cerastium* sp. | 7 | 1.96 |
| **Sonchus asper* ssp. | 7 | 1.96 |
| **Trifolium arvense* var. *arvense* | 7 | 1.96 |
| **Vulpia myuros* forma *myuros* | 7 | 1.96 |
| *Acacia brachybotrya* | 7 | 1.96 |
| *Amperea xiphoclada* var. *xiphoclada* | 7 | 1.96 |
| *Arthropodium fimbriatum* | 7 | 1.96 |
| *Calandrinia granulifera* | 7 | 1.96 |
| *Choretrum glomeratum* var. *glomeratum* | 7 | 1.96 |

| **Plant Species** | **Frequency** | **Percentage of sites(%)** |
|---|---|---|
| *Eriochilus cucullatus* | 7 | 1.96 |
| *Goodenia humilis* | 7 | 1.96 |
| *Hakea nodosa* | 7 | 1.96 |
| *Hemarthria uncinata* var. *uncinata* | 7 | 1.96 |
| *Lepidosperma congestum* | 7 | 1.96 |
| *Leptospermum lanigerum* | 7 | 1.96 |
| *Melaleuca squarrosa* | 7 | 1.96 |
| *Myosotis australis* | 7 | 1.96 |
| *Ophioglossum lusitanicum* | 7 | 1.96 |
| *Quinetia urvillei* | 7 | 1.96 |
| *Styphelia exarrhena* | 7 | 1.96 |
| *Thelymitra benthamiana* | 7 | 1.96 |
| *Viola sieberiana* | 7 | 1.96 |
| *Vittadinia australasica* var. | 7 | 1.96 |
| **Conyza albida* | 6 | 1.68 |
| **Critesion murinum* ssp. *glaucum* | 6 | 1.68 |
| **Dactylis glomerata* | 6 | 1.68 |
| **Melilotus indica* | 6 | 1.68 |
| **Solanum nigrum* | 6 | 1.68 |
| *Adriana klotzschii* | 6 | 1.68 |
| *Agrostis aemula* | 6 | 1.68 |
| *Boronia nana* | 6 | 1.68 |
| *Eucalyptus leucoxylon* ssp. *megalocarpa* | 6 | 1.68 |
| *Eutaxia microphylla* var. *microphylla* | 6 | 1.68 |
| *Galium migrans* | 6 | 1.68 |
| *Gratiola peruviana* | 6 | 1.68 |
| *Hypoxis glabella* var. *glabella* | 6 | 1.68 |
| *Juncus subsecundus* | 6 | 1.68 |
| *Lomandra collina* | 6 | 1.68 |
| *Melaleuca gibbosa* | 6 | 1.68 |
| *Plantago* sp. *B* | 6 | 1.68 |
| *Poa meionectes* | 6 | 1.68 |
| *Pomaderris obcordata* | 6 | 1.68 |
| *Pterostylis* sp. | 6 | 1.68 |
| *Rumex brownii* | 6 | 1.68 |
| *Vittadinia gracilis* | 6 | 1.68 |
| **Acacia longifolia* var. *longifolia* | 5 | 1.40 |
| **Avellinia michelii* | 5 | 1.40 |
| **Euphorbia peplus* | 5 | 1.40 |
| **Galium aparine* | 5 | 1.40 |
| **Lolium rigidum* | 5 | 1.40 |
| **Myosotis discolor* ssp. *discolor* | 5 | 1.40 |
| **Trifolium campestre* | 5 | 1.40 |
| *Allocasuarina mackliniana* ssp. | 5 | 1.40 |
| *Asperula conferta* | 5 | 1.40 |
| *Baumea arthrophylla* | 5 | 1.40 |
| *Centrolepis aristata* | 5 | 1.40 |
| *Chorizandra enodis* | 5 | 1.40 |
| *Comesperma calymega* | 5 | 1.40 |
| *Crassula closiana* | 5 | 1.40 |
| *Cymbonotus preissianus* | 5 | 1.40 |
| *Daviesia ulicifolia* ssp. *ulicifolia* | 5 | 1.40 |
| *Euchiton involucratus* | 5 | 1.40 |
| *Exocarpos syrticola* | 5 | 1.40 |
| *Gonocarpus mezianus* | 5 | 1.40 |
| *Grevillea aquifolium* | 5 | 1.40 |
| *Grevillea ilicifolia* var. *lobata* | 5 | 1.40 |
| *Lepidosperma longitudinale* | 5 | 1.40 |
| *Leptomeria aphylla* | 5 | 1.40 |
| *Leucopogon lanceolatus* | 5 | 1.40 |
| *Monotoca scoparia* | 5 | 1.40 |
| *Olearia ramulosa* | 5 | 1.40 |
| *Patersonia fragilis* | 5 | 1.40 |
| *Phyllota remota* | 5 | 1.40 |
| *Pterostylis nutans* | 5 | 1.40 |
| *Pultenaea stricta* | 5 | 1.40 |
| *Ranunculus pachycarpus* | 5 | 1.40 |
| *Schoenus fluitans* | 5 | 1.40 |
| *Solanum laciniatum* | 5 | 1.40 |
| *Stackhousia monogyna* | 5 | 1.40 |
| *Stipa drummondii* | 5 | 1.40 |
| *Viola cleistogamoides* | 5 | 1.40 |
| **Avena barbata* | 4 | 1.12 |
| **Bromus madritensis* | 4 | 1.12 |
| **Parentucellia viscosa* | 4 | 1.12 |
| **Phalaris* sp. | 4 | 1.12 |
| **Poa pratensis* | 4 | 1.12 |
| **Senecio elegans* | 4 | 1.12 |
| **Sonchus asper* ssp. *glaucescens* | 4 | 1.12 |
| **Zaluzianskya divaricata* | 4 | 1.12 |
| *Acacia acinacea* | 4 | 1.12 |
| *Ajuga australis* form | 4 | 1.12 |
| *Ajuga australis* form *A* | 4 | 1.12 |
| *Allocasuarina mackliniana* ssp. *mackliniana* | 4 | 1.12 |
| *Angianthus preissianus* | 4 | 1.12 |
| *Beyeria lechenaultii* | 4 | 1.12 |
| *Brachycome lineariloba* | 4 | 1.12 |
| *Caladenia dilatata complex* | 4 | 1.12 |
| *Calandrinia* sp. | 4 | 1.12 |
| *Callistemon rugulosus* var. *rugulosus* | 4 | 1.12 |
| *Carpobrotus modestus* | 4 | 1.12 |
| *Comesperma polygaloides* | 4 | 1.12 |
| *Cyanicula deformis* | 4 | 1.12 |
| *Danthonia setacea* var. *setacea* | 4 | 1.12 |
| *Diuris* aff. *corymbosa* | 4 | 1.12 |
| *Drosera pygmaea* | 4 | 1.12 |
| *Eucalyptus odorata* | 4 | 1.12 |
| *Gahnia clarkei* | 4 | 1.12 |
| *Galium compactum* | 4 | 1.12 |
| *Gnaphalium indutum* | 4 | 1.12 |
| *Gnaphalium* sp. (NC) | 4 | 1.12 |
| *Goodia medicaginea* | 4 | 1.12 |
| *Haloragaceae* sp. | 4 | 1.12 |
| *Haloragis heterophylla* | 4 | 1.12 |
| *Helichrysum leucopsideum* | 4 | 1.12 |
| *Hovea linearis* | 4 | 1.12 |
| *Hydrocotyle capillaris* | 4 | 1.12 |
| *Lawrencia spicata* | 4 | 1.12 |
| *Leptorhynchos squamatus* | 4 | 1.12 |
| *Lindsaea linearis* | 4 | 1.12 |
| *Lobelia alata* | 4 | 1.12 |
| *Mentha diemenica* | 4 | 1.12 |
| *Myoporum insulare* | 4 | 1.12 |
| *Pelargonium australe* | 4 | 1.12 |
| *Pimelea phylicoides* | 4 | 1.12 |
| *Plantago gaudichaudii* | 4 | 1.12 |
| *Pomaderris paniculosa* ssp. | 4 | 1.12 |
| *Pratia pedunculata* | 4 | 1.12 |
| *Ranunculus robertsonii* | 4 | 1.12 |
| *Schoenus carsei* | 4 | 1.12 |
| *Sebaea ovata* | 4 | 1.12 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Solenogyne dominii* | 4 | 1.12 |
| *Sonchus* sp. | 4 | 1.12 |
| *Stackhousia aspericocca* ssp. *"Cylindrical inflorescence"(W.R.Barker 1418)* | 4 | 1.12 |
| *Stellaria pungens* | 4 | 1.12 |
| *Themeda triandra* | 4 | 1.12 |
| **Acacia baileyana* | 3 | 0.84 |
| **Aira cupaniana* | 3 | 0.84 |
| **Briza maxima* | 3 | 0.84 |
| **Bromus diandrus* | 3 | 0.84 |
| **Bromus hordeaceus* ssp. *hordeaceus* | 3 | 0.84 |
| **Crassula natans* var. *minus* | 3 | 0.84 |
| **Echium plantagineum* | 3 | 0.84 |
| **Erodium botrys* | 3 | 0.84 |
| **Euphorbia paralias* | 3 | 0.84 |
| **Lupinus cosentinii* | 3 | 0.84 |
| **Lycium ferocissimum* | 3 | 0.84 |
| **Medicago polymorpha* var. *polymorpha* | 3 | 0.84 |
| **Parentucellia latifolia* | 3 | 0.84 |
| **Plantago lanceolata* var. *lanceolata* | 3 | 0.84 |
| **Raphanus raphanistrum* | 3 | 0.84 |
| **Sagina maritima* | 3 | 0.84 |
| **Sambucus gaudichaudiana* | 3 | 0.84 |
| **Sorghum halepense* | 3 | 0.84 |
| **Trifolium fragiferum* var. *fragiferum* | 3 | 0.84 |
| **Trifolium glomeratum* | 3 | 0.84 |
| **Vicia tetrasperma* | 3 | 0.84 |
| *Acacia farinosa* | 3 | 0.84 |
| *Agrostis avenacea* var. | 3 | 0.84 |
| *Allocasuarina paludosa* | 3 | 0.84 |
| *Amphibromus recurvatus* | 3 | 0.84 |
| *Amphipogon strictus* var. *setifer* | 3 | 0.84 |
| *Amyema melaleucae* | 3 | 0.84 |
| *Billardiera* sp. | 3 | 0.84 |
| *Boronia filifolia* | 3 | 0.84 |
| *Boronia pilosa* | 3 | 0.84 |
| *Brachycome ciliaris* var. | 3 | 0.84 |
| *Caladenia reticulata* | 3 | 0.84 |
| *Centella cordifolia* (NC) | 3 | 0.84 |
| *Centrolepis cephaloformis* ssp. *cephaloformis* | 3 | 0.84 |
| *Cheilanthes austrotenuifolia* | 3 | 0.84 |
| *Cotula vulgaris* var. *australasica* | 3 | 0.84 |
| *Cynoglossum suaveolens* | 3 | 0.84 |
| *Danthonia pilosa* var. *pilosa* | 3 | 0.84 |
| *Danthonia semiannularis* | 3 | 0.84 |
| *Deyeuxia quadriseta* | 3 | 0.84 |
| *Diuris palustris* | 3 | 0.84 |
| *Elymus scabrus* var. *scabrus* | 3 | 0.84 |
| *Epilobium billardierianum* ssp. *billardierianum* | 3 | 0.84 |
| *Epilobium billardierianum* ssp. *x intermedium* | 3 | 0.84 |
| *Erodium* sp. | 3 | 0.84 |
| *Eucalyptus rugosa* | 3 | 0.84 |
| *Euchiton gymnocephalus* | 3 | 0.84 |
| *Gahnia lanigera* | 3 | 0.84 |
| *Goodenia blackiana* | 3 | 0.84 |
| *Grevillea ilicifolia* var. | 3 | 0.84 |
| *Grevillea ilicifolia* var. *ilicifolia* | 3 | 0.84 |
| *Hakea repullulans* | 3 | 0.84 |
| *Hydrocotyle foveolata* | 3 | 0.84 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Hydrocotyle hirta* | 3 | 0.84 |
| *Isolepis fluitans* | 3 | 0.84 |
| *Juncus bufonius* | 3 | 0.84 |
| *Juncus procerus* | 3 | 0.84 |
| *Lepidosperma canescens* | 3 | 0.84 |
| *Lomandra effusa* | 3 | 0.84 |
| *Luzula* sp. | 3 | 0.84 |
| *Lythrum hyssopifolia* | 3 | 0.84 |
| *Opercularia ovata* | 3 | 0.84 |
| *Phyllangium divergens* | 3 | 0.84 |
| *Plantago hispida* | 3 | 0.84 |
| *Poa morrisii* | 3 | 0.84 |
| *Potamogeton ochreatus* | 3 | 0.84 |
| *Ranunculus pumilio* var. *pumilio* | 3 | 0.84 |
| *Restio tetraphyllus* | 3 | 0.84 |
| *Scaevola albida* var. *pallida* | 3 | 0.84 |
| *Senecio odoratus* var. *odoratus* | 3 | 0.84 |
| *Stipa flavescens* | 3 | 0.84 |
| *Stipa mollis* | 3 | 0.84 |
| *Tetratheca pilosa* ssp. *pilosa* | 3 | 0.84 |
| *Thelymitra epipactoides* | 3 | 0.84 |
| *Trachymene pilosa* | 3 | 0.84 |
| *Triglochin alcockiae* | 3 | 0.84 |
| **Aira elegantissima* ssp. *elegantissima* | 2 | 0.56 |
| **Anagallis* sp. | 2 | 0.56 |
| **Apium graveolens* | 2 | 0.56 |
| **Cakile maritima* ssp. *maritima* | 2 | 0.56 |
| **Cicendia filiformis* | 2 | 0.56 |
| **Crassula alata* var. *alata* | 2 | 0.56 |
| **Desmazeria rigida* | 2 | 0.56 |
| **Dittrichia graveolens* | 2 | 0.56 |
| **Festuca arundinacea* | 2 | 0.56 |
| **Festuca pratensis* | 2 | 0.56 |
| **Glycyrrhiza glabra* | 2 | 0.56 |
| **Juncus capitatus* | 2 | 0.56 |
| **Limonium* sp. | 2 | 0.56 |
| **Marrubium vulgare* | 2 | 0.56 |
| **Medicago lupulina* | 2 | 0.56 |
| **Medicago* sp. | 2 | 0.56 |
| **Moenchia erecta* | 2 | 0.56 |
| **Olea europaea* ssp. *europaea* | 2 | 0.56 |
| **Oxalis pes-caprae* | 2 | 0.56 |
| **Parapholis incurva* | 2 | 0.56 |
| **Phalaris aquatica* | 2 | 0.56 |
| **Plantago bellardii* | 2 | 0.56 |
| **Plantago coronopus* ssp. *coronopus* | 2 | 0.56 |
| **Polypogon monspeliensis* | 2 | 0.56 |
| **Rapistrum rugosum* ssp. *rugosum* | 2 | 0.56 |
| **Rubus ulmifolius* var. *ulmifolius* | 2 | 0.56 |
| **Rumex conglomeratus* | 2 | 0.56 |
| **Silene* sp. | 2 | 0.56 |
| **Trifolium angustifolium* | 2 | 0.56 |
| **Vulpia muralis* | 2 | 0.56 |
| *Acacia cupularis* | 2 | 0.56 |
| *Acacia rupicola* | 2 | 0.56 |
| *Acaena agnipila* var. | 2 | 0.56 |
| *Allocasuarina luehmannii* | 2 | 0.56 |
| *Aphelia pumilio* | 2 | 0.56 |
| *Apium annuum* | 2 | 0.56 |
| *Apium prostratum* ssp. *prostratum* var. *filiforme* | 2 | 0.56 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Arthropodium milleflorum* | 2 | 0.56 |
| *Baumea acuta* | 2 | 0.56 |
| *Brachycome leptocarpa* | 2 | 0.56 |
| *Bulbine bulbosa* | 2 | 0.56 |
| *Calandrinia calyptrata* | 2 | 0.56 |
| *Calandrinia eremaea* | 2 | 0.56 |
| *Callitris preissii* | 2 | 0.56 |
| *Cardamine paucijuga* | 2 | 0.56 |
| *Carex tereticaulis* | 2 | 0.56 |
| *Carpobrotus* sp. | 2 | 0.56 |
| *Cassytha* sp. | 2 | 0.56 |
| *Centrolepis polygyna* | 2 | 0.56 |
| *Chrysocephalum baxteri* | 2 | 0.56 |
| *Conospermum patens* | 2 | 0.56 |
| *Daviesia arenaria* | 2 | 0.56 |
| *Eleocharis acuta* | 2 | 0.56 |
| *Euphrasia collina* ssp. *tetragona* | 2 | 0.56 |
| *Galium gaudichaudii* | 2 | 0.56 |
| *Genoplesium rufum* | 2 | 0.56 |
| *Glyceria australis* | 2 | 0.56 |
| *Glycine clandestina* var. *clandestina* | 2 | 0.56 |
| *Goodenia robusta* | 2 | 0.56 |
| *Hemichroa pentandra* | 2 | 0.56 |
| *Hydrocotyle muscosa* | 2 | 0.56 |
| *Hydrocotyle tripartita* | 2 | 0.56 |
| *Indigofera australis* var. *australis* | 2 | 0.56 |
| *Isolepis cernua* | 2 | 0.56 |
| *Lepidosperma* sp. | 2 | 0.56 |
| *Leptoceras menziesii* | 2 | 0.56 |
| *Lepyrodia muelleri* | 2 | 0.56 |
| *Linum marginale* | 2 | 0.56 |
| *Lissanthe strigosa* | 2 | 0.56 |
| *Lomandra filiformis* ssp. *coriacea* | 2 | 0.56 |
| *Lomandra micrantha* ssp. *micrantha* | 2 | 0.56 |
| *Lomandra micrantha* ssp. *tuberculata* | 2 | 0.56 |
| *Luzula densiflora* | 2 | 0.56 |
| *Melaleuca squamea* | 2 | 0.56 |
| *Microlaena stipoides* var. *stipoides* | 2 | 0.56 |
| *Microtis arenaria* | 2 | 0.56 |
| *Muellerina eucalyptoides* | 2 | 0.56 |
| *Myriophyllum variifolium* | 2 | 0.56 |
| *Opercularia scabrida* | 2 | 0.56 |
| *Plantago varia* | 2 | 0.56 |
| *Platysace heterophylla* var. *heterophylla* | 2 | 0.56 |
| *Pomaderris halmaturina* ssp. | 2 | 0.56 |
| *Potamogeton tricarinatus* | 2 | 0.56 |
| *Pratia puberula* | 2 | 0.56 |
| *Pultenaea hispidula* | 2 | 0.56 |
| *Pultenaea scabra* | 2 | 0.56 |
| *Ranunculus* sp. | 2 | 0.56 |
| *Rhodanthe pygmaea* | 2 | 0.56 |
| *Senecio minimus* var. *minimus* | 2 | 0.56 |
| *Spinifex sericeus* | 2 | 0.56 |
| *Spyridium vexilliferum* var. | 2 | 0.56 |
| *Stellaria palustris* var. | 2 | 0.56 |
| *Stipa stipoides* | 2 | 0.56 |
| *Suaeda australis* | 2 | 0.56 |
| *Threlkeldia diffusa* | 2 | 0.56 |
| *Triglochin calcitrapum* | 2 | 0.56 |
| *Triglochin procerum* | 2 | 0.56 |
| *Triglochin procerum* var. *procerum* (NC) | 2 | 0.56 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Triglochin striatum* | 2 | 0.56 |
| *Typha domingensis* | 2 | 0.56 |
| *Urtica incisa* | 2 | 0.56 |
| *Villarsia umbricola* var. | 2 | 0.56 |
| *Vittadinia cuneata* var. *cuneata* forma *cuneata* | 2 | 0.56 |
| *Wahlenbergia litticola* | 2 | 0.56 |
| *Wahlenbergia stricta* ssp. *stricta* | 2 | 0.56 |
| *Wilsonia backhousei* | 2 | 0.56 |
| *Wilsonia rotundifolia* | 2 | 0.56 |
| **Acacia saligna* | 1 | 0.28 |
| **Aira caryophyllea* | 1 | 0.28 |
| **Aira* sp. | 1 | 0.28 |
| **Albizia lophantha* | 1 | 0.28 |
| **Anagallis minima* | 1 | 0.28 |
| **Anthoxanthum odoratum* | 1 | 0.28 |
| **Atriplex prostrata* | 1 | 0.28 |
| **Avena* sp. | 1 | 0.28 |
| **Batrachium trichophyllum* | 1 | 0.28 |
| **Berula erecta* | 1 | 0.28 |
| **Bromus rubens* | 1 | 0.28 |
| **Centaurium* sp. | 1 | 0.28 |
| **Cerastium semidecandrum* (NC) | 1 | 0.28 |
| **Chamaecytisus palmensis* | 1 | 0.28 |
| **Chenopodium glaucum* | 1 | 0.28 |
| **Conyza bonariensis* | 1 | 0.28 |
| **Conyza* sp. | 1 | 0.28 |
| **Cotula coronopifolia* | 1 | 0.28 |
| **Crepis vesicaria* ssp. *haenseleri* | 1 | 0.28 |
| **Epilobium ciliatum* | 1 | 0.28 |
| **Erodium moschatum* | 1 | 0.28 |
| **Fumaria capreolata* ssp. *capreolata* | 1 | 0.28 |
| **Gamochaeta spicata* | 1 | 0.28 |
| **Hainardia cylindrica* | 1 | 0.28 |
| **Hedypnois rhagadioloides* | 1 | 0.28 |
| **Homeria flaccida* | 1 | 0.28 |
| **Hymenolobus procumbens* | 1 | 0.28 |
| **Medicago minima* var. *minima* | 1 | 0.28 |
| **Medicago truncatula* | 1 | 0.28 |
| **Molineriella minuta* | 1 | 0.28 |
| **Paspalum dilatatum* | 1 | 0.28 |
| **Phalaris minor* | 1 | 0.28 |
| **Piptatherum miliaceum* | 1 | 0.28 |
| **Plantago coronopus* ssp. | 1 | 0.28 |
| **Polygala monspeliaca* | 1 | 0.28 |
| **Polypogon maritimus* | 1 | 0.28 |
| **Romulea rosea* var. *australis* | 1 | 0.28 |
| **Rorippa nasturtium-aquaticum* | 1 | 0.28 |
| **Rostraria pumila* | 1 | 0.28 |
| **Rumex crispus* | 1 | 0.28 |
| **Salvia verbenaca* form | 1 | 0.28 |
| **Salvia verbenaca* form *A* | 1 | 0.28 |
| **Scorzonera laciniata* | 1 | 0.28 |
| **Senecio pterophorus* var. *pterophorus* | 1 | 0.28 |
| **Sherardia arvensis* | 1 | 0.28 |
| **Silene nocturna* | 1 | 0.28 |
| **Silybum marianum* | 1 | 0.28 |
| **Taraxacum erythrospermum* | 1 | 0.28 |
| **Trifolium repens* | 1 | 0.28 |
| **Trifolium tomentosum* | 1 | 0.28 |
| **Vulpia bromoides* | 1 | 0.28 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| **Vulpia myuros* forma *megalura* | 1 | 0.28 |
| *Acacia longifolia* var. | 1 | 0.28 |
| *Acacia mitchellii* | 1 | 0.28 |
| *Acacia stricta* | 1 | 0.28 |
| *Acaena x anserovina* | 1 | 0.28 |
| *Acianthus caudatus* var. | 1 | 0.28 |
| *Acianthus* sp. | 1 | 0.28 |
| *Agrostis avenacea* var. *avenacea* | 1 | 0.28 |
| *Agrostis billardieri* var. *filifolia* | 1 | 0.28 |
| *Allocasuarina mackliniana* ssp. *xerophila* | 1 | 0.28 |
| *Amphibromus archeri* | 1 | 0.28 |
| *Amphibromus nervosus* | 1 | 0.28 |
| *Amyema* sp. | 1 | 0.28 |
| *Baumea articulata* | 1 | 0.28 |
| *Bracteantha bracteata* | 1 | 0.28 |
| *Bromus arenarius* | 1 | 0.28 |
| *Bromus* sp. | 1 | 0.28 |
| *Caladenia cardiochila x reticulata* (NC) | 1 | 0.28 |
| *Caladenia prolata* | 1 | 0.28 |
| *Caladenia vulgaris* | 1 | 0.28 |
| *Calandrinia brevipedata* | 1 | 0.28 |
| *Calectasia intermedia* | 1 | 0.28 |
| *Callitris rhomboidea* | 1 | 0.28 |
| *Cardamine gunnii* | 1 | 0.28 |
| *Carex breviculmis* | 1 | 0.28 |
| *Carex gaudichaudiana* | 1 | 0.28 |
| *Carex inversa* var. | 1 | 0.28 |
| *Carex inversa* var. *inversa* | 1 | 0.28 |
| *Centella cordifolia s.str.* | 1 | 0.28 |
| *Centipeda cunninghamii* | 1 | 0.28 |
| *Cerastium semidecandrum* | 1 | 0.28 |
| *Chorizandra australis* | 1 | 0.28 |
| *Clematis aristata* | 1 | 0.28 |
| Compositae sp. | 1 | 0.28 |
| *Convolvulus erubescens* | 1 | 0.28 |
| *Cotula reptans* | 1 | 0.28 |
| *Cyperus* sp. | 1 | 0.28 |
| *Cyperus tenellus* | 1 | 0.28 |
| *Danthonia eriantha* | 1 | 0.28 |
| *Dillwynia cinerascens* | 1 | 0.28 |
| *Dillwynia* sp. | 1 | 0.28 |
| *Diuris* sp. | 1 | 0.28 |
| *Einadia nutans* ssp. *nutans* | 1 | 0.28 |
| *Enchylaena tomentosa* var. *tomentosa* | 1 | 0.28 |
| *Epilobium* sp. | 1 | 0.28 |
| *Eriostemon pungens* | 1 | 0.28 |
| *Erodium crinitum* | 1 | 0.28 |
| *Eryngium rostratum* | 1 | 0.28 |
| *Eryngium vesiculosum* | 1 | 0.28 |
| *Eucalyptus* "Carpenter Rocks" | 1 | 0.28 |
| *Eucalyptus behriana* | 1 | 0.28 |
| *Eucalyptus dumosa* | 1 | 0.28 |
| *Eucalyptus pauciflora* ssp. *pauciflora* | 1 | 0.28 |
| *Eucalyptus porosa* | 1 | 0.28 |
| *Eucalyptus willisii* ssp. *willisii* | 1 | 0.28 |
| *Euchiton sphaericus* | 1 | 0.28 |
| *Gahnia deusta* | 1 | 0.28 |
| *Gahnia radula* | 1 | 0.28 |
| *Galium* sp. | 1 | 0.28 |
| *Gastrodia sesamoides* | 1 | 0.28 |
| *Genoplesium* sp. | 1 | 0.28 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Gompholobium knightianum* (NC) | 1 | 0.28 |
| *Gonocarpus humilis* | 1 | 0.28 |
| *Goodenia* sp. | 1 | 0.28 |
| *Goodenia varia* | 1 | 0.28 |
| *Goodenia willisiana* | 1 | 0.28 |
| *Grevillea ilicifolia* var. *angustiloba* | 1 | 0.28 |
| *Grevillea lavandulacea* var. *lavandulacea* | 1 | 0.28 |
| *Grevillea lavandulacea* var. *sericea* | 1 | 0.28 |
| *Gyrostemon australasicus* | 1 | 0.28 |
| *Haloragis brownii* | 1 | 0.28 |
| *Halosarcia indica* ssp. *leiostachya* | 1 | 0.28 |
| *Halosarcia pergranulata* ssp. *pergranulata* | 1 | 0.28 |
| *Hardenbergia violacea* | 1 | 0.28 |
| *Hibbertia incana* | 1 | 0.28 |
| *Hibbertia* sp. | 1 | 0.28 |
| *Hybanthus floribundus* ssp. *floribundus* | 1 | 0.28 |
| *Hydrocotyle plebeya* | 1 | 0.28 |
| *Hydrocotyle pterocarpa* | 1 | 0.28 |
| *Isoetes drummondii* ssp. | 1 | 0.28 |
| *Isoetopsis graminifolia* | 1 | 0.28 |
| *Isolepis inundata* | 1 | 0.28 |
| *Isolepis platycarpa* | 1 | 0.28 |
| *Isolepis* sp. | 1 | 0.28 |
| *Isotoma fluviatilis* ssp. *australis* | 1 | 0.28 |
| *Juncus caespiticius* | 1 | 0.28 |
| *Juncus planifolius* | 1 | 0.28 |
| *Lasiopetalum schulzenii* | 1 | 0.28 |
| *Lepidosperma curtisiae* | 1 | 0.28 |
| *Leptospermum* sp. | 1 | 0.28 |
| *Leucophyta brownii* | 1 | 0.28 |
| *Leucopogon clelandii* | 1 | 0.28 |
| *Leucopogon rufus* | 1 | 0.28 |
| *Leucopogon* sp. | 1 | 0.28 |
| *Lilaeopsis polyantha* | 1 | 0.28 |
| *Lobelia* sp. | 1 | 0.28 |
| *Logania ovata* | 1 | 0.28 |
| *Lotus* sp. | 1 | 0.28 |
| *Mazus pumilio* | 1 | 0.28 |
| *Melaleuca acuminata* | 1 | 0.28 |
| *Microtis parviflora* | 1 | 0.28 |
| *Mitrasacme pilosa* var. *pilosa* | 1 | 0.28 |
| *Montia australasica* | 1 | 0.28 |
| *Myoporum platycarpum* (NC) | 1 | 0.28 |
| *Myriophyllum integrifolium* | 1 | 0.28 |
| *Myriophyllum simulans* | 1 | 0.28 |
| *Myriophyllum* sp. | 1 | 0.28 |
| *Olearia lanuginosa* | 1 | 0.28 |
| *Olearia pannosa* ssp. *pannosa* | 1 | 0.28 |
| *Patersonia occidentalis* | 1 | 0.28 |
| *Persicaria prostrata* | 1 | 0.28 |
| *Phyllangium distylis* | 1 | 0.28 |
| *Pimelea flava* ssp. *flava* | 1 | 0.28 |
| *Pimelea linifolia* ssp. *linifolia* | 1 | 0.28 |
| *Pimelea stricta* | 1 | 0.28 |
| *Pittosporum phylliraeoides* var. *microcarpa* | 1 | 0.28 |
| *Plantago* aff. *debilis* | 1 | 0.28 |
| *Plantago* sp. | 1 | 0.28 |
| *Poa clelandii* | 1 | 0.28 |
| *Poa poiformis* | 1 | 0.28 |
| *Poa rodwayi* | 1 | 0.28 |
| *Pomaderris halmaturina* ssp. *halmaturina* | 1 | 0.28 |

