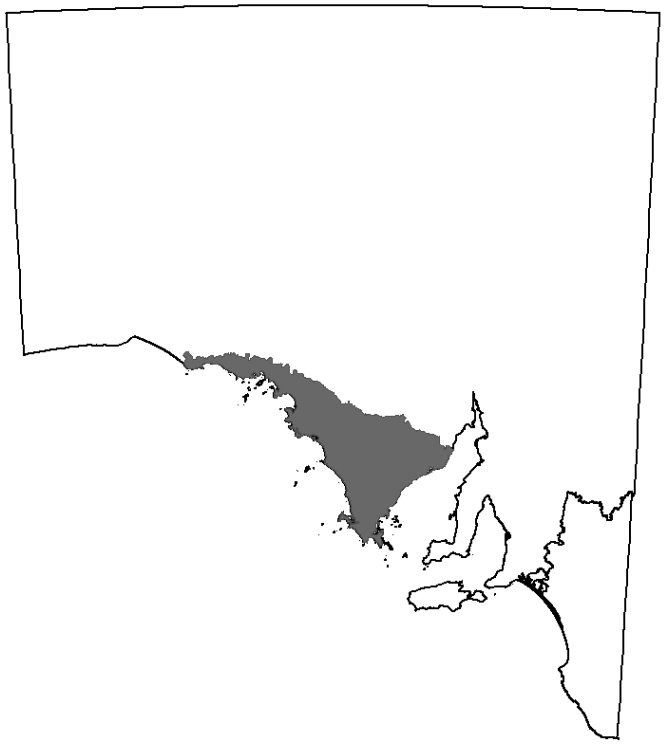
A BIOLOGICAL SURVEY OF THE EYRE PENINSULA SOUTH AUSTRALIA



BIOLOGICAL SURVEY
SOUTH AUSTRALIA

R Brandle

Science Resource Centre
Information, Science and Technology Directorate
Department for Environment and Heritage
South Australia
2010

The Biological Survey of the Eyre Peninsula was an initiative of the Biological Survey and Monitoring Section for the South Australian Department for Environment and Heritage

The views and opinions expressed in this report are those of the authors and do not necessarily represent the views or policies of the State Government of South Australia.

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Cover Photograph:
A southern Eyre Peninsula view north from the Marble Range to South Block range.
Photo: R Brandle

Abstract

Specific objectives of the Biological Survey of the Eyre Peninsula Biogeographic Region were to collate the existing flora and fauna information and systematically sample the diversity of habitats present in the region for vertebrates. The fauna survey conducted across the region from 2001-2005 is the focus of this report, but it builds on a number of previous smaller regional surveys. Plant data from the 1696 visits to survey sites were collated from 22 separate surveys conducted between 1978 and 2008. Fauna data was used from a subset of 283 survey sites which were collated from six surveys conducted between 1990 and 2008.

Survey sites across the Eyre Peninsula Study Area have sampled native vegetation communities in all environmental associations (Laut *et al.* 1977). The sampling effort within different landform types reflects the dominance of those types within the study area. Plains and dunes were dominant, most commonly with calcareous surface rock or strew and sandy soils. Fire history was known for 13% of sites.

At least 1167 plant taxa from 85 Families were detected at the 1696 survey sites within the study area, of which 969 were indigenous natives. Plant species richness at sites ranged from 1 to 96 with hill landform types having the highest site species richness and tidal flats the lowest. Sandy soils were significantly less species rich than clay or loam soils. The most species rich floristic communities were woodland groups associated with moister more fertile hill environments. The surveys added an extra 17 new rated species to the SA Herbarium collection and 194 plant taxa have current Commonwealth or South Australian legislated conservation ratings. The surveys also recorded 198 introduced taxa with one or more present at 74% of the sites.

Cluster analyses were used to define 95 floristic community groups which were broadly defined under 36 vegetation alliances including: coastal shrublands, mangrove forests, samphire low shrublands, grasslands, hummock grasslands, sedgelands, shrublands, mallee woodlands and true woodlands dominated by Eucalypts, Sheoaks or Native Pines. A number of floristic groups had limited representation in the study area of which 12 were considered to require some follow up assessment of status and potential conservation requirements.

Vertebrate fauna information was collected for birds, mammals, reptiles, and to a lesser extent frogs. The specimen collection at the South Australian Museum confirms that 27 species of native mammal were known to occur on Eyre Peninsula since the arrival of Europeans. An extra 16 species have become extinct in the region over the last 5000 years with many likely to have disappeared since European settlement. The surveys detected 23 native mammal species at sample sites. This included one from jaw bones that was thought to be extinct, and two resulting from deliberate introductions. The survey also resulted in the addition of a new species to the State's known mammal fauna. Three mammal species had South Australian Threatened species ratings of which two were also rated nationally. Of the six introduced mammal species that are widespread across the region, four have been have been listed nationally as threatening processes.

The study area supports a high diversity of terrestrial bird species which reflects the variety of vegetation types and climatic zones in the region. Of the 171 species known to inhabit the study area, 150 were recorded at the 273 survey sites sampled for birds. The most species rich families were the raptors, parrots/cockatoos and honeyeaters. Only four species were recorded at more than 50% of sites. The study area supports eight species that are listed as threatened under the Commonwealth EPBC Act and an extra 27 as threatened or rare under the SA NPW Act. For three EPBC listed species the study area represents a significant proportion of the species' distributions. Habitat analyses showed that Red Gum, Mallee Box, Eyre Peninsula Blue Gum and Sugar Gum woodlands supported the highest numbers of species per site whilst chenopod low shrublands the lowest. The survey also provides further evidence of the importance of Sugar Gum woodland as a unique bird habitat in SA.

The specimen collection at the South Australian Museum confirms that three frog and 84 reptile species were known to occur on Eyre Peninsula since the arrival of Europeans. The survey detected three frog and 83 reptile species at survey sites. The Skinks were the most species rich of the nine families of reptiles represented by the species detected at sites. Only four species were detected at more than a quarter of the sites reflecting the diversity of habitat types and climatic range across the study area. No reptile or frog species occurring in the study area was rated as nationally threatened. Of the seven reptile species with a South Australian conservation rating only one was listed as threatened, the remainder being classed as rare. Five species were near endemic to the study area and 14 were identified as having populations that were significantly isolated from other regions. These species should be monitored to detect distributional declines before they become rare or vulnerable to extinction.

The diversity of landforms and climatic range across the Eyre Peninsula biogeographic region provides for a diversity of plants and animals that make up the vegetation communities still represented in the region. Vegetation clearance and degradation has affected many of these, making conservation action critical for the continued survival of many species and communities. The surveys have been important in providing an overview of the distribution and habitat requirements for many species and provide a baseline for long term comparisons.

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Acknowledgements

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INTRODUCTION

Brandle R[1]

Background and Aims

The Biological Survey of South Australia is a program of systematic surveys conducted across the state to provide a broad baseline inventory of the state's flora and fauna. It was established under the auspices of the Biological Survey Coordinating Committee, an interdepartmental group comprising representatives from the SA Museum, Environment and Heritage, SA Research and Development Institute, and Primary Industries and Resources SA (Foulkes and Gillen 2000). The aim of these surveys is to systematically and consistently sample a representative range of the ecological habitats found in South Australia (Brandle 2001). The information is collected to assist with long-term natural resource management and the conservation of the state's biological diversity.

This project was funded by the Department for Environment and Heritage to complete the baseline dataset for the agricultural regions of South Australia.

Specific objectives of the Biological Survey of the Eyre Peninsula Biogeographic Region (EPBR), as defined in the Interim Biogeographic Regionalisation of Australia (IBRA V6.1, Thackway and Cresswell 1995), were:

- To observe, collect and identify species of plants and vertebrate fauna present in the area by sampling sites selected to represent the diversity of habitats present in the region. The flora and fauna survey conducted across the EPBR from 2001-2005 is the focus of this report, but it builds on a number of previous smaller regional surveys. Information from these surveys is included in this report
- To provide the South Australian Plant Biodiversity Centre and South Australian Museum with collections representative of the diversity of plants, vertebrates and invertebrates in the region.
- To document and classify the patterns of species and communities across the region .
- To establish ecological relationships between the vegetation, vertebrate fauna and the physical environment across the EPBR.
- To evaluate the conservation status of species and communities within the EPBR, as a basis for conservation strategies.
- To establish a long-term monitoring system and associated database to enable subsequent evaluation of broad-scale environmental change.

Biological Surveys Included in This Report

Data from 22 surveys have been used in this report (Figure 1). Field data for all of these surveys has been extracted from the Department for Environment and Heritage's Survey and Opportune databases (Environmental DataBase of South Australia EDBSA).

The 22 surveys were:

- EYRE PENINSULA (1978-80) Department for Environment and Planning. North-western Eyre Peninsula. Vegetation only.
- LINCOLN NATIONAL PARK (1983) Department for Environment and Planning. Resource assessment for Lincoln National Park. Vegetation and fauna, however only vegetation data has been stored on the database. (NPWS 1989).
- KULLIPARU CONSERVATION PARK (1990) Nature Conservation Society of SA. Kulliparu CP and adjacent pastoral land and Heritage Agreements. Vegetation and Fauna. (Brandle 2000).
- LAKE NEWLAND CONSERVATION PARK (1991) Scientific Expedition Group. Lake Newland CP. Vegetation and fauna.
- TEMPERATE GRASSLANDS (1991) World Wildlife Fund grant. Focussed on temperate grassland communities in SA. Vegetation only. (Hyde 1995)
- VENUS BAY C P & BETTONG (1992-96). National Parks and Wildlife SA. Venus Bay CP. Vegetation and fauna. (Copley *et al.* 1999)
- BRUSH CUTTING MONITORING (1993) Department for Environment & Heritage. Areas of SA where commercial cutting of *Melaleuca uncinata* is permitted. (Neagle 1994).
- SOUTHERN EYRE PENINSULA (1995, 99, 03) Department of Housing and Urban Development. South of 34^{o} latitude on EP. Vegetation only (some vertebrate surveys in the south).
- COASTAL DUNE & CLIFFTOP (1995-97). Coast Protection Branch Dept Environment & Heritage - dune and clifftop communities along the entire coast of mainland SA. Vegetation only. (Oppermann 1999)
- TIDAL & SALT MARSH COMMUNITIES (1995-98). Coast Protection Branch Dept Environment & Heritage. Mangrove and coastal saltmarsh communities in SA. Vegetation only. (Fotheringham 2000)
- NORTH EASTERN EYRE PENINSULA (1998) Department of Housing and Urban Development.

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Covers an area extending east from Pinkawillinie Conservation Park to just south of Iron Knob, then south to below Arno Bay on the coast and west to Hincks Conservation Park. Vegetation only.

- NORTH WESTERN EYRE PENINSULA (1999) Department of Housing and Urban Development. Covers an area from Streaky Bay in the north west, across to Pinkawilline CP in north east, south to just west of Hincks CP in the south east and west to the coast near Lake Hamilton in the south west. Vegetation only.
- VENUS BAY CP, CR AND ENVIRONS (1999) Planning SA. Venus Bay Conservation Reserve and adjacent areas. Vegetation only.
- PUREBA (1999) Dept. for Environment & Heritage supported by Mines and Energy. Pureba Conservation Park and Nunnyah Conservation Reserve. Vegetation only.
- CROWN LAND ASSESSMENT (1999, 2005) Coast Protection Branch, Dept. for Environment & Heritage. Coastal areas from Streaky Bay to Baird Bay. Vegetation only.
- KOONIBBA (2001) Aboriginal Lands Trust. Koonibba aboriginal land. Vegetation only. (Landless 2001)
- HINCKS & HAMBIDGE CP (2001) Planning SA. Hincks and Hambidge Conservation Parks. Vegetation only.
- EYRE PENINSULA FAUNA (2001-05, 07) Dept. Environment & Heritage. Eyre Peninsula Biogeographic Region. Vegetation and fauna.
- GAWLER (2001) Dept. Environment & Heritage. Gawler Ranges. Vegetation and fauna.
- YELLABINNA RR (2005) Iluka Resources. Yellabinna Regional Reserve. Vegetation only. (Badman unpubl.)
- GAWLER CRATON (2006) Dept. Environment & Heritage for Primary Industries SA. Yellabinna Regional Reserve and the south-east part of the Maralinga Tjarutja Aboriginal Lands. Vegetation only.
- SHIRROCOE MGT PLAN SURVEY (2008) Dept. Environment & Heritage. Shirrocoe pastoral lease. Vegetation and fauna.

A complete list of all 1696 sites from these surveys including the coordinates (projection GDA94) are provided in Appendix 1.

The approach of this report is for the subsequent chapters to stand alone as reports on the various sections of the survey. Hence each chapter will contain its own introduction, methods, results and discussion section.

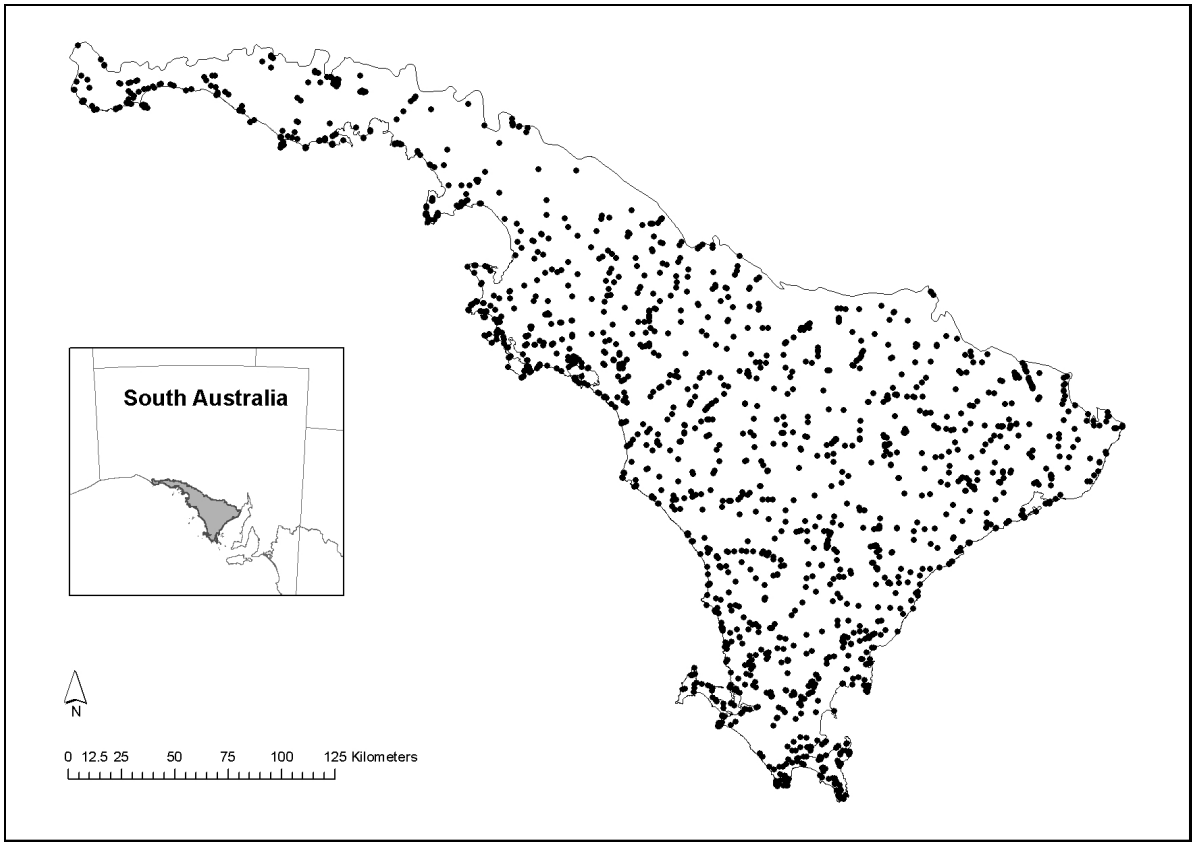

Figure 1. Map of study area showing the location of 1696 survey sites from the 22 surveys mentioned in the text.

THE PHYSICAL ENVIRONMENT

Brandle R[1]

Introduction

The physical attributes of the Eyre Peninsula region have been well documented in the Natural History of the Eyre Peninsula (Twidale *et al.* 1985) and the Environments of South Australia (Laut *et al.* 1977). Both accounts use maps to delineate landform types. However they differ in their approaches. Twidale *et al.* (1985) provided more interpretation of the various physical parameters relating to landform, soils, hydrology and climate, based on researchers findings in the area over the previous 40 years. Laut *et al.* (1977) used a descriptive and rigidly structured approach at an environmental association level, which they defined using Landsat imagery in combination with previous research data. Information on location, area, topographic relief, altitude, drainage networks, climate and groundwater resources were summarised for each association whilst further detail for the variety of land units within each association was listed under landform, surface water and soils.

It is not the intention of this report to review or compare these treatments as both are useful to those wishing to gain an understanding of the diversity of geomorphology and physical attributes found across Eyre Peninsula. They are specifically mentioned here as they provide the basis to understanding the summary of information collected at 1696 biological survey sites that contribute to this report of the biological assets of Eyre Peninsula Biogeographic Region (EPBR).

The Australian continent has been regionalised using biogeographic principles (Interim Biogeographic Regionalisation of Australia [IBRA], Thackway & Cresswell 1995). In South Australia this is based on Environmental Association line work developed by Laut *et al.* (1977), though the bioregional boundaries differ significantly in many areas including the Eyre Peninsula. The Eyre Peninsula comprises three of the five biogeographic subregions that make up the Eyre Yorke Block Biogeograhic Region. It is these three regions (Eyre Mallee, Eyre Hills and Talia) that make up the study area for this report. On the east coast it cuts the Eyre Peninsula off from the Middleback Ranges to the north, halfway between the towns of Cowell and Whyalla, runs south of the Gawler Ranges and loops around the mostly cleared parts of the western Eyre Peninsula meeting the west coast 33 km west of Fowlers Bay (Figure 2). The boundary runs between the 250 – 300 mm rainfall isohyet which in many areas is accompanied by a change in vegetation from the mallee that dominates Eyre Peninsula to more arid adapted woodlands to the north.

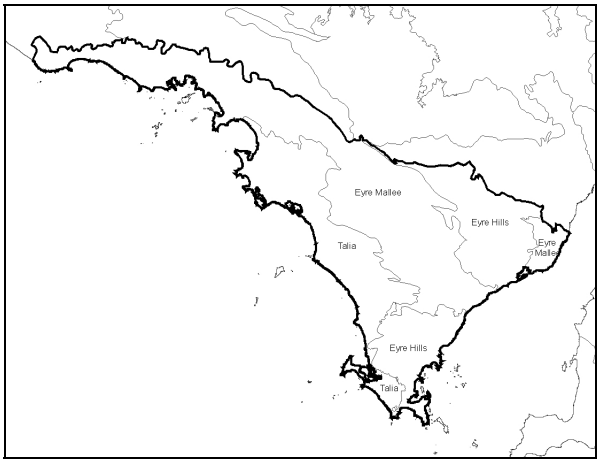

Figure 2. The Eyre Peninsula biogeographic region and subregions that comprise the study area.

The Eyre Peninsula is dominated by undulating limestone plains which in many areas are overlain by longitudinal sand dunes. Significant uplands in the form of the Marble Ranges and Koppio Hills characterise the southern Eyre Hills subregion whilst the hills and ranges to the north of Cleve characterise the northern section of the Eyre Hills subregion. An interesting feature of the Eyre Peninsula are the granite inselbergs that occasionally rise out of the plains. A more detailed summary utilising the three sources mentioned above can be found in the Biodiversity Plan for Eyre Peninsula (DEH 2002).

This chapter aims to summarise the physical components of the Eyre Peninsula measured at survey sites to determine habitat relationships for the vegetation and vertebrate fauna that was sampled across these sites.

Methods

Survey sites referred in this paper were sampled in accordance with the Biological Survey of South Australia (Heard and Channon 1997), though sites sampled prior to 1990 are lacking some physical information. Each site has a point location with accuracy within 300m. The physical descriptors are based on McDonald *et al.* (1990) and include: Landform Pattern, Landform Element, Site Slope and Aspect, Outcrop Cover and Lithology, Surface Strew Size, Cover and Lithology, Surface Soil Texture Class. Estimates of Bare Earth and Litter Cover were also recorded. Location of sites within biogeographic subregions and environmental associations was determined using ARCGIS, as was fire history.

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The selection of sites varied depending on the scale of the survey for which the information was collected. However, most surveys aimed to sample the variety of landforms and vegetation communities across the geographic extent of their study area, with the intention of sampling discrete vegetation communities (as opposed to sampling ecotonal areas). Twenty-two different survey programs have contributed to the 1696 sites located on Eyre Peninsula (Table 1). A number of these are part of large regional projects (BS# 30, 80, 103, 107, 128). Others such as BS 1 and 430 are large regional surveys focusing on adjacent regions where a small number of sites have overlapped this study area. Others are targeted for specific environmental features on a statewide basis such as BS 82 the Coastal Dunes and Clifftop survey. The remaining surveys mostly target smaller regions, conservation reserves or are associated with specific monitoring programs. The majority of sites relate to 30m x 30m vegetation quadrats (89%). Others ranged from 10m x 10m plots to 20 replicate 5m x 5m plots along a point transect. 50m x 50m plots were used in the dry mallee country at the edge of the study region, and 100m x 100m plots for large regional surveys that primarily surveyed north of the study area. The percent cover classes that are estimated for rock outcrop, surface strew, bare earth and litter relate to the size of these vegetation quadrats.

Site selection and methodologies for surveys will be dealt with more thoroughly in specific papers dealing with the vegetation and vertebrate fauna of the Eyre Peninsula biogeographic region. The physical parameters have been summarised in this chapter as a reference for the physical habitat variables within the following chapters in this report. Sites and their locations are presented in Appendix 1.

Results

The 1696 sites containing physical survey information contributing to this summary were collected from 22 separate surveys. These are listed in Table 1 which indicates the number of sites sampled in each year for each survey.

Surveys conducted prior to 1990 did not use the full biological survey methodology as described by Heard and Channon (1997). For example BS46 (Temperate Grassland – WWF) and BS121 (Brush Cutting Monitoring). A number of surveys have had repeat visits to sites which are included in the Table 1. Of 1696 sites, 1462 were visited once whilst 234 have had more than one visit. However, most of these visits do not relate to re-sampling vegetation, as the Eyre Peninsula fauna survey was conducted three to four months after the vegetation survey. Surveys where vegetation was sampled on more than one occasion were limited to Venus Bay Conservation Park and Bettong Monitoring BS#71 (total of nine sites of which most were re-sampled more than once) (Copley *et al.*1999) and Eyre Peninsula Fauna Survey (BS# 128), where 13 sites in the Koppio Hills region were re-sampled to investigate the effects of the 2005 Wangary fire (Lang *et al.* 2009).

Table 1. Surveys conducted in the Eyre Peninsula study area and the number of sites per year in which they were sampled. NB. # sites may be lower than the sum of sites sampled per year for a survey where sites were re-sampled in subsequent years. (BS# = a unique Survey number relating to the Biological Databases of South Australia BDBSA).

BS #	Survey name	1978	1979	1980	1983	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	# sites
1	GAWLER															7									7
21	KULLIPARU CONS. PARK (NCS) *					39																			39
27	LAKE NEWLAND CONSERVATION PARK						7																		7
30	EYRE PENINSULA (DEP 1977) *	89	3	2																					94
46	TEMPERATE GRASSLANDS – WWF *						7																		7
71	VENUS BAY C P AND BETTONG MONITORING							5	9	8	8	8													9
78	TIDAL & SALT MARSH COMMUNITIES										9	6		13											28
79	LINCOLN NATIONAL PARK *				33																				33
80	SOUTHERN EYRE PENINSULA										307				5				1						307
82	COASTAL DUNE & CLIFFTOP										151	36	47												234
103	NORTH EASTERN EYRE PENINSULA													249											249
107	NORTH WESTERN EYRE PENINSULA														291										291
110	VENUS BAY CP, CR AND ENVIRONS														12										12
113	PUREBA														5										5
121	BRUSH CUTTING MONITORING *								16																16
127	KOONIBBA																13								13
128	EYRE PENINSULA FAUNA																37	55	48	50	47		16		240
131	HINCKS & HAMBIDGE CP																31								31
179	CROWN LAND ASSESSMENT *															27					25				52
428	YELLABINNA RR (ILUKA RESOURCES)																				11				11
430	GAWLER CRATON																					1			1
599	SHIRROCOE MANAGEMENT PLAN SURVEY																							10	10

* surveys marked with asterisk lack landform pattern information.

Biogeographic Subregions and Environmental Associations

Eyre Mallee

The Eyre Mallee biogeographic subregion is described as a dunefield in an erosional land type. The landform is characterised by stable and closely spaced, north-west to south-east longitudinal dunes that are locally broken by granite hills and ridges of metamorphic rocks. The geology is described as: vast sand dunes and interdune corridors of clay, silt and very fine sand; evaporite deposits in numerous salt lakes (gypsum, halite); kopi ridges and dunes; some silcrete and calcrete (rare). Soils are mostly sand soils with weak pedologic development, red calcareous earths and red siliceous sands. Vegetation form is described as mallee heath and shrublands and the climate is characterised by moisture being the main limit on crop growth with growth index highest in spring .

This subregion is the largest of the three comprising the study area (50%, of which 35% retains native vegetation cover) and encompasses 18 environmental associations (Figure 3). These, along with their total area (km^2), percentage of remnant vegetation, the number of sites and the area of remnant vegetation to each sample site are listed in Table 2. The summary indicates site coverage of the remnant vegetation within environmental associations of 1.1 to 35.4 km^2/site and 7.4 km^2/site for the biogeographic subregion. Sites at highest densities within remnant vegetation (i.e. <5 km^2/site) are in the smaller associations supporting <25% remnant vegetation, whilst sites at the lowest densities (i.e. >20 km^2/site) are in the larger associations supporting >70% remnant vegetation.

Table 2. Eyre Mallee biogeographic subregion - summary of remnant vegetation within each environmental association and the number of flora and fauna sites sampled in each (2009).

Environmental Association (Laut *et al.* 1977)	Area (km^2)	% of area under remnant vegetation	# flora sites in association	remnant vegetation (km^2)/ flora site	# fauna sites in association	remnant vegetation (km^2)/ fauna site
Blue Range	65.1	47	5	6.15	3	10.26
Bookabie	1351.8	54	75	9.72	13	56.07
Ceduna	1296.1	39	99	5.34	14	37.74
Corrabinnie	1326.4	92	41	29.69	10	121.71
Darke Peake	77.1	23	13	1.35	4	4.40
Hambidge	3534.7	28	92	10.87	10	99.97
Hincks	289.5	83	16	14.97	8	29.94
Isabella	296.0	16	10	4.77	0	
Koongawa	5386.8	35	125	15.08	26	72.48
Kyancutta	735.5	17	17	7.26	4	30.87
Lock	187.4	5	2	5.05	0	
McLochlan	1039.6	71	34	21.64	4	183.95
Midgee	1207.8	61	53	13.87	15	49.02
Mt Dampier	64.0	20	5	2.57	0	
Scrubby Peak	245.2	72	5	35.48	0	
Tooligie	43.4	3	1	1.09	0	
Wharminda	702.5	9	17	3.63	0	
Wirrula	5005.0	11	63	8.94	18	31.28
Unmapped			2			
50% of the study area and 40% of sites	**22853.8**	**35**	**675**	**12.1**	**129**	**62.9**

Eyre Hills

The Eyre Hills biogeographic subregion is described as dunefield on a depositional land type. The landform is characterised by low limestone dune ridges and small granitic islands with dunes. The geology is described as: Ripon Calcrete and Loveday Soil in aeolian sand sheets, dune sand and red soils (terra rossa). The soils are mostly sands of minimal pedologic development, brown calcareous earths, brown sands, shallow red brown sandy soils and sandy soils with yellow clayey mottled subsoil. The vegetation form is described as mallee heath and shrublands, which describes most of the communities within the northern block but only a proportion of the southern block. Also of note are woodlands, grassy woodlands and grasslands associated with the Koppio Hills and Marble Range (though these are now significantly reduced through clearance). The climate is described as classic, "Mediterranean" with peaks of plant growth in autumn and spring and moderate growth in winter. This subregion is split into a northern and southern block by the Eyre Mallee subregion. The climatic summary above is only relevant to the southern block which has long term annual averages between 400 – 500 mm at most rainfall stations. In contrast the northern block ranges from 300 – 400 mm and has higher evapotranspiration rate, giving it a climate more similar to the Eyre Mallee region. However it is recognised as having a more reliable growing season, particularly in the south-eastern half.

The combined area of the Eyre Hills biogeographic region makes up 26% of the study area, of which 30%

retains native vegetation cover and comprises 25 environmental associations (Figure 3, northern block 8, southern block 17). These, along with their total area (km^2), percentage of remnant vegetation, the number of sites and the area of remnant vegetation to each sample site are listed in Table 3. The summary indicates site coverage of the remnant vegetation within environmental associations of 1.7 to 84.5 km^2/site and 10.2 km^2/site for the biogeographic subregion (northern block 6.7 to 84.5 km^2/site; southern block 1.7 to 18 km^2/site). The most obvious difference between the north and south blocks is the density of sites within the remnant vegetation (means = 22 and 4.6 km^2/site respectively). This reflects both the smaller size of the south block, lower area of remnant vegetation and the location in a more diverse landscape. The higher diversity in the landscape is reflected in the smaller size of the environmental association and supports a greater number of vegetation types which may relate to higher rainfall.

Table 3. Eyre Hills biogeographic subregion - summary of remnant vegetation within each environmental association and the number of flora and fauna sites sampled in each (2009).

Environmental Association (Laut *et al.* 1977)	Area (km^2)	% of area under remnant vegetation	# sites in subregion	Area of remnant vegetation (km^2)/site	# fauna sites in association	remnant vegetation (km^2)/ fauna site
Northern Block	**7082**	**35**	**195**	**12.8**	**45**	**55.4**
Cleve	969.4	18	26	6.71	2	87.28
Ironstone Hill	268.0	99	17	15.68	12	22.22
Kimba	1093.6	16	18	9.88	3	59.26
Messenger	1895.9	34	62	10.43	15	43.09
Mt Desperate	875.9	38	32	10.49	8	41.94
Pinkawillinie	1612.6	42	36	19.03	5	137.02
Triple Hill	130.2	30	2	19.36	0	
Yalarna	236.3	72	2	84.54	0	
Southern Block	**4589**	**22**	**281**	**3.6**	**31**	**32.7**
Butler	773.0	7	24	2.14	0	
Cobbler Hill	112.7	53	11	5.41	1	59.55
Cummins	370.9	4	4	3.45	0	
Edillie	367.0	13	19	2.50	4	11.85
Greenly	68.8	31	4	5.27	1	21.06
Jussieu	25.9	94	6	4.06	1	24.38
Lincoln	327.2	76	63	4.96	9	34.71
Malata	199.6	27	8	6.82	0	
Marble Range	152.2	41	18	3.45	3	20.70
Mt Gawler	193.4	9	4	4.15	0	
Numulta	144.3	17	9	2.71	0	
Peake bay	328.3	16	31	1.72	1	53.30
Salt Creek	33.8	53	1	18.04	0	
Waretta	112.6	13	6	2.50	0	
Woolawae	173.4	12	4	5.14	0	
Yalunda	1057.4	20	63	3.44	11	19.69
Yeelanna	148.3	2	1	3.22	0	
Unmapped			5			
26% of the study area and 28% of sites	**11671**	**30**	**476**	**7.4**	**76**	**46.2**

Talia

At present the brief description for the Talia biogeographic region is identical to that presented for Eyre Mallee with a slight difference in the climatic description: "Mediterranean" climate, but with drier cooler winters and less growth than for the Eyre Hills southern block. This appears to be an error in the database as the subregion closely corresponds closely to the West Coast Environmental Region as described in the Environments of South Australia (Laut *et al.* 1977): “It is comprised predominantly of undulating to hilly plains on calcarenite with local rises and occasional steep sided hills on quartzite… Dunes are restricted to the coastal fringe where they occur in association with lagoons and lakes. Shallow brownish sands with many calcarenite outcrops occur throughout the region, and support a woodland of Dryland Teatree and Drooping Sheoak in the south, or mallee in the north…. The region has a mild climate with winter rainfall maximum and dry summers with high evaporation. Mean annual rainfall varies from 500 mm in the south to about 350 mm in the north of the region, with most of the rainfall occurring between April and October.”

This subregion is the smallest of the three comprising the study area (24% of which 32% retains native vegetation cover) and encompasses 12 environmental associations (Figure 3). These, along with their total area (km^2), percentage of remnant vegetation, the number of sites and the area of remnant vegetation to

each sample site are listed in Table 4. The summary indicates site coverage of the remnant vegetation within environmental associations of 3 to 24 km^2/site and 11.2 km^2/site for the biogeographic subregion. The environmental associations with the most dense coverage of sites per km^2 of remnant vegetation are small ones that have been targeted by specific surveys. It is also worth noting that the percentage of remnant vegetation cover for the Polda Environmental Association is likely to be under represented because of the large areas of grasslands from which the Drooping Sheoak open woodland has been removed by stock grazing. Whilst these areas are greatly modified they still support a number of native grassland species, most of which are only apparent in the spring.

Table 4. Talia biogeographic subregion - summary of remnant vegetation within each environmental association and the number of flora and fauna sites sampled in each (2009).

Environmental Association (Laut *et al.* 1977)	Area (km^2)	% of area under remnant vegetation	# sites in subregion	Area of remnant vegetation (km^2)/site	# fauna sites in association	remnant vegetation (km^2)/ fauna site
Avoid Bay	204.7	71	18	8.09	4	36.40
Brimpton	159.6	16	3	8.36	0	
Coffin Bay	109.4	86	17	5.69	4	24.20
Drummond	461.8	44	45	4.55	6	34.15
Inkster	3201.9	59	87	21.60	14	134.22
Kappawanta	1797.7	80	60	23.98	17	84.65
Kiona	145.1	25	4	9.06	1	36.25
Mt Cooper	404.7	20	26	3.19	1	82.86
Mungerowie	651.2	87	48	11.80	6	94.40
Newland	112.3	53	15	3.96	6	9.89
Polda	2841.4	45	129	10.14	31	42.19
Streaky Bay	756.7	35	88	3.00	0	
unmapped			5			
24% of the study area and 32% of sites	**10846.7**	**56**	**545**	**11.3**	**90**	**68.7**

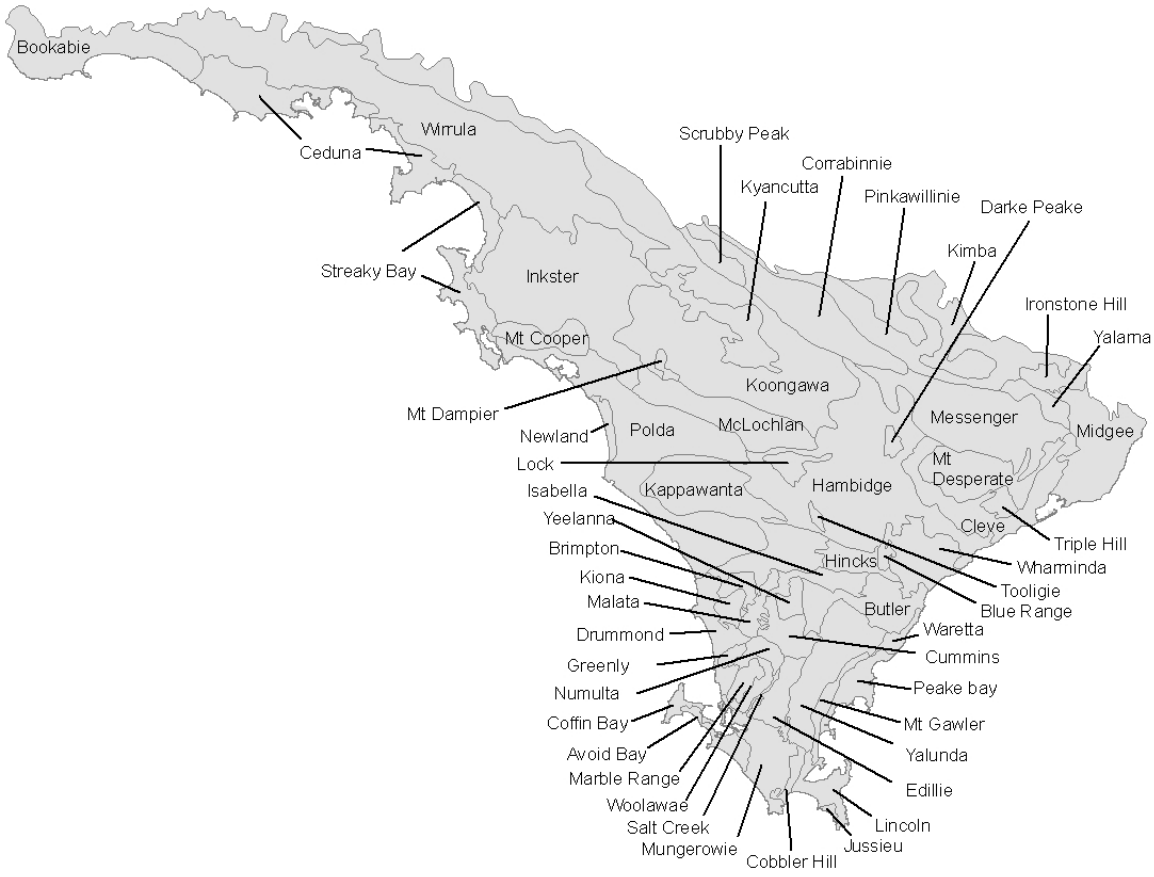


Figure 3. Eyre Peninsula study area showing the locations of the 55 Environmental Associations it contains (after Laut *et al.* 1997).

Landform

Sites were categorised into 18 landform pattern classes and 38 landform element classes (McDonald *et al.* 1990). Approximately 10% of sites lacked one or both classes of data. The values in Figures 4 and 5 indicate that the majority of sites occurred on plains (undulating plains 32%) and dunefields (35%), reflecting the dominance of these types within the Eyre Peninsula landscape. Low hills and ranges were represented by 19% of sites. The most frequently sampled landform elements were plains, including sandy plains, stony and calcarenite plains, with 33% of sites whilst dunes only represented 23% of sites, interdunes and swales making up a further 6%. Over 13% of sites sampled hill slopes. Values for landform pattern and element are presented in Appendix 1.

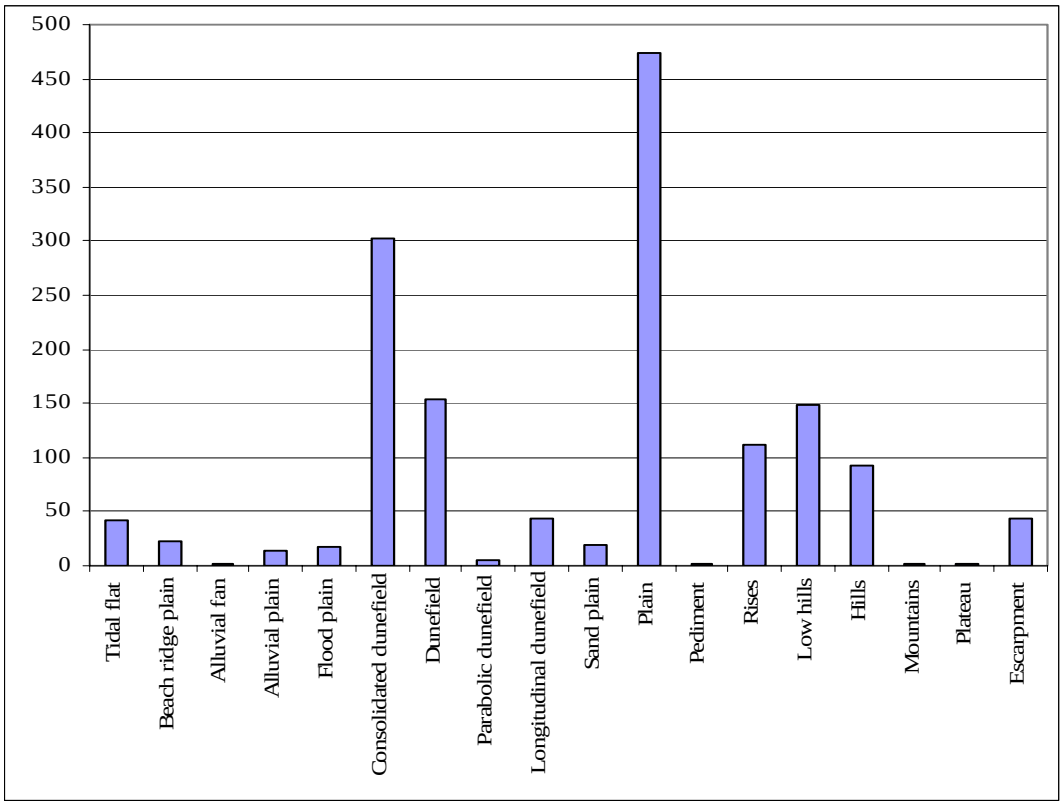


Figure 4. Site frequency in Landform Pattern categories within the Eyre Peninsula Study area.

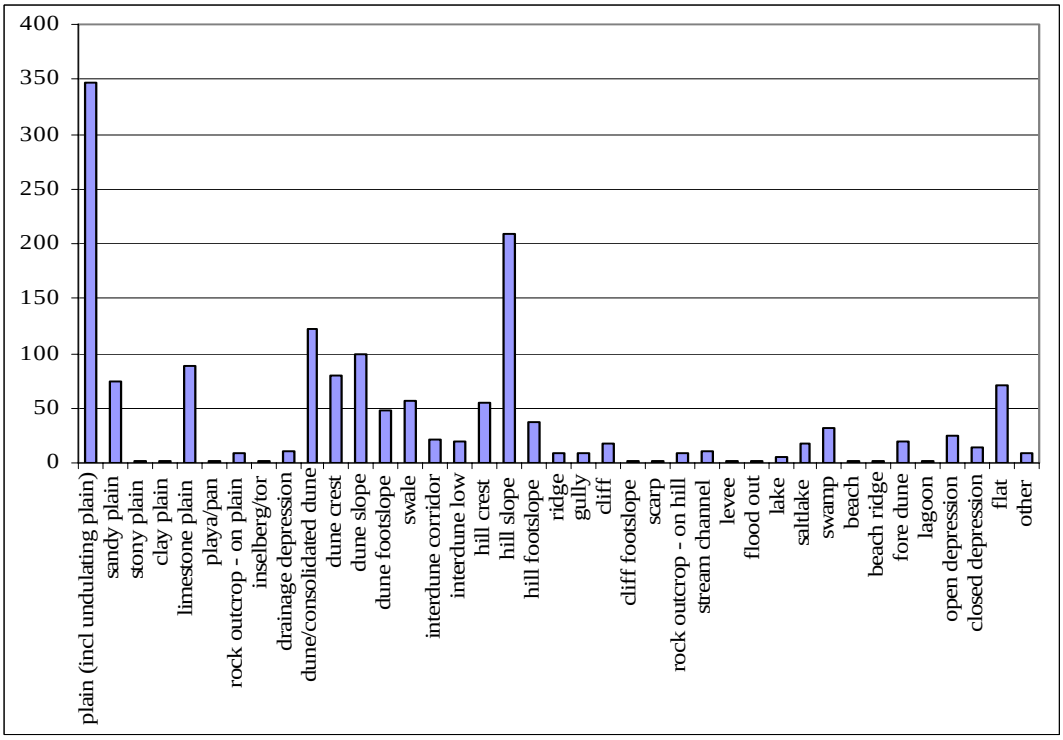


Figure 5. Site frequency in Landform Element categories within the Eyre Peninsula Study area.

Slope and Aspect

Almost half of the sites sampled (47%) had no measurable slope and a further 38% were in the gentle class, indicating the generally flat nature of the Eyre Peninsula study area. Of the remaining 15% of sites the majority were moderately inclined (12%). There was a slight bias in aspect toward the north across all groups (Table 5).

Table 5. Site frequency for slope and aspect. Percentages for aspect class are for each slope class excepting the slope class totals which are a percentage of the 1550 sites with data.

Slope Class	Aspect class	Total	%
Level (< 1°)		723	
Level Total		**723**	**47**
Gentle	North	117	20
(1° - 5°)	North-east	66	11
	East	77	13
	South-east	49	8
	South	82	14
	South-west	61	10
	W	76	13
	North-west	60	10
Gentle Total		**588**	**38**
Moderate	North	31	17
(5.1° – 18°)	North-east	16	9
	East	24	13
	South-east	21	12
	South	27	15
	South-west	29	16
	W	18	10
	North-west	14	8
Moderate Total		**180**	**12**
Steep	North	11	30
(18.1° - 30°)	North-east	1	3
	East	2	5
	South	5	14
	South-east	4	11
	South-west	4	11
	W	1	3
	North-west	9	24
Steep Total		**37**	**2**
Very Steep	North	4	27
(30.1° - 45°)	North-east	6	40
	South-east	2	13
	South	1	7
	South-west	1	7
	North-west	1	7
Very Steep Total		**15**	**1**
Preciptious	North	2	29
(45.1° - 72°)	North-east	1	14
	South-east	1	14
	South	1	14
	South-west	2	29
Preciptious Total		**7**	**0.5**
Total		**1550**	
not recorded		144	9

Rock outcrop

Outcropping rock type was recorded at 497 sites (34% of the sites with data). Outcrop-cover class data was recorded for 95% of these sites and is presented in Table 6. Eleven types of outcrop were identified of which 77% were calcareous (includes limestone) and the next most common types being granite (8%) and quartzite (5%). A large proportion of the undulating plains and rises on the peninsula have exposed calcrete at or near the surface. Granite is present as numerous isolated hills and inselbergs across the peninsula, whilst quartzite is mainly present in the Lincoln and Cleve uplands in the Eyre Hills biogeographic region (Twidale & Campbell 1984).

Table 6. Site frequencies for rock outcrop type and cover categories.

Outcrop lithology	% cover	# sites	%
calcareous material	no data	24	6.3
	<10%	206	53.6
	10-50%	137	35.7
	>50%	17	4.4
calcareous material Total		**384**	**77.3**
sandstone	no data	1	9.1
	<10%	4	36.4
	10-50%	5	9.1
	>50%	1	45.5
sandstone Total		**11**	**2.2**
siltstone	<10%	1	50.0
	10-50%	1	50.0
siltstone Total		**2**	**0.4**
shale	<10%	2	100.0
shale Total		**2**	**0.4**
laterite (ironstone)	<10%	6	66.7
	10-50%	1	22.2
	>50%	2	11.1
laterite (ironstone) Total		**9**	**1.8**
slate	<10%	1	100.0
slate Total		**1**	**0.2**
quartzite	no data	1	3.8
	<10%	18	69.2
	10-50%	5	7.7
	>50%	2	19.2
quartzite Total		**26**	**5.2**
gneiss	<10%	7	63.6
	10-50%	2	18.2
	>50%	2	18.2
gneiss Total		**11**	**2.2**
schist	<10%	5	83.3
	10-50%	1	16.7
schist Total		**6**	**1.2**
quartz	<10%	1	100.0
quartz Total		**1**	**0.2**
granite	no data	1	2.6
	<10%	17	44.7
	10-50%	14	15.8
	>50%	6	36.8
granite Total		**38**	**7.6**
not identified	<10%	4	
	10-50%	1	
	>50%	1	
not identified Total		**6**	**1.2**
Outcrop present		497	34.3
no outcrop present		951	65.7
not recorded		246	

[1] Science Resource Centre, Department for Environment and Heritage, GPO Box 1047, Adelaide SA 5001.

Surface strew

Surface strew cover was recorded at 808 sites in four size classes (Table 7). Strew was present in the form of the 11 rock types also present as outcrop (Table 6), with calcareous material being dominant (72% of sites). This was followed by quartzite 9%, ironstone laterite 7% and granite 4%. For boulder sized strew (5% of sites) quartzite and gneiss were present at 17% of sites each whilst calcareous material fell to 54%. The sites supporting surface strew were mostly in the size classes pebbles (51%) and cobbles (43%). Surface strew cover was mostly less than 30% of a quadrat: pebble 89% of sites, cobble 78% of sites, boulder 50% of sites.

Table 7. Site frequencies for surface strew size and cover categories.

Size	Cover	# sites	%
pebble (5-50 mm)	< 1%	5	1.2
	1 <10%	277	66.7
	2 10-30%	92	22.2
	3 30-70%	37	8.9
	4 > 70%	4	1.0
pebble (5-50 mm) Total		**415**	**51.4**
cobble (51-250 mm)	< 1%	1	0.3
	1 <10%	150	42.9
	2 10-30%	123	35.1
	3 30-70%	65	18.6
	4 > 70%	11	3.1
cobble (51-250 mm) Total		**350**	**43.3**
boulder (> 250 mm)	1 <10%	10	23.8
	2 10-30%	11	26.2
	3 30-70%	17	40.5
	4 > 70%	4	9.5
boulder (> 250 mm) Total		**42**	**5.2**
Sheet	2 10-30%	1	
Sheet Total		**1**	**0.1**
Strew cover present		808	47.7
none apparent		886	52.3

Soil

Sands dominated the soil types at the sites sampled within the study area (48% of sites) whilst clays were relatively rare (6% of sites). This reflects the dominance of siliceous and calcareous sands across the Eyre Mallee subregion and the calcareous sands in the Talia subregion (Table 8). Loams and clays are dominant in the Eyre Hills subregion (Wright 1985).

Table 8. Site frequencies for surface soil textures

Soil group	Surface soil texture	# sites	%
CLAYS	heavy clay	6	6.9
	silty clay	1	1.1
	medium heavy clay	6	6.9
	medium clay	22	25.3
	light medium clay	15	17.2
	light clay	31	35.6
	silty light clay	1	1.1
	sandy clay	4	4.6
	sandy light clay	1	1.1
Clay totals		**87**	**5.9**
CLAY LOAMS	clay loam	96	34.3
	silty clay loam	14	5.0
	clay loam, sandy	41	14.6
	sandy clay loam	127	45.4
	fine sandy clay loam	1	0.4
	lt. sandy clay loam	1	0.4
Clay loam totals		**280**	**19.1**
LOAMS	loam	70	18.0
	silty loam	51	13.1
	sandy loam	268	68.9
Loam totals		**389**	**26.5**
SANDS	clayey sand	119	16.7
	loamy sand	206	29.0
	sand	386	54.3
Sand totals		**711**	**48.4**
PEAT	peat	2	
Peat totals		**2**	**0.1**
# sites with soil data		1469	
Not collected		225	

Site MAR00901 showing typical variation in surface strew size and cover with minor areas of outcrop. Descriptions for this site had <10% calcareous rock outcrop and 1-10% cover of calcareous cobble (51-250 mm diameter) surface strew. (Photo: DEH)

Estimated cover of Bare Earth and Litter

The cover of bare earth was estimated for 1487 sites and litter for 1482. The three surveys conducted before 1991 (166 sites) did not have bare earth and litter cover estimates recorded (BS 21, 30 & 79). Thirteen sites from BS 128 were sampled again after three years to assess the impact of a fire and have been added to this summary. Cover estimates were summarised using frequency histograms (Figure 6 and 7). These show that the largest proportion of sites have less than 35% bare earth cover (77% of sites) and litter cover (64%). Only a small proportion of sites had no bare earth (5%) or litter (2.5%) cover.

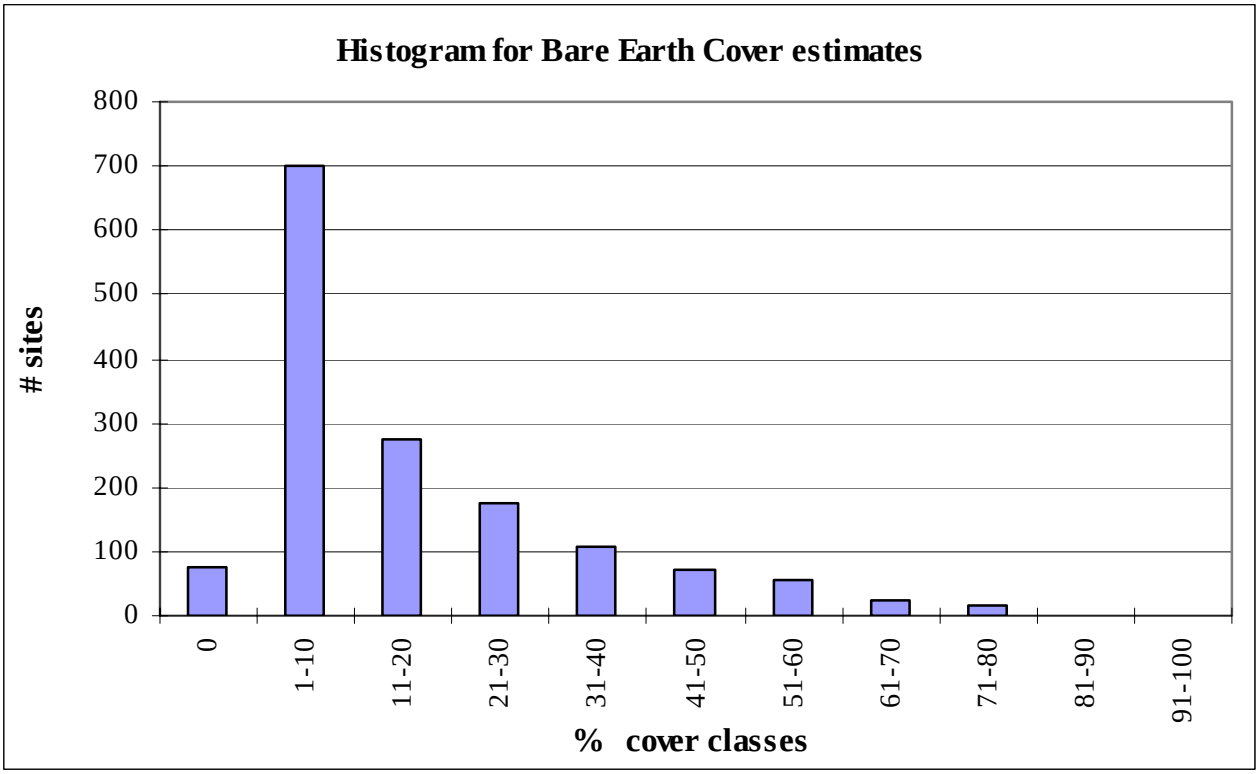


Figure 6. Frequency histogram for bare earth cover estimates for 1500 site visits.

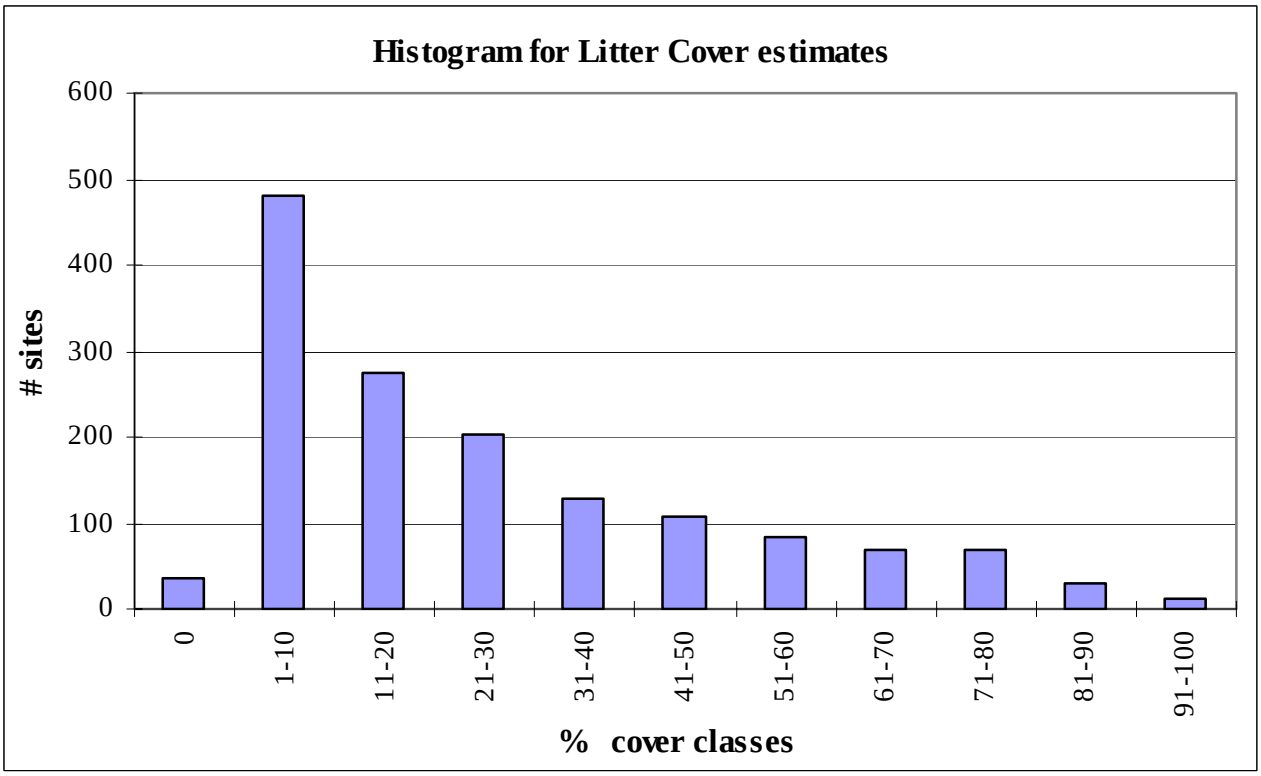


Figure 7. Frequency histogram for litter cover estimates for 1495 site visits.

Fire History

Two methods for determining fire history at sites have been used to assess fire history at sites. The survey database contains three fields relating to fire. The first is whether or not there is physical evidence of a burn, the second is the year of the burn (mostly information from landholders) the third is whether or not the date is certain. Fire history mapping has also been done over much of the Eyre Peninsula mostly focussing around state managed conservation reserves for which fire management plans have been produced. This mapping is produced from identification of burnt areas on aerial photography and more recently satellite imagery. To date fire history has been mapped in the southern and eastern parts of the study area (Figure 8) and is currently in production for the central west (Spatial Information Services Branch, Dept Environment & Heritage, spatial database 2008).

The survey site data indicates that 201 sites showed obvious signs of having been burnt, of which 163 also had an approximate date in years for the last fire. Only 43 of these dates were considered certain whilst 101 were labelled not certain (refer to map Figure 8 for locations). Plotting sites over existing fire mapping using ARCGIS selected 175 survey sites as having been burnt since 1953. Only 59 sites were common to both datasets of which 47 had date of burn recorded by the survey teams. For these sites the agreement between field collected data and mapping using remote sensing can be compared.

For 23 of the 47 sites, the field collected dates were earlier than the mapped dates, and for 19 of these the sites were sampled prior to last fire mapped, which explains the differences between the recorded and mapped data. For three sites earlier burns had also been mapped, and the field data corresponded to the mapped data at 2 sites. For another three sites, field data was significantly at variance with mapped data, however the fire dates were recorded as uncertain.

There are likely to be valid instances where mapping data may differ from a site relating to scale, e.g. if a very small fire occurred between mapped fire periods it may not have been detected at the scale being mapped or may only have affected the understorey and not been obvious. Burn year data for five other sites varied by 1 year which may just reflect estimated time of burn within a fire season and is not considered as true variation. It was therefore felt suitable to use the fire history available from mapping and supplement this with site based data for areas where there is as yet no fire mapping. Figure 8 highlights the areas where fire mapping is at variance with the field records.

The mapped site data was analysed to remove all sites that only had burn information post the vegetation sampling date. The field collected fire data was combined with the mapped data and the most accurate data selected. Site data that had dates ascribed with certainty were kept over mapped dates, whilst mapped dates were used in preference to uncertain field dates.

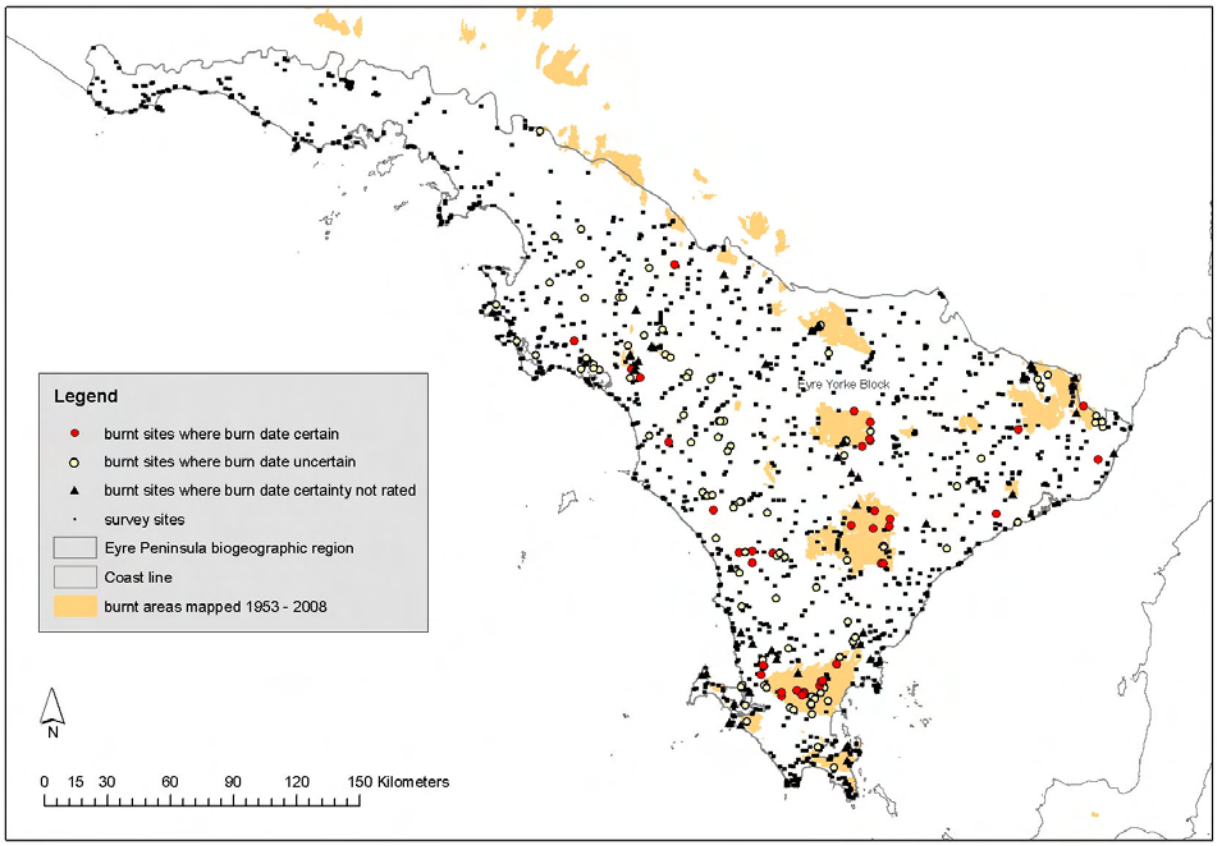


Figure 8. Map of the study area with survey sites and fire history.

This left a total of 221 sites with fire history (13% of sites surveyed), 71 from the fire history mapping and 150 from the field collected site data. Of these only 43 had dates that were considered certain by the data collector, whilst 91 were considered not certain and 16 had not been rated for certainty. The time (in years) for the last fire at sites was calculated and sorted into 10 year categories and graphed (Figure 9) to show the coverage of sites across 10 year burn classes. Figure 9 shows a relatively even spread of sites (39 to 52) across the first 40 years with a rapid decline in site representation for older fire classes. The oldest mapping dates from 1953 and the oldest fire history recorded for sites was with low certainty from before the 1930s.

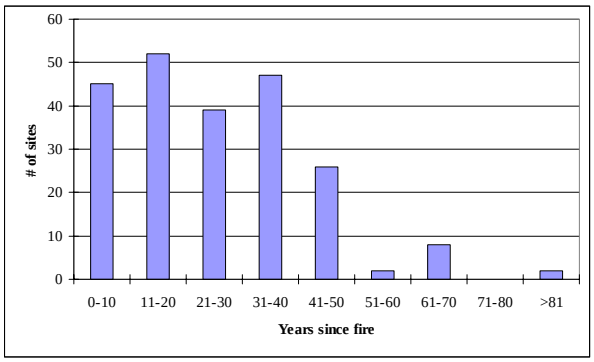


Figure 9. Frequency histogram (in 10 year categories) of years since the last fire

Survey site in Wanilla Settler's Reserve (128ULE01201) taken in December 2004 (Top) prior to a fire in January 2005 and three seasons later in September 2007 (Bottom). (Photos: DEH)

Discussion

Survey sites across the Eyre Peninsula study area have sampled native vegetation communities in all environmental associations, at densities ranging from 1.09 to 84.54 with an average of 10.29 km^2 of remnant vegetation per site (median = 6.15 km^2/site, standard deviation = 12.6 km^2/site). The southern regions had the highest density of sites in remnant vegetation, reflecting the proximity to population centres, diversity of vegetation types relating to higher rainfall and the smaller proportion of remnant vegetation remaining. The associations with lowest coverage of sites usually contained large blocks of apparently homogeneous remnant vegetation that had few access routes. The exception to this was the small Salt Creek Association, located in the centre of southern Eyre Peninsula. This was dominated by a saline drainage line supporting mostly samphire and *Melaleuca* shrublands.

The distribution of survey sites across the Eyre Peninsula appears to represent a fair reflection of the dominance of those landforms within the study area. There may be a slight bias in favour of coastal landforms as this narrow strip was the target of a specific survey (Opperman 1999) that contributed 13.7% of sites. Steeper hills and ranges may also be slightly over represented as these areas usually support ecological communities that differ from surrounding areas and are thus targeted to capture the diversity within a region. Unvegetated habitats such as salt lakes or clay pans are under represented as they only get sampled in areas where they support vegetation and this is usually relatively uniform. Similarly, the degraded grasslands and former sheoak grassy woodlands of the limestone plains in the Polda Basin (Young 1990) are also under represented because of poor native vegetation cover.

An investigation of the slope and aspect of sites are indicative of the flat nature of much of Eyre Peninsula (85% of sites had slopes less than 5%). The bias of site toward northern aspect on the steeper slopes is likely to be coincidental. It could relate to longer northern slopes for the higher country of the Eyre Hills Environmental Association, which have steeper south-east facing slopes. These latter slopes tend to have less access tracks and less available area for site selection.

Both rock outcrop and surface strew were dominated by calcareous material, mirroring its dominance across the peninsula, over 10% for both. Sites with rock outcrop had cover that was strongly skewed to less than 10% (58% of sites), with only 7% of sites in the >50% cover class. This bias was similar for surface strew, particularly for the smallest size class (pebble). This cover bias shifted for the largest (boulder) surface strew with the 30-70% class supporting 41% of sites. This results from the location of boulder covered areas on the slopes of hills and an association with areas of rock outcrop.

The dominance of sandy soils on Eyre Peninsula reflects the periodic aridity of the region over the last 2 million years, leading to the creation of the numerous dune fields characteristic of the study area. This comes through in the survey site information of which 48% of sites supported sandy soils. The low proportion of sites with clay surface soil texture (6%) results from the low proportion of sedimentary plains and basins on the peninsula. This is related to the high porosity of the limestone plains and overlying dunes, but could also reflect the preferential clearance of areas with clay soils for agriculture. For the same reason the sandiest areas support the most native vegetation, highlighting their lower suitability for agriculture.

The proportion of bare earth and litter cover reflect the skewed cover of rock outcrop and surface strew, strongly biased toward <10% cover, however only a low proportion of sites had no cover of bare earth or litter. Sites with no bare earth cover generally had high cover of litter resulting from a denser vegetative cover. Areas with no litter cover were mangrove forests plus a mixture of grasslands and sedgelands, samphire and other coastal shrublands subject to strong winds. Many of these sites had high bare earth cover with the exception of closed sedgelands and mangrove forests.

Fire history has been determined for 13% of the sites sampled. There were no signs of fire detected at sites that were sampled to the west of Streaky Bay. Also no fires have been mapped in this region. This may reflect a lack of mapping in this region as most of the conservation reserves in this region have been more recently acquired, and the vegetation mapping program has been driven by the needs of park managers. However, it is also likely that fires are less frequent and extensive in this region, as a result of lower flammability of the extant habitats. The dominant understorey for the mallee communities in this region are dominated by chenopod shrubs which do not burn well. Their high abundance in this region also suggest that fire is not very common as they are long lived and not very fire tolerant. The region also supports the large areas of native grassland, most of which is used for stock grazing thus reducing its fuel load. This area also has a low density of sites because it has not yet been mapped, a project that has recently been completed added more than 50 sites to the region (Kenny pers. comm.).

Fire history site frequency was fairly evenly distributed across four 10 year fire history classes covering the first 40 years (average = 46 sites). Older fires were recorded less frequently, highlighting the difficulty in detecting fires at sites that are long unburnt and getting reliable fire date data from landholders or other sources. The fire history mapping is faced with similar problems because of its reliance on technology that was not in common use prior to the 1960's (regular standardized aerial photography and satellite imagery).

View south-west from the Blue Range at the northern tip of the southern block Eyre Hills upland, across Hinks CP in the Eyre Mallee biogeographic subregion. The quartzitic outcrop supports Broombush *Melaleuca uncinata* giving way to mallee in the areas with deeper soils. (photo: R Brandle DEH)

View from Cleve Hills lookout south-east over the northern block of the Eyre Hills biogeographic subregion and the township of Cleve. The woodland in the foreground is dominated by Drooping Sheoak *Allocasuarina verticillata*. (photo: R Brandle DEH)

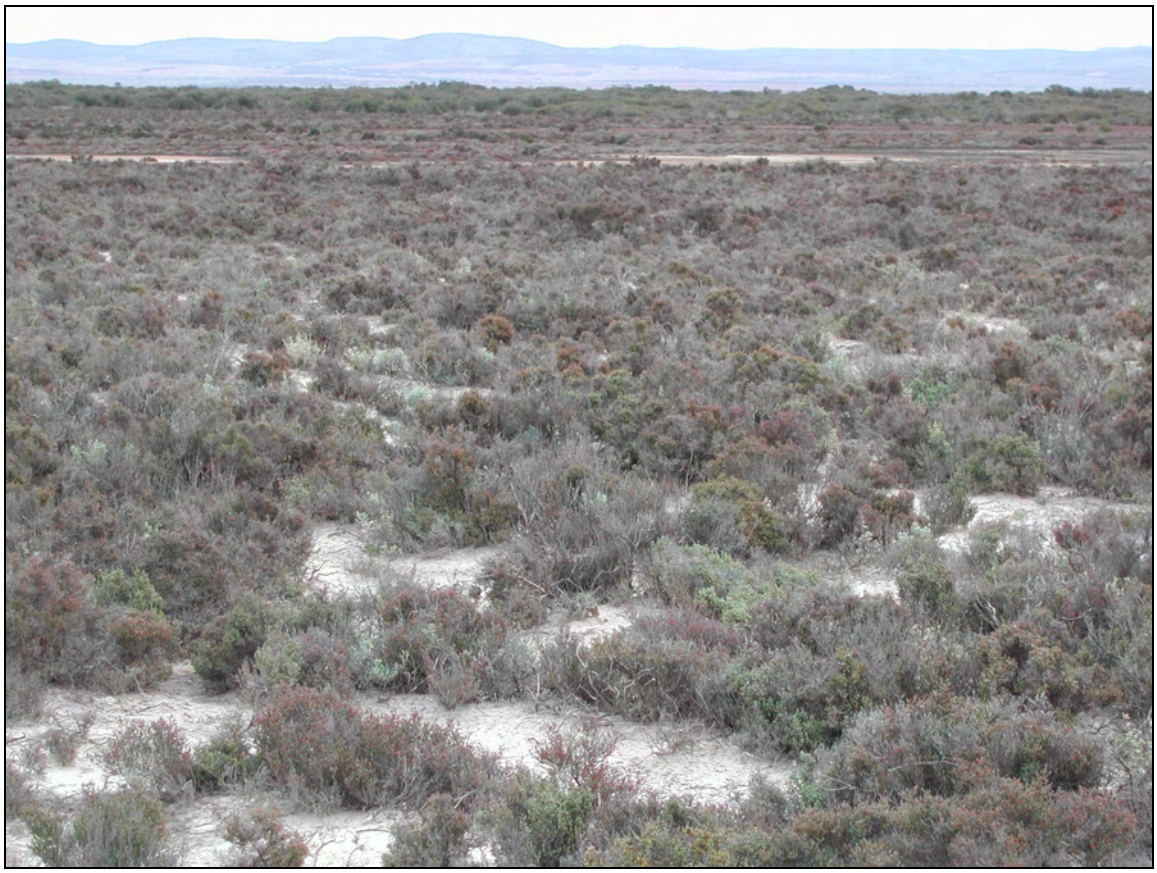
View north-west off Darke Peake across to Hambidge CP. Mid-gound shows parallel dunes many of which support remnant vegetation. In the foreground the quartzitic Darke Range supports dense Broombush *Melaeuca uncinata* tall shrubland. (photo: R Brandle DEH)

View south across a small lake associated with the Lake Malata complex to the Marble Range. The lake's edge fringed with Swamp Paperbark *Melaleuca halmaturorum*. (photo: R Brandle DEH)

View across plains and rises in the southern half of the Talia biogeographic subregion, shows remnant Sheoak *Allocasuarina verticillata* grassy woodland on rises with mallee on the plains. The yellow areas are flowering canola crops. (photo: R Brandle DEH)

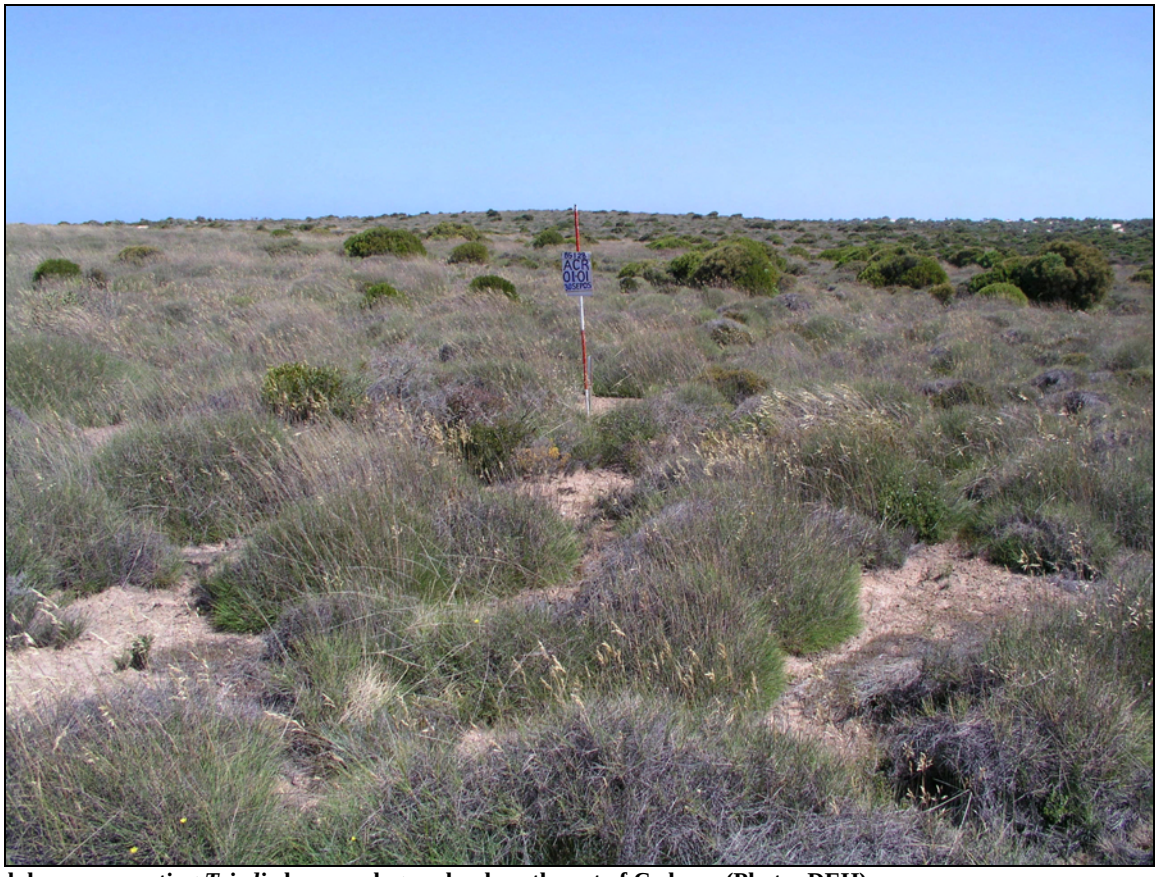
Calcareous outcrop and surface strew in the middle of the Talia biogeographic subregion. The Sheoak *Allocasuarina verticillata* woodland has been protected from grazing with a mesh fence. (photo: R Brandle DEH)

Limestone cliffs along the western Eyre Peninsula north of Mt Greenly. (photo: R Brandle DEH)



Coastal samphire shrubland near Franklin Harbour looking west to the northern uplands of the Eyre Hills biogeographic subregion. (photo: R Brandle DEH)

Granite outcropping and boulder sized strew in the Secret rocks area. Eastern block of the Eyre Mallee biogeographic subregion. (photo: P Lang DEH)



Coastal dunes supporting *Triodia* hummock grassland south-east of Ceduna. (Photo: DEH)

Chenopod shrublands on plains west of Penong in the Eyre Mallee biogeographic region. Southern Hairy-nosed Wombat *Lasiorhinus latifrons* warrens in fore and mid ground. (photo: R Brandle DEH)

Mobile coastal dunes fringed by Boobialla *Myoporum insulare* and saline wetlands supporting samphire low shrubland east of Fowlers Bay. Eyre Mallee biogeographic region. (photo: R Brandle DEH)

Calcareous plains supporting degraded native grasslands in the far west of the Eyre Mallee biogeographic region. (photo: R Brandle DEH)

Recently burnt mallee in Hambidge Conservation Park, Eyre Mallee biogeographic region. (photo: R Brandle DEH)

VEGETATION

Brandle R[1], Lang PJ[1] & Canty PD [1]

Introduction

The study area

The study area for the Biological Survey of Eyre Peninsula is defined by the Eyre block of the Eyre and Yorke Block biogeographic regions as delineated for an interim biogeographic regionalisation for Australia (Thackway and Creswell 1995). Three subregions comprise the Eyre Peninsula which is dominated by undulating limestone plains. In many areas these are overlain by longitudinal sand dunes. Significant uplands in the form of the Marble Ranges and Koppio Hills characterise the southern Eyre Hills subregion whilst the hills and ranges to the north of Cleve characterise the northern section of the Eyre Hills subregion. An interesting feature of the Eyre Peninsula are the granite inselbergs that occasionally rise out of the plains. A more detailed summary is presented in the chapter on Physical Environment and can also be found in the Biodiversity Plan for Eyre Peninsula (DEH 2002).

Previous studies

In the Natural History of Eyre Peninsula (Twidale *et al.* 1985) Lange and Lang (1985) provide an outline of the literature describing the Eyre Peninsula's native vegetation and is worth pursuing for those who are interested in the historical aspects of vegetation description and mapping in the region. It also provides a summary of plant species with distributions that within South Australia are restricted to the Eyre Peninsula and Gawler Ranges. Since the mid 1980s there have been few published studies dealing with vegetation across the Eyre Peninsula. However a number of large regional vegetation surveys have been completed which have contributed to floristic mapping across most of the Eyre Peninsula biogeographic region (Thackway and Creswell 1995) which defines the study area for this report (Figure 11). The resultant mapping is available to the public through request to the Department for Environment & Heritage and on a public website www.naturemaps.sa.gov.au. The most recent published summary of plant communities and floristic mapping can be found in the Biodiversity Plan for Eyre Peninsula SA (DEH 2002).

The plan provides a brief summary of the floristic communities mapped by Kenny and Graham (2002) prior to the publication of that document which covered approximately 78% of the remnant native vegetation at that time. It provides statistics on area of occurrence and conservation status plus a brief description on locations of these communities. Broad communities in the areas that were not mapped were also included, particularly where they were of conservation concern, or had been the subject of specific studies. Eighty floristic map groups were described in the biodiversity plan. Currently there are still parts of the far west of Eyre Peninsula that have not been mapped, however the areas that are mapped comprise 174 floristic groups (Kenny and Graham (2002), Graham *et. al.* (2004). These are represented by the 22 broad vegetation categories listed in Table 9.

Table 9. Vegetation mapping group summary

Broad Vegetation Mapping Category	# of floristic map groups
Acacia shrubland	7
Acacia woodland	2
Alectryon woodland and shrubland	1
Allocasuarina forest and woodland	4
Avicennia forest and woodland	1
Callitris forest and woodland	4
Casuarina woodland	2
chenopod shrubland	14
coastal shrubland	7
Eucalyptus forest and woodland	5
Eucalyptus mallee forest and mallee woodland	59
fern/herbland	4
grassland	1
hummock grassland	4
Melaleuca forest and woodland	3
Melaleuca shrubland >1m	10
Myoporum woodland	1
rush/sedgeland	5
samphire shrubland	9
shrubland <1m	11
shrubland >1m	13
tussock grassland	7

Two studies since 1985 have classified vegetation communities of smaller regions within Eyre Peninsula using multivariate analyses (Tiver *et al.* 1989, Brandle 2000). Both of these studies, though different in scale and numbers of sites, identified seven floristic groups each. Most of which broadly fit into existing mapping groups (Kenny and Graham 2002, Graham *et al.* 2004), however the area studied by Tiver *et al.* (1989) is currently unmapped and highlights two floristic groups not adequately represented in the existing mapping groups. Three other reports used the more traditional

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dominant overstorey and understorey species approach to describing vegetation communities, both fall within the areas currently mapped. The study in the Polda Basin (Young 1990) followed the edaphic complex (soil-vegetation) descriptions of Crocker (1946) whilst the Lake Gilles Conservation Park survey report (Eyre Peninsula Project Group, unpubl.) and a Biological Survey of the Coffin Bay-Lincoln Bush Corridor used a descriptive dominant species approach (Atkins 1994). The three studies included vegetation mapping for those areas.

Objectives

This paper reports on information that has been collected from 22 separate surveys, each with their own specific objectives. The major surveys contributing to this survey had the following objectives:

- To observe, collect and identify species of plants present in the area by sampling sites selected to represent the diversity of habitats present in the region. The flora and fauna survey conducted across the Eyre Peninsula Biogeographic Region (EPBR) from 2001-2005 is the focus of this report, but it also reports on the large scale mapping surveys conducted between 1995 and 1999, and a number of smaller scale regional surveys. Some of which have been published (refer to introduction chapter).
- To provide the South Australian Plant Biodiversity Centre with collections representative of the diversity of plants in the region.
- To document and classify the patterns of species and communities across the region .
- To establish ecological relationships between the vegetation and the physical environment across the EPBR.
- To evaluate the conservation status of species and communities within the EPBR, as a basis for conservation strategies.
- To establish a long-term monitoring system and associated database to enable subsequent measurement of environmental change.

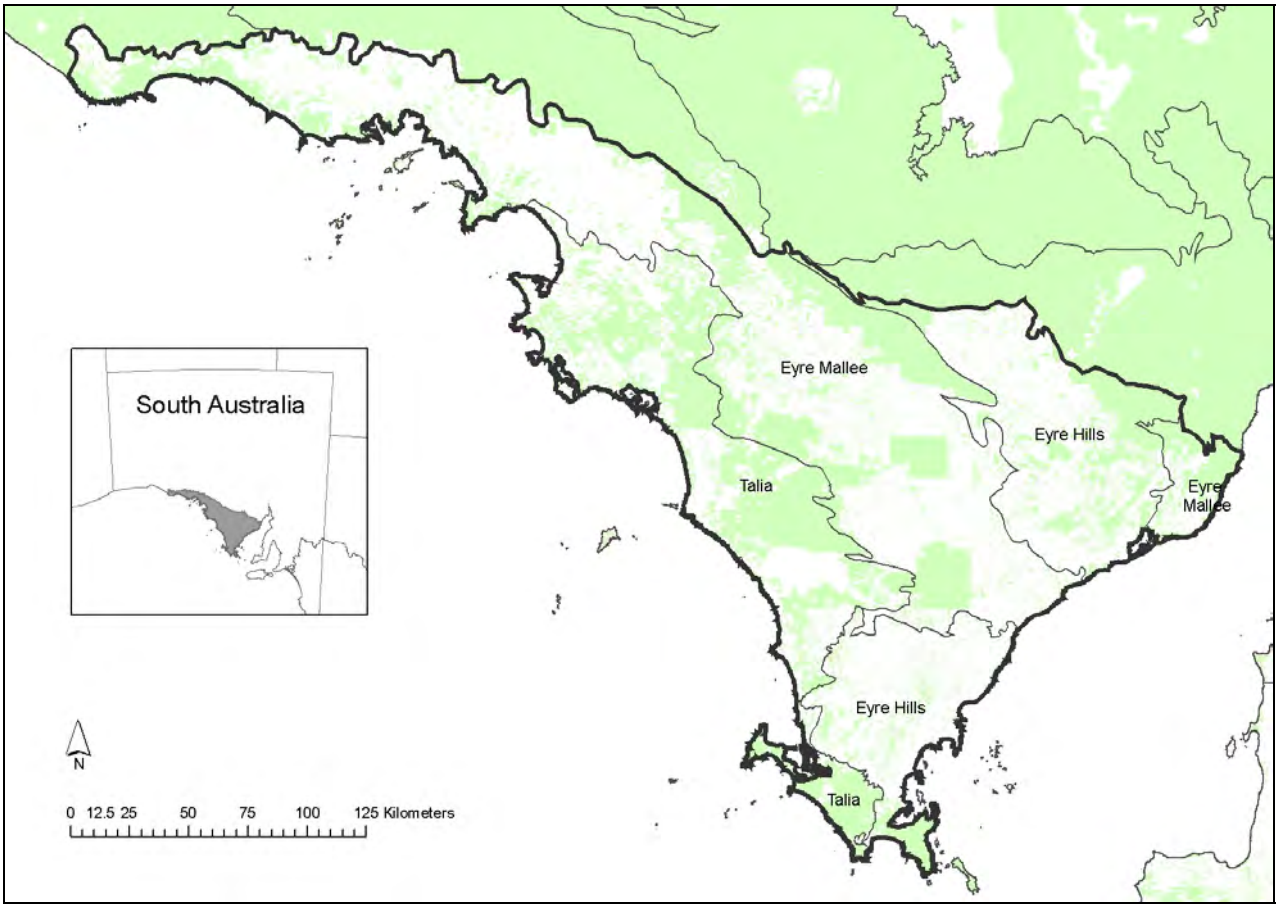


Figure 11. Remnant vegetation (shaded area) covers 39% the Eyre Peninsula biogeographic region (Dark grey lines). Three biogeographic subregions are also shown (refer to Physical Environment chapter for details).

Methods

The surveys contributing to this report form part of the Biological Survey of South Australia. For most survey sites the methods used are consistent with the methodologies outlined for vegetation surveys in 'Guide to a Native Vegetation Survey (Agricultural Region), Using the Biological Survey of South Australia Methodology' (Heard and Channon 1997). Surveys conducted prior to 1990, varied in quadrat size and the collection of some aspects of the physical and vegetation data. These will be detailed in the appropriate section.

Site Selection and Nomenclature

As with other regional biological surveys in South Australia sites were chosen to represent the biological and geographical diversity of the study area. The latter surveys concentrated on geographic regions and habitats not covered by earlier surveys, with the exception that the flora and fauna survey (#128) conducted between 2001-2005 used only fauna sites as a guide for site placement, thus increasing the flora sampling effort already present in those localities.

Figures 12 to 16 display the 22 surveys, the number of sites and their location in the study area.

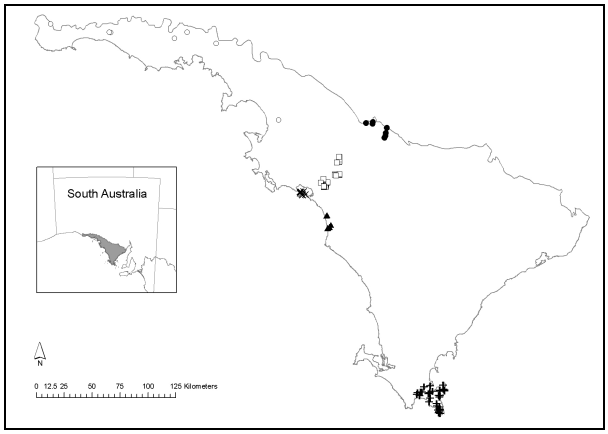


Figure 12. Study area with survey sites: black circles = 7 Gawler sites, white squares = 39 Kulliparu CP sites, black triangles = 7 Lake Newland CP sites, white circles = 7 Temperate Grassland sites, X = 9 Venus Bay CP and Bettong Monitoring sites, + = 33 Lincoln NP sites

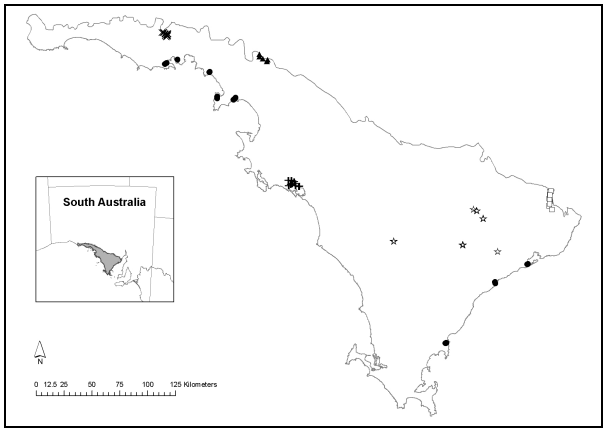


Figure 13. Study area with survey sites: black circles = 28 Tidal Salt Marsh sites, white squares = 10 Shirrocoe Mgt Plan sites, black triangles = 5 Pureba sites, X = 13 Koonibba sites, + = 12 Venus Bay CP CR and Environs sites, white stars = Brush Cutting Monitoring sites.

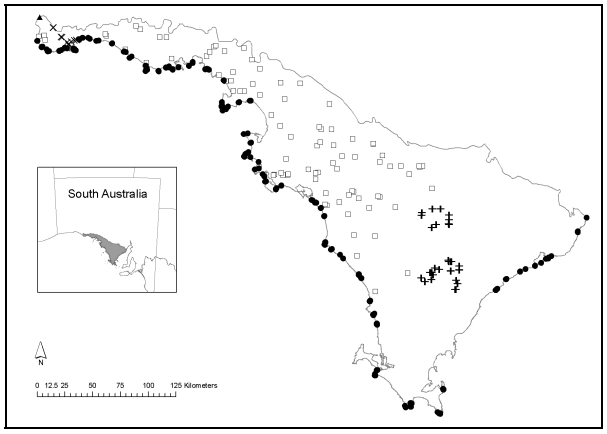


Figure 14. Study area with survey sites: black circles = 234 Coastal Dune and Clifftop sites, white squares = 94 Eyre Peninsula (DEP1977) sites, black triangles = 1 Gawler Craton site, X = 11 Yellabinna RR sites, + = 31 Hincks & Hambidge CP sites.

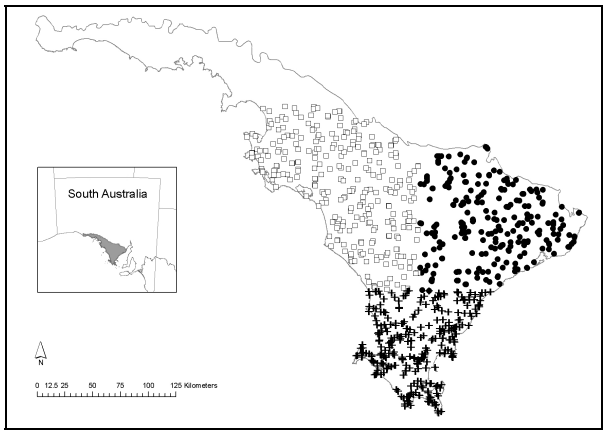


Figure 15. Study area with survey sites: black circles = 249 North Eastern EP, white squares = 291 North Western EP sites, + = 307 Southern EP sites.

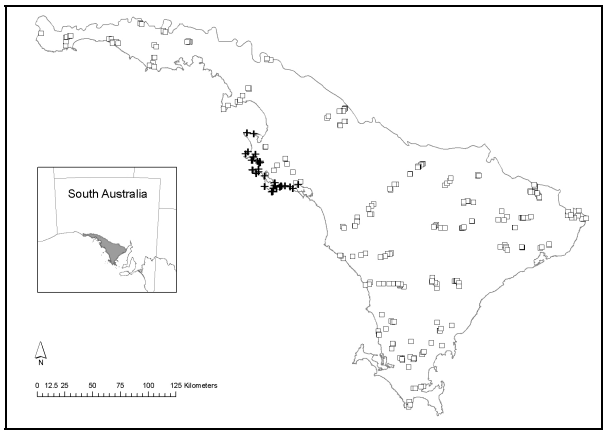


Figure 16. Study area with survey sites: white squares = 240 EP Fauna sites, + = 52 Crown Land Assessment sites.

Site selection for the vegetation mapping (BS 80, 103 and 107) was based on digitizing identifiable patches from 1:40,000 colour aerial photography.

Site selection for the fauna survey (BS 128) was based on vegetation mapping. Where mapping was absent,

topographic, soil and geological maps plus satellite imagery was used in conjunction with existing site information to define potential survey areas. Final site locations in all areas were determined in the field prior to the survey. Where possible sites were selected in larger, less disturbed remnants and within 200m of vehicle access tracks. Where there was a choice (similar physical and vegetation characteristics), sites were located preferentially in conservation reserves and private Heritage Agreements.

Site names were in accordance with Guidelines for Vertebrate Surveys in South Australia (Owens 2000). Further details relating to selection and naming of site codes are presented in the vertebrate survey reports (Brandle this issue). All sites also have a unique computer generated identification number referred to as PatchID in the Biological Survey Database of South Australia.

Data collection

For most sites on most surveys standard 900m^2 (30m x 30m) quadrats were used to limit the sampling effort (Table V2). Surveys prior to 1984 (BS 30 & 79) used 5m x 5m quadrats (BS 79) or transects of 20, 5m x 5m quadrats (BS 30). BS 46, which was a specific temperate grassland survey, used 10m x 10m quadrats on Eyre Peninsula, whilst the brush cutting monitoring survey (BS 121, specific for dense *Melaleuca uncinata* communities) used 20m x 10m quadrats. Larger 100m x 100m quadrats were used at Venus Bay (BS 71, 9 sites) and for surveys concentrated in areas north of the study region (BS 428, 11 sites and BS 430, 1 site). Three surveys used 50m x 50m quadrats in the north west of the study area (BS 1, 7 sites, BS 113, 5 sites and BS 128, 43 sites). Twelve sites entered into the database as part of the Fauna Survey (BS 128) but sampled by the Scientific Expedition Group SA, used 40m x 40m quadrats in the north east of the study area.

Each plant species detected within the quadrat was scored for its dominant life form (21 categories ranging from grasses to trees > 30m in height), cover abundance (7 classes ranging from sparsely present to >75% of quadrat), life stage (9 categories describing whether each species is flowering, budding, dead, etc.). Assemblage dominance was also noted for up to 3 overstorey dominant/co-dominant species, up to three emergents and up to 5 understorey species. A representative voucher specimen of each specimen was collected for each region. For the three vegetation mapping surveys (BS 80, 103 & 107) this involved at least two sets for each region being sampled, and for the fauna survey (BS 128) each camp area (12 sites sampled for vertebrates for 4 nights from a base camp). Extra vouchers were collected for species that were difficult to separate in the field or of specific taxonomic or conservation interest.

Extra quadrat information was also recorded such as a structural summary of the vegetation (Assemblage Information) for which 4 cover abundance categories were applied to 23 life form height classes. Upper stratum age classes were also recorded for the dominant tree/mallee species (if present), this included seedlings < 1 m high, juvenile saplings, if mature, if senescent and if hollows were present. Overstorey measurements were recorded 10 plants in the overstorey layer for which % average canopy type was estimated. These included overstorey height, crown depth, canopy diameter and gap between canopies. One of two climatic condition classes (wet or dry) and one of five vegetation condition classes (undisturbed natural to virtually no cover) are also recorded.

Data storage and analysis

Data was entered onto the biological survey Database which forms part of the state-wide Environmental Database of South Australia (EDBSA) maintained by the Department for Environment & Heritage SA. This database is regularly updated with taxonomic changes determined by the State Herbarium SA. The history of these changes is also stored within the database, enabling changes to be tracked in future.

Following verification of data entry, the data was extracted and a plant species list was produced. This was checked for anomalies that relate to data capture, species identification, data collection errors and historic taxonomic changes that were not updated automatically with system wide taxonomic upgrades. A species may be present in the database under a number of names where species have been split into two or more species or subspecies. These are usually flagged as non-current species names with (NC). Where possible all species on the list were assessed and re-assigned to current taxonomy. Taxa complexes for which it was not possible to resolve discrepancies have been grouped to a higher level or excluded from further analysis. Sites and associated species data which did not have cover abundance estimates were also excluded from community analyses. The complete species list and the species used for final analyses are presented in Appendix 3.

Site vegetation assemblage patterns were investigated using hierarchical agglomerative cluster analysis (PC-ord program, McCune & Mefford 1999). The resulting floristic groups were compared to environmental variables and geographic location.

***Olearia pannosa* ssp *pannosa* the nationally Vulnerable Silver Daisy-bush has 8 collections at the SA Herbarium and was not recorded at sites. This photo was taken in Wanilla Conservation Park in 2004 near an earlier collection site. (Photo: R Brandle)**

Results

Taxonomic Summary

At least 1167 plant taxa from 85 Families were collected at the 1696 sites contributing to the biological survey of South Australia within the study area. A total of 1744 site visits (includes multiple visits to 48 sites) resulted in 53,713 plant records being stored within the Biological Survey Databases. Native taxa comprised 83% of the taxa recorded, the remaining 198 being non-indigenous invaders that have become established since European settlement. For the complete list of recorded taxa refer to Appendix 3.

The most species rich plant family was Compositae (herbs including daisies and thistles, etc. 152 taxa, 13% of total) followed by Graminae (grasses 119 taxa, 10% of total) and Leguminosae (acacias, peas etc. 111 taxa, 9.5% of total). Only 7 other families had more than 23 taxa (>2% of total). These included Orchidaceae (orchids, 72 taxa), Chenopodiaceae (saltbush, bluebush, bindyi, samphires, 66 taxa), Myrtaceae (trees and shrubs containing volatile oils such as eucalypts, tea-trees, myrtles, bottlebrush, 53 taxa), Cyperaceae (sedges, 38 taxa), Liliaceae (lilies 30 taxa), Caryophyllaceae (mostly herbs of Mediterranean origin including chickweeds, worts as well as native knawels, 25 taxa) and the Goodeniaceae (including goodenias, fanflowers, dampieras, 24 species) (Appendix 2).

Taxonomic Issues

Taxonomic issues relate to 28 of the listed taxa which represent at least 48 actual taxa. These issues arise from a combination of the extended time period over which different surveys contributing to the data were conducted and the taxonomic revision of numerous species groups during this time. This can result in species being renamed, lumped together or being split into several new taxa. Simple name replacements are applied automatically and progressively by the database. However where taxonomic splits or lumping has occurred, names representing non-current concepts need to be resolved into the derived current taxa where possible. Intergrades and hybridization between taxa also create problems with field identification.

Twenty-seven of the names potentially represent more than one taxa. Sixteen of these are flagged by the word “group” or “complex” after the scientific name. Eleven are referred to by a Latin binomial or trinomial and could be mis-named within the database. While vouchered records can be determined by refernce to specimens, un-vouchered records must often remain unresolved. A further three hybrid taxa were also recorded. Details of these taxonomic issues are presented in Table 10. Taxa not already labelled as a group or complex were lumped for subsequent community analyses. Records identified only to genus were removed prior to analysis; for a number of samphire dominated sites this necessitated removal of the site from the analyses. Samphires are difficult to identify when lacking visible reproductive parts.

Table 10. Plant species within the database that have unresolvable taxonomic issues.

Taxa	Issues
Acacia sp. Winged (C.R.Alcock 4936) X *Acacia nematophylla*	Hybrid
Centaurium pulchellum/tenuiflorum	* May include some of the similar *C. pulchellum*
Convolvulus angustissimus	* May include some *C. recurvatus*
Crassula sieberiana complex	* includes *Crassula colligata* ssp. *colligata*, *C.c.* ssp. *lamprosperma*, *C. exserta*, and *C. tetramera*
Eucalyptus dumosa complex	* includes records identified inconsistently as *E. dumosa*, *E. calcareana*, *E. pileata* and *Eucalyptus dumosa* complex -- *Eucalyptus phenax* intergrades
Eucalyptus incrassata	* includes one record identified as *E. ceratocorys* and probably some others from the north west of the study area which match it or intergrade.
Eucalyptus phenax	* mostly *E. phenax* ssp. *phenax* but may include some *E. p.* ssp. *compressa* in the south where contact occurs with *E. conglobata*
Eucalyptus socialis complex	*includes *E. socialis* ssp. *socialis*, as well as *Eucalyptus peninsularis*, *E. socialis* ssp. Glossy green (P.J.Lang 804) and intergrades between the last two, as the taxa were not consistently distinguished across all surveys
Frankenia pauciflora	* includes *F. p.* var. *fruticulosa* and *F. p.* var. *gunnii*
Grevillea ilicifolia complex	* comprises *G. ilicifolia*, *G. dilatata* and intergrades
Grevillea pauciflora ssp.	* both *G. p.* ssp. *pauciflora* and *G. p.* ssp. *leptophylla* present
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	* may possibly include some *H. riparia* which has not been definitely established as occurring on Eyre Peninsula and if present is likely to be rare
Lobelia gibbosa complex	* includes the three related species to which Eyre Peninsula specimens have been assigned, but not consistently applied: *L. gibbosa*, *L. heterophylla* & the recently recognised *L. cleistogamoides*
Lolium perenne X Lolium rigidum	Hybrid
Lolium X hubbardii	Hybrid
Microtis unifolia complex	* includes 90 records identified as *M. arenaria*, 1 as *M. frutetorum*, 60 as *Microtis* sp. and 9 as *M. unifolia* complex.
Poranthera microphylla group	* as well as *P. microphylla* includes one definite *P. leiosperma* and most likely others as this species has only recently been recognised
Prasophyllum goldsackii group	* includes *P. goldsackii* and at least one specimen identified as *P.* sp. Enigma (R.Bates 2350)
Prasophyllum odoratum group	* includes *P. odoratum*, at least 1 collection of *P.* sp. Coast sandhills (Hj.Eichler 14100), and possibly some *P. collinum* & *P. praecox*.
Ptilotus spathulatus	* 2 overlapping forms

Taxa	Issues
Senecio glossanthus group	* as well as *S. glossanthus*, likely to include some *S. serratiformis* in coastal areas, a closely related species only recently recognised.
Senecio pinnatifolius group	* as well as *S. pinnatifolius*, includes *S. spanomerous*.
Senecio tenuiflorus group	* Records are likely to be either of two related species: *S. dolichcephalus* (sth of Lock) or *S. phelleus* (nth of Lock).
Spergularia diandra group	* as well as *S. diandra* (exotic) may include native species *S.* sp. Densely papillose (E.N.S.Jackson 2133) and *S.* sp. Mt Mulyah (C.W.E.Moore 7046)
Spergularia marina group	* as well as *S. marina* may include another native species *S.* sp. Mt Mulyah (C.W.E.Moore 7046)
Thelymitra nuda complex	* comprises closely related species *T. nuda* & *T. megcalyptra*.
Thelymitra pauciflora complex	* includes *T. pauciflora, T. albliflora* and possibly other related taxa.

Species Frequency

Eighty-one taxa (7%) were present at 10% or more of the survey sites with the most commonly encountered species, *Melaleuca lanceolata* (Dryland Tea-tree) being present at 40%. The next most common species, *M. uncinata* (Broombush), was present at 30% of sites and only another 19 species were present at 20% or more of sites. Of these 26% were non-indigenous species. Over half of the taxa (616) were recorded at 10% or less of survey sites and 24% of these were from single sites. These results indicate a high diversity of vegetation communities across the study area. Site frequency data for all taxa are listed in Appendix 3.

Species Richness

Plant species richness at sites ranged from 1, at a site supporting Swamp Paperbark (*Melaleuca halmaturorum)* fringing a saline lake, to 96, at a site dominated by Coastal White Mallee (*Eucalyptus diversifolia)* with Drooping Sheoak (*Allocasuarina verticillata)* on an undulating limestone plain on the west central part of the study area. Figure 17 presents the average species richness for sites sampled for each survey effort. Plant species richness is influenced by physical habitat variables such as soil types, topographic location and climate. It is also related to sample quadrat size. The first four surveys in the figure have a much smaller quadrat size; 25 m^2, 100 m^2, 100 m^2 and 200 m^2 respectively. All surveys shaded grey represent 900 m^2 samples whilst pale blue were 2500 m^2 and dark blue 10,000 m^2. The darker grey surveys had a significant proportion of quadrats sampled at > 900 m^2 (i.e. Crown Land Assessment and EP Fauna). Surveys sampling at greater than 900 m^2 sampled in drier regions with sparser coverage and lower diversity of species, and this is reflected in their generally lower species richness. Average species richness for broad scale surveys with more than 200 sites was around 40 species per quadrat. The targeted nature of other surveys in their location or specific habitat types is reflected in their species richness, e.g. Tidal & Salt Marsh Communities had the lowest species richness as would be expected, whilst the Venus Bay environment has a particularly diverse mallee community which was well represented within that survey. Because of the quadrat size issue, subsequent comparisons with habitat variables have been restricted to sites with 900m^2 quadrats.

Average site species richness was compared for the five biogeographic subregion blocks. Figure 18 indicates that the Eyre Mallee west block had a significantly lower average number of species at sites than the Talia, Eyre Hills south and Eyre Hills north subregion blocks. This is probably related to the remnant vegetation in the Eyre Mallee west blocks being dominated by sandier less fertile soils as well as having a drier climate than the more southerly Talia and Eyre Hills south blocks.

Figure 19 highlights the consistently high species richness for hill landform types which were significantly higher than all other landform types. Not unexpectedly, tidal flats had the lowest species richness. Floodplains and alluvial plains, which also had lower average site species richness, are rare on Eyre Peninsula and were represented by few sites most of which have elevated salt levels.

Figure 20 shows that sandy soils were significantly less species-rich than clay or loam soils. The floristic analyses that follow indicate that the most species-rich communities were woodland groups associated with moister more fertile hill environments (Floristic groups 53, 57, 26 & 40) had an average number of species of above 50. Coastal shrubland and samphire communities (floristic groups 5, 12, 13, 14, 15, 16, 17, 18, 45) had the lowest species richness, with less than 13 species per site (Appendix 8).

***Eucalyptus incrassata* the Ridge Fruited Mallee is a often a dominant species in areas of deep sandy soil. (Photo: R Brandle)**

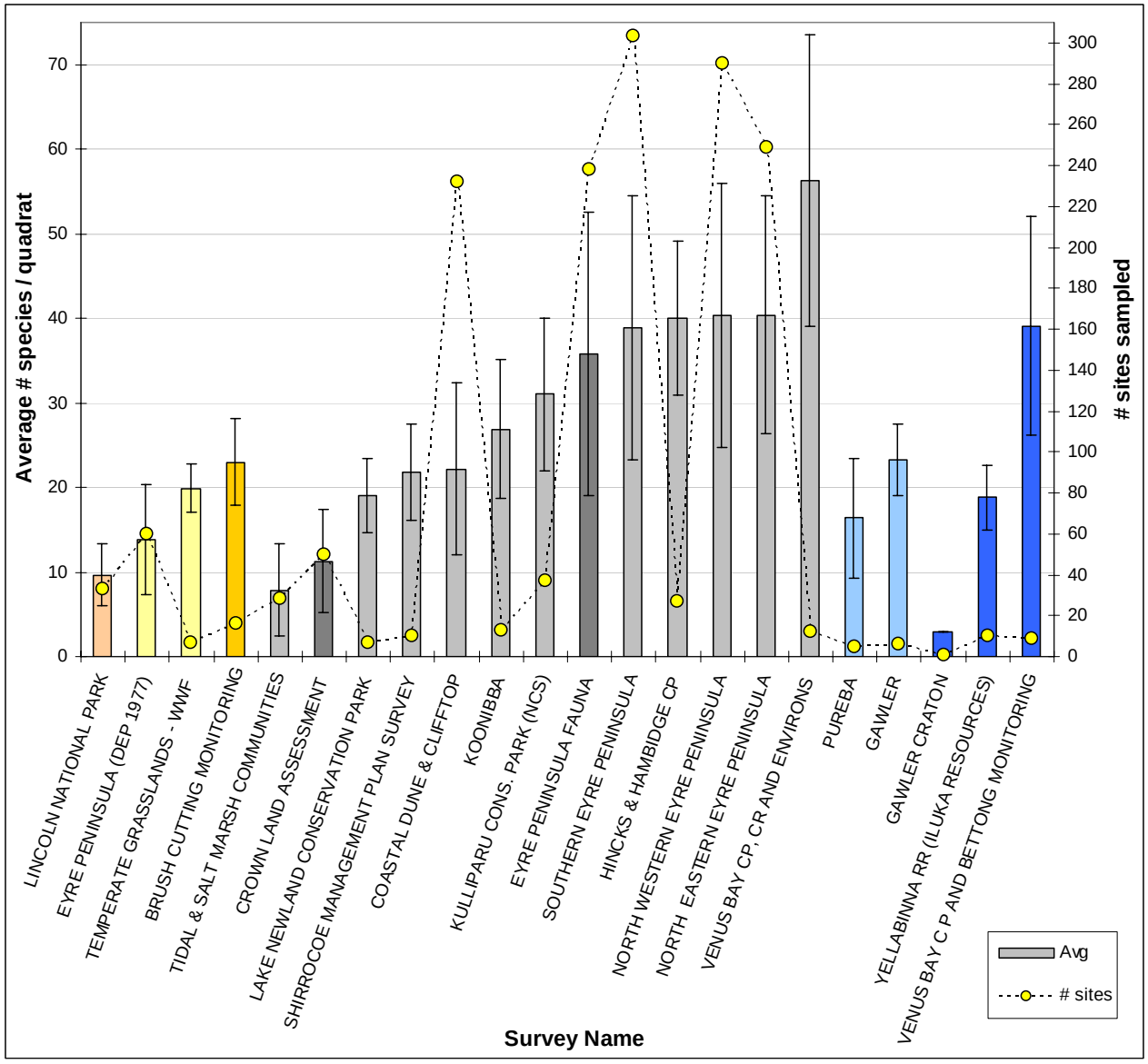


Figure 17. Average plant species richness for quadrats and the number sampled within each survey. Coloured bars relate to surveys with different sampling areas as indicated in the text. Error bars indicate 95% confidence intervals

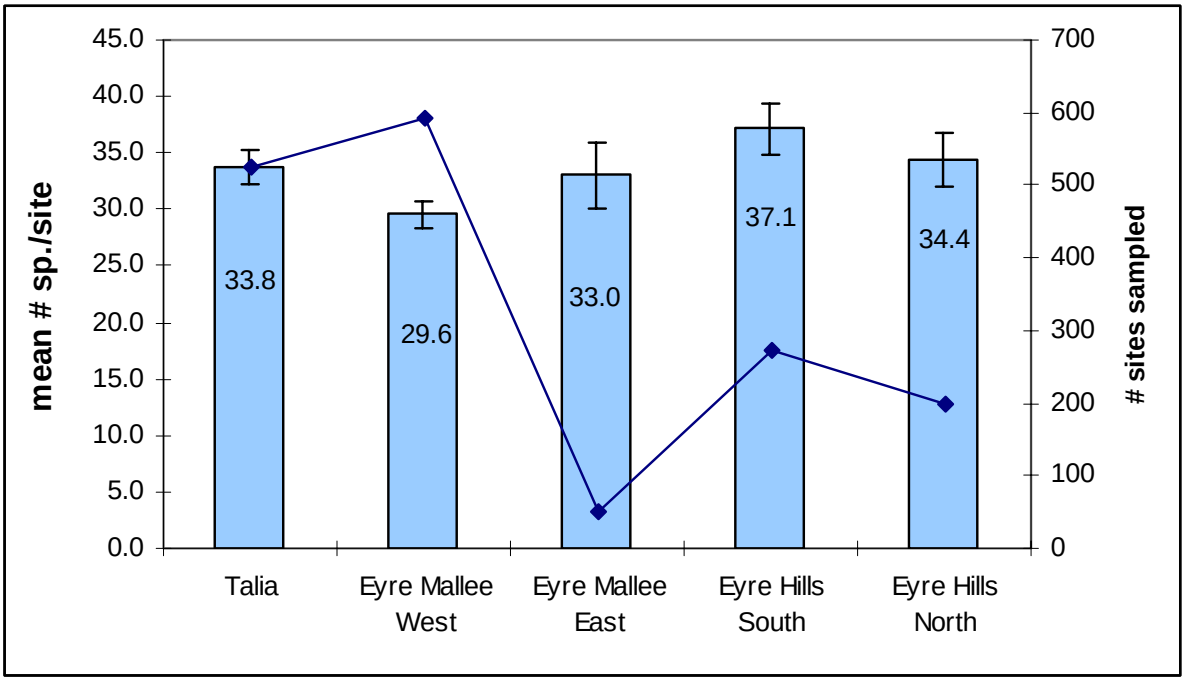


Figure 18. Plant species richness by biogeographic subregion blocks. Error bars indicate 95% confidence intervals.

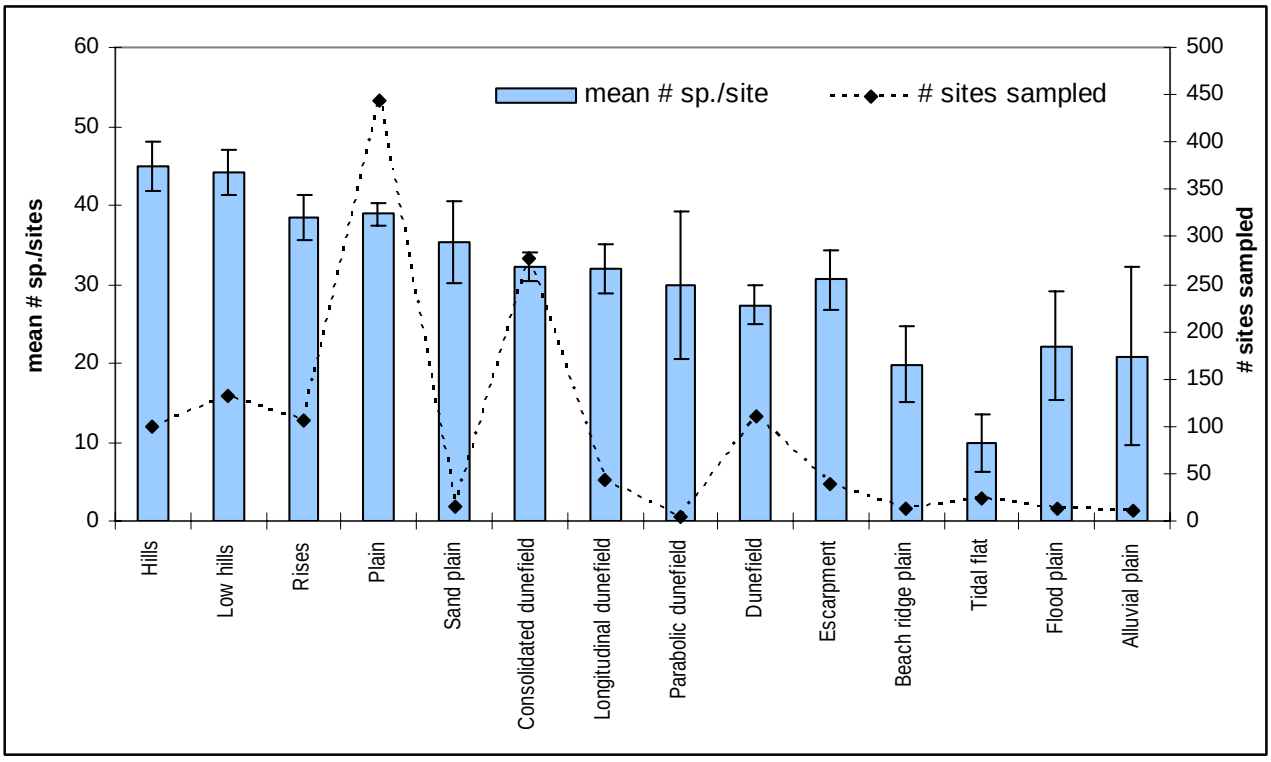


Figure 19. Average plant species richness by landform. Error bars indicate 95% confidence intervals (only landforms with 5 or more sites presented).

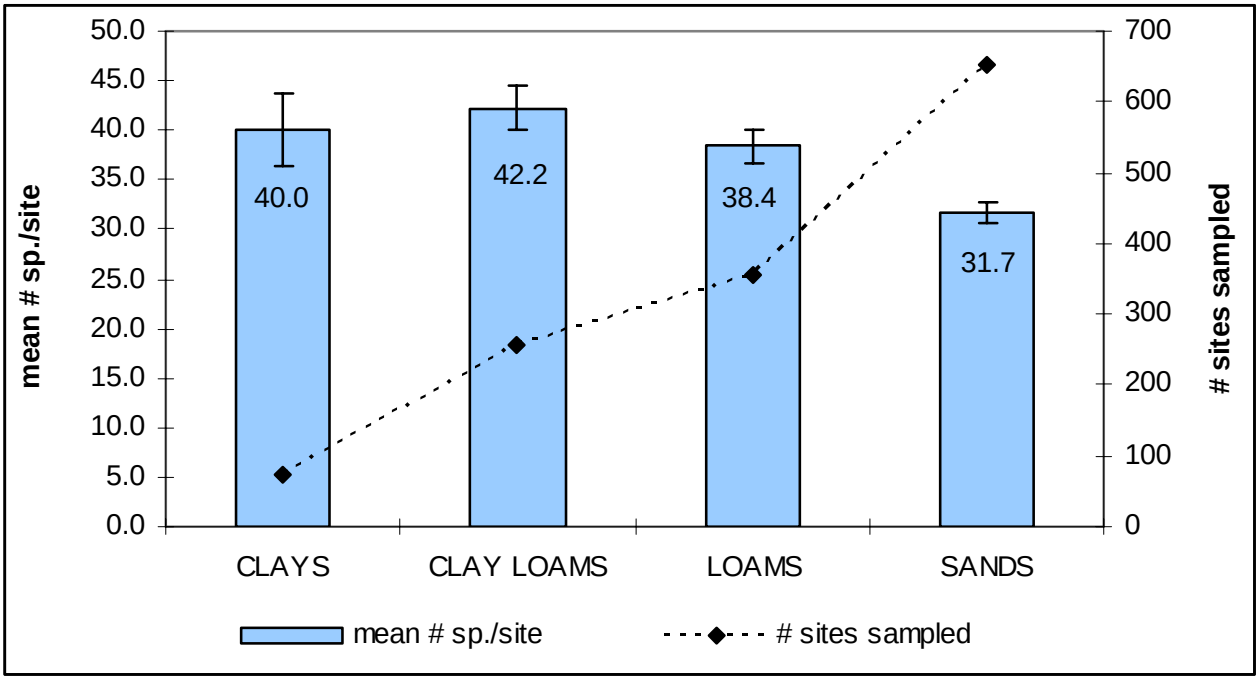


Figure 20. Average plant species richness by broad surface soil type. Error bars indicate 95% confidence intervals (only landforms with 5 or more sites presented).

Significant Species (conservation rated and endemic)

Legislated Ratings

Records form the South Australian Herbarium and the combined surveys across the study area indicate that 194 plant taxa have current Commonwealth or South Australian legislated conservation ratings. Twenty-nine with Australian ratings under the Commonwealth Government "Environment Protection and Biodiversity Conservation Act" (EPBC), and 192 under the South Australian Government "National Parks and Wildlife Act" (NPW). Two taxa with EPBC Act ratings do not also have a NPW Act rating. The EPBC ratings include EN for endangered and VU for vulnerable, whilst the NPW ratings similarly include E and V, there is an extra category R for rare.

Table 11 summarises the number of conservation rated taxa that were collected in the study area that are stored in the SA Herbarium and Table 12 summarises the numbers of taxa recorded at survey sites and the biogeographic subregions in which they were recorded. A full list of all rated species for the survey area can be found in Appendix 5. This shows that whilst the surveys detected an extra 17 rated species that were not in the SA Herbarium, a further 92 rated taxa which are in the SA Herbarium were not detected at survey sites. Following analyses were limited to information about conservation rated species that were recorded at survey sites.

Table 11. Summary of the number of conservation rated species at National and State levels contained in the collection of the South Australian Herbarium.

HERBARIUM RECORDS	All subregions
Rated species	**178**
Aus rated: EPBC Act	**27**
Aus. ENDANGERED	11
Aus. VULNERABLE	16
SA rated: NPW Act	**167**
SA Endangered	24
SA Vulnerable	36
SA Rare	117

Table 12. Summary of the number of conservation rated species at National and State levels by the Eyre Peninsula biogeographic region and subregions.

SURVEY RECORDS	All subregions	Eyre Hills	Eyre Mallee	Talia
Rated species	**103**	**66**	**45**	**40**
AUS rated: EPBC	**14**	**10**	**3**	**4**
Aus. ENDANGERED	5	4	1	1
Aus. VULNERABLE	9	6	2	3
SA rated: NPW	**101**	**65**	**44**	**39**
SA Endangered	5	3	0	1
SA Vulnerable	19	7	4	5
SA Rare	77	48	38	30

Regional Ratings

A further 75 taxa also have a regional rating (3 Endangered, 6 Threatened (= near endangered), 3 Vulnerable, 63 Rare and Uncommon (79): BDBSA 2009) which indicates their status within the Eyre Peninsula Herbarium Region. This region is larger than the Eyre Biogeographic region, including southern parts of the Gawler Bioregion. In total 220 of the species recorded within the Eyre Bioregion had a regional rating whilst a further 60 were rated as poorly known (53) or questionable (7). See Appendix 6 for full details.

Species with restricted range

An analysis of taxa recorded at survey sites within the Eyre biogeographic region (EBR) indicated that 25 were not recorded in any other biogeographic region in South Australia. However, only 19 of these were unique to the EBR with 5 taxa also occurring in other parts of Australia. The majority of these (3) were in southern Western Australia. One occurred to the east whilst the other had isolated populations in western and eastern Australia. These taxa are presented in Table 13. The analysis also highlighted 6 species that are near endemics for the EBR, except that these species' distributions stray into neighbouring biogeographic regions, mostly the Gawler Ranges or Yellabinna. One species, the Port Lincoln Guinea-flower *Hibbertia cinerea* was present on Kangaroo Island (1 record). A further 5 species with interstate populations were similarly mostly restricted to the EBR in South Australia.

All but 3 of these species have a national, state or regional conservation rating, of which one, the Sand Mintbush *Prostanthera ammophila*, was only recorded at two sites. This low recording rate indicates it may warrant assessment for regional rating. Investigation of specimens in the SA Herbarium reveal a further 26 records of which all but 6 are within the EBR and with most records being collected more than 20 years ago, prior to 1989. The EBR is the stronghold for these species in South Australia. All species recorded at less than 10 sites, of which there were 20, warrant further investigation into their current conservation status.

Table 13 also indicates the biogeographic subregions in which each species was recorded. The southern subregional blocks (Eyre Hills south and Talia) supported the highest number of endemics and near endemics reflecting the moister climate in these regions. This illustrates the role of these areas as isolated refugia over evolutionary time frames, and the impact of the Eyrean and Nullarbor barriers (Keast 1961) on speciation. These barriers are thought to operate during times of high aridity and when sea levels are relatively high such as the present. When sea levels were lower Spencer Gulf would have ceased being a barrier to the east and land south of the Nullarbor Plain would have supported habitats more suitable for species requiring wetter habitats. During moister periods the mallee belt to the north of the Nullarbor may also have assisted population expansion to and from the west.

Table 13. List of taxa recorded at survey sites that are restricted to the Eyre biogeographic region within South Australia. Total and within subregion block site frequency are presented. Species marked with an asterisk (*) indicate species has also been recorded in adjacent biogeographic regions but the EPBR is likely to support the bulk of the species' distribution (SA Herbarium database).

Species	Common name	EPBC Act Status	NPW Act Status	Eyre Herbarium Region Status	Survey site frequency	Eyre Hills South Block	Eyre Hills North Block	Eyre Mallee West Block	Eyre Mallee East Block	Talia
Unique to the Eyre Biogeographic Region (EP)										
Acacia alcockii	Alcock's Wattle		R	R	8	2				6
Acacia gillii	Gill's Wattle			U	34	34				
Acacia hexaneura	Six-nerve Spine-bush		R	R	3		3			
Acacia imbricata	Feathery Wattle	VU	R	R	22	22				
Brachyscome xanthocarpa	Yellow-fruit Daisy		R	R	2			1		1
*Caladenia septuosa**	Eyre Peninsula Spider-orchid				50	32		6		12
Daviesia asperula ssp. *obliqua*	Eyre Peninsula Bitter-pea			R	23	22				1
Drosera sp. *Rigid (R.J.Bates 2268)*	Erect Sundew			K	10	9				1
Eucalyptus cretata	Darke Peak Mallee		R	R	11		1	10		
Eucalyptus peninsularis	Beaked Red Mallee			U	39	10	1	26	1	1
Eucalyptus petiolaris	Eyre Peninsula Blue Gum			U	10	7	3			
Grevillea halmaturina ssp. *laevis*	Prickly Grevillea		R	R	3	3				
Grevillea pauciflora ssp. *leptophylla*			R	K	7			2		5
Hakea cycloptera	Elm-seed Hakea				165	60	24	55		26
*Hibbertia cinerea**	Port Lincoln Guinea-flower			U	15	11				4
Homoranthus homoranthoides	Port Lincoln Ground-myrtle			U	44	37				7
*Melaleuca oxyphylla**	Pointed-leaf Honey-myrtle		R	R	3		2	1		
Pomaderris flabellaris	Fan Pomaderris			U	29	24	3			2
*Prostanthera ammophila**	Sand Mintbush				2		1	1		
*Prostanthera calycina**	West Coast Mintbush	VU	V	V	17					17
Pultenaea teretifolia var. *teretifolia*	Terete-leaf Bush-pea			U	19	12	3	2		2
Pultenaea trichophylla	Tufted Bush-pea	VU	R	R	3	3				
Spyridium bifidum var. *Marble Range (W.R.Barker 7601)*	Spyridium		V	K	3	3				
Spyridium leucopogon	Silvery Spyridium		R	K	7	7				
Recorded in eastern and western Australia (AUS)										
Stypandra glauca	Nodding Grass-lily		V	V	1			1		
Recorded in eastern Australia (E)										
Bossiaea ensata	Sword Bossiaea		V	T	1	1				
*Commersonia tatei**	Trailing Commersonia			U	0					
Recorded in western Australia (W)										
Anthocercis anisantha ssp. *anisantha**	Port Lincoln Ray-flower		R	R	2	2				
Chondropyxis halophila	Salt Button-daisy		R	K	1			1		
*Goodenia quasilibera**				K	1			1		
*Levenhookia stipitata**	Stylewort		R	R	14	10		1		3
Olearia adenolasia	Musk Daisy-bush		R	R	2		2			
*Templetonia battii**	Spiny Templetonia		R	R	2			2		
Thysanotus wangariensis	Eyre Peninsula Fringe-lily		R	R	3	1		2		
# taxa EP only	19 (+ 5*)	3	12	21		17	9	9	1	13
# taxa with affinities Aus	1		1	1				1		
# taxa with affinities E	1 (+ 1*)		1	2		1				
# taxa with affinities W	3 (+ 4*)		6	7		3	1	5		1
Total	24 (+ 10*)	3	20	32		21	11	16	1	15

Introduced Plants

Introduced plants refer to non-indigenous species which are also referred to as alien or exotics. At least one of the 198 of the non-indigenous taxa recorded were present at 74% of the 1696 sites surveyed. The average number of introduced species recorded at these sites was 6.9 with a maximum of 32. Only one of these species, Bridal Creeper *Asparagus asparagoides* f. *asparagoides* has been listed as a "Weeds of National Significance" http://www.weeds.org.au/natsig.htm#list. This species was recorded at 190 sites and was the 13th most frequently recorded introduced species. It is widespread across the study area with the heaviest infestations being in the wetter southern regions. It was recorded at 106 sites in the Eyre Hills BSR (mostly in the southern block), 72 sites in the Talia BSR and only 12 sites in the drier Eyre Mallee BSR. Details on management programs dealing with this problem can be accessed through: http://www.epnrm.sa.gov.au/Portals/3/ASPARAGUS%20WEEDS%20Regional%20Strategy%202004-07.pdf.

The biogeographic pattern evident for Bridal Creeper is consistent for introduced plants as a group, with the Eyre Hills biogeographic subregion having the highest number of taxa (155) despite only having 28% of sites. Talia BSR was similar with 146 taxa from 32% of sites. The drier Eyre Mallee BSR supported 110 taxa from 40% of the sites. Details of introduced taxa site frequency within biogeographic sub-regions are presented in Appendix 7.

The average introduced species richness at sites within each sub-region and environmental association also reflects the higher rainfall and productivity of the southern areas (Table 15). The higher average for the Talia BSR may be a reflection of the remnant vegetation types that occur within this sub-region. In general these are less suitable for cropping and have therefore been retained for stock grazing. In general, biological survey effort is biased against grazed sites where ever there were examples of specific habitat types that were in less disturbed condition. Within the habitats favoured for grazing, which are widespread in the Talia BSR, un-grazed examples were rare.

Some introduced plants that are considered a problem from a conservation perspective are detailed in the Biodiversity Plan for Eyre Peninsula (DEH 2002). Table 14 lists 24 species that dominated some of the native vegetation communities sampled at sites (i.e. those with >25% cover abundance estimates). Some of the listed species are considered greater long term threats to vegetation communities than others. Particularly perennial species such as Bridal Creeper, Perennial Veldt Grass and African Boxthorn.

Table 14. Introduced plant species, the number of sites at which they occurred and the average cover abundance class estimates. Only species with a maximum cover of >25% at one or more sites are presented in decreasing maximum cover value order.

FAMILY	Species	Common Name	# sites	Ave % cover	Max cover %
GRAMINEAE	*Ehrharta calycina*	Perennial Veldt Grass	18	5-25	>75%
GRAMINEAE	*Hordeum glaucum*	Blue Barley-grass	177	<5	>75%
GRAMINEAE	*Lolium rigidum*	Wimmera Ryegrass	115	<5	50-75
GRAMINEAE	*Vulpia myuros f. myuros*	Rat's-tail Fescue	270	<5	50-75
GRAMINEAE	*Avena barbata*	Bearded Oat	395	5-25	50-75
GRAMINEAE	*Bromus diandrus*	Great Brome	83	<5	50-75
CRUCIFERAE	*Brassica tournefortii*	Wild Turnip	288	<5	50-75
LIMONIACEAE	*Limonium companyonis*	Sea-lavender	11	5-25	50-75
UMBELLIFERAE	*Apium graveolens*	Celery	2	25	50-75
LEGUMINOSAE	*Medicago polymorpha* var. *polymorpha*	Burr-medic	63	5-25	50-75
GRAMINEAE	*Rostraria cristata*	Annual Cat's-tail	247	<5	50-75
GRAMINEAE	*Parapholis incurva*	Curly Ryegrass	102	5-25	25-50
GRAMINEAE	*Ehrharta villosa* var. *maxima*	Pyp Grass	1	25-50	25-50
POLYGALACEAE	*Polygala myrtifolia*	Myrtle-leaf Milkwort	2	25-50	25-50
CRUCIFERAE	*Carrichtera annua*	Ward's Weed	164	5-25	25-50
LEGUMINOSAE	*Medicago minima* var. *minima*	Little Medic	190	<5	25-50
SOLANACEAE	*Lycium ferocissimum*	African Boxthorn	139	<5	25-50
GERANIACEAE	*Erodium cicutarium*	Cut-leaf Heron's-bill	105	<5	25-50
IRIDACEAE	*Moraea setifolia*	Thread Iris	119	<5	25-50
PRIMULACEAE	*Anagallis arvensis*	Pimpernel	494	<5	25-50
CRUCIFERAE	*Sisymbrium erysimoides*	Smooth Mustard	62	<5	25-50
EUPHORBIACEAE	*Euphorbia paralias*	Sea Spurge	26	5-25	25-50
GRAMINEAE	*Vulpia muralis*	Wall Fescue	56	<5	25-50

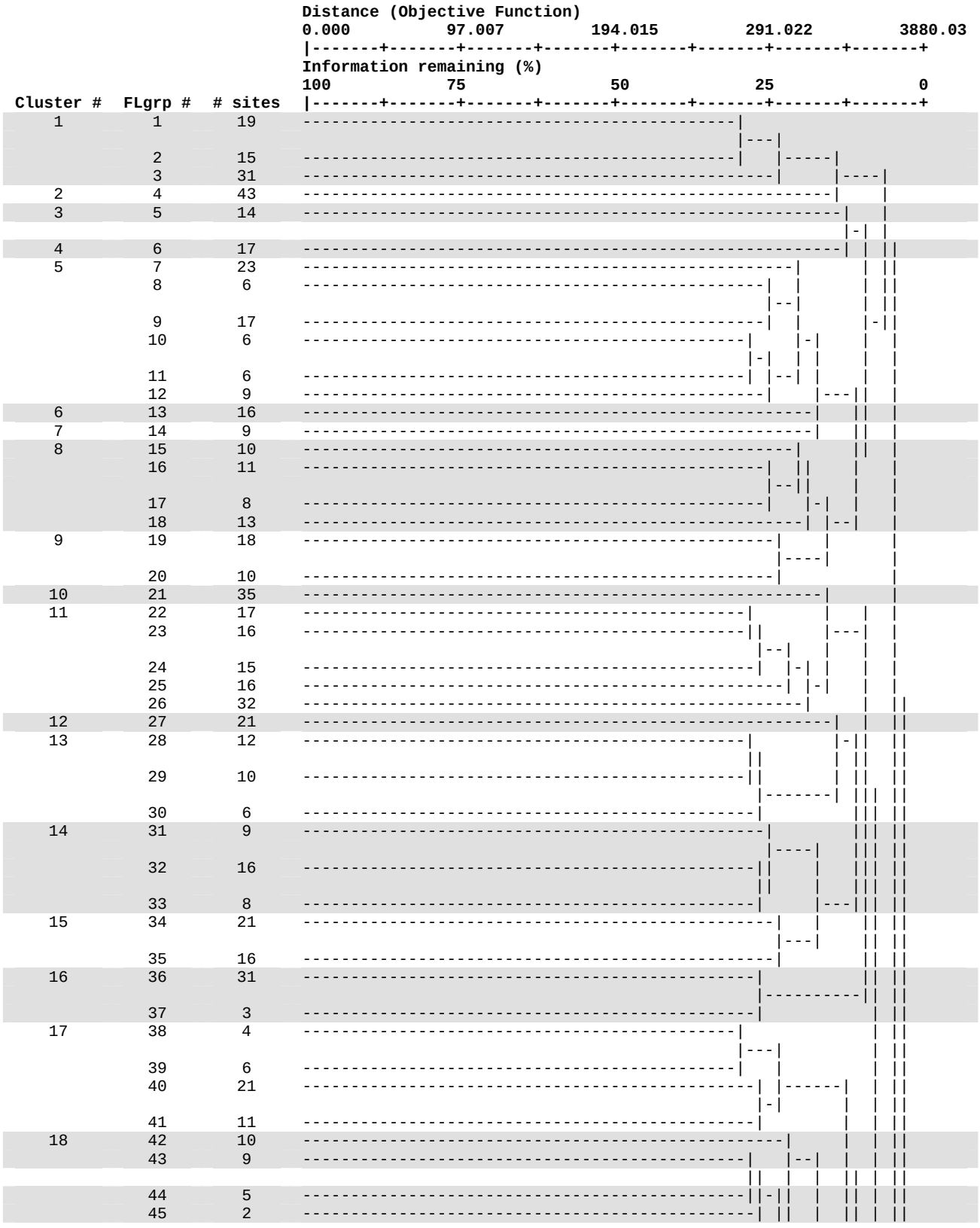
Table 15. This table highlights the level of non-native plant species at sites in a geographic context. For each Environmental Association (Laut *et al.* 1977) within biogeographic subregions the proportion of sites that support introduced plant species and average number of those species at affected sites is shown. For a map of the location of Environmental Associations refer to Figure 3, p. 7.

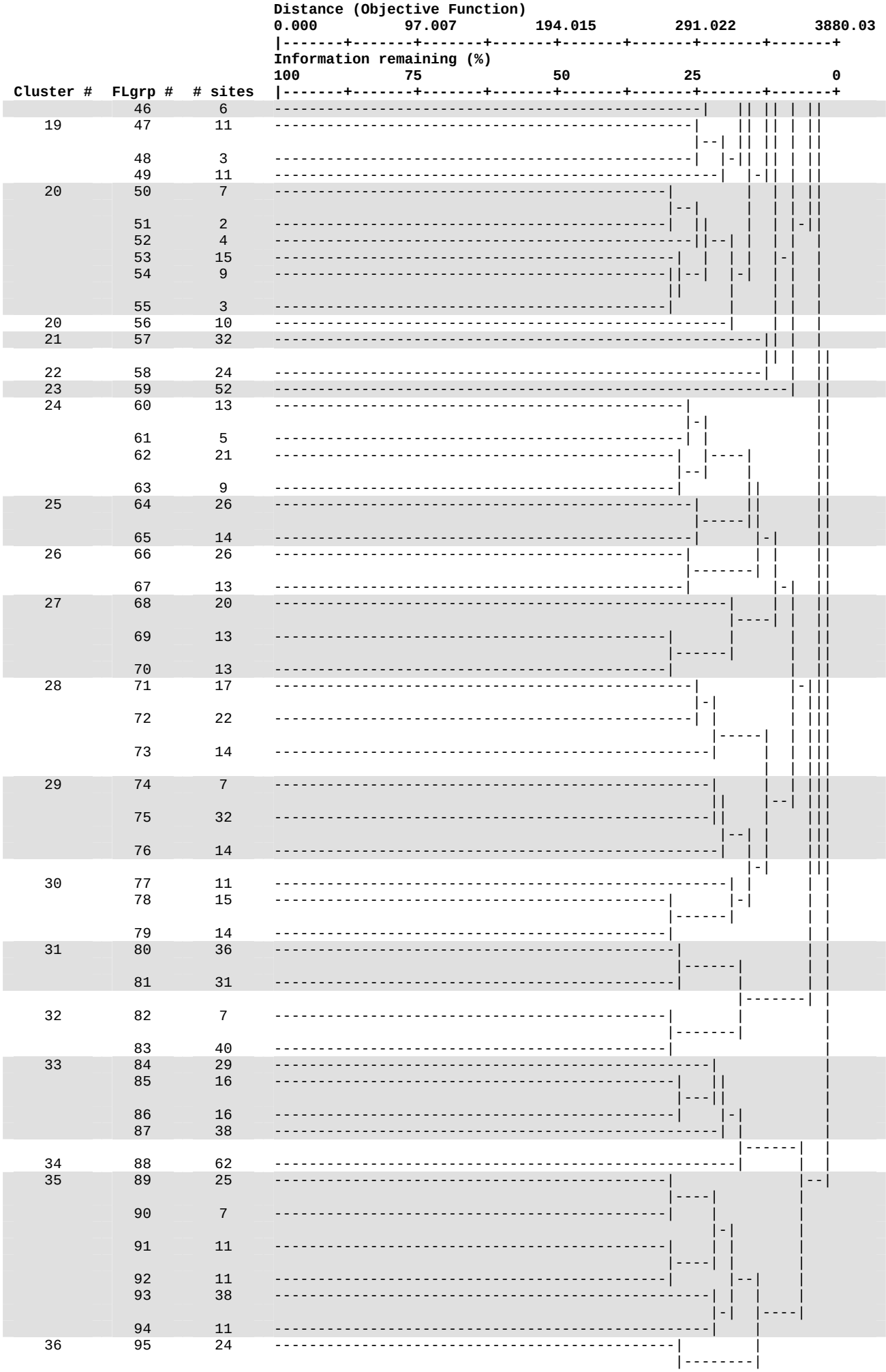
Biogeographic Sub-region	Environmental Association	# sites	# sites w intrsp.	% of total sites	ave # sp/site	max	sdev
Eyre Hills – South block	1:4 Cobbler Hill	11	10	91	5.9	17	4.8
	1:5 Jussieu	6	3	50	12.3	19	5.8
	1:6 Lincoln	63	36	57	5.6	17	3.9
	1:7 Peake bay	31	21	68	6.0	15	4.6
	1:8 Mt Gawler	4	4	100	11.3	15	3.9
	1:9 Yalunda	63	60	95	9.1	26	5.8
	1:10 Edillie	19	17	89	7.1	17	5.5
	1:11 Salt Creek	1	1	100	10.0	10	
	1:12 Woolawae	4	4	100	6.8	10	3.2
	1:13 Marble Range	18	16	89	6.6	14	4.1
	1:14 Greenly	4	4	100	8.8	14	5.6
	1:15 Numulta	9	9	100	4.7	10	2.5
	1:16 Cummins	4	4	100	7.3	14	5.0
	1:17 Waretta	6	6	100	12.7	16	1.8
	1:18 Butler	24	23	96	9.2	24	5.9
	1:19 Yeelanna	1	1	100	9.0	9	
	1:20 Malata	8	8	100	9.3	19	5.8
Eyre Hills – North block	3:9 Cleve	26	23	88	6.0	17	5.1
	3:10 Mt Desperate	32	23	72	7.7	20	4.7
	3:11 Triple Hill	2	2	100	14.0	17	4.2
	3:13 Yalarna	2	2	100	4.5	8	4.9
	3:14 Ironstone Hill	12	4	33	2.3	4	1.5
	3:15 Pinkawillinie	36	24	67	5.5	16	3.9
	3:16 Kimba	18	14	78	5.4	10	2.8
	3:17 Messenger	62	38	61	6.4	20	5.8
	Summary	**476**	**359**	**75.4**	**7.2**	**26**	**5.1**
Talia	1:1 Coffin Bay	17	14	82	6.3	12	3.6
	1:2 Avoid Bay	18	17	94	5.5	10	2.9
	1:3 Mungerowie	48	42	88	10.5	27	6.3
	1:21 Kiona	4	3	75	5.3	13	6.7
	2:1 Drummond	45	43	96	9.8	22	5.2
	2:2 Brimpton	3	1	33	2.0	2	
	2:3 Kappawanta	60	51	85	12.5	26	6.8
	2:4 Polda	129	111	86	10.4	26	7.1
	2:5 Newland	15	15	100	4.8	15	4.0
	2:6 Mt Cooper	26	20	77	7.2	21	6.5
	2:7 Inkster	87	64	74	8.3	23	5.8
	2:8 Streaky Bay	88	60	68	4.6	17	4.5
	Summary	**545**	**445**	**81.7**	**8.7**	**27**	**6.4**
Eyre Mallee	3:1 Isabella	10	6	60	4.8	11	3.6
	3:2 Hincks	16	13	81	5.6	8	
	3:3 Tooligie	1	1	100	8.0	10	4.6
	3:4 Blue Range	5	3	60	5.0	12	3.5
	3:5 Wharminda	17	15	88	6.7	17	
	3:6 Lock	2	1	50	17.0	13	3.2
	3:7 Hambidge	92	58	63	4.4	15	5.4
	3:8 Darke Peake	13	10	77	5.5	9	2.7
	3:18 Corrabinnie	41	19	46	4.5	19	5.0
	3:19 Koongawa	125	79	63	6.0	32	7.0
	3:20 McLochlan	34	28	82	8.3	23	7.6
	3:21 Mt Dampier	5	3	60	17.7	14	4.5
	3:22 Kyancutta	17	16	94	7.1	4	1.3
	3:23 Scrubby Peak	5	5	100	1.8	13	3.8
	3:24 Wirrula	63	39	62	4.3	13	2.9
	3:25 Ceduna	99	72	73	2.8	12	3.2
	3:26 Bookabie	75	53	71	3.7	12	3.2
	3:12 Midgee	53	33	62	3.4	11	3.6
	Summary	**675**	**453**	**67.1**	**4.9**	**32**	**4.4**
Totals		**1696**	**1257**	**74.1**	**6.9**	**32**	**5.6**

Vegetation Community Descriptions

Vascular plant data from 1580 sites supporting 1100 predefined plant taxa were analysed for similarity based on species composition and relative cover abundance classes using hierarchical cluster analysis. Ninety-five of 96 floristic groups were chosen to best represent the diversity of vegetation communities that make up the remnant vegetation of the Eyre Peninsula biogeographic region. These were grouped into 36 broad alliances that have been termed clusters throughout the remainder of this report. The relationship between clusters and floristic groups is displayed in the dendrogram below (Figure 21). An ecological interpretation of the clustering within the dendrogram and floristic group descriptions follows. Floristic group explanations, locality maps, plant taxa and fauna taxa summaries are detailed in Appendix 8.

Figure 21. Dendrogram from Hierarchical Cluster Analysis using PC-ORD, Version 4.25. Linkage method: FLEXIBLE BETA; Distance measure: Sorensen (Bray-Curtis); Flexible beta value selected is -0.250; Percent chaining = 0.17




Distance (Objective Function)
0.000
97.007
194.015
291.022
3880.03
Information remaining (%)
100
75
50
25
0
Cluster #
FLgrp #
sites
46 6
19 47 11
48 3
49 11
20 50 7
51 2
52 4
53 15
54 9
55 3
20 56 10
21 57 32
22 58 24
23 59 52
24 60 13
61 5
62 21
63 9
25 64 26
65 14
26 66 26
67 13
27 68 20
69 13
70 13
28 71 17
72 22
73 14
29 74 7
75 32
76 14
30 77 11
78 15
79 14
31 80 36
81 31
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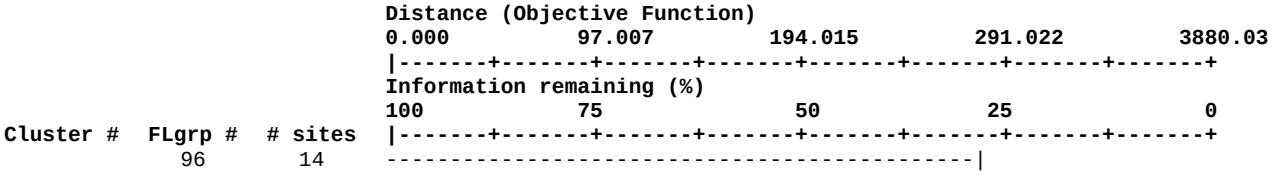
36 95 24



The first nine clusters relate to saline coastal or inland salt lake margins and are dominated by shrublands.

Clusters 10 and 11 relate to sites on plains and low hills with sandy loam to clay loam soils, often shallow over a hard calcareous layer expressed as outcrop and surface strew cover. Sites in these clusters supported Mallee Box / Coastal White Mallee / Drooping Sheoak / Southern Cypress Pine / River Red Gum mallee to woodland over grass or sedge dominated understorey.

Clusters 12 to 15 incorporate the more arid plains and hill sites from the central and northern parts of the study area with sandy loam to clay loam soils. Their floristic communities have understoreys dominated by grasses or chenopod shrubs and include those dominated by woodland species such as Southern Cypress Pine and Black Oak.

Cluster 16 represents coastal heath shrublands and hummock grasslands whilst Cluster 17 represents broombush shrublands of the southern Eyre Peninsula.

Cluster 18 combines a diverse group of unrelated floristic communities ranging from coastal Sheoak and mallee, through intertidal Mangrove forest and Umbrella Bush shrubland.

Cluster 19 represents the Cutting Grass and Thatching Grass swamp areas.

Clusters 20 to 23 combine a collection of mallee and woodland communities with limited distributions associated with hills of the Eyre Hills biogeographic subregion as well as Sheoak, River Red Gum Woodlands and Coastal White Mallee of the Talia biogeographic region.

Clusters 24 to 27 represent the complexes of White Mallee communities across the study area.

Clusters 28 to 29 represent Dryland Teatree tall shrublands with or without mallee overstorey, mostly along the southern coasts to the far west. Cluster 30 incorporates the similarly distributed but less common shrublands dominated by Pale Turpentine Bush.

Clusters 31 to 32 incorporates the Gilja, Yorrell and Coastal Red Mallee communities of the northern plains and low hills, with sandy loam to clay soils.

Cluster 33 to 34 represents Broombush shrublands with or without mallee overstorey, mostly on plains or hills with sandy loam to clay soils.

Cluster 35 to 36 represent the mallee over broombush communities, with or without spinifex, that occur on the siliceous sand dunes typical across the north-central and eastern parts of the study area, where Ridge-fruited Mallee and Beaked Red Mallee dominate.

The clusters and floristic groups are listed and summarised below. More detailed descriptions including location maps, and defining plant species are presented in Appendix 8. Where sampled, fauna species encountered at sites within these groups are also included.

Cluster 1. Coast Daisy-bush Shrublands on coastal dunes

Floristic Group 1. Coast Daisy-bush *Olearia axillaris* Shrubland over Coast Bonefruit *Threlkeldia diffusa*, Native Pigface *Carpobrotus rossii* and Bower Spinach *Tetragonia implexicoma* +/- emergent Common Boobialla *Myoporum insulare*

Floristic Group 2. Coast Daisy-bush *Olearia axillaris* Shrubland +/- Cockies Tongue *Templetonia retusa* over Sea-berry Saltbush *Rhagodia candolleana* ssp. *candolleana*, Coast Bonefruit *Threlkeldia diffusa* and Bower Spinach *Tetragonia implexicoma* +/- an overtorey of Coastal White Mallee *Eucalyptus diversifolia* ssp. *diversifolia* or Drooping Sheoak *Allocasuarina verticillata*

Floristic Group 3. Coast Daisy-bush *Olearia axillaris* Shrubland over Coast Bonefruit *Threlkeldia diffusa* and Bower Spinach *Tetragonia implexicoma* +/- Sea-berry Saltbush *Rhagodia candolleana* ssp. *candolleana*, emergent Common Boobialla *Myoporum insulare*

Cluster 2. Coast Beard-heath Shrublands on southern coast dunes

Floristic Group 4. Coast Beard-heath *Leucopogon parviflorus* and Coast Daisy-bush *Olearia axillaris* Shrubland over Knobby Club-rush *Ficinia nodosa* and Native Pigface *Carpobrotus rossii* +/- overstorey of Drooping Sheoak *Allocasuarina verticillata*

Cluster 3. Beaded and Shrubby Samphire Low shrublands on tidal flats

Floristic Group 5. Beaded Samphire *Sarcocornia quinqueflora*, Shrubby Samphire *Tecticornia arbuscula* Low Shrubland +/- Sea Rush *Juncus kraussii*, emergent Grey Mangrove *Avicennia marina* ssp. *marina* / Swamp Paperbark *Melaleuca halmaturorum*

Cluster 4. Swamp Paper-bark Tall Shrublands to Low Woodlands on clay to loam flats, swamps and lake margins

Floristic Group 6. Swamp Paper-bark *Melaleuca halmaturorum* Tall Shrubland +/- Thatching Grass *Gahnia filum*

Cluster 5. Shrublands on sandy soils of west coast dunes and cliff tops, dominated by a mix of Coast Daisy-bush, Coast Bone-fruit, Sea-berry Saltbush, Coast Saltbush, Native Pigface or Rolling Spinifex

Floristic Group 7. Angled Wattle *Acacia* sp. Winged (C.R.Alcock 4936) &/or Coast Daisy-bush *Olearia axillaris* over Coast Velvet-bush *Lasiopetalum discolor* +/- emergent Native Apricot *Pittosporum angustifolium*

Floristic Group 8. Shore Westringia *Westringia dampieri* Low Shrubland with emergent Coast Daisy-bush *Olearia axillaris* +/- Thyme Riceflower *Pimelea serpyllifolia* ssp. *serpyllifolia* / Salt Bluebush *Maireana oppositifolia* / Creeping Brookweed *Samolus repens*

Floristic Group 9. Dryland Tea-tree *Melaleuca lanceolata* / Leafless Cherry *Exocarpos aphyllus* / Coast Daisy-bush *Olearia axillaris* over Sea-berry Saltbush *Rhagodia candolleana* ssp. *candolleana* / Groundsel *Senecio pinnatifolius* group

Floristic Group 10. Rolling Spinifex *Spinifex hirsutus* Grassland +/- Coast Saltbush *Atriplex cinerea* / Two-horned Sea Rocket *Cakile maritima* ssp. *maritima*

Floristic Group 11. Coast Saltbush *Atriplex cinerea* Low Shrubland with Coast Bonefruit *Threlkeldia diffusa* +/- Two-horned Sea Rocket *Cakile maritima* ssp. *maritima* / Coast Cushion Bush *Leucophyta brownii* / emergent Coast Daisy-bush *Olearia axillaris*

Floristic Group 12. Coast Daisy-bush *Olearia axillaris* Shrubland +/- Cushion Fanflower *Scaevola crassifolia* / Sea Spurge *Euphorbia paralias* / Rolling Spinifex *Spinifex hirsutus*

Cluster 6. Nitre-bush Shrublands on sandy soils of coastal dunes and cliffs

Floristic Group 13. Nitre-bush *Nitraria billardierei* Shrubland with Coast Daisy-bush *Olearia axillaris* Shrubland +/- Marsh Saltbush *Atriplex paludosa* ssp. *cordata*

Cluster 7. Coast Cushion Bush Low shrublands on coastal cliffs and dunes with outcropping limestone

Floristic Group 14. Coast Cushion Bush *Leucophyta brownii* Low Shrubland

Cluster 8. Samphire Low Shrublands on saline flats, swamps and lakes

Floristic Group 15. Black-seed Samphire *Tecticornia pergranulata* ssp. *pergranulata* +/- Samphire *Tecticornia indica* Low Shrubland over Slender Iceplant *Mesembryanthemum nodiflorum* / Curly Ryegrass *Parapholis incurva*

Floristic Group 16. Samphire *Tecticornia indica* Low Shrubland over Round-leaf Pigface *Disphyma crassifolium* ssp. *clavellatum* +/- Small-leaf Sea-heath *Frankenia sessilis* / Salt Bluebush *Maireana oppositifolia*

Floristic Group 17. Shrubby Samphire *Tecticornia arbuscula* +/- Samphire *Tecticornia halocnemoides* and Salt Bluebush *Maireana oppositifolia* Low Shrubland

Floristic Group 18. Samphire *Tecticornia halocnemoides* Low Shrubland

Cluster 9. Low shrublands on sand to loam soils of coastal dunes and swales dominated by Marsh Saltbush, Salt Bluebush or Thorny Lawrencia

Floristic Group 19. Marsh Saltbush *Atriplex paludosa* ssp. *cordata* Low shrubland with Groundsel *Senecio pinnatifolius* group +/- Turkey-bush *Eremophila deserti* / Salt Bluebush *Maireana oppositifolia* over Round-leaf Pigface *Disphyma crassifolium* ssp. *clavellatum* +/- emergent Sheep Bush *Geijera linearifolia*

Floristic Group 20. Thorny Lawrencia *Lawrencia squamata* Low Shrubland with Salt Bluebush *Maireana oppositifolia* +/- Marsh Saltbush *Atriplex paludosa* ssp. *cordata* over Round-leaf Pigface *Disphyma crassifolium* ssp. *clavellatum*

Cluster 10. Mallee Box Open Mallee on plains with loamy soils

Floristic Group 21. Mallee Box *Eucalyptus porosa* Open Mallee over Common Wallaby-grass *Austrodanthonia caespitosa* +/- Dryland Tea-tree *Melaleuca lanceolata*

Cluster 11. Woodlands/Mallee over sedgelands, grasslands and herblands that are typical of the sheet limetone plains domnated by Coastal White Mallee, Mallee Box, Drooping Sheoak, White Cypress Pine or River Red Gum

Floristic Group 22. Bearded Oat * *Avena barbata* / Common Wallaby-grass *Austrodanthonia caespitosa* Grassland +/- emergent Ruby Saltbush *Enchylaena tomentosa* / Native Apricot *Pittosporum angustifolium* / Eucalypt species

Floristic Group 23. Drooping Sheoak *Allocasuarina verticillata* Open Woodland over Common Wallaby-grass *Austrodanthonia caespitosa* / Black Grass Saw-sedge *Gahnia lanigera* and Bearded Oat * *Avena barbata*

Floristic Group 24. River Red Gum *Eucalyptus camaldulensis* / Southern Cypress Pine *Callitris gracilis* / Dryland Tea-tree *Melaleuca lanceolata* Woodland over introduced herbs and grasses with Native Sorrel *Oxalis perennans* and Native Carrot *Daucus glochidiatus* +/- Ruby Saltbush *Enchylaena tomentosa* / Sea-berry Saltbush *Rhagodia candolleana* / Prickly Ground-berry *Acrotriche patula*

Floristic Group 25. Black Grass Saw-sedge *Gahnia lanigera* Sedgeland +/- Scented Mat-rush *Lomandra effusa* / Prickly Ground-berry *Acrotriche patula* +/- overstorey of Coastal White Mallee *Eucalyptus diversifolia*

Floristic Group 26. Coastal White Mallee *Eucalyptus diversifolia* +/- Mallee Box *E. porosa* over Prickly Ground-berry *Acrotriche patula* +/- Ribbed Thryptomene *Thryptomene micrantha* / Horned Hop-bush *Dodonaea*

hexandra / Black Grass Saw-sedge *Gahnia lanigera* / Dryland Tea-tree *Melaleuca lanceolata*

Cluster 12. Coastal Red Mallee and Boree Tall Shrubland on loamy plains.