| **Plant Species** | **Frequency** | **Percentage of sites(%)** |
|---|---|---|
| *Pomaderris paniculosa* ssp. *paralia* | 1 | 0.28 |
| *Prasophyllum odoratum* | 1 | 0.28 |
| *Pseudognaphalium luteoalbum* | 1 | 0.28 |
| *Pterostylis* aff. *rufa* | 1 | 0.28 |
| *Pterostylis curta* | 1 | 0.28 |
| *Pultenaea densifolia* | 1 | 0.28 |
| *Pultenaea laxiflora* | 1 | 0.28 |
| *Pultenaea vestita* | 1 | 0.28 |
| *Ranunculus glabrifolius* | 1 | 0.28 |
| *Ranunculus inundatus* | 1 | 0.28 |
| *Ranunculus papulentus* | 1 | 0.28 |
| *Ranunculus sessiliflorus* var. *sessiliflorus* | 1 | 0.28 |
| *Rubus parvifolius* | 1 | 0.28 |
| *Santalum murrayanum* | 1 | 0.28 |
| *Scaevola albida* var. *albida* | 1 | 0.28 |
| *Schoenus lepidosperma* ssp. *lepidosperma* | 1 | 0.28 |
| *Schoenus maschalinus* | 1 | 0.28 |
| *Schoenus tesquorum* | 1 | 0.28 |
| *Sebaea albidiflora* | 1 | 0.28 |
| *Senecio macrocarpus* | 1 | 0.28 |
| *Senecio psilocarpus* | 1 | 0.28 |
| *Senecio* sp. | 1 | 0.28 |
| *Solanum simile* | 1 | 0.28 |
| *Sonchus hydrophilus* | 1 | 0.28 |
| *Sphaerolobium minus* | 1 | 0.28 |
| *Sporobolus virginicus* | 1 | 0.28 |
| *Spyridium eriocephalum* var. *eriocephalum* | 1 | 0.28 |
| *Spyridium parvifolium* | 1 | 0.28 |
| *Spyridium thymifolium* | 1 | 0.28 |

| **Plant Species** | **Frequency** | **Percentage of sites(%)** |
|---|---|---|
| *Stackhousia spathulata* | 1 | 0.28 |
| *Stellaria caespitosa* | 1 | 0.28 |
| *Stipa acrociliata* | 1 | 0.28 |
| *Stipa mundula* | 1 | 0.28 |
| *Stipa nodosa* | 1 | 0.28 |
| *Stylidium inundatum* | 1 | 0.28 |
| *Templetonia retusa* | 1 | 0.28 |
| *Thelymitra aristata* | 1 | 0.28 |
| *Thelymitra luteocilium* | 1 | 0.28 |
| *Thelymitra rubra* | 1 | 0.28 |
| *Thysanotus juncifolius* | 1 | 0.28 |
| *Thysanotus* sp. | 1 | 0.28 |
| *Thysanotus tuberosus* ssp. *parviflorus* | 1 | 0.28 |
| *Tricoryne tenella* | 1 | 0.28 |
| *Tricostularia pauciflora* | 1 | 0.28 |
| *Triglochin mucronatum* | 1 | 0.28 |
| *Triodia scariosa* ssp. *scariosa* | 1 | 0.28 |
| *Veronica gracilis* | 1 | 0.28 |
| *Veronica gracilis* (NC) | 1 | 0.28 |
| *Villarsia* sp. | 1 | 0.28 |
| *Viminaria juncea* | 1 | 0.28 |
| *Vittadinia australasica* var. *australasica* | 1 | 0.28 |
| *Vittadinia dissecta* var. *hirta* | 1 | 0.28 |
| *Vittadinia* sp. | 1 | 0.28 |
| *Wahlenbergia luteola* | 1 | 0.28 |
| *Westringia eremicola* | 1 | 0.28 |
| *Xanthorrhoea* sp. | 1 | 0.28 |
| *Zoysia matrella* | 1 | 0.28 |
| *Zygophyllum* sp. | 1 | 0.28 |

| Plant Species | Frequency | Percentage of sites(%) |
|---|---|---|
| *Arthropodium milleflorum* | 2 | 0.56 |
| *Baumea acuta* | 2 | 0.56 |
| *Brachycome leptocarpa* | 2 | 0.56 |
| *Bulbine bulbosa* | 2 | 0.56 |
| *Calandrinia calyptrata* | 2 | 0.56 |
| *Calandrinia eremaea* | 2 | 0.56 |
| *Callitris preissii* | 2 | 0.56 |
| *Cardamine paucijuga* | 2 | 0.56 |
| *Carex tereticaulis* | 2 | 0.56 |
| *Carpobrotus* sp. | 2 | 0.56 |
| *Cassytha* sp. | 2 | 0.56 |
| *Centrolepis polygyna* | 2 | 0.56 |
| *Chrysocephalum baxteri* | 2 | 0.56 |
| *Conospermum patens* | 2 | 0.56 |
| *Daviesia arenaria* | 2 | 0.56 |
| *Eleocharis acuta* | 2 | 0.56 |
| *Euphrasia collina* ssp. *tetragona* | 2 | 0.56 |
| *Galium gaudichaudii* | 2 | 0.56 |
| *Genoplesium rufum* | 2 | 0.56 |
| *Glyceria australis* | 2 | 0.56 |
| *Glycine clandestina* var. *clandestina* | 2 | 0.56 |
| *Goodenia robusta* | 2 | 0.56 |
| *Hemichroa pentandra* | 2 | 0.56 |
| *Hydrocotyle muscosa* | 2 | 0.56 |
| *Hydrocotyle tripartita* | 2 | 0.56 |
| *Indigofera australis* var. *australis* | 2 | 0.56 |
| *Isolepis cernua* | 2 | 0.56 |
| *Lepidosperma* sp. | 2 | 0.56 |
| *Leptoceras menziesii* | 2 | 0.56 |
| *Lepyrodia muelleri* | 2 | 0.56 |
| *Linum marginale* | 2 | 0.56 |
| *Lissanthe strigosa* | 2 | 0.56 |
| *Lomandra filiformis* ssp. *coriacea* | 2 | 0.56 |
| *Lomandra micrantha* ssp. *micrantha* | 2 | 0.56 |
| *Lomandra micrantha* ssp. *tuberculata* | 2 | 0.56 |
| *Luzula densiflora* | 2 | 0.56 |
| *Melaleuca squamea* | 2 | 0.56 |
| *Microlaena stipoides* var. *stipoides* | 2 | 0.56 |
| *Microtis arenaria* | 2 | 0.56 |
| *Muellerina eucalyptoides* | 2 | 0.56 |
| *Myriophyllum variifolium* | 2 | 0.56 |
| *Opercularia scabrida* | 2 | 0.56 |
| *Plantago varia* | 2 | 0.56 |
| *Platysace heterophylla* var. *heterophylla* | 2 | 0.56 |
| *Pomaderris halmaturina* ssp. | 2 | 0.56 |
| *Potamogeton tricarinatus* | 2 | 0.56 |
| *Pratia puberula* | 2 | 0.56 |
| *Pultenaea hispidula* | 2 | 0.56 |
| *Pultenaea scabra* | 2 | 0.56 |
| *Ranunculus* sp. | 2 | 0.56 |
| *Rhodanthe pygmaea* | 2 | 0.56 |
| *Senecio minimus* var. *minimus* | 2 | 0.56 |
| *Spinifex sericeus* | 2 | 0.56 |
| *Spyridium vexilliferum* var. | 2 | 0.56 |
| *Stellaria palustris* var. | 2 | 0.56 |
| *Stipa stipoides* | 2 | 0.56 |
| *Suaeda australis* | 2 | 0.56 |
| *Threlkeldia diffusa* | 2 | 0.56 |
| *Triglochin calcitrapum* | 2 | 0.56 |
| *Triglochin procerum* | 2 | 0.56 |
| *Triglochin procerum* var. *procerum* (NC) | 2 | 0.56 |
| *Triglochin striatum* | 2 | 0.56 |
| *Typha domingensis* | 2 | 0.56 |
| *Urtica incisa* | 2 | 0.56 |
| *Villarsia umbricola* var. | 2 | 0.56 |
| *Vittadinia cuneata* var. *cuneata* forma *cuneata* | 2 | 0.56 |
| *Wahlenbergia litticola* | 2 | 0.56 |
| *Wahlenbergia stricta* ssp. *stricta* | 2 | 0.56 |
| *Wilsonia backhousei* | 2 | 0.56 |
| *Wilsonia rotundifolia* | 2 | 0.56 |
| **Acacia saligna* | 1 | 0.28 |
| **Aira caryophyllea* | 1 | 0.28 |
| **Aira* sp. | 1 | 0.28 |
| **Albizia lophantha* | 1 | 0.28 |
| **Anagallis minima* | 1 | 0.28 |
| **Anthoxanthum odoratum* | 1 | 0.28 |
| **Atriplex prostrata* | 1 | 0.28 |
| **Avena* sp. | 1 | 0.28 |
| **Batrachium trichophyllum* | 1 | 0.28 |
| **Berula erecta* | 1 | 0.28 |
| **Bromus rubens* | 1 | 0.28 |
| **Centaurium* sp. | 1 | 0.28 |
| **Cerastium semidecandrum* (NC) | 1 | 0.28 |
| **Chamaecytisus palmensis* | 1 | 0.28 |
| **Chenopodium glaucum* | 1 | 0.28 |
| **Conyza bonariensis* | 1 | 0.28 |
| **Conyza* sp. | 1 | 0.28 |
| **Cotula coronopifolia* | 1 | 0.28 |
| **Crepis vesicaria* ssp. *haenseleri* | 1 | 0.28 |
| **Epilobium ciliatum* | 1 | 0.28 |
| **Erodium moschatum* | 1 | 0.28 |
| **Fumaria capreolata* ssp. *capreolata* | 1 | 0.28 |
| **Gamochaeta spicata* | 1 | 0.28 |
| **Hainardia cylindrica* | 1 | 0.28 |
| **Hedypnois rhagadioloides* | 1 | 0.28 |
| **Homeria flaccida* | 1 | 0.28 |
| **Hymenolobus procumbens* | 1 | 0.28 |
| **Medicago minima* var. *minima* | 1 | 0.28 |
| **Medicago truncatula* | 1 | 0.28 |
| **Molineriella minuta* | 1 | 0.28 |
| **Paspalum dilatatum* | 1 | 0.28 |
| **Phalaris minor* | 1 | 0.28 |
| **Piptatherum miliaceum* | 1 | 0.28 |
| **Plantago coronopus* ssp. | 1 | 0.28 |
| **Polygala monspeliaca* | 1 | 0.28 |
| **Polypogon maritimus* | 1 | 0.28 |
| **Romulea rosea* var. *australis* | 1 | 0.28 |
| **Rorippa nasturtium-aquaticum* | 1 | 0.28 |
| **Rostraria pumila* | 1 | 0.28 |
| **Rumex crispus* | 1 | 0.28 |
| **Salvia verbenaca* form | 1 | 0.28 |
| **Salvia verbenaca* form *A* | 1 | 0.28 |
| **Scorzonera laciniata* | 1 | 0.28 |
| **Senecio pterophorus* var. *pterophorus* | 1 | 0.28 |
| **Sherardia arvensis* | 1 | 0.28 |
| **Silene nocturna* | 1 | 0.28 |
| **Silybum marianum* | 1 | 0.28 |
| **Taraxacum erythrospermum* | 1 | 0.28 |
| **Trifolium repens* | 1 | 0.28 |
| **Trifolium tomentosum* | 1 | 0.28 |
| **Vulpia bromoides* | 1 | 0.28 |

# Appendix V

**Introduced plant species records for both survey quadrats and opportune sightings are provided in Table 1. and Table 2.**

**Table 1. Introduced plant species records for survey sites listed in frequency order.**

Note: 159 taxonomic categories, 358 sites
Freq – refers to the frequency of occurrence of the species, during the survey.
Percent – refers to the percentage of sites the species was observed in, during the survey.
* - Introduced species (This can include species native to Australia that do not naturally occur in this region such as *Acacia saligna*).
(NC) – Non–current species name (based on data an extracted from SA FLORA database, December 2001).

| Plant Species | Common Name | Freq | Percent |
|---|---|---|---|
| **Hypochaeris glabra* | Smooth Cat's Ear | 167 | 46.65 |
| **Hypochaeris radicata* | Rough Cat's Ear | 104 | 29.05 |
| **Holcus lanatus* | Yorkshire Fog | 58 | 16.20 |
| **Cerastium glomeratum* | Common Mouse-ear Chickweed | 48 | 13.41 |
| **Galium murale* | Small Bedstraw | 44 | 12.29 |
| **Sonchus oleraceus* | Common Sow-thistle | 44 | 12.29 |
| **Arctotheca calendula* | Cape Weed | 40 | 11.17 |
| **Cirsium vulgare* | Spear Thistle | 37 | 10.34 |
| **Myrsiphyllum asparagoides* | Bridal Creeper | 37 | 10.34 |
| **Carduus tenuiflorus* | Slender Thistle | 34 | 9.50 |
| **Anagallis arvensis* | Pimpernel | 31 | 8.66 |
| **Pinus radiata* | Radiata Pine | 31 | 8.66 |
| **Centaurium erythraea* | Common Centaury | 24 | 6.70 |
| **Trifolium subterraneum* | Subterranean Clover | 21 | 5.87 |
| **Trifolium* sp. | Clover | 15 | 4.19 |
| **Ehrharta longiflora* | Annual Veldt Grass | 14 | 3.91 |
| **Geranium molle* var. *molle* | Soft Geranium | 13 | 3.63 |
| **Poa annua* | Winter Grass | 13 | 3.63 |
| **Taraxacum officinale* | Dandelion | 13 | 3.63 |
| **Briza minor* | Lesser Quaking-grass | 12 | 3.35 |
| **Stellaria media* | Chickweed | 12 | 3.35 |
| **Cynosurus echinatus* | Rough Dog's-tail Grass | 11 | 3.07 |
| **Helminthotheca echioides* | Ox-tongue | 11 | 3.07 |
| **Ehrharta calycina* | Perennial Veldt Grass | 10 | 2.79 |
| **Leontodon taraxacoides* ssp. *taraxacoides* | Lesser Hawkbit | 10 | 2.79 |
| **Vulpia* sp. | Fescue | 10 | 2.79 |
| **Centaurium tenuiflorum* | Branched Centaury | 9 | 2.51 |
| **Erodium cicutarium* | Cut-leaf Heron's-bill | 9 | 2.51 |
| **Lagurus ovatus* | Hare's Tail Grass | 9 | 2.51 |
| **Schismus barbatus* | Arabian Grass | 9 | 2.51 |
| **Rostraria cristata* | Annual Cat's-tail | 8 | 2.23 |
| **Acetosella vulgaris* | Sorrel | 7 | 1.96 |
| **Cerastium* sp. | Chickweed | 7 | 1.96 |
| **Sonchus asper* ssp. | Rough Sow-thistle | 7 | 1.96 |
| **Trifolium arvense* var. *arvense* | Hare's-foot Clover | 7 | 1.96 |
| **Vulpia myuros* forma *myuros* | Rat's-tail Fescue | 7 | 1.96 |
| **Conyza albida* | Tall Fleabane | 6 | 1.68 |
| **Critesion murinum* ssp. *glaucum* | Blue Barley-grass | 6 | 1.68 |
| **Dactylis glomerata* | Cocksfoot | 6 | 1.68 |
| **Melilotus indica* | King Island Melilot | 6 | 1.68 |
| **Solanum nigrum* | Black Nightshade | 6 | 1.68 |
| **Acacia longifolia* var. *longifolia* | Sallow Wattle | 5 | 1.40 |
| **Avellinia michelii* | Avellinia | 5 | 1.40 |
| **Euphorbia peplus* | Petty Spurge | 5 | 1.40 |
| **Galium aparine* | Cleavers | 5 | 1.40 |
| **Lolium rigidum* | Wimmera Ryegrass | 5 | 1.40 |
| **Myosotis discolor* ssp. *discolor* | Yellow-and-blue Forget-me-not | 5 | 1.40 |
| **Trifolium campestre* | Hop Clover | 5 | 1.40 |
| **Avena barbata* | Bearded Oat | 4 | 1.12 |
| **Bromus madritensis* | Compact Brome | 4 | 1.12 |
| **Parentucellia viscosa* | Yellow Bartsia | 4 | 1.12 |
| **Phalaris* sp. | Canary Grass | 4 | 1.12 |
| **Poa pratensis* | Kentucky Blue-grass | 4 | 1.12 |
| **Senecio elegans* | Purple Groundsel | 4 | 1.12 |
| **Sonchus asper* ssp. *glaucescens* | Rough Sow-thistle | 4 | 1.12 |
| **Zaluzianskya divaricata* | Spreading Night-phlox | 4 | 1.12 |
| **Acacia baileyana* | Cootamundra Wattle | 3 | 0.84 |
| **Aira cupaniana* | Small Hair-grass | 3 | 0.84 |
| **Briza maxima* | Large Quaking-grass | 3 | 0.84 |
| **Bromus diandrus* | Great Brome | 3 | 0.84 |
| **Bromus hordeaceus* ssp. *hordeaceus* | Soft Brome | 3 | 0.84 |
| **Crassula natans* var. *minus* | Water Crassula | 3 | 0.84 |
| **Echium plantagineum* | Salvation Jane | 3 | 0.84 |
| **Erodium botrys* | Long Heron's-bill | 3 | 0.84 |
| **Euphorbia paralias* | Sea Spurge | 3 | 0.84 |
| **Lupinus cosentinii* | Blue Lupin | 3 | 0.84 |
| **Lycium ferocissimum* | African Boxthorn | 3 | 0.84 |
| **Medicago polymorpha* var. *polymorpha* | Burr-medic | 3 | 0.84 |
| **Parentucellia latifolia* | Red Bartsia | 3 | 0.84 |
| **Plantago lanceolata* var. *lanceolata* | Ribwort | 3 | 0.84 |
| **Raphanus raphanistrum* | Wild Radish | 3 | 0.84 |
| **Sagina maritima* | Sea Pearlwort | 3 | 0.84 |
| **Sambucus gaudichaudiana* | White Elderberry | 3 | 0.84 |
| **Sorghum halepense* | Johnson Grass | 3 | 0.84 |
| **Trifolium fragiferum* var. *fragiferum* | Strawberry Clover | 3 | 0.84 |

| Plant Species | Common Name | Freq | Percent |
|---|---|---|---|
| *Trifolium glomeratum* | Cluster Clover | 3 | 0.84 |
| *Vicia tetrasperma* | Slender Vetch | 3 | 0.84 |
| **Aira elegantissima* ssp. *elegantissima* | Delicate Hair-grass | 2 | 0.56 |
| *Anagallis sp.* |  | 2 | 0.56 |
| *Apium graveolens* | Celery | 2 | 0.56 |
| **Cakile maritima* ssp. *maritima* | Two-horned Sea Rocket | 2 | 0.56 |
| *Cicendia filiformis* | Slender Cicendia | 2 | 0.56 |
| **Crassula alata* var. *alata* | Three-part Crassula | 2 | 0.56 |
| *Desmazeria rigida* | Rigid Fescue | 2 | 0.56 |
| *Dittrichia graveolens* | Stinkweed | 2 | 0.56 |
| *Festuca arundinacea* | Tall Meadow Fescue | 2 | 0.56 |
| *Festuca pratensis* | Meadow Fescue | 2 | 0.56 |
| *Glycyrrhiza glabra* | Liquorice | 2 | 0.56 |
| *Juncus capitatus* | Dwarf Rush | 2 | 0.56 |
| **Limonium* sp. | Sea-lavender | 2 | 0.56 |
| *Marrubium vulgare* | Horehound | 2 | 0.56 |
| *Medicago lupulina* | Black Medic | 2 | 0.56 |
| **Medicago* sp. | Medic | 2 | 0.56 |
| *Moenchia erecta* | Erect Chickweed | 2 | 0.56 |
| **Olea europaea* ssp. *europaea* | Olive | 2 | 0.56 |
| *Oxalis pes-caprae* | Soursob | 2 | 0.56 |
| *Parapholis incurva* | Curly Ryegrass | 2 | 0.56 |
| *Phalaris aquatica* | Phalaris | 2 | 0.56 |
| *Plantago bellardii* | Hairy Plantain | 2 | 0.56 |
| **Plantago coronopus* ssp. *coronopus* | Bucks-horn Plantain | 2 | 0.56 |
| *Polypogon monspeliensis* | Annual Beard-grass | 2 | 0.56 |
| **Rapistrum rugosum* ssp. *rugosum* | Turnip Weed | 2 | 0.56 |
| **Rubus ulmifolius* var. *ulmifolius* | Blackberry | 2 | 0.56 |
| *Rumex conglomeratus* | Clustered Dock | 2 | 0.56 |
| **Silene* sp. | Catchfly | 2 | 0.56 |
| *Trifolium angustifolium* | Narrow-leaf Clover | 2 | 0.56 |
| *Vulpia muralis* | Wall Fescue | 2 | 0.56 |
| *Acacia saligna* | Golden Wreath Wattle | 1 | 0.28 |
| *Aira caryophyllea* | Silvery Hair-grass | 1 | 0.28 |
| **Aira* sp. | Hair-grass | 1 | 0.28 |
| *Albizia lophantha* | Cape Leeuwin Wattle | 1 | 0.28 |
| *Anagallis minima* | Chaffweed | 1 | 0.28 |
| *Anthoxanthum odoratum* | Sweet Vernal Grass | 1 | 0.28 |
| *Atriplex prostrata* | Creeping Saltbush | 1 | 0.28 |
| **Avena* sp. | Oat | 1 | 0.28 |
| *Batrachium trichophyllum* | Water Buttercup | 1 | 0.28 |
| *Berula erecta* | Water Parsnip | 1 | 0.28 |
| *Bromus rubens* | Red Brome | 1 | 0.28 |
| **Centaurium* sp. | Centaury | 1 | 0.28 |
| **Cerastium semidecandrum* (NC) | Small Mouse-ear Chickweed | 1 | 0.28 |
| *Chamaecytisus palmensis* | Tree Lucerne | 1 | 0.28 |
| *Chenopodium glaucum* | Glaucous Goosefoot | 1 | 0.28 |
| *Conyza bonariensis* | Flax-leaf Fleabane | 1 | 0.28 |
| **Conyza* sp. | Fleabane | 1 | 0.28 |
| *Cotula coronopifolia* | Water Buttons | 1 | 0.28 |
| **Crepis vesicaria* ssp. *haenseleri* | Bladder Hawksbeard | 1 | 0.28 |
| *Epilobium ciliatum* | Glandular Willow-herb | 1 | 0.28 |
| *Erodium moschatum* | Musky Herons-bill | 1 | 0.28 |
| **Fumaria capreolata* ssp. *capreolata* | White-flower Fumitory | 1 | 0.28 |
| *Gamochaeta spicata* | Spiked Cudweed | 1 | 0.28 |
| *Hainardia cylindrica* | Common Barb-grass | 1 | 0.28 |
| *Hedypnois rhagadioloides* | Cretan Weed | 1 | 0.28 |
| *Homeria flaccida* | One-leaf Cape Tulip | 1 | 0.28 |
| *Hymenolobus procumbens* | Oval Purse | 1 | 0.28 |
| **Medicago minima* var. *minima* | Little Medic | 1 | 0.28 |
| *Medicago truncatula* | Barrel Medic | 1 | 0.28 |
| *Molineriella minuta* | Small Hair-grass | 1 | 0.28 |
| *Paspalum dilatatum* | Paspalum | 1 | 0.28 |
| *Phalaris minor* | Lesser Canary-grass | 1 | 0.28 |
| *Piptatherum miliaceum* | Rice Millet | 1 | 0.28 |
| **Plantago coronopus* ssp. | Bucks-horn Plantain | 1 | 0.28 |
| *Polygala monspeliaca* | Annual Milkwort | 1 | 0.28 |
| *Polypogon maritimus* | Coast Beard-grass | 1 | 0.28 |
| **Romulea rosea* var. *australis* | Common Onion-grass | 1 | 0.28 |
| *Rorippa nasturtium-aquaticum* | Watercress | 1 | 0.28 |
| *Rostraria pumila* | Tiny Bristle-grass | 1 | 0.28 |
| *Rumex crispus* | Curled Dock | 1 | 0.28 |
| **Salvia verbenaca* form | Wild Sage | 1 | 0.28 |
| **Salvia verbenaca* form A | Wild Sage | 1 | 0.28 |
| *Scorzonera laciniata* | Scorzonera | 1 | 0.28 |
| **Senecio pterophorus* var. *pterophorus* | African Daisy | 1 | 0.28 |
| *Sherardia arvensis* | Field Madder | 1 | 0.28 |
| *Silene nocturna* | Mediterranean Catchfly | 1 | 0.28 |
| *Silybum marianum* | Variegated Thistle | 1 | 0.28 |
| *Taraxacum erythrospermum* | Red-seed Dandelion | 1 | 0.28 |
| *Trifolium repens* | White Clover | 1 | 0.28 |
| *Trifolium tomentosum* | Woolly Clover | 1 | 0.28 |
| *Vulpia bromoides* | Squirrel-tail Fescue | 1 | 0.28 |
| **Vulpia myuros* forma *megalura* | Fox-tail Fescue | 1 | 0.28 |

### Table 2. Introduced species listed by frequency for opportune sightings

Note: 6 species, 12 Opportune Sighting locations

Freq – refers to the frequency of occurrence of the species, during the survey.

| Plant Species | Common Name | Freq |
|---|---|---|
| *Modiola caroliniana* | Red-flowered Mallow | 2 |
| **Medicago minima* var. *minima* | Little Medic | 1 |
| *Sambucus gaudichaudiana* | White Elderberry | 1 |
| *Scabiosa atropurpurea* | Scabious | 1 |
| *Trifolium angustifolium* | Narrow-leaf Clover | 1 |
| *Trifolium stellatum* | Star Clover | 1 |

# Appendix VI

This appendix provides an index list of the survey sites used in the Floristic Analysis. The information provided includes the Biological Survey number (Svy No.), the site name used in the PATN analysis (Patn_site), the unique site identifier (Patchid), the site name on the Biological Survey database (Siteid) and the Floristic Group number (Patn Grp No.) indicating which floristic group the site occurred in according to the PATN analysis. A zero in the Patn Grp No column indicates sites that were masked out of the floristic analysis.
Biological Survey Number (Svy No.)
4 = SE Coast Survey
16 = Murray Mallee Survey
29 = South East Survey (1991 data only).

| Svy No. | Patn_site | Patch id | Siteid | Patn Grp No. |
|---|---|---|---|---|
| 4 | *AL0101 | 45 | AL00101 | 10 |
| 4 | *AL0102 | 46 | AL00102 | 19 |
| 4 | *AL0201 | 100 | AL00201 | 26 |
| 4 | *AL0202 | 101 | AL00202 | 26 |
| 4 | *AL0301 | 102 | AL00301 | 26 |
| 4 | *AL0302 | 103 | AL00302 | 26 |
| 4 | *AL0401 | 104 | AL00401 | 26 |
| 4 | *AL0501 | 105 | AL00501 | 10 |
| 4 | *AL0601 | 106 | AL00601 | 26 |
| 4 | *AL0701 | 107 | AL00701 | 10 |
| 4 | *AL0801 | 108 | AL00801 | 10 |
| 4 | *AL0901 | 109 | AL00901 | 21 |
| 4 | *AL1001 | 110 | AL01001 | 26 |
| 4 | *AL1101 | 111 | AL01101 | 26 |
| 4 | *BE0101 | 1 | BE00101 | 26 |
| 4 | *BE0102 | 2 | BE00102 | 26 |
| 4 | *BE0201 | 3 | BE00201 | 26 |
| 4 | *BE0301 | 4 | BE00301 | 26 |
| 4 | *BE0401 | 5 | BE00401 | 26 |
| 4 | *BE0501 | 6 | BE00501 | 21 |
| 4 | *BE0502 | 7 | BE00502 | 26 |
| 4 | *BE0503 | 8 | BE00503 | 26 |
| 4 | *BE0601 | 9 | BE00601 | 26 |
| 4 | *BE0602 | 10 | BE00602 | 26 |
| 4 | *BE0701 | 179 | BE00701 | 26 |
| 4 | *BE0801 | 180 | BE00801 | 26 |
| 4 | *BE0901 | 181 | BE00901 | 26 |
| 4 | *BE1001 | 182 | BE01001 | 21 |
| 4 | *BK0101 | 140 | BK00101 | 29 |
| 4 | *BK0102 | 141 | BK00102 | 0 |
| 4 | *BK0201 | 142 | BK00201 | 0 |
| 4 | *BK0301 | 143 | BK00301 | 0 |
| 4 | *BK0401 | 144 | BK00401 | 26 |
| 4 | *BK0501 | 145 | BK00501 | 26 |
| 4 | *BK0601 | 146 | BK00601 | 26 |
| 4 | *BK0701 | 147 | BK00701 | 29 |
| 4 | *BK0702 | 148 | BK00702 | 26 |
| 4 | *BK0703 | 149 | BK00703 | 5 |
| 4 | *BK0801 | 150 | BK00801 | 29 |
| 4 | *BK0901 | 151 | BK00901 | 0 |
| 4 | *CA0101 | 70 | CA00101 | 26 |
| 4 | *CA0102 | 71 | CA00102 | 21 |
| 4 | *CA0103 | 72 | CA00103 | 21 |
| 4 | *CA0104 | 73 | CA00104 | 21 |
| 4 | *CA0201 | 74 | CA00201 | 26 |
| 4 | *CA0202 | 7597 | CA00202 | 26 |
| 4 | *CA0301 | 75 | CA00301 | 26 |
| 4 | *CA0302 | 76 | CA00302 | 27 |
| 4 | *CA0401 | 77 | CA00401 | 26 |
| 4 | *CA0402 | 78 | CA00402 | 26 |
| 4 | *CA0501 | 79 | CA00501 | 21 |
| 4 | *CA0502 | 80 | CA00502 | 21 |
| 4 | *CA0503 | 81 | CA00503 | 26 |
| 4 | *CI0101 | 118 | CI00101 | 0 |
| 4 | *CI0201 | 119 | CI00201 | 26 |
| 4 | *CI0301 | 120 | CI00301 | 26 |
| 4 | *CI0401 | 121 | CI00401 | 26 |
| 4 | *CI0501 | 122 | CI00501 | 26 |
| 4 | *CI0601 | 123 | CI00601 | 28 |
| 4 | *CI0701 | 124 | CI00701 | 28 |
| 4 | *CI0801 | 125 | CI00801 | 28 |
| 4 | *CI0901 | 126 | CI00901 | 28 |
| 4 | *CJ0101 | 169 | CJ00101 | 26 |
| 4 | *CJ0102 | 170 | CJ00102 | 26 |
| 4 | *CJ0103 | 171 | CJ00103 | 26 |
| 4 | *CT0101 | 163 | CT00101 | 3 |
| 4 | *CT0201 | 164 | CT00201 | 26 |
| 4 | *CT0202 | 165 | CT00202 | 26 |
| 4 | *CT0301 | 166 | CT00301 | 21 |
| 4 | *CT0401 | 167 | CT00401 | 26 |
| 4 | *CT0402 | 168 | CT00402 | 21 |
| 4 | *KI0101 | 173 | KI00101 | 26 |
| 4 | *LB0101 | 32 | LB00101 | 26 |
| 4 | *LB0102 | 35 | LB00102 | 26 |
| 4 | *LB0103 | 82 | LB00103 | 26 |
| 4 | *LB0201 | 36 | LB00201 | 21 |
| 4 | *LB0202 | 37 | LB00202 | 19 |
| 4 | *LB0203 | 38 | LB00203 | 26 |
| 4 | *LB0204 | 39 | LB00204 | 10 |
| 4 | *LB0301 | 40 | LB00301 | 20 |
| 4 | *LB0302 | 41 | LB00302 | 21 |
| 4 | *LB0303 | 42 | LB00303 | 21 |
| 4 | *LB0304 | 43 | LB00304 | 21 |
| 4 | *LB0401 | 44 | LB00401 | 10 |

| Svy No. | Patn_site | Patch id | Siteid | Patn Grp No. |
|---|---|---|---|---|
| 4 | *LB0501 | 83 | LB00501 | 19 |
| 4 | *LB0502 | 84 | LB00502 | 10 |
| 4 | *LB0503 | 85 | LB00503 | 10 |
| 4 | *LB0504 | 86 | LB00504 | 10 |
| 4 | *LB0601 | 87 | LB00601 | 19 |
| 4 | *LB0701 | 88 | LB00701 | 26 |
| 4 | *LE0101 | 11 | LE00101 | 19 |
| 4 | *LE0201 | 12 | LE00201 | 21 |
| 4 | *LE0202 | 13 | LE00202 | 26 |
| 4 | *LE0301 | 14 | LE00301 | 21 |
| 4 | *LE0302 | 15 | LE00302 | 21 |
| 4 | *LE0303 | 16 | LE00303 | 21 |
| 4 | *LE0304 | 17 | LE00304 | 21 |
| 4 | *LE0401 | 18 | LE00401 | 10 |
| 4 | *LE0402 | 19 | LE00402 | 21 |
| 4 | *LE0403 | 20 | LE00403 | 21 |
| 4 | *LE0501 | 21 | LE00501 | 26 |
| 4 | *LE0601 | 22 | LE00601 | 26 |
| 4 | *LE0701 | 183 | LE00701 | 19 |
| 4 | *LE0702 | 184 | LE00702 | 21 |
| 4 | *LG0101 | 23 | LG00101 | 26 |
| 4 | *LG0102 | 24 | LG00102 | 21 |
| 4 | *LG0201 | 25 | LG00201 | 26 |
| 4 | *LG0301 | 26 | LG00301 | 26 |
| 4 | *LG0302 | 27 | LG00302 | 21 |
| 4 | *LG0303 | 28 | LG00303 | 26 |
| 4 | *LG0401 | 29 | LG00401 | 23 |
| 4 | *LG0402 | 30 | LG00402 | 21 |
| 4 | *LG0403 | 31 | LG00403 | 26 |
| 4 | *LI0101 | 127 | LI00101 | 28 |
| 4 | *LI0201 | 128 | LI00201 | 28 |
| 4 | *LI0301 | 129 | LI00301 | 28 |
| 4 | *LI0401 | 130 | LI00401 | 28 |
| 4 | *LI0501 | 131 | LI00501 | 0 |
| 4 | *MF0101 | 117 | MF00101 | 0 |
| 4 | *MU0101 | 33 | MU00101 | 19 |
| 4 | *MU0102 | 34 | MU00102 | 21 |
| 4 | *NE0101 | 47 | NE00101 | 10 |
| 4 | *NE0201 | 49 | NE00201 | 19 |
| 4 | *NE0202 | 48 | NE00202 | 20 |
| 4 | *NE0301 | 50 | NE00301 | 26 |
| 4 | *NE0302 | 51 | NE00302 | 21 |
| 4 | *NE0303 | 52 | NE00303 | 26 |
| 4 | *NE0401 | 89 | NE00401 | 26 |
| 4 | *NE0402 | 90 | NE00402 | 26 |
| 4 | *NE0403 | 91 | NE00403 | 26 |
| 4 | *NE0501 | 92 | NE00501 | 0 |
| 4 | *NE0601 | 93 | NE00601 | 10 |
| 4 | *NE0602 | 94 | NE00602 | 10 |
| 4 | *NE0603 | 95 | NE00603 | 19 |
| 4 | *NE0604 | 96 | NE00604 | 19 |
| 4 | *NE0701 | 97 | NE00701 | 10 |
| 4 | *NE0801 | 98 | NE00801 | 10 |
| 4 | *NE0901 | 99 | NE00901 | 19 |
| 4 | *PM0101 | 56 | PM00101 | 26 |
| 4 | *PM0102 | 57 | PM00102 | 26 |

| Svy No. | Patn_site | Patch id | Siteid | Patn Grp No. |
|---|---|---|---|---|
| 4 | *PM0103 | 58 | PM00103 | 26 |
| 4 | *PM0201 | 59 | PM00201 | 21 |
| 4 | *PM0202 | 60 | PM00202 | 21 |
| 4 | *PM0301 | 61 | PM00301 | 21 |
| 4 | *PM0302 | 62 | PM00302 | 23 |
| 4 | *PM0303 | 63 | PM00303 | 0 |
| 4 | *PM0304 | 64 | PM00304 | 0 |
| 4 | *PM0305 | 65 | PM00305 | 19 |
| 4 | *PM0401 | 66 | PM00401 | 10 |
| 4 | *PM0402 | 67 | PM00402 | 24 |
| 4 | *PM0501 | 68 | PM00501 | 10 |
| 4 | *PM0502 | 69 | PM00502 | 19 |
| 4 | *RB0101 | 112 | RB00101 | 0 |
| 4 | *RB0201 | 113 | RB00201 | 29 |
| 4 | *RB0301 | 114 | RB00301 | 0 |
| 4 | *RB0401 | 115 | RB00401 | 0 |
| 4 | *RB0501 | 116 | RB00501 | 0 |
| 4 | *RI0101 | 132 | RI00101 | 29 |
| 4 | *RI0201 | 133 | RI00201 | 28 |
| 4 | *RI0301 | 134 | RI00301 | 28 |
| 4 | *ST0101 | 138 | ST00101 | 28 |
| 4 | *ST0201 | 139 | ST00201 | 28 |
| 4 | *TB0101 | 135 | TB00101 | 28 |
| 4 | *TB0201 | 136 | TB00201 | 29 |
| 4 | *TB0301 | 137 | TB00301 | 28 |
| 4 | *TT0101 | 152 | TT00101 | 21 |
| 4 | *TT0201 | 153 | TT00201 | 21 |
| 4 | *TT0301 | 154 | TT00301 | 26 |
| 4 | *TT0401 | 155 | TT00401 | 3 |
| 4 | *TT0402 | 156 | TT00402 | 3 |
| 4 | *TT0501 | 157 | TT00501 | 27 |
| 4 | *TT0502 | 158 | TT00502 | 27 |
| 4 | *TT0601 | 159 | TT00601 | 21 |
| 4 | *TT0602 | 160 | TT00602 | 26 |
| 4 | *TT0603 | 161 | TT00603 | 23 |
| 4 | *TT0701 | 162 | TT00701 | 3 |
| 4 | *WO0101 | 172 | WO00101 | 10 |
| 4 | *WO0201 | 175 | WO00201 | 3 |
| 4 | *WO0202 | 177 | WO00202 | 10 |
| 4 | *WO0301 | 176 | WO00301 | 26 |
| 4 | *WO0401 | 178 | WO00401 | 19 |
| 16 | 0AY0506 | 1671 | BV01401 | 0 |
| 16 | 0LSF101 | 1972 | CA01501 | 0 |
| 16 | 10AR0530 | 1654 | MR01301 | 1 |
| 16 | 10AY0502 | 1667 | BV00201 | 2 |
| 16 | 10AY0503 | 1668 | BV01201 | 2 |
| 16 | 10AY0539 | 1673 | BV01601 | 2 |
| 16 | 10AY0540 | 1674 | BV01701 | 2 |
| 16 | 10KKD103 | 1956 | CN00201 | 1 |
| 16 | 10SH0301 | 2225 | MR02201 | 2 |
| 16 | 11AY0402 | 1665 | BV01001 | 2 |
| 16 | 11PED101 | 2143 | CA00101 | 1 |
| 16 | 13LSE301 | 1970 | TT00301 | 0 |
| 16 | 14702611 | 1608 | NG03401 | 1 |
| 16 | 14702612 | 1609 | NG03501 | 16 |
| 16 | 14702613 | 1610 | NG03601 | 16 |