Floristic Group 27. Coastal Red Mallee *Eucalyptus oleosa*, Boree *Melaleuca pauperiflora* Mallee / Shrubland

Cluster 13. Floristic groups with Bladder Saltbush Low Shrublands, restricted to the drier more arid parts of the study area.

Floristic Group 28. Sheep Bush *Geijera linearifolia* Shrubland +/- Bladder Saltbush *Atriplex vesicaria* / Round-leaf Pigface *Disphyma crassifolium* +/- emergent Eucalypt spp.

Floristic Group 29. Yorrell *Eucalyptus gracilis* / White Mallee *E. phenax* / Gilja *E. brachycalyx* Mallee +/- Boree *Melaleuca pauperiflora* over Sheep Bush *Geijera linearifolia*, Fleshy Saltbush *Rhagodia crassifolia* +/- Bladder Saltbush *Atriplex vesicaria* / Bindyi *Sclerolaena diacantha* group / Native Pigface *Carpobrotus rossii*

Floristic Group 30. Bladder Saltbush *Atriplex vesicaria* Low Shrubland +/- Round-leaf Pigface *Disphyma crassifolium* / Little Medic * *Medicago minima* var. *minima* / Blue Barley-grass * *Hordeum glaucum*

Cluster 14. Floristic groups related through native tussock grassland understorey spp. on clay and loam plains.

Floristic Groups 31. Balcarra Spear-grass *Austrostipa nitida* Tussock Grassland +/- Woolly Yellow-heads *Trichanthodium skirrophorum* / Cottony Spear-grass *A. drummondii* / Common Wallaby-grass *Austrodanthonia caespitosa*

Floristic Group 32. Spine Bush *Acacia nyssophylla* / Sheep Bush *Geijera linearifolia* / Desert Senna *Senna artemisioides* ssp. *petiolaris* Open Shrubland over Stiff Westringia *Westringia rigida* / Spiny Fanflower *Scaevola spinescens* / Woolly Yellow-heads *Trichanthodium skirrophorum* +/- an overstorey of Southern Cyperus Pine *Callitris gracilis* or Black Oak *Casuarina pauper*

Floristic Groups 33. Black Oak *Casuarina pauper* Woodland over Spiny Fanflower *Scaevola spinescens* / Feather Spear-grass *Austrostipa elegantissima* / Balcarra Spear-grass *Austrostipa nitida* +/- Rosy Bluebush *Maireana erioclada*

Cluster 15. Southern Cypress Pine Woodlands on hills and plains of central-northern Eyre Peninsula

Floristic Groups 34. Southern Cypress Pine *Callitris gracilis* Woodand over Sea Box *Alyxia buxifolia* +/- Narrow-leaf Hop-bush *Dodonaea viscosa* ssp. *angustissima* / Sheep Bush *Geijera linearifolia* / Pale Turpentine Bush *Beyeria lechenaultii* / Winged Daisy-bush *Olearia decurrens*

Floristic Groups 35. Southern Cypress Pine *Callitris gracilis* Woodand over Common Wallaby-grass *Austrodanthonia caespitosa* and introduced herbs and grasses

Cluster 16. Spinifex *Triodia scariosa* group Hummock Grasslands and heathy coastal shrublands

Floristic Group 36. Spinifex *Triodia scariosa* group Hummock Grassland +/- an overstorey of open shrubland or mallee.

Floristic Group 37. Leafless Cherry *Exocarpos aphyllus* and Narrow-leaf Spyridium *Spyridium phylicoides* over Prickly Ground-berry *Acrotriche patula* and Black Grass Saw-sedge *Gahnia lanigera* +/- Spinifex *Triodia scariosa* group

Cluster 17. Silver Broombush / Broombush Shrublands over Smooth Guinea-flower +/- mallee overstorey

Floristic Group 38. Coast Ridge-fruited Mallee *Eucalyptus angulosa* over Broombush *Melaleuca uncinata* and Smooth Guinea-flower *Hibbertia* sp. Glabriuscula with Elm-seed Hakea *Hakea cycloptera*, Cockies Tongue *Templetonia retusa*

Floristic Group 39. Ridge-fruited Mallee *Eucalyptus incrassata* / Beaked Red Mallee *Eucalyptus socialis* complex / Coastal White Mallee *Eucalyptus diversifolia* ssp. *diversifolia* Mallee over Narrow-leaf Bush-pea *Pultenaea tenuifolia*, Smooth Guinea-flower *Hibbertia* sp. Glabriuscula +/- Pink Velvet-bush *Lasiopetalum behrii* / Rosemary Dampiera *Dampiera rosmarinifolia* / Cup Fringe-myrtle *Calytrix involucrata* / Broombush *Melaleuca uncinata*

Floristic Group 40. Silver Broombush *Babingtonia behrii* / Broombush *Melaleuca uncinata* / Yacca *Xanthorrhoea semiplana* Shrubland over Smooth Guinea-flower *Hibbertia* sp. Glabriuscula / Flame Heath *Astroloma conostephioides* +/- an overtorey of Drooping Sheoak *Allocasuarina verticillata* / Mallee *Eucalyptus* spp. / Sugar Gum *E. cladocalyx* / Golden Wattle *Acacia pycnantha*

Floristic Group 41. Coastal White Mallee *Eucalyptus diversifolia* ssp. *diversifolia* +/- Coast Ridge-fruited Mallee *Eucalyptus angulosa* Mallee over Yacca *Xanthorrhoea semiplana*, Narrow-leaf Myrtle Wattle *Acacia myrtifolia* and Smooth Guinea-flower *Hibbertia* sp. Glabriuscula

Cluster 18. A diverse collection of floristic groups that include as dominant overstorey: Drooping Sheoak, Bitter Saltbush, the intertidal Grey Mangrove, and a dune group dominated by Umbrella Bush and Dune Tea-tree.

Floristic Group 42. Drooping Sheoak Woodland *Allocasuarina verticillata* / Coastal White Mallee *Eucalyptus diversifolia* / Dryland Teatree *Melaleuca lanceolata* Tall Shrubland over Coast Velvet Bush *Lasiopetalum discolor* +/- Coast Beard Heath *Leucopogon parviflorus* / Coast Daisy Bush *Olearia axillari* / Scaly Poa *Poa fax* / Scented Mat-rush *Lomandra effusa*

Floristic Group 43.

Floristic Group 44. Bitter Saltbush *Atriplex stipitata* Low Shrubland over Small-leaf Bindyi *Sclerolaena*

brevifolia / Shrubby Twinleaf *Zygophyllum aurantiacum* +/- emergent trees / tall shrubs

Floristic Group 45. Grey Mangrove *Avicennia marina* ssp. *marina* Tall Shrubland over Beaded Samphire *Sarcocornia quinqueflora* +/- Trailing Hemichroa *Hemichroa pentandra*

Floristic Group 46. Umbrella Bush *Acacia ligulata* Shrubland +/- Dune Tea-tree *Leptospermum coriaceum* / Coast Daisy-bush *Olearia axillaris*

Cluster 19. Thatching Grass and Cutting Grass Sedgelands with or without an overstorey of Short-leaf Honey Myrtle or Swamp Paperbark

Floristic Group 47. Short-leaf Honey-myrtle *Melaleuca brevifolia* Shrubland +/- Totem-poles *Melaleuca decussata* / Cutting Grass *Gahnia trifida* over Bare Twig-rush *Baumea juncea* / Tassel Rope-rush *Hypolaena fastigiata*

Floristic Group 48. Cutting Grass *Gahnia trifida* Sedgeland over Bare Twig-rush *Baumea juncea*

Floristic Group 49. Thatching Grass *Gahnia filum* Sedgeland +/- emergent Swamp Paper-bark *Melaleuca halmaturorum* / Short-leaf Honey-myrtle *Melaleuca brevifolia*

Cluster 20. A diverse collection of floristic groups that include as overtorey dominants: Peppermint Box, Peninsula Mallee, Coast Ridge-fruited Mallee, Darke Peak Mallee and River Red Gum.

Floristic Group 50. Drooping Sheoak *Allocasuarina verticillata* +/- Coastal White Mallee *Eucalyptus diversifolia* Woodland / Mallee over Yacca *Xanthorrhoea semiplana* +/- Port Lincoln Guinea-flower *Hibbertia cinerea* / Needle Bottlebrush *Callistemon rugulosus* / Broad-leaf Raspwort *Gonocarpus mezianus* / Totem-poles *Melaleuca decussata*

Floristic Group 51. Bottlebrush *Callistemon rugulosus* Shrubland +/- Peppermint Box *Eucalyptus odorata*

Floristic Group 52. Hop-bush Wattle *Acacia dodonaeifolia* Shrubland +/- Coast Ridge-fruited Mallee *Eucalyptus angulosa* over Broad-leaf Raspwort *Gonocarpus mezianus*, Sticky Sword-sedge *Lepidosperma viscidum* / Guinea-flower *Hibbertia platyphylla*

Floristic Group 53. Peppermint Box *Eucalyptus odorata* Mallee / Eyre Peninsula Blue Gum *E. petiolaris* Woodland over Broombush *Melaleuca uncinata* +/- Feathery Wattle *Acacia imbricata* / Sweet Bursaria *Bursaria spinosa* ssp. *spinosa* / Peach Heath *Lissanthe strigosa* ssp. *subulata*

Floristic Group 54. Broombush *Melaleuca uncinata* / Narrow-leaf Hop-bush *Dodonaea viscosa* ssp. *angustissima* / Sticky Hop-bush *D. viscosa* ssp. *spatulata* Shrubland +/- overstorey of Peppermint Box *E. odorata* / Peninsula Mallee *E. peninsularis* over Slender Velvet-bush *Lasiopetalum baueri* / Cup Fringe-myrtle *Calytrix involucrata*

Floristic Group 55. Peppermint Box *Eucalyptus odorata* / Darke Peak Mallee *E. cretata* Mallee over Mealy Saltbush *Rhagodia parabolica*

Floristic Group 56. River Red Gum *Eucalyptus camaldulensis* Woodland over introduced grasses, Old Man's Beard *Clematis microphylla* and Native Sorrel *Oxalis perennans* +/- Bottlebrush *Callistemon rugulosus* / Woolly New Holland Daisy *Vittadinia gracilis*

Cluster 21. Drooping Sheoak Woodland over Broad-leaf Raspwort / Sticky Sword-sedge / Annual Rock-fern

Floristic Group 57. Drooping Sheoak *Allocasuarina verticillata* Woodland over Broad-leaf Raspwort *Gonocarpus mezianus* / Sticky Sword-sedge *Lepidosperma viscidum* / Annual Rock-fern *Cheilanthes austrotenuifolia*

Cluster 22. Sugar Gum Woodlands of the Koppio Hills and Marble Range.

Floristic Group 58. Sugar Gum *Eucalyptus cladocalyx* Woodland over Rock Wattle *Acacia rupicola* / Yacca *Xanthorrhoea semiplana* / Peach Heath *Lissanthe strigosa* / Broad-leaf Raspwort *Gonocarpus mezianus* / Coarse Bottle-daisy *Lagenophora huegelii*

Cluster 23. Mallee dominated by Coastal White Mallee in the south west of the study area, characterised by outcropping limestone on undulating plains, low hills and consolidated dunes.

Floristic Group 59. Coastal White Mallee *Eucalyptus diversifolia* ssp. *diversifolia* Mallee +/- Dryland Tea-tree *Melaleuca lanceolata* / Prickly Ground-berry *Acrotriche patula*

Cluster 24. White Mallee assemblages spread across the centre of the study area.

Floristic Group 60. White Mallee *Eucalyptus dumosa* / Narrow-leaf Red Mallee *E. leptophylla* / Beaked Red Mallee *E. socialis complex* Mallee over Mallee Honey-myrtle *Melaleuca acuminata* +/- Dryland Tea-tree *M. lanceolata* / Broombush *Melaleuca uncinata*

Floristic Group 61. White Mallee *Eucalyptus dumosa* / Ridge-fruited Mallee *E. incrassata* / Beaked Red Mallee *E. socialis complex* Mallee over Broombush *Melaleuca uncinata*, Ridged Bush-everlasting *Ozothamnus decurrens* and Small Hop-bush *Dodonaea bursariifolia*

Floristic Group 62. Beaked Red Mallee *Eucalyptus socialis* / White Mallee *E. dumosa* +/- Yorrell *E. gracilis* Mallee over Broombush *Melaleuca uncinata* +/- Dryland Tea-tree *M. lanceolata* / Mallee Honey-myrtle *M. acuminata*

Floristic Group 63. White Mallee *Eucalyptus dumosa* Mallee over sparse shrub and grass understorey

Cluster 25. Mallee assemblages characterised by Spinifex *Triodia irritans* hummock grassland.

Floristic Group 64. White Mallee *Eucalyptus dumosa* +/- Yalata Mallee *E. yalatensis* / Coastal White Mallee *E. diversifolia* over Spinifex *Triodia irritans* with Dryland Tea-tree *M. lanceolata* +/- Mallee Honey-myrtle *M.*

acuminata / Broombush *Melaleuca uncinata*

Floristic group 65. Mixed Eucalypt Open Mallee +/- Scrub Cypress Pine *Callitris verrucosa* over Spinifex *Triodia irritans* +/- Dryland Tea-tree *Melaleuca lanceolata* / Black Grass Saw-sedge *Gahnia lanigera*

Cluster 26. White Mallee (*Eucalyptus phenax*) over Dryland Teatree

Floristic Group 66. White Mallee *Eucalyptus phenax* +/- Beaked Red Mallee *E. socialis* / Square-fruited Mallee *E. calycogona* over Dryland Tea-tree *Melaleuca lanceolata* / Broombush *M. uncinata* / Small Hop-bush *Dodonaea bursariifolia* and Spear-grass *Austrostipa* spp.

Floristic Group 67. White Mallee *Eucalyptus phenax* +/- Yalata Mallee *E. yalatensis* over Dryland Tea-tree *Melaleuca lanceolata* and Black Grass Saw-sedge *Gahnia lanigera* / Thick-leaf Emubush *Eremophila crassifolia* +/- Spinifex *Triodia* spp.

Cluster 27. Yorrell and White Mallee over Dryland Teatree.

Floristic Group 68. White Mallee *Eucalyptus dumosa* complex +/- Yorrell *Eucalyptus gracilis* Mallee over Dryland Tea-tree *M. lanceolata* +/- Mallee Honey-myrtle *Melaleuca acuminata* ssp. *acuminata*

Floristic Group 69. Yorrell *Eucalyptus gracilis* +/- White Mallee *Eucalyptus dumosa* complex Mallee over Mallee Honey-myrtle *Melaleuca acuminata* ssp. *acuminata* / Dryland Tea-tree *M. lanceolata* / Stiff Westringia *Westringia rigida* / Heath Spear-grass *Austrostipa exilis*

Floristic Group 70. Yorrell *Eucalyptus gracilis* Mallee over Dryland Tea-tree *Melaleuca lanceolata*

Cluster 28. Dryland Teatree Shrublands

Floristic Group 71. Dryland Tea-tree *Melaleuca lanceolata* Open Shrubland +/- Yalata Mallee *Eucalyptus yalatensis* over variable low shrub understorey

Floristic Group 72. White Mallee *Eucalyptus dumosa* complex / Coastal Red Mallee *E. oleosa* / Yorrell *Eucalyptus gracilis* Mallee over Dryland Tea-tree *Melaleuca lanceolata*

Floristic Group 73. Dryland Tea-tree *Melaleuca lanceolata* Shrubland over Sheep Bush *Geijera linearifolia* +/- Marsh Saltbush *Atriplex paludosa* ssp. *cordata* +/- emergent Native Apricot *Pittosporum angustifolium* / Eucalypt spp.

Cluster 29. Dryland Teatree shrublands to mallee with Prickly ground-berry and Coast Velvet-bush

Floristic Group 74. Port Lincoln Mallee *Eucalyptus conglobata* ssp. *conglobata* +/- Coastal Red Mallee *E. oleosa* / Coastal White Mallee *E. diversifolia* over Dryland Tea-tree *Melaleuca lanceolata* +/- Cockies Tongue *Templetonia retusa* / Prickly Ground-berry *Acrotriche patula* / Coast Velvet-bush *Lasiopetalum discolor* / Pale Turpentine Bush *Beyeria lechenaultii* / Wedge-leaf Pomaderris *Pomaderris obcordata*

Floristic Group 75. Dryland Tea-tree *Melaleuca lanceolata* Shrubland +/- overstorey of Coastal White Mallee *Eucalyptus diversifolia* / Kingscote Mallee *E. rugosa* over Coast Velvet-bush *Lasiopetalum discolor* / Prickly Ground-berry *Acrotriche patula*

Floristic Group 76. Coast Ridge-fruited Mallee *Eucalyptus angulosa* +/- Coastal White Mallee *Eucalyptus diversifolia* ssp. *diversifolia* / Kingscote Mallee *Eucalyptus rugosa* Mallee over Dryland Tea-tree *Melaleuca lanceolata* +/- Twiggy Stinkweed *Opercularia turpis* / Coast Velvet-bush *Lasiopetalum discolor* / Blunt-leaf Ground-berry *Acrotriche cordata*

Cluster 30. Shrublands with Pale Turpentine Bush

Floristic Group 77. Pale Turpentine Bush *Beyeria lechenaultii* Low Shrubland +/- Sheep Bush *Geijera linearifolia* / Leafless Cherry *Exocarpos aphyllus* / Dryland Tea-tree *Melaleuca lanceolata*

Floristic Group 78. Coast Beard-heath *Leucopogon parviflorus* / Dryland Tea-tree *Melaleuca lanceolata* / Mallee Pomaderris *Pomaderris paniculosa* ssp. *paniculosa* Shrubland over Coast Velvet-bush *Lasiopetalum discolor* / Prickly Ground-berry *Acrotriche patula* +/- overstorey Drooping Sheoak *Allocasuarina verticillata*

Floristic Group 79. Pale Turpentine Bush *Beyeria lechenaultii* / Coast Velvet-bush *Lasiopetalum discolor* / Prickly Ground-berry *Acrotriche patula* / Blunt-leaf Ground-berry *A. cordata* / Dryland Tea-tree *Melaleuca lanceolata* / Coast Daisy-bush *Olearia axillaris* Low Shrubland +/- overstorey of Coastal White Mallee *Eucalyptus diversifolia*

Cluster 31. Yorrell and Coastal Red Mallee over Rigid Westringia, Shrubby Twinleaf and Mueller's Daisy-bush

Florsitic Group 80. Coastal Red Mallee *Eucalyptus oleosa* +/- Yorrell *E. gracilis* Mallee over +/- Dryland Tea-tree *Melaleuca lanceolata* / Hook-leaf Wattle *Acacia ancistrophylla* var. *lissophylla* / Stiff Westringia *Westringia rigida* / Bindyi *Sclerolaena diacantha group* / Mueller's Daisy-bush *Olearia muelleri*

Florsitic Group 81. Yorrell *Eucalyptus gracilis* Mallee and Coastal Red Mallee *E. oleosa* +/- Gilja *E. brachycalyx* over +/- Sheep Bush *Geijera linearifolia* / Broom Emubush *Eremophila scoparia* / Stiff Westringia *Westringia rigida* / Shrubby Twinleaf *Zygophyllum aurantiacum* / Mueller's Daisy-bush *Olearia muelleri*

Cluster 32. Gilja Mallee over Dryland Teatree

Floristic Group 82. Gilja *Eucalyptus brachycalyx* +/- Yorrell *E. gracilis* Mallee over +/- Dryland Tea-tree *Melaleuca lanceolata* / Prickly Ground-berry *Acrotriche patula* / Limestone Saw-sedge *Gahnia deusta*

Floristic Groups 83. Gilja *Eucalyptus brachycalyx* +/- Coastal Red Mallee *E. oleosa* Mallee +/- Boree *Melaleuca pauperiflora* over +/- Dryland Tea-tree *Melaleuca lanceolata*

Cluster 33. Broombush shrublands +/- Mallee overstorey

Floristic Group 84. Coastal White Mallee *Eucalyptus diversifolia* Mallee over Broombush *Melaleuca uncinata* +/- Smooth Guinea-flower *Hibbertia* sp. Glabriuscula / Horned Hop-bush *Dodonaea hexandra*

Floristic Group 85. Square-fruited Mallee *Eucalyptus calycogona* / Beaked Red Mallee *E.* socialis complex / White Mallee *E. dumosa* complex +/- Ridge-fruited Mallee *E. incrassata* Mallee over Broombush *Melaleuca uncinata*

Floristic Group 86. Narrow-leaf Red Mallee *Eucalyptus leptophylla* / Coastal White Mallee *E. diversifolia* / White Mallee *E. dumosa* complex over Broombush *Melaleuca uncinata*

Floristic Group 87. Broombush *Melaleuca uncinata* Shrubland over Spinifex *Triodia irritans* +/- overstorey of Narrow-leaf Red Mallee *Eucalyptus leptophylla* / Coastal White Mallee *E. diversifolia* / White Mallee *E. dumosa* complex

Cluster 34. Broombush *Melaleuca uncinata* Shrubland

Floristic Group 88. Broombush *Melaleuca uncinata* +/- Silver Broombush *Babingtonia behrii* Shrubland over Broad-leaf Raspwort *Gonocarpus mezianus* / Horned Hop-bush *Dodonaea hexandra* / Smooth Guinea-flower *Hibbertia* sp. Glabriuscula / Sticky Sword-sedge *Lepidosperma viscidum* +/- Eucalypt spp.

Cluster 35. Ridge-fruited Mallee over Broombush

Floristic Group 89. Ridge-fruited Mallee *Eucalyptus incrassata* +/- Beaked Red Mallee *E. socialis* complex over Broombush *Melaleuca uncinata* & Woolly Spinifex *Triodia lanata*

Floristic Group 90. Yumbarra Mallee *Eucalyptus yumbarrana* +/- Ridge-fruited Mallee *E. incrassata* over Woolly Spinifex *Triodia lanata* / Dune Tea-tree *Leptospermum coriaceum* / Broombush *Melaleuca uncinata* and Sand Mat-rush *Lomandra collina*

Floristic Group 91. Ridge-fruited Mallee *E. incrassata* / Scrub Cypress Pine *Callitris verrucosa* over Dune Tea-tree *Leptospermum coriaceum* / Silvery Phebalium *Phebalium bullatum* +/- Broombush *Melaleuca uncinata* / Common Oak-bush *Allocasuarina muelleriana* / Bottlebrush Hakea *Hakea francisiana* / Cup Fringe-myrtle *Calytrix involucrata*

Floristic Group 92. Ridge-fruited Mallee *E. incrassata* +/- Scrub Cypress Pine *Callitris verrucosa* over Dune Tea-tree *Leptospermum coriaceum* / Common Oak-bush *Allocasuarina muelleriana* +/- Sandhill Bog-rush *Schoenus racemosus* / Broombush *Melaleuca uncinata* / Cup Fringe-myrtle *Calytrix involucrata*

Floristic Group 93. Ridge-fruited Mallee *E. incrassata* +/- Beaked Red Mallee *E. socialis* complex / Narrow-leaf Red Mallee *E. leptophylla* over Broombush *Melaleuca uncinata*

Floristic Group 94. Ridge-fruited Mallee *Eucalyptus incrassata* +/- Beaked Red Mallee *E. socialis* complex over +/- Dryland Tea-tree *Melaleuca lanceolata* / Broombush *M. uncinata* / Ribbed Thryptomene *Thryptomene micrantha*

Cluster 36. Beaked Red Mallee assemblages

Floristic Group 95. Beaked Red Mallee *Eucalyptus socialis* +/- Ridge-fruited Mallee *Eucalyptus incrassata* Mallee over Broombush *Melaleuca uncinata* & /or Woolly Spinifex *Triodia lanata*

Floristic Group 96. Beaked Red Mallee *Eucalyptus socialis* +/- Narrow-leaf Red Mallee *E. leptophylla* Open Mallee with Scrub Cypress Pine *Callitris verrucosa* over Spinifex *Triodia scariosa* group / Dune Tea-tree *Leptospermum coriaceum* / Silvery Phebalium *Phebalium bullatum* / Sticky Sword-sedge *Lepidosperma viscidum*

A River Red Gum flat in the Talia subregion, south west of Peachna Conservation Park. (Photo: R Brandle)

Floristic Groups with limited representation on EP
Floristic groups with low numbers of sites were examined to assess rarity and potential for future conservation requirements. Twenty-seven floristic groups were represented by less than 10 sites (Appendix 8). Clusters and floristic groups were examined for position on the dendrogram (Figure 21) with respect to dissimilarity from the most closely related groups. Vegetation communities represented by the following floristic groups were considered to potentially require further investigation to determine their status and conservation requirements.

Cluster 7 supported only one floristic group (#14 Coast Cushion Bush low shrubland) indicating its floristic distinctiveness despite its scattered occurrence along the south and west coast. The SA vegetation mapping layer (EDBSA) indicates that this community is present though covering smaller areas along the east coast as well (Figure 22).

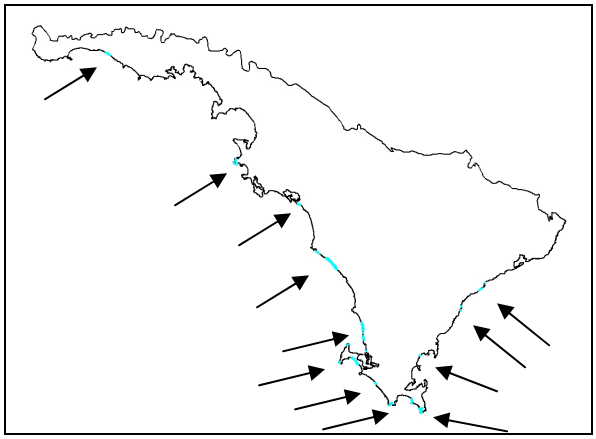


Figure 22. *Leucophyta brownii* low shrubland highlighted in pale blue and indicated by arrows**.**

Cluster 17 has 2 of 4 floristic groups with very restricted distributions. Although having 30% similarity in the dendrogram they were also distinctive with high numbers of significant indicator species. Floristic Group 38, represented by only 4 sites, is restricted to Point Bolingbroke Peninsula and under probable threat of vegetation clearance for housing, as it is close to Port Lincoln. Group 39 was represented by six sites that support a high number of conservation rated species and EBR endemics. Its conservation status is more likely to be assured as it occurs mainly in Hinks Conservation Park

Floristic group 45 was only represented by two sites which reflects its intertidal status more than its limited distribution. However Grey Mangrove communities are restricted and have been the target for coastal development over the last few decades. They represent important nursery areas for many marine organisms including commercial fish species.

Floristic Group 48, a Cutting-grass sedgeland, was represented by 3 sites in the southern Eyre Peninsula it shares 25% similarity with Floristic Group 47 which is represented by 11 sites in the same region. Both these members of Cluster 19 are rare and distinctive as they are restricted to swampy areas. Global warming projections indicate that these habitats are likely to be further threatened in the future.

Cluster 20 incorporated 4 floristic groups with Peppermint Box as an overstorey component, a Red Gum Woodland and a southern Drooping Sheoak floristic group. All but the Red Gum Woodland were represented by less than 10 sites indicating their restricted distributions. Floristic Group 50, Drooping Sheoak over shrubs, was recorded at 3 sites in the Koppio Hills where it was associated with moist drainage areas and is therefore a vulnerable community in this already fragmented landscape. One site is within Lincoln National Park whilst the other two are on private land. This vegetation assemblage was not mapped indicating the patches that occur are small and limited in extent. Floristic Group 51 (2 sites) is similar to the previous group but occurs on the plains north-west of the Koppio Hills. The Drooping Sheoak is absent or replaced by sparse cover of Peppermint Box and Black Bristle-rush is the dominant sedge. The four sites in Floristic Group 52 are scattered across the southern block of the Eyre Hills subregion. No forms of this group were mapped indicating it may also only occur in small patches. Also, the dominant Eucalypt in this group, *E. angulosa*, has only recently been given full species status from *E. incrassata*, which may have lead to this group not being recognised in earlier analyses. Floristic Group 54 (9 sites) represents a diverse collection of Broombush and Sticky Hop-bush shrublands associated with rocky hills. It is widespread in the drier parts of the study area, well represented in reserves and is unlikely to be of conservation concern. Floristic Group 55 (3 sites), a Peppermint Box or Darke Peak Mallee woodland over chenopod understorey was restricted to a small area in the Cleve Hills where this community is impacted by stock grazing. The Red Gum community represented by Floristic Group 6 (10 sites) is more widespread than some of the other groups in this cluster, and there are some examples in reserves such as Bascombe Well Conservation Park. However, the status of this important community should be determined. Baselines for monitoring of tree health and recruitment should also be established as this is a community that may be further impacted under most of the projected climate change scenarios.

Sticky Hop-bush in a Broombush shrubland. (Photo: R Brandle)

Discussion

The survey results indicate that the Eyre Peninsula biogeographic region has a diverse and species rich flora (1303 taxa from all sources, 1167 from survey sites) when compared to survey results from other regions with substantial mallee areas: Murray Mallee 626 taxa (Foulkes 2000); Yorke Mid North 1282 taxa from all sources, 774 from survey sites (Neagle 2008); Kangaroo Island 1179 taxa from all sources, 648 from survey sites (Kinnear *et al.* 1999), Flinders Ranges 1533 taxa from all sources, 1428 from survey sites (Brandle 2001). The high species richness for the Flinders Ranges and Eyre Peninsulas comes from the diversity of habitats and the transition from northern arid to southern temperate, high rainfall areas within the study regions. Kangaroo Island, whilst smaller than the other areas, is in a higher rainfall region and has retained substantial areas of native vegetation. Native vegetation clearance has also been most pronounced in the Yorke Mid-North and Murray Mallee regions, the latter of which also lacks major hill formations and diverse coastal areas.

Introduced taxa comprised 17% of Eyre Peninsula's flora. This compares with Kangaroo Island where 16% of the surveyed flora was introduced and the Flinders Ranges (18%). In comparison the more highly fragmented Yorke Mid North region's flora taxa were 26% introduced.

Comparisons of conservation rated species between regions from reports written in different periods can be misleading, as species ratings can change over time, particularly following comprehensive surveys which may lead to species being delisted. However most of the reports were written in the last 10 years when changes are likely to have been minor. Survey sites within the study area detected 103 rated species (14 EPBC Act and 101 SA NPW Act). Other regional reports indicate similarly high numbers: Yorke Mid-North, 17 EPBC and 84 SA NPW; Flinders Ranges, 29 EPBC and 107 SA NPW; Murray Mallee, 15 EPBC of which 12 had SA NPW Act ratings. It appears that taxa with only an SA NPWS Act rating were not considered in this report (Kinnear *et al.* 2000). The Kangaroo Island report used older out of date ratings so aren't compared here. However, the significance of Kangaroo Island for plant speciation is highlighted by the high number of endemics, 45 compared with 20 for the Eyre Peninsula and 14 for the Flinders Ranges. The regional ratings do not lend themselves for survey region comparisons as these differ from the Herbarium regions on which the regional ratings were based.

The Department for Environment is currently developing an updated regional conservation assessment process based on biogeographic subregions which will then be used to provide rated species lists and endemics for the larger biogeographic regions. The process has been completed for the West Region (Gillam and Urban 2009). For the Eyre Hills subregion only 57% of 1060 taxa were considered of least concern with 14 % in the vulnerable to endangered categories. This compares with Talia 52% and 9%, and Eyre Mallee 55% and 10%.

Biogeographic analyses highlighted that a number of species have population isolates in the Eyre Peninsula from other populations centres mostly to the west, indicating that the Mt Lofty and Flinders Ranges combined with the Spencer Gulf – Lake Torrens –Lake Dieri (Keast 1961, Heatwole 1987) formed a more formidable barrier in the east for southern-temperate adapted species than the Nullarbor Barrier to the west.

Within the Eyre Peninsula the subregional analyses indicated that the Eyre Hills subregion supported the highest number of conservation rated species and that this was consistent across all of the threatened species categories. This reflects a combination of the more complex topography and climatic range across the subregion, which gives rise to a greater range of habitat types, as well as the greater fragmentation of these generally smaller areas of diverse habitat.

Site species richness was generally highest in the Eyre Hills south biogeographic subregion block. This area combines the effects of higher rainfall, more fertile loam to clay soils and topographic relief, all providing for a greater diversity of habitats. This was similar for native and introduced species. The most threatening weed species for native vegetation in the study area are perennial and include Bridal Creeper, Perennial Veldt Grass and African Boxthorn.

The floristic analyses were used to define 95 floristic groups which clustered into 36 broad groups referred to as vegetation clusters. Cluster 18 at a transition zone in the dendrogram incorporated 4 largely unrelated floristic groups. Floristic groups made up from 10 or fewer sites were investigated for potential significance with regard to conservation status. From 27 groups, 12 were considered to require some follow up assessment of status and potential conservation requirements.

The Scarlet Bottlebrush *Callistemon rugulosus* is restricted to the wettest habitats, such as creeklines and swamps on Eyre Peninsula. (Photo: R Brandle)

MAMMALS

Brandle R[1]

Introduction

The study area

The study area for the Biological Survey of Eyre Peninsula is defined by the Eyre Peninsula block of the Eyre and Yorke Biogeographic Region as delineated for an interim biogeographic regionalisation for Australia (Thackway and Creswell 1995). Three subregions comprise the Eyre Peninsula which is dominated by undulating limestone plains. In many areas these are overlain by longitudinal sand dunes. Significant uplands in the form of the Marble Ranges and Koppio Hills characterise the southern Eyre Hills subregion whilst the hills and ranges to the north of Cleve characterise the northern section of the Eyre Hills subregion. An interesting feature of the Eyre Peninsula are the granite inselbergs that occasionally rise out of the plains. A more detailed summary is presented in the chapter on Physical Environment and can also be found in the Biodiversity Plan for Eyre Peninsula (DEH 2002).

Previous studies

Documented research into the mammals of the Eyre Peninsula is sparse. The earliest published survey reports specific to areas of the peninsula that included sections on mammals date back to the late 1960's when the Nature Conservation Society of South Australia (NCSSA) conducted general biological surveys to Hambidge wildlife reserve (Bonython & Preiss 1968) and the Hundred of Blesing in 1967 (Preiss 1969). The NCSSA maintained its interest in the Eyre Peninsula mammals with surveys to Lake Gilles Conservation Park in 1973 (Eyre Peninsula Group of NCSSA, unpubl. rpt.), Carappee Hill Conservation Park in 1974 (NCSSA 1974.), Pinkawillinie Crown Land in 1981 (Smith unpubl. rpt.), Coffin Bay to Port Lincoln National Park in 1985 (Atkins & Barley in NCSSA unpubl. rpt. 1994.) and the Kulliparu region in 1990 (Brandle 2000). The South Australian Government through its environment and national parks agencies has been the other main contributor to targeted mammal studies on Eyre Peninsula. These include investigations into Tammar Wallabies and Bettongs (Saunders and St John 1986, 1987), a resource document including a section on mammals for Lincoln National Park (Dept. Environment & Planning 1989), a management plan for the management of the Hairy-nosed Wombat in SA (St John and Saunders 1981, 1989). Through the 1990's fauna work began on Venus Bay Peninsula to remove and fence-out introduced predators enabling the re-introduction of a number of mammals now extinct in mainland South Australia (Copley *et al.* 1999), and in Lincoln National Park to monitor response following predator control and re-introduction of Brush-tailed Bettongs (unpubl.). A number of university projects in the Middleback Ranges area have contributed to our understanding of *Ningaui yvonnae* (Bos and Carthew 2001, 2002, 2003). A distributional and ecological study of the nationally Endangered Sandhill Dunnart *Sminthopsis psammophila* was concentrated on the Eyre Peninsula (Churchill 2001). The status of the Common Brushtail Possum on the Peninsula was highlighted by an Honours project in 2002 (Pieck 2002) which provided a baseline for investigating the impact of the 2005 Wangary fire one year on (Ecological Associates 2008).

The lack of early interest in the Eyre Peninsula as a place to study mammals is reflected in the collection of mammals stored in the South Australian Museum. There were only 18 specimens (representing 7 native and two introduced species) that are dated earlier than 1950. Whilst this may partly reflect poor record keeping in the early days of the museum (lost or poorly collected locality and date information), it is also likely to result from the relative isolation due to the Peninsula's remoteness from major population centres. Also the lure of the outback was likely to be far more enticing to early natural historians, than the dense mallee of the Peninsula, when mallee regions much closer to Adelaide were easy to access.

The mammal species recorded through the SA Museum collection prior to the advent of the Biological Survey of South Australia are listed in Table 16 for each decade since 1930. Major land clearance on the Eyre Peninsula took place following the second world war during the 1950's and extending into the 1980's. Serious collecting only started in 1965 in association with the biological survey activity already mentioned, culminating in the Eyre Peninsula Fauna Survey (BS# 128) which added 357 mammal voucher specimens to the SA Museum collection including frozen liver samples enabling future genetic analysis.

Objectives

This paper reports on information that has been collected from six separate surveys, each with their own specific objectives. The major surveys contributing to this survey had the following

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objectives:

- To observe, collect and identify species of mammals present in the area by sampling sites selected to represent the diversity of habitats present in the region. The Eyre Peninsula Fauna Survey (BS# 128) conducted across the Eyre Peninsula Biogeographic Region (EPBR) from 2001-2005 based its site selection to complement existing surveys by targeting unsurveyed areas.
- To provide the South Australian Museum with whole animal collections and associated DNA material representative of the diversity of mammals in the region.
- To establish ecological relationships between the mammal fauna, other biota and the physical environment across the EPBR.
- To evaluate the conservation status of species and communities within the EPBR, as a basis for conservation strategies.
- To establish a baseline for a long-term monitoring system and associated database to enable subsequent measurement of environmental change.

Table 16. Numbers of specimens held in the mammal collection of the South Australian Museum for the Eyre Peninsula biogeographic region and summarised by the decade of their collection.

Species (Common Names)	1880–1930	1930–1940	1940–1950	1950–1960	1960–1970	1970–1980	1980–1990	1990–2000	2000–2005
Introduced species									
**Felis catus* (Cat)								2	2
**Mus musculus* (House Mouse)	2	1			19	2	12	9	74
**Oryctolagus cuniculus* (Rabbit)	1							1	2
**Rattus rattus* (Black Rat)					2	1	8	1	7
**Vulpes vulpes* (Fox)									3
Bats									
Chalinolobus gouldii (Gould's Wattled Bat)					2	2	14	2	10
Chalinolobus morio (Chocolate Wattled Bat)						13	10		5
Nyctophilus major ssp. *tor* (Central Long-eared Bat)							3	2	1
Nyctophilus geoffroyi (Lesser Long-eared Bat)					4	5	33	7	22
Tadarida australis (White-striped Freetail-bat)	1					1	1	1	
Vespadelus regulus (Southern Forest Bat)							31	3	46
Rodents									
Hydromys chrysogaster (Water Rat) [#]				1					
Notomys mitchellii (Mitchell's Hopping-mouse)			1	2	8	10	7	6	19
Pseudomys bolami (Bolam's Mouse)							1		2
Pseudomys hermannsburgensis (Sandy Inland Mouse)									1
Rattus fuscipes (Bush Rat)					30	20	7	2	32
Bandicoots									
Isoodon obesulus obesulus AUS: EN SA: V (Southern Brown Bandicoot) [#]					1	1		1	
Dasyurids (carnivorous marsupials)									
Antechinomys laniger (Kultarr)									1
Ningaui yvonneae (Southern Ningaui)							4		9
Sminthopsis crassicaudata (Fat-tailed Dunnart)		2		1	20	2	3	4	5
Sminthopsis dolichura (Little Long-tailed Dunnart)					1	1	16	4	25
Sminthopsis griseoventer (Grey-bellied Dunnart)									9
Sminthopsis psammophila AUS: EN SA: V (Sandhill Dunnart)					4			1	
Macropods (kangaroos and bettongs)									
Bettongia penicillata penicillata SA: E (Brush-tailed Bettong)							3	2	2
Macropus eugenii ssp. *eugenii* AUS: Ex SA: E (Tammar Wallaby)	6					1		1	
Macropus fuliginosus (Western Grey Kangaroo)	2			1	7		4	1	12
Macropus robustus (Euro)					1				2
Macropus rufus (Red Kangaroo)									1
Possums (including pygmy-possum)									
Trichosurus vulpecula SA: R (Common Brushtail Possum)	1			1	3	2	2	3	
Cercartetus concinnus (Western Pygmy-possum)	2		2		4	6	18	11	36
Wombats									
Lasiorhinus latifrons (Southern Hairy-nosed Wombat)					1				2
Monotremes									
Tachyglossus aculeatus (Short-beaked Echidna)						1		1	
Number of species in collection 32	**7**	**2**	**2**	**5**	**15**	**15**	**18**	**21**	**25**
Number of specimens in collection 774	**15**	**3**	**3**	**6**	**107**	**68**	**177**	**65**	**330**

[#] it is likely that people introduced these species into the study area at these locations – particularly the Southern Brown Bandicoots.

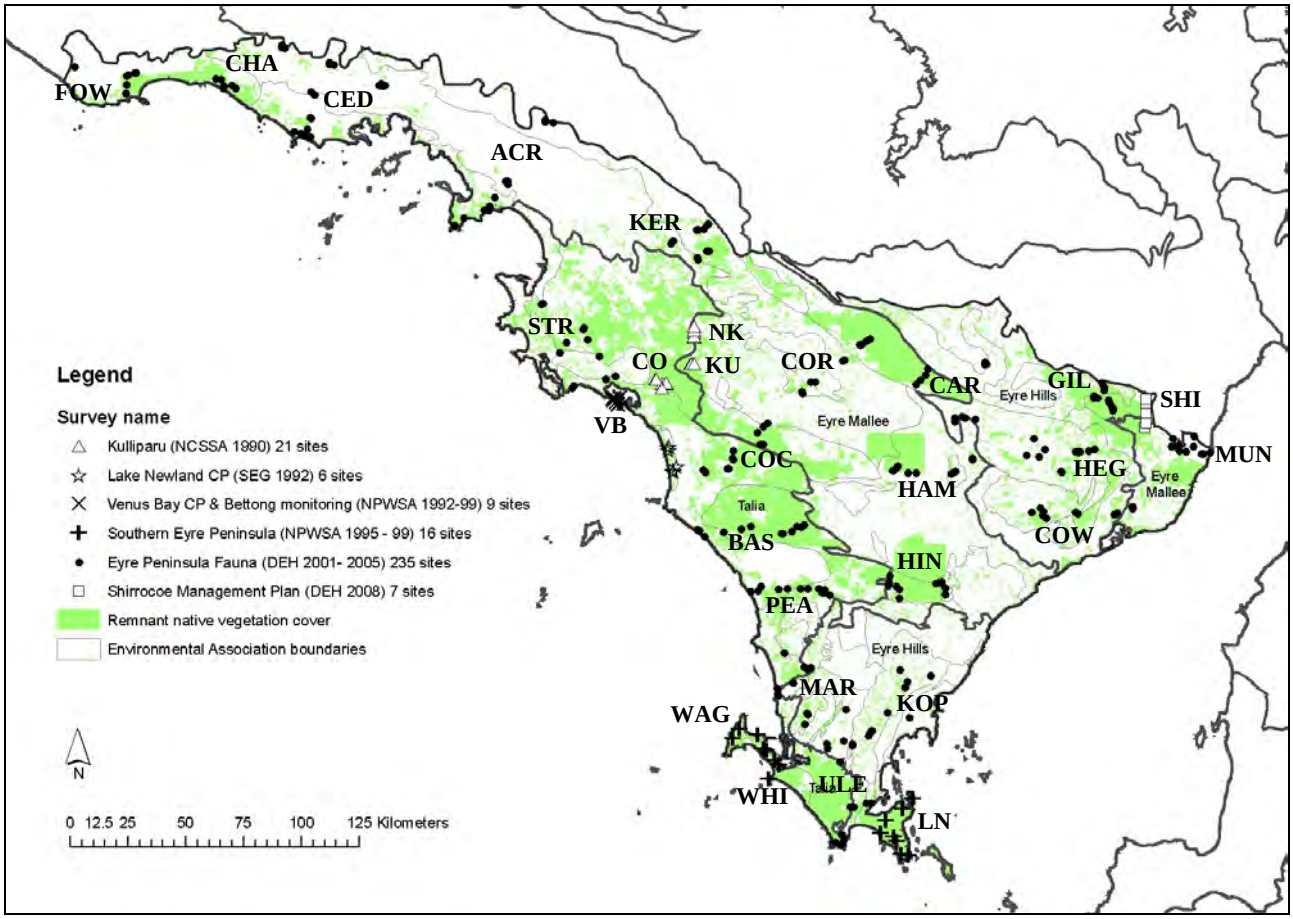

Figure 23. Remnant vegetation (shaded area) covers 39% of the Eyre Peninsula biogeographic region. The distribution of survey sites within the Environmental Associations that make up the biogeographic regions of the study area are plotted by survey name (refer to Physical Environment chapter for details). The 3 and 2 letter camp-codes relate to Table 17.

Southern Ningaui *Ningaui yvonneae* is restricted to sand dunes with low to open mallee communities that have an understorey dominated by Spinifex *Triodia* spp. (Photo: AC Robinson)

Methods

The surveys contributing to this report form part of the Biological Survey of South Australia. For most fauna survey sites the methods used are consistent with the methodologies outlined in 'Guidelines for Vertebrate Surveys in South Australia' (Owens 2000).

Site Selection and Nomenclature

As with other regional biological surveys in South Australia sites were chosen to represent the biological and geographical diversity of the study area. All surveys with the exception of the Eyre Peninsula Fauna Survey (BS# 128), concentrated on specific localised regions. The Eyre Peninsula Fauna survey avoided re-sampling locations containing existing survey sites to enable maximum coverage of sampling across the peninsula. Site selection for this survey was based on vegetation mapping. Where mapping was absent, topographic, soil and geological maps plus satellite imagery were used in conjunction with existing site information to define potential survey areas. Final site locations in all areas were determined in the field prior to the survey. Where possible, sites were selected in the largest blocks of vegetation that contained the largest areas of specific vegetation communities and were accessible via vehicular tracks. Where there was a choice (similar physical and vegetation characteristics), sites were located preferentially in conservation reserves and private Heritage Agreements.

Site names were in accordance with Guidelines for Vertebrate Surveys in South Australia (Owens 2000). Sites were sampled in groups of 12 over 4 nights by a survey team. The base camp from which each survey team accessed the sites was named using a prominent feature in that region. The first three letters of that name became the first three letters of the site code which was then numbered from 1 to 12. All fauna sites were labelled patch 1, e.g. site 1 at the Cocata Camp was labelled COC 001 01, site 2 as COC 002 01. These site labels are referred to as SiteIDs. All sites also have a unique computer generated identification number referred to as PatchID in the Biological Survey Database of South Australia.

Data collection

Mammals were sampled at sites using a single 50 m line of six (400 mm deep by 150 mm diameter) pitfall traps connected with 300 mm high flywire drift fence. In association with each pitfall trapline was a line of 15 metal box traps (Elliott Scientific Type A) and two larger wire cage traps (150 x 150 x 500 mm), both baited with rolled oats and peanut butter. Spacing between traps varied from 5 m to 15 m and the cage traps were placed at each end of the box trap line. A hessian bag was used around the cage trap to provide some shelter for trapped animals. Traps were left open over a four night period being checked morning and afternoon each day.

All sites were searched for signs of mammals such as tracks, burrows, scats, bones and raptor pellets containing bone, particularly below raptor nests and in suitable hollow logs or caves. A proportion of sites were also sampled using spotlights at night, particularly areas with large hollow bearing trees where possums and other hollow dwellers may reside. Observations of diurnal species were made daily whilst checking traps. Bats were sampled at 36 sites where the vegetation lent itself to setting harp traps (i.e. areas with suitable bat flyways within the vegetation). The numbers of these traps were limited so not all sites were sampled. An attempt was made to collect bat calls from each site for at least one night. Trapping effort for each site is detailed in Appendix 9 with the numbers of sites for each "camp" summarised for each camp in Table 17.

Table 17. Vertebrate survey site clusters sampled for the six separate surveys analysed for this report. Refer to Figure 23 for locations.

Camp Area		Survey						
Name	Code	21 Kulliparu	27 Lincoln NP	71 Venus Bay CP	80 Southern EP	128 EP Fauna	599 Shirroccoe	Total number of visits to sites
Kulliparu	KU	5						5
North Kulliparu	NK	7						7
Courtabie	CO	8						8
Lincoln NP	LN		6					6
Venus Bay	VB			9*				22
Point Whidbey	WHI				2*			3
Coffin Bay CP	WAG				6*			18
Fowlers Bay	FOW					7		7
Munyaroo CP	MUN					10		10
Chadinga CR	CHA					11		11
Corrabinnie Hill	COR					11		11
Marble Ra	MAR					12		12
Acraman Creek	ACR					12		12
Bascombe Well CP	BAS					12		12
Caralue Bluff	CAR					12		12
Coccata CP	COC					12		12
Cowell	COW					12		12
Lake Gillies CP	GIL					12		12
Hambidge CP	HAM					12		12
Heggaton CP	HEG					12		12
Kerchalbie Rocks	KER					12		12
Peachna CP	PEA					12		12
Streaky Bay	STR					12		12
Ceduna	CED					13		13
Hinks	HIN					12*		14
Uley Basin	ULE					12*		14
Koppio Hills	KOP					12*		18
Shirroccoe	SHI						6	6
Total number of	sites	20	6	9	8	232	6	317 visit 281 sites

* indicates sites with multiple visits.
VB0 = 8 sites with 1-3 extra visits.
WAG = 6 sites with 1-3 extra visits.
WHI = 1 site with 2nd visit.

HIN = 2 sites with second visit to catch *Sminthopsis griseoventer*.
ULE = 2 sites second visit post Wangary Fire.
KOP = 6 sites second visit post Wangary Fire.

For the 281 sites sampled trapping effort was: 4840 Elliott traps for 19360 nights, 1865 pits for 7564 nights and 532 cage traps for 2108 nights (Appendix 9).

Bats were also sampled at 6 survey sites and a number of opportune locations, using mist nets over dams, tanks and along creek lines when weather conditions permitted (i.e. no wind). Where sufficient bats were captured sample recordings were made of released bats to assist with identification of recorded calls.

Voucher specimens of a male and a female of each species were collected for each locality sampled. These were euthanased by injecting animals with a lethal dose of barbiturate, following which a sample of liver was removed and frozen in liquid nitrogen. Whole specimens were preserved in 10% formalin. All specimens were lodged with the South Australian Museum for future reference and research purposes.

Data storage and analysis

Data was entered onto the Biological Survey Database which forms part of the state-wide Environmental Database of South Australia (EDBSA) maintained by the Department for Environment and Heritage SA. This database is regularly updated with taxonomic changes determined by curators at the South Australian Museum. The history of these changes is also stored within the database, enabling changes to be tracked in future.

Following verification of data entry, the data was extracted and a mammal species list was produced. This was checked for anomalies that relate to data capture, species identification or data collection errors. The relationship of species to habitat parameters and other species was analysed using the physical site data and the results of the vegetation analysis. Some extra data relating to fire was gathered using fire mapping and attributed to sites. Regional conservation status assessments were made based on frequency of detection.

The Bush Rat *Rattus fuscipes* is one of four native rodents that survive on the Eyre peninsula. It remains common in the National Parks of southern Eyre Peninsula. (Photo: AC Robinson)

Results

Taxonomic Summary

Biological surveys across the Eyre Biogeographic Region detected 23 indigenous species at survey sites. One of these, Tamar Wallaby *Macropus eugenii*, was detected from old jaw material and is most likely extinct on the mainland. Two other South Australian natives were also recorded as a result of deliberate introductions. Brush-tailed Bettongs *Bettongia penicillata* ssp. *ogilbyi* were re-introduced to Venus Bay Peninsula on the west coast as part of a national recovery plan, whilst the Koala *Phascolarctus cinereus* was introduced to the southern Eyre Peninsula for a private Koala sanctuary. This population has since escaped and established a wild population. A further 11 non-native species were also detected at survey sites, two of which are likely to have been escaped or managed domestic stock (i.e. Cattle and sheep). Table 18 lists the species and the number of sites at which they were recorded within the six vertebrate surveys contributing to this report.

The 23 extant native species belong to 10 Families, the most species rich being the evening bats (Vespertilionidae) and carnivorous marsupials (Dasyuridae) with 5 species each (refer to Table 18).

The survey detected one species of dasyurid marsupial not previously collected in South Australia. The Grey-bellied Dunnart *Sminthopsis griseoventer* is superficially very similar to the Little Long-tailed Dunnart *S. dolichura* which is widespread across the northern half of the study area. Only close investigation of the deciduous premolars of the juvenile animals captured enabled separation from *S. dolichura* in the field.

The discovery prompted the re-identification of sub-fossil skeletal material held in the South Australian Museum that had been attributed to *Sminthopsis* cf *aitkeni*, the closely related Kangaroo Island Dunnart. This confirmed that *S. griseoventer* had been present around the Darke Peak and South Block ranges in the central and southern Eyre Peninsula. Re-evaluation of the entire SA Museum *S. dolichura* and *S. aitkeni* collections enabled clarification of the distribution of all three species in South Australia.

Other species that were difficult to distinguish included two native rodents, *Pseudomys bolami* and *P. hermannsburgensis*, the former usually being darker in colour and having larger ears and feet. Both species were rarely encountered within the study area (2 sites each). Confusion was avoided through the collection of all 4 specimens. Only *P. bolami* had been previously collected in the north eastern part of the study area, though sub-fossil material from Darke Peak and Venus Bay indicates a much wider former distribution across the Eyre Peninsula (Medlin in Copley *et. al.* 1999).

Common Species

How common a species is can be expressed in two ways from survey site data. The number of sites at which a species was recorded (Site Frequency) and relative abundance, which is a combination of site frequency and total number recorded at each site. Site frequency is the more objective measure when comparing species that are recorded with the variety of methods used on surveys (e.g. Small mammals are trapped, kangaroo are observed, echidnas are detected from diggings and droppings). Only 7 species were detected at more than 10% of sites of which four were native species.

The House Mouse was the most widespread and abundant with 933 captures from 52% of the 324 sites. Western Grey Kangaroos were detected at 35%, but animals were only observed at 18%, the remaining being detected from a combination of droppings scats and skeletal material. As two other species of large macropod were present over at least some of their range field mammalogists recorded only the presence of *Macropus* sp.. The number of sites at which Western Grey Kangaroos periodically occur from scats and tracks are likely to be an under-estimate.

The non-native invaders, Rabbits and Foxes, were both detected at about a quarter of the sites, mostly from droppings and tracks. Of the native small mammals, the Western Pygmy-possum was trapped at 22% of sites with Little Long-tailed Dunnart and Mitchell's Hopping Mouse at approximately 13% of sites each. (refer to Table 18).

Bat species are far more common at sites than many other species and are greatly under represented by traditional survey methods. Bats were either captured or directly observed at 27 sites, 17 of which did not have bat detector records. Most commonly trapped were the Lesser Long-eared Bat (44% of sites) and Southern Forest Bat (30% of sites) (Table 19).

Bat detectors were successfully used at 71 of the 242 Eyre Peninsula Fauna and six Shirrocoe Survey sites. Two species not recorded with trapping were detected at numerous sites. Identification of bat species using echolocation is an imprecise technique in that many calls can not be accurately attributed to single species and calls from unrelated species can also confuse identification. However, the technique indicates that at least 4 species were present at more than half the sites for which bat location data was collected. These were the Gould's Wattled Bat, Southern Forest Bat, White-striped Mastiff Bat and the Southern Freetail Bat (Table 19). The latter was not captured at any site and no specimens from within the study area are within the SA Museum collection. Because of the difficulty in separating species in the genus *Nyctophilus* calls from both species have been lumped. Calls for either or both of these species were recorded at 61% of sites.

Table 18. Site frequency of mammal species recorded for each survey (records from repeat visits to sites not included).

FAMILY Subfamily Name	SPECIES Name	COMMON Name	Kulliparu (NCSSA)	Lake Newland (SEG)	Venus Bay CP	Southern Eyre Pen.	Eyre Pen. Fauna	Shirrocoe	Total
DASYURIDS carnivorous marsupials									
DASYURIDAE Planigalinae	*Ningaui yvonneae*	Southern Ningaui					11	1	12
DASYURIDAE Sminthopsinae	*Sminthopsis crassicaudata*	Fat-tailed Dunnart		2	4		6	1	13
DASYURIDAE Sminthopsinae	*Sminthopsis dolichura*	Little Long-tailed Dunnart	6		8		27	2	43
DASYURIDAE Sminthopsinae	*Sminthopsis griseoventer*	Grey-bellied Dunnart					11		11
DASYURIDAE Sminthopsinae	*Sminthopsis psammophila*	Sandhill Dunnart **EN V**						1	1
Kangaroos and potoroo									
MACROPODIDAE	*Macropus eugenii*	Tammar Wallaby (old Jaw bones) **EXT Ex**					1		1
MACROPODIDAE	*Macropus fuliginosus*	Western Grey Kangaroo			9	7	98		114
MACROPODIDAE	*Macropus robustus*	Euro			1		11		12
MACROPODIDAE	*Macropus rufus*	Red Kangaroo					2		2
POTORIDAE	*Bettongia penicillata ogilbyi*	Brush-tailed Bettong **CD**			4	1			5
Possums									
BURRAMYIDAE	*Cercartetus concinnus*	Western Pygmy-possum	16		4	5	45		70
PHALANGERIDAE	*Trichosurus vulpecula*	Common Brushtail Possum **R**					4		4
Vombatiformes									
VOMBATIDAE	*Lasiorhinus latifrons*	Southern Hairy-nosed Wombat					11		11
PHASCOLARCTIDAE	*Phascolarctos cinereus*	Koala *****					4		4
Monotremes									
TACHYGLOSSIDAE	*Tachyglossus aculeatus*	Short-beaked Echidna					21		21
Native Rodents									
MURIDAE Hydromyinae	*Notomys mitchellii*	Mitchell's Hopping-mouse	3		1		35	1	40
MURIDAE Hydromyinae	*Pseudomys bolami*	Bolam's Mouse					2		2
MURIDAE Hydromyinae	*Pseudomys hermannsburgensis*	Sandy Inland Mouse					2		2
MURIDAE Murinae	*Rattus fuscipes*	Bush Rat				9	22		31
Insectivorous Bats									
MOLOSSIDAE	*Mormopterus* sp.	Freetail-bat					*	*	
MOLOSSIDAE	*Tadarida australis*	White-striped Freetail-bat					4	*	4
VESPERTILIONIDAE Nyctophilinae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat					14	1	15
VESPERTILIONIDAE Nyctophilinae	*Nyctophilus major* ssp. *tor*	Central Greater Long-eared Bat					6	1	7
VESPERTILIONIDAE Vespertilioninae	*Chalinolobus gouldii*	Gould's Wattled Bat					6	2	8
VESPERTILIONIDAE Vespertilioninae	*Chalinolobus morio*	Chocolate Wattled Bat					2		2
VESPERTILIONIDAE Vespertilioninae	*Vespadelus regulus*	Southern Forest Bat					12		12
VESPERTILIONIDAE Vespertilioninae	*Vespadelus baverstocki*	Inland Forest Bat					*	*	
Introduced Exotic Species									
BOVIDAE	*Bos taurus*	Cattle					2		2
BOVIDAE	*Capra hircus*	Goat					6		6
BOVIDAE	*Ovis aries*	Sheep					13		13
CAMELIDAE	*Camelus dromedarius*	One-humped Camel					2		2
CANIDAE	*Canis lupus* (ssp. *dingo*?)	Dog/Dingo					2		2
CANIDAE	*Vulpes vulpes*	Fox			4	1	72	1	78
EQUIDAE	*Equus caballus*	Horse				1	1		2
FELIDAE	*Felis catus*	Cat			1		14		15
LEPORIDAE	*Oryctolagus cuniculus*	Rabbit			7	4	75	2	88
MURIDAE Murinae	*Mus musculus*	House Mouse	7	6	9	11	135	1	169
MURIDAE Murinae	*Rattus rattus*	Black Rat					4		4
# native species	25 (including 1 extinct, 1 introduction)		3	1	7	4	24	11	
# non-native species	11		1	1	4	4	11	3	

* bat species detected by call only – no verification with vouchers for whole study area.

Table 19. Bat records from echolocation call recordings from 71 sites where recording were collected and captures from 27 sites where trapping took place.

Bat Species	Common Name	Anabat record sites	% of total	Capture sites	% of total
Chalinolobus gouldii	Gould's Wattled Bat	44	62	8	30
Chalinolobus morio	Chocolate Wattled Bat	25	35	2	7
Nyctophilus geoffroyi/major		43	61	0	0
Nyctophilus geoffroyi	Lesser Long-eared Bat	0	0	15	56
Nyctophilus major ssp. *tor*	Central Greater Long-eared Bat	0	0	7	26
Tadarida australis	White-striped Freetail-bat	39	55	4	15
Vespadelus regulus	Southern Forest Bat	39	55	12	44
Vespadelus baverstocki	Central Forest Bat	7	10	0	0
Mormopterus sp. (prob. Sp.4)	Southern Freetail-bat	43	61	0	0

The Central Long Eared Bat *Nyctophilus major* ssp. *tor* is at the south eastern edge of its range in the study area. (Photo: AC Robinson)

Species Richness

The maximum total species richness for any site was 8 with the majority of sites supporting 1-3 species (average total mammal species =3, native species = 1.6). Figures 24 and 25 show site frequency histograms for native and introduced species richness values respectively. The maximum recorded native species richness was 6 at one site with most sites supporting between 1 and 2 (excludes bat species data recorded from high frequency calls). Introduced species show a similar pattern with a maximum of 5 species at any one site. For 40 sites there was no species specific mammal data.

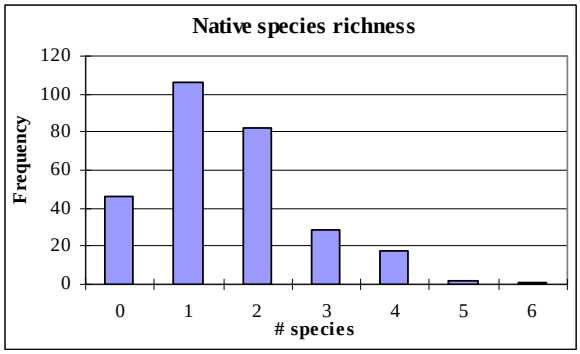

Figure 24. Native mammal species frequency histogram for Eyre Peninsula survey sites with some mammal species data (n=284).

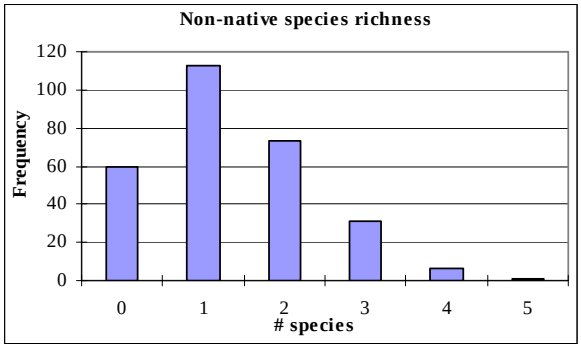

Figure 25. Non-native mammal species frequency histogram for Eyre Peninsula survey sites with some mammal species data (n=284).

When considering native mammal species richness it is more instructive to treat bats, small ground dwelling mammals and medium to larger mammals separately because of the different scales at which they interact with the environment.

Medium to large native mammals

A total of 8 medium to large native mammals were recorded in the study area. The maximum number at any one site was 3 with 1 or less recorded at 90% of sites sampled. This reflects the rarity across Eyre Peninsula of all of the larger species, with the exception of Western Grey Kangaroos. Some species such as Hairy-nosed Wombats may be locally common and particularly conspicuous with their burrows, but the data highlights that they have a combination of limited distributions or habitat requirements. Other species in this category are the Common Brushtail Possum, Euro and Red Kangaroo, which is at the southern edge of its range. Koalas were introduced and are restricted to the wetter south. The re-introduced Brush-tailed Bettong is reliant on effective control of introduced predators which restricts it to a small peninsula at Venus Bay. Recently the similar sized Greater Bilby *Macrotis lagotis* has also been successfully introduced into this fenced and managed area. The Echidna is a highly detectable species from its diggings, tracks and droppings. The 6% of sites at which it was recorded were widespread across the study area. This low frequency is surprising given its apparent abundance in the Murray Mallee - 40% of sites (Foulkes and Gillen 2000) and the Flinders Ranges - 34% of sites (Brandle 2001)

Small ground-dwelling native mammals

A total of 10 small ground dwelling mammals were recorded at survey sites in the study area. A maximum of 3 species was recorded at 3 sites . Two species were present at 43 sites and 1 at 115. This reflects a diversity in distributions and habitat requirements of small mammals across the study area, and in comparison with some arid habitats site species richness is low. Sites supporting three small mammal species were in the northern half of the study area east from Streaky Bay. No more than 2 dasyurid or 2 native rodent species shared any one site.

Bats

Only a small proportion of sites (37) were sampled for bats. Figure 26 shows the number of sites at which up to 4 species were captured. Catching bats is a very imprecise process and is more affected by trap location and wind than are the methods used for small ground dwelling mammals. This may have some influence on the zero capture sites. One way to overcome this problem is by remotely recording their calls over a whole night. The data gathered in this manner is presented in Figure 27 which shows that up to 7 species were detected at 71 sites, and that at more than half of the sites 3 or more bat species were detected.

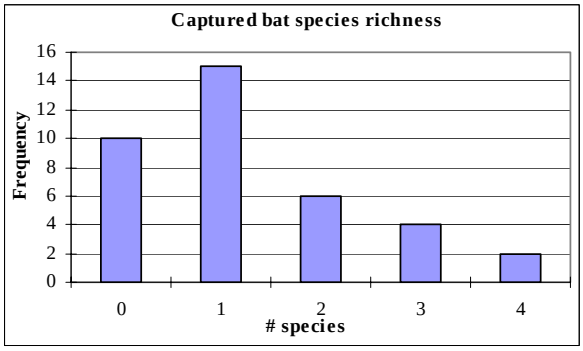

Figure 26. Bat species frequency histogram from capture data for Eyre Peninsula survey sites (n=37).

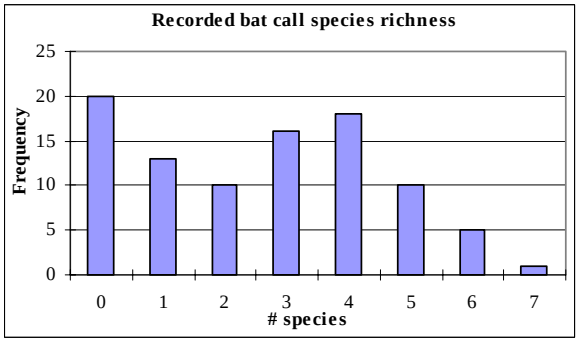

Figure 27. Bat species frequency histogram from echolocation call recorded data for Eyre Peninsula survey sites (n=93).

Mammal species richness and habitat types

Analysis of average species richness at sites with the various habitat parameters (Landform type, surface soil texture, vegetation type and fire history), indicate that there were no significant differences for native and non-native mammals for most parameters. Apparent trends included: hill-footslope sites had higher average number of native species compared with other landform types; mallee to woodland sites supported higher average numbers of native species than low shrublands and sedgelands (Figure 28). When broken down to small ground dwelling mammals low-mallee appeared to consistently support more than other structural vegetation types (Figure 29). Non-native mammals had highest average species richness in shrubland and low shrubland sites (Figure 30).

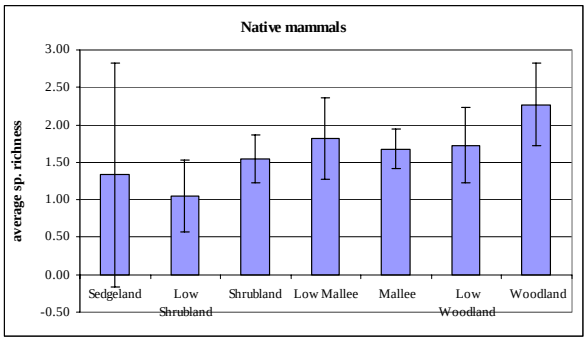

Figure 28. Mean native mammal species richness by structural vegetation types. Error bars indicate 95% confidence intervals.

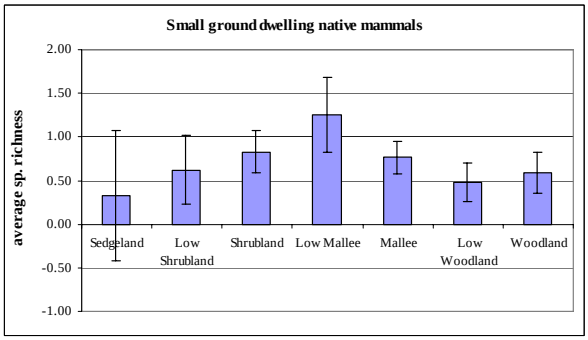

Figure 29. Mean native small mammal species richness by structural vegetation types. Error bars indicate 95% confidence intervals.

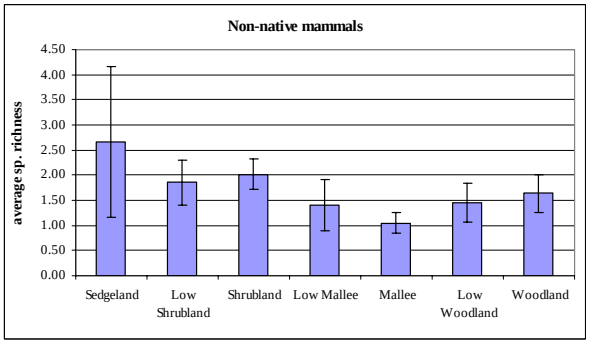

Figure 30. Mean non-native mammal species richness at sites by structural vegetation types. Error bars indicate 95% confidence intervals.

Species Habitat Affinities.

The previous section compared species richness at sites for physical and biotic habitat variables. The relationship of individual mammal species for these habitat variables and other fauna species is discussed in the following section. Mammal site frequency was compared with the habitat variables discussed in the 'Physical Environment' chapter. Vegetation structure was grouped into the following broad structural vegetation types to assist with statistically meaningful analysis: Sedgeland, Low Shrubland, Shrubland (including tall shrubland) Low Mallee, Mallee, Low Woodland and Woodland. These are a combined grouping of the structural data collected in the field. Some types such as Grassland, Herbland and Hummock Grasslands were omitted because they contained very few sites with species.

Comparisons were made using Chi-square analyses with and tested with the Pearson Chi-square statistic using Statexact 4 to model exact probabilities through multiple iterations on each dataset. Probabilities for occurrence for the categories for each variable were estimated by dividing the number of sites sampled that were recorded as being in a particular category by the total number of sites for all categories.

Structural vegetation type and soil appear to be strong determinants of mammal distribution for the most mammal species. Bat data from Anabat recordings at 71 sites were similarly analysed for landform, soils and structural vegetation types but no significant trends were identified.

Landform Pattern

At the broad landscape level, three species were significantly associated with landform pattern categories: Euro with Hills (Chi^2=41.5, df.=8, p=0.001); Southern Ningaui with Dunefields (Chi^2=25.6, df.=8, p=0.009); Mitchell's Hopping Mouse with Dunefields, Sand Plains and Rises (Chi^2=27.9, df.=8, p=0.003). (Appendix 10).

Land Unit

At the site specific land unit level Euros were again strongly associated with hill land units (Chi^2=29.2, df.=6, p=0.002) and Southern Ningauis with sand dunes (Chi^2=24.9, df.=6, p=0.004). (Appendix 11).

Surface Strew

Only Euros were significantly associated with surface strew cover of between 10-70% (Chi^2=34.9, df.=4, p=0.004), but not size. (Appendix 12& 13).

Slope

Euros were significantly associated with slopes between 6-20% (Chi^2=34.1, df.=5, p=0.007). Other species that showed non-significant trends for slope were Bush Rats 2-5% and Little Long-tailed Dunnarts 2-5%. (Appendix 14).

Soils

Four species were significantly associated specific broad soil categories: Southern Ningaui for Sands (Chi^2=14.3, df.=3, p=0.005); Mitchell's Hopping-mouse for sands (Chi^2=13.1, df.=3, p=0.006); Fat-tailed Dunnart for clay-loams and clays (Chi^2=9.3, df.=3, p=0.02); Koala for clays (Chi^2=15.7, df.=3, p=0.007). (Appendix 15).

Structural Vegetation

Nine species were significantly associated with particular structural vegetation types, 5 native and three exotic aliens: Southern Ningaui with Low Mallee (Chi^2=15.5, df.=6, p=0.03); Mitchell's Hopping Mouse with Low Mallee (Chi^2=17.3, df.=6, p=0.02); Bush Rat with Low Woodland, Woodland and Shrubland and an apparent aversion to Mallee (Chi^2=15.4, df.=6, p=0.02); Fat-tailed Dunnart with Low Shrubland and Shrubland (Chi^2=16.6, df.=6, p=0.02); Grey-bellied Dunnart with Low Mallee (Chi^2=18.5, df.=6, p=0.01); Common Brushtail Possum with Woodland (Chi^2=33.9, df.=6, p=0.002). Introduced species:

House Mouse with Shrublands and low shrublands (Chi^2=15.6, df.=6, p=0.02); Rabbit with all Shrublands and Woodlands (Chi^2=20, df.=6, p=0.004). Black Rat with Sedgelands and Woodlands (Chi^2=21.3, df.=6, p=0.01). (Appendix 16).

Significant Species

Species can have significance for a number reasons. Species that are threatened with extinction receive legislative recognition at both National under the Australian Commonwealth's Environment Protection and Biodiversity Conservation (EPBC) Act, and State under the South Australian National Parks and Wildlife (NPW) Act. This can only occur once enough is known about a species to be able to give it a rating. Species can also have significance for a region if they are restricted to that region (often referred to as endemic) because it is the only place where they can be adequately conserved. Also species with isolated populations, usually at the edges of their range, should be considered significant as loss of species in these areas can represent the beginning of decline into threatened status. During this study a species previously unrecorded in South Australia was detected, which subsequent morphological and genetic inquiry has determined to be most similar to *Sminthopsis griseoventer* and *S. aitkeni* (CM Kemper pers. comm.) The former being restricted to south-west Western Australia and the latter to the isolated Kangaroo Island. The Koala, which has been introduced to the Eyre Peninsula is also significant because of its potential to threaten biodiversity as it has on Kangaroo Island.

Nationally Threatened Species

***Macropus eugenii* Tammar Wallaby:**
Tammar Wallabies were once a widespread and abundant species on the Eyre and Yorke Peninsulas, and were last reliably recorded on the Eyre Peninsula prior to the 1930's (Saunders & St John 1986). Numerous unsubstantiated reports have resulted following clearance operations across the peninsula since the mid 1940s. In 1986 populations were still thought to potentially occur in the Yeldulknie Water Reserve area near Cleve (now Conservation Reserve) and in the centre-west of the peninsula around Cocata Conservation Park. A road-killed specimen that was collected in 2002 adjacent to Yeldulknie Conservation Park was found to be the Kangaroo Island subspecies using DNA (Kemper pers. comm.) indicating that more recent sightings may have been of privately re-introduced stock.

During the survey two jaw bones were collected at site CHA00301 in Chadinga Conservation Reserve on the west coast of the study area. The habitat was Dryland Teatree with very low mallee over saltbush and pigface on clayey sands with sparse cover of calcareous strew and outcrop. The jaws were on the surface and still intact indicating that a population may have survived in this area until recent times.

***Sminthopsis psammophila* Sandhill Dunnart**
The Sandhill Dunnart has been an elusive species since the first animal was collected in 1894 from central Australia where it hasn't been recorded since (Churchill 2001). The second record was from near Kyancutta on Eyre Peninsula in 1969, where it was collected by a farmer and later in the same year four animals were collected by a clearing contractor 50 km further south-east (Aitken 1971). More recently animals have been located and studied on the north eastern edge of the study area (Churchill 2001), where recent surveys (2007) on the Shirrocoe Pastoral Lease trapped several animals on sand dunes with low open Mallee over *Triodia* Hummock Grassland. Efforts to sample prospective mature *Triodia* habitat (as identified by Churchill, 2001) failed to locate any new population areas despite the use of extra deep pitfall traps in areas with deeper sands. Some more recent University fire research projects suggest that the species may still have populations in Pinkawillinnie and Hinks Conservation Parks (Way 2008a, Van Weenen pers. comm.)

The Sandhill Dunnart *Sminthopsis psammophila* is easily distinguished from other dunnarts by the black crest on the underside of the tail. (Photo: PD Canty)

South Australian Rated Species

***Trichosurus vulpecula* Common Brushtail Possum SA: Rare**
Despite its common name *T. vulpecula* has declined dramatically in South Australia, being extinct in the arid areas and threatened in most other regions with the exception of the South East and various urban centres (Kerle *et al.* 1992, Kemper and Foulkes 1996). On Eyre Peninsula it appears to be restricted to the Koppio Hills. Watts and Ling (1985) state "it survives in small numbers, most notably in the forest remnants in the south but also in other scattered localities such as Flinders Island and Iron Knob" the latter two locations are not part of and isolated from the study area.

More recent studies indicate that populations are now restricted to areas of larger hollow bearing Sugar Gums *Eucalyptus cladocalyx* and River Red Gums *E. camaldulensis* (Pieck 2002, Ecological Associates 2006) within the southern Block of the Eyre Hills biogeographic region.

The biological survey detected possums at three sites with Sugar Gums in the Koppio Hills from droppings,

distinctive scratchings on the bark of Sugar Gums and fur in hair tubes (at the one site in the northern Koppio Hills where the tubes didn't get burnt during the 2005 Wangary fire). Visits to the burnt sites three years later in December 2007 confirmed their persistence in the Tucknott Conservation Reserve.

Scratchings on large mature River Red Gums in Bascome Wells Conservation Park (CP) (site BAS00701) were attributed to Common Brushtail Possums and may indicate this species persistence in the Talia biogeographic subregion.

***Sminthopsis griseoventer* Grey-bellied Dunnart**

This species was first recognised as likely to be different from the morphologically similar Little Long-tailed Dunnart *Sminthopsis dolichura* by Dr C Kemper from the SA Museum who was the mammalogists in the survey team working in the Hinks CP group of sites. Re-assessment of all collections of vouchered specimens that had been attributed to *S. dolichura* found that 10 animals had been collected and that *S. griseoventer* was present at 11 sites, eight in Hincks Conservation Park, one in Bascombe Well CP to the west, one in Hambidge CP to the north and one in Yeldulkne CP to the north-east. Studies investigating the impacts of fire on the Eyre Penisnula (Driscoll and Henderson 2008) detected *S. griseoventer* (genetic samples) at a further 13 which were located in the northern part of Hinks CP, Heggarton CP, Pinkawillinie CP and Munyaroo Conservation Reserve.

Sminthopsis griseoventer was found to occur in a range of mallee communities ranging from low (<3 m) to mid-sized (<5 m) mallee over *Melaleuca* spp. shrubs +/- *Triodia* spp. Hummock Grasses or sedges on a variety of soils with light calcareous strew cover. The very similar *S. dolichura* which is much more widespread across the study area occupies a similar but broader range of habitats to *S. griseoventer*. Sand dunes and low shrublands appear to be avoided. The only obvious differences in habitat preferences between *S. dolichura* and *S. griseoventer* relate to soil type and strew cover with *S. griseoventer* having been more commonly recorded on sandy clay loams with some cover of strew, whilst *S. dolichura* appears to favour sand and no strew cover. Occasional overlap occurs, as has been found at two sites. One of these sites had been burnt only three years prior to sampling and the other at some age >30 years, implying that neither species is likely to be fire dependent. Neither species was recorded south of latitude 34˚. Further research is required to determine if this is an accurate limit to their distribution, and if so why.

***Phascolarctus cinereus* Koala**

Six Koalas were introduced into a fenced in enclosure of native bushland on Mikkara Station south of Port Lincoln in 1969. Since then they have escaped and formed a self sustaining and expanding population. Local landholders have observed them at low densities across the *Eucalyptus diversifolia* mallee and low mallee-scrub communities common across the Uley Basin and the southern coastal fringe (Robert Theakstone pers. comm. 2004).

The survey detected Koalas at 4 sites of which 2 were in *E. diversifolia* communities and the others in River Red Gum *E. camaldulensis* drainage line communities from marks on trees, droppings, direct observation (2 sites) and from their distinctive call (1 site). The most northerly site was just south of Wanilla Forest and the most southerly near Fishery Bay.

The release site for the koala was into one of only two documented (Smith 1963, Nicole 1997) Rough-barked Manna Gum *Eucalyptus viminalis* ssp. *cygnetensis* Woodlands on the Eyre Peninsula. This species has been severely impacted by feral Koalas on Kangaroo Island. The impact of Koalas on this rare Eyre Peninsula community, which is distinctive on Eyre Peninsula in that it occurs on limestone, has not been assessed. Given the situation on Kangaroo Island this should be investigated. Rough-barked Manna Gum have also been recorded in Kellidie Bay Conservation Park. This area was not investigated for Koalas during the survey but given the continuous nature of suitable habitat between our northern most record approximately 10 km further west, their presence there is possible.

Introduced Mammals

The survey detected 11 exotic species at sites, 5 of which are unlikely to sustain wild (Feral) populations within the study area. Cattle and sheep were probably escapees or part of managed commercial herds, whilst the camel sign (recorded at two of the Cowell sites) were likely to have been from a small owned mob. Wild camels with young were observed beyond the western edge of the study area in Wahgunyah Conservation Park, and it is likely that they would occasionally inhabit the north-western fringes of the study area. Horses were detected at three sites which were probably owned managed herds, this includes the "Coffin Bay Ponies" which have since been removed from the Coffin Bay National Park.

Dog sign was surprisingly rare on study sites (2) and these were most likely from domesticated animals. Any wild populations of domestic dog or dingo are likely to be short lived in the study area because of baiting and shooting activities to protect sheep.

The six remaining species are present as feral populations. Four of these goats, rabbits, cats and foxes have been listed as threatening process under the Australian Government Environmental Protection and Biodiversity Conservation Act:

- Competition and land degradation by unmanaged Goats.
- Competition and land degradation by Rabbits
- Predation by Red Foxes
- Predation by Cats

Of these the fox, cat and rabbit are widely distributed across all regions and are likely to be responsible for

suppressed populations of most native ground dwelling mammals. Whilst rabbits don't directly consume small mammals they are a probable factor in the sparseness of the arid adapted native rodents, through competition for food and habitat degradation. Goats were more restricted in their distribution and were only detected at sites in the north-east corner of the study area, Heggaton CP, Peachna CP and Shirrocoe Pastoral Lease. However feral goats were also observed in Calpatana Waterhole CP and around Kulliparu CP, which indicates that they are a wide spread problem with potential to impact on palatable rare plant populations.

Biogeography

National Context

The Eyre Peninsula is to the west of a conceptual biogeographic dividing line termed the Eyrean Barrier (Keast 1961, Ford 1973). This barrier divided, at various times through recent evolutionary history, arid and semi arid adapted species through Spencer Gulf, Lake Torrens and Lake Eyre primarily through aridity but possibly also, in more pluvial times, a super-lake (Lake Dieri) that connected Lake Eyre with Lake Frome, and probably Lake Torrens with Spencer Gulf. The Flinders Ranges also plays a role as a barrier. The Nullarbor Plain to the west of the study area has and continues to act in a similar manner hindering the dispersal of many species. The Eyre Peninsula has therefore periodically acted as an island for many semi-arid adapted species, as it currently still is for the more southern temperate (Bassian) species. Of the currently extant mammal fauna, members of the *Sminthopsis murina* complex represented by *S. dolichura* and *S. griseoventer* illustrate the impact of the Eyrean/Flinders Barrier which represents the eastern Boundary for both species.

The Sandhill Dunnart *S. psammophila* and the Central Long-eared Bat *Nyctophilus* sp. are also at the western extent of their distributions on the Eyre Peninsula.

The Bush Rat *Rattus fuscipes*, one of the new endemic rodents is a more recent coloniser of the wetter habitats of the continent which during the current dry period has restricted this species to isolated populations along the thicker vegetated coastal habitats and ranges in SA. To date this species has been resistant to obvious speciation.

The Eyre Peninsula represents the western limit for the eastern form of Common Brushtail Possum *Trichosurus vulpecula* ssp. *vulpecula* (Taylor and Foulkes 1984, Kerle and How 2008) which is separated from the western form *T. v.* ssp. *hypoleucus* by the Nullarbor Plain.

Regional Context

The Eyre Biogeographic Region has been split into three sub-regions of which two are split into discreet blocks, the Eyre Hills having a southern and northern block whilst the Eyre Mallee has a large pan peninsula block coming across from the west and splitting the Eyre Hills sub-region and a small north eastern isolate, which is split by the northern block of the Eyre Hills sub-region (Figure 23).

Twelve mammals species were significantly more likely to be recorded in particular biogeographic sub-region blocks than would be expected from random using goodness of fit (Chi-square) statistics (Statexact 4). These included 7 native and 4 introduced species. The details are presented in Table 20 which indicates in bold, the site frequencies for subregion blocks that were higher than would be expected from random.

The occurrence of Bush Rats in Talia and Eyre Hill south subregions is related to dense vegetation communities responding to a wetter and cooler climate. This also drives the Black Rat distribution with nearby human related disturbance likely to also be a factor. Black Rats are more often found in modified environments than natural vegetation.

This analysis may be biased by the survey site selection process which targets the larger areas of dominant vegetation communities. Examples of species listed in Table 20 where this appears to be the case include Fat-tailed Dunnart which were not sampled at all in the Eyre Hills and minimally in the Eyre Mallee blocks. A look at Museum records indicates a more widespread occurrence. This species has also been associated open and degraded habitats – which tend to be under sampled by most biological surveys. However, given the much larger areas of degraded but uncultivated open areas in the Talia region the results from the analysis may still reflect a real pattern.

Mitchell's Hopping Mouse *Notomys mitchellii* was the most widespread and abundant native rodent (Photo: AC Robinson).

Table 20. Number of sites at which selected mammal species were recorded within each sub-region block, Pearson's chi-square value and the exact *p* value modelled for the datasets using 1000 iterations (Statexact 4). Values in bold indicate observed frequencies that were higher than expected values for a random distribution.

SPECIES	Common name	Eyre Hills North	Eyre Hills South	Eyre Mallee East	Eyre Mallee West	Talia	Total	Chi	Exact-*p*
Rattus fuscipes	Bush Rat	0	**12**	0	0	**15**	27	62.73	0
Notomys mitchellii	Mitchell's Hopping-mouse	**15**	0	**2**	**18**	2	37	25.95	0.0002
Capra hircus *	Goat	**5**	0	0	0	1	6	20.8	0.0002
Ningaui yvonneae	Southern Ningaui	**3**	0	**4**	**5**	0	12	23.81	0.0008
Trichosurus vulpecula	Common Brushtail Possum	0	**2**	0	0	1	3	13.79	0.008
Mus musculus *	House Mouse	19	**15**	3	53	**66**	156	12.39	0.015
Phascolarctos cinereus *	Koala	0	**2**	0	0	**2**	4	11.01	0.029
Rattus rattus *	Black Rat	0	**2**	0	0	**2**	4	11.01	0.029
Macropus robustus	Euro	**6**	1	0	3	2	12	10.86	0.038
Tadarida australis	White-striped Mastiff Bat	**3**	**12**	**2**	3	**14**	34	10.27	0.04
Sminthopsis crassicaudata	Fat-tailed Dunnart	0	0	**2**	2	**5**	9	9.69	0.045
Sminthopsis dolichura	Little Long-tailed Dunnart	**12**	0	**3**	12	**15**	42	9.72	0.045
Number of native species	for which subregion block is significant	5	3	5	2	4	8		
Number of native species	recorded at sites in subregion block	12	7	8	14	13	19		
	Proportion signif. sp. / # sp. at sites	0.42	0.43	0.63	0.14	0.31	0.42		
proportion of sites per region	Ground dwelling mammals	0.16	0.08	0.05	0.39	0.31	1		
	Bats	0.06	0.21	0.03	0.32	0.38	1		

Discussion

Of the 27 species of native mammal listed in Table 16, that are confirmed as having occurred in the study area by museum specimens, two are likely to have been translocations from other regions (Water Rat and Southern Brown Bandicoot, Kemper pers. comm. 2009). Natural populations of another two (Tammar Wallaby and Brush-tailed Bettong) are also likely to be extinct. However both species were recorded at survey sites, the Brush-tailed Bettong at sites within Venus Bay Conservation Park where the species has been successfully re-introduced from Western Australian stock, and the Tammar Wallaby from jaw bones in Chadinga Conservation Park. This implies that all species known to have occurred on the peninsula were recorded at survey sites (including 1 species not previously recorded). That this is not the case merely a reflection of the paucity of early scientific collection of mammals in this region is supported by investigations of sub-fossil material from caves and sinkholes on the peninsula. Material from a sinkhole in Venus Bay Conservation Park indicates that 16 species once occurred on the peninsula that are now extinct. Some of these such as the Thylacine (dated ~3000 yrs before present) probably disappeared well before Europeans entered the landscape but others such as the Southern Brown Bandicoot, Black-faced Potoroo, and Plains Mouse were in the more recent layers (0-30 cm from the top). Only the Brush-tailed Bettong and Bush Rat were found in the disturbed spoil heap at the surface of the deposit (Medlin 1996, Medlin in Copley *et al.* 1999). It is likely that as in other parts of South Australia there have been significant recent losses, particularly in the medium sized mammals.

The landforms and habitats of the Eyre Peninsula biogeographic region have most similarities with other mallee dominated regions in SA. Biological surveys of these regions recorded fewer native species of the total thought to be surviving in those regions: Kangaroo Island 3 of 17 (Robinson & Kemper 1999), Yorke Peninsula & Mid North 17 of 20 (Brandle 2008), Murray Mallee 17 of 22 (Foulkes & Gillen 2000). These comparisons highlight the diversity and importance of Eyre Peninsula's remaining mammal fauna. This may reflect a greater diversity of habitats but may also be related to the larger areas of more connected remnant native vegetation that can still be found on parts of the peninsula. The role of the peninsula as the distributional boundary of species with either eastern or western affinities may also play a role.

Species richness analyses indicated that structural vegetation types were likely to be the most important influence on site species richness, particularly for small ground dwelling mammals. Mallee and taller shrub communities supporting the more diverse fauna.

Investigations of species habitat affinities indicated that Structural vegetation was most important for mammal species with nine being found at significantly more sites in particular types. Less than four species were significantly associated with any of the other parameter

types. This may reflect a cumulative effect of the parameters not being independent. Landform influences soils, surface strew and slope which combine to influence the vegetation community. Eleven species (7 native and 4 introduced) were significantly more likely to be found in particular physical or vegetation structure parameters (except strew size) (Appendixes 10 –16).

The Euro is associated with rock hills and escarpments throughout Australia (Clancy and Croft 2008) and this was reflected in its significantly higher occurrence in hill and outcrop land types, moderate to high strew cover, slopes between 2-20%. The Southern Ningaui is also considered a habitat specialist being thought to require habitats with spinifex (*Triodia* spp.) within which it shelters (Carthew and Bos 2008). In the study area it was associated with sand dunes, sandy soils with an absence of surface strew and low mallee and mallee vegetation communities. Mitchell's Hopping-mouse has similarly been associated with sandy habitats (Watts and Aslin 1981). It was found in higher than expected numbers in dunes as well as Sand plains and rises with sandy soils that supported low mallee and mallee vegetation communities. The only other species significantly associated with a physical parameter was the Fat-tailed Dunnart which was found at sites with clay or clay loam surface soils supporting low shrublands and shrublands. No other species were significantly associated with physical parameters, however two other native species and three introduced species were significantly more likely to be found in particular structural vegetation types: Grey-bellied Dunnart with low mallee and mallee; Common Brushtail Possum with Woodlands; the introduced House Mouse, European Rabbit and Black Rat with sedgelands, shrublands and woodlands. These latter categories are the more productive and highly cleared habitats on Eyre Peninsula. The nutrient and water poor mallee communities support the more diverse native mammal faunas. This may reflect the loss of species from richer more productive areas because of competition from introduced herbivores.

Capture rates of nationally and state rated species indicate that these require action plans to guide monitoring and conservation management. Further survey work in the Chadinga Conservation Park to confirm the presence and distribution of Tammar Wallabies should be a regional priority. The recently discovered Grey-bellied Dunnart at present appears to be secure with its presence confirmed in a number of Eyre Peninsula conservation reserves. Both Bolam's Mouse and the Sandy Inland Mouse were rarely recorded in the study area (2 sites each). These species were rated as rare and vulnerable (respectively) in a recent assessment of regional conservation status across the West Region (Gillam and Urban 2009). The Sandy Inland Mouse population appears to be an isolate as it was recorded well away from other known populations to the north.

The success and apparent spread of the Koala across the Uley Basin on southern Eyre Peninsula should be monitored with emphasis on investigating impacts. Particularly on the regionally rare Rough-barked Manna Gum *Eucalyptus viminalis* ssp. *cygnetensis* which is threatened on Kangaroo Island by Koalas.

Populations of four species are significant from a national biogeographic perspective as being the western (Common Brushtail Possum) or eastern (Grey Bellied Dunnart, Sandhill Dunnart) boundary for species and also for supporting isolated populations of trans southern Australian species (Bush Rat). Eight native species were found to have significant occurrences from a regional biogeographic perspective. The apparent preference of these species relates to their habitat requirements. Species requiring sandy soils (Mitchell's Hopping-mouse, Southern Ningaui) with the Eyre Mallee and Eyre Hills north blocks. The Bush Rat which requires dense vegetation cover and the Common Brushtail possum with its woodland requirements were restricted to the Eyre Hills south and Talia subregions. Euros were strongly associated with the more arid ranges of the Eyre Hills North block and Fat-tailed Dunnarts with the open expanses of the Talia subregion.

The Southern Hairy-nosed Wombat *Lasiorhinus latifrons* has isolated occurrences all over Eyre Peninsula but is most dominant in the west (Photo: AC Robinson).

The Western Yellow Robin *Eopsaltria griseogularis* is at the eastern edge of its distribution on the Eyre Peninsula (Photo: AC Robinson)

The Bluw-breasted Fairy-wren *Malurus pulcherrimus* is at the eastern edge of its distribution on the Eyre Peninsula (Photo: AC Robinson)

BIRDS

Carpenter G[1]. & Cooper J.[2]

Introduction

Eyre Peninsula is of special interest to ornithologists because of its geographic position midway between south-eastern and south-western Australia (Hall 1910, Ford 1971a and b, Eckert *et al.* 1985, Schodde 1981 and 1990). However, in their review of the region's avifauna, Eckert *et al.* 1985 concluded that it remained the most poorly known in the State.

Early observations in the region are reported by Holroyd (1902a and b) which include valuable notes on the ecology of the Yellow-tailed Black-Cockatoo, and the introduction of the Laughing Kookaburra. George Masters of the Australian Museum (Sydney) collected birds around Port Lincoln in 1865. Although it has not been possible to access a list of these collections, North (1901) refers to specimens of Western Gerygone and Australian Ringneck.

A trip to Warunda Creek (about 8 km west of the Koppio Hills) by the Australasian Ornithologists Union from 6-16 October 1909 (Hall 1910, Barrett 1910a and b) and revisit in August 1911 (White 1912) provided a detailed assessment of birds of the Sugar Gum woodlands on southern Eyre Peninsula. Storr (1947a, b, c) made observations based around Wanilla. Sutton (1924), Sullivan (1927), Cleland (1926), Jenkin and Waterman (1964), Shaw (1958), McEvey and Middleton (1968) and Eckert (1972, 1973, 1974) also report a number of observations across the region.

More recently there have been several smaller biological surveys of specific areas (e.g. Munyaroo Conservation Park – Cox and Carpenter 2003; Koppio Hills area – Nias 1987, Carpenter 2007). In addition, there have been surveys on selected species (e.g. Yellow-tailed Black-Cockatoo – Possingham 1986, van Weenen and Cooper 2000; Southern Emu-wren – Pickett 2002). Carpenter (1995) related bird species to vegetation types in native vegetation on 200 Eyre Peninsula properties between 1985 and 1992. Gill and O'Connor (2000) produced a photographic guide of the birds of southern Eyre Peninsula that includes notes on all but the least common species.

To the north, the birds of the Gawler Ranges and Yellabinna regions are relatively well known (Paton 1975, Joseph and Black 1980, Robinson *et al.* 1988, Copley and Kemper 1992, Baxter and Paton 1998), while to the west a recent survey of the Yalata aboriginal lands highlighted the importance of its eucalypt low open forests and woodland as a bird habitat (Carpenter in Neagle 2008). Cox (1974) details birds seen in the Whyalla area, a district included as part of Eyre Peninsula elsewhere (e.g. Eckert *et al.* 1985) but largely excluded from this study.

The current survey aims to better understand the terrestrial bird fauna of Eyre Peninsula based on systematic field surveys across the region in a variety of vegetation types.

Methods

The surveys contributing to this report form part of the Biological Survey of South Australia. For most fauna survey sites the methods used are consistent with the methodologies outlined in 'Guidelines for Vertebrate Surveys in South Australia' (Owens 2000).

Survey Coverage

A total of 273 survey sites were sampled for birds on Eyre Peninsula. Of these, 247 were sampled during the current survey in 2001-2007, while the remainder is from smaller biological surveys of specific areas. Figure 22 and Table 17 in the mammal chapter provide a guide to the distribution of sites. These sites give a good representation of native terrestrial bird habitats throughout the survey area. Coastal and waterbirds were not surveyed systematically but recorded opportunistically. These are not discussed further in this report.

Data Collection

Bird surveys followed the standard Biological Survey method described in Owens (2000) which involved the equivalent of one person hour of search effort within a specified habitat type within 500m of permanent survey photo point markers. Each site was sampled once in the early morning and once in the late afternoon. Data was recorded on standard datasheets and entered into the Biological Survey of South Australia Database.

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Results

Total bird species

A total of 150 bird species were recorded during the survey, including 15 water (including coastal) birds. A further 7 terrestrial birds and 9 waterbirds were recorded from opportunistic sightings, and 29 terrestrial birds are known from the study area from records provided by the South Australian Museum, Birds Australia bird atlas data and other published and unpublished reports. The total species of terrestrial birds from the survey area is therefore 171. A list of records and their sources is appended (Appendix 17).

The list includes 6 introduced species: Common Starling, House Sparrow, Eurasian Skylark, Common Blackbird, Spotted Dove and Rock Dove. All are widespread except the Spotted Dove that appears to be establishing along the east coast from the north and is currently in low numbers. The birds introduced to Tumby Bay and Port Lincoln in the 1960s (Green in Glover 1968) appear to have died out. The Ostrich was also observed opportunistically but would be escaped farm birds rather than a feral population. In addition a relatively large population of European Goldfinch was present on southern Eyre Peninsula in the 1960s (Barnes in Glover 1966).

Birds well represented in the region are raptors (18 species), parrots and cockatoos (17 species), fairy-wrens (5 species), honeyeaters (15 species) and whistlers and allies (5 species).

Common species

Species recorded at the most sites were Grey Shrike-thrush (63% of sites), Inland Thornbill (62%), Weebill (61%), Grey Butcherbird (51%) and Red Wattlebird (46%) (Table 21). These were mostly species that inhabit a range of vegetation types, are conspicuous and were relatively abundant. The Weebill and Red Wattlebird were largely confined to vegetation that included eucalypts, reflecting the prevalence of eucalypt woodlands and mallee in the region.

Table 21. Common birds of Eyre Peninsula

COMMON NAME	% sites recorded
Grey Shrike-thrush	63
Inland Thornbill	62
Weebill	61
Grey Butcherbird	51
Red Wattlebird	46
Galah	43
Grey Currawong	43
Australian Ringneck	41
Spiny-cheeked Honeyeater	40
Silvereye	39
Striated Pardalote	39
White-browed Babbler	37
White-eared Honeyeater	37
Common Bronzewing	37
Spotted Pardalote	34
Emu	33
Singing Honeyeater	32
White-fronted Honeyeater	31

Species Richness

The most species recorded at a survey site was 37 (MUN00601 – Bullock Bush low woodland at Munyaroo CP) and 35 (KOP01001 – Peppermint Box and EP Blue Gum woodland in the Koppio Hills). An average of 15.4 species was recorded across all sites.

Significant Species

Of the 171 terrestrial species in the study area, eight are considered to be threatened under the Commonwealth EPBC Act 1999 and 23 are rare or threatened in South Australia (National Parks & Wildlife Act schedules, February 2008) (Table 22).

Table 22. Rare and threatened bird species of Eyre Peninsula.
E = endangered, V = vulnerable, R = rare

Species Name	Common Name	Aus	SA	Sites
Calyptorhynchus lathami halmaturinus	Glossy Black-Cockatoo	E	E	
Leipoa ocellata	Malleefowl	V	V	17
Pedionomus torquatus	Plains-wanderer	V	E	
Pachycephala rufogularis	Red-lored Whistler	V	V	
Acanthiza iredalei iredalei	Slender-billed Thornbill	V	R	1
Stipiturus malachurus parimeda	Southern Emu-wren	V	E	1
Amytornis textilis myall	Thick-billed Grasswren	V		1
Psophodes nigrogularis leucogaster	Western Whipbird	V	E	3
Pandion cristatus	Osprey		E	
Myiagra cyanoleuca	Satin Flycatcher		E	
Lophoictinia isura	Square-tailed Kite		E	1

Species Name	Common Name	Aus	SA	Sites
Haliaeetus leucogaster	White-bellied Sea-Eagle		E	2
Ardeotis australis	Australian Bustard		V	
Neophema chrysostoma	Blue-winged Parrot		V	
Coturnix ypsilophora	Brown Quail		V	
Stagonopleura guttata	Diamond Firetail		V	9
Petroica boodang	Scarlet Robin		V	1
Calyptorhynchus funereus	Yellow-tailed Black-Cockatoo		V	1
Burhinus grallarius	Bush Stone-curlew		R	
Cereopsis novaehollandiae	Cape Barren Goose		R	1
Neophema elegans	Elegant Parrot		R	6
Pachycephala inornata	Gilbert's Whistler		R	11
Elanus scriptus	Letter-winged Kite		R	
Cacatua leadbeateri	Major Mitchell's Cockatoo		R	1
Turnix varia	Painted Button-quail		R	8
Falco peregrinus	Peregrine Falcon		R	2
Lichenostomus cratitius	Purple-gaped Honeyeater		R	31
Myiagra inquieta	Restless Flycatcher		R	11
Neophema petrophila	Rock Parrot		R	6
Neophema splendida	Scarlet-chested Parrot		R	
Calamanthus cautus	Shy Heathwren		R	32
Amytornis striatus	Striated Grasswren		R	2
Gerygone fusca	Western Gerygone		R	6
Climacteris affinis	White-browed Treecreeper		R	1
Corcorax melanorhamphos	White-winged Chough		R	11

Glossy Black-Cockatoo *Calyptorhynchus lathami halmaturinus* (Aust – endangered, SA – endangered)
The subspecies *halmaturinus* of the Glossy Black-Cockatoo is largely confined to Kangaroo Island where it feeds on seeds of Drooping Sheoak. Preece (1985) noted that according to local residents, black cockatoos with red tails were moderately common summer visitors to the sheoak woodlands on Coffin Bay Peninsula until the early 1900s (last recorded in 1964).

Malleefowl *Leipoa ocellata* (Aust – vulnerable, SA – vulnerable)
Malleefowl occur mainly in the mallee areas of southern Australia and have declined extensively due to introduced predators, land clearance and habitat degradation. Malleefowl are widely distributed in the sandy areas of northern and central Eyre Peninsula, with highest densities in the north-east and a smaller concentration in White Mallee open scrubs near Lock. Evidence (sightings, tracks, mounds) was recorded at 17 sites during the survey, and a positive association was found with Ridge-fruited Mallee open scrubs.

Eyre Peninsula supports a significant population of this species at the National level (Benshemesh 2007), although is declining following a series of dry years (Gillam 2008).

Plains-wanderer *Pedionomus torquatus* (EPBC – vulnerable, SA – vulnerable)
The status of this species on Eyre Peninsula is uncertain. It was not recorded during the survey, but is known from scattered records throughout the cleared farming areas of Eyre Peninsula.

Red-lored Whistler *Pachycephala rufogularis* (EPBC – vulnerable, SA – vulnerable)
This species was discovered on Eyre Peninsula in February 1993 (Matthew *et al*. 1995), when three birds were seen in Ridge-fruited Mallee open scrub in Pinkawillinie CP. They were seen at the same site several times up to March 1995 (Matthew *et al*. 1996) but could not be found during searches of similar habitat nearby. Way (2007) failed to locate any birds during an intensive search after the area had been burnt.

Slender-billed Thornbill *Acanthiza iredalei iredalei* (EPBC – vulnerable, SA – rare)
The nominate subspecies of the Slender-billed Thornbill occurs sparsely throughout inland Australia wherever chenopod low shrublands with Pearl Bluebush *Maireana sedifolia* predominate (Matthew 1994).

A small group was recorded in Pearl Bluebush at Site MUN00601 in the north-east of Munyaroo CP in September 2002, at the very margin of the survey area. It occurs more extensively in the Whyalla and Gawler Ranges districts immediately to the north.

Thick-billed Grasswren *Amytornis textilis myall* (EPBC – vulnerable)
This subspecies of the Thick-billed Grasswren has a limited distribution from Whyalla to the eastern Gawler Ranges (Black *et al*. 2009). Its main habitat is Blackbush *Maireana pyramidata* low shrubland along drainage lines, particularly where spiny shrubs such as Australian Boxthorn *Lycium australe* are also present.

At least three birds were observed in Blackbush and Spiny Saltbush *Rhagodia spinescens* at MUN00601 in the north-east of Munyaroo CP, at the very margin of the survey area.

Southern Emu-wren *Stipiturus malachurus parimeda* (EPBC – vulnerable, SA – endangered)
The Eyre Peninsula Southern Emu-wren is confined to a range of wet heaths in the south (Schodde and Weatherley 1981). The largest populations are on Marble Range and the clifftop heaths near Sleaford Bay (Pickett 2002). Smaller populations in the Koppio Hills were decimated by the January 2005 bushfire.

During the survey it was recorded in Broombush and Totempoles *Melaleuca decussata* heath on the Marble Range at Site MAR00601.

Western Whipbird *Psophodes nigrogularis leucogaster* (EPBC – vulnerable, SA – vulnerable)
The subspecies *leucogaster* of the Western Whipbird occurs in the southern Murray Mallee and on the tips of Yorke and Eyre Peninsulas. The Murray Mallee population has dwindled (Woinarski 1988). During the survey it was recorded in dense mallee and Dryland Teatree in the Uley Basin (Sites ULE00201, ULE00301, ULE00401).

Osprey *Pandion haliaetus* (SA – endangered)
The Osprey is sparsely distributed in South Australia with an estimated 52 breeding pairs in 2005, mostly located on the west coast of Eyre Peninsula (Dennis 2004, 2007). Breeding sites are mostly in exposed sites on sea stacks where they are threatened by disturbance.

It was recorded opportunistically at four sites during the survey.

Satin Flycatcher *Myiagra cyanoleuca* (SA – endangered)
The Satin Flycatcher has a small breeding population in the far south-east of the State and disperses widely during late summer-autumn. It is a vagrant to Eyre Peninsula (one record – 13 km E Kimba on 16 December 1984).

Square-tailed Kite *Lophoictinia isura* (SA – endangered)
The Square-tailed Kite occurs in eucalypt forests and woodlands and is rarely recorded (few breeding records) in South Australia (Jolly 1989, Debus 1991 and 1993). A pair has bred in and adjacent the Wanilla Forest for many years, and was recorded there (Site ULE00901) during the survey.

White-bellied Sea-Eagle *Halieetus leucogaster* (SA – endangered)
The sea-eagle is sparsely distributed in SA with about 55 occupied territories in 1994, mostly located on the west coast of Eyre Peninsula (Dennis and Lashmar 1996).

It was recorded at Venus Bay (VB00101) and Cowell (COW00901) during the survey.

Australian Bustard *Ardeotis australis* (SA – vulnerable)
Australian Bustards occur in open areas that include sparsely timbered woodlands, saltbush plains, grasslands, low heaths and occasionally croplands. It has declined extensively in the settled areas of south-eastern Australia (including Eyre Peninsula), where its status has been reduced to that of a rare non-breeding visitor (Boehm 1947, Blakers *et al*. 1984). One was recorded opportunistically in a paddock north of Kimba.

Blue-winged Parrot *Neophema chrysostoma* (SA - vulnerable)
The Blue-winged Parrot breeds in the far south-east of the state, and disperses widely during late summer-autumn. It is a vagrant to Eyre Peninsula (Mount Cooper, September 1972 – Eckert 1974).

Brown Quail *Coturnix ypsilophora* (SA - vulnerable)
Brown Quails occur in dense grass-sedgelands and disperse widely in some years. It is a vagrant to Eyre Peninsula (one record – Port Neill, March 1975).

Diamond Firetail *Stagonopleura guttata* (SA - vulnerable)
The Diamond Firetail lives in pairs and small groups in grassy woodlands across south-eastern Australia wherever a significant proportion of native grasses remain (Read 1994). The population on Eyre Peninsula is probably isolated and occurs at the western limit of distribution. It was formerly widespread over the southern half of Eyre Peninsula, but has declined in many areas following the loss Drooping Sheoak woodlands through grazing and fire (Bishop and Venning 1986).

During the survey it was recorded from 9 sites mostly in Coast Ridge-fruited Mallee open scrub and Mallee Box, Drooping Sheoak and EP Blue Gum woodlands. Its main population is now centred in and around the margins of the Koppio Hills (Carpenter 2007).

Scarlet Robin *Petroica boodang* (SA - vulnerable)
The Scarlet Robin occurs in forests and wetter woodlands in south-eastern and south-western Australia. The population on Eyre Peninsula is suspected to be of the smaller south-western subspecies (Schodde and Mason 1999), but specimen evidence is lacking. On Eyre Peninsula its distribution is mostly in the Koppio Hills, although birds disperse into more open habitats after breeding, when areas of introduced Aleppo Pines are also used.

During the survey it was recorded from one site in Drooping Sheoak woodland (KOP00401). Opportune records were all from Sugar Gum woodlands.

Scarlet Robins have recolonised sites burnt by the January 2005 fire (Carpenter 2007, J. Cooper pers. obs.).

Yellow-tailed Black-Cockatoo *Calyptorhynchus funereus* (SA - vulnerable)
Yellow-tailed Black-Cockatoos occur in wetter forests and woodlands across south-eastern Australia. On Eyre Peninsula an isolated, genetically distinct (Norman 2008) and critically endangered population occurs in Sugar Gum woodland in the Koppio Hills and adjacent areas. Breeding is now confined to one area, in part because other areas of tall gums that provide suitable nesting hollows have been extensively cleared. Most food now comprises seed of the feral Aleppo Pine supplemented by seed of hakeas (*H. rugosa* and *H. cycloptera*) and wood-boring insect larvae in the branches of Drooping Sheoak and various eucalypts (*E. cladocalyx, E. gracilis, E. incrassata* and *E. diversifolia*), in galls of Golden Wattles *Acacia pycnantha* and in fruiting spikes of *Xanthorrhoea semiplana* ssp *tateana* (Possingham 1993, van Weenen and Cooper 2000).

In winter birds disperse north-westwards to the Mount Damper - Mount Cooper area (Possingham 1993, van Weenen and Cooper 2000).

Since the January 2005 fire, numbers have declined from 15 birds in 2004-2005 to 9 birds in 2008-2009. The reduction is probably due to both direct impacts of the fire on nesting areas and on the removal of important Aleppo Pine feed trees at the margins of the breeding areas as part of the ongoing control strategy for this pest plant species.

Evidence of its presence (chewed branches of Drooping Sheoak) was recorded near Elliston at BAS00901.

Bush Stone-curlew *Burhinus grallarius* (SA – rare)
Bush Stone-curlews once occurred in woodlands across South Australia. Mainland populations of this species have mostly been extirpated, with the only significant population on Kangaroo Island. On Eyre Peninsula it is now largely confined to islands (e.g. Boston and Thistle Islands – Robinson *et al* 1996), from which occasional stragglers occur. Intensive baiting of foxes has led to its recent re-establishment in Lincoln NP. The species was not recorded during the survey.

Cape Barren Goose *Cereopsis novaehollandiae* (SA – rare)
The Cape Barren Goose nests on islands and disperses to the mainland during summer. It declined severely due to human persecution during the 1930s but has recovered following formal protection, with the majority of birds (about 10,000) occurring in SA (Robinson *et al.* 1982). Flocks of 100s disperse from the main breeding areas in the Sir Joseph Banks Group islands to summer feeding areas around coastal wetlands and adjacent farmlands near Port Lincoln and Elliston (e.g. North Shields and near Little Swamp).

Elegant Parrot *Neophema elegans* (SA – rare)
The Elegant Parrot is a poorly known species that has a fragmented breeding distribution in SA. In September 1990 Chapple and Lewis (1991) found a pair feeding young in a eucalypt hollow at Scrubby Peak in the Gawler Ranges, immediately north of the study area. Ten years previously (5 October 1980), G. White saw a pair at a hollow in the same area (per J. Cooper). More recently on 26 October 2006, L. Pedler and G. Carpenter saw a group of about 10 adults and at least 4 recently fledged juveniles in mallee *(E. porosa, E. oleosa* and *E. gracilis*) low woodland west Old Paney HS. These may be the source of small post-breeding flocks (up to 50 birds) on the west coast of Eyre Peninsula observed during the survey (e.g. in coastal dunes at Site BAS01201 in early December 2003 and Coast Ridge-fruited Mallee at MAR01201 in December 2004).

More recently, several small flocks of Elegant Parrots have been seen at various sites on southern Eyre Peninsula in April – September (J. Cooper pers. obs.). These coincide with post-breeding records on Kangaroo Island (Baxter and Parker 1981) and Yorke Peninsula (Eckert 2006), thus could also be of birds dispersing across Spencer Gulf.

Gilbert's Whistler *Pachycephala inornata* (SA – rare)
The Gilbert's Whistler occurs sparsely mainly in drier mallee with larger shrubs prominent in the understorey. It was recorded at 11 sites during the survey, mostly in Ridge-fruited Mallee open scrub, Yorrell low woodland and Black Oak - Native Pine low woodland across the north of the region.

Letter-winged Kite *Elanus scriptus* (SA – rare)
Letter-winged Kites occur mainly in the in the Lake Eyre drainage in far north-east of the State, with breeding closely linked to floods. Occasionally single birds or small groups disperse into the agricultural regions, particularly during mice plagues. The species is a vagrant to Eyre Peninsula, with records from near Wudinna, Kimba, Warramboo and Butler (SAOA Newsletter 1971 & 1993, Glover 1952, Schulze 1958).

Major Mitchell's Cockatoo *Cacatua leadbeateri* (SA – rare)
Major Mitchell's Cockatoo occurs throughout drier woodlands, with the Gawler Ranges and Yalata regions being a probable stronghold in South Australia. Areas of Native Pines are often visited for food. Its distribution has contracted from the settled areas, and was recorded from only one site in Yorrell low woodland in the far west of the study area (FOW00701).

Painted Button-quail *Turnix varia* (SA – rare)
The Painted Button-quail is a sparsely distributed mobile species which uses a range of mostly eucalypt associations wherever leaf litter provided by acacias is prominent.

The 8 site records were from a range of vegetation types in the south, particularly Coast Ridge-fruited Mallee open scrub.

Peregrine Falcon *Falco peregrinus* (SA – rare)
In SA the Peregrine Falcon is sparsely distributed in woodlands (especially near water), in gorges with rock

faces and along coastal cliffs. On Eyre Peninsula coastal cliffs are mostly used for breeding (Dennis 2004), although grain silos are also used further inland. It was recorded from two coastal sites (ULE00101, BAS00101) during the survey.

Purple-gaped Honeyeater *Lichenostomus cratitius occidentalis* (SA – rare)
The mainland race of the Purple-gaped Honeyeater is widely distributed in the mallee-heathlands of the Murray Mallee, Yorke and Eyre Peninsulas. It was recorded from 31 (11.5%) of survey sites indicating that the survey area is important, particularly Ridge-fruited Mallee open scrub and Coastal White Mallee open scrub.

Restless Flycatcher *Myiagra inquieta* (SA – rare)
The Restless Flycatcher is a woodland species that has declined extensively in the temperate areas of south-eastern Australia (e.g. Robinson 1991).

It was recorded from 11 sites during the survey indicating that Eyre Peninsula is important to the species, particularly in Red Gum and Mallee Box woodlands and Yorrell low woodlands.

Rock Parrot *Neophema petrophila* (SA – rare)
The South Australian population of the Rock Parrot breeds mainly on Eyre Peninsula islands and disperses along the mainland coast in summer-autumn. It was recorded at 6 coastal sites (coastal heath, samphire) during the survey. Little is known of its ecology and status in South Australia.

Scarlet-chested Parrot *Neophema splendida* (SA – rare)
The Scarlet-chested Parrot is a rare species of the mallee-spinifex dunefields, whose main stronghold is the Great Victoria Desert. Its distribution extends into the northern part of the region, with recent reports from Munyaroo and Lake Gilles CPs.

Shy Heathwren *Calamanthus cautus* (SA – rare)
The Shy Heathwren occurs widely in mallee with a sufficiently dense shrubby understorey to provide cover as it feeds on or near the ground. It was recorded at 32 sites (in mallee and Broombush) indicating that Eyre Peninsula is important for the species.

Striated Grasswren *Amytornis striatus* (SA – rare)
The Striated Grasswren is associated with *Triodia scariosa* on sand dunes and sand flats and has a disjunct distribution in South Australia. On Eyre Peninsula it is confined to mallee in the north-east from Pinkawillinie CP to Munyaroo CP.

During the survey it was recorded from two sites with dense *Triodia scariosa*, MUN01001 and GIL00601.

Western Gerygone *Gerygone fusca* (SA – rare)
The Western Gerygone (Warbler) is a small insectivorous bird that frequents the tree canopy. The population on southern Eyre Peninsula is most closely related to the nominate subspecies *Gerygone f. fusca* that occurs in south-western Western Australia, but has slightly darker underparts and appears sedentary in nature (Ford 1981, Higgins and Peter 2002). Its distribution corresponds with the occurrence of Sugar Gum woodlands, but also uses adjacent habitats such as Red Gum, Drooping Sheoak and introduced Aleppo Pines (Reid 1975). Despite the burning of half of its distribution in January 2005, the species appears to be recovering well (Carpenter 2007).

During the survey it was found at 6 sites, in Sugar Gum and adjacent Red Gum woodlands.

White-browed Treecreeper *Climacteris affinis* (SA – rare)
The White-browed Treecreeper is sparsely distributed in mulga and Black Oak woodlands, occurring mostly to the north of the Eyre Peninsula in the southern Gawler Ranges. During the survey it was recorded in Black Oak woodland at the northern margin of the region (Site ACR01101).

White-winged Chough *Corcorax melanorhamphos* (SA – rare)
The White-winged Chough occurs in eucalypt woodlands throughout south-eastern Australia. The population on Eyre Peninsula is probably isolated and occurs at the western limit of distribution. Its main population is in the Koppio Hills, although it is also widespread in the tall mallee woodlands across the north.

During the survey it was recorded in a variety of woodlands at 11 sites, indicating that the region is important for the species. Note that the White-winged Chough has sometimes been mis-identified due to the presence of prominent white wing patches with the more common Yorke and Eyre Peninsula subspecies *intermedia* of the Grey Currawong.

Habitats

The 36 vegetation clusters identified in the plant analysis were further lumped for the purpose of describing bird habitats in the region. A total of 18 groups (A-R) are defined (Table 23). Calculating the Chi-Square statistic with Yate's correction factor (Zar 1984) tested any significant positive association between the 18 vegetation groups and associated bird species.

Table 23. Use of vegetation types by birds in the Eyre Peninsula survey area.

Group	Vegt clusters	Vegetation type	No. sites	No. species	Mean species/site
A	1, 2, 6	Coastal dune shrublands	8	41	12.5
B	3, 8, 9	Chenopod low shrublands	13	39	6.5
C	4	Swamp Paperbark tall shrubland	2	24	13.5
D	5, 7, 16	Coastal heath	12	56	11.8
E	10, 11, 20	Red Gum, Mallee Box and EP Blue Gum woodlands	42	114	20.6
F	12	White Mallee, Red Mallee and Boree open scrub	5	43	15.0
G	13, 31, 32	Yorrell low woodlands	43	85	15.0
H	14, 15	Black Oak, Native Pine low woodlands	18	73	16.7
I	17	Coast Ridge-fruited Mallee – Broombush open scrub	12	69	18.4
J	19	Short-leaf Honey-myrtle – Cutting Grass shrubland	3	20	9.3
K	21	Drooping Sheoak low woodland	7	46	13.9
L	22	Sugar Gum woodland	5	42	20.4
M	23, 33	Coastal White Mallee open scrub	15	61	17.0
N	24, 26	Various mallee open scrub on loams	24	70	14.8
O	27	Yorrell – Red Mallee open scrub	7	49	14.4
P	28, 29, 30	Dryland Teatree – mallee shrubland	8	42	11.4
Q	34	Broombush heath	8	55	14.9
R	35, 36	Ridge-fruited Mallee open scrub	38	85	15.4

Red Gum, Mallee Box and EP Blue Gum woodlands (Group E) had the most bird species (114). They also had the highest average number of species per site (20.6), along with Sugar Gum woodlands (Group L) with 20.4. Vegetation groups with the lowest diversity were the Chenopod low shrublands (6.5 species per site).

The bird faunas of each vegetation group are described as follows.

A. Coastal dune shrublands (8 sites)

The coastal dune bird fauna on Eyre Peninsula is typical of coastal habitats throughout South Australia, with characteristic species including Singing Honeyeater, Nankeen Kestrel and Silvereye. Coastal shrubland is also distributed across both the Nullarbor and Eyrean Barriers, providing a link for such species as White-browed Scrubwren, Brush Bronzewing and Silvereye (Carpenter and Matthew 1999).

Bird species of conservation significance include post breeding Elegant and Rock Parrots.

Species	% sites recorded	Signif association
Silvereye	100	X
Grey Shrike-thrush	88	
Spiny-cheeked Honeyeater	88	
Inland Thornbill	63	
Red Wattlebird	63	
Singing Honeyeater	63	
White-browed Scrubwren	63	
Nankeen Kestrel	42	X

B. Chenopod low shrublands (8 sites)

Chenopod low shrubland in the area is dominated by Bladder Saltbush *Atriplex vesicaria*, Pearl Bluebush *Maireana sedifolia* and samphires. Bird species are mostly typical of the low chenopod shrublands throughout southern inland South Australia.

Species	% sites recorded	Signif association
Singing Honeyeater	62	
Galah	38	
Nankeen Kestrel	38	X
Australasian Pipit	38	X
White-fronted Chat	38	X
Brown Songlark	31	X

C. Swamp Paperbark shrubland (2 sites)

Swamp Paperbark is characterised by its dense canopy, although too few sites were sampled to determine its bird fauna. No particularly significant species were recorded.

D. Coastal low shrublands (10 sites)

Coastal low shrubland occurs mainly on calcrete clifftops and is characterised by stunted shrubs including Dryland Teatree.

Characteristic species are Welcome Swallow, which nests under cliff overhangs, and Singing Honeyeater. Rock Parrots are frequent visitors during summer-autumn.

Species	% sites recorded	Signif association
Welcome Swallow	83	X
Singing Honeyeater	83	X
Nankeen Kestrel	58	X
Silvereye	50	
Rock Parrot	33	X

E. Red Gum, Mallee Box and EP Blue Gum woodlands (42 sites)

This relatively large group includes Red Gum *E. camaldulensis*, Mallee Box *E. porosa* and Eyre Peninsula Blue Gum *E. petiolaris* woodlands. Although grouped due to the similarity of understorey plants, it is likely that bird faunas would differ if groups were defined based on the dominant eucalypts. Red gum woodlands are characterised by a rich bird fauna throughout Australia, particularly because they contain large hollows and have an open understorey (Loyn 1985). These features are shared on Eyre Peninsula but in the absence of major watercourses, it is confined to areas of surface calcrete with fresh, near surface ground water. Positively associated bird species include many that nest in hollows or feed on or near the ground. These include parrots (especially the Australian Ringneck and Galah, the latter colonising the region in the early 1900s following the spread of cereal cropping), White-winged Chough, Willie Wagtail, Striated Pardalote and Little Raven. Other notable species are Diamond Firetail, Restless Flycatcher and Jacky Winter, woodland birds that are declining throughout south-eastern Australia (Robinson 1991, Ford *et al*. 2001).

Red gum woodlands on Eyre Peninsula have some notable absentees. The White-plumed Honeyeater *Meliphaga penicillata* is an abundant species in red gums elsewhere in Australia (e.g. Loyn 1985) but is absent from Eyre Peninsula (Reid 1978, a report of two in the Hundred of Blesing by Mack in Preiss 1969 requires confirmation). Reid (1978) observed that the Yellow-plumed and Tawny-crowned Honeyeaters occur instead. The Laughing Kookaburra was probably introduced to Red Gum woodlands in the Wangary district during the late 1800s (Holroyd 1902) and now occurs widely in the woodlands of the Koppio Hills (a single bird was also present in the Kimba district in November 1969). Holroyd stated that there were previously no kookaburras in the region, although it is interesting that birds on Eyre Peninsula lack the brown strip along the crown of eastern Australian birds, thus appearing "white headed" (L. Pedler pers. comm, pers. obs.), so may be genetically distinct.

Eyre Peninsula Blue Gum has a limited distribution along watercourses, often with a dense understorey cover of Scarlet Bottlebrush *Callistemon rugulosus*. Lorikeets and honeyeaters are often abundant in this vegetation type (Ford 1977). The call of the Musk Lorikeet on Eyre Peninsula differs from birds in the Mount Lofty Ranges, suggesting a taxonomic divergence that requires investigation.

Species	% sites recorded	Signif association
Galah	76	X
Australian Ringneck	74	X
Inland Thornbill	74	
Weebill	69	
Grey Butcherbird	67	
Grey Shrike-thrush	62	
Silvereye	62	
Striated Pardalote	62	X
Little Raven	50	X
Willie Wagtail	48	X
Yellow-rumped Thornbill	45	X
Grey Fantail	38	X
Superb Fairy-wren	38	X
Rufous Whistler	33	X
Common Starling	29	X
Southern Whiteface	29	X
Laughing Kookaburra	14	X
Shining Bronze-cuckoo	12	X
White-winged Chough	12	X

F. White Mallee – Red Mallee - Boree open scrub (5 sites)

This vegetation type is associated with the grey calcareous sands of western Eyre Peninsula. Too few sites were sampled to determine its characteristic bird species.

Species	% sites recorded	Signif association
Grey Shrike-thrush	80	
Weebill	80	
White-eared Honeyeater	80	

G. Yorrell low woodland (43 sites)

This large group is predominantly mallee low woodland with a chenopod understorey on loams across the north of Eyre Peninsula. It has been extensively cleared in the study area, but extends further north and west into the pastoral region. Trees contain numerous hollows and the understorey is usually open, often with abundant leaf litter. Its bird fauna is typical of low open forest mallee throughout southern South Australia (e.g. Yellow-plumed Honeyeater, Jacky Winter, Striated Pardalote, Chestnut Quail-thrush, Major Mitchell's Cockatoo and White-winged Chough), but with western affinities (e.g. Rufous vs Brown Treecreeper). Many of its associated birds (e.g. Purple-crowned Lorikeet, Chestnut Quail-thrush, Jacky Winter, Gilbert's Whistler, Rufous Treecreeper, plus possibly Spotted Pardalote and Yellow-plumed Honeyeater) link westwards around the Nullarbor Barrier from Eyre Peninsula via the Barton Sandhills and the Marble Gum *Eucalyptus gongylocarpa* woodlands of the Great Victoria Desert into Western Australia (Ford 1971, Black and Badman 1986).

Species	% sites recorded	Signif association
Weebill	91	X
Grey Shrike-thrush	77	
Striated Pardalote	60	X
Inland Thornbill	58	
Grey Butcherbird	53	
White-eared Honeyeater	47	
Grey Currawong	44	
Red Wattlebird	44	
Yellow-plumed Honeyeater	40	X
Black-faced Cuckoo-shrike	40	X
Jacky Winter	33	X
Rufous Treecreeper	9	X

H. Native Pine – Black Oak low woodlands (18 sites)

The bird fauna of the Native Pine and Black Oak low woodlands is similar to that of Drooping Sheoak low woodlands (Group K), with the Rufous Whistler and Red-capped Robin prominent. The Major Mitchell's Cockatoo feeds on the cones of Native Pine *Callitris gracilis* in the north of the region.

Species	% sites recorded	Signif association
Inland Thornbill	78	
Spiny-cheeked Honeyeater	72	X
White-browed Babbler	67	
Australian Ringneck	61	
Galah	61	
Singing Honeyeater	61	
Grey Shrike-thrush	56	
Rufous Whistler	44	X
Red-capped Robin	39	X
Masked Woodswallow	22	X
Budgerigar	17	X
Chestnut-rumped Thornbill	17	X

I. Coast Ridge-fruited Mallee – Broombush open scrub (12 sites)

This vegetation type has a limited distribution on sandy soils in the wetter south of Eyre Peninsula and has a similar bird fauna to Group R.

Species	% sites recorded	Signif association
Inland Thornbill	86	
Grey Currawong	75	
Grey Shrike-thrush	75	X
Weebill	75	X
Red Wattlebird	67	
Silvereye	67	
Blue-breasted Fairy-wren	58	X
Brush Bronzewing	42	X
Tawny-crowned Honeyeater	33	X
Painted Button-quail	25	X

J. Short-leaf Honey-myrtle – Cutting Grass shrubland (3 sites)

Short-leaf Honey-myrtle *Melaleuca brevifolia* and Scarlet Bottlebrush *Callistemon rugulosus* open heath occurs mostly along fresh or brackish creeklines and waterlogged flats in the southern part of the region. This habitat has been extensively cleared and modified through frequent burning and dryland salinity. Too few sites were surveyed to determine characteristic bird species, although wet heath and Cutting-grass is the main habitat for the Southern Emu-wren (e.g. Morgan 1982, Pickett 2002).

K. Drooping Sheoak low woodland (7 sites)

Drooping Sheoak low woodland supports several bird species that occur more frequently within vegetation types of lower rainfall (e.g. Southern Whiteface, Red-capped Robin and Mulga Parrot), a feature shared by other *Allocasuarina* woodlands that occur within higher rainfall areas (e.g. *A. leuhmannii* in the south-east of South Australia – Stokes 1996). Unfortunately the Drooping Sheoak low woodland on Eyre Peninsula has been severely reduced by clearance, grazing and burning, particularly on the undulating calcrete plains in the west (Bishop & Venning 1986), leading to a depleted bird fauna. The surveys of Sutton (1923) and Cleland (1926) are of particular interest because they include surveys of the Wangary - Elliston - Streaky Bay area when extensive stands of sheoak low woodland were still extant. Cleland (1926) noted Hooded Robins between Talia and Elliston and Elliston to Wangary, a species only recorded at one site during the survey. Cleland (1926) commonly met with the Diamond Firetail in the Elliston area.

Extensive areas of native grass (especially Kangaroo Grass *Themeda triandra*) occurred with sheoaks on southern Eyre Peninsula at the time of European settlement, particularly in the low hills north-east of Port Lincoln (e.g. Smith 1840), although only small, isolated examples are still extant (e.g. Hundred of Yaranyacka). These provide habitat for the Singing Bushlark *Mirafra javanica* , a species that now occurs widely in cereal cropping areas, countering Eckert *et al.'s* (1985) suggestion that it may only have colonised Eyre Peninsula after farming commenced. This habitat may also have been the source of Little Ravens in the region, another species that has expanded into cereal growing areas.

Species	% sites recorded	Signif association
Inland Thornbill	86	
Silvereye	86	
Golden Whistler	71	X
Grey Fantail	71	X
Common Bronzewing	57	

L. Sugar Gum woodland (5 sites)

Sugar Gum woodland is the most important vegetation type for birds on Eyre Peninsula, supporting the greatest number of positively associated species and having a high species richness. Trees contain abundant hollows and the understorey is either open with fallen branches and litter, or is heathy (including Tate's Grass-tree *Xanthorrhoea semiplana* ssp. *tateana*, Broombush and Peach Heath *Lissanthe strigosa*). Abundant nectar is produced in late summer, when other sources are scarce, attracting large numbers of lorikeets and honeyeaters.

The biogeographic importance of the Sugar Gum woodlands on southern Eyre Peninsula has been long recognised, leading first to a camp-out by the Royal Australasian Ornithological Association in October 1909 (Hall 1910, detailed by Barrett 1910a and b) and a subsequent survey by White (1912).

About half of the 13,000 ha of this vegetation type on Eyre Peninsula was burnt in January 2005, resulting in severe impacts on its bird fauna. However, Carpenter (2007) found that most species present immediately before the fire re-established to varying degrees by the end of 2006. 75% of pre-2005 species (60% at survey sites) were recorded in 2006. Most species recorded in 2006 (90%) were equally or more abundant (% of sites and nos. of individuals) at burnt than unburnt sites. Woodland species in very low numbers immediately prior to the fire that were not recorded were Whistling Kite and Peaceful Dove. Other woodland species were much less abundant at burnt compared to unburnt sites, namely Rainbow, Musk and Purple-crowned Lorikeets, White-browed Scrubwren, Weebill, Inland Thornbill, New Holland Honeyeater, Western Yellow Robin, White-browed Babbler and White-winged Chough. Several species (Grey Currawong, Australian Ringneck, Laughing Kookaburra, Striated Pardalote, Common Bronzewing) were particularly prominent in the burnt areas in 2006. Predatory species such as the Grey Currawong and Laughing Kookaburra are known to exploit disturbed habitats when a flush of food is available, so are likely to have increased in abundance immediately after the fire. The survey also found that most bird species of conservation concern had also re-established and were widely distributed in the burnt area, particularly Scarlet Robin and Western Gerygone.

Species	% sites recorded	Signif association
Australian Ringneck	100	
Grey Currawong	100	
Red Wattlebird	100	
Striated Pardalote	100	
Australian Magpie	80	
Grey Fantail	80	X
Laughing Kookaburra	80	X
Superb Fairy-wren	80	X
Weebill	80	
Rainbow Lorikeet	60	X
Sacred Kingfisher	60	X
Western Gerygone	60	X

M. Coastal White Mallee open scrub (15 sites)

Coastal White Mallee occurs mainly on shallow soils with surface calcrete and has a diverse understorey. It is used by a range of mallee birds particularly the Blue-breasted Fairy-wren. Its bird fauna is similar to that of Coastal White Mallee on Yorke Peninsula and in the southern Murray Mallee, where the Blue-breasted is replaced by the similar Variegated Fairy-wren.

Species	% sites recorded	Signif associat^{n}
Inland Thornbill	87	
Grey Shrike-thrush	80	
White-eared Honeyeater	67	
Blue-breasted Fairy-wren	60	X
Weebill	60	
Shy Heathwren	40	X
Purple-gaped Honeyeater	33	X

N. Mallee open scrub (24 sites)

This vegetation type incorporates a range of mallee species *(E. dumosa, E. socialis, E. peninsularis*) on loamy soils usually with an open litter understorey. It has been widely cleared and fragmented and now lacks a distinct bird fauna. It is likely that it was a significant former habitat of the Malleefowl.

Species	% sites recorded	Signif association
Grey Butcherbird	75	
Grey Shrike-thrush	67	
Weebill	63	
Inland Thornbill	54	
Red Wattlebird	54	
Spotted Pardalote	54	
White-eared Honeyeater	54	

O. Red Mallee – Yorrell open scrub (7 sites)

This vegetation type is widely distributed in the north of the region but lacks a distinctive bird fauna.

Species	% sites recorded	Signif association
Grey Shrike-thrush	71	
Red Wattlebird	71	
Weebill	71	X
Striated Pardalote	57	X

P. Dryland Teatree - mallee tall shrubland (8 sites)

This vegetation type occurs mainly in coastal areas and also lacks distinctive species.

Species	% sites recorded	Signif association
Silvereye	75	
Grey Shrike-thrush	63	
Red Wattlebird	63	
Spotted Pardalote	50	
Striated Pardalote	50	
Weebill	50	

Q. Broombush open heath (8 sites)

Broombush *Melaleuca uncinata* open heath is widespread on granite outcrops throughout the study area (especially Cleve Hills), sometimes associated with emergent Drooping Sheoaks. Small outliers also occur in clay hollows on calcrete plains in the west. Characteristic birds include Southern Scrub-robin, Shy Heathwren, Tawny-crowned Honeyeater and Blue-breasted Fairy-wren. Where the Broombush is short, it also provides habitat for the Rufous Fieldwren (e.g. Marble Range – White 1912, Mangalo area – pers. obs.). The Southern Emu-wren also inhabits this vegetation on the Marble Range.

Species	% sites recorded	Signif association
Common Bronzewing	63	
Grey Currawong	63	
Inland Thornbill	63	
Silvereye	63	
Southern Scrub-robin	63	X

R. Ridge-fruited Mallee open scrub (38 sites)

This vegetation type occurs on the parallel north-west to south-east trending dunes that extend across northern Eyre Peninsula from the Great Victoria Desert, often in association with Yumbarra Mallee *E. yumburrana*. It supports a range of characteristic species, particularly White-eared, Purple-gaped and White-fronted Honeyeaters and Spotted Pardalote (Yellow-rumped subspecies). Malleefowl were also associated with this vegetation. These bird species are also found in this vegetation type in the Murray Mallee region.

Species	% sites recorded	Signif association
White-eared Honeyeater	82	X
Weebill	71	
Grey Shrike-thrush	68	
Inland Thornbill	65	
Spotted Pardalote	65	X
Grey Butcherbird	62	
White-fronted Honeyeater	62	X
Crested Bellbird	41	X
Purple-gaped Honeyeater	29	X
Malleefowl	18	X

Discussion

Eyre Peninsula supports a high diversity of terrestrial bird species that reflects the variety of vegetation types present, from arid shrublands to wet woodlands. Birds of eucalypt woodlands are particularly well represented, a habitat that has severely degraded elsewhere in the State (Paton *et al*. 1999). At the State level the region supports significant populations of several species of conservation concern, namely Southern Emu-wren (endemic ssp *parimeda*), Western Whipbird (ssp *leucogaster*), Osprey, White-bellied Sea-eagle, Rock Parrot, Cape Barren Goose, Scarlet Robin, Diamond Firetail, Painted Button-quail, Shy Heathwren, Purple-gaped Honeyeater (mainland ssp.), Restless Flycatcher, White-winged Chough, Western Gerygone and Square-tailed Kite. Of these the Yellow-tailed Black-Cockatoo faces imminent extinction, while populations of the Southern Emu-wren are declining following a series of dry years. Several other species have declined at the regional level, including Chestnut Quail-thrush, Rufous Treecreeper, Hooded Robin and Southern Whiteface. The genetic uniqueness of many species is suspected but unresolved (e.g. Red-lored Whistler, Scarlet Robin, Musk Lorikeet, ?Laughing Kookaburra).

Despite the relative intensity of the survey, the status of several presumed breeding species (Eckert *et al*. 1985) remains obscure, namely Whistling Kite, Peaceful Dove, Hooded Robin, Mistletoebird and Australian Reed-warbler. The Whistling Kite was not recorded during the current survey although one or two pairs still breed near Port Lincoln (L. Bebbington pers. comm.). Peaceful Doves were found at survey sites near Cowell (COW00801) and Hambidge Conservation Park (HAM01001) respectively. The Hooded Robin was found at one site inland from Elliston (COC00401). Mistletoebirds were confined to six sites in the north-east of the region, presumably reflecting the limited distribution of mistletoes in the survey area. The Australian Reed-warbler was not recorded, although occurs regularly in spring-summer at a few wetlands

with reedbeds (*Typha*) at Charlton Gully (J. Cooper pers. comm.).

Introduced bird species are less widespread on Eyre Peninsula compared with the remainder of the agricultural regions of South Australia. The European Goldfinch was not recorded during the survey, but was widespread from Port Lincoln to Wangary in the 1960s (Barnes in Glover 1966). The Spotted Dove has a small population in coastal shrubland and mangroves between Cowell and Arno Bay. The Common Blackbird has spread slowly westwards reaching the west coast in the 1980s (J. Cooper pers. obs.), while the Eurasian Skylark appears to be confined to the south.

The survey provides further evidence (Carpenter 1995) of the importance of Sugar Gum woodland on Eyre Peninsula as a unique bird habitat in South Australia. This habitat needs to be protected and managed to ensure that similar extinctions do not occur as has been predicted in the birds of other outliers such as the Mount Lofty Ranges (Ford and Howe 1980).

The biogeography of Eyre Peninsula is of special interest and is discussed by Eckert *et al*. (1985). In the north-east of the region a belt of arid acacia woodland extends to the sea, dividing the distribution of birds of eucalypt open scrubs and woodlands. It is known as the "Eyrean Barrier" (Keast 1961). Mallee or eucalypt woodland birds that occur east of the barrier but not (unless introduced) on Eyre Peninsula are Sulphur-crested Cockatoo, Little Lorikeet, Crimson Rosella, Eastern Rosella, Red-rumped Parrot, Azure Kingfisher, Laughing Kookaburra, Brown Treecreeper, White-throated Gerygone, Brown Thornbill, Buff-rumped Thornbill, Yellow Thornbill, Little Wattlebird, Noisy Miner, Striped Honeyeater, Yellow-faced Honeyeater, White-plumed Honeyeater, Black-chinned Honeyeater, White-naped Honeyeater, Eastern Spinebill, Rose Robin, Spotted Quail-thrush, Crested Shriketit, Olive-backed Oriole, Red-browed Finch and Beautiful Firetail (Eckert *et. al*. 1985). Additional species that occur only east of the barrier are associated with stringybark (*Eucalyptus baxteri* and *E. obliqua*) open forests and woodlands of the Mount Lofty Ranges (e.g. Possingham *et al*. 2006), a vegetation type absent from Eyre Peninsula.

Birds that occur only west of the Eyrean Barrier are Rufous Treecreeper, Western Yellow Robin and Blue-breasted Fairy-wren. To the west of Eyre Peninsula another belt of arid vegetation (the "Nullarbor Barrier" – Keast 1961) divides the distribution of mallee and eucalypt woodlands between Eyre Peninsula and south-western Australia. However, some species are linked to the north of the barrier in mallee and eucalypt woodlands that extend inland on sand dunes through the Great Victoria Desert (Ford 1971). Native birds that occur only east of this barrier are Musk Lorikeet, Rainbow Lorikeet, Peaceful Dove, Superb Fairy-wren, White-winged Chough, Little Raven, Singing Bushlark and Diamond Firetail. The wetter southern part of Eyre Peninsula has provided a refuge for bird populations during periods of climatic stress (Keast 1971).

Morphological differences in mallee birds on either side of the Nullarbor Plain have been demonstrated for only a few species (Ford 1971 and 1987, Schodde and Mason 1999, Johnstone and Storr 2004), mostly those which breed at the higher rainfall limit (e.g. Western Whipbird – Schodde and Mason 1991, Southern Emu-wren– Schodde and Weatherley 1981). This suggests that most mallee birds are still or have until recently been in contact, although the gap has existed since the last sea-level rise about 12,000 years ago (Ford 1987). Most mallee woodland birds have proved to be linked inland north of the Nullarbor Plain via the Great Victoria Desert (e.g. Malleefowl, Purple-crowned Lorikeet, Rufous Treecreeper, Chestnut Quail-thrush, Major Mitchell's Cockatoo, Gilbert's Whistler, Jacky Winter, Yellow-plumed Honeyeater and Brown-headed Honeyeater – Ford 1971, Black and Badman 1986, Johnstone and Storr 2004, L. Pedler pers. comm.). Others that inhabit mallee-heaths occur sparingly along the thin strip of mallee shrubland that extends (except for about a 30 km gap immediately west of Head of Bight) along southern margin of the plain (e.g. Western Yellow Robin, Dusky Woodswallow, Spotted Pardalote, Golden Whistler, Blue-breasted Fairy-wren, Red Wattlebird, Brush Bronzewing – Ford 1971, Carpenter and Matthew 1997, Carpenter 2009).

The variation in distribution and abundance of mallee birds across Eyre Peninsula is of ecological interest and requires further study. Field surveys suggest that birds of denser mallee (e.g. Purple-gaped Honeyeater, Golden Whistler, White-eared Honeyeater, Western Yellow Robin) become scarcer towards the west of the region. The occurrence of 5 fairy-wren species is also unusual, with up to three species occurring in many areas. The distribution of the two fairy-wrens, Variegated and Blue-breasted, has been compounded by identification problems. The Variegated occurs mainly at the northern fringe of the region but appears to have an outlying population near Elliston, possibly associated with the formerly extensive Drooping Sheoak low woodlands.

Islands along the Eyre Peninsula coast support the majority of breeding sites for the Rock Parrot *Neophema petrophila* in South Australia (Photo: PD Canty).

REPTILES & FROGS

Brandle R[1] and Armstrong D[1]

Introduction

The study area

The study area for the Biological Survey of Eyre Peninsula is defined by the Eyre block of the Eyre and Yorke Biogeographic Region as delineated for an interim biogeographic regionalisation for Australia (Thackway and Creswell 1995). Three subregions (Talia, Eyre Hills and Eyre Mallee) comprise the Eyre Peninsula which is dominated by undulating limestone plains. In many areas these are overlain by longitudinal sand dunes. Significant uplands in the form of the Marble Ranges and Koppio Hills characterise the southern Eyre Hills subregion whilst the hills and ranges to the north of Cleve characterise the northern section of the Eyre Hills subregion. An interesting feature of the Eyre Peninsula are the granite inselbergs that occasionally rise out of the plains. A more detailed summary is presented in the chapter on Physical Environment and can also be found in the Biodiversity Plan for Eyre Peninsula (DEH 2002).

Previous studies

Documented research into the reptiles of the Eyre Peninsula is sparse. The earliest published survey reports relating to reptiles occurring in areas of the peninsula date back to the late 1960's when the Nature Conservation Society of South Australia (NCSSA) conducted general biological surveys to Hambidge wildlife reserve (Bonython & Preiss 1968) and the Hundred of Blesing in 1967 (Preiss 1969). The NCSSA maintained its interest in the Eyre Peninsula mammals with surveys to Lake Gilles Conservation Park in 1973 (Eyre Peninsula Group of NCSSA, unpubl. rpt.), Carappee Hill Conservation Park in 1974 (Aitken in NCSSA unpubl. rpt.), Pinkawillinie Crown land in 1981 (Smith unpubl. rpt.), Coffin Bay to Port Lincoln National Park in 1985 (Atkins & Barley in NCSSA unpubl. rpt. 1994.) and the Kulliparu region in 1990 (Brandle 2000).

Until the 1960s relatively few reptiles were collected for the SA Museum from the study area (30 specimens with reliable location and date data Table 24). The museum holds another 539 specimens that could have been collected anytime in the 1900s as the collection dates had been lost (or were never provided). One species the Curl Snake *Suta suta* can be added to the list in Table 24 from these imprecise records. Others including the Loggerhead Turtle and the Green Turtle are marine reptiles that occasionally wash up on the shores of the Peninsula whilst all freshwater tortoises including the Macquarie Tortoise *Emydura macquarii* are likely to be the results of introductions.

Serious collecting only started in 1965 in association with the NCSSA biological survey activity already mentioned, culminating in the Eyre Peninsula Fauna Survey (BS# 128) which added 14 frog and 857 reptile specimens from survey sites to the SA Museum collection. This included frozen liver samples which are stored with the voucher information and are available for future genetic research. Animals collected opportunely whilst on survey, but not at survey sites, added a further 3 frog and 123 reptile specimens to the collection.

Objectives

This paper reports on information that has been collected from 6 separate surveys, each with their own specific objectives. The location of sites for these surveys are presented in Figure 23 (Mammal chapter). The major surveys contributing to this survey had the following objectives:

- To observe, collect and identify species of vertebrate fauna present in the area by sampling sites selected to represent the diversity of habitats present in the region. The Eyre Peninsula Fauna Survey (BS# 128) conducted across the Eyre Peninsula Biogeographic Region (EPBR) from 2001-2005 based its site selection to complement existing surveys by targeting unsurveyed areas.
- To provide the South Australian Museum with whole animal collections and associated DNA material representative of the diversity of mammals in the region.
- To establish ecological relationships between the vertebrate fauna, other biota and the physical environment across the EPBR.
- To evaluate the conservation status of species and communities within the EPBR, as a basis for conservation strategies.
- To establish a baseline for a long-term monitoring system and associated database to enable subsequent measurement of environmental change.

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Table 24. Numbers of specimens held in the herpetology collection of the South Australian Museum for the Eyre Peninsula biogeographic region and summarised by the decade of their collection. Data for 2001-2009 has been shaded grey as the numbers are not representative of the whole collection for the last decade and don't include many of the 997 records from the Eyre Peninsula Fauna Survey.