| Svy No. | Patn_site | Patch id | Siteid | Patn Grp No. |
|---|---|---|---|---|
| 16 | 14702614 | 1611 | NG03701 | 1 |
| 16 | 14AY0401 | 1664 | BV00901 | 4 |
| 16 | 14AY0541 | 1675 | BV01801 | 4 |
| 16 | 14CAF201 | 1785 | CA00801 | 4 |
| 16 | 14CAF301 | 1787 | CA00901 | 4 |
| 16 | 14CAF302 | 1788 | CA01001 | 4 |
| 16 | 14CAF502 | 1792 | CA01201 | 4 |
| 16 | 14CAF603 | 1796 | CA00301 | 4 |
| 16 | 14DY0401 | 1866 | QB00301 | 4 |
| 16 | 14DY0402 | 1867 | QB00801 | 4 |
| 16 | 14DY0404 | 1869 | QB01001 | 16 |
| 16 | 14FK0101 | 1891 | NG00801 | 4 |
| 16 | 14FK0201 | 1893 | NG03201 | 1 |
| 16 | 14FK0202 | 1894 | NG03301 | 1 |
| 16 | 14OH0101 | 2074 | NG01201 | 4 |
| 16 | 14OH0505 | 2083 | NG01801 | 4 |
| 16 | 14OH0506 | 2084 | NG01901 | 4 |
| 16 | 14OH0507 | 2085 | NG02001 | 1 |
| 16 | 14OH0516 | 2094 | NG02601 | 4 |
| 16 | 14OH0537 | 2099 | NG00401 | 1 |
| 16 | 14QE0901 | 2190 | SS01701 | 4 |
| 16 | 14SH0101 | 2220 | MR01701 | 4 |
| 16 | 15682612 | 1594 | CA03501 | 1 |
| 16 | 15AR0519 | 1643 | MR00501 | 1 |
| 16 | 15AR0526 | 1650 | MR00301 | 1 |
| 16 | 15CAD101 | 1784 | CA03301 | 1 |
| 16 | 15CEE101 | 1801 | TT00901 | 1 |
| 16 | 15CHC502 | 1812 | BB00201 | 3 |
| 16 | 15CRD202 | 1851 | CN01601 | 1 |
| 16 | 15CRD401 | 1855 | CN00601 | 1 |
| 16 | 15JSC201 | 1926 | YU00301 | 1 |
| 16 | 15KKC201 | 1952 | CN01201 | 1 |
| 16 | 15LND401 | 1964 | CA00701 | 1 |
| 16 | 15LND502 | 1967 | CA03201 | 1 |
| 16 | 15LSF104 | 1975 | CA01701 | 1 |
| 16 | 15SEB202 | 2205 | CN03301 | 3 |
| 16 | 15SEC201 | 2209 | CN02401 | 1 |
| 16 | 16CRC101 | 1845 | CN00901 | 0 |
| 16 | 17OH0510 | 2088 | NG02101 | 0 |
| 16 | 18682641 | 1595 | YU01801 | 3 |
| 16 | 18682642 | 1596 | YU01901 | 3 |
| 16 | 18AR0101 | 1636 | CB00201 | 3 |
| 16 | 18AR0201 | 1637 | CB00101 | 3 |
| 16 | 18AR0302 | 1640 | CB00501 | 3 |
| 16 | 18AR0521 | 1645 | MR00101 | 3 |
| 16 | 18AR0523 | 1647 | MR00801 | 3 |
| 16 | 18AR0529 | 1653 | MR00201 | 3 |
| 16 | 18BR0103 | 1709 | NA00601 | 3 |
| 16 | 18BR0201 | 1710 | NA00701 | 3 |
| 16 | 18BR0401 | 1713 | NA00401 | 3 |
| 16 | 18BR0501 | 1714 | NA00501 | 3 |
| 16 | 18BY0401 | 1764 | MG01301 | 3 |
| 16 | 18BY0501 | 1765 | MG00101 | 3 |
| 16 | 18BY0601 | 1767 | MG01501 | 3 |
| 16 | 18BY0602 | 1768 | MG01601 | 3 |
| 16 | 18BYA101 | 1769 | MG00501 | 3 |

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|---|---|---|---|---|
| 16 | 18BYA102 | 1770 | MG00701 | 3 |
| 16 | 18BYA201 | 1772 | MG00801 | 3 |
| 16 | 18CAF401 | 1789 | CA00401 | 0 |
| 16 | 18CED101 | 1797 | CB00301 | 3 |
| 16 | 18CHC503 | 1813 | BB00801 | 3 |
| 16 | 18CHC601 | 1815 | BB00901 | 5 |
| 16 | 18CHC603 | 1817 | BB01101 | 3 |
| 16 | 18CRC102 | 1846 | CN03101 | 3 |
| 16 | 18FDA101 | 1889 | CN03501 | 3 |
| 16 | 18GEA401 | 1901 | MF00601 | 3 |
| 16 | 18GEA601 | 1904 | MF00201 | 3 |
| 16 | 18GEA701 | 1905 | MG00601 | 3 |
| 16 | 18JSC101 | 1924 | YU01401 | 3 |
| 16 | 18JSC202 | 1927 | YU00401 | 3 |
| 16 | 18KKD101 | 1954 | CN00101 | 3 |
| 16 | 18LSE201 | 1969 | TT00201 | 3 |
| 16 | 18LSE302 | 1971 | TT00801 | 3 |
| 16 | 18OH0534 | 2096 | NG02801 | 3 |
| 16 | 18RSD401 | 2197 | TT01501 | 3 |
| 16 | 18SEC102 | 2208 | CN02301 | 3 |
| 16 | 18SEC202 | 2210 | CN00501 | 3 |
| 16 | 19AR0202 | 1638 | CB00301 | 4 |
| 16 | 19AR0303 | 1641 | CB00601 | 4 |
| 16 | 19AR0518 | 1642 | MR00401 | 4 |
| 16 | 19AR0520 | 1644 | MR00601 | 4 |
| 16 | 19AR0522 | 1646 | MR00701 | 4 |
| 16 | 19AR0524 | 1648 | MR00901 | 3 |
| 16 | 19AR0525 | 1649 | MR01001 | 4 |
| 16 | 19AR0527 | 1651 | MR01101 | 4 |
| 16 | 19AR0528 | 1652 | MR01201 | 4 |
| 16 | 19AR0531 | 1655 | MR01401 | 4 |
| 16 | 19AR0532 | 1656 | MR01501 | 4 |
| 16 | 19AR0533 | 1657 | MR01601 | 4 |
| 16 | 19AY0501 | 1666 | BV01101 | 4 |
| 16 | 19AY0504 | 1669 | BV01301 | 4 |
| 16 | 19AY0505 | 1670 | BV00301 | 4 |
| 16 | 19AY0538 | 1672 | BV01501 | 4 |
| 16 | 19BY0201 | 1760 | MG01001 | 4 |
| 16 | 19BY0301 | 1761 | MG01101 | 4 |
| 16 | 19BY0502 | 1766 | MG01401 | 4 |
| 16 | 19BYB101 | 1775 | MG01701 | 4 |
| 16 | 19BYB103 | 1777 | MG01801 | 4 |
| 16 | 19BYB201 | 1778 | MG01901 | 4 |
| 16 | 19BYB202 | 1779 | MG02001 | 4 |
| 16 | 19BYB301 | 1780 | MG02101 | 4 |
| 16 | 19BYB302 | 1781 | MG02201 | 4 |
| 16 | 19BYB303 | 1782 | MG02301 | 4 |
| 16 | 19BYB401 | 1783 | MG02401 | 4 |
| 16 | 19CAF402 | 1790 | CA00501 | 4 |
| 16 | 19CAF501 | 1791 | CA01101 | 4 |
| 16 | 19CAF503 | 1793 | CA01301 | 4 |
| 16 | 19CAF602 | 1795 | CA01401 | 4 |
| 16 | 19CED201 | 1798 | CB00401 | 4 |
| 16 | 19CED202 | 1799 | CB00501 | 4 |
| 16 | 19CEE102 | 1802 | TT00401 | 4 |
| 16 | 19CG0201 | 1805 | YU01101 | 4 |

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|---|---|---|---|---|
| 16 | 19CHC501 | 1811 | BB00701 | 3 |
| 16 | 19CHC504 | 1814 | BB00101 | 3 |
| 16 | 19CHC602 | 1816 | BB01001 | 4 |
| 16 | 19CHC604 | 1818 | BB01201 | 4 |
| 16 | 19CHC605 | 1819 | BB00301 | 5 |
| 16 | 19CHD101 | 1820 | BB01301 | 5 |
| 16 | 19CRD101 | 1847 | CN00301 | 4 |
| 16 | 19CRD103 | 1849 | CN01401 | 4 |
| 16 | 19CRD201 | 1850 | CN01501 | 3 |
| 16 | 19CRD203 | 1852 | CN01701 | 4 |
| 16 | 19CRD301 | 1853 | CN01801 | 4 |
| 16 | 19CRD302 | 1854 | CN01901 | 4 |
| 16 | 19CRD502 | 1857 | CN02001 | 4 |
| 16 | 19CRE101 | 1858 | TT00601 | 3 |
| 16 | 19CRE102 | 1859 | TT00101 | 4 |
| 16 | 19DY0403 | 1868 | QB00901 | 4 |
| 16 | 19FDB201 | 1890 | CN03601 | 4 |
| 16 | 19FK0102 | 1892 | NG03101 | 4 |
| 16 | 19GEA101 | 1898 | MF00401 | 3 |
| 16 | 19GEA301 | 1900 | MF00501 | 3 |
| 16 | 19GEA501 | 1902 | MF00101 | 3 |
| 16 | 19GEA502 | 1903 | MF00701 | 4 |
| 16 | 19JSB401 | 1923 | YU01301 | 4 |
| 16 | 19JSC102 | 1925 | YU01501 | 4 |
| 16 | 19JSC301 | 1928 | YU01601 | 4 |
| 16 | 19JSC302 | 1929 | YU01701 | 3 |
| 16 | 19KKC202 | 1953 | CN01101 | 4 |
| 16 | 19LND101 | 1958 | CA02401 | 4 |
| 16 | 19LND102 | 1959 | CA02501 | 3 |
| 16 | 19LND201 | 1960 | CA02601 | 4 |
| 16 | 19LND301 | 1962 | CA02801 | 4 |
| 16 | 19LND402 | 1965 | CA03001 | 4 |
| 16 | 19LND501 | 1966 | CA03101 | 3 |
| 16 | 19LSF102 | 1973 | CA01601 | 4 |
| 16 | 19LSF103 | 1974 | CA00601 | 3 |
| 16 | 19LSF201 | 1976 | CA01801 | 4 |
| 16 | 19LSF202 | 1977 | CA01901 | 4 |
| 16 | 19LSF301 | 1978 | CA02001 | 4 |
| 16 | 19LSF302 | 1979 | CA02101 | 4 |
| 16 | 19LSF303 | 1980 | CA02201 | 4 |
| 16 | 19MA0101 | 1981 | NG01001 | 4 |
| 16 | 19MC0101 | 1983 | NG03401 | 4 |
| 16 | 19MC0102 | 1984 | SD00101 | 4 |
| 16 | 19OH0102 | 2075 | NG01301 | 4 |
| 16 | 19OH0201 | 2076 | NG01401 | 4 |
| 16 | 19OH0301 | 2077 | OH0301 | 4 |
| 16 | 19OH0302 | 2078 | NG00901 | 4 |
| 16 | 19OH0502 | 2080 | NG01601 | 4 |
| 16 | 19OH0503 | 2081 | NG00301 | 4 |
| 16 | 19OH0504 | 2082 | NG01701 | 4 |
| 16 | 19OH0508 | 2086 | NG00701 | 4 |
| 16 | 19OH0509 | 2087 | NG00601 | 4 |
| 16 | 19OH0511 | 2089 | NG02201 | 4 |
| 16 | 19OH0512 | 2090 | OH00512 | 4 |
| 16 | 19OH0513 | 2091 | NG02301 | 4 |
| 16 | 19OH0514 | 2092 | NG02401 | 4 |

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|---|---|---|---|---|
| 16 | 19OH0517 | 2095 | NG02701 | 4 |
| 16 | 19OH0535 | 2097 | NG02901 | 4 |
| 16 | 19OH0536 | 2098 | NG03001 | 4 |
| 16 | 19PED102 | 2144 | CA00101 | 4 |
| 16 | 19PED103 | 2145 | CA00201 | 4 |
| 16 | 19RSD101 | 2191 | TT01001 | 4 |
| 16 | 19RSD201 | 2192 | TT01101 | 4 |
| 16 | 19RSD203 | 2194 | TT01201 | 4 |
| 16 | 19RSD301 | 2195 | TT01301 | 4 |
| 16 | 19RSD302 | 2196 | TT01401 | 4 |
| 16 | 19SEB101 | 2204 | CN03201 | 4 |
| 16 | 19SEB301 | 2206 | CN03401 | 4 |
| 16 | 19SEC101 | 2207 | CN02201 | 4 |
| 16 | 19SEC601 | 2214 | CN02701 | 3 |
| 16 | 19SEC602 | 2294 | CN02801 | 3 |
| 16 | 19SEC801 | 2216 | CN02901 | 4 |
| 16 | 19SEC802 | 2217 | CN03001 | 3 |
| 16 | 19SH0102 | 2221 | MR01801 | 4 |
| 16 | 19SH0201 | 2223 | MR02001 | 4 |
| 16 | 19SH0202 | 2224 | MR02101 | 4 |
| 16 | 19SH0302 | 2226 | MR02301 | 4 |
| 16 | 20702615 | 1612 | NG00101 | 11 |
| 16 | 20OH0501 | 2079 | NG00201 | 11 |
| 16 | 21682611 | 1593 | CA03601 | 6 |
| 16 | 21692642 | 1607 | CA03801 | 6 |
| 16 | 21BR0301 | 1711 | NA00801 | 3 |
| 16 | 21BR0302 | 1712 | NA00301 | 3 |
| 16 | 21BY0303 | 1763 | YU00501 | 6 |
| 16 | 21BYA103 | 1771 | MG00301 | 6 |
| 16 | 21BYA202 | 1773 | MG00901 | 0 |
| 16 | 21CAF202 | 1786 | CA00801 | 6 |
| 16 | 21CHD201 | 1821 | BB01401 | 6 |
| 16 | 21CRD501 | 1856 | CN01001 | 6 |
| 16 | 21LSE101 | 1968 | TT00701 | 6 |
| 16 | 21SEC301 | 2211 | CN02501 | 5 |
| 16 | 21SEC401 | 2212 | CN00701 | 5 |
| 16 | 21SEC501 | 2213 | CN02601 | 6 |
| 16 | 21SED101 | 2218 | CN00401 | 5 |
| 16 | 22BR0101 | 1707 | NA00201 | 9 |
| 16 | 22CGD401 | 1807 | YU00201 | 9 |
| 16 | 22SEC701 | 2215 | CN00801 | 9 |
| 16 | 23AR0301 | 1639 | CB00401 | 0 |
| 16 | 23GEA201 | 1899 | MF00301 | 0 |
| 16 | 23MA0102 | 1982 | NG01101 | 0 |
| 16 | 24BR0102 | 1708 | NA00101 | 21 |
| 16 | 24RSD202 | 2193 | TT00501 | 22 |
| 16 | 25BY0302 | 1762 | MG01201 | 17 |
| 16 | 25BYA203 | 1774 | MG00401 | 21 |
| 16 | 25BYB102 | 1776 | MG00201 | 17 |
| 16 | 25CED301 | 1800 | CB00601 | 17 |
| 16 | 8CRD102 | 1848 | CN01301 | 1 |
| 16 | 8KKD102 | 1955 | CN01001 | 1 |
| 16 | 8LND202 | 1961 | CA02701 | 1 |
| 16 | 8LND302 | 1963 | CA02901 | 1 |
| 16 | 8OH0515 | 2093 | NG02501 | 1 |
| 16 | 8SED102 | 2219 | CN02101 | 1 |

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|---|---|---|---|---|
| 16 | 9692641 | 1606 | CA03701 | 1 |
| 16 | 9CAF601 | 1794 | CA00201 | 0 |
| 29 | BEA0301 | 7253 | BEA0301 | 0 |
| 29 | BEA0302 | 7254 | BEA0302 | 10 |
| 29 | BEA0401 | 7255 | BEA0401 | 3 |
| 29 | BEA0501 | 7256 | BEA0501 | 26 |
| 29 | BEA0502 | 7257 | BEA0502 | 3 |
| 29 | BEA0601 | 7258 | BEA0601 | 0 |
| 29 | BEA0701 | 7259 | BEA0701 | 26 |
| 29 | BEA0901 | 7260 | BEA0901 | 26 |
| 29 | BEA0902 | 7261 | BEA0902 | 26 |
| 29 | BEN0301 | 7262 | BEN0301 | 26 |
| 29 | BEN0302 | 7263 | BEN0302 | 0 |
| 29 | BEN0303 | 7264 | BEN0303 | 26 |
| 29 | BEN0401 | 7265 | BEN0401 | 26 |
| 29 | BEN0402 | 7266 | BEN0402 | 10 |
| 29 | BOO0101 | 7267 | BOO0101 | 12 |
| 29 | BOO0102 | 7268 | BOO0102 | 17 |
| 29 | BOO0103 | 7269 | BOO0103 | 7 |
| 29 | BOO0501 | 7270 | BOO0501 | 7 |
| 29 | BOO0601 | 7271 | BOO0601 | 17 |
| 29 | BOO0701 | 7272 | BOO0701 | 7 |
| 29 | BOO0702 | 7273 | BOO0702 | 7 |
| 29 | BOO1001 | 7274 | BOO1001 | 17 |
| 29 | BUF0301 | 7275 | BUF0301 | 26 |
| 29 | BUF0401 | 7276 | BUF0401 | 26 |
| 29 | BUF0601 | 7277 | BUF0601 | 26 |
| 29 | BUF0603 | 7278 | BUF0603 | 26 |
| 29 | BUF0701 | 7279 | BUF0701 | 19 |
| 29 | CAN0102 | 7280 | CAN0102 | 5 |
| 29 | CAN0103 | 7281 | CAN0103 | 17 |
| 29 | CAW0201 | 7282 | CAW0201 | 4 |
| 29 | CAW0202 | 7283 | CAW0202 | 1 |
| 29 | CAW0301 | 7284 | CAW0301 | 1 |
| 29 | CAW0601 | 7285 | CAW0601 | 2 |
| 29 | CAW0602 | 7286 | CAW0602 | 1 |
| 29 | CON0201 | 7287 | CON0201 | 4 |
| 29 | CON0301 | 7288 | CON0301 | 12 |
| 29 | CON0401 | 7289 | CON0401 | 12 |
| 29 | CON0402 | 7290 | CON0402 | 7 |
| 29 | CON0501 | 7291 | CON0501 | 17 |
| 29 | CON0502 | 7292 | CON0502 | 17 |
| 29 | CON0701 | 7293 | CON0701 | 12 |
| 29 | CON0702 | 7294 | CON0702 | 10 |
| 29 | CON0901 | 7295 | CON0901 | 4 |
| 29 | CON1001 | 7296 | CON1001 | 10 |
| 29 | CON1101 | 7297 | CON1101 | 7 |
| 29 | DID0201 | 7298 | DID0201 | 3 |
| 29 | DID0501 | 7299 | DID0501 | 17 |
| 29 | DID0502 | 7300 | DID0502 | 7 |
| 29 | DID0601 | 7301 | DID0601 | 4 |
| 29 | DID0602 | 7302 | DID0602 | 17 |
| 29 | DID0701 | 7303 | DID0701 | 3 |
| 29 | DID0801 | 7304 | DID0801 | 3 |
| 29 | DID0802 | 7305 | DID0802 | 7 |
| 29 | DID0901 | 7306 | DID0901 | 7 |

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|---|---|---|---|---|
| 29 | DID1001 | 7307 | DID1001 | 3 |
| 29 | DID1002 | 7308 | DID1002 | 4 |
| 29 | DID1102 | 7309 | DID1102 | 3 |
| 29 | DID1103 | 7310 | DID1103 | 4 |
| 29 | DUF0101 | 7311 | DUF0101 | 3 |
| 29 | DUF0201 | 7312 | DUF0201 | 22 |
| 29 | DUF0301 | 7313 | DUF0301 | 7 |
| 29 | DUF0302 | 7314 | DUF0302 | 3 |
| 29 | DUF0401 | 7315 | DUF0401 | 7 |
| 29 | DUF0402 | 7316 | DUF0402 | 3 |
| 29 | DUF0501 | 7317 | DUF0501 | 26 |
| 29 | DUF0502 | 7318 | DUF0502 | 26 |
| 29 | DUF0601 | 7319 | DUF0601 | 7 |
| 29 | DUF0901 | 7320 | DUF0901 | 4 |
| 29 | DUF0902 | 7321 | DUF0902 | 3 |
| 29 | FRA0101 | 7322 | FRA0101 | 12 |
| 29 | FRA0102 | 7323 | FRA0102 | 12 |
| 29 | FRA0103 | 7324 | FRA0103 | 6 |
| 29 | FRA0301 | 7325 | FRA0301 | 6 |
| 29 | FRA0302 | 7326 | FRA0302 | 6 |
| 29 | FRA0303 | 7327 | FRA0303 | 12 |
| 29 | FRA0501 | 7328 | FRA0501 | 4 |
| 29 | FRA0901 | 7329 | FRA0901 | 12 |
| 29 | GAM0101 | 7330 | GAM0101 | 10 |
| 29 | GAM0601 | 7331 | GAM0601 | 12 |
| 29 | GAM0701 | 7332 | GAM0701 | 10 |
| 29 | GAM0702 | 7333 | GAM0702 | 10 |
| 29 | GAM0801 | 7334 | GAM0801 | 10 |
| 29 | GAM0901 | 7335 | GAM0901 | 12 |
| 29 | GAM0902 | 7336 | GAM0902 | 10 |
| 29 | GAM1001 | 7337 | GAM1001 | 12 |
| 29 | GAM1002 | 7338 | GAM1002 | 10 |
| 29 | GAM1101 | 7339 | GAM1101 | 10 |
| 29 | GAM1301 | 7340 | GAM1301 | 12 |
| 29 | GAM1601 | 7341 | GAM1601 | 26 |
| 29 | GAM1701 | 7342 | GAM1701 | 24 |
| 29 | GAM1A12 | 7343 | GAM1A12 | 10 |
| 29 | GYP0101 | 7344 | GYP0101 | 17 |
| 29 | GYP0801 | 7345 | GYP0801 | 7 |
| 29 | GYP0802 | 7346 | GYP0802 | 3 |
| 29 | GYP0803 | 7347 | GYP0803 | 17 |
| 29 | HAT0301 | 7348 | HAT0301 | 7 |
| 29 | HAT0302 | 7349 | HAT0302 | 10 |
| 29 | HAT0303 | 7350 | HAT0303 | 10 |
| 29 | HAT0601 | 7351 | HAT0601 | 3 |
| 29 | HAT0602 | 7352 | HAT0602 | 10 |
| 29 | HAT0701 | 7353 | HAT0701 | 10 |
| 29 | HAT0801 | 7354 | HAT0801 | 26 |
| 29 | HAT0901 | 7355 | HAT0901 | 26 |
| 29 | HYN0101 | 7356 | HYN0101 | 12 |
| 29 | HYN0201 | 7357 | HYN0201 | 18 |
| 29 | HYN0301 | 7358 | HYN0301 | 12 |
| 29 | HYN0302 | 7359 | HYN0302 | 6 |
| 29 | HYN0401 | 7360 | HYN0401 | 12 |
| 29 | HYN0501 | 7361 | HYN0501 | 12 |
| 29 | HYN0601 | 7362 | HYN0601 | 18 |