Species and Conservation Status	Common Name	1880-1930	1941-1950	1951-1960	1961-1970	1971-1980	1981-1990	1991-2000	2001-2009
FROGS									
Crinia signifera	Common Froglet				1	5	1		
Neobatrachus centralis	Trilling Frog							1	
Neobatrachus pictus	Burrowing frog				2	4	4		7
3	number of species in collection	0	0	0	0	0	2	2	2
25	number of specimens in collection	0	0	0	3	9	5	1	7
REPTILES									
Lizards									
AGAMIDAE - dragons									
Amphibolurus norrisi	Mallee Tree-dragon				1	1	2	1	3
Ctenophorus chapmani	Prickly Dragon					2	6	4	3
Ctenophorus cristatus	Crested Dragon			1		1	3	3	7
Ctenophorus fionni	Peninsula Dragon				7	14	22	5	17
Ctenophorus fordi	Mallee Dragon			1	1	4	14	6	15
Ctenophorus isolepis	Military Dragon					1			
Ctenophorus pictus	Painted Dragon				4	1	9	8	6
Diporiphora linga	Linga Dragon					1			
Moloch horridus	Thorny Devil				2	1	2		2
Pogona barbata	Eastern Bearded Dragon				2	3	5	2	4
Pogona minor	Dwarf Bearded Dragon			3		2	5	3	7
Pogona vitticeps	Central Bearded Dragon			1		3	2	1	
Tympanocryptis lineata	Five-lined Earless Dragon		1			2	3	2	4
CARPHODACTYLIDAE – Knob-tailed geckos									
Nephrurus milii	Barking Gecko				2	5	8		5
Nephrurus stellatus	Starred Knob-tailed Gecko				1	4	15	4	12
DIPLODACTYLIDAE - Ground geckos									
Diplodactylus calcicolus	South Coast Gecko				2	2	12	6	14
Diplodactylus furcosus	Ranges Stone Gecko			1		1	6	1	6
Diplodactylus wiru	Desert Wood Gecko								1
Lucasium bungabinna	Southern Sandplain Gecko								5
Lucasium damaeum	Beaded Gecko					4	4	2	3
Rhynchoedura ornata	Beaked Gecko						1		
Strophurus assimilis	Thorn-tailed Gecko					1	1	6	2
Strophurus elderi	Jewelled Gecko				1	1	1		
Strophurus intermedius	Southern Spiny-tailed Gecko				1	2	1		
GEKKONIDAE -Climbing Geckos									
Christinus marmoratus	Marbled Gecko				3	6	15	1	8
Gehyra lazelli	Southern Rock Dtella				1	3	4	1	15
Gehyra variegata complex	Variegated Gecko group				2	2	1		1
Heteronotia binoei	Bynoe's Gecko				3	5	3		6
PYGOPODIDAE - legless lizards									
Aprasia inaurita	Red-tailed Worm-lizard		1			1	3	2	9
Aprasia striolata	Lined Worm-lizard							5	1
Delma australis	Barred Snake-lizard			1	1	3	5	5	16
Delma butleri	Spinifex Snake-lizard			1	1	2	2	2	10
Delma petersoni	Painted Snake-lizard			1			5	2	9
Lialis burtonis	Burton's Legless Lizard					3	5	2	6
Pygopus lepidopodus	Common Scaly-foot			1	1	3	11	5	8
SCINCIDAE - skinks									
Bassiana trilineata SA: R	Western Three-lined Skink						1	6	1
Cryptoblepharus australis	Desert Wall Skink					1	1		6
Cryptoblepharus pulcher	Striped Wall Skink						9	1	5
Ctenotus atlas	Southern Spinifex Ctenotus	1				5	4	1	19
Ctenotus euclae	Bight Coast Ctenotus					2	1	4	5
Ctenotus leae	Centralian Coppertail					1			
Ctenotus orientalis	Spotted Ctenotus				1	1		2	6
Ctenotus regius	Eastern Desert Ctenotus								2
Ctenotus robustus	Eastern Striped Skink					2	1		5
Ctenotus schomburgkii	Sandplain Ctenotus				2	1	4	3	21
Cyclodomorphus melanops	Spinifex Slender Bluetongue				4	1			8
Egernia richardi	Western Tree Skink			1			1	2	1
Egernia stokesii	Gidgee Skink						1		
Egernia striolata	Eastern Tree Skink						1		
Hemiergis initialis	Western Earless Skink					1	1		5
Hemiergis millewae	Rusty Earless Skink			1	1	1	7		6

Species and Conservation Status	Common Name	1880-1930	1941-1950	1951-1960	1961-1970	1971-1980	1981-1990	1991-2000	2001-2009
Hemiergis peronii	Four-toed Earless Skink				6	10	15	6	20
Lampropholis delicata	Delicate Skink					4	4	2	1
Lerista arenicola SA: R	Beach Slider							1	1
Lerista bougainvillii	Bougainville's Skink					4	1		1
Lerista distinguenda SA: R	Dwarf Four-toed Slider						2		7
Lerista dorsalis	Southern Four-toed Slider				2	3	13	5	21
Lerista edwardsae	Myall Slider				2	2	4	6	22
Lerista taeniata	Ribbon Slider								3
Lerista terdigitata	Southern Three-toed Slider				2	1	7	1	12
Liopholis inornata	Desert Skink				1	1	2	3	6
Liopholis multiscutata	Bull Skink				2			3	
Menetia greyii	Dwarf Skink				2	8	11	10	31
Morethia adelaidensis	Adelaide Snake-eye				1	4		1	3
Morethia boulengeri	Common Snake-eye			1		1	1		2
Morethia butleri	Butler's Snake-eye								4
Morethia obscura	Mallee Snake-eye	1			1	7	11	7	19
Pseudemoia baudini SA: R	Bight Coast Skink				1				
Tiliqua occipitalis	Western Bluetongue			1	1	2	1		6
Tiliqua rugosa	Sleepy Lizard			1		2	11	2	
Tiliqua scincoides	Eastern Bluetongue								1
VARANIDAE - goannas									
Varanus gouldii	Sand Goanna					1	1		
Snakes									
ELAPIDAE - elapid snakes									
Acanthophis antarcticus	Common Death Adder				1		2	1	
Brachyurophis fasciolatus	Narrow-banded Snake					1			
Brachyurophis semifasciatus	Half-girdled Snake					1	3	3	4
Demansia reticulata	Desert Whipsnake				1		3	1	6
Drysdalia mastersii	Master's Snake			1		1	4	1	
Echiopsis curta SA: R	Bardick			1	2	2	3	1	1
Notechis scutatus	Eastern Tiger Snake		1		1	3	4		
Parasuta nigriceps	Mitchell's Short-tailed Snake	1							
Parasuta spectabilis	Mallee Black-headed Snake	1			3		1	4	1
Pseudechis australis	Mulga Snake	1			1		5	2	4
Pseudonaja affinis	Dugite						2	2	5
Pseudonaja aspidorhyncha	Patch-nosed Brown Snake					1		5	
Pseudonaja inframacula	Peninsula Brown Snake			1	5	18	19	4	3
Pseudonaja mengdeni	Gwardar								1
Simoselaps bertholdi	Desert Banded Snake	1		1	1			1	4
TYPHLOPIDAE - blind snakes									
Ramphotyphlops bicolor	Southern Blind Snake			1			2	2	3
Ramphotyphlops bituberculatus	Rough-nosed Blind Snake					3	3	2	2
Turtles									
CHELONIIDAE - sea turtles									
Chelonia mydas AUS: VU SA: V	Green Turtle					1		1	
84	number of species in collection	6	3	19	41	63	68	57	70
1298	number of specimens in collection	6	3	21	80	181	343	175	489
75	number of lizard species	2	2	14	33	54	56	43	59
9	number of snake species	4	1	5	8	8	12	13	11
1	number of turtle species	0	0	0	0	1	0	1	0

The Peninsula Dragon *Ctenophorous fionni* is a rocky outcrop habitat specialist that is endemic to the study area and adjacent Gawler Ranges biogeographic region. (Photo: R. Brandle)

Methods

The surveys contributing to this report form part of the Biological Survey of South Australia. For most fauna survey sites the methods used are consistent with the methodologies outlined in 'Guidelines for Vertebrate Surveys in South Australia' (Owens 2000).

Site Selection and Nomenclature

As with other regional biological surveys in South Australia sites were chosen to represent the biological and geographical diversity of the study area. All surveys with the exception of the Eyre Peninsula Fauna Survey (BS# 128), concentrated on specific localised regions. The Eyre Peninsula Fauna survey avoided re-sampling locations containing existing survey sites to enable maximum coverage of sampling across the peninsula. Site selection for this survey was based on DEH vegetation mapping. Where mapping was absent, topographic, soil and geological maps plus satellite imagery were used in conjunction with existing site information to define potential survey areas. Final site locations in all areas were determined in the field prior to the survey. Where possible sites were selected in the bigger blocks of vegetation containing the largest areas of specific vegetation communities and where accessible via vehicular tracks. Where there was a choice (similar physical and vegetation characteristics), sites were located preferentially in conservation reserves and private Heritage Agreements.

Site names were in accordance with Guidelines for Vertebrate Surveys in South Australia (Owens 2000). Sites were sampled in groups of 12 over 4 nights by a survey team. The base camp from which each survey team accessed the sites was named using a prominent feature in that region. The first three letters of that name became the first three letters of the site code which was then numbered from 1 to 12. All fauna sites were labelled patch 1, e.g. site 1 at the Cocata Camp was labelled COC 001 01, site 2 as COC 002 01. These site labels are referred to as SiteIDs. All sites also have a unique computer generated identification number referred to as PatchID in the Biological Survey Database of South Australia.

Data collection

Reptiles were sampled at sites using a single 50 m line of six (400 mm deep by 150 mm diameter) pitfall traps connected with 300 mm high flywire drift fence. In association with each pitfall trapline was a line of 15 metal box traps, (Elliott Scientific Type A) and two larger wire cage traps (150 x 150 x 500 mm), both baited with rolled oats and peanut butter. These traps were primarily set to target mammals, however they are also effective for some larger reptiles such as *Tiliqua* and *Egernia* species and larger snakes. Spacing between Elliott traps varied from 5 m to 15 m depending on available natural cover and the cage traps were placed at each end of this box trap line. A hessian bag was used around the cage trap to provide some shelter for trapped animals. Traps were left open over a four night period being checked mornings and afternoons each day.

All sites were searched for reptiles by one or more persons for at least one hour. Techniques used included observation, searching through leaf litter, excavating burrows, lifting surface objects such as rocks and logs, and breaking open hollow logs and branches. Indirect techniques such as goanna excavated spider holes, droppings and tracks were also used to detect presence primarily of the Sand Goanna *Varanus gouldii*. A proportion of sites were also sampled using spotlights at night. Observations of active diurnal species were also made daily whilst checking traps. Trapping effort for each site is detailed in Appendix 11 and summarised for each camp in Table 17 (mammal chapter).

Voucher specimens of a male and a female of each species were collected for each locality sampled. These were euthanased by injecting animals with a lethal dose of barbiturate, following which a sample of liver was removed before preserving the animal in 10% formalin. Livers were frozen in liquid nitrogen. All specimens were lodged with the South Australian Museum for future reference and research purposes.

Data storage and analysis

Data was entered onto the Biological Survey Database which forms part of the state-wide Environmental Database of South Australia (EDBSA) maintained by the Department for Environment and Heritage (DEH) SA. This database is regularly updated with taxonomic changes determined by curators at the South Australian Museum. The history of these changes is also stored within the database, enabling changes to be tracked in future.

Following verification of data entry, the data was extracted and reptile and amphibian species lists produced. This was checked for anomalies that relate to data capture, species identification, data collection errors and historic taxonomic changes that were not updated automatically with system wide taxonomic upgrades. A species may be present in the database under a number of names where species have been split into two or more species or subspecies. These are usually flagged as non-current species names with (NC). Where possible all species on the list were assessed and re-assigned to current taxonomy. The complete species list is presented in Appendix 18. The relationship of species to habitat parameters and other species was analysed using the physical site data and the results of the vegetation analysis. Some extra data relating to fire was gathered using fire mapping and attributed to sites. Regional conservation status assessments were made based on frequency of detection.

The Peninsula Brown Snake *Pseudonaja inframacula* is endemic to southern Eyre and southern Yorke Peninsulas and an isolated population in the far west near Nullarbor Station (Skinner 2008). (Photo: AC Robinson)

The Eyre Peninsula is at the distributional centre for the Myall Slider *Lerista edwardsae* which was the fifth most common species encountered at survey sites. (Photo: S Doyle)

Results

Taxonomic Summary

Biological surveys across the study area detected 86 species (3 frog, 69 lizard and 14 snake) with 3222 records at 304 survey sites. Survey site data added an extra 4 species and opportune collection (post 2000) added another 5 species to the SA Museum specimen records for this region. Table 26 lists the species recorded at sites, and lists totals for each of the amphibian and reptile groups and the number of sites at which they were recorded within the six vertebrate surveys contributing to this report. The frog species were all members of the Myobatrachidae Family commonly called the Southern Frogs. Two of these were burrowing frogs that only require temporary surface water to breed. Reptiles were represented by members of 9 Families, of which 7 were lizards and 2 snakes.

There have been some taxonomic revisions which have impacted on the summary table, with a number of currently recognised species having been recorded as a single taxon or species complex at the time of survey. Also the gecko family (formerly Gekkonidae) has been split into 3 families: Carphodactylidae (knob-tailed and thick-tailed geckos), Diplodactylidae (ground geckos) and Gekkonidae (climbing geckos).

Within the Diplodactylidae the Wood/Stone Gecko species complex has been separated into 4 species. During the survey sample periods it was referred to as the *Diplodactylus vittatus* complex and included *D. granariensis* Western Stone Gecko as the recognised Eyre Peninsula and western form. Fortunately 68% of the animals recorded for the Eyre Peninsula Fauna survey were collected as vouchers, enabling the new taxonomy to be updated for half of the surveys records. Of 104 mostly unvouchered records 87 were assigned to *D. calcicolus*, 4 to *D. furcosus*, 1 to *D. wiru* and 12 were unresolved.

Two species of *Gehyra* have been recorded in the study area. The taxonomy has now been resolved though identification in the field can remain difficult. Seven records attributed to Gehyra sp. and 3 to *G. variegata* were updated to *G. lazelli* (formerly Gehyra 2N=44) based on location and nearest vouchered specimens.

The Wall Skinks *Cryptoblepharus* spp. have been taxonomically revised from *C. virgatus* and the species complex formerly referred to as *C. carnabyi* and more recently *C.* cf *plagiocephalus*. The Striped Wall Skink *C. virgatus* has become *C. pulcher* and primarily follows the western coast of the study region. The Desert Wall Skink *C. plagiocephalus* has become 3 species: *C. australis*, *C. pannosus* and *C. ochrus*. Only *C. australis* has been recorded for the study area. Unresolved records were subsequently updated as follows: 6 records were updated to *C. australis* and 3 to *C. pulcher*.

The Brown Snakes *Pseudonaja* spp. have also been taxonomically revised which has resulted in the Western Brown Snake *Pseudonaja nuchalis* being split into 3 species, 2 of which occur with overlapping ranges in South Australia and the study area. These are *P. aspidorhyncha* and *P. mengdeni*. Only two records of *P. nuchalis* were from survey sites, both from the west coast, one of which was collected and confirmed to be *P. aspidorhyncha*.

Common Species

The Sleepy Lizard *Tiliqua rugosa* was recorded at the most number of sites 34%, however smaller species such as the Mallee Snake-eye *Morethia obscura* and the Four-toed Earless Skink *Hemiergis peronii* were the most commonly recorded species. Eighteen species were recorded at more than 10% of sites and their recording rates ranged from 2% to 9% (Table 25). Skinks represent the 5 most common and abundant species. Gecko and Dragon families were also well represented as was one species of Legless Lizard. Five of the seven most common species were the same as those detected at sites in the Mid North and Yorke Peninsula biological survey (Brandle 2008) reflecting the similarity of habitats across these two regions.

Table 25. Reptile species present at more than 10% of 304 survey sites in decreasing site frequency order. Also displayed are the number of records at all sites and the % recording rate (# sp. records/total # records for all spp.).

SPECIES NAME	# sites	% of sites	# records	% recording rate
Tiliqua rugosa	104	34	199	6.2
Menetia greyii	101	33	184	5.7
Morethia obscura	96	32	283	8.8
Hemiergis peronii	77	25	253	7.9
Lerista edwardsae	72	24	157	4.9
Diplodactylus calcicolus	70	23	103	3.2
Lerista dorsalis	58	19	85	2.6
Ctenotus schomburgkii	54	18	138	4.3
Delma australis	51	17	100	3.1
Ctenophorus pictus	42	14	137	4.3
Christinus marmoratus	41	13	95	2.9
Ctenotus atlas	34	11	86	2.7
Nephrurus milii	34	11	89	2.8
Ctenophorus fordi	33	11	134	4.2
Ctenophorus chapmani	31	10	96	3.0
Nephrurus stellatus	31	10	49	1.5
Ctenophorus cristatus	29	10	50	1.6
Gehyra lazelli	29	10	53	1.6

Frogs were poorly assessed by the survey methods because of the timing required to adequately sample this surface water dependent group. As the data implies in Table R3, the Painted Frog is likely to be the most widespread and abundant in the study area as its only requirements to survive in an area is for there to be temporary standing water following heavy rain and

deep enough soil in which to burrow to shelter between rainfall events. The other two species depend on near permanent surface water.

Table 26. Site frequency of reptile and frog species recorded for each survey. The numbers in brackets indicate the number of individuals recorded. Records from repeat visits to sites were not included.

Taxonomic Group Family Name Species Name & cons. status	Common Name	KULLIPARU (NCSSA)	LAKE NEWLAND CP (SEG)	VENUS BAY CP Project	SOUTHERN EYRE	EYRE PENINSULA FAUNA	SHIRROCOE MGTPLAN	# sites	# records
Frogs									
MYOBATRACHIDAE	**3 species**								
Crinia signifera	Common Froglet					1 (1)		1	
Limnodynastes tasmaniensis	Spotted Marsh Frog					1 (1)		1	
Neobatrachus pictus	Painted frog	2 (2)				8 (22)		10	
Lizards									
AGAMIDAE - dragons	**12 species**								
Amphibolurus norrisi	Mallee Tree-dragon				1 (1)	6 (6)		7	7
Ctenophorus chapmani	Prickly Dragon	1 (3)		7 (26)		23 (67)		31	96
Ctenophorus cristatus	Crested Dragon					29 (50)		29	50
Ctenophorus fionni	Peninsula Dragon	1 (1)		2 (10)	3 (5)	18 (40)	1 (1)	25	57
Ctenophorus fordi	Mallee Dragon	6 (7)				27 (127)		33	134
Ctenophorus pictus	Painted Dragon	1 (1)	4 (4)	6 (23)		31 (109)		42	137
Diporiphora linga	Linga Dragon					2 (3)		2	3
Moloch horridus	Thorny Devil					1 (3)		1	3
Pogona barbata	Eastern Bearded Dragon				2 (2)	5 (5)		7	7
Pogona minor	Dwarf Bearded Dragon	1 (1)				11 (16)		12	17
Pogona vitticeps	Central Bearded Dragon					6 (6)		6	6
Tympanocryptis lineata	Five-lined Earless Dragon					4 (6)		4	6
CARPHODACTYLIDAE -Knob-tailed geckos	**2 species**								
Nephrurus milii	Barking Gecko	1 (1)		5 (14)	1 (2)	27 (72)		34	89
Nephrurus stellatus	Starred Knob-tailed Gecko	11 (15)				19 (33)	1 (1)	31	49
DIPLODACTYLIDAE -ground geckos	**7 species**								
Diplodactylus calcicolus	South Coast Gecko	9 (11)		5 (16)		56 (76)		70	103
Diplodactylus furcosus	Ranges Stone Gecko					8 (11)		8	11
Diplodactylus vittatus complex (NC)	Stone Geckos	3 (3)				4 (6)		7	9
Diplodactylus wiru	Desert Wood Gecko					3 (4)		3	4
Lucasium bungabinna	Southern Sandplain Gecko					4 (8)		4	8
Lucasium damaeum	Beaded Gecko					9 (27)	1 (1)	10	28
Strophurus assimilis	Thorn-tailed Gecko					5 (6)		5	6
Strophurus intermedius	Southern Spiny-tailed Gecko					3 (3)		3	3
GEKKONIDAE -climbing geckos	**4 species**								
Christinus marmoratus	Marbled Gecko			1 (1)	8 (20)	32 (74)		41	95
Gehyra lazelli	Southern Rock Dtella					28 (51)	1 (2)	29	53
Gehyra variegata	Tree Dtella					4 (4)		4	4
Heteronotia binoei	Bynoe's Gecko					11 (15)	1 (3)	12	18
PYGOPODIDAE- legless lizards	**7 species**								
Aprasia inaurita	Red-tailed Worm-lizard			1 (1)		16 (17)		17	18
Aprasia striolata	Lined Worm-lizard		1 (1)			2 (2)		3	3
Delma australis	Barred Snake-lizard				3 (3)	48 (97)		51	100
Delma butleri	Spinifex Snake-lizard			1 (1)		14 (20)		15	21
Delma petersoni	Painted Snake-lizard	1 (1)				12 (14)		13	15
Lialis burtonis	Burton's Legless Lizard	1 (1)		1 (1)		9 (10)	1 (1)	12	13
Pygopus lepidopodus	Common Scaly-foot			4 (5)		19 (22)		23	27
VARANIDAE - goannas	**3 species**								
Varanus eremius	Desert Pygmy Goanna					1 (1)		1	1
Varanus gouldii	Sand Goanna					2 (2)		2	2
Varanus rosenbergi SA: V	Heath Goanna				1 (1)			1	1
SCINCIDAE - skinks	**34 species**								
Bassiana trilineata SA: R	Western Three-lined Skink				2 (3)	1 (1)		3	4
Cryptoblepharus australis	Desert Wall Skink					9 (14)	1 (3)	10	17
Cryptoblepharus pulcher	Striped Wall Skink	1 (2)		1 (2)		21 (47)		23	51
Ctenotus atlas	Southern Spinifex Ctenotus					34 (86)		34	86

Taxonomic Group Family Name Species Name & cons. status	Common Name	KULLIPARU (NCSSA)	LAKE NEWLAND CP (SEG)	VENUS BAY CP Project	SOUTHERN EYRE	EYRE PENINSULA FAUNA	SHIRROCOE MGTPLAN	# sites	# records
Ctenotus euclae	Bight Coast Ctenotus	1 (1)		4 (9)		22 (101)		27	111
Ctenotus orientalis	Spotted Ctenotus				2 (4)	27 (64)		29	68
Ctenotus regius	Eastern Desert Ctenotus					4 (6)		4	6
Ctenotus robustus	Eastern Striped Skink					4 (4)		4	4
Ctenotus schomburgkii	Sandplain Ctenotus	3 (3)				50 (134)	1 (1)	54	138
Cyclodomorphus melanops	Spinifex Slender Bluetongue					8 (12)	1 (2)	9	14
Egernia striolata	Tree Skink						1 (1)	1	1
Eremiascincus richardsonii	Broad-banded Sandswimmer					2 (3)		2	3
Hemiergis initialis	Western Earless Skink					20 (23)		20	23
Hemiergis millewae	Rusty Earless Skink	2 (2)				7 (18)		9	20
Hemiergis peronii	Four-toed Earless Skink	1 (1)		3 (4)	10 (57)	63 (191)		77	253
Lampropholis delicata	Delicate Skink				1 (1)	14 (40)		15	41
Lerista arenicola SA: R	Beach Slider					1 (1)		1	1
Lerista bougainvillii	Bougainville's Skink				2 (2)	16 (27)		18	29
Lerista distinguenda SA: R	Dwarf Four-toed Slider	1 (1)				7 (12)		8	13
Lerista dorsalis	Southern Four-toed Slider	3 (3)		3 (3)	11 (24)	41 (55)		58	85
Lerista edwardsae	Myall Slider	1 (1)				71 (156)		72	157
Lerista taeniata	Ribbon Slider					4 (4)		4	4
Lerista terdigitata	Southern Three-toed Slider	1 (1)				20 (27)		21	28
Liopholis inornata	Desert Skink	1 (1)				10 (16)	1 (1)	12	18
Liopholis multiscutata	Bull Skink			1 (1)	3 (5)	5 (20)		9	26
Menetia greyii	Dwarf Skink	2 (2)		6 (10)	7 (8)	86 (164)		101	184
Morethia adelaidensis	Adelaide Snake-eye	1 (1)				9 (24)		10	25
Morethia boulengeri	Common Snake-eye					8 (9)	1 (1)	9	10
Morethia butleri	Butler's Snake-eye					7 (11)		7	11
Morethia obscura	Mallee Snake-eye		1 (2)	4 (10)	11 (19)	80 (252)		96	283
Pseudemoia baudini SA: R	Bight Coast Skink					2 (2)		2	2
Snakes									
ELAPIDAE - front fanged snakes	**12 species**								
Acanthophis antarcticus	Common Death Adder				1 (1)			1	1
Brachyurophis semifasciatus	Half-girdled Snake					7 (8)		7	8
Demansia reticulata	Desert Whipsnake					7 (7)		7	7
Drysdalia mastersii	Master's Snake			4 (6)	3 (3)	5 (9)		12	18
Echiopsis curta SA: R	Bardick					1 (1)		1	1
Notechis scutatus	Eastern Tiger Snake				2 (2)	1 (1)		3	3
Parasuta spectabilis	Mallee Black-headed Snake					2 (2)		2	2
Pseudechis australis	Mulga Snake					2 (3)	1 (1)	3	4
Pseudonaja affinis	Dugite					7 (7)		7	7
Pseudonaja inframacula	Peninsula Brown Snake				8 (8)	7 (8)		15	16
Pseudonaja nuchalis (NC)	Western Brown Snake					1 (1)		1	1
Simoselaps bertholdi	Desert Banded Snake					7 (8)		7	8
TYPHLOPIDAE - blind snakes	**2 species**								
Ramphotyphlops bicolor	Southern Blind Snake	1 (1)				5 (6)		6	7
Ramphotyphlops bituberculatus	Rough-nosed Blind Snake	1 (1)				4 (5)		5	6
Frogs	number of species	1				3			3
	number of records								
Reptiles	number of species	25	4	19	22	80	14		83
	number of records	66	10	151	182	2793	20		3222
	number of sites sampled	20	6	9	20	243	6	304	

The Linga Dragon *Diporiphora linga*, a spinifex specialist, has the bulk of its distribution in the Yellabinna subregion to the north west. It was recorded at two sites in the north west of the study area where it is at the south eastern extreme of its range. (Photo: S Doyle)

Species Richness

The maximum total reptile species richness for any site was 15 with an average of 5.2 (sdev. = 2.59). Figure 31 displays the number of sites supporting each of 1-15 species. Frog species richness for Eyre Peninsula sites was not analysed because of the lack of standard sampling effort for this group.

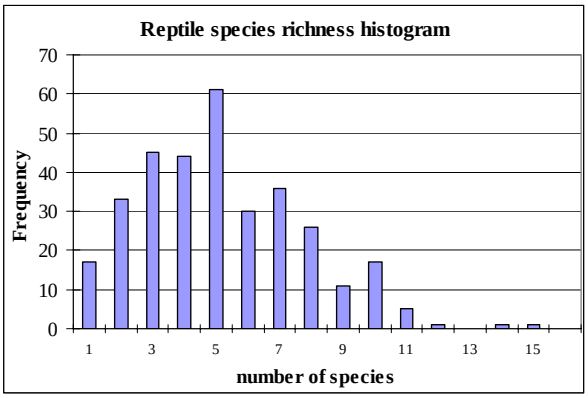

Figure 31. Reptile species frequency histogram.

The maximum number of Families recorded at a site was 7 at two sites. Skinks were the most species rich group with a maximum of 8 species at some sites.

Table 27. Reptile Family species richness at site summary.

Family	Max Number of species	Mean across 328 sites	Mean for sites with spp.	# sites with spp.
Lizards				
AGAMIDAE	5	0.67	1.34	165
CARPHODACTYLIDAE	1	0.21	1.00	68
DIPLODACTYLIDAE	3	0.37	1.08	113
GEKKONIDAE	3	0.28	1.10	84
PYGOPODIDAE	3	0.46	1.20	125
VARANIDAE	1	0.01	1.00	4
SCINCIDAE	8	2.91	3.09	309
Snakes				
ELAPIDAE	3	0.24	1.07	74
TYPHLOPIDAE	2	0.04	1.08	12

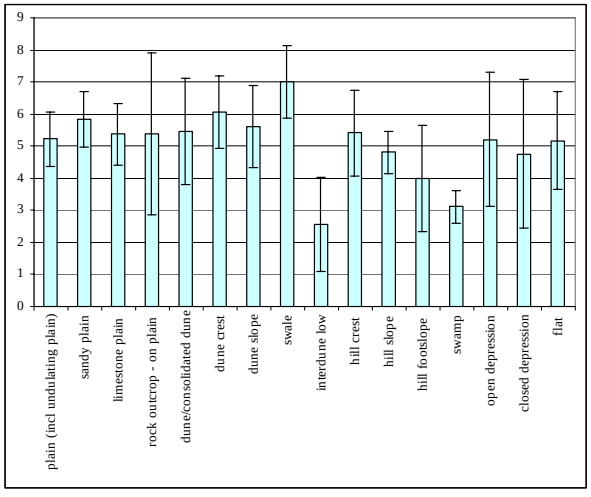

Figure 32. Reptile average site species richness by landform type. Error bars indicate 95% confidence intervals.

Analysis of species richness at sites with the various habit parameters (landform type, surface soil texture, vegetation type and fire history), indicate that there were few significant differences for reptile species richness for most parameters. Apparent trends included: low inter-dune and swamp sites had significantly lower average species richness than plain and dune landform types (Figure 32); soils lacking sand tended to have lower species richness, with clay loam being significantly lower than sandy clay loam, sandy loam and loamy sand (Figure 33); mallee sites had significantly higher species richness than low shrubland sites (Figure 34); the 60 sites with reptile data and known or deduced fire history showed no significant trends for species richness and time since fire (Figure 35).

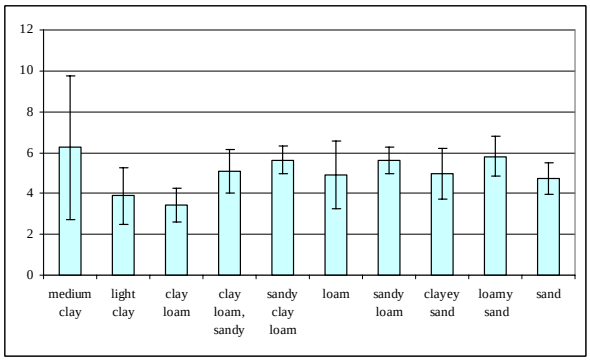

Figure 33. Reptile average site species richness by surface soil texture type. Error bars indicate 95% confidence intervals.

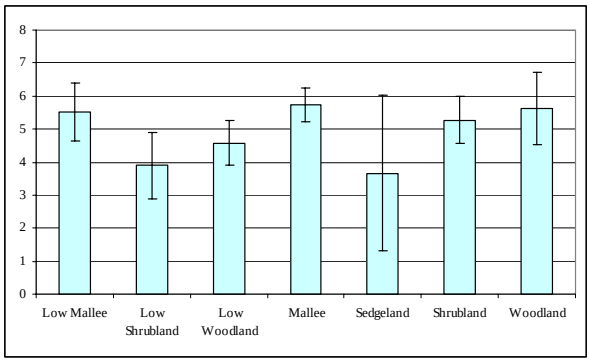

Figure 34. Reptile average site species richness by vegetation structure type. Error bars indicate 95% confidence intervals.

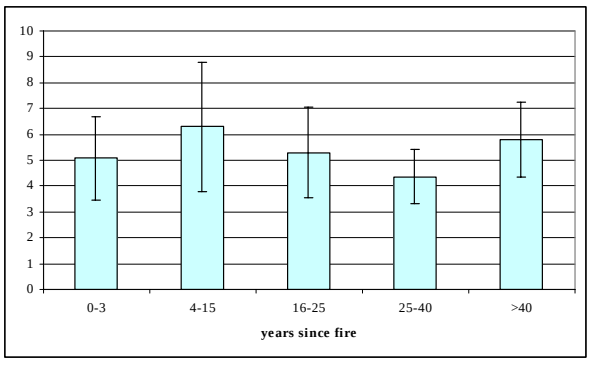

Figure 35. Reptile average site species richness by time since fire. Error bars indicate 95% confidence intervals.

Species Habitat Affinities.

The previous section compared species richness at sites for physical and biotic habitat variables. The relationship of individual reptile species for these habitat variables and reptile species is discussed in the following section. Reptile site frequency was compared with the habitat variables discussed in the 'Physical Environment' chapter.

Comparisons were made against a hypothetical random occurrence, Chi-square analyses, and tested with the Pearson Chi-square statistic using Statexact 4 to model exact probabilities through multiple (10000) iterations on each dataset. Probabilities for occurrence for the categories for each variable were estimated by dividing the number of sites sampled that were recorded as being in a particular category by the total number of sites for all categories.

Thirty-three species were significantly more likely to occur in particular habitat parameter types than would be expected if they had no preferences. Twenty of these only featured in one of the six habitat parameter groups analysed and none in all six categories. Only single species featured in five and four of the six analyses. The species that showed significant trends are detailed in Tables 28-32.

Landform

Landform units were grouped into the following: hills (67 sites including crests, slopes, footslopes and ridges), outcrops (8 sites including cliffs, scarps, outcrops and inselbergs), drainage (8 sites including gully, stream channel, levee and floodout), lake/swamp (28 sites including lakes, pans, swamp, lagoon and depressions), plain (107 sites including sandy, stony, clay, limestone, undulating plains and flats), interdune (15 sites including swales, low interdunes and interdune corridors), dune (30 sites including dune footslopes, slopes, crests and consolidated dune). Fourteen species were significantly more likely to be recorded in particular landforms (Table 28). These included the four dragons from the *Ctenophorus* genus, seven skinks and three geckos (two from the Carphodactylidae).

Table 28. Species site frequencies for landform unit categories that differed significantly from an expected random distribution using Chi-square. Values marked with bold indicate greater than expected frequencies.

SPECIES	drainage	dune	hill	interdune	lake/swamp	outcrop	plain	Total	χ^2 value	exact-*p*
Ctenophorus chapmani	0	**7**	5	**5**	0	0	10	27	13.4	**0.0443**
Ctenophorus fionni	0	2	**9**	0	**3**	**4**	5	23	24.2	**0.0027**
Ctenophorus fordi	**2**	**16**	1	**3**	0	0	8	30	34.1	**0.0003**
Ctenophorus pictus	0	7	5	**6**	**4**	1	11	34	13.0	**0.0487**
Ctenotus atlas	**2**	**16**	2	0	1	0	11	32	28.3	**0.001**
Ctenotus orientalis	0	0	**14**	0	2	**2**	7	25	19.6	**0.0087**
Ctenotus robustus	0	0	1	0	0	**2**	0	3	43.9	**0.0032**
Heteronotia binoei	**1**	0	**6**	0	0	**2**	1	10	22.0	**0.0089**
Lampropholis delicata	**3**	0	**6**	0	0	0	5	14	23.0	**0.005**
Lerista edwardsae	1	**18**	6	3	0	0	**32**	60	20.0	**0.0043**
Liopholis inornata	0	**8**	0	0	0	0	4	12	21.7	**0.0116**
Morethia adelaidensis	**1**	1	2	0	**4**	0	2	10	18.5	**0.0142**
Nephrurus milii	0	2	7	0	2	**5**	**15**	31	24.0	**0.0026**
Nephrurus stellatus	0	**15**	3	**3**	0	0	8	29	27.7	**0.0011**
No. of sites	8	48	67	15	20	8	107	273		

Surface Strew

Eight species appear to be significantly influenced by surface strew size and cover (Table 29), four dragons, 1 *Hemiergis* skink and three geckos.

Table 29. Species site frequencies for surface strew categories that differed significantly from an expected random distribution using Chi-square. Values marked with bold indicate greater than expected frequencies.

SPECIES	pebble (5-50 mm)1 <10%	pebble (5-50 mm)2 10-30%	pebble (5-50 mm)3 30-70%	cobble (51-250 mm)1 <10%	cobble (51-250 mm)2 10-30%	cobble (51-250 mm)3 30-70%	no strew apparent	Total	χ^2 value	exact-*p*
Amphibolurus norrisi	1	**1**	**2**	0	0	0	1	5	28.8	0.0084
Ctenophorus cristatus	**14**	**3**	0	0	0	0	10	27	11.4	0.083
Ctenophorus fionni	4	2	1	**6**	0	**3**	2	18	31.1	0.0013
Ctenophorus fordi	5	0	0	2	0	0	**22**	29	16.2	0.024
Hemiergis initialis	4	**5**	**1**	0	0	0	6	16	14.1	0.0431
Heteronotia binoei	5	0	**2**	0	0	**1**	0	8	28.3	0.0044
Nephrurus milii	8	2	**3**	**10**	**2**	**2**	2	29	27.9	0.0016
Nephrurus stellatus	4	0	0	2	0	0	**22**	28	17.7	0.0161
No. of sites	76	22	7	37	10	5	107	264		

The Starred Knob-tailed Gecko *Nephrurus stellatus*, a sand dune specialist, has the bulk of its distribution in the study area and adjacent Yellabinna region. (Photo: AC Robinson)

Outcrop

Eight species appear to be significantly influenced by surface strew (Table 30), only four of which were also significant in the surface strew analysis. Extra species included a *Ctenotus* skink an extra gecko and two snakes.

Table 30. Species site frequencies for rock outcrop categories that differed significantly from an expected random distribution using Chi-square. Values marked with bold indicate greater than expected frequencies.

SPECIES	nil	<10%	10-50%	>50%	Total	χ^2 value	exact-*p*
Ctenophorus fionni	3	**6**	**8**	**3**	20	46.6	**0.0000**
Ctenophorus fordi	**23**	1	0	1	25	10.8	**0.0234**
Ctenotus atlas	**28**	2	2	0	32	9.0	**0.0383**
Diplodactylus furcosus	2	**2**	0	**2**	6	30.1	**0.0044**
Heteronotia binoei	3	**3**	**3**	**1**	10	10.2	**0.0305**
Nephrurus milii	3	**14**	**7**	**2**	26	32.3	**0.0002**
Pseudechis australis	0	**1**	**1**	**1**	3	18.4	**0.0052**
Ramphotyphlops bituberculatus	1	**2**	0	**1**	4	12.4	**0.0358**
No. of sites sampled	153	65	21	5	244		

Slope

Percent slope classes were grouped into the following categories: 0-1, 2-5, 6-10, 11-20, 20-40 and >40. Only 2 species were significantly associated with particular slope classes. The skink *Ctenotus robustus* with slope classes between 11-40% (χ^2 = 78.3. exact p = 0.0006) and the Peninsula Brown Snake *Pseudonaja inframacula* with slope classes 6-10% and >20% (χ^2 = 20, exact p = 0.0237).

Soils

Surface soil texture classes were grouped into four categories for analysis as follows: clays (14 sites including heavy, medium, light, silty and sandy clays), clay loams (90 sites including all silty and sandy clay loams), loams (67 sites including silty and sandy loams), sands (75 sites including clayey and loamy sands).

Fourteen species were significantly more likely to be recorded in particular soil groups (Table 31). Species included 8 skinks, 3 dragons, 2 geckos and 1 legless lizard.

Table 31. Species site frequencies for surface soil categories that differed significantly from an expected random distribution using Chi-square. Values marked with bold indicate greater than expected frequencies.

SPECIES	CLAYS	CLAY LOAMS	LOAMS	SANDS	Total	χ^2 value	exact-*p*
Cryptoblepharus australis	0	3	**6**	0	9	8.4	**0.0317**
Cryptoblepharus pulcher	**4**	**11**	3	1	19	15.1	**0.0045**
Ctenophorus chapmani	0	4	**13**	3	20	14.7	**0.0043**
Ctenophorus fordi	0	1	4	**21**	26	32.0	**0.0000**
Ctenophorus pictus	1	4	**13**	6	24	9.3	**0.0278**
Ctenotus atlas	0	3	8	**21**	32	21.3	**0.0004**
Ctenotus euclae	0	1	**7**	**9**	17	9.4	**0.0282**
Delma australis	**4**	**26**	8	8	46	10.0	**0.0195**
Gehyra lazelli	0	**11**	**14**	2	27	12.4	**0.0075**
Lampropholis delicata	**3**	**8**	1	2	14	11.0	**0.0139**
Lerista distinguenda SA: R	0	0	1	**6**	7	10.4	**0.0144**
Morethia adelaidensis	**4**	**5**	0	0	9	29.8	**0.0001**
Nephrurus stellatus	0	3	1	**15**	19	21.3	**0.0006**
Tiliqua rugosa	**9**	**46**	16	24	95	10.6	**0.0143**
No. of sites sampled	14	90	67	75	246		

Structural Vegetation

Vegetation structure was grouped into the following broad structural vegetation types to assist with statistically meaningful analysis: Sedgeland, Low Shrubland, Shrubland (including tall shrubland) Mallee (including Low Mallee), and Woodland (including Low Woodland). Some types such as Grassland, Herbland and Hummock Grasslands were omitted because very few sites in these categories were sampled for reptiles.

Thirteen reptile species were significantly more likely to be recorded in particular structural vegetation forms (Table 32). Species included 8 skinks, 4 dragons and 1 legless lizard.

Table 32. Species site frequencies for structural vegetation categories that differed significantly from an expected random distribution using Chi-square. Values marked with bold indicate greater than expected frequencies.

SPECIES	Low Shrubland	Mallee	Sedgeland	Shrubland	Woodland	Total	Chi value	exact-*p*
Cryptoblepharus pulcher	0	7	0	3	**14**	24	19.3	**0.0043**
Ctenophorus fordi	0	**23**	0	2	0	25	18.6	**0.0048**
Ctenophorus pictus	**6**	10	0	**13**	2	31	19.1	**0.0063**
Ctenotus atlas	0	**28**	0	4	0	32	20.0	**0.0059**
Delma butleri	1	7	**1**	**9**	0	18	15.3	**0.0212**
Lampropholis delicata	1	3	0	4	**12**	20	18.4	**0.0063**
Lerista bougainvillii	**2**	1	0	5	**13**	21	24.4	**0.002**
Lerista edwardsae	0	**44**	0	7	7	58	17.5	**0.0059**
Liopholis multiscutata	**3**	4	0	1	0	8	12.4	**0.0383**
Morethia adelaidensis	**6**	0	**1**	2	0	9	58.8	**0.0001**
Pogona minor	0	**11**	0	0	0	11	11.3	**0.0349**
Pseudemoia baudini SA: R	0	0	**1**	1	0	2	44.6	**0.0064**
Tympanocryptis lineata	0	1	**1**	**2**	0	4	23.5	**0.0131**
No. of sites sampled	19	131	3	54	58	265		

The Spinifex Snake-lizard *Delma butleri* was found in heathy shrublands and mallee over Spinifex. (Photo: AC Robinson)

Significant Species

Species can have significance for a number reasons. Species that are threatened with extinction receive legislative recognition at both national level under the Australian Commonwealth's Environment Protection and Biodiversity Conservation (EPBC) Act, and state level under the South Australian National Parks and Wildlife (NPW) Act. This can only occur once enough is known about a species to be able to give it a rating. Species can also have significance for a region if they are restricted to that region (often referred to as endemic) because it is the only place where they can be adequately conserved. Also species with isolated populations, usually at the edges of their range, should be considered significant as loss of species in these areas can represent the beginning of decline into threatened status. At present there are no nationally threatened species recognised as inhabiting the Eyre Peninsula biogeographic region. Only one of the 7 species rated under the South Australian National Parks and Wildlife Act is considered vulnerable the other six having a rare rating. These species are detailed below.

South Australian Rated Species

***Varanus rosenbergi* Heath Goanna SA: V**

The Heath Goanna is the most southerly distributed of all goanna species, being restricted to southern Western Australia and South Australia, with restricted and isolated populations in south-eastern Victoria and New South Wales (Wilson & Swan 2003). In South Australia it is common on Kangaroo Island but mainland populations appear to be restricted, primarily due to vegetation clearance and fragmentation across their former range.

The Biological Databases of South Australia has 7 opportune records for the Heath Goanna. All are from the south eastern tip of the Eyre Peninsula. Two records from the South Australian Museum specimen collection have no accurate date information. One was recorded as being 1 km south west of Port Lincoln which would place it in or near the coastal remnant vegetation south of Kirton Point, or possibly further onto the Billy Light Point peninsula. The second was further south along the coast (2.2 km SSE of Gum Flat which would put it on the coast along the Proper Bay Road about 2 km north of Tulka. This second record is likely to be from within the last 70 years and at present the area is still mostly under native vegetation which is dominated by dense low mallee over thick shrub understorey with outcropping limestone. The SA Museum also has more recent non-specimen records, two road killed animals from the northern part of Lincoln National Park in 1997 and 2000. Biological Survey work from Lincoln National Park recorded one animal at site JUS03401, characterised by Sheoaks over shrubs in the southern central Jussieu Peninsula in Lincoln National Park. The SA DEH opportune database records a further 5 observations, 1 in 2006 and 4 in 2008 also all on the northern half of Lincoln National Park. Habitat descriptions range from the inland side of coastal dunes to mallee with dense understorey. One observation was in mallee with diverse tall heath understorey, 7 years post fire. A number of collections and sighting records for the Heath Goanna have also been documented by NPW staff at Coffin Bay National Park confirming its presence across the southern tip of Eyre Peninsula.

The low reporting rate reflects the restricted distribution of this species on Eyre Peninsula. Museum records indicate the species also occurs on Thistle Island where it is common and Taylor Island, both off the west coast of Lincoln National Park, and Flinders Island, off the West Coast, where it has not been recorded since 1980 (P. Hudson pers com.). There are three other SA records of this species extending west along the coast indicating a wider if disjunct distribution in the region. There are SA Museum non-specimen records from Wahgunyah Conservation Park just west of the Study area boundary, another from the Yalata IPA and a recent record from the eastern end of the Hampton Biogeographic Region, just inside SA.

The Heath Goanna is unlikely to be recognised as a species distinct from the more common and widespread Gould's Goanna *Varanus gouldii* by most people. This is likely to result in interested by-passers being less likely to collect dead animals that they observe. The greater number of more recent records reflects the efforts of one individual in documenting observations of this poorly reported species. Broad scale fox baiting in both Lincoln and Coffin Bay National Parks since 1997 may have contributed to a significant increase in *V. rosenbergi* sightings on the southern end of Eyre peninsula, having been frequently observed in both parks during summer (D. Armstrong pers obs.).

Western Three-lined Skink *Bassiana trilineata* from Murranatta CP. (Photo: K Lloyd)

***Bassiana trilineata* Western Three-lined Skink SA: R**

This species is restricted to south-western Western Australia and the southern tip of Eyre Peninsula. Notes on its habitat include "thick vegetation on wetland margins" (Wilson & Swan 2003) and "moist forest and wetland habitats" (Cogger 2000).

There are 13 locality records for the Western Three-lined Skink on Eyre Peninsula, all but one within conservation reserves of the Southern Eyre Peninsula. One record from the SA Museum database has poor date information and is the most north easterly record for the species in Lincoln National Park. The oldest dated record of this species in SA (December 1985) is also the only non DEH reserve location. This record from the vicinity of Tulka is the result of survey work by the Nature Conservation Society South Australia (NCSSA), unfortunately the specimen was not referenced in the resulting report (Atkins 1994) and no habitat comments were entered into the SA Museum records.

In 1997 the South Australian Herpetological Group (SAHG) collected two specimens for the SA Museum from coastal dunes near Wanna in southern Lincoln National Park. Fauna survey work between 1999 and 2001 recorded animals at 6 locations in Lincoln and 3 in Coffin Bay National Parks. The Coffin Bay records were all associated with coastal dunes whilst 4 of the six Lincoln sites were inland. Habitat characteristics of sites in both parks ranged from shallow limestone mostly sandy soils to dune slopes supporting low Sheoak or Mallee woodland over dense heathy to tall shrub understorey. The Eyre Peninsula Fauna survey collected one specimen in 2004 in Murranatta Conservation Park approximately 15 kms north-east of Coffin bay township. This was on a white sandy rise with Mallee over a diverse heathy shrub and Triodia understorey. A revisit to this site in 2007 following an extremely hot fire in 2005 failed to relocate this species.

***Lerista arenicola* Beach Slider SA: R**

The Beach Slider is restricted to the coastal fringe of eastern Western Australia across to the southern Eyre Peninsula. It has been associated with leaf litter on pale coastal sands (Wilson and Swan 2003).

There are eight records from three localities along the west coast of the Eyre Peninsula biogeographic region. The earliest record was collected by members of the SAHG on coastal dunes near Talia during 1997. A further 3 specimens were collected by D Armstrong in this locality during 2006, under washed up seaweed and driftwood between the high tide mark and the base of coastal fore dunes. The species was also detected opportunely during a fauna survey of Coffin Bay National Park during 2000. This was along the southern coast behind the fore dunes in coastal Spinifex. Two more animals were recorded in the same area during 2001 and 2003. The third locality was further north in Acraman Creek Conservation Park during 2005. Habitat was an infrequently inundated coastal swamp dominated by Salt Bluebush *Maireana oppositifolia* and Samphire Low Shrubland, on sandy clay loam soil. The only other SA record is from St Peter Island off Ceduna in 2006, where it was found under flotsam at the base of a foredune.

Beach Slider *Lerista arenicola* from St Peter Island. (Photo: D Armstrong)

***Lerista distinguenda* Dwarf Four-toed Slider SA: R**

The Dwarf Four-toed Slider is another species with a predominantly south western distribution of which Eyre Peninsula represents an eastern population isolate. They have been found in various habitats including coastal heaths, woodlands and sclerophyll forests (Cogger 2000), sheltering under rocks, logs and leaf litter as well as abandoned stick-ant nests (Wilson & Swan 2003).

Within South Australia *L. distinguenda* is restricted to the Eyre Peninsula biogeographic region. All 10 locations at which it has been recorded in this state are in the central and northern parts of this study area. The earliest specimen was collected in 1967 on the NCSSA survey of Bascombe Wells prior to it becoming a Conservation Park. The next collection was from 1981 also from a NCSSA survey of Pinkawillinie prior to it being made a Conservation Park. The two most westerly records were also the result of a NCSSA survey in 1990 to Kulliparu Conservation Park and surrounding land, much of which is now incorporated into this conservation reserve. The remaining 6 locations were from 7 Eyre Peninsula Fauna Survey sites, all in conservation reserves (Hinck CP, Hambidge CP, Heggaton CP, Munyaroo CP).

Habitat data from 8 biological survey sites indicate that sandy plains and dune landforms, with sand to clayey sand soils are preferred (Table 31). The Ridge-fruited Mallee *Eucalyptus incrassata* was common to all but one site which supported mallee to open low mallee communities mostly over Broombush *Melaeuca uncinata*.

Dwarf Four-toed Slider *Lerista distinguenda* from the Caralue Bluff area (Photo: AC Robinson)

***Pseudemoia baudini* Bight Coast Skink SA: R**
The distribution of the Bight Coast Skink is very similar to the Beach Slider (Wilson & Swan 2003). Animals in Western Australia were generally found under cover on sandy soils in heathy vegetation (Greer 1982).

The majority of South Australian records are from islands (Investigator group near Elliston and St Peter Island near Ceduna). There are four mainland localities. The earliest record was from 1964 on the coastal headland WSW of Elliston. The next mainland record came 26 years later from Lincoln National Park at survey site JUS03301 in 2000. The Eyre Peninsula survey captured animals at two near coastal sites in 2004, 45 km ESE of Elliston. The fourth locality was also the most westerly, approximately 20 km SW of Streaky Bay in 2007. Two individuals were found under a dead Cushion Bush *Leucophyta brownii* between the high tide zone and the base of the coastal slope.

Information from survey sites indicates that they occupy a wide range of habitats from clifftop to swamp. The clifftop supported a typical diverse coastal heathy shrubland on clayey sand, whilst the swamp supported a dense *Gahnia* and *Juncus* sedgeland on a light clay. Both sites had low levels of calcareous surface strew.

Bight Coast Skink *Pseudemoia baudini* from south of Sheringa on the west coast. (Photo: AC Robinson)

***Echiopsis curta* Bardick SA: R**
The Bardick has been described as small, short, stumpy and stout (Cooger 2000, Wildon and Swan 2003). Its distribution is restricted to south-west Western Australia, Eyre Peninsula and the Murray Mallee extending from South Australia into western Victoria and New South Wales. Its habitat includes heaths and mallee over Spinifex vegetation communities (Wilson and Swan 2003). It is usually found under logs and other ground debris on sandy or loamy soils (Cogger 2000).

The SA Museum database holds records from 14 locations within the study area. There are also three records from the Middleback Ranges, just outside the north-eastern boundary of the study area. Only 3 localities are from conservation reserves, one from Hinks Conservation Park, probably from the late 1960's to early 1970's, one from Hambidge Conservation Park during a SA Mammal Club trip in 1984, and one on the west coast in Point Labatt Conservation Park on Bairds Bay Peninsula. The earliest record from 1956 is the only inland record for the western Eyre Peninsula (22 km north of Poochera). In 1962 a specimen was collected from Ceduna and in 1967 from the opposite end of the study area along the Cowell-Whyalla road near the Middleback Ranges. In 1972 the most southerly record was collected along the coastal strip north of Port Neill. Carrappee Hill had several collections in 1974 and 1981. During the 1980's NPWS staff made several collections in the Streaky Bay area including the one at Point Labatt Conservation Park. In the 1990s there was only one record from the north-west in the ranges east of Cleve.

The Eyre Peninsula Biological Survey detected only one Bardick at a site near Secret Rocks in the north-west of the study area (2002). The site was on the crest of a low rise with moderate cover of outcropping gneiss and associated cobble sized strew. Surface soil was sandy loam supporting Broombush *Melaleuca uncinata* over Spinifex *Triodia irritans.* The animal was found sheltering in leaf litter.

Bardick *Echiopsis curta* from the north east of the study area. (Photo: AC Robinson)

***Morelia spilota* Carpet Python SA: R**
The Carpet or Diamond Python is patchily distributed across mainland Australia, occurring in a variety of tropical, temperate and arid habitats. These include rain forests, rocky hills and gorges, rivers and floodplains that support large hollow-forming eucalypt trees (Cogger 2000, Wilson and Swan 2003). South Australian populations appear to be restricted to the Murray River Valley and better wooded areas to the immediate north, the Mt Lofty and Flinders Ranges, Goyders Lagoon and the Cooper Creek Floodplains, the Middleback and Gawler Ranges to the north of the study area, an isolated locality in the Talia sub-region of Eyre Peninsula and the far west of Eyre Mallee sub-region extending into the Yalata sub-region. A population also exists on St Francis Island off the west coast near Ceduna.

The SA Museum has five reliable records for this species within the study area. The earliest dates back to 1934 in the vicinity of Mt Wudinna, described as 10 foot long. The observer indicated that they also occurred on other nearby granite outcrops. More

recently (2006) a 1.8 m snake was observed and photographed just outside the study area in the Gawler Ranges National Park, 50 km to the NNW. There have been no recent records of this species from this part of the study area. The remaining 4 records are from the 1990's. The earliest (1993) were from 2 observations just north of Coulta, an area which has some remnant patches of large Sugar Gum *Eucalyptus cladocalyx* woodland. The remaining three records were collected by Ceduna based NPWS staff in the far west region and included a record from Fowlers Bay Conservation Park (on a track near the edge of a swamp), Bookabie and 27 km ESE of Penong (in light mallee scrub). There is also an undated record with no collector information from near Mt Middleback which just falls inside the study area. Given the number of records from the Middleback Ranges it is likely that this population extends into some of the adjacent long unburnt mallee patches within the study area.

No Carpet Pythons have been recorded at biological survey sites within the study area. This lack of records does not necessarily indicate their absence, as individuals are particular about their periods of activity which may not coincide with survey activity on those sites. The trapping methods used for these surveys are also unlikely to capture this species.

Carpet Python *Morelia spilota* from Yumbarra CP to the north of the study area. (Photo: AC Robinson)

Biogeography

National Context

The Eyre Peninsula is positioned to the west of a conceptual biogeographic dividing line that has been termed the Eyrean Barrier (Keast 1961, Ford 1973). In recent evolutionary history this barrier has divided arid and semi-arid species distributions giving rise to eastern and western forms, some of which are recognised as separate species. This barrier is periodically situated through Spencer Gulf, Lake Torrens and Lake Eyre, and functions primarily through aridity being the main barrier to species dispersal. However in more pluvial times it may also have acted as a water barrier, through elevated sea levels linking Lake Torrens with Spencer Gulf, and further north the super-lake (Lake Dieri) that connected Lake Eyre with Lake Frome. The Flinders Ranges similarly play a role, both as a physical barrier through elevation, and its influence on local climate and habitats. To the west of the study area the Nullarbor Plain also acts as a barrier to the dispersal of many species through its aridity and limited range of habitats. This barrier is thought to be broken during times of low sea levels and higher rainfall, when mallee habitats have been connected along the coast between east and west The Eyre Peninsula has therefore periodically acted as an island for many semi-arid adapted species, as it currently still is for the more southern temperate (Bassian) species (eg the Western Three-lined Skink *Bassiana trilineata*, Eastern Tiger Snake *Notechis scutatus* and Rosenberg's Goanna *Varanus rosenbergi*).

Whilst no reptile or amphibian species are entirely restricted to the study area, five are exclusively endemic to the Eyre Peninsula and adjacent biogeographic regions, such as the Gawler Ranges, Yorke Peninsula and Yellabinna. For all but the Linga Dragon the Eyre Peninsula region supports a large and significant proportion of their distribution (Table 33). The study area represents significant isolated populations for a further 14 species, including most of the conservation rated species discussed earlier. Of the 92 species that are currently known to inhabit the Eyre Peninsula biogeographic region, 22 are at their eastern distributional limit from the west, and 8 are at their western limit from the east. These are listed Table 33, along with endemics and those that have isolated populations.

A number of true arid adapted species also occur in the more arid habitats along the northern boundary of the study area. Most of these were recorded at few sites and are listed in Table 33 and identified with the letter "D" following the species name.

Table 33. Reptile species for which the study area represents a significant distributional boundary. Distributional affinities indicate where the rest of a species distribution lies (E=east and W=west with N and S indicating weather a species is restricted to the north or the south in those other areas). Near Endemic (NE) indicates the species has a distribution restricted to the study area and adjacent biogeographic regions. Isolated (IS) indicates that whilst the species has a wider distribution the populations on Eyre Peninsula are isolated from other regions. The letter D in the species column indicates a true arid adapted species.

SPECIES	COMMON NAME	Distributional Affinities	Near Endemic /isolated pops.
Dragon			
Ctenophorus chapmani	Prickly Dragon	WS	
Ctenophorus cristatus	Crested Dragon	WN	
Ctenophorus fionni	Peninsula Dragon		NE
Ctenophorus isolepis D	Military Dragon		
Diporiphora linga	Linga Dragon	WN	NE
Moloch horridus D	Thorny Devil	WN	

SPECIES	COMMON NAME	Distributional Affinities	Near Endemic /isolated pops.
Pogona barbata	Eastern Bearded Dragon	ES	
Pogona minor	Dwarf Bearded Dragon	WN	
Pogona vitticeps D	Central Bearded Dragon	EN	
Gecko			
Diplodactylus calcicolus	South Coast Gecko	WS	
Diplodactylus furcosus	Ranges Stone Gecko	ES	
Diplodactylus wiru	Desert Wood Gecko	WN	
Lucasium damaeum	Beaded Gecko	WN	
Rhynchoedura ornata D	Beaked Gecko		
Strophurus assimilis	Thorn-tailed Gecko	WS	
Strophurus elderi D	Jewelled Gecko		
Legless Lizard			
Aprasia striolata	Lined Worm-lizard		IS
Delma petersoni	Painted Snake-lizard	W	
Skink			
Bassiana trilineata SA: R	Western Three-lined Skink	W	IS
Cryptoblepharus australis D	Desert Wall Skink		
Ctenotus euclae	Bight Coast Ctenotus	W	
Ctenotus leae D	Centralian Coppertail		
Ctenotus robustus	Eastern Striped Skink	E	
Egernia richardi	Western Tree Skink	W	
Egernia stokesii D	Gidgee Skink		
Egernia striolata	Eastern Tree Skink	E	
Hemiergis initialis	Western Earless Skink	W	
Hemiergis millewae	Rusty Earless Skink		IS
Hemiergis peronii	Four-toed Earless Skink		IS
Lampropholis delicata	Delicate Skink	ES	IS
Lerista arenicola SA: R	Beach Slider	W	
Lerista bougainvillii	Bougainville's Skink	E	IS
Lerista distinguenda SA: R	Dwarf Four-toed Slider	W	IS
Lerista edwardsae	Myall Slider		NE
Lerista terdigitata	Southern Three-toed Slider		NE
Lerista timida D	Dwarf Three-toed Slider		
Liopholis multiscutata	Bull Skink		IS
Morethia butleri	Butler's Snake-eye	W	
Pseudemoia baudini SA: R	Bight Coast Skink	W	IS
Tiliqua scincoides	Eastern Bluetongue	E	
Goanna			
Varanus eremius D	Desert Pygmy Goanna	WN	
Varanus rosenbergi SA: V	Heath Goanna		IS
Snake			
Brachyurophis semifasciatus	Half-girdled Snake	W	
Drysdalia mastersii	Master's Snake		IS
Echiopsis curta SA: R	Bardick		IS
Morelia spilota SA: R	Carpet Python		IS
Notechis scutatus AUS: ssp	Eastern Tiger Snake		IS
Pseudonaja affinis	Dugite	W	
Pseudonaja aspidorhyncha D	Patch-nosed Brown Snake	W	
Pseudonaja inframacula	Peninsula Brown Snake		NE
Pseudechis australis D	Mulga Snake		
Simoselaps bertholdi D	Desert Banded Snake		

Regional Context

The Eyre Biogeographic Region has been split into three sub-regions two of which are split into discreet blocks, the Eyre Hills having a southern and northern block whilst the Eyre Mallee has a large pan peninsula block coming across from the west and splitting the Eyre Hills sub-region and a small north eastern isolate, which is split by the northern block of the Eyre Hills sub-region (Figure 1- Physical Environment chapter).

Twenty-six reptile species were recorded at significantly more sites within particular biogeographic sub-region blocks than was expected from random using goodness of fit (Chi-square) statistics (Statexact 4). These included 7 dragons, 12 skinks, 6 geckos and 1 snake. The details are presented in Table 34, which indicates in bold the site frequencies for subregion blocks that were higher than would be expected from random. The number of species for which a region is significant is highest for the largest most species rich Eyre Mallee west block. However as a proportion of the species richness for each region block, the more easterly distributed Eyre Hills and Eyre Mallee east block were higher: 25-32% of total species recorded compared with 14 and 22% of total species recorded in the Talia and Eyre Mallee west blocks. This may reflect the more complex landforms of the smaller Eyre Hills subregions but could also be related to the lower sampling effort there, leading to lower numbers of species recorded. Table 34 summarises the proportion of known species recorded by the varying sample efforts in each region.

Some species that are likely to be specific to particular subregions were not identified as significant because of low site frequencies (i.e. all species detected at less than 4 sites). These include: for Talia – Common Death Adder *Acanthophis antarcticus*, Bight Coast Skink *Pseudemoia baudini*, Lined Worm Lizard *Aprasia striolata*; Eyre Mallee western block – Linga Dragon *Diporiphora linga*, Desert Wood Gecko *Diplodactylus wiru*; Eyre Hills south block – Western Three-lined Skink *Bassiana trilineata* which also occurs in the southern tip of the Talia Sub-region.

The Painted Snake-lizard *Delma petersoni* has the bulk of its known distribution in the Eyre Peninsula and Yellabinna regions, with three isolated records in southern-central Western Australia. (Photo: AC Robinson)

The Bull Skink *Liopholis multiscutata* is present on the Eyre Peninsula as a population isolated from other populations to the west and east. (Photo: S Doyle)

Table 34. Reptiles species significantly associated with particular biogeographic sub-regions. Number indicate site frequency in each sub-region block. Pearson's chi-square value and the exact *p* value modelled for the datasets using 1000 iterations (Statexact 4). Values in bold indicate observed frequencies that were higher than expected values for a random distribution.

SPECIES	COMMON NAME	Eyre Hills North	Eyre Hills South	Eyre Mallee East	Eyre Mallee West	Talia	Total	Chi value	exact-*p*
Dragons									
Ctenophorus chapmani	Prickly Dragon	0	0	0	**19**	9	28	15.2	**0.0066**
Ctenophorus cristatus	Crested Dragon	**4**	0	3	**20**	0	27	24.6	**0.0004**
Ctenophorus fionni	Peninsula Dragon	3	1	0	2	**17**	23	17.0	**0.0045**
Ctenophorus fordi	Mallee Dragon	**6**	0	**7**	**13**	5	31	28.7	**0.0001**
Ctenophorus pictus	Painted Dragon	0	0	**2**	**18**	14	34	11.0	**0.0287**
Pogona minor	Dwarf Bearded Dragon	0	0	0	**12**	0	12	20.5	**0.0028**
Pogona vitticeps	Central Bearded Dragon	**1**	0	**2**	0	1	4	20.2	**0.0086**
Geckos									
Diplodactylus calcicolus	South Coast Gecko	3	1	0	**37**	**27**	68	18.5	**0.0016**
Diplodactylus furcosus	Ranges Stone Gecko	**2**	0	2	0	2	6	15.2	**0.0092**
Gehyra lazelli	Southern Rock Dtella	**10**	0	1	**16**	0	27	26.2	**0.0003**
Lucasium damaeum	Beaded Gecko	**5**	0	**1**	3	0	9	16.1	**0.0094**
Nephrurus milii	Barking Gecko	0	1	0	4	**27**	32	35.4	**0**
Nephrurus stellatus	Starred Knob-tailed Gecko	3	0	**2**	**22**	2	29	21.8	**0.0008**
Skinks									
Cryptoblepharus pulcher	Striped Wall Skink	0	**6**	0	6	**9**	21	12.1	**0.0203**
Ctenotus atlas	Southern Spinifex Ctenotus	**9**	0	**5**	**16**	2	32	25.2	**0.0003**
Ctenotus orientalis	Spotted Ctenotus	**4**	**9**	**2**	4	7	26	20.3	**0.0016**
Ctenotus schomburgkii	Sandplain Ctenotus	**9**	0	**7**	**26**	6	48	26.5	**0.0001**
Hemiergis initialis	Western Earless Skink	**5**	0	0	**11**	0	16	15.7	**0.0079**
Hemiergis peronii	Four-toed Earless Skink	4	**15**	0	14	**38**	71	28.8	**0.0001**
Lampropholis delicata	Delicate Skink	0	**11**	0	0	3	14	75.1	**0**
Lerista bougainvillii	Bougainville's Skink	0	**8**	0	0	**8**	16	35.9	**0.0001**
Lerista edwardsae	Myall Slider	**17**	0	**6**	**36**	1	60	46.2	**0**
Liopholis inornata	Desert Skink	**2**	0	0	**10**	0	12	12.9	**0.0201**
Morethia boulengeri	Common Snake-eye	**2**	0	**3**	0	1	6	31.8	**0.0002**
Morethia butleri	Butler's Snake-eye	0	0	0	**7**	0	7	11.9	**0.0242**
Snake									
Pseudonaja inframacula	Peninsula Brown Snake	0	**4**	0	0	**6**	10	16.5	**0.0073**
Number of species	for which subregion block is significant	13	6	10	14	7	26		
Number of species	recorded at sites in subregion block	44	24	31	65	51	81		
	Proportion signif. sp. / # sp. at sites	0.3	0.25	0.32	0.22	0.14	0.32		
Number of species	recorded all sources (> 1 record)	58	38	48	79	62	94		
	Proportion of site sp. / all known sp.	0.76	0.63	0.65	0.82	0.82	0.86		
proportion of sites per region	used for χ^2 analyses	0.1386	0.099	0.0462	0.3696	0.3465	303		

Discussion

The biological surveys recorded three frog and 83 reptile species within the study area. No species new to science were discovered through the survey though the surveys added 2 reptile species and associated opportune collections another 5 to the records of the SA Museum bringing the total known to inhabit the study area to 4 frogs and 92 reptiles. Whole animal and associated genetic material collections assisted in the description of new species from two species complexes: the Wood/Stone Gecko complex *Diplodactylus vittatus* and *D. granariensis* which has been split into three species *D. furcosus*, *D. calcicolus* and *D. wiru*; and the Western Brown Snake complex *Pseudonaja nuchalis*, which has been split into *P. aspidohryncha* and *P. mengdeni* for Eyre Peninsula animals.

Two species were not represented by specimens in the SA Museum for the Eyre Peninsula biogeographic region prior to the surveys. Butler's Snake-eye *Morethia butleri* which was found at 7 sites along the northern boundary of the Eyre Mallee biogeographic subregion. The Eastern Desert Ctenotus *Ctenotus regius* was recorded at 5 locations in the Eyre Mallee west and Eyre Hills north blocks.

Whilst few frogs were recorded at survey sites they are an important component of the biodiversity in the region. Four species have been verified as occurring in the region with specimens (SA Museum collection). The "Frogwatch" monitoring program which engages the community in an annual frog call recording program has identified a further 3 (*Litoria ewingii*, *Lymnodynastes dumerilii*, *Pseudophryne bibroni*). Ewing's Tree Frog *Litoria ewingii* and the Eastern Banjo Frog *Lymnodynastes dumerilii* have few records clustered in Port Lincoln and are likely to result from deliberate or accidental introductions by humans. The Brown Toadlet *Pseudophryne bibroni* has been recorded from one location 15 km NNE of Port Lincoln. A call was also noted from a well vegetated hill slope in the southern Koppio Hills (J Van Weenen pers. com.) indicating that further searches for this species are required. Collection of specimens will enable genetic assessment of the relationship of an Eyre Peninsula population to the genetically distinct Flinders Ranges and Mt Lofty Ranges populations, and whether or not the species has been introduced to the region.

The diversity of the Eyre Peninsula reptile fauna was highlighted by low proportion of sites at which the most common species were recorded, less than 35% of sites for Sleepy lizards with only 18 species present at more than 10% of sites. Species richness, which averaged 5.2 species per site was as high as 15, but was not significantly related to physical habitat parameters. However, swamps, clay soils and low shrublands generally supported fewer species.

Thirty-three species were significantly associated with specific habitat parameters. Landform, surface soils and vegetation structure appeared to be a determinant in the likely occurrence for the most species (14 spp.). Half of the species that were significantly associated with one habitat parameter were likely to also be significantly associated with one or more of the others. This was not surprising as there are hierarchical dependencies from landform to soil to vegetation types. Rock outcrop (8 spp.) and surface strew (7 spp.) occurred in only some of the landform types and therefore represent a subset of the other categories. This was reflected in the lower number of species. Reptile species occurrence did not appear to be associated with slope.

The majority of conservation rated reptile species appear to have restricted distributions and isolated populations justifying their ratings. The Heath Goanna is the only species rated as Vulnerable. It was recorded at one site and within the study area appears to be restricted to the southern tip of the Eyre Peninsula. Anecdotal evidence suggests that this species has undergone some recovery within Lincoln and Coffin Bay National Parks, possibly in response to an ongoing fox control program that has been operating in those parks over the last decade (D. Armstrong pers. obs.). Evidence like this indicates its vulnerable status is justified. The only rated species that was recorded at more than three survey sites was the Dwarf Four-toed Slider *Lerista distinguenda* which was located at 8 sites that were spread across the northern central parts of the study area. A recent regional conservation status assessment (Gillam and Urban 2009) assigned it a rare status for the three biogeographic subregions that make up the study area (Appendix 18).

Species with low site frequencies in Table 23 were investigated to assess potential conservation concern. The 21 species (excluding those with existing conservation ratings) that were recorded at less than 4 sites were compared for all data based records in Eyre Peninsula versus South Australia. Many of these low frequency species are marginal to the Eyre Peninsula biogeographic region (eg *Diplodactylus wiru*, *Varanus eremius*, *Diporiphora linga*, *Gehyra variegata*, *Eremiascincus richardsonii*, *Ctenotus robustus*). Others have low recording probabilities using standard survey methodology – this includes many snakes which are only active during certain seasons and climatic conditions (*Parasuta nigriceps* and *P. spectabilis*, *Pseudechis australis*, *Pogona vitticeps*). Some such as the Tiger Snake *Notechis scutatus* have restricted distributions as well as short periods of activity. This species, because of its limited isolated distribution and requirement for moister habitats is probably a species that warrants further assessment and monitoring, particularly in light of changes that may be occurring with projected climate change. *Parasuta nigriceps* is also at the western end of its distribution and within the study area is only known from 3 mainland locations. The only other three mainland locality records west of the Flinders Ranges were all from the adjacent Gawler Ranges to the north. The species is also known from St Peters Island just off the west coast near Ceduna.

All vascular plant and vertebrate taxa known to occur in the study area were recently assessed for regional conservation status at the IBRA subregion level (Gillam and Urban 2009). The results of these assessments at a study area (Eyre IBRA region) scale have been presented in Appendix 18. The least threatened status for species occurring in any of the 3 subregions is what is presented. The ratings include Least Concern (not considered to be threatened) - 48 species, Rare (because of limited range or occupancy of isolated patches) - 40 species, Vulnerable to further decline – 3 species. Five of the recently described taxa were not rated. Two of the Vulnerable rated species were also rated Vulnerable at the state level. The extra species was the Common Froglet *Crinia signifera* which has a very restricted distribution and is reliant on very limited surface waters. All species with low recording rates were also rated as Rare or Vulnerable at the regional level.

The Eyre Peninsula study area has biogeographic significance for 43 of the 92 reptile species which occur within it (Table 33). The 5 near endemic and 14 species that were identified as having populations that were significantly isolated from other regions should also be monitored so that distributional declines can be detected before species become rare or vulnerable to extinction.

Summary

R Brandle

Specific objectives of the Biological Survey of the Eyre Peninsula Biogeographic Region (EPBR) were:
To observe, collect and identify species of plants and vertebrate fauna present in the area by sampling sites selected to represent the diversity of habitats present in the region. The flora and fauna survey conducted across the EPBR from 2001-2005 is the focus of this report, but it builds on a number of previous smaller regional surveys. Information from these surveys is included in this report

- To provide the South Australian Plant Biodiversity Centre and South Australian Museum with collections representative of the diversity of plants, vertebrates and invertebrates in the region.
- To document and classify the patterns of species and communities across the region.
- To establish ecological relationships between the vegetation, vertebrate fauna and the physical environment across the EPBR.
- To evaluate the conservation status of species and communities within the EPBR, as a basis for conservation strategies.
- To establish a long-term monitoring system and associated database to enable subsequent evaluation of broad-scale environmental change.

Plant data from the 1696 visits to survey sites were collated from 22 separate surveys conducted between 1978 and 2008. Fauna data was used from a subset of 283 survey sites which were collated from six surveys conducted between 1990 and 2008. Other data contributing to this report include all collections with known location and date accuracy held by the SA Herbarium for plants and SA Museum for fauna. Also accessed were data contributing to the opportune database which is managed by the SA Department for Environment and Heritage (DEH). These include data from the Atlas of Australian Birds, SA Ornithology Association database, SA Herpetology Group trip reports and SA Field Naturalists Mammal Club trip data.

Physical Data
Survey sites across the Eyre Peninsula study area have sampled native vegetation communities in all environmental associations, at densities ranging from 1.09 to 84.54 km^2 of remnant vegetation per site. The southern regions had the highest density of sites resulting from higher topography diversity and rainfall which is reflected in the diversity of vegetation types, as well as the generally smaller sizes of vegetation remnants.

The distribution of survey sites within landforms across the Eyre Peninsula landscape reflects the dominance of those landforms within the study area. Plains, sand dunes and hills making up more than 80% landforms. The majority of sites were flat or had gentle slopes (85%) with only 3% on steep slopes >18^o.

The dominant rock type, present at approximately half of the sites as outcrop or surface strew, was calcareous at 75% of those sites. Granite, quartzite and ironstone laterite were the next most common types. At the 34% of sites where rock outcrop was present its cover was mostly <10% of the site. This was similar for the 48% of sites with surface strew where pebble and cobble sized stones dominate.

Sands dominated the soil types at the sites sampled within the study area (48% of sites) whilst clays were relatively rare (6% of sites). The remaining sites supported a mix of sandy loams, loams and clay loams.

Bare earth covered less than 50% of the area at most sites with 1-10% cover being most common. Ground cover of litter, which is usually negatively correlated with bare earth, was also highest at less than 50% of sites, with almost a third in the 1-10% class.

Fire history was determined for 13% of sites from a combination of site data and inference from fire mapping. Where fire history was determined it indicated an even spread across 10 year age classes to 40 years. Beyond this fire ages were more difficult to detect and the number of sites is unlikely to be representative.

Vegetation
At least 1167 plant taxa from 85 Families were detected at the 1696 survey sites within the study area, of which 969 were indigenous natives. Compositae (herbs including daisies and thistles), Graminae (grasses) and Leguminosae (acacias, peas etc.) were the most species rich Families with more than 100 species each. Only 7% of taxa were present at 10% or more of the survey sites. The most commonly encountered species, *Melaleuca lanceolata* (Dryland Tea-tree) was present at 40% of sites followed by *M. uncinata* (Broombush) at 30% and only another 19 species were present at 20% or more of sites. Of these 26% were non-indigenous species.

Plant species richness at sites ranged from 1 to 96. Site species richness averaged across all sites within the biogeographic subregion blocks were highest in the wettest and most topographically diverse Eyre Hills south block, and lowest in the drier, sandy soil dominated Eyre Mallee west block. Hill landform types had higher site species richness than all other landform types and tidal flats had the lowest. Sandy soils were significantly less species rich than clay or loam soils. The most species rich floristic communities

were woodland groups associated with moister more fertile hill environments.

194 plant taxa have current Commonwealth or South Australian legislated conservation ratings. Twenty-nine with Australian ratings under the Commonwealth Government "Environment Protection and Biodiversity Conservation Act" (EPBC) and 192 under the South Australian Government "National Parks and Wildlife Act" (NPW). Of these, 103 were detected at survey sites (14 EPBC and 101 NPW). The surveys added an extra 17 new rated species to the SA Herbarium collection. The Eyre Hills bioregion supported the most conservation rated species (66), with the other two biogeographic subregions supporting similar numbers (45 Eyre Mallee and 40 Talia). Species have also been rated at the Herbarium region level which for the Eyre includes the southern part of the Gawler Ranges across to Whyalla. In total 220 of the species recorded within the EPBR had a regional rating whilst a further 60 were rated as poorly known (53) or questionable (7). Twenty-five plant taxa were not recorded in any other biogeographic region in South Australia. However, only 19 of these were unique to the EBR with 5 taxa also occurring in other parts of Australia.

Surveys recorded 198 introduced taxa from 74% of the sites. The average number of introduced species recorded at these sites was 6.9 with a maximum of 32. Only one of these species, Bridal Creeper *Asparagus asparagoides* f. *asparagoides* has been listed as a "Weed of National Significance". The Eyre Hills biogeographic subregion had the highest number of taxa (155) despite only having 28% of sites. This is likely to primarily be driven by higher rainfall in the subregion. Twenty-four species that dominated some of the native vegetation communities sampled were identified by their high (>25%) cover abundance estimates for sites. Some of the listed species are considered greater long term threats to vegetation communities than others. Particularly perennial species such as Bridal Creeper, Perennial Veldt Grass and African Boxthorn.

Site plant taxa data were analysed for similarity based on species composition and relative cover abundance classes using hierarchical cluster analysis. Ninety-five floristic groups were chosen to best represent the diversity of vegetation communities that make up the remnant vegetation of the study area. These were grouped into 36 broad alliances that have been termed clusters. The communities described include coastal shrublands, mangrove forests, samphire low shrublands, grasslands, hummock grasslands, sedgelands, shrublands, mallee woodlands and true woodlands dominated by Eucalypts, Sheoaks or Native Pines. The physical and biotic characteristics of these groups were detailed in the appendices. A number of floristic groups had limited representation in the study area and these were further investigated for conservation significance. From 27 groups 12 were considered to require some follow up assessment of status and potential conservation requirements. One community not adequately sampled by survey sites (Rough barked Manna Gum woodland, 1 site) may be threatened because of its limited distribution and the presence of an introduced and self-sustaining Koala population. This also requires further evaluation.

Fauna

Vertebrate fauna information was collected for birds, mammals, reptiles, and to a lesser extent frogs.

Mammals

The specimen collection at the South Australian Museum confirms that 27 species of native mammal were known to occur on Eyre Peninsula since the arrival of Europeans. Two of the more recent records are likely to have been the result of translocations to the study area. Sub-fossil deposits of mammal skeletal material indicates that this list was probably much greater. An extra 16 species have become extinct in the region over the last 5000 years with many likely to have disappeared since European settlement.

The surveys detected 23 native mammal species at sample sites. This included one from jaw bones that was thought to be extinct, and two resulting from deliberate introductions. The survey also resulted in the addition of a new species, the Grey-bellied Dunnart *Sminthopsis griseoventer*, to the State's known mammal fauna. The Vespertilionidae (evening bats) and Dasyuridae (carnivorous marsupials) were the most species rich of the 10 Families represented in the study area. A further 11 non-native introduced species were also recorded in the study area, 6 of which have widespread feral populations.

The most frequently encountered species were the introduced House Mouse (more than half of the survey sites) and Western Grey Kangaroos, Rabbits and Foxes were present at more than a quarter of the sites. The most frequently detected small ground dwelling mammal was the Western Pygmy-possum. Fewer sites were sampled for bats precluding direct comparison between bats and other mammal groups. Five of the 8 species of bats recorded were detected at more than half the sites that were effectively sampled, indicating that these are likely to be the most common mammals in the study area.

Native mammal species richness was highest at sites on hill-footslopes and sites supporting mallee to woodland vegetation types. Small ground dwelling species richness was highest at sites in low mallee, whilst introduced species were dominant in low shrubland sites.

Investigation of species affinities for habitat parameters indicated that landform parameters were important to up to three species, soils four and structural vegetation nine species, highlighting the importance of vegetation structure in providing habitat.

Two mammal species had Australian Threatened species ratings (Brush-tailed Bettong and Sandhill Dunnart, EPBC Act) and one a South Australian only rating (Common Brushtail Possum, NPW Act). The Grey-bellied Dunnart as a new species for SA has recently been rated as Rare at the regional and state level (Gillam and Urban 2009).

Of the six introduced mammal species that are widespread across the region, four have been have been listed as threatening processes. Predation by foxes and cats (of other mammals in particular, but also birds and reptiles). Competition with other mammals by rabbits and goats, and land degradation which includes removal of palatable plant species – some of which are listed as threatened. The Koala as an introduced native is also a potential threat to vegetation communities – particularly rare and isolated Manna Gum populations.

Populations of four mammal species were identified as being significant from a national biogeographic perspective as being on the eastern or western edges of their distributional ranges. Eight species were found to mostly occur in specific biogeographical subregions. These preferences were mostly related to habitat requirements relating to soils, rocky landforms or vegetation structure and cover.

Birds

The study area supports a high diversity of terrestrial bird species which reflects the variety of vegetation types and climatic zones in the region. Of the 171 species known to inhabit the study area, 150 were recorded at the 273 survey sites sampled for birds. The species list includes 15 shore and water bird species and because survey sites were biased for terrestrial habitats, these species were not discussed further in this report. Also included in the total were six introduced species, the majority of which are widespread throughout the region.

The most species rich families were the raptors, parrots/cockatoos and honeyeaters. Only four species were recorded at more than 50% of sites. The average number of species across all sites was 15.4 with the highest number at one site being 37.

The study area supports eight species that are listed as threatened under the Commonwealth EPBC Act and and extra 27 as threatened or rare under the SA NPW Act. For three EPBC listed species the study area represents a significant proportion of the species' distributions (Malleefowl, Western Whipbird and the endemic Eyre Peninsula subspecies of Southern Emu-wren. Two others, the Plains-wanderer and Red-lored Whistler, have an uncertain distribution in the study area. Both the Thick-billed Grasswren and Slender-billed Thornbill are at the southern margin of their distributions in the north-east of the study area, whilst the Glossy Black-Cockatoo, which was last recorded on the Peninsula in 1964, were summer visitors from Kangaroo Island. For the SA only rated species the study area provides critical habitat for the endemic subspecies of Yellow-tailed Black-Cockatoo, supports significant populations of 6 species, and provides significant habitat for the distribution of another 11 species. Four species are at their southern margins in the north of the study area whilst 5 are occasional visitors or vagrants.

Habitat analyses showed that Red Gum, Mallee Box, Eyre Peninsula Blue Gum and Sugar Gum woodlands supported the highest numbers of species per site, and chenopod low shrublands the lowest. The survey also provides further evidence of the importance of Sugar Gum woodland as a unique bird habitat in SA (Carpenter 1995). The position of the EPBR between major biogeographic barriers is highlighted by the mix of western and eastern distributed species of which the occurrence of five fairy-wren species is a good example.

Reptiles

The specimen collection at the South Australian Museum confirms that three frog and 84 reptile species were known to occur on Eyre Peninsula since the arrival of Europeans. The survey detected three frog and 83 reptile species at sample sites. The Skinks were the most species rich of the nine families of reptiles represented by the species detected at sites. Only four species were detected at more than a quarter of the sites reflecting the diversity of habitat types and climatic range across the study area. Frogs were under sampled by the survey methods used and the burrowing frog is likely to be a much greater component of the terrestrial vertebrate fauna during suitable conditions for above ground activity (i.e. following heavy rains).

Reptile species richness was not significantly associated with most of the physical parameters collected at sites. Trends indicated lower richness at swamps and low interdunes or sites lacking sand in the surface soil (i.e. clay dominated soils). Mallee sites supported significantly higher numbers of species than low shrubland sites. There were also no obvious trends for species richness and time since last fire for those sites with data.

Investigation of reptile species affinities for habitat parameters indicated that landform parameters were important to up to 14 species, surface strew size and cover 8, rock outcrop 8, site slope 2, soils 14 and structural vegetation 13. In total 35 species showed strong preference to one or more of these parameters, landform, soil and structural vegetation appeared to be important for the distributions of similar numbers of species.

No reptile or frog species occurring in the study area was rated as nationally threatened. Of the seven reptile species with a SA NPW Act rating only one was listed as threatened, the remainder being classed as rare. An extra 21 non-rated species that were recorded at very few sites were investigated for conservation status potential. Most species appeared to be at the edge of their distributional range in the study area or were from

hard to detect groups, e.g. many snake species. Two snake species were considered as warranting further assessment.

The Eyre Peninsula study area has biogeographic significance for 43 of the 94 species that occur in it. Five species were near endemic to the study area and 14 were identified as having populations that were significantly isolated from other regions. These species should be monitored to detect distributional declines before they become rare or vulnerable to extinction.

Conclusions

The diversity of landforms and climatic range across the Eyre Peninsula biogeographic region provides for a diversity of plants and animals that make up the vegetation communities still represented in the region. Vegetation clearance and degradation has affected many of these, making conservation action critical for the continued survival of many species and communities. The surveys have been important in providing an overview of the distribution and habitat requirements for many species and provide a baseline for long term comparisons. To detect trends at the population level more detailed monitoring programs need to be established. The survey report provides a basis for prioritising some of these, particularly those that are not already part of established species and vegetation community recovery/management projects.

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APPENDICES

Appendix 1. Site Frequencies for Landform Pattern and Landform Element

Detailed site information is accessible through the Biological Databases of South Australia which can be publicly accessed through NatureMaps www.naturemaps.sa.gov.au or by request to the Science Resource Centre DEH.

Survey No.	Site ID	Site No.	MGA Zone	Easting	Northing
1	PAN00701	17686	53	538047	6375148
1	PAN00801	17687	53	538907	6377114
1	PAN00901	17688	53	539170	6379356
1	PAN01001	17689	53	540169	6384178
1	SCR00601	17668	53	527373	6387772
1	SCR00701	17669	53	527648	6389294
1	SCR00801	17670	53	521408	6388420
21	CO00101	5344	53	483529	6332971
21	CO00201	5345	53	484529	6332971
21	CO00301	5346	53	484729	6333071
21	CO00401	5347	53	485629	6333071
21	CO00601	5349	53	483629	6330971
21	CO00701	5350	53	483829	6331071
21	CO00801	5351	53	480729	6334771
21	CO00901	5352	53	480729	6334971
21	CO01001	5353	53	481029	6334871
21	CO01101	5354	53	483629	6331871
21	CO01201	5355	53	483529	6331371
21	CO01301	5356	53	485329	6331171
21	CO01401	5357	53	485229	6330971
21	CO01501	5358	53	487029	6334971
21	CO01601	5359	53	487029	6335171
21	CO01701	5360	53	483429	6337271
21	CO01801	5361	53	483429	6337571
21	CO01901	5362	53	483429	6338171
21	KU00101	5363	53	497229	6341771
21	KU00201	5364	53	497229	6341721
21	KU00301	5365	53	496129	6341471
21	KU00401	5366	53	496429	6341671
21	KU00501	5367	53	497629	6341471
21	KU00601	5368	53	497729	6341771
21	KU00701	5369	53	497629	6342571
21	KU00801	5370	53	493429	6342071
21	KU00901	5371	53	493429	6341971
21	KU01001	5372	53	494529	6341271
21	KU01101	5373	53	494529	6341171
21	NK00101	5374	53	497629	6354671
21	NK00201	5375	53	497529	6353171
21	NK00301	5376	53	497529	6353071
21	NK00401	5377	53	497629	6353671
21	NK00501	5378	53	497629	6355971
21	NK00601	5379	53	497629	6357571
21	NK00701	5380	53	497629	6357671
21	NK00801	5381	53	497629	6355571
21	NK00901	5382	53	497529	6358171
21	NK01001	5383	53	495329	6352771
27	LN00101	10440	53	486695	6305748
27	LN00301	10442	53	486178	6305439
27	LN00401	10443	53	490062	6297129
27	LN00501	10444	53	488774	6295280
27	LN00601	10445	53	488516	6294971
27	LN00701	10446	53	487429	6294371
27	LN00801	10447	53	486929	6294171
30	AD00143	9299	53	485929	6325671
30	AD00255	9305	53	476929	6338271
30	AD00344	9311	53	478929	6344471
30	AD00445	9312	53	496129	6347671
30	AD00556	9317	53	476829	6343671
30	CA00152	9302	53	439929	6342371
30	CA00253	9303	53	447529	6341771
30	CA00354	9304	53	451829	6342171
30	CA00401	9306	53	439129	6341871
30	CA00503	9307	53	446029	6343971
30	CA00630	9371	53	412829	6417472
30	CA00733	9372	53	420329	6423872
30	CA00834	9373	53	426829	6413972
30	CA00929	9384	53	409129	6417472
30	CA01004	9308	53	452229	6342771
30	CO00185	9297	53	530629	6237471
30	CO00265	9323	53	445129	6386172
30	CO00366	9329	53	437129	6395872
30	CO00480	9356	53	525129	6312671
30	CU00101	9326	53	492429	6352771
30	CU00202	9327	53	492429	6352771
30	FO00113	9363	53	319129	6473172
30	FO00214	9364	53	315129	6476172
30	FO00315	9365	53	336629	6466172
30	FO00588	9377	53	342629	6466172
30	FO00601	9385	53	233628	6463672
30	FO00702	9386	53	232628	6467672
30	FO00803	9387	53	232628	6467672
30	FO00904	9388	53	232628	6467672
30	FO01005	9389	53	227628	6466672
30	FO01106	9390	53	227628	6466672
30	FO01207	9391	53	288629	6467172
30	FO01308	9392	53	287629	6468872
30	IL00137	9342	53	489329	6405672
30	IN00150	9316	53	454429	6376472
30	KO00167	9345	53	581629	6329971
30	KY00178	9352	53	561429	6342671
30	MA00119	9335	53	385329	6457472
30	MA00221	9337	53	394829	6453572
30	MA00323	9339	53	305529	6455172
30	MA00427	9370	53	402529	6434472
30	MA00524	9381	53	389729	6431972
30	MI00161	9320	53	510329	6374471
30	MI00246	9343	53	512429	6358371
30	MI00360	9344	53	500629	6359071
30	MO00147	9313	53	493029	6368871
30	MO00248	9314	53	478529	6368471
30	MO00349	9315	53	481129	6371671
30	MU00122	9338	53	412329	6456172
30	MU00232	9341	53	419829	6445772
30	MU00338	9376	53	426829	6437672
30	NU00209	9378	53	324629	6443172
30	NU00310	9379	53	324629	6443172
30	NU00411	9380	53	347129	6446672
30	PA00270	9348	53	534729	6322471
30	PA00372	9349	53	533029	6323071
30	PI00135	9374	53	445429	6425172
30	PI00236	9375	53	449129	6410472
30	PO00162	9321	53	482129	6383172
30	PO00243	9322	53	480129	6385172
30	PO00342	9354	53	506929	6324171
30	PO00471	9355	53	515629	6321171
30	PO00539	9357	53	511229	6326871
30	PO00640	9358	53	509929	6327371
30	RI00159	9319	53	450329	6356471
30	SH00182	9294	53	511329	6287971
30	SH00283	9295	53	530529	6287171
30	SH00384	9296	53	514229	6269371
30	ST00151	9328	53	426129	6349171
30	TA00157	9300	53	487129	6314771
30	TA00281	9301	53	506129	6306771
30	TA00341	9310	53	498329	6317671
30	TA00458	9318	53	485529	6315571
30	TA00501	9324	53	491129	6383172
30	TA00602	9325	53	491129	6383172
30	TH00117	9367	53	378629	6448772
30	TH00218	9368	53	381629	6452572
30	TO00186	9298	53	559829	6253971
30	VE00105	9309	53	470629	6347171
30	WA00120	9336	53	386929	6458472
30	WA00226	9369	53	400829	6426972
30	WA00325	9382	53	396229	6426172
30	WA00428	9383	53	402929	6417572
30	WA00587	9330	53	548629	6313171
30	WI00131	9340	53	463129	6424572
30	YA00179	9331	53	570629	6349171
30	YA00269	9347	53	537129	6359771
30	YA00374	9350	53	528929	6370071
30	YA00475	9351	53	528929	6370371
30	YA00573	9359	53	534829	6353971
30	YA00676	9360	53	544129	6349971
30	YA00789	9332	53	573129	6350171
30	YA00806	9333	53	570129	6350171
30	YA01077	9361	53	553629	6350171
46	TG025	11391	53	238928	6477172
46	TG026	11390	53	291529	6469572
46	TG027	11389	53	292929	6469372
46	TG028	11388	53	350129	6464272
46	TG029	11387	53	387429	6459622
46	TG030	11386	53	361379	6469572
46	TG031	11249	53	443129	6391172
71	VB00101	12416	53	465679	6326971
71	VB00201	12426	53	463029	6326521
71	VB00301	12427	53	463629	6324871
71	VB00401	12428	53	464329	6323821
71	VB00501	12429	53	464679	6323821
71	VB00601	12430	53	462729	6326271
71	VB00701	12431	53	462529	6325371
71	VB00801	12432	53	462229	6326471
71	VB00901	12434	53	466979	6324071
78	ACR00201	17999	53	410037	6408917
78	ACR00202	18000	53	411327	6410099
78	ACR00203	18001	53	410318	6409175
78	ACR00204	18002	53	411782	6410516
78	ARN00101	18175	53	644140	6245883
78	ARN00102	18177	53	644152	6245812
78	ARN00103	18178	53	644358	6244543
78	CHA00101	17995	53	348298	6440858
78	CHA00102	17996	53	348324	6440871
78	CHA00103	17997	53	349226	6441303
78	CHA00104	17998	53	349869	6441612
78	FRA00101	18162	53	673068	6261636
78	FRA00102	18163	53	673698	6261742
78	FRA00103	18164	53	673525	6261713
78	FRA00104	18165	53	673698	6261742
78	LAU00101	18003	53	388506	6433793
78	LAU00102	18004	53	388423	6433543
78	MIS00101	18157	53	395231	6410232
78	MIS00102	18158	53	395203	6410071
78	MIS00103	18159	53	395318	6410722
78	MIS00104	18174	53	395439	6411404
78	NAD00101	18201	53	359550	6444760
78	TUM00101	17940	53	599870	6190913
78	TUM00102	17941	53	599953	6190951
78	TUM00103	17942	53	600458	6191182
78	TUM00104	17943	53	600734	6191309
78	TUM00105	17988	53	600762	6191322
78	TUM00106	18154	53	599668	6190820
79	LN00101	12748	53	587529	6148871
79	LN00201	12750	53	590829	6149771
79	LN00301	12751	53	591729	6148371
79	LN00401	12752	53	587629	6148171
79	LN00501	12754	53	586729	6144471
79	LN00601	12755	53	587129	6133871
79	LN00701	12756	53	587729	6132171
79	LN00801	12757	53	569429	6144171
79	LN00901	12759	53	585129	6134871
79	LN01001	12762	53	567829	6146671
79	LN01101	12763	53	578629	6146771
79	LN01201	12764	53	581029	6147971
79	LN01301	12765	53	591929	6149171
79	LN01401	12767	53	577429	6145771
79	LN01501	12768	53	570429	6147471
79	LN01601	12769	53	588029	6143971
79	LN01701	12770	53	587829	6144071
79	LN01801	12771	53	587329	6142771
79	LN01901	12772	53	585929	6131271
79	LN02001	12773	53	587929	6128171
79	LN02101	12774	53	590629	6153671
79	LN02201	12775	53	591829	6148471
79	LN02401	12777	53	586629	6128871
79	LN02501	12778	53	571829	6147471
79	LN02601	12779	53	578129	6138471
79	LN02701	12781	53	587929	6131571
79	LN02801	12782	53	579129	6141871
79	LN02901	12783	53	584929	6137171
79	LN03001	12784	53	586829	6129771
79	LN03201	12786	53	567129	6145171
79	LN03301	12787	53	579129	6153071
79	LN03401	12788	53	573629	6152071
79	LN03501	12789	53	587629	6130971
80	BAN00101	13231	53	600993	6181135
80	BAN00201	13232	53	600450	6177780
80	BAN00202	13233	53	600224	6178057
80	BAN00203	13234	53	599789	6178426
80	BAN00204	13235	53	600532	6179346
80	BAN00301	13236	53	598817	6181157
80	BUT00101	13237	53	615088	6232227
80	BUT00301	13238	53	608716	6232046
80	BUT00401	13239	53	604533	6236570
80	BUT00402	13240	53	605161	6235810
80	BUT00403	13241	53	605234	6236422
80	BUT00601	13242	53	592728	6233991
80	BUT00701	13243	53	610307	6229396
80	BUT00702	13244	53	610487	6229852
80	BUT00801	13245	53	613640	6224484
80	BUT00901	13246	53	604472	6228722

Survey No.	Site ID	Site No.	MGA Zone	Easting	Northing
80	BUT01101	13247	53	611115	6217569
80	BUT01201	13248	53	605462	6217962
80	BUT01301	13249	53	596377	6218728
80	BUT01401	13250	53	605601	6211263
80	BUT01501	13251	53	606888	6211599
80	BUT01701	13252	53	615414	6229386
80	BUT01801	13253	53	611110	6229042
80	COC00101	13254	53	592416	6235072
80	COC00201	13255	53	589342	6232372
80	COC00301	13256	53	587784	6235691
80	COC00501	13257	53	584579	6231402
80	COC00701	13258	53	574694	6232620
80	COC01001	13259	53	587591	6222516
80	COC01101	13260	53	586347	6224218
80	COC01301	13261	53	582808	6228697
80	COC01401	13262	53	576126	6225382
80	COC01501	13263	53	571320	6227593
80	COC01601	13264	53	590714	6219497
80	COC01901	13265	53	569668	6220297
80	COC01F02	13266	53	584077	6220679
80	COC01F07	13267	53	587029	6232699
80	COC01F08	13268	53	587319	6232186
80	COC01F14	13269	53	578887	6237697
80	COC02001	13270	53	591462	6211531
80	COC02101	13271	53	586379	6211435
80	COC02401	13272	53	571852	6231642
80	COU00201	13273	53	540201	6203939
80	COU00401	13274	53	539081	6207421
80	COU00501	13275	53	535838	6206010
80	COU00601	13276	53	532392	6206907
80	COU00801	13277	53	541408	6200877
80	COU01001	13278	53	534631	6199996
80	COU01002	13279	53	533836	6199990
80	COU01003	13280	53	534144	6198213
80	COU01101	13281	53	533124	6199322
80	COU01201	13282	53	544786	6191907
80	COU01202	13283	53	544902	6191669
80	COU01203	13284	53	544221	6190770
80	COU01204	13285	53	545569	6188642
80	COU01205	13286	53	543432	6186524
80	COU01301	13287	53	542814	6190628
80	COU01401	13288	53	544989	6195001
80	COU01501	13289	53	533924	6192298
80	COU01502	13290	53	534336	6193163
80	COU01601	13291	53	539725	6184208
80	COU01701	13292	53	535986	6187166
80	COU01A16	13293	53	536505	6201620
80	COU01A20	13294	53	544464	6207440
80	CUM00201	13295	53	561826	6202920
80	CUM00301	13296	53	559358	6203542
80	CUM00401	13297	53	558897	6203653
80	CUM00601	13298	53	556661	6209892
80	CUM00701	13299	53	554684	6208245
80	CUM00801	13300	53	549131	6206337
80	CUM00901	13301	53	549138	6208729
80	CUM01101	13302	53	565777	6199897
80	CUM01201	13303	53	560805	6198213
80	CUM01401	13304	53	558155	6198596
80	CUM01601	13305	53	550530	6197855
80	CUM01701	13306	53	553986	6196531
80	CUM01801	13307	53	563160	6192722
80	CUM01802	13308	53	562742	6193019
80	CUM01902	13309	53	559921	6192022
80	CUM01E05	13310	53	555402	6208163
80	CUM02001	13311	53	552526	6195963
80	CUM02002	13312	53	553417	6194533
80	CUM02003	13313	53	552966	6193414
80	CUM02101	13314	53	547951	6195435
80	CUM02201	13315	53	545980	6193229
80	CUM02401	13316	53	562851	6186770
80	CUM02501	13317	53	547554	6182587
80	JUS00101	13318	53	590458	6153235
80	JUS00201	13319	53	586643	6152505
80	JUS00301	13320	53	589014	6150036
80	JUS00401	13321	53	585887	6151858
80	JUS00402	13322	53	585792	6151479
80	JUS00403	13323	53	585580	6151477
80	JUS00601	13324	53	580336	6154135
80	JUS00701	13325	53	578183	6147330
80	JUS00801	13326	53	573439	6150346
80	JUS00901	13327	53	572364	6151885
80	JUS01001	13328	53	586196	6145317
80	JUS01101	13329	53	587179	6143138
80	JUS01201	13330	53	578410	6145909
80	JUS01401	13331	53	579741	6140319
80	JUS01501	13332	53	580452	6141489
80	JUS01601	13333	53	579631	6142094
80	JUS01701	13334	53	570465	6143569
80	JUS02001	13335	53	585583	6135514
80	JUS02101	13336	53	584908	6134337
80	JUS02201	13337	53	583979	6137271
80	JUS02301	13338	53	582085	6136675
80	JUS02401	13339	53	579032	6137542
80	JUS02501	13340	53	578126	6138404
80	JUS02601	13341	53	590155	6129221
80	JUS02701	13342	53	587049	6129661
80	JUS02901	13343	53	587450	6127749
80	JUS02A08	13344	53	570246	6143886
80	KIA00201	13345	53	538373	6230204
80	KIA00301	13346	53	533855	6237436
80	KIA00302	13347	53	531098	6237383
80	KIA00303	13348	53	531318	6236805
80	KIA00401	13349	53	534974	6234614
80	KIA00501	13350	53	524894	6237103
80	KIA00601	13351	53	525380	6233522
80	KIA00801	13352	53	535169	6225017
80	KIA01201	13353	53	525100	6223648
80	KIA01501	13354	53	539797	6218196
80	KIA01601	13355	53	535755	6218576
80	KIA01701	13356	53	531180	6221324
80	KIA01801	13357	53	529207	6222097
80	KIA01901	13358	53	524767	6218861
80	KIA01C24	13359	53	545283	6235748
80	KIA02002	13360	53	542127	6213137
80	KIA02201	13361	53	530492	6214954
80	KIA02301	13362	53	531681	6210626
80	KIA02401	13363	53	538456	6218810
80	KOP00801	13365	53	579149	6206469
80	KOP01001	13366	53	589640	6201189
80	KOP01002	13367	53	589181	6201195
80	KOP01301	13369	53	574107	6197319
80	KOP01401	13370	53	571601	6195862
80	KOP01501	13371	53	590425	6188708
80	KOP01601	13372	53	591387	6194897
80	KOP01801	13373	53	584787	6194741
80	KOP01901	13374	53	581397	6193423
80	KOP01B02	13375	53	576400	6185947
80	KOP01B11	13368	53	588934	6198997
80	KOP01B13	13376	53	591183	6203521
80	KOP01B14	13364	53	588929	6203771
80	KOP01B18	13377	53	571766	6204934
80	KOP01B21	13378	53	591502	6195062
80	KOP02101	13379	53	582421	6194462
80	KOP02401	13380	53	577385	6184129
80	KOP02601	13381	53	576272	6186123
80	LIN00101	13382	53	593197	6181195
80	LIN00201	13383	53	588867	6181945
80	LIN00601	13384	53	575687	6181774
80	LIN00701	13385	53	575109	6180014
80	LIN00801	13386	53	574610	6177955
80	LIN00901	13387	53	573574	6177596
80	LIN01001	13388	53	572807	6180764
80	LIN01301	13389	53	584604	6168962
80	LIN01501	13390	53	577039	6173752
80	LIN01601	13391	53	569523	6174268
80	LIN01801	13392	53	576171	6168350
80	LIN02101	13393	53	569235	6167597
80	LIN02201	13394	53	580839	6154508
80	LIN02501	13395	53	576710	6154849
80	LIN02701	13396	53	571777	6156321
80	LIN02801	13397	53	568814	6156689
80	LIN02B02	13398	53	588720	6181604
80	LIN02B14	13399	53	569260	6175793
80	LIN02B18	13400	53	569075	6171583
80	LIN02B23	13401	53	572532	6176862
80	LIN03001	13402	53	570664	6174624
80	NEI00101	13403	53	634275	6236635
80	NEI00201	13404	53	629845	6236078
80	NEI00301	13405	53	626574	6236142
80	NEI00401	13406	53	625193	6232749
80	NEI00501	13407	53	620693	6234317
80	NEI00601	13408	53	616313	6236082
80	NEI00701	13409	53	625282	6228711
80	NEI00801	13410	53	624277	6225220
80	NEI00901	13411	53	623972	6224626
80	NEI01001	13412	53	619564	6229666
80	NEI01101	13413	53	624288	6223332
80	NEI01201	13414	53	621030	6221146
80	NEI01301	13415	53	621922	6217234
80	NEI01401	13416	53	617223	6214673
80	NEI01601	13417	53	623367	6224642
80	NEI01G04	13418	53	616071	6217355
80	SLE00101	13419	53	565624	6154329
80	SLE00201	13420	53	568714	6151807
80	SLE00401	13421	53	567110	6146307
80	SLE00502	13422	53	562797	6152068
80	SLE00901	13423	53	551143	6147309
80	SLE01101	13424	53	549779	6148979
80	SLE01401	13425	53	564941	6144394
80	SLE01501	13426	53	563024	6145991
80	SLE01701	13427	53	562070	6143968
80	SLE01702	13428	53	560703	6142438
80	SLE01703	13429	53	559027	6142670
80	SLE01801	13430	53	556540	6141421
80	SLE01901	13431	53	554149	6142525
80	SLE02201	13432	53	561346	6138352
80	SLE02301	13433	53	562500	6134499
80	SLE02401	13434	53	559736	6136156
80	SLE02501	13435	53	559309	6138931
80	SLE02601	13436	53	557378	6133827
80	SLE02602	13437	53	557260	6135894
80	TUM00101	13438	53	614814	6206376
80	TUM00201	13439	53	606636	6204806
80	TUM00301	13440	53	603858	6205646
80	TUM00401	13441	53	601066	6204282
80	TUM00501	13442	53	599259	6203099
80	TUM00601	13443	53	596938	6206357
80	TUM00701	13444	53	596999	6209131
80	TUM00801	13445	53	594059	6205992
80	TUM01001	13446	53	603426	6198919
80	TUM01101	13447	53	602555	6198770
80	TUM01201	13448	53	600078	6196599
80	TUM01401	13449	53	592778	6200696
80	TUM01402	13450	53	592559	6200516
80	TUM01501	13451	53	596965	6201934
80	TUM01601	13452	53	602016	6191556
80	TUM01602	13453	53	601675	6191756
80	TUM01701	13454	53	601597	6193460
80	TUM01801	13455	53	598073	6193442
80	TUM01901	13456	53	597515	6193485
80	TUM02001	13457	53	599106	6183530
80	TUM02101	13458	53	596074	6184744
80	TUM02201	13459	53	593548	6184369
80	TUM02301	13460	53	608892	6207206
80	TUM02401	13461	53	602599	6205035
80	TUM02501	13462	53	603013	6204989
80	TUM02601	13463	53	601156	6203283
80	WAG00101	13464	53	542908	6181503
80	WAG00201	13465	53	540088	6177692
80	WAG00301	13466	53	538473	6179330
80	WAG00302	13467	53	538653	6178821
80	WAG00303	13468	53	537938	6178965
80	WAG00401	13469	53	536173	6181296
80	WAG00403	13470	53	535421	6180207
80	WAG00501	13471	53	535951	6179962
80	WAG00601	13472	53	527218	6178668
80	WAG00602	13473	53	527239	6179721
80	WAG00603	13474	53	525161	6181149
80	WAG00801	13475	53	542678	6169932
80	WAG00901	13476	53	545006	6169551
80	WAG01001	13477	53	536498	6172912
80	WAG01002	13478	53	536377	6172385
80	WAG01003	13479	53	537717	6171476
80	WAG01101	13480	53	532444	6170094
80	WAG01102	13481	53	532630	6172391
80	WAG01201	13482	53	529312	6173528
80	WAG01202	13483	53	528898	6174398
80	WAG01301	13484	53	527509	6175209
80	WAG01401	13485	53	541527	6168218
80	WAG01501	13486	53	540968	6167594
80	WAG01601	13487	53	538393	6164012
80	WAG01801	13488	53	531860	6163572
80	WAG01901	13489	53	529973	6162059
80	WAG02001	13490	53	532782	6165963
80	WAG02201	13491	53	535937	6162332
80	WAG02301	13492	53	531289	6162307
80	WAG02F17	13493	53	536140	6172371
80	WAN00101	13494	53	565564	6177852
80	WAN00102	13495	53	565904	6177362
80	WAN00103	13496	53	565765	6176763
80	WAN00201	13497	53	561930	6178714
80	WAN00301	13498	53	555486	6175904
80	WAN00302	13499	53	555043	6175656
80	WAN00401	13500	53	555001	6177954
80	WAN00402	13501	53	554885	6176771
80	WAN00601	13502	53	546511	6181081
80	WAN00701	13503	53	547826	6179947
80	WAN00801	13504	53	568727	6172382
80	WAN00802	13505	53	568890	6172150
80	WAN01001	13506	53	558656	6170680
80	WAN01501	13507	53	548290	6170572

Survey No.	Site ID	Site No.	MGA Zone	Easting	Northing
80	WAN01601	13508	53	548860	6170802
80	WAN01801	13509	53	558111	6165804
80	WAN01802	13510	53	557850	6165529
80	WAN02A33	13511	53	561660	6168282
80	WAN02A34	13512	53	566751	6165116
80	WAN02D09	13513	53	568337	6172325
80	WAN02D21	13514	53	555972	6161856
80	WHI00101	13515	53	519360	6186414
80	WHI00201	13516	53	518943	6189297
80	WHI00301	13517	53	517834	6185884
80	WHI00401	13518	53	517458	6185821
80	WHI00501	13519	53	514497	6179535
80	WHI00601	13520	53	513579	6179251
80	WHI00801	13521	53	519742	6182201
80	WHI00901	13522	53	518840	6181441
80	WHI01001	13523	53	518873	6179865
80	WHI01101	13524	53	518618	6177867
80	WHI01201	13525	53	522325	6181695
80	YEE00201	13526	53	561088	6237543
80	YEE00301	13527	53	559575	6237222
80	YEE00401	13528	53	558039	6233323
80	YEE00501	13529	53	557956	6233415
80	YEE00701	13530	53	556005	6232935
80	YEE00901	13531	53	547988	6231750
80	YEE01301	13532	53	551867	6228338
80	YEE01801	13533	53	552189	6222514
80	YEE01901	13534	53	552055	6222251
80	YEE01F25	13535	53	552002	6221584
80	YEE02101	13536	53	564738	6214077
80	YEE02301	13537	53	566264	6216436
82	ARN00101	14578	53	639302	6238677
82	ARN00102	14577	53	638946	6238426
82	ARN00103	14579	53	640337	6239625
82	ARN00104	14580	53	640016	6239425
82	ARN00201	14590	53	648354	6248266
82	ARN00202	14591	53	648410	6248386
82	ARN00203	14581	53	648729	6248564
82	ARN00204	14592	53	648101	6248369
82	ARN00301	14588	53	660998	6255125
82	ARN00302	14589	53	661061	6255356
82	BOO00101	13759	53	266754	6465332
82	BOO00201	13760	53	267230	6465472
82	BOO00301	13761	53	271911	6465442
82	BOO00401	13764	53	273449	6464646
82	BOO00501	13762	53	279238	6462563
82	BOO00601	13763	53	281564	6462936
82	CAL00101	13946	53	430755	6340660
82	CAL00201	13945	53	431242	6336182
82	CAL00202	13944	53	431488	6336153
82	CAL00203	13943	53	431786	6336083
82	CAL00204	13941	53	432248	6336540
82	CAL00301	13937	53	441211	6329101
82	CAL00302	13936	53	441175	6329584
82	CAL00303	13938	53	441590	6330139
82	CAL00304	13935	53	441278	6329635
82	CAL00401	13940	53	446013	6332408
82	CAL00402	13939	53	445941	6332744
82	CAR00101	13732	53	407937	6407328
82	CAR00102	13731	53	407422	6407366
82	CAR00103	13730	53	408120	6407777
82	CAR00201	13733	53	417684	6408910
82	CAR00202	13734	53	417860	6409004
82	CAR00203	13735	53	418441	6408990
82	CHA00101	13921	53	335567	6435043
82	CHA00102	13920	53	335594	6435311
82	CHA00103	13919	53	335748	6435447
82	CHA00104	13918	53	335474	6435789
82	CHA00201	13924	53	341920	6438490
82	CHA00202	13923	53	342178	6438550
82	CHA00203	13922	53	342192	6438756
82	CHA00301	13934	53	344501	6438734
82	CHA00302	13933	53	344592	6439013
82	CHA00303	13926	53	344902	6439356
82	CHA00304	13925	53	344901	6439673
82	CHA00401	13915	53	348231	6436560
82	CHA00402	13914	53	347909	6436950
82	CHA00403	13913	53	348277	6437402
82	CHA00501	13917	53	353367	6438823
82	CHA00502	13916	53	353327	6439001
82	COL00101	13737	53	392323	6403403
82	COL00102	13738	53	392783	6403311
82	COL00201	13739	53	393489	6401712
82	COL00301	13740	53	396271	6401264
82	COL00401	13744	53	397815	6403220
82	COL00402	13745	53	398004	6403674
82	COL00403	13742	53	397582	6403270
82	COL00404	13741	53	397391	6402997
82	COL00405	13743	53	397712	6403479
82	COL00501	13877	53	393065	6400118
82	COL00502	13878	53	393256	6399984
82	COO00101	13756	53	246039	6453407
82	COO00102	13755	53	246328	6453746
82	COO00103	13754	53	246125	6453921
82	COO00201	13758	53	247992	6454446
82	COO00301	13753	53	250978	6456642
82	COO00401	13772	53	252906	6455990
82	COO00402	13771	53	252958	6456009
82	COO00501	13747	53	258464	6455272
82	COO00502	13746	53	259344	6454430
82	COO00503	13749	53	261019	6454068
82	COO00504	13769	53	259914	6455423
82	COO00505	13770	53	259029	6455811
82	COO00506	13748	53	261118	6454247
82	COO00602	13751	53	264016	6463682
82	COO00604	13750	53	263478	6464218
82	COU00101	15882	53	531783	6208500
82	COU00102	15883	53	532303	6208200
82	COU00103	15885	53	532051	6207600
82	COU00104	15884	53	532304	6207935
82	COU00105	15886	53	532175	6207218
82	COW00101	14565	53	684293	6266745
82	COW00102	14567	53	684485	6266781
82	COW00103	14566	53	684611	6266791
82	CUN00101	13768	53	293481	6460288
82	CUN00102	13767	53	293639	6460467
82	CUN00103	13765	53	293696	6460652
82	CUN00104	13766	53	293846	6460600
82	ELL00101	13789	53	485485	6281655
82	ELL00102	13788	53	485713	6281555
82	ELL00103	13787	53	485652	6281404
82	ELL00201	13786	53	484785	6279503
82	ELL00202	13784	53	485243	6279164
82	ELL00301	13783	53	490654	6274806
82	ELL00302	13782	53	490738	6275010
82	ELL00303	13780	53	491633	6275539
82	ELL00304	13781	53	491308	6275287
82	ELL00401	13795	53	498767	6270424
82	FOW01	14059	53	226309	6462617
82	FOW02	14061	53	226516	6462697
82	GIB00101	14587	53	666006	6257606
82	GIB00201	14585	53	674408	6260210
82	GIB00202	14586	53	674516	6260481
82	GIB00203	14584	53	674334	6260274
82	GIB00301	14582	53	679871	6262959
82	GIB00302	14583	53	679828	6263064
82	HAS00101	13729	53	415739	6379596
82	HAS00102	13728	53	412046	6379041
82	HUD00101	13790	53	501806	6267036
82	JUS00101	15898	53	589177	6127270
82	JUS00102	15899	53	589257	6127623
82	JUS00103	15900	53	589257	6127885
82	JUS00104	15901	53	588316	6127684
82	JUS00105	15902	53	586613	6128875
82	JUS00202	15924	53	592160	6149242
82	JUS00203	15926	53	591889	6148909
82	JUS00204	15923	53	591898	6149459
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82	KIA00101	15908	53	525421	6228373
82	KIA00102	15909	53	525688	6228376
82	KIA00103	15910	53	525810	6228625
82	KIA00104	15911	53	525964	6229164
82	KIA00105	15912	53	526187	6229106
82	KIA00201	15903	53	528867	6215893
82	KIA00202	15904	53	528555	6216457
82	KIA00203	15905	53	528832	6216646
82	KIA00204	15906	53	529149	6216837
82	KIA00205	15907	53	529771	6217509
82	KUR00201	14290	53	230132	6456972
82	KUR00202	14291	53	230262	6457177
82	KUR00203	14292	53	230604	6457172
82	KUR00204	14313	53	230386	6457587
82	KUR00205	14312	53	230991	6457496
82	KUR00301	14283	53	235782	6453157
82	KUR00302	14289	53	235781	6453553
82	KUR00303	14310	53	236963	6453498
82	KUR00304	14311	53	234753	6454970
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82	NUN00102	13905	53	323716	6440343
82	NUN00103	13903	53	323924	6440448
82	NUN00201	13912	53	323758	6435349
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82	NUN00203	13909	53	325239	6436715
82	NUN00204	13910	53	324203	6436976
82	NUN00205	13908	53	324885	6438085
82	SEA00101	13949	53	425564	6348078
82	SEA00102	13942	53	425774	6348099
82	SEA00201	13948	53	422103	6347141
82	SEA00301	13947	53	429285	6342660
82	SHE00101	13800	53	515609	6251961
82	SHE00102	13799	53	515774	6252398
82	SHE00103	13798	53	515687	6252833
82	SHE00104	13797	53	516150	6252762
82	SHE00201	13794	53	517790	6249198
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82	SLE00101	15921	53	557388	6134485
82	SLE00102	15920	53	558053	6133211
82	SLE00104	15918	53	562808	6133692
82	SLE00105	15919	53	562259	6133639
82	SLE00106	15917	53	562733	6135163
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82	SLE00204	15895	53	563124	6136579
82	SLE00205	15896	53	563326	6136848
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82	STR00102	13727	53	418283	6370847
82	STR00201	13959	53	416431	6362554
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82	STR00203	13957	53	413798	6361232
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82	STR00302	13955	53	412548	6358352
82	STR00303	13953	53	412235	6358706
82	STR00401	13951	53	418061	6358099
82	STR00402	13952	53	418279	6358036
82	STR00501	13950	53	425555	6353850
82	TAL00101	13773	53	476382	6317203
82	TAL00102	13774	53	476430	6317519
82	TAL00103	13775	53	476664	6317540
82	TAL00104	13776	53	476859	6317571
82	TAL00105	13723	53	477614	6317017
82	TAL00201	13778	53	481634	6312325
82	TAL00202	13777	53	481668	6312424
82	TAL00301	13726	53	473248	6319581
82	TAL00302	13725	53	474139	6319213
82	TAL00402	15879	53	484490	6305274
82	TAL00403	15876	53	484492	6304822
82	TAL00404	15878	53	484564	6305355
82	TAL00405	15877	53	484951	6305265
82	TAL00406	15880	53	484624	6305082
82	THE00101	13892	53	362980	6439948
82	THE00102	13891	53	362955	6440204
82	THE00201	13895	53	366111	6442887
82	THE00202	13894	53	366118	6443151
82	THE00203	13893	53	366084	6443602
82	THE00301	13890	53	377389	6436847
82	THE00302	13889	53	377605	6437162
82	THE00401	13888	53	378848	6437283
82	THE00402	13887	53	378847	6437463
82	THE00501	13886	53	380081	6437016
82	THE00502	13885	53	380099	6437176
82	THE00503	13884	53	380796	6436815
82	WAL00101	13876	53	394026	6427301
82	WAL00102	13875	53	394332	6426946
82	WAL00103	13874	53	394473	6427067
82	WAL00201	13883	53	392479	6406995
82	WAL00202	13882	53	392405	6407258
82	WAL00203	13881	53	392383	6407491
82	WAL00204	13880	53	392561	6407443
82	WAL00205	13879	53	392484	6407693
82	WAL00301	13869	53	392353	6404287
82	WAL00302	13868	53	392664	6404325
82	WAL00401	13736	53	392219	6404075
82	WAN00102	15914	53	531835	6166654
82	WAN00103	15915	53	531996	6166505
82	WAN00104	15916	53	532444	6166743
82	WAN00201	15888	53	530506	6163237
82	WAN00202	15887	53	530346	6163133
82	WAN00204	15890	53	530091	6161706
82	WAN00205	15889	53	530609	6161705
82	WAN00206	15892	53	530583	6161719
82	WIT00101	14564	53	686381	6266885
82	WIT00102	14568	53	686172	6267387
82	WIT00103	14569	53	686651	6267901
82	WIT00104	14563	53	689055	6269098

Survey No.	Site ID	Site No.	MGA Zone	Easting	Northing
82	WIT00201	14560	53	713047	6290565
82	WIT00202	14562	53	712873	6291288
82	WIT00203	14561	53	712857	6291441
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103	ARN00301	16682	53	648641	6263274
103	ARN00401	16689	53	656835	6262401
103	ARN00701	16687	53	658680	6257165
103	ARN00702	16686	53	656639	6258046
103	ARN00703	16685	53	656444	6255382
103	ARN00901	16684	53	641199	6251089
103	ARN01001	16697	53	640826	6250250
103	ARN01301	16688	53	642772	6244154
103	BAR00301	16423	53	657167	6337685
103	BAR00401	16422	53	649328	6336525
103	BAR00501	16421	53	649129	6338716
103	BAR00601	16420	53	646493	6337394
103	BAR00701	16425	53	643808	6329768
103	BAR00801	16426	53	644574	6328671
103	BAR00901	16428	53	647050	6328846
103	BAR01001	16429	53	650409	6333830
103	BAR01101	16440	53	654638	6333736
103	BAR01201	16436	53	663067	6325120
103	BAR01301	16441	53	642631	6344865
103	BAR01501	16427	53	642015	6320980
103	BUC00601	16545	53	596694	6358852
103	BUC00701	16548	53	607106	6360660
103	BUC00801	16546	53	613134	6357649
103	BUC00802	16547	53	612916	6357247
103	BUC01001	16557	53	611069	6353717
103	CAR00101	16543	53	621987	6317633
103	CAR00102	16542	53	622844	6317356
103	CAR00201	16544	53	626582	6317548
103	CAR00401	16560	53	630359	6309798
103	CAR00601	16552	53	618351	6300229
103	CAR00701	16551	53	618709	6300971
103	CAR00702	16550	53	618698	6301317
103	CAR00703	16549	53	618324	6302156
103	CAR00801	16558	53	631803	6303817
103	CAR00901	16559	53	637756	6302385
103	CAR01001	16561	53	637906	6308131
103	CHA00201	16719	53	698432	6313470
103	CHA00701	16723	53	693123	6306378
103	CHA00801	16709	53	686238	6298812
103	CHA00901	16708	53	690943	6299579
103	CHA01001	16726	53	690888	6297672
103	CHA01101	16710	53	698300	6302203
103	CHA01201	16711	53	699876	6296972
103	CHA01301	16724	53	690560	6293956
103	CHA01401	16725	53	697488	6293699
103	COR00101	16451	53	590131	6359086
103	COR00201	16453	53	588031	6359110
103	COR00301	16452	53	586486	6359127
103	COR00401	16456	53	587167	6354815
103	COR00501	16457	53	587180	6353999
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103	COR00701	16455	53	587178	6353135
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103	COW00101	16732	53	676753	6290611
103	COW00201	16731	53	677982	6288730
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103	COW00601	16728	53	667735	6281632
103	COW00701	16692	53	664506	6282154
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103	COW00901	16691	53	664619	6279023
103	COW01001	16690	53	664822	6271844
103	COW01201	16730	53	681195	6275900
103	CUN00501	16532	53	630210	6367310
103	CUN00502	16533	53	630753	6366828
103	CUN00601	16531	53	631617	6365777
103	CUN01001	16526	53	619560	6353584
103	DAR00101	16521	53	600828	6315169
103	DAR00102	16522	53	600937	6314897
103	DAR00201	16520	53	603173	6319197
103	DAR00301	16601	53	609497	6317357
103	DAR00401	16600	53	609856	6316131
103	DAR00402	16599	53	609946	6316212
103	DAR00501	16579	53	608144	6314913
103	DAR00601	16581	53	614472	6318384
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103	GIB00301	16694	53	666969	6258666
103	GIB00302	16695	53	667271	6258476
103	GIB00401	16696	53	673601	6263638
103	GLY00101	16698	53	665272	6314174
103	GLY00201	16699	53	668492	6314199
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103	HAM00802	16565	53	583700	6295487
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103	HAM02D14	16574	53	579779	6320281
103	HEG00101	16645	53	648831	6313493
103	HEG00201	16654	53	652336	6315377
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103	HEG00303	16656	53	660224	6319001
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103	PAL00601	16633	53	588499	6281779
103	PAL00701	16618	53	583361	6275269
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103	PAN00201	16597	53	603869	6347243
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103	PAN00501	16583	53	597892	6338222
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103	PAN01002	16587	53	593817	6332171
103	PAN01101	16588	53	596841	6330848
103	PAN01201	16602	53	612580	6321611
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103	RUD01101	16603	53	630077	6271328
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103	VER00601	16623	53	627428	6254895
103	VER00701	16624	53	632137	6255012
103	VER00801	16626	53	633421	6245963
103	VER00901	16625	53	630310	6247749
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103	WIL00101	16667	53	691280	6289076
103	WIL00201	16668	53	695499	6288713
103	WIL00301	16669	53	705317	6288199
103	WIL00401	16671	53	709987	6286723
103	WIL00501	16670	53	709997	6286148
103	WIL00601	16680	53	709146	6282021
103	WIL00701	16681	53	707494	6280224
103	WIL00801	16679	53	705314	6277350
103	WIL00802	16678	53	704305	6277436
103	WIL00901	16677	53	694837	6283748
103	WIL01001	16657	53	687102	6280482
103	WIL01002	16658	53	687140	6279861
103	WIL01003	16659	53	687128	6279658
103	WIL01101	16660	53	687023	6275372
103	WIL01201	16661	53	691498	6271112
107	ADD00101	16980	53	482031	6342461
107	ADD00301	16981	53	489735	6347273
107	ADD00401	16982	53	499979	6348469
107	ADD00501	16983	53	476888	6338355
107	ADD00601	16984	53	499684	6338190
107	ADD00602	16985	53	499671	6338310
107	ADD00801	16986	53	482892	6327020
107	ADD01001	16987	53	484465	6325003
107	ADD02D01	16988	53	487763	6326980

Survey No.	Site ID	Site No.	MGA Zone	Easting	Northing
107	CAL00101	16989	53	451638	6342557
107	CAL00201	16990	53	447996	6342881
107	CAL00301	16991	53	443635	6342062
107	CAL00302	16992	53	443463	6342159
107	CAL00401	16993	53	440628	6346587
107	CAL00402	16994	53	439659	6345785
107	CAL00501	16995	53	439338	6341674
107	CAL00502	16996	53	439426	6341768
107	CAL00701	16997	53	438048	6337769
107	CAL00801	16998	53	440996	6331641
107	CHI00401	17002	53	511902	6389168
107	CHI00501	17003	53	512986	6390673
107	CHI00701	17005	53	520511	6387683
107	CHI00801	17006	53	522834	6389486
107	CHI00901	17007	53	516028	6377779
107	CHI01001	17008	53	512123	6383248
107	CHI01101	17009	53	511135	6381305
107	CHI01201	17010	53	504056	6380630
107	CHI02C10	17011	53	505743	6379999
107	COC00101	17012	53	542729	6314462
107	COC00201	17013	53	532791	6318754
107	COC00301	17014	53	526784	6313994
107	COC00401	17015	53	524022	6311219
107	COC00601	17016	53	545419	6300826
107	COC00801	17017	53	525047	6306673
107	COC00901	17018	53	524733	6298857
107	COC01001	17019	53	525972	6299517
107	COC01101	17020	53	530569	6294788
107	COC01201	17021	53	541674	6299909
107	COC03C18	17022	53	542881	6314153
107	COU00101	17023	53	449272	6403538
107	COU00201	17024	53	435278	6399499
107	COU00301	17025	53	435628	6390751
107	COU00501	17026	53	446792	6394459
107	COU00502	17027	53	446969	6394374
107	COU00601	17028	53	450073	6392236
107	COU00701	17029	53	434566	6384571
107	COU00801	17030	53	437269	6387797
107	COU00901	17031	53	447481	6384591
107	COU01001	17032	53	451626	6377627
107	COU01101	17033	53	443462	6382892
107	COU01D10	17034	53	442606	6391322
107	CUN00101	17035	53	475258	6403338
107	CUN00201	17036	53	475086	6401612
107	CUN00301	17037	53	457870	6402007
107	CUN00401	17038	53	459533	6397787
107	CUN00501	17039	53	472858	6395747
107	CUN00701	17040	53	470349	6388235
107	CUN00801	17041	53	475483	6383875
107	CUN00901	17042	53	474134	6382686
107	CUN01001	17043	53	459294	6381162
107	CUN01101	17044	53	456168	6377444
107	CUN01C14	17045	53	463846	6393774
107	ELL00101	17046	53	489468	6286826
107	ELL00201	17047	53	499093	6292033
107	ELL00301	17048	53	496870	6283493
107	ELL00401	17049	53	496454	6283187
107	ELL00601	17050	53	491084	6278057
107	HAS00101	17051	53	429368	6401772
107	HAS00201	17052	53	422861	6377044
107	HAS00301	17053	53	420161	6379302
107	HUD00201	17054	53	507608	6292027
107	HUD00401	17055	53	517901	6281841
107	HUD00501	17056	53	511316	6277476
107	HUD00701	17057	53	503426	6273304
107	HUD00801	17058	53	508814	6268438
107	HUD00901	17059	53	508926	6270933
107	HUD01001	17060	53	517393	6272820
107	HUD01101	17061	53	518129	6270410
107	HUD04C03	17062	53	518170	6281126
107	HUD04C13	17063	53	519567	6271148
107	HUD04C20	17064	53	502275	6279665
107	INK00101	17065	53	459472	6370138
107	INK00201	17066	53	463819	6375414
107	INK00301	17067	53	470671	6363630
107	INK00401	17068	53	461293	6365157
107	INK00601	17069	53	476449	6362301
107	INK00701	17070	53	476144	6357571
107	INK01001	17071	53	461111	6353661
107	INK01101	17072	53	456241	6352612
107	INK01201	17073	53	455625	6352483
107	INK01D14	17074	53	461183	6353613
107	KAP00101	17075	53	529283	6292374
107	KAP00201	17076	53	542911	6287028
107	KAP00401	17077	53	528569	6282542
107	KAP00501	17078	53	527696	6281189
107	KAP00701	17079	53	526629	6273275
107	KAP00901	17080	53	532117	6268106
107	KAP01001	17081	53	535937	6268270
107	KAP01101	17082	53	540683	6269938
107	KAP01201	17083	53	541608	6272331
107	KAP04B18	17084	53	543390	6287425
107	KOP00101	17085	53	562831	6318875
107	KOP00201	17086	53	546798	6307061
107	KOP00301	17087	53	560948	6308174
107	KOP00401	17088	53	565277	6300565
107	KOP00501	17089	53	561617	6304193
107	KOP00601	17090	53	559921	6300243
107	KOP00701	17091	53	557673	6306611
107	KOP00801	17092	53	546770	6299201
107	KOP00901	17093	53	547147	6293757
107	KOP01001	17094	53	556042	6295207
107	KOP01101	17095	53	560858	6300514
107	KOP01201	17096	53	561436	6294881
107	KYA00201	17097	53	565866	6345620
107	KYA00301	17098	53	561989	6342989
107	KYA00401	17099	53	552900	6336938
107	KYA00501	17100	53	561068	6337176
107	KYA00601	17101	53	565176	6329456
107	KYA00701	17102	53	552637	6333366
107	KYA00801	17103	53	550141	6331320
107	KYA00901	17104	53	548313	6326146
107	KYA01001	17105	53	556488	6321454
107	KYA01101	17106	53	564010	6326790
107	KYA01201	17107	53	565455	6321081
107	KYA01301	17108	53	561915	6331167
107	MIN00101	17109	53	502729	6376201
107	MIN00201	17110	53	510571	6371764
107	MIN00301	17111	53	515616	6374225
107	MIN00501	17112	53	515264	6367375
107	MIN00601	17113	53	510477	6369267
107	MIN00701	17114	53	507661	6365461
107	MIN00801	17115	53	500278	6359375
107	MIN00901	17116	53	502543	6362689
107	MIN01001	17117	53	520610	6361645
107	MIN01101	17118	53	512645	6352991
107	MIN02B17	17119	53	520714	6360921
107	MOO00101	17120	53	478929	6376116
107	MOO00201	17121	53	477291	6372292
107	MOO00301	17122	53	483154	6374367
107	MOO00401	17123	53	495456	6374994
107	MOO00501	17124	53	477712	6365355
107	MOO00601	17125	53	479594	6365501
107	MOO00701	17126	53	493290	6369533
107	MOO00801	17127	53	492160	6366459
107	MOO00901	17128	53	499495	6366298
107	MOO01001	17129	53	486262	6359468
107	MOO01101	17130	53	480478	6351749
107	MOO01201	17131	53	498212	6350186
107	MTW00101	17132	53	519273	6317529
107	MTW00201	17133	53	517386	6315154
107	MTW00301	17134	53	508952	6312381
107	MTW00401	17135	53	508426	6309428
107	MTW00501	17136	53	516644	6313832
107	MTW00601	17137	53	521963	6305647
107	MTW00701	17138	53	519191	6302576
107	MTW00801	17139	53	514041	6304071
107	MTW00901	17140	53	501632	6299753
107	MTW01001	17141	53	501330	6296416
107	MTW01101	17142	53	512490	6296635
107	MUR00201	17143	53	550397	6286931
107	MUR00301	17144	53	568838	6292920
107	MUR00302	17145	53	569063	6292397
107	MUR00401	17146	53	551498	6285250
107	MUR00501	17147	53	568139	6283929
107	MUR00601	17148	53	550242	6275375
107	MUR00602	17149	53	549711	6275293
107	MUR00701	17150	53	550997	6268993
107	MUR00801	17151	53	553509	6268956
107	MUR00901	17152	53	555974	6268955
107	MUR01001	17153	53	565587	6268541
107	PAL00101	17154	53	524636	6346448
107	PAL00201	17155	53	528999	6342170
107	PAL00401	17156	53	537436	6345927
107	PAL00501	17157	53	545751	6337613
107	PAL00601	17158	53	534274	6340265
107	PAL00701	17159	53	526040	6329147
107	PAL00702	17160	53	526014	6328988
107	PAL00801	17161	53	540391	6329599
107	PAL00901	17162	53	543587	6328344
107	PAL01001	17163	53	544642	6327030
107	PAL01101	17164	53	531267	6326417
107	PEA00201	17165	53	540357	6261870
107	PEA00401	17166	53	544094	6249089
107	PEA00501	17167	53	523528	6250803
107	PEA00601	17168	53	524816	6246003
107	PEA00701	17169	53	529346	6242167
107	PEA00702	17170	53	529402	6241799
107	PEA00801	17171	53	530198	6241034
107	PEA00901	17172	53	534935	6244136
107	PEA01001	17173	53	541047	6244645
107	PEA01101	17174	53	541188	6239201
107	PEA04B09	17175	53	531911	6265499
107	POO00102	17176	53	498520	6399437
107	POO00103	17177	53	498112	6399393
107	POO00201	17178	53	494370	6398798
107	POO00301	17179	53	478668	6402219
107	POO00401	17180	53	488114	6394602
107	POO00501	17181	53	487758	6395315
107	POO00601	17182	53	499660	6393236
107	POO00701	17183	53	478250	6386536
107	POO00801	17184	53	499047	6386434
107	POO00901	17185	53	491936	6379219
107	POO01001	17186	53	479711	6377987
107	POR00101	17187	53	506496	6347525
107	POR00201	17188	53	522531	6348370
107	POR00401	17189	53	514865	6337906
107	POR00501	17190	53	510719	6329631
107	POR00601	17191	53	522867	6328572
107	POR00701	17192	53	521325	6326440
107	POR00801	17193	53	519624	6322292
107	POR00901	17194	53	509613	6327383
107	POR01001	17195	53	507564	6327789
107	POR01101	17196	53	503290	6322427
107	POR01201	17197	53	502315	6321848
107	POR01301	17198	53	501943	6336936
107	RIP00201	17199	53	444701	6372521
107	RIP00301	17200	53	448530	6376020
107	RIP00401	17201	53	449824	6362687
107	RIP00501	17202	53	443955	6364860
107	RIP00601	17203	53	443267	6362855
107	RIP00701	17204	53	438771	6370173
107	RIP00801	17205	53	431989	6363892
107	RIP00901	17206	53	434032	6359359
107	RIP01001	17207	53	448502	6356514
107	RIP01101	17208	53	441988	6349721
107	RIP01201	17209	53	441646	6350600
107	SEA00101	17210	53	428138	6347702
107	SEA00201	17211	53	428927	6345943
107	SEA00301	17212	53	429185	6344562
107	SHE00101	17213	53	508416	6265566
107	SHE00201	17214	53	509566	6264138
107	SHE00301	17215	53	512183	6264428
107	SHE00401	17216	53	522747	6264109
107	STR00101	17217	53	415127	6376012
107	STR00501	17218	53	419622	6361941
107	STR00601	17219	53	419282	6361888
107	STR00701	17220	53	419835	6357694
107	STR00801	17221	53	424953	6358776
107	STR00901	17222	53	427909	6355467
107	STR01A03	17223	53	424322	6365181
107	STR01A08	17224	53	426896	6364054
107	TAL00101	17225	53	499628	6319854
107	TAL00201	17226	53	485957	6319445
107	TAL00301	17227	53	486453	6317194
107	TAL00401	17228	53	482684	6317167
107	TAL00501	17229	53	479661	6314087
107	TAL00601	17230	53	496696	6300687
107	TAL00701	17231	53	497882	6302267
107	TAL00801	17232	53	492131	6299640
107	TAL00901	17233	53	496237	6294565
107	TAL01001	17234	53	494636	6304378
107	TOO00101	17235	53	548008	6263083
107	TOO00201	17236	53	553965	6259619
107	TOO00301	17237	53	561805	6263901
107	TOO00401	17238	53	561743	6258317
107	TOO00501	17239	53	568082	6253903
107	TOO00601	17240	53	569091	6254197
107	TOO00701	17241	53	567072	6253515
107	TOO00901	17242	53	556818	6250349
107	TOO01201	17243	53	550675	6243485
107	TOO04C04	17244	53	556188	6240464
107	TOO04C06	17245	53	559662	6240148
107	VEN00101	17246	53	475904	6347893
107	VEN00301	17247	53	461279	6346991
107	VEN00302	17248	53	461443	6345871
107	VEN00401	17249	53	453866	6337981
107	VEN00501	17250	53	459983	6340129
107	VEN00701	17252	53	475947	6333302
107	VEN00702	17253	53	476530	6332458
107	VEN01001	17254	53	468723	6322969

Survey No.	Site ID	Site No.	MGA Zone	Easting	Northing
107	VEN01B13	17251	53	476136	6338821
107	WUD00101	17255	53	548363	6372829
107	WUD00201	17256	53	549333	6373869
107	WUD00401	17260	53	549180	6361618
107	WUD00501	17261	53	549462	6359511
107	WUD00601	17262	53	549315	6358483
107	WUD00801	17263	53	551188	6350189
107	WUD00901	17264	53	569155	6350007
107	WUD00902	17265	53	569222	6349798
107	YAN00101	17266	53	527743	6376324
107	YAN00201	17267	53	545168	6369106
107	YAN00301	17268	53	544797	6368354
107	YAN00501	17269	53	534221	6368809
107	YAN00601	17270	53	533524	6369031
107	YAN00701	17271	53	534690	6364700
107	YAN00801	17272	53	528933	6369343
107	YAN00901	17273	53	531208	6362822
107	YAN01001	17274	53	545081	6360204
107	YAN01101	17275	53	534531	6353215
107	YAN01201	17276	53	525425	6355038
107	YAN01301	17277	53	527614	6368642
110	VEN00101	17291	53	459637	6331444
110	VEN00102	17292	53	459313	6336248
110	VEN00103	17293	53	461980	6335788
110	VEN00104	17294	53	461931	6336474
110	VEN00105	17295	53	461988	6336539
110	VEN00106	17296	53	465660	6333419
110	VEN00107	17297	53	468958	6331118
110	VEN00108	17298	53	468517	6331015
110	VEN00109	17299	53	465619	6331503
110	VEN00110	17300	53	461203	6332856
110	VEN00111	17301	53	462445	6333434
110	VEN00112	17302	53	464505	6335237
113	NUN00101	16950	53	436132	6445256
113	NUN00201	16951	53	433095	6447099
113	NUN00301	16952	53	433035	6449190
113	NUN00401	16953	53	440247	6444500
113	NUN00501	16954	53	439680	6442731
121	CAROEP08	17401	53	627829	6309646
121	CAROEP09	17385	53	627829	6309721
121	CAROEP10	17387	53	627929	6309721
121	CAROEP11	17389	53	627979	6309771
121	CAROEP12	17390	53	625129	6310796
121	CAROEP13	17392	53	633679	6302571
121	CAROEP14	17393	53	633654	6302621
121	KIEOEP05	17398	53	615329	6279096
121	KIEOEP06	17399	53	615179	6278996
121	KIEOEP07	17400	53	615429	6279071
121	MANOEP15	17394	53	646479	6273071
121	MANOEP16	17395	53	646729	6273046
121	MUROEP01	17384	53	553379	6282421
121	MUROEP02	17391	53	553379	6282321
121	MUROEP03	17396	53	553404	6282521
121	MUROEP04	17397	53	553529	6282521
127	KOO00801	18219	53	345854	6468749
127	KOO00901	18220	53	346856	6468677
127	KOO01001	18221	53	347592	6468791
127	KOO01101	18222	53	348413	6467921
127	KOO01201	18223	53	348885	6467146
127	KOO01301	18224	53	348692	6465698
127	KOO01401	18225	53	349597	6464879
127	KOO01501	18226	53	350213	6466010
127	KOO01601	18227	53	350265	6467033
127	KOO01701	18228	53	350524	6467775
127	KOO01801	18229	53	350656	6465364
127	KOO01901	18230	53	350885	6466215
127	KOO02001	18231	53	351122	6467506
128	ACR00101	22716	53	393962	6401246
128	ACR00201	22717	53	398043	6404471
128	ACR00301	22718	53	406693	6407877
128	ACR00401	22719	53	408610	6407766
128	ACR00501	22720	53	408950	6409449
128	ACR00601	22721	53	411156	6413455
128	ACR00701	22722	53	416842	6419138
128	ACR00801	22723	53	416883	6420194
128	ACR00901	22724	53	416009	6420174
128	ACR01001	22725	53	433145	6445758
128	ACR01101	22726	53	436495	6445469
128	ACR01201	22727	53	433131	6446837
128	BAS00101	19262	53	545044	6271960
128	BAS00201	19263	53	543898	6271053
128	BAS00301	19264	53	541795	6271413
128	BAS00401	19265	53	539512	6269014
128	BAS00501	19266	53	535976	6268219
128	BAS00601	19267	53	535298	6268247
128	BAS00701	19268	53	521975	6271456
128	BAS00801	19269	53	517886	6270160
128	BAS00901	19270	53	510235	6268742
128	BAS01001	19271	53	501883	6267039
128	BAS01101	19272	53	499762	6269578
128	BAS01201	19273	53	499003	6269881
128	CAR00101	19129	53	610155	6316684
128	CAR00201	19130	53	610097	6318078
128	CAR00301	19131	53	614550	6318250
128	CAR00401	19132	53	613549	6318590
128	CAR00501	19133	53	619152	6317556
128	CAR00601	19134	53	593515	6332655
128	CAR00701	19135	53	595289	6334564
128	CAR00801	19136	53	597688	6336769
128	CAR00901	19137	53	598572	6339175
128	CAR01001	19138	53	623189	6341189
128	CAR01101	19139	53	623198	6342297
128	CAR01201	19140	53	623949	6341677
128	CED00101	22772	53	363757	6461843
128	CED00201	22773	53	362798	6461350
128	CED00301	22774	53	362215	6462410
128	CED00401	22795	53	361276	6461818
128	CED00501	22775	53	331713	6458966
128	CED00601	22776	53	333373	6457574
128	CED00701	22777	53	331484	6447820
128	CED00801	22778	53	331928	6447565
128	CED00901	22779	53	330333	6442778
128	CED01001	22780	53	329291	6439985
128	CED01101	22781	53	327364	6440754
128	CED01201	22782	53	331646	6439528
128	CHA00101	22728	53	290868	6464542
128	CHA00201	22729	53	293060	6464153
128	CHA00301	22730	53	294148	6461552
128	CHA00401	22731	53	293949	6460436
128	CHA00501	22732	53	297683	6461851
128	CHA00601	22733	53	299257	6460423
128	CHA00701	22734	53	319172	6478980
128	CHA00801	22735	53	319209	6478266
128	CHA00901	22736	53	320373	6477786
128	CHA01001	22737	53	339882	6471007
128	CHA01101	22738	53	339904	6471691
128	CHA01201	22739	53	341689	6470577
128	COC00101	19286	53	529154	6315768
128	COC00201	19287	53	527342	6314273
128	COC00301	19288	53	524730	6311702
128	COC00401	19289	53	527482	6306723
128	COC00501	19290	53	525926	6306683
128	COC00601	19291	53	514357	6303931
128	COC00701	19292	53	514189	6300724
128	COC00801	19293	53	514253	6300026
128	COC00901	19294	53	511943	6296385
128	COC01001	19295	53	512451	6296301
128	COC01101	19296	53	501447	6295587
128	COC01201	19297	53	502472	6294637
128	COR00101	17952	53	573441	6352239
128	COR00201	17953	53	572952	6351942
128	COR00301	17954	53	572008	6351289
128	COR00401	17955	53	570097	6349950
128	COR00501	17956	53	569532	6349303
128	COR00601	17957	53	569232	6349904
128	COR00701	17958	53	562314	6343194
128	COR00801	17959	53	561926	6342882
128	COR00901	17960	53	549689	6333704
128	COR01001	17961	53	547737	6333776
128	COR01101	17962	53	544510	6328677
128	COR01201	17963	53	543963	6329524
128	COR01301	18293	53	568912	6348971
128	COW00101	19153	53	643322	6277410
128	COW00201	19154	53	647097	6279161
128	COW00301	19155	53	648394	6277735
128	COW00401	19156	53	648306	6276039
128	COW00501	19157	53	649797	6274778
128	COW00601	19158	53	663239	6276722
128	COW00701	19159	53	662941	6277042
128	COW00801	19160	53	662473	6277252
128	COW00901	19161	53	679165	6276397
128	COW01001	19162	53	680435	6276997
128	COW01101	19163	53	687139	6278810
128	COW01201	19164	53	687136	6279848
128	FOW00101	22783	53	251905	6458322
128	FOW00201	22784	53	252036	6461960
128	FOW00301	22785	53	252072	6465876
128	FOW00401	22786	53	252945	6466153
128	FOW00501	22787	53	255584	6466983
128	FOW00601	22788	53	256345	6467253
128	FOW00701	22789	53	229860	6469486
128	GIL00101	19141	53	678539	6321380
128	GIL00201	19144	53	678374	6322341
128	GIL00301	19142	53	677872	6323203
128	GIL00401	19143	53	676998	6324667
128	GIL00501	19145	53	676477	6325775
128	GIL00601	19146	53	674854	6330254
128	GIL00701	19147	53	674582	6331490
128	GIL00801	19148	53	674447	6332119
128	GIL00901	19149	53	673793	6333330
128	GIL01001	19150	53	671954	6326544
128	GIL01101	19151	53	670170	6327516
128	GIL01201	19152	53	670355	6326574
128	HAM00101	19274	53	585602	6297141
128	HAM00201	19275	53	584881	6296515
128	HAM00301	19276	53	583535	6295373
128	HAM00401	19277	53	583425	6295279
128	HAM00501	19278	53	589829	6294391
128	HAM00601	19279	53	593345	6294394
128	HAM00701	19280	53	608745	6294062
128	HAM00801	19281	53	609107	6294400
128	HAM00901	19282	53	609996	6294622
128	HAM01001	19283	53	610654	6295165
128	HAM01101	19284	53	617946	6300261
128	HAM01201	19285	53	617649	6300659
128	HEG00101	19165	53	662246	6303547
128	HEG00201	19166	53	663299	6303494
128	HEG00301	19167	53	663755	6303133
128	HEG00401	19168	53	664422	6303542
128	HEG00501	19169	53	668179	6303782
128	HEG00601	19170	53	670709	6304667
128	HEG00701	19171	53	656002	6294910
128	HEG00801	19172	53	656228	6294877
128	HEG00901	19173	53	644503	6309435
128	HEG01001	19174	53	649213	6304651
128	HEG01101	19175	53	646443	6301530
128	HEG01201	19176	53	641257	6301955
128	HIN00101	19250	53	602064	6246597
128	HIN00201	19251	53	603225	6246893
128	HIN00301	19252	53	604195	6247079
128	HIN00401	19253	53	604427	6247211
128	HIN00501	19254	53	606050	6244834
128	HIN00601	19255	53	606085	6241849
128	HIN00701	19256	53	586024	6240350
128	HIN00801	19257	53	586058	6244130
128	HIN00901	19258	53	584897	6245239
128	HIN01001	19259	53	581405	6245855
128	HIN01101	19260	53	581771	6246822
128	HIN01201	19261	53	581930	6249864
128	KER00101	17964	53	503627	6402001
128	KER00201	17965	53	503333	6401728
128	KER00301	17966	53	502984	6401293
128	KER00401	17967	53	501855	6399828
128	KER00501	17968	53	499200	6399451
128	KER00601	17969	53	498412	6399319
128	KER00701	17970	53	503801	6390303
128	KER00801	17971	53	503014	6390342
128	KER00901	17972	53	498998	6387253
128	KER01001	17973	53	499194	6386563
128	KER01101	17974	53	487381	6393397
128	KER01201	17975	53	488478	6394761
128	KOP00101	20187	53	590650	6188787
128	KOP00201	20188	53	565899	6176750
128	KOP00301	20189	53	565864	6177370
128	KOP00401	20190	53	572919	6180716
128	KOP00501	20191	53	573915	6182667
128	KOP00601	20192	53	574522	6183084
128	KOP00701	20193	53	581138	6191064
128	KOP00801	20194	53	588607	6202068
128	KOP00901	20195	53	588771	6201891
128	KOP01001	20196	53	589670	6204128
128	KOP01101	20197	53	586370	6209490
128	KOP01201	20198	53	599623	6206764
128	MAR00101	20213	53	533491	6201454
128	MAR00201	20214	53	533742	6198862
128	MAR00301	20215	53	534129	6198174
128	MAR00401	20216	53	545301	6185864
128	MAR00501	20217	53	546555	6189977
128	MAR00601	20218	53	546261	6190517
128	MAR00701	20219	53	540225	6203678
128	MAR00801	20220	53	536553	6216512
128	MAR00901	20221	53	545067	6210742
128	MAR01001	20222	53	546315	6209752
128	MAR01101	20223	53	547888	6210138
128	MAR01201	20224	53	562917	6192355
128	MUN00101	20029	53	720495	6303150
128	MUN00102	36371	53	720695	6303150
128	MUN00201	20030	53	717887	6302587
128	MUN00301	20031	53	716893	6302646
128	MUN00601	20037	53	713754	6310123
128	MUN00701	20038	53	713204	6305644

Survey No.	Site ID	Site No.	MGA Zone	Easting	Northing
128	MUN00801	20039	53	710030	6303681
128	MUN00901	36372	53	703827	6305888
128	MUN01001	36373	53	704439	6309173
128	MUN01201	36375	53	707299	6303781
128	MUN01301	36376	53	706937	6306192
128	MUR00101	36233	53	553067	6177694
128	MUR00201	36234	53	554991	6176828
128	MUR00301	36235	53	554958	6176401
128	PEA00101	20199	53	556260	6241733
128	PEA00201	20201	53	553175	6242545
128	PEA00301	20202	53	552622	6242738
128	PEA00401	20203	53	553948	6243831
128	PEA00501	20204	53	551323	6244348
128	PEA00601	20205	53	546654	6244349
128	PEA00701	20206	53	543325	6244350
128	PEA00801	20207	53	537766	6244399
128	PEA00901	20208	53	534088	6244267
128	PEA01001	20209	53	526253	6245464
128	PEA01101	20211	53	525241	6243649
128	PEA01201	20212	53	521842	6243214
128	STR00101	17987	53	449750	6356990
128	STR00201	17976	53	459258	6334789
128	STR00301	17977	53	463349	6336030
128	STR00401	17978	53	445326	6331955
128	STR00501	17979	53	444631	6331014
128	STR00601	17980	53	439345	6346136
128	STR00701	17981	53	442263	6350804
128	STR00801	17982	53	456391	6344582
128	STR00901	17983	53	451300	6351957
128	STR01001	17984	53	449653	6356467
128	STR01101	17985	53	431633	6367195
128	STR01201	17986	53	432098	6367565
128	ULE00101	20225	53	558733	6134900
128	ULE00201	20226	53	561275	6138216
128	ULE00301	20227	53	560730	6133783
128	ULE00401	20228	53	562167	6135641
128	ULE00501	20229	53	573985	6151927
128	ULE00601	20230	53	572004	6151811
128	ULE00701	20231	53	566682	6150116
128	ULE00801	20232	53	565047	6150055
128	ULE00901	20233	53	560665	6169443
128	ULE01001	20184	53	555080	6175649
128	ULE01101	20185	53	554964	6177501
128	ULE01201	20186	53	562132	6178651
128	WAN00101	36236	53	565399	6176988
128	WAN00201	36237	53	564812	6176200
131	DAR00101	18205	53	596996	6301661
131	DAR00201	18207	53	596902	6297882
131	DAR00301	18206	53	597095	6305954
131	DAR00401	18197	53	597001	6297198
131	HAM00101	18171	53	589343	6311181
131	HAM00201	18173	53	582200	6311362
131	HAM00301	18144	53	572450	6308050
131	HAM00401	18145	53	572390	6305480
131	HAM00501	18170	53	581397	6294560
131	HAM00601	18166	53	585520	6297360
131	HIN00201	18179	53	596748	6263891
131	HIN00301	18211	53	598632	6263868
131	HIN00401	18210	53	599083	6263815
131	HIN00501	18204	53	598463	6255566
131	HIN00601	18203	53	598443	6255389
131	HIN00701	18149	53	603480	6246960
131	HIN00801	18156	53	606220	6256560
131	HIN00901	18150	53	606200	6256170
131	HIN01001	18148	53	604750	6244080
131	HIN01101	18208	53	602451	6238848
131	HIN01201	18209	53	603236	6238836
131	HIN01B11	18161	53	606330	6259820
131	KIE00101	18196	53	596527	6265167
131	NIC00101	18142	53	588110	6256880
131	NIC00201	18143	53	584270	6258010
131	NIC00301	18172	53	582613	6252012
131	NIC00401	18198	53	581558	6254010
131	NIC00501	18202	53	579927	6254055
131	NIC00601	18176	53	581315	6247745
131	NIC00701	18146	53	571970	6249130
131	NIC00801	18147	53	575290	6246030
179	COA00101	22568	53	456280	6329560
179	COA00102	22522	53	453974	6331061
179	COA00103	22523	53	461236	6333261
179	COA00202	22526	53	440150	6334800
179	COA00203	22544	53	440120	6334800
179	COA00301	22533	53	431080	6340870
179	COA00401	22535	53	419890	6346520
179	COA00402	22560	53	420480	6346070
179	COA00501	22542	53	438980	6329850
179	COA00502	22543	53	438840	6329700
179	COA00601	22559	53	420940	6357734
179	COA00602	22541	53	420990	6358050
179	COA00701	22546	53	427010	6352820
179	COA00702	22547	53	427210	6352770
179	COA00802	22563	53	440135	6332040
179	COA00803	22545	53	440120	6332040
179	COA00804	22565	53	440100	6332030
179	COA00805	22562	53	440100	6332030
179	COA00806	22566	53	440000	6332060
179	COA00901	22564	53	438510	6327010
179	COA00902	22537	53	437400	6326520
179	COA01001	22538	53	445320	6331880
179	COA01002	22539	53	445930	6332250
179	COA01101	22567	53	420070	6355000
179	COA01201	22558	53	426091	6352457
179	GAB00101	21324	53	449453	6332219
179	GAB00201	21327	53	445815	6332222
179	GAB00301	21329	53	444703	6331007
179	GAB00302	21439	53	444703	6331007
179	GAB00401	21330	53	439924	6334804
179	GAB00501	21331	53	440500	6332047
179	GAB00601	21332	53	441636	6329315
179	GAB00602	21506	53	441636	6329315
179	GAB00701	21333	53	437830	6326708
179	GAB00801	21334	53	430991	6331508
179	GAB00901	21335	53	425669	6344651
179	GAB00902	21507	53	425669	6344651
179	GAB01001	21337	53	423533	6343027
179	GAB01101	21338	53	425651	6346968
179	GAB01201	21340	53	424634	6354189
179	GAB01202	21509	53	424634	6354189
179	GAB01301	21342	53	426626	6353983
179	GAB01401	21344	53	422929	6360584
179	GAB01402	21510	53	422929	6360584
179	GAB01403	21511	53	422929	6360584
179	GAB01501	21345	53	419513	6355058
179	GAB01801	21351	53	413759	6360930
179	GAB01901	21364	53	415989	6362657
179	GAB02401	21370	53	415189	6379668
179	GAB02402	21514	53	415189	6379668
179	GAB02501	21371	53	421099	6378963
179	GAB02502	21533	53	421099	6378963
428	FB00101	35931	53	261354	6463367
428	FB00201	35932	53	259393	6463011
428	FB00301	35933	53	254249	6459051
428	FB00401	35934	53	256886	6461693
428	FB00501	35936	53	253183	6455982
428	OR02601	35923	53	240504	6474460
428	OR02701	35924	53	240490	6474340
428	OR02801	35925	53	247633	6466072
428	OR02901	35926	53	248362	6465664
428	OR03001	35927	53	252989	6461069
428	OR03101	35928	53	254485	6459845
430	VMSDT18901	23698	53	228234	6483724
599	SHD03701	36397	53	695312	6310594
599	SHD06901	36395	53	694586	6327109
599	SHI00101	36388	53	692428	6313889
599	SHI00201	36389	53	693136	6315773
599	SHI00301	36390	53	693558	6317926
599	SHI00401	36391	53	692917	6320340
599	SHI00501	36392	53	693031	6322913
599	SHI00601	36393	53	693203	6326288
599	SHI00701	36394	53	693009	6320017
599	SHI00801	36396	53	693595	6323480

Appendix 2. Summary of the number of plant taxa in taxonomic Family order (Census of South Australian Vascular Plants, Barker *et al.* 2005) that were recorded at survey sites in the study area.

DIVISION, CLASS, FAMILY NAME			# taxa	% of total
PTERIDOPHYTA (Ferns and other seedless vascular plants)				0.8
		LYCOPODIACEAE	1	0.1
		OPHIOGLOSSACEAE	1	0.1
		ADIANTACEAE	5	0.4
		ASPLENIACEAE	1	0.1
		MARSILEACEAE	1	0.1
SPERMATOPHYTA (vascular plants that produce seeds)				
	GYMNOSPERMAE (seeds in cones, e.g. Conifers and Cycads)			0.3
		PINACEAE	1	0.1
		CUPRESSACEAE	3	0.3
	ANGIOSPERMAE (flowering plants)			99
	Dicotyledonae (seed with two embronic leaves)			**74**
		CASUARINACEAE	5	0.4
		URTICACEAE	3	0.3
		PROTEACEAE	20	1.7
		SANTALACEAE	8	0.7
		LORANTHACEAE	5	0.4
		POLYGONACEAE	8	0.7
		GYROSTEMONACEAE	3	0.3
		AIZOACEAE	11	0.9
		PORTULACACEAE	7	0.6
		CARYOPHYLLACEAE	25	2.1
		CHENOPODIACEAE	66	5.7
		AMARANTHACEAE	8	0.7
		LAURACEAE	4	0.3
		RANUNCULACEAE	4	0.3
		DILLENIACEAE	8	0.7
		GUTTIFERAE	1	0.1
		DROSERACEAE	5	0.4
		PAPAVERACEAE	1	0.1
		FUMARIACEAE	2	0.2
		CRUCIFERAE	18	1.5
		CRASSULACEAE	10	0.9
		PITTOSPORACEAE	9	0.8
		ROSACEAE	2	0.2
		LEGUMINOSAE	111	9.5
		OXALIDACEAE	3	0.3
		GERANIACEAE	12	1.0
		ZYGOPHYLLACEAE	12	1.0
		LINACEAE	2	0.2
		EUPHORBIACEAE	15	1.3
		RUTACEAE	13	1.1
		POLYGALACEAE	4	0.3
		SAPINDACEAE	11	0.9
		STACKHOUSIACEAE	6	0.5
		RHAMNACEAE	23	2.0
		MALVACEAE	6	0.5
		STERCULIACEAE	6	0.5
		THYMELAEACEAE	11	0.9
		VIOLACEAE	1	0.1
		FRANKENIACEAE	4	0.3
		LYTHRACEAE	1	0.1
		MYRTACEAE	53	4.5

DIVISION, CLASS, FAMILY NAME			# taxa	% of total
		ONAGRACEAE	2	0.2
		HALORAGACEAE	7	0.6
		UMBELLIFERAE	19	1.6
		EPACRIDACEAE	11	0.9
		PRIMULACEAE	3	0.3
		LIMONIACEAE	3	0.3
		OLEACEAE	1	0.1
		LOGANIACEAE	7	0.6
		GENTIANACEAE	5	0.4
		APOCYNACEAE	1	0.1
		RUBIACEAE	8	0.7
		CONVOLVULACEAE	8	0.7
		BORAGINACEAE	10	0.9
		AVICENNIACEAE	1	0.1
		CHLOANTHACEAE	1	0.1
		LABIATAE	15	1.3
		SOLANACEAE	14	1.2
		SCROPHULARIACEAE	7	0.6
		LENTIBULARIACEAE	1	0.1
		MYOPORACEAE	15	1.3
		PLANTAGINACEAE	7	0.6
		DIPSACACEAE	1	0.1
		CAMPANULACEAE	12	1.0
		GOODENIACEAE	24	2.1
		STYLIDIACEAE	3	0.3
		COMPOSITAE	152	13.0
	Monocotyledonae (seed with one embronic leaf)			**25**
		JUNCAGINACEAE	7	0.6
		LILIACEAE	30	2.6
		HYPOXIDACEAE	2	0.2
		IRIDACEAE	7	0.6
		JUNCACEAE	7	0.6
		RESTIONACEAE	3	0.3
		CENTROLEPIDACEAE	4	0.3
		GRAMINEAE	119	10.2
		CYPERACEAE	38	3.3
		ORCHIDACEAE	72	6.2
		Number of plant Families	**85**	
		Number of plant taxa	**1167**	

Appendix 3. Plant taxa list from survey sites by Family with site frequency, in alphabetic species order. Taxa used in the floristic analyses are indicated with "@". Explanation of status codes can be found at the end of the table.

Family Name	*Species Name*	Common name and Status	Site Freq
LEGUMINOSAE	*Acacia acinacea @*	Wreath Wattle	2
LEGUMINOSAE	*Acacia alcockii @*	Alcock's Wattle **R**	8
LEGUMINOSAE	*Acacia anceps @*		29
LEGUMINOSAE	*Acacia ancistrophylla* var. *lissophylla @*	Hook-leaf Wattle	66
LEGUMINOSAE	*Acacia beckleri @*	Beckler's Rock Wattle	19
LEGUMINOSAE	*Acacia brachybotrya @*	Grey Mulga-bush	22
LEGUMINOSAE	*Acacia burkittii @*	Pin-bush Wattle	1
LEGUMINOSAE	*Acacia colletioides*	Veined Wait-a-while	8
LEGUMINOSAE	*Acacia continua @*	Thorn Wattle	44
LEGUMINOSAE	*Acacia cupularis @*	Cup Wattle	53
LEGUMINOSAE	*Acacia dodonaeifolia @*	Hop-bush Wattle **R**	9
LEGUMINOSAE	*Acacia enterocarpa @*	Jumping-jack Wattle **EN E**	3
LEGUMINOSAE	*Acacia euthycarpa @*	Wallowa	114
LEGUMINOSAE	*Acacia farinosa @*	Mealy Wattle	17
LEGUMINOSAE	*Acacia gillii @*	Gill's Wattle	39
LEGUMINOSAE	*Acacia hakeoides @*	Hakea Wattle	29
LEGUMINOSAE	*Acacia halliana @*	Hall's Wattle	22
LEGUMINOSAE	*Acacia havilandiorum @*	Needle Wattle	2
LEGUMINOSAE	*Acacia hexaneura @*	Six-nerve Spine-bush **R**	3
LEGUMINOSAE	*Acacia imbricata @*	Feathery Wattle **VU R**	28
LEGUMINOSAE	*Acacia leiophylla @*	Coast Golden Wattle	14
LEGUMINOSAE	*Acacia ligulata @*	Umbrella Bush	77
LEGUMINOSAE	*Acacia lineata*	Streaked Wattle **R**	1
LEGUMINOSAE	*Acacia longifolia* ssp. *sophorae @*	Coastal Wattle	55
LEGUMINOSAE	*Acacia mearnsii @*	Black Wattle	4
LEGUMINOSAE	*Acacia merrallii @*	Merrall's Wattle	59
LEGUMINOSAE	*Acacia microcarpa @*	Manna Wattle	45
LEGUMINOSAE	*Acacia montana @*	Mallee Wattle **R**	1
LEGUMINOSAE	*Acacia myrtifolia @*	Narrow-leaf Myrtle Wattle	36
LEGUMINOSAE	*Acacia nematophylla @*	Coast Wallowa	32
LEGUMINOSAE	*Acacia notabilis @*	Notable Wattle	42
LEGUMINOSAE	*Acacia nyssophylla @*	Spine Bush	45
LEGUMINOSAE	*Acacia oswaldii @*	Umbrella Wattle	52
LEGUMINOSAE	*Acacia papyrocarpa @*	Western Myall	3
LEGUMINOSAE	*Acacia paradoxa @*	Kangaroo Thorn	32
LEGUMINOSAE	*Acacia pinguifolia @*	Fat-leaf Wattle **EN E**	2
LEGUMINOSAE	*Acacia pycnantha @*	Golden Wattle	40
LEGUMINOSAE	*Acacia rhetinocarpa @*	Resin Wattle **VU V**	1
LEGUMINOSAE	*Acacia rhigiophylla @*	Dagger-leaf Wattle **R**	2
LEGUMINOSAE	*Acacia rigens @*	Nealie	77
LEGUMINOSAE	*Acacia rupicola @*	Rock Wattle	111
LEGUMINOSAE	*Acacia sclerophylla* var. *sclerophylla @*	Hard-leaf Wattle	56
LEGUMINOSAE	*Acacia* sp. *Winged (C.R.Alcock 4936) @*	Angled Wattle	43
LEGUMINOSAE	*Acacia* sp. *Winged (C.R.Alcock 4936) X Acacia nematophylla #*	Hybrid Wattle	1
LEGUMINOSAE	*Acacia spinescens @*	Spiny Wattle	291
LEGUMINOSAE	*Acacia triquetra @*	Mallee Wreath Wattle	41
LEGUMINOSAE	*Acacia wilhelmiana @*	Dwarf Nealie	25
ROSACEAE	*Acaena echinata @*	Sheep's Burr	65
POLYGONACEAE	*Acetosella vulgaris @*	* Sorrel	1
ORCHIDACEAE	*Acianthus pusillus @*	Mosquito Orchid	8
EPACRIDACEAE	*Acrotriche affinis @*	Ridged Ground-berry	1
EPACRIDACEAE	*Acrotriche cordata @*	Blunt-leaf Ground-berry	98
EPACRIDACEAE	*Acrotriche patula @*	Prickly Ground-berry	374
COMPOSITAE	*Actinobole uliginosum @*	Flannel Cudweed	106
COMPOSITAE	*Actites megalocarpa @*	Coast Sow-thistle	1
PROTEACEAE	*Adenanthos terminalis @*	Yellow Gland-flower	28
ADIANTACEAE	*Adiantum aethiopicum @*	Common Maiden-hair	1
RANUNCULACEAE	*Adonis microcarpa @*	* Pheasant's Eye	1
EUPHORBIACEAE	*Adriana quadripartita @*	Coast Bitter-bush	12
GRAMINEAE	*Aira cupaniana @*	* Small Hair-grass	139
SAPINDACEAE	*Alectryon oleifolius* ssp. *canescens @*	Bullock Bush	11
CASUARINACEAE	*Allocasuarina helmsii @*	Helm's Oak-bush	3
CASUARINACEAE	*Allocasuarina muelleriana* ssp. *muelleriana @*	Common Oak-bush	75
CASUARINACEAE	*Allocasuarina pusilla @*	Dwarf Oak-bush	1
CASUARINACEAE	*Allocasuarina verticillata @*	Drooping Sheoak	146
MALVACEAE	*Alyogyne huegelii @*	Native Hibiscus	20

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CRUCIFERAE	*Alyssum linifolium @*	* Flax-leaf Alyssum	13
APOCYNACEAE	*Alyxia buxifolia @*	Sea Box	134
GRAMINEAE	*Ammophila arenaria @*	* Marram Grass	2
GRAMINEAE	*Amphipogon caricinus* var. *caricinus @*	Long Grey-beard Grass	24
GRAMINEAE	*Amphipogon strictus* var. *setifer @*	Spreading Grey-beard Grass	2
BORAGINACEAE	*Amsinckia calycina @*	* Hairy Fiddle-neck	2
LORANTHACEAE	*Amyema melaleucae @*	Tea-tree Mistletoe	65
LORANTHACEAE	*Amyema miraculosa* ssp. *boormanii @*	Fleshy Mistletoe	8
LORANTHACEAE	*Amyema preissii @*	Wire-leaf Mistletoe	3
LORANTHACEAE	*Amyema quandang* var. *quandang*	Grey Mistletoe	1
PRIMULACEAE	*Anagallis arvensis @*	* Pimpernel	496
COMPOSITAE	*Angianthus preissianus @*	Salt Angianthus	24
COMPOSITAE	*Angianthus tomentosus @*	Hairy Angianthus	35
ADIANTACEAE	*Anogramma leptophylla @*	Annual Fern **R**	1
SOLANACEAE	*Anthocercis anisantha* ssp. *anisantha @*	Port Lincoln Ray-flower **R**	2
SOLANACEAE	*Anthocercis anisantha* ssp. *collina @*	Gawler Ranges Ray-flower	1
LEGUMINOSAE	*Aotus subspinescens @*	Mallee Aotus	22
COMPOSITAE	*Apalochlamys spectabilis @*	Showy Firebush	1
ROSACEAE	*Aphanes australiana @*	Australian Piert	13
UMBELLIFERAE	*Apium annuum @*	Annual Celery	40
UMBELLIFERAE	*Apium graveolens @*	* Celery	3
UMBELLIFERAE	*Apium prostratum @*	Native Celery	4
RESTIONACEAE	*Apodasmia brownii @*	Coarse Twine-rush	10
COMPOSITAE	*Arctotheca calendula @*	* Cape Weed	128
COMPOSITAE	*Arctotheca populifolia @*	* Beach Daisy	2
CARYOPHYLLACEAE	*Arenaria leptoclados @*	* Lesser Thyme-leaved Sandwort	9
COMPOSITAE	*Argentipallium obtusifolium @*	Blunt Everlasting	6
COMPOSITAE	*Argyranthemum frutescens @*	* Marguerite Daisy	2
GRAMINEAE	*Aristida behriana @*	Brush Wire-grass	2
GRAMINEAE	*Aristida contorta @*	Curly Wire-grass	9
LILIACEAE	*Arthropodium minus @*	Small Vanilla-lily	49
LILIACEAE	*Arthropodium strictum @*	Common Vanilla-lily	1
LILIACEAE	*Asparagus asparagoides f. asparagoides @*	* Bridal Creeper	197
RUBIACEAE	*Asperula conferta @*	Common Woodruff	11
LILIACEAE	*Asphodelus fistulosus @*	* Onion Weed	21
COMPOSITAE	*Aster subulatus @*	* Aster-weed	2
COMPOSITAE	*Asteridea athrixioides f.*	Wirewort	131
PRIMULACEAE	*Asterolinon linum-stellatum @*	* Asterolinon	2
EPACRIDACEAE	*Astroloma conostephioides @*	Flame Heath	117
EPACRIDACEAE	*Astroloma humifusum @*	Cranberry Heath	142
CHENOPODIACEAE	*Atriplex acutibractea* ssp. *acutibractea @*	Pointed Saltbush	6
CHENOPODIACEAE	*Atriplex acutibractea* ssp. *karoniensis @*	Pointed Saltbush	20
CHENOPODIACEAE	*Atriplex cinerea @*	Coast Saltbush	43
CHENOPODIACEAE	*Atriplex paludosa* ssp. *cordata @*	Marsh Saltbush	97
CHENOPODIACEAE	*Atriplex pumilio @*	Mat Saltbush	2
CHENOPODIACEAE	*Atriplex semibaccata @*	Berry Saltbush	11
CHENOPODIACEAE	*Atriplex stipitata @*	Bitter Saltbush	42
CHENOPODIACEAE	*Atriplex vesicaria @*	Bladder Saltbush	84
GRAMINEAE	*Austrodanthonia auriculata @*	Lobed Wallaby-grass	1
GRAMINEAE	*Austrodanthonia caespitosa @*	Common Wallaby-grass	425
GRAMINEAE	*Austrodanthonia eriantha @*	Hill Wallaby-grass	2
GRAMINEAE	*Austrodanthonia fulva @*	Leafy Wallaby-grass	3
GRAMINEAE	*Austrodanthonia laevis @*	Smooth Wallaby-grass **R**	8
GRAMINEAE	*Austrodanthonia pilosa @*	Velvet Wallaby-grass	4
GRAMINEAE	*Austrodanthonia setacea @*	Small-flower Wallaby-grass	224
GRAMINEAE	*Austrofestuca littoralis @*	Coast Fescue	2
GRAMINEAE	*Austrostipa acrociliata @*	Graceful Spear-grass	169
GRAMINEAE	*Austrostipa blackii @*	Crested Spear-grass	24
GRAMINEAE	*Austrostipa densiflora @*	Fox-tail Spear-grass **R**	1
GRAMINEAE	*Austrostipa drummondii @*	Cottony Spear-grass	96
GRAMINEAE	*Austrostipa echinata @*	Spiny Spear-grass **R**	15
GRAMINEAE	*Austrostipa elegantissima @*	Feather Spear-grass	368
GRAMINEAE	*Austrostipa eremophila @*	Rusty Spear-grass	108
GRAMINEAE	*Austrostipa exilis @*	Heath Spear-grass	300
GRAMINEAE	*Austrostipa flavescens @*	Coast Spear-grass	134
GRAMINEAE	*Austrostipa hemipogon @*	Half-beard Spear-grass	198
GRAMINEAE	*Austrostipa lanata @*		1
GRAMINEAE	*Austrostipa macalpinei @*	Annual Spear-grass	4
GRAMINEAE	*Austrostipa mollis @*	Soft Spear-grass	31
GRAMINEAE	*Austrostipa multispiculis @*	R	1
GRAMINEAE	*Austrostipa mundula @*	Neat Spear-grass	92
GRAMINEAE	*Austrostipa nitida @*	Balcarra Spear-grass	175

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GRAMINEAE	*Austrostipa nodosa @*	Tall Spear-grass	30
GRAMINEAE	*Austrostipa nullanulla @*	Club Spear-grass **VU V**	14
GRAMINEAE	*Austrostipa pilata @*	Prickly Spear-grass **V**	5
GRAMINEAE	*Austrostipa platychaeta @*	Flat-awn Spear-grass	42
GRAMINEAE	*Austrostipa plumigera @*	R	4
GRAMINEAE	*Austrostipa puberula @*	Fine-hairy Spear-grass	36
GRAMINEAE	*Austrostipa scabra* ssp. *falcata @*	Slender Spear-grass	99
GRAMINEAE	*Austrostipa scabra* ssp. *scabra @*	Rough Spear-grass	3
GRAMINEAE	*Austrostipa semibarbata @*	Fibrous Spear-grass	2
GRAMINEAE	*Austrostipa setacea @*	Corkscrew Spear-grass	1
GRAMINEAE	*Austrostipa stipoides @*	Coast Spear-grass	5
GRAMINEAE	*Austrostipa trichophylla @*		56
GRAMINEAE	*Austrostipa variabilis @*	* Variable Spear-grass	2
GRAMINEAE	*Austrostipa vickeryana @*	Vickery's Spear-grass **R**	1
GRAMINEAE	*Avellinia michelii @*	* Avellinia	384
GRAMINEAE	*Avena barbata @*	* Bearded Oat	396
GRAMINEAE	*Avena fatua @*	* Wild Oat	18
GRAMINEAE	*Avena sativa @*	* Cultivated Oat	1
AVICENNIACEAE	*Avicennia marina* ssp. *marina @*	Grey Mangrove	8
MYRTACEAE	*Babingtonia behrii @*	Silver Broombush	167
MYRTACEAE	*Baeckea crassifolia @*	Desert Baeckea	162
PROTEACEAE	*Banksia marginata @*	Silver Banksia	6
PROTEACEAE	*Banksia ornata @*	Desert Banksia	5
SCROPHULARIACEAE	*Bartsia trixago @*	* Bellardia	2
CYPERACEAE	*Baumea arthrophylla @*	Swamp Twig-rush	1
CYPERACEAE	*Baumea juncea @*	Bare Twig-rush	16
EUPHORBIACEAE	*Bertya tasmanica* ssp. *vestita @*	Mitchell's Bertya	16
EUPHORBIACEAE	*Beyeria lechenaultii @*	Pale Turpentine Bush	209
EUPHORBIACEAE	*Beyeria opaca @*	Dark Turpentine Bush	9
PITTOSPORACEAE	*Billardiera cymosa @*	Sweet Apple-berry	75
PITTOSPORACEAE	*Billardiera sericophora @*	Silky Apple-berry	50
PITTOSPORACEAE	*Billardiera* sp. *Yorke Peninsula (P.C.Heyligers 80164) @*	Lehmann's Apple-berry **E**	1
PITTOSPORACEAE	*Billardiera uniflora @*	One-flower Apple-berry	4
PITTOSPORACEAE	*Billardiera versicolor @*	Yellow-flower Apple-berry	24
COMPOSITAE	*Blennospora drummondii @*	Dwarf Button-flower	190
RUTACEAE	*Boronia coerulescens* ssp. *coerulescens @*	Blue Boronia	79
RUTACEAE	*Boronia filifolia @*	Slender Boronia	5
RUTACEAE	*Boronia inornata* ssp. *leptophylla @*	Dryland Boronia	52
LEGUMINOSAE	*Bossiaea ensata @*	Sword Bossiaea **V**	1
GRAMINEAE	*Brachypodium distachyon @*	* False Brome	13
COMPOSITAE	*Brachyscome ciliaris* var. *ciliaris @*	Variable Daisy	122
COMPOSITAE	*Brachyscome ciliaris* var. *lanuginosa @*	Woolly Variable Daisy	2
COMPOSITAE	*Brachyscome cuneifolia @*	Wedge-leaf Daisy	1
COMPOSITAE	*Brachyscome exilis @*	Slender Daisy	33
COMPOSITAE	*Brachyscome goniocarpa @*	Dwarf Daisy	20
COMPOSITAE	*Brachyscome lineariloba @*	Hard-head Daisy	242
COMPOSITAE	*Brachyscome perpusilla @*	Tiny Daisy	37
COMPOSITAE	*Brachyscome trachycarpa @*	Smooth Daisy	6
COMPOSITAE	*Brachyscome xanthocarpa @*	Yellow-fruit Daisy **R**	2
CRUCIFERAE	*Brassica tournefortii @*	* Wild Turnip	288
GRAMINEAE	*Briza maxima @*	* Large Quaking-grass	28
GRAMINEAE	*Briza minor @*	* Lesser Quaking-grass	127
GRAMINEAE	*Bromus arenarius @*	Sand Brome	6
GRAMINEAE	*Bromus diandrus @*	* Great Brome	83
GRAMINEAE	*Bromus hordeaceus* ssp. *hordeaceus @*	* Soft Brome	4
GRAMINEAE	*Bromus madritensis @*	* Compact Brome	67
GRAMINEAE	*Bromus rigidus @*	* Rigid Brome	13
GRAMINEAE	*Bromus rubens @*	* Red Brome	334
BORAGINACEAE	*Buglossoides arvensis @*	* Sheepweed	11
LILIACEAE	*Bulbine bulbosa @*	Bulbine-lily	8
LILIACEAE	*Bulbine semibarbata @*	Small Leek-lily	141
UMBELLIFERAE	*Bupleurum semicompositum @*	* Hare's Ear	220
LILIACEAE	*Burchardia umbellata @*	Milkmaids	36
PITTOSPORACEAE	*Bursaria spinosa* ssp. *spinosa @*	Sweet Bursaria	82
CRUCIFERAE	*Cakile edentula @*	* American Sea Rocket	1
CRUCIFERAE	*Cakile maritima* ssp. *maritima @*	* Two-horned Sea Rocket	24
ORCHIDACEAE	*Caladenia bicalliata* ssp. *bicalliata @*	Western Daddy-long-legs **R**	11
ORCHIDACEAE	*Caladenia capillata @*	Wispy Spider-orchid	40
ORCHIDACEAE	*Caladenia cardiochila @*	Heart-lip Spider-orchid	18
ORCHIDACEAE	*Caladenia carnea @*	Pink Fingers	5
ORCHIDACEAE	*Caladenia clavula @*	Brown-club Spider Orchid	11
ORCHIDACEAE	*Caladenia fuscata @*	Dusky Caladenia	5

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ORCHIDACEAE	*Caladenia latifolia @*	Pink Caladenia	33
ORCHIDACEAE	*Caladenia pusilla @*	Pigmy Caladenia **R**	1
ORCHIDACEAE	*Caladenia septuosa @*	Eyre Peninsula Spider-orchid	54
ORCHIDACEAE	*Caladenia* sp. *Inland (F.A.Mason 300) @*	Spider-orchid	5
ORCHIDACEAE	*Caladenia stricta @*	Upright Caladenia	15
ORCHIDACEAE	*Caladenia tensa @*	Inland Green-comb Spider-orchid **EN**	8
ORCHIDACEAE	*Caladenia tentaculata @*	King Spider-orchid	2
PORTULACACEAE	*Calandrinia brevipedata @*	Short-stalked Purslane	9
PORTULACACEAE	*Calandrinia calyptrata @*	Pink Purslane	141
PORTULACACEAE	*Calandrinia corrigioloides @*	Strap Purslane	17
PORTULACACEAE	*Calandrinia eremaea @*	Dryland Purslane	327
PORTULACACEAE	*Calandrinia granulifera @*	Pigmy Purslane	77
PORTULACACEAE	*Calandrinia sphaerophylla @*	Bead Purslane **R**	1
PORTULACACEAE	*Calandrinia volubilis @*	Twining Purslane	1
MYRTACEAE	*Callistemon rugulosus @*	Scarlet Bottlebrush	54
CUPRESSACEAE	*Callitris canescens @*	Scrubby Cypress Pine	72
CUPRESSACEAE	*Callitris gracilis @*	Southern Cypress Pine	121
CUPRESSACEAE	*Callitris verrucosa @*	Scrub Cypress Pine	79
ORCHIDACEAE	*Calochilus pruinosa @*	Plains Beard-orchid **R**	1
COMPOSITAE	*Calotis erinacea @*	Tangled Burr-daisy	4
COMPOSITAE	*Calotis hispidula @*	Hairy Burr-daisy	66
MYRTACEAE	*Calytrix involucrata @*	Cup Fringe-myrtle	138
MYRTACEAE	*Calytrix tetragona @*	Common Fringe-myrtle	154
CRUCIFERAE	*Capsella bursa-pastoris @*	* Shepherd's Purse	4
COMPOSITAE	*Carduus tenuiflorus @*	* Slender Thistle	39
CYPERACEAE	*Carex breviculmis @*	Short-stem Sedge	14
CYPERACEAE	*Carex inversa* var. *major @*	Knob Sedge	2
CYPERACEAE	*Carex tereticaulis @*	Rush Sedge	3
AIZOACEAE	*Carpobrotus chilensis*	* Angled Pigface	16
AIZOACEAE	*Carpobrotus modestus @*	Inland Pigface	20
AIZOACEAE	*Carpobrotus rossii @*	Native Pigface	263
CRUCIFERAE	*Carrichtera annua @*	* Ward's Weed	165
COMPOSITAE	*Carthamus lanatus @*	* Saffron Thistle	11
COMPOSITAE	*Cassinia complanata @*	Sticky Cassinia	5
COMPOSITAE	*Cassinia laevis @*	Curry Bush	2
LAURACEAE	*Cassytha glabella f. dispar @*	Slender Dodder-laurel	132
LAURACEAE	*Cassytha melantha @*	Coarse Dodder-laurel	170
LAURACEAE	*Cassytha peninsularis* var. *peninsularis @*	Peninsula Dodder-laurel	222
LAURACEAE	*Cassytha pubescens @*	Downy Dodder-laurel	9
CASUARINACEAE	*Casuarina pauper @*	Black Oak	20
GRAMINEAE	*Catapodium rigidum @*	* Rigid Fescue	187
COMPOSITAE	*Centaurea melitensis @*	* Malta Thistle	32
GENTIANACEAE	*Centaurium erythraea @*	* Common Centaury	3
GENTIANACEAE	*Centaurium pulchellum/tenuiflorum #*	* Branched Centaury	22
GENTIANACEAE	*Centaurium tenuiflorum @*	* Branched Centaury	1
UMBELLIFERAE	*Centella asiatica @*	Asian Centella	1
CENTROLEPIDACEAE	*Centrolepis aristata @*	Pointed Centrolepis	37
CENTROLEPIDACEAE	*Centrolepis cephaloformis* ssp. *cephaloformis @*	Cushion Centrolepis **R**	5
CENTROLEPIDACEAE	*Centrolepis polygyna @*	Wiry Centrolepis	31
CENTROLEPIDACEAE	*Centrolepis strigosa* ssp. *strigosa @*	Hairy Centrolepis	35
CARYOPHYLLACEAE	*Cerastium balearicum @*	* Chickweed	38
CARYOPHYLLACEAE	*Cerastium glomeratum @*	* Common Mouse-ear Chickweed	12
CARYOPHYLLACEAE	*Cerastium pumilum @*	* Chickweed	9
COMPOSITAE	*Ceratogyne obionoides @*	Wingwort **R**	6
LILIACEAE	*Chamaescilla corymbosa* var. *corymbosa @*	Blue Squill	92
EUPHORBIACEAE	*Chamaesyce drummondii @*	Caustic Weed	4
ADIANTACEAE	*Cheilanthes austrotenuifolia @*	Annual Rock-fern	72
ADIANTACEAE	*Cheilanthes lasiophylla @*	Woolly Cloak-fern	5
ADIANTACEAE	*Cheilanthes sieberi* ssp. *sieberi @*	Narrow Rock-fern	11
PITTOSPORACEAE	*Cheiranthera alternifolia @*	Hand-flower	59
CHENOPODIACEAE	*Chenopodium curvispicatum @*	Cottony Goosefoot	46
CHENOPODIACEAE	*Chenopodium desertorum* ssp. *anidiophyllum @*	Mallee Goosefoot	5
CHENOPODIACEAE	*Chenopodium desertorum* ssp. *desertorum @*	Frosted Goosefoot	28
CHENOPODIACEAE	*Chenopodium desertorum* ssp. *microphyllum @*	Small-leaf Goosefoot	38
CHENOPODIACEAE	*Chenopodium desertorum* ssp. *rectum @*	Erect Goosefoot	10
CHENOPODIACEAE	*Chenopodium murale @*	* Nettle-leaf Goosefoot	1
COMPOSITAE	*Chondropyxis halophila @*	Salt Button-daisy **R**	1
SANTALACEAE	*Choretrum glomeratum* var. *glomeratum @*	White Sour-bush	39
CYPERACEAE	*Chorizandra enodis @*	Black Bristle-rush	12
COMPOSITAE	*Chrysocephalum apiculatum @*	Common Everlasting	119
COMPOSITAE	*Chrysocephalum baxteri @*	White Everlasting	16

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COMPOSITAE	*Chrysocephalum semipapposum* @	Clustered Everlasting	16
COMPOSITAE	*Chthonocephalus pseudevax* @	Ground-heads	4
COMPOSITAE	*Cirsium vulgare* @	* Spear Thistle	8
RANUNCULACEAE	*Clematis microphylla* var. *microphylla* @	Old Man's Beard	353
AIZOACEAE	*Cleretum papulosum* ssp. *papulosum* @	*	2
POLYGALACEAE	*Comesperma calymega* @	Blue-spike Milkwort	13
POLYGALACEAE	*Comesperma scoparium* @	Broom Milkwort	52
POLYGALACEAE	*Comesperma volubile* @	Love Creeper	302
STERCULIACEAE	*Commersonia tatei* @	Trailing Commersonia	8
PROTEACEAE	*Conospermum patens* @	Slender Smoke-bush	2
CONVOLVULACEAE	*Convolvulus angustissimus* @ #	Australian Bindweed	23
CONVOLVULACEAE	*Convolvulus angustissimus* ssp. *angustissimus*	Australian Bindweed	5
CONVOLVULACEAE	*Convolvulus angustissimus* ssp. *peninsularum*	Grassland Bindweed	2
CONVOLVULACEAE	*Convolvulus remotus* @	Grassy Bindweed	37
RUTACEAE	*Correa backhouseana* var. *coriacea* @	Common Correa	132
RUTACEAE	*Correa pulchella* @	Salmon Correa	111
ORCHIDACEAE	*Corybas despectans* @	Coast Helmet-orchid	22
COMPOSITAE	*Cotula coronopifolia* @	* Water Buttons	1
COMPOSITAE	*Cotula vulgaris* var. *australasica* @	Slender Cotula	6
COMPOSITAE	*Craspedia variabilis* @	Billy-buttons	34
CRASSULACEAE	*Crassula closiana* @	Stalked Crassula	46
CRASSULACEAE	*Crassula colligata* ssp. *colligata* #		5
CRASSULACEAE	*Crassula colligata* ssp. *lamprosperma* #	Australian Stonecrop	47
CRASSULACEAE	*Crassula colorata* var. *acuminata*	Dense Crassula	182
CRASSULACEAE	*Crassula colorata* var. *colorata*	Dense Crassula	151
CRASSULACEAE	*Crassula decumbens* var. *decumbens* @	Spreading Crassula	47
CRASSULACEAE	*Crassula exserta*	Large-fruit Crassula **R**	21
CRASSULACEAE	*Crassula natans* var. *minus* @	* Water Crassula	2
CRASSULACEAE	*Crassula sieberiana complex* @ #	Australian Stonecrop	431
CRASSULACEAE	*Crassula tetramera* #	Australian Stonecrop	2
COMPOSITAE	*Cratystylis conocephala* @	Bluebush Daisy	44
RHAMNACEAE	*Cryptandra propinqua* @	Silky Cryptandra	3
RHAMNACEAE	*Cryptandra* sp. *Floriferous (W.R.Barker 4131)* @	Spiny Cryptandra	65
RHAMNACEAE	*Cryptandra tomentosa* @	Heath Cryptandra	10
COMPOSITAE	*Cymbonotus preissianus* @	Austral Bear's-ear	2
GRAMINEAE	*Cynodon dactylon* var. *dactylon* @	* Couch	1
BORAGINACEAE	*Cynoglossum suaveolens* @	Sweet Hound's-tongue	2
CYPERACEAE	*Cyperus laevigatus* @	Bore-drain Sedge	2
CYPERACEAE	*Cyperus tenellus* @	Tiny Flat-sedge	3
SOLANACEAE	*Cyphanthera myosotidea* @	Small-leaf Ray-flower	6
ORCHIDACEAE	*Cyrtostylis robusta* @	Gnat-orchid	1
ORCHIDACEAE	*Cyrtostylis robusta* @	Robust Gnat-orchid	43
GOODENIACEAE	*Dampiera lanceolata* var. *lanceolata* @	Grooved Dampiera	4
GOODENIACEAE	*Dampiera rosmarinifolia* @	Rosemary Dampiera	188
MYRTACEAE	*Darwinia salina* @	Salt Darwinia	4
UMBELLIFERAE	*Daucus glochidiatus* @	Native Carrot	466
LEGUMINOSAE	*Daviesia asperula* ssp. *asperula* @	Kangaroo Island Bitter-pea	5
LEGUMINOSAE	*Daviesia asperula* ssp. *obliqua* @	Eyre Peninsula Bitter-pea	29
LEGUMINOSAE	*Daviesia benthamii* ssp. *acanthoclona* @	Dryland Bitter-pea	15
LEGUMINOSAE	*Daviesia benthamii* ssp. *humilis* @	Mallee Bitter-pea **R**	14
LEGUMINOSAE	*Daviesia brevifolia* @	Leafless Bitter-pea	24
LEGUMINOSAE	*Daviesia pectinata* @	Zig-zag Bitter-pea **R**	13
LEGUMINOSAE	*Daviesia ulicifolia* ssp. *aridicola* @	Gorse Bitter-pea	12
RESTIONACEAE	*Desmocladus diacolpicus* @	Bundled Cord-rush **V**	3
LILIACEAE	*Dianella brevicaulis* @	Short-stem Flax-lily	155
LILIACEAE	*Dianella revoluta* var. *divaricata* @	Broad-leaf Flax-lily	45
LILIACEAE	*Dianella revoluta* var. *revoluta* @	Black-anther Flax-lily	400
GRAMINEAE	*Dichelachne crinita* @	Long-hair Plume-grass	39
CONVOLVULACEAE	*Dichondra repens* @	Kidney Weed	19
CHLOANTHACEAE	*Dicrastylis verticillata* @	Whorled Sand-sage	6
GRAMINEAE	*Digitaria brownii* @	Cotton Panic-grass	2
LEGUMINOSAE	*Dillwynia hispida* @	Red Parrot-pea	13
LEGUMINOSAE	*Dillwynia uncinata* @	Silky Parrot-pea	50
CRUCIFERAE	*Diplotaxis tenuifolia* @	* Lincoln Weed	45
AIZOACEAE	*Disphyma crassifolium* ssp. *clavellatum* @	Round-leaf Pigface	155
GRAMINEAE	*Distichlis distichophylla* @	Emu-grass	3
COMPOSITAE	*Dittrichia graveolens* @	* Stinkweed	3
ORCHIDACEAE	*Diuris orientis* @	Wallflower Donkey-orchid	9
ORCHIDACEAE	*Diuris palustris* @	Little Donkey-orchid	2
ORCHIDACEAE	*Diuris pardina* @	Spotted Donkey-orchid	23
SAPINDACEAE	*Dodonaea baueri* @	Crinkled Hop-bush	46
SAPINDACEAE	*Dodonaea bursariifolia* @	Small Hop-bush	184

Family Name	*Species Name*	Common name and Status	Site Freq
SAPINDACEAE	*Dodonaea hexandra @*	Horned Hop-bush	214
SAPINDACEAE	*Dodonaea humilis @*	Dwarf Hop-bush	39
SAPINDACEAE	*Dodonaea intricata @*	Gawler Ranges Hop-bush	1
SAPINDACEAE	*Dodonaea lobulata @*	Lobed-leaf Hop-bush	2
SAPINDACEAE	*Dodonaea stenozyga @*	Desert Hop-bush	50
SAPINDACEAE	*Dodonaea tepperi @*	Streaked Hop-bush	7
SAPINDACEAE	*Dodonaea viscosa* ssp. *angustissima @*	Narrow-leaf Hop-bush	55
SAPINDACEAE	*Dodonaea viscosa* ssp. *spatulata @*	Sticky Hop-bush	40
DROSERACEAE	*Drosera glanduligera @*	Scarlet Sundew	54
DROSERACEAE	*Drosera macrantha* ssp. *planchonii @*	Climbing Sundew	139
DROSERACEAE	*Drosera peltata @*	Pale Sundew	17
DROSERACEAE	*Drosera pygmaea @*	Tiny Sundew	1
DROSERACEAE	*Drosera* sp. *Rigid (R.J.Bates 2268) @*	Erect Sundew **V**	11
BORAGINACEAE	*Echium plantagineum @*	* Salvation Jane	8
GRAMINEAE	*Ehrharta calycina @*	* Perennial Veldt Grass	18
GRAMINEAE	*Ehrharta longiflora @*	* Annual Veldt Grass	87
GRAMINEAE	*Ehrharta villosa* var. *maxima @*	* Pyp Grass	2
CHENOPODIACEAE	*Einadia nutans* ssp. *nutans @*	Climbing Saltbush	87
COMPOSITAE	*Elachanthus pusillus @*	Elachanth	3
CYPERACEAE	*Eleocharis acuta @*	Common Spike-rush	1
GRAMINEAE	*Elymus scaber* var. *scaber @*	Native Wheat-grass	22
BORAGINACEAE	*Embadium uncinatum @*	Gawler Ranges Slipper-plant	2
POLYGONACEAE	*Emex australis @*	* Three-corner Jack	2
CHENOPODIACEAE	*Enchylaena tomentosa* var. *tomentosa @*	Ruby Saltbush	380
GRAMINEAE	*Enneapogon nigricans @*	Black-head Grass	9
GRAMINEAE	*Enteropogon acicularis @*	Umbrella Grass	2
ONAGRACEAE	*Epilobium billardierianum* ssp. *billardierianum @*	Robust Willow-herb	2
CHENOPODIACEAE	*Eremophea spinosa*		4
MYOPORACEAE	*Eremophila alternifolia @*	Narrow-leaf Emubush	12
MYOPORACEAE	*Eremophila behriana @*	Rough Emubush	47
MYOPORACEAE	*Eremophila crassifolia @*	Thick-leaf Emubush	156
MYOPORACEAE	*Eremophila deserti @*	Turkey-bush	78
MYOPORACEAE	*Eremophila gibbifolia @*	Coccid Emubush **R**	1
MYOPORACEAE	*Eremophila glabra* ssp. *glabra @*	Tar Bush	117
MYOPORACEAE	*Eremophila oppositifolia* ssp. *oppositifolia @*	Opposite-leaved Emubush	2
MYOPORACEAE	*Eremophila scoparia @*	Broom Emubush	58
MYOPORACEAE	*Eremophila subfloccosa* ssp. *Lanata (R.Bates 33587) @*	Woolly Emubush	3
MYOPORACEAE	*Eremophila weldii @*	Purple Emubush	75
ORCHIDACEAE	*Eriochilus cucullatus @*	Parson's Bands	14
CHENOPODIACEAE	*Eriochiton sclerolaenoides @*	Woolly-fruit Bluebush	59
COMPOSITAE	*Eriochlamys behrii @*	Woolly Mantle	25
GERANIACEAE	*Erodium aureum @*	*	7
GERANIACEAE	*Erodium botrys @*	* Long Heron's-bill	27
GERANIACEAE	*Erodium carolinianum @*	Blue Heron's-bill	6
GERANIACEAE	*Erodium cicutarium @*	* Cut-leaf Heron's-bill	105
GERANIACEAE	*Erodium crinitum @*	Blue Heron's-bill	38
GERANIACEAE	*Erodium moschatum @*	* Musky Herons-bill	1
MYRTACEAE	*Eucalyptus albopurpurea @*	Purple-flowered Mallee Box	5
MYRTACEAE	*Eucalyptus angulosa @*	Coast Ridge-fruited Mallee	38
MYRTACEAE	*Eucalyptus behriana @*	Broad-leaf Box **R**	4
MYRTACEAE	*Eucalyptus brachycalyx @*	Gilja	167
MYRTACEAE	*Eucalyptus calycogona @*	Square-fruit Mallee	64
MYRTACEAE	*Eucalyptus camaldulensis* var. *camaldulensis @*	River Red Gum	19
MYRTACEAE	*Eucalyptus cladocalyx @*	Sugar Gum	48
MYRTACEAE	*Eucalyptus concinna @*	Victoria Desert Mallee	1
MYRTACEAE	*Eucalyptus conglobata* ssp. *conglobata @*	Port Lincoln Mallee **R**	9
MYRTACEAE	*Eucalyptus cretata @*	Darke Peak Mallee **R**	11
MYRTACEAE	*Eucalyptus diversifolia* ssp. *diversifolia @*	Coastal White Mallee	288
MYRTACEAE	*Eucalyptus dumosa complex @ #*	White Mallee	325
MYRTACEAE	*Eucalyptus gracilis @*	Yorrell	258
MYRTACEAE	*Eucalyptus incrassata @ #*	Ridge-fruited Mallee	202
MYRTACEAE	*Eucalyptus leptophylla @*	Narrow-leaf Red Mallee	193
MYRTACEAE	*Eucalyptus odorata @*	Peppermint Box	60
MYRTACEAE	*Eucalyptus oleosa @*	Red Mallee	275
MYRTACEAE	*Eucalyptus petiolaris @*	Eyre Peninsula Blue Gum	12
MYRTACEAE	*Eucalyptus phenax @ #*	White Mallee	119
MYRTACEAE	*Eucalyptus porosa @*	Mallee Box	128
MYRTACEAE	*Eucalyptus rugosa @*	Coastal White Mallee	30
MYRTACEAE	*Eucalyptus socialis complex @ #*	Beaked Red Mallee	407
MYRTACEAE	*Eucalyptus viminalis* ssp. *cygnetensis @*	Rough-bark Manna Gum	1
MYRTACEAE	*Eucalyptus yalatensis @*	Yalata Mallee	72
MYRTACEAE	*Eucalyptus yumbarrana* ssp. *yumbarrana @*	Yumbarra Mallee	14

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COMPOSITAE	*Euchiton collinus @*	Creeping Cudweed	3
COMPOSITAE	*Euchiton sphaericus @*	Annual Cudweed	20
EUPHORBIACEAE	*Euphorbia paralias @*	* Sea Spurge	26
EUPHORBIACEAE	*Euphorbia peplus @*	* Petty Spurge	10
EUPHORBIACEAE	*Euphorbia tannensis* ssp. *eremophila @*	Desert Spurge	3
EUPHORBIACEAE	*Euphorbia terracina @*	* False Caper	9
SCROPHULARIACEAE	*Euphrasia collina* ssp. *tetragona @*	Coast Eyebright	3
LEGUMINOSAE	*Eutaxia diffusa @*	Large-leaf Eutaxia	4
LEGUMINOSAE	*Eutaxia microphylla @*	Common Eutaxia	343
SANTALACEAE	*Exocarpos aphyllus @*	Leafless Cherry	375
SANTALACEAE	*Exocarpos cupressiformis @*	Native Cherry	2
SANTALACEAE	*Exocarpos sparteus @*	Slender Cherry	67
SANTALACEAE	*Exocarpos syrticola @*	Coast Cherry	82
FRANKENIACEAE	*Frankenia pauciflora @ #*	Southern Sea-heath	164
FRANKENIACEAE	*Frankenia serpyllifolia @*	Thyme Sea-heath	2
FRANKENIACEAE	*Frankenia sessilis @*	Small-leaf Sea-heath	56
IRIDACEAE	*Freesia cultivar @*	* Freesia	4
FUMARIACEAE	*Fumaria bastardii @*	* Bastard Fumitory	3
FUMARIACEAE	*Fumaria capreolata @*	* White-flower Fumitory	2
CYPERACEAE	*Gahnia ancistrophylla @*	Curled Saw-sedge	36
CYPERACEAE	*Gahnia deusta @*	Limestone Saw-sedge	159
CYPERACEAE	*Gahnia filum @*	Thatching Grass	33
CYPERACEAE	*Gahnia lanigera @*	Black Grass Saw-sedge	290
CYPERACEAE	*Gahnia trifida @*	Cutting Grass	17
AIZOACEAE	*Galenia pubescens* var. *pubescens @*	* Coastal Galenia	11
RUBIACEAE	*Galium gaudichaudii @*	Rough Bedstraw	16
RUBIACEAE	*Galium migrans @*	Loose Bedstraw	7
RUBIACEAE	*Galium murale @*	* Small Bedstraw	242
COMPOSITAE	*Gazania rigens @*	* Gazania	1
RUTACEAE	*Geijera linearifolia @*	Sheep Bush	268
ORCHIDACEAE	*Genoplesium nigricans @*	Black Midge-orchid	30
ORCHIDACEAE	*Genoplesium rufum @*	Red Midge-orchid	3
GERANIACEAE	*Geranium molle* var. *molle @*	* Soft Geranium	13
GERANIACEAE	*Geranium potentilloides* var. *potentilloides @*	Downy Geranium	6
GERANIACEAE	*Geranium retrorsum @*	Grassland Geranium	37
GERANIACEAE	*Geranium solanderi* var. *solanderi @*	Austral Geranium	35
IRIDACEAE	*Gladiolus undulatus @*	* Wild Gladiolus	1
HALORAGACEAE	*Glischrocaryon aureum* var. *angustifolium @*	Yellow Pop-flower	4
HALORAGACEAE	*Glischrocaryon behrii @*	Golden Pennants	58
HALORAGACEAE	*Glischrocaryon flavescens*	Yellow Pennants	2
LEGUMINOSAE	*Glycine rubiginosa @*	Twining Glycine	18
COMPOSITAE	*Gnaphalium indutum @*	Tiny Cudweed	64
COMPOSITAE	*Gnephosis drummondii @*	Slender Golden-tip	5
COMPOSITAE	*Gnephosis tenuissima @*	Dwarf Golden-tip	3
LEGUMINOSAE	*Gompholobium ecostatum @*	Dwarf Wedge-pea	4
HALORAGACEAE	*Gonocarpus elatus @*	Hill Raspwort	13
HALORAGACEAE	*Gonocarpus mezianus @*	Broad-leaf Raspwort	174
GOODENIACEAE	*Goodenia blackiana @*	Native Primrose	54
GOODENIACEAE	*Goodenia gibbosa @*		1
GOODENIACEAE	*Goodenia glabra @*	Smooth Goodenia	2
GOODENIACEAE	*Goodenia havilandii @*	Hill Goodenia	1
GOODENIACEAE	*Goodenia lobata @*		5
GOODENIACEAE	*Goodenia ovata @*	Hop Goodenia	10
GOODENIACEAE	*Goodenia pinnatifida @*	Cut-leaf Goodenia	39
GOODENIACEAE	*Goodenia pusilliflora @*	Small-flower Goodenia	93
GOODENIACEAE	*Goodenia quasilibera @*		1
GOODENIACEAE	*Goodenia robusta @*	Woolly Goodenia	64
GOODENIACEAE	*Goodenia varia @*	Sticky Goodenia	104
GOODENIACEAE	*Goodenia willisiana @*	Silver Goodenia	155
LEGUMINOSAE	*Goodia medicaginea @*	Western Golden-tip	7
SOLANACEAE	*Grammosolen dixonii @*		6
SOLANACEAE	*Grammosolen truncatus @*	Shrubby Ray-flower	6
PROTEACEAE	*Grevillea anethifolia @*	R	1
PROTEACEAE	*Grevillea aspera @*	Rough Grevillea	34
PROTEACEAE	*Grevillea halmaturina* ssp. *laevis @*	Prickly Grevillea	8
PROTEACEAE	*Grevillea huegelii @*	Comb Grevillea	56
PROTEACEAE	*Grevillea ilicifolia complex @ #*	Holly-leaf Grevillea	81
PROTEACEAE	*Grevillea juncifolia* ssp. *juncifolia @*	Honeysuckle Grevillea	4
PROTEACEAE	*Grevillea pauciflora* ssp. *#*	Few-flower Grevillea	15
PROTEACEAE	*Grevillea pterosperma @*	Dune Grevillea	17
CARYOPHYLLACEAE	*Gypsophila tubulosa @*	* Annual Chalkwort	1
GYROSTEMONACEAE	*Gyrostemon australasicus @*	Buckbush Wheel-fruit	2

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GYROSTEMONACEAE	*Gyrostemon ramulosus @*	Bushy Wheel-fruit	2
GYROSTEMONACEAE	*Gyrostemon thesioides @*	Broom Wheel-fruit	2
COMPOSITAE	*Haeckeria cassiniiformis @*	Dogwood Haeckeria **R**	1
COMPOSITAE	*Haegiela tatei @*	Small Nut-heads **R**	2
GRAMINEAE	*Hainardia cylindrica @*	* Common Barb-grass	1
PROTEACEAE	*Hakea cycloptera @*	Elm-seed Hakea	187
PROTEACEAE	*Hakea francisiana @*	Bottlebrush Hakea	37
PROTEACEAE	*Hakea leucoptera* ssp. *leucoptera @*	Silver Needlewood	13
PROTEACEAE	*Hakea mitchellii @*	Heath Needlebush	42
PROTEACEAE	*Hakea rugosa @*	Dwarf Hakea	36
PROTEACEAE	*Hakea vittata @*	Limestone Needlebush	19
BORAGINACEAE	*Halgania andromedifolia @*	Scented Blue-flower	39
BORAGINACEAE	*Halgania cyanea @*	Rough Blue-flower	126
HALORAGACEAE	*Haloragis acutangula @*	Smooth Raspwort	10
HALORAGACEAE	*Haloragis aspera @*	Rough Raspwort	11
LEGUMINOSAE	*Hardenbergia violacea @*	Native Lilac	57
COMPOSITAE	*Hedypnois rhagadioloides @*	* Cretan Weed	94
COMPOSITAE	*Helichrysum leucopsideum @*	Satin Everlasting	434
AMARANTHACEAE	*Hemichroa diandra @*	Mallee Hemichroa	39
AMARANTHACEAE	*Hemichroa pentandra @*	Trailing Hemichroa	7
CARYOPHYLLACEAE	*Herniaria cinerea @*	* Rupturewort	5
DILLENIACEAE	*Hibbertia cinerea @*	Port Lincoln Guinea-flower	15
DILLENIACEAE	*Hibbertia crinita @*		2
DILLENIACEAE	*Hibbertia paeninsularis @*	Peninsula Guinea-flower	14
DILLENIACEAE	*Hibbertia platyphylla @*	Large Guinea-flower	26
DILLENIACEAE	*Hibbertia platyphylla @*		33
DILLENIACEAE	*Hibbertia riparia @*	Bristly Guinea-flower	4
DILLENIACEAE	*Hibbertia* sp. *Glabriuscula (D.J.Whibley 9012) @ #*	Guinea-flower	288
DILLENIACEAE	*Hibbertia virgata @*	Twiggy Guinea-flower	69
GRAMINEAE	*Holcus lanatus*	* Yorkshire Fog	1
MYRTACEAE	*Homoranthus homoranthoides @*	Port Lincoln Ground-myrtle	47
MYRTACEAE	*Homoranthus wilhelmii @*	Wilhelm's Homoranthus	35
GRAMINEAE	*Hordeum glaucum @*	* Blue Barley-grass	177
GRAMINEAE	*Hordeum leporinum @*	* Wall Barley-grass	9
GRAMINEAE	*Hordeum marinum @*	* Sea Barley-grass	9
CRUCIFERAE	*Hornungia procumbens @*	* Oval Purse	34
COMPOSITAE	*Hyalosperma demissum @*	Dwarf Sunray	78
COMPOSITAE	*Hyalosperma glutinosum* ssp. *glutinosum @*	Golden Sunray	35
COMPOSITAE	*Hyalosperma semisterile @*	Orange Sunray	2
VIOLACEAE	*Hybanthus floribundus* ssp. *floribundus @*	Shrub Violet	26
UMBELLIFERAE	*Hydrocotyle callicarpa @*	Tiny Pennywort	52
UMBELLIFERAE	*Hydrocotyle capillaris @*	Thread Pennywort	42
UMBELLIFERAE	*Hydrocotyle foveolata @*	Yellow Pennywort	9
UMBELLIFERAE	*Hydrocotyle medicaginoides @*	Medic Pennywort	11
UMBELLIFERAE	*Hydrocotyle pilifera* var. *glabrata @*	Buttercup Pennywort	111
UMBELLIFERAE	*Hydrocotyle rugulosa @*	Mallee Pennywort	8
GUTTIFERAE	*Hypericum perforatum @*	* St John's Wort	1
COMPOSITAE	*Hypochaeris glabra @*	* Smooth Cat's Ear	398
COMPOSITAE	*Hypochaeris radicata @*	* Rough Cat's Ear	36
RESTIONACEAE	*Hypolaena fastigiata @*	Tassel Rope-rush	15
HYPOXIDACEAE	*Hypoxis glabella* var. *glabella @*	Tiny Star	43
HYPOXIDACEAE	*Hypoxis vaginata* var. *vaginata @*	Yellow Star	5
LEGUMINOSAE	*Indigofera helmsii @*	Helm's Indigo	2
COMPOSITAE	*Isoetopsis graminifolia @*	Grass Cushion	67
CYPERACEAE	*Isolepis australiensis @*	Southern Club-rush	1
CYPERACEAE	*Isolepis cernua @*	Nodding Club-rush	1
CYPERACEAE	*Isolepis marginata @*	Little Club-rush	37
CYPERACEAE	*Ficinia nodosa @*	Knobby Club-rush	86
CYPERACEAE	*Isolepis platycarpa @*	Flat-fruit Club-rush	1
CAMPANULACEAE	*Isotoma petraea*	Rock Isotome	3
CAMPANULACEAE	*Isotoma scapigera @*	Salt Isotome **R**	5
COMPOSITAE	*Ixodia achillaeoides* ssp. *achillaeoides @*	Coast Ixodia	7
JUNCACEAE	*Juncus bufonius @*	Toad Rush	8
JUNCACEAE	*Juncus capitatus @*	* Dwarf Rush	4
JUNCACEAE	*Juncus kraussii @*	Sea Rush	9
JUNCACEAE	*Juncus pallidus @*	Pale Rush	1
JUNCACEAE	*Juncus subsecundus @*	Finger Rush	4
LEGUMINOSAE	*Kennedia prostrata @*	Scarlet Runner	42
SCROPHULARIACEAE	*Kickxia elatine* ssp. *crinita @*	* Twining Toadflax	1
COMPOSITAE	*Kippistia suaedifolia @*	Fleshy Kippistia	1
GRAMINEAE	*Lachnagrostis aemula @*	Blown-grass	5
GRAMINEAE	*Lachnagrostis billardierei* ssp. *billardierei @*	Coast Blown-grass	6

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GRAMINEAE	*Lachnagrostis filiformis @*	Common Blown-grass	21
COMPOSITAE	*Lactuca serriola f. serriola @*	* Prickly Lettuce	3
COMPOSITAE	*Lagenophora huegelii @*	Coarse Bottle-daisy	107
GRAMINEAE	*Lagurus ovatus @*	* Hare's Tail Grass	28
STERCULIACEAE	*Lasiopetalum baueri @*	Slender Velvet-bush	134
STERCULIACEAE	*Lasiopetalum behrii @*	Pink Velvet-bush	168
STERCULIACEAE	*Lasiopetalum discolor @*	Coast Velvet-bush	180
STERCULIACEAE	*Lasiopetalum schulzenii @*	Drooping Velvet-bush	11
MALVACEAE	*Lawrencia spicata @*	Salt Lawrencia	1
MALVACEAE	*Lawrencia squamata @*	Thorny Lawrencia	58
LILIACEAE	*Laxmannia orientalis @*	Dwarf Wire-lily	6
COMPOSITAE	*Leiocarpa pluriseta @*	R	2
COMPOSITAE	*Leiocarpa supina @*	Coast Plover-daisy	2
COMPOSITAE	*Lemooria burkittii @*	Wires-and-wool	2
COMPOSITAE	*Leontodon taraxacoides* ssp. *taraxacoides @*	* Lesser Hawkbit	2
CRUCIFERAE	*Lepidium africanum @*	* Common Peppercress	12
CYPERACEAE	*Lepidosperma canescens @*	Hoary Rapier-sedge	3
CYPERACEAE	*Lepidosperma carphoides @*	Black Rapier-sedge	60
CYPERACEAE	*Lepidosperma concavum @*	Spreading Sword-sedge	13
CYPERACEAE	*Lepidosperma congestum @*	Clustered Sword-sedge	95
CYPERACEAE	*Lepidosperma curtisiae @*	Little Sword-sedge	1
CYPERACEAE	*Lepidosperma gladiatum @*	Coast Sword-sedge	30
CYPERACEAE	*Lepidosperma leptophyllum @*	R	1
CYPERACEAE	*Lepidosperma* sp. *Narrow leaf (R.L.Taplin 709)*		20
CYPERACEAE	*Lepidosperma viscidum @*	Sticky Sword-sedge	290
ORCHIDACEAE	*Leporella fimbriata @*	Fringed Hare-orchid	11
COMPOSITAE	*Leptorhynchos squamatus* ssp. *squamatus @*	Scaly Buttons	17
COMPOSITAE	*Leptorhynchos tetrachaetus @*	Little Buttons	5
COMPOSITAE	*Leptorhynchos waitzia @*	Button Immortelle	62
MYRTACEAE	*Leptospermum coriaceum @*	Dune Tea-tree	115
COMPOSITAE	*Leucophyta brownii @*	Coast Cushion Bush	54
EPACRIDACEAE	*Leucopogon clelandii @*	Cleland's Beard-heath **R**	5
EPACRIDACEAE	*Leucopogon cordifolius @*	Heart-leaf Beard-heath	113
EPACRIDACEAE	*Leucopogon parviflorus @*	Coast Beard-heath	144
EPACRIDACEAE	*Leucopogon rufus @*	Ruddy Beard-heath	13
EPACRIDACEAE	*Leucopogon woodsii @*	Nodding Beard-heath	1
STYLIDIACEAE	*Levenhookia dubia @*	Hairy Stylewort	44
STYLIDIACEAE	*Levenhookia stipitata @*	R	16
LIMONIACEAE	*Limonium binervosum @*	* Dwarf Sea-lavender	1
LIMONIACEAE	*Limonium companyonis @*	* Sea-lavender	12
LIMONIACEAE	*Limonium lobatum @*	* Winged Sea-lavender	1
LINACEAE	*Linum marginale @*	Native Flax	99
LINACEAE	*Linum strictum* ssp. *strictum @*	* Upright Yellow Flax	1
EPACRIDACEAE	*Lissanthe strigosa* ssp. *subulata @*	Peach Heath	77
CAMPANULACEAE	*Lobelia anceps @*	Angled Lobelia	3
CAMPANULACEAE	*Lobelia gibbosa complex @ #*	Tall Lobelia	41
LOGANIACEAE	*Logania crassifolia @*	Coast Logania	13
LOGANIACEAE	*Logania linifolia @*	Flax-leaf Logania	3
LOGANIACEAE	*Logania minor @*	Spoon-leaf Logania	3
LOGANIACEAE	*Logania nuda @*	Leafless Logania	11
LOGANIACEAE	*Logania ovata @*	Oval-leaf Logania	27
GRAMINEAE	*Lolium loliaceum @*	* Stiff Ryegrass	6
GRAMINEAE	*Lolium perenne X Lolium rigidum #*	* Hybrid Ryegrass	1
GRAMINEAE	*Lolium rigidum @*	* Wimmera Ryegrass	115
GRAMINEAE	*Lolium X hubbardii @ #*	*	1
LILIACEAE	*Lomandra collina @*	Sand Mat-rush	193
LILIACEAE	*Lomandra effusa @*	Scented Mat-rush	189
LILIACEAE	*Lomandra juncea @*	Desert Mat-rush	20
LILIACEAE	*Lomandra leucocephala* ssp. *robusta @*	Woolly Mat-rush	67
LILIACEAE	*Lomandra micrantha* ssp. *micrantha @*	Small-flower Mat-rush	48
LILIACEAE	*Lomandra micrantha* ssp. *tuberculata @*	Small-flower Mat-rush	18
LILIACEAE	*Lomandra sororia @*	Sword Mat-rush	3
LEGUMINOSAE	*Lotus australis @*	Austral Trefoil	8
LEGUMINOSAE	*Lotus subbiflorus @*	* Hairy Bird's-foot Trefoil	1
LEGUMINOSAE	*Lupinus cosentinii @*	* Blue Lupin	1
JUNCACEAE	*Luzula densiflora @*	Dense Wood-rush	1
JUNCACEAE	*Luzula meridionalis @*	Common Wood-rush	7
SOLANACEAE	*Lycium australe @*	Australian Boxthorn	36
SOLANACEAE	*Lycium ferocissimum @*	* African Boxthorn	150
LORANTHACEAE	*Lysiana exocarpi* ssp. *exocarpi @*	Harlequin Mistletoe	8
LYTHRACEAE	*Lythrum hyssopifolia @*	Lesser Loosestrife	2
CHENOPODIACEAE	*Maireana appressa @*	Pale-fruit Bluebush	1

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CHENOPODIACEAE	*Maireana brevifolia @*	Short-leaf Bluebush	29
CHENOPODIACEAE	*Maireana cannonii @*	Cannon's Bluebush	1
CHENOPODIACEAE	*Maireana enchylaenoides @*	Wingless Fissure-plant	63
CHENOPODIACEAE	*Maireana erioclada @*	Rosy Bluebush	143
CHENOPODIACEAE	*Maireana integra @*	Entire-wing Bluebush	2
CHENOPODIACEAE	*Maireana lobiflora @*	Lobed Bluebush	1
CHENOPODIACEAE	*Maireana oppositifolia @*	Salt Bluebush	71
CHENOPODIACEAE	*Maireana pentatropis @*	Erect Mallee Bluebush	56
CHENOPODIACEAE	*Maireana pyramidata*	Black Bluebush	1
CHENOPODIACEAE	*Maireana radiata @*	Radiate Bluebush	41
CHENOPODIACEAE	*Maireana rohrlachii @*	Rohrlach's Bluebush R	1
CHENOPODIACEAE	*Maireana sedifolia @*	Bluebush	6
CHENOPODIACEAE	*Maireana suaedifolia @*	Lax Bluebush R	1
CHENOPODIACEAE	*Maireana tomentosa* ssp. *urceolata*		2
CHENOPODIACEAE	*Maireana trichoptera @*	Hairy-fruit Bluebush	80
CHENOPODIACEAE	*Maireana triptera @*	Three-wing Bluebush	8
CHENOPODIACEAE	*Maireana turbinata @*	Top-fruit Bluebush	2
MALVACEAE	*Malva parviflora @*	* Small-flower Marshmallow	5
LABIATAE	*Marrubium vulgare @*	* Horehound	37
MARSILEACEAE	*Marsilea drummondii @*	Common Nardoo	2
LEGUMINOSAE	*Medicago minima* var. *minima @*	* Little Medic	191
LEGUMINOSAE	*Medicago polymorpha* var. *polymorpha @*	* Burr-medic	63
LEGUMINOSAE	*Medicago praecox @*	* Small-leaf Burr-medic	1
LEGUMINOSAE	*Medicago scutellata @*	* Snail Medic	1
LEGUMINOSAE	*Medicago truncatula @*	* Barrel Medic	68
MYRTACEAE	*Melaleuca acuminata* ssp. *acuminata @*	Mallee Honey-myrtle	198
MYRTACEAE	*Melaleuca armillaris* ssp. *akineta @*	Needle-leaf Honey-myrtle **R**	11
MYRTACEAE	*Melaleuca brevifolia @*	Short-leaf Honey-myrtle	28
MYRTACEAE	*Melaleuca decussata @*	Totem-poles	79
MYRTACEAE	*Melaleuca eleuterostachya @*	Hummock Honey-myrtle	23
MYRTACEAE	*Melaleuca gibbosa @*	Slender Honey-myrtle	10
MYRTACEAE	*Melaleuca halmaturorum @*	Swamp Paper-bark	48
MYRTACEAE	*Melaleuca lanceolata @*	Dryland Tea-tree	672
MYRTACEAE	*Melaleuca oxyphylla @*	Pointed-leaf Honey-myrtle **R**	3
MYRTACEAE	*Melaleuca pauperiflora* ssp. *mutica @*	Boree	109
MYRTACEAE	*Melaleuca uncinata @*	Broombush	512
LEGUMINOSAE	*Melilotus indicus @*	* King Island Melilot	67
CRUCIFERAE	*Menkea australis @*	Fairy Spectacles	5
AIZOACEAE	*Mesembryanthemum crystallinum @*	* Common Iceplant	55
AIZOACEAE	*Mesembryanthemum nodiflorum @*	* Slender Iceplant	37
EUPHORBIACEAE	*Micrantheum demissum @*	Dwarf Micrantheum	1
RUTACEAE	*Microcybe multiflora* ssp. *baccharoides @*	Scale-leaf Microcybe	15
RUTACEAE	*Microcybe multiflora* ssp. *multiflora @*	Small-leaf Microcybe	35
RUTACEAE	*Microcybe pauciflora* ssp. *pauciflora @*	Yellow Microcybe	39
CRUCIFERAE	*Microlepidium pilosulum @*	Hairy Shepherd's-purse **R**	14
COMPOSITAE	*Microseris lanceolata @*	Yam Daisy	74
ORCHIDACEAE	*Microtis frutetorum*		1
ORCHIDACEAE	*Microtis unifolia complex @ #*	Onion-orchid	159
COMPOSITAE	*Millotia major @*		32
COMPOSITAE	*Millotia muelleri @*	Common Bow-flower	92
COMPOSITAE	*Millotia myosotidifolia @*	Broad-leaf Millotia	84
COMPOSITAE	*Millotia perpusilla @*	Tiny Bow-flower	2
COMPOSITAE	*Millotia tenuifolia* var. *@*	Soft Millotia	159
CARYOPHYLLACEAE	*Minuartia mediterranea @*	* Slender Sandwort	156
COMPOSITAE	*Minuria leptophylla @*	Minnie Daisy	69
LOGANIACEAE	*Mitrasacme pilosa* var. *pilosa @*	Hairy Mitrewort **V**	1
CARYOPHYLLACEAE	*Moenchia erecta @*	* Erect Chickweed	2
IRIDACEAE	*Moraea setifolia @*	* Thread Iris	119
POLYGONACEAE	*Muehlenbeckia adpressa @*	Climbing Lignum	40
POLYGONACEAE	*Muehlenbeckia florulenta @*	Lignum	2
POLYGONACEAE	*Muehlenbeckia gunnii @*	Coastal Climbing Lignum	3
MYOPORACEAE	*Myoporum brevipes @*	Warty Boobialla	2
MYOPORACEAE	*Myoporum insulare @*	Common Boobialla	47
MYOPORACEAE	*Myoporum parvifolium @*	Creeping Boobialla **R**	4
MYOPORACEAE	*Myoporum platycarpum @*	False Sandalwood	42
MYOPORACEAE	*Myoporum viscosum @*	Sticky Boobialla	1
BORAGINACEAE	*Myosotis australis @*	Austral Forget-me-not	11
BORAGINACEAE	*Neatostema apulum @*	* Hairy Sheepweed	11
GRAMINEAE	*Neurachne alopecuroidea @*	Fox-tail Mulga-grass	159
SOLANACEAE	*Nicotiana goodspeedii @*	Small-flower Tobacco	6
SOLANACEAE	*Nicotiana maritima @*	Coast Tobacco	3
SOLANACEAE	*Nicotiana velutina @*	Velvet Tobacco	2

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ZYGOPHYLLACEAE	*Nitraria billardierei* @	Nitre-bush	71
ONAGRACEAE	*Oenothera stricta* ssp. *stricta* @	* Common Evening Primrose	2
OLEACEAE	*Olea europaea* ssp. *europaea* @	* Olive	3
COMPOSITAE	*Olearia adenolasia* @	Musk Daisy-bush **R**	2
COMPOSITAE	*Olearia axillaris* @	Coast Daisy-bush	279
COMPOSITAE	*Olearia brachyphylla* @	Short-leaf Daisy-bush	13
COMPOSITAE	*Olearia calcarea* @	Crinkle-leaf Daisy-bush	16
COMPOSITAE	*Olearia ciliata* var. *ciliata* @	Fringed Daisy-bush	58
COMPOSITAE	*Olearia decurrens* @	Winged Daisy-bush	56
COMPOSITAE	*Olearia exiguifolia* @	Lobed-leaf Daisy-bush	22
COMPOSITAE	*Olearia floribunda* var. *floribunda* @	Heath Daisy-bush	46
COMPOSITAE	*Olearia lanuginosa* @	Woolly Daisy-bush	5
COMPOSITAE	*Olearia lepidophylla* @	Clubmoss Daisy-bush	14
COMPOSITAE	*Olearia magniflora* @	Splendid Daisy-bush	30
COMPOSITAE	*Olearia minor* @	Heath Daisy-bush	58
COMPOSITAE	*Olearia muelleri* @	Mueller's Daisy-bush	113
COMPOSITAE	*Olearia passerinoides* ssp. *passerinoides* @	Feather Daisy-bush	2
COMPOSITAE	*Olearia picridifolia* @	Rasp Daisy-bush **R**	3
COMPOSITAE	*Olearia pimeleoides* ssp. *pimeleoides* @	Pimelea Daisy-bush	18
COMPOSITAE	*Olearia ramulosa* @	Twiggy Daisy-bush	44
COMPOSITAE	*Olearia rudis* @	Azure Daisy-bush	6
COMPOSITAE	*Olearia subspicata* @	Spiked Daisy-bush	1
COMPOSITAE	*Oligocarpus calendulaceus* @	*	2
BORAGINACEAE	*Omphalolappula concava* @	Burr Stickseed	4
RUBIACEAE	*Opercularia scabrida* @	Stalked Stinkweed	99
RUBIACEAE	*Opercularia turpis* @	Twiggy Stinkweed	75
RUBIACEAE	*Opercularia varia* @	Variable Stinkweed	4
OPHIOGLOSSACEAE	*Ophioglossum lusitanicum* @	Austral Adder's-tongue	13
ORCHIDACEAE	*Orthoceras strictum* @	Horned Orchid	3
IRIDACEAE	*Orthrosanthus multiflorus* @	Morning Flag	1
CHENOPODIACEAE	*Osteocarpum salsuginosum* @	Inland Bonefruit	1
OXALIDACEAE	*Oxalis perennans* @	Native Sorrel	292
OXALIDACEAE	*Oxalis pes-caprae* @	* Soursob	6
OXALIDACEAE	*Oxalis radicosa* @	Downy Native Sorrel	2
COMPOSITAE	*Ozothamnus decurrens* @	Ridged Bush-everlasting	58
COMPOSITAE	*Ozothamnus retusus* @	Notched Bush-everlasting	35
PAPAVERACEAE	*Papaver somniferum* @	* Small-flower Opium Poppy	1
GRAMINEAE	*Parapholis incurva* @	* Curly Ryegrass	102
SCROPHULARIACEAE	*Parentucellia latifolia* @	* Red Bartsia	68
URTICACEAE	*Parietaria cardiostegia* @	Mallee Smooth-nettle	25
URTICACEAE	*Parietaria debilis group* @	Smooth-nettle	93
GRAMINEAE	*Paspalum vaginatum* @	* Salt-water Couch	1
GERANIACEAE	*Pelargonium australe* @	Australian Pelargonium	3
GERANIACEAE	*Pelargonium littorale* @	Native Pelargonium	45
GRAMINEAE	*Pentaschistis airoides* @	* False Hair-grass	88
CARYOPHYLLACEAE	*Petrorhagia dubia* @	* Velvet Pink	26
RUTACEAE	*Phebalium bullatum* @	Silvery Phebalium	126
ORCHIDACEAE	*Pheladenia deformis* @	Bluebeard Orchid	11
RUTACEAE	*Philotheca angustifolia* ssp. *angustifolia* @	Narrow-leaf Wax-flower **R**	3
RUTACEAE	*Philotheca linearis* @	Narrow-leaf Wax-flower	1
RUTACEAE	*Philotheca pungens* @	Prickly Wax-flower	29
LOGANIACEAE	*Phyllangium divergens* @	Wiry Mitrewort	107
EUPHORBIACEAE	*Phyllanthus calycinus* @	Snowdrop Spurge **R**	7
LYCOPODIACEAE	*Phylloglossum drummondii* @	Pigmy Clubmoss **R**	1
LEGUMINOSAE	*Phyllota remota* @	Slender Phyllota	1
COMPOSITAE	*Picris angustifolia* ssp. *angustifolia* @	Coast Picris	1
THYMELAEACEAE	*Pimelea flava* ssp. *dichotoma* @	Diosma Riceflower	132
THYMELAEACEAE	*Pimelea glauca* @	Smooth Riceflower	61
THYMELAEACEAE	*Pimelea micrantha* @	Silky Riceflower	21
THYMELAEACEAE	*Pimelea microcephala* ssp. *microcephala* @	Shrubby Riceflower	28
THYMELAEACEAE	*Pimelea octophylla* @	Woolly Riceflower	9
THYMELAEACEAE	*Pimelea serpyllifolia* ssp. *serpyllifolia* @	Thyme Riceflower	152
THYMELAEACEAE	*Pimelea simplex* ssp. *simplex* @	Desert Riceflower	16
THYMELAEACEAE	*Pimelea stricta* @	Erect Riceflower	14
THYMELAEACEAE	*Pimelea subvillifera*	Silky Riceflower	1
THYMELAEACEAE	*Pimelea trichostachya* @	Spiked Riceflower	2
THYMELAEACEAE	*Pimelea williamsonii* @	Williamson's Riceflower **R**	1
PINACEAE	*Pinus halepensis* @	* Aleppo Pine	2
PITTOSPORACEAE	*Pittosporum angustifolium* @	Native Apricot	378
PITTOSPORACEAE	*Pittosporum ligustrifolium*		1
PLANTAGINACEAE	*Plantago coronopus* ssp. *commutata*	* Bucks-horn Plantain	5
PLANTAGINACEAE	*Plantago coronopus* ssp. *coronopus*	* Bucks-horn Plantain	6

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PLANTAGINACEAE	*Plantago drummondii @*	Dark Plantain	41
PLANTAGINACEAE	*Plantago gaudichaudii @*	Narrow-leaf Plantain	5
PLANTAGINACEAE	*Plantago hispida @*	Hairy Plantain	14
PLANTAGINACEAE	*Plantago* sp. *B (R.Bates 44765) @*	Little Plantain	97
PLANTAGINACEAE	*Plantago varia @*	Variable Plantain	5
UMBELLIFERAE	*Platysace heterophylla* var. *heterophylla @*	Slender Platysace	22
COMPOSITAE	*Pleuropappus phyllocalymmeus @*	Silver Candles **VU V**	3
ASPLENIACEAE	*Pleurosorus rutifolius @*	Blanket Fern	3
GRAMINEAE	*Poa annua group @*	* Winter Grass	1
GRAMINEAE	*Poa bulbosa @*	* Bulbous Meadow-grass	1
GRAMINEAE	*Poa clelandii @*	Matted Tussock-grass	11
GRAMINEAE	*Poa crassicaudex @*	Thick-stem Tussock-grass	11
GRAMINEAE	*Poa drummondiana @*	Knotted Poa **R**	13
GRAMINEAE	*Poa fax @*	Scaly Poa **R**	17
GRAMINEAE	*Poa labillardieri* var. *labillardieri @*	Common Tussock-grass	14
GRAMINEAE	*Poa poiformis* var. *poiformis @*	Coast Tussock-grass	22
COMPOSITAE	*Podolepis canescens @*	Grey Copper-wire Daisy	2
COMPOSITAE	*Podolepis capillaris @*	Wiry Podolepis	156
COMPOSITAE	*Podolepis jaceoides @*	Showy Copper-wire Daisy **R**	4
COMPOSITAE	*Podolepis muelleri @*	Button Podolepis **V**	1
COMPOSITAE	*Podolepis rugata* var. *littoralis @*	Coast Copper-wire Daisy	7
COMPOSITAE	*Podolepis rugata* var. *rugata @*	Pleated Copper-wire Daisy	18
COMPOSITAE	*Podolepis tepperi @*	Delicate Copper-wire Daisy	133
COMPOSITAE	*Podotheca angustifolia @*	Sticky Long-heads	277
COMPOSITAE	*Pogonolepis muelleriana @*	Stiff Cup-flower	69
CARYOPHYLLACEAE	*Polycarpon tetraphyllum @*	* Four-leaf Allseed	6
POLYGALACEAE	*Polygala myrtifolia @*	* Myrtle-leaf Milkwort	2
POLYGONACEAE	*Polygonum aviculare @*	* Wireweed	2
GRAMINEAE	*Polypogon maritimus @*	* Coast Beard-grass	12
GRAMINEAE	*Polypogon monspeliensis @*	* Annual Beard-grass	2
GRAMINEAE	*Polypogon tenellus @*	V	1
RHAMNACEAE	*Pomaderris flabellaris @*	Fan Pomaderris	30
RHAMNACEAE	*Pomaderris forrestiana @*	R	1
RHAMNACEAE	*Pomaderris obcordata @*	Wedge-leaf Pomaderris	49
RHAMNACEAE	*Pomaderris paniculosa* ssp. *paniculosa @*	Mallee Pomaderris	73
EUPHORBIACEAE	*Poranthera leiosperma*	Small Poranthera	1
EUPHORBIACEAE	*Poranthera microphylla group @ #*	Small Poranthera	86
EUPHORBIACEAE	*Poranthera triandra @*	Three-petal Poranthera	100
ORCHIDACEAE	*Prasophyllum calcicola @*	Limestone Leek-orchid **V**	2
ORCHIDACEAE	*Prasophyllum constrictum @*	Tawny Leek-orchid **R**	3
ORCHIDACEAE	*Prasophyllum elatum @*	Tall Leek-orchid	1
ORCHIDACEAE	*Prasophyllum fecundum @*	Self-pollinating Leek-orchid **R**	8
ORCHIDACEAE	*Prasophyllum fitzgeraldii @*	Fitzgerald's Leek-orchid	2
ORCHIDACEAE	*Prasophyllum goldsackii group @ #*	Goldsack's Leek-orchid **R**	2
ORCHIDACEAE	*Prasophyllum occidentale @*	Plains Leek-orchid	10
ORCHIDACEAE	*Prasophyllum occultans @*	Hidden Leek-orchid **R**	3
ORCHIDACEAE	*Prasophyllum odoratum group @ #*	Scented Leek-orchid	6
ORCHIDACEAE	*Prasophyllum* sp. *Coast sandhills (Hj.Eichler 14100)*	Scented Leek-orchid	2
ORCHIDACEAE	*Prasophyllum* sp. *Enigma (R.Bates 2350)*	Goldsack's Leek-orchid **E**	1
LABIATAE	*Prostanthera ammophila @*	Sand Mintbush	2
LABIATAE	*Prostanthera aspalathoides @*	Scarlet Mintbush	17
LABIATAE	*Prostanthera calycina @*	West Coast Mintbush **VU V**	20
LABIATAE	*Prostanthera florifera @*	Gawler Ranges Mintbush	2
LABIATAE	*Prostanthera serpyllifolia* ssp. *microphylla @*	Small-leaf Mintbush	57
LABIATAE	*Prostanthera serpyllifolia* ssp. *serpyllifolia @*	Thyme Mintbush	65
LABIATAE	*Prostanthera spinosa @*	Spiny Mintbush	11
COMPOSITAE	*Pseudognaphalium luteoalbum @*	Jersey Cudweed	3
GRAMINEAE	*Psilurus incurvus @*	* Bristle-tail Grass	4
ORCHIDACEAE	*Pterostylis aff. nana "mallee"*	Mallee Dwarf Greenhood	1
ORCHIDACEAE	*Pterostylis biseta @*	Two-bristle Greenhood	9
ORCHIDACEAE	*Pterostylis boormanii @*	Boorman's Greenhood	7
ORCHIDACEAE	*Pterostylis cycnocephala @*	Swan-head Greenhood	3
ORCHIDACEAE	*Pterostylis erythroconcha @*	Red Shell-orchid	5
ORCHIDACEAE	*Pterostylis excelsa @*	Dryland Greenhood	68
ORCHIDACEAE	*Pterostylis mutica @*	Midget Greenhood	105
ORCHIDACEAE	*Pterostylis nana @*	Dwarf Greenhood	19
ORCHIDACEAE	*Pterostylis plumosa @*	Bearded Greenhood	27
ORCHIDACEAE	*Pterostylis pusilla @*	Small Rusty-hood	54
ORCHIDACEAE	*Pterostylis robusta @*	Large Shell-orchid	1
ORCHIDACEAE	*Pterostylis sanguinea @*	Blood Greenhood	24
ORCHIDACEAE	*Pterostylis smaragdyna @*		3
ORCHIDACEAE	*Pterostylis* sp. *Coastal (R.Bates 37621) @*	Tall Greenhood	3

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ORCHIDACEAE	*Pterostylis* sp. *Short sepals (A.G.Spooner 12842) @*	Dryland Greenhood	1
AMARANTHACEAE	*Ptilotus beckerianus @*	Ironstone Mulla Mulla **VU V**	8
AMARANTHACEAE	*Ptilotus exaltatus* var. *exaltatus @*	Pink Mulla Mulla	5
AMARANTHACEAE	*Ptilotus obovatus* var. *obovatus @*	Silver Mulla Mulla	41
AMARANTHACEAE	*Ptilotus seminudus @*	Rabbit-tails	128
AMARANTHACEAE	*Ptilotus spathulatus @ #*	Pussy-tails	80
GRAMINEAE	*Puccinellia stricta* var. *stricta @*	Australian Saltmarsh-grass	6
LEGUMINOSAE	*Pultenaea acerosa @*	Bristly Bush-pea	21
LEGUMINOSAE	*Pultenaea canaliculata* var. *@*	Soft Bush-pea	3
LEGUMINOSAE	*Pultenaea densifolia @*	Dense Bush-pea	5
LEGUMINOSAE	*Pultenaea elachista @*	Limestone Bush-pea	23
LEGUMINOSAE	*Pultenaea hispidula*	Rusty Bush-pea	1
LEGUMINOSAE	*Pultenaea pedunculata @*	Matted Bush-pea	10
LEGUMINOSAE	*Pultenaea rigida* var. *ovata*	Rigid Bush-pea	7
LEGUMINOSAE	*Pultenaea rigida* var. *rigida*	Rigid Bush-pea	1
LEGUMINOSAE	*Pultenaea tenuifolia @*	Narrow-leaf Bush-pea	90
LEGUMINOSAE	*Pultenaea teretifolia* var. *teretifolia @*	Terete-leaf Bush-pea	20
LEGUMINOSAE	*Pultenaea trichophylla @*	Tufted Bush-pea **VU R**	3
LEGUMINOSAE	*Pultenaea trinervis @*	Three-nerve Bush-pea	26
LEGUMINOSAE	*Pultenaea vestita @*	Feather Bush-pea	3
ORCHIDACEAE	*Pyrorchis nigricans @*	Black Fire-orchid	28
COMPOSITAE	*Quinetia urvillei @*	Quinetia	14
RANUNCULACEAE	*Ranunculus lappaceus @*	Native Buttercup	3
RANUNCULACEAE	*Ranunculus sessiliflorus* var. *sessiliflorus @*	Annual Buttercup	10
CRUCIFERAE	*Raphanus raphanistrum @*	* Wild Radish	1
CRUCIFERAE	*Rapistrum rugosum* ssp. *rugosum @*	* Turnip Weed	10
COMPOSITAE	*Reichardia tingitana @*	* False Sowthistle	34
CHENOPODIACEAE	*Rhagodia candolleana* ssp. *candolleana @*	Sea-berry Saltbush	267
CHENOPODIACEAE	*Rhagodia crassifolia @*	Fleshy Saltbush	249
CHENOPODIACEAE	*Rhagodia parabolica @*	Mealy Saltbush	54
CHENOPODIACEAE	*Rhagodia preissii* ssp. *preissii @*	Mallee Saltbush	150
CHENOPODIACEAE	*Rhagodia spinescens @*	Spiny Saltbush	28
CHENOPODIACEAE	*Rhagodia ulicina @*	Intricate Saltbush	7
RHAMNACEAE	*Rhamnus alaternus @*	* Blowfly Bush	2
COMPOSITAE	*Rhodanthe haigii @*	Haig's Everlasting	1
COMPOSITAE	*Rhodanthe laevis @*	Smooth Daisy	30
COMPOSITAE	*Rhodanthe moschata @*	Musk Daisy	2
COMPOSITAE	*Rhodanthe polygalifolia @*	Milkwort Everlasting	28
COMPOSITAE	*Rhodanthe pygmaea @*	Pigmy Daisy	53
COMPOSITAE	*Rhodanthe stuartiana @*	Clay Everlasting	9
IRIDACEAE	*Romulea minutiflora @*	* Small-flower Onion-grass	5
IRIDACEAE	*Romulea rosea* var. *australis @*	* Common Onion-grass	2
GRAMINEAE	*Rostraria cristata @*	* Annual Cat's-tail	247
GRAMINEAE	*Rostraria pumila @*	* Tiny Bristle-grass	38
POLYGONACEAE	*Rumex brownii @*	Alcock's Dock	1
POLYGONACEAE	*Rumex brownii @*	Slender Dock	7
CARYOPHYLLACEAE	*Sagina apetala @*	* Annual Pearlwort	5
CARYOPHYLLACEAE	*Sagina maritima @*	Sea Pearlwort	26
CHENOPODIACEAE	*Salsola tragus @*	Buckbush	37
LABIATAE	*Salvia verbenaca* var. *verbenaca*	* Wild Sage	1
LABIATAE	*Salvia verbenaca* var. *vernalis*	* Wild Sage	1
PRIMULACEAE	*Samolus repens @*	Creeping Brookweed	55
SANTALACEAE	*Santalum acuminatum @*	Quandong	242
SANTALACEAE	*Santalum murrayanum @*	Bitter Quandong	32
SANTALACEAE	*Santalum spicatum @*	Sandalwood **V**	2
CHENOPODIACEAE	*Sarcocornia blackiana @*	Thick-head Samphire	19
CHENOPODIACEAE	*Sarcocornia quinqueflora @*	Beaded Samphire	42
AIZOACEAE	*Sarcozona praecox @*	Sarcozona	29
DIPSACACEAE	*Scabiosa atropurpurea @*	* Pincushion	1
GOODENIACEAE	*Scaevola aemula @*	Fairy Fanflower	3
GOODENIACEAE	*Scaevola angustata @*	Coast Fanflower	2
GOODENIACEAE	*Scaevola bursariifolia @*	Bursaria Fanflower	12
GOODENIACEAE	*Scaevola crassifolia @*	Cushion Fanflower	46
GOODENIACEAE	*Scaevola humilis @*	Inland Fanflower	5
GOODENIACEAE	*Scaevola linearis* ssp. *linearis @*	Rough Fanflower	24
GOODENIACEAE	*Scaevola spinescens @*	Spiny Fanflower	83
GENTIANACEAE	*Schenkia australis @*	Spike Centaury	49
GRAMINEAE	*Schismus barbatus @*	* Arabian Grass	66
CYPERACEAE	*Schoenus apogon @*	Common Bog-rush	27
CYPERACEAE	*Schoenus breviculmis @*	Matted Bog-rush	111
CYPERACEAE	*Schoenus carsei @*	Wiry Bog-rush	1
CYPERACEAE	*Schoenus deformis @*	Small Bog-rush	13

Family Name	*Species Name*	Common name and Status	Site Freq
CYPERACEAE	*Schoenus nanus @*	Little Bog-rush	55
CYPERACEAE	*Schoenus nitens @*	Shiny Bog-rush	6
CYPERACEAE	*Schoenus racemosus @*	Sandhill Bog-rush	92
CYPERACEAE	*Schoenus sculptus @*	Gimlet Bog-rush **R**	10
CYPERACEAE	*Schoenus subaphyllus @*	Desert Bog-rush	25
CARYOPHYLLACEAE	*Scleranthus minusculus @*	Cushion Knawel	3
CARYOPHYLLACEAE	*Scleranthus pungens @*	Prickly Knawel	3
CHENOPODIACEAE	*Sclerolaena brevifolia @*	Small-leaf Bindyi	17
CHENOPODIACEAE	*Sclerolaena diacantha*	Grey Bindyi	148
CHENOPODIACEAE	*Sclerolaena holtiana @*	Holt's Bindyi	2
CHENOPODIACEAE	*Sclerolaena obliquicuspis @*	Oblique-spined Bindyi	54
CHENOPODIACEAE	*Sclerolaena parviflora @*	Small-flower Bindyi	43
CHENOPODIACEAE	*Sclerolaena patenticuspis @*	Spear-fruit Bindyi	3
CHENOPODIACEAE	*Sclerolaena uniflora*	Small-spine Bindyi	85
GENTIANACEAE	*Sebaea ovata @*	Yellow Sebaea	49
GOODENIACEAE	*Selliera radicans @*	Shiny Swamp-mat	6
COMPOSITAE	*Senecio gawlerensis @*	Gawler Ranges Groundsel	2
COMPOSITAE	*Senecio glossanthus group @ #*	Annual Groundsel	275
COMPOSITAE	*Senecio laceratus @*	Cut-leaf Groundsel	1
COMPOSITAE	*Senecio picridioides @*	Purple-leaf Groundsel	12
COMPOSITAE	*Senecio pinnatifolius group @ #*	Variable Groundsel	246
COMPOSITAE	*Senecio pterophorus @*	* African Daisy	111
COMPOSITAE	*Senecio quadridentatus @*	Cotton Groundsel	16
COMPOSITAE	*Senecio tenuiflorus group @ #*	Woodland Groundsel	8
LEGUMINOSAE	*Senna artemisioides* ssp. *filifolia @*	Fine-leaf Desert Senna	16
LEGUMINOSAE	*Senna artemisioides* ssp. *petiolaris @*	Flat-stalk Senna	79
LEGUMINOSAE	*Senna artemisioides* ssp. *quadrifolia @*	Four-leaf Desert Senna	5
LEGUMINOSAE	*Senna artemisioides* ssp. *X artemisioides @*	Silver Senna	5
LEGUMINOSAE	*Senna artemisioides* ssp. *X coriacea @*	Broad-leaf Desert Senna	82
LEGUMINOSAE	*Senna cardiosperma* ssp. *gawlerensis @*	Gawler Ranges Senna	8
GRAMINEAE	*Setaria constricta @*	Knotty-butt Paspalidium	2
RUBIACEAE	*Sherardia arvensis @*	* Field Madder	7
MALVACEAE	*Sida corrugata* var. *angustifolia @*	Corrugated Sida	3
MALVACEAE	*Sida petrophila @*	Rock Sida	1
CARYOPHYLLACEAE	*Silene apetala @*	* Sand Catchfly	5
CARYOPHYLLACEAE	*Silene gallica* var. *gallica @*	* French Catchfly	7
CARYOPHYLLACEAE	*Silene nocturna @*	* Mediterranean Catchfly	184
CARYOPHYLLACEAE	*Silene tridentata @*	*	71
COMPOSITAE	*Siloxerus multiflorus @*	Small Wrinklewort	32
CRUCIFERAE	*Sisymbrium erysimoides @*	* Smooth Mustard	61
CRUCIFERAE	*Sisymbrium irio @*	* London Mustard	8
CRUCIFERAE	*Sisymbrium orientale @*	* Indian Hedge Mustard	5
SOLANACEAE	*Solanum coactiliferum @*	Tomato-bush	3
SOLANACEAE	*Solanum hystrix @*	Afghan Thistle	2
SOLANACEAE	*Solanum nigrum @*	* Black Nightshade	9
SOLANACEAE	*Solanum petrophilum @*	Rock Nightshade	5
COMPOSITAE	*Solenogyne dominii @*	Smooth Solenogyne	1
COMPOSITAE	*Sonchus asper* ssp. *@*	* Rough Sow-thistle	9
COMPOSITAE	*Sonchus asper* ssp. *glaucescens*	* Rough Sow-thistle	4
COMPOSITAE	*Sonchus hydrophilus @*	Native Sow-thistle	3
COMPOSITAE	*Sonchus oleraceus @*	* Common Sow-thistle	367
IRIDACEAE	*Sparaxis bulbifera @*	* Sparaxis	5
CARYOPHYLLACEAE	*Spergularia diandra group @ #*	* Lesser Sand-spurrey	24
CARYOPHYLLACEAE	*Spergularia marina*	Salt Sand-spurrey	1
CARYOPHYLLACEAE	*Spergularia marina group @ #*	* Salt Sand-spurrey	9
CARYOPHYLLACEAE	*Spergularia* sp. *Butchers Gap (P.Gibbons 234) @*	* Coast Sand-spurrey	6
LEGUMINOSAE	*Sphaerolobium minus @*	Leafless Globe-pea **R**	5
GRAMINEAE	*Spinifex hirsutus @*	Rolling Spinifex	30
GRAMINEAE	*Sporobolus virginicus @*	Salt Couch	12
RHAMNACEAE	*Spyridium bifidum* var. *bifidum*	Forked Spyridium	25
RHAMNACEAE	*Spyridium bifidum* var. *Marble Range (W.R.Barker 7601)*	Marble Range Spyridium **V**	3
RHAMNACEAE	*Spyridium bifidum* var. *Wanilla (K.Clipstone @8)*		?
RHAMNACEAE	*Spyridium eriocephalum* var. *eriocephalum @*	Heath Spyridium	12
RHAMNACEAE	*Spyridium leucopogon @*	Silvery Spyridium **R**	7
RHAMNACEAE	*Spyridium nitidum @*	Shining Spyridium	11
RHAMNACEAE	*Spyridium phlebophyllum @*	Inland Spyridium	1
RHAMNACEAE	*Spyridium phylicoides @*	Narrow-leaf Spyridium	82
RHAMNACEAE	*Spyridium spathulatum @*	Spoon-leaf Spyridium **R**	7
RHAMNACEAE	*Spyridium subochreatum @*		16
RHAMNACEAE	*Spyridium tricolor @*	Rusty Spyridium **V**	1
RHAMNACEAE	*Spyridium vexilliferum* var. *vexilliferum @*	Winged Spyridium	12
STACKHOUSIACEAE	*Stackhousia annua @*	Annual Candles **VU V**	1

Family Name	*Species Name*	Common name and Status	Site Freq
STACKHOUSIACEAE	*Stackhousia aspericocca* ssp. *Cylindrical inflorescence (W.R.Barker 1418) @*	Bushy Candles	13
STACKHOUSIACEAE	*Stackhousia aspericocca* ssp. *One-sided inflorescence (W.R.Barker 697) @*	One-sided Candles	25
STACKHOUSIACEAE	*Stackhousia monogyna @*	Creamy Candles	62
STACKHOUSIACEAE	*Stackhousia muricata* ssp. *Perennial (W.R.Barker 3641) @*	Yellow Candles	5
STACKHOUSIACEAE	*Stackhousia spathulata @*	Coast Candles	3
CARYOPHYLLACEAE	*Stellaria filiformis @*	Thread Starwort	7
CARYOPHYLLACEAE	*Stellaria media @*	* Chickweed	70
CARYOPHYLLACEAE	*Stellaria pallida @*	* Lesser Starwort	4
RHAMNACEAE	*Stenanthemum leucophractum @*	White Cryptandra	111
RHAMNACEAE	*Stenanthemum notiale* ssp. *notiale @*	Trident Spyridium	8
CRUCIFERAE	*Stenopetalum lineare @*	Narrow Thread-petal	43
CRUCIFERAE	*Stenopetalum sphaerocarpum @*	Round-fruit Thread-petal	41
COMPOSITAE	*Stuartina muelleri @*	Spoon Cudweed	15
STYLIDIACEAE	*Stylidium calcaratum @*	Spurred Trigger-plant	5
LILIACEAE	*Stypandra glauca @*	Nodding Grass-lily **V**	2
CHENOPODIACEAE	*Suaeda australis @*	Austral Seablite	13
COMPOSITAE	*Taraxacum officinale @*	* Dandelion	4
CHENOPODIACEAE	*Tecticornia arbuscula @*	Shrubby Samphire	26
CHENOPODIACEAE	*Tecticornia disarticulata @*		8
CHENOPODIACEAE	*Tecticornia flabelliformis @*	Bead Samphire **VU V**	5
CHENOPODIACEAE	*Tecticornia halocnemoides @*	Grey Samphire	34
CHENOPODIACEAE	*Tecticornia indica @*	Brown-head Samphire	1
CHENOPODIACEAE	*Tecticornia indica @*	Brown-head Samphire	29
CHENOPODIACEAE	*Tecticornia lepidosperma*	R	2
CHENOPODIACEAE	*Tecticornia pergranulata* ssp. *pergranulata @*	Black-seed Samphire	21
CHENOPODIACEAE	*Tecticornia pruinosa @*	Bluish Samphire	1
CHENOPODIACEAE	*Tecticornia pterygosperma* ssp. *pterygosperma @*	Winged-seed Samphire	5
CHENOPODIACEAE	*Tecticornia tenuis @*	Slender Samphire	4
LEGUMINOSAE	*Templetonia battii @*	Spiny Templetonia **R**	2
LEGUMINOSAE	*Templetonia egena @*	Broombush Templetonia	2
LEGUMINOSAE	*Templetonia retusa @*	Cockies Tongue	119
LEGUMINOSAE	*Templetonia sulcata @*	Flat Mallee-pea	13
AIZOACEAE	*Tetragonia eremaea @*	Desert Spinach	2
AIZOACEAE	*Tetragonia implexicoma @*	Bower Spinach	264
CYPERACEAE	*Tetraria capillaris @*	Hair Sedge	6
LABIATAE	*Teucrium racemosum @*	Grey Germander	1
LABIATAE	*Teucrium sessiliflorum @*	Mallee Germander	54
ORCHIDACEAE	*Thelymitra antennifera @*	Lemon Sun-orchid	5
ORCHIDACEAE	*Thelymitra azurea @*	Azure Sun-orchid	1
ORCHIDACEAE	*Thelymitra benthamiana @*	Leopard Sun-orchid	7
ORCHIDACEAE	*Thelymitra chasmogama @*	Globe-hood Sun-orchid	2
ORCHIDACEAE	*Thelymitra epipactoides @*	Metallic Sun-orchid **EN E**	2
ORCHIDACEAE	*Thelymitra flexuosa @*	Twisted Sun-orchid **R**	13
ORCHIDACEAE	*Thelymitra luteocilium @*	Yellow-tuft Sun Orchid	31
ORCHIDACEAE	*Thelymitra megcalyptra*	Scented Sun-orchid	7
ORCHIDACEAE	*Thelymitra nuda complex @ #*	Scented Sun-orchid	148
ORCHIDACEAE	*Thelymitra pauciflora complex @ #*	Slender Sun-orchid	6
ORCHIDACEAE	*Thelymitra rubra @*	Salmon Sun-orchid	7
GRAMINEAE	*Themeda triandra @*	Kangaroo Grass	11
STERCULIACEAE	*Thomasia petalocalyx @*	Paper-flower	1
CHENOPODIACEAE	*Threlkeldia diffusa @*	Coast Bonefruit	306
MYRTACEAE	*Thryptomene calycina @*	Grampians Thryptomene	1
MYRTACEAE	*Thryptomene micrantha @*	Ribbed Thryptomene	170
LILIACEAE	*Thysanotus baueri @*	Mallee Fringe-lily	200
LILIACEAE	*Thysanotus juncifolius*	Rush Fringe-lily	3
LILIACEAE	*Thysanotus patersonii @*	Twining Fringe-lily	410
LILIACEAE	*Thysanotus tenellus @*	Grassy Fringe-lily **R**	1
LILIACEAE	*Thysanotus wangariensis @*	Eyre Peninsula Fringe-lily **R**	3
UMBELLIFERAE	*Trachymene ceratocarpa @*	Creeping Carrot	1
UMBELLIFERAE	*Trachymene cyanopetala @*	Purple Trachymene	77
UMBELLIFERAE	*Trachymene ornata @*	Sponge-fruit Trachymene	40
UMBELLIFERAE	*Trachymene pilosa @*	Dwarf Trachymene	238
COMPOSITAE	*Trichanthodium skirrophorum @*	Woolly Yellow-heads	44
LILIACEAE	*Tricoryne elatior @*	Yellow Rush-lily	7
LILIACEAE	*Tricoryne tenella @*	Tufted Yellow Rush-lily	125
LEGUMINOSAE	*Trifolium angustifolium @*	* Narrow-leaf Clover	13
LEGUMINOSAE	*Trifolium arvense* var. *arvense @*	* Hare's-foot Clover	46
LEGUMINOSAE	*Trifolium campestre @*	* Hop Clover	132
LEGUMINOSAE	*Trifolium dubium @*	* Suckling Clover	4
LEGUMINOSAE	*Trifolium fragiferum* var. *fragiferum @*	* Strawberry Clover	1

Family Name	*Species Name*	Common name and Status	Site Freq
LEGUMINOSAE	*Trifolium glomeratum @*	* Cluster Clover	19
LEGUMINOSAE	*Trifolium hirtum @*	* Rose Clover	1
LEGUMINOSAE	*Trifolium scabrum @*	* Rough Clover	21
LEGUMINOSAE	*Trifolium subterraneum @*	* Subterranean Clover	7
LEGUMINOSAE	*Trifolium tomentosum @*	* Woolly Clover	21
JUNCAGINACEAE	*Triglochin centrocarpum group @*	Dwarf Arrowgrass	43
JUNCAGINACEAE	*Triglochin minutissimum @*	Tiny Arrowgrass **R**	2
JUNCAGINACEAE	*Triglochin mucronatum @*	Prickly Arrowgrass	15
JUNCAGINACEAE	*Triglochin nanum @*	Dwarf Arrowgrass	2
JUNCAGINACEAE	*Triglochin* sp. *B (J.Z.Weber 1330) @*	Spurred Arrowgrass	18
JUNCAGINACEAE	*Triglochin striatum @*	Streaked Arrowgrass	2
JUNCAGINACEAE	*Triglochin trichophorum @*		9
GRAMINEAE	*Triodia bunicola*	Flinders Ranges Spinifex	22
GRAMINEAE	*Triodia compacta*	Spinifex	60
GRAMINEAE	*Triodia irritans @*	Spinifex	168
GRAMINEAE	*Triodia lanata @*	Woolly Spinifex	73
GRAMINEAE	*Triodia scariosa*	Spinifex	78
COMPOSITAE	*Tripteris clandestina @*	* Tripteris	4
COMPOSITAE	*Triptilodiscus pygmaeus @*	Small Yellow-heads	8
GRAMINEAE	*Triticum aestivum @*	* Wheat	1
RHAMNACEAE	*Trymalium wayi*	Grey Trymalium	1
COMPOSITAE	*Urospermum picroides @*	* False Hawkbit	48
URTICACEAE	*Urtica urens @*	* Small Nettle	3
LENTIBULARIACEAE	*Utricularia tenella @*	Pink Bladderwort	2
GOODENIACEAE	*Velleia arguta @*	Toothed Velleia	25
GOODENIACEAE	*Velleia connata @*	Cup Velleia	2
SCROPHULARIACEAE	*Verbascum virgatum @*	* Twiggy Mullein	1
SCROPHULARIACEAE	*Veronica hillebrandii @*	Rigid Speedwell	19
LEGUMINOSAE	*Vicia cracca @*	* Tufted Vetch	1
LEGUMINOSAE	*Vicia monantha @*	* Spurred Vetch	2
COMPOSITAE	*Vittadinia australasica* var. *australasica @*	Sticky New Holland Daisy	114
COMPOSITAE	*Vittadinia cervicularis* var. *cervicularis @*	Waisted New Holland Daisy	41
COMPOSITAE	*Vittadinia cuneata @*	Fuzzy New Holland Daisy	1
COMPOSITAE	*Vittadinia cuneata* var. *cuneata f. cuneata*	Fuzzy New Holland Daisy	28
COMPOSITAE	*Vittadinia dissecta* var. *hirta @*	Dissected New Holland Daisy	28
COMPOSITAE	*Vittadinia eremaea @*	Desert New Holland Daisy	1
COMPOSITAE	*Vittadinia gracilis @*	Woolly New Holland Daisy	66
COMPOSITAE	*Vittadinia megacephala @*	Giant New Holland Daisy	104
GRAMINEAE	*Vulpia bromoides @*	* Squirrel-tail Fescue	6
GRAMINEAE	*Vulpia ciliata @*	* Fringed Fescue	1
GRAMINEAE	*Vulpia fasciculata @*	* Sand Fescue	11
GRAMINEAE	*Vulpia muralis @*	* Wall Fescue	56
GRAMINEAE	*Vulpia myuros @*	* Fox-tail Fescue	15
GRAMINEAE	*Vulpia myuros @*	* Rat's-tail Fescue	270
CAMPANULACEAE	*Wahlenbergia communis @*	Tufted Bluebell	18
CAMPANULACEAE	*Wahlenbergia gracilenta @*	Annual Bluebell	110
CAMPANULACEAE	*Wahlenbergia littoricola @*	Coast Bluebell	3
CAMPANULACEAE	*Wahlenbergia luteola @*	Yellow-wash Bluebell	21
CAMPANULACEAE	*Wahlenbergia preissii @*		13
CAMPANULACEAE	*Wahlenbergia stricta* ssp. *stricta @*	Tall Bluebell	88
COMPOSITAE	*Waitzia acuminata* var. *acuminata @*	Orange Immortelle	15
LABIATAE	*Westringia dampieri @*	Shore Westringia	33
LABIATAE	*Westringia eremicola @*	Slender Westringia	17
LABIATAE	*Westringia rigida @*	Stiff Westringia	234
CONVOLVULACEAE	*Wilsonia backhousei @*	Narrow-leaf Wilsonia	3
CONVOLVULACEAE	*Wilsonia humilis @*	Silky Wilsonia	10
CONVOLVULACEAE	*Wilsonia rotundifolia @*	Round-leaf Wilsonia	7
LILIACEAE	*Wurmbea decumbens @*	Trailing Nancy **R**	11
LILIACEAE	*Wurmbea dioica @*	Early Nancy	218
LILIACEAE	*Xanthorrhoea semiplana @*	Yacca	83
UMBELLIFERAE	*Xanthosia huegelii @*	Hairy Xanthosia	8
UMBELLIFERAE	*Xanthosia leiophylla @*	Cut-leaf Xanthosia	1
SCROPHULARIACEAE	*Zaluzianskya divaricata @*	* Spreading Night-phlox	23
ZYGOPHYLLACEAE	*Zygophyllum angustifolium @*	Scrambling Twinleaf	25
ZYGOPHYLLACEAE	*Zygophyllum apiculatum @*	Pointed Twinleaf	53
ZYGOPHYLLACEAE	*Zygophyllum aurantiacum @*		98
ZYGOPHYLLACEAE	*Zygophyllum billardierei @*	Coast Twinleaf	23
ZYGOPHYLLACEAE	*Zygophyllum emarginatum @*	Notched Twinleaf	2
ZYGOPHYLLACEAE	*Zygophyllum eremaeum @*	Pale-flower Twinleaf	8
ZYGOPHYLLACEAE	*Zygophyllum flavum @*	Coast Twinleaf	2
ZYGOPHYLLACEAE	*Zygophyllum glaucum @*	Pale Twinleaf	50
ZYGOPHYLLACEAE	*Zygophyllum humillimum @*	Small-fruit Twinleaf **R**	1

Family Name	*Species Name*	Common name and Status	Site Freq
ZYGOPHYLLACEAE	*Zygophyllum ovatum @*	Dwarf Twinleaf	120
ZYGOPHYLLACEAE	*Zygophyllum simile @*	White Twinleaf	7
Number of Species			
1145	*Number of listed species representing at least 1166 distinct taxonomic forms*		
1094	*@ identifies the taxa and species complexes were used in community analyses*		
28	*# indicates listed taxa that are likely to represent more than one taxonomic form*		
198	** indicates non-indigenous invasive or introduced taxa*		
4	*EN = Endangered under the Commonwealth Environment Protection & Biodiversity Conservation Act*		
9	*VU = Vulnerable under the Commonwealth Environment Protection & Biodiversity Conservation Act*		
5	*E = Endangered under the South Australian National Parks & Wildlife Act*		
19	*V = Vulnerable under the South Australian National Parks & Wildlife Act*		
70	*R = Rare under the South Australian National Parks & Wildlife Act*		

Appendix 4. Taxa requiring specific alteration to taxonomy and/or site data prior to analyses.

PJL = taxonomic comment Peter J Lang

SPECIES	Reason for change
Acacia anceps and *A.. anceps* (NC)	taxonomic split: A. anceps north and west of Streaky Bay, new taxa A. sp. Winged (C.R.Alcock 4936) east of Streaky Bay
Cryptandra propinqua	PJL EXCLUDE the 1 record from BS21 siteID KU00801, RETAIN other two
Eucalyptus angulosa	PJL: REASSIGN 1 record for BS30 SiteID IL00137 to *Eucalyptus incrassata*
Eucalyptus incrassata	PJL: REASSIGN 1 record for BS79 SiteID LN00501 to *Eucalyptus angulosa*. "* includes one record identified as *E. ceratocorys* and probably some others from the NW part which match it or intergrade."
Eucalyptus phenax (NC)	PJL: UPDATE 4 records to *Eucalyptus conglobata* ssp. *conglobata* (BS79 sites LN00201, LN00301, LN00601, LN00701 merge rest with *Eucalyptus phenax*
Gahnia trifida	PJL: REASSIGN 1 record to *Gahnia filum* (=BS179 GAB00401) Baird Bay Larry Bebington nv, retain rest
Halosarcia sp. (NC)	PJL: Remove this species and also REMOVE QUADRATS WHERE *Halosarcia* sp. (NC) cover was > 1.
Leptomeria aphylla	PJL: EXCLUDE SPECIES from QUADRATS for BS30 (misID), RETAIN SPECIES for 2 QUADRATS for BS80 & 1 for BS128
Podolepis rugata var.	PJL: REASSIGN QUADRATS BS71 VB00301, VB00401 & VB00801 to *Podolepis rugata* var. *littoralis* and reasign QUADRAT BS46 TG025 to *Podolepis rugata* var. *rugata*
Sarcocornia sp.	PJL: Remove this species and also REMOVE QUADRATS WHERE *Sarcocornia* sp. cover was > 1
Stuartina muelleri	PJL: EXCLUDE SPECIES FROM 1 QUADRAT ONLY: BS103 MAN00701 (V. close to location of southernmost *Stuartina hamata*)
Triodia irritans complex	PJL: Remove this species and also REMOVE QUADRATS WHERE *T. irritans* complex cover was > 1
Triodia irritans var. (NC)	PJL: Remove this species and at least REMOVE QUADRATS WHERE T. irritans var. (NC) cover was > 1 , if not removing all the quadrats from cluster analysis anyway because all 34 lack cover data / 4 sp *T. irritans/bunicola/scariosa/compacta*
Triodia sp. (NC)	PJL: Remove this species and also REMOVE QUADRATS WHERE *Triodia* sp. (NC) cover was > 1.

Appendix 5. Plant species within the Eyre Peninsula Biogeographic Region with National and South Australian conservation ratings.

EPBC = the Commonwealth's Environment Protection & Biodiversity Conservation Act, NPW = the South Australian National Parks & Wildlife Act: EN and E = Endangered, VU and V = Vulnerable and R = Rare.
H = the South Australian Herbarium Collection, SU = the Biological Survey database, Y = records for study area

SPECIES	Common Name	EPBC Act	NPW Act	H	SU
Acacia alcockii	Alcock's Wattle		R	Y	Y
Acacia cretacea	Chalky Wattle	EN	E	Y	
Acacia dodonaeifolia	Hop-bush Wattle		R	Y	Y
Acacia enterocarpa	Jumping-jack Wattle	EN	E	Y	Y
Acacia hexaneura	Six-nerve Spine-bush		R	Y	Y
Acacia imbricata	Feathery Wattle	VU	R	Y	Y
Acacia iteaphylla	Flinders Ranges Wattle		R	Y	
Acacia lineata	Streaked Wattle		R		Y
Acacia montana	Mallee Wattle		R	Y	Y
Acacia pinguifolia	Fat-leaf Wattle	EN	E	Y	Y
Acacia praemorsa	Senna Wattle		E	Y	
Acacia rhetinocarpa	Resin Wattle	VU	V	Y	Y
Acacia rhigiophylla	Dagger-leaf Wattle		R	Y	Y
Acacia simmonsiana	Hall's Wattle		R	Y	
Acacia spilleriana	Spiller's Wattle		E	Y	
Acacia whibleyana	Whibley's Wattle	EN	E	Y	
Amphibromus archeri	Pointed Swamp Wallaby-grass		R	Y	
Amphibromus macrorhinus	Long-nosed Swamp Wallaby-grass		R	Y	
Anogramma leptophylla	Annual Fern		R	Y	Y
Anthocercis anisantha ssp. *anisantha*	Port Lincoln Ray-flower		R	Y	Y
Asplenium trichomanes	Common Spleenwort		R	Y	
Austrodanthonia laevis	Smooth Wallaby-grass		R	Y	Y
Austrostipa densiflora	Fox-tail Spear-grass		R		Y
Austrostipa echinata	Spiny Spear-grass		R	Y	Y
Austrostipa gibbosa	Swollen Spear-grass		R	Y	
Austrostipa multispiculis			R		Y
Austrostipa nullanulla	Club Spear-grass	VU	V	Y	Y
Austrostipa pilata	Prickly Spear-grass		V	Y	Y
Austrostipa plumigera			R	Y	Y
Austrostipa tenuifolia			R	Y	
Austrostipa vickeryana	Vickery's Spear-grass		R	Y	Y
Billardiera sp. Yorke Peninsula (P.C.Heyligers 80164)	Lehmann's Apple-berry		E		Y
Boronia pilosa ssp. *torquata*	Hairy Boronia		R	Y	
Bossiaea ensata	Sword Bossiaea		V	Y	Y
Bothriochloa macra	Red-leg Grass		R	Y	
Brachyscome breviscapis	Short-stem Daisy		R	Y	
Brachyscome xanthocarpa	Yellow-fruit Daisy		R	Y	Y
Caladenia arenaria	Sand Spider-orchid	EN			Y
Caladenia bicalliata ssp. *bicalliata*	Western Daddy-long-legs		R	Y	Y
Caladenia brumalis	Winter Spider-orchid	VU	V	Y	
Caladenia conferta	Coast Spider-orchid	EN	E	Y	
Caladenia dilatata	Late Spider-orchid		E	Y	
Caladenia macroclavia	Large-club Spider-orchid	EN	E	Y	
Caladenia pusilla	Pigmy Caladenia		R	Y	Y
Caladenia tensa	Inland Green-comb Spider-orchid	EN		Y	Y
Calandrinia sphaerophylla	Bead Purslane		R		Y
Calocephalus sonderi	Pale Beauty-heads		R	Y	
Calochilus campestris (NC) (could be C. campestris or C. pruinosus)	Plains Beard-orchid		R		Y
Calochilus pruinosus	Plains Beard-orchid		R	Y	
Calotis lappulacea	Yellow Burr-daisy		R	Y	
Centrolepis cephaloformis ssp. *cephaloformis*	Cushion Centrolepis		R	Y	Y
Centrolepis glabra	Smooth Centrolepis		R	Y	
Ceratogyne obionoides	Wingwort		R	Y	Y
Chondropyxis halophila	Salt Button-daisy		R	Y	Y
Choretrum glomeratum var. *chrysanthum*	Yellow-flower Sour-bush		R	Y	
Cladium procerum	Leafy Twig-rush		R	Y	
Commersonia multiloba	Trailing Commersonia		E	Y	
Crassula exserta	Large-fruit Crassula		R	Y	Y
Crassula peduncularis	Purple Crassula		R	Y	
Dampiera lanceolata var. *intermedia*	Aldinga Dampiera		E	Y	
Daviesia benthamii ssp. *humilis*	Mallee Bitter-pea		R	Y	Y
Daviesia pectinata	Zig-zag Bitter-pea		R	Y	Y
Desmocladus diacolpicus	Bundled Cord-rush		V	Y	Y
Dianella longifolia var. *grandis*	Pale Flax-lily		R		Y
Diuris behrii	Behr's Cowslip Orchid		V	Y	
Dodonaea procumbens	Trailing Hop-bush	VU	V	Y	
Drosera sp. Rigid (R.J.Bates 2268)	Erect Sundew		V	Y	Y

SPECIES	Common Name	EPBC Act	NPW Act	H	SU
Elatine gratioloides	Waterwort		R	Y	
Eremophila barbata	Blue Range Emubush		R	Y	
Eremophila gibbifolia	Coccid Emubush		R	Y	Y
Eucalyptus behriana	Broad-leaf Box		R	Y	Y
Eucalyptus calycogona ssp. *spaffordii*	Spafford's Square-fruit Mallee		R	Y	
Eucalyptus conglobata ssp. *conglobata*	Port Lincoln Mallee		R*	Y	Y
Eucalyptus cretata	Darke Peak Mallee		R	Y	Y
Eucalyptus gillenii	Mount Lindsay Mallee		R	Y	
Eucalyptus viridis ssp. *viridis*	Green Mallee		R	Y	
Exocarpos strictus	Pale-fruit Cherry		R		Y
Goodenia benthamiana	Bentham's Goodenia		R	Y	
Gratwickia monochaeta			R	Y	
Grevillea anethifolia			R	Y	Y
Grevillea halmaturina ssp. *halmaturina*	Prickly Grevillea		R	Y	
Grevillea halmaturina ssp. *laevis*	Prickly Grevillea		R	Y	Y
Grevillea pauciflora ssp. *leptophylla*	Narrow-leaf Grevillea		R	Y	Y
Haeckeria cassiniiformis	Dogwood Haeckeria		R	Y	Y
Haegiela tatei	Small Nut-heads		R	Y	Y
Haloragis eyreana	Prickly Raspwort	EN	E	Y	
Hydrocotyle crassiuscula	Spreading Pennywort		R	Y	
Isotoma scapigera	Salt Isotome		R	Y	Y
Juncus radula	Hoary Rush		V	Y	
Lawrencia berthae	Showy Lawrencia		R	Y	
Leiocarpa pluriseta			R	Y	Y
Lepidosperma leptophyllum			R		Y
Leptomeria preissiana			E	Y	
Leptorhynchos elongatus	Lanky Buttons		R	Y	
Leptorhynchos scaber	Annual Buttons		R	Y	
Leucopogon clelandii	Cleland's Beard-heath		R	Y	Y
Levenhookia stipitata			R	Y	Y
Limosella granitica	Granite Mudwort	VU	V	Y	
Lobelia cleistogamoides			R	Y	Y
Maireana excavata	Bottle Fissure-plant		V	Y	
Maireana rohrlachii	Rohrlach's Bluebush		R	Y	Y
Maireana suaedifolia	Lax Bluebush		R	Y	Y
Melaleuca armillaris ssp. *akineta*	Needle-leaf Honey-myrtle		R	Y	Y
Melaleuca leiocarpa	Pungent Honey-myrtle		R	Y	
Melaleuca oxyphylla	Pointed-leaf Honey-myrtle		R	Y	Y
Mentha diemenica	Slender Mint		R	Y	
Mentha satureioides	Native Pennyroyal		R	Y	
Microlepidium alatum		VU	V	Y	
Microlepidium pilosulum	Hairy Shepherd's-purse		R	Y	Y
Microtis atrata	Yellow Onion-orchid		R	Y	
Microtis eremaea	Slender Onion-orchid		E	Y	
Microtis orbicularis	Swamp Onion-orchid		V	Y	
Mitrasacme pilosa var. *pilosa*	Hairy Mitrewort		V	Y	Y
Myoporum parvifolium	Creeping Boobialla		R	Y	Y
Myriophyllum integrifolium	Tiny Milfoil		R	Y	
Olax obcordata			R	Y	
Olearia adenolasia	Musk Daisy-bush		R	Y	Y
Olearia microdisca	Small-flower Daisy-bush	EN	E	Y	
Olearia pannosa ssp. *cardiophylla*	Velvet Daisy-bush		R	Y	
Olearia pannosa ssp. *pannosa*	Silver Daisy-bush	VU	V	Y	
Olearia passerinoides ssp. *glutescens*	Sticky Daisy-bush		R	Y	
Olearia picridifolia	Rasp Daisy-bush		R	Y	Y
Orobanche cernua var. *australiana*	Australian Broomrape		R	Y	
Philotheca angustifolia ssp. *angustifolia*	Narrow-leaf Wax-flower		R	Y	Y
Phlegmatospermum eremaeum	Spreading Cress		R	Y	
Phlegmatospermum richardsii	Nullarbor Cress		V	Y	
Phyllangium distylis	Tiny Mitrewort		R	Y	
Phyllangium sulcatum			V	Y	
Phyllanthus calycinus	Snowdrop Spurge		R	Y	Y
Phylloglossum drummondii	Pigmy Clubmoss		R		Y
Pilularia novae-hollandiae	Austral Pillwort		R	Y	
Pimelea penicillaris	Sandhill Riceflower		R	Y	
Pimelea williamsonii	Williamson's Riceflower		R	Y	Y
Pleuropappus phyllocalymmeus	Silver Candles	VU	V	Y	Y
Poa drummondiana	Knotted Poa		R	Y	Y
Poa fax	Scaly Poa		R	Y	Y
Podolepis jaceoides	Showy Copper-wire Daisy		R	Y	Y
Podolepis muelleri	Button Podolepis		V	Y	Y
Polypogon tenellus			V		Y
Pomaderris forrestiana			R		Y

SPECIES	Common Name	EPBC Act	NPW Act	H	SU
Potamogeton ochreatus	Blunt Pondweed		R	Y	
Prasophyllum calcicola	Limestone Leek-orchid		V	Y	Y
Prasophyllum catenemum			E	Y	
Prasophyllum constrictum	Tawny Leek-orchid		R	Y	Y
Prasophyllum fecundum	Self-pollinating Leek-orchid		R	Y	Y
Prasophyllum goldsackii	Goldsack's Leek-orchid	EN	E	Y	Y
Prasophyllum occultans	Hidden Leek-orchid		R	Y	Y
Prasophyllum sp. Enigma (R.Bates 2350)	Goldsack's Leek-orchid		E	Y	Y
Prostanthera calycina	West Coast Mintbush	VU	V	Y	Y
Prostanthera chlorantha	Green Mintbush		R	Y	
Pteris tremula	Tender Brake		R	Y	
Pterostylis sp. Eyre Peninsula (R.Bates 19474)	Lowly Greenhood	VU	V*	Y	
Pterostylis sp. Triloba (pl.191, Bates & Weber 1990)			E*	Y	
Pterostylis xerophila	Desert Greenhood	VU	V	Y	
Ptilotus beckerianus	Ironstone Mulla Mulla	VU	V	Y	Y
Pultenaea trichophylla	Tufted Bush-pea	VU	R	Y	Y
Rulingia craurophylla			V	Y	
Rumex dumosus	Wiry Dock		R	Y	
Santalum spicatum	Sandalwood		V	Y	Y
Sarcozona bicarinata	Ridged Noon-flower		V	Y	
Scaevola myrtifolia	Myrtle Fanflower		R	Y	
Schoenus laevigatus			R	Y	
Schoenus sculptus	Gimlet Bog-rush		R	Y	Y
Sphaerolobium minus	Leafless Globe-pea		R	Y	Y
Spyridium bifidum var. *integrifolium*			R	Y	
Spyridium bifidum var. Marble Range (W.R.Barker 7601)	Marble Range Spyridium		V	Y	Y
Spyridium bifidum var. Wanilla (K.Clipstone 88)	Wanilla Spyridium		V	Y	
Spyridium erymnocladum	Cloaked Spyridium		V	Y	
Spyridium leucopogon	Silvery Spyridium		R	Y	Y
Spyridium spathulatum	Spoon-leaf Spyridium		R	Y	Y
Spyridium tricolor	Rusty Spyridium		V	Y	Y
Stackhousia annua	Annual Candles	VU	V	Y	Y
Stypandra glauca	Nodding Grass-lily		V	Y	Y
Swainsona microcalyx	Wild Violet		R	Y	
Swainsona pyrophila	Yellow Swainson-pea	VU	R	Y	
Swainsona viridis	Creeping Darling Pea		V	Y	
Tecticornia flabelliformis	Bead Samphire	VU	V		Y
Tecticornia lepidosperma			R	Y	Y
Templetonia battii	Spiny Templetonia		R	Y	Y
Thelymitra carnea	Small Pink Sun-orchid		R	Y	
Thelymitra epipactoides	Metallic Sun-orchid	EN	E	Y	Y
Thelymitra flexuosa	Twisted Sun-orchid		R	Y	Y
Thelymitra ixioides	Spotted Sun-orchid		E*	Y	
Thysanotus nudicaulis			E	Y	
Thysanotus tenellus	Grassy Fringe-lily		R		Y
Thysanotus wangariensis	Eyre Peninsula Fringe-lily		R	Y	Y
Triglochin minutissimum	Tiny Arrowgrass		R		Y
Velleia cycnopotamica			R	Y	
Veronica gracilis	Slender Speedwell		V	Y	
Veronica parnkalliana	Port Lincoln Speedwell		E	Y	
Wurmbea decumbens	Trailing Nancy		R	Y	Y
Wurmbea latifolia ssp. *vanessae*	Broad-leaf Nancy		R	Y	
Wurmbea sinora			E	Y	
Xanthorrhoea semiplana ssp. *tateana*	Tate's Grass-tree		R	Y	Y
Zygophyllum humillimum	Small-fruit Twinleaf		R		Y
	195	29	193	Y78	Y03

Appendix 6. Plant taxa with regional conservation ratings for Eyre Peninsula that were recorded at survey sites.

SPECIES	Common name	EP region status	Eyre Hills	Eyre Mallee	Talia
Acacia alcockii	Alcock's Wattle	R	2		6
Acacia dodonaeifolia	Hop-bush Wattle	R	9		
Acacia enterocarpa	Jumping-jack Wattle	E	3		
Acacia gillii	Gill's Wattle	U	39		
Acacia havilandiorum	Needle Wattle	R	2		
Acacia hexaneura	Six-nerve Spine-bush	R	3		
Acacia imbricata	Feathery Wattle	R	28		
Acacia lineata	Streaked Wattle	K		1	
Acacia montana	Mallee Wattle	R	1		
Acacia pinguifolia	Fat-leaf Wattle	E	2		
Acacia pycnantha	Golden Wattle	R	38		2
Acacia rhetinocarpa	Resin Wattle	V	1		
Acacia rhigiophylla	Dagger-leaf Wattle	R	1	1	
Acacia triquetra	Mallee Wreath Wattle	U	6	7	28
Acrotriche affinis	Ridged Ground-berry	R		1	
Adiantum aethiopicum	Common Maiden-hair	E	1		
Allocasuarina helmsii	Helm's Oak-bush	U		3	
Allocasuarina pusilla	Dwarf Oak-bush	R	1		
Amphipogon strictus var. *setifer*	Spreading Grey-beard Grass	K	2		
Anogramma leptophylla	Annual Fern	R		1	
Anthocercis anisantha ssp. *anisantha*	Port Lincoln Ray-flower	R	2		
Anthocercis anisantha ssp. *collina*	Gawler Ranges Ray-flower	U		1	
Apalochlamys spectabilis	Showy Firebush	U	1		
Aphanes australiana	Australian Piert	U	3	1	7
Apium prostratum var.	Native Celery	U	1		1
Apodasmia brownii	Coarse Twine-rush	K	8		2
Aristida behriana	Brush Wire-grass	E	2		
Arthropodium strictum	Common Vanilla-lily	R	1		
Atriplex pumilio	Mat Saltbush	U	1	1	
Austrodanthonia auriculata	Lobed Wallaby-grass	K	1		
Austrodanthonia eriantha	Hill Wallaby-grass	R	2		
Austrodanthonia fulva	Leafy Wallaby-grass	K	3		
Austrodanthonia laevis	Smooth Wallaby-grass	K			8
Austrodanthonia pilosa	Velvet Wallaby-grass	K	4		
Austrofestuca littoralis	Coast Fescue	U			2
Austrostipa blackii	Crested Spear-grass	R	20	3	1
Austrostipa echinata	Spiny Spear-grass	R		6	9
Austrostipa macalpinei	Annual Spear-grass	R		3	1
Austrostipa nullanulla	Club Spear-grass	K		14	
Austrostipa plumigera		K		4	
Austrostipa semibarbata	Fibrous Spear-grass	K	2		
Austrostipa stipoides	Coast Spear-grass	R	5		
Austrostipa velutina		U		5	
Banksia marginata	Silver Banksia	R	5		1
Banksia ornata	Desert Banksia	R	5		
Baumea arthrophylla	Swamp Twig-rush	R			1
Baumea juncea	Bare Twig-rush	U	9		7
Billardiera sp. Yorke Peninsula (P.C.Heyligers 80164)	Lehmann's Apple-berry	E	1		
Billardiera uniflora	One-flower Apple-berry	K			4
Billardiera versicolor	Yellow-flower Apple-berry	U	13	3	8
Boronia filifolia	Slender Boronia	K	5		
Bossiaea ensata	Sword Bossiaea	T	1		
Brachyscome cuneifolia	Wedge-leaf Daisy	R	1		
Brachyscome xanthocarpa	Yellow-fruit Daisy	R		1	1
Bulbine bulbosa	Bulbine-lily	K	7		1
Burchardia umbellata	Milkmaids	U	35		1
Caladenia bicalliata ssp. *bicalliata*	Western Daddy-long-legs	R	1		10
Caladenia carnea	Pink Fingers	U			5
Caladenia pusilla	Pigmy Caladenia	V	1		
Caladenia stricta	Upright Caladenia	U		2	13
Calandrinia brevipedata	Short-stalked Purslane	U	3	1	5
Calandrinia corrigioloides	Strap Purslane	R	3	12	2
Calandrinia sphaerophylla	Bead Purslane	K			1
Calandrinia volubilis	Twining Purslane	U		1	
Carex breviculmis	Short-stem Sedge	K	12		2

SPECIES	Common name	EP region status	Eyre Hills	Eyre Mallee	Talia
Carex inversa var. *major*	Knob Sedge	K	2		
Carex tereticaulis	Rush Sedge	T	3		
Centella asiatica	Asian Centella	R			1
Centrolepis cephaloformis ssp. *cephaloformis*	Cushion Centrolepis	R	2		1
Ceratogyne obionoides	Wingwort	K	3	3	
Chondropyxis halophila	Salt Button-daisy	K		1	
Chorizandra enodis	Black Bristle-rush	R	11		1
Chrysocephalum baxteri	White Everlasting	U	5	9	2
Comesperma calymega	Blue-spike Milkwort	U	12		1
Commersonia tatei	Trailing Commersonia	U	2	6	
Conospermum patens	Slender Smoke-bush	R	2		
Convolvulus angustissimus ssp. *peninsularum*	Grassland Bindweed	U			2
Corybas despectans	Coast Helmet-orchid	U	2		9
Crassula exserta	Large-fruit Crassula	R	11	9	1
Cymbonotus preissianus	Austral Bear's-ear	E			2
Cynoglossum suaveolens	Sweet Hound's-tongue	K	2		
Cyperus laevigatus	Bore-drain Sedge	K			2
Cyperus tenellus	Tiny Flat-sedge	R	3		
Darwinia salina	Salt Darwinia	U		4	
Daviesia asperula ssp. *asperula*	Kangaroo Island Bitter-pea	R	4	1	
Daviesia asperula ssp. *obliqua*	Eyre Peninsula Bitter-pea	U	28		1
Daviesia benthamii ssp. *acanthoclona*	Dryland Bitter-pea	U	6	9	
Daviesia benthamii ssp. *humilis*	Mallee Bitter-pea	R	2	7	4
Daviesia genistifolia	Broom Bitter-pea	R		1	
Daviesia pectinata	Zig-zag Bitter-pea	R	12	1	
Desmocladus diacolpicus	Bundled Cord-rush	V	1	2	
Dichelachne crinita	Long-hair Plume-grass	U	27		12
Digitaria brownii	Cotton Panic-grass	U	2		
Diuris orientis	Wallflower Donkey-orchid	K	6	1	2
Diuris palustris	Little Donkey-orchid	R			2
Diuris pardina	Spotted Donkey-orchid	U	16	2	5
Dodonaea intricata	Gawler Ranges Hop-bush	R		1	
Drosera peltata	Pale Sundew	U	12	1	4
Drosera pygmaea	Tiny Sundew	K	1		
Drosera sp. Rigid (R.J.Bates 2268)	Erect Sundew	K	10		1
Elachanthus pusillus	Elachanth	R		3	
Eleocharis acuta	Common Spike-rush	T	1		
Enneapogon nigricans	Black-head Grass	U	8	1	
Eremophila gibbifolia	Coccid Emubush	R	1		
Eremophila subfloccosa ssp. Lanata (R.Bates 33587)	Woolly Emubush	U		3	
Eriochilus cucullatus	Parson's Bands	U	10		4
Eucalyptus albopurpurea	Purple-flowered Mallee Box	R	2		2
Eucalyptus behriana	Broad-leaf Box	V	4		
Eucalyptus camaldulensis var. *camaldulensis*	River Red Gum	U	2		17
Eucalyptus conglobata ssp. *conglobata*	Port Lincoln Mallee	R	9		
Eucalyptus cretata	Darke Peak Mallee	R	1	10	
Eucalyptus peninsularis	Merrit	U	12	27	1
Eucalyptus petiolaris	Eyre Peninsula Blue Gum	U	12		
Eucalyptus viminalis ssp. *cygnetensis*	Rough-bark Manna Gum	V			1
Eutaxia diffusa	Large-leaf Eutaxia	R	4		
Gahnia ancistrophylla	Curled Saw-sedge	U	35		1
Genoplesium rufum	Red Midge-orchid	R	2	1	
Glischrocaryon aureum var. *angustifolium*	Golden Pennants	U	1	1	
Gompholobium ecostatum	Dwarf Wedge-pea	R	4		
Goodenia glabra	Smooth Goodenia	Q	2		
Goodenia quasilibera		K		1	
Goodia medicaginea	Western Golden-tip	U	1	1	5
Grammosolen dixonii		U	4	2	
Grevillea anethifolia		R	1		
Grevillea halmaturina ssp. *laevis*	Prickly Grevillea	R	4		
Grevillea juncifolia ssp. *juncifolia*	Honeysuckle Grevillea	R		4	
Grevillea pauciflora ssp. *leptophylla*	Narrow-leaf Grevillea	K		2	5
Grevillea pauciflora ssp. *pauciflora*	Few-flower Grevillea	U	2	1	1
Gyrostemon thesioides	Broom Wheel-fruit	R			2
Haeckeria cassiniiformis	Dogwood Haeckeria	R		1	
Haegiela tatei	Small Nut-heads	K		1	1
Haloragis aspera	Rough Raspwort	Q	4		7
Hemichroa pentandra	Trailing Hemichroa	R	1	2	4
Hibbertia cinerea	Port Lincoln Guinea-flower	U	11		4

SPECIES	Common name	EP region status	Eyre Hills	Eyre Mallee	Talia
Hibbertia paeninsularis	Peninsula Guinea-flower	R	14		
Hibbertia platyphylla ssp. *platyphylla*		R	12		21
Homoranthus homoranthoides	Port Lincoln Ground-myrtle	U	40		7
Hypoxis vaginata var. *vaginata*	Yellow Star	K	5		
Isolepis australiensis	Southern Club-rush	K	1		
Isolepis cernua	Nodding Club-rush	U		1	
Isolepis platycarpa	Flat-fruit Club-rush	R	1		
Isotoma scapigera	Salt Isotome	R	2	1	2
Kippistia suaedifolia	Fleshy Kippistia	R		1	
Lawrencia spicata	Salt Lawrencia	U	1		
Laxmannia orientalis	Dwarf Wire-lily	R	6		
Leiocarpa pluriseta		K		2	
Lepidosperma canescens	Hoary Rapier-sedge	K	3		
Lepidosperma curtisiae	Little Sword-sedge	K	1		
Lepidosperma leptophyllum		K		1	
Leporella fimbriata	Fringed Hare-orchid	R	11		
Leptomeria aphylla	Leafless Currant-bush	R	3	8	6
Leptorhynchos squamatus ssp. *squamatus*	Scaly Buttons	K	11		6
Leptorhynchos tetrachaetus	Little Buttons	U		2	3
Leucopogon clelandii	Cleland's Beard-heath	T	1	4	
Leucopogon rufus	Ruddy Beard-heath	U	9	4	
Leucopogon woodsii	Nodding Beard-heath	R		1	
Levenhookia stipitata		R	12	1	3
Lobelia anceps	Angled Lobelia	R	1		2
Lobelia cleistogamoides		R	6	7	4
Logania minor	Spoon-leaf Logania	R		1	2
Lomandra juncea	Desert Mat-rush	R	6	14	
Lomandra micrantha ssp. *tuberculata*	Small-flower Mat-rush	K	17		1
Luzula meridionalis	Common Wood-rush	R	5		2
Maireana appressa	Pale-fruit Bluebush	U	1		
Maireana rohrlachii	Rohrlach's Bluebush	K	1		
Maireana suaedifolia	Lax Bluebush	R	1		
Marsilea drummondii	Common Nardoo	R	1		
Melaleuca armillaris ssp. *akineta*	Needle-leaf Honey-myrtle	R	2	9	
Melaleuca gibbosa	Slender Honey-myrtle	R			10
Melaleuca oxyphylla	Pointed-leaf Honey-myrtle	R	2	1	
Micrantheum demissum	Dwarf Micrantheum	T	1		
Microlepidium pilosulum	Hairy Shepherd's-purse	R	1	9	4
Muehlenbeckia florulenta	Lignum	R	2		
Myoporum parvifolium	Creeping Boobialla	R	1		3
Myosotis australis	Austral Forget-me-not	K	2	1	8
Olearia adenolasia	Musk Daisy-bush	R	2		
Olearia calcarea	Crinkle-leaf Daisy-bush	U	1	15	
Olearia lanuginosa	Woolly Daisy-bush	R		3	2
Olearia magniflora	Splendid Daisy-bush	U		30	
Olearia passerinoides ssp. *passerinoides*	Feather Daisy-bush	U	2		
Olearia picridifolia	Rasp Daisy-bush	R		2	1
Olearia rudis	Azure Daisy-bush	U		6	
Olearia subspicata	Spiked Daisy-bush	U			1
Orthoceras strictum	Horned Orchid	R	2		1
Orthrosanthus multiflorus	Morning Flag	V			1
Osteocarpum salsuginosum	Inland Bonefruit	V		1	
Philotheca angustifolia ssp. *angustifolia*	Narrow-leaf Wax-flower	R	3		
Phyllanthus calycinus	Snowdrop Spurge	R	2		5
Phyllota remota	Slender Phyllota	U	1		
Picris angustifolia ssp. *angustifolia*	Coast Picris	Q			1
Pimelea subvillifera	Silky Riceflower	U		1	
Pimelea williamsonii	Williamson's Riceflower	R		1	
Plantago gaudichaudii	Narrow-leaf Plantain	K	5		
Platysace heterophylla var. *heterophylla*	Slender Platysace	U	9	13	
Pleuropappus phyllocalymmeus	Silver Candles	V	1		2
Poa crassicaudex	Thick-stem Tussock-grass	U	10	1	
Poa drummondiana	Knotted Poa	R		9	4
Poa fax	Scaly Poa	R	1	1	15
Podolepis canescens	Grey Copper-wire Daisy	U		2	
Podolepis jaceoides	Showy Copper-wire Daisy	R		4	
Podolepis muelleri	Button Podolepis	T			1
Podolepis rugata var. *littoralis*	Coast Copper-wire Daisy	U			3
Polypogon tenellus		K			1

SPECIES	Common name	EP region status	Eyre Hills	Eyre Mallee	Talia
Pomaderris flabellaris	Fan Pomaderris	U	28		2
Prasophyllum calcicola	Limestone Leek-orchid	V	1		1
Prasophyllum constrictum	Tawny Leek-orchid	V		3	
Prasophyllum elatum	Tall Leek-orchid	U	1		
Prasophyllum fecundum	Self-pollinating Leek-orchid	R	4	1	3
Prasophyllum fitzgeraldii	Fitzgerald's Leek-orchid	R	1	1	
Prasophyllum goldsackii	Goldsack's Leek-orchid	E	1		1
Prasophyllum occultans	Hidden Leek-orchid	R	2		1
Prasophyllum sp. Enigma (R.Bates 2350)	Goldsack's Leek-orchid	Q			1
Prostanthera calycina	West Coast Mintbush	V			20
Prostanthera florifera	Gawler Ranges Mintbush	U	2		
Prostanthera serpyllifolia ssp. *serpyllifolia*	Thyme Mintbush	U	7	7	14
Prostanthera serpyllifolia ssp. *serpyllifolia* (purplish-green flowers)	Thyme Mintbush	R		1	
Prostanthera serpyllifolia ssp. *serpyllifolia* (red flowers)	Thyme Mintbush	U	9	20	7
Prostanthera spinosa	Spiny Mintbush	R	11		
Pterostylis boormanii	Boorman's Greenhood	U	3	2	2
Ptilotus beckerianus	Ironstone Mulla Mulla	E	8		
Pultenaea acerosa	Bristly Bush-pea	U	17		4
Pultenaea canaliculata var.	Soft Bush-pea	K	2		1
Pultenaea densifolia	Dense Bush-pea	U		2	3
Pultenaea pedunculata	Matted Bush-pea	K	10		
Pultenaea rigida var. *ovata*	Rigid Bush-pea	R	1		6
Pultenaea rigida var. *rigida*	Rigid Bush-pea	R			1
Pultenaea teretifolia var. *teretifolia*	Terete-leaf Bush-pea	U	16	2	2
Pultenaea trichophylla	Tufted Bush-pea	R	3		
Pultenaea vestita	Feather Bush-pea	R	2		1
Quinetia urvillei	Quinetia	U	5	1	8
Ranunculus lappaceus	Native Buttercup	T	1		2
Santalum murrayanum	Bitter Quandong	U	8	20	4
Santalum spicatum	Sandalwood	V	2		
Scaevola angustata	Coast Fanflower	K		1	1
Scaevola bursariifolia	Bursaria Fanflower	U		12	
Scaevola linearis ssp. *linearis*	Rough Fanflower	U	23		1
Schoenus carsei	Wiry Bog-rush	T			1
Schoenus deformis	Small Bog-rush	T	7	3	3
Schoenus nitens	Shiny Bog-rush	R	4		2
Schoenus sculptus	Gimlet Bog-rush	R	7	1	2
Scleranthus minusculus	Cushion Knawel	R	1	2	
Selliera radicans	Shiny Swamp-mat	R	2		4
Senecio tenuiflorus (NC) 2 sp *Senecio phelleus* (sth of Lock) / *dolichcephalus* (nth of Lock)	Woodland Groundsel	R	7		1
Solenogyne dominii	Smooth Solenogyne	K	1		
Sphaerolobium minus	Leafless Globe-pea	K	4		1
Spyridium bifidum var. Marble Range (W.R.Barker 7601)	Marble Range Spyridium	K	3		
Spyridium leucopogon	Silvery Spyridium	K	7		
Spyridium nitidum	Shining Spyridium	U	10	1	
Spyridium spathulatum	Spoon-leaf Spyridium	R	7		
Spyridium tricolor	Rusty Spyridium	K		1	
Stackhousia annua	Annual Candles	V	1		
Stackhousia spathulata	Coast Candles	R	1		2
Stellaria filiformis	Thread Starwort	U	5	2	
Stylidium calcaratum	Spurred Trigger-plant	R	4	1	
Stypandra glauca	Nodding Grass-lily	V		2	
Tecticornia flabelliformis	Bead Samphire	V		2	3
Tecticornia halocnemoides ssp. *halocnemoides*	Grey Samphire	U	1	13	5
Tecticornia lepidosperma		Q			2
Tecticornia pterygosperma ssp. *pterygosperma*	Winged-seed Samphire	K	4	1	
Templetonia battii	Spiny Templetonia	R		2	
Templetonia sulcata	Flat Mallee-pea	U	2	10	1
Tetraria capillaris	Hair Sedge	K	1		5
Thelymitra azurea or occidentalis	Azure Sun-orchid	U		1	
Thelymitra benthamiana	Leopard Sun-orchid	R	6		1
Thelymitra epipactoides	Metallic Sun-orchid	E	2		
Thelymitra flexuosa	Twisted Sun-orchid	K	13		
Thysanotus wangariensis	Eyre Peninsula Fringe-lily	R	1	2	
Trachymene ceratocarpa	Creeping Carrot	Q		1	
Triglochin minutissimum	Tiny Arrowgrass	K	2		
Triglochin striatum	Streaked Arrowgrass	U			2
Triodia lanata	Woolly Spinifex	Q	2	71	

SPECIES	Common name	EP region status	Eyre Hills	Eyre Mallee	Talia
Trymalium wayi	Grey Trymalium	K			1
Utricularia tenella	Pink Bladderwort	V	2		
Velleia connata	Cup Velleia	U	1	1	
Wahlenbergia luteola	Yellow-wash Bluebell	U	16	4	1
Wilsonia backhousei	Narrow-leaf Wilsonia	R		1	2
Wilsonia rotundifolia	Round-leaf Wilsonia	R	5		2
Wurmbea decumbens	Trailing Nancy	R	5	6	
Zygophyllum flavum	Coast Twinleaf	K		1	1
Zygophyllum humillimum	Small-fruit Twinleaf	K	1		
Endangered	E	9	8	0	2
Threatened	T	9	7	2	4
Vulnerable	V	16	9	5	6
Rare	R	107	80	47	49
Uncommon	U	79	57	48	43
Poorly Known	K	53	35	16	21
Status questionable	Q	7	3	2	4
	Total	280	199	120	129

Appendix 7. Non-native plant taxa that were recorded at survey sites with site frequency data for each of the three biogeographic subregions (IBRA V6.1) comprising the study area.