| Svy No. | Patn_site | Patch id | Siteid | Patn Grp No. |
|---|---|---|---|---|
| 29 | HYN0701 | 7363 | HYN0701 | 12 |
| 29 | HYN0801 | 7364 | HYN0801 | 12 |
| 29 | HYN1101 | 7365 | HYN1101 | 6 |
| 29 | HYN1102 | 7366 | HYN1102 | 12 |
| 29 | KAL0201 | 7367 | KAL0201 | 12 |
| 29 | KAL0202 | 7368 | KAL0202 | 12 |
| 29 | KAL0401 | 7369 | KAL0401 | 12 |
| 29 | KAL0501 | 7370 | KAL0501 | 10 |
| 29 | KAL0502 | 7371 | KAL0502 | 13 |
| 29 | KAL0601 | 7372 | KAL0601 | 12 |
| 29 | KAL0602 | 7373 | KAL0602 | 12 |
| 29 | KAL0701 | 7374 | KAL0701 | 12 |
| 29 | KAL0801 | 7375 | KAL0801 | 12 |
| 29 | KAL0802 | 7376 | KAL0802 | 13 |
| 29 | KAL1001 | 7377 | KAL1001 | 13 |
| 29 | KAL1002 | 7378 | KAL1002 | 12 |
| 29 | KEI0201 | 7379 | KEI0201 | 1 |
| 29 | KEI0202 | 7380 | KEI0202 | 4 |
| 29 | KEI0203 | 7381 | KEI0203 | 4 |
| 29 | KEI0401 | 7382 | KEI0401 | 8 |
| 29 | KEI0601 | 7383 | KEI0601 | 0 |
| 29 | KEI0602 | 7384 | KEI0602 | 1 |
| 29 | KEI0603 | 7385 | KEI0603 | 4 |
| 29 | KEI0604 | 7386 | KEI0604 | 4 |
| 29 | KEI0701 | 7387 | KEI0701 | 3 |
| 29 | KEI0702 | 7388 | KEI0702 | 4 |
| 29 | KEN0501 | 7389 | KEN0501 | 14 |
| 29 | KEN0502 | 7390 | KEN0502 | 14 |
| 29 | KEN0802 | 7391 | KEN0802 | 12 |
| 29 | KEN1301 | 7392 | KEN1301 | 7 |
| 29 | KEN1302 | 7393 | KEN1302 | 7 |
| 29 | KEN1701 | 7394 | KEN1701 | 0 |
| 29 | KEN1702 | 7395 | KEN1702 | 10 |
| 29 | KEN1703 | 7396 | KEN1703 | 14 |
| 29 | KEN1704 | 7397 | KEN1704 | 14 |
| 29 | KEP0101 | 7398 | KEP0101 | 5 |
| 29 | KEP0201 | 7399 | KEP0201 | 5 |
| 29 | KEP0501 | 7400 | KEP0501 | 7 |
| 29 | KEP0601 | 7401 | KEP0601 | 6 |
| 29 | KEP0602 | 7402 | KEP0602 | 12 |
| 29 | KEP0603 | 7403 | KEP0603 | 7 |
| 29 | KEP0701 | 7404 | KEP0701 | 12 |
| 29 | KEP0901 | 7405 | KEP0901 | 12 |
| 29 | KEP1001 | 7406 | KEP1001 | 12 |
| 29 | KEP1002 | 7407 | KEP1002 | 12 |
| 29 | KEP1101 | 7408 | KEP1101 | 6 |
| 29 | KEP1102 | 7409 | KEP1102 | 12 |
| 29 | KIN0101 | 7410 | KIN0101 | 26 |
| 29 | KIN0102 | 7411 | KIN0102 | 26 |
| 29 | KIN0103 | 7412 | KIN0103 | 26 |
| 29 | KIN0201 | 7413 | KIN0201 | 22 |
| 29 | KIN0301 | 7414 | KIN0301 | 7 |
| 29 | KIN0302 | 7415 | KIN0302 | 3 |
| 29 | KIN0401 | 7416 | KIN0401 | 7 |
| 29 | KIN0402 | 7417 | KIN0402 | 8 |
| 29 | KIN0501 | 7418 | KIN0501 | 17 |

| Svy No. | Patn_site | Patch id | Siteid | Patn Grp No. |
|---|---|---|---|---|
| 29 | KIN0502 | 7419 | KIN0502 | 17 |
| 29 | KIN0901 | 7420 | KIN0901 | 22 |
| 29 | KIN1101 | 7421 | KIN1101 | 14 |
| 29 | KIN1102 | 7422 | KIN1102 | 7 |
| 29 | KON0101 | 7423 | KON0101 | 12 |
| 29 | KON0201 | 7424 | KON0201 | 17 |
| 29 | KON0501 | 7425 | KON0501 | 7 |
| 29 | KON0701 | 7426 | KON0701 | 7 |
| 29 | KON0702 | 7427 | KON0702 | 10 |
| 29 | KON0801 | 7428 | KON0801 | 22 |
| 29 | KON0901 | 7429 | KON0901 | 7 |
| 29 | KON0902 | 7430 | KON0902 | 7 |
| 29 | KON1101 | 7431 | KON1101 | 3 |
| 29 | LAF0202 | 7432 | LAF0202 | 8 |
| 29 | LAF0401 | 7433 | LAF0401 | 4 |
| 29 | LAF0601 | 7434 | LAF0601 | 17 |
| 29 | LAF0602 | 7435 | LAF0602 | 1 |
| 29 | LAF0701 | 7436 | LAF0701 | 4 |
| 29 | LUC0101 | 7437 | LUC0101 | 22 |
| 29 | LUC0102 | 7438 | LUC0102 | 12 |
| 29 | LUC0103 | 7439 | LUC0103 | 7 |
| 29 | LUC0201 | 7440 | LUC0201 | 7 |
| 29 | LUC0202 | 7441 | LUC0202 | 4 |
| 29 | LUC0203 | 7442 | LUC0203 | 4 |
| 29 | LUC0204 | 7443 | LUC0204 | 4 |
| 29 | LUC0205 | 7444 | LUC0205 | 17 |
| 29 | LUC0301 | 7445 | LUC0301 | 4 |
| 29 | LUC0302 | 7446 | LUC0302 | 4 |
| 29 | LUC0303 | 7447 | LUC0303 | 7 |
| 29 | LUC0401 | 7448 | LUC0401 | 7 |
| 29 | LUC0402 | 7449 | LUC0402 | 17 |
| 29 | LUC0501 | 7450 | LUC0501 | 12 |
| 29 | LUC0502 | 7451 | LUC0502 | 4 |
| 29 | MAR0101 | 7452 | MAR0101 | 0 |
| 29 | MAR0102 | 7453 | MAR0102 | 5 |
| 29 | MAR0103 | 7454 | MAR0103 | 6 |
| 29 | MAR0201 | 7455 | MAR0201 | 4 |
| 29 | MAR0301 | 7456 | MAR0301 | 6 |
| 29 | MAR0302 | 7457 | MAR0302 | 6 |
| 29 | MAR0701 | 7458 | MAR0701 | 7 |
| 29 | MAR1001 | 7459 | MAR1001 | 12 |
| 29 | MAR1002 | 7460 | MAR1002 | 17 |
| 29 | MIL0201 | 7461 | MIL0201 | 12 |
| 29 | MIL0401 | 7462 | MIL0401 | 12 |
| 29 | MIL0501 | 7463 | MIL0501 | 12 |
| 29 | MIL0502 | 7464 | MIL0502 | 12 |
| 29 | MIN0501 | 7465 | MIN0501 | 7 |
| 29 | MIN0502 | 7466 | MIN0502 | 17 |
| 29 | MIN0503 | 7467 | MIN0503 | 12 |
| 29 | MIN0601 | 7468 | MIN0601 | 12 |
| 29 | MIN0602 | 7469 | MIN0602 | 22 |
| 29 | MIN0701 | 7470 | MIN0701 | 7 |
| 29 | MIN0803 | 7471 | MIN0803 | 17 |
| 29 | MIN1201 | 7472 | MIN1201 | 17 |
| 29 | MIN1202 | 7473 | MIN1202 | 0 |
| 29 | MIN1203 | 7474 | MIN1203 | 12 |

| Svy No. | Patn_site | Patch id | Siteid | Patn Grp No. |
|---|---|---|---|---|
| 29 | MIN1401 | 7475 | MIN1401 | 3 |
| 29 | MIN1402 | 7476 | MIN1402 | 7 |
| 29 | MON0302 | 7477 | MON0302 | 8 |
| 29 | MON0303 | 7478 | MON0303 | 12 |
| 29 | MON0601 | 7479 | MON0601 | 17 |
| 29 | MON0602 | 7480 | MON0602 | 12 |
| 29 | MON0603 | 7481 | MON0603 | 18 |
| 29 | MON0701 | 7482 | MON0701 | 12 |
| 29 | MON0801 | 7483 | MON0801 | 12 |
| 29 | MON0903 | 7484 | MON0903 | 12 |
| 29 | MON1001 | 7485 | MON1001 | 14 |
| 29 | MON1002 | 7486 | MON1002 | 12 |
| 29 | MON1003 | 7487 | MON1003 | 14 |
| 29 | MON1101 | 7488 | MON1101 | 14 |
| 29 | MON1102 | 7489 | MON1102 | 0 |
| 29 | NAN0101 | 7490 | NAN0101 | 12 |
| 29 | NAN0301 | 7491 | NAN0301 | 15 |
| 29 | NAN0302 | 7492 | NAN0302 | 12 |
| 29 | NAN0401 | 7493 | NAN0401 | 12 |
| 29 | NAN0402 | 7494 | NAN0402 | 17 |
| 29 | NAN0501 | 7495 | NAN0501 | 15 |
| 29 | NAN0502 | 7496 | NAN0502 | 15 |
| 29 | NAN0503 | 7497 | NAN0503 | 12 |
| 29 | NAN0601 | 7498 | NAN0601 | 12 |
| 29 | NAN0602 | 7499 | NAN0602 | 15 |
| 29 | NAR0201 | 7500 | NAR0201 | 6 |
| 29 | NAR0202 | 7501 | NAR0202 | 4 |
| 29 | NAR0203 | 7502 | NAR0203 | 12 |
| 29 | NAR0301 | 7503 | NAR0301 | 12 |
| 29 | NAR0701 | 7504 | NAR0701 | 12 |
| 29 | NAR0702 | 7505 | NAR0702 | 7 |
| 29 | NAR0801 | 7506 | NAR0801 | 5 |
| 29 | NAR0802 | 7507 | NAR0802 | 12 |
| 29 | PEN0101 | 7508 | PEN0101 | 12 |
| 29 | PEN0201 | 7509 | PEN0201 | 15 |
| 29 | PEN0301 | 7510 | PEN0301 | 18 |
| 29 | PEN0401 | 7511 | PEN0401 | 12 |
| 29 | PEN0502 | 7512 | PEN0502 | 12 |
| 29 | PEN0801 | 7513 | PEN0801 | 10 |
| 29 | PEN1001 | 7514 | PEN1001 | 12 |
| 29 | ROB0101 | 7515 | ROB0101 | 7 |
| 29 | ROB0201 | 7516 | ROB0201 | 10 |
| 29 | ROB0401 | 7517 | ROB0401 | 17 |
| 29 | ROB0402 | 7518 | ROB0402 | 10 |
| 29 | ROB0601 | 7519 | ROB0601 | 10 |
| 29 | ROB0801 | 7520 | ROB0801 | 7 |
| 29 | SAN0101 | 7521 | SAN0101 | 3 |
| 29 | SAN0102 | 7522 | SAN0102 | 4 |
| 29 | SAN0201 | 7523 | SAN0201 | 4 |
| 29 | SAN0202 | 7524 | SAN0202 | 4 |
| 29 | SAN0203 | 7525 | SAN0203 | 0 |
| 29 | SAN0301 | 7526 | SAN0301 | 4 |
| 29 | SAN0401 | 7527 | SAN0401 | 17 |
| 29 | SAN0501 | 7528 | SAN0501 | 3 |
| 29 | SAN0801 | 7529 | SAN0801 | 7 |
| 29 | SAN0802 | 7530 | SAN0802 | 21 |
| 29 | SAN0803 | 7531 | SAN0803 | 22 |
| 29 | SAN0804 | 7532 | SAN0804 | 5 |
| 29 | SAN0805 | 7533 | SAN0805 | 3 |
| 29 | SAN0901 | 7534 | SAN0901 | 5 |
| 29 | SCH1801 | 7535 | SCH1801 | 10 |
| 29 | SCH1802 | 7536 | SCH1802 | 10 |
| 29 | SCH1803 | 7537 | SCH1803 | 0 |
| 29 | STR0101 | 7538 | STR0101 | 12 |
| 29 | STR0301 | 7539 | STR0301 | 6 |
| 29 | STR0302 | 7540 | STR0302 | 4 |
| 29 | STR0501 | 7541 | STR0501 | 12 |
| 29 | STR0502 | 7542 | STR0502 | 4 |
| 29 | STR0601 | 7543 | STR0601 | 15 |
| 29 | STR0602 | 7544 | STR0602 | 18 |
| 29 | STR0603 | 7545 | STR0603 | 7 |
| 29 | STR2B05 | 7546 | STR2B05 | 12 |
| 29 | TAT0101 | 7547 | TAT0101 | 1 |
| 29 | TAT0102 | 7548 | TAT0102 | 4 |
| 29 | TAT0201 | 7549 | TAT0201 | 0 |
| 29 | TAT0202 | 7550 | TAT0202 | 5 |
| 29 | TAT0601 | 7551 | TAT0601 | 0 |
| 29 | TAT0602 | 7552 | TAT0602 | 5 |
| 29 | TAU0101 | 7553 | TAU0101 | 4 |
| 29 | TAU0301 | 7554 | TAU0301 | 25 |
| 29 | TAU0401 | 7555 | TAU0401 | 4 |
| 29 | TAU0402 | 7556 | TAU0402 | 3 |
| 29 | TAU0403 | 7557 | TAU0403 | 4 |
| 29 | TAU0601 | 7558 | TAU0601 | 4 |
| 29 | TAU0602 | 7559 | TAU0602 | 3 |
| 29 | TAU0701 | 7560 | TAU0701 | 4 |
| 29 | TAU0702 | 7561 | TAU0702 | 17 |
| 29 | TAU0901 | 7562 | TAU0901 | 4 |
| 29 | TAU1002 | 7563 | TAU1002 | 6 |
| 29 | TAU3B03 | 7564 | TAU3B03 | 4 |
| 29 | TAU3B05 | 7565 | TAU3B05 | 4 |
| 29 | TAU3B12 | 7566 | TAU3B12 | 3 |
| 29 | TIL0101 | 7567 | TIL0101 | 3 |
| 29 | TIL0104 | 7568 | TIL0104 | 21 |
| 29 | TIL0201 | 7569 | TIL0201 | 3 |
| 29 | TIL0301 | 7570 | TIL0301 | 3 |
| 29 | TIL0302 | 7571 | TIL0302 | 22 |
| 29 | TIL0303 | 7572 | TIL0303 | 4 |
| 29 | TIL0501 | 7573 | TIL0501 | 7 |
| 29 | TIL0601 | 7574 | TIL0601 | 3 |
| 29 | TIL0701 | 7575 | TIL0701 | 4 |
| 29 | TIL0801 | 7576 | TIL0801 | 4 |
| 29 | TIL0802 | 7577 | TIL0802 | 4 |

| | | | | |
|---|---|---|---|---|
| 29 | TIL0803 | 7578 | TIL0803 | 17 |
| 29 | TIL1001 | 7579 | TIL1001 | 3 |
| 29 | TIL1002 | 7580 | TIL1002 | 7 |
| 29 | TIL1201 | 7581 | TIL1201 | 22 |
| 29 | WIL0301 | 7582 | WIL0301 | 3 |
| 29 | WIL0401 | 7583 | WIL0401 | 3 |
| 29 | WIL0402 | 7584 | WIL0402 | 1 |
| 29 | WIL0403 | 7585 | WIL0403 | 1 |
| 29 | WIL0601 | 7586 | WIL0601 | 4 |
| 29 | WIL0602 | 7587 | WIL0602 | 3 |
| 29 | WIL0801 | 7588 | WIL0801 | 6 |
| 29 | WIL0802 | 7589 | WIL0802 | 12 |
| 29 | WIL0901 | 7590 | WIL0901 | 3 |
| 29 | WIL0902 | 7591 | WIL0902 | 12 |
| 29 | WIL0903 | 7592 | WIL0903 | 4 |

# Appendix VII

## SOUTH AUSTRALIAN VEGETATION STRUCTURAL FORMATIONS

| Life Form/Height Class | Percentage Foliage Cover of Tallest Stratum | | | |
|---|---|---|---|---|
| | **Dense (70-100%)** | **Mid-dense (30-70%)** | **Sparse (10-30%)** | **Very sparse (<10%)** |
| Trees > 30m | Tall Closed Forest | Tall Open Forest | Tall Woodland | Tall Open Woodland |
| Trees 10-30m | Closed Forest | Open Forest | Woodland | Open Woodland |
| Trees 5-10m | Low Closed Forest | Low Open Forest | Low Woodland | Low Open Woodland |
| Trees <5m | Very Low Closed Forest | Very Low Open Forest | Very Low Woodland | Very Low Open Woodland |
| Mallee (>3m) | Closed Mallee | Mallee | Open Mallee | Very Open Mallee |
| Low Mallee (<3m) | Closed Low Mallee | Low Mallee | Open Low Mallee | Very Open Low Mallee |
| Shrubs > 2m | Tall Closed Shrubland | Tall Shrubland | Tall Open Shrubland | Tall Very Open Shrubland |
| Shrubs 1-2m | Closed Shrubland | Shrubland | Open Shrubland | Very Open Shrubland |
| Shrubs < 1m | Low Closed Shrubland | Low Shrubland | Low Open Shrubland | Low Very Open Shrubland |
| Mat Plants | Closed Mat Plants | Mat Plants | Open Mat Plants | Very Open Mat Plants |
| Hummock Grasses | Closed Hummock Grassland | Hummock Grassland | Open Hummock Grassland | Very Open Hummock Grassland |
| Grasses (Tussock) | Closed (Tussock) Grassland | (Tussock) Grassland | Open (Tussock) Grassland | Very Open (Tussock) Grassland |
| Sedges | Closed Sedgeland | Sedgeland | Open Sedgeland | Very Open Sedgeland |
| Herbs | Closed Herbland | Herbland | Open Herbland | Very Open Herbland |
| Ferns | Closed Fernland | Fernland | Open Fernland | Very Open Fernland |

[Note: Table originally derived from Specht (1972) and Muir (1977)]

**Trees -** woody; perennial; erect; canopy raised well above the ground. Depth of canopy is usually less than or equal to two thirds of the total tree height. Single stemmed, or if multistemmed, fewer than five individual trunks resulting from branching of a single short trunk, that is not a mallee-like lignotuber. Height usually >2m.
**Mallees -** genus *Eucalyptus;* multi-stemmed, trunks arising from lignotuber. Low mallee - < 3m. Mallee - > 3m
**Shrubs-** woody; perennial; erect, procumbent or weeping; foliage occupies all or part of total plant height; multiple stems and branches arising from a rootstock or very short common trunk; generally <5m tall.
**Mat Plants** - Herbaceous or woody plants of prostrate habit, with major stems growing along the ground. Rarely exceeds 10 cm in height. Examples of mat plants are *Kunzea pomifera*, *Myoporum parvifolium*, *Carpobrotus rossii* and *Mimulus repens*.
**Hummock Grass -** Genera *Triodia* or *Plectrachne* only.
**Grasses (Tussock) -** family Poaceae (Gramineae); leaf sheath always split. Includes all non-hummock grasslands. The brackets surrounding Tussock indicate it is an optional word in the description, depending on the species present.
**Sedges -** herbaceous, usually perennial, erect, generally tufted; arise from stolons, tubers, bulbs, rhizomes or seeds. Leaf sheath never split. Includes Cyperaceae, Juncaceae, Restionaceae, Typhaceae and Xyridaceae and other sedge-like forms.
**Herbs -** herbaceous or slightly woody; annual or sometimes perennial; erect or creepers; rarely exceeds 0.5m height.
**Ferns** - Ferns and fern allies, i.e. non-vascular cryptogams of classes Filicopsida and Lycopsida. This category includes *Ophioglossum* spp., *Lycopodium* spp., *Selaginella* spp. and *Isoetes* spp.

Source: Adapted from Forward & Robinson (1996) and updated from Heard & Channon (1997).