FAMILYNAME	Species for listing	Common Name	Eyre Hills	Eyre Mallee	Talia
POLYGONACEAE	*Acetosella vulgaris*	Sorrel	1		
RANUNCULACEAE	*Adonis microcarpa*	Pheasant's Eye			1
GRAMINEAE	*Aira cupaniana*	Small Hair-grass	86	5	43
GRAMINEAE	*Aira* sp.	Silvery Hair-grass	3	2	
CRUCIFERAE	*Alyssum linifolium*	Flax-leaf Alyssum	7	4	2
GRAMINEAE	*Ammophila arenaria*	Marram Grass			2
BORAGINACEAE	*Amsinckia calycina*	Hairy Fiddle-neck			2
PRIMULACEAE	*Anagallis arvensis*	Pimpernel	126	95	269
UMBELLIFERAE	*Apium graveolens*	Celery			3
COMPOSITAE	*Arctotheca calendula*	Cape Weed	78	18	28
COMPOSITAE	*Arctotheca populifolia*	Beach Daisy		1	1
CARYOPHYLLACEAE	*Arenaria leptoclados*	Lesser Thyme-leaved Sandwort		2	7
COMPOSITAE	*Argyranthemum frutescens*	Marguerite Daisy	1		1
LILIACEAE	*Asparagus asparagoides f. asparagoides*	Bridal Creeper	106	12	72
LILIACEAE	*Asphodelus fistulosus*	Onion Weed	14	5	2
COMPOSITAE	*Aster subulatus*	Aster-weed	2		
PRIMULACEAE	*Asterolinon linum-stellatum*	Asterolinon			2
GRAMINEAE	*Avellinia michelii*	Avellinia	114	131	139
GRAMINEAE	*Avena barbata*	Bearded Oat	119	82	193
GRAMINEAE	*Avena fatua*	Wild Oat	1	5	12
GRAMINEAE	*Avena sativa*	Cultivated Oat	1		
SCROPHULARIACEAE	*Bartsia trixago*	Bellardia			2
GRAMINEAE	*Brachypodium distachyon*	False Brome	4	1	8
CRUCIFERAE	*Brassica tournefortii*	Wild Turnip	45	166	77
GRAMINEAE	*Briza maxima*	Large Quaking-grass	22		5
GRAMINEAE	*Briza minor*	Lesser Quaking-grass	50	7	69
GRAMINEAE	*Bromus diandrus*	Great Brome	38	13	32
GRAMINEAE	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome	2		2
GRAMINEAE	*Bromus madritensis*	Compact Brome	27	7	33
GRAMINEAE	*Bromus rigidus*	Rigid Brome	4	3	6
GRAMINEAE	*Bromus rubens*	Red Brome	53	103	178
BORAGINACEAE	*Buglossoides arvensis*	Sheepweed	1	4	6
UMBELLIFERAE	*Bupleurum semicompositum*	Hare's Ear	21	70	129
CRUCIFERAE	*Cakile edentula*	American Sea Rocket			1
CRUCIFERAE	*Cakile maritima* ssp. *maritima*	Two-horned Sea Rocket	6	8	10
CRUCIFERAE	*Capsella bursa-pastoris*	Shepherd's Purse	1		3
COMPOSITAE	*Carduus tenuiflorus*	Slender Thistle	8	3	28
AIZOACEAE	*Carpobrotus chilensis*	Angled Pigface		14	2
CRUCIFERAE	*Carrichtera annua*	Ward's Weed	43	82	41
COMPOSITAE	*Carthamus lanatus*	Saffron Thistle	3	4	4
GRAMINEAE	*Catapodium rigidum*	Rigid Fescue	33	9	145
COMPOSITAE	*Centaurea melitensis*	Malta Thistle	5	8	19
GENTIANACEAE	*Centaurium erythraea*	Common Centaury	1	2	
GENTIANACEAE	*Centaurium pulchellum/tenuiflorum*	Branched Centaury	5	4	13
GENTIANACEAE	*Centaurium tenuiflorum*	Branched Centaury			1
CARYOPHYLLACEAE	*Cerastium balearicum*	Chickweed	10	1	27
CARYOPHYLLACEAE	*Cerastium glomeratum*	Common Mouse-ear Chickweed	7		5
CARYOPHYLLACEAE	*Cerastium pumilum*	Chickweed	3		6
CHENOPODIACEAE	*Chenopodium murale*	Nettle-leaf Goosefoot		1	
COMPOSITAE	*Cirsium vulgare*	Spear Thistle		2	6
AIZOACEAE	*Cleretum papulosum* ssp. *papulosum*		2		
COMPOSITAE	*Cotula coronopifolia*	Water Buttons	1		
CRASSULACEAE	*Crassula natans* var. *minus*	Water Crassula	1		1
GRAMINEAE	*Cynodon dactylon* var. *dactylon*	Couch		1	
CRUCIFERAE	*Diplotaxis tenuifolia*	Lincoln Weed	1	1	43
COMPOSITAE	*Dittrichia graveolens*	Stinkweed	1	1	1
BORAGINACEAE	*Echium plantagineum*	Salvation Jane	3		5
GRAMINEAE	*Ehrharta calycina*	Perennial Veldt Grass	8	10	
GRAMINEAE	*Ehrharta longiflora*	Annual Veldt Grass	49	3	33
GRAMINEAE	*Ehrharta villosa* var. *maxima*	Pyp Grass			2
POLYGONACEAE	*Emex australis*	Three-corner Jack	2		
GERANIACEAE	*Erodium aureum*			3	4
GERANIACEAE	*Erodium botrys*	Long Heron's-bill	16	1	10
GERANIACEAE	*Erodium cicutarium*	Cut-leaf Heron's-bill	10	30	65
GERANIACEAE	*Erodium moschatum*	Musky Herons-bill	1		
EUPHORBIACEAE	*Euphorbia paralias*	Sea Spurge	4	11	11
EUPHORBIACEAE	*Euphorbia peplus*	Petty Spurge	4		6
EUPHORBIACEAE	*Euphorbia terracina*	False Caper	5	2	2
IRIDACEAE	*Freesia cultivar*	Freesia	2		2
FUMARIACEAE	*Fumaria bastardii*	Bastard Fumitory	2	1	
FUMARIACEAE	*Fumaria capreolata*	White-flower Fumitory			2

FAMILYNAME	Species for listing	Common Name	Eyre Hills	Eyre Mallee	Talia
AIZOACEAE	*Galenia pubescens* var. *pubescens*	Coastal Galenia	9	2	
RUBIACEAE	*Galium murale*	Small Bedstraw	52	30	160
COMPOSITAE	*Gazania rigens*	Gazania	1		
GERANIACEAE	*Geranium molle* var. *molle*	Soft Geranium	4		9
IRIDACEAE	*Gladiolus undulatus*	Wild Gladiolus	1		
CARYOPHYLLACEAE	*Gypsophila tubulosa*	Annual Chalkwort	1		
GRAMINEAE	*Hainardia cylindrica*	Common Barb-grass			1
COMPOSITAE	*Hedypnois rhagadioloides*	Cretan Weed	9	27	58
CARYOPHYLLACEAE	*Herniaria cinerea*	Rupturewort	1	4	
GRAMINEAE	*Holcus lanatus*	Yorkshire Fog		1	
GRAMINEAE	*Hordeum glaucum*	Blue Barley-grass	36	73	68
GRAMINEAE	*Hordeum leporinum*	Wall Barley-grass	4	2	3
GRAMINEAE	*Hordeum marinum*	Sea Barley-grass	4		5
GRAMINEAE	*Hordeum* sp.	Barley-grass		2	2
CRUCIFERAE	*Hornungia procumbens*	Oval Purse	7	10	17
GUTTIFERAE	*Hypericum perforatum*	St John's Wort			1
COMPOSITAE	*Hypochaeris glabra*	Smooth Cat's Ear	133	114	145
COMPOSITAE	*Hypochaeris radicata*	Rough Cat's Ear	28	4	3
JUNCACEAE	*Juncus capitatus*	Dwarf Rush	3		1
SCROPHULARIACEAE	*Kickxia elatine* ssp. *crinita*	Twining Toadflax	1		
COMPOSITAE	*Lactuca serriola f. serriola*	Prickly Lettuce	1	2	
GRAMINEAE	*Lagurus ovatus*	Hare's Tail Grass	3		25
COMPOSITAE	*Leontodon taraxacoides* ssp. *taraxacoides*	Lesser Hawkbit			2
CRUCIFERAE	*Lepidium africanum*	Common Peppercress	11	1	
LIMONIACEAE	*Limonium binervosum*	Dwarf Sea-lavender	1		
LIMONIACEAE	*Limonium companyonis*	Sea-lavender	3	1	8
LIMONIACEAE	*Limonium lobatum*	Winged Sea-lavender		1	
LINACEAE	*Linum strictum* ssp. *strictum*	Upright Yellow Flax			1
GRAMINEAE	*Lolium loliaceum*	Stiff Ryegrass	2	1	3
GRAMINEAE	*Lolium perenne X Lolium rigidum*	Hybrid Ryegrass			1
GRAMINEAE	*Lolium rigidum*	Wimmera Ryegrass	66	35	14
GRAMINEAE	*Lolium X hubbardii*		1		
LEGUMINOSAE	*Lotus subbiflorus*	Hairy Bird's-foot Trefoil	1		
LEGUMINOSAE	*Lupinus cosentinii*	Blue Lupin	1		
SOLANACEAE	*Lycium ferocissimum*	African Boxthorn	48	49	53
MALVACEAE	*Malva parviflora*	Small-flower Marshmallow	4		1
LABIATAE	*Marrubium vulgare*	Horehound	7	7	23
LEGUMINOSAE	*Medicago minima* var. *minima*	Little Medic	23	68	100
LEGUMINOSAE	*Medicago polymorpha* var. *polymorpha*	Burr-medic	26	13	23
LEGUMINOSAE	*Medicago praecox*	Small-leaf Burr-medic	1		
LEGUMINOSAE	*Medicago scutellata*	Snail Medic	1		
LEGUMINOSAE	*Medicago truncatula*	Barrel Medic	26	18	24
LEGUMINOSAE	*Melilotus indicus*	King Island Melilot	3	1	63
AIZOACEAE	*Mesembryanthemum crystallinum*	Common Iceplant	20	26	9
AIZOACEAE	*Mesembryanthemum nodiflorum*	Slender Iceplant	23	12	2
CARYOPHYLLACEAE	*Minuartia mediterranea*	Slender Sandwort	19	28	109
CARYOPHYLLACEAE	*Moenchia erecta*	Erect Chickweed	1		1
IRIDACEAE	*Moraea setifolia*	Thread Iris	20	26	73
BORAGINACEAE	*Neatostema apulum*	Hairy Sheepweed		1	10
ONAGRACEAE	*Oenothera stricta* ssp. *stricta*	Common Evening Primrose	2		
OLEACEAE	*Olea europaea* ssp. *europaea*	Olive	2		1
COMPOSITAE	*Oligocarpus calendulaceus*			2	
OXALIDACEAE	*Oxalis pes-caprae*	Soursob	3		2
PAPAVERACEAE	*Papaver somniferum*	Small-flower Opium Poppy			1
GRAMINEAE	*Parapholis incurva*	Curly Ryegrass	22	26	54
SCROPHULARIACEAE	*Parentucellia latifolia*	Red Bartsia	20	3	44
GRAMINEAE	*Paspalum vaginatum*	Salt-water Couch			1
GRAMINEAE	*Pentaschistis airoides*	False Hair-grass	51	33	6
CARYOPHYLLACEAE	*Petrorhagia dubia*	Velvet Pink	10	2	14
PINACEAE	*Pinus halepensis*	Aleppo Pine			2
PLANTAGINACEAE	*Plantago coronopus*	Bucks-horn Plantain	1		1
PLANTAGINACEAE	*Plantago coronopus* ssp. *commutata*	Bucks-horn Plantain	1		4
PLANTAGINACEAE	*Plantago coronopus* ssp. *coronopus*	Bucks-horn Plantain	5		1
GRAMINEAE	*Poa annua group*	Winter Grass			1
GRAMINEAE	*Poa bulbosa*	Bulbous Meadow-grass			1
CARYOPHYLLACEAE	*Polycarpon tetraphyllum*	Four-leaf Allseed	6		
POLYGALACEAE	*Polygala myrtifolia*	Myrtle-leaf Milkwort			2
POLYGONACEAE	*Polygonum aviculare*	Wireweed	2		
GRAMINEAE	*Polypogon maritimus*	Coast Beard-grass	7		5
GRAMINEAE	*Polypogon monspeliensis*	Annual Beard-grass	2		
GRAMINEAE	*Psilurus incurvus*	Bristle-tail Grass			4
CRUCIFERAE	*Raphanus raphanistrum*	Wild Radish	1		
CRUCIFERAE	*Rapistrum rugosum* ssp. *rugosum*	Turnip Weed	5	3	2
COMPOSITAE	*Reichardia tingitana*	False Sowthistle	16	13	5

FAMILYNAME	Species for listing	Common Name	Eyre Hills	Eyre Mallee	Talia
RHAMNACEAE	*Rhamnus alaternus*	Blowfly Bush	2		
IRIDACEAE	*Romulea minutiflora*	Small-flower Onion-grass	5		
IRIDACEAE	*Romulea rosea* var. *australis*	Common Onion-grass	2		
GRAMINEAE	*Rostraria cristata*	Annual Cat's-tail	41	52	154
GRAMINEAE	*Rostraria pumila*	Tiny Bristle-grass	2	26	10
CARYOPHYLLACEAE	*Sagina apetala*	Annual Pearlwort			5
LABIATAE	*Salvia verbenaca*	Wild Sage		2	
LABIATAE	*Salvia verbenaca* var. *verbenaca*	Wild Sage		1	
LABIATAE	*Salvia verbenaca* var. *vernalis*	Wild Sage			1
DIPSACACEAE	*Scabiosa atropurpurea*	Pincushion	1		
GRAMINEAE	*Schismus barbatus*	Arabian Grass	16	39	11
COMPOSITAE	*Senecio pterophorus*	African Daisy	72		34
RUBIACEAE	*Sherardia arvensis*	Field Madder	3		4
CARYOPHYLLACEAE	*Silene apetala*	Sand Catchfly			5
CARYOPHYLLACEAE	*Silene gallica* var. *gallica*	French Catchfly	5		2
CARYOPHYLLACEAE	*Silene nocturna*	Mediterranean Catchfly	27	57	100
CARYOPHYLLACEAE	*Silene tridentata*		5	48	18
CRUCIFERAE	*Sisymbrium erysimoides*	Smooth Mustard	19	33	10
CRUCIFERAE	*Sisymbrium irio*	London Mustard	2	1	5
CRUCIFERAE	*Sisymbrium orientale*	Indian Hedge Mustard	3	2	
SOLANACEAE	*Solanum nigrum*	Black Nightshade	4	3	2
COMPOSITAE	*Sonchus asper* ssp.	Rough Sow-thistle	2	1	5
COMPOSITAE	*Sonchus asper* ssp. *glaucescens*	Rough Sow-thistle	1	1	2
COMPOSITAE	*Sonchus oleraceus*	Clammy Sow-thistle			3
COMPOSITAE	*Sonchus oleraceus*	Common Sow-thistle	100	110	154
IRIDACEAE	*Sparaxis bulbifera*	Sparaxis	4		
CARYOPHYLLACEAE	*Spergularia diandra group*	Lesser Sand-spurrey	7	14	3
CARYOPHYLLACEAE	*Spergularia marina group*	Salt Sand-spurrey	7	2	
CARYOPHYLLACEAE	*Spergularia* sp. *Butchers Gap (P.Gibbons 234)*	Coast Sand-spurrey	4		2
CARYOPHYLLACEAE	*Stellaria media*	Chickweed	17	11	42
CARYOPHYLLACEAE	*Stellaria pallida*	Lesser Starwort		4	
COMPOSITAE	*Taraxacum officinale*	Dandelion			4
LEGUMINOSAE	*Trifolium angustifolium*	Narrow-leaf Clover	7		5
LEGUMINOSAE	*Trifolium arvense* var. *arvense*	Hare's-foot Clover	28	6	12
LEGUMINOSAE	*Trifolium campestre*	Hop Clover	56	6	69
LEGUMINOSAE	*Trifolium dubium*	Suckling Clover	4		
LEGUMINOSAE	*Trifolium fragiferum* var. *fragiferum*	Strawberry Clover	1		
LEGUMINOSAE	*Trifolium glomeratum*	Cluster Clover	16	1	2
LEGUMINOSAE	*Trifolium hirtum*	Rose Clover	1		
LEGUMINOSAE	*Trifolium scabrum*	Rough Clover		1	20
LEGUMINOSAE	*Trifolium subterraneum*	Subterranean Clover	7		
LEGUMINOSAE	*Trifolium tomentosum*	Woolly Clover	7	5	9
COMPOSITAE	*Tripteris clandestina*	Tripteris	3	1	
GRAMINEAE	*Triticum aestivum*	Wheat	1		
COMPOSITAE	*Urospermum picroides*	False Hawkbit	9	8	31
URTICACEAE	*Urtica urens*	Small Nettle		3	
SCROPHULARIACEAE	*Verbascum virgatum*	Twiggy Mullein			1
LEGUMINOSAE	*Vicia cracca*	Tufted Vetch	1		
LEGUMINOSAE	*Vicia monantha*	Spurred Vetch	2		
GRAMINEAE	*Vulpia bromoides*	Squirrel-tail Fescue	5		
GRAMINEAE	*Vulpia ciliata*	Fringed Fescue			1
GRAMINEAE	*Vulpia fasciculata*	Sand Fescue	3	8	
GRAMINEAE	*Vulpia muralis*	Wall Fescue	20	21	15
GRAMINEAE	*Vulpia myuros*	Fox-tail Fescue	6	3	6
GRAMINEAE	*Vulpia myuros*	Rat's-tail Fescue	61	111	98
SCROPHULARIACEAE	*Zaluzianskya divaricata*	Spreading Night-phlox	17	6	
		sum of taxa	2531	2166	3838
		# taxa	155	109	145
		# sites	476	675	545
		proportion of total	0.28	0.40	0.32
		predicted # taxa based on # sites	115	164	132

Appendix 8. Detailed Floristic Group Descriptions

This appendix provides details with regard to the 36 vegetation community clusters and the 96 floristic groups derived from the cluster analyses on site flora species and their estimated cover abundance classes. Descriptions follow the standard format detailed below.

Cluster #. Dominant species and major physical descriptor(s) description.

Number of sites and floristic groups contributing to the cluster.
A table of most common species at sites contributing to the cluster in lifeform then site frequency decreasing order. Average cover index is the average of cover class scores for each site at which the species is present. It provides a guide to species dominance in a range from 0.1 to 20 taken from the categories recorded in the field (field code); 0.1 = (N) not many individuals with minimal cover, 0.5 = (T) sparsely present with < 5% cover, 1 = (1) numerous with < 5% cover, 5 = (2) 5–25% cover, 10 = (3) 25–50% cover, 15 = (4) 50–75%, 20 = (5) >75% cover.

Fauna species most frequently encountered at sites contributing to cluster where sampled for fauna.
Birds # sites – *Scientific name*, Common Name (# sites where species present);
Mammals # sites – *Scientific name*, Common Name (# sites where species present);
Reptiles # sites – *Scientific name*, Common Name (# sites where species present);

Map of study area with biogeographic subregion boundaries and sites contributing to each floristic group in the cluster.

Florisitc Group #. Description of the dominant overstorey and understorey species including any common emergents. The +/- symbol is used to indicate that species may or may not be present at a site. A "/" between species indicates that either or both species may be present

Number of sites in the group and description of their location in study area. Description of landforms and soil types on which the floristic group was most commonly recorded. Description of rock outcrop and surface strew type and cover. Fire history. Most common range of bare earth and litter cover estimates (includes means and standard deviations).

Total number of species from sites contributing to the floristic group
Average number of species per site plus standard deviation and range (Max – Min)
Number of Significant species: EPBC Act = Commonwealth Environmnet Protection and Biodiversity Act rated species
NPW Act = South Australian National Parks and Wildlife Act rated species
Scientific name, Common Name Aus: and SA: ratings
Number of Eyre Peninsula endemic species at sites in the group as listed in Table 13.
Scientific name, Common Name
Number of introduced species at sites in the group.
Average number of introduced species per site for the group and the range (Max – Min).

Table of indictaor plant species for the group using the method of Dufrêne and Legendre (1997) in PC-ORD (McCune and Mefford 1999) determined from the highest Indicator value, its level of significance (*p*) based on 1000 randomizations using the Monte Carlo test, the mean indicator value across all groups and the standard deviation.

Table of the more frequently encountered species present at > 39% of sites in the group in decreasing frequency order by structural type. Table includes indicator value and average cover index as described above.

A list of the sites contributing to the group which includes Survey Number and Site ID code.

Photograph of a representative site from the group.

Appendix 8. Detailed Floristic Group Descriptions

Cluster 1. Coast Daisy-bush Shrublands on coastal dunes

65 sites in 3 floristic groups

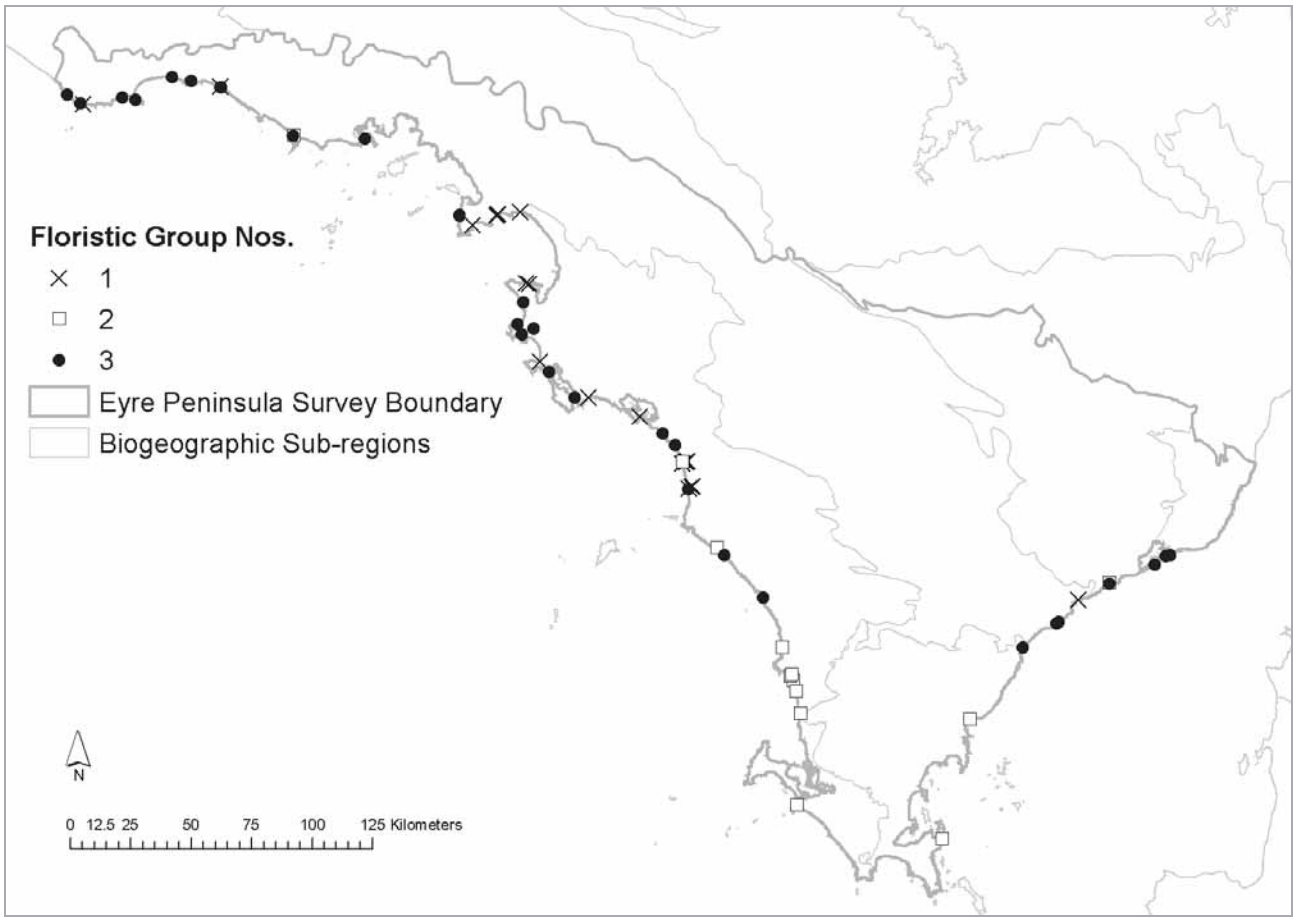
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Shrub > 1m	*Olearia axillaris*	Coast Daisy-bush	63	96	7.25
Shrub > 1m	*Lycium ferocissimum*	African Boxthorn *	28	43	1.38
Low Shrub < 1m	*Threlkeldia diffusa*	Coast Bonefruit	53	81	2.04
Low Shrub < 1m	*Rhagodia candolleana ssp. candolleana*	Sea-berry Saltbush	38	58	2.69
Low Shrub < 1m	*Senecio pinnatifolius group*	Groundsel	36	55	1.34
Forb Herb Vine	*Tetragonia implexicoma*	Bower Spinach	52	80	2.34
Forb Herb Vine	*Carpobrotus rossii*	Native Pigface	43	66	2.55

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 7 sites - *Zosterops lateralis,* Silvereye, 7; *Acanthagenys rufogularis,* Spiny-cheeked Honeyeater, 6; *Colluricincla harmonica,* Grey Shrike-thrush, 6; *Lichenostomus virescens,* Singing Honeyeater, 5; *Acanthiza apicalis,* Inland Thornbill, 4; *Sericornis frontalis,* White-browed Scrubwren, 4; *Anthochaera carunculata,* Red Wattlebird, 4

MAMMALS 9 sites - ***Mus musculus,** House Mouse, 9

REPTILES 9 sites - *Ctenophorus pictus,* Painted Dragon, 6; *Tiliqua rugosa,* Sleepy Lizard, 6



Floristic Group 1. Coast Daisy-bush *Olearia axillaris* Shrubland over Coast Bonefruit *Threlkeldia diffusa*, Native Pigface *Carpobrotus rossii* and Bower Spinach *Tetragonia implexicoma* +/- emergent Common Boobialla *Myoporum insulare*

19 sites in coastal dunefields along the mid to northern coasts, mostly in the mid west coast between Elliston and Streaky Bay. This open mid to tall shrubland assemblage was recorded equally on sand dunes and sandy swales and interdune corridors with mostly no surface rock. Where present calcareous outrcrops and surface strew covered less than 10 % of the sample quadrat. No sites had recorded fire histories. Bare earth cover was low (mean 23% sdev 11). As was litter cover (mean 18% sdev12).

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 96
Average number of species per site: 17.8 sdev: 6.7 Maximum: 30 Minimum: 5
Number of significant species - EPBC Act: 0 NPW Act: 2
Austrostipa echinata, Spiny Spear-grass SA; R; *Poa fax*, Scaly Poa SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 24
Average number of introduced/invasive species per site: 3.2 Maximum: 12 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Carpobrotus rossii	Native Pigface	Forb Herb Vine	21	0.001	3.4	2.21
Threlkeldia diffusa	Coast Bonefruit	Low Shrub < 1m	17.4	0.001	3.3	2.33
Tetragonia implexicoma	Bower Spinach	Forb Herb Vine	17.5	0.002	3.4	2.38
Podotheca angustifolia	Sticky Long-heads	Forb Herb Vine	6.8	0.036	2.7	1.78
Senecio pinnatifolius group	Groundsel	Low Shrub < 1m	7.3	0.073	3.5	2.78

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	95	14	3.74
Myoporum insulare	Common Boobialla	47	13	1.53
Low Shrub < 1m				
Threlkeldia diffusa	Coast Bonefruit	89	17	0.99
Senecio pinnatifolius group	Groundsel	58	7	0.90
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	42	2	1.35
Forb Herb Vine				
Carpobrotus rossii	Native Pigface	89	21	1.24
Tetragonia implexicoma	Bower Spinach	84	18	1.07
Podotheca angustifolia	Sticky Long-heads	53	7	0.60
Anagallis arvensis	Pimpernel *	42	1	0.70

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

27 LN00101, 27 LN00301, 27 LN00501, 27 LN00601, 71 VB00901, 82 COL00401, 82 CAR00103, 82 CAR00101, 82 CAR00201, 82 KUR00303, 27 LN00701, 82 ARN00201, 82 TAL00403, 82 CUN00103, 107 HAS00301, 179 GAB00201, 179 GAB02501, 179 GAB01101, 128 ACR00401

Floristic Group 1: photopoint site 128ACR00401 – 21/9/2005.

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 2. Coast Daisy-bush *Olearia axillaris* Shrubland +/- Cockies Tongue *Templetonia retusa* over Sea-berry Saltbush *Rhagodia candolleana ssp. candolleana*, Coast Bonefruit *Threlkeldia diffusa* and Bower Spinach *Tetragonia implexicoma* +/- an overtorey of Coastal White Mallee *Eucalyptus diversifolia ssp. diversifolia* or Drooping Sheoak *Allocasuarina verticillata*

15 sites mostly along the southern half of the west coast. Sites comprising this group ranged from low open shrub to mallee and low woodland assemblages, with most (66%) being shrublands greater than 1m in height. All sites had sandy soils with most (73%) on sand dune slopes and crest, the remainder in sandy swales and associated plains. Two sites had a low cover (<30%) of calcareous surface strew. No sites had reported or mapped fire histories. Bare earth cover was low (mean 20% sdev 16). Litter cover was highly variable (mean 37% sdev 25).

Total number of species: 141
Average number of species per site: 31 sdev: 10.3 Maximum: 50 Minimum: 13
Number of significant species - EPBC Act: 0 NPW Act: 1
Austrostipa echinata, Spiny Spear-grass SA: R
Number of Eyre Peninsula endemic species: 1
Hakea cycloptera, Elm-seed Hakea
Number of introduced/invasive species: 38
Average number of introduced/invasive species per site: 8.5 Maximum: 22 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	Low Shrub < 1m	11.5	0.018	3.5	2.27
Lagurus ovatus	Hare's Tail Grass *	grass sedge	12.3	0.034	3.6	3.03
Austrostipa flavescens	Coast Spear-grass	grass sedge	8	0.035	2.9	2.39
Templetonia retusa	Cockies Tongue	Shrub > 1m	12.8	0.045	4.1	3.94

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	40	1	6.47
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	93	9	3.74
Templetonia retusa	Cockies Tongue	60	13	1.03
Leucopogon parviflorus	Coast Beard-heath	53	2	3.76
Exocarpos syrticola	Coast Cherry	47	12	0.76
Melaleuca lanceolata	Dryland Tea-tree	47	1	3.62
Lycium ferocissimum	African Boxthorn *	40	3	0.61
Low Shrub < 1m				
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	93	11	1.35
Threlkeldia diffusa	Coast Bonefruit	73	7	0.99
Acrotriche patula	Prickly Ground-berry	40	1	1.52
Grass Sedge				
Austrostipa flavescens	Coast Spear-grass	73	8	0.66
Dianella brevicaulis	Short-stem Flax-lily	60	10	0.75
Bromus rubens	Red Brome *	60	2	0.68
Catapodium rigidum	Rigid Fescue *	47	3	0.57
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	93	12	1.07
Anagallis arvensis	Pimpernel *	87	4	0.70
Crassula sieberiana complex	Australian Stonecrop	80	3	0.61
Carpobrotus rossii	Native Pigface	73	2	1.24
Daucus glochidiatus	Native Carrot	60	2	0.56
Clematis microphylla var. microphylla	Old Man's Beard	53	2	0.57
Calandrinia eremaea	Dryland Purslane	47	2	0.56
Podotheca angustifolia	Sticky Long-heads	47	1	0.60
Sonchus oleraceus	Common Sow-thistle *	47	1	0.45
Parietaria debilis group	Smooth-nettle	40	3	0.66
Galium murale	Small Bedstraw *	40	2	0.62
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel Y	40	1	0.74

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 KIA02201, 80 KIA02301, 80 TUM01001, 80 WAG01801, 82 NUN00103, 82 ARN00302, 82 TAL00405, 82 TAL00404, 82 TAL00402, 82 KIA00204, 82 KIA00205, 82 KIA00103, 82 JUS00204, 128 BAS01201, 128 MAR00101

Appendix 8. Detailed Floristic Group Descriptions

Floristic group 2: photopoint site 128BAS01201 – 12/9/2003.

Floristic group 3: photopoint site 128CHA00401 – 23/9/2005.

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 3. Coast Daisy-bush *Olearia axillaris* Shrubland over Coast Bonefruit *Threlkeldia diffusa* and Bower Spinach *Tetragonia implexicoma* +/- Sea-berry Saltbush *Rhagodia candolleana* ssp. *candolleana*, emergent Common Boobialla *Myoporum insulare*

31 sites widespread along both mid and northern coasts. Sites comprising this group ranged from low open shrub to tall shrub assemblages with most greater than 1m in height. This assemblage occurred on sand dunes, sandy interdune areas and beaches, mostly without calcareous outcrop or strew. At the two sites where strew was present its cover was low (< 30%). One site was recorded as having been burnt one year prior to sampling. Bare earth cover was moderate (mean 38%, sdev 14.5). Litter cover was low (mean 12%, sdev 8).

Total number of species: 129
Average number of species per site: 17.1 sdev: 5.2 Maximum: 29 Minimum: 6
Number of significant species - EPBC Act: 0 NPW Act: 1
Austrodanthonia laevis, Smooth Wallaby-grass SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 34
Average number of introduced/invasive species per site: 3.8 Maximum: 16 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Olearia axillaris	Coast Daisy-bush	Shrub > 1m	16.8	0.002	2.9	1.76
Myoporum insulare	Common Boobialla	Shrub > 1m	17	0.031	4.3	4.36

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	100	17	3.74
Lycium ferocissimum	African Boxthorn *	45	2	0.61
Myoporum insulare	Common Boobialla	42	17	1.53
Low Shrub < 1m				
Threlkeldia diffusa	Coast Bonefruit	77	2	0.99
Senecio pinnatifolius group	Groundsel	65	3	0.90
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	52	4	1.35
Grass Sedge				
Ficinia nodosa	Knobby Club-rush	29	3	1.66
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	71	3	1.07
Anagallis arvensis	Pimpernel *	48	1	0.70
Carpobrotus rossii	Native Pigface	45	1	1.24
Crassula sieberiana complex	Australian Stonecrop	42	1	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

27 LN00801, 80 NEI00701, 82 TAL00202, 82 HUD00101, 82 COO00501, 82 SHE00202, 82 BOO00401, 82 CUN00102, 82 COO00401, 82 TAL00101, 82 WAL00202, 82 WAL00203, 82 NUN00102, 82 CHA00502, 82 SEA00301, 82 STR00401, 82 STR00101, 82 STR00201, 82 KUR00302, 82 KUR00202, 82 WIT00101, 82 COW00101, 82 ARN00101, 82 ARN00104, 82 GIB00301, 82 GIB00302, 82 ARN00301, 82 BOO00601, 179 GAB01401, 179 COA00803, 128 CHA00401

Appendix 8. Detailed Floristic Group Descriptions

Cluster 2. Coast Beard-heath Shrublands on southern coast dunes

43 sites in 1 floristic group

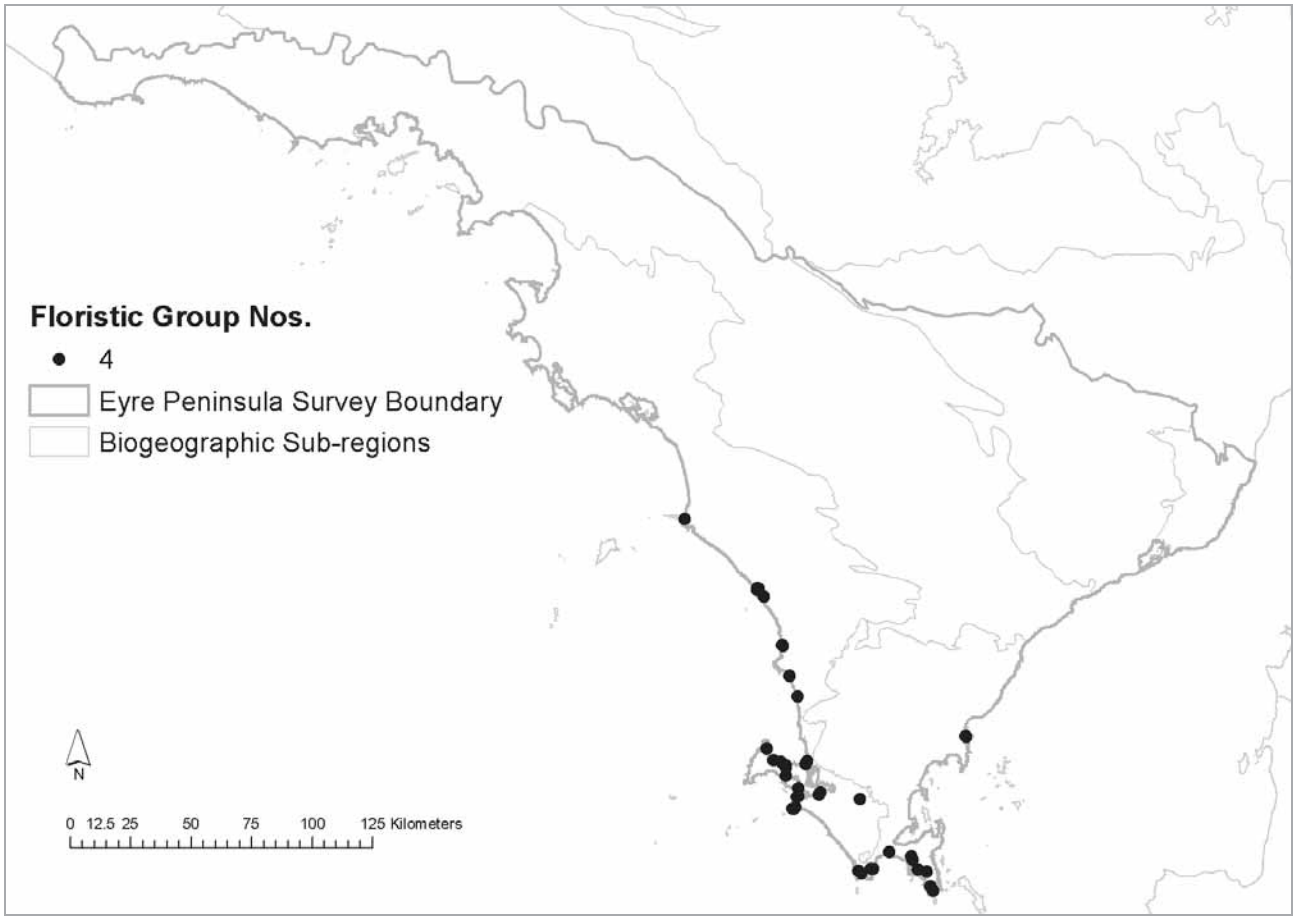
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Shrub > 1m	*Leucopogon parviflorus*	Coast Beard-heath	43	100.00	8.29
Shrub > 1m	*Olearia axillaris*	Coast Daisy-bush	41	95.35	4.84
Shrub > 1m	*Exocarpos syrticola*	Coast Cherry	24	55.81	1.51
Shrub > 1m	*Acacia longifolia ssp. sophorae*	Coastal Wattle	23	53.49	1.53
Shrub > 1m	*Acacia nematophylla*	Coast Wallowa Y	18	41.86	2.27
Low Shrub < 1m	*Lasiopetalum discolor*	Coast Velvet-bush	20	46.51	3.02
grass sedge	*Ficinia nodosa*	Knobby Club-rush	32	74.42	1.52
grass sedge	*Lepidosperma gladiatum*	Coast Sword-sedge	24	55.81	2.79
Forb Herb Vine	*Carpobrotus rossii*	Native Pigface	35	81.40	1.10
Forb Herb Vine	*Anagallis arvensis*	Pimpernel *	32	74.42	1.44

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 1 sites - *Zosterops lateralis,* Silvereye, 79; *Sericornis frontalis,* White-browed Scrubwren, 9; *Dromaius novaehollandiae,* Emu, 7; *Anthochaera carunculata,* Red Wattlebird, 7; *Malurus cyaneus,* Superb Fairy-wren, 6

**MAMMALS 4 sites - ***Mus musculus,* House Mouse, 4; *Macropus fuliginosus,* Western Grey Kangaroo, 3; *Rattus fuscipes,* Bush Rat, 3; **Oryctolagus cuniculus,* Rabbit, 1

REPTILES 6 sites - *Christinus marmoratus,* Marbled Gecko, 5; *Lerista dorsalis,* Southern Four-toed Slider, 4; *Morethia obscura,* Mallee Snake-eye, 3; *Hemiergis peronii,* Four-toed Earless Skink, 3



Floristic Group 4. Coast Beard-heath *Leucopogon parviflorus* and Coast Daisy-bush *Olearia axillaris* Shrubland over Knobby Club-rush *Ficinia nodosa* and Native Pigface *Carpobrotus rossii* +/- overstorey of Drooping Sheoak *Allocasuarina verticillata*

43 sites mostly along the southern quarter of the coast. Sites comprising this group range from low open shrub to low woodland assemblages with most (70%) being shrublands greater than 1m in height. All sites had sandy soils with most

Appendix 8. Detailed Floristic Group Descriptions

(60%) on sand dunes, the remainder in sandy swales and associated pains and depressions. Loamy soils were present at 12% of sites which had a mostly variable cover of calcareous outcrop (<10 to >50%) and surface strew (<10 to >70%). Fire was associated with 9% of sites all between 2-9 years prior to sampling. Bare earth cover was low but variable (mean 22%, sdev 19.5), as was litter cover (mean 16%, sdev 18).

Total number of species: 233
Average number of species per site: 32.5 sdev: 11.4 Maximum: 60 Minimum: 6
Number of significant species - EPBC Act: 0 NPW Act: 4
Caladenia bicalliata ssp. bicalliata, Western Daddy-long-legs SA: R; *Myoporum parvifolium*, Creeping Boobialla SA: R; *Poa fax*, Scaly Poa SA: R; *Podolepis muelleri*, Button Podolepis SA: V;
Number of Eyre Peninsula endemic species: 2
Hibbertia cinerea, Port Lincoln Guinea-flower; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle;
Number of introduced/invasive species: 54
Average number of introduced/invasive species per site: 7.8 Maximum: 22 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Leucopogon parviflorus	Coast Beard-heath	Shrub > 1m	40.7	0.001	3.5	2.42
Lepidosperma gladiatum	Coast Sword-sedge	grass sedge	27.4	0.003	4.2	4.17
Acacia nematophylla	Coast Wallowa	Shrub > 1m	25.8	0.014	4.6	4.66
Exocarpos syrticola	Coast Cherry	Shrub > 1m	20.8	0.018	4.4	4.01
Ficinia nodosa	Knobby Club-rush	grass sedge	12.7	0.028	3.8	3.12

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Allocasuarina verticillata	Drooping Sheoak	28	1	4.44
Shrub > 1m				
Leucopogon parviflorus	Coast Beard-heath	100	41	3.76
Olearia axillaris	Coast Daisy-bush	95	9	3.74
Exocarpos syrticola	Coast Cherry	56	21	0.76
Acacia longifolia ssp. sophorae	Coastal Wattle	53	11	1.58
Acacia nematophylla	Coast Wallowa Y	42	26	1.60
Low Shrub < 1m				
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	88	3	1.35
Senecio pinnatifolius group	Groundsel	60	2	0.90
Threlkeldia diffusa	Coast Bonefruit	56	1	0.99
Lasiopetalum discolor	Coast Velvet-bush	47	2	2.83
Grass Sedge				
Ficinia nodosa	Knobby Club-rush	74	13	1.66
Rostraria cristata	Annual Cat's-tail *	65	4	0.70
Dianella brevicaulis	Short-stem Flax-lily	60	6	0.75
Austrostipa flavescens	Coast Spear-grass	58	7	0.66
Lepidosperma gladiatum	Coast Sword-sedge	56	27	2.67
Catapodium rigidum	Rigid Fescue *	40	2	0.57
Forb Herb Vine				
Clematis microphylla var. microphylla	Old Man's Beard	86	6	0.57
Carpobrotus rossii	Native Pigface	81	4	1.24
Anagallis arvensis	Pimpernel *	74	5	0.70
Crassula sieberiana complex	Australian Stonecrop	63	2	0.61
Tetragonia implexicoma	Bower Spinach	53	2	0.56
Daucus glochidiatus	Native Carrot	53	2	1.07
Podotheca angustifolia	Sticky Long-heads	47	2	0.60
Trachymene pilosa	Dwarf Trachymene	44	2	0.65
Galium murale	Small Bedstraw *	42	2	0.62
Erodium cicutarium	Cut-leaf Heron's-bill *	40	3	0.63

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN02801, 80 JUS01401, 80 JUS02001, 80 JUS02301, 80 JUS02701, 80 JUS02A08, 80 SLE02602, 80 TUM01601, 80 TUM01602, 80 WAG00401, 80 WAG00403, 80 WAG00601, 80 WAG00602, 80 WAG00603, 80 WAG01101, 80 WAG01301, 80 WAG01401, 80 WAG01501, 80 WAG02301, 80 WAN01802, 80 WHI00101, 80 WHI01201, 82 SHE00104, 82 SHE00103, 82 SHE00102, 82 ELL00103, 82 SHE00101, 82 SHE00203, 82 COU00102, 82 COU00104, 82 WAN00205, 82 WAN00204, 82 WAN00206, 82 SLE00201, 82 SLE00205, 82 JUS00104, 82 KIA00203, 82 KIA00104, 82 KIA00105, 82 WAN00102, 82 WAN00103, 82 WAN00104, 128 ULE00101

Appendix 8. Detailed Floristic Group Descriptions

Floristic group 4: photopoint site 128 ULE00101 – 15/12/2004.

Floristic Group 5: photopoint site 103 GIB00401 – 13/11/1998.

Appendix 8. Detailed Floristic Group Descriptions

Cluster 3. Beaded and Shrubby Samphire Low shrublands on tidal flats

14 sites in 1 floristic group

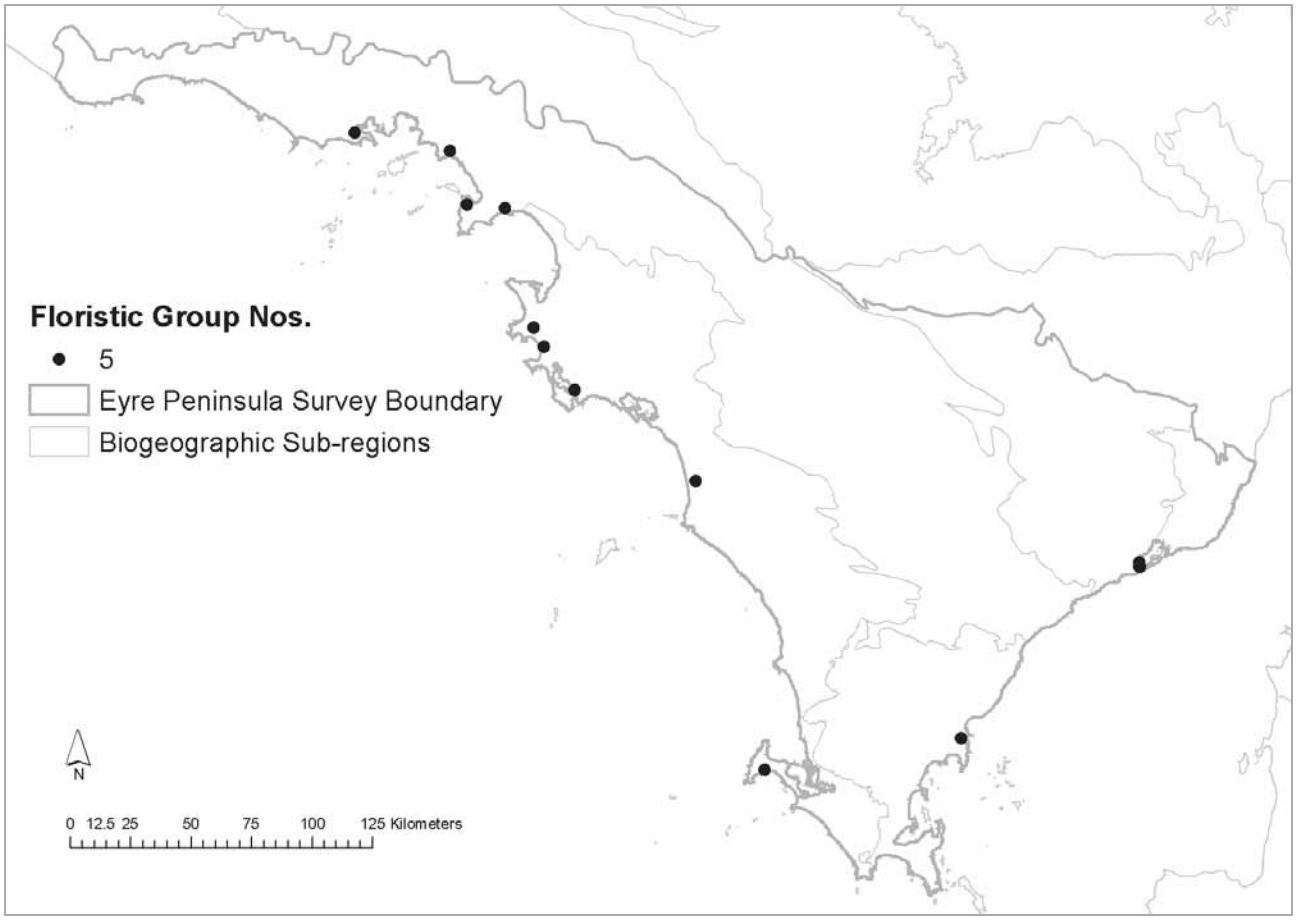
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Low Shrub < 1m	*Sarcocornia quinqueflora*	Beaded Samphire	14	100.00	8.57
Low Shrub < 1m	*Tecticornia arbuscula*	Shrubby Samphire	10	71.43	11.00

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 1 sites - *Acanthagenys rufogularis*, Spiny-cheeked Honeyeater, 1; *Falco cenchroides*, Nankeen Kestrel, 1; *Ocyphaps lophotes*, Crested Pigeon, 1

**MAMMALS 1 site - ****Mus musculus*, House Mouse

REPTILES 1 site – none recorded



Floristic Group 5. Beaded Samphire *Sarcocornia quinqueflora*, Shrubby Samphire *Tecticornia arbuscula* Low Shrubland +/- Sea Rush *Juncus kraussii*, emergent Grey Mangrove *Avicennia marina ssp. marina* / Swamp Paperbark *Melaleuca halmaturorum*

14 sites in low energy bays spread along the coast. Sites comprising this group were mostly low closed shrublands with one site classed a sedgeland and one as a very low mangrove forest. Sites occurred on tidal flats but were also attributed to saltlakes. Surface soils included sands, silty loams and clay loams with no outcrop or surface strew. There was no record of previous fire. Bare earth cover was mostly low (mean 10%, sdev 17), as was litter cover (mean 19%, sdev 17).

Total number of species: 28
Average number of species per site: 4.6 sdev: Maximum: 10 Minimum: 2
Number of significant species - EPBC Act: 1 NPW Act: 1
Tecticornia flabelliformis, Bead Samphire AUS: VU SA: V
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 6

Appendix 8. Detailed Floristic Group Descriptions

Average number of introduced/invasive species per site: 0.4 Maximum: 2 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Sarcocornia quinqueflora	Beaded Samphire	Low Shrub < 1m	57	0.001	3.8	3.27
Juncus kraussii	Sea Rush	grass sedge	10	0.095	5	4.65

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Low Shrub < 1m				
Sarcocornia quinqueflora	Beaded Samphire	100	57	5.17
Tecticornia arbuscula	Shrubby Samphire	71	37	7.44
Grass Sedge				
Juncus kraussii	Sea Rush	21	10	7.44

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

27 LN00401, 80 WHI01101, 103 GIB00401, 78 TUM00101, 78 TUM00102, 78 CHA00103, 78 ACR00202, 78 LAU00102, 78 FRA00103, 78 FRA00104, 78 MIS00104, 179 GAB01402, 179 COA00202, 179 COA00702

Floristic Group 6: photopoint site 128 STR00601 – 10/9/2001.

Appendix 8. Detailed Floristic Group Descriptions

Cluster 4. Swamp Paper-bark Tall Shrublands to Low Woodlands on clay to loam flats, swamps and lake margins

17 sites in 1 floristic group.

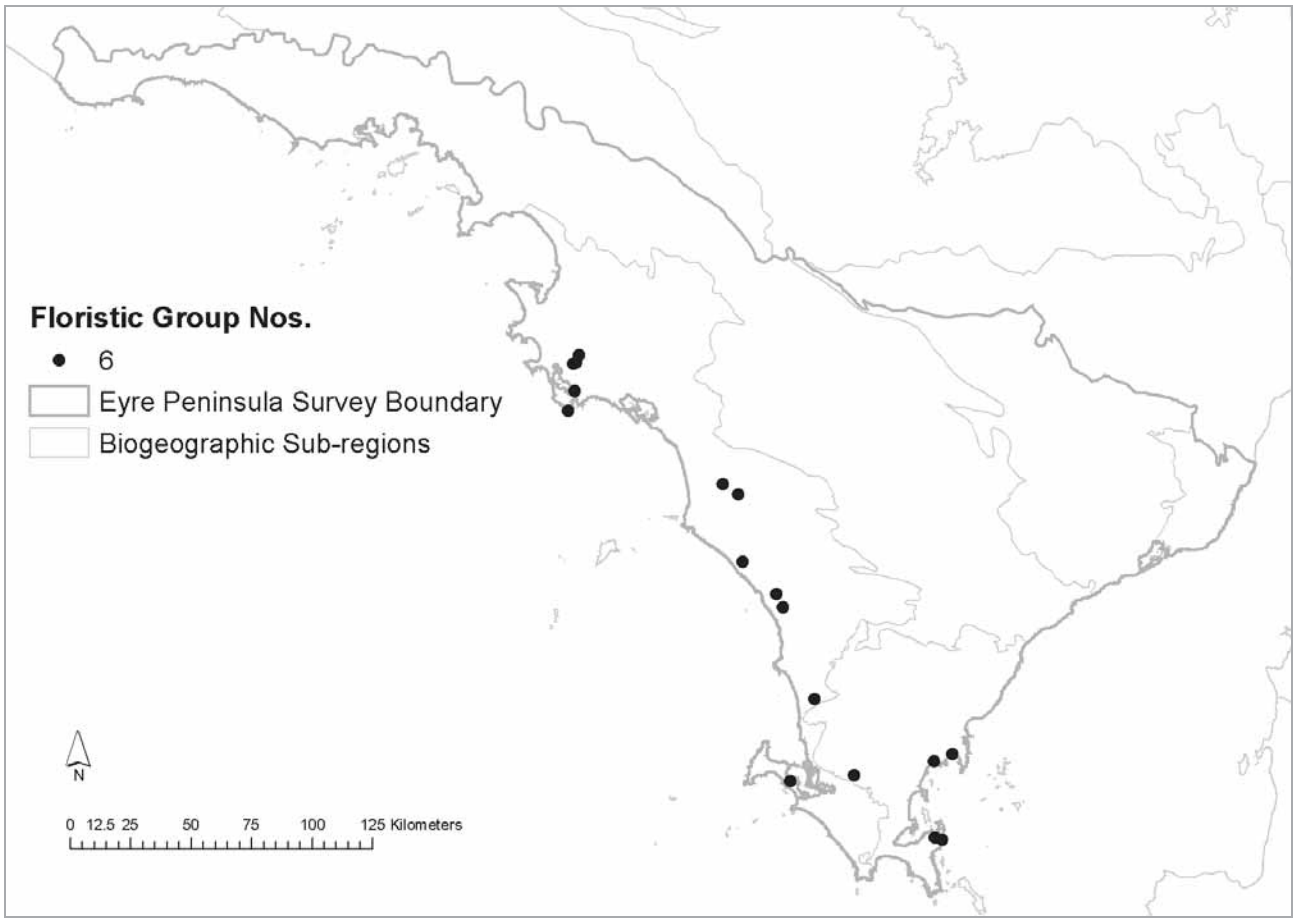
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Shrub > 1m	*Melaleuca halmaturorum*	Swamp Paper-bark	17	100.00	14.71
Shrub > 1m	*Exocarpos aphyllus*	Leafless Cherry	7	41.18	2.26
grass sedge	*Gahnia filum*	Thatching Grass	9	52.94	2.38

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 4 sites - *Zosterops lateralis,* Silvereye; *Sericornis frontalis,* White-browed Scrubwren; *Corvus mellori,* Little Raven

MAMMALS 1 site - ***Mus musculus,* House Mouse

REPTILES 1 site - *Lerista terdigitata,* Southern Three-toed Slider, 1; *Tiliqua occipitalis,* Western Bluetongue, 1; *Cryptoblepharus pulcher,* Striped Wall Skink, 1; *Ctenophorus fionni,* Peninsula Dragon, 1



Floristic Group 6. Swamp Paper-bark *Melaleuca halmaturorum* Tall Shrubland +/- Thatching Grass *Gahnia filum*

17 sites in near coastal lowlands along the southern half of the west coast and southern east coast. Sites comprising this group were mostly tall shrublands (60% > 2m) with 30% of sites recorded as low forest and woodland. Sites occurred around swamps, lakes, lagoons, depressions and associated flats. Most soils were clays to clay loams and silty loams (65% of sites) with no outcrop and minimal calcareous pebble sized surface strew cover (< 10% cover) at 33% of sites. Fire history was present at 1 site which was burnt in the year of sampling. Bare earth cover was low (mean10%, sdev 14). Litter cover was highly variable (mean 34%, sdev 31).

Total number of species: 143

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 18.9 sdev: 15.2 Maximum: 47 Minimum: 1
Number of significant species - EPBC Act: 1 NPW Act: 6
Crassula exserta, Large-fruit Crassula SA: R; *Isotoma scapigera*, Salt Isotome SA: R; *Myoporum parvifolium*, Creeping Boobialla SA: R; *Pleuropappus phyllocalymmeus*, Silver Candles AUS: VU SA: V; *Polypogon tenellus*, SA: V; *Schoenus sculptus*, Gimlet Bog-rush SA: R;
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 42
Average number of introduced/invasive species per site: 6.6 Maximum: 21 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Melaleuca halmaturorum	Swamp Paper-bark	Shrub > 1m	72.6	0.001	3.8	3.15

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Melaleuca halmaturorum	Swamp Paper-bark	100	73	8.05
Exocarpos aphyllus	Leafless Cherry	41	3	0.61
Low Shrub < 1m				
Threlkeldia diffusa	Coast Bonefruit	53	0	0.99
Grass Sedge				
Gahnia filum	Thatching Grass	53	4	6.20
Forb Herb Vine				
Anagallis arvensis	Pimpernel *	47	1	0.70
Galium murale	Small Bedstraw *	41	1	0.62

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN01301, 80 COU00401, 80 JUS00301, 80 LIN02B02, 80 TUM02101, 80 WAG01201, 80 WAN00301, 107 CAL00401, 107 HUD00201, 107 MTW01001, 107 PEA00501, 107 RIP01101, 107 SHE00201, 128 STR00601, 128 PEA01001, 179 COA00902, 179 COA00203

Floristic Group 7: photopoint site 71 VB00801 – 22/9/1993

Appendix 8. Detailed Floristic Group Descriptions

Cluster 5. Shrublands on sandy soils of west coast dunes and cliff tops, dominated by a mix of Coast Daisy-bush, Coast Bone-fruit, Sea-berry Saltbush, Coast Saltbush, Native Pigface or Rolling Spinifex

68 sites in 5 floristic groups

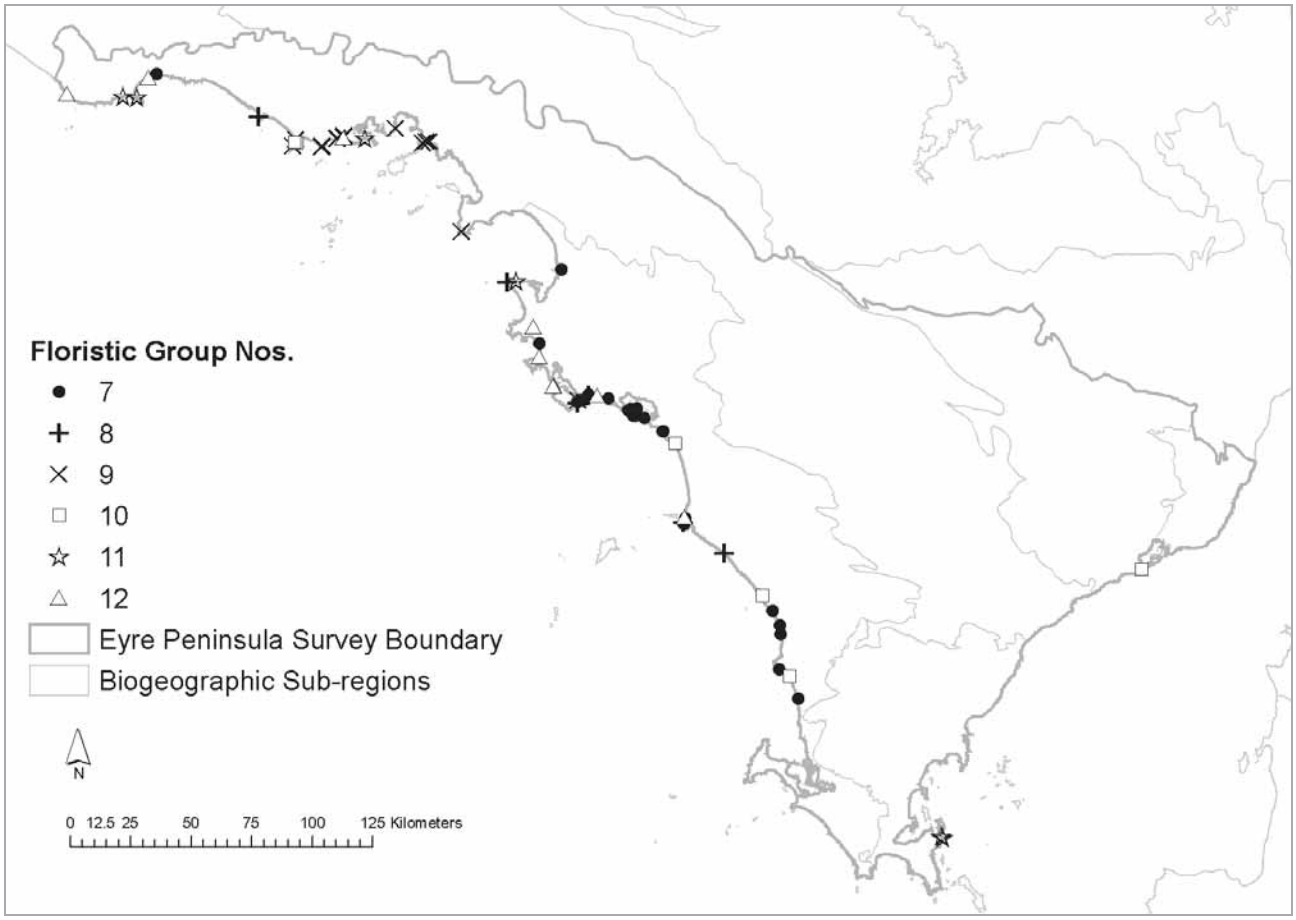
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Shrub > 1m	*Olearia axillaris*	Coast Daisy-bush	52	77.61	2.53
Low Shrub < 1m	*Rhagodia candolleana ssp. candolleana*	Sea-berry Saltbush	31	46.27	1.09

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 9 sites - *Hirundo neoxena*, Welcome Swallow, 9; *Lichenostomus virescens*, Singing Honeyeater, 9; *Zosterops lateralis*, Silvereye, 6; *Falco cenchroides*, Nankeen Kestrel, 6; *Sericornis frontalis*, White-browed Scrubwren, 5

**MAMMALS 9 sites - ****Mus musculus*, House Mouse, 8; **Oryctolagus cuniculus*, Rabbit, 8; *Macropus fuliginosus*, Western Grey Kangaroo, 7; *Sminthopsis dolichura*, Little Long-tailed Dunnart, 5

REPTILES 9 sites - *Hemiergis peronii*, Four-toed Earless Skink, 6; *Menetia greyii*, Dwarf Skink, 6; *Ctenophorus pictus*, Painted Dragon, 6; *Nephrurus milii*, Barking Gecko, 6; *Morethia obscura*, Mallee Snake-eye, 5; *Tiliqua rugosa*, Sleepy Lizard, 5; *Diplodactylus calcicolus*, South Coast Gecko, 5; *Ctenophorus chapmani*, Prickly Dragon, 5



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 7. Angled Wattle *Acacia* sp. Winged (C.R.Alcock 4936) &/or Coast Daisy-bush *Olearia axillaris* over Coast Velvet-bush *Lasiopetalum discolor* +/- emergent Native Apricot *Pittosporum angustifolium*

23 in the Talia Subregion along the mid-west coast. Sites comprising this group were mostly low to tall shrublands (90%). Dunes supported the most sites (48%), followed by hill slopes (30%), interdune corridors and plains. All sites were sandy with calcareous outcrop present at low to moderate cover (1-50%) at 47% of sites, and a mostly low surface strew cover (< 30%) of calcareous pebbles or cobbles 60% of sites. Past fires were not evident at any sites. Bare earth cover was variable (mean 34%, sdev 19). Litter cover was lower but highly variable (mean 19%,sdev 20).

Total number of species: 179
Average number of species per site: 28.9 sdev: 11.8 Maximum: 54 Minimum: 10
Number of significant species - EPBC Act: 1 NPW Act: 4
Austrodanthonia laevis, Smooth Wallaby-grass SA: R; *Caladenia bicalliata ssp. bicalliata*, Western Daddy-long-legs SA: R; *Myoporum parvifolium*, Creeping Boobialla SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V;
Number of Eyre Peninsula endemic species: 1
Prostanthera calycina, West Coast Mintbush
Number of introduced/invasive species: 39
Average number of introduced/invasive species per site: 5.2 Maximum: 14 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Acacia sp. Winged (C.R.Alcock 4936)	Angled Wattle	Shrub > 1m	39.1	0.003	3.9	3.57
Podolepis rugata var. littoralis	Coast Copper-wire Daisy	Forb Herb Vine	13.1	0.067	5.3	5.32

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	48	3	0.45
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	91	6	3.74
Acacia sp. Winged (C.R.Alcock 4936)	Angled Wattle	87	39	1.90
Melaleuca lanceolata	Dryland Tea-tree	52	0	3.62
Exocarpos syrticola	Coast Cherry	43	4	0.76
Low Shrub < 1m				
Lasiopetalum discolor	Coast Velvet-bush	70	9	2.83
Threlkeldia diffusa	Coast Bonefruit	70	2	0.99
Senecio pinnatifolius group	Groundsel	61	2	0.90
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	48	2	1.35
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	48	1	1.82
Grass Sedge				
Austrostipa flavescens	Coast Spear-grass	48	3	0.66
Catapodium rigidum	Rigid Fescue *	43	2	0.57
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	70	2	1.07
Carpobrotus rossii	Native Pigface	65	1	1.24
Anagallis arvensis	Pimpernel *	61	2	0.70

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

71 VB00101, 71 VB00201, 71 VB00301, 71 VB00401, 71 VB00501, 71 VB00801, 80 COU00601, 80 KIA00501, 80 KIA00601, 80 KIA01901, 82 TAL00102, 82 TAL00103, 82 ELL00202, 82 ELL00102, 82 BOO00201, 82 CAL00302, 82 CAL00402, 82 STR00501, 107 COU00701, 107 VEN01001, 128 STR00501, 128 PEA01201, 179 COA00102

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 8. Shore Westringia *Westringia dampieri* Low Shrubland with emergent Coast Daisy-bush *Olearia axillaris* +/- Thyme Riceflower *Pimelea serpyllifolia ssp. serpyllifolia* / Salt Bluebush *Maireana oppositifolia* / Creeping Brookweed *Samolus repens*

The 6 sites in this group were sparsely spread along the west coast from Sheringa to Cactus Beach. Plant assemblages comprising this group were mostly low shrublands (67%) and characteristic of cliffs and associated dunes. Soils were mostly sandy (83%) with the remainder being loam. Low to moderate calcareous outcrop cover (<50%) characterised half of the sites and cobble sized calcareous surface strew was also present at low to high (<70%) levels of cover. Past fires were also not evident. Bare earth cover ranged from low to moderate (mean 31%, sdev 18) whilst litter cover was minimal (mean 4%, sdev 4).

Total number of species: 74
Average number of species per site: 22 sdev: 4.7 Maximum: 29 Minimum: 15
Number of significant species - EPBC Act: 0 NPW Act: 1
Brachyscome xanthocarpa, Yellow-fruit Daisy SA: R
Number of Eyre Peninsula endemic species: 1
Brachyscome xanthocarpa, Yellow-fruit Daisy
Number of introduced/invasive species: 17
Average number of introduced/invasive species per site: 4 Maximum: 15 Minimum: 2

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Westringia dampieri	Shore Westringia	Low Shrub < 1m	54.5	0.001	4.3	4.1
Brachyscome xanthocarpa	Yellow-fruit Daisy R Y	Forb Herb Vine	12.1	0.086	5.9	5.29

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	83	2	3.74
Lycium ferocissimum	African Boxthorn *	50	1	0.61
Low Shrub < 1m				
Westringia dampieri	Shore Westringia	100	55	3.25
Frankenia pauciflora		83	4	0.98
Senecio pinnatifolius group	Groundsel	67	2	0.90
Threlkeldia diffusa	Coast Bonefruit	67	2	0.99
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	50	5	1.82
Maireana oppositifolia	Salt Bluebush	50	4	2.54
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	50	1	1.35
Sclerolaena diacantha group	Bindyi	50	1	0.95
Grass Sedge				
Parapholis incurva	Curly Ryegrass *	50	1	1.20
Forb Herb Vine				
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	67	2	1.44
Samolus repens	Creeping Brookweed	50	6	1.46

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 ELL00201, 82 HAS00102, 82 SIN00301, 82 CAL00301, 128 BAS01001, 179 COA01002

Floristic Group 8: site 128 BAS01001 – 9/10/2001

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 9. Dryland Tea-tree *Melaleuca lanceolata* / Leafless Cherry *Exocarpos aphyllus* / Coast Daisy-bush *Olearia axillaris* over Sea-berry Saltbush *Rhagodia candolleana ssp. candolleana* / Groundsel *Senecio pinnatifolius* group

17 sites in this poorly defined group clustered around Ceduna on the north-west coast. Sites comprising this group were mostly low shrublands (70%). Sites occurred on a variety of coastal land types including dunes, cliffs, beach ridges undulating plains. Surface soils at sites were sandy (69%) or sandy loams. Rock outcrop was restricted to the 3 sites on cliffs that included high cover of granite, sandstone or siltstone. Surface strew were present at 47% of sites and included pebbles to boulders of sandstone, siltstone and calcareous material with cover ranging from 1 - 70%. Past fires were not evident at any sites. Bare earth cover was variable (mean 33%, sdev 23). Litter cover was low (mean 16%, sdev 8).

Total number of species: 76
Average number of species per site: 17 sdev: 4.1 Maximum: 21 Minimum: 8
Number of significant species - EPBC Act: 0 NPW Act: 1
Austrodanthonia laevis, Smooth Wallaby-grass SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 7
Average number of introduced/invasive species per site: 1 Maximum: 4 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Olearia exiguifolia	Lobed-leaf Daisy-bush	Low Shrub < 1m	15.6	0.031	4.7	4.52

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	35	1	0.45
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	65	0	3.62
Exocarpos aphyllus	Leafless Cherry	59	1	0.61
Olearia axillaris	Coast Daisy-bush	53	0	3.74
Acacia anceps	Angled Wattle	47	2	1.64
Geijera linearifolia	Sheep Bush	41	0	2.12
Low Shrub < 1m				
Frankenia pauciflora		71	3	0.98
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	71	2	1.35
Senecio pinnatifolius group	Groundsel	71	2	0.90
Threlkeldia diffusa	Coast Bonefruit	65	1	0.99
Beyeria lechenaultii	Pale Turpentine Bush	47	0	2.54
Olearia exiguifolia	Lobed-leaf Daisy-bush	41	16	0.68
Forb Herb Vine				
Carpobrotus rossii	Native Pigface	71	1	1.24
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	41	0	1.44

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

71 VB00801, 82 THE00301, 82 COL00502, 82 THE00502, 82 THE00401, 82 THE00201, 82 NUN00205, 82 NUN00201, 82 CHA00103, 82 CHA00102, 82 CHA00101, 82 CHA00203, 82 CHA00202, 82 CHA00201, 82 CHA00304, 82 CHA00303, 82 CHA00302, 82 CAL00303

Floristic Group 9: survey site 71VB00801 – 22/9/1993

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 10. Rolling Spinifex *Spinifex hirsutus* Grassland +/- Coast Saltbush *Atriplex cinerea* / Two-horned Sea Rocket *Cakile maritima ssp. maritima*

The 6 sites in this group were sparsely distributed along the west coast with an outlier along the north-east coast. Plant assemblages comprising this group were mostly low shrublands (67%) and characteristic of the exposed foredunes along beaches. Surface soils were mostly sandy (67%), the remainder sandy loams. Rock outcrop and surface strew were not present. Past fires were also not evident. Bare earth cover was moderately high (mean 46%, sdev 23) whilst litter cover was low (mean 11%, sdev 15).

Total number of species: 43
Average number of species per site: 13.2 sdev: 5.7 Maximum: 21 Minimum: 7
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 6
Average number of introduced/invasive species per site: 2 Maximum: 3 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Spinifex hirsutus	Rolling Spinifex	grass sedge	79	0.001	4.3	4.24
Actites megalocarpa	Coast Sow-thistle	Forb Herb Vine	16.7	0.032	5.8	4.33
Ammophila arenaria	Marram Grass*	grass sedge	14	0.056	5.9	5.01

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	67	1	3.74
Low Shrub < 1m				
Atriplex cinerea	Coast Saltbush	67	24	3.13
Cakile maritima ssp. maritima	Two-horned Sea Rocket *	67	15	1.12
Frankenia pauciflora		50	2	0.98
Senecio pinnatifolius group	Groundsel	50	1	0.90
Grass Sedge				
Spinifex hirsutus	Rolling Spinifex	100	79	3.10
Forb Herb Vine				
Carpobrotus rossii	Native Pigface	83	2	1.24
Euphorbia paralias	Sea Spurge *	50	5	2.11
Tetragonia implexicoma	Bower Spinach	50	1	1.07

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 TAL00201,
82 SHE00201,
82 NUN00203,
82 NUN00204,
82 GIB00203,
82 KIA00201

Floristic Group 10: site 82 SHE00201 – 21/11/1995

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 11. Coast Saltbush *Atriplex cinerea* Low Shrubland with Coast Bonefruit *Threlkeldia diffusa* +/- Two-horned Sea Rocket *Cakile maritima ssp. maritima* / Coast Cushion Bush *Leucophyta brownii* / emergent Coast Daisy-bush *Olearia axillaris*

6 sites widespread along the western to southern coast. Plant assemblages comprising this group took the form of low shrublands (67%) and shrublands on coastal dunes crests and slopes. Soils were all sandy and without outcropping or surface strew. Past fires were not evident. Bare earth cover was moderately high and variable (mean 45%, sdev 19) and litter cover was recorded as 0% except at one site (71-80%, mean 16%, sdev 36).

Total number of species: 72
Average number of species per site: 22.2 sdev: 13.2 Maximum: 39 Minimum: 11
Number of significant species - EPBC Act: 0 NPW Act: 1
Poa fax, Scaly Poa SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 11
Average number of introduced/invasive species per site: 3 Maximum: 6 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Atriplex cinerea	Coast Saltbush	Low Shrub < 1m	35.9	0.002	4.1	3.7
Cakile maritima ssp. maritima	Two-horned Sea Rocket	Low Shrub < 1m	29.4	0.008	4.4	4.38
Senecio laceratus	Cut-leaf Groundsel	Low Shrub < 1m	16.7	0.041	5.9	5.23
Suaeda australis	Austral Seablite	Low Shrub < 1m	14.3	0.045	5.1	4.83
Salsola tragus	Buckbush	Low Shrub < 1m	11	0.05	4.3	4.13
Cakile edentula	American Sea Rocket*	Low Shrub < 1m	16.7	0.051	6.2	5.04

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Myoporum insulare	Common Boobialla	67	4	1.53
Olearia axillaris	Coast Daisy-bush	67	3	3.74
Exocarpos aphyllus	Leafless Cherry	50	1	0.61
Low Shrub < 1m				
Atriplex cinerea	Coast Saltbush	100	36	3.13
Threlkeldia diffusa	Coast Bonefruit	100	9	0.99
Cakile maritima ssp. maritima	Two-horned Sea Rocket *	67	29	1.12
Leucophyta brownii	Coast Cushion Bush	67	10	3.57
Salsola tragus	Buckbush	50	11	0.51
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	50	1	1.35
Senecio pinnatifolius group	Groundsel	50	1	0.90
Grass Sedge				
Spinifex hirsutus	Rolling Spinifex	83	3	3.10
Ficinia nodosa	Knobby Club-rush	67	7	1.66
Parapholis incurva	Curly Ryegrass *	50	2	1.20
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	83	6	1.07
Carpobrotus rossii	Native Pigface	50	1	1.24

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 HAS00101, 82 COO00505, 82 CHA00501, 82 JUS00205, 82 JUS00202, 428 FB00501

Floristic Group 11: site 82COO00505 – 11/1995

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 12. Coast Daisy-bush *Olearia axillaris* Shrubland +/- Cushion Fanflower *Scaevola crassifolia* / Sea Spurge *Euphorbia paralias* / Rolling Spinifex *Spinifex hirsutus*

The 9 sites in this group were spread along the north-west coast from Elliston. Plant assemblages comprising this group took the form of low to tall shrublands on beach dunes and tidal flats. Soils were all sandy and mostly without outcropping or surface strew (71% of sites). Where present calcareous rock outcrop (2 sites) and surface strew cover of cobbles (1 site) was moderate to low (<50% and 10-30% respectively). Past fires were not evident. Bare earth cover was high (mean 56%, sdev 14). Litter cover was minimal (mean 4%, sdev 4).

Total number of species: 48
Average number of species per site: 11.1 sdev: 3.3 Maximum: 16 Minimum: 5
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 14
Average number of introduced/invasive species per site: 2.3 Maximum: 9 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Euphorbia paralias	Sea Spurge *	Forb Herb Vine	43.8	0.001	4.6	4.5
Scaevola crassifolia	Cushion Fanflower	Low Shrub < 1m	9	0.085	4.3	4.35

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	100	6	3.74
Nitraria billardierei	Nitre-bush	44	3	2.65
Low Shrub < 1m				
Atriplex cinerea	Coast Saltbush	56	1	3.13
Cakile maritima ssp. maritima	Two-horned Sea Rocket *	44	11	1.12
Threlkeldia diffusa	Coast Bonefruit	44	2	0.99
Scaevola crassifolia	Cushion Fanflower	33	9	2.07
Grass Sedge				
Spinifex hirsutus	Rolling Spinifex	56	6	3.10
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	89	2	1.07
Euphorbia paralias	Sea Spurge *	56	44	2.11

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 ELL00101, 82 COO00602, 82 CHA00301, 82 CAL00202, 82 CAL00201, 82 SEA00101, 82 KUR00201, 179 GAB00101, 179 GAB01403

Floristic Group 12: site 82 COO00602 – 11/11/1995

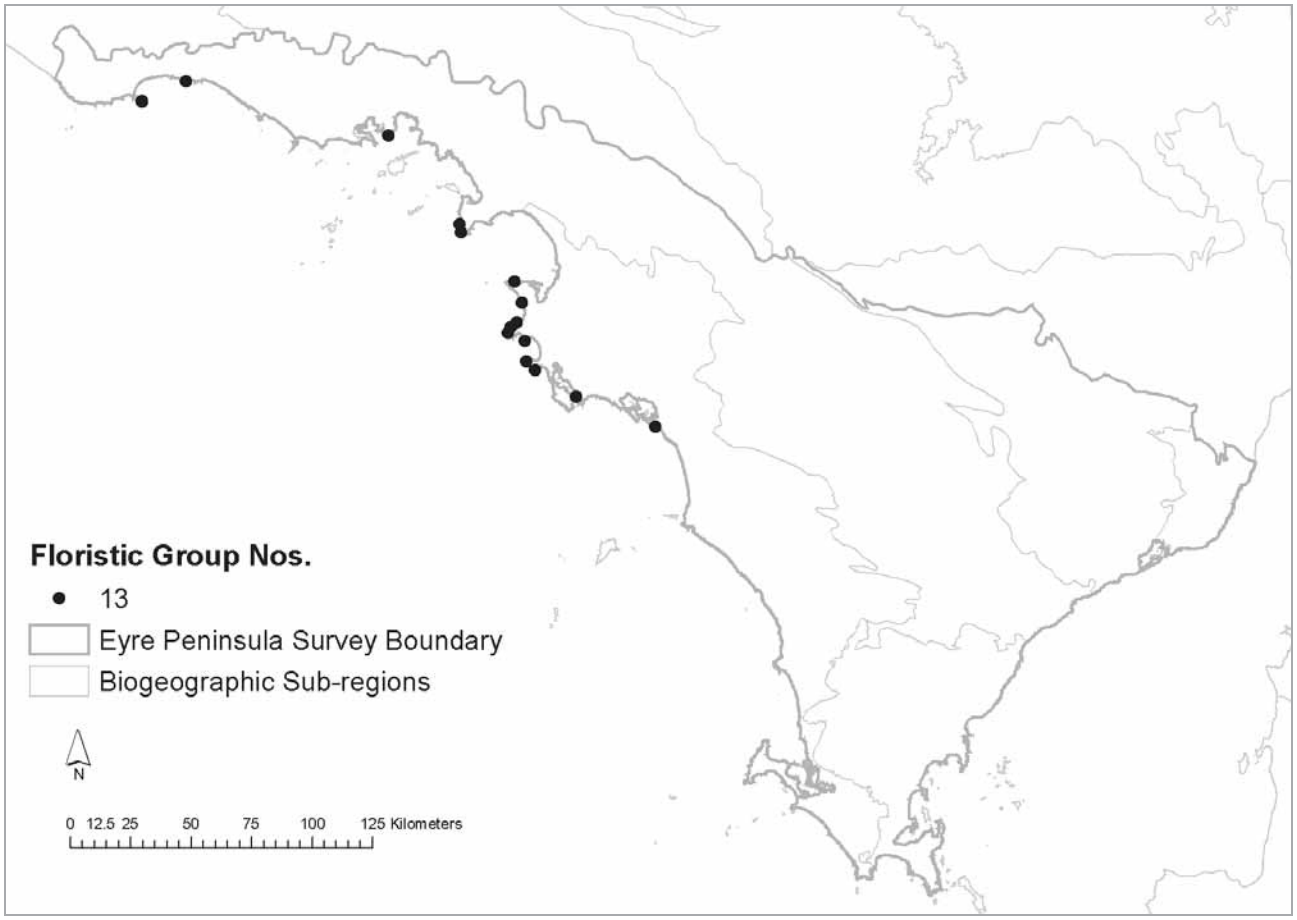
Appendix 8. Detailed Floristic Group Descriptions

Cluster 6. Nitre-bush Shrublands on sandy soils of coastal dunes and cliffs

16 sites 1 Floristic Group

Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Shrub > 1m	*Nitraria billardierei*	Nitre-bush	16	100.00	7.50
Shrub > 1m	*Olearia axillaris*	Coast Daisy-bush	13	81.25	4.77
Shrub > 1m	*Lycium ferocissimum*	African Boxthorn *	7	43.75	1.73
Low Shrub < 1m	*Atriplex paludosa ssp. cordata*	Marsh Saltbush	10	62.50	2.32
Low Shrub < 1m	*Senecio pinnatifolius group*	Groundsel	8	50.00	3.51
Low Shrub < 1m	*Rhagodia candolleana ssp. candolleana*	Sea-berry Saltbush	7	43.75	4.59
Forb Herb Vine	*Tetragonia implexicoma*	Bower Spinach	8	50.00	1.03

No fauna surveys were done in this vegetation community.



Floristic Group 13. Nitre-bush *Nitraria billardierei* Shrubland with Coast Daisy-bush *Olearia axillaris* Shrubland +/- Marsh Saltbush *Atriplex paludosa ssp. cordata*

16 sites along the north-west coast from Venus Bay. Plant assemblages comprising this group took the form of low to medium shrublands on beach and coastal dunes, escarpments and cliffs. Surface soils at sites were sandy. Sandstone or rock calcareous rock outcrop was present at 30% of sites with moderate to high cover. Surface strew was present at half the sites mostly as calcareous pebbles or cobbles with high to moderate cover (10-70%). Past fires were not evident. Bare earth cover ranged from nil to high (mean 34.5%, sdev 26) and litter cover was minimal (mean 3%, sdev 3).

Total number of species: 79
Average number of species per site: 12.9 sdev: 4.4 Maximum: 22 Minimum: 6
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 15
Average number of introduced/invasive species per site: 2.1 Maximum: 6 Minimum: 0

Appendix 8. Detailed Floristic Group Descriptions

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Nitraria billardierei	Nitre-bush	Shrub > 1m	56.2	0.001	3.9	3.29

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Nitraria billardierei	Nitre-bush	100	56	2.65
Olearia axillaris	Coast Daisy-bush	81	7	3.74
Low Shrub < 1m				
Atriplex paludosa ssp. cordata	Marsh Saltbush	63	4	3.33
Senecio pinnatifolius group	Groundsel	50	7	0.90
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	44	4	1.35
Threlkeldia diffusa	Coast Bonefruit	44	1	0.99
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	50	1	1.07

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 COL00101, 82 TAL00301, 82 STR00102, 82 COO00506, 82 COO00503, 82 BOO00501, 82 COL00501, 82 THE00101, 82 STR00302, 179 GAB00501, 179 GAB01001, 179 GAB01501, 179 GAB01801, 179 GAB01901, 179 GAB02401, 179 COA00401

Floristic Group 13: site 82 COL00101 – 21/11/1995

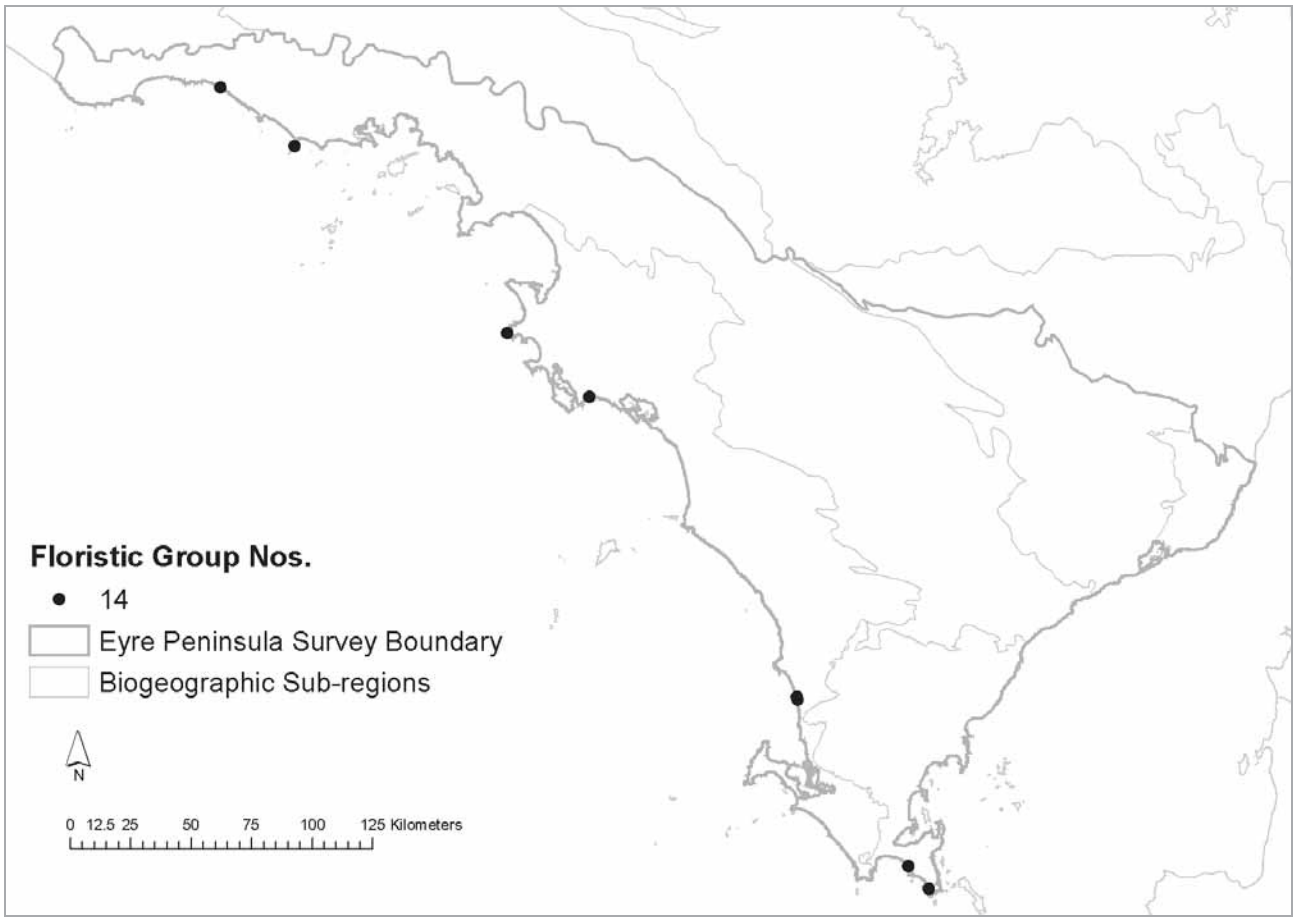
Appendix 8. Detailed Floristic Group Descriptions

Cluster 7. Coast Cushion Bush Low shrublands on coastal cliffs and dunes with outcropping limestone

9 sites in 1 floristic group

Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Low Shrub < 1m	*Leucophyta brownii*	Coast Cushion Bush	9	100.00	8.89
Low Shrub < 1m	*Pimelea serpyllifolia ssp. serpyllifolia*	Thyme Riceflower	5	55.56	2.52
Forb Herb Vine	*Disphyma crassifolium ssp. clavellatum*	Round-leaf Pigface	4	44.44	1.55

No fauna sites wre sampled in this vegetation community



Floristic Group 14. Coast Cushion Bush *Leucophyta brownii* Low Shrubland

9 sites sparsely spread along the south and west coast. Plant assemblages comprising this group took the form of low to medium shrublands and a grassland on coastal cliff/escarpments, limestone plains and dunes over limestone. Surface soils were mostly sandy, with loam at one site. Rock outcrop was at 80% of sites with calcareous or granite cover from 1 to >50%. Surface strew was present at 90% of sites with moderately high cover (30-70%) of pebbles to boulders, mostly calcareous but also of sandstone. Past fires were not evident. Bare earth cover ranged from moderate (mean 24%, sdev 19) and litter cover was low (mean 4%, sdev 6).

Total number of species: 87
Average number of species per site: 20.1 sdev: 10.8 Maximum: 36 Minimum: 10
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 20
Average number of introduced/invasive species per site: 3.8 Maximum: 10 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Leucophyta brownii	Coast Cushion Bush	Low Shrub < 1m	50.9	0.001	3.9	3.49
Austrostipa stipoides	Coast Spear-grass	grass sedge	18.1	0.034	5.2	5.19
Sagina maritima	Sea Pearlwort	Forb Herb Vine	13.8	0.04	3.7	3.3

Appendix 8. Detailed Floristic Group Descriptions

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Gnaphalium indutum	Tiny Cudweed	Forb Herb Vine	7.7	0.064	3.2	2.58
Muehlenbeckia gunnii	Coastal Climbing Lignum	Forb Herb Vine	11	0.078	5.9	4.56

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Olearia axillaris	Coast Daisy-bush	56	0	3.74
Low Shrub < 1m				
Leucophyta brownii	Coast Cushion Bush	100	51	3.57
Frankenia pauciflora		89	5	0.98
Senecio pinnatifolius group	Groundsel	78	3	0.90
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	56	5	1.82
Sclerolaena diacantha group	Bindyi	56	1	0.95
Threlkeldia diffusa	Coast Bonefruit	56	1	0.99
Grass Sedge				
Parapholis incurva	Curly Ryegrass *	44	2	1.20
Forb Herb Vine				
Carpobrotus rossii	Native Pigface	56	1	1.24
Sagina maritima	Sea Pearlwort	44	14	0.79
Gnaphalium indutum	Tiny Cudweed	44	8	0.59
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	44	2	1.44
Tetragonia implexicoma	Bower Spinach	44	1	1.07
Sonchus oleraceus	Common Sow-thistle *	44	0	0.45

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN02601, 80 JUS02501, 82 CUN00101, 82 NUN00202, 82 CAL00401, 82 STR00303, 82 COU00101, 82 COU00105, 82 JUS00105

Floristic Group 14: site CUN00101 – 21/11/1995

Appendix 8. Detailed Floristic Group Descriptions

Cluster 8. Samphire Low Shrublands on saline flats, swamps and lakes

42 sites in 4 floristic groups

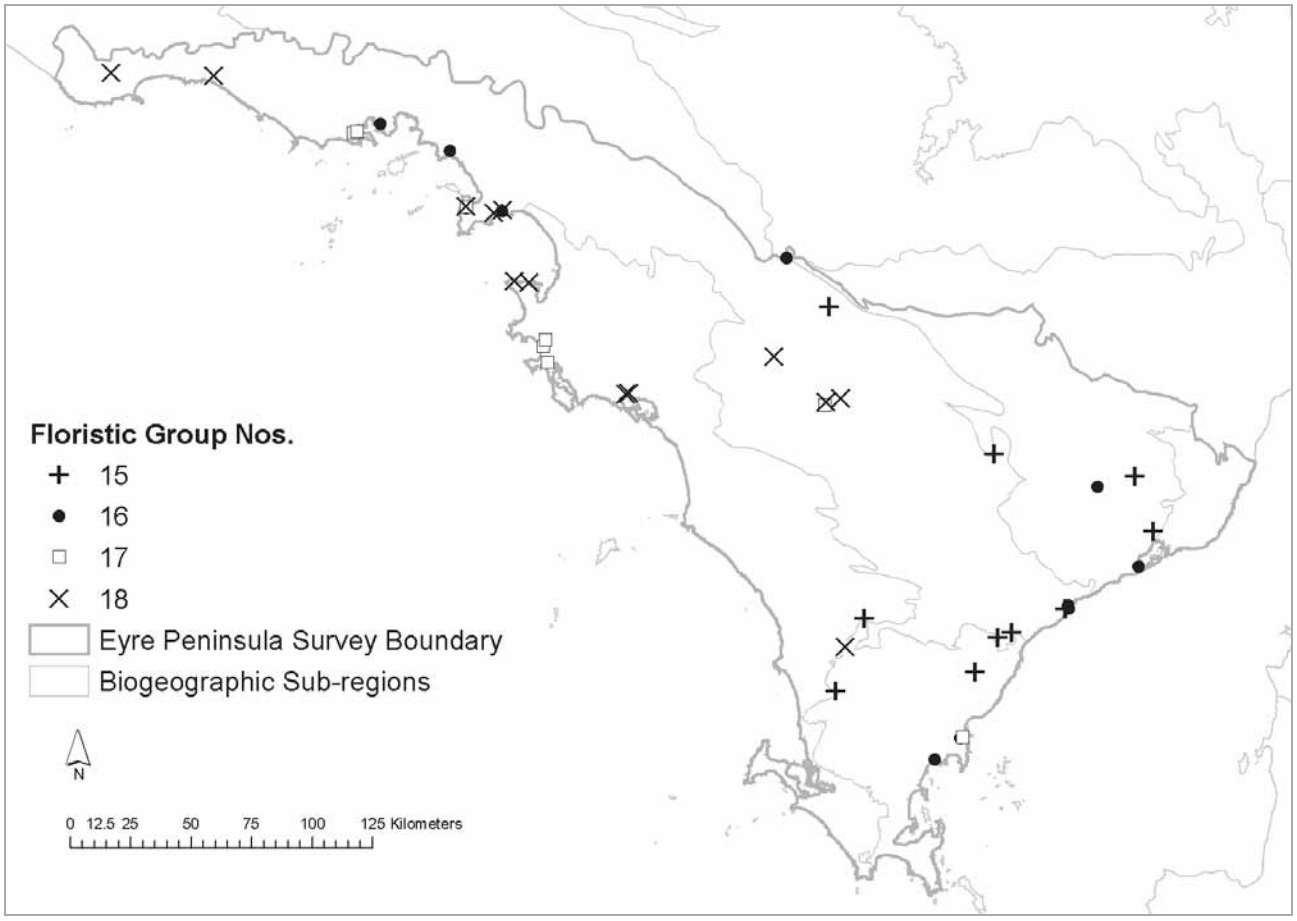
Lifefzorm	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Low Shrub < 1m	*Tecticornia halocnemoides*	Samphire	26	61.90	5.62
Low Shrub < 1m	*Tecticornia indica*	Samphire	20	47.62	7.10
Low Shrub < 1m	*Frankenia pauciflora*	Sea-heath	17	40.48	1.22
grass sedge	*Parapholis incurva*	Curly Ryegrass *	19	45.24	3.16
Forb Herb Vine	*Disphyma crassifolium ssp. clavellatum*	Round-leaf Pigface	22	52.38	1.52

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 3 sites - *Lichenostomus virescens,* Singing Honeyeater, 2; *Eolophus roseicapilla,* Galah, 2; *Epthianura albifrons,* White-fronted Chat, 2; *Gymnorhina tibicen,* Australian Magpie, 2; *Malurus leucopterus,* White-winged Fairy-wren, 2

**MAMMALS 3 sites - ****Mus musculus,* House Mouse, 2; *Macropus fuliginosus,* Western Grey Kangaroo, 2; **Vulpes vulpes,* Fox, 2

REPTILES 3 sites - *Tiliqua rugosa,* Sleepy Lizard, 2; *Morethia adelaidensis,* Adelaide Snake-eye, 2



Floristic Group 15. Black-seed Samphire *Tecticornia pergranulata ssp. pergranulata* +/- Samphire *Tecticornia indica* Low Shrubland over Slender Iceplant *Mesembryanthemum nodiflorum* / Curly Ryegrass *Parapholis incurva*

10 sites scattered across the central and eastern half of the study area. This low shrubland assemblage is characteristic of temporary wetlands such as saline floodouts, drainage depressions and lake margins. Soils were mostly clays and clay loams (70% of sites). Calcareous outcropping or surface strew was limited (20% of sites, <10% cover). Past fires were not evident. Bare earth cover was moderate but variable (mean 27%, sdev 27). Litter cover was mostly low (mean 15%, sdev 18). The high proportion of introduced species indicates that members of this group are prone to disturbance.

Total number of species: 62

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 12.1 sdev: 7.4 Maximum: 23 Minimum: 2
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 27
Average number of introduced/invasive species per site: 5.3 Maximum: 13 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Tecticornia pergranulata ssp. pergranulata	Black-seed Samphire	Low Shrub < 1m	70.2	0.001	4.3	4.39
Parapholis incurva	Curly Ryegrass *	grass sedge	32.8	0.001	3.8	3.11
Mesembryanthemum nodiflorum	Slender Iceplant *	Forb Herb Vine	21.3	0.005	4	3.59

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Low Shrub < 1m				
Tecticornia pergranulata ssp. pergranulata	Black-seed Samphire	90	70	6.67
Tecticornia indica	Samphire	40	6	5.90
Grass Sedge				
Parapholis incurva	Curly Ryegrass *	70	33	1.2
Forb Herb Vine				
Mesembryanthemum nodiflorum	Slender Iceplant *	60	21	0.87
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	60	1	1.44
Medicago polymorpha var. polymorpha	Burr-medic *	40	2	1.05
Senecio glossanthus group	Groundsel	40	1	0.53
Sonchus oleraceus	Common Sow-thistle *	40	1	0.45

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 BUT00101, 80 BUT01201, 80 NEI00501, 103 DAR00701, 103 ARN01301, 103 GLY01001, 107 TOO04C06, 107 YAN00201, 128 COW00901, 128 MAR01101

Floristic Group 15: site 128 MAR01101 – 10/12/2004.

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 16. Samphire *Tecticornia indica* Low Shrubland over Round-leaf Pigface *Disphyma crassifolium ssp. clavellatum* +/- Small-leaf Sea-heath *Frankenia sessilis* / Salt Bluebush *Maireana oppositifolia*

Most of the 11 sites comprising this group are widespread along sheltered coastal inlets. This low shrubland assemblage is characteristic of tidal flats (72%), but also occurs on saline inland swamps and drainage depressions. Surface soils were mostly loams (63% of sites) but includes clay loams and clayey sand. Sites showed no outcropping or surface strew and there was no evidence of fire. Bare earth was moderately high (mean 49%, sdev 21). Litter cover was minimal (mean 4%, sdev 3).

Total number of species: 66
Average number of species per site: 12.5 sdev: 7.1 Maximum: 30 Minimum: 6
Number of significant species - EPBC Act: 0 NPW Act: 1
Crassula exserta, Large-fruit Crassula SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 18
Average number of introduced/invasive species per site: 2.6 Maximum: 10 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Tecticornia indica	Samphire	Low Shrub < 1m	59	0.001	3.9	3.91
Frankenia sessilis	Small-leaf Sea-heath	Low Shrub < 1m	14.8	0.03	4	3.77
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	Forb Herb Vine	9.3	0.045	3.6	2.74

Species	Common name & status	% Site Frequency	Indicator value	Ave cover index
Low Shrub < 1m				
Tecticornia indica	Samphire	100	59	5.90
Frankenia sessilis	Small-leaf Sea-heath	55	15	1.55
Maireana oppositifolia	Salt Bluebush	55	4	2.54
Lawrencia squamata	Thorny Lawrencia	55	3	2.77
Frankenia pauciflora		55	2	0.98
Atriplex paludosa ssp. cordata	Marsh Saltbush	45	2	3.33
Grass Sedge				
Parapholis incurva	Curly Ryegrass *	55	5	1.20
Forb Herb Vine				
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	91	9	1.44
Senecio glossanthus group	Groundsel	64	3	0.53

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 LIN00201, 1 SCR00701, 78 ACR00201, 78 LAU00101, 78 TUM00106, 78 MIS00102, 78 FRA00101, 78 ARN00102, 78 ARN00103, 78 NAD00101, 128 HEG00801

Floristic Group 16: site 128 HEG00801 – 3/10/2002

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 17. Shrubby Samphire *Tecticornia arbuscula* +/- Samphire *Tecticornia halocnemoides* and Salt Bluebush *Maireana oppositifolia* Low Shrubland

8 sites, mostly associated with sheltered tidal inlets between Baird Bay and Murat Bay on the north west coast with 1 site at Tumby Bay on the east coast. This low shrub assemblage is characteristic coastal salt lake margins and associated flats. Surface soils were mostly clay loams and loams (71% of sites) but included clays and sands. Sites showed no outcropping or surface strew and there was no evidence of fire. Bare earth cover was moderate (mean 38%, sdev 27) and variable, inversely reflecting plantcover at sites. Litter cover was low (mean 7%, sdev10.5).

Total number of species: 19
Average number of species per site: 6.3 sdev: 3 Maximum: 12 Minimum: 3
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 0
Average number of introduced/invasive species per site: 0 Maximum: 0 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Tecticornia arbuscula	Shrubby Samphire	Low Shrub < 1m	36.7	0.001	3.9	3.51
Wilsonia humilis	Silky Wilsonia	Forb Herb Vine	21.2	0.017	5.6	4.91

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Low Shrub < 1m				
Tecticornia arbuscula	Shrubby Samphire	100	37	7.44
Tecticornia halocnemoides	Samphire	88	21	5.10
Maireana oppositifolia	Salt Bluebush	63	13	2.54
Frankenia sessilis	Small-leaf Sea-heath	50	10	1.55
Frankenia pauciflora		50	4	0.98

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

107 PAL00901, 107 SEA00201, 107 STR00901, 78 TUM00103, 78 CHA00102, 78 CHA00104, 78 MIS00101, 179 COA00701

Floristic Group 17: site 82 PAL00901 – 11/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 18. Samphire *Tecticornia halocnemoides* Low Shrubland

13 sites scattered across the western half of the study area. This low shrub assemblage is characteristic saline lakes, swamps and drainage depressions as well as tidal flats. Surface soils were variable with clay loams (45% of sites) and loam/clay sands (27%of sites) most common. Sites showed no outcropping or surface strew and there was no evidence of fire. Bare earth cover was moderatley high (mean 46.5%, sdev 28) and litter cover was minimal (mean 2%, sdev 3).

Total number of species: 82
Average number of species per site: 12.4 sdev: 12.2 Maximum: 43 Minimum: 2
Number of significant species - EPBC Act: 1 NPW Act: 1
Tecticornia flabelliformis, Bead Samphire AUS: VU SA: V
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 31
Average number of introduced/invasive species per site: 4.5 Maximum: 20 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Tecticornia halocnemoides	Samphire	Low Shrub < 1m	61.4	0.001	3.9	3.72
Tecticornia flabelliformis	Bead Samphire VU V	Low Shrub < 1m	23	0.013	5.5	4.89

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Low Shrub < 1m				
Tecticornia halocnemoides	Samphire	100	61	5.10
Grass Sedge				
Parapholis incurva	Curly Ryegrass *	46	2	1.20
Forb Herb Vine				
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	46	3	1.44

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 YEE01301, 107 KYA00801, 107 POR00201, 110 VEN00110, 110 VEN00111, 78 ACR00203, 128 COR01201, 78 MIS00103, 179 GAB02402, 179 GAB02502, 128 ACR00301, 128 CHA00101, 428 OR02901

Floristic Group 18: site 128 ACR00301 – 8/12/2005.

Appendix 8. Detailed Floristic Group Descriptions

Cluster 9. Low shrublands on sand to loam soils of coastal dunes and swales dominated by Marsh Saltbush, Salt Bluebush or Thorny Lawrencia

28 sites in 2 groups

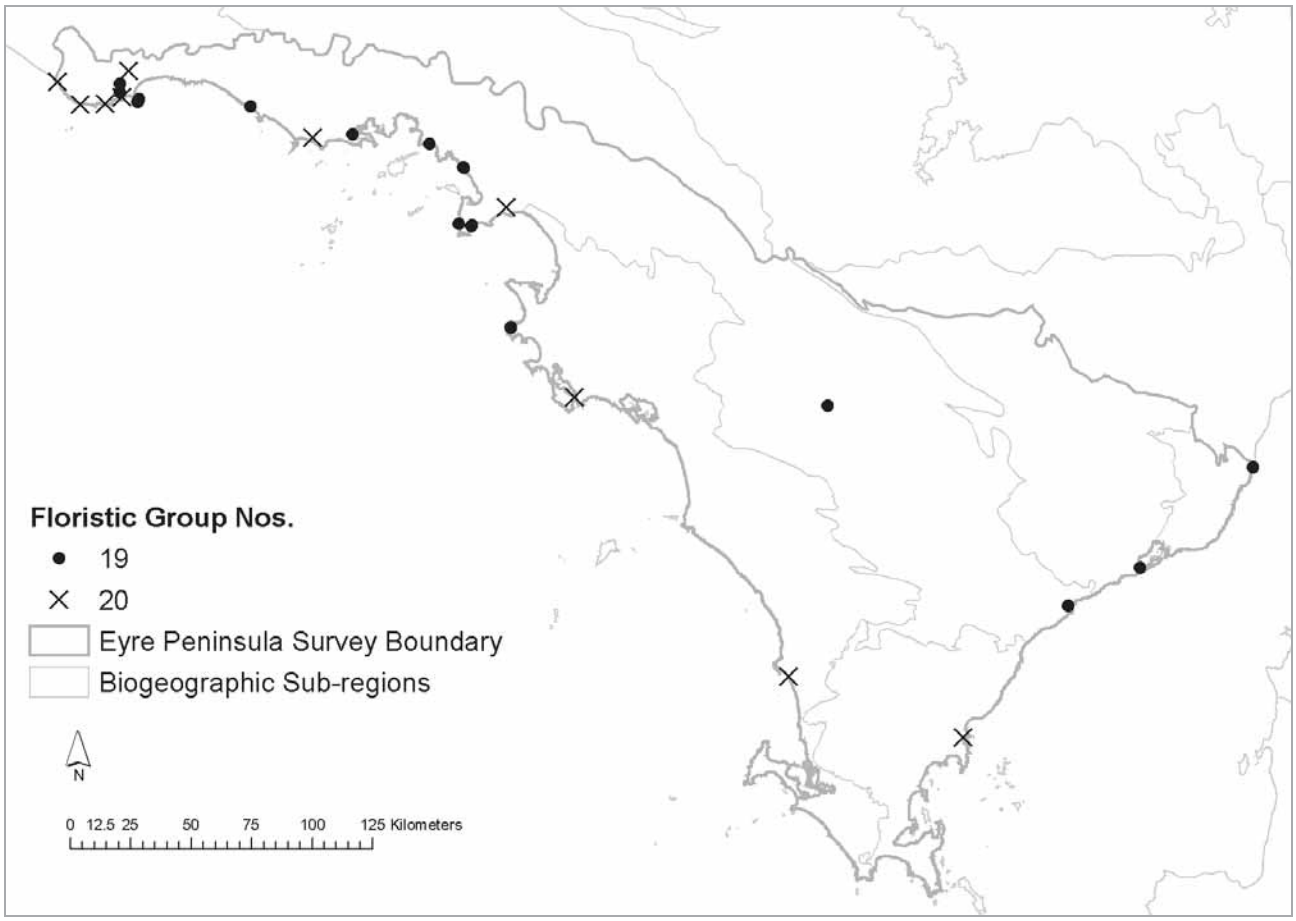
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Low Shrub < 1m	*Atriplex paludosa ssp. cordata*	Marsh Saltbush	23	82.14	6.09
Low Shrub < 1m	*Senecio pinnatifolius group*	Groundsel	18	64.29	1.18
Low Shrub < 1m	*Maireana oppositifolia*	Salt Bluebush	17	60.71	2.43
Low Shrub < 1m	*Lawrencia squamata*	Thorny Lawrencia	16	57.14	5.80
Low Shrub < 1m	*Frankenia pauciflora*		14	50.00	1.94
Low Shrub < 1m	*Hemichroa diandra*	Mallee Hemichroa	12	42.86	1.19
Low Shrub < 1m	*Eremophila deserti*	Turkey-bush	11	39.29	2.47
Forb Herb Vine	*Disphyma crassifolium ssp. clavellatum*	Round-leaf Pigface	22	78.57	1.80

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 6 sites - *Lichenostomus virescens,* Singing Honeyeater, 5; *Epthianura albifrons,* White-fronted Chat, 3; *Anthus novaeseelandiae,* Australasian Pipit, 3

MAMMALS 6 sites - *Mus musculus, House Mouse, 6; *Oryctolagus cuniculus,* Rabbit, 3; *Macropus fuliginosus,* Western Grey Kangaroo, 2; *Lasiorhinus latifrons,* Southern Hairy-nosed Wombat, 2

REPTILES 6 sites - *Morethia adelaidensis,* Adelaide Snake-eye, 4; *Ctenophorus pictus,* Painted Dragon, 4; *Delma australis,* Barred Snake-lizard, 3



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 19. Marsh Saltbush *Atriplex paludosa ssp. cordata* Low shrubland with Groundsel *Senecio pinnatifolius* group +/- Turkey-bush *Eremophila deserti* / Salt Bluebush *Maireana oppositifolia* over Round-leaf Pigface *Disphyma crassifolium ssp. clavellatum* +/- emergent Sheep Bush *Geijera linearifolia*

18 sites along the northern half of both coasts. This low shrubland assemblage was also found under mallee (17% of sites) and taller shrublands (22% of sites). It was found on limestone plains and dunes on a variety of surface soils, but mostly sands (61% of sites). Calcareous outcropping (2 sites with <10% cover) and surface strew (3 sites with <30% cover) was rare and low, and there was no evidence of fire. Bare earth cover was moderate (mean 24%, sdev 13). Litter cover was low (mean 14%, sdev 14).

Total number of species: 124
Average number of species per site: 20.1 sdev: 9.3 Maximum: 41 Minimum: 8
Number of significant species - EPBC Act: 1 NPW Act: 6
Austrodanthonia laevis, Smooth Wallaby-grass SA: R; *Austrostipa nullanulla*, Club Spear-grass AUS: VU SA: V; *Leiocarpa pluriseta* SA: R; *Poa drummondiana*, Knotted Poa SA: R; *Poa fax*, Scaly Poa SA: R; *Podolepis jaceoides*, Showy Copper-wire Daisy SA: R;
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 27
Average number of introduced/invasive species per site: 3.8 Maximum: 12 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Atriplex paludosa ssp. cordata	Marsh Saltbush	Low Shrub < 1m	29.3	0.001	3.3	2.39
Eremophila deserti	Turkey-bush	Low Shrub < 1m	18	0.02	4.1	3.61
Hemichroa diandra	Mallee Hemichroa	Low Shrub < 1m	10.3	0.065	4.5	4.49
Leiocarpa pluriseta	Plover-daisy R Y	Low Shrub < 1m	11.1	0.075	5.7	4.84

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Geijera linearifolia	Sheep Bush	44	2	2.12
Low Shrub < 1m				
Atriplex paludosa ssp. cordata	Marsh Saltbush	100	29	3.33
Senecio pinnatifolius group	Groundsel	83	7	0.90
Frankenia pauciflora		50	4	0.98
Eremophila deserti	Turkey-bush	44	18	0.80
Lycium australe	Australian Boxthorn	44	8	0.35
Maireana erioclada	Rosy Bluebush	44	3	0.74
Maireana oppositifolia	Salt Bluebush	44	2	2.54
Forb Herb Vine				
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	72	8	1.44
Carpobrotus rossii	Native Pigface	44	1	1.24

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 WAL00401, 82 COL00404, 82 COL00405, 82 COO00502, 82 COO00504, 82 WAL00102, 82 SIN00201, 82 STR00301, 82 STR00203, 82 WAL00101, 82 THE00501, 78 CHA00101, 128 COR01101, 78 FRA00102, 78 ARN00101, 128 MUN00101, 128 FOW00101, 128 FOW00201

Floristic Group 19: site 128 FOW00201 – 24/9/2005

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 20. Thorny Lawrencia *Lawrencia squamata* Low Shrubland with Salt Bluebush *Maireana oppositifolia* +/- Marsh Saltbush *Atriplex paludosa ssp. cordata* over Round-leaf Pigface *Disphyma crassifolium ssp. clavellatum*

10 sites widespread along the west cost but most common in the far west. This low shrubland assemblage was was found on near coastal plains and low dunes and in low lying temporary wetland areas. Surface soils varied but were mostly sands (56% of sites). Calcareous outcropping was present at 2 sites with low to moderate cover. Surface strew was present as pebbles and cobbles at 56% of sites with cover ranging from 1 to 70%. There was no evidence of fire. Bare earth cover ranged from moderately high (mean 41%, sdev 21), whilst litter cover was low (mean 9%, sdev 9).

Total number of species: 83
Average number of species per site: 18 sdev: 5.8 Maximum: 27 Minimum: 10
Number of significant species - EPBC Act: 0 NPW Act: 5
Chondropyxis halophila, Salt Button-daisy SA: R; *Crassula exserta*, Large-fruit Crassula SA: R; *Haegiela tatei*, Small Nut-heads SA: R; *Isotoma scapigera*, Salt Isotome SA: R; *Poa drummondiana*, Knotted Poa SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 15
Average number of introduced/invasive species per site: 2.7 Maximum: 8 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Lawrencia squamata	Thorny Lawrencia	Low Shrub < 1m	57.6	0.001	4	3.85
Maireana oppositifolia	Salt Bluebush	Low Shrub < 1m	13.9	0.016	3.7	2.98

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Nitraria billardierei	Nitre-bush	50	0	2.65
Olearia axillaris	Coast Daisy-bush	50	0	3.74
Low Shrub < 1m				
Lawrencia squamata	Thorny Lawrencia	100	58	2.77
Maireana oppositifolia	Salt Bluebush	80	14	2.54
Frankenia sessilis	Small-leaf Sea-heath	70	13	1.55
Hemichroa diandra	Mallee Hemichroa	60	8	0.77
Atriplex paludosa ssp. cordata	Marsh Saltbush	50	6	3.33
Frankenia pauciflora		50	6	0.98
Sarcocornia blackiana	Thick-head Samphire	40	3	2.18
Maireana erioclada	Rosy Bluebush	40	1	0.74
Sclerolaena diacantha group	Bindyi	40	0	0.95
Forb Herb Vine				
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	90	7	1.44
Bupleurum semicompositum	Hare's Ear *	60	4	0.63
Carpobrotus rossii	Native Pigface	50	2	1.24
Crassula colorata		40	1	0.58
Samolus repens	Creeping Brookweed	40	1	1.46

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 COO00101, 82 COO00402, 82 FOW01, 82 KUR00301, 82 KIA00202, 78 TUM00104, 78 ACR00204, 179 COA00806, 128 CED01201, 128 FOW00501

Floristic Group 20: site 128 FOW00501 – 26/9/2005

Appendix 8. Detailed Floristic Group Descriptions

Cluster 10. Mallee Box Open Mallee on plains with loamy soils

35 sites in 1 floristic group

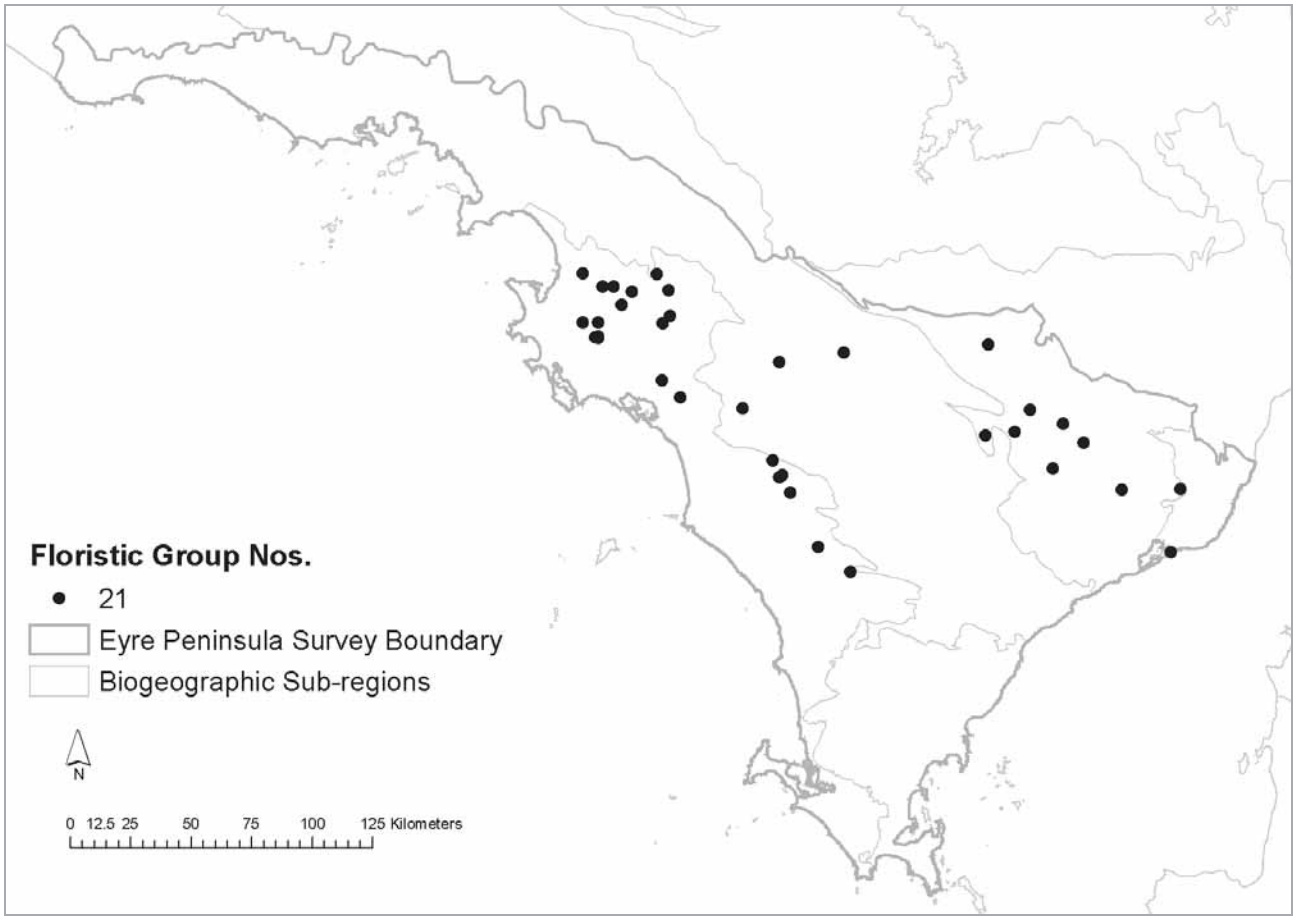
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Tree	*Eucalyptus porosa*	Mallee Box	35	100.00	7.71
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	22	62.86	3.79
grass sedge	*Avena barbata*	Bearded Oat *	26	74.29	1.58
Forb Herb Vine	*Carrichtera annua*	Ward's Weed *	15	42.86	2.37

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 2 sites - *Eolophus roseicapilla*, Galah, 2; *Gymnorhina tibicen*, Australian Magpie, 2; *Manorina flavigula*, Yellow-throated Miner, 2; *Cracticus torquatus*, Grey Butcherbird, 2; *Sturnus vulgaris*, Common Starling, 2; *Corvus mellori*, Little Raven, 2; *Smicrornis brevirostris*, Weebill, 2; *Pomatostomus superciliosus*, White-browed Babbler, 2; *Acanthiza chrysorrhoa*, Yellow-rumped Thornbill, 2; *Barnardius zonarius*, Australian Ringneck, 2; *Pardalotus striatus*, Striated Pardalote, 2; *Accipiter fasciatus*, Brown Goshawk, 2; *Pachycephala rufiventris*, Rufous Whistler, 2

**MAMMALS 2 sites - ****Mus musculus*, House Mouse, 2

REPTILES 2 sites - *Diplodactylus calcicolus*, South Coast Gecko, 1; *Tiliqua rugosa*, Sleepy Lizard, 1; *Nephrurus milii*, Barking Gecko, 1; *Lerista dorsalis*, Southern Four-toed Slider, 1; *Ramphotyphlops bituberculatus*, Rough-nosed Blind Snake, 1; *Heteronotia binoei*, Bynoe's Gecko, 1



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 21. Mallee Box *Eucalyptus porosa* Open Mallee over Common Wallaby-grass *Austrodanthonia caespitosa* +/- Dryland Tea-tree *Melaleuca lanceolata*

35 sites mostly in the Talia biogeographic subregion (60% of sites) but also in the northern block of the Eyre Hills biogeographic subregion. This open mallee to woodland assemblage was strongly associated with plains and drainage depressions mostly on sandy loam to clay loam surface soils (68% of sites). Calcareous rock outcrop was present at 50% of sites (<10% cover at 35% of sites and 10-50% cover at 15% of sites). Calcareous surface strew was present as cobbles and pebbles covering between 1-30% (10% of sites had cover 30-70%), boulders present at 1 site. Fire was noted for 10% of sites ranging from 19-69 years prior to sampling (mean 41.5 yrs). Bare earth cover was mostly low (mean 10%, sdev 15). Litter cover was moderate (mean 30%, sdev 26).

Total number of species: 296
Average number of species per site: 42.2 sdev: 13.4 Maximum: 73 Minimum: 15
Number of significant species - EPBC Act: 0 NPW Act: 2
Austrostipa vickeryana, Vickery's Spear-grass SA: R; *Melaleuca armillaris ssp. akineta*, Needle-leaf Honey-myrtle SA: R
Number of Eyre Peninsula endemic species: 1
Hakea cycloptera, Elm-seed Hakea
Number of introduced/invasive species: 68
Average number of introduced/invasive species per site: 12.6 Maximum: 22 Minimum: 4

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus porosa	Mallee Box	Tree	40.1	0.001	3	2.39

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus porosa	Mallee Box	100	40	4.75
Pittosporum angustifolium	Native Apricot	66	2	0.45
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	63	1	3.62
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	49	1	0.67
Zygophyllum ovatum	Dwarf Twinleaf	40	2	0.64
Comesperma volubile	Love Creeper	40	1	0.32
Grass Sedge				
Austrodanthonia caespitosa	Common Wallaby-grass	80	3	0.67
Bromus rubens	Red Brome *	77	4	0.68
Avena barbata	Bearded Oat *	74	3	1.39
Hordeum glaucum	Blue Barley-grass *	54	1	0.73
Austrostipa elegantissima	Feather Spear-grass	51	1	0.47
Avellinia michelii	Avellinia *	40	1	0.65
Forb Herb Vine				
Sonchus oleraceus	Common Sow-thistle *	80	3	0.45
Oxalis perennans	Native Sorrel	74	3	0.54
Medicago minima var. minima	Little Medic *	69	3	0.99
Brassica tournefortii	Wild Turnip *	66	2	0.68
Daucus glochidiatus	Native Carrot	66	2	0.56
Helichrysum leucopsideum	Satin Everlasting	63	2	0.60
Anagallis arvensis	Pimpernel *	60	2	0.70
Crassula sieberiana complex	Australian Stonecrop	54	1	0.61
Brachyscome ciliaris var. ciliaris	Variable Daisy	51	4	0.42
Bupleurum semicompositum	Hare's Ear *	51	2	0.63
Vittadinia megacephala	Giant New Holland Daisy	49	4	0.48
Hypochaeris glabra	Smooth Cat's Ear *	46	1	0.57
Hedypnois rhagadioloides		43	3	0.78
Carrichtera annua	Ward's Weed *	43	2	1.80
Silene nocturna	Mediterranean Catchfly *	43	2	0.48
Teucrium sessiliflorum	Mallee Germander	40	4	0.55
Moraea setifolia	Thread Iris *	40	2	0.96
Asteridea athrixioides		40	1	0.91
Clematis microphylla var. microphylla	Old Man's Beard	40	1	0.57

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO01101, 82 WIT00103, 103 BAR01501, 103 CAR00101, 103 BUC01001, 103 CAR00901, 103 KIM00901, 103 DAR00401, 103 HEG00401, 103 GLY01401, 103 CHA01301, 107 COC00901, 107 COC01001, 107 COU01001, 107 COU01101, 107 CUN00901, 107 CUN01101, 107 INK00101, 107 INK00201, 107 INK00601, 107 KAP00101, 107 KAP01101, 107 MOO00101, 107 MOO00601, 107 MTW00601, 107 PAL00101, 107 POR00901, 107 RIP00401, 107 RIP00601, 107 RIP01001, 107 TOO00201, 107 VEN01B13, 107 WUD00801, 128 STR00101, 128 STR01001

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 21: site 128 STR010001 – 24/10/2001.

Appendix 8. Detailed Floristic Group Descriptions

Cluster 11. Woodlands/Mallee over sedgelands, grasslands and herblands that are typical of the sheet limetone plains domnated by Coastal White Mallee, Mallee Box, Drooping Sheoak, White Cypress Pine or River Red Gum

96 sites in 5 floristic group

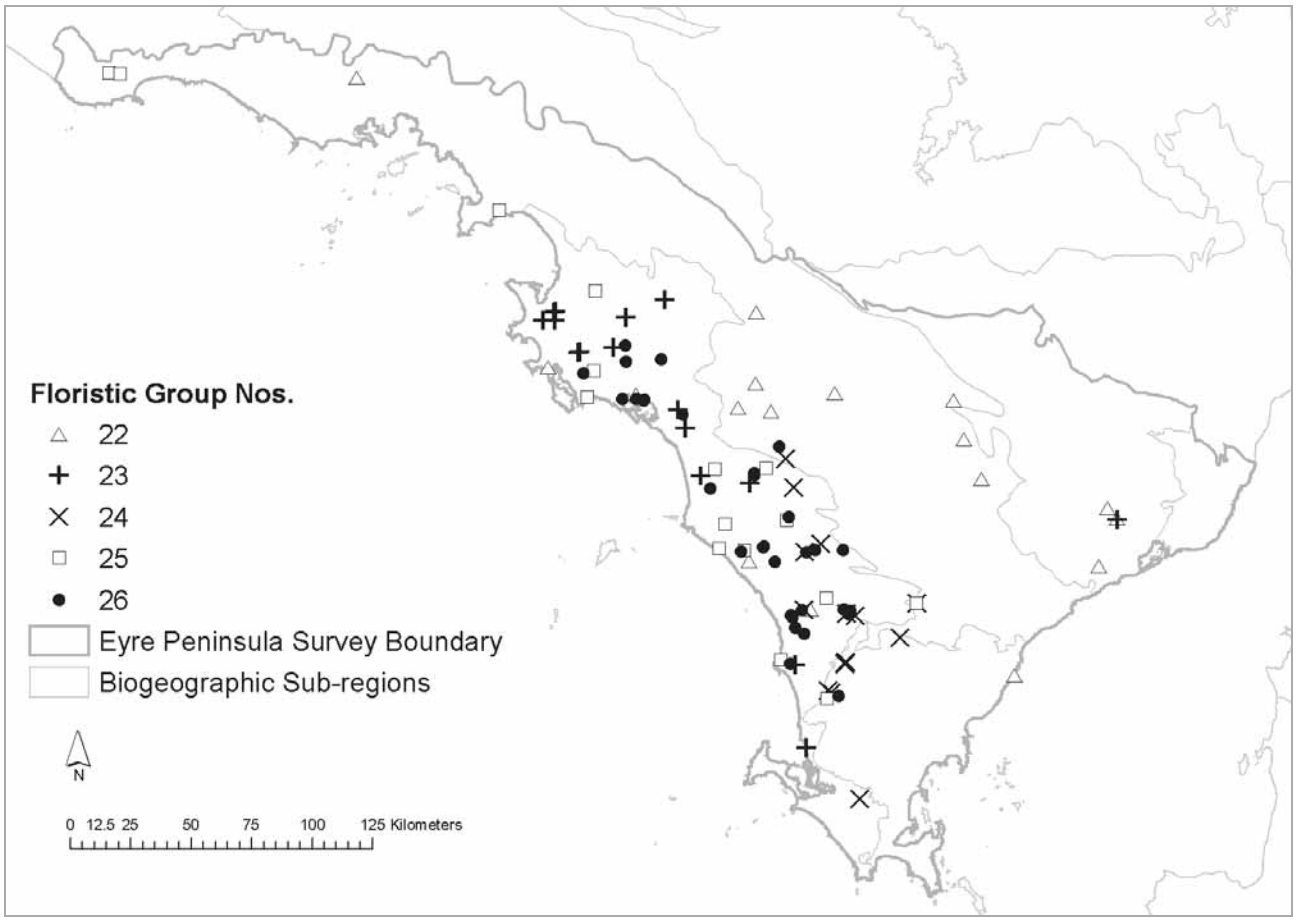
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Tree	*Eucalyptus diversifolia ssp. diversifolia*	Coastal White Mallee	43	44.79	4.68
Low Shrub < 1m	*Acrotriche patula*	Prickly Ground-berry	54	56.25	1.76
grass sedge	*Avena barbata*	Bearded Oat *	80	83.33	2.92
grass sedge	*Gahnia lanigera*	Black Grass Saw-sedge	55	57.29	4.98
Forb Herb Vine	*Medicago minima var. minima*	Little Medic *	45	46.88	1.47
Forb Herb Vine	*Moraea setifolia*	Thread Iris *	43	44.79	1.43

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 28 sites - *Eolophus roseicapilla*, Galah, 22; *Cracticus torquatus*, Grey Butcherbird, 21; *Acanthiza apicalis*, Inland Thornbill, 21; *Smicrornis brevirostris*, Weebill, 20; *Barnardius zonarius*, Australian Ringneck, 19; *Pardalotus striatus*, Striated Pardalote, 16; *Colluricincla harmonica*, Grey Shrike-thrush, 16; *Dromaius novaehollandiae*, Emu, 16; *Zosterops lateralis*, Silvereye, 15; *Manorina flavigula*, Yellow-throated Miner, 14; *Anthochaera carunculata*, Red Wattlebird, 14; *Rhipidura leucophrys*, Willie Wagtail, 14

**MAMMALS 28 sites - ****Mus musculus*, House Mouse, 18; *Macropus fuliginosus*, Western Grey Kangaroo, 16; **Oryctolagus cuniculus*, Rabbit, 11; *Cercartetus concinnus*, Western Pygmy-possum, 7

REPTILES 28 sites - *Nephrurus milii*, Barking Gecko, 15; *Hemiergis peronii*, Four-toed Earless Skink, 14; *Tiliqua rugosa*, Sleepy Lizard, 12; *Diplodactylus calcicolus*, South Coast Gecko, 10; *Menetia greyii*, Dwarf Skink, 10



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 22. Bearded Oat * *Avena barbata* / Common Wallaby-grass *Austrodanthonia caespitosa* Grassland +/- emergent Ruby Saltbush *Enchylaena tomentosa* / Native Apricot *Pittosporum angustifolium* / Eucalypt species

17 sites spread across the central part of the study area. This group represents a collection of modified and degraded mallee, tussock grassland and sedgeland assemblages unified by a high cover of introduced weeds. Landforms were mostly plains and hill slopes with loamy sand to clay loam surface soils. Granite, quartzite and calcareous rock outcrop was present with <10% cover at 40% of sites. Surface strew was present as cobbles, pebbles and boulders with 1-30% cover at 60% of sites. Fire history was noted for 30% of sites ranging from 2 to 54 years prior to sampling (mean 24 yrs). Bare earth cover was low (mean 8%, sdev 13). Litter cover was also low (mean 16.5%, 21).

Total number of species: 267
Average number of species per site: 38 sdev: 11.6 Maximum: 58 Minimum: 21
Number of significant species - EPBC Act: 0 NPW Act: 2
Austrostipa pilata, Prickly Spear-grass SA: V; *Grevillea pauciflora*, Narrow-leaf Grevillea SA: R
Number of Eyre Peninsula endemic species: 1
Grevillea pauciflora, Narrow-leaf Grevillea SA: R
Number of introduced/invasive species: 63
Average number of introduced/invasive species per site: 12.7 Maximum: 20 Minimum: 6

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Avena barbata	Bearded Oat	grass sedge	22.4	0.003	3.5	2.22
Medicago minima var. minima	Little Medic	Forb Herb Vine	12.2	0.014	3.3	2.51
Bromus rubens	Red Brome	grass sedge	7.9	0.025	2.7	1.71
Hedypnois rhagadioloides		Forb Herb Vine	10.2	0.028	3.5	2.58
Austrostipa eremophila	Rusty Spear-grass	grass sedge	10.6	0.047	3.9	3.5

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	41	1	0.45
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	76	5	0.67
Grass Sedge				
Avena barbata	Bearded Oat *	100	22	1.39
Austrodanthonia caespitosa	Common Wallaby-grass	82	2	0.67
Bromus rubens	Red Brome *	65	8	0.68
Lomandra effusa	Scented Mat-rush	53	3	0.93
Hordeum glaucum	Blue Barley-grass *	53	1	0.73
Vulpia myuros	Fescue *	41	1	0.93
Forb Herb Vine				
Medicago minima var. minima	Little Medic *	82	12	0.99
Oxalis perennans	Native Sorrel	53	2	0.54
Sonchus oleraceus	Common Sow-thistle *	53	1	0.45
Hedypnois rhagadioloides		47	10	0.78
Carrichtera annua	Ward's Weed *	47	2	1.80
Hypochaeris glabra	Smooth Cat's Ear *	47	1	0.57
Moraea setifolia	Thread Iris *	41	5	0.96
Anagallis arvensis	Pimpernel *	41	1	0.70
Crassula sieberiana complex	Australian Stonecrop	41	1	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

46 TG028, 80 NEI01301, 103 DAR00102, 103 PAN01101, 103 DAR00901, 103 MAN00401, 103 ARN00401, 103 COW00701, 107 MIN00501, 107 POR00401, 107 POR00701, 107 POR01001, 107 SEA00301, 107 SHE00301, 110 VEN00106, 128 COR01001, 128 PEA00801

Floristic Group 22: site 128 PEA00801 – 10/12/2004.

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 23. Drooping Sheoak *Allocasuarina verticillata* Open Woodland over Common Wallaby-grass *Austrodanthonia caespitosa* / Black Grass Saw-sedge *Gahnia lanigera* and Bearded Oat * *Avena barbata*

16 sites in the Talia biogeographic subregion. This grassy woodland assemblage was confined to plains, depressions and hills with sandy loam to clay loam surface soils. Calcareous rock outcrop was present at 80% of sites with cover ranging from <10% to <50% (sandstone was present at 1 site). Calcareous surface strew was present at 95% of sites mostly as cobbles covering from <10% to >70% of sample areas (40% of sites >30% cover). Fire history was present at 2 sites ranging from 9-20 years prior to sampling (mean 14.5 yrs). Bare earth cover was low (mean 8%, sdev 11). Litter cover was moderate (mean 22%, sdev 25.5).

Total number of species: 220
Average number of species per site: 47.1 sdev: 13.5 Maximum: 76 Minimum: 23
Number of significant species - EPBC Act: 1 NPW Act: 4
Acacia alcockii, Alcock's Wattle SA: R; *Austrostipa echinata,* Spiny Spear-grass SA: R; *Poa drummondiana,* Knotted Poa SA: R; *Prostanthera calycina,* West Coast Mintbush AUS: VU SA: V
Number of Eyre Peninsula endemic species: 3
Acacia alcockii, Alcock's Wattle; *Pomaderris flabellaris,* Fan Pomaderris; *Prostanthera calycina,* West Coast Mintbush
Number of introduced/invasive species: 61
Average number of introduced/invasive species per site: 15.3 Maximum: 24 Minimum: 7

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Vittadinia megacephala	Giant New Holland Daisy	Forb Herb Vine	11.9	0.007	2.8	1.99
Goodenia pusilliflora	Small-flower Goodenia	Forb Herb Vine	9.6	0.011	2.8	1.89
Austrodanthonia caespitosa	Common Wallaby-grass	grass sedge	8.4	0.015	2.9	1.68
Moraea setifolia	Thread Iris	Forb Herb Vine	14.1	0.018	3.6	2.98
Linum marginale	Native Flax	Forb Herb Vine	8.6	0.028	3	2.21
Isoetopsis graminifolia	Grass Cushion	Forb Herb Vine	7.3	0.033	3	2.2

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree			**Indicator_value**	**Average_Abundance**
Allocasuarina verticillata	Drooping Sheoak	69	12	4.44
Pittosporum angustifolium	Native Apricot	69	4	0.45
Shrub > 1m			**Indicator_value**	**Average_Abundance**
Pomaderris paniculosa ssp. paniculosa	Mallee Pomaderris	50	8	0.79
Melaleuca lanceolata	Dryland Tea-tree	44	0	3.62
Shrub < 1m				
Acrotriche patula	Prickly Ground-berry	56	2	1.52
Grass Sedge				
Avena barbata	Bearded Oat *	100	9	1.39
Austrodanthonia caespitosa	Common Wallaby-grass	94	8	0.67
Gahnia lanigera	Black Grass Saw-sedge	88	8	2.34
Bromus rubens	Red Brome *	63	2	0.68
Austrostipa exilis	Heath Spear-grass	50	1	0.84
Lepidosperma congestum		44	6	0.95
Avellinia michelii	Avellinia *	44	1	0.65
Rostraria cristata	Annual Cat's-tail *	44	1	0.70
Vulpia myuros	Fescue *	44	1	0.93
Forb Herb Vine				
Anagallis arvensis	Pimpernel *	88	3	0.70
Vittadinia megacephala	Giant New Holland Daisy	81	12	0.48
Medicago minima var. minima	Little Medic *	81	8	0.99
Oxalis perennans	Native Sorrel	81	5	0.54
Galium murale	Small Bedstraw *	69	4	0.62
Bupleurum semicompositum	Hare's Ear *	69	3	0.63
Hypochaeris glabra	Smooth Cat's Ear *	69	2	0.57
Moraea setifolia	Thread Iris *	63	14	0.96
Goodenia pusilliflora	Small-flower Goodenia	63	10	0.58
Helichrysum leucopsideum	Satin Everlasting	63	3	0.60
Daucus glochidiatus	Native Carrot	63	2	0.56
Ptilotus spathulatus		56	8	0.45
Hedypnois rhagadioloides		56	6	0.78
Carrichtera annua	Ward's Weed *	56	3	1.80
Thysanotus patersonii	Twining Fringe-lily	56	1	0.37
Arthropodium minus	Small Vanilla-lily	50	9	0.37
Linum marginale	Native Flax	50	9	0.40
Podotheca angustifolia	Sticky Long-heads	50	2	0.60
Silene nocturna	Mediterranean Catchfly *	50	2	0.48
Isoetopsis graminifolia	Grass Cushion	44	7	0.42
Millotia myosotidifolia	Broad-leaf Millotia	44	4	0.73
Minuartia mediterranea	Slender Sandwort *	44	2	0.54

Appendix 8. Detailed Floristic Group Descriptions

Wurmbea dioica	Nancy	44	2	0.39
Brachyscome lineariloba	Hard-head Daisy	44	1	0.53
Clematis microphylla var. microphylla	Old Man's Beard	44	1	0.57
Crassula sieberiana complex	Australian Stonecrop	44	1	0.61
Sonchus oleraceus	Common Sow-thistle *	44	1	0.45

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 COU01701, 80 KIA01701, 103 COW00801, 107 ADD00801, 107 INK00401, 107 INK01101, 107 MOO00201, 107 MTW01101, 107 RIP00801, 107 RIP01201, 107 STR01A08, 107 TAL00201, 107 TAL00801, 128 STR00701, 128 STR01101, 128 STR01201,

Floristic Group 23: site 128 STR01101 – 23/10/2001

Floristic Group 24: site 128 BAS00301 – 19/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 24. River Red Gum *Eucalyptus camaldulensis* / Southern Cypress Pine *Callitris gracilis* / Dryland Tea-tree *Melaleuca lanceolata* Woodland over introduced herbs and grasses with Native Sorrel *Oxalis perennans* and Native Carrot *Daucus glochidiatus* +/- Ruby Saltbush *Enchylaena tomentosa* / Sea-berry Saltbush *Rhagodia candolleana* / Prickly Ground-berry *Acrotriche patula*

15 sites in the south western quarter of the study area. This mostly woodland assemblage was characteristic of plains, temporary wetland flats and rises with mostly sandy loam and clay loam soils. Calcareous rock outcrop was present at all but 1 site with moderate (10-50%) to low (<10%) cover. Calcareous surface strew in the form of cobbles, pebbles and boulders ranged from <10% to 30-70% (80% of sites 1-30% cover). Fire had affected 45% of sites ranging from 9-43 years prior to sampling (mean 30 yrs). Bare earth cover was low (mean 7%, sdev 8). Litter cover was moderate (mean 22.5%, sdev 18).

Total number of species: 246
Average number of species per site: 48.9 sdev: 12.7 Maximum: 73 Minimum: 32
Number of significant species - EPBC Act: 0 NPW Act: 6

Austrostipa echinata, Spiny Spear-grass SA: R; *Centrolepis cephaloformis ssp. cephaloformis*, Cushion Centrolepis SA: R; *Crassula exserta*, Large-fruit Crassula SA: R; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew SA: V; *Myoporum parvifolium*, Creeping Boobialla SA: R; *Phyllanthus calycinus*, Snowdrop Spurge SA: R

Number of Eyre Peninsula endemic species: 2

Caladenia septuosa, Eyre Peninsula Spider-orchid; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew

Number of introduced/invasive species: 73
Average number of introduced/invasive species per site: 16.9 Maximum: 33 Minimum: 9

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Galium murale	Small Bedstraw *	Forb Herb Vine	13.1	0.004	2.9	2.1
Hypochaeris glabra	Smooth Cat's Ear *	Forb Herb Vine	8.8	0.005	2.6	1.36
Asteridea athrixioides		Forb Herb Vine	17.1	0.009	3.6	2.98
Parentucellia latifolia	Red Bartsia *	Forb Herb Vine	11.9	0.024	3.6	3.66
Leptorhynchos tetrachaetus	Little Buttons	Forb Herb Vine	15.9	0.038	5	4.61
Urospermum picroides	False Hawkbit*	Forb Herb Vine	8.5	0.049	3.3	2.55

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	80	3	0.45
Callitris gracilis	Southern Cypress Pine	47	5	3.51
Eucalyptus camaldulensis var. camaldulensis	River Red Gum	40	6	8.16
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	47	1	3.62
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	53	6	0.67
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	53	2	1.35
Acrotriche patula	Prickly Ground-berry	40	1	1.52
Comesperma volubile	Love Creeper	40	1	0.32
Grass Sedge				
Avena barbata	Bearded Oat *	80	3	1.39
Bromus rubens	Red Brome *	73	4	0.68
Austrostipa elegantissima	Feather Spear-grass	53	2	0.47
Avellinia michelii	Avellinia *	47	1	0.65
Forb Herb Vine				
Hypochaeris glabra	Smooth Cat's Ear *	93	9	0.57
Oxalis perennans	Native Sorrel	93	7	0.54
Daucus glochidiatus	Native Carrot	87	4	0.56
Anagallis arvensis	Pimpernel *	80	4	0.70
Crassula sieberiana complex	Australian Stonecrop	73	2	0.61
Galium murale	Small Bedstraw *	67	13	0.62
Clematis microphylla var. microphylla	Old Man's Beard	67	4	0.57
Asteridea athrixioides		60	17	0.91
Trifolium campestre	Hop Clover *	60	6	0.60
Arctotheca calendula	Cape Weed *	53	6	0.41
Silene nocturna	Mediterranean Catchfly *	53	4	0.48
Ptilotus spathulatus		53	2	0.45
Hedypnois rhagadioloides		47	7	0.78
Millotia muelleri	Common Bow-flower	47	6	0.48
Bulbine semibarbata	Small Leek-lily	47	3	0.49
Helichrysum leucopsideum	Satin Everlasting	47	1	0.60
Sonchus oleraceus	Common Sow-thistle *	47	1	0.45
Thysanotus patersonii	Twining Fringe-lily	47	1	0.37
Parentucellia latifolia	Red Bartsia *	40	12	0.51
Urospermum picroides	False Hawkbit *	40	8	0.46

Arthropodium minus	Small Vanilla-lily	40	5	0.37
Goodenia pusilliflora	Small-flower Goodenia	40	4	0.58
Actinobole uliginosum	Flannel Cudweed	40	3	0.51
Bupleurum semicompositum	Hare's Ear *	40	3	0.63
Millotia myosotidifolia	Broad-leaf Millotia	40	3	0.73
Erodium cicutarium	Cut-leaf Heron's-bill *	40	2	0.63
Minuartia mediterranea	Slender Sandwort *	40	2	0.54
Moraea setifolia	Thread Iris *	40	2	0.96
Wurmbea dioica	Nancy	40	1	0.39

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 COC00701, 80 WAN01801, 80 YEE01801, 80 YEE01901, 80 YEE01F25, 107 COC01101, 107 PEA00901, 128 COC00401, 128 HIN01101, 128 BAS00301, 128 BAS00601, 128 PEA00101, 128 PEA00301, 128 MAR00901, 128 MAR01001,

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Floristic Group 25: site 128 BAS00901 – 21/9/2003

Floristic Group 25. Black Grass Saw-sedge *Gahnia lanigera* Sedgeland +/- Scented Mat-rush *Lomandra effusa* / Prickly Ground-berry *Acrotriche patula* +/- overstorey of Coastal White Mallee *Eucalyptus diversifolia*

16 sites spread inland along the west coast of the study region but mostly in the Talia biogeographic subregion. This mallee over sedgeland assemblage was found on limestone plains, hill slopes and depressions with mostly sandy loam to clay loam surface soils. Calcareous rock outcrop cover was moderate (10-50% cover at 40% of sites) to low (<10% cover 30% of sites). Calcareous surface strew in the form of pebbles and cobbles ranged from <10% to 30-70% (25% of sites 30-70% cover). Fire had affected 1 site 39 years prior to sampling. Bare earth cover was low (mean 12 %, sdev 11.5), as was litter cover (mean 8%, sdev 6).

Total number of species: 212
Average number of species per site: 39.3 sdev: 11.2 Maximum: 61 Minimum: 17
Number of significant species - EPBC Act: 1 NPW Act: 4
Austrostipa echinata, Spiny Spear-grass SA: R; *Austrostipa pilata*, Prickly Spear-grass SA: V; *Poa drummondiana*, Knotted Poa SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V
Number of Eyre Peninsula endemic species: 1
Prostanthera calycina, West Coast Mintbush
Number of introduced/invasive species: 45
Average number of introduced/invasive species per site: 10 Maximum: 25 Minimum: 1

Appendix 8. Detailed Floristic Group Descriptions

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Gahnia lanigera	Black Grass Saw-sedge	grass sedge	23.3	0.001	3.3	2.05
Convolvulus angustissimus	Bindweed	Forb Herb Vine	12.1	0.041	4	4.2

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	50	1	6.47
Pittosporum angustifolium	Native Apricot	50	1	0.45
Low Shrub < 1m				
Acrotriche patula	Prickly Ground-berry	69	2	1.52
Eutaxia microphylla	Common Eutaxia	44	1	0.64
Grass Sedge				
Gahnia lanigera	Black Grass Saw-sedge	100	23	2.34
Lomandra effusa	Scented Mat-rush	56	4	0.93
Bromus rubens	Red Brome *	56	2	0.68
Avena barbata	Bearded Oat *	50	4	1.39
Austrodanthonia caespitosa	Common Wallaby-grass	50	1	0.67
Austrostipa exilis	Heath Spear-grass	50	1	0.84
Lomandra collina	Sand Mat-rush	50	1	0.50
Lepidosperma congestum		44	6	0.95
Catapodium rigidum	Rigid Fescue *	44	2	0.57
Forb Herb Vine				
Anagallis arvensis	Pimpernel *	88	3	0.70
Oxalis perennans	Native Sorrel	81	4	0.54
Helichrysum leucopsideum	Satin Everlasting	75	4	0.60
Daucus glochidiatus	Native Carrot	69	2	0.56
Tricoryne tenella	Tufted Yellow Rush-lily	56	5	0.30
Clematis microphylla var. microphylla	Old Man's Beard	56	1	0.57
Vittadinia megacephala	Giant New Holland Daisy	50	5	0.48
Goodenia willisiana	Silver Goodenia	50	4	0.49
Moraea setifolia	Thread Iris *	50	3	0.96
Bupleurum semicompositum	Hare's Ear *	50	2	0.63
Silene nocturna	Mediterranean Catchfly *	50	2	0.48
Brassica tournefortii	Wild Turnip *	50	1	0.68
Podotheca angustifolia	Sticky Long-heads	50	1	0.60
Thysanotus baueri	Mallee Fringe-lily	44	2	0.30

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 COU01A20, 80 KIA01201, 103 NIC00801, 107 CAL00201, 107 HUD04C20, 107 KAP00501, 107 MTW00701, 107 PEA00401, 107 RIP00301, 107 TAL00701, 128 STR00401, 128 BAS00901, 128 BAS01101, 128 ACR00501, 128 FOW00301, 428 OR02801,

Floristic Group 26: site 128 BAS00501 – 20/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 26. Coastal White Mallee *Eucalyptus diversifolia* +/- Mallee Box *E. porosa* over Prickly Ground-berry *Acrotriche patula* +/- Ribbed Thryptomene *Thryptomene micrantha* / Horned Hop-bush *Dodonaea hexandra* / Black Grass Saw-sedge *Gahnia lanigera* / Dryland Tea-tree *Melaleuca lanceolata*

32 sites common in the Talia biogeographic subregion. This mallee assemblage was common on limestone plains with clayey sand to clay loam surface soils. Calcareous rock outcrop was common (90% of sites) with low to moderate cover. Calcareous surface strew in the form of cobbles or pebbles ranged from <10% to >70%. Fire had affected 28% of sites ranging from 11-99 years prior to sampling (mean 37 yrs). Bare earth cover was low (mean 9%, sdev 11). Litter cover was moderate (mean 25%, sdev 20).

Total number of species: 334
Average number of species per site: 52.9 sdev: 14 Maximum: 80 Minimum: 23
Number of significant species - EPBC Act: 2 NPW Act: 11

Acacia alcockii, Alcock's Wattle SA: R; *Austrostipa pilata*, Prickly Spear-grass SA: V; *Caladenia bicalliata ssp. bicalliata*, Western Daddy-long-legs SA: R; *Caladenia tensa*, Inland Green-comb Spider-orchid AUS: EN ; *Calandrinia sphaerophylla*, Bead Purslane SA: R; *Centrolepis cephaloformis ssp. cephaloformis*, Cushion Centrolepis SA: R; *Grevillea pauciflora*, Narrow-leaf Grevillea SA: R; *Lobelia gibbosa complex*, SA: R; *Microlepidium pilosulum*, Hairy Shepherd's-purse SA: R; *Phyllanthus calycinus*, Snowdrop Spurge SA: R; *Prasophyllum calcicola*, Limestone Leek-orchid SA: V; *Prasophyllum fecundum*, Self-pollinating Leek-orchid SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V

Number of Eyre Peninsula endemic species: 6

Acacia alcockii, Alcock's Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Calandrinia sphaerophylla*, Bead Purslane; *Grevillea pauciflora*, Narrow-leaf Grevillea; *Hakea cycloptera*, Elm-seed Hakea; *Prostanthera calycina*, West Coast Mintbush

Number of introduced/invasive species: 63
Average number of introduced/invasive species per site: 11.2 Maximum: 23 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Thryptomene micrantha	Ribbed Thryptomene	Low Shrub < 1m	8.7	0.047	3.6	2.83

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	88	6	6.47
Pittosporum angustifolium	Native Apricot	66	1	0.45
Eucalyptus porosa	Mallee Box	47	5	4.75
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	53	1	3.62
Low Shrub < 1m				
Acrotriche patula	Prickly Ground-berry	84	5	3.62
Eutaxia microphylla	Common Eutaxia	50	1	1.52
Thryptomene micrantha	Ribbed Thryptomene	47	9	0.64
Dodonaea hexandra	Horned Hop-bush	47	5	1.70
Comesperma volubile	Love Creeper	44	0	1.30
Grass Sedge				
Avena barbata	Bearded Oat *	84	3	1.39
Gahnia lanigera	Black Grass Saw-sedge	66	3	2.34
Bromus rubens	Red Brome *	66	2	0.68
Austrodanthonia caespitosa	Common Wallaby-grass	56	1	0.67
Avellinia michelii	Avellinia *	47	2	0.65
Lepidosperma congestum		41	2	0.95
Forb Herb Vine				
Daucus glochidiatus	Native Carrot	91	3	0.56
Oxalis perennans	Native Sorrel	78	4	0.54
Helichrysum leucopsideum	Satin Everlasting	78	3	0.60
Anagallis arvensis	Pimpernel *	78	2	0.70
Clematis microphylla var. microphylla	Old Man's Beard	75	2	0.57
Hypochaeris glabra	Smooth Cat's Ear *	72	3	0.57
Blennospora drummondii	Dwarf Button-flower	59	5	0.61
Galium murale	Small Bedstraw *	59	2	0.62
Linum marginale	Native Flax	50	6	0.40
Thysanotus patersonii	Twining Fringe-lily	50	1	0.37
Podolepis tepperi	Delicate Copper-wire Daisy	47	4	0.53
Vittadinia megacephala	Giant New Holland Daisy	44	5	0.48
Asteridea athrixioides		44	2	0.91
Brachyscome lineariloba	Hard-head Daisy	44	2	0.53
Bulbine semibarbata	Small Leek-lily	44	2	0.49
Lagenophora huegelii	Coarse Bottle-daisy	44	2	0.67
Crassula sieberiana complex	Australian Stonecrop	44	1	0.61
Minuartia mediterranea	Slender Sandwort *	41	2	0.54

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Appendix 8. Detailed Floristic Group Descriptions

Sites in Group (Survey number Site Identification code)**:**

80 CUM00901, 80 KIA00303, 80 KIA00401, 80 KIA01801, 107 ADD01001, 107 CAL00301, 107 HUD00801, 107 HUD01101, 107 INK01001, 107 KAP00401, 107 KAP01001, 107 MUR00701, 107 PEA00701, 107 PEA00801, 107 SHE00401, 107 TAL00901, 107 VEN00101, 107 VEN00301, 110 VEN00101, 110 VEN00107, 110 VEN00108, 110 VEN00109, 128 COC00301, 128 BAS00401, 128 BAS00501, 128 BAS00801, 128 COC00701, 128 COC00801, 128 PEA00201, 128 PEA00401, 128 PEA00501, 128 PEA00901,

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Cluster 12. Coastal Red Mallee and Boree Tall Shrubland on loamy plains.

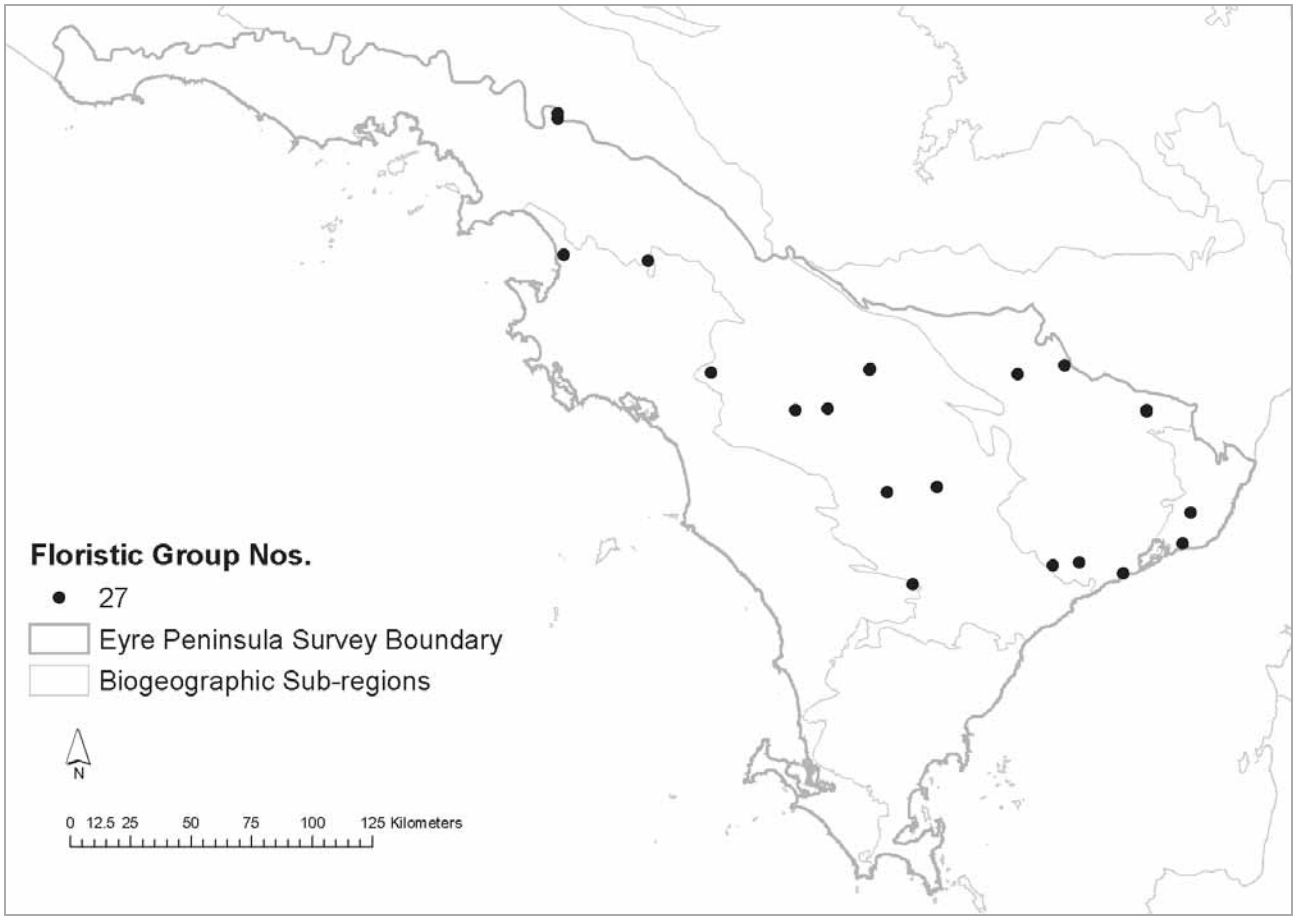
21 sites in 1 group

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 5 sites - *Smicrornis brevirostris,* Weebill, 4; *Colluricincla harmonica,* Grey Shrike-thrush, 4; *Lichenostomus leucotis,* White-eared Honeyeater, 4; *Acanthiza apicalis,* Inland Thornbill, 3; *Strepera versicolor,* Grey Currawong, 3; *Phaps chalcoptera,* Common Bronzewing, 3; *Pachycephala pectoralis,* Golden Whistler, 3; *Phylidonyris albifrons,* White-fronted Honeyeater, 3

MAMMALS 5 sites - *Macropus fuliginosus,* Western Grey Kangaroo, 2; **Oryctolagus cuniculus,* Rabbit, 2; *Cercartetus concinnus,* Western Pygmy-possum, 2; *Sminthopsis dolichura,* Little Long-tailed Dunnart, 2

REPTILES 5 sites - *Tiliqua rugosa,* Sleepy Lizard, 3; *Lerista edwardsae,* Myall Slider, 3; *Menetia greyii,* Dwarf Skink, 2; *Lerista dorsalis,* Southern Four-toed Slider, 2; *Ctenotus schomburgkii,* Sandplain Ctenotus, 2; *Ctenophorus cristatus,* Crested Dragon, 2



Floristic Group 27. Coastal Red Mallee *Eucalyptus oleosa,* Boree *Melaleuca pauperiflora* Mallee / Shrubland

21 sites in the north central to north-eastern part of the study area. This mallee and tall shrub over sparse chenopod low shrub assemblage was most common on plains and interdune corridors (70% of sites) with loamy sand to clay loam surface soils. Rock outcrop was absent. Surface strew was present at 80% of sites mostly as pebbles with <10% cover, mostly calcareous but also as quartz and quartzite. Fire had affected 2 sites 42 and 98 years prior to sampling. Bare earth cover was moderate (mean 22%, sdev 23) as was litter cover (mean 25%, sdev 20).

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 164
Average number of species per site: 22.4 sdev: 9.4 Maximum: 40 Minimum: 8
Number of significant species - EPBC Act: 0 NPW Act: 2
Lobelia gibbosa complex SA: R; *Poa fax*, Scaly Poa SA: R;
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 35
Average number of introduced/invasive species per site: 5.1 Maximum: 17 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Melaleuca pauperiflora ssp. mutica	Boree Y	Tree	60.3	0.001	3.4	2.86

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Melaleuca pauperiflora ssp. mutica	Boree Y	100	60	5.67
Eucalyptus oleosa	Coastal Red Mallee	81	7	5.31
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	52	3	0.67
Sclerolaena diacantha group	Bindyi	52	1	0.95
Maireana erioclada	Rosy Bluebush	48	2	0.74
Chenopodium curvispicatum	Cottony Goosefoot	43	4	0.34
Rhagodia crassifolia	Fleshy Saltbush	43	1	0.98
Grass Sedge				
Schismus barbatus	Arabian Grass *	43	4	0.55
Forb Herb Vine				
Calandrinia eremaea	Dryland Purslane	48	1	0.56

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 KU00401, 103 NIL00901, 103 BAR01301, 103 VER00401, 103 WIL01201, 103 WIL00901, 103 ARN00301, 103 GIB00301, 113 NUN00201, 113 NUN00301, 107 COU00301, 107 CUN00701, 107 KYA00301, 107 MUR00302, 107 PAL01001, 107 PAL01101, 128 COR00701, 131 NIC00501, 128 CAR01001, 128 GIL00501, 128 HAM00501

Floristic Group 27: site 128 GIL00501 – 1/10/2002

Appendix 8. Detailed Floristic Group Descriptions

Cluster 13. Floristic groups with Bladder Saltbush Low Shrublands, restricted to the drier more arid parts of the study area.

28 sites in 3 floristic groups

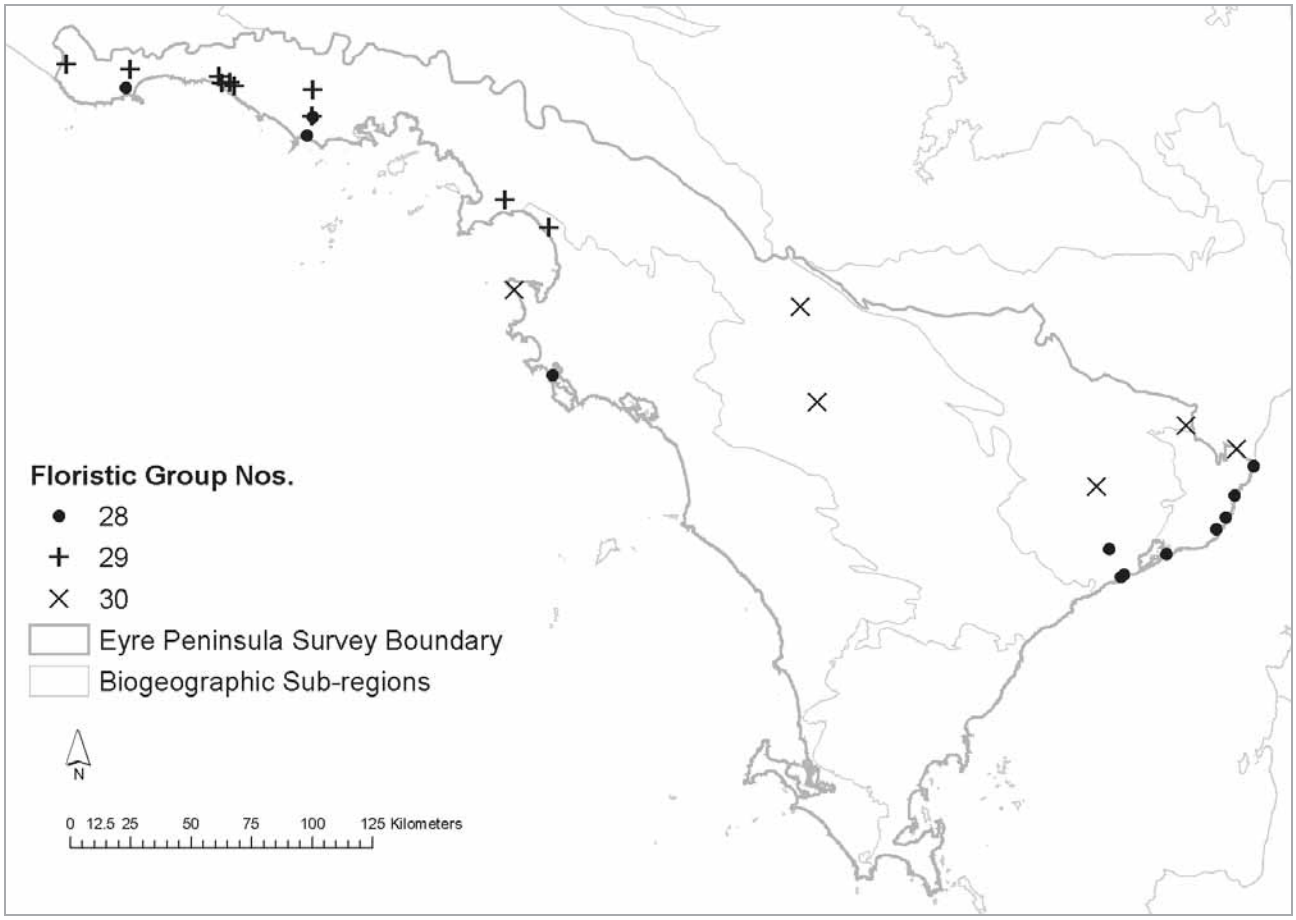
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Tree	*Eucalyptus gracilis*	Yorrell	12	42.86	5.06
Shrub > 1m	*Geijera linearifolia*	Sheep Bush	20	71.43	5.37
Shrub > 1m	*Exocarpos aphyllus*	Leafless Cherry	14	50.00	1.02
Low Shrub < 1m	*Atriplex vesicaria*	Bladder Saltbush	22	78.57	6.67
Low Shrub < 1m	*Rhagodia crassifolia*	Fleshy Saltbush	18	64.29	2.36
Low Shrub < 1m	*Sclerolaena diacantha group*	Bindyi	14	50.00	2.16
Forb Herb Vine	*Disphyma crassifolium ssp. clavellatum*	Round-leaf Pigface	15	53.57	2.57

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 15 sites - *Smicrornis brevirostris,* Weebill, 13; *Colluricincla harmonica,* Grey Shrike-thrush, 12; *Pardalotus striatus,* Striated Pardalote, 11; *Acanthiza apicalis,* Inland Thornbill, 9; *Cracticus torquatus,* Grey Butcherbird, 9; *Zosterops lateralis,* Silvereye, 9; *Pomatostomus superciliosus,* White-browed Babbler, 8; *Rhipidura leucophrys,* Willie Wagtail, 8; *Lichenostomus virescens,* Singing Honeyeater, 8; *Coracina novaehollandiae,* Black-faced Cuckoo-shrike, 8

MAMMALS 15 sites - ****Mus musculus***, House Mouse, 8; **Vulpes vulpes,* Fox, 5; *Macropus fuliginosus,* Western Grey Kangaroo, 4; **Oryctolagus cuniculus,* Rabbit, 4

REPTILES 15 sites - *Morethia obscura,* Mallee Snake-eye, 12; *Tiliqua rugosa,* Sleepy Lizard, 8; *Lerista edwardsae,* Myall Slider, 8; *Diplodactylus calcicolus,* South Coast Gecko, 8



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 28. Sheep Bush *Geijera linearifolia* Shrubland +/- Bladder Saltbush *Atriplex vesicaria* / Round-leaf Pigface *Disphyma crassifolium* +/- emergent Eucalypt spp.

12 sites mostly along the north-east coast with scattered occurrence along the north-west coast. This shrubland to mallee/woodland assemblage was mostly found on plains with sand to sandy loam soils. Rock outcrop was limited to 1 site with <10% cover of calcareous material. Calcareous surface strew was limited to 25% of sites with 1-30% cover. One site had been burnt 31 years prior to sampling. Bare earth cover was moderate (mean 21.5%, sdev 13). Litter cover was low (mean 14.5%,sdev 8).

Total number of species: 167
Average number of species per site: 32.3 sdev: 15.8 Maximum: 55 Minimum: 6
Number of significant species - EPBC Act: 0 NPW Act: 3
Maireana rohrlachii, Rohrlach's Bluebush SA: R; *Microlepidium pilosulum*, Hairy Shepherd's-purse SA: R; *Podolepis jaceoides*, Showy Copper-wire Daisy SA: R;
Number of Eyre Peninsula endemic species: 1
Eucalyptus peninsularis, Merrit
Number of introduced/invasive species: 29
Average number of introduced/invasive species per site: 5.3 Maximum: 17 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Geijera linearifolia	Sheep Bush	Shrub > 1m	24.9	0.001	3.2	1.97
Cratystylis conocephala	Bluebush Daisy	Low Shrub < 1m	12.8	0.05	3.9	3.53
Myoporum platycarpum		Tree	11.8	0.064	4.7	4.71

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Geijera linearifolia	Sheep Bush	100	25	2.12
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	67	1	0.67
Atriplex vesicaria	Bladder Saltbush	58	12	3.40
Frankenia pauciflora		50	3	0.98
Maireana erioclada	Rosy Bluebush	50	2	0.74
Rhagodia crassifolia	Fleshy Saltbush	50	1	0.98
Senecio pinnatifolius group	Groundsel	50	1	0.90
Cratystylis conocephala	Bluebush Daisy	42	13	2.80
Threlkeldia diffusa	Coast Bonefruit	42	0	0.99
Grass Sedge				
Austrostipa elegantissima	Feather Spear-grass	42	1	0.47
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	75	1	1.07
Carrichtera annua	Ward's Weed *	67	2	1.80
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	58	6	1.44
Senecio glossanthus group	Groundsel	58	2	0.53
Crassula sieberiana complex	Australian Stonecrop	50	1	0.61
Brachyscome lineariloba	Hard-head Daisy	42	1	0.53
Medicago minima var. minima	Little Medic *	42	1	0.99

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 WIT00202, 82 COW00103, 82 GIB00101, 103 MAN01201, 103 WIL00801, 103 WIL00601, 103 GIB00302, 179 COA00301, 128 CED00801, 128 CED01001, 428 OR03101, 128 MUN00102,

Floristic Group 28: site 128 CAR01001 – 21/9/2005

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 29. Yorrell *Eucalyptus gracilis* / White Mallee *E. phenax* / Gilja *E. brachycalyx* Mallee +/- Boree *Melaleuca pauperiflora* over Sheep Bush *Geijera linearifolia,* Fleshy Saltbush *Rhagodia crassifolia* +/- Bladder Saltbush *Atriplex vesicaria* / Bindyi *Sclerolaena diacantha* group / Native Pigface *Carpobrotus rossii*

10 sites adjacent to the far west coast in the Eyre Mallee biogeographic subregion. This mallee assemblage was found on a variety of dune, hill slope and plain locations with mostly sandy loam surface soils. Calcareous rock outcrop was present at 30% of sites with cover <10%. Calcareous surface strew was present at 70% of sites in the form of pebbles and cobbles, mostly covering <10%. Fire history was absent. Bare earth cover was moderate (mean 23%, sdev 15) as was litter cover (mean 39%, sdev 23).

Total number of species: 94
Average number of species per site: 27.7 sdev: 10.2 Maximum: 46 Minimum: 16
Number of significant species - EPBC Act: 0 NPW Act: 1
Poa drummondiana, Knotted Poa SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 22
Average number of introduced/invasive species per site: 5.9 Maximum: 16 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Rhagodia crassifolia	Fleshy Saltbush	Low Shrub < 1m	29.2	0.001	3.7	2.49
Sclerolaena diacantha group	Bindyi	Low Shrub < 1m	18.9	0.005	3.5	2.66
Stellaria pallida	Lesser Starwort	Forb Herb Vine	40	0.006	5.4	4.84
Senecio glossanthus group	Groundsel	Forb Herb Vine	5.3	0.067	2.4	1.4

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus gracilis	Yorrell	80	8	4.40
Melaleuca pauperiflora ssp. mutica	Boree Y	70	10	5.67
Eucalyptus phenax	White Mallee	50	4	4.13
Eucalyptus brachycalyx	Gilja	40	2	5.05
Shrub > 1m				
Exocarpos aphyllus	Leafless Cherry	80	4	0.61
Geijera linearifolia	Sheep Bush	70	4	2.12
Melaleuca lanceolata	Dryland Tea-tree	60	1	3.62
Low Shrub < 1m				
Rhagodia crassifolia	Fleshy Saltbush	100	29	0.98
Sclerolaena diacantha group	Bindyi	80	19	0.95
Atriplex vesicaria	Bladder Saltbush	80	16	3.40
Threlkeldia diffusa	Coast Bonefruit	80	3	0.99
Maireana erioclada	Rosy Bluebush	40	1	0.74
Grass Sedge				
Rostraria cristata	Annual Cat's-tail *	70	4	0.70
Avellinia michelii	Avellinia *	60	2	0.65
Schismus barbatus	Arabian Grass *	50	7	0.55
Vulpia myuros	Fescue *	50	1	0.93
Forb Herb Vine				
Senecio glossanthus group	Groundsel	90	5	0.53
Carpobrotus rossii	Native Pigface	70	11	1.24
Crassula sieberiana complex	Australian Stonecrop	70	2	0.61
Brachyscome lineariloba	Hard-head Daisy	50	1	0.53
Calandrinia eremaea	Dryland Purslane	50	1	0.56
Sonchus oleraceus	Common Sow-thistle *	50	1	0.45
Stellaria pallida	Lesser Starwort *	40	40	0.30
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	40	3	1.44
Pterostylis mutica	Midget Greenhood	40	1	0.29
Mistletoe				
Amyema melaleucae	Tea-tree Mistletoe	40	6	0.38

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

107 HAS00101, 128 ACR00601, 128 CHA00201, 128 CHA00301, 128 CHA00501, 128 CHA00601, 128 CED00501, 128 CED00701, 128 FOW00601, 128 FOW00701,

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 29: site 128 CHA00501 – 26/9/2005

Floristic Group 30: site 107 YAN00601 – 13/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 30. Bladder Saltbush *Atriplex vesicaria* Low Shrubland +/- Round-leaf Pigface *Disphyma crassifolium* / Little Medic * *Medicago minima var. minima* / Blue Barley-grass **Hordeum glaucum*

6 sites scattered across the northern part of the study area. This low shrubland group occurred on a variety of landforms types including plains, hill slopes and dunes with sand to sandy clay loam surface soils. Rock outcrop was present at the two most north-easterly sites as <10% laterite associated with an escarpment and 10-50% cover of granite on a hill footslope. Surface strew cover at two sites ranged from 10-70% mimicking outcrop lithology and cover, and at a third had <10% cover of sheet limestone. Fire history was not present. Bare earth cover was low (mean 10.5%, sdev 12). Litter cover was also low (mean 12%, sdev 11).

Total number of species: 112
Average number of species per site: 28 sdev: 8.9 Maximum: 41 Minimum: 15
Number of significant species - EPBC Act: 1 NPW Act: 1
Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 26
Average number of introduced/invasive species per site: 7.7 Maximum: 16 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Atriplex vesicaria	Bladder Saltbush	Low Shrub < 1m	40.9	0.001	3.7	3
Rhagodia ulicina	Intricate Saltbush	Low Shrub < 1m	27	0.013	5.7	5.16
Alectryon oleifolius ssp. canescens	Bullock Bush	Tree	23.1	0.019	5.1	4.81
Eremophila oppositifolia ssp. oppositifolia	Opposite-leaved Emubush	Shrub > 1m	16.5	0.049	6.2	5.18

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	50	0	0.45
Low Shrub < 1m				
Atriplex vesicaria	Bladder Saltbush	100	41	3.40
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	67	1	0.67
Sclerolaena diacantha group	Bindyi	50	1	0.95
Grass Sedge				
Vulpia myuros	Fescue *	67	2	0.93
Hordeum glaucum	Blue Barley-grass *	50	6	0.73
Bromus rubens	Red Brome *	50	2	0.68
Austrostipa nitida	Balcarra Spear-grass	50	0	0.96
Forb Herb Vine				
Medicago minima var. minima	Little Medic *	50	5	0.99
Sonchus oleraceus	Common Sow-thistle *	50	5	0.45
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	50	4	1.44
Bupleurum semicompositum	Hare's Ear *	50	2	0.63
Erodium cicutarium	Cut-leaf Heron's-bill *	50	2	0.63
Brachyscome lineariloba	Hard-head Daisy	50	1	0.53

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

107 PAL00801, 107 STR00101, 107 YAN00601, 128 HEG00701, 128 MUN00601, 599 SHI00701

Appendix 8. Detailed Floristic Group Descriptions

Cluster 14. Floristic groups related through native tussock grassland understorey spp. on clay and loam plains.

33 sites in 3 floristic groups

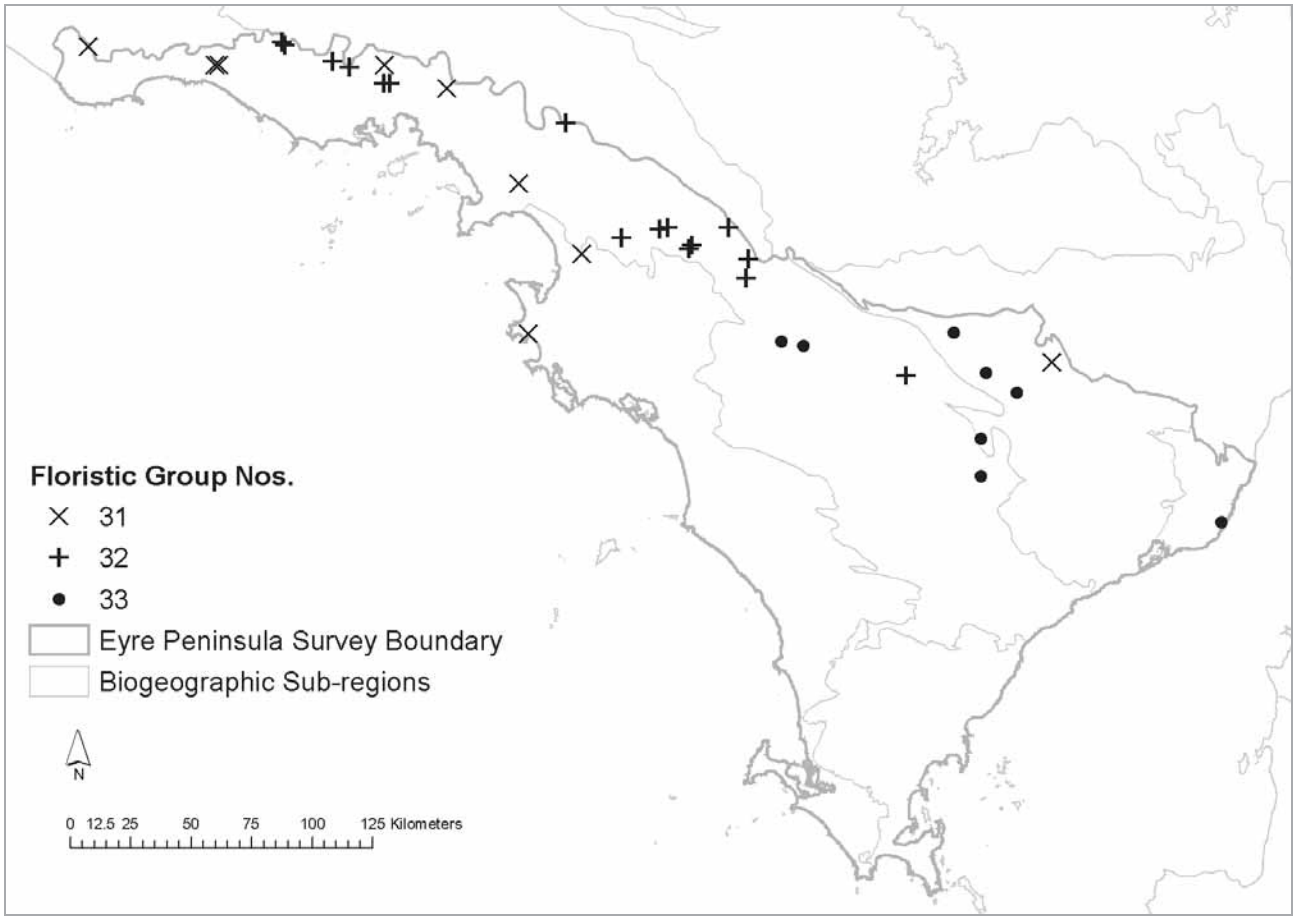
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Shrub > 1m	*Acacia nyssophylla*	Spine Bush	16	48	2.49
Shrub > 1m	*Geijera linearifolia*	Sheep Bush	16	48	1.45
Low Shrub < 1m	*Zygophyllum ovatum*	Dwarf Twinleaf	16	48	1.10
Low Shrub < 1m	*Scaevola spinescens*	Spiny Fanflower	15	45	3.76
Low Shrub < 1m	*Westringia rigida*	Stiff Westringia	14	42	3.37
grass sedge	*Austrodanthonia caespitosa*	Common Wallaby-grass	23	70	1.10
grass sedge	*Austrostipa nitida*	Balcarra Spear-grass	21	64	3.18
Forb Herb Vine	*Carrichtera annua*	Ward's Weed *	27	82	3.22
Forb Herb Vine	*Trichanthodium skirrophorum*	Woolly Yellow-heads	16	48	2.61

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 10 sites - *Barnardius zonarius*, Australian Ringneck, 7; *Smicrornis brevirostris*, Weebill, 6; *Acanthiza apicalis*, Inland Thornbill, 6; *Acanthagenys rufogularis*, Spiny-cheeked Honeyeater, 6; *Eolophus roseicapilla*, Galah, 6; *Pomatostomus superciliosus*, White-browed Babbler, 5; *Coracina novaehollandiae*, Black-faced Cuckoo-shrike, 5

MAMMALS 10 sites - ****Mus musculus***, House Mouse, 7; **Oryctolagus cuniculus*, Rabbit, 4; *Macropus fuliginosus*, Western Grey Kangaroo, 2; *Notomys mitchellii*, Mitchell's Hopping-mouse, 2; *Cercartetus concinnus*, Western Pygmy-possum, 2; *Sminthopsis crassicaudata*, Fat-tailed Dunnart, 2

REPTILES 10 sites - *Tiliqua rugosa*, Sleepy Lizard, 6; *Ctenotus schomburgkii*, Sandplain Ctenotus, 5; *Ctenophorus cristatus*, Crested Dragon, 4



Appendix 8. Detailed Floristic Group Descriptions

Floristic Groups 31. Balcarra Spear-grass *Austrostipa nitida* Tussock Grassland +/- Woolly Yellow-heads *Trichanthodium skirrophorum* / Cottony Spear-grass *A. drummondii* / Common Wallaby-grass *Austrodanthonia caespitosa*

9 sites mostly along the north western boundary of the study area with isolated occurrences from Streaky bay to Ceduna and near Buckleboo. This grassland assemblage was found on plains and flats with loamy sand to sandy clay loam surface soils. Rock outcrop was nil or not recorded. Surface strew cover was present as calcareous pebbles and cobbles at 45% of sites with 1-30% cover. Fire history was not detected. Bare earth cover moderate (mean 33%, sdev 23). Litter cover was generally low but variable (mean 9%, sdev 22).

Total number of species: 86
Average number of species per site: 20.6 sdev: 5.3 Maximum: 31 Minimum: 14
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 24
Average number of introduced/invasive species per site: 6.7 Maximum: 9 Minimum: 2

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Austrostipa nitida	Balcarra Spear-grass	grass sedge	38.2	0.001	3.8	2.71
Trichanthodium skirrophorum	Woolly Yellow-heads	Forb Herb Vine	26.8	0.005	4	3.78
Solanum hystrix	Afghan Thistle	Forb Herb Vine	22.2	0.017	5.7	5.01
Centaurium erythraea	Common Centaury	Forb Herb Vine	17.5	0.026	5.4	5.03
Wahlenbergia luteola	Yellow-wash Bluebell	Forb Herb Vine	15.2	0.038	4	3.92
Velleia arguta	Toothed Velleia	Forb Herb Vine	14.3	0.042	4.1	4.02

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Grass Sedge				
Austrostipa nitida	Balcarra Spear-grass	100	38	0.96
Austrodanthonia caespitosa	Common Wallaby-grass	78	4	0.67
Austrostipa eremophila	Rusty Spear-grass	67	7	1.03
Vulpia myuros	Fescue *	67	3	0.93
Austrostipa drummondii	Cottony Spear-grass	56	7	1.05
Rostraria cristata	Annual Cat's-tail *	56	3	0.70
Bromus rubens	Red Brome *	56	2	0.68
Forb Herb Vine				
Trichanthodium skirrophorum	Woolly Yellow-heads	78	27	1.97
Carrichtera annua	Ward's Weed *	67	4	1.80
Teucrium sessiliflorum	Mallee Germander	44	8	0.55
Bupleurum semicompositum	Hare's Ear *	44	2	0.63
Brassica tournefortii	Wild Turnip *	44	1	0.68

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Floristic Group 31: site 128 ACR00801 – 8/12/2005

Sites in Group (Survey number Site Identification code)**:**

46 TG031, 46 TG026, 46 TG025, 46 TG030, 46 TG029, 46 TG027, 103 KIM00301, 179 COA00602, 128 ACR00801

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 32. Spine Bush *Acacia nyssophylla* / Sheep Bush *Geijera linearifolia* / Desert Senna *Senna artemisioides ssp. petiolaris* Open Shrubland over Stiff Westringia *Westringia rigida* / Spiny Fanflower *Scaevola spinescens* / Woolly Yellow-heads *Trichanthodium skirrophorum* +/- an overstorey of Southern Cyperus Pine *Callitris gracilis* or Black Oak *Casuarina pauper*

16 sites restricted to the northern inland section of the Eyre Mallee biogeographic subregion. This shrubland to woodland group was characteristic of flats and depressions but extended into plains and interdune corridors. Surface soils ranged from loamy sand to light clay (clay loams 55% of sites). Calcareous rock outcrop cover ranged from <10% to 50% at 35% of sites. Calcareous surface strew was present at 75% of sites, mostly as pebbles with cover of 1-30%. Fire history was detected for 1 site that was burnt 19 years prior to sampling. Bare earth cover was low (mean 13%, sdev 12). Litter cover was mostly low (mean 14%, sdev 14).

Total number of species: 149
Average number of species per site: 32.6 sdev: 9.6 Maximum: 53 Minimum: 21
Number of significant species - EPBC Act: 1 NPW Act: 2
Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V; *Templetonia battii*, Spiny Templetonia SA: R;
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 23
Average number of introduced/invasive species per site: 4.9 Maximum: 12 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Acacia nyssophylla	Spine Bush	Shrub > 1m	50.5	0.001	4.5	4.43
Carrichtera annua	Ward's Weed	Forb Herb Vine	16	0.003	3.3	2.45
Westringia rigida	Stiff Westringia	Low Shrub < 1m	15.3	0.004	3.5	2.3
Maireana trichoptera	Hairy-fruit Bluebush	Low Shrub < 1m	15.8	0.015	3.9	3.38
Zygophyllum ovatum	Dwarf Twinleaf	Low Shrub < 1m	11.6	0.018	3.2	2.66
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	Low Shrub < 1m	8	0.037	3.2	2.61
Brachyscome trachycarpa	Smooth Daisy	Forb Herb Vine	15.3	0.044	5.1	5.24
Senna artemisioides ssp. petiolaris	Desert Senna	Shrub > 1m	13.5	0.048	5.1	5.22
Senna artemisioides ssp. X coriacea	Desert Senna	Shrub > 1m	14.9	0.049	5.5	4.81

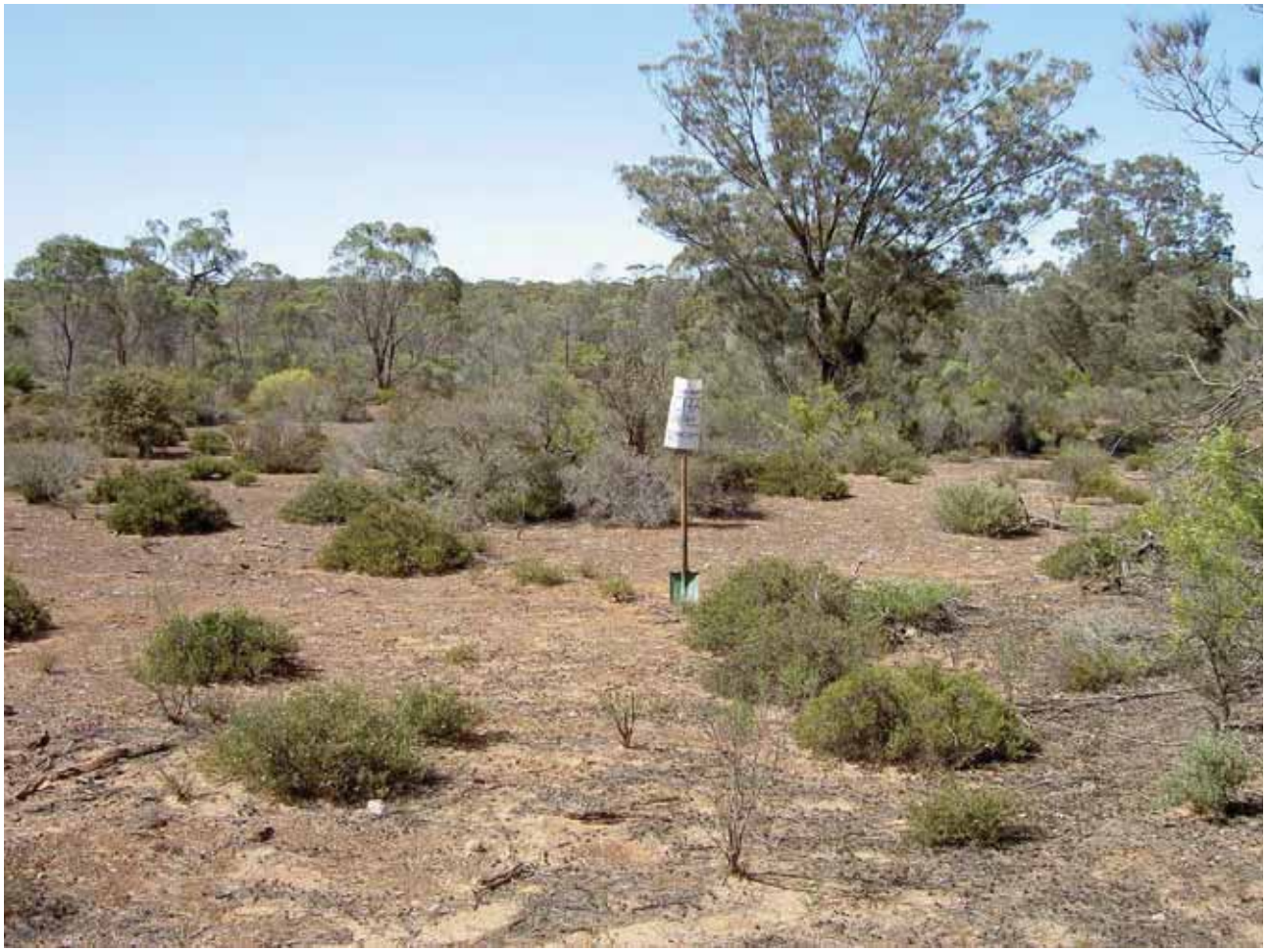
Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	56	2	0.45
Acacia oswaldii	Umbrella Wattle	50	11	0.44
Shrub > 1m				
Acacia nyssophylla	Spine Bush	88	51	1.43
Geijera linearifolia	Sheep Bush	81	3	2.12
Exocarpos aphyllus	Leafless Cherry	69	1	0.61
Senna artemisioides ssp. petiolaris	Desert Senna	50	13	0.83
Eremophila glabra ssp. glabra	Tar Bush	50	6	0.33
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	75	4	0.67
Westringia rigida	Stiff Westringia	69	15	1.32
Zygophyllum ovatum	Dwarf Twinleaf	69	12	0.64
Maireana trichoptera	Hairy-fruit Bluebush	56	16	0.65
Comesperma volubile	Love Creeper	56	3	0.32
Scaevola spinescens	Spiny Fanflower	50	15	1.10
Olearia magniflora	Splendid Daisy-bush	50	12	0.62
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	50	8	0.44
Chenopodium curvispicatum	Cottony Goosefoot	44	5	0.34
Rhagodia crassifolia	Fleshy Saltbush	44	1	0.98
Grass Sedge				
Austrodanthonia caespitosa	Common Wallaby-grass	63	3	0.67
Austrostipa elegantissima	Feather Spear-grass	63	2	0.47
Forb Herb Vine				
Carrichtera annua	Ward's Weed *	94	16	1.80
Trichanthodium skirrophorum	Woolly Yellow-heads	56	13	1.97
Helichrysum leucopsideum	Satin Everlasting	50	1	0.60
Sonchus oleraceus	Common Sow-thistle *	50	1	0.45

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 KOO00201, 107 CHI00401, 107 CHI01101, 107 CUN00201, 107 CUN00401, 107 POO00301, 128 KER00101, 128 KER01101, 128 KER01201, 127 KOO00901, 128 ACR01101, 128 CHA00701, 128 CHA00901, 128 CHA01001, 128 CED00101, 128 CED00401

Appendix 8. Detailed Floristic Group Descriptions



Florsitic Group 32: site 128 CHA00701 – 14/12/2005

Florsitic Group 33: site 103 DAR00801 – 21/10/1998

Appendix 8. Detailed Floristic Group Descriptions

Floristic Groups 33. Black Oak *Casuarina pauper* Woodland over Spiny Fanflower *Scaevola spinescens* / Feather Spear-grass *Austrostipa elegantissima* / Balcarra Spear-grass *Austrostipa nitida* +/- Rosy Bluebush *Maireana erioclada*

8 sites in the central northern part of the study area. This woodland assemblage occurred on plains and hill slopes with clay loam and sandy loam surface soils. Rock outcrop was mostly absent except for a <10% cover of schist at one site. Surface strew was similarly rare, present at two sites as calcareous pebbles and as quartzite with limited cover (<10%). Fire history was absent. Bare earth cover was minimal (mean 7%, sdev 7). Litter cover was moderate (mean 26%, sdev 25).

Total number of species: 132
Average number of species per site: 38.5 sdev: 9.1 Maximum: 45 Minimum: 17
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 31
Average number of introduced/invasive species per site: 9 Maximum: 13 Minimum: 3

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Sisymbrium erysimoides	Smooth Mustard *	Forb Herb Vine	65.2	0.001	4.2	3.81
Casuarina pauper	Black Oak	Tree	57	0.001	4.4	4.29
Scaevola spinescens	Spiny Fanflower	Low Shrub < 1m	41.9	0.002	4.5	4.17
Hordeum glaucum	Blue Barley-grass *	grass sedge	30.3	0.002	4.3	3.52
Maireana erioclada	Rosy Bluebush	Low Shrub < 1m	16.9	0.013	3.8	3.09
Cleretum papulosum ssp. papulosum		Forb Herb Vine	25	0.018	5.8	5.28
Schismus barbatus	Arabian Grass *	grass sedge	8.9	0.035	3.3	2.8

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Casuarina pauper	Black Oak	75	57	6.09
Pittosporum angustifolium	Native Apricot	50	1	0.45
Shrub > 1m				
Alyxia buxifolia	Sea Box	50	0	1.29
Low Shrub < 1m				
Scaevola spinescens	Spiny Fanflower	88	42	1.10
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	75	2	0.67
Rhagodia preissii ssp. preissii	Mallee Saltbush	63	3	0.37
Maireana erioclada	Rosy Bluebush	50	17	0.74
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	50	7	0.44
Maireana enchylaenoides	Wingless Fissure-plant	50	7	0.29
Sclerolaena obliquicuspis	Oblique-spined Bindyi	50	7	0.35
Einadia nutans ssp. nutans	Climbing Saltbush	50	3	0.42
Grass Sedge				
Austrostipa elegantissima	Feather Spear-grass	88	3	0.47
Hordeum glaucum	Blue Barley-grass *	75	30	0.73
Austrostipa nitida	Balcarra Spear-grass	75	15	0.96
Austrodanthonia caespitosa	Common Wallaby-grass	75	4	0.67
Schismus barbatus	Arabian Grass *	63	9	0.55
Austrostipa platychaeta	Flat-awn Spear-grass	50	9	0.50
Forb Herb Vine				
Sisymbrium erysimoides	Smooth Mustard *	88	65	0.90
Calandrinia eremaea	Dryland Purslane	88	4	0.56
Crassula colorata		88	4	0.58
Carrichtera annua	Ward's Weed *	75	14	1.80
Crassula sieberiana complex	Australian Stonecrop	75	2	0.61
Brassica tournefortii	Wild Turnip *	50	9	0.68
Brachyscome lineariloba	Hard-head Daisy	50	2	0.53
Podolepis capillaris	Wiry Podolepis	50	2	0.65
Senecio glossanthus group	Groundsel	50	1	0.53

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 BUC00601, 103 KIM00501, 103 DAR00501, 103 DAR00801, 103 PAN00301, 103 WIL00701, 107 YAN01101, 107 YAN01201

Appendix 8. Detailed Floristic Group Descriptions

Cluster 15. Southern Cypress Pine Woodlands on hills and plains of central-northern Eyre Peninsula

37 sites in 2 floristic groups.

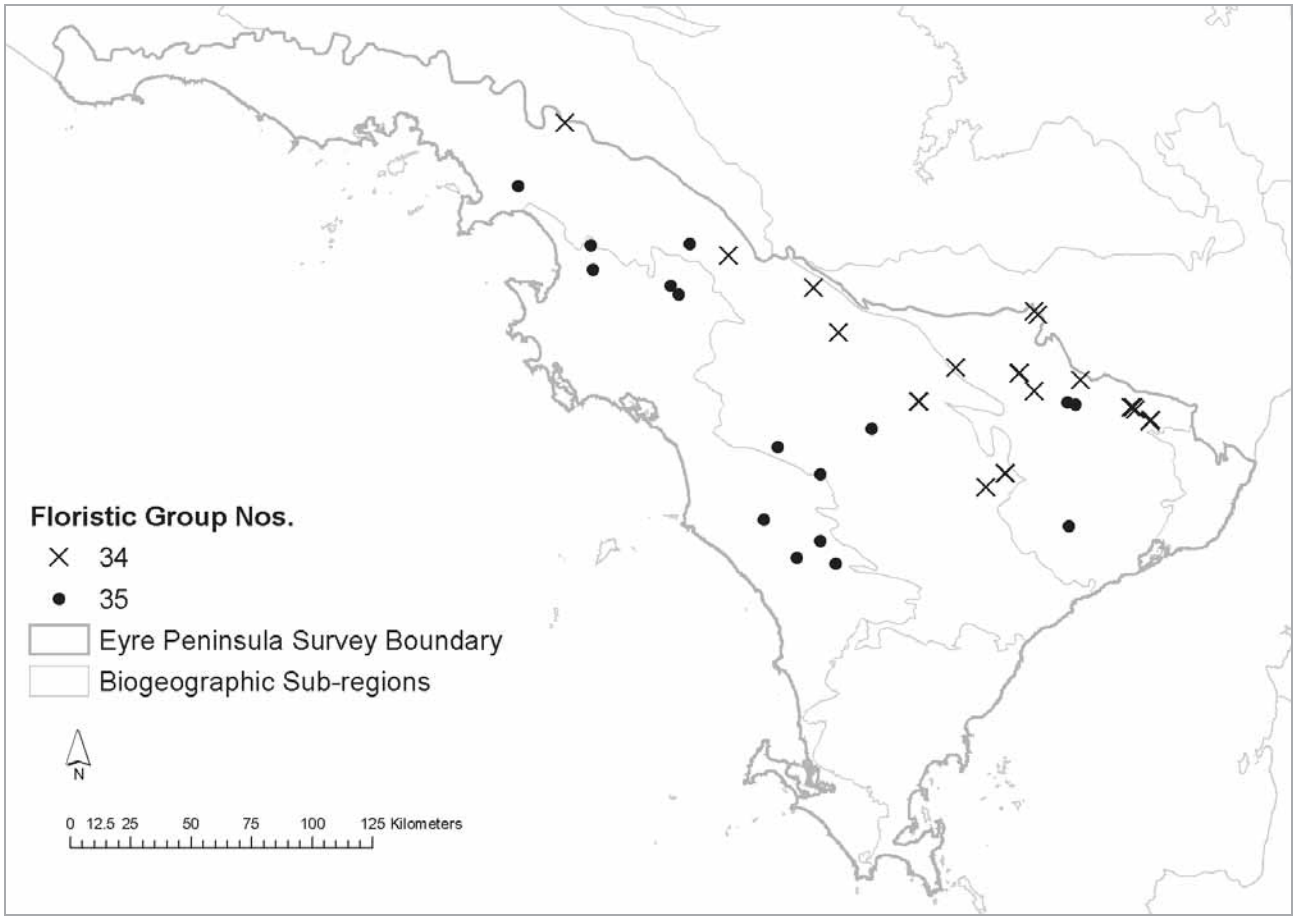
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
Tree	*Callitris gracilis*	Southern Cypress Pine	31	83.78	7.26
Shrub > 1m	*Alyxia buxifolia*	Sea Box	17	45.95	2.54
Shrub > 1m	*Geijera linearifolia*	Sheep Bush	16	43.24	3.65
Shrub > 1m	*Dodonaea viscosa ssp. angustissima*	Narrow-leaf Hop-bush	15	40.54	3.49
grass sedge	*Austrostipa nitida*	Balcarra Spear-grass	19	51.35	1.13
grass sedge	*Avellinia michelii*	Avellinia *	16	43.24	1.19
Forb Herb Vine	*Carrichtera annua*	Ward's Weed *	20	54.05	2.86

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 8 sites - *Acanthiza apicalis*, Inland Thornbill, 8; *Acanthagenys rufogularis*, Spiny-cheeked Honeyeater, 7; *Pomatostomus superciliosus*, White-browed Babbler, 7; *Lichenostomus virescens*, Singing Honeyeater, 7; *Colluricincla harmonica*, Grey Shrike-thrush, 6; *Phylidonyris albifrons*, White-fronted Honeyeater, 6; *Pachycephala rufiventris*, Rufous Whistler, 6; *Rhipidura leucophrys*, Willie Wagtail, 6; *Eolophus roseicapilla*, Galah, 5; *Cracticus torquatus*, Grey Butcherbird, 5; *Phaps chalcoptera*, Common Bronzewing, 5; *Strepera versicolor*, Grey Currawong, 5; *Malurus pulcherrimus*, Blue-breasted Fairy-wren, 5; *Barnardius zonarius*, Australian Ringneck, 4; *Smicrornis brevirostris*, Weebill, 4; *Acanthiza chrysorrhoa*, Yellow-rumped Thornbill, 4; *Petroica goodenovii*, Red-capped Robin, 4; *Corvus coronoides*, Australian Raven, 4; *Anthochaera carunculata*, Red Wattlebird, 4

MAMMALS 8 sites - ****Mus musculus***, House Mouse, 7; **Oryctolagus cuniculus*, Rabbit, 7; *Sminthopsis dolichura*, Little Long-tailed Dunnart, 4

REPTILES 8 sites - *Lerista edwardsae*, Myall Slider, 5; *Gehyra lazelli*, Southern Rock Dtella, 5



Appendix 8. Detailed Floristic Group Descriptions

Floristic Groups 34. Southern Cypress Pine *Callitris gracilis* Woodand over Sea Box *Alyxia buxifolia* +/- Narrow-leaf Hop-bush *Dodonaea viscosa ssp. angustissima* / Sheep Bush *Geijera linearifolia* / Pale Turpentine Bush *Beyeria lechenaultii* / Winged Daisy-bush *Olearia decurrens*

21 sites in the central northern part of the study area. This woodland assemblage occurred mostly on hill slopes and plains. Surface soils ranged from sand to light medium clay but most sites had sandy loams or clay loams. Rock outcrop was present at 24% of sites as granite, gneiss or calcrete with cover ranging from <10% to >50%. Surface strew was recorded at 53% of sites as pebbles or cobbles of quartzite, granite, gneiss and calcareous material, with cover ranging from <10% to 70%. Fire history was absent. Bare earth cover was low but variable (mean 15%, sdev 20). Litter cover was moderate (mean 21%, sdev 18).

Total number of species: 242
Average number of species per site: 43.3 sdev: 17.3 Maximum: 66 Minimum: 16
Number of significant species - EPBC Act: 0 NPW Act: 5
Austrostipa plumigera, SA: R; *Eucalyptus cretata*, Darke Peak Mallee SA: R; *Melaleuca armillaris ssp. akineta*, Needle-leaf Honey-myrtle SA: R; *Santalum spicatum*, Sandalwood SA: V; *Wurmbea decumbens*, Trailing Nancy SA: R
Number of Eyre Peninsula endemic species: 3
Caladenia septuosa, Eyre Peninsula Spider-orchid; *Eucalyptus cretata*, Darke Peak Mallee; *Hakea cycloptera*, Elm-seed Hakea
Number of introduced/invasive species: 32
Average number of introduced/invasive species per site: 5.2 Maximum: 18 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Dodonaea viscosa ssp. angustissima	Narrow-leaf Hop-bush	Shrub > 1m	31.2	0.002	4.1	3.64
Hakea leucoptera ssp. leucoptera	Silver Needlewood	Shrub > 1m	36.5	0.005	5.3	5.23
Alyxia buxifolia	Sea Box	Shrub > 1m	15.6	0.019	4.3	3.37
Rhodanthe polygalifolia	Milkwort Everlasting	Forb Herb Vine	10.1	0.049	3.9	3.83

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Callitris gracilis	Southern Cypress Pine	71	12	3.51
Pittosporum angustifolium	Native Apricot	43	1	0.45
Shrub > 1m				
Alyxia buxifolia	Sea Box	71	16	1.29
Dodonaea viscosa ssp. angustissima	Narrow-leaf Hop-bush	67	31	1.78
Geijera linearifolia	Sheep Bush	67	6	2.12
Senna artemisioides ssp. X coriacea	Desert Senna	52	5	0.51
Exocarpos aphyllus	Leafless Cherry	43	1	0.61
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	81	3	0.67
Rhagodia parabolica	Mealy Saltbush	62	7	1.42
Beyeria lechenaultii	Pale Turpentine Bush	52	4	2.54
Olearia decurrens	Winged Daisy-bush	48	11	0.81
Comesperma volubile	Love Creeper	48	1	0.32
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	43	4	0.44
Grass Sedge				
Austrostipa nitida	Balcarra Spear-grass	76	3	0.96
Austrostipa elegantissima	Feather Spear-grass	67	2	0.47
Pentaschistis airoides	False Hair-grass *	48	4	0.64
Austrodanthonia caespitosa	Common Wallaby-grass	48	1	0.67
Bromus rubens	Red Brome *	43	1	0.68
Forb Herb Vine				
Podolepis capillaris	Wiry Podolepis	62	4	0.65
Carrichtera annua	Ward's Weed *	62	3	1.80
Crassula colorata		57	2	0.58
Podolepis tepperi	Delicate Copper-wire Daisy	52	5	0.53
Brachyscome lineariloba	Hard-head Daisy	52	2	0.53
Calandrinia eremaea	Dryland Purslane	52	2	0.56
Actinobole uliginosum	Flannel Cudweed	48	4	0.51

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 BAR00501, 103 NIL01001, 103 NIL00402, 103 CUN00601, 103 CUN00501, 103 KOO00801, 103 KOO00802, 103 CAR00601, 103 KIM00102, 103 KIM00601, 103 PAN00101, 113 NUN00101, 107 WUD00601, 1 PAN00801, 128 KER00701, 128 CAR01201, 128 GIL00201, 128 GIL01001, 128 GIL01101, 128 HAM00901, 128 HAM01101

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 34: site 128 GIL01001 - 11/10/2002

Floristic Group 35: site 107 KAP01201 – 18/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Groups 35. Southern Cypress Pine *Callitris gracilis* Woodand over Common Wallaby-grass *Austrodanthonia caespitosa* and introduced herbs and grasses

16 sites across central Eyre Peninsula. This woodland assemblage was found on plains with sandy to medium clay surface soils. Calcareous rock outcrop was present at 45% of sites with mostly moderate (10-50%) cover. Surface strew as calcareous pebbles and cobbles was present at 80% of sites with cover ranging from <10% to 70%. Fire burnt two sites, 29 and 39 years prior to sampling. Bare earth cover was mostly low (mean 7%, sdev 14). Litter cover was moderate (mean 27%, sdev 23).

Total number of species: 234
Average number of species per site: 41.3 sdev: 10.4 Maximum: 59 Minimum: 23
Number of significant species - EPBC Act: 0 NPW Act: 2
Austrostipa echinata, Spiny Spear-grass SA: R; *Brachyscome xanthocarpa*, Yellow-fruit Daisy SA: R
Number of Eyre Peninsula endemic species: 2
Brachyscome xanthocarpa, Yellow-fruit Daisy; *Hakea cycloptera*, Elm-seed Hakea;
Number of introduced/invasive species: 41
Average number of introduced/invasive species per site: 10.8 Maximum: 15 Minimum: 3

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Callitris gracilis	Southern Cypress Pine	Tree	48	0.001	3.2	2.24
Millotia myosotidifolia	Broad-leaf Millotia	Forb Herb Vine	7.3	0.049	3.2	2.48
Silene nocturna	Mediterranean Catchfly *	Forb Herb Vine	4.7	0.049	2.4	1.39

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Callitris gracilis	Southern Cypress Pine	100	48	3.51
Pittosporum angustifolium	Native Apricot	69	1	0.45
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	44	0	3.62
Low Shrub < 1m				
Comesperma volubile	Love Creeper	63	2	0.32
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	44	0	0.67
Grass Sedge				
Bromus rubens	Red Brome *	81	4	0.67
Austrodanthonia caespitosa	Common Wallaby-grass	81	4	0.68
Avellinia michelii	Avellinia *	63	5	0.65
Avena barbata	Bearded Oat *	63	1	1.39
Vulpia myuros	Fescue *	50	6	0.93
Austrostipa elegantissima	Feather Spear-grass	50	1	0.47
Forb Herb Vine				
Hypochaeris glabra	Smooth Cat's Ear *	75	3	0.57
Silene nocturna	Mediterranean Catchfly *	63	5	0.48
Crassula colorata		63	2	0.58
Medicago minima var. minima	Little Medic *	56	3	0.99
Bupleurum semicompositum	Hare's Ear *	56	2	0.63
Crassula sieberiana complex	Australian Stonecrop	56	1	0.61
Daucus glochidiatus	Native Carrot	56	1	0.56
Asteridea athrixioides		50	7	0.91
Podolepis tepperi	Delicate Copper-wire Daisy	50	4	0.53
Helichrysum leucopsideum	Satin Everlasting	50	1	0.60
Millotia myosotidifolia	Broad-leaf Millotia	44	7	0.73
Carrichtera annua	Ward's Weed *	44	6	1.80
Ptilotus spathulatus		44	3	0.45
Brachyscome lineariloba	Hard-head Daisy	44	1	0.53
Oxalis perennans	Native Sorrel	44	1	0.54

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 BAR00701, 103 BAR00901, 103 MAN00802, 107 COC00401, 107 COC01201, 107 COU00501, 107 COU00901, 107 HUD04C03, 107 KAP01201, 107 KOP00101, 107 MOO00301, 107 PEA04B09, 107 POO00501, 107 POO01001, 107 TOO00101, 128 ACR00701

Appendix 8. Detailed Floristic Group Descriptions

Cluster 16. Spinifex *Triodia scariosa* group Hummock Grasslands and heathy coastal shrublands

34 sites in 2 floristic groups

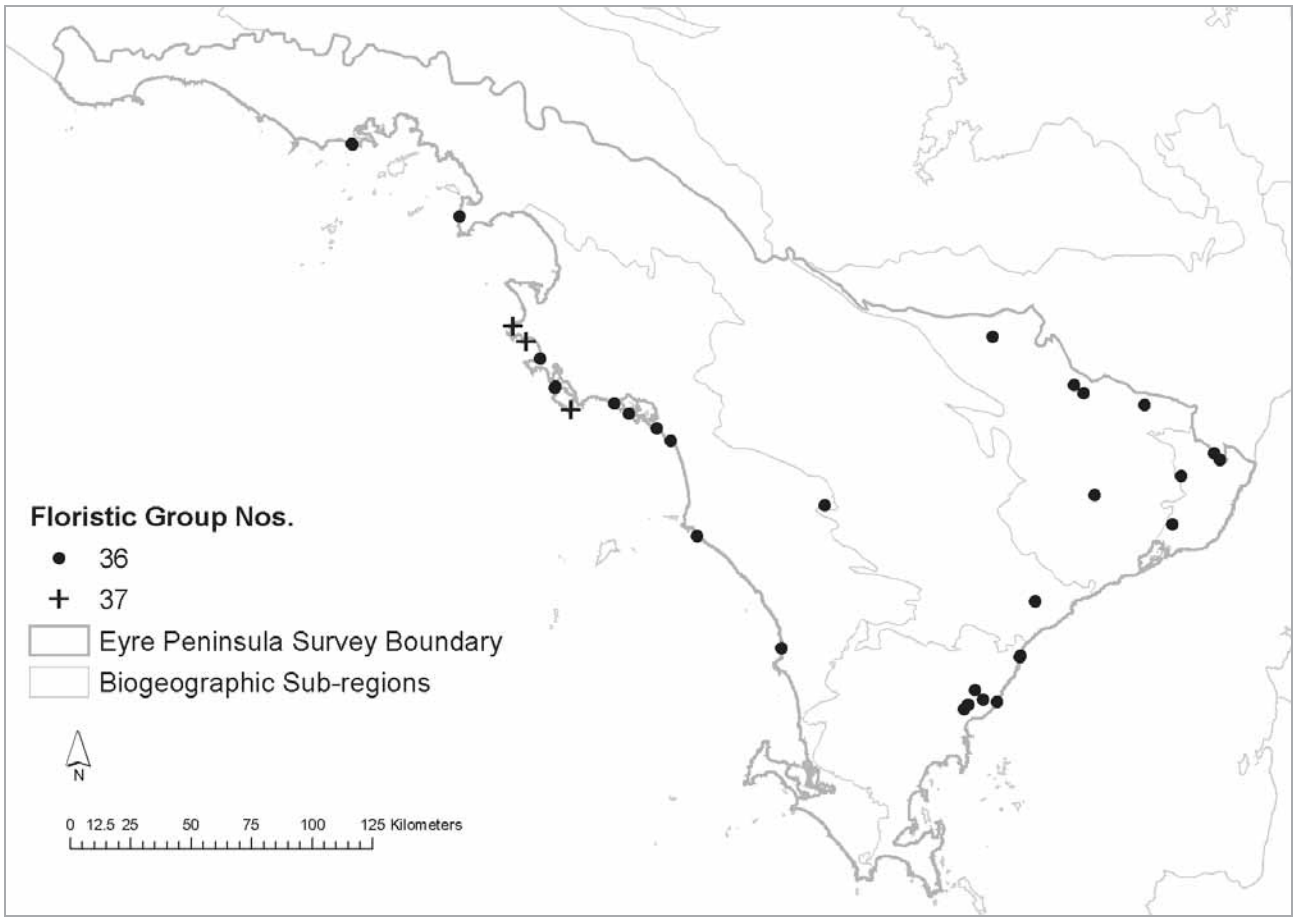
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave cover index
grass sedge	*Triodia scariosa* group	Spinifex	33	97.06	11.52

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 3 sites - *Acanthiza apicalis,* Inland Thornbill, 2; *Phylidonyris albifrons,* White-fronted Honeyeater, 2; *Malurus pulcherrimus,* Blue-breasted Fairy-wren, 2; *Smicrornis brevirostris,* Weebill, 2; *Anthochaera carunculata,* Red Wattlebird, 2; *Lichenostomus leucotis,* White-eared Honeyeater, 2; *Dromaius novaehollandiae,* Emu, 2; *Pardalotus punctatus,* Spotted Pardalote, 2; *Calamanthus cautus,* Shy Heathwren, 2; *Leipoa ocellata,* Malleefowl, 2

MAMMALS 3 sites - *Macropus fuliginosus,* Western Grey Kangaroo, 2;

REPTILES 3 sites - *Menetia greyii,* Dwarf Skink, 2; *Ctenotus atlas,* Southern Spinifex Ctenotus, 2; *Delma sp.,* , 2



Floristic Group 36. Spinifex *Triodia scariosa* group Hummock Grassland +/- an overstorey of open shrubland or mallee.

31 sites one group scattered along the west coast, with the rest more inland in the north east of the study area. This hummock grassland assemblage with variable overtorey species was found on dunes, hillslopes and plains with most surface soils being sand to sandy loams. Rock outcrop was present at 22% of sites. Calcareous material at more than half of these with surface coverage of between 1-50%. The remaining sites included shale shist and granite with <10% cover. Surface strew was present at 40% of sites, mostly as cobbles and pebbles with <10% cover but ranging to 30-70% cover. Calcareous material was most frequent at 40% of the sites with strew. Fire had affected 1 site 15 years prior to survey. Bare earth cover was moderate (mean 31%, sdev 19). Litter cover was moderate (mean 21%, sdev 18).

Total number of species: 325

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 33.8 sdev: 18 Maximum: 94 Minimum: 8
Number of significant species - EPBC Act: 1 NPW Act: 4
Acacia imbricata, Feathery Wattle AUS: VU SA: R; *Caladenia bicalliata ssp. bicalliata*, Western Daddylong-legs SA: R; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Grevillea anethifolia*, SA: R
Number of Eyre Peninsula endemic species: 3
Acacia imbricata, Feathery Wattle; *Grevillea anethifolia*; *Hakea cycloptera*, Elm-seed Hakea
Number of introduced/invasive species: 53
Average number of introduced/invasive species per site: 6.1 Maximum: 16 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Triodia scariosa group	Spinifex	grass sedge	28.9	0.001	3.2	2.38

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Grass Sedge				
Triodia scariosa group	Spinifex	100	29	5.31
Avena barbata	Bearded Oat *	42	1	1.39
Forb Herb Vine				
Helichrysum leucopsideum	Satin Everlasting	61	3	0.60

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**
SITE, 71 VB00701, 80 BUT01401, 80 NEI00801, 80 NEI00901, 80 TUM00101, 80 TUM02301, 80 TUM02401, 80 TUM02501, 80 TUM02601, 82 TAL00302, 82 ELL00301, 82 WAL00201, 82 CHA00402, 82 CHA00401, 82 CAL00204, 82 SEA00102, 82 CAL00203, 82 KIA00101, 103 BAR00601, 103 BAR01001, 103 NIL00502, 103 BUC00802, 103 VER00901, 103 WIL01003, 103 MAN00301, 103 CHA00901, 107 KAP04B18, 107 TAL00501, 179 COA00101, 128 MUN01001, 128 MUN01301

Floristic Group 36: site 103 BAR00601 – 13/10/1998

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 37. Leafless Cherry *Exocarpos aphyllus* and Narrow-leaf Spyridium *Spyridium phylicoides* over Prickly Ground-berry *Acrotriche patula* and Black Grass Saw-sedge *Gahnia lanigera* +/- Spinifex *Triodia scariosa* group

3 sites along the coast of the Talia gographic subregion between Streaky and Baird bays. This shrubland assemblage was restricted to coastal escarpment on sand to sandy loam surface soils. Calcareous rock outcrop covered <10% of 2 sites and >50% at the third. Calcareous surface strew was present as cobbles covering between 1-70% of sites. Fire was not recorded. Bare earth cover was variable (mean 30%, sdev 35). Litter cover was low (mean 5%, sdev 0).

Total number of species: 54
Average number of species per site: 24.7 sdev: 2.9 Maximum: 28 Minimum: 23
Number of significant species - EPBC Act: 0 NPW Act: 1
Austrodanthonia laevis, Smooth Wallaby-grass SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 1
Average number of introduced/invasive species per site: 0.3 Maximum: 1 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Spyridium phylicoides	Narrow-leaf Spyridium	Low Shrub < 1m	62.4	0.001	3.9	3.65
Goodenia gibbosa		Forb Herb Vine	33.3	0.005	6.1	4.53
Comesperma volubile	Love Creeper	Low Shrub < 1m	8.9	0.015	3	2
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel	Forb Herb Vine	12.5	0.016	3.6	2.93
Exocarpos aphyllus	Leafless Cherry	Shrub > 1m	14.8	0.026	4.3	3.41
Austrodanthonia laevis	Smooth Wallaby-grass	grass sedge	18.3	0.028	5.4	4.85

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Exocarpos aphyllus	Leafless Cherry	100	15	0.61
Acacia sp. Winged (C.R.Alcock 4936)	Angled Wattle	67	0	1.90
Low Shrub < 1m				
Spyridium phylicoides	Narrow-leaf Spyridium Y	100	100	62
Acrotriche patula	Prickly Ground-berry	100	100	2
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	67	67	2
Beyeria lechenaultii	Pale Turpentine Bush	67	67	0
Eutaxia microphylla	Common Eutaxia	67	67	0
Grass Sedge				
Gahnia lanigera	Black Grass Saw-sedge	100	2	2.34
Triodia scariosa group	Spinifex	67	8	5.31
Forb Herb Vine				
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel Y	67	12	0.74
Helichrysum leucopsideum	Satin Everlasting	67	2	0.60

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 STR00202, 179 COA00901, 179 COA01101

Appendix 8. Detailed Floristic Group Descriptions

Cluster 17. Silver Broombush / Broombush Shrublands over Smooth Guinea-flower +/- mallee overstorey

42 sites in 4 floristic groups

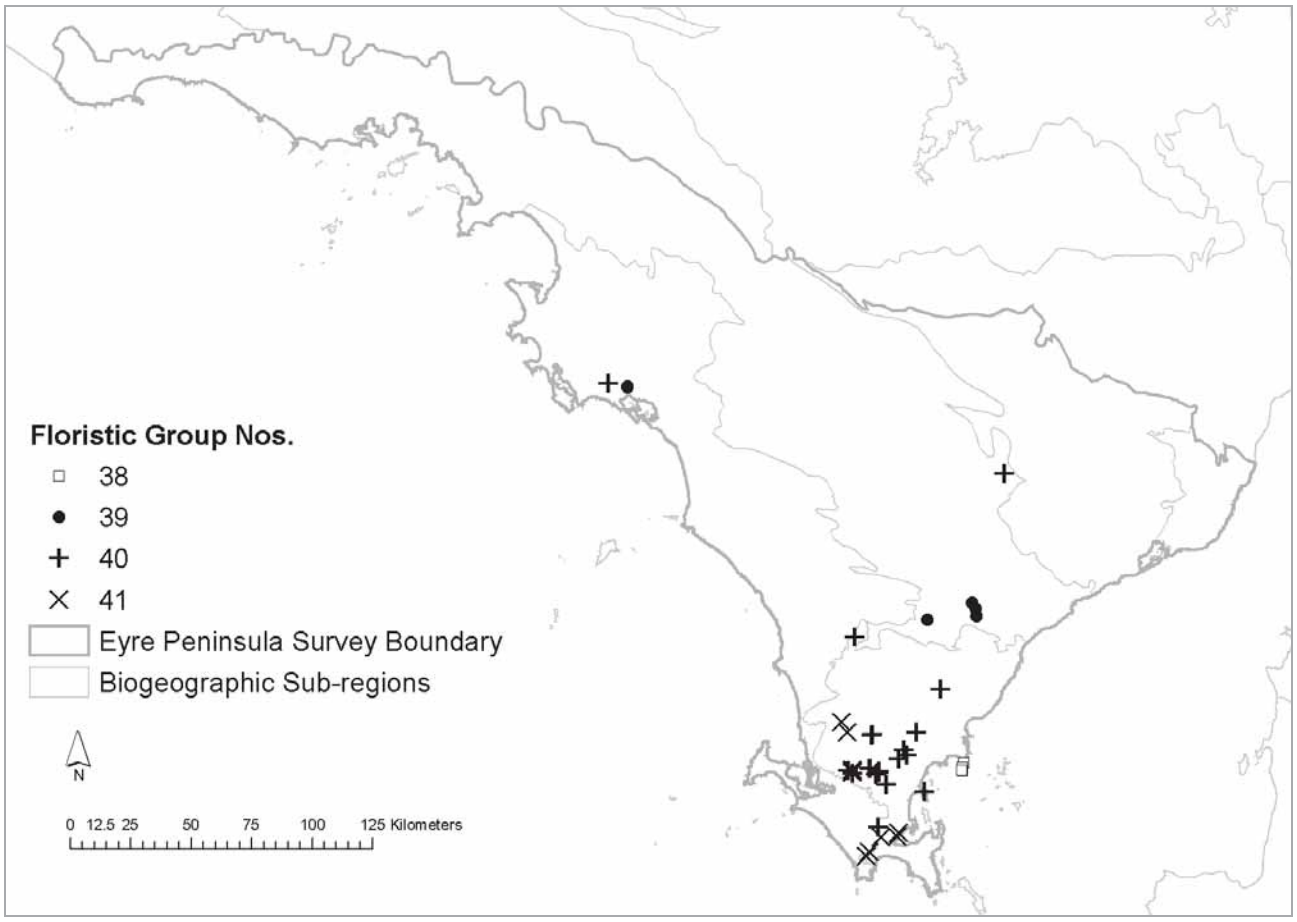
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	Ave
Shrub > 1m	*Melaleuca uncinata*	Broombush	31	73.81	4.35
Shrub > 1m	*Babingtonia behrii*	Silver Broombush	30	71.43	2.97
Shrub > 1m	*Xanthorrhoea semiplana*	Yacca R Y	28	66.67	5.38
Shrub > 1m	*Allocasuarina muelleriana ssp. muelleriana*	Common Oak-bush	18	42.86	1.46
Low Shrub < 1m	*Hibbertia sp. Glabriuscula (D.J.Whibley 9012)*	Smooth Guinea-flower	38	90.48	3.91
Low Shrub < 1m	*Astroloma conostephioides*	Flame Heath	24	57.14	1.50
Low Shrub < 1m	*Gonocarpus mezianus*	Broad-leaf Raspwort	22	52.38	1.27
grass sedge	*Lepidosperma viscidum*	Sticky Sword-sedge	27	64.29	1.84
grass sedge	*Schoenus breviculmis*	Matted Bog-rush	23	54.76	1.07
Forb Herb Vine	*Opercularia scabrida*	Stalked Stinkweed	22	52.38	1.78
Forb Herb Vine	*Homoranthus homoranthoides*	Port Lincoln Ground-myrtle Y	19	45.24	3.16

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 12 sites - *Acanthiza apicalis*, Inland Thornbill, 10; *Smicrornis brevirostris*, Weebill, 9; *Colluricincla harmonica*, Grey Shrike-thrush, 9; *Strepera versicolor*, Grey Currawong, 9; *Anthochaera carunculata*, Red Wattlebird, 8; *Zosterops lateralis*, Silvereye, 8; *Malurus pulcherrimus*, Blue-breasted Fairy-wren, 7; *Barnardius zonarius*, Australian Ringneck, 6; *Pachycephala pectoralis*, Golden Whistler, 6; *Pardalotus striatus*, Striated Pardalote, 6; *Sericornis frontalis*, White-browed Scrubwren, 6

MAMMALS 13 sites - *Macropus fuliginosus*, Western Grey Kangaroo, 6; **Mus musculus*, House Mouse, 6; **Vulpes vulpes*, Fox, 4; *Cercartetus concinnus*, Western Pygmy-possum, 4; *Rattus fuscipes*, Bush Rat, 4

REPTILES 13 sites - *Tiliqua rugosa*, Sleepy Lizard, 7; *Hemiergis peronii*, Four-toed Earless Skink, 7; *Christinus marmoratus*, Marbled Gecko, 6; *Menetia greyii*, Dwarf Skink, 5; *Morethia obscura*, Mallee Snake-eye, 5; *Delma australis*, Barred Snake-lizard, 5



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 38. Coast Ridge-fruited Mallee *Eucalyptus angulosa* over Broombush *Melaleuca uncinata* and Smooth Guinea-flower *Hibbertia sp. Glabriuscula* with Elm-seed Hakea *Hakea cycloptera*, Cockies Tongue *Templetonia retusa*

4 sites on clustered together on the Point Bolingbroke peninsula. This mallee assemblage was recorded on a sandy plain with no outcropping or surface strew. There was no evidence of fire. Bare earth cover was moderate (mean 33%, sdev 22), as was litter cover (mean 26%, sdev 11).

Total number of species: 64
Average number of species per site: 35 sdev: 4.4 Maximum: 40 Minimum: 30
Number of significant species - EPBC Act: 0 NPW Act: 2
Daviesia benthamii ssp. humilis, Mallee Bitter-pea SA: R; *Spyridium leucopogon*, Silvery Spyridium SA: R
Number of Eyre Peninsula endemic species: 2
Hakea cycloptera, Hakea cycloptera; *Spyridium leucopogon*, Spyridium leucopogon
Number of introduced/invasive species: 3
Average number of introduced/invasive species per site: 1 Maximum: 2 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Spyridium leucopogon	Silvery Spyridium	Shrub > 1m	64.2	0.001	5.3	5.32
Pimelea stricta	Erect Riceflower	Low Shrub < 1m	59.5	0.001	4.9	4.88
Eucalyptus angulosa	Coast Ridge-fruited Mallee	Tree	44.1	0.001	3.9	3.38
Comesperma calymega	Blue-spike Milkwort	Forb Herb Vine	43.1	0.001	5	4.74
Schoenus racemosus	Sandhill Bog-rush	grass sedge	38.3	0.001	3.6	3.01
Glischrocaryon behrii	Golden Pennants	Forb Herb Vine	27.8	0.001	3.4	2.62
Trachymene pilosa	Dwarf Trachymene	Forb Herb Vine	12.6	0.001	2.5	1.33
Billardiera versicolor	Yellow-flower Apple-berry	Forb Herb Vine	37.5	0.002	4.5	4.57
Thysanotus patersonii	Twining Fringe-lily	Forb Herb Vine	7.6	0.003	2.4	1.16
Pultenaea acerosa	Bristly Bush-pea	Low Shrub < 1m	27.4	0.005	4.9	4.42
Dianella revoluta var. revoluta	Black-anther Flax-lily	grass sedge	11.6	0.006	2.9	1.82
Hybanthus floribundus ssp. floribundus	Shrub Violet	Low Shrub < 1m	23.7	0.013	4.6	4.98
Correa backhouseana var. coriacea	Thick-leaf Correa	Low Shrub < 1m	16.3	0.018	4.3	4.37
Hibbertia virgata	Twiggy Guinea-flower	Low Shrub < 1m	11.3	0.031	3.3	2.74
Austrostipa hemipogon	Half-beard Spear-grass	grass sedge	9.4	0.034	3.3	2.38

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus angulosa	Coast Ridge-fruited Mallee	100	42	5.47
Shrub > 1m				
Hakea cycloptera	Elm-seed Hakea Y	100	13	0.40
Templetonia retusa	Cockies Tongue	100	7	1.03
Melaleuca uncinata	Broombush	100	5	6.14
Spyridium leucopogon	Silvery Spyridium R Y	75	64	0.49
Leptospermum coriaceum	Dune Tea-tree	75	8	2.63
Phebalium bullatum	Silvery Phebalium	75	6	0.90
Melaleuca lanceolata	Dryland Tea-tree	75	0	3.62
Leucopogon cordifolius	Heart-leaf Beard-heath	50	9	0.46
Allocasuarina muelleriana ssp. muelleriana	Common Oak-bush	50	3	1.88
Exocarpos aphyllus	Leafless Cherry	50	1	0.61
Low Shrub < 1m				
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	100	13	1.66
Pimelea stricta	Erect Riceflower	75	60	0.45
Pultenaea acerosa	Bristly Bush-pea	75	27	1.11
Correa backhouseana var. coriacea	Thick-leaf Correa	75	16	0.38
Baeckea crassifolia	Desert Baeckea	75	7	0.39
Calytrix involucrata	Cup Fringe-myrtle Y	75	7	0.80
Acacia spinescens	Spiny Wattle	75	6	1.30
Hybanthus floribundus ssp. floribundus	Shrub Violet	50	24	0.26
Hibbertia virgata	Twiggy Guinea-flower	50	11	0.49
Astroloma conostephioides	Flame Heath	50	7	0.69
Gonocarpus mezianus	Broad-leaf Raspwort	50	2	1.66
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	50	1	0.67
Grevillea ilicifolia complex	Holly-leaf Grevillea	50	1	0.49
Lasiopetalum discolor	Coast Velvet-bush	50	1	2.83
Rhagodia crassifolia	Fleshy Saltbush	50	1	0.98
Grass Sedge				
Schoenus racemosus	Sandhill Bog-rush	100	38	1.62
Dianella revoluta var. revoluta	Black-anther Flax-lily	100	12	0.37
Lepidosperma viscidum	Sticky Sword-sedge	100	9	1.24
Austrostipa hemipogon	Half-beard Spear-grass	75	9	0.59

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Triodia scariosa group	Spinifex	75	1	5.31
Lomandra leucocephala ssp. robusta	Woolly Mat-rush	50	9	0.57
Lepidosperma gladiatum	Coast Sword-sedge	50	8	2.67
Forb Herb Vine				
Trachymene pilosa	Dwarf Trachymene	100	13	0.65
Tetragonia implexicoma	Bower Spinach	100	6	1.07
Glischrocaryon behrii	Golden Pennants	75	28	0.47
Thysanotus patersonii	Twining Fringe-lily	75	8	0.37
Comesperma calymega	Blue-spike Milkwort *	50	43	0.36
Billardiera versicolor	Yellow-flower Apple-berry	50	38	0.21
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel Y	50	3	0.74
Mistletoe				
Amyema melaleucae	Tea-tree Mistletoe	50	2	0.38

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 BAN00101, 80 BAN00201, 80 BAN00202, 80 BAN00204

Floristic Group 38: site 80 BAN00202 – 20/10/1995 + map of sites and remnant vegetation (cream shading). The Dark Green represents *Eucalyptus angulosa* mallee woodland over tall shrubs and sedges. The light blue represents mixed mallee including *E. angulosa*, *E. leptophylla* +/- *E. dumosa* complex, *E. gracilis*.

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Floristic Group 39. Ridge-fruited Mallee *Eucalyptus incrassata* / Beaked Red Mallee *Eucalyptus socialis* complex / Coastal White Mallee *Eucalyptus diversifolia ssp. diversifolia* Mallee over Narrow-leaf Bush-pea *Pultenaea tenuifolia*, Smooth Guinea-flower *Hibbertia* sp. Glabriuscula +/- Pink Velvet-bush *Lasiopetalum behrii* / Rosemary Dampiera *Dampiera rosmarinifolia* / Cup Fringe-myrtle *Calytrix involucrata* / Broombush *Melaleuca uncinata*

6 sites mostly in Hinks Conservation Park with one site at Venus Bay. This mixed open mallee assemblage was recorded on dunes and low hills with mostly sandy soils. Quartzite outcropping at the 2 hill sites had low cover. Surface strew was present as quartzitic or lateritic pebbles with a low to moderate (11-70%) cover. This assemblage is fire prone with all sites having fire history, half were burnt approximately 20 years prior to sampling and the half 44 years. Bare earth cover was moderate (mean 22%, sdev 16). Litter cover was low (mean 14%, sdev 11).

Total number of species: 159
Average number of species per site: 51.8 sdev: 14.1 Maximum: 73 Minimum: 36
Number of significant species - EPBC Act: 1 NPW Act: 7

Caladenia tensa, Inland Green-comb Spider-orchid AUS: EN ; *Daviesia benthamii ssp. humilis*, Mallee Bitter-pea SA: R; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Leucopogon clelandii*, Cleland's Beard-heath SA: R; *Microlepidium pilosulum*, Hairy Shepherd's-purse SA: R; *Olearia picridifolia*, Rasp Daisy-bush SA: R; *Prasophyllum fecundum*, Self-pollinating Leek-orchid SA: R; *Thysanotus tenellus*, Grassy Fringe-lily SA: R

Number of Eyre Peninsula endemic species: 3

Caladenia septuosa, Eyre Peninsula Spider-orchid; *Eucalyptus peninsularis*, Merrit; *Hakea cycloptera*, Elm-seed Hakea

Number of introduced/invasive species: 9
Average number of introduced/invasive species per site: 2 Maximum: 6 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Pultenaea tenuifolia	Narrow-leaf Bush-pea	Low Shrub < 1m	31.6	0.002	4	3.61
Philotheca pungens	Prickly Wax-flower	Low Shrub < 1m	17.2	0.012	3.7	3.63
Dampiera rosmarinifolia	Rosemary Dampiera	Low Shrub < 1m	15.1	0.013	3.1	2.57
Lasiopetalum behrii	Pink Velvet-bush	Shrub > 1m	15.8	0.015	3.5	3.02
Acrotriche cordata	Blunt-leaf Ground-berry	Low Shrub < 1m	13.5	0.019	3.8	3.32
Gahnia deusta	Limestone Saw-sedge	grass sedge	10.6	0.032	3.5	2.6
Caladenia tensa	Inland Green-comb Spider-orchid	Forb Herb Vine	16.1	0.038	4.8	4.82
Logania linifolia	Flax-leaf Logania	Low Shrub < 1m	15.2	0.039	5.6	5
Thelymitra azurea	Azure Sun-orchid	Forb Herb Vine	16.7	0.04	6.2	4.61
Leucopogon woodsii	Nodding Beard-heath	Low Shrub < 1m	16.7	0.044	6	4.39
Thysanotus tenellus	Grassy Fringe-lily	Forb Herb Vine	16.7	0.045	6.1	4.9
Caladenia stricta	Upright Caladenia	Forb Herb Vine	12.8	0.048	4.5	4.71
Baeckea crassifolia	Desert Baeckea	Low Shrub < 1m	9	0.049	3.6	3.02

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus incrassata	Ridge-fruited Mallee	67	3	4.27
Eucalyptus socialis complex	Beaked Red Mallee	50	3	3.96
Exocarpos sparteus	Slender Cherry	50	2	0.33
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	50	1	6.47
Shrub > 1m				
Templetonia retusa	Cockies Tongue	83	5	1.03
Lasiopetalum behrii	Pink Velvet-bush	67	16	0.51
Melaleuca uncinata	Broombush	67	1	6.14
Allocasuarina muelleriana ssp. muelleriana	Common Oak-bush	50	5	1.88
Hakea cycloptera	Elm-seed Hakea Y	50	2	0.40
Leptospermum coriaceum	Dune Tea-tree	50	1	2.63
Low Shrub < 1m				
Pultenaea tenuifolia	Narrow-leaf Bush-pea	100	32	0.72
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	100	8	1.66
Dampiera rosmarinifolia	Rosemary Dampiera	83	15	0.62
Calytrix involucrata	Cup Fringe-myrtle Y	83	10	1.30
Acacia spinescens	Spiny Wattle	83	3	0.39
Acrotriche cordata	Blunt-leaf Ground-berry	67	13	1.78
Baeckea crassifolia	Desert Baeckea	67	9	0.80
Opercularia turpis	Twiggy Stinkweed	67	2	0.47
Philotheca pungens	Prickly Wax-flower	50	17	0.36
Daviesia benthamii ssp. humilis	Mallee Bitter-pea R	50	10	0.50
Grevillea ilicifolia complex	Holly-leaf Grevillea	50	7	0.49
Cryptandra sp. Floriferous (W.R.Barker 4131)	Pretty Cryptandra	50	5	0.42
Boronia coerulescens ssp. coerulescens	Blue Boronia	50	3	0.26
Acacia cupularis	Cup Wattle	50	2	0.46
Astroloma humifusum	Cranberry Heath	50	2	0.46
Correa backhouseana var. coriacea	Thick-leaf Correa	50	2	0.38

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Halgania cyanea	Rough Blue-flower	50	2	0.58
Calytrix tetragona	Common Fringe-myrtle	50	1	0.82
Dodonaea hexandra	Horned Hop-bush	50	1	1.30
Hibbertia virgata	Twiggy Guinea-flower	50	1	0.49
Grass Sedge				
Lomandra collina	Sand Mat-rush	100	7	0.50
Gahnia deusta	Limestone Saw-sedge	67	11	2.03
Lepidosperma viscidum	Sticky Sword-sedge	67	8	1.24
Gahnia lanigera	Black Grass Saw-sedge	50	2	2.34
Schoenus racemosus	Sandhill Bog-rush	50	2	1.62
Triodia irritans	Spinifex	50	2	5.19
Forb Herb Vine				
Goodenia willisiana	Silver Goodenia	67	5	0.49
Cassytha glabella f. dispar	Dodder-laurel	50	6	0.53
Chrysocephalum apiculatum	Common Everlasting	50	3	0.59
Drosera macrantha ssp. planchonii	Climbing Sundew	50	3	0.41
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel Y	50	1	0.74
Glischrocaryon behrii	Golden Pennants	50	1	0.47

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

110 VEN00104, 110 VEN00105, 128 HIN00401, 128 HIN00501, 128 HIN00601, 128 HIN00701

Floristic Group 39: site 128 HIN00501 – 6/12/2003

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Floristic Group 40. Silver Broombush *Babingtonia behrii* / Broombush *Melaleuca uncinata* / Yacca *Xanthorrhoea semiplana* Shrubland over Smooth Guinea-flower *Hibbertia sp. Glabriuscula* / Flame Heath *Astroloma conostephioides* +/- an overtorey of Drooping Sheoak *Allocasuarina verticillata* / Mallee *Eucalyptus* spp. / Sugar Gum *E. cladocalyx* / Golden Wattle *Acacia pycnantha*

21 sites concentrated in the Koppio Hills in the south-east of the study area. This shrubland to woodland assemblage was mostly associated with hills but also on plains with sand to clay loam soils. Rock outcrop to 50% cover was present at 28% of sites and included granite, quartzite, laterite and sandstone. Surface strew of similar lithology was present at 70% of sites mostly with <10% cover. Fire history for 43% of sites ranged from 2-65 years prior to sampling (mean 19 yrs). Bare earth cover was low (mean 15%, sdev 11). Litter cover was moderate (mean 27%, sdev 25).

Total number of species: 291
Average number of species per site: 50 sdev: 15.4 Maximum: 74 Minimum: 21
Number of significant species - EPBC Act: 5 NPW Act: 18

Acacia dodonaeifolia, Hop-bush Wattle SA: R; *Acacia imbricata*, Feathery Wattle AUS: VU SA: R; *Billardiera sp. Yorke Peninsula (P.C.Heyligers 80164)*, Lehmann's Apple-berry SA: E; *Bossiaea ensata*, Sword Bossiaea SA: V; *Caladenia sp. Inland (F.A.Mason 300)*, Sand Spider-orchid AUS: EN ; *Crassula exserta*, Large-fruit Crassula SA: R; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew SA: V; *Grevillea halmaturina ssp. laevis*, Prickly Grevillea SA: R; *Levenhookia stipitata*, SA: R; *Melaleuca armillaris ssp. akineta*, Needle-leaf Honey-myrtle SA: R; *Prasophyllum fecundum*, Self-pollinating Leek-orchid SA: R; *Ptilotus beckerianus*, Ironstone Mulla Mulla AUS: VU SA: V; *Pultenaea trichophylla*, Tufted Bush-pea AUS: VU SA: R; *Sphaerolobium minus*, Leafless Globe-pea SA: R; *Spyridium spathulatum*, Spoon-leaf Spyridium SA: R; *Thelymitra epipactoides*, Metallic Sun-orchid AUS: EN SA: E; *Thelymitra flexuosa*, Twisted Sun-orchid SA: R; *Wurmbea decumbens*, Trailing Nancy SA: R; *Xanthorrhoea semiplana*, Tate's Grass-tree SA: R

Number of Eyre Peninsula endemic species: 14

Acacia gillii, Gill's Wattle; *Acacia imbricata*, Feathery Wattle; *Bossiaea ensata*, Sword Bossiaea; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew; *Grevillea halmaturina ssp. laevis*, Prickly Grevillea; *Hakea cycloptera*, Elm-seed Hakea; *Hibbertia cinerea*, Port Lincoln Guinea-flower; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Levenhookia stipitata*, ; *Pomaderris flabellaris*, Fan Pomaderris; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea; *Pultenaea trichophylla*, Tufted Bush-pea

Number of introduced/invasive species: 36
Average number of introduced/invasive species per site: 4.1 Maximum: 14 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Babingtonia behrii	Silver Broombush	Shrub > 1m	37	0.001	3.5	2.5
Astroloma conostephioides	Flame Heath	Low Shrub < 1m	28.2	0.001	3.8	3.08
Homoranthus homoranthoides	Port Lincoln Ground-myrtle	Forb Herb Vine	30.2	0.002	4.1	3.75
Gahnia ancistrophylla	Curled Saw-sedge	grass sedge	23.4	0.003	3.8	3.35
Daviesia asperula ssp. obliqua	Eyre Peninsula Bitter-pea	Low Shrub < 1m	35.1	0.004	4.6	4.38
Opercularia scabrida	Stalked Stinkweed	Forb Herb Vine	20.4	0.004	3.5	2.84
Pultenaea trinervis	Three-nerve Bush-pea	Low Shrub < 1m	24.1	0.016	5.1	4.84
Hakea rugosa	Dwarf Hakea	Shrub > 1m	18.6	0.029	4.5	4.39
Drosera glanduligera	Scarlet Sundew	Forb Herb Vine	9.7	0.036	3.4	3.14
Burchardia umbellata	Milkmaids	Forb Herb Vine	11.9	0.043	4	4.03

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Babingtonia behrii	Silver Broombush	95	37	1.97
Melaleuca uncinata	Broombush	86	3	6.14
Xanthorrhoea semiplana	Yacca R Y	81	16	4.35
Hakea cycloptera	Elm-seed Hakea Y	71	5	0.40
Melaleuca decussata	Totem-poles	52	4	2.40
Hakea rugosa	Dwarf Hakea	43	19	0.48
Low Shrub < 1m				
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	81	9	1.66
Astroloma conostephioides	Flame Heath	71	28	0.69
Gonocarpus mezianus	Broad-leaf Raspwort	62	3	1.66
Astroloma humifusum	Cranberry Heath	57	6	0.46
Daviesia asperula ssp. obliqua	Eyre Peninsula Bitter-pea Y	52	35	0.55
Pimelea flava ssp. dichotoma	Diosma Riceflower	52	7	0.43
Stenanthemum leucophractum	White Cryptandra	52	7	0.40
Lissanthe strigosa ssp. subulata	Peach Heath	52	4	2.64
Calytrix tetragona	Common Fringe-myrtle	52	2	0.82
Adenanthos terminalis	Yellow Gland-flower	43	17	1.30
Daviesia brevifolia	Leafless Bitter-pea	43	17	0.42
Acacia spinescens	Spiny Wattle	43	3	0.39
Correa backhouseana var. coriacea	Thick-leaf Correa	43	2	0.38
Grass Sedge				

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Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Lepidosperma viscidum	Sticky Sword-sedge	67	3	1.24
Lepidosperma carphoides	Black Rapier-sedge	57	12	0.70
Schoenus breviculmis	Matted Bog-rush	57	6	1.21
Neurachne alopecuroidea	Fox-tail Mulga-grass	57	5	0.81
Dianella revoluta var. revoluta	Black-anther Flax-lily	57	1	0.37
Gahnia ancistrophylla	Curled Saw-sedge	48	23	0.42
Austrodanthonia setacea	Small-flower Wallaby-grass	48	2	0.60
Austrostipa hemipogon	Half-beard Spear-grass	43	2	0.59
Forb Herb Vine				
Opercularia scabrida	Stalked Stinkweed	71	20	1.61
Homoranthus homoranthoides	Port Lincoln Ground-myrtle Y	57	30	2.12
Chamaescilla corymbosa var. corymbosa	Blue Squill	57	8	0.68
Drosera macrantha ssp. planchonii	Climbing Sundew	57	7	0.41
Cassytha glabella f. dispar	Dodder-laurel	57	5	0.53
Thysanotus patersonii	Twining Fringe-lily	52	2	0.37
Drosera glanduligera	Scarlet Sundew	43	10	0.36

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 COC02001, 107 VEN00401, 128 HAM01201, 80 LIN01301, 80 KOP02401, 80 KOP02601, 80 KOP01901, 80 WAN00103, 80 WAN00201, 128 ULE01201, 128 KOP00301, 128 KOP00501, 128 WAN00101, 128 MUR00101, 128 MUR00301, 80 SLE00101, 80 WAN00802, 128 WAN00201, 80 CUM01801, 128 MAR01201, 80 YEE00701

Floristic Group 40: site 128 MAR01201 – 9/12/2004

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Floristic Group 41. Coastal White Mallee *Eucalyptus diversifolia ssp. diversifolia* +/- Coast Ridge-fruited Mallee *Eucalyptus angulosa* Mallee over Yacca *Xanthorrhoea semiplana*, Narrow-leaf Myrtle Wattle *Acacia myrtifolia* and Smooth Guinea-flower *Hibbertia* sp. Glabriuscula

11 sites on the southern block of the Eyre Eyre Hills environmental association. This mallee assemblage was associated with plains (70% of sites) and hill slopes on sand to clay loam soils. Rock outcrop was present at 65% of sites mostly with moderate (<50%) to low cover. Rock types was dominated by calcareous material but included gneiss. Surface strew was present at 45% of sites mostly as calcareous cobbles with < 30% cover. Fire was rare for this assemblage affecting 2 sites, burnt 2 years prior to sampling. Bare earth cover was low (mean 11%, sdev 9). Litter cover was high (mean 54%, sdev 27).

Total number of species: 182
Average number of species per site: 48.2 sdev: 9.2 Maximum: 56 Minimum: 23
Number of significant species - EPBC Act: 1 NPW Act: 9

Eucalyptus conglobata ssp. conglobata, Port Lincoln Mallee SA: R; *Prasophyllum fecundum*, Self-pollinating Leek-orchid SA: R; *Prasophyllum occultans*, Hidden Leek-orchid SA: R; *Ptilotus beckerianus*, Ironstone Mulla Mulla AUS: VU SA: V; *Sphaerolobium minus*, Leafless Globe-pea SA: R; *Spyridium bifidum var. Marble Range (W.R.Barker 7601)*, Marble Range Spyridium SA: V; *Spyridium spathulatum*, Spoon-leaf Spyridium SA: R; *Thysanotus wangariensis*, Eyre Peninsula Fringe-lily SA: R; *Xanthorrhoea semiplana*, Tate's Grass-tree SA: R

Number of Eyre Peninsula endemic species: 8

Acacia gillii, Gill's Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Hakea cycloptera*, Elm-seed Hakea; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Pomaderris flabellaris*, Fan Pomaderris; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea; *Spyridium bifidum var. Marble Range (W.R.Barker 7601)*, Marble Range Spyridium; *Thysanotus wangariensis*, Eyre Peninsula Fringe-lily;

Number of introduced/invasive species: 11
Average number of introduced/invasive species per site: 1.8 Maximum: 6 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Xanthorrhoea semiplana	Yacca	Shrub > 1m	32.9	0.001	3.4	2.58
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	Low Shrub < 1m	26.6	0.001	3.4	1.97
Acacia myrtifolia	Narrow-leaf Myrtle Wattle	Shrub > 1m	83.4	0.002	5.4	5.81
Spyridium nitidum	Shining Spyridium	Shrub > 1m	32.8	0.002	5.4	4.63
Hakea cycloptera	Elm-seed Hakea	Shrub > 1m	22.7	0.003	3.8	3.2
Lepidosperma carphoides	Black Rapier-sedge	grass sedge	27.7	0.004	4	3.64
Stenanthemum leucophractum	White Cryptandra	Low Shrub < 1m	16	0.005	3.1	2.39
Drosera macrantha ssp. planchonii	Climbing Sundew	Forb Herb Vine	13.7	0.005	2.9	1.88
Adenanthos terminalis	Yellow Gland-flower	Low Shrub < 1m	28.4	0.01	4.7	4.66
Banksia marginata	Silver Banksia	Shrub > 1m	25.6	0.01	5.8	4.87
Daviesia brevifolia	Leafless Bitter-pea	Low Shrub < 1m	25.4	0.01	4.3	4.1
Pimelea octophylla	Woolly Riceflower	Low Shrub < 1m	28.7	0.012	5.2	5.33
Boronia filifolia	Slender Boronia	Low Shrub < 1m	25.4	0.012	5.5	4.7
Stackhousia aspericocca ssp. One-sided inflorescence (W.R.Barker 697)	One-sided Candles	Forb Herb Vine	20.9	0.012	4.1	3.82
Leporella fimbriata	Fringed Hare-orchid	Forb Herb Vine	22.4	0.015	5	4.79
Leucopogon rufus	Ruddy Beard-heath	Low Shrub < 1m	19.4	0.024	4.8	4.69
Pyrorchis nigricans	Black Fire-orchid	Forb Herb Vine	15.8	0.027	4.4	4.06
Pultenaea canaliculata var.	Soft Bush-pea	Low Shrub < 1m	17	0.03	5.6	4.8
Conospermum patens	Slender Smoke-bush	Low Shrub < 1m	18.2	0.032	6	5.89
Schoenus breviculmis	Matted Bog-rush	grass sedge	12.4	0.032	3.4	2.91
Sphaerolobium minus	Leafless Globe-pea	Low Shrub < 1m	15.1	0.034	5.3	4.57
Lasiopetalum schulzenii	Drooping Velvet-bush	Low Shrub < 1m	16	0.044	5.1	5.28

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	92	10	6.47
Eucalyptus angulosa	Coast Ridge-fruited Mallee	50	2	5.47
Shrub > 1m				
Xanthorrhoea semiplana	Yacca R Y	100	33	4.35
Acacia myrtifolia	Narrow-leaf Myrtle Wattle	92	83	1.25
Hakea cycloptera	Elm-seed Hakea Y	83	23	0.40
Babingtonia behrii	Silver Broombush	83	3	1.97
Allocasuarina muelleriana ssp. muelleriana	Common Oak-bush	67	4	1.88
Leptospermum coriaceum	Dune Tea-tree	58	5	2.63
Melaleuca uncinata	Broombush	50	1	6.14
Low Shrub < 1m				
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	100	27	1.66

Appendix 8. Detailed Floristic Group Descriptions

Stenanthemum leucophractum	White Cryptandra	91	16	0.40
Acacia spinescens	Spiny Wattle	73	4	0.39
Adenanthos terminalis	Yellow Gland-flower	64	28	1.30
Daviesia brevifolia	Leafless Bitter-pea	64	25	0.42
Gonocarpus mezianus	Broad-leaf Raspwort	64	4	1.66
Calytrix tetragona	Common Fringe-myrtle	64	2	0.82
Correa backhouseana var. coriacea	Thick-leaf Correa	55	3	0.38
Astroloma conostephioides	Flame Heath	55	2	0.69
Astroloma humifusum	Cranberry Heath	55	1	0.46
Leucopogon rufus	Ruddy Beard-heath	45	19	0.40
Daviesia asperula ssp. obliqua	Eyre Peninsula Bitter-pea Y	45	10	0.55
Acrotriche cordata	Blunt-leaf Ground-berry	45	5	1.78
Grass Sedge				
Lepidosperma carphoides	Black Rapier-sedge	100	28	0.70
Schoenus breviculmis	Matted Bog-rush	82	12	1.21
Hypolaena fastigiata	Tassel Rope-rush	55	18	5.33
Neurachne alopecuroidea	Fox-tail Mulga-grass	45	3	0.81
Austrodanthonia setacea	Small-flower Wallaby-grass	45	1	0.60
Austrostipa hemipogon	Half-beard Spear-grass	45	1	0.59
Lomandra collina	Sand Mat-rush	45	1	0.50
Lepidosperma viscidum	Sticky Sword-sedge	45	0	1.24
Forb Herb Vine				
Drosera macrantha ssp. planchonii	Climbing Sundew	91	14	0.41
Thysanotus patersonii	Twining Fringe-lily	73	2	0.37
Homoranthus homoranthoides	Port Lincoln Ground-myrtle Y	64	17	2.12
Chamaescilla corymbosa var. corymbosa	Blue Squill	55	7	0.68
Opercularia scabrida	Stalked Stinkweed	55	5	1.61
Cassytha glabella f. dispar	Dodder-laurel	55	2	0.53
Stackhousia aspericocca ssp. One-sided inflorescence (W.R.Barker 697)	One-sided Candles	45	21	0.16
Pyrorchis nigricans	Black Fire-orchid	45	16	0.73

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 CUM01601, 80 CUM02003, 80 JUS00801, 80 SLE01701, 80 SLE01702, 80 WAN00401, 80 WAN00402, 128 ULE00501, 128 ULE00701, 128 ULE01101, 128 MUR00201

Floristic Group 41: site 128 ULE01101 – 14/12/2004

Appendix 8. Detailed Floristic Group Descriptions

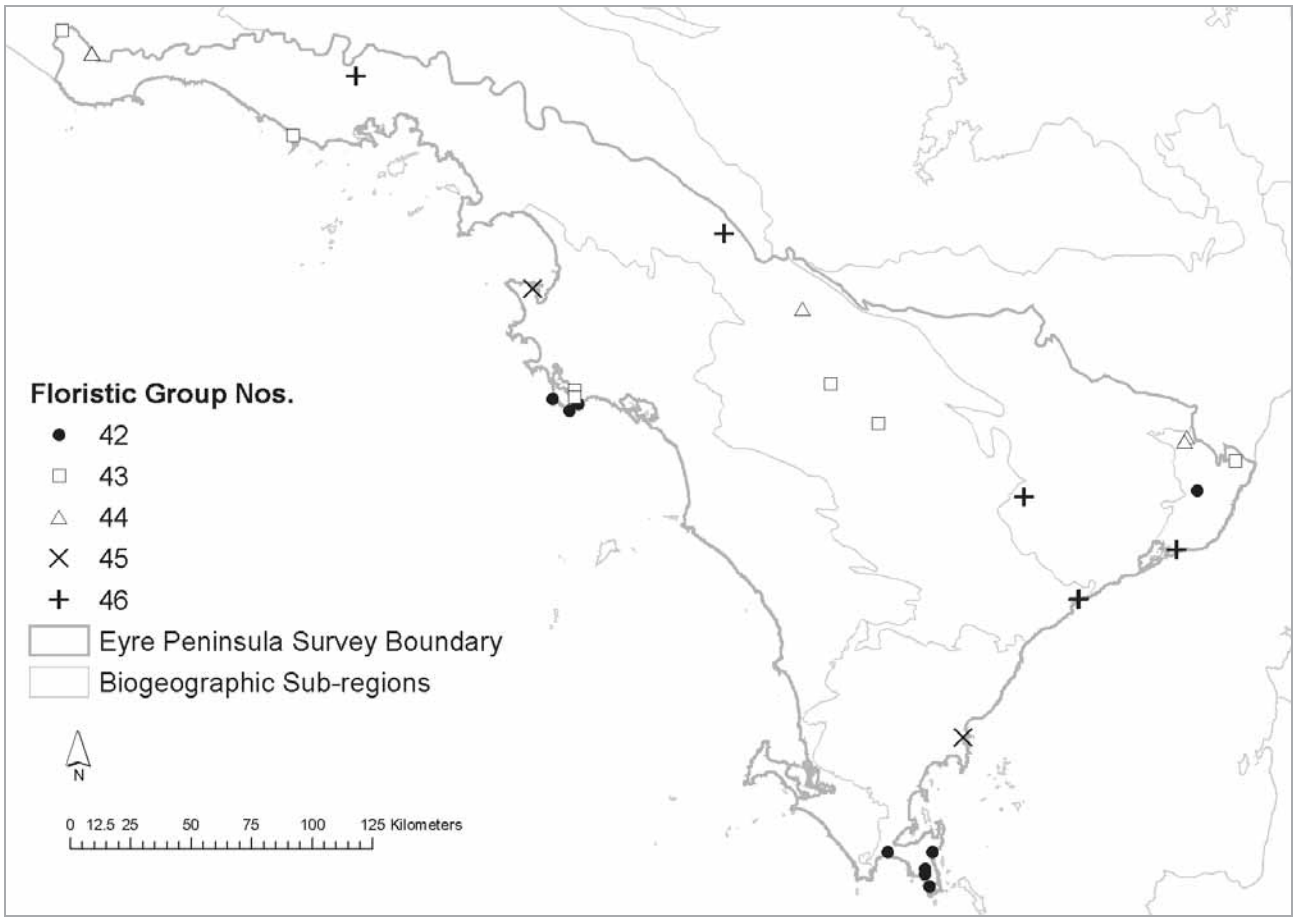
Cluster 18. A diverse collection of floristic groups that include as dominant overstorey: Drooping Sheoak, Bitter Saltbush, the intertidal Grey Mangrove, and a dune group dominated by Umbrella Bush and Dune Tea-tree.

This cluster should not be viewed as a collection of closely related groups. It brings together a diverse mix of dissimilar sites that don't fit into the other broader clusters. As can be seen from the characteristic species table below, no species are in more than 1/3rd of the sites contributing to this cluster.

32 sites in 5 groups

Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Allocasuarina verticillata*	Drooping Sheoak	7	21.88	8.35
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	10	31.25	4.66
Shrub > 1m	*Acacia ligulata*	Umbrella Bush	8	25.00	5.80
Shrub > 1m	*Olearia axillaris*	Coast Daisy-bush	8	25.00	4.43
Low Shrub < 1m	*Lasiopetalum discolor*	Coast Velvet-bush	7	21.88	8.57
Low Shrub < 1m	*Rhagodia candolleana ssp. candolleana*	Sea-berry Saltbush	7	21.88	3.73
grass sedge	*Lomandra effusa*	Scented Mat-rush	8	25.00	4.08

Fauna at cluster level not relevant.



Floristic Group 42. Drooping Sheoak Woodland *Allocasuarina verticillata* / Coastal White Mallee *Eucalyptus diversifolia* / Dryland Teatree *Melaleuca lanceolata* Tall Shrubland over Coast Velvet Bush *Lasiopetalum discolor* +/- Coast Beard Heath *Leucopogon parviflorus* / Coast Daisy Bush *Olearia axillari* / Scaly Poa *Poa fax* / Scented Mat-rush *Lomandra effusa*

10 predominantly coastal sites divided between the southern tip of the Eyre Hills Environmental Association and oceanic coast around Baird Bay. This mixed assemblage was associated with consolidated dunes and plains, mostly on sand surface soils. Where recorded, outcropping and strew were absent. No history of fires was recorded or mapped though some sites are likely to have been burnt since data was collected. Both bare earth cover (mean 3%, sdev 8) and litter cover (mean 2%, sdev 4) were low.

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 82
Average number of species per site: 14.6 sdev: 6.6 Maximum: 30 Minimum: 6
Number of significant species - EPBC Act: 1 NPW Act: 2
Poa fax, Scaly Poa SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V
Number of Eyre Peninsula endemic species: 2
Hibbertia cinerea, Hibbertia cinerea; *Prostanthera calycina*, Prostanthera calycina
Number of introduced/invasive species: 7
Average number of introduced/invasive species per site: 1 Maximum: 3 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Prostanthera calycina	West Coast Mintbush	Low Shrub < 1m	28.6	0.01	5.7	5.13
Poa fax	Scaly Poa	grass sedge	26.4	0.015	5	5.12
Lasiopetalum discolor	Coast Velvet-bush	Low Shrub < 1m	15	0.005	3.2	2.12
Hardenbergia violacea	Native Lilac	Forb Herb Vine	13.3	0.044	5.1	4.55
Acacia longifolia ssp. sophorae	Coastal Wattle	Shrub > 1m	11.7	0.053	4.4	4.11

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Allocasuarina verticillata	Drooping Sheoak	50	8	4.44
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	50	3	6.47
Shrub > 1m				
Leucopogon parviflorus	Coast Beard-heath	50	12	3.76
Melaleuca lanceolata	Dryland Tea-tree	50	1	3.62
Olearia axillaris	Coast Daisy-bush	40	2	3.74
Low Shrub < 1m				
Lasiopetalum discolor	Coast Velvet-bush	70	15	2.83
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	40	5	1.35
Grass Sedge				
Poa fax	Scaly Poa R	40	26	3.94
Lomandra effusa	Scented Mat-rush	40	10	0.93

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN00801, 79 LN00901, 79 LN01601, 79 LN02901, 79 LN03001, 103 CHA01401, 179 GAB00601, 179 GAB00602, 179 GAB00701, 179 GAB00801

Floristic Group 43. not a meaningfull grouping

9 sites. This group has not been described as it represents a scattered and widespread collection of sites across the northern part of study area with no species characteristic across the majority of sites. Species are a collection of saline tollerant species often associated with temporary wetlands. Most sites were related to sand dunes with sand soils.

Total number of species: 91
Average number of species per site: 12 sdev: 7.3 Maximum: 23 Minimum: 2
Number of significant species - EPBC Act: 1 NPW Act: 2
Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V; *Poa fax*, Scaly Poa SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 6
Average number of introduced/invasive species per site: 0.7 Maximum: 2 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Sporobolus virginicus	Salt Couch	grass sedge	21.8	0.019	5.2	4.78
Allocasuarina helmsii	Helm's Oak-bush	Shrub > 1m	22.1	0.024	6	5.46
Samolus repens	Creeping Brookweed	Forb Herb Vine	15.6	0.034	4.5	4.31
Apium graveolens	Celery	Forb Herb Vine	10.9	0.095	5.9	4.72

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus incrassata	Ridge-fruited Mallee	22	0	3.56
Eucalyptus dumosa complex	White Mallee	22	0	4.27
Shrub > 1m				
Allocasuarina helmsii	Helm's Oak-bush	22	22	6.70
Acacia sclerophylla var. sclerophylla	Hard-leaf Wattle	22	3	1.34
Low Shrub < 1m				

Appendix 8. Detailed Floristic Group Descriptions

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Darwinia salina	Salt Darwinia Y	22	9	0.23
Westringia rigida	Stiff Westringia	22	1	2.18
Senecio pinnatifolius group	Groundsel	22	1	0.90
Sarcocornia blackiana	Thick-head Samphire	22	1	1.32
Grass Sedge				
Sporobolus virginicus	Salt Couch	33	22	3.38
Ficinia nodosa	Knobby Club-rush	22	0	1.66
Forb Herb Vine				
Samolus repens	Creeping Brookweed	33	16	1.46

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 NUN00101, 107 KYA01201, 107 PAL00501, 128 MUN00701, 179 GAB00401, 179 COA00805, 179 COA00802, 179 COA00804, 430 VMSDT18901

Floristic Group 44. Bitter Saltbush *Atriplex stipitata* Low Shrubland over Small-leaf Bindyi *Sclerolaena brevifolia* / Shrubby Twinleaf *Zygophyllum aurantiacum* +/- emergent trees / tall shrubs

5 sites scattered across the northern margins of the Eyre Mallee biogeographic subregion. This low shrubland assemblage was restricted to plains with sandy loam soils. Rock outcrop was absent and surface strew of calcrete cobbles and granite pebbles was restricted to two sites with <30% cover. No past fires were recorded. Bare earth cover was moderate (mean 20%, sdev 20). Litter cover was also moderate (mean 22%, sdev 8).

Total number of species: 66
Average number of species per site: 18.8 sdev: 11.8 Maximum: 39 Minimum: 10
Number of significant species - EPBC Act: 1 NPW Act: 1
Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 10
Average number of introduced/invasive species per site: 3.2 Maximum: 6 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Atriplex stipitata	Bitter Saltbush	Low Shrub < 1m	63.3	0.001	5.1	4.97
Salvia verbenaca	Salvia	Forb Herb Vine	36.4	0.005	5.6	5.14
Sclerolaena patenticuspis	Spear-fruit Bindyi	Low Shrub < 1m	33.1	0.01	5.6	5.35
Sclerolaena brevifolia	Small-leaf Bindyi	Low Shrub < 1m	31.8	0.008	5.1	5.05
Sclerolaena holtiana	Holt's Bindyi	Low Shrub < 1m	20	0.026	6.2	5.11
Acacia papyrocarpa	Western Myall	Tree	15.2	0.031	5.8	4.99
Marrubium vulgare	Horehound	Forb Herb Vine	14.5	0.035	4.2	3.98
Rhagodia spinescens	Spiny Saltbush	Low Shrub < 1m	14.1	0.045	5.3	5.03
Lycium australe	Australian Boxthorn	Low Shrub < 1m	11.5	0.05	3.8	3.48

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	40	1	0.45
Shrub > 1m				
Dodonaea viscosa ssp. angustissima	Narrow-leaf Hop-bush	40	2	1.78
Geijera linearifolia	Sheep Bush	40	0	2.12
Melaleuca lanceolata	Dryland Tea-tree	40	0	3.62
Low Shrub < 1m				
Atriplex stipitata	Bitter Saltbush	80	63	1.10
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	80	2	0.67
Sclerolaena diacantha group	Bindyi	60	2	0.95
Sclerolaena patenticuspis	Spear-fruit Bindyi	40	33	0.50
Sclerolaena brevifolia	Small-leaf Bindyi	40	32	1.03
Rhagodia spinescens	Spiny Saltbush	40	14	0.93
Lycium australe	Australian Boxthorn	40	12	0.35
Zygophyllum aurantiacum	Shrubby Twinleaf	40	11	0.82
Salsola tragus	Buckbush	40	1	0.51
Threlkeldia diffusa	Coast Bonefruit	40	1	0.99
Grass Sedge				
Lomandra effusa	Scented Mat-rush	60	1	0.93
Schismus barbatus	Arabian Grass *	40	2	0.55
Hordeum glaucum	Blue Barley-grass *	40	1	0.73

Appendix 8. Detailed Floristic Group Descriptions

Forb Herb Vine				
Salvia verbenaca	Salvia *	40	36	1.78
Marrubium vulgare	Horehound *	40	15	0.36
Hypoxis glabella var. glabella	Tiny Star	40	6	0.50
Carrichtera annua	Ward's Weed *	40	1	1.80
Medicago minima var. minima	Little Medic *	40	0	0.99

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

107 YAN00501, 428 OR02601, 428 OR02701, 599 SHI00101, 599 SHI00201

Floristic Group 44: site 599 SHI00201 – 15/5/2008

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 45. Grey Mangrove *Avicennia marina ssp. marina* Tall Shrubland over Beaded Samphire *Sarcocornia quinqueflora* +/- Trailing Hemichroa *Hemichroa pentandra*

2 sites on tidal flats on the east and west coast of the study area with saline soils described as peat. Neither site had rock outcrop or surface strew nor were affected by fire. Bare earth and litter cover were recorded as nil.

Total number of species: 5
Average number of species per site: 3.5 sdev: 2.1 Maximum: 5 Minimum: 2
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 0
Average number of introduced/invasive species per site: 0 Maximum: 0 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Avicennia marina ssp. marina	Grey Mangrove	Tree	85	0.001	5.1	4.64
Hemichroa pentandra	Trailing Hemichroa	Forb Herb Vine	45.6	0.003	5.4	4.73

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Avicennia marina ssp. marina	Grey Mangrove	100	85	9.44
Low Shrub < 1m				
Sarcocornia quinqueflora	Beaded Samphire	100	7	5.17
Tecticornia arbuscula	Shrubby Samphire	50	2	7.44
Forb Herb Vine				
Hemichroa pentandra	Trailing Hemichroa	50	46	1.16
Samolus repens	Creeping Brookweed	50	3	1.46

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

107 HAS00201, 78 TUM00105

Floristic Group 45: site 107 HAS00201 – 14/9/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 46. Umbrella Bush *Acacia ligulata* Shrubland +/- Dune Tea-tree *Leptospermum coriaceum* / Coast Daisy-bush *Olearia axillaris*

6 sites spread across from the north east coast to the north west of the Eyre Mallee biogeographic subregion. This shrubland assemblage occupied dunes, plains and a hill footslope. Soils included sands (66% of sites) and loams. No evidence of past fires was recorded for sites. Outcrop was nil or minimal (<10% calcrete at 1 site). Surface strew was apparent at 50% of sites in the form of pebbles and cobbles, mainly calcareous but also as quartzite adjacent to an inselberg. Fire history was not apparent at sites. Bare earth cover was moderate (mean 27%, sdev 20). Litter cover was low (mean 14.5%, sdev 9)

Total number of species: 141
Average number of species per site: 32.7 sdev: 18.6 Maximum: 69 Minimum: 20
Number of significant species - EPBC Act: 1 NPW Act: 3

Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V; *Ceratogyne obionoides*, Wingwort SA: R; *Lobelia gibbosa complex*, SA: R

Number of Eyre Peninsula endemic species: 1

Hakea cycloptera, Elm-seed Hakea

Number of introduced/invasive species: 20
Average number of introduced/invasive species per site: 4.8 Maximum: 12 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Acacia ligulata	Umbrella Bush	Shrub > 1m	53.8	0.001	4.3	4.29
Vittadinia eremaea	Desert New Holland Daisy	Low Shrub < 1m	16.7	0.053	6.2	5.21

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	67	2	0.45
Callitris gracilis	Southern Cypress Pine	33	0	3.51
Shrub > 1m				
Acacia ligulata	Umbrella Bush	100	54	1.82
Leptospermum coriaceum	Dune Tea-tree	50	8	2.63
Olearia axillaris	Coast Daisy-bush	50	2	3.74
Exocarpos aphyllus	Leafless Cherry	50	0	0.61
Lycium ferocissimum	African Boxthorn *	50	0	0.61
Low Shrub < 1m				
Rhagodia preissii ssp. preissii	Mallee Saltbush	50	4	0.37
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	50	1	0.67
Grass Sedge				
Dianella revoluta var. revoluta	Black-anther Flax-lily	50	1	0.37
Forb Herb Vine				
Brassica tournefortii	Wild Turnip *	67	3	0.68
Senecio glossanthus group	Groundsel	50	3	0.53
Crassula sieberiana complex	Australian Stonecrop	50	1	0.61
Sonchus oleraceus	Common Sow-thistle *	50	1	0.45
Tetragonia implexicoma	Bower Spinach	50	1	1.07

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 WIT00104, 82 ARN00203, 82 ARN00202, 103 RUD00401, 128 KER00401, 127 KOO01401

Floristic Group 46: site 103 RUD00401 - 5/11/1998

Appendix 8. Detailed Floristic Group Descriptions

Cluster 19. Thatching Grass and Cutting Grass Sedgelands with or without an overstorey of Short-leaf Honey Myrtle or Swamp Paperbark

25 sites in 3 floristic groups

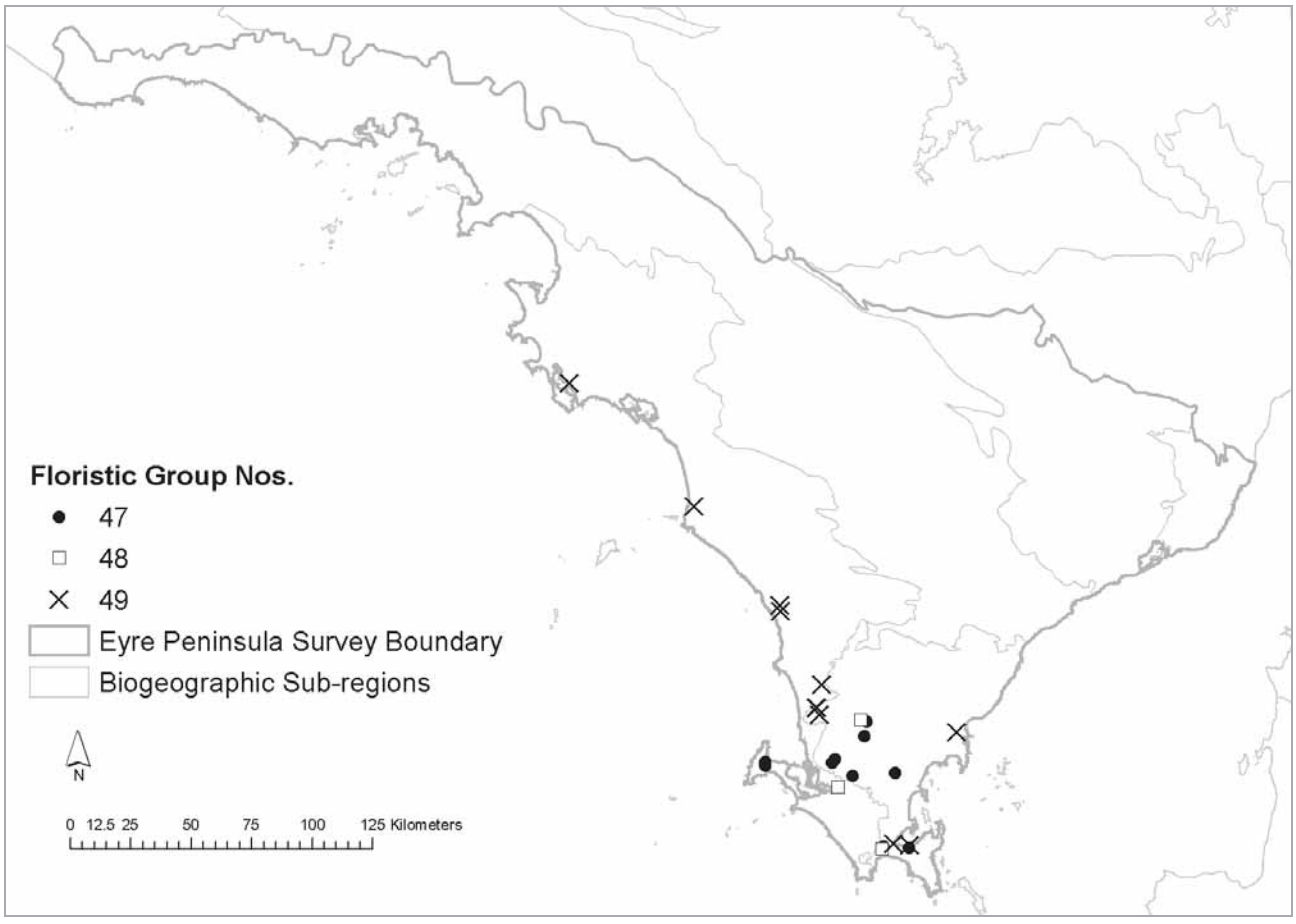
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Shrub > 1m	*Melaleuca brevifolia*	Short-leaf Honey-myrtle	17	68.00	10.61
grass sedge	*Gahnia filum*	Thatching Grass	15	60.00	9.14
grass sedge	*Gahnia trifida*	Cutting Grass	11	44.00	9.60

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 3 sites - *Malurus cyaneus*, Superb Fairy-wren, 3; *Colluricincla harmonica*, Grey Shrike-thrush, 2; *Acanthiza apicalis*, Inland Thornbill, 2; *Falco cenchroides*, Nankeen Kestrel, 2; *Strepera versicolor*, Grey Currawong, 2; *Zosterops lateralis*, Silvereye, 2; *Sericornis frontalis*, White-browed Scrubwren, 2

MAMMALS 3 sites - ***Mus musculus***, House Mouse, 3; **Vulpes vulpes*, Fox, 2; *Rattus fuscipes*, Bush Rat, 2

REPTILES 3 sites - *Tiliqua rugosa*, Sleepy Lizard, 2; *Hemiergis peronii*, Four-toed Earless Skink, 2;



Floristic Group 47. Short-leaf Honey-myrtle *Melaleuca brevifolia* Shrubland +/- Totem-poles *Melaleuca decussata* / Cutting Grass *Gahnia trifida* over Bare Twig-rush *Baumea juncea* / Tassel Rope-rush *Hypolaena fastigiata*

11 sites in southern central part of the Eyre peninsula and on the Coffin Bay and Jussieu Peninsulas. This shrubland assemblage occurred on temporary wetlands (65% of sites), lakes and stream channels. Surface soils ranged from loamy sand to medium clay. Rock outcrop and surface strew was absent. Two sites had recorded fire histories, one having been burnt <3 years prior to sampling and the other 65 years prior to sampling. Bare earth cover was mostly low (mean 11%, sdev 17). Litter cover was variable (mean 26%, sdev 28).

Total number of species: 166

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 26.3 sdev: 19.4 Maximum: 67 Minimum: 5
Number of significant species - EPBC Act: 0 NPW Act: 7

Crassula exserta, Large-fruit Crassula SA: R; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew SA: V; *Grevillea halmaturina ssp. laevis*, Prickly Grevillea SA: R; *Prasophyllum fecundum*, Self-pollinating Leek-orchid SA: R; *Schoenus sculptus*, Gimlet Bog-rush SA: R; *Thelymitra flexuosa*, Twisted Sun-orchid SA: R; *Triglochin minutissimum*, Tiny Arrowgrass SA: R

Number of Eyre Peninsula endemic species: 5

Acacia gillii, Gill's Wattle; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew; *Eucalyptus petiolaris*, Eyre Peninsula Blue Gum; *Grevillea halmaturina ssp. laevis*, Prickly Grevillea; *Hakea cycloptera*, Elm-seed Hakea;

Number of introduced/invasive species: 26
Average number of introduced/invasive species per site: 4.4 Maximum: 10 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Melaleuca brevifolia	Short-leaf Honey-myrtle	Shrub > 1m	69.1	0.001	4.1	4.02
Drosera sp. Rigid (R.J.Bates 2268)	Erect Sundew	Forb Herb Vine	21.1	0.02	4.7	4.82
Utricularia tenella	Pink Bladderwort	Forb Herb Vine	18.2	0.023	5.6	4.82
Aster subulatus	Aster-weed	Forb Herb Vine	18.2	0.041	6	5.47
Hypolaena fastigiata	Tassel Rope-rush	grass sedge	17.9	0.034	5	5.26
Schoenus sculptus	Gimlet Bog-rush	grass sedge	16.9	0.034	4.7	4.73
Schoenus nitens	Shiny Bog-rush	grass sedge	15.2	0.039	5	4.87
Apodasmia brownii	Coarse Twine-rush	grass sedge	13.5	0.042	5	4.65

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Melaleuca brevifolia	Short-leaf Honey-myrtle	100	69	8.17
Melaleuca decussata	Totem-poles	45	10	2.04
Low Shrub < 1m				
Senecio pterophorus	African Daisy *	55	2	0.54
Eutaxia microphylla	Common Eutaxia	45	1	0.64
Grass Sedge				
Gahnia trifida	Cutting Grass	64	14	7.98
Baumea juncea	Bare Twig-rush	45	8	5.61
Forb Herb Vine				
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel Y	55	1	0.74
Microtis unifolia complex	Onion-orchid	45	3	0.42
Anagallis arvensis	Pimpernel *	45	1	0.70

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN01001, 80 CUM01201, 80 CUM01902, 80 CUM02501, 80 JUS01201, 80 LIN02B23, 80 WAN00302, 80 WAN00601, 80 WHI00901, 80 WHI01001, 128 ULE01001

Floristic Group 47: site 128 ULE01001 – 14/12/2004

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 48. Cutting Grass *Gahnia trifida* Sedgeland over Bare Twig-rush *Baumea juncea*

3 sites in the southern Eyre Peninsula. This sedgeland assemblage was found in temporary wetlands and lakes with surface soils classified as loam, clayey sand or peat. Rock outcrop and surface strew were absent. One site had been burnt within the year of sampling. Both bare earth and litter cover were recorded as 0, reflecting dense live vegetation cover.

Total number of species: 29
Average number of species per site: 13 sdev: 10.6 Maximum: 25 Minimum: 5
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 4
Average number of introduced/invasive species per site: 1.7 Maximum: 4 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Gahnia trifida	Cutting Grass	grass sedge	71.6	0.001	4.5	4.54
Lobelia anceps	Angled Lobelia	Forb Herb Vine	65.1	0.001	5.4	4.77
Baumea juncea	Bare Twig-rush	grass sedge	56.6	0.001	4.9	4.67
Schoenus carsei	Wiry Bog-rush	grass sedge	33.3	0.004	6	4.31
Centella asiatica	Asian Centella	Forb Herb Vine	33.3	0.004	6	4.31
Baumea arthrophylla	Swamp Twig-rush	grass sedge	33.3	0.004	6	4.31
Juncus pallidus	Pale Rush	grass sedge	33.3	0.01	6	4.97
Epilobium billardierianum ssp. billardierianum	Robust Willow-herb	Forb Herb Vine	31.6	0.004	5.8	4.31
Sonchus hydrophilus	Native Sow-thistle	Forb Herb Vine	31.6	0.011	5.8	5.18
Lythrum hyssopifolia	Lesser Loosestrife	Forb Herb Vine	20.8	0.022	5.8	4.99
Poa labillardieri var. labillardieri	Common Tussock-grass	grass sedge	15.9	0.022	4.2	4.16
Sonchus asper ssp.	Rough Sow-thistle	Forb Herb Vine	14.3	0.041	4.9	4.65

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Melaleuca brevifolia	Short-leaf Honey-myrtle	67	0	8.17
Senecio pterophorus	African Daisy *	67	6	0.54
Grass Sedge				
Gahnia trifida	Cutting Grass	100	72	7.98
Baumea juncea	Bare Twig-rush	100	57	5.61
Apodasmia brownii	Coarse Twine-rush	67	12	1.51
Forb Herb Vine				
Lobelia anceps	Angled Lobelia	67	65	0.50
Selliera radicans	Shiny Swamp-mat	67	10	3.50
Samolus repens	Creeping Brookweed	67	2	1.46

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN03201, 80 CUM01401, 80 WAN01601

Floristic Group 48: site 80 CUM01401 – 11/10/1995

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 49. Thatching Grass *Gahnia filum* Sedgeland +/- emergent Swamp Paper-bark *Melaleuca halmaturorum* / Short-leaf Honey-myrtle *Melaleuca brevifolia*

11 sites, 4 along the east coast of the southern block of the Eyre Hills, and 7 along the west coast of the Talia biogeographic subregions. This sedgeland assemblage occupied swamps (60% of sites), drainage depressions and lakes. Surface soils ranged from sand to heavy clay, with clays dominating (65% of sites). Calcareous rock outcrop was limited (17% of sites) with limited cover (<10%). Calcareous pebbles represented surface strew at 33% of sites with limited cover (<10%). Fire was present at only 1 site (10 years before sampling). Bare earth cover was mostly low (mean 15%, sdev 19). Litter cover was mostly minimal (mean 13%, sdev 26).

Total number of species: 100
Average number of species per site: 16.7 sdev: 10.8 Maximum: 40 Minimum: 3
Number of significant species - EPBC Act: 1 NPW Act: 2
Isotoma scapigera, Salt Isotome SA: R; *Pleuropappus phyllocalymmeus*, Silver Candles AUS: VU SA: V
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 28
Average number of introduced/invasive species per site: 4.3 Maximum: 13 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Gahnia filum	Thatching Grass	grass sedge	72.3	0.001	4.2	4.06

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Melaleuca halmaturorum	Swamp Paper-bark	55	7	8.05
Melaleuca brevifolia	Short-leaf Honey-myrtle	36	3	8.17
Low Shrub < 1m				
Sarcocornia quinqueflora	Beaded Samphire	55	4	5.17
Threlkeldia diffusa	Coast Bonefruit	36	0	0.99
Grass Sedge				
Gahnia filum	Thatching Grass	100	72	6.20
Avena barbata	Bearded Oat *	36	0	1.39
Forb Herb Vine				
Samolus repens	Creeping Brookweed	55	5	1.46
Sonchus oleraceus	Common Sow-thistle *	36	1	0.45

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN01101, 79 LN02501, 80 COU00201, 80 COU00801, 80 KIA02002, 80 TUM01801, 107 CAL00701, 107 ELL00101, 107 PEA00601, 128 PEA01101, 128 MAR00701

Floristic Group 49: site 80 COU00801 – 10/10/ 1995

Appendix 8. Detailed Floristic Group Descriptions

Cluster 20. A diverse collection of floristic groups that include as overtorey dominants: Peppermint Box, Peninsula Mallee, Coast Ridge-fruited Mallee, Darke Peak Mallee and River Red Gum.

50 sites in seven groups

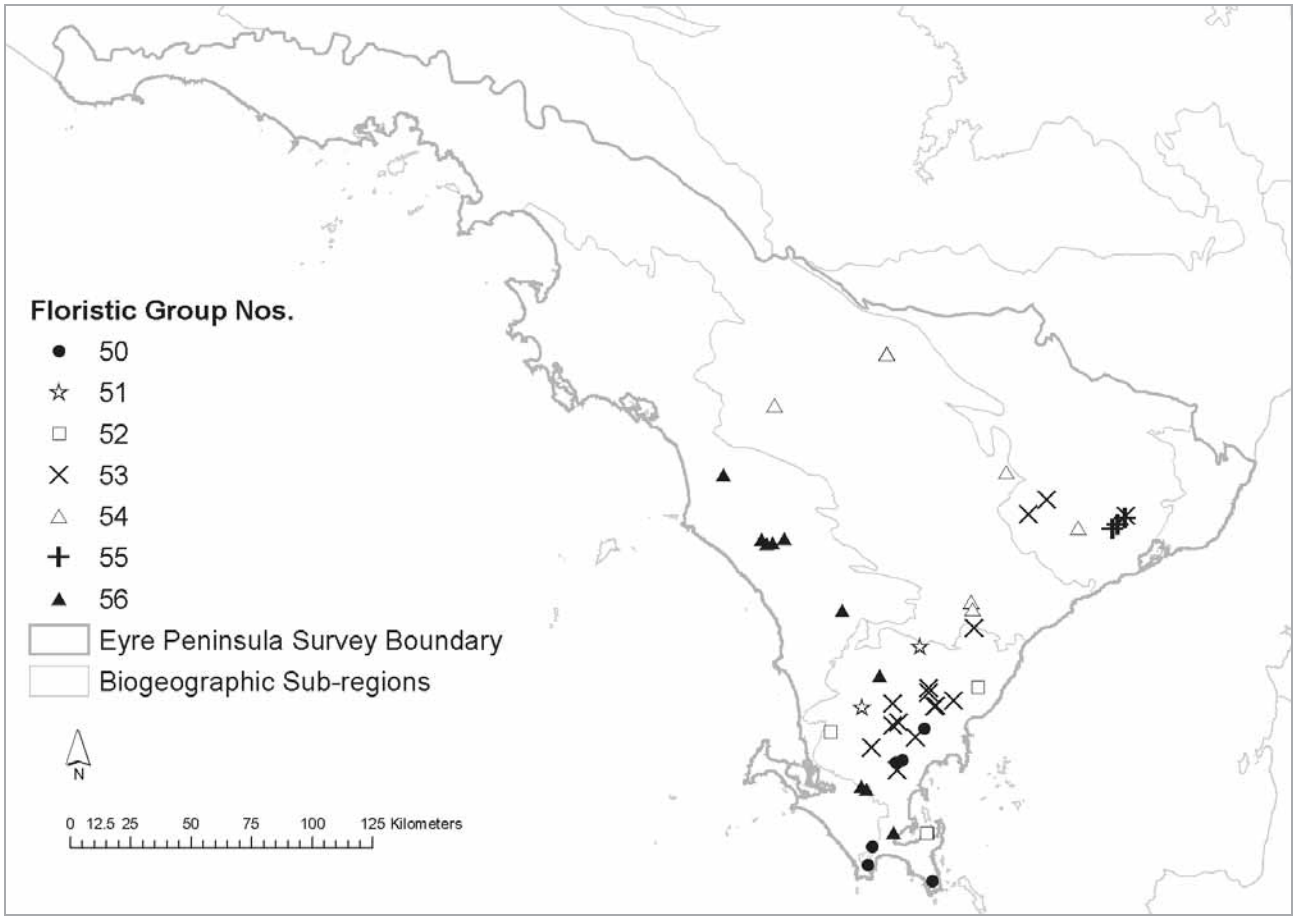
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Shrub > 1m	*Melaleuca uncinata*	Broombush	20	40.00	3.23
Low Shrub < 1m	*Lasiopetalum baueri*	Slender Velvet-bush	21	42.00	1.09
Low Shrub < 1m	*Gonocarpus mezianus*	Broad-leaf Raspwort	20	40.00	2.46
grass sedge	*Avena barbata*	Bearded Oat *	29	58.00	1.20
Forb Herb Vine	*Asparagus asparagoides f. asparagoides*	Bridal Creeper *	27	54.00	2.11

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 12 sites - *Zosterops lateralis,* Silvereye, 11; *Barnardius zonarius,* Australian Ringneck, 10; *Colluricincla harmonica,* Grey Shrike-thrush, 9; *Acanthiza apicalis,* Inland Thornbill, 9; *Strepera versicolor,* Grey Currawong, 9; *Anthochaera carunculata,* Red Wattlebird, 9; *Pardalotus striatus,* Striated Pardalote, 8; *Eolophus roseicapilla,* Galah, 8; *Malurus cyaneus,* Superb Fairy-wren, 7; *Sericornis frontalis,* White-browed Scrubwren, 7; *Pachycephala pectoralis,* Golden Whistler, 7; *Rhipidura albiscapa,* Grey Fantail, 7; *Phylidonyris novaehollandiae,* New Holland Honeyeater, 7; *Smicrornis brevirostris,* Weebill, 7; *Dromaius novaehollandiae,* Emu, 7; *Pardalotus punctatus,* Spotted Pardalote, 6; *Rhipidura leucophrys,* Willie Wagtail, 6; *Drymodes brunneopygia,* Southern Scrub-robin, 6; *Acanthagenys rufogularis,* Spiny-cheeked Honeyeater, 6; *Melithreptus brevirostris,* Brown-headed Honeyeater, 6; *Malurus pulcherrimus,* Blue-breasted Fairy-wren, 6; *Corvus mellori,* Little Raven, 6; *Dacelo novaeguineae,* Laughing Kookaburra, 6

MAMMALS 12 sites - ****Mus musculus***, House Mouse, 9; **Oryctolagus cuniculus,* Rabbit, 9; *Macropus fuliginosus,* Western Grey Kangaroo, 9

REPTILES 12 sites - *Tiliqua rugosa,* Sleepy Lizard, 7; *Christinus marmoratus,* Marbled Gecko, 5; *Menetia greyii,* Dwarf Skink, 5; *Lampropholis delicata,* Delicate Skink, 5



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 50. Drooping Sheoak *Allocasuarina verticillata* +/- Coastal White Mallee *Eucalyptus diversifolia* Woodland / Mallee over Yacca *Xanthorrhoea semiplana* +/- Port Lincoln Guinea-flower *Hibbertia cinerea* / Needle Bottlebrush *Callistemon rugulosus* / Broad-leaf Raspwort *Gonocarpus mezianus* / Totem-poles *Melaleuca decussata*

7 sites with 3 in moist land types within the Koppio Hills and 4 on the wetter sections of undulating calcrete plains on the southern tip of the Eyre Hills Environmental Association. This woodland to mallee assemblage was associated with clay to sandy clay loam surface soils. Calcareous outcrop was present at a third of sites with low to moderate (<50%) cover. Where present, calcareous cobbles dominated the surface strew with cover < 30%. Fire had affected 1 site 2 years prior to sampling. Bare earth cover was minimal (mean 4%, sdev 5), whilst litter cover was moderate but variable (mean 29%, sdev 37).

Total number of species: 135
Average number of species per site: 32 sdev: 16.6 Maximum: 54 Minimum: 8
Number of significant species - EPBC Act: 1 NPW Act: 1
Acacia imbricata, Feathery Wattle AUS: VU SA: R
Number of Eyre Peninsula endemic species: 4
Acacia imbricata, Feathery Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Hibbertia cinerea*, Port Lincoln Guinea-flower; *Pomaderris flabellaris*, Fan Pomaderris
Number of introduced/invasive species: 30
Average number of introduced/invasive species per site: 7.6 Maximum: 16 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Hibbertia cinerea	Port Lincoln Guinea-flower	Low Shrub < 1m	42.1	0.001	4.4	4.15
Trifolium dubium	Suckling Clover	Forb Herb Vine	28.2	0.008	5.4	4.37
Vulpia bromoides	Squirrel-tail Fescue	grass sedge	24.9	0.02	5.6	5.47
Carex breviculmis	Short-stem Sedge	grass sedge	22	0.014	4.7	4.6
Senecio pterophorus	African Daisy	Low Shrub < 1m	19.5	0.008	3.7	3.11
Themeda triandra	Kangaroo Grass	grass sedge	17.1	0.028	4.3	4.22
Melaleuca decussata	Totem-poles	Shrub > 1m	15.5	0.032	4.3	3.95

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Allocasuarina verticillata	Drooping Sheoak	71	12	4.44
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	43	1	6.47
Shrub > 1m				
Xanthorrhoea semiplana	Yacca R Y	86	13	4.35
Callistemon rugulosus	Needle Bottlebrush	57	5	3.65
Acacia rupicola	Rock Wattle	57	2	1.73
Melaleuca decussata	Totem-poles	43	16	2.40
Low Shrub < 1m				
Senecio pterophorus	African Daisy *	71	20	0.54
Hibbertia cinerea	Port Lincoln Guinea-flower Y	57	42	5.21
Gonocarpus mezianus	Broad-leaf Raspwort	57	8	1.66
Lissanthe strigosa ssp. subulata	Peach Heath	43	7	2.64
Lasiopetalum baueri	Slender Velvet-bush	43	0	0.81
Grass Sedge				
Bromus madritensis	Compact Brome *	57	8	0.61
Carex breviculmis	Short-stem Sedge	43	22	0.47
Briza minor	Lesser Quaking-grass *	43	5	0.51
Aira cupaniana	Small Hair-grass *	43	3	0.62
Lepidosperma viscidum	Sticky Sword-sedge	43	2	1.24
Dianella revoluta var. revoluta	Black-anther Flax-lily	43	0	0.37
Forb Herb Vine				
Oxalis perennans	Native Sorrel	71	4	0.54
Acaena echinata	Sheep's Burr	57	9	0.48
Hypochaeris radicata	Rough Cat's Ear *	43	8	0.44
Asparagus asparagoides f. asparagoides	Bridal Creeper *	43	3	1.14
Clematis microphylla var. microphylla	Old Man's Beard	43	1	0.57
Hypochaeris glabra	Smooth Cat's Ear *	43	1	0.57

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN02701, 80 SLE01501, 80 SLE02201, 128 ULE00201, 80 KOP01801, 80 LIN00601, 128 KOP00401

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 50: site 128 ULE00201 – 15/12/2004

Floristic Group 51: site 80 CUM00401 – 10/10/1995

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 51. Bottlebrush *Callistemon rugulosus* Shrubland +/- Peppermint Box *Eucalyptus odorata*

2 sites on the central plains the southern block of the Eyre Hills biogeographic region. This shrubland to mallee assemblage was associated with plains on clay loam and sandy clay loam surface soils. Rock outcrop was absent and surface strew cover minimal, one site with <10% cover of calcareous cobbles. No sites had recorded fire history. Bare earth cover was low (mean 10%, sdev 14), and litter cover was moderate (mean 42.5%, sdev 25).

Total number of species: 33
Average number of species per site: 17.5 sdev: 7.8 Maximum: 23 Minimum: 12
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 1
Acacia gillii, Gill's Wattle
Number of introduced/invasive species: 11
Average number of introduced/invasive species per site: 5.5 Maximum: 8 Minimum: 3

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Callistemon rugulosus	Bottlebrush	Shrub > 1m	61.9	0.001	4	3.88
Crassula natans var. minus	Water Crassula	Forb Herb Vine	49.3	0.001	5.8	4.4
Vicia monantha	Spurred Vetch	Forb Herb Vine	44.1	0.003	5.7	4.6
Juncus subsecundus	Finger Rush	grass sedge	39.8	0.001	5.3	4.47
Chorizandra enodis	Black Bristle-rush	grass sedge	37.8	0.006	5.2	5.21
Rumex brownii	Slender Dock	Forb Herb Vine	35.8	0.001	4.8	4.41
Malva parviflora	Small-flower Marshmallow	Forb Herb Vine	19.4	0.02	5.4	4.62

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus odorata	Peppermint Box	50	14	3.16
Shrub > 1m				
Callistemon rugulosus	Bottlebrush	100	62	3.65
Melaleuca uncinata	Broombush	50	1	6.14
Grass Sedge				
Chorizandra enodis	Black Bristle-rush	100	38	1.66
Juncus subsecundus	Finger Rush	50	40	0.65
Forb Herb Vine				
Crassula natans var. minus	Water Crassula*	50	49	0.55
Rumex brownii	Slender Dock	50	36	0.53
Sonchus oleraceus	Common Sow-thistle *	50	3	0.45

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 COC01301, 80 CUM00401

Floristic Group 52. Hop-bush Wattle *Acacia dodonaeifolia* Shrubland +/- Coast Ridge-fruited Mallee *Eucalyptus angulosa* over Broad-leaf Raspwort *Gonocarpus mezianus*, Sticky Sword-sedge *Lepidosperma viscidum* / Guinea-flower *Hibbertia platyphylla*

4 sites in the southern block of the Eyre Hills biogeographic subregion. This shrubland assemblage was restricted to hillslopes with surface soils ranging from loamy sand to clay loam. Rock outcrop included granite and gneiss, ranging from 0 to >50% cover. Surface strew cover included boulders and pebbles of granit, quartz and gneiss with <10% to 70% cover. Fire affected 75% of sites 10-28 years prior to sampling (mean 22 years). Bare earth cover was low (mean 12.5%, sdev 10). Litter cover was high (mean 50%, sdev 36).

Total number of species: 120
Average number of species per site: 47 sdev: 10.8 Maximum: 58 Minimum: 35
Number of significant species - EPBC Act: 0 NPW Act: 4
Acacia dodonaeifolia, Hop-bush Wattle SA: R; *Anthocercis anisantha ssp. anisantha*, Port Lincoln Ray-flower SA: R; *Eucalyptus conglobata ssp. conglobata*, Port Lincoln Mallee SA: R; *Lobelia gibbosa complex*, SA: R
Number of Eyre Peninsula endemic species: 1
Anthocercis anisantha ssp. anisantha, Port Lincoln Ray-flower; *Pomaderris flabellaris*, Fan Pomaderris
Number of introduced/invasive species: 18

Appendix 8. Detailed Floristic Group Descriptions

Average number of introduced/invasive species per site: 7 Maximum: 10 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Acacia dodonaeifolia	Hop-bush Wattle	Shrub > 1m	93.6	0.001	4.9	5.12
Anthocercis anisantha ssp. anisantha	Port Lincoln Ray-flower	Low Shrub < 1m	50	0.001	5.9	4.97
Gonocarpus mezianus	Broad-leaf Raspwort	Low Shrub < 1m	32.1	0.001	3.6	2.99
Poranthera microphylla group		Forb Herb Vine	17.8	0.002	3.1	2.18
Hibbertia platyphylla	Guinea-flower	Low Shrub < 1m	29.8	0.003	4.2	3.94
Poa crassicaudex	Thick-stem Tussock-grass	grass sedge	29.5	0.004	4.5	4.6
Wahlenbergia gracilenta	Annual Bluebell	Forb Herb Vine	14.5	0.004	2.9	1.98
Chrysocephalum apiculatum	Common Everlasting	Forb Herb Vine	14.3	0.016	3.4	2.8
Astroloma humifusum	Cranberry Heath	Low Shrub < 1m	19.2	0.018	3.8	3.26
Aira cupaniana	Small Hair-grass	grass sedge	6.5	0.023	2.7	1.76
Hydrocotyle foveolata	Yellow Pennywort	Forb Herb Vine	13.6	0.045	4.7	4.79
Schoenus nanus	Little Bog-rush	grass sedge	8.7	0.048	3.4	2.89

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus angulosa	Coast Ridge-fruited Mallee	50	0	5.47
Shrub > 1m				
Acacia dodonaeifolia	Hop-bush Wattle R Y	100	94	7.90
Pomaderris flabellaris	Fan Pomaderris Y	50	6	0.82
Low Shrub < 1m				
Gonocarpus mezianus	Broad-leaf Raspwort	100	32	1.66
Anthocercis anisantha ssp. anisantha	Port Lincoln Ray-flower R	50	50	0.30
Hibbertia platyphylla	Guinea-flower Y	50	30	1.51
Astroloma humifusum	Cranberry Heath	50	19	0.46
Calytrix tetragona	Common Fringe-myrtle	50	10	0.82
Beyeria lechenaultii	Pale Turpentine Bush	50	8	2.54
Opercularia turpis	Twiggy Stinkweed	50	3	0.47
Acrotriche patula	Prickly Ground-berry	50	2	1.52
Acacia spinescens	Spiny Wattle	50	1	0.39
Lasiopetalum baueri	Slender Velvet-bush	50	1	0.81
Correa backhouseana var. coriacea	Thick-leaf Correa	50	1	0.38
Grass Sedge				
Lepidosperma viscidum	Sticky Sword-sedge	75	9	1.24
Aira cupaniana	Small Hair-grass *	75	6	0.62
Austrostipa hemipogon	Half-beard Spear-grass	75	3	0.59
Avellinia michelii	Avellinia *	75	2	0.65
Poa crassicaudex	Thick-stem Tussock-grass	50	30	0.39
Gahnia deusta	Limestone Saw-sedge	50	9	0.46
Austrostipa blackii	Crested Spear-grass	50	6	1.01
Schoenus nanus	Little Bog-rush	50	6	2.03
Austrostipa exilis	Heath Spear-grass	50	1	0.84
Austrostipa elegantissima	Feather Spear-grass	50	0	0.47
Dianella revoluta var. revoluta	Black-anther Flax-lily	50	0	0.37
Forb Herb Vine				
Wahlenbergia gracilenta	Annual Bluebell	100	100	14
Thysanotus patersonii	Twining Fringe-lily	100	100	5
Poranthera microphylla group		75	75	18
Anagallis arvensis	Pimpernel *	75	75	2
Chrysocephalum apiculatum	Common Everlasting	50	50	14
Hyalosperma demissum	Dwarf Sunray	50	50	6
Trachymene cyanopetala	Purple Trachymene	50	50	6
Erodium botrys	Long Heron's-bill *	50	50	6
Goodenia robusta	Woolly Goodenia	50	50	5
Podolepis tepperi	Delicate Copper-wire Daisy	50	50	5
Wurmbea dioica	Nancy	50	50	5
Crassula decumbens var. decumbens	Spreading Crassula	50	50	5
Stackhousia monogyna	Creamy Candles	50	50	4
Calandrinia calyptrata	Pink Purslane	50	50	3
Millotia tenuifolia var.	Soft Millotia	50	50	3
Plantago sp. B (R.Bates 44765)	Little Plantain	50	50	3
Blennospora drummondii	Dwarf Button-flower	50	50	2
Arctotheca calendula	Cape Weed *	50	50	2
Bulbine semibarbata	Small Leek-lily	50	50	2
Daucus glochidiatus	Native Carrot	50	50	1
Hypochaeris glabra	Smooth Cat's Ear *	50	50	1
Oxalis perennans	Native Sorrel	50	50	1
Senecio glossanthus group	Groundsel	50	50	1
Sonchus oleraceus	Common Sow-thistle *	50	50	0
Cheilanthes austrotenuifolia	Annual Rock-fern	100	15	1.3

Appendix 8. Detailed Floristic Group Descriptions

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 BUT01501, 80 CUM02201, 80 JUS00402, 80 JUS00403

Floristic Group 52: site 80 JUS00402 – 15/10/1995

Floristic Group 53. Peppermint Box *Eucalyptus odorata* Mallee / Eyre Peninsula Blue Gum *E. petiolaris* Woodland over Broombush *Melaleuca uncinata* +/- Feathery Wattle *Acacia imbricata* / Sweet Bursaria *Bursaria spinosa* ssp. *spinosa* / Peach Heath *Lissanthe strigosa* ssp. *subulata*

15 sites concentrated around the higher hills of the south and north block of the Eyre Hills biogeographic subregion. This mallee to woodland assemblage was associated with hills, low hills, rises and plains on a variety of land types including hill slopes, drainage lines and dunes. Surface soils ranged from sand to light medium clay. Rock outcrop was rare, 2 sites of granite or calcrete with low (<10%) cover. Surface strew was present at 60% of sites as pebbles, cobbles or boulders with <10% to 70% cover of granite, quartzite or calcrete. Fire had affected 33% of sites having occurred 2-45 years prior to sampling (mean 30 years). Bare earth cover was moderate (mean 20%, sdev 14). Litter cover was high (mean 43%, sdev 20).