# Appendix VIII

**TERRESTRIAL MAMMAL SPECIES RECORDED FROM THE SOUTH EAST OF SOUTH AUSTRALIA**
Mammal taxonomy follows Robinson *et al.* (2000). Specimen records from the South Australian Museum are up to January 1997 and exclude specimens collected on the present survey. Interesting and unusual records are indicated in the annotations.

| SPECIES | | STATUS | | SOURCE | | | |
|---|---|---|---|---|---|---|---|
| | | | | | EDBSA DEH/DTUPA | | |
| FAMILY Scientific Name | Common Name | Aust. | SA | SAM | Quad | Opp. | Res. |
| **ACROBATIDAE** | | | | | | | |
| *Acrobates pygmaeus* | Feathertail Glider | | E | X[1] | | | |
| **BOVIDAE** | | | | | | | |
| *Bos taurus* | Cattle | | | | X | | |
| *Capra hircus* | Goat | | | | X | X | X |
| *Ovis aries* | Sheep | | | | X | X | |
| **BURRAMYIDAE** | | | | | | | |
| *Cercartetus concinnus* | Western Pygmy-possum | | | X | X | X | X |
| *Cercartetus lepidus* | Little Pygmy-possum | | | X | X | X | X |
| *Cercartetus nanus* | Eastern Pygmy-possum | | V | X | X | | X |
| **CANIDAE** | | | | | | | |
| *Vulpes vulpes* | Fox (Red Fox) | | | X | X | X | X |
| *Canis lupus* | Dog, Dingo | | | X[2] | | | |
| **CERVIDAE** | | | | | | | |
| *Cervus dama* | Fallow Deer | | R | X | X | X | X |
| **DASYURIDAE** | | | | | | | |
| *Antechinus agilis* | Agile Antechinus | | | X | | X[3] | |
| *Antechinus flavipes* | Yellow-footed Antechinus | | | X | X | X | X |
| *Antechinus minimus* | Swamp Antechinus | | E | X | X | X | X |
| *Phascogale tapoatafa* | Brush-tailed Phascogale | | E | X[4] | | | X |
| *Sminthopsis crassicaudata* | Fat-tailed Dunnart | | | X | X | | |
| *Sminthopsis murina* | Common Dunnart | | | X | X | | |
| **EMBALLONURIDAE** | | | | | | | |
| *Saccolaimus flaviventris* | Yellow-bellied Sheathtail Bat | | R | X | | | |
| **EQUIDAE** | | | | | | | |
| *Equus caballus* | Horse | | | | X | | |
| **FELIDAE** | | | | | | | |
| *Felis catus* | Cat | | | X | X | X | X |
| **LEPORIDAE** | | | | | | | |
| *Lepus capensis* | Brown Hare | | | X | X | X | X |
| *Oryctolagus cuniculus* | Rabbit | | | X | X | X | X |
| **MACROPODIDAE** | | | | | | | |
| *Macropus fuliginosus* | Western Grey Kangaroo | | | X | X | X | X |
| *Macropus giganteus* | Eastern Grey Kangaroo | | R | X | X | X | X |
| *Macropus rufogriseus* | Red-necked Wallaby | | R | X | X | X | X |
| *Wallabia bicolor* | Swamp Wallaby | | V | X | | X | |
| **MOLOSSIDAE** | | | | | | | |
| *Mormopterus* spp. | Southern Freetail-bats. | | | X | X | X | X |
| *Tadarida australis* | White-striped Mastiff-bat | | | X | X | X | X |

[1] several records, most recent 1996
[2] Dingo record 1934 Cape Banks
[3] specimen captured 2001 from Lower Glenelg CP
[4] one specimen from 1967 near Joanna

| SPECIES | | | | SOURCE | | | |
|---|---|---|---|---|---|---|---|
| | | STATUS | | | EDBSA DEH/DTUPA | | |
| FAMILY<br>Scientific Name | Common Name | Aust. | SA | SAM | Quad | Opp. | Res. |
| **MURIDAE** | | | | | | | |
| *Hydromys chrysogaster* | Water-rat | | | X | X | X | X |
| *Mus musculus* | House Mouse | | | X | X | X | X |
| *Pseudomys apodemoides* | Silky Mouse | | | X | X | X | X |
| *Pseudomys shortridgei* | Heath Rat | E | E | X | | X[5] | |
| *Rattus fuscipes* | Bush Rat | | | X | X | X | X |
| *Rattus lutreolus* | Swamp Rat | | | X | X | X | X |
| *Rattus rattus* | Black Rat (Ship Rat) | | | X | X | X | X |
| **ORNITHORHYNCHIDAE** | | | | | | | |
| *Ornithorhynchus anatinus* | | | E | X | | | |
| **PERAMELIDAE** | | | | | | | |
| *Isoodon obesulus* | Southern Brown Bandicoot | | V | X | X | X | |
| **PETAURIDAE** | | | | | | | |
| *Petaurus australis* | Yellow-bellied Glider | E | E | | | X[6] | X |
| *Petaurus breviceps* | Sugar Glider | | R | X | X | X | X |
| *Petaurus norfolcensis* | Squirrel Glider | | EX | X | | | |
| **PHALANGERIDAE** | | | | | | | |
| *Trichosurus vulpecula* | Common Brushtail Possum | | | X | X | X | X |
| **PHASCOLARCTIDAE** | | | | | | | |
| *Phascolarctos cinereus* | Koala | | R | X[7] | X | X | |
| **POTOROIDAE** | | | | | | | |
| *Potorous tridactylus* | Long-nosed Potoroo | | E | | | X[8] | |
| **PSEUDOCHEIRIDAE** | | | | | | | |
| *Pseudocheirus peregrinus* | Common Ringtail Possum | | | X | X | X | X |
| **PTEROPIDAE** | | | | | | | |
| *Pteropus poliocephalus* | Grey headed Flying-fox | | | X | | X[9] | |
| **TACHYGLOSSIDAE** | | | | | | | |
| *Tachyglossus aculeatus* | Short-beaked Echidna | | | X | X | X | X |
| **VESPERTILIONIDAE** | | | | | | | |
| *Chalinolobus gouldii* | Gould's Wattled Bat | | | X | X | X | X |
| *Chalinolobus morio* | Chocolate Wattled Bat | | | X | X | X | X |
| *Falsistrellus tasmaniensis* | Eastern Falsistrelle | | R | X[10] | | | |
| *Miniopterus schreibersii* | Large Bentwing-bat | | | X[11] | | | X |
| *Myotis macropus* | Southern Myotis | | E | X[12] | | | |
| *Nyctophilus geoffroyi* | Lesser Long-eared Bat | | | X | X | X | X |
| *Nyctophilus gouldi* | Gould's Long-eared Bat | | E | X[13] | | | |
| *Scotorepens balstoni* | Inland Broad-nosed Bat | | | X[14] | | | |
| *Vespadelus darlingtoni* | Large Forest Forest Bat | | | X | | | X |
| *Vespadelus regulus* | Southern Forest Bat | | | X | X | X | |
| *Vespadelus vulturnus* | Little Forest Bat | | | X | X | X | X |

5 First captured 2001
6 Two records from 1997, one incision mark, one spotlight sighting.
7 One specimen collected 1944 at Frances
8 Two individuals captured 2002.
9 Recent sightings
10 First record for state recently collected by T. Reardon, Jan 2000.
11 Numerous specimens from Naracoorte Caves area.
12 Only one specimen in SE 1965, Pirate Caves.
13 Two collected by Reardon 1993 at Donovans, south east tip of the South East. (One recently collected Jan, 2000.)
14 Three recent Museum records

| SPECIES | | | | | SOURCE | | |
|---|---|---|---|---|---|---|---|
| | | STATUS | | | EDBSA DEH/DTUPA | | |
| FAMILY<br>Scientific Name | Common Name | Aust. | SA | SAM | Quad | Opp. | Res. |
| **VOMBATIDAE** | | | | | | | |
| *Vombatus ursinus* | Common Wombat | | R | X | X | X | X |

# Appendix IX

**BIRDS RECORDED FROM THE SOUTH EAST OF SOUTH AUSTRALIA**

Taxonomy and South Australian status follows that of Robinson *et al.*(2000). Australian status follows the Endangered Species Protection Act 1992. Descriptions of the status categories are presented in Robinson *et al.* 2000 -X=Extinct, E=Endangered, V=Vulnerable, R=Rare.

Specimen records from the South Australian Museum are up to January 1997 and exclude specimens collected on the present survey.

Interesting and unusual records are indicated in the footnotes.

* denotes species introduced to Australia.

| SPECIES | | STATUS | | SOURCE | BDSA | | |
|---|---|---|---|---|---|---|---|
| **FAMILY**<br>**Scientific Name** | **Common Name** | **Aust.** | **SA** | **SAM** | **Quad** | **Opp.** | **Res.** |
| **BIRDS** | | | | | | | |
| **ACANTHIZIDAE** | | | | | | | |
| **ACANTHIZINAE** | | | | | | | |
| *Acanthiza apicalis* | Inland Thornbill | | | | X | X | X |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | | | X | X | X | X |
| *Acanthiza iredalei* | Slender-billed Thornbill | | V | X | X | | X |
| *Acanthiza lineata* | Striated Thornbill | | | X | X | X | X |
| *Acanthiza nana* | Yellow Thornbill, (Samphire Thornbill) | | | X | X | X | X |
| *Acanthiza pusilla* | Brown Thornbill | | | X | X | X | X |
| *Acanthiza reguloides* | Buff-rumped Thornbill | | | X | X | X | X |
| *Acanthiza uropygialis* | Chestnut-rumped Thornbill | | | | X | X | |
| *Aphelocephala leucopsis* | Southern Whiteface | | | | X | | X |
| *Calamanthus campestris* | Rufous Fieldwren | | | X | X | | |
| *Calamanthus cautus* | Shy Heathwren, (Shy Hylacola) | | | X | X | X | X |
| *Calamanthus fuliginosus* | Striated Fieldwren | | | X | X | X | X |
| *Calamanthus pyrrhopygius* | Chestnut-rumped Heathwren, (Chestnut-rumped Hylacola) | | V | X | X | | X |
| *Gerygone olivacea* | White-throated Gerygone, (White-throated Warbler) | | R | X[1] | | | X |
| *Sericornis frontalis* | White-browed Scrubwren | | | X | X | X | X |
| *Smicrornis brevirostris* | Weebill | | | X | X | X | X |
| **ACANTHIZIDAE** | | | | | | | |
| **DASYORNITHINAE** | | | | | | | |
| *Dasyornis broadbenti* | Rufous Bristlebird | | V | X | X | X | X |
| **ACCIPITRIDAE** | | | | | | | |
| **ACCIPITRINAE** | | | | | | | |
| *Accipiter cirrhocephalus* | Collared Sparrowhawk | | | X | X | X | X |
| *Accipiter fasciatus* | Brown Goshawk | | | X | X | X | X |
| *Accipiter novaehollandiae* | Grey Goshawk, (White Goshawk) | | R,O | X[2] | | | |
| *Aquila audax* | Wedge-tailed Eagle | | | X | X | X | X |
| *Circus approximans* | Swamp Harrier, (Marsh Harrier) | | | X | X | X | X |
| *Circus assimilis* | Spotted Harrier | | | X | X | X | X |
| *Elanus axillaris* | Black-shouldered Kite | | | X | X | X | X |

[1] Two specimens collected in 1938 near Millicent and a more recent sighting at Naracoorte Caves in 1982.
[2] One specimen collected 1965 near Tintinara.

| | | | | | | |
|---|---|---|---|---|---|---|
| *Elanus scriptus* | Letter-winged Kite | | X[3] | | | X |
| *Haliaeetus leucogaster* | White-bellied Sea-Eagle | V | | | | X[4] |
| *Haliastur sphenurus* | Whistling Eagle, (Whistling Kite) | | X | X | X | X |
| *Hieraaetus morphnoides* | Little Eagle | | | X | X | X |
| *Milvus migrans* | Black Kite | | | | | X[5] |
| **ACCIPITRIDAE PANDIONINAE** | | | | | | |
| *Pandion haliaetus* | Osprey | R | | | | X |
| **AEGOTHELIDAE** | | | | | | |
| *Aegotheles cristatus* | Australian Owlet-nightjar | | X | X | X | X |
| **ALAUDIDAE** | | | | | | |
| *Alauda arvensis | Eurasian Skylark | | X | X | X | X |
| *Mirafra javanica* | Horsfield's Bushlark, (Singing Bushlark) | | X | X | | X |
| **ALCEDINIDAE HALCYONINAE** | | | | | | |
| *Dacelo novaeguineae* | Laughing Kookaburra | | X | X | X | X |
| *Todiramphus pyrrhopygia* | Red-backed Kingfisher | | X | | | X |
| *Todiramphus sancta* | Sacred Kingfisher | | | X | X | X |
| **ANATIDAE ANATINAE** | | | | | | |
| *Anas castanea* | Chestnut Teal | | X | | X | X |
| *Anas gracilis* | Grey Teal, (Australasian Teal) | | X | X | X | X |
| *Anas rhynchotis* | Australasian Shoveler, (Blue-winged Shoveler) | R | X | X | X | X |
| *Anas superciliosa* | Pacific Black Duck | | X | X | X | X |
| *Aythya australis* | Hardhead, (White-eyed Duck) | | X | | X | X |
| *Chenonetta jubata* | Australian Wood Duck, (Maned Duck) | | X | X | X | X |
| *Malacorhynchus membranaceus* | Pink-eared Duck | | X | | X | X |
| **ANATIDAE ANSERINAE** | | | | | | |
| *Cereopsis novaehollandiae* | Cape Barren Goose | R | | | | X[6] |
| *Cygnus atratus* | Black Swan | | X | X | X | X |
| **ANATIDAE DENDROCYGNINAE** | | | | | | |
| *Dendrocygna eytoni* | Plumed Whistling-Duck | | X | | X | X |
| **ANATIDAE OXYURINAE** | | | | | | |
| *Biziura lobata* | Musk Duck | R | X | X | X | X |
| *Oxyura australis* | Blue-billed Duck | R | X | | X | X |
| **ANATIDAE STICTONETTINAE** | | | | | | |
| *Stictonetta naevosa* | Freckled Duck | V | X | | X | X |
| **ANATIDAE TADORNINAE** | | | | | | |
| *Tadorna tadornoides* | Australian Shelduck, (Mountain Duck) | | X | X | X | X |
| **ANHINGIDAE** | | | | | | |
| *Anhinga melanogaster* | Darter | | | | | X[7] |

[3] One specimen collected near Kybybolite in 1977. This species is also listed on birdlists for Beachport Conservation Park and Rowley's Scrub.
[4] There are three historical records from Mesent Conservation Park in 1964 and two from Canunda Conservation Reserve in 1950 and 1960.
[5] One sighting at Bool Lagoon in 1977.
[6] There are three sight records from Bool Lagoon in 1971, 1976 and 1977.
[7] This species has been seen at Beachport Conservation Park in 1984 as well as in Mullinger Swamp Conservation Park in 1980, 1985 and 1986.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **ANSERANATIDAE** | | | | | | | |
| *Anseranas semipalmata* | Magpie Goose | | E | X | | X | X |
| **APODIDAE** | | | | | | | |
| *Apus pacificus* | Fork-tailed Swift | | | | X | | X |
| *Hirundapus caudacutus* | White-throated Needletail, (Spine-tailed Swift ) | | | X | X | X | X |
| **ARDEIDAE** | | | | | | | |
| *Ardea alba* | Great Egret, (White Egret) | | | X | X | X | X |
| *Ardea ibis* | Cattle Egret | | | X | | | X |
| *Ardea intermedia* | Intermediate Egret, (Plumed Egret) | | R | | | | X[8] |
| *Ardea pacifica* | White-necked Heron, (Pacific Heron) | | | X | X | X | X |
| *Botaurus poiciloptilus* | Australasian Bittern, (Brown Bittern) | | V | X | X | | X |
| *Egretta garzetta* | Little Egret | | | | X | | X |
| *Egretta novaehollandiae* | White-faced Heron | | | X | X | X | X |
| *Egretta sacra* | Eastern Reef Egret, (Reef Heron) | | R | X | | | X |
| *Ixobrychus minutus* | Little Bittern | | R | X[9] | | | |
| *Nycticorax caledonicus* | Nankeen Night Heron, (Rufous Night Heron) | | | X | | | X |
| **ARTAMIDAE** | | | | | | | |
| *Artamus cyanopterus* | Dusky Woodswallow | | | X | X | X | X |
| *Artamus leucorhynchus* | White-breasted Woodswallow | | | X | | | X |
| *Artamus personatus* | Masked Woodswallow | | | X | X | X | X |
| *Artamus superciliosus* | White-browed Woodswallow | | | X | X | X | X |
| *Cracticus torquatus* | Grey Butcherbird | | | X | X | X | X |
| *Gymnorhina tibicen* | Australian Magpie | | | X | X | X | X |
| *Gymnorhina tibicen* | Australian Magpie | | | X | X | X | X |
| *Strepera versicolor* | Grey Currawong | | | X | X | X | X |
| **BURHINIDAE** | | | | | | | |
| *Burhinus grallarius* | Bush Stone-curlew, (Southern Stone Curlew) | | V | | X | | X |
| **CACATUIDAE** | | | | | | | |
| *Cacatua galerita* | Sulphur-crested Cockatoo | | | X | X | X | X |
| *Cacatua roseicapilla* | Galah | | | X | X | X | X |
| *Cacatua sanguinea* | Little Corella | | | | X | X | X |
| *Cacatua tenuirostris* | Long-billed Corella | | | X | X | X | X |
| *Callocephalon fimbriatum* | Gang-gang Cockatoo | | R | | | | X[10] |
| *Calyptorhynchus banksii graptogyne* | Red-tailed Black-Cockatoo (South Eastern subspecies) | En | E | X | X | X | X |
| *Calyptorhynchus funereus* | Yellow-tailed Black-cockatoo | | V | X | X | X | X |
| *Nymphicus hollandicus* | Cockatiel | | | X | X | X | X |
| **CAMPEPHAGIDAE** | | | | | | | |
| *Coracina novaehollandiae* | Black-faced Cuckoo-shrike | | | X | X | X | X |
| *Coracina papuensis* | White-bellied Cuckoo-shrike | | R | X | X | X | X |
| *Lalage tricolor* | White-winged Triller | | | | X | X | X |
| **CAPRIMULGIDAE** | | | | | | | |
| *Eurostopodus argus* | Spotted Nightjar | | | X | | | X |
| **CASUARIIDAE** | | | | | | | |
| *Dromaius novaehollandiae* | Emu | | | X | X | X | X |

[8] There are reports of this species from Bool Lagoon in 1981, Canunda Conservation Park in 1983 and Beachport Conservation Park in 1984.
[9] There are specimens from Bool Lagoon dated 1935, 1936, 1937 and two from 1981.
[10] There is a report of this species being sighted in Penambol Conservation Park in the 1970's.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **CHARADRIIDAE** | | | | | | | |
| *Charadrius bicinctus* | Double-banded Plover, (Double-banded Dotterel) | | | X | | | X |
| *Charadrius leschenaultii* | Greater Sand Plover, (Large Sand Plover) | | | X | | | X |
| *Charadrius mongolus* | Lesser Sand Plover, (Mongolian Dotterel) | | | X | | | X |
| *Charadrius ruficapillus* | Red-capped Plover, (Red-capped Dotterel) | | | X | X | X | X |
| *Charadrius veredus* | Oriental Plover, (Oriental Dotterel) | | | | | | X |
| *Elseyornis melanops* | Black-fronted Dotterel, (Black-fronted Plover) | | | X | X | X | X |
| *Erythogonys cinctus* | Red-kneed Dotterel | | | X | X | X | X |
| *Pluvialis fulva* | Pacific Golden Plover, (Lesser Golden Plover) | | | X | | | X |
| *Pluvialis squatarola* | Grey Plover | | | | | | X |
| *Thinornis rubricollis* | Hooded Plover, (Hooded Dotterel) | VU | V | X | | | X |
| *Vanellus miles* | Masked Lapwing, (Spur-winged Plover) | | | X | X | X | X |
| *Vanellus tricolor* | Banded Lapwing, (Banded Plover) | | | X | X | | X |
| **CLIMACTERIDAE** | | | | | | | |
| *Climacteris affinis* | White-browed Treecreeper | | R | | | | X[11] |
| *Climacteris picumnus* | Brown Treecreeper | | | X | X | X | X |
| *Cormobates leucophaeus* | White-throated Treecreeper | | | X | X | X | X |
| **COLUMBIDAE** | | | | | | | |
| **Columba livia* | Rock Dove, (Feral Pigeon) | | | X | X | X | X |
| *Geopelia placida* | Peaceful Dove | | | X | X | X | X |
| *Ocyphaps lophotes* | Crested Pigeon | | | X | X | X | X |
| *Phaps chalcoptera* | Common Bronzewing | | | X | X | X | X |
| *Phaps elegans* | Brush Bronzewing | | | X | X | X | X |
| **Streptopelia chinensis* | Spotted Turtle-dove | | | | X | X | X |
| **CORCORACIDAE** | | | | | | | |
| *Corcorax melanorhamphos* | White-winged Chough | | | X | X | X | X |
| *Struthidea cinerea* | Apostlebird | | | X[12] | | | |
| **CORVIDAE** | | | | | | | |
| *Corvus bennetti* | Little Crow | | | X | | | X |
| *Corvus coronoides* | Australian Raven | | | X | X | X | X |
| *Corvus mellori* | Little Raven | | | X | X | X | X |
| *Corvus tasmanicus* | Forest Raven | | | X | X | | X |
| **CUCULIDAE** | | | | | | | |
| *Cacomantis flabelliformis* | Fan-tailed Cuckoo | | | X | X | X | X |
| *Chrysococcyx basalis* | Horsfield's Bronze-cuckoo | | | X | X | X | X |
| *Chrysococcyx lucidus* | Shining Bronze-Cuckoo | | R | X | X | | X |
| *Chrysococcyx osculans* | Black-eared Cuckoo | | | | | | X[13] |
| *Cuculus pallidus* | Pallid Cuckoo | | | X | | | X |
| **DICAEIDAE** | | | | | | | |
| *Dicaeum hirundinaceum* | Mistletoebird | | | X | X | X | X |
| **DICRURIDAE** | | | | | | | |
| *Grallina cyanoleuca* | Magpie-lark | | | X | X | X | X |
| *Myiagra cyanoleuca* | Satin Flycatcher | | V | X | | | X |
| *Myiagra inquieta* | Restless Flycatcher | | | X | X | X | X |
| *Myiagra rubecula* | Leaden Flycatcher | | O | | | | X[14] |
| *Rhipidura albiscapa* | Grey Fantail | | | X | X | X | X |

[11] There is one sighting of this species in Bangham Conservation Park in 1982.
[12] One specimen was collected in 1925 near Naracoorte.
[13] There are records from the following Conservation Parks - Canunda, 1950; Mary Seymor, 1963; Bangham, 1983 and Beachport, 1984.
[14] There is one sighting of this species in Mary Seymor Conservation Park in 1963.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Rhipidura leucophrys* | Willie Wagtail | | | X | X | X | X |
| *Rhipidura rufifrons* | Rufous Fantail | | | X[15] | | | |
| **DIOMEDEIDAE** | | | | | | | |
| *Diomedea cauta* | Shy Albatross | VU | V | X | | | X |
| *Diomedea chlororhynchos* | Yellow-nosed Albatross | | V | X | | | X |
| *Diomedea chrysostoma* | Grey-headed Albatross | VU | V | X | | | X |
| *Diomedea exulans* | Wandering Albatross | VU | V | X | | | X |
| *Diomedea fusca* | Sooty Albatross | VU | V,O | X | | | |
| *Diomedea melanophris* | Black-browed Albatross | | V | X | | | X |
| *Diomedea palpebrata* | Light-mantled Sooty Albatross | | R | X | | | |
| **ESTRILDIDAE** | | | | | | | |
| *Neochima temporalis* | Red-browed Finch | | | X | X | X | X |
| *Stagonoplerua bella* | Beautiful Firetail | | R | X | X | X | X |
| *Stagonopleura guttata* | Diamond Firetail | | V | | X | | X |
| *Taeniopygia guttata* | Zebra Finch | | | | | | X |
| **EUPETIDAE** | | | | | | | |
| *Cinclosoma punctatum punctatum* | Spotted Quail-thrush | | Ex | X[16] | | | |
| **FALCONIDAE** | | | | | | | |
| *Falco berigora* | Brown Falcon | | | X | X | X | X |
| *Falco cenchroides* | Nankeen Kestrel, (Australian Kestrel) | | | X | X | X | X |
| *Falco longipennis* | Australian Hobby, (Little Falcon) | | | | X | X | X |
| *Falco peregrinus* | Peregrine Falcon | | R | X | X | X | X |
| *Falco subniger* | Black Falcon | | | X | | X | X |
| **FRINGILLIDAE** | | | | | | | |
| **Carduelis carduelis* | European Goldfinch | | | X | X | X | X |
| **Carduelis chloris* | European Greenfinch | | | X | | | X |
| **GRUIDAE** | | | | | | | |
| *Grus rubicundus* | Brolga | | V | X | | | X |
| **HAEMATOPODIDAE** | | | | | | | |
| *Haematopus fuliginosus* | Sooty Oystercatcher | | | X | X | | X |
| *Haematopus longirostris* | Pied Oystercatcher | | | X | | X | X |
| **HIRUNDINIDAE** | | | | | | | |
| *Cheramoeca leucosternus* | White-backed Swallow | | | X | | X | X |
| *Hirundo neoxena* | Welcome Swallow | | | X | X | X | X |
| *Petrochelidon ariel* | Fairy Martin | | | | X | X | X |
| *Petrochelidon nigricans* | Tree Martin | | | X | X | X | X |
| **HYDROBATIDAE** | | | | | | | |
| *Pelagodroma marina* | White-faced Storm-Petrel | | | X | | | X |
| **LARIDAE** | | | | | | | |
| **LARINAE** | | | | | | | |
| *Larus novaehollandiae* | Silver Gull | | | X | X | X | X |
| *Larus pacificus* | Pacific Gull | | | X | | X | X |
| **LARIDAE** | | | | | | | |
| **STERCORARIINAE** | | | | | | | |
| *Catharacta skua* | Great (Brown, Subantarctic) Skua | | | X | | | X |
| *Stercorarius longicaudus* | Long tailed Jaeger, (Long-tailed Skua) | | O | X | | | |
| *Stercorarius parasiticus* | Arctic Jaeger, (Arctic Skua) | | | | | | X |
| **LARIDAE** | | | | | | | |
| **STERNINAE** | | | | | | | |
| *Chlidonias hybridus* | Whiskered (Marsh) Tern | | | X | X | X | X |
| *Chlidonias leucopterus* | White-winged Black Tern | | | | | | X[17] |
| *Sterna anaethetus* | Bridled Tern | | O | X | | | X |
| *Sterna bergii* | Crested Tern | | | X | | X | X |
| *Sterna caspia* | Caspian Tern | | | X | | X | X |