Total number of species: 267
Average number of species per site: 55.5 sdev: 17.2 Maximum: 90 Minimum: 22
Number of significant species - EPBC Act: 1 NPW Act: 5
Acacia imbricata, Feathery Wattle AUS: VU SA: R; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Eucalyptus behriana*, Broad-leaf Box SA: R; *Philotheca angustifolia ssp. angustifolia*, Narrow-leaf Wax-flower SA: R; *Spyridium leucopogon*, Silvery Spyridium SA: R
Number of Eyre Peninsula endemic species: 7
Acacia imbricata, Feathery Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Eucalyptus petiolaris*, Eyre Peninsula Blue Gum; *Hakea cycloptera*, Elm-seed Hakea; *Pomaderris flabellaris*, Fan Pomaderris; *Spyridium leucopogon*, Silvery Spyridium;
Number of introduced/invasive species: 54
Average number of introduced/invasive species per site: 13.5 Maximum: 24 Minimum: 6

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus petiolaris	Eyre Peninsula Blue Gum	Tree	50.4	0.001	4.7	4.76
Acacia imbricata	Feathery Wattle	Shrub > 1m	35	0.001	4.3	4.33

Appendix 8. Detailed Floristic Group Descriptions

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Arctotheca calendula	Cape Weed	Forb Herb Vine	10.5	0.011	3	1.94
Stackhousia monogyna	Creamy Candles	Forb Herb Vine	11.9	0.014	3.3	2.66
Grevillea ilicifolia complex	Holly-leaf Grevillea	Low Shrub < 1m	19.9	0.017	4.8	4.88
Plantago gaudichaudii	Narrow-leaf Plantain	Forb Herb Vine	19.7	0.024	5.2	4.89
Bursaria spinosa ssp. spinosa	Sweet Bursaria	Shrub > 1m	16.4	0.024	4.1	3.64
Eutaxia diffusa	Large-leaf Eutaxia	Low Shrub < 1m	14.4	0.043	5.5	5.03

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus odorata	Peppermint Box	67	15	3.16
Eucalyptus petiolaris	Eyre Peninsula Blue Gum Y	60	50	8.04
Shrub > 1m				
Melaleuca uncinata	Broombush	80	2	6.14
Acacia imbricata	Feathery Wattle VU R Y	53	35	3.61
Bursaria spinosa ssp. spinosa	Sweet Bursaria	53	16	1.65
Acacia rupicola	Rock Wattle	40	1	1.73
Low Shrub < 1m				
Gonocarpus mezianus	Broad-leaf Raspwort	67	3	1.66
Lissanthe strigosa ssp. subulata	Peach Heath	60	13	2.64
Lasiopetalum baueri	Slender Velvet-bush	53	6	0.81
Vittadinia gracilis	Woolly New Holland Daisy	53	6	0.44
Eutaxia microphylla	Common Eutaxia	53	1	0.64
Grevillea ilicifolia complex	Holly-leaf Grevillea	47	20	0.49
Acacia spinescens	Spiny Wattle	40	2	0.39
Grass Sedge				
Avena barbata	Bearded Oat *	93	3	1.39
Austrostipa elegantissima	Feather Spear-grass	60	6	0.47
Lolium rigidum	Wimmera Ryegrass *	60	6	0.71
Austrodanthonia caespitosa	Common Wallaby-grass	60	3	0.67
Lepidosperma viscidum	Sticky Sword-sedge	60	3	1.24
Dianella revoluta var. revoluta	Black-anther Flax-lily	60	2	0.37
Aira cupaniana	Small Hair-grass *	53	4	0.62
Austrodanthonia setacea	Small-flower Wallaby-grass	53	3	0.60
Avellinia michelii	Avellinia *	53	1	0.65
Ehrharta longiflora	Annual Veldt Grass *	47	8	0.80
Neurachne alopecuroidea	Fox-tail Mulga-grass	47	6	0.81
Austrostipa scabra ssp. falcata	Slender Spear-grass	47	4	0.93
Forb Herb Vine				
Oxalis perennans	Native Sorrel	93	5	0.54
Hypochaeris glabra	Smooth Cat's Ear *	87	5	0.57
Anagallis arvensis	Pimpernel *	87	4	0.70
Arctotheca calendula	Cape Weed *	80	11	0.41
Sonchus oleraceus	Common Sow-thistle *	73	2	0.45
Trifolium campestre	Hop Clover *	67	8	0.60
Asparagus asparagoides f. asparagoides	Bridal Creeper *	67	4	1.14
Lagenophora huegelii	Coarse Bottle-daisy	60	14	0.67
Calandrinia calyptrata	Pink Purslane	60	4	0.64
Daucus glochidiatus	Native Carrot	60	2	0.56
Thysanotus patersonii	Twining Fringe-lily	60	2	0.37
Stackhousia monogyna	Creamy Candles	53	12	0.52
Chamaescilla corymbosa var. corymbosa	Blue Squill	53	5	0.68
Clematis microphylla var. microphylla	Old Man's Beard	53	1	0.57
Blennospora drummondii	Dwarf Button-flower	47	2	0.61
Helichrysum leucopsideum	Satin Everlasting	47	2	0.60
Geranium retrorsum	Grassland Geranium	40	7	0.78
Drosera macrantha ssp. planchonii	Climbing Sundew	40	2	0.41
Crassula colorata		40	1	0.58

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 BUT00403, 80 COC02101, 80 KOP01301, 80 KOP01401, 80 TUM00601, 80 KOP01B14, 128 KOP01101, 128 KOP01001, 80 CUM02401, 80 KOP01B18, 80 LIN00901, 128 KOP00701, 103 RUD00201, 103 RUD00501, 103 COW00501

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 53: site 128 KOP01101 – 4/9/2004

Floristic Group 54: site 128 HIN01001 – 24/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 54. Broombush *Melaleuca uncinata* / Narrow-leaf Hop-bush *Dodonaea viscosa ssp. angustissima* / Sticky Hop-bush *D. viscosa ssp. spatulata* Shrubland +/- overstorey of Peppermint Box *E. odorata* / Peninsula Mallee *E. peninsularis* over Slender Velvet-bush *Lasiopetalum baueri* / Cup Fringe-myrtle *Calytrix involucrata*

9 sites in the north eastern half of the study area. This shrubland to mallee assemblage was most common on hill slopes with sand to clay loam soils. Granite rock outcrop was common (>50% of sites) with cover ranging from <10 to >50%, quartzite was present at 1 site. Surface strew of granite, quartzite or calcrete was present as pebbles, cobbles or boulder at 67% of sites with cover <10%. Fire had affected 44% of sites 29-44 years prior to sampling. Bare earth was low (mean 6%, sdev 6). Litter cover was moderate (mean 36%, sdev 23).

Total number of species: 178
Average number of species per site: 44.8 sdev: 13.2 Maximum: 58 Minimum: 16
Number of significant species - EPBC Act: 1 NPW Act: 4
Caladenia tensa, Inland Green-comb Spider-orchid AUS: EN ; *Melaleuca armillaris ssp. akineta*, Needle-leaf Honey-myrtle SA: R; *Schoenus sculptus*, Gimlet Bog-rush SA: R; *Stypandra glauca*, Nodding Grass-lily SA: V; *Wurmbea decumbens*, Trailing Nancy SA: R;
Number of Eyre Peninsula endemic species: 3
Eucalyptus peninsularis, Merrit; *Hakea cycloptera*, Elm-seed Hakea; *Stypandra glauca*, Nodding Grass-lily;
Number of introduced/invasive species: 31
Average number of introduced/invasive species per site: 8.9 Maximum: 17 Minimum: 1

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Lasiopetalum baueri	Slender Velvet-bush	Low Shrub < 1m	18	0.005	4	3.75
Pterostylis excelsa	Dryland Greenhood	Forb Herb Vine	16.3	0.006	3.3	2.77
Melaleuca armillaris ssp. akineta	Needle-leaf Honey-myrtle	Tree	27.6	0.013	5.1	4.92
Dodonaea viscosa ssp. spatulata	Sticky Hop-bush	Shrub > 1m	17.2	0.017	4.1	3.5
Millotia tenuifolia var.	Soft Millotia	Forb Herb Vine	9.1	0.02	2.8	2.14
Acacia beckleri	Beckler's Rock Wattle	Shrub > 1m	22.9	0.022	5.5	5.45
Chrysocephalum semipapposum	Clustered Everlasting	Forb Herb Vine	16.7	0.025	5.3	5.22
Actinobole uliginosum	Flannel Cudweed	Forb Herb Vine	7.2	0.029	2.7	1.86
Gonocarpus elatus	Hill Raspwort	Low Shrub < 1m	14.2	0.04	4.9	4.85
Trachymene ornata		Forb Herb Vine	9.8	0.049	3.7	3.49

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Melaleuca uncinata	Broombush	78	1	6.14
Dodonaea viscosa ssp. angustissima	Narrow-leaf Hop-bush	67	11	1.78
Dodonaea viscosa ssp. spatulata	Sticky Hop-bush	44	17	2.85
Low Shrub < 1m				
Lasiopetalum baueri	Slender Velvet-bush	67	18	0.81
Calytrix involucrata	Cup Fringe-myrtle Y	44	5	1.30
Maireana enchylaenoides	Wingless Fissure-plant	44	2	0.29
Grass Sedge				
Austrostipa elegantissima	Feather Spear-grass	78	3	0.47
Vulpia myuros	Fescue *	67	2	0.93
Pentaschistis airoides	False Hair-grass *	56	6	0.64
Avellinia michelii	Avellinia *	56	3	0.65
Austrodanthonia caespitosa	Common Wallaby-grass	56	1	0.67
Dianella revoluta var. revoluta	Black-anther Flax-lily	44	4	0.37
Forb Herb Vine				
Anagallis arvensis	Pimpernel *	89	3	0.70
Hypochaeris glabra	Smooth Cat's Ear *	78	8	0.57
Trachymene pilosa	Dwarf Trachymene	78	4	0.65
Pterostylis excelsa	Dryland Greenhood	67	16	0.29
Crassula sieberiana complex	Australian Stonecrop	67	2	0.61
Daucus glochidiatus	Native Carrot	67	2	0.56
Thysanotus patersonii	Twining Fringe-lily	67	2	0.37
Asparagus asparagoides f. asparagoides	Bridal Creeper *	56	9	1.14
Millotia tenuifolia var.	Soft Millotia	56	9	0.59
Actinobole uliginosum	Flannel Cudweed	56	7	0.51
Plantago sp. B (R.Bates 44765)	Little Plantain	56	6	0.48
Trachymene ornata		44	10	0.71
Hyalosperma demissum	Dwarf Sunray	44	5	0.52

Appendix 8. Detailed Floristic Group Descriptions

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Podolepis capillaris	Wiry Podolepis	44	3	0.65
Brachyscome lineariloba	Hard-head Daisy	44	1	0.53
Sonchus oleraceus	Common Sow-thistle *	44	1	0.45
Ferns				
Cheilanthes austrotenuifolia	Annual Rock-fern	56	4	1.3

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 HIN00403, 103 HIN00404, 128 HIN00301, 131 HIN01001, 128 COW00301, 103 CAR00701, 107 POR00601, 128 COR00601, 107 WUD00902

Floristic Group 55: site 128 COW00801 – 4/10/2002

Floristic Group 55. Peppermint Box *Eucalyptus odorata* / Darke Peak Mallee *E. cretata* Mallee over Mealy Saltbush *Rhagodia parabolica*

3 sites in the Cleve Hills of the north block of the Eyre Hills biogeographic subregion. This mallee assemblage was found on plains and hill foot slopes with sandy clay loam to light clay surface soils. Granite outcrop was present at 1 site with <10% cover. Surface strew was present at 2 sites as pebbles with 1-30% cover. Fire was not recorded at sites. Bare earth was low (mean 11%, sdev 13). Litter cover was high (mean 47%, sdev 20).

Total number of species: 74
Average number of species per site: 38.7 sdev: 8.5 Maximum: 45 Minimum: 29
Number of significant species - EPBC Act: 0 NPW Act: 1
Eucalyptus cretata, Darke Peak Mallee SA: R
Number of Eyre Peninsula endemic species: 1
Eucalyptus cretata, Darke Peak Mallee
Number of introduced/invasive species: 14
Average number of introduced/invasive species per site: 8 Maximum: 9 Minimum: 7

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Rhagodia parabolica	Mealy Saltbush	Low Shrub < 1m	76.7	0.001	4.1	3.68
Chenopodium desertorum ssp. microphyllum	Small-leaf Goosefoot	Low Shrub < 1m	39.2	0.001	3.7	3.49

Appendix 8. Detailed Floristic Group Descriptions

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Vittadinia cervicularis var. cervicularis	Waisted New Holland Daisy	Low Shrub < 1m	30.1	0.001	3.4	2.81
Setaria constricta	Knotty-butt Paspalidium*	grass sedge	32.7	0.005	5.6	4.25
Acacia notabilis	Notable Wattle	Shrub > 1m	22.9	0.005	4.7	4.17
Oxalis perennans	Native Sorrel	Forb Herb Vine	8	0.005	2.4	1.25
Clematis microphylla var. microphylla	Old Man's Beard	Forb Herb Vine	11.3	0.006	2.9	1.77
Teucrium sessiliflorum	Mallee Germander	Forb Herb Vine	15.7	0.007	3.2	2.81
Austrostipa platychaeta	Flat-awn Spear-grass	grass sedge	15.2	0.007	3.5	3
Eucalyptus odorata	Peppermint Box	Tree	18.5	0.008	3.8	3.28
Enteropogon acicularis	Umbrella Grass	grass sedge	28.3	0.012	5.5	4.54
Ehrharta longiflora	Annual Veldt Grass*	grass sedge	12.3	0.013	3.3	2.63
Eucalyptus cretata	Darke Peak Mallee	Tree	22.3	0.021	4.5	4.54
Pimelea microcephala ssp. microcephala	Shrubby Riceflower	Shrub > 1m	15.4	0.021	3.9	3.64
Acacia wilhelmiana	Dwarf Nealie	Shrub > 1m	19	0.023	4.7	4.37
Sida corrugata var. angustifolia	Grassland Sida	Low Shrub < 1m	15.6	0.033	5.6	4.73
Galenia pubescens var. pubescens	Coastal Galenia	Forb Herb Vine	14.6	0.035	4.3	4.12
Dodonaea tepperi	Streaked Hop-bush	Low Shrub < 1m	14.8	0.043	5.1	4.87
Elymus scaber var. scaber	Native Wheat-grass	grass sedge	12.2	0.048	4.1	3.96
Austrostipa elegantissima	Feather Spear-grass	grass sedge	7	0.048	3.2	2.28
Lycium ferocissimum	African Boxthorn*	Shrub > 1m	12.4	0.049	4.6	4.28

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	100	3	0.45
Eucalyptus odorata	Peppermint Box	67	18	3.16
Shrub > 1m				
Lycium ferocissimum	African Boxthorn *	100	12	0.61
Pimelea microcephala ssp. microcephala	Shrubby Riceflower	67	15	0.42
Eremophila glabra ssp. glabra	Tar Bush	67	2	0.33
Geijera linearifolia	Sheep Bush	67	0	2.12
Low Shrub < 1m				
Rhagodia parabolica	Mealy Saltbush	100	77	1.42
Chenopodium desertorum ssp. microphyllum	Small-leaf Goosefoot	100	39	0.29
Vittadinia cervicularis var. cervicularis	Waisted New Holland Daisy	100	30	0.40
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	100	3	0.67
Einadia nutans ssp. nutans	Climbing Saltbush	67	7	0.42
Maireana brevifolia	Short-leaf Bluebush	67	5	0.40
Grass Sedge				
Ehrharta longiflora	Annual Veldt Grass *	100	12	0.80
Austrostipa elegantissima	Feather Spear-grass	100	7	0.47
Austrodanthonia caespitosa	Common Wallaby-grass	100	3	0.67
Avena barbata	Bearded Oat *	100	2	1.39
Austrostipa platychaeta	Flat-awn Spear-grass	67	15	0.50
Austrodanthonia setacea	Small-flower Wallaby-grass	67	5	0.60
Austrostipa scabra ssp. falcata	Slender Spear-grass	67	5	0.93
Lomandra effusa	Scented Mat-rush	67	3	0.93
Vulpia myuros	Fescue *	67	2	0.93
Dianella revoluta var. revoluta	Black-anther Flax-lily	67	1	0.37
Forb Herb Vine				
Oxalis perennans	Native Sorrel	100	8	0.54
Asparagus asparagoides f. asparagoides	Bridal Creeper *	100	4	1.14
Teucrium sessiliflorum	Mallee Germander	67	16	0.55
Clematis microphylla var. microphylla	Old Man's Beard	67	11	0.57
Goodenia willisiana	Silver Goodenia	67	5	0.49
Moraea setifolia	Thread Iris *	67	3	0.96
Cassytha melantha	Coarse Dodder-laurel	67	2	0.69
Crassula colorata		67	2	0.58

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 COW00901, 103 COW00601, 128 COW00801

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 56. River Red Gum *Eucalyptus camaldulensis* Woodland over introduced grasses, Old Man's Beard *Clematis microphylla* and Native Sorrel *Oxalis perennans* +/- Bottlebrush *Callistemon rugulosus* / Woolly New Holland Daisy *Vittadinia gracilis*

10 sites in the south western and bottom of the Eyre Peninsula. These woodlands mostly occur on calcareous plains often on low points such as drainage depressions, floodout flats and in the southern areas, stream channels. Surface soils ranged from sandy loam to clay loam. Calcareous rock outcrop was common (80% of sites with 1-50% cover). Calcareous surface strew cover ranged from cobbles to boulder at 80% of sites, mostly with <30% cover. Fire was recorded for 70% of sites and ranged from 28-65 years prior to sampling (mean 39 years). Bare earth cover was minimal (mean 2%, sdev 3). Litter cover was high (mean 56%, sdev 32).

Total number of species: 146
Average number of species per site: 36.9 sdev: 8.2 Maximum: 45 Minimum: 18
Number of significant species - EPBC Act: 0 NPW Act: 1
Eucalyptus behriana, Broad-leaf Box SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 66
Average number of introduced/invasive species per site: 17.6 Maximum: 25 Minimum: 8

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus camaldulensis var. camaldulensis	River Red Gum	Tree	78.9	0.001	4.1	4.19
Acaena echinata	Sheep's Burr	Forb Herb Vine	20.3	0.003	3.6	2.71
Trifolium scabrum	Rough Clover	Forb Herb Vine	19.6	0.005	3.8	3.22
Trifolium campestre	Hop Clover	Forb Herb Vine	10.8	0.006	2.8	1.83
Carduus tenuiflorus	Slender Thistle	Forb Herb Vine	17.1	0.007	3.5	3.03
Haloragis aspera	Rough Raspwort	Forb Herb Vine	27.1	0.009	4.4	4.21
Vittadinia gracilis	Woolly New Holland Daisy	Low Shrub < 1m	22.8	0.009	3.8	3.53
Geranium solanderi var. solanderi	Austral Geranium	Forb Herb Vine	13.2	0.02	3.6	2.88
Briza minor	Lesser Quaking-grass	grass sedge	7.6	0.022	2.7	1.75
Euphorbia peplus	Petty Spurge	Forb Herb Vine	17.7	0.023	5.2	5.13
Olea europaea ssp. europaea	Olive	Tree	19.7	0.024	6	5.55
Ranunculus lappaceus	Native Buttercup	Forb Herb Vine	13.7	0.038	5.3	4.39
Vittadinia australasica var. australasica	Sticky New Holland Daisy	Forb Herb Vine	7.9	0.039	2.9	1.95
Asparagus asparagoides f. asparagoides	Bridal Creeper	Forb Herb Vine	9.3	0.041	4	3.02
Goodia medicaginea	Western Golden-tip	Low Shrub < 1m	17.2	0.043	5.5	5.91
Melilotus indicus	King Island Melilot	Forb Herb Vine	9	0.044	3.6	3.25

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus camaldulensis var. camaldulensis	River Red Gum	100	79	8.16
Shrub > 1m				
Callistemon rugulosus	Bottlebrush	50	6	3.65
Vittadinia gracilis	Woolly New Holland Daisy	50	22	0.44
Acrotriche patula	Prickly Ground-berry	50	0	1.52
Low Shrub < 1m				
Senecio pterophorus	African Daisy *	40	4	0.54
Grass Sedge				
Avena barbata	Bearded Oat *	80	4	1.39
Briza minor	Lesser Quaking-grass *	60	6	0.51
Catapodium rigidum	Rigid Fescue *	60	4	0.57
Austrostipa exilis	Heath Spear-grass	60	1	0.84
Bromus rubens	Red Brome *	50	2	0.68
Vulpia myuros	Fescue *	50	1	0.93
Bromus madritensis	Compact Brome *	40	6	0.61
Aira cupaniana	Small Hair-grass *	40	2	0.62
Forb Herb Vine				
Clematis microphylla var. microphylla	Old Man's Beard	90	10	0.57
Oxalis perennans	Native Sorrel	90	6	0.54
Anagallis arvensis	Pimpernel *	80	3	0.70
Trifolium campestre	Hop Clover *	70	9	0.60
Hypochaeris glabra	Smooth Cat's Ear *	70	2	0.57
Vittadinia australasica var. australasica	Sticky New Holland Daisy	60	7	0.40
Bulbine semibarbata	Small Leek-lily	60	6	0.49
Lagenophora huegelii	Coarse Bottle-daisy	60	4	0.67
Acaena echinata	Sheep's Burr	50	17	0.48
Carduus tenuiflorus	Slender Thistle *	50	17	0.46
Asparagus asparagoides f. asparagoides		50	8	1.14
Vittadinia megacephala	Giant New Holland Daisy	50	6	0.48

Appendix 8. Detailed Floristic Group Descriptions

Galium murale	Small Bedstraw *	50	2	0.62
Haloragis aspera	Rough Raspwort	40	27	0.54
Trifolium scabrum	Rough Clover *	40	20	0.56
Geranium solanderi var. solanderi	Austral Geranium	40	13	0.38
Melilotus indicus	King Island Melilot *	40	9	0.79
Hedypnois rhagadioloides		40	3	0.78
Bupleurum semicompositum	Hare's Ear *	40	2	0.91
Asteridea athrixioides		40	2	0.63
Microtis unifolia complex	Onion-orchid	40	2	0.42
Silene nocturna	Mediterranean Catchfly *	40	2	0.48
Medicago minima var. minima	Little Medic *	40	1	0.56
Daucus glochidiatus	Native Carrot	40	1	0.99

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 WAN01001, 80 YEE02301, 107 HUD01001, 107 HUD04C13, 107 KAP00701, 107 MTW00901, 107 TOO01201, 128 BAS00701, 128 ULE00601, 128 ULE00901

Floristic Group 56: site 128 BAS00701 – 20/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Cluster 21. Drooping Sheoak Woodland over Broad-leaf Raspwort / Sticky Sword-sedge / Annual Rock-fern

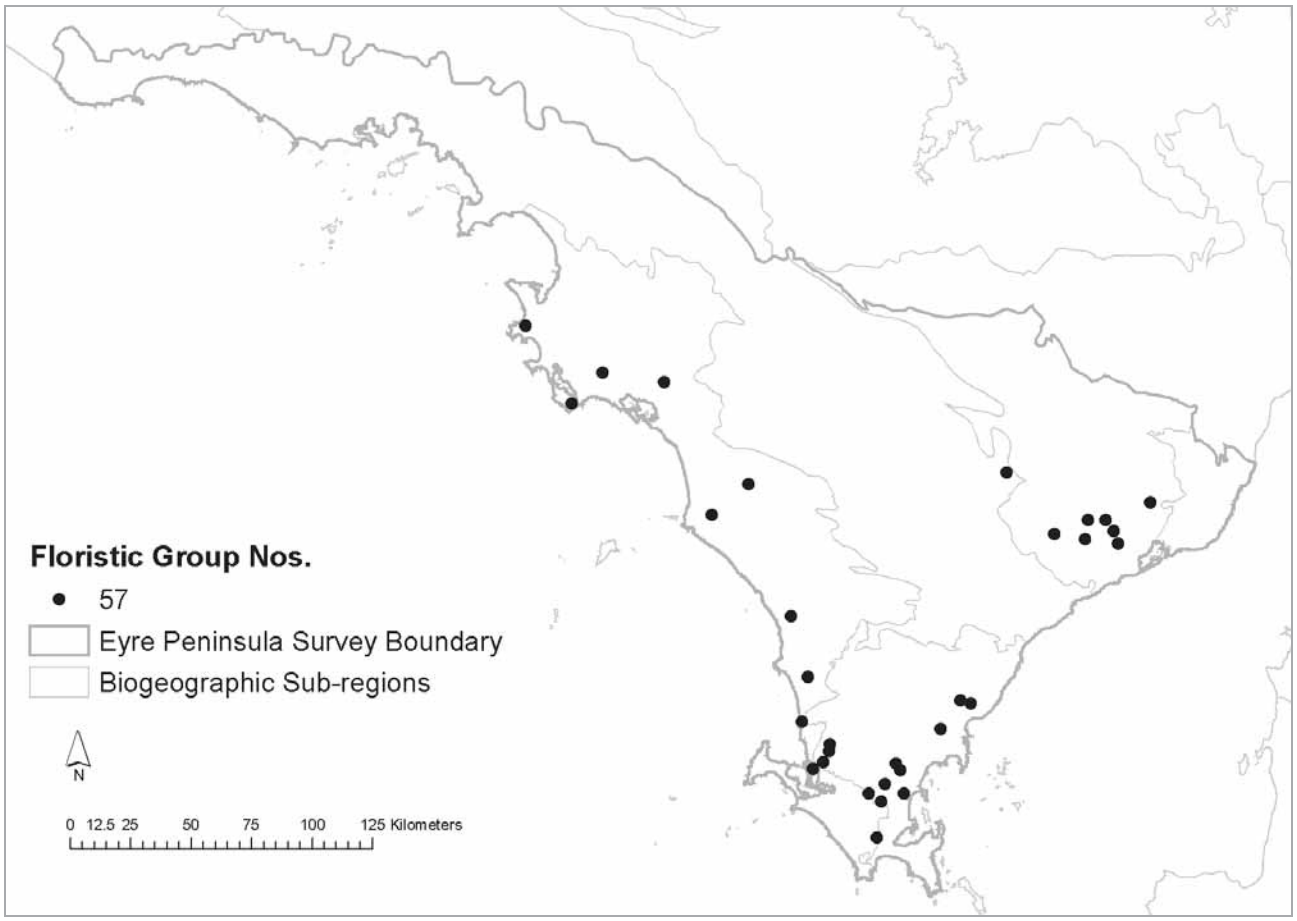
32 sites in 1 floristic group

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 7 sites - *Zosterops lateralis,* Silvereye, 6; *Acanthiza apicalis,* Inland Thornbill, 6; *Pachycephala pectoralis,* Golden Whistler, 5; *Rhipidura albiscapa,* Grey Fantail, 5; *Colluricincla harmonica,* Grey Shrike-thrush, 4; *Strepera versicolor,* Grey Currawong, 4; *Sericornis frontalis,* White-browed Scrubwren, 4; *Phaps chalcoptera,* Common Bronzewing, 4

MAMMALS 7 sites - ***Mus musculus**,* House Mouse, 5; *Rattus fuscipes,* Bush Rat, 4; **Vulpes vulpes,* Fox, 4

REPTILES 7 sites - *Hemiergis peronii,* Four-toed Earless Skink, 5; *Lerista bougainvillii,* Bougainville's Skink, 4



Floristic Group 57. Drooping Sheoak *Allocasuarina verticillata* Woodland over Broad-leaf Raspwort *Gonocarpus mezianus* / Sticky Sword-sedge *Lepidosperma viscidum* / Annual Rock-fern *Cheilanthes austrotenuifolia*

32 sites associated with drier hill slopes in the north east and southern Eyre Hills biogeographic subregion as well as rock outcrops and on calcareous plains in the Talia biogeographis subregion. This woodland assemblage was dominantly associated with hillslopes and inselbergs (81% of sites). Soils ranged from sand to light clay, with clay loams most common. Rock outcrop ranged from 10-50% cover (18% of sites) to <10% cover (42% of sites), the dominant types being calcareous (40% of sites) and quartzitic (28% of sites). Other rock types included granite, laterite, schist, schale and gneiss. These types made up the surface strew in the form of cobbles, pebbles and boulders, which covered between 1 and 30% at 87% of sites. Fire history was recorded for 9% of sites and ranged from 23-37 years prior to sampling (mean 28 years). Bare earth cover was low (mean 7%, sdev 9). Litter cover was moderately high (mean 41%, sdev 26).

Total number of species: 387

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 54.5 sdev: 16.6 Maximum: 92 Minimum: 8
Number of significant species - EPBC Act: 3 NPW Act: 14

Acacia dodonaeifolia, Hop-bush Wattle SA: R; *Austrostipa densiflora*, Fox-tail Spear-grass SA: R; *Caladenia bicalliata ssp. bicalliata*, Western Daddy-long-legs SA: R; *Caladenia tensa*, Inland Green-comb Spider-orchid AUS: EN ; *Centrolepis cephaloformis ssp. cephaloformis*, Cushion Centrolepis SA: R; *Ceratogyne obionoides*, Wingwort SA: R; *Lobelia gibbosa complex*, SA: R; *Phyllanthus calycinus*, Snowdrop Spurge SA: R; *Prasophyllum fecundum*, Self-pollinating Leek-orchid SA: R; *Prasophyllum sp. Enigma (R.Bates 2350)*, Goldsack's Leek-orchid SA: E; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V; *Ptilotus beckerianus*, Ironstone Mulla Mulla AUS: VU SA: V; *Spyridium leucopogon*, Silvery Spyridium SA: R; *Thelymitra flexuosa*, Twisted Sun-orchid SA: R; *Wurmbea decumbens*, Trailing Nancy SA: R

Number of Eyre Peninsula endemic species: 10

Acacia gillii, Gill's Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Hakea cycloptera*, Elm-seed Hakea; *Hibbertia cinerea*, Port Lincoln Guinea-flower; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Pomaderris flabellaris*, Fan Pomaderris; *Prostanthera calycina*, West Coast Mintbush; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea; *Spyridium leucopogon*, Silvery Spyridium

Number of introduced/invasive species: 63
Average number of introduced/invasive species per site: 9.3 Maximum: 23 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Allocasuarina verticillata	Drooping Sheoak	Tree	28.4	0.001	3.4	2.38
Cheilanthes austrotenuifolia	Annual Rock-fern	Fern	21.2	0.008	3.9	3.65
Goodenia robusta	Woolly Goodenia	Forb Herb Vine	14.5	0.029	4.4	4.19

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Allocasuarina verticillata	Drooping Sheoak	100	28	4.44
Low Shrub < 1m				
Astroloma humifusum	Cranberry Heath	69	12	0.46
Gonocarpus mezianus	Broad-leaf Raspwort	63	7	1.66
Grass Sedge				
Lepidosperma viscidum	Sticky Sword-sedge	63	4	1.24
Austrostipa elegantissima	Feather Spear-grass	56	2	0.47
Avena barbata	Bearded Oat *	56	1	1.39
Dianella revoluta var. revoluta	Black-anther Flax-lily	53	1	0.37
Neurachne alopecuroidea	Fox-tail Mulga-grass	50	4	0.81
Austrodanthonia caespitosa	Common Wallaby-grass	50	1	0.67
Aira cupaniana	Small Hair-grass *	41	2	0.62
Forb Herb Vine				
Thysanotus patersonii	Twining Fringe-lily	91	5	0.37
Anagallis arvensis	Pimpernel *	84	3	0.70
Hypochaeris glabra	Smooth Cat's Ear *	69	2	0.57
Oxalis perennans	Native Sorrel	66	3	0.54
Asparagus asparagoides f. asparagoides	Bridal Creeper*	63	3	1.14
Lagenophora huegelii	Coarse Bottle-daisy	53	4	0.67
Drosera macrantha ssp. planchonii	Climbing Sundew	50	4	0.41
Chamaescilla corymbosa var. corymbosa	Blue Squill	47	6	0.68
Blennospora drummondii	Dwarf Button-flower	47	3	0.61
Phyllangium divergens	Wiry Mitrewort	47	3	0.45
Daucus glochidiatus	Native Carrot	44	1	0.56
Goodenia robusta	Woolly Goodenia	41	14	0.99
Opercularia scabrida	Stalked Stinkweed	41	9	1.61
Stackhousia monogyna	Creamy Candles	41	5	0.52
Fern				
Cheilanthes austrotenuifolia	Annual Rock-fern	72	21	1.30

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 COU01003, 80 COU01204, 80 KOP01601, 80 LIN00801, 80 LIN01001, 80 LIN01801, 80 TUM00301, 80 WAG00101, 80 WAG00302, 80 WAN02A33, 80 WAN02A34, 80 WAN02D09, 103 CAR00702, 103 RUD00901, 103 MAN00501, 103 MAN01001, 103 MAN00701, 103 COW01001, 103 COW00201, 107 ADD00501, 107 CAL00101, 107 ELL00301, 107 PEA00702, 107 STR00501, 128 COW00701, 128 COC00901, 128 KOP01201, 128 MAR00301, 128 MAR00401, 128 MAR00801, 128 ULE00801, 179 COA00502

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 57: site 128 COC00901 – 17/9/2003

Floristic Group 57: site 128 KOP01201 – 7/9/2004

Appendix 8. Detailed Floristic Group Descriptions

Cluster 22. Sugar Gum Woodlands of the Koppio Hills and Marble Range.

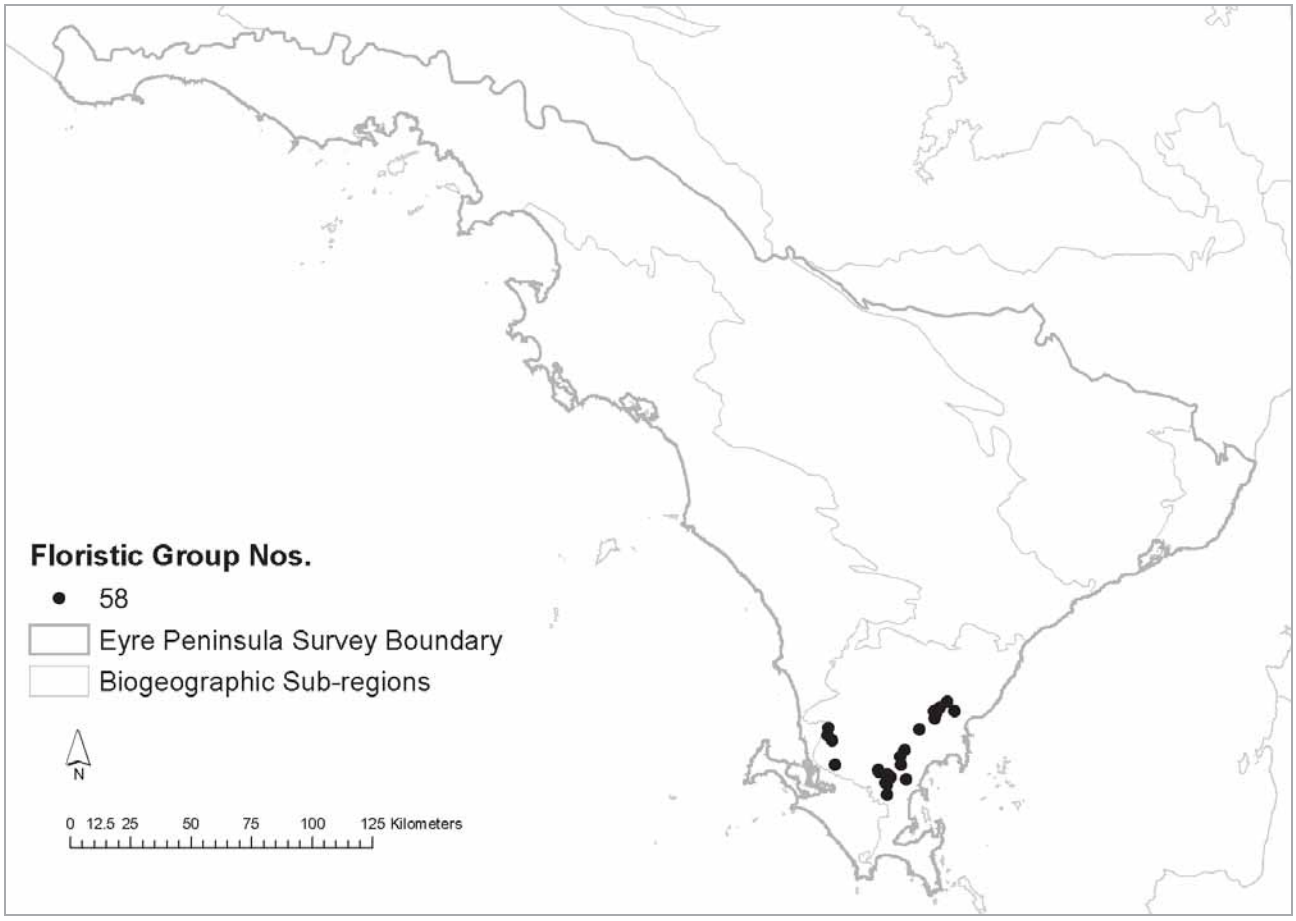
24 sites in 1 floristic group

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 5 sites - *Strepera versicolor*, Grey Currawong, 5; *Anthochaera carunculata*, Red Wattlebird, 5; *Pardalotus striatus*, Striated Pardalote, 5; *Barnardius zonarius*, Australian Ringneck, 5; *Rhipidura albiscapa*, Grey Fantail, 4; *Malurus cyaneus*, Superb Fairy-wren, 4; *Smicrornis brevirostris*, Weebill, 4; *Gymnorhina tibicen*, Australian Magpie, 4; *Dacelo novaeguineae*, Laughing Kookaburra, 4; *Zosterops lateralis*, Silvereye, 3; *Acanthiza apicalis*, Inland Thornbill, 3; *Sericornis frontalis*, White-browed Scrubwren, 3; *Phaps chalcoptera*, Common Bronzewing, 3; *Eolophus roseicapilla*, Galah, 3; *Phylidonyris novaehollandiae*, New Holland Honeyeater, 3; *Melithreptus brevirostris*, Brown-headed Honeyeater, 3; *Trichoglossus haematodus*, Rainbow Lorikeet, 3; *Gerygone fusca*, Western Gerygone, 3; *Todiramphus sanctus*, Sacred Kingfisher, 3

MAMMALS 5 sites - *Macropus fuliginosus*, Western Grey Kangaroo, 4; **Vulpes vulpes*, Fox, 3; *Rattus fuscipes*, Bush Rat, 2; **Oryctolagus cuniculus*, Rabbit, 2; *Nyctophilus geoffroyi*, Lesser Long-eared Bat, 2; *Trichosurus vulpecula*, Common Brushtail Possum, 2

REPTILES 5 sites - *Morethia obscura*, Mallee Snake-eye, 4; *Cryptoblepharus pulcher*, Striped Wall Skink, 4; *Hemiergis peronii*, Four-toed Earless Skink, 3; *Lampropholis delicata*, Delicate Skink, 3; *Christinus marmoratus*, Marbled Gecko, 2; *Menetia greyii*, Dwarf Skink, 2; *Tiliqua rugosa*, Sleepy Lizard, 2



Floristic Group 58. Sugar Gum *Eucalyptus cladocalyx* Woodland over Rock Wattle *Acacia rupicola* / Yacca *Xanthorrhoea semiplana* / Peach Heath *Lissanthe strigosa* / Broad-leaf Raspwort *Gonocarpus mezianus* / Coarse Bottle-daisy *Lagenophora huegelii*

24 sites restricted to the highest ranges in the southern block of the Eyre Hills geographic subregion. This woodland assemblage was mainly found on hill slopes and crests (70% of sites) with minor occurrences in gullies, streams and alluvial flats. Surface soils ranged from clay loams to sands (45% of sites on loams). Laterite and granite outcropping had minor cover (<10%) at 25% of sites. A surface strew of laterite pebbles and cobbles was present at 45% of sites with cover mostly between 1-10%. Fire history was recorded for 64% of sites ranging from 2-65 years prior to sampling (mean 39 years). Bare earth cover was low (mean 9%, sdev 8). Litter cover was very high (mean 69%, sdev 22).

Total number of species: 263

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 47.9 sdev: 13.8 Maximum: 74 Minimum: 19
Number of significant species - EPBC Act: 2 NPW Act: 6

Acacia dodonaeifolia, Hop-bush Wattle SA: R; *Acacia imbricata*, Feathery Wattle AUS: VU SA: R; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew SA: V; *Ptilotus beckerianus*, Ironstone Mulla Mulla AUS: VU SA: V; *Xanthorrhoea semiplana*, Tate's Grass-tree SA: R;

Number of Eyre Peninsula endemic species: 9

Acacia gillii, Gill's Wattle; *Acacia imbricata*, Feathery Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew; *Hakea cycloptera*, Elm-seed Hakea; *Hibbertia cinerea*, Port Lincoln Guinea-flower; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Pomaderris flabellaris*, Fan Pomaderris

Number of introduced/invasive species: 45
Average number of introduced/invasive species per site: 7.7 Maximum: 17 Minimum: 2

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus cladocalyx	Sugar Gum	Tree	80.6	0.001	3.8	3.45
Lagenophora huegelii	Coarse Bottle-daisy	Forb Herb Vine	25.6	0.001	3.2	2.6
Lissanthe strigosa ssp. subulata	Peach Heath	Low Shrub < 1m	36.4	0.002	3.6	3.1
Acacia rupicola	Rock Wattle	Shrub > 1m	25.1	0.002	3.9	3.19
Pultenaea pedunculata	Matted Bush-pea	Low Shrub < 1m	29.2	0.006	5.1	4.64
Goodenia ovata	Hop Goodenia	Low Shrub < 1m	27.1	0.009	4.9	4.55
Wahlenbergia stricta ssp. stricta	Tall Bluebell	Forb Herb Vine	10.3	0.012	2.9	2.08
Acacia pycnantha	Golden Wattle	Tree	17.3	0.016	4.3	3.72
Chamaescilla corymbosa var. corymbosa	Blue Squill	Forb Herb Vine	8.3	0.027	3.2	2.75
Acacia gillii	Gill's Wattle	Shrub > 1m	13.3	0.035	3.9	3.83

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus cladocalyx	Sugar Gum Y	100	81	7.29
Acacia pycnantha	Golden Wattle	42	17	2.86
Shrub > 1m				
Acacia rupicola	Rock Wattle	83	25	1.73
Xanthorrhoea semiplana	Yacca R Y	58	10	4.35
Melaleuca uncinata	Broombush	50	1	6.14
Acacia gillii	Gill's Wattle Y	42	13	0.53
Hakea cycloptera	Elm-seed Hakea Y	42	2	0.40
Low Shrub < 1m				
Lissanthe strigosa ssp. subulata	Peach Heath	96	36	2.64
Gonocarpus mezianus	Broad-leaf Raspwort	88	8	1.66
Senecio pterophorus	African Daisy *	79	7	0.54
Pimelea flava ssp. dichotoma	Diosma Riceflower	58	6	0.43
Astroloma humifusum	Cranberry Heath	54	2	0.46
Correa backhouseana var. coriacea	Thick-leaf Correa	46	3	0.38
Grass Sedge				
Austrodanthonia setacea	Small-flower Wallaby-grass	67	5	0.60
Dianella revoluta var. revoluta	Black-anther Flax-lily	67	2	0.37
Briza minor	Lesser Quaking-grass *	54	6	0.51
Aira cupaniana	Small Hair-grass *	54	4	0.62
Avena barbata	Bearded Oat *	42	0	1.39
Forb Herb Vine				
Lagenophora huegelii	Coarse Bottle-daisy	92	26	0.67
Oxalis perennans	Native Sorrel	75	4	0.54
Thysanotus patersonii	Twining Fringe-lily	75	3	0.37
Daucus glochidiatus	Native Carrot	75	2	0.56
Asparagus asparagoides f. asparagoides	Bridal Creeper *	67	2	1.14
Clematis microphylla var. microphylla	Old Man's Beard	63	1	0.57
Wahlenbergia stricta ssp. stricta	Tall Bluebell	54	10	0.55
Drosera macrantha ssp. planchonii	Climbing Sundew	54	6	0.41
Anagallis arvensis	Pimpernel *	54	1	0.70
Thelymitra nuda complex	Sun Orchid	50	6	0.29
Chamaescilla corymbosa var. corymbosa	Blue Squill	46	8	0.68
Acaena echinata	Sheep's Burr	46	4	0.48
Goodenia blackiana	Native Primrose	42	7	0.41
Hypochaeris glabra	Smooth Cat's Ear *	42	1	0.57

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Appendix 8. Detailed Floristic Group Descriptions

Sites in Group (Survey number Site Identification code)**:**

80 COU01201, 80 COU01401, 80 WAN00101, 128 MAR00501, 80 KOP01001, 80 KOP01B11, 80 KOP01B13, 80 KOP02101, 80 TUM00801, 80 TUM01501, 80 KOP01B02, 80 LIN00701, 80 LIN02101, 80 LIN02B14, 128 KOP00601, 80 LIN01501, 128 KOP00801, 128 KOP00901, 80 LIN01601, 80 WAN00801, 80 LIN02B18, 80 LIN03001, 128 KOP00201, 80 WAN00701

Floristic Group 58: site 128 KOP00201 – 3/9/2004

Cluster 23. Mallee dominated by Coastal White Mallee in the south west of the study area, characterised by outcropping limestone on undulating plains, low hills and consolidated dunes.

52 sites in 1 floristic group

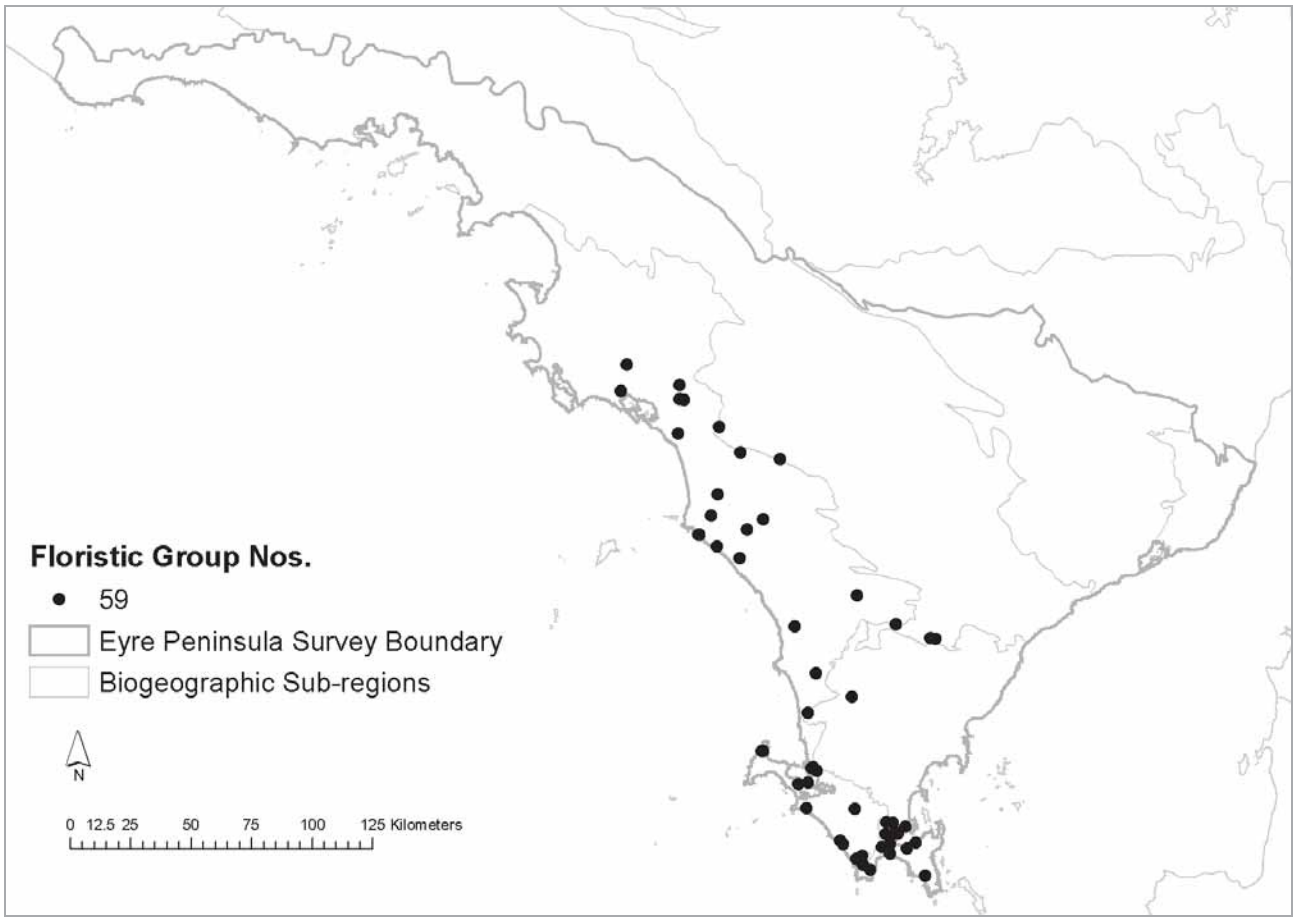
Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

SPECIES 1 site - *Acanthiza apicalis*, Inland Thornbill, 25; *Sturnus vulgaris*, Common Starling, 7; *Eolophus roseicapilla*, Galah, 7; *Pomatostomus superciliosus*, White-browed Babbler, 7; *Corvus mellori*, Little Raven, 5; *Acanthiza uropygialis*, Chestnut-rumped Thornbill, 4; *Smicrornis brevirostris*, Weebill, 4; *Lichenostomus leucotis*, White-eared Honeyeater, 3; *Colluricincla harmonica*, Grey Shrike-thrush, 3

MAMMALS 1 site - ****Mus musculus***, House Mouse

REPTILES 1 site - *Morethia obscura*, Mallee Snake-eye; *Hemiergis peronii*, Four-toed Earless Skink; *Menetia greyii*, Dwarf Skink; *Delma australis*, Barred Snake-lizard; *Ctenotus orientalis*, Spotted Ctenotus; *Diplodactylus calcicolus*, South Coast Gecko; *Nephrurus milii*, Barking Gecko

Appendix 8. Detailed Floristic Group Descriptions



Floristic Group 59. Coastal White Mallee *Eucalyptus diversifolia ssp. diversifolia* Mallee +/- Dryland Tea-tree *Melaleuca lanceolata* / Prickly Ground-berry *Acrotriche patula*

52 sites in the south west of the study area most common in the Talia subregion. This mallee assemblage was strongly associated with low hills, undulating limestone plains, plains and consolidated dunes. Surface soils ranged from sand to medium clay, with sand and loamy sand most common. Calcareous outcropping ranged from low to high at 76% of sites, most with a moderate cover (10-50%). Calcareous surface strew was similarly common, mostly as cobbles with <30% cover. Fire was recorded for 8% of sites, 4-12 years prior to sampling (mean 8 yrs). Bare earth cover was low (mean 6%, sdev 9). Litter cover was high (42%, sdev 33).

Total number of species: 374
Average number of species per site: 39.5 sdev: 17.7 Maximum: 81 Minimum: 7
Number of significant species - EPBC Act: 1 NPW Act: 10

Austrodanthonia laevis, Smooth Wallaby-grass SA: R; *Austrostipa echinata*, Spiny Spear-grass SA: R; *Caladenia bicalliata ssp. bicalliata*, Western Daddy-long-legs SA: R; *Crassula exserta*, Large-fruit Crassula SA: R; *Leucopogon clelandii*, Cleland's Beard-heath SA: R; *Lobelia gibbosa complex*, SA: R; *Phyllanthus calycinus*, Snowdrop Spurge SA: R; *Poa drummondiana*, Knotted Poa SA: R; *Prasophyllum occultans*, Hidden Leek-orchid SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V;

Number of Eyre Peninsula endemic species: 8

Acacia gillii, Gill's Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Eucalyptus peninsularis*, Merrit; *Hakea cycloptera*, Elm-seed Hakea; *Hibbertia cinerea*, Port Lincoln Guinea-flower; *Pomaderris flabellaris*, Fan Pomaderris; *Prostanthera calycina*, West Coast Mintbush; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea;

Number of introduced/invasive species: 65
Average number of introduced/invasive species per site: 10.2 Maximum: 26 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	Tree	19.9	0.001	2.7	1.44

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	100	20	6.47
Pittosporum angustifolium	Native Apricot	40	1	0.45
Shrub > 1m				

Appendix 8. Detailed Floristic Group Descriptions

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Melaleuca lanceolata	Dryland Tea-tree	62	1	3.62
Low Shrub < 1m				
Acrotriche patula	Prickly Ground-berry	60	2	1.52
Grass Sedge				
Catapodium rigidum	Rigid Fescue *	54	3	0.57
Avena barbata	Bearded Oat *	50	1	1.39
Austrostipa exilis	Heath Spear-grass	44	1	0.84
Forb Herb Vine				
Anagallis arvensis	Pimpernel *	73	3	0.70
Clematis microphylla var. microphylla	Old Man's Beard	73	3	0.57
Daucus glochidiatus	Native Carrot	63	2	0.56
Asparagus asparagoides f. asparagoides		50	6	1.14
Oxalis perennans	Native Sorrel	50	2	0.54
Trifolium campestre	Hop Clover *	48	6	0.60
Trachymene pilosa	Dwarf Trachymene	48	2	0.65
Hypochaeris glabra	Smooth Cat's Ear *	48	1	0.57
Galium murale	Small Bedstraw *	44	1	0.62
Sonchus oleraceus	Common Sow-thistle *	44	1	0.45
Hardenbergia violacea	Native Lilac	40	4	0.44
Crassula sieberiana complex	Australian Stonecrop	40	1	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO01201, 21 CO01301, 21 CO01701, 79 LN01201, 79 LN01401, 79 LN01501, 79 LN03401, 80 COC00201, 80 COC01F07, 80 COU01A16, 80 CUM00701, 80 JUS00901, 80 JUS01701, 80 JUS02101, 80 KIA00302, 80 KIA01501, 80 LIN02501, 80 LIN02701, 80 LIN02801, 80 SLE00201, 80 SLE00401, 80 SLE00901, 80 SLE01101, 80 SLE01703, 80 SLE01801, 80 SLE02501, 80 WAG00201, 80 WAG00301, 80 WAG00303, 80 WAG01001, 80 WAG01102, 80 WAG02201, 80 WHI00301, 80 WHI00401, 82 ELL00303, 82 ELL00304, 82 ELL00401, 82 SLE00202, 80 WAN02D21, 103 NIC01001, 107 COC00801, 107 ELL00201, 107 ELL00401, 107 HUD00401, 107 HUD00501, 107 MTW00401, 107 SHE00101, 107 TAL00101, 107 TAL00401, 107 TOO00901, 107 VEN00302, 128 STR00201

Floristic Group 59: site 107 ELL00201 – 21/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Cluster 24. White Mallee assemblages spread across the centre of the study area.

48 sites in 4 floristic groups

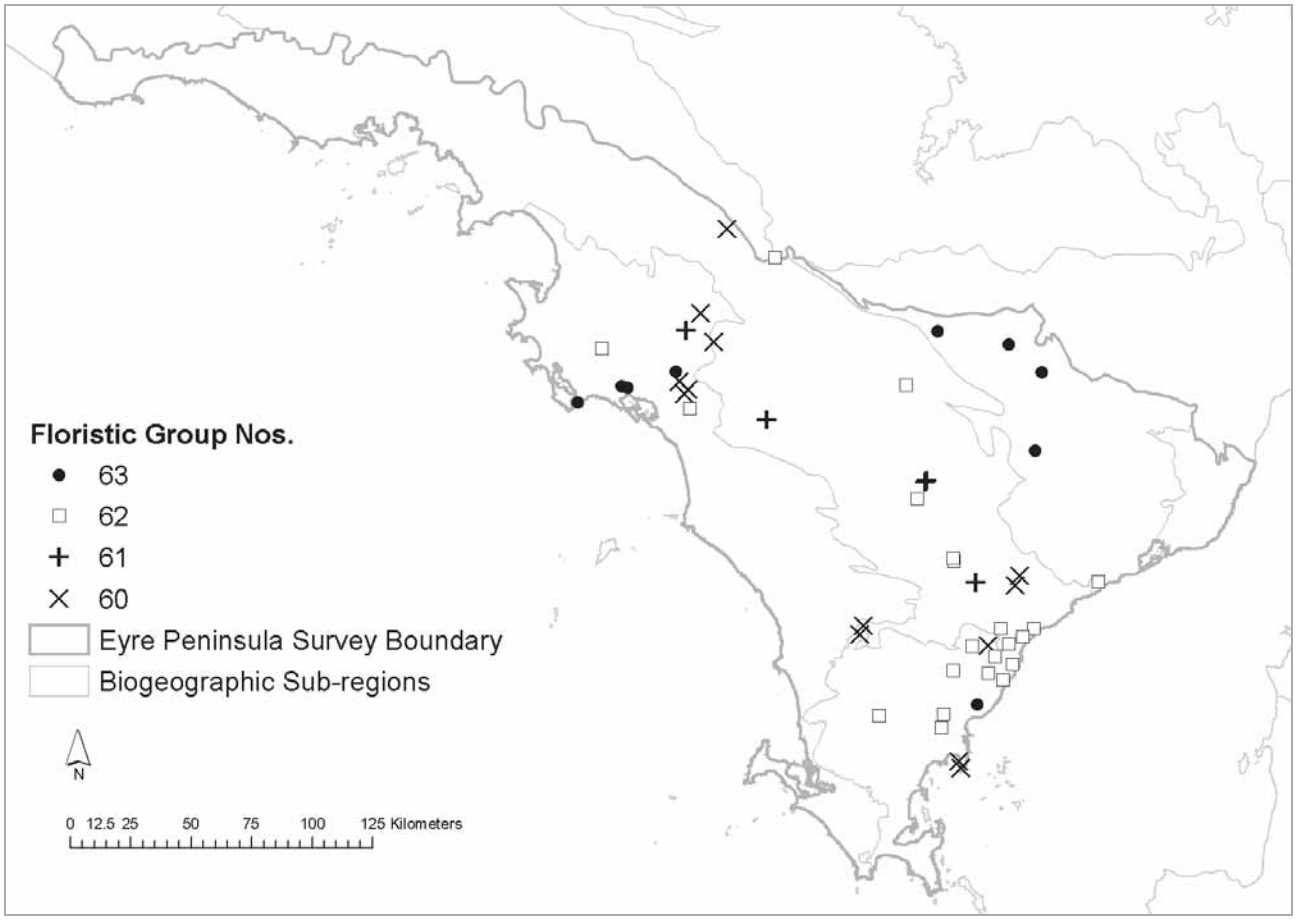
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus dumosa complex*	White Mallee	41	85.42	5.47
Tree	*Eucalyptus socialis complex*	Beaked Red Mallee	32	66.67	4.93
Shrub > 1m	*Melaleuca uncinata*	Broombush	35	72.92	4.41
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	27	56.25	2.70
Shrub > 1m	*Melaleuca acuminata ssp. acuminata*	Mallee Honey-myrtle	25	52.08	3.60
Low Shrub < 1m	*Dodonaea bursariifolia*	Small Hop-bush	21	43.75	2.39
Low Shrub < 1m	*Enchylaena tomentosa var. tomentosa*	Ruby Saltbush	21	43.75	1.21
Low Shrub < 1m	*Eutaxia microphylla*	Common Eutaxia	21	43.75	1.04

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 5 sites - *Anthochaera carunculata,* Red Wattlebird, 5; *Lichenostomus leucotis,* White-eared Honeyeater, 5; *Eolophus roseicapilla,* Galah, 4; *Cracticus torquatus,* Grey Butcherbird, 4; *Smicrornis brevirostris,* Weebill, 3; *Pardalotus striatus,* Striated Pardalote, 3; *Phaps chalcoptera,* Common Bronzewing, 3; *Pardalotus punctatus,* Spotted Pardalote, 3; *Phylidonyris albifrons,* White-fronted Honeyeater, 3

MAMMALS 6 sites - *Cercartetus concinnus,* Western Pygmy-possum, 3; **Mus musculus,* House Mouse, 2; *Macropus fuliginosus,* Western Grey Kangaroo, 2; *Sminthopsis dolichura,* Little Long-tailed Dunnart, 2

REPTILES 6 sites - *Menetia greyii,* Dwarf Skink, 2; *Ctenotus schomburgkii,* Sandplain Ctenotus, 2; *Nephrurus stellatus,* Starred Knob-tailed Gecko, 2; *Diplodactylus vittatus complex (NC),* Stone Geckos, 2



Floristic Group 60. White Mallee *Eucalyptus dumosa* / Narrow-leaf Red Mallee *E. leptophylla* / Beaked Red Mallee *E. socialis complex* Mallee over Mallee Honey-myrtle *Melaleuca acuminata* +/- Dryland Tea-tree *M. lanceolata* / Broombush *Melaleuca uncinata*

13 sites mostly in the Talia and Eyre Mallee biogeographical subregions. This mallee assemblage occurs mostly on calcareous plains depressions and interdunes with sand to clay loam surface soils. Calcareous rock outcrop was present

at 2 sites and quartzite at 1, all with low cover. Surface strew in the form of calcareous pebbles, cobbles and boulders was present at 45% of sites with low to high cover and included limestone, laterite and quartzite. Fire history was was recorded for 2 sites 12 years prior to sampling. Bare earth cover was low (mean 12%, sdev 17). Litter cover was moderate (mean 30%, sdev 28).

Total number of species: 196
Average number of species per site: 33.4 sdev: 7.3 Maximum: 48 Minimum: 16
Number of significant species - EPBC Act: 0 NPW Act: 2
Schoenus sculptus, Gimlet Bog-rush SA: R; *Spyridium leucopogon*, Silvery Spyridium SA: R
Number of Eyre Peninsula endemic species: 2
Eucalyptus peninsularis, Merrit; *Spyridium leucopogon*, Silvery Spyridium
Number of introduced/invasive species: 21
Average number of introduced/invasive species per site: 3.1 Maximum: 8 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Melaleuca acuminata ssp. acuminata	Mallee Honey-myrtle	Shrub > 1m	24.9	0.001	3.4	2.34

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus dumosa complex	White Mallee	62	6	3.56
Eucalyptus leptophylla	Narrow-leaf Red Mallee	54	7	2.22
Eucalyptus socialis complex	Beaked Red Mallee	46	2	3.96
Shrub > 1m				
Melaleuca acuminata ssp. acuminata	Mallee Honey-myrtle	85	25	1.70
Melaleuca lanceolata	Dryland Tea-tree	77	2	3.62
Melaleuca uncinata	Broombush	69	1	6.14
Exocarpos aphyllus	Leafless Cherry	46	1	0.61
Low Shrub < 1m				
Dodonaea bursariifolia	Small Hop-bush	62	4	1.07
Eutaxia microphylla	Common Eutaxia	62	3	0.64
Lasiopetalum baueri	Slender Velvet-bush	46	2	0.81
Grass Sedge				
Dianella revoluta var. revoluta	Black-anther Flax-lily	46	1	0.37
Forb Herb Vine				
Goodenia willisiana	Silver Goodenia	54	3	0.49
Crassula sieberiana complex	Australian Stonecrop	46	1	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO00401, 80 BUT01801, 103 VER00501, 21 CO01501, 21 CO01901, 21 NK00101, 80 BAN00203, 80 BAN00301, 80 YEE00301, 80 YEE00501, 103 VER00201, 128 KER00301, 107 MOO00801

Floristic Group 60: site 107 MOO00801 – 20/9/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 61. White Mallee *Eucalyptus dumosa* / Ridge-fruited Mallee *E. incrassata* / Beaked Red Mallee *E. socialis complex* Mallee over Broombush *Melaleuca uncinata*, Ridged Bush-everlasting *Ozothamnus decurrens* and Small Hop-bush *Dodonaea bursariifolia*

5 sites mostly in the centre of the Eyre Mallee biogeographic subregion. This mallee assemblage was most common on plains with sand to clay loam surface soils. Rock outcrop and surface strew were absent. Fire affected 3 of the sites 3-19 years prior to sampling. Bare earth was high (mean 51%, sdev 38). Litter cover was low (mean 16%, sdev 11).

Total number of species: 97
Average number of species per site: 38.6 sdev: 8.5 Maximum: 49 Minimum: 30
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 1
Hakea cycloptera, Elm-seed Hakea
Number of introduced/invasive species: 3
Average number of introduced/invasive species per site: 1 Maximum: 2 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Ozothamnus decurrens	Ridged Bush-everlasting	Low Shrub < 1m	72.9	0.001	4.3	3.98
Dodonaea bursariifolia	Small Hop-bush	Low Shrub < 1m	53.6	0.001	3.9	3.21
Olearia rudis	Azure Daisy-bush	Low Shrub < 1m	36.5	0.005	5.4	4.94
Microcybe multiflora ssp. baccharoides	Scale-leaf Microcybe	Low Shrub < 1m	35.9	0.006	5	4.71
Calandrinia granulifera	Pigmy Purslane	Forb Herb Vine	9.6	0.016	2.9	2
Cassytha melantha	Coarse Dodder-laurel	Forb Herb Vine	13.9	0.02	3.8	3.27
Eutaxia microphylla	Common Eutaxia	Low Shrub < 1m	10	0.022	3.6	2.59
Pterostylis mutica	Midget Greenhood	Forb Herb Vine	8.5	0.028	3.2	2.55
Templetonia sulcata	Flat Mallee-pea	Low Shrub < 1m	16.2	0.03	4.7	4.54
Crassula colorata		Forb Herb Vine	4.7	0.039	2.3	1.07
Acacia microcarpa	Manna Wattle	Shrub > 1m	15.1	0.04	4.4	4.22
Boronia inornata ssp. leptophylla	Dryland Boronia	Low Shrub < 1m	11.5	0.043	3.9	3.68
Olearia decurrens	Winged Daisy-bush	Low Shrub < 1m	13.9	0.048	4.8	4.56

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus dumosa complex	White Mallee	80	4	3.56
Eucalyptus incrassata	Ridge-fruited Mallee	60	4	4.27
Eucalyptus socialis complex	Beaked Red Mallee	60	4	3.96
Eucalyptus oleosa	Coastal Red Mallee	40	1	5.31
Santalum acuminatum	Quandong	40	0	0.69
Shrub > 1m				
Melaleuca uncinata	Broombush	100	2	6.14
Acacia microcarpa	Manna Wattle	80	15	0.82
Melaleuca lanceolata	Dryland Tea-tree	80	0	3.62
Melaleuca acuminata ssp. acuminata	Mallee Honey-myrtle	60	1	1.70
Exocarpos aphyllus	Leafless Cherry	60	0	0.61
Acacia sclerophylla var. sclerophylla	Hard-leaf Wattle	40	8	1.34
Eremophila glabra ssp. glabra	Tar Bush	40	3	0.33
Dodonaea stenozyga	Desert Hop-bush	40	1	1.18
Leucopogon cordifolius	Heart-leaf Beard-heath	40	1	0.46
Lasiopetalum behrii	Pink Velvet-bush	40	0	0.51
Low Shrub < 1m				
Ozothamnus decurrens	Ridged Bush-everlasting	100	73	0.80
Dodonaea bursariifolia	Small Hop-bush	100	54	1.07
Eutaxia microphylla	Common Eutaxia	60	10	0.64
Olearia rudis	Azure Daisy-bush	40	37	0.36
Microcybe multiflora ssp. baccharoides	Scale-leaf Microcybe	40	36	1.43
Templetonia sulcata	Flat Mallee-pea	40	16	0.38
Olearia decurrens	Winged Daisy-bush	40	14	0.81
Boronia inornata ssp. leptophylla	Dryland Boronia	40	11	1.67
Olearia ciliata var. ciliata	Fringed Daisy-bush	40	7	0.41
Prostanthera serpyllifolia ssp. microphylla	Small-leaf Mintbush	40	6	0.45
Halgania andromedifolia	Scented Blue-flower	40	5	0.51
Thryptomene micrantha	Ribbed Thryptomene	40	1	1.70

Appendix 8. Detailed Floristic Group Descriptions

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Westringia rigida	Stiff Westringia	40	1	1.32
Baeckea crassifolia	Desert Baeckea	40	0	0.80
Grass Sedge				
Austrostipa hemipogon	Half-beard Spear-grass	80	6	0.59
Austrostipa exilis	Heath Spear-grass	60	1	0.84
Avellinia michelii	Avellinia *	40	1	0.65
Austrodanthonia caespitosa	Common Wallaby-grass	40	0	0.67
Dianella revoluta var. revoluta	Black-anther Flax-lily	40	0	0.37
Forb Herb Vine				
Crassula colorata		100	5	0.58
Cassytha melantha	Coarse Dodder-laurel	80	14	0.69
Thysanotus patersonii	Twining Fringe-lily	80	1	0.37
Calandrinia granulifera	Pigmy Purslane	60	10	0.49
Trachymene cyanopetala	Purple Trachymene	60	9	0.50
Pterostylis mutica	Midget Greenhood	60	8	0.29
Wahlenbergia gracilenta	Annual Bluebell	60	4	0.40
Bulbine semibarbata	Small Leek-lily	60	2	0.49
Calandrinia eremaea	Dryland Purslane	60	2	0.56
Thelymitra nuda complex	Sun Orchid	60	2	0.29
Crassula sieberiana complex	Australian Stonecrop	60	1	0.61
Helichrysum leucopsideum	Satin Everlasting	60	1	0.60
Podotheca angustifolia	Sticky Long-heads	60	1	0.60
Genoplesium nigricans	Black Midge-orchid	40	5	0.21
Millotia muelleri	Common Bow-flower	40	4	0.48
Blennospora drummondii	Dwarf Button-flower	40	2	0.61
Hydrocotyle pilifera var. glabrata	Buttercup Pennywort	40	2	0.49
Millotia tenuifolia var.	Soft Millotia	40	2	0.59
Senecio glossanthus group	Groundsel	40	1	0.53
Trachymene pilosa	Dwarf Trachymene	40	1	0.65
Daucus glochidiatus	Native Carrot	40	0	0.56
Hypochaeris glabra	Smooth Cat's Ear *	40	0	0.57

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 HIN00204, 107 MOO01001, 107 POR00801, 128 HAM00101, 128 HAM00201

Floristic Group 61: site 128 HAM00101 – 22/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 62. Beaked Red Mallee *Eucalyptus socialis* / White Mallee *E. dumosa* +/- Yorrell *E. gracilis* Mallee over Broombush *Melaleuca uncinata* +/- Dryland Tea-tree *M. lanceolata* / Mallee Honey-myrtle *M. acuminata*

21 sites concentrated in the central-east of Eyre Peninsula, extending as far west as Baird's Bay. This mallee assemblage was most common on hills and plains. Surface soils ranged from sand to clay loams (most commonly loamy sand). Rock outcrop was present at 33% of sites with 1-50% cover, and included calcrete, granite and laterite. A surface strew of cobbles or pebbles was present at 60% of sites. Fire history for 3 sites ranged from 20-35 years prior to sampling. Bare earth cover was moderately low (mean 18%, sdev 16). Litter cover was high (mean 41%, sdev 23).

Total number of species: 260
Average number of species per site: 35.6 sdev: 9.9 Maximum: 56 Minimum: 21
Number of significant species - EPBC Act: 3 NPW Act: 7

Acacia enterocarpa, Jumping-jack Wattle AUS: EN SA: E; *Acacia imbricata*, Feathery Wattle AUS: VU SA: R; *Acacia montana*, Mallee Wattle SA: R; *Ceratogyne obionoides*, Wingwort SA: R; *Crassula exserta*, Large-fruit Crassula SA: R; *Eucalyptus cretata*, Darke Peak Mallee SA: R; *Pultenaea trichophylla*, Tufted Bush-pea AUS: VU SA: R

Number of Eyre Peninsula endemic species: 6

Acacia gillii, Gill's Wattle; *Acacia imbricata*, Feathery Wattle; *Eucalyptus cretata*, Darke Peak Mallee; *Eucalyptus peninsularis*, Merrit; *Hakea cycloptera*, Elm-seed Hakea; *Pultenaea trichophylla*, Tufted Bush-pea

Number of introduced/invasive species: 46
Average number of introduced/invasive species per site: 6.7 Maximum: 16 Minimum: 0

There were no indicator species with <0.05 level of significance for this group.

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus socialis complex	Beaked Red Mallee	95	10	3.96
Eucalyptus dumosa complex	White Mallee	86	8	3.56
Eucalyptus gracilis	Yorrell	48	1	4.40
Shrub > 1m				
Melaleuca uncinata	Broombush	86	4	6.14
Melaleuca lanceolata	Dryland Tea-tree	52	1	3.62
Melaleuca acuminata ssp. acuminata	Mallee Honey-myrtle	43	4	1.70
Exocarpos aphyllus	Leafless Cherry	43	1	0.61
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	57	4	0.67
Einadia nutans ssp. nutans	Climbing Saltbush	43	5	0.42
Acacia spinescens	Spiny Wattle	43	1	0.39
Grass Sedge				
Austrostipa exilis	Heath Spear-grass	52	2	0.84
Austrostipa elegantissima	Feather Spear-grass	48	2	0.47
Lolium rigidum	Wimmera Ryegrass *	43	2	0.71
Dianella revoluta var. revoluta	Black-anther Flax-lily	43	1	0.37
Avena barbata	Bearded Oat *	43	0	1.39
Forb Herb Vine				
Crassula sieberiana complex	Australian Stonecrop	62	2	0.61
Crassula colorata		57	2	0.58
Brassica tournefortii	Wild Turnip *	43	1	0.68
Calandrinia eremaea	Dryland Purslane	43	1	0.56

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 BUT00801, 80 BUT00901, 80 BUT01101, 80 BUT01301, 80 CUM01101, 80 KOP01B21, 80 NEI00201, 80 NEI00401, 80 NEI00601, 80 NEI01001, 80 NEI01201, 80 NEI01401, 80 TUM01402, 103 KOO00501, 103 PAL00201, 103 ARN00703, 107 ADD02D01, 107 CHI00801, 128 STR00901, 131 HIN00201, 131 KIE00101

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 62: site 103 PAL00201 – 5/11/1998

Floristic Group 63: site 103 KIM00201 – 19/10/1998

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 63. White Mallee *Eucalyptus dumosa* Mallee over sparse shrub and grass understorey

9 sites in two sub-groups, one in the northwest of the north block of the Eyre Hills biogeographic subregion, the other in the Venus Bay area of the Talia biogeographic subregion. This mallee aassemblage was found on plains, interdune swales and rises. Surface soils were mostly loamy sand but included clay loams. Calcareous rock outcrop extended from 1- 50% cover at 45% of sites with sandstone present at 1 site. Surface strew in the form of cobbles or pebbles was present at these sites with cover estimates of 1-30%. Two sites had been burnt 29-30 years before sampling. Bare earth cover was low (mean 11%, sdev 15). Litter cover was moderate (mean 33%, sdev 27).

Total number of species: 187
Average number of species per site: 37.8 sdev: 12.2 Maximum: 51 Minimum: 19
Number of significant species - EPBC Act: 1 NPW Act: 5
Caladenia bicalliata ssp. bicalliata, Western Daddylong-legs SA: R; *Daviesia benthamii ssp. humilis*, Mallee Bitter-pea SA: R; *Grevillea pauciflora*, Narrow-leaf Grevillea SA: R; *Lobelia gibbosa complex*, SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V
Number of Eyre Peninsula endemic species: 2
Grevillea pauciflora ssp. leptophylla, Narrow-leaf Grevillea; *Prostanthera calycina*, West Coast Mintbush
Number of introduced/invasive species: 24
Average number of introduced/invasive species per site: 4.3 Maximum: 12 Minimum: 0

There were no indicator species with <0.05 level of significance for this group.

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus dumosa complex	White Mallee	100	11	3.56
Low Shrub < 1m				
Eutaxia microphylla	Common Eutaxia	56	0	0.64
Prostanthera serpyllifolia ssp. microphylla	Small-leaf Mintbush	44		
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	44	2	0.45
Sclerolaena diacantha group	Bindyi	44	1	0.67
Acrotriche patula	Prickly Ground-berry	44	1	0.95
Grass Sedge				
Austrostipa eremophila	Rusty Spear-grass	44	2	1.03
Austrostipa nitida	Balcarra Spear-grass	44	1	0.47
Austrostipa elegantissima	Feather Spear-grass	44	1	0.96
Bromus rubens	Red Brome *	44	1	0.68
Gahnia lanigera	Black Grass Saw-sedge	44	0	2.34
Forb Herb Vine				
Daucus glochidiatus	Native Carrot	56	1	0.56
Ptilotus seminudus	Rabbit-tails	44	4	0.39
Podolepis capillaris	Wiry Podolepis	44	2	0.65

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 TUM00201, 82 CAL00304, 103 COR00101, 103 CUN01001, 103 CAR00401, 103 KIM00201, 107 ADD00101, 110 VEN00102, 110 VEN00103

Appendix 8. Detailed Floristic Group Descriptions

Cluster 25. Mallee assemblages characterised by Spinifex *Triodia irritans* hummock grassland.

40 sites in 2 floristic groups

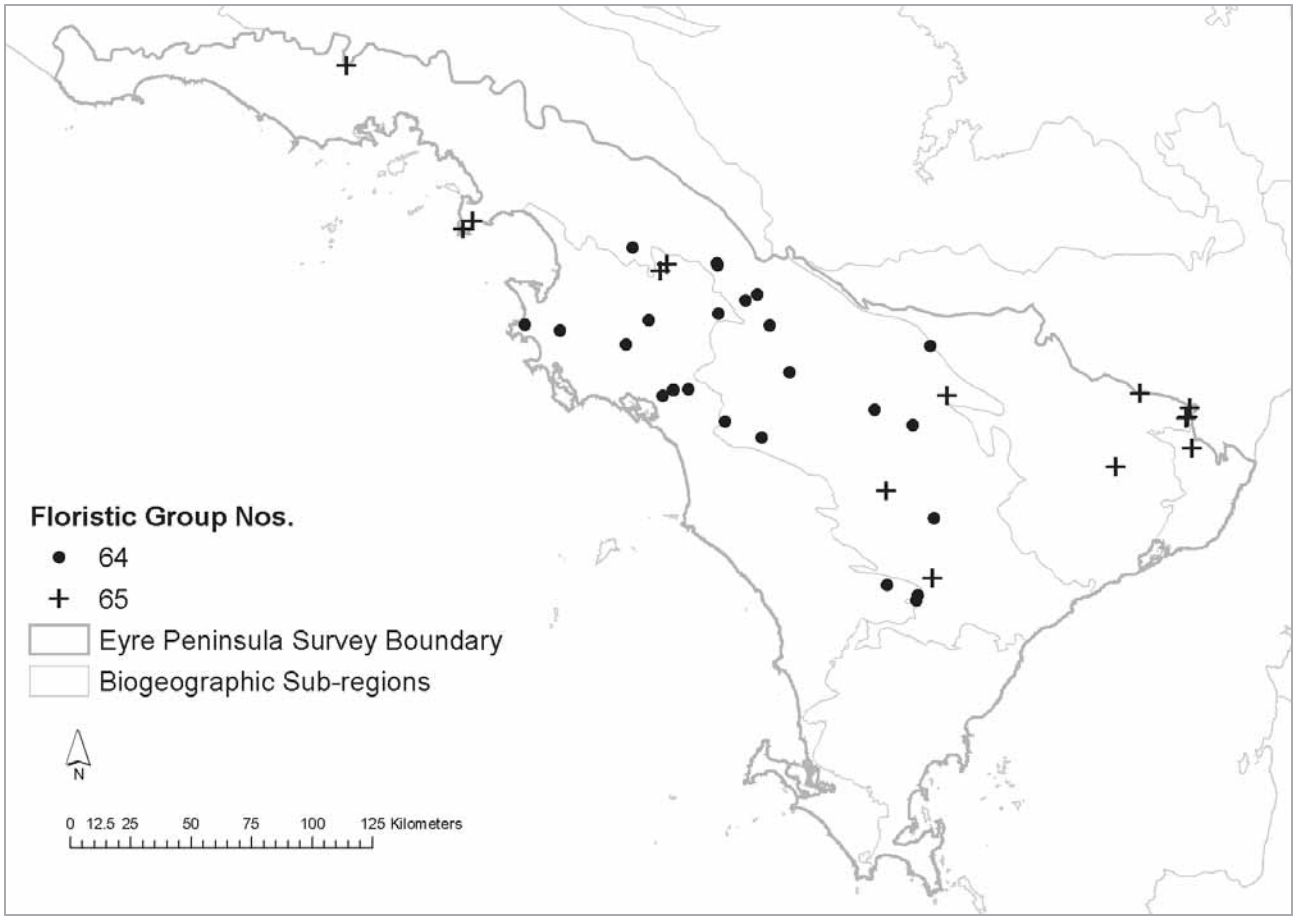
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus dumosa complex*	White Mallee	26	65	5.60
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	32	80	3.98
Shrub > 1m	*Melaleuca acuminata ssp. acuminata*	Mallee Honey-myrtle	21	52	3.13
Shrub > 1m	*Melaleuca uncinata*	Broombush	17	42	1.84
Low Shrub < 1m	*Eutaxia microphylla*	Common Eutaxia	17	42	1.28
grass sedge	*Triodia irritans*	Spinifex	39	97	6.87
grass sedge	*Gahnia lanigera*	Black Grass Saw-sedge	28	70	1.82

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 10 sites - *Smicrornis brevirostris,* Weebill, 7; *Colluricincla harmonica,* Grey Shrike-thrush, 7; *Cracticus torquatus,* Grey Butcherbird, 6; *Pardalotus striatus,* Striated Pardalote, 6; *Pardalotus punctatus,* Spotted Pardalote, 6; *Acanthagenys rufogularis,* Spiny-cheeked Honeyeater, 5; *Barnardius zonarius,* Australian Ringneck, 5

MAMMALS 8 sites - ***Mus musculus**,* House Mouse, 7; **Vulpes vulpes,* Fox, 5; *Notomys mitchellii,* Mitchell's Hopping-mouse, 5; *Macropus fuliginosus,* Western Grey Kangaroo, 4; *Ningaui yvonneae,* Southern Ningaui, 3; *Cercartetus concinnus,* Western Pygmy-possum, 1; *Sminthopsis griseoventer,* Grey-bellied Dunnart, 1; *Felis catus,* Cat, 1; *Nyctophilus timoriensis,* Greater Long-eared Bat, 1; *Sminthopsis psammophila,* Sandhill Dunnart, 1

REPTILES 8 sites - *Menetia greyii,* Dwarf Skink, 3; *Ctenophorus fordi,* Mallee Dragon, 3; *Ctenotus atlas,* Southern Spinifex Ctenotus, 3; *Morethia obscura,* Mallee Snake-eye, 3



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 64. White Mallee *Eucalyptus dumosa* +/- Yalata Mallee *E. yalatensis* / Coastal White Mallee *E. diversifolia* over Spinifex *Triodia irritans* with Dryland Tea-tree *M. lanceolata* +/- Mallee Honey-myrtle *M. acuminata* / Broombush *Melaleuca uncinata*

26 sites in the centre of the Eyre Mallee biogeographic subregion and the north-west of the Talia biogeographic subregion. This mostly open mallee assemblage was found on plains, interdune corridors and dunes with sand to clay loam surface soils. Outcropping calcrete was present at more than half of the sites with cover ranging from <10% to 50%. Surface strew of calcareous pebbles, cobbles or boulders ranged from <10% to 70% cover (95% of sites). Fire had affected 15% of sites ranging from 12-44 years prior to sampling. Bare earth cover was low (mean 11%, sdev 12). Litter cover was mostly low (mean 17%, sdev 18).

Total number of species: 246
Average number of species per site: 38.9 sdev: 14.5 Maximum: 81 Minimum: 13
Number of significant species - EPBC Act: 1 NPW Act: 4
Austrostipa echinata, Spiny Spear-grass SA: R; *Austrostipa plumigera*, SA: R; *Olearia picridifolia*, Rasp Daisy-bush SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V
Number of Eyre Peninsula endemic species: 3
Hakea cycloptera, Elm-seed Hakea; *Prostanthera calycina*, West Coast Mintbush
Number of introduced/invasive species: 26
Average number of introduced/invasive species per site: 4.4 Maximum: 12 Minimum: 0

There were no indicator species with <0.05 level of significance for this group.

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus dumosa complex	White Mallee	96	11	3.56
Eucalyptus yalatensis	Yalata Mallee	42	7	3.53
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	31	0	6.46
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	81	2	3.62
Melaleuca acuminata ssp. acuminata	Mallee Honey-myrtle	77	10	1.70
Melaleuca uncinata	Broombush	58	1	6.14
Low Shrub < 1m				
Comesperma volubile	Love Creeper	62	3	0.32
Westringia rigida	Stiff Westringia	50	1	1.30
Dodonaea hexandra	Horned Hop-bush	50	1	1.32
Acrotriche patula	Prickly Ground-berry	46	0	1.52
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	42	0	0.67
Grass Sedge				
Triodia irritans	Spinifex	96	13	5.19
Gahnia lanigera	Black Grass Saw-sedge	85	3	2.34
Austrodanthonia caespitosa	Common Wallaby-grass	54	1	0.67
Dianella revoluta var. revoluta	Black-anther Flax-lily	46	1	0.37
Avellinia michelii	Avellinia *	42	1	0.65
Forb Herb Vine				
Helichrysum leucopsideum	Satin Everlasting	54	1	0.60
Daucus glochidiatus	Native Carrot	46	1	0.56
Chrysocephalum apiculatum	Common Everlasting	42	2	0.59
Crassula sieberiana complex	Australian Stonecrop	42	0	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

SITE, 21 CO00801, 21 CO01001, 21 CO01601, 103 COR00701, 103 HAM02D14, 103 PAL00601, 107 CUN01C14, 107 INK00301, 107 INK01D14, 107 KYA01101, 107 MIN00201, 107 MIN00301, 107 MIN01001, 107 MOO00901, 107 MTW00201, 107 PAL00201, 107 POO00801, 107 POR01201, 107 RIP00901, 107 STR00601, 107 TOO00601, 107 VEN00702, 131 NIC00601, 128 KER00901, 128 KER01001, 128 HIN01201

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 64: site 107 MIN00301 – 20/9/1999

Floristic Group 65: site 599 SHI00501 – 13/5/2008

Appendix 8. Detailed Floristic Group Descriptions

Floristic group 65. Mixed Eucalypt Open Mallee +/- Scrub Cypress Pine *Callitris verrucosa* over Spinifex *Triodia irritans* +/- Dryland Tea-tree *Melaleuca lanceolata* / Black Grass Saw-sedge *Gahnia lanigera*

14 sites scattered across the north of the study area. This mallee over Spinifex assemblage was most common on dunes and sandy plains with sand to sandy loam surface soils. Occasional calcareous outcropping with <50% cover was present at 20% of sites. Surface strew at 35% of sites, present as calcareous pebbles or cobbles covered <10% to 70%. Three sites had been burnt 17-23 years prior to sampling. Bare earth cover was moderate (mean 22%, sdev 12). Litter cover was low (mean 15%, sdev 8).

Total number of species: 207
Average number of species per site: 32.2 sdev: 12.5 Maximum: 51 Minimum: 18
Number of significant species - EPBC Act: 0 NPW Act: 3
Austrostipa echinata, Spiny Spear-grass SA: R; *Poa drummondiana*, Knotted Poa SA: R; *Prasophyllum constrictum*, Tawny Leek-orchid SA: R
Number of Eyre Peninsula endemic species: 1
Hakea cycloptera, Elm-seed Hakea
Number of introduced/invasive species: 18
Average number of introduced/invasive species per site: 3.1 Maximum: 12 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Triodia irritans	Spinifex	grass sedge	26.9	0.001	3	2.05
Olearia passerinoides ssp. passerinoides	Feather Daisy-bush	Shrub > 1m	14.3	0.057	6.1	5.65
Olearia lepidophylla	Clubmoss Daisy-bush	Low Shrub < 1m	12.8	0.064	5.3	5.01
Prostanthera aspalathoides	Scarlet Mintbush	Low Shrub < 1m	9	0.094	4.5	4.02

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Callitris verrucosa	Scrub Cypress Pine	50	3	2.40
Eucalyptus socialis complex	Beaked Red Mallee	43	2	3.96
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	79	2	3.62
Phebalium bullatum	Silvery Phebalium	50	2	0.90
Low Shrub < 1m				
Eremophila crassifolia	Thick-leaf Emubush	50	5	0.55
Eutaxia microphylla	Common Eutaxia	50	4	0.64
Comesperma volubile	Love Creeper	43	2	0.32
Grass Sedge				
Triodia irritans	Spinifex	100	27	5.19
Dianella revoluta var. revoluta	Black-anther Flax-lily	71	2	0.37
Gahnia lanigera	Black Grass Saw-sedge	43	1	0.65
Avellinia michelii	Avellinia *	43	1	2.34
Forb Herb Vine				
Helichrysum leucopsideum	Satin Everlasting	43	1	0.68
Brassica tournefortii	Wild Turnip *	43	1	0.60

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 PAN01001, 107 CUN00801, 107 MUR00301, 107 POO00701, 131 NIC00101, 128 GIL00901, 128 HEG00301, 127 KOO00801, 128 ACR00201, 128 ACR00101, 599 SHI00501, 599 SHI00801, 599 SHD03701, 599 SHD06901

Appendix 8. Detailed Floristic Group Descriptions

Cluster 26. White Mallee (*Eucalyptus phenax*) over Dryland Teatree

39 sites in 2 floristic groups

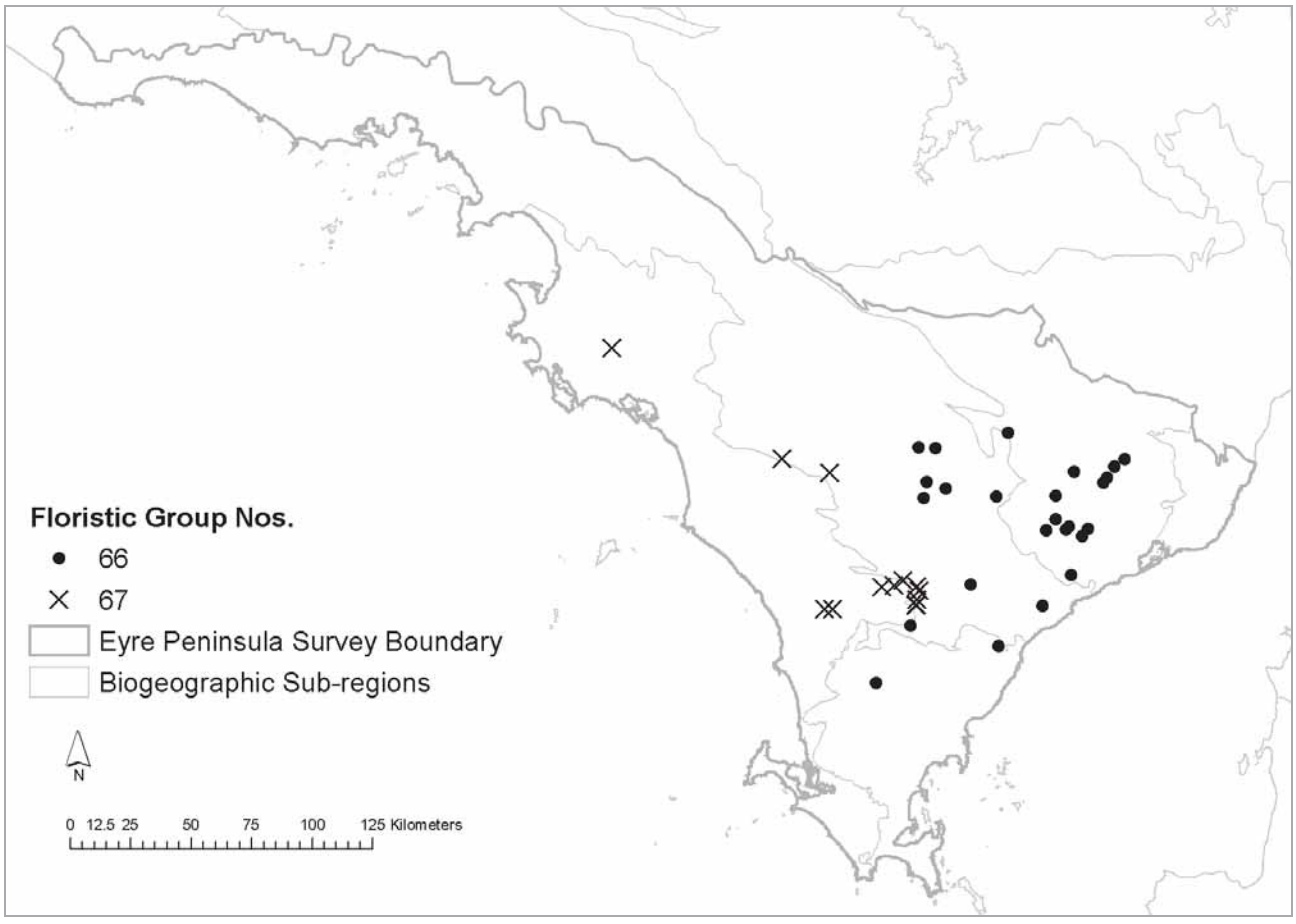
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus gracilis*	Yorrell	36	78.26	7.94
Tree	*Eucalyptus dumosa complex*	White Mallee	31	67.39	7.56
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	38	82.61	5.53
Shrub > 1m	*Melaleuca acuminata ssp. acuminata*	Mallee Honey-myrtle	21	45.65	1.33
Low Shrub < 1m	*Westringia rigida*	Stiff Westringia	19	41.30	1.37
grass sedge	*Austrostipa exilis*	Heath Spear-grass	20	43.48	1.48

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 9 sites - *Colluricincla harmonica*, Grey Shrike-thrush, 8; *Cracticus torquatus*, Grey Butcherbird, 8; *Acanthiza apicalis*, Inland Thornbill, 7; *Strepera versicolor*, Grey Currawong, 7; *Phaps chalcoptera*, Common Bronzewing, 7; *Pomatostomus superciliosus*, White-browed Babbler, 6; *Smicrornis brevirostris*, Weebill, 5; *Dromaius novaehollandiae*, Emu, 5; *Anthochaera carunculata*, Red Wattlebird, 5; *Phylidonyris albifrons*, White-fronted Honeyeater, 5; *Manorina flavigula*, Yellow-throated Miner, 5

MAMMALS 8 sites - *Macropus fuliginosus*, Western Grey Kangaroo, 6; **Mus musculus*, House Mouse, 4; **Vulpes vulpes*, Fox, 2; *Notomys mitchellii*, Mitchell's Hopping-mouse, 2; *Sminthopsis dolichura*, Little Long-tailed Dunnart, 2; *Tachyglossus aculeatus*, Short-beaked Echidna, 2

REPTILES 8 sites - *Lerista edwardsae*, Myall Slider, 4; *Hemiergis peronii*, Four-toed Earless Skink, 4; *Delma australis*, Barred Snake-lizard, 4; *Lerista dorsalis*, Southern Four-toed Slider, 3



Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 66. White Mallee *Eucalyptus phenax* +/- Beaked Red Mallee *E. socialis* / Square-fruited Mallee *E. calycogona* over Dryland Tea-tree *Melaleuca lanceolata* / Broombush *M. uncinata* / Small Hop-bush *Dodonaea bursariifolia* and Spear-grass *Austrostipa* spp.

26 sites central eastern Eyre Peninsula. This mallee assemblage occurred on hill slopes, crests, plains and interdune corridors with sand to medium heavy clay surface soils. Calcareous rock outcrop mostly at <10% cover was present at 20% of sites, quartzite was present at one site. Surface strew cover ranged from 1 to >70% and was present as pebbles or cobbles at 70% of sites. Fire history for 30% of sites ranged from 1-43 years, the majority of sites having been burnt in the 10 years prior to sampling (mean 12 yrs). Bare earth cover was low (mean 12%, sdev 10). Litter cover was high (mean 47%, sdev 25).

Total number of species: 251
Average number of species per site: 33.9 sdev: 12.8 Maximum: 61 Minimum: 15
Number of significant species - EPBC Act: 1 NPW Act: 7

Acacia rhetinocarpa, Resin Wattle AUS: VU SA: V; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Eremophila gibbifolia*, Coccid Emubush SA: R; *Eucalyptus behriana*, Broad-leaf Box SA: R; *Lobelia gibbosa complex*, SA: R; *Melaleuca oxyphylla*, Pointed-leaf Honey-myrtle SA: R; *Olearia adenolasia*, Musk Daisy-bush SA: R

Number of Eyre Peninsula endemic species: 3

Eucalyptus peninsularis, Merrit; *Melaleuca oxyphylla*, Pointed-leaf Honey-myrtle; *Olearia adenolasia*, Musk Daisy-bush;

Number of introduced/invasive species: 35
Average number of introduced/invasive species per site: 3.4 Maximum: 14 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus phenax	White Mallee	Tree	25.3	0.001	3.2	2.24

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus phenax	White Mallee	92	25	4.13
Eucalyptus socialis complex	Beaked Red Mallee	62	5	3.96
Eucalyptus calycogona	Square-fruited Mallee	46	4	2.65
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	65	1	3.62
Melaleuca uncinata	Broombush	62	1	6.14
Lasiopetalum behrii	Pink Velvet-bush	42	1	0.51
Exocarpos aphyllus	Leafless Cherry	42	0	0.61
Low Shrub < 1m				
Eutaxia microphylla	Common Eutaxia	65	3	0.64
Dodonaea bursariifolia	Small Hop-bush	62	4	1.07
Ozothamnus decurrens	Ridged Bush-everlasting	42	3	0.80
Grass Sedge				
Dianella revoluta var. revoluta	Black-anther Flax-lily	58	2	0.37
Austrostipa exilis	Heath Spear-grass	54	3	0.84
Austrostipa elegantissima	Feather Spear-grass	50	1	0.47
Austrostipa hemipogon	Half-beard Spear-grass	46	6	0.59
Austrodanthonia caespitosa	Common Wallaby-grass	46	1	0.67
Forb Herb Vine				
Cassytha melantha	Coarse Dodder-laurel	42	5	0.69

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 BUT01701, 80 YEE02101, 103 RUD00101, 103 RUD00801, 103 HIN00201, 103 RUD01001, 103 MAN00803, 103 MAN00804, 103 NIC01201, 103 VER00801, 103 PAL00301, 103 HEG00701, 103 KIE00501, 103 HEG00901, 103 HEG01001, 103 MAN00601, 103 ARN00201, 103 GLY00401, 131 HAM00601, 131 HAM00101, 131 HAM00201, 128 CAR00501, 128 COW00501, 128 HEG00201, 128 HEG01101, 128 HAM00601,

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 66: site 103 HEG00901 – 4/11/1998

Floristic Group 67: site 128 COC00501 – 16/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 67. White Mallee *Eucalyptus phenax* +/- Yalata Mallee *E. yalatensis* over Dryland Tea-tree *Melaleuca lanceolata* and Black Grass Saw-sedge *Gahnia lanigera* / Thick-leaf Emubush *Eremophila crassifolia* +/- Spinifex *Triodia* spp.

13 sites in the Talia and central-western Eyre Mallee biogeographic subregion. This mallee assemblage was found on plains, swales and also dunes. Surface soils were mostly sands, but ranged to clay loams. Calcareous rock outcrop mostly covered <10% at 40% of sites. Surface strew was present at all sites as calcareous pebbles or cobbles mostly with <10% cover. Fire had affected 61% of sites between 33 and 44 years prior to survey. Bare earth cover was mostly low (mean18, sdev 15). Litter cover was moderate (mean 34%, sdev 22).

Total number of species: 153
Average number of species per site: 40.7 sdev: 9.7 Maximum: 56 Minimum: 26
Number of significant species - EPBC Act: 0 NPW Act: 3
Austrostipa echinata, Spiny Spear-grass SA: R; *Microlepidium pilosulum*, Hairy Shepherd's-purse SA: R; *Poa drummondiana*, Knotted Poa SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 27
Average number of introduced/invasive species per site: 7.3 Maximum: 15 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus yalatensis	Yalata Mallee	Tree	22.4	0.001	3.5	2.72
Eremophila crassifolia	Thick-leaf Emubush	Low Shrub < 1m	15.9	0.009	3.3	2.61
Minuartia mediterranea	Slender Sandwort	Forb Herb Vine	6.7	0.025	2.5	1.7
Acacia farinosa	Mealy Wattle	Low Shrub < 1m	14.5	0.036	4.9	5.24
Microlepidium pilosulum	Hairy Shepherd's-purse	Forb Herb Vine	14.1	0.043	4.4	4.46
Olearia floribunda var. floribunda	Heath Daisy-bush	Low Shrub < 1m	10.3	0.063	4.4	3.86

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus phenax	White Mallee	92	25	4.13
Eucalyptus yalatensis	Yalata Mallee	85	22	3.53
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	92	4	3.62
Low Shrub < 1m				
Comesperma volubile	Love Creeper	85	3	0.32
Eremophila crassifolia	Thick-leaf Emubush	77	16	0.55
Pultenaea tenuifolia	Narrow-leaf Bush-pea	62	10	0.72
Correa pulchella	Salmon Correa Y	54	3	0.56
Pimelea flava ssp. dichotoma	Diosma Riceflower	46	3	0.43
Eutaxia microphylla	Common Eutaxia	46	1	0.64
Acrotriche patula	Prickly Ground-berry	46	0	1.52
Grass Sedge				
Gahnia lanigera	Black Grass Saw-sedge	77	4	2.34
Vulpia myuros	Fescue *	62	4	0.93
Catapodium rigidum	Rigid Fescue *	62	3	0.57
Avellinia michelii	Avellinia *	54	2	0.65
Lomandra effusa	Scented Mat-rush	46	3	0.93
Austrostipa exilis	Heath Spear-grass	46	1	0.84
Forb Herb Vine				
Minuartia mediterranea	Slender Sandwort *	69	7	0.54
Helichrysum leucopsideum	Satin Everlasting	69	4	0.60
Daucus glochidiatus	Native Carrot	69	3	0.56
Senecio glossanthus group	Groundsel	69	3	0.53
Clematis microphylla var. microphylla	Old Man's Beard	62	2	0.57
Chrysocephalum apiculatum	Common Everlasting	54	3	0.59
Podotheca angustifolia	Sticky Long-heads	54	1	0.60
Brachyscome ciliaris var. ciliaris	Variable Daisy	46	3	0.42
Anagallis arvensis	Pimpernel *	46	1	0.70
Crassula sieberiana complex	Australian Stonecrop	46	1	0.61
Galium murale	Small Bedstraw *	46	1	0.62

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 NIC00401, 103 NIC00501, 103 NIC00802, 103 NIC00701, 107 COC00601, 107 INK01201, 107 TOO00701, 131 NIC00301, 131 NIC00401, 128 COC00501, 128 HIN01001, 128 PEA00601, 128 PEA00701

Appendix 8. Detailed Floristic Group Descriptions

Cluster 27. Yorrell and White Mallee over Dryland Teatree.

46 sites in 3 groups

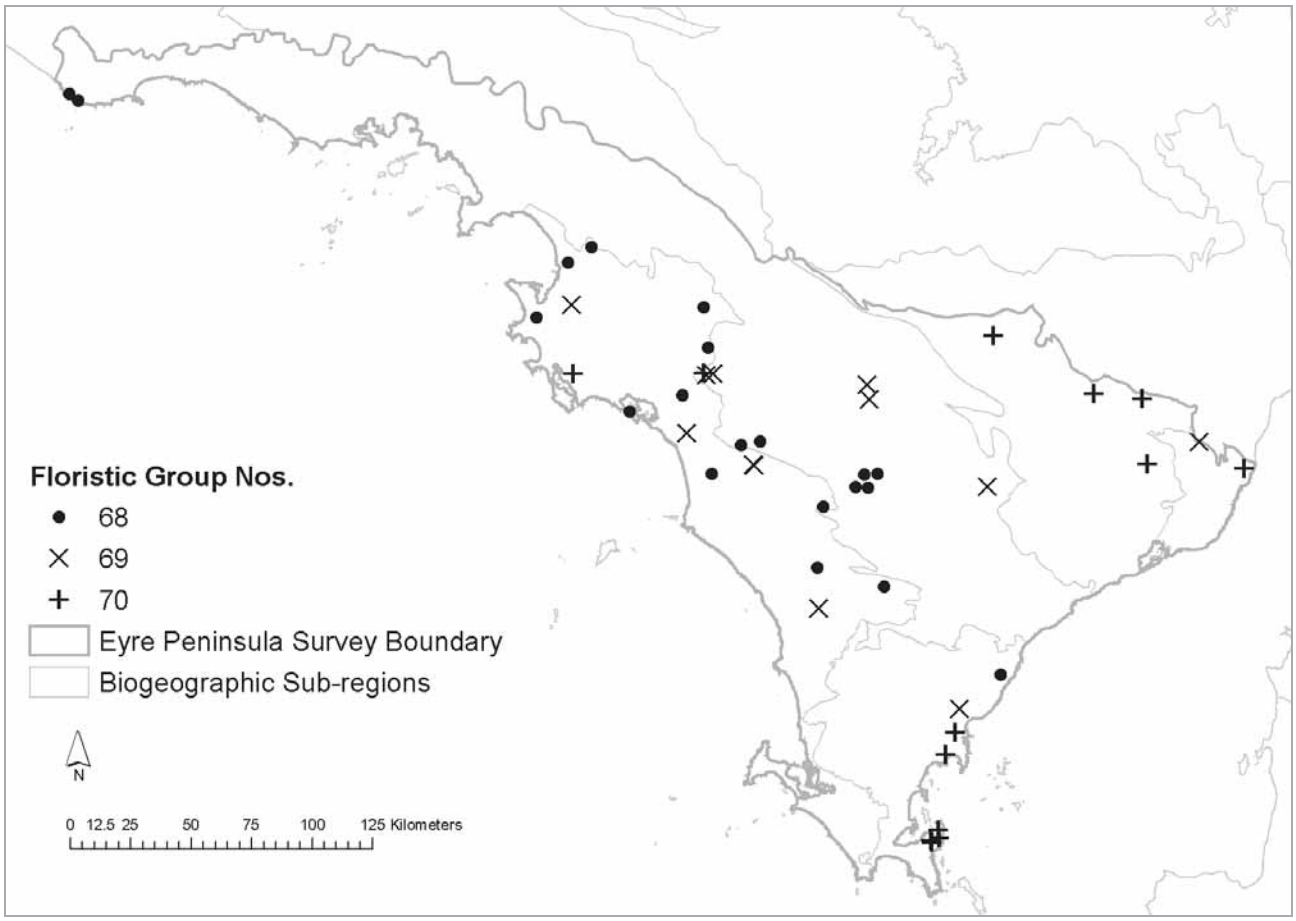
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus gracilis*	Yorrell	36	78.26	7.94
Tree	*Eucalyptus dumosa complex*	White Mallee	31	67.39	7.56
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	38	82.61	5.53
Shrub > 1m	*Melaleuca acuminata ssp. acuminata*	Mallee Honey-myrtle	21	45.65	1.33
Low Shrub < 1m	*Westringia rigida*	Stiff Westringia	19	41.30	1.37
grass sedge	*Austrostipa exilis*	Heath Spear-grass	20	43.48	1.48

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 7 sites - *Colluricincla harmonica*, Grey Shrike-thrush, 5; *Smicrornis brevirostris*, Weebill, 5; *Anthochaera carunculata*, Red Wattlebird, 5; *Pardalotus striatus*, Striated Pardalote, 4

MAMMALS 7 sites - *Cercartetus concinnus*, Western Pygmy-possum, 6; *Macropus fuliginosus*, Western Grey Kangaroo, 3; **Vulpes vulpes*, Fox, 2; *Sminthopsis dolichura*, Little Long-tailed Dunnart, 2

REPTILES 7 sites - *Diplodactylus calcicolus*, South Coast Gecko, 3; *Ctenotus schomburgkii*, Sandplain Ctenotus, 3



Floristic Group 68. White Mallee *Eucalyptus dumosa* complex +/- Yorrell *Eucalyptus gracilis* Mallee over Dryland Tea-tree *M. lanceolata* +/- Mallee Honey-myrtle *Melaleuca acuminata ssp. acuminata*

20 sites concentrated in the northern Talia and south-central Eyre Mallee biogeographic subregions. This mallee assemblage occurred on plains and to a lesser extent on dunes with sand to sandy clay loam soils. Calcareous rock outcrop was present at under half of the sites with variable cover. Calcareous surface strew of pebbles or cobbles was recorded at 80% of sites with cover between 1-70%. Fire was recorded for only 1 site, 39 years prior to sampling. Bare earth cover was low (mean 11%, sdev 16). Litter cover was moderate (mean 23%, sdev 21).

Total number of species: 206

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 31.5 sdev: 12.4 Maximum: 50 Minimum: 6
Number of significant species - EPBC Act: 0 NPW Act: 1
Austrostipa multispiculis SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 36
Average number of introduced/invasive species per site: 5.6 Maximum: 17 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus dumosa complex	White Mallee	Tree	20.4	0.001	2.9	1.71

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus dumosa complex	White Mallee	100	20	3.56
Eucalyptus gracilis	Yorrell	50	3	4.40
Pittosporum angustifolium	Native Apricot	50	1	0.45
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	90	4	3.62
Melaleuca acuminata ssp. acuminata	Mallee Honey-myrtle	50	3	1.70
Low Shrub < 1m				
Comesperma volubile	Love Creeper	65	1	0.32
Acrotriche patula	Prickly Ground-berry	40	1	1.52
Grass Sedge				
Avellinia michelii	Avellinia *	50	1	0.65
Austrodanthonia caespitosa	Common Wallaby-grass	50	0	0.67
Austrostipa exilis	Heath Spear-grass	45	1	0.84
Forb Herb Vine				
Crassula sieberiana complex	Australian Stonecrop	70	1	0.61
Thysanotus baueri	Mallee Fringe-lily	50	2	0.30
Helichrysum leucopsideum	Satin Everlasting	50	1	0.60
Brachyscome ciliaris var. ciliaris	Variable Daisy	40	2	0.42
Brachyscome lineariloba	Hard-head Daisy	40	1	0.53
Daucus glochidiatus	Native Carrot	40	1	0.56

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO00201, 80 NEI01G04, 21 NK01001, 82 KUR00304, 82 KUR00205, 107 MTW00301, 107 STR01A03, 71 VB00601, 107 COU00502, 107 COU00801, 107 PEA00201, 107 KAP00201, 107 MTW00501, 107 TOO00501, 107 TAL00601, 107 KOP00401, 107 KOP01201, 107 KOP00601, 107 KOP01001, 107 MOO00701

Floristic Group 68: site 107 KAP00201 – 22/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 69. Yorrell *Eucalyptus gracilis* +/- White Mallee *Eucalyptus dumosa* complex Mallee over Mallee Honey-myrtle *Melaleuca acuminata ssp. acuminata* / Dryland Tea-tree *M. lanceolata* / Stiff Westringia *Westringia rigida* / Heath Spear-grass *Austrostipa exilis*

13 sites spread across the centre of the study area. This mallee assemblage was found on hill slopes, plains and some dunes. Surface soils ranged from sand to light sandy clay. Rock outcrop affected 2 sites with <10% to 50% cover of sandstone or calcrete. Surface strew of calcareous, quartzite or sandstone pebbles covered <10% to >70% at 70% of sites. Fire had affected 2 sites 7 and 24 years prior to sampling. Bare earth cover was low (mean 11%, sdev 10). Litter cover was moderate (mean 37%, sdev 27).

Total number of species: 199
Average number of species per site: 35 sdev: 7.9 Maximum: 49 Minimum: 20
Number of significant species - EPBC Act: 0 NPW Act: 2
Eucalyptus cretata, Darke Peak Mallee SA: R; *Microlepidium pilosulum*, Hairy Shepherd's-purse SA: R;
Number of Eyre Peninsula endemic species: 1
Eucalyptus cretata, Darke Peak Mallee
Number of introduced/invasive species: 35
Average number of introduced/invasive species per site: 7.2 Maximum: 16 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Austrostipa exilis	Heath Spear-grass	grass sedge	7	0.075	3.1	2.06

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus gracilis	Yorrell	100	13	4.40
Eucalyptus dumosa complex	White Mallee	69	4	3.56
Shrub > 1m				
Melaleuca acuminata ssp. acuminata	Mallee Honey-myrtle	62	1	1.70
Melaleuca lanceolata	Dryland Tea-tree	62	0	3.62
Low Shrub < 1m				
Comesperma volubile	Love Creeper	62	2	0.32
Westringia rigida	Stiff Westringia	46	2	1.32
Grass Sedge				
Bromus rubens	Red Brome *	69	2	0.68
Austrostipa exilis	Heath Spear-grass	62	7	0.84
Avena barbata	Bearded Oat *	46	0	1.39
Forb Herb Vine				
Daucus glochidiatus	Native Carrot	77	2	0.56
Brachyscome lineariloba	Hard-head Daisy	54	2	0.53
Galium murale	Small Bedstraw *	46	1	0.62
Senecio glossanthus group	Groundsel	46	1	0.53
Anagallis arvensis	Pimpernel *	46	0	0.70

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 KU00201, 21 KU01101, 80 TUM00501, 103 DAR01102, 103 CHA00201, 107 KYA00501, 107 KYA01301, 107 MTW00801, 107 PEA01001, 107 RIP00701, 107 TAL00301, 128 HAM01001, 128 COC00601

Floristic Group 69: site 107 MTW00801 – 21/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 70. Yorrell *Eucalyptus gracilis* Mallee over Dryland Tea-tree *Melaleuca lanceolata*

13 sites in three clusters, a main cluster along the north-east boundary of the study area, northern Talia biogeograohic subregion and south-west coast. This simple mallee assemblage was found on plains with sand to medium clay surface soils (most sites were loam and sandy loam). Calcareous rock outcrop was recorded at 2 sites with <10% cover. Calcareous surface strew of calcareous pebbles and cobbles (boulders at 1 site) covered <10% to 30% at 90% of sites. Fire had affected 2 sites 16 years prior to sampling. Bare earth cover was low (mean 9%, sdev 9). Litter cover was moderate (mean 24%, sdev 25).

Total number of species: 147
Average number of species per site: 22.2 sdev: 10.1 Maximum: 34 Minimum: 5
Number of significant species - EPBC Act: 0 NPW Act: 1
Eucalyptus conglobata ssp. conglobata, Port Lincoln Mallee SA: R
Number of Eyre Peninsula endemic species: 1
Eucalyptus conglobata ssp. conglobata, Port Lincoln Mallee
Number of introduced/invasive species: 16
Average number of introduced/invasive species per site: 2.1 Maximum: 8 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus gracilis	Yorrell	Tree	19.8	0.001	2.8	1.57

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus gracilis	Yorrell	100	20	4.40
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	92	6	3.62
Low Shrub < 1m				
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	54	1	0.67
Westringia rigida	Stiff Westringia	46	1	1.32

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 KU00901, 79 LN00101, 79 LN00201, 79 LN00401, 80 JUS00101, 80 TUM01901, 80 TUM02201, 103 BAR01101, 103 BUC00801, 103 GLY01101, 107 CAL00502, 128 GIL00701, 128 MUN00301

Floristic Group 70: site 80 TUM01901 – 18/10/1995

Appendix 8. Detailed Floristic Group Descriptions

Cluster 28. Dryland Teatree Shrublands

53 sites in 3 floristic groups

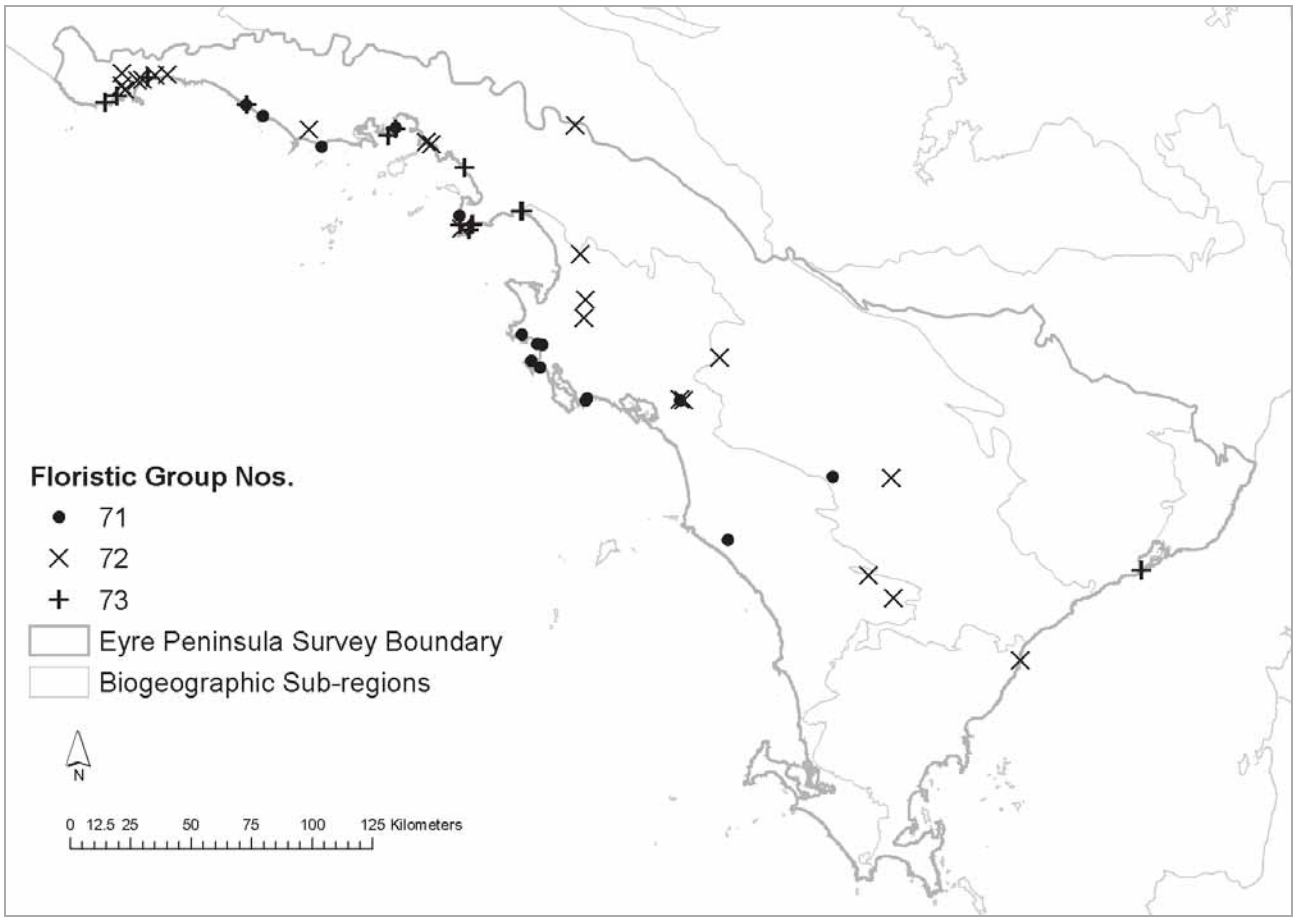
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus dumosa complex*	White Mallee	25	47.17	3.45
Tree	*Eucalyptus oleosa*	Coastal Red Mallee	21	39.62	4.41
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	53	100.00	5.92
Shrub > 1m	*Geijera linearifolia*	Sheep Bush	27	50.94	2.89
Low Shrub < 1m	*Threlkeldia diffusa*	Coast Bonefruit	26	49.06	1.11

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 4 sites - *Smicrornis brevirostris,* Weebill, 4; *Colluricincla harmonica,* Grey Shrike-thrush, 3; *Pardalotus striatus,* Striated Pardalote, 3; *Acanthiza apicalis,* Inland Thornbill, 3; *Cracticus torquatus,* Grey Butcherbird, 2; *Lichenostomus leucotis,* White-eared Honeyeater, 2; *Pardalotus punctatus,* Spotted Pardalote, 2; *Acanthiza chrysorrhoa,* Yellow-rumped Thornbill, 2; *Zosterops lateralis,* Silvereye, 2

MAMMALS 4 sites - **Mus musculus*, House Mouse, 2

REPTILES 4 sites - *Diplodactylus calcicolus,* South Coast Gecko, 4; *Lerista dorsalis,* Southern Four-toed Slider, 3; *Morethia obscura,* Mallee Snake-eye, 2; *Ctenophorus chapmani,* Prickly Dragon, 2; *Ctenophorus pictus,* Painted Dragon, 2; *Delma australis,* Barred Snake-lizard, 2; *Hemiergis initialis,* Western Earless Skink, 2



Floristic Group 71. Dryland Tea-tree *Melaleuca lanceolata* Open Shrubland +/- Yalata Mallee *Eucalyptus yalatensis* over variable low shrub understorey

17 sites in the west of the study area, mostly along the coast. The open shrubland assemblage most commonly occurred on dune slopes with sand to sandy loam surface soils. Rock outcrop was rare (2 sites) and included calcrete and siltstone with cover up to 50%. Surface strew, where present (4 sites), included siltstone, sandstone or calcareous pebbles and cobbles with cover ranging from <10% to 70%. Fire history was not recorded. Bare earth was moderate (mean 30%, sdev 24). Litter cover was also moderate (mean 21%, sdev 19).

Total number of species: 110

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 14.7 sdev: 7.9 Maximum: 37 Minimum: 5
Number of significant species - EPBC Act: 0 NPW Act: 2
Microlepidium pilosulum, Hairy Shepherd's-purse SA: R
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 14
Average number of introduced/invasive species per site: 1.5 Maximum: 6 Minimum: 0

This group had no significant indicator species.

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus yalatensis	Yalata Mallee	35	6	3.53
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	100	5	3.62
Low Shrub < 1m				
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	41	2	1.35
Forb Herb Vine				
Tetragonia implexicoma	Bower Spinach	59	2	1.07
Carpobrotus rossii	Native Pigface	41	1	1.24

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO00601, 82 SIN00401, 82 THE00203, 82 SIN00101, 82 CHA00104, 82 SEA00201, 82 STR00402, 82 WAL00204, 107 HUD00701, 107 KOP00801, 179 GAB00301, 179 GAB00901, 179 GAB00902, 179 GAB01201, 179 GAB01202, 179 GAB01301, 179 COA01001

Floristic Group 71: site 107 HUD00701 – 22/10/1999

Floristic Group 72. White Mallee *Eucalyptus dumosa* complex / Coastal Red Mallee *E. oleosa* / Yorrell *Eucalyptus gracilis* Mallee over Dryland Tea-tree *Melaleuca lanceolata*

22 sites across central and western Eyre Peninsula, concentrated along the far west coast. This mallee assemblage was recorded on dunes, plains and hillslopes with sand to sandy clay loam soils. Rock outcrop was present with <10% cover at 30% of sites, mostly as calcareous material, with granite at 1 site. Calcareous surface strew was present at 70% of sites as pebbles and some cobble with <10% to 70% cover. Fire history was available for 15% of sites ranging from

Appendix 8. Detailed Floristic Group Descriptions

11-19 years prior to sampling. Bare earth cover was moderate (mean 27%, sdev 20). Litter cover was also moderate (mean 24%, sdev 23).

Total number of species: 184
Average number of species per site: 23.1 sdev: 10.9 Maximum: 50 Minimum: 8
Number of significant species - EPBC Act: 0 NPW Act: 2

Austrostipa echinata, Spiny Spear-grass SA: R; *Poa drummondiana*, Knotted Poa SA: R

Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 27
Average number of introduced/invasive species per site: 2.5 Maximum: 12 Minimum: 0

This group had no significant indicator species.

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus dumosa complex	White Mallee	86	6	3.56
Eucalyptus oleosa	Coastal Red Mallee	77	6	5.31
Eucalyptus gracilis	Yorrell	50	2	4.40
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	100	4	3.62
Geijera linearifolia	Sheep Bush	41	0	2.12
Low Shrub < 1m				
Rhagodia crassifolia	Fleshy Saltbush	55	3	0.98
Threlkeldia diffusa	Coast Bonefruit	45	2	0.99

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO00701, 21 CO01401, 80 NEI01101, 82 COL00201, 82 BOO00101, 82 BOO00301, 82 THE00503, 82 THE00402, 103 HAM00502, 113 NUN00401, 107 ADD00401, 107 COU01D10, 107 RIP00201, 107 RIP00501, 107 TOO00401, 131 NIC00701, 128 CED00901, 128 FOW00401, 428 OR03001, 428 FB00101, 428 FB00201, 428 FB00301

Floristic Group 72: site 128 CED00901 – 21/9/2005

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 73. Dryland Tea-tree *Melaleuca lanceolata* Shrubland over Sheep Bush *Geijera linearifolia* +/- Marsh Saltbush *Atriplex paludosa ssp. cordata* +/- emergent Native Apricot *Pittosporum angustifolium* / Eucalypt spp.

14 sites along the far west coast with one exception on the east coast near Franklin Harbour. This mostly shrubland assemblage occurred on coastal dunes and plains. Surface soils ranged from sand to sandy loam. Rock outcrop cover was minor, 1 site calcareous <10% and another sandstone 10-50%. Surface strew was present at 35% of sites ranging from <10% to 70%. Calcareous cover ranged from pebbles to boulders, whilst sandsone was present as cobbles at one site with 30-70% cover. Fire history was not recorded. Bare earth cover was moderate (mean 35%, sdev 15). Litter cover was low (mean 10%, sdev 5).

Total number of species: 82
Average number of species per site: 21.1 sdev: 5.3 Maximum: 29 Minimum: 12
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 13
Average number of introduced/invasive species per site: 2.4 Maximum: 7 Minimum: 0

This group had no significant indicator species.

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Pittosporum angustifolium	Native Apricot	71	2	0.45
Shrub > 1m				
Geijera linearifolia	Sheep Bush	100	17	2.12
Melaleuca lanceolata	Dryland Tea-tree	100	6	3.62
Exocarpos aphyllus	Leafless Cherry	64	2	0.61
Low Shrub < 1m				
Atriplex paludosa ssp. cordata	Marsh Saltbush	86	16	3.33
Sclerolaena diacantha group	Bindyi	86	3	0.95
Threlkeldia diffusa	Coast Bonefruit	79	2	0.99
Rhagodia crassifolia	Fleshy Saltbush	71	2	0.98
Eremophila deserti	Turkey-bush	64	5	0.80
Olearia minor	Heath Daisy-bush	64	5	0.67
Senecio pinnatifolius group	Groundsel	64	2	0.90
Frankenia pauciflora	Sea Heath	43	1	0.98
Maireana erioclada	Rosy Bluebush	43	1	0.74
Forb Herb Vine				
Crassula colorata		64	3	0.58
Tetragonia implexicoma	Bower Spinach	64	0	1.07
Carpobrotus rossii	Native Pigface	57	1	1.24

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 COL00102, 82 COL00301, 82 COL00403, 82 COL00402, 82 COO00604, 82 COO00301, 82 COO00103, 82 CAR00202, 82 CAR00203, 82 WAL00103, 82 THE00102, 82 THE00202, 82 SIN00102, 82 GIB00202

Floristic Group 73: site 82 CAR00202 – 22/11/1995

Appendix 8. Detailed Floristic Group Descriptions

Cluster 29. Dryland Teatree shrublands to mallee with Prickly ground-berry and Coast Velvet-bush

53 sites in 3 floristic groups

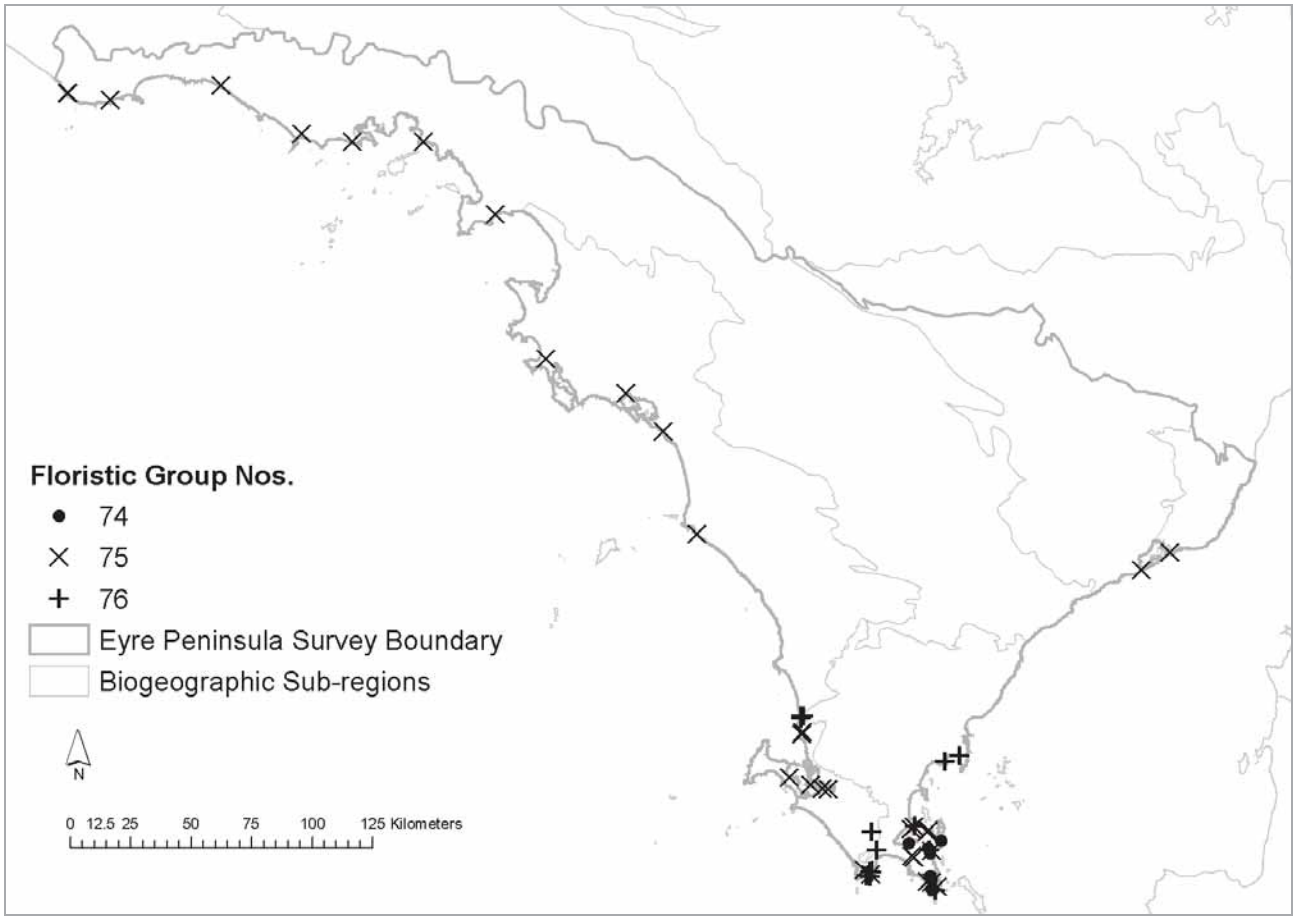
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus diversifolia ssp. diversifolia*	Coastal White Mallee	24	45.28	7.38
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	50	94.34	9.32
Low Shrub < 1m	*Acrotriche patula*	Prickly Ground-berry	31	58.49	1.47
Low Shrub < 1m	*Lasiopetalum discolor*	Coast Velvet-bush	30	56.60	3.14

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 4 sites - *Zosterops lateralis*, Silvereye, 4; *Anthochaera carunculata*, Red Wattlebird, 4; *Hirundo neoxena*, Welcome Swallow, 3; *Sericornis frontalis*, White-browed Scrubwren, 3; *Colluricincla harmonica*, Grey Shrike-thrush, 2; *Pardalotus punctatus*, Spotted Pardalote, 2; *Dromaius novaehollandiae*, Emu, 2; *Acanthagenys rufogularis*, Spiny-cheeked Honeyeater, 2; *Eopsaltria griseogularis*, Western Yellow Robin, 2; *Drymodes brunneopygia*, Southern Scrub-robin, 2; *Artamus cyanopterus*, Dusky Woodswallow, 2; *Gliciphila melanops*, Tawny-crowned Honeyeater, 2; *Lichenostomus cratitius*, Purple-gaped Honeyeater, 2; *Sturnus vulgaris*,* Common Starling, 2; *Falco cenchroides*, Nankeen Kestrel, 2; *Phylidonyris novaehollandiae*, New Holland Honeyeater, 2; *Phaps elegans*, Brush Bronzewing, 2; *Psophodes nigrogularis*, Western Whipbird, 2

MAMMALS 6 sites - *Rattus fuscipes*, Bush Rat, 5; **Mus musculus*, House Mouse, 3; **Oryctolagus cuniculus*, Rabbit, 3

REPTILES 6 sites - *Morethia obscura*, Mallee Snake-eye, 5; *Hemiergis peronii*, Four-toed Earless Skink, 4



Floristic Group 74. Port Lincoln Mallee *Eucalyptus conglobata ssp. conglobata* +/- Coastal Red Mallee *E. oleosa* / Coastal White Mallee *E. diversifolia* over Dryland Tea-tree *Melaleuca lanceolata* +/- Cockies Tongue *Templetonia retusa* / Prickly Ground-berry *Acrotriche patula* / Coast Velvet-bush *Lasiopetalum discolor* / Pale Turpentine Bush *Beyeria lechenaultii* / Wedge-leaf Pomaderris *Pomaderris obcordata*

7 sites confined to the Jussieu Peninsula on the south-eastern tip of the Eyre Hills biogeographic subregion. This mallee assemblage was found on plains and consolidated dunes with mostly loam tor sand surface soils. Calcareous rock outcrop ranged from nil to 50%. Calcareous surface strew was present at 45% of sites as pebbles and cobbles with 30%

to >70% cover. Fire history for 2 sites was 28 years prior to sampling. Bare earth cover was minimal (mean 1%, sdev 2). Litter cover was moderate and variable (mean 31%, sdev 42).

Total number of species: 84
Average number of species per site: 20.3 sdev: 17.3 Maximum: 44 Minimum: 4
Number of significant species - EPBC Act: 0 NPW Act: 2

Eucalyptus conglobata ssp. conglobata, Port Lincoln Mallee SA: R; *Prasophyllum calcicola*, Limestone Leek-orchid SA: V

Number of Eyre Peninsula endemic species: 3

Eucalyptus conglobata ssp. conglobata, Port Lincoln Mallee; *Hibbertia cinerea*, Port Lincoln Guinea-flower; *Pomaderris flabellaris*, Fan Pomaderris;

Number of introduced/invasive species: 6
Average number of introduced/invasive species per site: 1 Maximum: 6 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus conglobata ssp. conglobata	Port Lincoln Mallee	Tree	76.6	0.001	4.6	4.59
Pomaderris obcordata	Wedge-leaf Pomaderris	Low Shrub < 1m	19.2	0.03	4.6	4.56
Prasophyllum calcicola	Limestone Leek-orchid	Forb Herb Vine	11.7	0.082	5.7	5.3

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus conglobata ssp. conglobata	Port Lincoln Mallee R	100	77	8.52
Eucalyptus oleosa	Coastal Red Mallee	43	4	5.31
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	43	2	6.47
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	86	5	3.62
Templetonia retusa	Cockies Tongue	57	11	1.03
Exocarpos aphyllus	Leafless Cherry	57	1	0.61
Low Shrub < 1m				
Acrotriche patula	Prickly Ground-berry	71	6	1.52
Lasiopetalum discolor	Coast Velvet-bush	71	6	0.97
Dodonaea humilis	Dwarf Hop-bush Y	71	6	2.83
Beyeria lechenaultii	Pale Turpentine Bush	57	5	2.54
Pomaderris obcordata	Wedge-leaf Pomaderris	43	19	1.01
Acrotriche cordata	Blunt-leaf Ground-berry	43	3	1.78
Correa pulchella	Salmon Correa Y	43	1	0.56
Grass Sedge				
Gahnia deusta	Limestone Saw-sedge	43	0	2.03
Forb Herb Vine				
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel Y	43	0	0.74

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN00301, 79 LN00601, 79 LN00701, 79 LN02001, 80 JUS00701, 80 JUS01001, 80 JUS01101

Floristic Group 74: site 80 JUS00701 – 19/10/1995

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 75. Dryland Tea-tree *Melaleuca lanceolata* Shrubland +/- overstorey of Coastal White Mallee *Eucalyptus diversifolia* / Kingscote Mallee *E. rugosa* over Coast Velvet-bush *Lasiopetalum discolour* / Prickly Ground-berry *Acrotriche patula*

32 sites scattered along the entire coastline of the study area. This shrubland to mallee assemblage occurred on dunes, hillslopes and plains. Surface soils included sand to sandy clay loam. Calcareous rock outcrop was present at half of the sites ranging form <10% to >50% cover (with the exception of 2 sandstone sites). Calcareous surface strew in the form of pebbles, cobbles and boulders covered <10% to >70% at 65% of sites. Fire history was recorded for 10% of sites ranging from 16-35 years prior to sampling (mean 24 yrs). Bare earth cover was low (mean 16%, sdev 19). Litter cover was moderate (mean 26%, sdev 30).

Total number of species: 203
Average number of species per site: 22.9 sdev: 13.2 Maximum: 58 Minimum: 5
Number of significant species - EPBC Act: 0 NPW Act: 3
Acacia alcockii, Alcock's Wattle SA: R; *Eucalyptus conglobata ssp. conglobata*, Port Lincoln Mallee SA: R; *Microlepidium pilosulum*, Hairy Shepherd's-purse SA: R
Number of Eyre Peninsula endemic species: 1
Acacia alcockii, Alcock's Wattle; *Eucalyptus conglobata ssp. conglobata*, Port Lincoln Mallee
Number of introduced/invasive species: 42
Average number of introduced/invasive species per site: 4.1 Maximum: 17 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Melaleuca lanceolata	Dryland Tea-tree	Shrub > 1m	9.2	0.001	2.7	1.15

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	41	2	6.47
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	100	9	3.62
Low Shrub < 1m				
Lasiopetalum discolor	Coast Velvet-bush	53	3	2.83
Acrotriche patula	Prickly Ground-berry	50	1	1.52
Forb Herb Vine				
Crassula sieberiana complex	Australian Stonecrop	44	1	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN01701, 79 LN01901, 79 LN03301, 79 LN03501, 80 COU01501, 80 COU01502, 80 JUS00201, 80 JUS00401, 80 JUS00601, 80 JUS01501, 80 JUS01601, 80 JUS02601, 80 SLE02301, 80 SLE02401, 80 WAG00801, 80 WAG00901, 80 WAG01003, 80 WAG01202, 82 TAL00104, 82 ELL00302, 82 COO00201, 82 CUN00104, 82 CAR00102, 82 THE00302, 82 CHA00403, 82 KUR00203, 82 KUR00204, 82 WIT00102, 82 GIB00201, 107 SEA00101, 179 COA00103, 128 CED01101

Floristic Group 75: site 80 WAG00901 – 18/10/1995

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 76. Coast Ridge-fruited Mallee *Eucalyptus angulosa* +/- Coastal White Mallee *Eucalyptus diversifolia ssp. diversifolia* / Kingscote Mallee *Eucalyptus rugosa* Mallee over Dryland Tea-tree *Melaleuca lanceolata* +/- Twiggy Stinkweed *Opercularia turpis* / Coast Velvet-bush *Lasiopetalum discolor* / Blunt-leaf Ground-berry *Acrotriche cordata*

14 sites in the most south-eastern part of the study area mostly near the coast. This mallee assemblage was recorded on dunes, hill slopes and plains. Surface soils ranged from sand to clay loam. 38% of sites had mostly low (1-10%) cover of calcareous or quartzitic outcrop. Surface strew was more prominent as pebbles and cobbles mostly with a low (1-30%) cover at 62% of sites. Strew type included quartzite, calcareous material and laterite. Fire in this assemblage was rare (1 site 16 years prior to sampling). Bare earth cover was moderately low (mean 19%, sdev 18). Litter cover was moderate (mean 31%, sdev 24).

Total number of species: 186
Average number of species per site: 29.5 sdev: 9 Maximum: 47 Minimum: 12
Number of significant species - EPBC Act: 0 NPW Act: 1
Eucalyptus conglobata ssp. conglobata, Port Lincoln Mallee SA: R;
Number of Eyre Peninsula endemic species: 4
Eucalyptus conglobata ssp. conglobata, Port Lincoln Mallee; *Hakea cycloptera*, Elm-seed Hakea; *Hibbertia cinerea*, Port Lincoln Guinea-flower; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle;
Number of introduced/invasive species: 25
Average number of introduced/invasive species per site: 2.5 Maximum: 7 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus rugosa	Kingscote Mallee Y	Tree	26.3	0.01	4.2	4.26
Opercularia turpis	Twiggy Stinkweed	Low Shrub < 1m	8.7	0.09	4.4	4.09

Species present at >39% of sites	Common name & status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus angulosa	Coast Ridge-fruited Mallee	100	36	5.47
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	57	2	6.47
Eucalyptus rugosa	Kingscote Mallee Y	50	26	3.94
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	86	3	3.62
Low Shrub < 1m				
Acrotriche patula	Prickly Ground-berry	71	1	1.52
Lasiopetalum discolor	Coast Velvet-bush	57	3	2.83
Acrotriche cordata	Blunt-leaf Ground-berry	50	6	1.78
Opercularia turpis	Twiggy Stinkweed	43	8	0.47
Acacia spinescens	Spiny Wattle	43	2	0.39
Grass Sedge				
Gahnia deusta	Limestone Saw-sedge	64	4	2.03

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN00501, 80 COU01001, 80 COU01002, 80 LIN00101, 80 LIN02201, 80 SLE00502, 80 SLE01401, 80 TUM02001, 82 JUS00103, 82 SLE00106, 82 SLE00105, 128 MAR00201, 128 ULE00301, 128 ULE00401

Floristic Group 76: site 128 ULE00301 – 16/12/2004

Appendix 8. Detailed Floristic Group Descriptions

Cluster 30. Shrublands with Pale Turpentine Bush

40 sites in 3 floristic groups

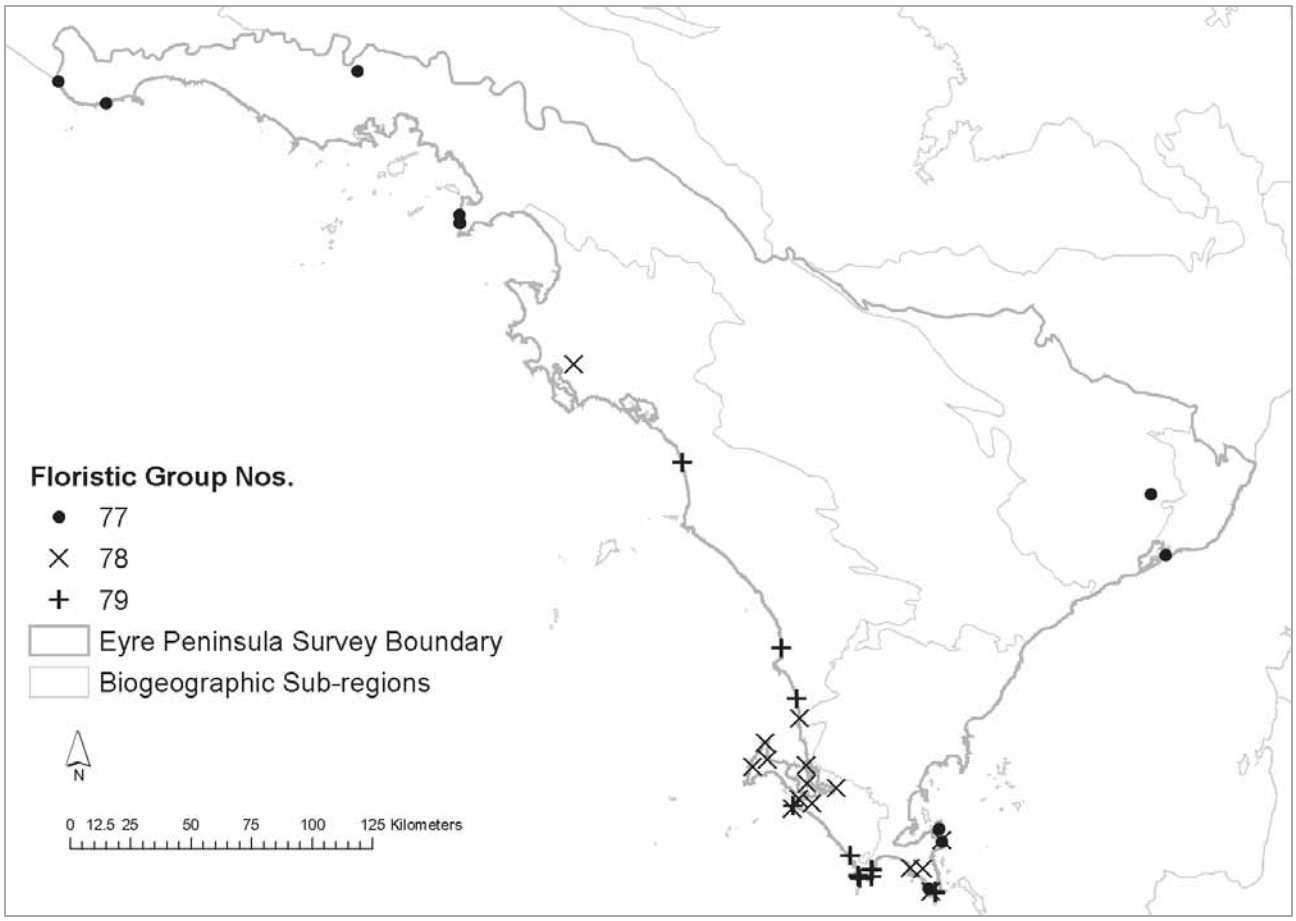
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	25	62.50	3.63
Shrub > 1m	*Leucopogon parviflorus*	Coast Beard-heath	19	47.50	1.09
Low Shrub < 1m	*Acrotriche patula*	Prickly Ground-berry	27	67.50	4.33
Low Shrub < 1m	*Lasiopetalum discolor*	Coast Velvet-bush	26	65.00	3.00
Low Shrub < 1m	*Beyeria lechenaultii*	Pale Turpentine Bush	25	62.50	4.76

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

No bird sites

MAMMALS 2 sites - *Rattus fuscipes*, Bush Rat, 1; **Mus musculus*, House Mouse, 1; **Oryctolagus cuniculus*, Rabbit, 1; *Macropus fuliginosus*, Western Grey Kangaroo, 1

REPTILES 2 sites - *Hemiergis peronii*, Four-toed Earless Skink, 2; *Liopholis multiscutata*, Bull Skink, 2



Floristic Group 77. Pale Turpentine Bush *Beyeria lechenaultii* Low Shrubland +/- Sheep Bush *Geijera linearifolia* / Leafless Cherry *Exocarpos aphyllus* / Dryland Tea-tree *Melaleuca lanceolata*

11 sites widely scattered around the coast of the study area. This low shrub to shrubland assemblage occurred on plains dunes and hill slopes with sand to loam surface soils. Rock outcrop was rare and minimal (<10% granite at 1 site). Surface strew was present at less than half of the sites. Calcareous pebbles covered <10% whilst granite cobbles at one site covered 10-30%. Fire history was absent. Bare earth cover was moderate (mean 25% sdev 22). Litter cover was low (mean 12%, sdev 9).

Total number of species: 122

Appendix 8. Detailed Floristic Group Descriptions

Average number of species per site: 20.6 sdev: 13.4 Maximum: 51 Minimum: 7
Number of significant species - EPBC Act: 1 NPW Act: 4
Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V; *Poa drummondiana*, Knotted Poa SA: R; *Pomaderris forrestiana*, SA: R; *Templetonia battii*, Spiny Templetonia SA: R
Number of Eyre Peninsula endemic species: 1
Templetonia battii, Spiny Templetonia
Number of introduced/invasive species: 13
Average number of introduced/invasive species per site: 1.6 Maximum: 8 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Beyeria lechenaultii	Pale Turpentine Bush	Low Shrub < 1m	23.3	0.001	3.2	2.07

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Exocarpos aphyllus	Leafless Cherry	73	6	0.61
Geijera linearifolia	Sheep Bush	73	4	2.12
Melaleuca lanceolata	Dryland Tea-tree	55	1	3.62
Alyxia buxifolia	Sea Box	45	7	1.29
Low Shrub < 1m				
Beyeria lechenaultii	Pale Turpentine Bush	100	23	2.54
Acrotriche patula	Prickly Ground-berry	45	3	1.52
Eremophila deserti	Turkey-bush	45	3	0.80
Atriplex paludosa ssp. cordata	Marsh Saltbush	45	2	3.33
Forb Herb Vine				
Carpobrotus rossii	Native Pigface	45	3	1.24

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

79 LN02101, 79 LN02201, 79 LN02401, 82 COO00102, 82 WAL00302, 82 WAL00301, 82 WAL00205, 82 FOW02, 82 COW00102, 103 GLY01301, 127 KOO01601

Floristic Group 77: site COW00102 – 7/8/1996

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 78. Coast Beard-heath *Leucopogon parviflorus* / Dryland Tea-tree *Melaleuca lanceolata* / Mallee Pomaderris *Pomaderris paniculosa ssp. paniculosa* Shrubland over Coast Velvet-bush *Lasiopetalum discolour* / Prickly Ground-berry *Acrotriche patula* +/- overstorey Drooping Sheoak *Allocasuarina verticillata*

15 sites along the south-west coast, mostly in the Talia biogeograohic subregion. This diverse shrubland to woodland assemblage was most common on hillslopes, but also occurred on dunes and plains. Surface soils were mostly sands (80% of sites) ranging to clay loam. Calcareous rock outcrop ranged from <10% to 50% at 55% of sites. Calcareous surface strew as pebbles, cobbles and boulders (1 site) ranged from <10% to >70% cover at 65% of sites. Fire had affected 1 site 15 years prior to sampling. Bare earth cover was low (mean 12%, sdev 17). Litter cover was also low (mean 18%, sdev 24).