[15] One specimen was collected in 1983 near Bool Lagoon.
[16] One specimen collected in 1898 near Mount Gambier.
[17] There is a possible record from Beachport Conservation Park in 1984.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Sterna hirundo* | Common Tern | | R | X | | | X |
| *Sterna nereis* | Fairy Tern | | V | X | | | X |
| *Sterna nilotica* | Gull-billed Tern | | | X | | X | X |
| *Sterna striata* | White-fronted Tern | | | X | | | X |
| **MALURIDAE** | | | | | | | |
| **MALURINAE** | | | | | | | |
| *Malurus cyaneus* | Superb Fairy Wren | | | X | X | X | X |
| *Malurus lamberti* | Variegated Wren | | | X | X | X | X |
| *Malurus splendens* | Splendid Blue Wren | | | | | | X[18] |
| *Stipiturus malachurus* | Southern Emu-wren | | R | X | X | X | X |
| **MEGAPODIIDAE** | | | | | | | |
| *Leipoa ocellata* | Malleefowl | VU | V | X | X | X | X |
| **MELIPHAGIDAE** | | | | | | | |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | | | X | X | X | X |
| *Acanthorhynchus tenuirostris* | Eastern Spinebill | | | X | X | X | X |
| *Anthochaera carunculata* | Red Wattlebird | | | X | X | X | X |
| *Anthochaera chrysoptera* | Little Wattlebird | | | X | X | X | X |
| *Certhionyx niger* | Black Honeyeater | | | X[19] | | | |
| *Certhionyx variegatus* | Pied Honeyeater | | | | | | X[20] |
| *Entomyzon cyanotis* | Blue-faced Honeyeater | | R | | | | X |
| *Gliciphila melanops* | Tawny-crowned Honeyeater | | | X | X | X | X |
| *Lichenostomus chrysops* | Yellow-faced Honeyeater | | | X | X | X | X |
| *Lichenostomus cratitius* | Purple-gaped Honeyeater | | | X | X | X | X |
| *Lichenostomus fuscus* | Fuscous Honeyeater | | | X | | | X |
| *Lichenostomus leucotis* | White-eared Honeyeater | | | X | X | X | X |
| *Lichenostomus melanops* | Yellow-tufted Honeyeater | | | X | X | X | X |
| *Lichenostomus ornatus* | Yellow-plumed Honeyeater | | | | | | X |
| *Lichenostomus penicillatus* | White-plumed Honeyeater | | | X | X | X | X |
| *Lichenostomus virescens* | Singing Honeyeater | | | X | X | X | X |
| *Manorina flavigula* | Yellow-throated Miner | | | X[21] | | | |
| *Manorina melanocephala* | Noisy Miner | | | X | X | X | X |
| *Melithreptus brevirostris* | Brown-headed Honeyeater | | | X | X | X | X |
| *Melithreptus gularis* | Black-chinned Honeyeater | | V | X | X | X | X |
| *Melithreptus lunatus* | White-naped Honeyeater | | | | X | X | X |
| *Phylidonyris albifrons* | White-fronted Honeyeater | | | X | X | | X |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | | | X | X | X | X |
| *Phylidonyris pyrrhoptera* | Crescent Honeyeater | | | | X | | |
| *Plectorhyncha lanceolata* | Striped Honeyeater | | R | | | | X[22] |
| **MELIPHAGIDAE** | | | | | | | |
| **EPTHIANURINAE** | | | | | | | |
| *Epthianura albifrons* | White-fronted Chat | | | X | X | X | X |
| **MEROPIDAE** | | | | | | | |
| *Merops ornatus* | Rainbow Bee-eater | | | X | | | X |
| **MOTACILLIDAE** | | | | | | | |
| *Anthus novaeseelandiae* | Richard's Pipit | | | X | X | X | X |
| **MUSCICAPIDAE** | | | | | | | |
| **Turdus merula* | Eurasian (Common) Blackbird | | | X | X | X | X |
| *Zoothera lunulata* | Mountain Thrush, (Ground Thrush, White's Thrush, Bassian Thrush) | | R | X | X | X | X |
| **NEOSITTIDA**E | | | | | | | |
| *Daphoenositta chrysoptera* | Varied Sittella | | | X | X | X | X |

[18] One sighting in Bangham Conservation Park in 1984.
[19] Two specimens were collected in 1985 near Bool Lagoon.
[20] One sighting from Big Heath Conservation Park in 1977.
[21] One undated specimen collected near Bordertown.
[22] This species was seen in 1970 in Beachport Conservation Park and in 1977 in Big Heath Conservation Park.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PACHYCEPHALIDAE** | | | | | | | |
| *Colluricincla harmonica* | Grey Shrike-thrush | | | X | X | X | X |
| *Falcunculus frontatus* | Crested Shrike-tit | | V | X | X | | X |
| *Oreoica gutturalis* | Crested Bellbird | | | X | X | X | X |
| *Pachycephala inornata* | Gilbert's Whistler | | | | | | X |
| *Pachycephala olivacea* | Olive Whistler | | V | X | X | | X |
| *Pachycephala pectoralis* | Golden Whistler | | | X | X | X | X |
| *Pachycephala rufiventris* | Rufous Whistler | | | X | X | X | X |
| **PARDALOTIDAE** | | | | | | | |
| *Pardalotus punctatus* | Spotted Pardalote | | | X | X | X | X |
| *Pardalotus striatus* | Striated Pardalote | | | X | X | X | X |
| **PASSERIDAE** | | | | | | | |
| **Passer domesticus* | House Sparrow | | | | X | X | X |
| **PEDIONOMIDAE** | | | | | | | |
| *Pedionomus torquatus* | Plains-wanderer | VU | V | X[23] | | | |
| **PELECANIDAE** | | | | | | | |
| *Pelecanus conspicillatus* | Australian Pelican | | | X | | X | X |
| **PETROICIDAE** | | | | | | | |
| *Drymodes brunneopygia* | Southern Scrub-robin | | | X | X | X | X |
| *Eopsaltria australis* | Eastern Yellow Robin | | | X | X | X | X |
| *Melanodryas cucullata* | Hooded Robin | | | X | X | X | X |
| *Microeca fascinans* | Jacky Winter | | | X | X | X | X |
| *Petroica goodenovii* | Red-capped Robin | | | | X | | X |
| *Petroica multicolor* | Scarlet Robin | | | X | X | X | X |
| *Petroica phoenicea* | Flame Robin | | R | X | | | X |
| *Petroica rodinogaster* | Pink Robin | | | | | | X[24] |
| *Petroica rosea* | Rose Robin | | R | | | | X[25] |
| **PHALACROCORACIDAE** | | | | | | | |
| *Phalacrocorax carbo* | Great Cormorant, (Black Cormorant) | | | X | X | X | X |
| *Phalacrocorax fuscescens* | Black-faced Cormorant, (Black-faced Shag) | | | X | | X | X |
| *Phalacrocorax melanoleucos* | Little Pied Cormorant | | | X | | X | X |
| *Phalacrocorax sulcirostris* | Little Black Cormorant | | | X | | X | X |
| *Phalacrocorax varius* | Pied Cormorant | | | X | | X | X |
| **PHASIANIDAE** | | | | | | | |
| *Coturnix pectoralis* | Stubble Quail | | | X | X | X | X |
| *Coturnix ypsilophora* | Brown Quail | | V | X | X | | X |
| **PODARGIDAE** | | | | | | | |
| *Podargus strigoides* | Tawny Frogmouth | | | X | X | X | X |
| **PODICIPEDIDAE** | | | | | | | |
| *Podiceps cristatus* | Great Crested Grebe | | R | X | | | X |
| *Poliocephalus poliocephalus* | Hoary-headed Grebe | | | X | | X | X |
| *Tachybaptus novaehollandiae* | Australasian Grebe, (Little Grebe) | | | X | X | X | X |
| **POMATOSTOMIDAE** | | | | | | | |
| *Pomatostomus superciliosus* | White-browed Babbler | | | X | X | X | X |
| *Pomatostomus temporalis* | Grey-crowned Babbler | | R | X | | | X |
| **PROCELLARIIDAE** | | | | | | | |
| *Daption capense* | Cape Petrel | | | X | | | X |
| *Fulmarus glacialoides* | Southern Fulmar | | | X | | | X |
| *Halobaena caerulea* | Blue Petrel | | V | X | | | X |
| *Lugensa brevirostris* | Kerguelen Petrel | | | X | | | |
| *Macronectes giganteus* | Southern Giant-Petrel | | | X | | | X |
| *Pachyptila belcheri* | Slender-billed Prion | | | X | | | X |
| *Pachyptila desolata* | Antarctic (Dove) Prion | | | X | | | X |

23 Two specimens collected near Naracoorte in 1985.
24 Possible sighting from Rowley's Scrub in the 1970's.
25 One sighting in Bangham Conservation Park in 1987.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Pachyptila salvini* | Salvin's Prion, (Medium-billed Prion) | | | X | | | X |
| *Pachyptila turtur* | Fairy Prion | | | X | | | X |
| *Pelecanoides urinatrix* | Common Diving-Petrel | | R | X | | | |
| *Procellaria cinerea* | Grey Petrel | | O | | | | X |
| *Pterodroma inexpectata* | Mottled Petrel | | O | X | | | |
| *Pterodroma lessonii* | White-headed Petrel | | | X | | | X |
| *Pterodroma leucoptera* | Gould's Petrel | | O | X | | | |
| *Pterodroma macroptera* | Great-winged Petrel | | | X | | | X |
| *Pterodroma mollis* | Soft-plumaged Petrel | VU | O | X | | | |
| *Puffinus assimilis* | Little Shearwater | | O | X | | | |
| *Puffinus carneipes* | Fleshy-footed Shearwater | | R | X | | | X |
| *Puffinus gavia* | Fluttering Shearwater | | | X | | | X |
| *Puffinus griseus* | Sooty Shearwater | | O | X | | | |
| *Puffinus puffinus* | Manx Shearwater | | O | | | | X |
| *Puffinus tenuirostris* | Short-tailed Shearwater, (Mutton Bird) | | | X | | | X |
| *Thalassoica antarctica* | Antarctic Petrel | | O | X | | | |
| **PSITTACIDAE** | | | | | | | |
| *Barnardius zonarius* | Australian Ringneck, (Ring-necked Parrot) | | | X | X | X | X |
| *Glossopsitta concinna* | Musk Lorikeet | | | X | X | X | X |
| *Glossopsitta porphyrocephala* | Purple-crowned Lorikeet | | | X | X | X | X |
| *Glossopsitta pusilla* | Little Lorikeet | | V | | X | | X |
| *Lathamus discolor* | Swift Parrot | | V | | | | X |
| *Melopsittacus undulatus* | Budgerigar | | | X | | X | X |
| *Neophema chrysogaster* | Orange-bellied Parrot | EN | E | X | X | | X |
| *Neophema chrysostoma* | Blue-winged Parrot | | V | X | X | X | X |
| *Neophema elegans* | Elegant Parrot | | | X | X | X | X |
| *Neophema petrophila* | Rock Parrot | | R | | | | X[26] |
| *Northiella haematogaster* | Blue Bonnet | | | | X | | X |
| *Platycercus elegans* | Crimson Rosella | | | X | X | X | X |
| *Platycercus eximius* | Eastern Rosella | | | X | X | X | X |
| *Psephotus haematonotus* | Red-rumped Parrot | | | X | X | X | X |
| *Trichoglossus haematodus* | Rainbow Lorikeet | | | X | X | X | X |
| **RALLIDAE** | | | | | | | |
| *Fulica atra* | Eurasian Coot | | | X | X | X | X |
| *Gallinula tenebrosa* | Dusky Moorhen | | | X | X | X | X |
| *Gallinula ventralis* | Black-tailed Native-hen | | | X | | X | X |
| *Gallirallus philippensis* | Buff-banded Rail, (Banded Landrail) | | | X | | | X |
| *Porphyrio porphyrio* | Purple Swamphen | | | X | X | X | X |
| *Porzana fluminea* | Australian Spotted Crake | | | X | | X | X |
| *Porzana pusilla* | Baillon's Crake, (Marsh Crake) | | R | X | | | X |
| *Porzana tabuensis* | Spotless Crake | | | X | | X | |
| *Rallus pectoralis* | Lewin's Rail | | V | X | | | X |
| **RECURVIROSTRIDAE** | | | | | | | |
| *Cladorhynchus leucocephalus* | Banded Stilt | | | X | | X | X |
| *Himantopus himantopus* | Black-winged Stilt, (White-headed Stilt) | | | X | X | X | X |
| *Recurvirostra novaehollandiae* | Red-necked Avocet | | | X | X | | X |
| **ROSTRATULIDAE** | | | | | | | |
| *Rostratula benghalensis* | Painted Snipe | | R | X | | | X |

[26] One sighting at Martin Washpool Conservation Park in 1970 and a possible record from Canunda Conservation Park.

| | | | | | | |
|---|---|---|---|---|---|---|
| **SCOLOPACIDAE** | | | | | | |
| **ARENARIINAE** | | | | | | |
| *Arenaria interpres* | Ruddy Turnstone | | X | | X | X |
| **SCOLOPACIDAE** | | | | | | |
| **CALIDRINAE** | | | | | | |
| *Calidris acuminata* | Sharp-tailed Sandpiper | | X | | X | X |
| *Calidris alba* | Sanderling | | X | | X | X |
| *Calidris canutus* | Red Knot | | | | | X |
| *Calidris ferruginea* | Curlew Sandpiper | | X | | X | X |
| *Calidris melanotos* | Pectoral Sandpiper | | | | | X |
| *Calidris ruficollis* | Red-necked Stint | | X | | X | X |
| *Calidris subminuta* | Long-toed Stint | | X | | | X |
| *Calidris tenuirostris* | Great Knot | | X | | | X |
| *Philomachus pugnax* | Ruff | | | | | X |
| **SCOLOPACIDAE** | | | | | | |
| **GALLINAGONINAE** | | | | | | |
| *Gallinago hardwickii* | Latham's Snipe, (Japanese Snipe) | V | X | X | X | X |
| **SCOLOPACIDAE** | | | | | | |
| **TRINGINAE** | | | | | | |
| *Actitis hypoleucos* | Common Sandpiper | | X | | | X |
| *Heteroscelus brevipes* | Grey-tailed Tattler | | X | | | X |
| *Limosa lapponica* | Bar-tailed Godwit | | | | | X |
| *Numenius madagascariensis* | Eastern Curlew | V | | | | X |
| *Numenius phaeopus* | Whimbrel | | | | | X |
| *Tringa glareola* | Wood Sandpiper | | | | | X |
| *Tringa nebularia* | Greenshank | | X | | X | X |
| *Tringa stagnatilis* | Marsh Sandpiper | | | | X | X |
| *Xenus cinereus* | Terek Sandpiper | | | | | X |
| **SPHENISCIDAE** | | | | | | |
| *Aptenodytes patagonicus* | King Peguion | O | X | | | |
| *Eudyptes chrysocome* | Rockhopper Penguin | O | X | | | |
| *Eudyptes pachyrhynchus* | Fiordland Penguin | O | X | | | |
| *Eudyptula minor* | Little Penguin, (Fairy Penquin) | | X | X | | X |
| *Eudyptes robustus* | Snares Penguin | O | X | | | |
| **STRIGIDAE** | | | | | | |
| *Ninox connivens* | Barking Owl | R | | | X | X |
| *Ninox novaeseelandiae* | Southern Boobook, (Boobook Owl) | | X | X | X | X |
| **STURNIDAE** | | | | | | |
| **Sturnus vulgaris* | Common Starling | | X | X | X | X |
| **SULIDAE** | | | | | | |
| *Morus serrator* | Australasian Gannet | | X | | X | X |
| **SYLVIIDAE** | | | | | | |
| **ACROCEPHALINAE** | | | | | | |
| *Acrocephalus stentoreus* | Clamorous Reedwarbler | | X | | X | X |
| **SYLVIIDAE** | | | | | | |
| **CISTICOLINAE** | | | | | | |
| *Cisticola exilis* | Golden-headed Cisticola | R | X | X | X | X |
| **SYLVIIDAE** | | | | | | |
| **MEGALURINAE** | | | | | | |
| *Cincloramphus cruralis* | Brown Songlark | | X | X | X | X |
| *Cincloramphus mathewsi* | Rufous Songlark | | | X | X | X |
| *Megalurus gramineus* | Little Grassbird | | X | X | X | X |
| **THRESKIORNITHIDAE** | | | | | | |
| *Platalea flavipes* | Yellow-billed Spoonbill | | X | | X | X |
| *Platalea regia* | Royal Spoonbill | | X | | X | X |
| *Plegadis falcinellus* | Glossy Ibis | R | X | X | | X |
| *Threskiornis molucca* | Australian White Ibis, (Sacred Ibis) | | X | X | X | X |
| *Threskiornis spinicollis* | Straw-necked Ibis | | X | X | X | X |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TURNICIDAE** | | | | | | | |
| *Turnix pyrrhothorax* | Red-chested Button-quail | R | X[27] | | | | |
| *Turnix varia* | Painted Button-quail | V | X | X | X | X |
| *Turnix velox* | Little Button-quail | | X | X | | X |
| **TYTONIDAE** | | | | | | | |
| *Tyto alba* | Barn Owl | | X | X | X | X |
| **ZOSTEROPIDAE** | | | | | | | |
| *Zosterops lateralis* | Silvereye | | X | X | X | X |
| Total 332 | | | 274 | 181 | 191 | 304 |

[27] Three specimens collected from the Bool Lagoon area, one in 1980 and two in 1985.

# Appendix X

**AMPHIBIANS AND REPTILES RECORDED FROM THE SOUTH EAST OF SOUTH AUSTRALIA**

Reptile taxonomy and South Australian status follows that of Robinson *et al.* (2000). Specimen records from the South Australian Museum are up to January 1997 and exclude specimens collected on the present survey. Interesting and unusual records are indicated in the annotations.

| FAMILY<br>Scientific Name | SPECIES<br>Common Name | STATUS<br>Aust. | <br>SA | SOURCE<br>SAM | EDBSA DEHAA/DTUPA<br>Quad | <br>Opp. | <br>Res. |
|---|---|---|---|---|---|---|---|
| **REPTILES** | | | | | | | |
| **AGAMIDAE** | | | | | | | |
| *Amphibolurus muricatus* | Jacky Lizard | | R | X | X | X | X |
| *Amphibolurus norrisi* | Mallee Tree-Dragon | | | X | X | X | X |
| *Ctenophorus fordi* | Mallee Dragon | | | X[1] | | | |
| *Ctenophorus pictus* | Painted Dragon | | | X | X | X | |
| *Pogona barbata* | Eastern Bearded Dragon | | | X | X | X | X |
| *Pogona vitticeps* | Central Bearded Dragon | | | X | | X | X |
| *Tympanocryptis lineata* | Five-lined Earless Dragon | | | X | X | | X |
| **CHELIDAE** | | | | | | | |
| *Chelodina longicollis* | Common Long-necked Tortoise | | | X | X | X | X |
| *Emydura macquarii* | Macquarie Tortoise | | | | | | X[2] |
| **ELAPIDAE** | | | | | | | |
| *Austrelaps superbus* | Lowland Copperhead | | | X | X | X | X |
| *Drysdalia coronoides* | White-lipped Snake | | | X | X | X | |
| *Drysdalia mastersii* | Masters' Snake | | | X | X | | X |
| *Echiops curta* | Bardick | | R | X[3] | | | |
| *Notechis scutatus* | Eastern Tiger Snake | | | X | X | X | X |
| *Pseudonaja textilis* | Eastern Brown Snake | | | X | X | X | X |
| *Suta flagellum* | Little Whip Snake | | | X | | | X |
| *Suta nigriceps* | Mitchell's Short-tailed Snake | | | X | X | X | X |
| **GEKKONIDAE** | | | | | | | |
| *Christinus marmoratus* | Marbled Gecko | | | X | X | X | X |
| *Diplodactylus damaeus* | Beaded Gecko | | | X[4] | | | |
| *Diplodactylus vittatus* | Eastern Stone Gecko | | | X[5] | | | |
| **PYGOPODIDAE** | | | | | | | |
| *Aprasia striolata* | Lined Worm-lizard | | | X | X | | X |
| *Delma impar* | Striped Snake-lizard | VU | E | X | | | |
| *Delma inornata* | Olive Snake-lizard | | R | X | X | | X |
| *Pygopus lepidopodus* | Common Scaly-foot | | | X | X | | X |
| **SCINCIDAE** | | | | | | | |
| *Bassiana duperreyi* | Eastern Three-lined Skink | | | X | X | X | X |
| *Ctenotus brooski* | Sandhill Ctenotus | | | X[6] | | | |
| *Ctenotus robustus* | Eastern Striped Skink | | | X | X | X | X |
| *Ctenotus orientalis* | Eastern Spotted Ctenotus | | | X | X | X | X |
| *Egernia coventryi* | Swamp Skink | | E | X | X | X | |
| *Egernia multiscutata* | Bull Skink | | | X[7] | | | |

[1] Several records around Keith. Two unexpected records near Mt Gambier, Pillman 1982, check.
[2] The only records are from an unpublished NCSSA report for Messent Wildlife Reserve by CT and EM James, 1965. The report stated that carapaces of *E. macquarii* had been found and *C. longicollis* had also been recorded.
[3] Specimen from Salt Creek, Coorong, no collection date (registered between 1944 and 1946)
[4] Two specimens collected 1982 near Mt Meredith, 15km NE Mt Gambier
[5] 1982 near Bool Lagoon and 1983 near Salt Creek
[6] One specimen near Naracoorte 1967
[7] One specimen from Princess Soak, Coorong N.P., 1985

| FAMILY<br>Scientific Name | SPECIES<br>Common Name | STATUS<br>Aust. | SA | SOURCE<br>SAM | EDBSA<br>Quad | DEHAA/DTUPA<br>Opp. | Res. |
|---|---|---|---|---|---|---|---|
| **REPTILES** | | | | | | | |
| *Egernia whitii* | White's Skink | | | X | X | X | X |
| *Eulamprus tympanum* | Southern Water Skink | | | X | X | X | |
| *Hemiergis decresiensis* | Three-toed Earless Skink | | | X | | X | |
| *Hemiergis peronii* | Four-toed Earless Skink | | | X | X | X | X |
| *Lampropholis delicata* | Delicate Skink | | | X | X | X | X |
| *Lampropholis guichenoti* | Garden Skink | | | X | X | X | X |
| *Lerista bougainvillii* | Bougainville's Skink | | | X | X | | X |
| *Menetia greyii* | Dwarf Skink | | | X | X | | X |
| *Morethia adelaidensis* | Adelaide Snake-eye | | | X | X | | |
| *Morethia obscura* | Mallee Snake-eye | | | X | X | X | X |
| *Nannoscincus macoyi* | | | E | | | X[8] | |
| *Pseudemoia entrecasteauxii* | Southern Grass Skink | | | X | X | X | X |
| *Pseudemoia pagenstecheri* | Tussock Skink | | R | X | | X | |
| *Pseudemoia rawlinsoni* | Glossy Grass Skink | | E | X | X | | |
| *Tiliqua nigrolutea* | Blotched Bluetongue | | | X | X | X | X |
| *Tiliqua occipitalis* | Western Bluetongue | | | X[9] | | | |
| *Tiliqua rugosa* | Sleepy Lizard | | | X | X | X | X |
| *Tiliqua scincoides* | Eastern Bluetongue | | | X | X | X | X |
| **TYPHLOPIDAE** | | | | | | | |
| *Ramphotyphlops australis* | Southern Blind Snake | | | X[10] | | | |
| **VARANIDAE** | | | | | | | |
| *Varanus rosenbergi* | Heath Goanna | | R | X | X | X | X |
| **AMPHIBIANS** | | | | | | | |
| **HYLIDAE** | | | | | | | |
| *Litoria ewingii* | Brown Tree Frog | | | X | X | X | X |
| *Litoria raniformis* | Golden Bell Frog | | V | X | X | | X |
| **MYOBATRACHIDAE** | | | | | | | |
| *Crinia parinsignifera* | Eastern Sign Bearing Frog | | | X[11] | | | |
| *Crinia signifera* | Common Froglet | | | X | X | X | X |
| *Geocrinia laevis* | Smooth Frog | | R | X | X | X | |
| *Limnodynastes dumerili* | Bull Frog | | | X | X | X | X |
| *Limnodynastes peroni* | Striped Marsh Frog | | | X | X | X | X |
| *Limnodynastes tasmaniensis* | Spotted Grass Frog | | | X | X | X | X |
| *Neobatrachus pictus* | Painted Frog | | | X | X | X | X |
| *Neobatrachus sudelli* | Sudell's Frog | | | X | X | X | |
| *Pseudophryne bibronii* | Brown Toadlet | | | X | X | | X |
| *Pseudophryne semimarmorata* | Marbled Toadlet | | | X | X | | X |

[8] One specimen from near Millicent 2001
[9] One specimen near Sherwood H/S, 18 km E of Keith, 1994
[10] One collected near Keith 1962 (two other specimens with no date and general locations)
[11] One record from Kalangadoo 1990

# Appendix XI

## a) Frequency of invertebrate taxa by order at surveyed quadrats (site _ID) on the 1997 survey.

| | | ORDER | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site_ID | Total no. individuals | BLATTODEA | COLEOPTERA | DIPTERA | HEMIPTERA | HYMENOPTERA | NEUROPTERA | ORTHOPTERA |
| BBO2801 | 1 | 1 | | | | | | |
| BEN00801 | 1 | | 1 | | | | | |
| BEN0303 | 5 | | 5 | | | | | |
| BO00401 | 1 | | 1 | | | | | |
| BO00501 | 1 | | 1 | | | | | |
| BO00601 | 9 | | 8 | | | | | 1 |
| BO00701 | 1 | | 1 | | | | | |
| BO01101 | 3 | | 3 | | | | | |
| BO0601 | 1 | | | | 1 | | | |
| BOO11 | 1 | 1 | | | | | | |
| BOO601 | 1 | | | | | 1 | | |
| BOO701 | 1 | | | | | 1 | | |
| BUF00601 | 3 | | 3 | | | | | |
| BUF0601 | 4 | | 4 | | | | | |
| BUF0603 | 3 | | 3 | | | | | |
| CA00201 | 1 | | | | | | | 1 |
| CA00501 | 7 | | 7 | | | | | |
| CA0201 | 5 | | 5 | | | | | |
| CA05 | 1 | | 1 | | | | | |
| CA0501 | 2 | 1 | 1 | | | | | |
| CA501 | 1 | | 1 | | | | | |
| CON00401 | 2 | | 1 | | 1 | | | |
| CON00402 | 1 | | 1 | | | | | |
| CON00701 | 5 | | | | 5 | | | |
| CON00702 | 3 | | 3 | | | | | |
| CON0401 | 15 | 2 | 3 | | | 10 | | |
| CON0402 | 9 | | 2 | | | 7 | | |
| CON0702 | 5 | | 1 | | | 4 | | |
| CON0901 | 3 | 1 | 1 | | | 1 | | |
| CON1401 | 2 | | | | | 2 | | |
| DID1103 | 2 | | 2 | | | | | |
| DUF00901 | 6 | | 6 | | | | | |
| DUF00902 | 1 | | | | 1 | | | |
| DUF0901 | 4 | | | 1 | | 3 | | |
| DUF0902 | 1 | | 1 | | | | | |
| FRA0101 | 2 | | 1 | | | 1 | | |
| FRA0302 | 3 | | | | | 3 | | |
| FRA0303 | 1 | | | | 1 | | | |
| GAM00901 | 1 | | 1 | | | | | |
| GAM01001 | 3 | | 3 | | | | | |
| GAM01002 | 2 | | 2 | | | | | |
| GAM01801 | 2 | | 2 | | | | | |
| GAM1001 | 4 | | 2 | 1 | | | | 1 |
| GAM1002 | 1 | | 1 | | | | | |
| GAM1801 | 1 | 1 | | | | | | |
| GON901 | 1 | | | | | | | 1 |
| GYP00801 | 2 | | 2 | | | | | |
| GYP00802 | 1 | | | | 1 | | | |
| GYP0602 | 1 | | 1 | | | | | |
| GYP0801 | 4 | 3 | | | | 1 | | |

| Site_ID | Total no. individuals | ORDER | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | BLATTODEA | COLEOPTERA | DIPTERA | HEMIPTERA | HYMENOPTERA | NEUROPTERA | ORTHOPTERA |
| BBO2801 | 1 | 1 | | | | | | |
| BEN00801 | 1 | | 1 | | | | | |
| BEN0303 | 5 | | 5 | | | | | |
| BO00401 | 1 | | 1 | | | | | |
| GYP0802 | 14 | 1 | | 2 | 1 | 10 | | |
| HYN00301 | 18 | | | | 18 | | | |
| HYN0301 | 4 | | 4 | | | | | |
| HYN0302 | 1 | | | 1 | | | | |
| KAL00601 | 1 | | 1 | | | | | |
| KAL00801 | 4 | | 4 | | | | | |
| KAL01002 | 3 | | 3 | | | | | |
| KEI0602 | 2 | | | 1 | | 1 | | |
| KEN01704 | 5 | | 5 | | | | | |
| KEN1702 | 3 | | 2 | | | | | 1 |
| KEN1704 | 4 | | 3 | | | | | 1 |
| KEP00601 | 4 | | 2 | | 2 | | | |
| KEP0601 | 2 | | | | | 2 | | |
| KEP0602 | 11 | | | | 8 | 3 | | |
| KON00501 | 2 | | 1 | | 1 | | | |
| KON05 | 1 | | | | | 1 | | |
| LB0101 | 1 | | | 1 | | | | |
| LB101 | 2 | | 2 | | | | | |
| LUC00201 | 1 | | 1 | | | | | |
| LUC00205 | 1 | | 1 | | | | | |
| LUC00501 | 4 | | 4 | | | | | |
| LUC02 | 2 | 2 | | | | | | |
| LUC0205 | 1 | | 1 | | | | | |
| LUC0501 | 4 | | 2 | | | 2 | | |
| LUC201 | 2 | | | | | 2 | | |
| LUC502 | 2 | | | | | 2 | | |
| MAR01001 | 1 | | 1 | | | | | |
| MAR10 | 2 | | | | 2 | | | |
| MAR1002 | 2 | | 2 | | | | | |
| MIN01401 | 3 | | 3 | | | | | |
| MIN14 | 19 | 2 | | | 17 | | | |
| MIN1401 | 8 | | 4 | | | 4 | | |
| MIN1402 | 1 | | 1 | | | | | |
| MON00301 | 1 | | 1 | | | | | |
| MON00601 | 6 | | 6 | | | | | |
| MON00602 | 1 | | 1 | | | | | |
| MON00901 | 2 | | 2 | | | | | |
| MON00903 | 1 | | 1 | | | | | |
| MON01003 | 9 | | 9 | | | | | |
| MON0303 | 2 | | | 2 | | | | |
| MON0601 | 1 | 1 | | | | | | |
| MON0903 | 2 | | 1 | | | | 1 | |
| MON1003 | 5 | | 4 | | | | | 1 |
| MON303 | 1 | | | | | | | 1 |
| MON602 | 2 | | 2 | | | | | |
| NAN00101 | 6 | | 5 | | | | | 1 |
| NAN0101 | 2 | | 1 | 1 | | | | |
| NAN10 | 1 | | 1 | | | | | |
| NAR00201 | 1 | | | | 1 | | | |
| NE0501 | 6 | | 5 | 1 | | | | |
| PEN00101 | 1 | | 1 | | | | | |
| PEN00801 | 9 | | 9 | | | | | |
| PEN01001 | 4 | | 4 | | | | | |

| Site_ID | Total no. individuals | ORDER | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | BLATTODEA | COLEOPTERA | DIPTERA | HEMIPTERA | HYMENOPTERA | NEUROPTERA | ORTHOPTERA |
| BBO2801 | 1 | 1 | | | | | | |
| BEN00801 | 1 | | 1 | | | | | |
| BEN0303 | 5 | | 5 | | | | | |
| BO00401 | 1 | | 1 | | | | | |
| PEN0801 | 3 | | 3 | | | | | |
| PEN1001 | 3 | | 3 | | | | | |
| PM0101 | 3 | | 3 | | | | | |
| ROB00101 | 3 | | | | 3 | | | |
| ROB00201 | 2 | | 1 | | 1 | | | |
| ROB00401 | 2 | | 2 | | | | | |
| ROB02 | 8 | 8 | | | | | | |
| ROB0201 | 1 | | | | | 1 | | |
| ROB0401 | 1 | | | | | 1 | | |
| ROB0402 | 3 | 2 | 1 | | | | | |
| ROB0901 | 1 | | 1 | | | | | |
| ROB0902 | 6 | 1 | 1 | | 4 | | | |
| STR00501 | 2 | | 2 | | | | | |
| STR00601 | 9 | | 9 | | | | | |
| STR0302 | 2 | | | 2 | | | | |
| STR0602 | 3 | 1 | | 2 | | | | |
| WIL00401 | 13 | | | | 13 | | | |
| WIL0401 | 1 | | 1 | | | | | |
| WIL0602 | 1 | | | | | 1 | | |
| WO00301 | 1 | | 1 | | | | | |
| WO0301 | 3 | | 3 | | | | | |
| WO301 | 3 | | | 3 | | | | |

## b) Frequency of invertebrate taxa in relation to soil texture class.

| | | | | | | Soil Texture Class | | | |
|---|---|---|---|---|---|---|---|---|---|
| **order** | **family** | **genus species** | **loam** | **loamy sand** | **sand** | **sandy clay loam** | **sandy loam** | **silty loam** | **Grand Total** |
| **BLATTODEA** | Blaberidae | *Calolampra* sp. | 3 | | 6 | 1 | 13 | 1 | 24 |
| | Blattellidae | Gn sp. | | | | | | | 1 |
| | Blattidae | *Platyzosteria* sp. | | | | | 1 | | 1 |
| **COLEOPTERA** | Archeocryptidae | Gn sp | | | 1 | | 4 | | 5 |
| | Carabidae | *Carenum* sp. 'black' | | | 6 | | 11 | | 17 |
| | | *Carenum violaceum* | 2 | | | | | | 2 |
| | | Gn sp | | | 3 | | | | 3 |
| | | *Notogonum* sp. | | 1 | | | 2 | | 3 |
| | | *Platycoelus* sp. | | | 6 | | 12 | | 18 |
| | | *Promocoderus* sp. | 2 | | 19 | | 22 | 1 | 44 |
| | | *Rhytisternus* sp. | | | 4 | | 1 | | 5 |
| | | *Sarticus* sp. | | | | | 1 | | 1 |
| | | *Scaraphites* sp. | | | 2 | | 1 | | 3 |
| | | *Secatophus* sp. | | | 9 | 2 | 9 | 2 | 22 |
| | Curculionidae | Amycterinae Gn. sp. | | | 1 | | 3 | | 4 |
| | | Gn. sp. | | | | 1 | | | 1 |
| | | *Leptopius* sp. | | | | | 8 | | 8 |
| | | *Tetralopus* sp. | | | 2 | | 1 | | 3 |
| | Tenebrionidae | *Brises* sp. | | | | | 5 | | 7 |
| | | *Cillibus blackburni* | | | 5 | | 6 | | 11 |
| | | *Metistete* sp. | 1 | | 4 | | 10 | | 16 |
| | | *Nyctozolius* sp. | | | 1 | | 3 | | 4 |
| **DIPTERA** | Dolichopodidae | Gn sp. | 2 | | 2 | | 5 | | 9 |
| | Tabanidae | Gn sp. | | | 5 | | | | 6 |
| **HEMIPTERA** | Acanthosomatidae | Gn sp. | 1 | | | | | | 1 |
| | Cydnidae | *Aethus* sp. | | | 15 | | 25 | | 44 |
| | Lygaeidae | *Crytorhampus orbus* | | | | | 1 | | 1 |
| | | *Euander lacertosus* | | | | | 1 | | 1 |
| | Pentatomidae | Gn sp. | | | 14 | | 7 | | 21 |
| | Scutelleridae | *Choerocoris paganus* | 3 | | 10 | | | | 13 |
| | Bethylidae | Cleptinae Gn sp. | 1 | | | | | | 1 |
| | Mutilidae | Gn sp. | 11 | | 9 | | 14 | | 34 |
| | Pompilidae | Gn sp. | 1 | | 6 | | 22 | | 29 |
| **NEUROPTERA** | Ithonidae | *Ithone* sp. | | | | | 1 | | 1 |
| **ORTHOPTERA** | Acrididae | Catantopinae Gn sp. | | | 2 | | 5 | | 7 |
| **Grand Total** | | | **27** | **1** | **132** | **4** | **194** | **4** | **371** |

## c) Frequency of invertebrate taxa in relation to landform type

| order | family | genus species | Landform<br>dune crest | dune slope | dune/consolidated dune | hill crest | hill footslope | hill slope | interdune corridor | plain (incl undulating plain) | sandy plain | swale | swamp | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BLATTODEA** | Blaberidae | *Calolampra* sp. | 2 | 1 | | 1 | 5 | | | 12 | | 2 | 1 | 24 |
| | Blattellidae | Gn sp | | | | | | | | | | | | 1 |
| | Blattidae | *Platyzosteria* sp. | | | | | | | | | | | 1 | 1 |
| **COLEOPTERA** | Archeocryptidae | Gn sp | | | | | | 1 | | | 4 | | | 5 |
| | Carabidae | *Carenum* sp. black | 2 | 1 | | | | 1 | | 9 | 4 | | | 17 |
| | | *Carenum violaceum* | | | 2 | | | | | | | | | 2 |
| | | Gn sp | | | | | 2 | | | 1 | | | | 3 |
| | | *Notagonum* sp. | | | 1 | | | | | | | | 2 | 3 |
| | | *Platycoelus* sp. | | | 5 | | 1 | 1 | | 5 | 3 | | 3 | 18 |
| | | *Promecoderus* sp. | 5 | 1 | 9 | | | 2 | | 9 | 6 | 3 | 9 | 44 |
| | | *Rhytisternus* sp. | | 3 | | | | | | | 1 | | 1 | 5 |
| | | *Sarticus* sp. | | | | | | | | | | | 1 | 1 |
| | | *Scaraphites* sp. | 2 | | | | | | | | | | 1 | 3 |
| | | *Secatophus* sp. | | 5 | | | | | | 3 | 5 | 4 | 5 | 22 |
| | Curculionidae | Amycterinae Gn. sp. | | | 2 | | | | | | 1 | 1 | | 4 |
| | | Gn. sp. | | | | | | | | | | | 1 | 1 |
| | | *Leptopius* sp. | | | 6 | | | | | | | 2 | | 8 |
| | | *Tetralopus* sp. | 1 | | | | | | | 1 | | 1 | | 3 |
| | Tenebrionidae | *Brises* sp. | | | 5 | | | | | 2 | | | | 7 |
| | | *Cillibus blackburni* | 1 | | 3 | | | 2 | | 4 | | 1 | | 11 |
| | | *Metistete* sp. | 3 | | | | | 2 | | 7 | 1 | 2 | | 16 |
| | | *Nyctozolius* sp. | | | | | | 1 | | 1 | 2 | | | 4 |
| **DIPTERA** | Dolichopodidae | Gn sp | 1 | | 1 | 2 | | 2 | | 2 | | 1 | | 9 |
| | Tabanidae | Gn sp | | | | | | 2 | | 1 | 1 | 2 | | 6 |
| **HEMIPTERA** | Acanthosomatidae | Gn sp | | | | 1 | | | | | | | | 1 |
| | Cydnidae | *Aethus* sp. | 8 | 3 | 4 | | | 2 | | 4 | 18 | 1 | | 44 |
| | Lygaeidae | *Crytorhampus orbus* | 1 | | | | | | | | | | | 1 |
| | | *Euander lacertosus* | | | | | | | | | | | 1 | 1 |
| | Pentatomidae | Gn sp. | 8 | | 1 | | | 12 | | | | | | 21 |
| | Scutelleridae | *Choerocoris paganus* | 10 | | 2 | 1 | | | | | | | | 13 |
| **HYMENOPTERA** | Bethylidae | Cleptinae Gn sp. | | | | | | | | 1 | | | | 1 |
| | Mutillidae | Gn sp. | 5 | 1 | 2 | 11 | 2 | 1 | 2 | | | 6 | 4 | 34 |
| | Pompilidae | Gn sp. | 3 | | 2 | 1 | 1 | 12 | | 2 | | 8 | | 29 |
| **NEUROPTERA** | Ithonidae | *Ithone* sp. | | | | | | | | 1 | | | | 1 |
| **ORTHOPTERA** | Acrididae | Catantopinae Gn sp. | 1 | | 2 | | | 1 | | 1 | 1 | | 1 | 7 |
| **Grand Total** | | | **53** | **15** | **47** | **17** | **11** | **42** | **2** | **66** | **47** | **34** | **31** | **371** |

## d) Frequency of invertebrate taxa in relation to vegetation structural formation.

| | | | Structural Formation | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **order** | **family** | **genus species** | **Closed forest** | **Closed mallee** | **Closed sedgeland** | **Closed shrubland** | **Low open forest** | **Low open woodland** | **Low shrubland** | **Low woodland** | **Mallee** | **Open forest** | **Open mallee** | **Open woodland** | **Sedgeland** | **Tall shrubland** | **Very low open forest** | **Very low open woodland** | **Very low woodland** | **Woodland** | **Grand Total** |
| **BLATTODEA** | Blaberidae | *Calolampra* sp. | | 3 | | | 1 | 3 | | 1 | | 10 | | | | | | | | 5 | **24** |
| | Blattellidae | Gn sp. | | | | | | | | | | | | | | | | | | | **1** |
| | Blattidae | *Platyzosteria* sp. | | | | 1 | | | | | | | | | | | | | | | **1** |
| **COLEOPTERA** | Archeocryptidae | Gn sp. | | | | | | 1 | | | | | | | | | | | | 4 | **5** |
| | Carabidae | *Carenum* sp. black | | | | | 2 | 6 | | 1 | | 3 | | 2 | | | | | | 3 | **17** |
| | | *Carenum violaceum* | | | | | | | | | | | | 2 | | | | | | | **2** |
| | | Gn sp. | | | | | | 2 | | | | 1 | | | | | | | | | **3** |
| | | *Notagonum* sp. | | | 1 | | | | | | | | | | | 1 | | | | | **3** |
| | | *Platycoelus* sp. | | | | 2 | | 3 | | | | 4 | | 1 | | 1 | | | | 5 | **18** |
| | | *Promecoderus* sp. | | 3 | | 3 | 1 | | 2 | 6 | | 1 | | 13 | | | | 3 | 9 | 2 | **44** |
| | | *Rhytisternus* sp. | | | | 1 | | | | | | 3 | | | | | | | | 1 | **5** |
| | | *Sarticus* sp. | | | | | | | | | | | | | | 1 | | | | | **1** |
| | | *Scaraphites* sp. | | 2 | | | | | | | | | | | | 1 | | | | | **3** |
| | | *Secatophus* sp. | | | | | 2 | | | 3 | | 1 | | 6 | | | | 3 | 1 | 3 | **22** |
| | Curculionidae | Amycterinae Gn. sp. | | | | | | | | | | 1 | | | 1 | | | | | | **4** |
| | | Gn. sp. | | | | 1 | | | | | | | | | | | | | | | **1** |
| | | *Leptopius* sp. | | | | | | | | | | | | | 2 | | 4 | | | | **8** |
| | | *Tetralopus* sp. | | 1 | | | | | | 2 | | | | | | | | | | | **3** |
| | Tenebrionidae | *Brises* sp. | 2 | | | | | | | | | | | | | | | | 3 | | **7** |
| | | *Cillibus blackburni* | | 1 | | | | 6 | | | | | | | | | 1 | | 2 | 1 | **11** |
| | | *Metistete* sp. | | | | | 2 | | | | 1 | 2 | | 6 | | | | | | 4 | **16** |
| | | *Nyctozolius* sp. | | | | | | | | 1 | | | | | | | | | | 3 | **4** |
| **DIPTERA** | Dolichopodidae | Gn sp. | | 2 | | | 1 | 2 | | | | | | | | | | 1 | | 3 | **9** |
| | Tabanidae | Gn sp. | | | | | | | | | | 1 | | | | 1 | | | | 2 | **6** |
| **HEMIPTERA** | Acanthosomatidae | Gn sp. | | 1 | | | | | | | | | | | | | | | | | **1** |
| | Cydnidae | *Aethus* sp. | | 8 | | | | 1 | | 4 | | 1 | | | | | | | 2 | 24 | **44** |
| | Lygaeidae | *Crytorhampus orbus* | | | | | | 1 | | | | | | | | | | | | | **1** |
| | | *Euander lacertosus* | | | | | | | | | | | | 1 | | | | | | | **1** |
| | Pentatomidae | Gn sp. | | | | | | 19 | | | 1 | | | | | | | | | 1 | **21** |
| | Scutelleridae | *Choerocoris paganus* | | 10 | | | | | | | | | | 3 | | | | | | | **13** |
| **HYMENOPTERA** | Bethylidae | Cleptinae Gn sp. | | | | | | | 1 | | | | | | | | | | | | **1** |
| | Mutillidae | Gn sp. | | 13 | | | | | | 3 | | | 1 | 4 | | | | 3 | | 8 | **34** |
| | Pompilidae | Gn sp. | | 1 | | | | 4 | | 1 | | 1 | | | | 1 | | | 2 | 18 | **29** |
| **NEUROPTERA** | Ithonidae | *Ithone* sp. | | | | | | | | 1 | | | | | | | | | | | **1** |
| **ORTHOPTERA** | Acrididae | Catantopinae Gn sp. | 1 | | | | 1 | 2 | | | | 1 | | 1 | | | | | 1 | | **7** |
| **Grand Total** | | | **3** | **45** | **1** | **8** | **10** | **50** | **3** | **23** | **2** | **30** | **1** | **39** | **3** | **6** | **5** | **10** | **20** | **87** | **371** |