Total number of species: 207
Average number of species per site: 42.4 sdev: 10.2 Maximum: 65 Minimum: 26
Number of significant species - EPBC Act: 1 NPW Act: 4
Acacia alcockii, Alcock's Wattle SA: R; *Caladenia bicalliata ssp. bicalliata*, Western Daddy-long-legs SA: R; *Prasophyllum occultans*, Hidden Leek-orchid SA: R; *Stackhousia annua*, Annual Candles AUS: VU SA: V
Number of Eyre Peninsula endemic species: 1
Acacia alcockii, Alcock's Wattle
Number of introduced/invasive species: 46
Average number of introduced/invasive species per site: 10.2 Maximum: 27 Minimum: 2

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Acrotriche patula	Prickly Ground-berry	Low Shrub < 1m	12.2	0.011	3.5	2.31
Dianella brevicaulis	Short-stem Flax-lily	grass sedge	10.4	0.032	3.4	2.62
Lepidosperma congestum		grass sedge	12.7	0.042	4	3.73
Pomaderris paniculosa ssp. paniculosa	Mallee Pomaderris	Shrub > 1m	11.6	0.069	4.6	4.4

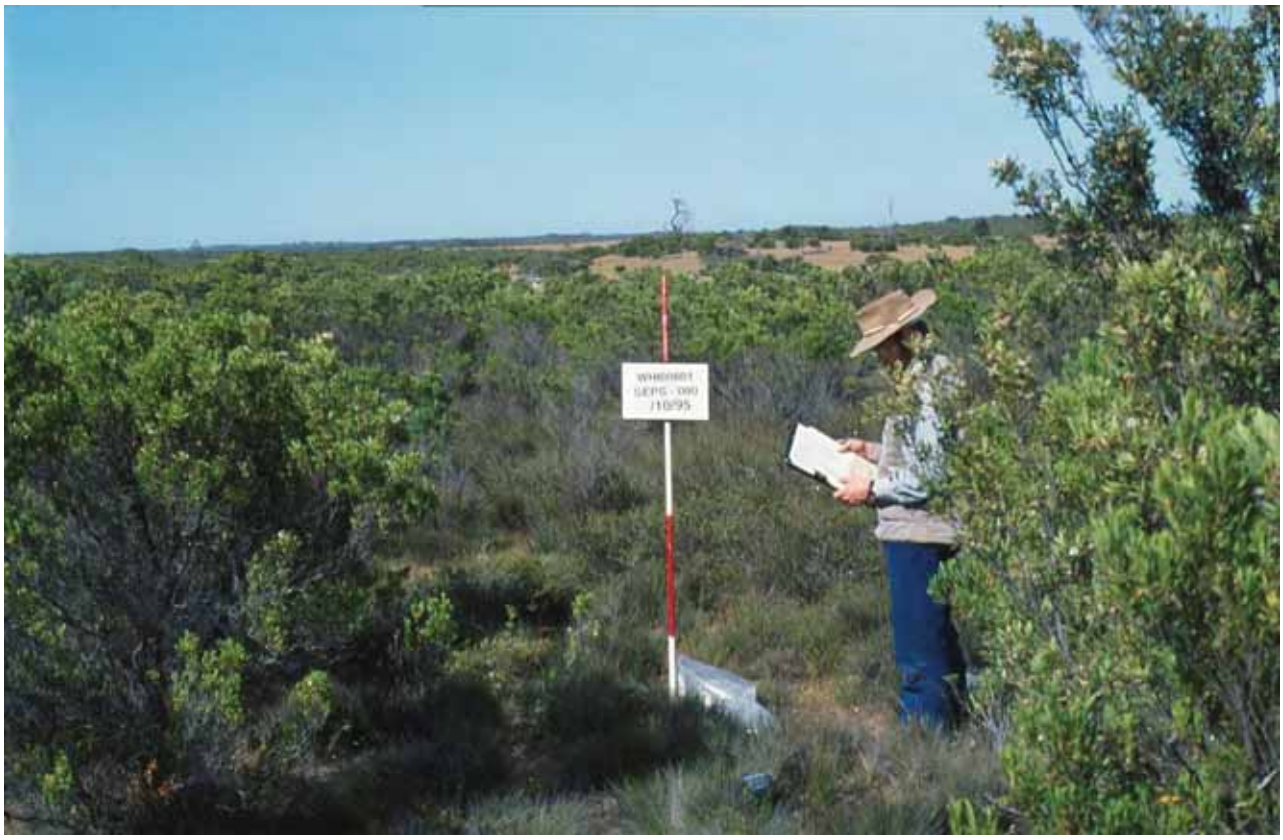
Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Trees				
Allocasuarina verticillata	Drooping Sheoak	40	1	4.44
Pittosporum angustifolium	Native Apricot	40	1	0.45
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	40	0	6.47
Shrub > 1m				
Leucopogon parviflorus	Coast Beard-heath	73	4	3.76
Melaleuca lanceolata	Dryland Tea-tree	67	2	3.62
Pomaderris paniculosa ssp. paniculosa	Mallee Pomaderris	40	12	0.79
Low Shrub < 1m				
Lasiopetalum discolor	Coast Velvet-bush	87	12	2.83
Acrotriche patula	Prickly Ground-berry	80	12	1.52
Comesperma volubile	Love Creeper	40	1	0.32
Grass Sedge				
Dianella brevicaulis	Short-stem Flax-lily	80	10	0.75
Catapodium rigidum	Rigid Fescue *	73	5	0.57
Avellinia michelii	Avellinia *	73	3	0.65
Austrostipa flavescens	Coast Spear-grass	67	6	0.66
Rostraria cristata	Annual Cat's-tail *	67	3	0.70
Lepidosperma congestum		53	13	0.95
Gahnia deusta	Limestone Saw-sedge	53	3	2.03
Gahnia lanigera	Black Grass Saw-sedge	53	3	2.34
Austrostipa exilis	Heath Spear-grass	47	1	0.84
Aira cupaniana	Small Hair-grass *	40	3	0.62
Austrodanthonia caespitosa	Common Wallaby-grass	40	0	0.67
Avena barbata	Bearded Oat *	40	0	1.39
Lomandra effusa	Scented Mat-rush	40	0	0.93
Forb Herb Vine				
Anagallis arvensis	Pimpernel *	100	5	0.70
Podotheca angustifolia	Sticky Long-heads	87	5	0.60
Galium murale	Small Bedstraw *	67	3	0.62
Trachymene pilosa	Dwarf Trachymene	67	3	0.65
Clematis microphylla var. microphylla	Old Man's Beard	60	2	0.57
Bupleurum semicompositum	Hare's Ear *	53	2	0.63
Crassula sieberiana complex	Australian Stonecrop	53	1	0.61
Daucus glochidiatus	Native Carrot	53	1	0.56
Vittadinia australasica var. australasica	Sticky New Holland Daisy	47	5	0.40
Microtis unifolia complex	Onion-orchid	47	3	0.42
Cassytha peninsularis var. peninsularis	Peninsula Dodder-laurel Y	47	1	0.74
Oxalis perennans	Native Sorrel	47	1	0.54
Asparagus asparagoides f. asparagoides	Bridal Creeper *	40	1	1.14
Helichrysum leucopsideum	Satin Everlasting	40	0	0.60

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Appendix 8. Detailed Floristic Group Descriptions

Sites in Group (Survey number Site Identification code)**:**

80 COU01101, 107 CAL00402, 80 WAG02F17, 82 JUS00203, 80 WHI00201, 80 WHI00601, 80 WHI00801, 80 JUS02201, 80 JUS02901, 80 WAN01501, 80 WAG00501, 80 WAG01601, 80 JUS02401, 80 WAG02001, 80 WAG01901



Floristic Group 78: site 80 WHI00801 – 18/10/1995

Floristic Group 79: site 80 SLE01901 – 18/10/1995

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 79. Pale Turpentine Bush *Beyeria lechenaultii* / Coast Velvet-bush *Lasiopetalum discolour* / Prickly Ground-berry *Acrotriche patula* / Blunt-leaf Ground-berry *A. cordata* / Dryland Tea-tree *Melaleuca lanceolata* / Coast Daisy-bush *Olearia axillaris* Low Shrubland +/- overstorey of Coastal White Mallee *Eucalyptus diversifolia*

14 sites along the south-west coast, mostly in the Talia biogeographic subregion. This diverse low shrub to mallee assemblage was most common on dunes and limestone plains. Surface soils were mostly sands (80% of sites). Calcareous rock outcrop ranged from <10% to 50% at 35% of sites. Calcareous surface strew as pebbles and cobbles ranged from <10% to 70% cover at 60% of sites. Fire history was absent. Bare earth cover was moderate (mean 25%, sdev12). Litter cover was moderately low (mean 20%, sdev 20).

Total number of species: 165
Average number of species per site: 39.3 sdev: 9 Maximum: 52 Minimum: 21
Number of significant species - EPBC Act: 0 NPW Act: 1
Acacia alcockii, Alcock's Wattle SA: R
Number of Eyre Peninsula endemic species: 4
Acacia alcockii, Alcock's Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Hakea cycloptera*, Elm-seed Hakea; *Pomaderris flabellaris*, Fan Pomaderris;
Number of introduced/invasive species: 33
Average number of introduced/invasive species per site: 6.6 Maximum: 12 Minimum: 3

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Hydrocotyle capillaris	Thread Pennywort	Forb Herb Vine	18.1	0.003	3.4	2.93
Ixodia achillaeoides ssp. achillaeoides	Coast Ixodia	Low Shrub < 1m	25.6	0.011	5.4	4.82
Corybas despectans	Coast Helmet-orchid	Forb Herb Vine	15.5	0.012	3.9	3.51
Microseris lanceolata	Yam Daisy	Forb Herb Vine	13.3	0.015	3.4	3.04
Veronica hillebrandii	Rigid Speedwell	Forb Herb Vine	19.5	0.017	4.1	3.92
Millotia major	Millotia	Forb Herb Vine	12.6	0.027	3.7	3.51
Leptorhynchos squamatus ssp. squamatus	Scaly Buttons	Forb Herb Vine	14.9	0.028	4	3.95
Catapodium rigidum	Rigid Fescue	grass sedge	7.1	0.033	2.5	1.65
Stackhousia spathulata	Coast Candles	Low Shrub < 1m	13	0.064	5.6	4.99
Craspedia variabilis	Billy-buttons	Forb Herb Vine	8.8	0.084	3.7	3.34

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	64	3	6.47
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	64	1	3.62
Olearia axillaris	Coast Daisy-bush	50	1	3.74
Leucopogon parviflorus	Coast Beard-heath	50	0	3.76
Low Shrub < 1m				
Senecio pinnatifolius group	Groundsel	86	3	0.90
Beyeria lechenaultii	Pale Turpentine Bush	79	6	2.54
Lasiopetalum discolor	Coast Velvet-bush	79	3	2.83
Acrotriche patula	Prickly Ground-berry	71	5	1.52
Acrotriche cordata	Blunt-leaf Ground-berry	57	7	1.78
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	57	2	1.82
Spyridium phylicoides	Narrow-leaf Spyridium Y	57	2	0.85
Eutaxia microphylla	Common Eutaxia	50	3	0.64
Pimelea glauca	Smooth Riceflower	43	7	0.31
Correa pulchella	Salmon Correa Y	43	2	0.56
Pultenaea tenuifolia	Narrow-leaf Bush-pea	43	2	0.72
Calytrix tetragona	Common Fringe-myrtle	43	1	0.82
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	43	0	1.35
Grass Sedge				
Rostraria cristata	Annual Cat's-tail *	79	5	0.70
Catapodium rigidum	Rigid Fescue *	71	7	0.57
Austrostipa flavescens	Coast Spear-grass	43	3	0.66
Austrodanthonia setacea	Small-flower Wallaby-grass	43	2	0.60
Dianella brevicaulis	Short-stem Flax-lily	43	2	0.75
Gahnia lanigera	Black Grass Saw-sedge	43	1	2.34
Forb Herb Vine				
Anagallis arvensis	Pimpernel *	86	4	0.70
Crassula sieberiana complex	Australian Stonecrop	71	3	0.61
Daucus glochidiatus	Native Carrot	71	3	0.56
Podotheca angustifolia	Sticky Long-heads	64	4	0.60
Carpobrotus rossii	Native Pigface	64	1	1.24
Hydrocotyle capillaris	Thread Pennywort	57	18	0.63
Microseris lanceolata	Yam Daisy	50	13	0.40
Galium murale	Small Bedstraw *	50	3	0.62

Appendix 8. Detailed Floristic Group Descriptions

Veronica hillebrandii	Rigid Speedwell	43	20	0.41
Sagina maritima	Sea Pearlwort	43	12	0.79
Gnaphalium indutum	Tiny Cudweed	43	6	0.59
Cassytha glabella f. dispar	Dodder-laurel	43	3	0.53
Microtis unifolia complex	Onion-orchid	43	3	0.42
Sonchus oleraceus	Common Sow-thistle *	43	1	0.45

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 SLE01901, 80 SLE02601, 82 TAL00406, 82 COU00103, 82 WAN00202, 82 WAN00201, 82 SLE00204, 82 SLE00203, 82 JUS00101, 82 SLE00104, 82 SLE00102, 82 SLE00101, 82 JUS00102, 82 KIA00102

Floristic Group 80: site 128 HAM00301 – 23/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Cluster 31. Yorrell and Coastal Red Mallee over Rigid Westringia, Shrubby Twinleaf and Mueller's Daisy-bush

70 sites in 2 floristic groups

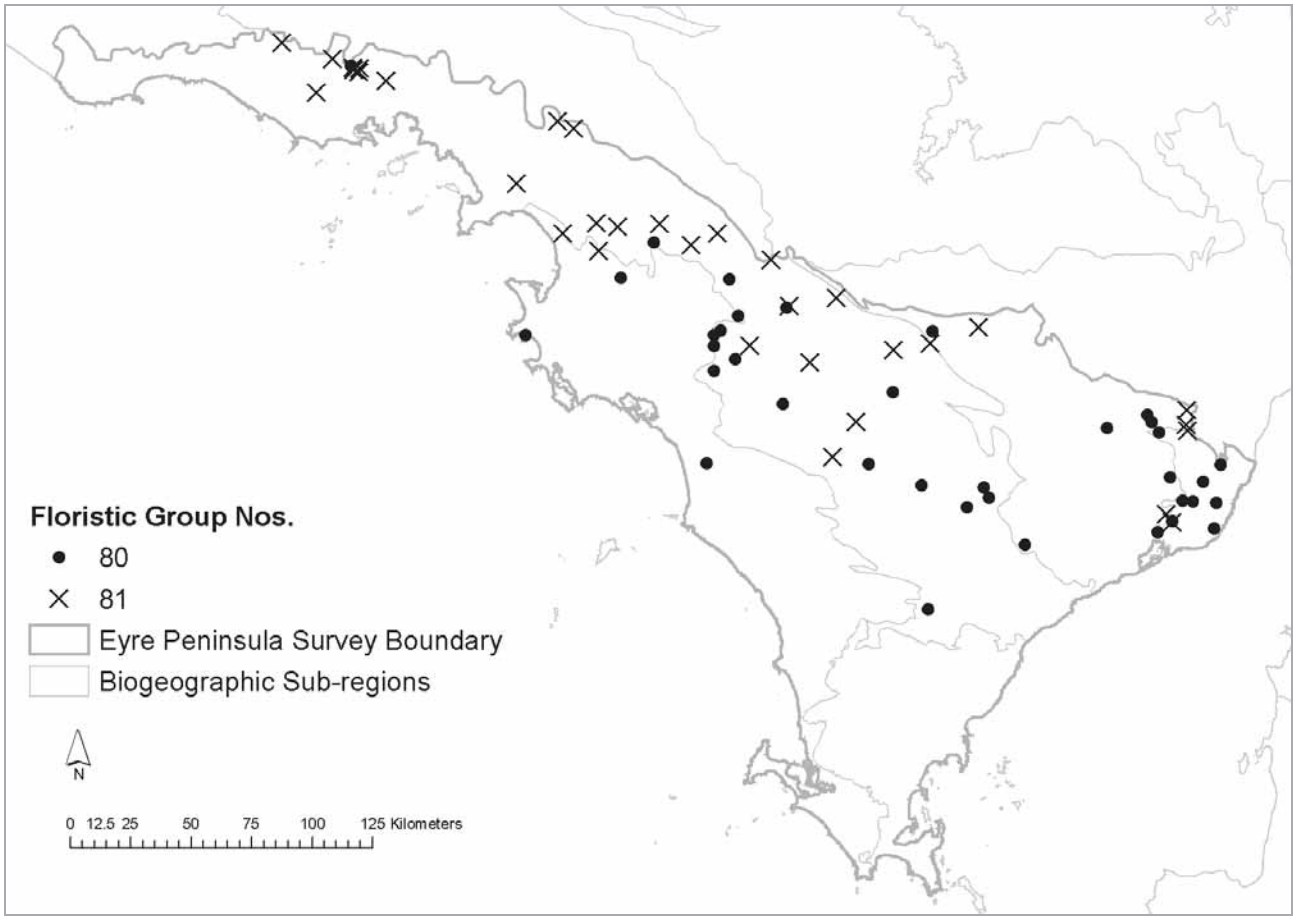
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus oleosa*	Coastal Red Mallee	70	100.00	7.46
Tree	*Eucalyptus gracilis*	Yorrell	57	81.43	5.36
Shrub > 1m	*Geijera linearifolia*	Sheep Bush	36	51.43	2.08
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	31	44.29	2.40
Low Shrub < 1m	*Westringia rigida*	Stiff Westringia	52	74.29	1.45
Low Shrub < 1m	*Sclerolaena diacantha group*	Bindyi	44	62.86	1.60
Low Shrub < 1m	*Zygophyllum aurantiacum*	Shrubby Twinleaf	40	57.14	1.00
Low Shrub < 1m	*Enchylaena tomentosa var. tomentosa*	Ruby Saltbush	39	55.71	1.05
Low Shrub < 1m	*Olearia muelleri*	Mueller's Daisy-bush	35	50.00	1.90

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 20 sites - *Smicrornis brevirostris,* Weebill, 19; *Colluricincla harmonica,* Grey Shrike-thrush, 15; *Lichenostomus leucotis,* White-eared Honeyeater, 13; *Pardalotus striatus,* Striated Pardalote, 12; *Acanthiza apicalis,* Inland Thornbill, 12; *Anthochaera carunculata,* Red Wattlebird, 11; *Pardalotus punctatus,* Spotted Pardalote, 10

MAMMALS 18 sites - ****Mus musculus***, House Mouse, 5; *Cercartetus concinnus,* Western Pygmy-possum, 5; *Sminthopsis dolichura,* Little Long-tailed Dunnart, 4

REPTILES 18 sites - *Lerista edwardsae,* Myall Slider, 10



Floristic Group 80. Coastal Red Mallee *Eucalyptus oleosa* +/- Yorrell *E. gracilis* Mallee over +/- Dryland Tea-tree *Melaleuca lanceolata* / Hook-leaf Wattle *Acacia ancistrophylla var. lissophylla* / Stiff Westringia *Westringia rigida* / Bindyi *Sclerolaena diacantha group* / Mueller's Daisy-bush *Olearia muelleri*

Appendix 8. Detailed Floristic Group Descriptions

36 sites across the northern parts of the study area. This mallee assemblage was mostly found on plains with clay loam, loam, sand or clay surface soils. Calcareous rock outcrop affected 15% of sites with cover ranging from <10% to 50%. Surface strew of calcareous pebbles and cobbles covered <10% to 70% at 50% of sites (10% of sites had quartz strew). Fire had affected 15% of sites 10-44 years prior to sampling (mean 32 yrs). Bare earth cover was low (mean 17%, sdev 14). Litter cover was moderate (mean 38%, sdev 25).

Total number of species: 243
Average number of species per site: 30.3 sdev: 9.5 Maximum: 47 Minimum: 13
Number of significant species - EPBC Act: 0 NPW Act: 2
Eucalyptus cretata, Darke Peak Mallee SA: R; *Lobelia gibbosa complex*, SA: R;
Number of Eyre Peninsula endemic species: 2
Eucalyptus cretata, Darke Peak Mallee; *Hakea cycloptera*, Elm-seed Hakea;
Number of introduced/invasive species: 34
Average number of introduced/invasive species per site: 2.6 Maximum: 11 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus oleosa	Coastal Red Mallee	Tree	19.6	0.01	2.5	1.51
Ptilotus seminudus	Rabbit-tails	Forb Herb Vine	8.3	0.03	3.4	3.08
Acacia ancistrophylla var. lissophylla	Hook-leaf Wattle	Shrub > 1m	11.3	0.09	5.1	6.2

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus oleosa	Coastal Red Mallee	100	19	5.31
Eucalyptus gracilis	Yorrell	67	5	4.40
Santalum acuminatum	Quandong	47	2	0.69
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	50	1	3.62
Acacia ancistrophylla var. lissophylla	Hook-leaf Wattle	42	11	1.62
Low Shrub < 1m				
Westringia rigida	Stiff Westringia	67	5	1.32
Sclerolaena diacantha group	Bindyi	53	6	0.95
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	50	3	0.67
Olearia muelleri	Mueller's Daisy-bush	47	10	1.27
Zygophyllum aurantiacum	Shrubby Twinleaf	42	5	0.82
Grass Sedge				
Austrostipa elegantissima	Feather Spear-grass	47	1	0.47
Austrostipa acrociliata	Graceful Spear-grass	42	2	0.48
Austrostipa exilis	Heath Spear-grass	42	1	0.84
Forb Herb Vine				
Ptilotus seminudus	Rabbit-tails	53	8	0.39
Calandrinia eremaea	Dryland Purslane	47	1	0.56
Crassula sieberiana complex	Australian Stonecrop	47	1	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 KU00701, 21 NK00301, 21 NK00601, 103 GLY00301, 103 COR00201, 103 KOO00601, 103 RUD01401, 103 KIE00401, 103 KIE00101, 103 HEG00303, 103 WIL01001, 103 WIL00101, 103 WIL00201, 103 WIL00301, 103 WIL00802, 103 CHA00801, 103 CHA01201, 103 COW01201, 107 CHI01201, 107 CUN00501, 107 CUN01001, 107 KOP00501, 107 MIN00701, 107 MIN00801, 107 PAL00702, 107 POR00101, 107 STR00701, 107 TAL01001, 107 YAN01301, 128 GIL00101, 128 GIL00401, 127 KOO01001, 128 HIN00801, 128 HAM00301, 128 HAM00801, 128 MUN01201

Floristic Group 81. Yorrell *Eucalyptus gracilis* Mallee and Coastal Red Mallee *E. oleosa* +/- Gilja *E. brachycalyx* over +/- Sheep Bush *Geijera linearifolia* / Broom Emubush *Eremophila scoparia* / Stiff Westringia *Westringia rigida* / Shrubby Twinleaf *Zygophyllum aurantiacum* / Mueller's Daisy-bush *Olearia muelleri*

34 sites across the northern parts of the study area, mostly in the Eyre Mallee biogeographic subregion. This mallee assemblage was mostly found on plains with sand to light medium clay surface soils. Calcareous rock outcrop affected 25% of sites with <10% cover. Surface strew of calcareous pebbles and some cobbles covered <10% to >70% at 80% of sites (quartz strew at 1 site). Fire history was absent. Bare earth cover moderate (mean 22%, sdev 14). Litter cover was high (mean 42%, sdev 21).

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 155
Average number of species per site: 24.8 sdev: 9.3 Maximum: 50 Minimum: 11
Number of significant species - EPBC Act: 1 NPW Act: 3
Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V; *Maireana suaedifolia*, Lax Bluebush SA: R; *Spyridium tricolor*, Rusty Spyridium SA: V
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 12
Average number of introduced/invasive species per site: 1.2 Maximum: 6 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eremophila scoparia	Broom Emubush	Shrub > 1m	19.3	0.02	4.6	3.56
Zygophyllum aurantiacum	Shrubby Twinleaf	Low Shrub < 1m	11.9	0.04	3.9	3.33
Olearia muelleri	Mueller's Daisy-bush	Low Shrub < 1m	11.5	0.05	3.7	3.64
Zygophyllum glaucum	Pale Twinleaf	Low Shrub < 1m	9.7	0.05	3.5	2.62

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus gracilis	Yorrell	97	10	4.40
Eucalyptus oleosa	Coastal Red Mallee	94	9	5.31
Eucalyptus brachycalyx	Gilja	44	2	5.05
Shrub > 1m				
Geijera linearifolia	Sheep Bush	65	1	2.12
Eremophila scoparia	Broom Emubush	47	19	1.37
Low Shrub < 1m				
Westringia rigida	Stiff Westringia	82	8	1.32
Sclerolaena diacantha group	Bindyi	74	4	0.95
Zygophyllum aurantiacum	Shrubby Twinleaf	71	12	0.82
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	59	1	0.67
Olearia muelleri	Mueller's Daisy-bush	53	11	1.27
Rhagodia crassifolia	Fleshy Saltbush	53	2	0.98
Zygophyllum ovatum	Dwarf Twinleaf	50	3	0.64
Maireana trichoptera	Hairy-fruit Bluebush	44	6	0.65
Eremophila weldii	Purple Emubush	44	4	0.63
Olearia magniflora	Splendid Daisy-bush	41	19	0.62
Grass Sedge				
Austrostipa acrociliata	Graceful Spear-grass	56	4	0.48

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 COR00501, 103 BUC00701, 103 WIL01002, 103 COW00301, 113 NUN00501, 107 COU00101, 107 COU00201, 107 COU00601, 107 CUN00101, 107 CUN00301, 107 KOP00201, 107 KYA01001, 107 MIN01101, 107 PAL00401, 107 POO00401, 107 WUD00101, 107 YAN00801, 1 SCR00801, 128 COR00301, 128 KER00501, 128 COW01201, 127 KOO01101, 127 KOO01201, 127 KOO01901, 127 KOO02001, 128 ACR00901, 128 ACR01001, 128 CHA00801, 128 CHA01101, 128 CED00301, 128 CED00601, 599 SHI00301, 599 SHI00401, 599 SHI00601

Floristic Group 81: site 128 CHA01101 – 27/9/2005

Appendix 8. Detailed Floristic Group Descriptions

Cluster 32. Gilja Mallee over Dryland Teatree

47 sites in 2 floristic groups

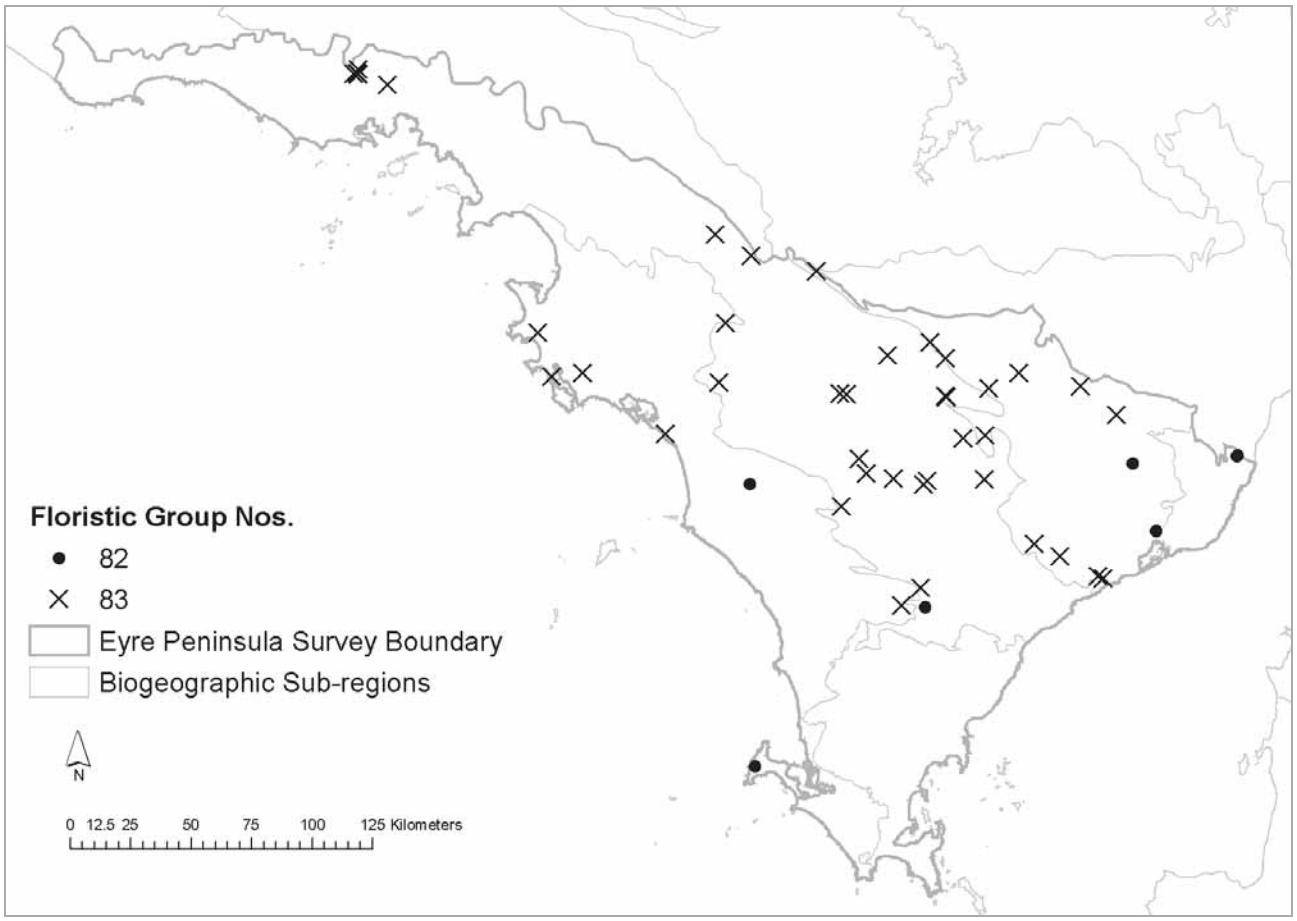
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus brachycalyx*	Gilja	47	100.00	8.52
Tree	*Eucalyptus oleosa*	Coastal Red Mallee	37	78.72	6.21
Shrub > 1m	*Melaleuca lanceolata*	Dryland Tea-tree	20	42.55	2.89
Low Shrub < 1m	*Rhagodia crassifolia*	Fleshy Saltbush	22	46.81	1.08
Low Shrub < 1m	*Olearia muelleri*	Mueller's Daisy-bush	21	44.68	1.88

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 8 sites - *Smicrornis brevirostris*, Weebill, 7; *Strepera versicolor*, Grey Currawong, 7; *Colluricincla harmonica*, Grey Shrike-thrush, 6; *Cracticus torquatus*, Grey Butcherbird, 6; *Lichenostomus leucotis*, White-eared Honeyeater, 5; *Phylidonyris albifrons*, White-fronted Honeyeater, 5; *Microeca fascinans*, Jacky Winter, 5; *Rhipidura leucophrys*, Willie Wagtail, 5; *Acanthiza apicalis*, Inland Thornbill, 4; *Pardalotus punctatus*, Spotted Pardalote, 4; *Acanthagenys rufogularis*, Spiny-cheeked Honeyeater, 4; *Phaps chalcoptera*, Common Bronzewing, 4; *Eolophus roseicapilla*, Galah, 4; *Coracina novaehollandiae*, Black-faced Cuckoo-shrike, 4

MAMMALS 9 sites - *Macropus fuliginosus*, Western Grey Kangaroo, 4; **Mus musculus*, House Mouse, 3; *Cercartetus concinnus*, Western Pygmy-possum, 3

REPTILES 9 sites - *Lerista edwardsae*, Myall Slider, 4; *Tiliqua rugosa*, Sleepy Lizard, 4; *Morethia obscura*, Mallee Snake-eye, 4



Floristic Group 82. Gilja *Eucalyptus brachycalyx* +/- Yorrell *E. gracilis* Mallee over +/- Dryland Tea-tree *Melaleuca lanceolata* / Prickly Ground-berry *Acrotriche patula* / Limestone Saw-sedge *Gahnia deusta*

7 sites scattered widely in the eastern half of the study area. This mallee assemblage occurred on hill slopes, plains and dunes with sand to clay loam surface soils. Calcareous rock outcrop affected 2 sites with 10-30% cover. Surface strew of pebbles and cobbles covered <10% to 30% at 45% of sites (2 sites had 10-30% calcareous pebble cover, quartz cobbles <10% at 1 site). Fire affected 1 site 22 years prior to sampling. Bare earth cover was mostly low (mean 19%, sdev 13). Litter cover was high (mean 44%, sdev 28).

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 123
Average number of species per site: 26.9 sdev: 10 Maximum: 42 Minimum: 13
Number of significant species - EPBC Act: 1 NPW Act: 2
Acacia alcockii, Alcock's Wattle SA: R; *Prostanthera calycina*, West Coast Mintbush AUS: VU SA: V;
Number of Eyre Peninsula endemic species: 2
Acacia alcockii, Alcock's Wattle; *Prostanthera calycina*, West Coast Mintbush
Number of introduced/invasive species: 12
Average number of introduced/invasive species per site: 2.3 Maximum: 6 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Maireana sedifolia	Bluebush	Low Shrub < 1m	25.5	0.009	5.3	4.45
Dodonaea stenozyga	Desert Hop-bush	Shrub > 1m	13.9	0.04	4.5	4.39
Acacia alcockii	Alcock's Wattle R Y	Shrub > 1m	13.1	0.056	5.6	5.07

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus brachycalyx	Gilja	100	19	5.05
Eucalyptus gracilis	Yorrell	71	3	4.40
Santalum acuminatum	Quandong	43	1	0.69
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	57	1	3.62
Low Shrub < 1m				
Zygophyllum apiculatum	Pointed Twinleaf	57	6	0.56
Maireana pentatropis	Erect Mallee Bluebush	43	5	0.66
Olearia muelleri	Mueller's Daisy-bush	43	4	1.27
Acrotriche patula	Prickly Ground-berry	43	2	1.52
Grass Sedge				
Gahnia deusta	Limestone Saw-sedge	43	3	2.03
Forb Herb Vine				
Cassytha melantha	Coarse Dodder-laurel	43	1	0.69
Daucus glochidiatus	Native Carrot	43	1	0.56
Helichrysum leucopsideum	Satin Everlasting	43	1	0.60

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 WHI00501, 103 MCG00801, 103 MCG00802, 128 COW01001, 128 HEG00601, 128 HIN00901, 128 COC01001

Floristic Group 82: site 128 COC01001 – 17/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Floristic Groups 83. Gilja *Eucalyptus brachycalyx* +/- Coastal Red Mallee *E. oleosa* Mallee +/- Boree *Melaleuca pauperiflora* over +/- Dryland Tea-tree *Melaleuca lanceolata*

40 sites widespread across northern Eyre Peninsula. This mallee assemblage occurred on plains, dunes and hillslopes. Surface soils included sand to light clay. Rock outcrop affected 15% of sites most with <10% calcareous cover. One site had >50% cover of quartzite. Surface strew of pebbles and some cobbles covered <10% to 70% at 40% of sites. Fire affected <10% of sites 29-42 years prior to sampling. Bare earth cover was low (mean 14%, sdev 14). Litter cover was high (mean 48%, sdev 24).

Total number of species: 243
Average number of species per site: 29.4 sdev: 11.3 Maximum: 57 Minimum: 10
Number of significant species - EPBC Act: 1 NPW Act: 3
Austrostipa nullanulla, Club Spear-grass AUS: VU SA: V; *Austrostipa plumigera*, SA: R; *Caladenia bicalliata ssp. bicalliata*, Western Daddy-long-legs SA: R;
Number of Eyre Peninsula endemic species: 0
Number of introduced/invasive species: 44
Average number of introduced/invasive species per site: 3.4 Maximum: 17 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus brachycalyx	Gilja	Tree	26.1	0.001	3	2.1
Austrostipa acrociliata	Graceful Spear-grass	grass sedge	8.1	0.034	3.1	2.13

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus brachycalyx	Gilja	100	26	5.05
Eucalyptus oleosa	Coastal Red Mallee	88	10	5.31
Melaleuca pauperiflora ssp. mutica	Boree Y	43	3	5.67
Santalum acuminatum	Quandong	40	2	0.69
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	40	0	3.62
Low Shrub < 1m				
Sclerolaena diacantha group	Bindyi	60	3	0.95
Rhagodia crassifolia	Fleshy Saltbush	50	2	0.98
Zygophyllum aurantiacum	Shrubby Twinleaf	48	5	0.82
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	48	1	0.67
Olearia muelleri	Mueller's Daisy-bush	45	10	1.27
Westringia rigida	Stiff Westringia	45	1	1.32
Grass Sedge				
Austrostipa acrociliata	Graceful Spear-grass	63	8	0.48
Austrostipa elegantissima	Feather Spear-grass	55	2	0.47
Austrostipa exilis	Heath Spear-grass	40	1	0.84
Forb Herb Vine				
Ptilotus seminudus	Rabbit-tails	52	5	0.39
Calandrinia eremaea	Dryland Purslane	45	1	0.56
Crassula sieberiana complex	Australian Stonecrop	45	1	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

82 TAL00105, 82 CAL00101, 103 BAR00401, 103 NIL01101, 103 COR00401, 103 MAN01101, 103 KOO00101, 103 DAR00101, 103 HAM01001, 103 HAM00801, 103 KIM00101, 103 HAM00501, 103 PAN01002, 103 DAR01001, 103 PAN00901, 103 DAR00402, 103 RUD01101, 103 NIC03B13, 103 ARN00702, 103 ARN00701, 107 ADD00601, 107 CAL00302, 107 CHI00501, 107 KOP00701, 107 KOP01101, 107 KYA00701, 107 MIN00901, 107 MUR00201, 107 POO00103, 107 STR00801, 1 PAN01001, 128 COR00501, 128 COR00901, 131 NIC00801, 128 CAR00601, 127 KOO01301, 127 KOO01501, 127 KOO01701, 127 KOO01801, 128 CED00201

Floristic Group 83: site 107 ADD00601 – 22/9/1999

Appendix 8. Detailed Floristic Group Descriptions

Cluster 33. Broombush shrublands +/- Mallee overstorey

99 sites in 4 floristic groups

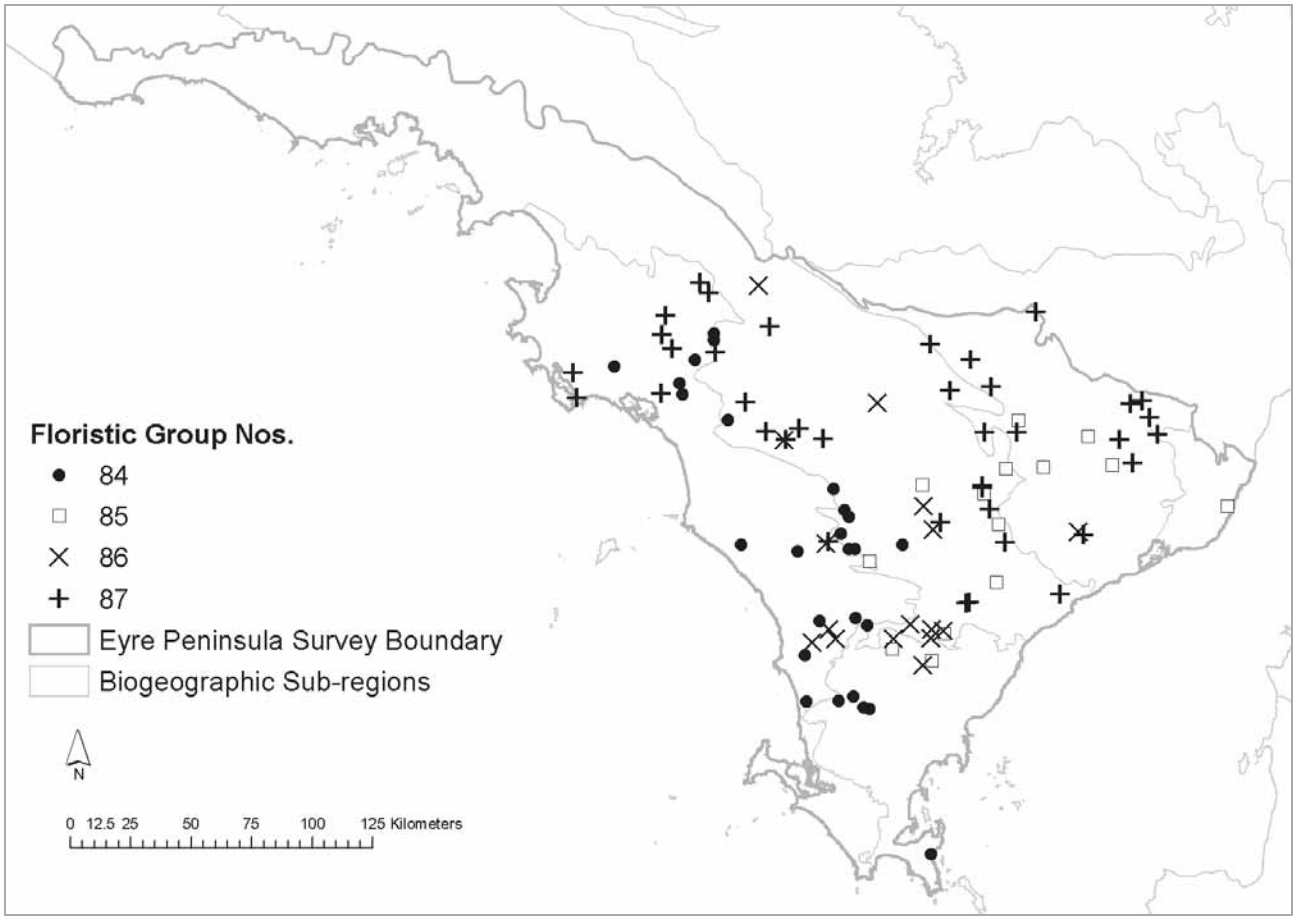
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus diversifolia ssp. diversifolia*	Coastal White Mallee	52	52.53	5.87
Shrub > 1m	*Melaleuca uncinata*	Broombush	98	98.99	7.93
Low Shrub < 1m	*Dodonaea hexandra*	Horned Hop-bush	55	55.56	1.29
Low Shrub < 1m	*Hibbertia sp. Glabriuscula (D.J.Whibley 9012)*	Smooth Guinea-flower	51	51.52	1.62
grass sedge	*Triodia irritans*	Spinifex	45	45.45	8.44

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 13 sites - *Acanthiza apicalis,* Inland Thornbill, 12; *Colluricincla harmonica,* Grey Shrike-thrush, 11; *Lichenostomus leucotis,* White-eared Honeyeater, 9; *Malurus pulcherrimus,* Blue-breasted Fairy-wren, 9; *Smicrornis brevirostris,* Weebill, 8; *Acanthagenys rufogularis,* Spiny-cheeked Honeyeater, 8; *Strepera versicolor,* Grey Currawong, 7; *Cracticus torquatus,* Grey Butcherbird, 7; *Pardalotus punctatus,* Spotted Pardalote, 7; *Dromaius novaehollandiae,* Emu, 7; *Drymodes brunneopygia,* Southern Scrub-robin, 7

MAMMALS 13 sites - *Macropus fuliginosus,* Western Grey Kangaroo, 4; **Vulpes vulpes,* Fox, 4; **Mus musculus,* House Mouse, 3; *Sminthopsis dolichura,* Little Long-tailed Dunnart, 3; *Notomys mitchellii,* Mitchell's Hopping-mouse, 3; **Oryctolagus cuniculus,* Rabbit, 3; *Macropus robustus,* Euro, 3

REPTILES 13 sites - *Ctenotus schomburgkii,* Sandplain Ctenotus, 4; *Ctenophorus fordi,* Mallee Dragon, 4; *Diplodactylus calcicolus,* South Coast Gecko, 4; *Menetia greyii,* Dwarf Skink, 3; *Hemiergis peronii,* Four-toed Earless Skink, 3; *Ctenotus atlas,* Southern Spinifex Ctenotus, 3; *Nephrurus stellatus,* Starred Knob-tailed Gecko, 3



Floristic Group 84. Coastal White Mallee *Eucalyptus diversifolia* Mallee over Broombush *Melaleuca uncinata* +/- Smooth Guinea-flower *Hibbertia sp. Glabriuscula* / Horned Hop-bush *Dodonaea hexandra*

29 sites central-western Eyre Peninsula. This mallee assemblage was found mostly on plains and dunes. Surface soils loamy sand to medium clay. Calcareous rock outcrop was present at 90% of sites ranging from <10% to >50% cover. Calcareous surface strew of pebbles, cobbles or boulders (2 sites) covered <10% to 70% at 95% of sites. Fire affected 25% of sites 7-30 years prior to sampling (mean 16 yrs). Bare earth cover was low (mean 8%, sdev 9). Litter cover was moderate (mean 29%, sdev 20).

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 271
Average number of species per site: 43.6 sdev: 15.3 Maximum: 72 Minimum: 11
Number of significant species - EPBC Act: 0 NPW Act: 4
Austrostipa pilata, Prickly Spear-grass SA: V; *Grevillea pauciflora*, Narrow-leaf Grevillea SA: R; *Levenhookia stipitata*, SA: R; *Lobelia gibbosa complex*, SA: R;
Number of Eyre Peninsula endemic species: 7
Caladenia septuosa, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Grevillea pauciflora ssp. leptophylla*, Narrow-leaf Grevillea; *Hakea cycloptera*, Elm-seed Hakea; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Levenhookia stipitata*, ; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea;
Number of introduced/invasive species: 33
Average number of introduced/invasive species per site: 3.8 Maximum: 19 Minimum: 0

No significant indicators for this group

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	100	12	6.47
Shrub > 1m				
Melaleuca uncinata	Broombush	100	8	6.14
Hakea cycloptera	Elm-seed Hakea Y	55	3	0.40
Lasiopetalum behrii	Pink Velvet-bush	41	6	0.51
Melaleuca lanceolata	Dryland Tea-tree	41	0	3.62
Low Shrub < 1m				
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	86	6	1.66
Dodonaea hexandra	Horned Hop-bush	76	6	1.30
Acacia spinescens	Spiny Wattle	66	3	0.39
Lasiopetalum baueri	Slender Velvet-bush	62	8	0.81
Acrotriche patula	Prickly Ground-berry	62	1	1.52
Calytrix tetragona	Common Fringe-myrtle	59	7	0.82
Thryptomene micrantha	Ribbed Thryptomene	55	3	1.70
Stenanthemum leucophractum	White Cryptandra	52	6	0.40
Baeckea crassifolia	Desert Baeckea	52	3	0.80
Dampiera rosmarinifolia	Rosemary Dampiera	45	2	0.62
Grass Sedge				
Avellinia michelii	Avellinia *	59	2	0.65
Neurachne alopecuroidea	Fox-tail Mulga-grass	55	4	0.81
Lepidosperma viscidum	Sticky Sword-sedge	48	1	1.24
Gahnia deusta	Limestone Saw-sedge	45	2	2.03
Dianella revoluta var. revoluta	Black-anther Flax-lily	45	1	0.37
Gahnia lanigera	Black Grass Saw-sedge	45	0	2.34
Austrodanthonia setacea	Small-flower Wallaby-grass	41	1	0.60
Forb Herb Vine				
Thysanotus patersonii	Twining Fringe-lily	72	3	0.37
Blennospora drummondii	Dwarf Button-flower	55	4	0.61
Goodenia willisiana	Silver Goodenia	52	2	0.49
Hypochaeris glabra	Smooth Cat's Ear *	52	1	0.57
Trachymene pilosa	Dwarf Trachymene	48	2	0.65
Daucus glochidiatus	Native Carrot	45	1	0.56

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO00301, 21 CO01801, 21 NK00801, 21 NK00901, 79 LN01801, 80 COU00501, 80 CUM00201, 80 CUM00301, 80 CUM00801, 80 CUM01E05, 80 KIA00801, 80 YEE00201, 103 PAL00901, 107 ADD00301, 107 HUD00901, 107 KAP00901, 107 KOP00901, 107 MUR00401, 107 MUR00601, 107 MUR00801, 107 MUR00901, 107 PEA01101, 107 POR01101, 107 TOO04C04, 121 MUROEP01, 121 MUROEP02, 121 MUROEP03, 121 MUROEP04, 128 STR00801

Floristic Group 84: site 107 ADD00301 – 21/9/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 85. Square-fruited Mallee *Eucalyptus calycogona* / Beaked Red Mallee *E.* socialis complex / White Mallee *E. dumosa* complex +/- Ridge-fruited Mallee *E. incrassata* Mallee over Broombush *Melaleuca uncinata*

16 sites central-eastern Eyre Peninsula. This mallee assemblage was found on plains and hillslopes including rocky outcrops and inselbergs. Surface soils ranged from sand to light clay. Calcareous or quartz rock outcrop affected 40% of sites with cover ranging from <10% to >50%. Surface strew of pebbles, cobbles or boulders covered <10% to >70% at 85% of sites. Strew lithology of pebbles and cobbles included quartzite, laterite, calcareous material and sandstone. Boulders were granite with cover >70% (1 site). Fire affected 1 site 15 years prior to sampling. Bare earth cover was low (mean 9%, sdev 7). Litter cover was high (mean 48%, sdev 30).

Total number of species: 186
Average number of species per site: 28.7 sdev: 9.7 Maximum: 51 Minimum: 16
Number of significant species - EPBC Act: 2 NPW Act: 8

Acacia hexaneura, Six-nerve Spine-bush SA: R; *Acacia imbricata*, Feathery Wattle AUS: VU SA: R; *Acacia pinguifolia*, Fat-leaf Wattle AUS: EN SA: E; *Daviesia benthamii ssp. humilis*, Mallee Bitter-pea SA: R; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Eucalyptus cretata*, Darke Peak Mallee SA: R; *Melaleuca oxyphylla*, Pointed-leaf Honey-myrtle SA: R; *Wurmbea decumbens*, Trailing Nancy SA: R;

Number of Eyre Peninsula endemic species: 7

Acacia hexaneura, Six-nerve Spine-bush; *Acacia imbricata*, Feathery Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Eucalyptus cretata*, Darke Peak Mallee; *Eucalyptus peninsularis*, Merrit; *Hakea cycloptera*, Elm-seed Hakea; *Melaleuca oxyphylla*, Pointed-leaf Honey-myrtle;

Number of introduced/invasive species: 21
Average number of introduced/invasive species per site: 1.8 Maximum: 9 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus calycogona	Square-fruited Mallee	Tree	28.3	0.002	3.8	3.53
Acacia hexaneura	Six-nerve Spine-bush R Y	Shrub > 1m	12.4	0.06	6.2	5

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus calycogona	Square-fruited Mallee	75	28	2.65
Eucalyptus socialis complex	Beaked Red Mallee	69	6	3.96
Eucalyptus dumosa complex	White Mallee	50	1	3.56
Eucalyptus incrassata	Ridge-fruited Mallee	44	0	4.27
Shrub > 1m				
Melaleuca uncinata	Broombush	100	7	6.14
Lasiopetalum behrii	Pink Velvet-bush	63	2	0.51
Melaleuca lanceolata	Dryland Tea-tree	56	0	3.62
Exocarpos aphyllus	Leafless Cherry	44	0	0.61
Low Shrub < 1m				
Eutaxia microphylla	Common Eutaxia	69	3	0.64
Dodonaea bursariifolia	Small Hop-bush	63	2	1.07
Thryptomene micrantha	Ribbed Thryptomene	50	2	1.70
Correa backhouseana var. coriacea	Thick-leaf Correa	44	1	0.38
Grass Sedge				
Austrostipa hemipogon	Half-beard Spear-grass	44	1	0.59
Forb Herb Vine				
Thysanotus patersonii	Twining Fringe-lily	56	1	0.37

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 BUT00601, 80 COC01001, 80 COC01501, 103 HIN00301, 103 CAR00703, 103 HAM00802, 103 KIM00801, 103 KIE00301, 103 HEG00201, 103 WIL00401, 107 TOO00301, 121 CAROEP13, 121 CAROEP14, 121 KIEOEP05, 121 KIEOEP07, 128 HEG00101

Floristic Group 85: site 103 HAM00802 – 20/10/1998

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 86. Narrow-leaf Red Mallee *Eucalyptus leptophylla* / Coastal White Mallee *E. diversifolia* / White Mallee *E. dumosa* complex over Broombush *Melaleuca uncinata*

16 sites central Eyre Peninsula. This mallee assemblage was mostly found on hillslopes and plains with loamy sand to clay loam surface soils. Calcareous rock outcrop affected 65% of sites with cover ranging from <10% to >50%. Surface strew of cobbles and some pebbles covered <10% to 70% at 80% of sites. Fire affected 1 site 42 years prior to sampling. Bare earth cover was low (mean 9%, sdev 5). Litter cover was high (mean 46%, sdev 25).

Total number of species: 211
Average number of species per site: 33.1 sdev: 10.4 Maximum: 51 Minimum: 16
Number of significant species - EPBC Act: 1 NPW Act: 4

Acacia pinguifolia, Fat-leaf Wattle AUS: EN SA: E; *Austrostipa pilata*, Prickly Spear-grass SA: V; *Prasophyllum goldsackii group*, Goldsack's Leek-orchid SA: R; *Spyridium spathulatum*, Spoon-leaf Spyridium SA: R

Number of Eyre Peninsula endemic species: 6

Caladenia septuosa, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Eucalyptus peninsularis*, Merrit; *Hakea cycloptera*, Elm-seed Hakea; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea;

Number of introduced/invasive species: 21
Average number of introduced/invasive species per site: 2.3 Maximum: 9 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Austrostipa mundula	Neat Spear-grass	grass sedge	11.2	0.01	3.1	2.36

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus leptophylla	Narrow-leaf Red Mallee	75	5	2.22
Eucalyptus diversifolia ssp. diversifolia	Coastal White Mallee	56	2	6.47
Eucalyptus dumosa complex	White Mallee	50	0	3.56
Shrub > 1m				
Melaleuca uncinata	Broombush	100	4	6.14
Melaleuca lanceolata	Dryland Tea-tree	63	0	3.62
Lasiopetalum behrii	Pink Velvet-bush	56	4	0.51
Hakea cycloptera	Elm-seed Hakea Y	50	2	0.40
Low Shrub < 1m				
Acacia spinescens	Spiny Wattle	44	2	0.39
Dampiera rosmarinifolia	Rosemary Dampiera	44	2	0.62
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	44	0	1.66
Grass Sedge				
Austrostipa mundula	Neat Spear-grass	63	11	0.52
Dianella revoluta var. revoluta	Black-anther Flax-lily	56	1	0.37
Gahnia deusta	Limestone Saw-sedge	44	1	2.03
Lepidosperma viscidum	Sticky Sword-sedge	44	1	1.24
Forb Herb Vine				
Goodenia willisiana	Silver Goodenia	50	4	0.49

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

80 COC00101, 80 COC00301, 80 COC01F02, 80 COC01F08, 80 COC01F14, 80 COC02401, 80 KIA00201, 80 KIA01C24, 80 YEE00901, 103 PAL00801, 103 PAL00401, 107 CHI00901, 107 COC00301, 107 KYA00601, 128 COW00401, 128 BAS00201

Floristic Group 86: site 128 BAS00201 – 19/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 87. Broombush *Melaleuca uncinata* Shrubland over Spinifex *Triodia irritans* +/- overstorey of Narrow-leaf Red Mallee *Eucalyptus leptophylla* / Coastal White Mallee *E. diversifolia* / White Mallee *E. dumosa* complex

38 sites central-northern Eyre Peninsula. This shrubland to mallee assemblage was mostly found on plains, interdune corridors and hillslopes with sand to medium heavy clay surface soils. Rock outcrop affected 75% of sites with cover ranging from <10% to >50%. Calcareous material at 45% of sites with granite, quartzite, gneiss and schist making up the rest. Surface strew of cobbles, pebbles or boulder covered <10% to >70% at 85% of sites. Lithology of strew was similar to that for rock outcrop. Fire affected 20% of sites ranging from 18-44 years prior to sampling (mean 26 yrs). Bare earth cover was low (mean 13%, sdev 13). Litter cover was also low (mean 17%, sdev 13).

Total number of species: 362
Average number of species per site: 46 sdev: 15.6 Maximum: 71 Minimum: 10
Number of significant species - EPBC Act: 1 NPW Act: 14

Acacia rhigiophylla, Dagger-leaf Wattle SA: R; *Anogramma leptophylla*, Annual Fern SA: R; *Austrostipa echinata*, Spiny Spear-grass SA: R; *Caladenia tensa*, Inland Green-comb Spider-orchid AUS: EN ; *Calochilus pruinosa*, Plains Beard-orchid SA: R; *Ceratogyne obionoides*, Wingwort SA: R; *Crassula exserta*, Large-fruit Crassula SA: R; *Grevillea pauciflora*, Narrow-leaf Grevillea SA: R; *Leucopogon clelandii*, Cleland's Beard-heath SA: R; *Lobelia gibbosa complex*, SA: R; *Melaleuca armillaris ssp. akineta*, Needle-leaf Honey-myrtle SA: R; *Microlepidium pilosulum*, Hairy Shepherd's-purse SA: R; *Prasophyllum fecundum*, Self-pollinating Leek-orchid SA: R; *Wurmbea decumbens*, Trailing Nancy SA: R; *Zygophyllum humillimum*, Small-fruit Twinleaf SA: R

Number of Eyre Peninsula endemic species: 5

Caladenia septuosa, Eyre Peninsula Spider-orchid; *Eucalyptus peninsularis*, Merrit; *Grevillea pauciflora ssp. leptophylla*, Narrow-leaf Grevillea; *Hakea cycloptera*, Elm-seed Hakea; *Prostanthera florifera*, Gawler Ranges Mintbush

Number of introduced/invasive species: 37
Average number of introduced/invasive species per site: 4.5 Maximum: 12 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Dodonaea hexandra	Horned Hop-bush	Low Shrub < 1m	9.1	0.027	3.7	2.65
Acacia continua	Thorn Wattle	Low Shrub < 1m	9.1	0.078	4.1	3.74

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Melaleuca uncinata	Broombush	97	8	6.14
Melaleuca lanceolata	Dryland Tea-tree	42	0	3.62
Low Shrub < 1m				
Dodonaea hexandra	Horned Hop-bush	68	9	1.30
Eutaxia microphylla	Common Eutaxia	50	1	0.64
Grass Sedge				
Triodia irritans	Spinifex	97	24	5.19
Dianella revoluta var. revoluta	Black-anther Flax-lily	66	1	0.37
Avellinia michelii	Avellinia *	63	2	0.65
Austrodanthonia caespitosa	Common Wallaby-grass	50	1	0.67
Gahnia lanigera	Black Grass Saw-sedge	42	1	2.34
Lepidosperma viscidum	Sticky Sword-sedge	42	1	1.24
Forb Herb Vine				
Thysanotus patersonii	Twining Fringe-lily	82	4	0.37
Daucus glochidiatus	Native Carrot	71	2	0.56
Hypochaeris glabra	Smooth Cat's Ear *	53	1	0.57
Thelymitra nuda complex	Sun Orchid	47	3	0.29
Blennospora drummondii	Dwarf Button-flower	47	2	0.61
Hydrocotyle pilifera var. glabrata	Buttercup Pennywort	45	4	0.49
Podolepis tepperi	Delicate Copper-wire Daisy	45	3	0.53
Crassula colorata		45	1	0.58

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 GLY00302, 103 NIL00401, 103 COR00601, 103 CUN00502, 103 CAR00102, 103 DAR01101, 103 PAN00801, 103 PAN00201, 103 DAR00301, 103 RUD01201, 103 PAL00501, 103 KIE00701, 103 MAN00901, 103 ARN01001, 103 GLY00101, 103 GLY00801, 107 CAL00501, 107 CAL00801, 107 COC00101, 107 COC00201, 107 INK00701, 107 MIN02B17, 107 MOO00401, 107 MOO00501, 107 MOO01101, 107 MOO01201, 107 MTW00101, 107 POO00901, 107 POR00501, 107 VEN00701, 128 CAR00701, 128 GIL00301, 128 GIL00601, 128 HIN00101, 128 HIN00201, 128 HAM00701, 128 COC00201, 128 BAS00101

Floristic Group 87: site 128 BAS00101 – 19/9/2003

Appendix 8. Detailed Floristic Group Descriptions

Cluster 34. Broombush *Melaleuca uncinata* Shrubland

62 sites in 1 floristic group

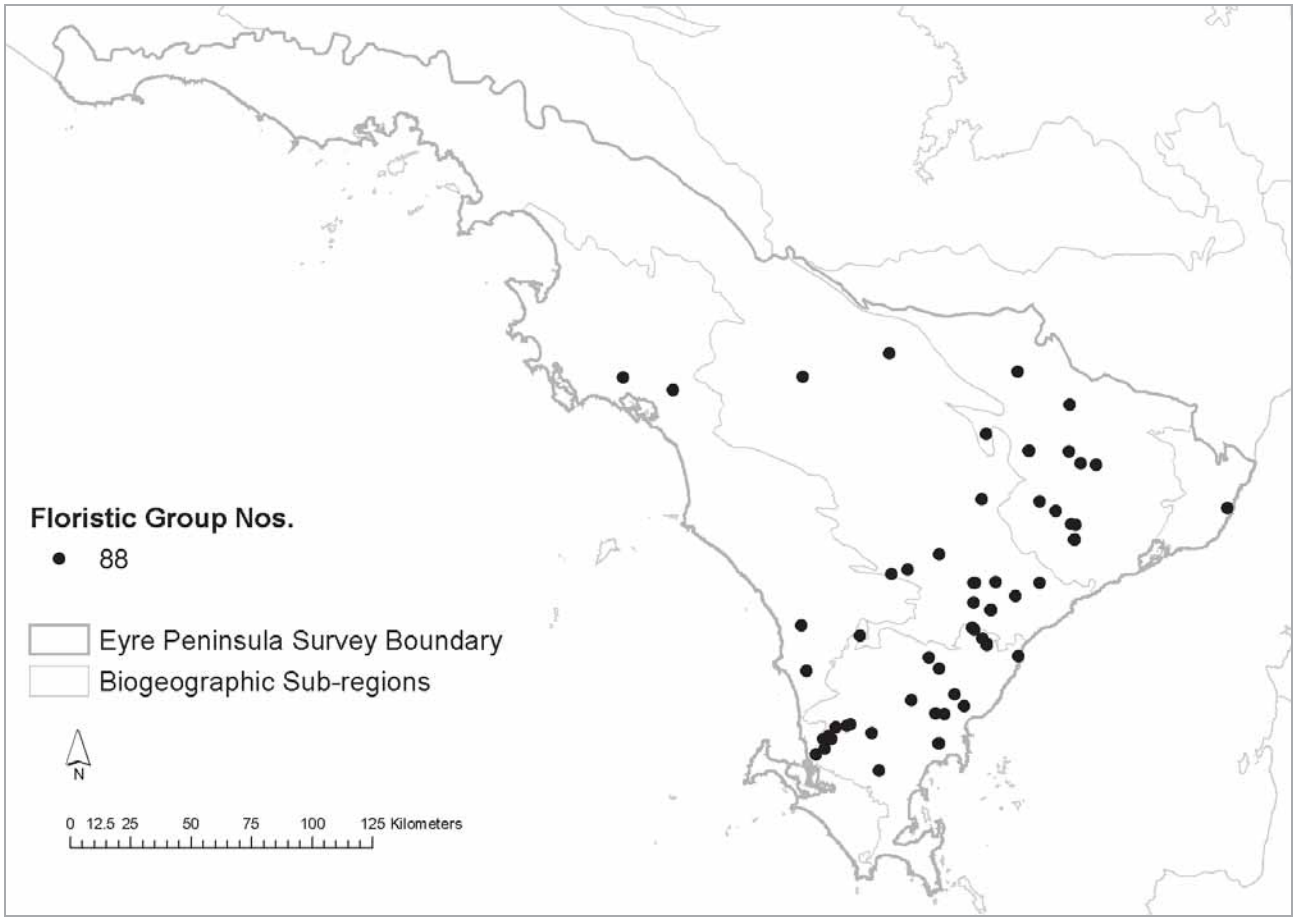
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Shrub > 1m	*Melaleuca uncinata*	Broombush	62	100.00	13.63
Shrub > 1m	*Babingtonia behrii*	Silver Broombush	40	64.52	3.12
Low Shrub < 1m	*Gonocarpus mezianus*	Broad-leaf Raspwort	35	56.45	1.83
Low Shrub < 1m	*Hibbertia sp. Glabriuscula (D.J.Whibley 9012)*	Smooth Guinea-flower	31	50.00	2.30
grass sedge	*Lepidosperma viscidum*	Sticky Sword-sedge	35	56.45	1.36
grass sedge	*Schoenus breviculmis*	Matted Bog-rush	26	41.94	1.56

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 8 sites - *Acanthiza apicalis,* Inland Thornbill, 5; *Strepera versicolor,* Grey Currawong, 5; *Drymodes brunneopygia,* Southern Scrub-robin, 5; *Phaps chalcoptera,* Common Bronzewing, 5; *Zosterops lateralis,* Silvereye, 5; *Colluricincla harmonica,* Grey Shrike-thrush, 4; *Barnardius zonarius,* Australian Ringneck, 4; *Sericornis frontalis,* White-browed Scrubwren, 4; *Eolophus roseicapilla,* Galah, 4; *Pomatostomus superciliosus,* White-browed Babbler, 4; *Corvus mellori,* Little Raven, 4

MAMMALS 9 sites - **Mus musculus*, House Mouse, 7; **Vulpes vulpes,* Fox, 4; *Macropus fuliginosus,* Western Grey Kangaroo, 3; *Notomys mitchellii,* Mitchell's Hopping-mouse, 3

REPTILES 9 sites - *Tiliqua rugosa,* Sleepy Lizard, 4; *Menetia greyii,* Dwarf Skink, 3; *Morethia obscura,* Mallee Snake-eye, 3; *Ctenotus orientalis,* Spotted Ctenotus, 3; *Hemiergis millewae,* Rusty Earless Skink, 3



Floristic Group 88. Broombush *Melaleuca uncinata* +/- Silver Broombush *Babingtonia behrii* Shrubland over Broad-leaf Raspwort *Gonocarpus mezianus* / Horned Hop-bush *Dodonaea hexandra* / Smooth Guinea-flower *Hibbertia sp. Glabriuscula* / Sticky Sword-sedge *Lepidosperma viscidum* +/- Eucalypt spp.

62 sites across the eastern half of the study area. This shrubland to mallee assemblage was mostly found on and plains and hillslopes with sand to medium heavy clay surface soils. Rock outcrop affected 40% of sites with cover ranging from <10% to 50%. Quartzite was the most frequent rock type, others included granite, calcareous material, gneiss,

laterite, sandstone and slate. Surface strew of cobbles, pebbles or boulder covered <10% to 70% at 85% of sites. Lithology of strew was similar to that for rock outcrop and included schist. Fire affected 10% of sites ranging from 7-39 years prior to sampling (mean 30 yrs). Bare earth cover was low (mean 14%, sdev 12). Litter cover was high (mean 41%, sdev 24).

Total number of species: 403
Average number of species per site: 35.2 sdev: 16.4 Maximum: 82 Minimum: 10
Number of significant species - EPBC Act: 6 NPW Act: 28

Acacia enterocarpa, Jumping-jack Wattle AUS: EN SA: E; *Acacia hexaneura*, Six-nerve Spine-bush SA: R; *Acacia imbricata*, Feathery Wattle AUS: VU SA: R; *Acacia rhigiophylla*, Dagger-leaf Wattle SA: R; *Caladenia tensa*, Inland Green-comb Spider-orchid AUS: EN ; *Crassula exserta*, Large-fruit Crassula SA: R; *Daviesia benthamii ssp. humilis*, Mallee Bitter-pea SA: R; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Desmocladus diacolpicus*, Bundled Cord-rush SA: V; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew SA: V; *Eucalyptus cretata*, Darke Peak Mallee SA: R; *Lepidosperma leptophyllum*, SA: R; *Levenhookia stipitata*, SA: R; *Melaleuca armillaris ssp. akineta*, Needle-leaf Honey-myrtle SA: R; *Melaleuca oxyphylla*, Pointed-leaf Honey-myrtle SA: R; *Mitrasacme pilosa var. pilosa*, Hairy Mitrewort SA: V; *Philotheca angustifolia ssp. angustifolia*, Narrow-leaf Wax-flower SA: R; *Prasophyllum constrictum*, Tawny Leek-orchid SA: R; *Prasophyllum goldsackii group*, Goldsack's Leek-orchid SA: R; *Ptilotus beckerianus*, Ironstone Mulla Mulla AUS: VU SA: V; *Pultenaea trichophylla*, Tufted Bush-pea AUS: VU SA: R; *Schoenus sculptus*, Gimlet Bog-rush SA: R; *Sphaerolobium minus*, Leafless Globe-pea SA: R; *Spyridium bifidum var. Marble Range (W.R.Barker 7601)*, Marble Range Spyridium SA: V; *Spyridium leucopogon*, Silvery Spyridium SA: R; *Spyridium spathulatum*, Spoon-leaf Spyridium SA: R; *Thelymitra epipactoides*, Metallic Sun-orchid AUS: EN SA: E; *Thelymitra flexuosa*, Twisted Sun-orchid SA: R; *Wurmbea decumbens*, Trailing Nancy SA: R

Number of Eyre Peninsula endemic species: 17

Acacia gillii, Gill's Wattle; *Acacia hexaneura*, Six-nerve Spine-bush; *Acacia imbricata*, Feathery Wattle; *Caladenia septuosa*, Eyre Peninsula Spider-orchid; *Daviesia asperula ssp. obliqua*, Eyre Peninsula Bitter-pea; *Drosera sp. Rigid (R.J.Bates 2268)*, Erect Sundew; *Eucalyptus cretata*, Darke Peak Mallee; *Eucalyptus peninsularis*, Merrit; *Hakea cycloptera*, Elm-seed Hakea; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Lepidosperma leptophyllum*, ; *Levenhookia stipitata*, ; *Melaleuca oxyphylla*, Pointed-leaf Honey-myrtle; *Pomaderris flabellaris*, Fan Pomaderris; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea; *Pultenaea trichophylla*, Tufted Bush-pea; *Spyridium bifidum var. Marble Range (W.R.Barker 7601)*, Marble Range Spyridium; *Spyridium leucopogon*, Silvery Spyridium

Number of introduced/invasive species: 49
Average number of introduced/invasive species per site: 3.2 Maximum: 16 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Melaleuca uncinata	Broombush	Shrub > 1m	12.2	0.001	2.6	1.21

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Shrub > 1m				
Melaleuca uncinata	Broombush	100	12	6.14
Babingtonia behrii	Silver Broombush	65	12	1.97
Low Shrub < 1m				
Gonocarpus mezianus	Broad-leaf Raspwort	56	4	1.66
Dodonaea hexandra	Horned Hop-bush	55	3	1.30
Eutaxia microphylla	Common Eutaxia	55	2	0.64
Astroloma humifusum	Cranberry Heath	53	5	0.46
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	50	2	1.66
Grass Sedge				
Lepidosperma viscidum	Sticky Sword-sedge	56	2	1.24
Neurachne alopecuroidea	Fox-tail Mulga-grass	44	3	0.81
Schoenus breviculmis	Matted Bog-rush	42	5	1.21
Forb Herb Vine				
Thysanotus patersonii	Twining Fringe-lily	47	1	0.37
Hypochaeris glabra	Smooth Cat's Ear *	40	1	0.57

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 CO00901, 128 COR00401, 80 BUT00301, 103 KIE00202, 103 NIC00101, 80 KIA00301, 121 CAROEP09, 121 CAROEP10, 121 CAROEP11, 121 CAROEP08, 121 MANOEP15, 121 MANOEP16, 80 NEI01601, 80 YEE00401, 107 PAL00601, 80 TUM00401, 80 TUM01401, 80 TUM00701, 80 BUT00401, 80 BUT00701, 80 BUT00702, 80 CUM02001, 80 CUM01701, 80 CUM01802, 103 MAN00801, 80 COU01301, 103 NIC00201, 80 COU01601, 103 BAR00801, 80 KOP00801, 80 KOP01501, 80 COU01202, 80 COU01205, 80 WAN00102, 80 COU01203, 80 CUM02101, 128 MAR00601, 80 KOP01002, 80 BUT00402, 103 HEG00801, 128 CAR00101, 103 HIN00402, 103 HIN00502, 80 COC01101, 80 COC01601, 80 KIA01601, 128 COW00201, 128 HEG01001, 128 HEG00901, 103 RUD00701, 103 HIN00203, 103 VER00701, 103 HIN00302, 103 HIN00501, 107 VEN00501, 103 RUD00301, 103 PAL01001, 103 HIN00202, 103 VER01101, 103 WIL00501, 128 CAR01101, 128 KOP00101

Floristic Group 88: site 128 MAR00601 – 17/12/2004

Appendix 8. Detailed Floristic Group Descriptions

Cluster 35. Ridge-fruited Mallee over Broombush

103 sites in 5 floristic groups

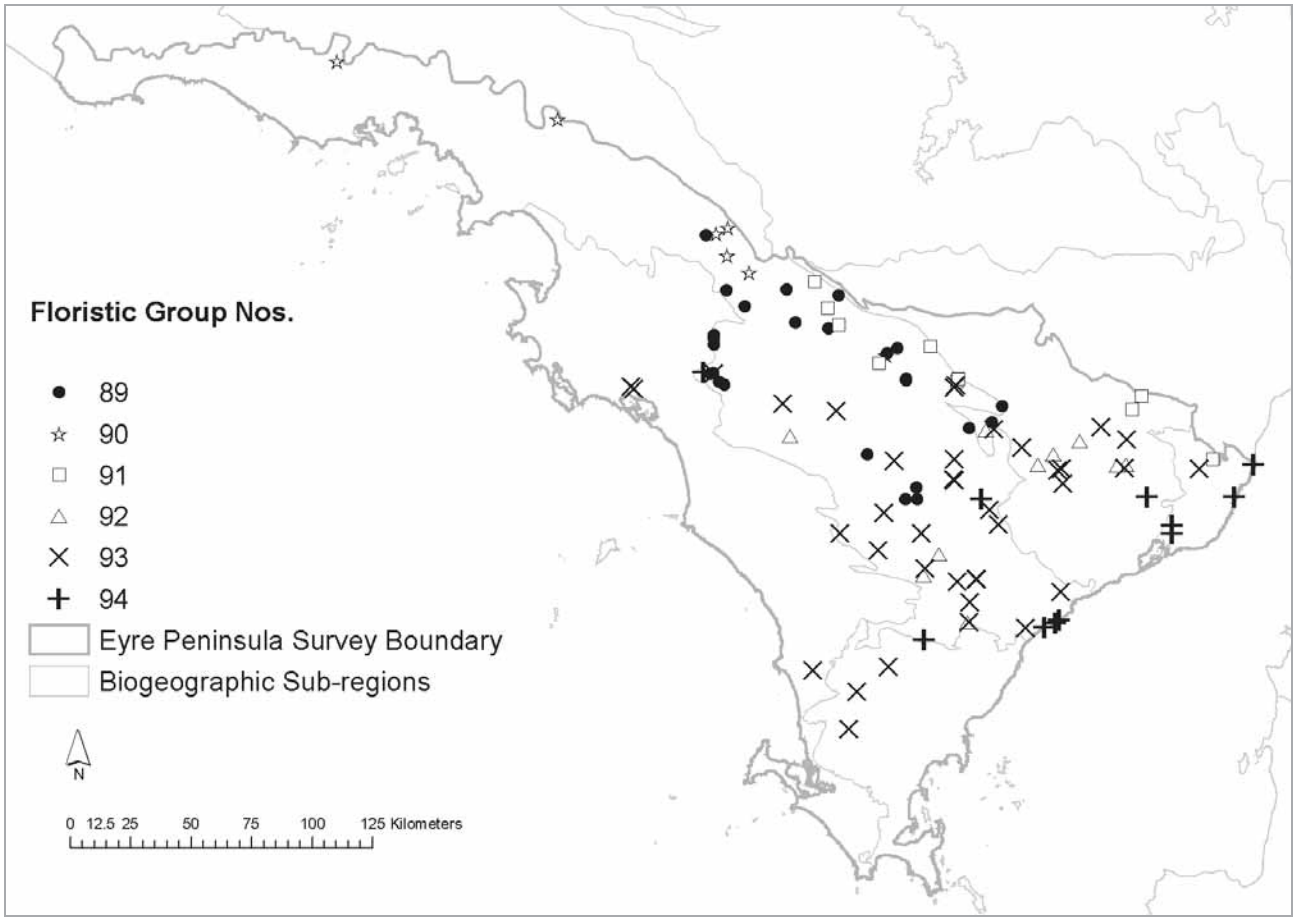
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus incrassata*	Ridge-fruited Mallee	96	93.20	5.56
Tree	*Eucalyptus socialis complex*	Beaked Red Mallee	52	50.49	3.31
Shrub > 1m	*Melaleuca uncinata*	Broombush	86	83.50	7.59
Shrub > 1m	*Leptospermum coriaceum*	Dune Tea-tree	49	47.57	2.83
Low Shrub < 1m	*Calytrix involucrata*	Cup Fringe-myrtle Y	44	42.72	1.24
grass sedge	*Triodia lanata*	Woolly Spinifex Y	46	44.66	5.92

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 25 sites - *Lichenostomus leucotis*, White-eared Honeyeater, 20; *Smicrornis brevirostris*, Weebill, 19; *Colluricincla harmonica*, Grey Shrike-thrush, 17; *Acanthiza apicalis*, Inland Thornbill, 16; *Cracticus torquatus*, Grey Butcherbird, 15; *Phylidonyris albifrons*, White-fronted Honeyeater, 15; *Pardalotus punctatus*, Spotted Pardalote, 14; *Phaps chalcoptera*, Common Bronzewing, 13; *Eolophus roseicapilla*, Galah, 13

MAMMALS 23 sites, Common name, 35; *Notomys mitchellii*, Mitchell's Hopping-mouse, 13; **Vulpes vulpes*, Fox, 10; *Cercartetus concinnus*, Western Pygmy-possum, 10

REPTILES 23 sites - *Nephrurus stellatus*, Starred Knob-tailed Gecko, 10; *Ctenophorus fordi*, Mallee Dragon, 9; *Ctenotus atlas*, Southern Spinifex Ctenotus, 9; *Lerista edwardsae*, Myall Slider, 8; *Liopholis inornata*, Desert Skink, 8



Floristic Group 89. Ridge-fruited Mallee *Eucalyptus incrassata* +/- Beaked Red Mallee *E. socialis* complex over Broombush *Melaleuca uncinata* & Woolly Spinifex *Triodia lanata*

25 sites central-north of the study area. This mallee to shrubland assemblage was mostly found on dune crests and slopes, as well as dune swales and flats. Surface soils ranged from sand to sandy loam. Rock outcrop affected 10% of sites with <10% cover, composed of granite or calcareous material. Surface strew of calcareous pebbles or cobbles was present at 10% of sites with <10% cover. Fire affected 25% of sites ranging from 15-39 years prior to sampling (mean 29 yrs). Bare earth cover was low (mean 15%, sdev 19). Litter cover was also low (mean 16%, sdev 16)

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 221
Average number of species per site: 40.2 sdev: 10.8 Maximum: 67 Minimum: 24
Number of significant species - EPBC Act: 0 NPW Act: 7

Ceratogyne obionoides, Wingwort SA: R; *Crassula exserta*, Large-fruit Crassula SA: R; *Daviesia benthamii ssp. humilis*, Mallee Bitter-pea SA: R; *Levenhookia stipitata*, SA: R; *Lobelia gibbosa complex*, SA: R; *Melaleuca armillaris ssp. akineta*, Needle-leaf Honey-myrtle SA: R; *Podolepis jaceoides*, Showy Copper-wire Daisy SA: R

Number of Eyre Peninsula endemic species: 2

Goodenia quasilibera; *Hakea cycloptera*, Elm-seed Hakea; *Levenhookia stipitata*

Number of introduced/invasive species: 20
Average number of introduced/invasive species per site: 3.1 Maximum: 11 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Triodia lanata	Woolly Spinifex Y	grass sedge	31	0.001	3.1	2.52
Trachymene cyanopetala	Purple Trachymene	Forb Herb Vine	12.5	0.006	3.1	2.37

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus incrassata	Ridge-fruited Mallee	88	9	4.27
Eucalyptus socialis complex	Beaked Red Mallee	52	2	3.96
Shrub > 1m				
Melaleuca uncinata	Broombush	100	8	6.14
Leucopogon cordifolius	Heart-leaf Beard-heath	64	10	0.46
Phebalium bullatum	Silvery Phebalium	44	2	0.90
Acacia rigens	Nealie	40	3	0.64
Low Shrub < 1m				
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	56	1	1.66
Calytrix involucrata	Cup Fringe-myrtle Y	52	2	1.30
Boronia coerulescens ssp. coerulescens	Blue Boronia	44	6	0.26
Dampiera rosmarinifolia	Rosemary Dampiera	44	2	0.62
Dodonaea bursariifolia	Small Hop-bush	40	1	0.39
Acacia spinescens	Spiny Wattle	40	1	1.07
Grass Sedge				
Triodia lanata	Woolly Spinifex Y	100	31	6.11
Dianella revoluta var. revoluta	Black-anther Flax-lily	60	1	0.37
Lepidosperma viscidum	Sticky Sword-sedge	48	1	0.65
Avellinia michelii	Avellinia *	48	1	1.24
Austrostipa hemipogon	Half-beard Spear-grass	44	1	0.59
Vulpia myuros	Fescue *	40	1	0.93
Forb Herb Vine				
Thysanotus patersonii	Twining Fringe-lily	80	4	0.37
Calandrinia eremaea	Dryland Purslane	76	3	0.56
Trachymene cyanopetala	Purple Trachymene	68	13	0.50
Podotheca angustifolia	Sticky Long-heads	68	4	0.60
Trachymene pilosa	Dwarf Trachymene	68	4	0.65
Crassula colorata		60	2	0.58
Podolepis capillaris	Wiry Podolepis	56	4	0.65
Helichrysum leucopsideum	Satin Everlasting	56	1	0.60
Blennospora drummondii	Dwarf Button-flower	52	3	0.61
Hypochaeris glabra	Smooth Cat's Ear *	52	1	0.57
Crassula sieberiana complex	Australian Stonecrop	48	1	0.61
Actinobole uliginosum	Flannel Cudweed	40	3	0.29
Thelymitra nuda complex	Sun Orchid	40	2	0.51

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 KU00101, 21 KU00301, 21 NK00401, 21 NK00501, 21 NK00701, 103 DAR00201, 103 KOO00401, 103 KOO00301, 103 KIM00401, 103 PAN01201, 103 PAL00202, 103 PAL00101, 107 ADD00602, 107 KOP00301, 107 MIN00101, 107 MIN00601, 107 POO00201, 107 POR01301, 107 WUD00201, 107 WUD00901, 107 YAN00101, 107 YAN00901, 107 YAN01001, 128 COR00101, 131 HAM00501

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 89: site 107 ADD00602 – 22/9/2009

Floristic Group 90: site 128 KER00601 -

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 90. Yumbarra Mallee *Eucalyptus yumbarrana* +/- Ridge-fruited Mallee *E. incrassata* over Woolly Spinifex *Triodia lanata* / Dune Tea-tree *Leptospermum coriaceum* / Broombush *Melaleuca uncinata* and Sand Mat-rush *Lomandra collina*

7 sites in the centre-north of the Eyre Mallee biogeographic subregion. This mallee Triodia assemblage occurred on dunes and a sandy plain with sand to sandy clay loam surface soils. Rock outcrop and surface strew cover were absent. Fire history was also absent. Bare earth cover was moderate (mean 23%, sdev 14). Litter cover was also moderate (mean 22%, sdev 11).

Total number of species: 95
Average number of species per site: 27.9 sdev: 3.4 Maximum: 31 Minimum: 23
Number of significant species - EPBC Act: 0 NPW Act: 1
Austrostipa plumigera SA: R
Number of Eyre Peninsula endemic species: 1
Hakea cycloptera, Elm-seed Hakea
Number of introduced/invasive species: 4
Average number of introduced/invasive species per site: 0.7 Maximum: 4 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus yumbarrana ssp. yumbarrana	Yumbarra Mallee	Tree	94.1	0.001	4.9	5.02
Daviesia ulicifolia ssp. aridicola	Gorse Bitter-pea	Low Shrub < 1m	22	0.006	5.1	4.3
Melaleuca eleuterostachya	Hummock Honey-myrtle	Shrub > 1m	21.6	0.016	5.1	4.59
Lomandra collina	Sand Mat-rush	grass sedge	15.2	0.016	3.7	3.34
Podolepis capillaris	Wiry Podolepis	Forb Herb Vine	5.8	0.036	2.6	1.81
Chrysocephalum baxteri	White Everlasting	Forb Herb Vine	17.6	0.04	4.2	4.41
Austrostipa plumigera		grass sedge	12.4	0.065	5.2	4.93

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus yumbarrana ssp. yumbarrana		100	94	5.63
Eucalyptus incrassata	Ridge-fruited Mallee	57	4	4.27
Callitris verrucosa	Scrub Cypress Pine	43	1	2.40
Shrub > 1m				
Leptospermum coriaceum	Dune Tea-tree	86	4	2.63
Melaleuca uncinata	Broombush	71	3	6.14
Acacia ligulata	Umbrella Bush	43	0	1.82
Low Shrub < 1m				
Dampiera rosmarinifolia	Rosemary Dampiera	57	9	0.62
Goodenia varia	Sticky Goodenia	57	2	0.75
Comesperma scoparium	Broom Milkwort	43	4	0.47
Halgania cyanea	Rough Blue-flower	43	3	0.58
Rhagodia preissii ssp. preissii	Mallee Saltbush	43	2	0.23
Billardiera cymosa	Apple-berry	43	2	0.37
Grass Sedge				
Lomandra collina	Sand Mat-rush	100	15	0.50
Triodia lanata	Woolly Spinifex Y	86	20	6.11
Gahnia lanigera	Black Grass Saw-sedge	71	1	2.34
Lomandra leucocephala ssp. robusta	Woolly Mat-rush	57	6	0.57
Dianella revoluta var. revoluta	Black-anther Flax-lily	57	1	0.37
Forb Herb Vine				
Podolepis capillaris	Wiry Podolepis	57	6	0.65
Calandrinia eremaea	Dryland Purslane	57	2	0.56
Chrysocephalum baxteri	White Everlasting	43	18	0.40
Tricoryne tenella	Tufted Yellow Rush-lily	43	4	0.30
Trachymene pilosa	Dwarf Trachymene	43	2	0.65
Helichrysum leucopsideum	Satin Everlasting	43	1	0.69
Senecio glossanthus group	Groundsel	43	1	0.60
Cassytha melantha	Coarse Dodder-laurel	43	1	0.53
Thysanotus patersonii	Twining Fringe-lily	43	1	0.37

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

107 CHI01001, 128 KER00201, 128 KER00801, 128 KER00601, 128 COR01301, 128 ACR01201, 128 CHA01201

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 91. Ridge-fruited Mallee *E. incrassata* / Scrub Cypress Pine *Callitris verrucosa* over Dune Tea-tree *Leptospermum coriaceum* / Silvery Phebalium *Phebalium bullatum* +/- Broombush *Melaleuca uncinata* / Common Oak-bush *Allocasuarina muelleriana* / Bottlebrush Hakea *Hakea francisiana* / Cup Fringe-myrtle *Calytrix involucrata*

11 sites in the north-eastern part of the study area. This mallee assemblage was found on dunes with sandy surface soils. Rock outcrop and surface strew cover was absent. Fire history at 2 sites ranged from 15-32 years prior to sampling. Bare earth cover was moderate (mean 22%, sdev 15). Litter cover was moderate (mean 22%, sdev 14).

Total number of species: 111
Average number of species per site: 25.5 sdev: 10.6 Maximum: 54 Minimum: 17
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 2
Hakea cycloptera, Elm-seed Hakea; *Prostanthera ammophila*, Sand Mintbush;
Number of introduced/invasive species: 3
Average number of introduced/invasive species per site: 0.3 Maximum: 2 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Hakea francisiana	Bottlebrush Hakea	Shrub > 1m	54.7	0.001	4.2	3.79
Callitris verrucosa	Scrub Cypress Pine	Tree	32.5	0.001	3.6	2.81
Phebalium bullatum	Silvery Phebalium	Shrub > 1m	25.2	0.002	3.7	2.92
Leucopogon cordifolius	Heart-leaf Beard-heath	Shrub > 1m	16.7	0.008	3.7	2.82
Bertya tasmanica ssp. vestita	Mitchell's Bertya	Low Shrub < 1m	20.5	0.025	4.6	4.58
Logania nuda	Leafless Logania	Low Shrub < 1m	17.8	0.027	4.8	4.62

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Callitris verrucosa	Scrub Cypress Pine	100	33	2.40
Eucalyptus incrassata	Ridge-fruited Mallee	91	13	4.27
Eucalyptus leptophylla	Narrow-leaf Red Mallee	55	5	2.22
Shrub > 1m				
Leptospermum coriaceum	Dune Tea-tree	91	17	2.63
Hakea francisiana	Bottlebrush Hakea	82	55	1.68
Phebalium bullatum	Silvery Phebalium	82	25	0.90
Leucopogon cordifolius	Heart-leaf Beard-heath	64	17	0.46
Acacia euthycarpa	Wallowa	45	8	1.24
Low Shrub < 1m				
Calytrix involucrata	Cup Fringe-myrtle Y	55	8	1.30
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	55	1	1.66
Homoranthus wilhelmii	Wilhelm's Homoranthus Y	45	10	0.91
Cryptandra sp. Floriferous (W.R.Barker 4131)	Pretty Cryptandra	45	8	0.42
Baeckea crassifolia	Desert Baeckea	45	3	0.80
Grass Sedge				
Triodia lanata	Woolly Spinifex Y	45	4	6.11

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 COR00801, 107 KYA00201, 103 PAN00501, 107 WUD00401, 103 PAN00401, 107 YAN00301, 128 CAR00901, 128 GIL01201, 128 GIL00801, 1 PAN00901, 128 MUN00901

Floristic Group 91: site 107 WUD00401 – 11/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 92. Ridge-fruited Mallee *E. incrassata* +/- Scrub Cypress Pine *Callitris verrucosa* over Dune Tea-tree *Leptospermum coriaceum* / Common Oak-bush *Allocasuarina muelleriana* +/- Sandhill Bog-rush *Schoenus racemosus* / Broombush *Melaleuca uncinata* / Cup Fringe-myrtle *Calytrix involucrata*

11 sites in the central-north of the study area. This mostly mallee assemblage was found on dunes, sand plains and hills. Surface soils ranged from sand to sandy loam. Rock outcrop and surface strew were absent. Fire affected 2 sites, 18 and 32 years prior to sampling. Bare earth cover was low (mean 17%, sdev 12). Litter cover was moderate (mean 30%, sdev 9).

Total number of species: 117
Average number of species per site: 30.6 sdev: 12.3 Maximum: 56 Minimum: 15
Number of significant species - EPBC Act: 0 NPW Act: 3
Desmocladus diacolpicus, Bundled Cord-rush SA: V; *Prasophyllum constrictum*, Tawny Leek-orchid SA: R; *Thysanotus wangariensis*, Eyre Peninsula Fringe-lily SA: R
Number of Eyre Peninsula endemic species: 3
Hakea cycloptera, Elm-seed Hakea; *Prostanthera ammophila*, Sand Mintbush; *Thysanotus wangariensis*, Eyre Peninsula Fringe-lily;
Number of introduced/invasive species: 3
Average number of introduced/invasive species per site: 0.9 Maximum: 4 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Allocasuarina muelleriana ssp. muelleriana	Common Oak-bush	Shrub > 1m	45.9	0.001	4	3.35
Leptospermum coriaceum	Dune Tea-tree	Shrub > 1m	21.6	0.004	3.7	3.2
Hakea mitchellii	Heath Needlebush	Shrub > 1m	27	0.007	4.2	4.25
Calytrix involucrata	Cup Fringe-myrtle	Low Shrub < 1m	12.6	0.011	3.6	2.78
Grevillea pterosperma	Dune Grevillea	Shrub > 1m	24.6	0.015	5.4	5.08
Comesperma scoparium	Broom Milkwort	Low Shrub < 1m	16.8	0.019	4.2	4.31
Homoranthus wilhelmii	Wilhelm's Homoranthus	Low Shrub < 1m	16.2	0.025	4.4	3.89

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus incrassata	Ridge-fruited Mallee	100	6	4.27
Callitris verrucosa	Scrub Cypress Pine	64	12	2.40
Shrub > 1m				
Leptospermum coriaceum	Dune Tea-tree	100	22	2.63
Allocasuarina muelleriana ssp. muelleriana	Common Oak-bush	91	46	1.88
Phebalium bullatum	Silvery Phebalium	82	6	0.90
Leucopogon cordifolius	Heart-leaf Beard-heath	73	7	0.46
Melaleuca uncinata	Broombush	73	2	6.14
Hakea mitchellii	Heath Needlebush	64	27	0.32
Babingtonia behrii	Silver Broombush	64	4	1.97
Hakea cycloptera	Elm-seed Hakea Y	64	2	0.40
Low Shrub < 1m				
Baeckea crassifolia	Desert Baeckea	82	4	0.80
Calytrix involucrata	Cup Fringe-myrtle Y	73	13	1.30
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	73	1	1.66
Homoranthus wilhelmii	Wilhelm's Homoranthus Y	64	16	0.91
Astroloma conostephioides	Flame Heath	64	4	0.69
Acacia spinescens	Spiny Wattle	55	1	0.39
Comesperma scoparium	Broom Milkwort	45	17	0.47
Dampiera rosmarinifolia	Rosemary Dampiera	45	2	0.62
Grass Sedge				
Schoenus racemosus	Sandhill Bog-rush	73	8	1.62
Lomandra collina	Sand Mat-rush	64	2	0.50
Neurachne alopecuroidea	Fox-tail Mulga-grass	55	3	0.81
Lomandra leucocephala ssp. robusta	Woolly Mat-rush	45	2	0.57
Forb Herb Vine				
Glischrocaryon behrii	Golden Pennants	64	10	0.47
Thysanotus patersonii	Twining Fringe-lily	45	1	0.37

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 CAR00801, 131 NIC00201, 103 GLY00701, 128 CAR00201, 128 HEG00501, 103 CAR01001, 128 COC00101, 103 PAL01002, 103 HEG00101, 131 HIN01101, 128 HEG00401

Floristic Group 92: site 103 GLY00701 – 10/11/1998

Floristic Group 93: site 103 ARN00901 – 9/11/1998

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 93. Ridge-fruited Mallee *E. incrassata* +/- Beaked Red Mallee *E. socialis* complex / Narrow-leaf Red Mallee *E. leptophylla* over Broombush *Melaleuca uncinata*

38 sites in the eastern half of the study area. This mallee assemblage was found on dunes, plains and hill slopes with mostly sand to light clay surface soils. Rock outcrop affected 5% of sites with <10% cover of gneiss or calcareous material. Surface strew of laterite, quartz or gneiss pebbles or cobbles was present at 4% of sites with cover ranging from <10% to 70%. Fire affected 30% of sites ranging from 2-45 years prior to sampling (mean 18 yrs). Bare earth cover was low (mean 13%, sdev 11). Litter cover was high (mean 41%, sdev 22).

Total number of species: 260
Average number of species per site: 33.4 sdev: 11.1 Maximum: 55 Minimum: 16
Number of significant species - EPBC Act: 0 NPW Act: 5
Crassula exserta, Large-fruit Crassula SA: R; *Daviesia pectinata*, Zig-zag Bitter-pea SA: R; *Eucalyptus cretata*, Darke Peak Mallee SA: R; *Haeckeria cassiniiformis*, Dogwood Haeckeria SA: R; *Pimelea williamsonii*, Williamson's Riceflower SA: R;
Number of Eyre Peninsula endemic species: 5
Eucalyptus cretata, Darke Peak Mallee; *Eucalyptus peninsularis*, Merrit; *Hakea cycloptera*, Elm-seed Hakea; *Homoranthus homoranthoides*, Port Lincoln Ground-myrtle; *Pultenaea teretifolia var. teretifolia*, Terete-leaf Bush-pea;
Number of introduced/invasive species: 32
Average number of introduced/invasive species per site: 2.3 Maximum: 16 Minimum: 0

There were no significant indicator species for this group.

Species	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus incrassata	Ridge-fruited Mallee	100	13	4.27
Eucalyptus socialis complex	Beaked Red Mallee	74	5	3.96
Eucalyptus leptophylla	Narrow-leaf Red Mallee	66	4	2.22
Shrub > 1m				
Melaleuca uncinata	Broombush	100	8	6.14
Phebalium bullatum	Silvery Phebalium	58	3	0.90
Hakea cycloptera	Elm-seed Hakea Y	42	1	0.40
Low Shrub < 1m				
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	68	1	1.66
Baeckea crassifolia	Desert Baeckea	55	2	0.80
Dodonaea bursariifolia	Small Hop-bush	53	2	1.07
Acacia spinescens	Spiny Wattle	50	1	0.39
Thryptomene micrantha	Ribbed Thryptomene	47	2	0.62
Dampiera rosmarinifolia	Rosemary Dampiera	47	2	1.70
Grass Sedge				
Schoenus racemosus	Sandhill Bog-rush	50	3	1.62
Austrostipa hemipogon	Half-beard Spear-grass	47	3	0.59
Lepidosperma viscidum	Sticky Sword-sedge	47	1	1.24
Forb Herb Vine				
Crassula colorata		55	2	0.58
Thysanotus patersonii	Twining Fringe-lily	42	1	0.37

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 KU00501, 80 COC01901, 80 CUM00601, 80 CUM02002, 80 KIA02401, 80 NEI00301, 103 PAN00601, 103 NIC00301, 103 PAL00701, 103 HEG01201, 103 HEG00601, 103 KIE00702, 103 HEG00301, 103 ARN00901, 103 GLY00201, 103 GLY00601, 103 CHA01101, 107 KYA00901, 107 MUR00501, 107 MUR00602, 107 MUR01001, 107 PAL00701, 110 VEN00112, 121 CAROEP12, 121 KIEOEP06, 128 STR00301, 131 HAM00401, 131 HIN00701, 131 HIN00901, 131 HIN00801, 131 DAR00401, 131 HIN00601, 131 DAR00301, 131 DAR00201, 131 HIN01201, 128 CAR00401, 128 CAR00801, 128 HEG01201

Floristic Group 94. Ridge-fruited Mallee *Eucalyptus incrassata* +/- Beaked Red Mallee *E. socialis* complex over +/- Dryland Tea-tree *Melaleuca lanceolata* / Broombush *M. uncinata* / Ribbed Thryptomene *Thryptomene micrantha*

11 sites along the north-east coast and centre of the study area. This mallee assemblage was found on dunes, sandy plains and cliffs with mostly sand surface soils. Rock outcrop and surface strew cover were absent. Fire affected 1 site 12 years prior to sampling. Bare earth cover was moderate (mean 23%, sdev 20). Litter cover was moderate (mean 24%, sdev 21).

Appendix 8. Detailed Floristic Group Descriptions

Total number of species: 162
Average number of species per site: 27.6 sdev: 10.1 Maximum: 44 Minimum: 12
Number of significant species - EPBC Act: 0 NPW Act: 3
Crassula exserta, Large-fruit Crassula SA: R; *Desmocladus diacolpicus*, Bundled Cord-rush SA: V; *Thysanotus wangariensis*, Eyre Peninsula Fringe-lily SA: R;
Number of Eyre Peninsula endemic species: 2
Hakea cycloptera, Elm-seed Hakea; *Thysanotus wangariensis*, Eyre Peninsula Fringe-lily;
Number of introduced/invasive species: 23
Average number of introduced/invasive species per site: 2.9 Maximum: 11 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus incrassata	Ridge-fruited Mallee	Tree	16.7	0.002	2.7	1.61

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus incrassata	Ridge-fruited Mallee	100	17	4.27
Eucalyptus socialis complex	Beaked Red Mallee	45	2	3.96
Pittosporum angustifolium	Native Apricot	45	0	0.45
Shrub > 1m				
Melaleuca lanceolata	Dryland Tea-tree	55	1	3.62
Melaleuca uncinata	Broombush	45	0	6.14
Low Shrub < 1m				
Rhagodia preissii ssp. preissii	Mallee Saltbush	64	5	0.37
Thryptomene micrantha	Ribbed Thryptomene	45	2	1.70
Forb Herb Vine				
Crassula sieberiana complex	Australian Stonecrop	64	2	0.61

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

21 KU00801, 80 COC00501, 80 NEI00101, 82 MCG00105, 82 WIT00201, 82 ARN00102, 82 ARN00103, 103 KIE00201, 103 WIL01101, 103 COW00101, 128 COW01101.

Floristic Group 94: site 103 KIE00201 – 8/11/1998

Appendix 8. Detailed Floristic Group Descriptions

Cluster 36. Beaked Red Mallee assemblages

38 sites in 2 floristic groups

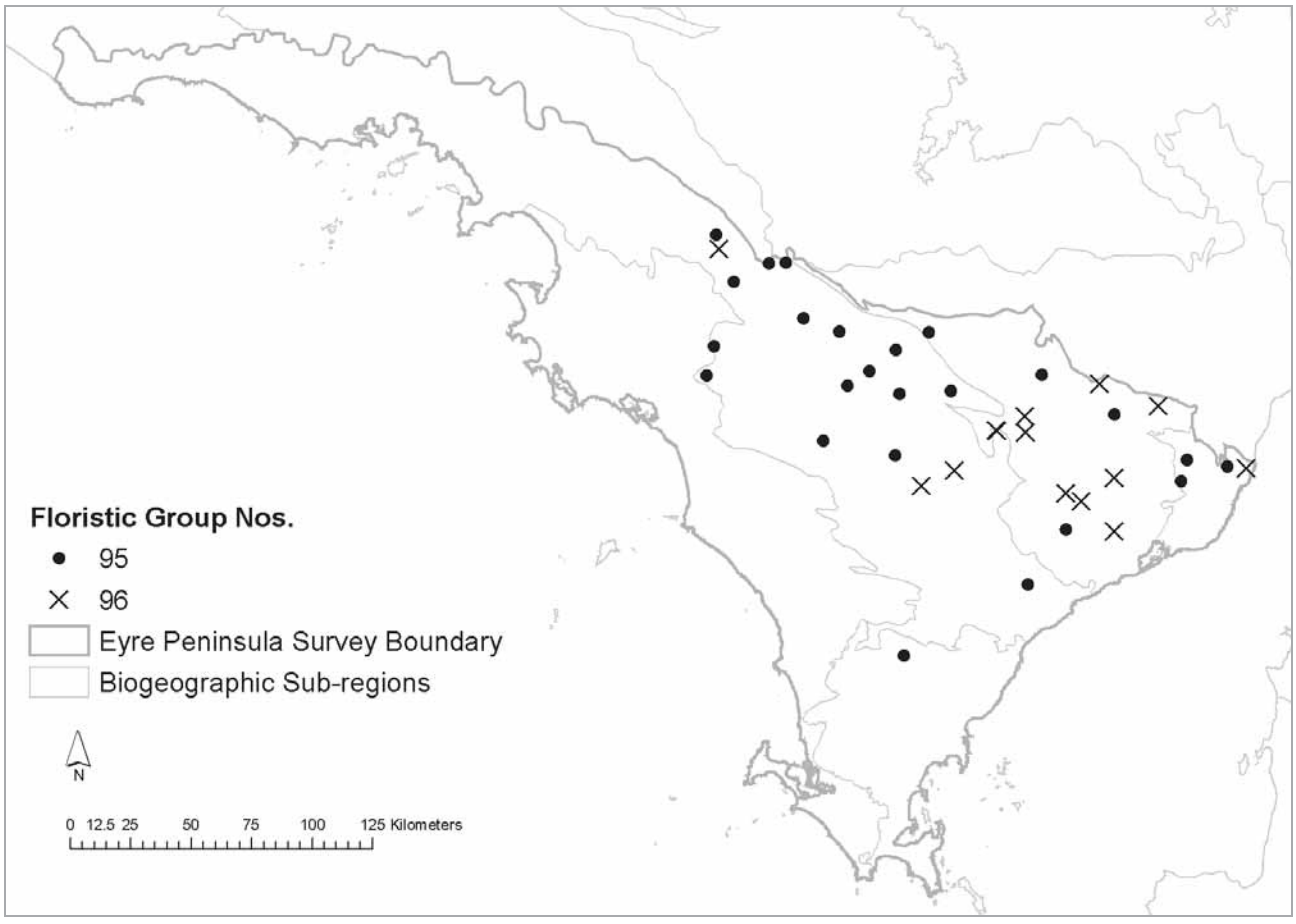
Lifeform	Characteristic Species	Common names and status	# sites	% frequency	mean cover index
Tree	*Eucalyptus socialis complex*	Beaked Red Mallee	37	97.37	5.41
Tree	*Eucalyptus incrassata*	Ridge-fruited Mallee	25	65.79	3.73
Tree	*Eucalyptus leptophylla*	Narrow-leaf Red Mallee	15	39.47	3.51
Shrub > 1m	*Melaleuca uncinata*	Broombush	26	68.42	2.28
Shrub > 1m	*Phebalium bullatum*	Silvery Phebalium	20	52.63	1.19
grass sedge	*Lepidosperma viscidum*	Sticky Sword-sedge	22	57.89	1.15
grass sedge	*Triodia scariosa group*	Spinifex	18	47.37	6.28
grass sedge	*Triodia lanata*	Woolly Spinifex Y	17	44.74	7.71

Fauna species most commonly encountered (numbers after common name indicate number of sites at which species recorded, * indicates introduced species)

BIRDS 9 sites - *Lichenostomus leucotis,* White-eared Honeyeater, 8; *Smicrornis brevirostris,* Weebill, 8; *Pardalotus punctatus,* Spotted Pardalote, 8; *Colluricincla harmonica,* Grey Shrike-thrush, 6; *Acanthiza apicalis,* Inland Thornbill, 6; *Cracticus torquatus,* Grey Butcherbird, 6; *Phylidonyris albifrons,* White-fronted Honeyeater, 6; *Dromaius novaehollandiae,* Emu, 6; *Phaps chalcoptera,* Common Bronzewing, 5; *Acanthagenys rufogularis,* Spiny-cheeked Honeyeater, 5; *Pomatostomus superciliosus,* White-browed Babbler, 5

MAMMALS 9 sites - ****Mus musculus,*** House Mouse, 4

REPTILES 9 sites - *Ctenotus atlas,* Southern Spinifex Ctenotus, 6; *Ctenophorus fordi,* Mallee Dragon, 5



Floristic Group 95. Beaked Red Mallee *Eucalyptus socialis* +/- Ridge-fruited Mallee *Eucalyptus incrassate* Mallee over Broombush *Melaleuca uncinata* & /or Woolly Spinifex *Triodia lanata*

24 sites mostly in the central eastern half of the Eyre Mallee biogeographic subregion and the northern block of the Eyre Hills biogeographic subregion. This mallee assemblage was most common on dune slopes and crests with remaining sites on plains and sandy plains. Surface soils were dominated by sands (90% of sites). Rock outcrop was absent and surface strew present at only 10% of sites. These had a 30-70% cover of sandstone or quartzite cobbles.

Appendix 8. Detailed Floristic Group Descriptions

Three sites (15%) had been burnt prior to sampling, ranging from 12-38 years. Bare earth cover low (mean 18%, sdev 15). Litter cover was moderate (mean 24%, sdev 16).

Total number of species: 199
Average number of species per site: 29.7 sdev: 10.2 Maximum: 50 Minimum: 9
Number of significant species - EPBC Act: 0 NPW Act: 1
Ceratogyne obionoides, Wingwort SA: R
Number of Eyre Peninsula endemic species: 2
Eucalyptus peninsularis, Merrit; *Hakea cycloptera*, Elm-seed Hakea
Number of introduced/invasive species: 16
Average number of introduced/invasive species per site: 1.5 Maximum: 8 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	Mean	sdev
Eucalyptus socialis complex	Beaked Red Mallee	Tree	11.7	0.005	2.6	1.58

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus socialis complex	Beaked Red Mallee	100	12	3.96
Eucalyptus incrassata	Ridge-fruited Mallee	71	4	4.27
Eucalyptus dumosa complex	White Mallee	38	1	3.56
Shrub > 1m				
Melaleuca uncinata	Broombush	75	1	6.14
Phebalium bullatum	Silvery Phebalium	42	1	0.90
Low Shrub < 1m				
Eremophila crassifolia	Thick-leaf Emubush	42	1	0.55
Thryptomene micrantha	Ribbed Thryptomene	38	3	1.70
Dampiera rosmarinifolia	Rosemary Dampiera	38	1	0.62
Grass Sedge				
Dianella revoluta var. revoluta	Black-anther Flax-lily	63	2	0.37
Triodia lanata	Woolly Spinifex Y	58	12	6.11
Lomandra leucocephala ssp. robusta	Woolly Mat-rush	50	4	0.57
Austrostipa hemipogon	Half-beard Spear-grass	46	1	0.59
Lepidosperma viscidum	Sticky Sword-sedge	46	0	1.24
Forb Herb Vine				
Calandrinia eremaea	Dryland Purslane	58	2	0.56
Podolepis capillaris	Wiry Podolepis	54	3	0.65
Podotheca angustifolia	Sticky Long-heads	54	2	0.60
Crassula colorata		50	1	0.58
Calandrinia granulifera	Pigmy Purslane	42	3	0.49
Helichrysum leucopsideum	Satin Everlasting	42	1	0.60
Senecio glossanthus group	Groundsel	42	1	0.53

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**
21 KU01001, 21 NK00201, 80 COC01401, 103 BAR01201, 103 COR00301, 103 KOO00701, 103 KIM00202, 103 PAN00701, 103 VER00601, 103 CHA00701, 103 CHA01001, 107 CHI00701, 107 CHI02C10, 107 COC03C18, 107 KYA00401, 107 POO00102, 107 WUD00501, 107 YAN00701, 1 SCR00601, 128 COR00201, 128 COR00801, 131 HAM00301, 128 COW00101, 128 MUN00801

Floristic Group 95: site 107 COC03C18 – 15/10/1999

Appendix 8. Detailed Floristic Group Descriptions

Floristic Group 96. Beaked Red Mallee *Eucalyptus socialis* +/- Narrow-leaf Red Mallee *E. leptophylla* Open Mallee with Scrub Cypress Pine *Callitris verrucosa* over Spinifex *Triodia scariosa* group / Dune Tea-tree *Leptospermum coriaceum* / Silvery Phebalium *Phebalium bullatum* / Sticky Sword-sedge *Lepidosperma viscidum*

14 sites mostly in the northern block of the Eyre Hills and north east of the Eyre Mallee biogeographic subregions. This mallee assemblage occurred on plains, dunes and to a lesser extent hill slopes. Surface soils ranged sand to sandy loam. Rock outcrop was absent and surface strew limited (5% of sites with 10-30% calcareous cobble cover). Fire history was apparent at 20% of sites 26-38 years prior to sampling. Bare earth cover was moderate (mean 22%, sdev 22). Litter cover was moderate (mean 28%, sdev 13).

Total number of species: 169
Average number of species per site: 36.4 sdev: 13.5 Maximum: 68 Minimum: 22
Number of significant species - EPBC Act: 0 NPW Act: 0
Number of Eyre Peninsula endemic species: 2
Hakea cycloptera, Elm-seed Hakea; *Pomaderris flabellaris*, Fan Pomaderris;
Number of introduced/invasive species: 9
Average number of introduced/invasive species per site: 1.2 Maximum: 6 Minimum: 0

Significant indicator species	Common names and status	Lifeform	Indicator Value	Significance	mean	sdev
Eucalyptus leptophylla	Narrow-leaf Red Mallee	Tree	9.1	0.025	3.2	2.18
Aotus subspinescens	Mallee Aotus	Low Shrub < 1m	13.9	0.046	4.3	3.96
Schoenus subaphyllus	Desert Bog-rush	grass sedge	12.6	0.05	4	3.87

Species present at >39% of sites	Common names and status	% Site Frequency	Indicator value	Ave cover index
Tree				
Eucalyptus socialis complex	Beaked Red Mallee	93	10	3.96
Callitris verrucosa	Scrub Cypress Pine	79	18	2.40
Eucalyptus leptophylla	Narrow-leaf Red Mallee	64	9	2.22
Eucalyptus incrassata	Ridge-fruited Mallee	43	2	4.27
Shrub > 1m				
Leptospermum coriaceum	Dune Tea-tree	79	5	2.63
Phebalium bullatum	Silvery Phebalium	71	16	0.90
Melaleuca uncinata	Broombush	57	1	6.14
Hakea mitchellii	Heath Needlebush	43	9	0.32
Low Shrub < 1m				
Baeckea crassifolia	Desert Baeckea	71	3	0.80
Cryptandra sp. Floriferous (W.R.Barker 4131)	Pretty Cryptandra	57	7	0.42
Stenanthemum leucophractum	White Cryptandra	50	5	0.40
Hibbertia sp. Glabriuscula (D.J.Whibley 9012)	Smooth Guinea-flower	50	2	0.62
Dampiera rosmarinifolia	Rosemary Dampiera	50	2	1.66
Aotus subspinescens	Mallee Aotus	43	14	0.38
Grass Sedge				
Triodia scariosa group	Spinifex	86	14	5.31
Lepidosperma viscidum	Sticky Sword-sedge	79	5	1.24
Lomandra collina	Sand Mat-rush	64	4	0.50
Dianella revoluta var. revoluta	Black-anther Flax-lily	64	1	0.37
Lomandra leucocephala ssp. robusta	Woolly Mat-rush	50	5	0.57
Schoenus racemosus	Sandhill Bog-rush	50	4	1.62
Austrostipa hemipogon	Half-beard Spear-grass	43	1	0.59
Forb Herb Vine				
Helichrysum leucopsideum	Satin Everlasting	57	1	0.60
Tricoryne tenella	Tufted Yellow Rush-lily	50	5	0.30
Podolepis capillaris	Wiry Podolepis	43	1	0.65

Average abundance values provide a guide to species dominance in a range from 0.1 to 20; 0.1 = not many individuals with minimal cover, 0.5 = sparsely present with < 5% cover, 1 = numerous with < 5% cover, 5 = 5–25% cover, 10 = 25–50% cover, 15 = 50–75%, 20 = >75% cover.

Sites in Group (Survey number Site Identification code)**:**

103 BAR00301, 103 NIL00801, 103 CAR00201, 103 KIM02D16, 103 DAR00601, 103 MAN00101, 103 MAN00201, 103 GLY00501, 107 POO00601, 131 DAR00101, 128 CAR00301, 128 COW00601, 128 HAM00401, 128 MUN00201,

Floristic Group 96: site 103 GLY00501 – 10/11/1998

Appendix 9. Trapping Effort at survey sites for each visit.

Survey Number	Site Identity Code	Visit Date	No. of trap nights	No. of Elliott traps	No. of Pit traps	No. of Cage traps	No. of Elliott nights	No. of Pit nights	No. of Cage nights	Harp Trap	Mist Net	Bat Detector
21	CO00101	23/09/1990	4	15	6	0	60	24	0			
21	CO00201	23/09/1990	4	15	6	0	60	24	0			
21	CO00401	24/09/1990	4	15	6	0	60	24	0			
21	CO00501	24/09/1990	4	15	6	0	60	24	0			
21	CO00601	25/09/1990	4	15	6	0	60	24	0			
22	CO00701	25/09/1990	4	15	0	0	60	0	0			
21	CO00801	24/09/1990	4	15	0	0	60	0	0			
21	CO00901	24/09/1990	4	15	6	0	60	24	0			
21	CO01001	24/09/1990	4	15	0	0	60	0	0			
21	KU00101	29/09/1990	4	15	6	0	60	24	0			
21	KU00201	29/09/1990	4	15	6	0	60	24	0			
21	KU00301	30/09/1990	4	15	6	0	60	24	0			
21	KU00401	29/09/1990	4	15	6	0	60	24	0			
21	KU00501	30/09/1990	4	15	6	0	60	24	0			
21	NK00101	5/10/1990	4	15	6	0	60	24	0			
21	NK00201	4/10/1990	4	15	6	0	60	24	0			
21	NK00301	4/10/1990	4	15	6	0	60	24	0			
21	NK00401	4/10/1990	4	15	6	0	60	24	0			
21	NK00501	5/10/1990	4	15	6	0	60	24	0			
21	NK00601	5/10/1990	4	15	6	0	60	24	0			
21	NK00701	5/10/1990	4	15	6	0	60	24	0			
27	LN00101	29/09/1991	4	25	6	0	100	24	0			
27	LN00201	29/09/1991	4	25	6	0	100	24	0			
27	LN00301	29/09/1991	4	20	6	0	80	24	0			
27	LN00401	29/09/1991	4	25	5	0	100	20	0	Y	Y	
27	LN00501	30/09/1991	4	25	6	0	100	24	0			
27	LN00601	30/09/1991	4	25	6	0	100	24	0			
71	VB00101	1/12/1992	4	15	6	2	60	24	8			
		26/11/1993	5	15	6	2	75	30	10			
		22/11/1994	4	15	6	2	60	24	8			
71	VB00201	1/12/1992	4	15	6	2	60	24	8			
		24/11/1993	4	15	6	2	60	24	8			
		23/11/1994	4	15	6	2	60	24	8			
71	VB00301	3/12/1992	4	15	6	2	60	24	8			
		26/11/1993	5	15	6	2	75	30	10			
		23/11/1994	4	15	6	2	60	24	8			
71	VB00401	3/12/1992	4	15	6	2	60	24	8			
		27/11/1993	4	15	6	2	60	24	8			
		23/11/1994	4	15	6	2	60	24	8			
71	VB00501	3/12/1992	4	15	6	2	60	24	8			
		27/11/1993	4	15	6	2	60	24	8			
		24/11/1994	4	15	6	2	60	24	8			
71	VB00601	1/12/1993	4	15	6	2	60	24	8			
		23/11/1994	4	15	6	2	60	24	8			
71	VB00701	25/11/1993	4	15	0	0	60	0	0			
71	VB00801	23/09/1993	4	15	6	2	60	24	8			
		23/11/1994	4	15	6	2	60	20	8			
71	VB00901	3/12/1993	4	15	6	2	60	24	8			
		24/11/1994	4	15	6	2	60	24	8			
80	WAG00603	19/10/1995	4	15	6	0	60	24	0			
		28/04/1999	4	15	6	0	60	24	0			
80	WAG01101	20/10/1995	4	15	6	0	60	24	0			
		28/04/1999	4	15	6	0	60	24	0			
		16/11/1999	4	15	6	0	60	24	0			
80	WAG01202	20/10/1995	4	15	6	0	60	24	0			
		28/04/1999	4	15	6	0	60	24	0			
		16/11/1999	4	15	6	0	60	24	0			
		18/03/2003	4	15	6	0	60	24	0			
80	WAG01301	20/10/1995	4	15	6	0	60	24	0			
		28/04/1999	4	15	6	0	60	24	0			
		16/11/1999	4	15	6	0	60	24	0			
80	WAG01901	18/10/1995	4	15	6	0	60	24	0			
		28/04/1999	4	15	6	0	60	24	0			
		16/11/1999	4	15	6	0	60	24	0			
80	WAG02401	28/04/1999	4	15	6	0	60	24	0			
		16/11/1999	4	15	6	0	60	24	0			
80	WHI00501	18/10/1995	4	15	6	0	60	24	0			

Survey Number	Site Identity Code	Visit Date	No. of trap nights	No. of Elliott traps	No. of Pit traps	No. of Cage traps	No. of Elliott nights	No. of Pit nights	No. of Cage nights	Harp Trap	Mist Net	Bat Detector
80	WHI01301	28/04/1999	4	15	6	0	60	24	0			
		18/03/2003	4	15	6	0	60	24	0			
128	ACR00101	8/12/2005	4	15	6	2	60	24	8			Y
128	ACR00201	8/12/2005	4	15	6	2	60	24	8			
128	ACR00301	8/12/2005	4	15	6	2	60	24	8			
128	ACR00401	8/12/2005	4	15	6	2	60	24	8	Y	Y	
128	ACR00501	8/12/2005	4	15	6	2	60	24	8			Y
128	ACR00601	8/12/2005	4	15	6	2	60	24	8	Y		Y
128	ACR00701	9/12/2005	4	15	6	2	60	24	8	Y		Y
128	ACR00801	9/12/2005	4	15	6	2	60	24	8			Y
128	ACR00901	9/12/2005	4	15	6	2	60	24	8	Y		Y
128	ACR01001	8/12/2005	4	15	6	2	60	24	8		Y	Y
128	ACR01101	8/12/2005	4	15	6	2	60	24	8	Y		Y
128	ACR01201	8/12/2005	4	15	6	2	60	24	8	Y		Y
128	BAS00101	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS00201	8/12/2003	4	15	6	2	60	24	2			Y
128	BAS00301	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS00401	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS00501	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS00601	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS00701	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS00801	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS00901	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS01001	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS01101	8/12/2003	4	15	6	2	60	24	8			Y
128	BAS01201	8/12/2003	4	15	6	2	60	24	8			Y
128	CAR00101	28/11/2002	4	15	6	2	60	24	8			
128	CAR00201	28/11/2002	4	15	6	2	60	24	8			
128	CAR00301	28/11/2002	4	15	6	2	60	24	8			
128	CAR00401	28/11/2002	4	15	6	2	60	24	8			
128	CAR00501	28/11/2002	4	15	6	2	60	24	8			
128	CAR00601	27/11/2002	4	15	6	2	60	24	8			
128	CAR00701	27/11/2002	4	15	6	2	60	24	8			
128	CAR00801	27/11/2002	4	15	6	2	60	24	8			
128	CAR00901	27/11/2002	4	15	6	2	60	24	8			
128	CAR01001	29/11/2002	4	15	6	2	60	24	8	Y		
128	CAR01101	29/11/2002	4	15	6	2	60	24	8			
128	CAR01201	29/11/2002	4	15	6	2	60	24	8			
128	CED00101	9/12/2005	4	15	6	2	60	24	8			Y
128	CED00201	9/12/2005	4	15	6	2	60	24	8			Y
128	CED00301	7/12/2005	4	15	6	2	60	24	8	Y	Y	Y
128	CED00401	7/12/2005	4	15	6	2	60	24	8			Y
128	CED00501	9/12/2005	4	15	6	2	60	24	8			Y
128	CED00601	9/12/2005	4	15	6	2	60	24	8	Y	Y	Y
128	CED00701	8/12/2005	4	15	6	2	60	24	8	Y	Y	Y
128	CED00801	8/12/2005	4	15	6	2	60	24	8			Y
128	CED00901	8/12/2005	4	15	6	2	60	24	8			Y
128	CED01001	8/12/2005	4	15	6	2	60	24	8			Y
128	CED01101	8/12/2005	4	15	6	2	60	24	8			Y
128	CED01201	8/12/2005	4	15	6	2	60	24	8			Y
128	CED01301	6/12/2005	4	15	6	2	60	24				
128	CHA00101	13/12/2005	4	15	6	2	60	24	8			Y
128	CHA00201	13/12/2005	4	15	6	2	60	24	8	Y		Y
128	CHA00301	13/12/2005	4	15	6	2	60	24	8	Y		Y
128	CHA00401	13/12/2005	4	15	6	2	60	24	8			Y
128	CHA00501	13/12/2005	4	15	6	2	60	24	8			Y
128	CHA00601	13/12/2005	4	15	6	2	60	24	8	Y		Y
128	CHA00701	14/12/2005	4	15	6	2	60	24	8	Y		Y
128	CHA00801	14/12/2005	4	15	6	2	60	24	8	Y		Y
128	CHA00901	14/12/2005	4	15	6	2	60	24	8			Y
128	CHA01001	14/12/2005	4	15	6	2	60	24	8			Y
128	CHA01101	14/12/2005	4	15	6	2	60	24	8			Y
128	CHA01201	14/12/2005	4	15	6	2	60	24	8			Y
128	COC00101	16/09/2003	4	15	6	2	60	24	8			Y
128	COC00201	8/12/2003	4	15	6	2	60	24	8			Y
128	COC00301	8/12/2003	4	15	6	2	60	24	8			Y
128	COC00401	8/12/2003	4	15	6	2	60	24	8			Y
128	COC00501	8/12/2003	4	15	6	2	60	24	8			Y
128	COC00601	8/12/2003	4	15	6	2	60	24	8			Y
128	COC00701	8/12/2003	4	15	6	2	60	24	8			Y

Survey Number	Site Identity Code	Visit Date	No. of trap nights	No. of Elliott traps	No. of Pit traps	No. of Cage traps	No. of Elliott nights	No. of Pit nights	No. of Cage nights	Harp Trap	Mist Net	Bat Detector
128	COC00801	8/12/2003	4	15	6	2	60	24	8	Y		Y
128	COC00901	8/12/2003	4	15	6	2	60	24	8			Y
128	COC01001	8/12/2003	4	15	6	2	60	24	8			Y
128	COC01101	8/12/2003	4	15	6	2	60	24	8			Y
128	COC01201	8/12/2003	4	15	6	2	60	24	8			Y
128	COR00101	17/10/2001	4	15	6	2	60	24	8			
128	COR00301	17/10/2001	4	15	6	2	60	24	8			
128	COR00401	18/10/2001	4	15	6	2	60	24	8			
128	COR00501	18/10/2001	4	15	6	2	60	24	8			
128	COR00601	18/10/2001	4	15	6	2	60	24	8			
128	COR00701	19/10/2001	4	15	6	2	60	24	8			
128	COR00801	19/10/2001	4	15	6	2	60	24	8			
128	COR00901	16/10/2001	4	15	6	2	60	24	8			
128	COR01001	19/10/2001	4	15	6	2	60	24	8			
128	COR01101	16/10/2001	4	15	6	2	60	24	8			
128	COR01201	16/10/2001	4	15	6	2	60	24	8			
128	COW00101	28/11/2002	4	15	6	2	60	24	8			
128	COW00201	28/11/2002	4	15	6	2	60	24	8			
128	COW00301	28/11/2002	4	15	6	2	60	24	8			
128	COW00401	28/11/2002	4	15	6	2	60	24	8			
128	COW00501	28/11/2002	4	15	6	2	60	24	8			
128	COW00601	27/11/2002	4	15	6	2	60	24	8			
128	COW00701	27/11/2002	4	15	6	2	60	24	8			
128	COW00801	27/11/2002	4	15	6	2	60	24	8	Y		
128	COW00901	29/11/2002	4	15	6	2	60	24	8			
128	COW01001	28/11/2002	4	15	6	2	60	24	8			
128	COW01101	29/11/2002	4	15	6	2	60	24	8			
128	COW01201	29/11/2002	4	15	6	2	60	24	8			
128	FOW00101	13/12/2005	4	15	6	2	60	24	8			Y
128	FOW00201	13/12/2005	4	15	6	2	60	24	8			Y
128	FOW00301	13/12/2005	4	15	6	2	60	24	8			Y
128	FOW00401	13/12/2005	4	15	6	2	60	24	8	Y		Y
128	FOW00501	13/12/2005	4	15	6	2	60	24	8			Y
128	FOW00601	13/12/2005	4	15	6	2	60	24	8	Y		Y
128	FOW00701	13/12/2005	4	15	6	2	60	24	8	Y		Y
128	GIL00101	3/12/2002	4	15	6	2	60	24	8			
128	GIL00201	3/12/2002	4	15	6	2	60	24	8			
128	GIL00301	3/12/2002	4	15	6	2	60	24	8			
128	GIL00401	3/12/2002	4	15	6	2	60	24	8			
128	GIL00501	3/12/2002	4	15	6	2	60	24	8			
128	GIL00601	2/12/2002	4	15	6	2	60	24	8			
128	GIL00701	2/12/2002	4	15	6	2	60	24	8			
128	GIL00801	2/12/2002	4	15	6	2	60	24	8			
128	GIL00901	2/12/2002	4	15	6	2	60	24	8			
128	GIL01001	4/12/2002	4	15	6	2	60	24	8			
128	GIL01101	4/12/2002	4	15	6	2	60	24	8			
128	GIL01201	1/12/2002	4	15	6	2	60	24	8			
128	HAM00101	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00201	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00301	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00401	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00501	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00601	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00701	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00801	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM00901	3/12/2003	4	15	6	2	60	24	8			Y
128	HAM01001	3/12/2003	4	15	6	2	60	24	8	Y		Y
128	HAM01101	24/09/2003	4	15	6	2	60	24	8	Y		Y
128	HAM01201	24/09/2003	4	15	6	2	60	24	8			Y
128	HEG00101	4/12/2002	4	15	6	2	60	24	8			
128	HEG00201	4/12/2002	4	15	6	2	60	24	8			
128	HEG00301	4/12/2002	4	15	6	2	60	24	8			
128	HEG00401	4/12/2002	4	15	6	2	60	24	8			
128	HEG00501	2/12/2002	4	15	6	2						
128	HEG00601	2/12/2002	4	15	6	2	60	24	8			
128	HEG00701	3/12/2002	4	15	6	2	60	24	8			
128	HEG00801	3/12/2002	4	15	6	2	60	24	8			
128	HEG00901	2/12/2002	4	15	6	2	60	24	8			
128	HEG01001	2/12/2002	4	15	6	2	60	24	8			
128	HEG01101	2/12/2002	4	15	6	2	60	24	8			

Survey Number	Site Identity Code	Visit Date	No. of trap nights	No. of Elliott traps	No. of Pit traps	No. of Cage traps	No. of Elliott nights	No. of Pit nights	No. of Cage nights	Harp Trap	Mist Net	Bat Detector
128	HEG01201	3/12/2002	4	15	6	2	60	24	8			
128	HIN00101	3/12/2003	4	15	6	2	60	24	8			Y
128	HIN00201	3/12/2003	4	15	6	2	60	24	8			Y
		9/09/2004	7	15	6	0	105	70	0			Y
128	HIN00301	3/12/2003	4	15	6	2	60	24	8			Y
128	HIN00401	3/12/2003	4	15	6	2	60	24	8			Y
		2/09/2004	7	15	6	0	105	70	0			Y
128	HIN00501	3/12/2003	4	15	6	2	60	24	8			Y
128	HIN00601	3/12/2003	4	15	6	2	60	24	8			Y
128	HIN00701	3/12/2003	4	15	6	2	60	24	8			Y
128	HIN00801	3/12/2003	4	15	6	2	60	24	8			Y
128	HIN00901	2/12/2003	4	15	6	2	60	24	8			Y
128	HIN01001	2/12/2003	4	15	6	2	60	24	8			Y
128	HIN01101	2/12/2003	4	15	6	2	60	24	8			Y
128	HIN01201	2/12/2003	4	15	6	2	60	24	8			Y
128	KER00101	23/10/2001	4	15	6	2	60	24	8			
128	KER00201	23/10/2001	4	15	6	2	60	24	8			
128	KER00301	23/10/2001	4	15	6	2	60	24	8			
128	KER00401	23/10/2001	4	15	6	2	60	24	8			
128	KER00501	23/10/2001	4	15	6	2	60	24	8			
128	KER00601	24/10/2001	4	15	6	2	60	24	8			
128	KER00701	22/10/2001	4	15	6	2	60	24	8			
128	KER00801	22/10/2001	4	15	6	2	60	24	8			
128	KER00901	22/10/2001	4	15	6	2	60	24	8			
128	KER01001	22/10/2001	4	15	6	2	60	24	8			
128	KER01101	24/10/2001	4	15	6	2	60	24	8			
128	KER01201	24/10/2001	4	15	6	2	60	24	8			
128	KOP00101	16/12/2004	4	15	6	2	60	28	8			Y
128	KOP00201	16/12/2004	4	15	6	2	60	24	8			Y
		10/12/2007	4	15	6	2	60	24	8			Y
128	KOP00301	16/12/2004	4	15	6	2	60	24	8			Y
		10/12/2007	4	15	6	2	60	24	8			Y
128	KOP00401	16/12/2004	4	15	6	2	60	24	8	Y		Y
		10/12/2007	4	15	6	2	60	24	8			Y
128	KOP00501	15/12/2004	4	15	6	2	60	24	8			Y
		10/12/2007	4	15	6	2	60	24	8			Y
128	KOP00601	15/12/2004	4	15	6	2	60	24	8			Y
		10/12/2007	4	15	6	2	60	24	8			Y
128	KOP00701	15/12/2004	4	15	6	2	60	24	8			Y
128	KOP00801	15/12/2004	4	15	6	2	60	24	8			Y
128	KOP00901	15/12/2004	4	15	6	2	60	24	8			Y
128	KOP01001	15/12/2004	4	15	6	2	60	24	8			Y
128	KOP01101	15/12/2004	4	15	6	2	60	24	8	Y		Y
128	KOP01201	15/12/2004	4	15	6	2	60	24	8			Y
128	MAR00101	9/12/2004	4	15	6	2	60	24	8			Y
128	MAR00201	9/12/2004	4	15	6	2	60	24	8			Y
128	MAR00301	9/12/2004	4	15	6	2	60	24	8			Y
128	MAR00401	11/12/2004	4	15	6	2	60	24	8			Y
128	MAR00501	8/12/2004	4	15	6	2	60	24	8	Y		Y
128	MAR00601	11/12/2004	4	15	6	2	60	24	8			Y
128	MAR00701	10/12/2004	4	15	6	2	60	24	8			Y
128	MAR00801	9/12/2004	4	15	6	2	60	24	8			Y
128	MAR00901	9/12/2004	4	15	6	2	60	24	8			Y
128	MAR01001	9/12/2004	4	15	6	2	60	24	8	Y		Y
128	MAR01101	9/12/2004	4	15	6	2	60	24	8			Y
128	MAR01201	10/12/2004	4	15	6	2	60	24	8			Y
128	MUN00101	30/09/2002	4	15	6	2	60	24	8			
128	MUN00201	30/09/2002	4	15	6	2	60	24	8			
128	MUN00301	30/09/2002	4	15	6	2	60	24	8			
128	MUN00601	30/09/2002	4	15	6	2	60	24	8			
128	MUN00701	30/09/2002	4	15	6	2	60	24	8	Y		
128	MUN00801	30/09/2002	4	15	6	2	60	24	8			
128	MUN00901	28/11/2005	4	15	6	2	60	24	8			
128	MUN01001	29/11/2005	4	15	6	2	60	24	8			
128	MUN01201	2/12/2005	4	15	6	2	60	24	8			
128	MUN01301	30/11/2005	4	15	6	2	60	24	8			
128	PEA00101	10/12/2004	4	15	6	2	60	24	8	Y		Y
128	PEA00201	10/12/2004	4	15	6	2	60	24	8	Y		Y
128	PEA00301	10/12/2004	4	15	6	2	60	24	8			Y
128	PEA00401	10/12/2004	4	15	6	2	60	24	8			Y

Survey Number	Site Identity Code	Visit Date	No. of trap nights	No. of Elliott traps	No. of Pit traps	No. of Cage traps	No. of Elliott nights	No. of Pit nights	No. of Cage nights	Harp Trap	Mist Net	Bat Detector
128	PEA00501	10/12/2004	4	15	6	2	60	24	8			Y
128	PEA00601	10/12/2004	4	15	6	2	60	24	8			Y
128	PEA00701	10/12/2004	4	15	6	2	60	24	8	Y		Y
128	PEA00801	10/12/2004	4	15	6	2	60	24	8			Y
128	PEA00901	10/12/2004	4	15	6	2	60	24	8			Y
128	PEA01001	10/12/2004	4	15	6	2	60	24	8			Y
128	PEA01101	10/12/2004	4	15	6	2	60	24	8			Y
128	PEA01201	10/12/2004	4	15	6	2	60	24	8			Y
128	STR00101	24/10/2001	4	15	6	2	60	24	8			
128	STR00201	24/10/2001	4	15	6	2	60	24	8			
128	STR00301	24/10/2001	4	15	6	2	60	24	8			
128	STR00401	25/10/2001	4	15	6	2	60	24	8			
128	STR00501	25/10/2001	4	15	6	2	60	24	8			
128	STR00601	23/10/2001	4	15	6	2	60	24	8			
128	STR00701	23/10/2001	4	15	6	2	60	24	8			
128	STR00801	24/10/2001	4	15	6	2	60	24	8			
128	STR00901	24/10/2001	4	15	6	2	60	24	8			
128	STR01001	24/10/2001	4	15	6	2	60	24	8			
128	STR01101	23/10/2001	4	15	6	2	60	24	8			
128	STR01201	23/10/2001	4	15	6	2	60	24	8			
128	ULE00101	14/12/2004	4	15	6	2	60	24	8			Y
128	ULE00201	14/12/2004	4	15	6	2	60	24	8			Y
128	ULE00301	14/12/2004	4	15	6	2	60	24	7			Y
128	ULE00401	14/12/2004	4	15	6	2	60	24	8			Y
128	ULE00501	13/12/2004	4	15	6	2	60	24	8			Y
128	ULE00601	13/12/2004	4	15	6	2	60	24	8	Y		Y
128	ULE00701	13/12/2004	4	15	6	2	60	24	8	Y		Y
128	ULE00801	14/12/2004	4	15	6	2	60	24	8			Y
128	ULE00901	14/12/2004	4	15	6	2	60	24	8			Y
128	ULE01001	14/12/2004	4	15	6	2	60	24	8			Y
128	ULE01101	14/12/2004	4	15	6	2	60	24	7			Y
		10/12/2007	4	15	6	2	60	24	8			Y
128	ULE01201	14/12/2004	4	15	6	2	60	24	8	Y		Y
		10/12/2007	4	15	6	2	60	24	8			Y
599	SHI00101	15/05/2008	4	15	6	2	60	24	8			Y
599	SHI00201	15/05/2008	4	15	6	2	60	24	8			Y
599	SHI00301	14/05/2008	4	15	6	2	60	24	8	Y		Y
599	SHI00401	14/05/2008	4	30	0	2	60	24	8	Y		Y
599	SHI00501	13/05/2008	4	15	6	2	60	24	8			Y
599	SHI00701	15/05/2008	4	30	0	0	120	0	0			Y
	Sites	Visits		Elliotts	Pits	Cages	Elliott nights	Pit nights	Cage nights	Harp trap sites	Mist net sites	Bat detect[n] sites
Totals	**283 sites**	**317 visits**		**4840**	**1865**	**534**	**19360**	**7564**	**2108**	**36**	**6**	**151**

Appendix 10. Mammal site frequency within landform pattern categories showing Pearson's Chi-square statistics. Exact *p*-values were calculated using Statexact 4 with 1000 iterations where *p* was less than 0.1 and total N >3. Where frequencies were too high to calculate exact *p*-values 99% confidence limits were calculated using Monte Carlo estimates. The number of sites sampled per category were used to calculate the proportions against which the observed values were compared – numbers highlighted in bold indicate higher than expected values. Bats were excluded from this analysis because of differences in sampling effort.

NATIVE SPECIES	ALP Alluvial plain	CON Consolidated dunefield	DUN Dunefield	FLO Flood plain	HIL Hills	LOW Low hills	PLA Plain	RIS Rises	SAN Sand plain	Total N	CHISQ total	*p*	significance at .05	exact *P*-value	99% Confidence limits for *p*
Cercartetus concinnus	0	7	8	0	4	8	14	3	1	45	5.54	0.699			
Lasiorhinus latifrons	0	1	0	0	1	2	5	2	0	11	9.23	0.324			
Macropus eugenii	0	1	0	0	0	0	0	0	0	1	5.53	0.700			
Macropus fuliginosus	6	17	10	3	18	12	36	6	1	109	5.86	0.663			
Macropus robustus	0	0	0	0	**9**	**2**	0	**1**	0	12	41.5	0.000	*	0.001	
Macropus rufus	0	0	0	0	0	1	0	0	0	1	5.7	0.680			
Ningaui yvonneae	0	**3**	**7**	0	0	0	2	0	0	12	25.6	0.001	*	0.009	
Notomys mitchellii	0	**7**	**11**	0	2	2	6	**4**	**3**	35	27.9	0.000	*	0.003	.0017-.0047
Phascolarctos cinereus	0	0	0	0	0	2	2	0	0	4	6.01	0.646			
Pseudomys bolami	0	0	0	0	0	2	0	0	0	2	11.4	0.180			
Pseudomys hermannsburgensis	0	0	0	0	0	0	2	0	0	2	4.61	0.798			
Rattus fuscipes	0	1	2	2	9	5	6	1	0	26	15.6	0.049	ns	0.059	.053-.065
Sminthopsis crassicaudata	0	1	1	1	0	2	4	0	0	9	5.38	0.716			
Sminthopsis dolichura	0	2	6	1	6	10	8	1	1	35	9.32	0.316			
Sminthopsis griseoventer	0	3	0	0	1	3	4	0	0	11	5.3	0.725			
Sminthopsis psammophila	0	0	1	0	0	0	0	0	0	1	6.75	0.564			
Tachyglossus aculeatus	0	2	3	0	4	5	5	1	1	21	4.19	0.840			
Trichosurus vulpecula	0	0	0	0	2	0	1	0	0	3	7.83	0.450			
INTRODUCED SPECIES															
Bos taurus	0	0	0	0	1	1	0	0	0	2	5	0.758			
Camelus dromedarius	2	0	0	0	0	0	0	0	0	2	53.1	0.000			
Capra hircus	0	0	1	0	0	2	2	1	0	6	6.1	0.636			
Equus caballus	0	1	0	0	0	0	0	0	0	1	5.53	0.700			
Felis catus	0	3	4	0	0	2	5	0	0	14	6.87	0.550			
Mus musculus	6	20	15	6	20	25	49	4	2	147	4.22	0.836			
Oryctolagus cuniculus	2	8	9	1	13	18	28	1	0	80	10.2	0.254			
Ovis aries	2	0	1	0	4	0	5	0	0	12	14.4	0.071			
Rattus rattus	0	0	0	0	2	2	0	0	0	4	10	0.265			
Vulpes vulpes	4	10	13	1	15	10	18	0	2	73	9.01	0.341			
Canis lupus	0	0	0	0	1	1	0	0	0	2	5	0.758			
# sites per landform	9	38	32	7	34	37	75	10	6	248					
proportions	0.04	0.15	0.13	0.03	0.14	0.15	0.30	0.04	0.02	1.00					

Appendix 11. Mammal site frequency within land unit categories showing Pearson's Chi-square statistics. Exact *p*-values were calculated using Statexact 4 with 1000 iterations where *p* was less than 0.1 and total N >3. Where frequencies were too high to calculate exact *p*-values 99% confidence limits were calculated using Monte Carlo estimates. The number of sites sampled per category were used to calculate the proportions against which the observed values were compared – numbers highlighted in bold indicate higher than expected values. Bats were excluded from this analysis because of differences in sampling effort.

NATIVE SPECIES	drainage	dune	hill	interdune	lake/swamp	outcrop	plain	Total N	CHISQ total	*p*	significance at .05	exact *P*-value
Cercartetus concinnus	0	5	14	5	14	0	22	60	7.85	0.2493		
Lasiorhinus latifrons	0	0	3	0	1	0	7	11	4.46	0.6142		
Macropus eugenii	0	1	0	0	0	0	0	1	8.54	0.2014		
Macropus fuliginosus	5	9	32	3	14	1	47	111	6.02	0.4213		
Macropus robustus	**1**	0	**9**	0	0	**2**	0	12	29.21	0.0001	*	0.0016
Macropus rufus	0	0	2	0	0	0	0	2	6.09	0.4131		
Ningaui yvonneae	**2**	**5**	0	0	3	0	2	12	24.86	0.0004	*	0.0036
Notomys mitchellii	1	9	6	0	6	0	14	36	11.22	0.0819		
Phascolarctos cinereus	1	0	1	0	0	0	2	4	7.95	0.2420		
Pseudomys bolami	0	0	2	0	0	0	0	2	6.09	0.4131		
Pseudomys hermannsburgensis	0	0	0	0	0	1	1	2	15.98	0.0138		
Rattus fuscipes	1	2	14	1	4	0	5	27	12.08	0.0603	ns	0.064
Sminthopsis crassicaudata	0	0	1	1	3	0	4	9	4.85	0.5629		
Sminthopsis dolichura	1	3	18	4	3	0	12	41	11.89	0.0645	ns	0.067
Sminthopsis griseoventer	0	0	4	0	0	0	7	11	6.43	0.3766		
Sminthopsis psammophila	0	1	0	0	0	0	0	1	8.54	0.2014		
Tachyglossus aculeatus	0	3	9	0	1	1	7	21	6.65	0.3548		
Trichosurus vulpecula	0	0	2	0	1	0	0	3	4.62	0.5935		
INTRODUCED SPECIES												
Bos taurus	1	0	0	0	0	0	1	2	15.98	0.0138		
Camelus dromedarius	1	0	0	0	0	0	1	2	15.98	0.0138		
Capra hircus	0	1	3	0	0	0	2	6	3.39	0.7591		
Equus caballus	0	1	0	0	0	0	0	1	8.54	0.2014		
Felis catus	0	2	1	1	2	0	8	14	4.13	0.6587		
Mus musculus	6	15	39	8	24	7	55	154	2.12	0.9084		
Oryctolagus cuniculus	4	8	26	2	7	2	33	82	6.28	0.3928		
Ovis aries	1	1	4	0	2	0	5	13	2.32	0.8882		
Rattus rattus	1	0	1	0	2	0	0	4	12.03	0.0613	ns	0.0766
Vulpes vulpes	3	14	20	4	8	3	21	73	8.69	0.1917		
Canis lupus	0	0	1	0	0	0	1	2	1.32	0.9706		
# sites per landform	8	28	66	14	40	8	103	267				
proportions	0.03	0.105	0.247	0.052	0.15	0.03	0.386	1				

Appendix 12. Mammal site frequency within Surface Strew Size categories showing Pearson's Chi-square statistics. Exact *p*-values were calculated using Statexact 4 with 1000 iterations where *p* was less than 0.1 and total N >3. Where frequencies were too high to calculate exact *p*-values 99% confidence limits were calculated using Monte Carlo estimates. The number of sites sampled per category were used to calculate the proportions against which the observed values were compared – numbers highlighted in bold indicate higher than expected values. Bats were excluded from this analysis because of differences in sampling effort.

NATIVE SPECIES	Common Name	1 pebble (5-50 mm)	2 cobble (51-250 mm)	3 boulder (> 250 mm)	5 sheet	Total N	CHISQ total	*p*
Cercartetus concinnus	Western Pygmy-possum	27	8	1	0	36	2.346	0.504
Lasiorhinus latifrons	Southern Hairy-nosed Wombat	7	3	0	0	10	0.533	0.912
Macropus eugenii	Tammar Wallaby	0	1	0	0	1	2.057	0.561
Macropus fuliginosus	Western Grey Kangaroo	49	22	1	1	73	2.092	0.553
Macropus robustus	Euro	6	4	1	0	11	1.098	0.777
Macropus rufus	Red Kangaroo	1	0	0	1	2	79.794	0.000
Ningaui yvonneae	Southern Ningaui	1	0	0	0	1	0.588	0.899
Notomys mitchellii	Mitchell's Hopping-mouse	12	2	0	0	14	3.209	0.360
Phascolarctos cinereus	Koala	1	2	1	0	4	6.204	0.102
Pseudomys bolami	Bolam's Mouse	0	1	0	0	1	2.057	0.561
Pseudomys hermannsburgensis	Sandy Inland Mouse	0	1	0	0	1	2.057	0.561
Rattus fuscipes	Bush Rat	14	7	0	0	21	0.956	0.812
Sminthopsis crassicaudata	Fat-tailed Dunnart	3	2	0	0	5	0.304	0.959
Sminthopsis dolichura	Little Long-tailed Dunnart	13	8	0	1	22	6.456	0.091
Sminthopsis griseoventer	Grey-bellied Dunnart	7	2	0	0	9	1.006	0.800
Tachyglossus aculeatus	Short-beaked Echidna	13	2	0	0	15	3.709	0.295
Trichosurus vulpecula	Common Brushtail Possum	1	2	0	0	3	1.605	0.658
INTRODUCED SPECIES								
Bos taurus	Cattle	1	0	0	0	1	0.588	0.899
Capra hircus	Goat	1	2	0	0	3	1.605	0.658
Felis catus	Cat	8	1	0	0	9	2.634	0.452
Mus musculus	House Mouse	59	36	4	0	99	1.222	0.748
Oryctolagus cuniculus	Rabbit	36	23	1	1	61	2.349	0.503
Ovis aries	Sheep	6	4	0	0	10	0.608	0.895
Rattus rattus	Black Rat	3	0	0	0	3	1.765	0.623
Vulpes vulpes	Fox	30	9	3	0	42	3.714	0.294
Canis lupus	Dog/Dingo	1	1	0	0	2	0.322	0.956
	# sites per landform	102	53	6	1	162		
	proportions	0.63	0.327	0.037	0.006			

Appendix 13. Mammal site frequency within Surface Strew Cover categories showing Pearson's Chi-square statistics. Exact *p*-values were calculated using Statexact 4 with 1000 iterations where *p* was less than 0.1 and total N >3. Where frequencies were too high to calculate exact *p*-values 99% confidence limits were calculated using Monte Carlo estimates. The number of sites sampled per category were used to calculate the proportions against which the observed values were compared – numbers highlighted in bold indicate higher than expected values. Bats were excluded from this analysis because of differences in sampling effort.

NATIVE SPECIES	1 <10%	2 10-30%	3 30-70%	4 > 70%	9 nil	Total N	CHISQ total	*P*	significance at .05	exact *P*-value
Cercartetus concinnus	30	4	2	0	23	59	4.69	0.3207		
Lasiorhinus latifrons	6	3	1	0	1	11	4.75	0.3142		
Macropus eugenii	1	0	0	0	0	1	1.46	0.8332		
Macropus fuliginosus	51	17	4	1	38	111	2.15	0.7085		
Macropus robustus	3	**3**	**5**	0	1	12	34.89	0.0000	*	0.0036
Macropus rufus	0	2	0	0	0	2	12.00	0.0174		
Ningaui yvonneae	1	0	0	0	**10**	11	12.48	0.0141	*	0.0517
Notomys mitchellii	11	2	1	0	22	36	7.97	0.0927		
Phascolarctos cinereus	2	2	0	0	0	4	5.46	0.2430		
Pseudomys bolami	0	1	0	0	1	2	2.78	0.5955		
Pseudomys hermannsburgensis	1	0	0	0	1	2	0.51	0.9725		
Rattus fuscipes	16	5	0	0	6	27	6.24	0.1816		
Sminthopsis crassicaudata	4	1	0	0	4	9	0.70	0.9509		
Sminthopsis dolichura	12	7	3	0	20	42	3.04	0.5509		
Sminthopsis griseoventer	4	3	2	0	2	11	6.15	0.1883		
Sminthopsis psammophila	0	0	0	0	1	1	1.56	0.8164		
Tachyglossus aculeatus	9	3	3	0	6	21	4.03	0.4023		
Trichosurus vulpecula	3	0	0	0	0	3	4.39	0.3559		
INTRODUCED SPECIES										
Bos taurus	0	0	1	0	1	2	8.78	0.0669		
Camelus dromedarius	0	0	0	0	2	2	3.12	0.5387		
Capra hircus	1	1	1	0	3	6	2.58	0.6303		
Equus caballus	0	0	0	0	1	1	1.56	0.8164		
Felis catus	7	2	0	0	5	14	1.19	0.8801		
Mus musculus	63	26	8	2	55	154	1.80	0.7733		
Oryctolagus cuniculus	38	17	6	0	21	82	8.14	0.0866		
Ovis aries	5	4	1	0	3	13	3.58	0.4652		
Rattus rattus	3	0	0	0	1	4	2.18	0.7025		
Vulpes vulpes	31	7	4	0	32	74	2.12	0.7134		
Canis lupus	2	0	0	0	0	2	2.93	0.5703		
# sites per landform	108	38	14	2	104	266				
proportions	0.406	0.143	0.053	0.008	0.391					

Appendix 14. Mammal site frequency within Slope classes showing Pearson's Chi-square statistics. Exact *p*-values were calculated using Statexact 4 with 1000 iterations where *p* was less than 0.1 and total N >3. Where frequencies were too high to calculate exact *p*-values 99% confidence limits were calculated using Monte Carlo estimates. The number of sites sampled per category were used to calculate the proportions against which the observed values were compared – numbers highlighted in bold indicate higher than expected values. Bats were excluded from this analysis because of differences in sampling effort.

NATIVE SPECIES	0-1	2-5	6-10	11-20	20-40	>40	Total N	CHISQ total	*p*	significance at .05	exact *P*-value
Cercartetus concinnus	30	25	3	1	1	0	60	5.93	0.3130		
Lasiorhinus latifrons	6	3	1	0	0	1	11	10.90	0.0534	ns	0.1706
Macropus eugenii	0	0	1	0	0	0	1	15.63	0.0080		
Macropus fuliginosus	66	37	2	5	0	1	111	4.92	0.4262		
Macropus robustus	2	**4**	**2**	**4**	0	0	12	34.12	0.0000	*	0.0074
Macropus rufus	1	0	0	1	0	0	2	12.14	0.0329		
Ningaui yvonneae	6	5	1	0	0	0	12	1.54	0.9083		
Notomys mitchellii	22	12	3	0	0	0	37	2.34	0.8005		
Phascolarctos cinereus	3	1	0	0	0	0	4	0.64	0.9861		
Pseudomys bolami	0	2	0	0	0	0	2	4.82	0.4382		
Pseudomys hermannsburgensis	2	0	0	0	0	0	2	1.37	0.9279		
Rattus fuscipes	10	13	3	0	1	0	27	11.05	0.0504	ns	0.0673
Sminthopsis crassicaudata	9	0	0	0	0	0	9	6.15	0.2917		
Sminthopsis dolichura	15	21	1	2	0	0	39	12.43	0.0294	ns	0.0597
Sminthopsis griseoventer	5	5	1	0	0	0	11	2.09	0.8368		
Sminthopsis psammophila	0	1	0	0	0	0	1	2.41	0.7899		
Tachyglossus aculeatus	8	8	3	2	0	0	21	6.72	0.2427		
Trichosurus vulpecula	1	1	1	0	0	0	3	4.24	0.5155		
INTRODUCED SPECIES											
Bos taurus	2	0	0	0	0	0	2	1.37	0.9279		
Camelus dromedarius	2	0	0	0	0	0	2	1.37	0.9279		
Capra hircus	2	3	1	0	0	0	6	3.01	0.6987		
Equus caballus	1	0	0	0	0	0	1	0.68	0.9839		
Felis catus	12	2	0	0	0	0	14	4.29	0.5083		
Mus musculus	93	41	8	7	2	2	153	2.07	0.8400		
Oryctolagus cuniculus	47	22	6	5	0	1	81	2.53	0.7718		
Ovis aries	9	2	0	1	1	0	13	10.82	0.0552	ns	0.1088
Rattus rattus	3	1	0	0	0	0	4	0.64	0.9861		
Vulpes vulpes	37	23	6	6	0	1	73	6.42	0.2672		
Canis lupus	1	0	1	0	0	0	2	7.15	0.2094		
# sites per landform	158	78	16	10	2	2	266				
proportions	0.59	0.29	0.06	0.04	0.01	0.01	1				

Appendix 15. Mammal site frequency within Surface Soil Texture categories showing Pearson's Chi-square statistics. Exact *p*-values were calculated using Statexact 4 with 1000 iterations where *p* was less than 0.1 and total N >3. Where frequencies were too high to calculate exact *p*-values 99% confidence limits were calculated using Monte Carlo estimates. The number of sites sampled per category were used to calculate the proportions against which the observed values were compared – numbers highlighted in bold indicate higher than expected values. Bats were excluded from this analysis because of differences in sampling effort.

NATIVE SPECIES	CLAY LOAMS	CLAYS	LOAMS	SANDS	Total N	CHISQ total	*p*	significance at .05	exact *P*-value
Cercartetus concinnus	15	1	17	12	45	2.762	0.43		
Lasiorhinus latifrons	6	0	3	2	11	1.931	0.587		
Macropus eugenii	0	0	0	1	1	2.5	0.475		
Macropus fuliginosus	44	9	23	26	102	3.876	0.275		
Macropus robustus	6	0	2	3	11	1.907	0.592		
Macropus rufus	0	1	1	0	2	8.276	0.041		
Ningaui yvonneae	0	0	3	**9**	12	14.29	0.003	*	0.005
Notomys mitchellii	7	0	9	**19**	35	13.06	0.004	*	0.006
Phascolarctos cinereus	**2**	**2**	0	0	4	15.67	0.001	*	0.007
Pseudomys bolami	0	0	2	0	2	5.104	0.164		
Pseudomys hermannsburgensis	1	0	1	0	2	1.113	0.774		
Rattus fuscipes	11	3	3	10	27	4.798	0.187		
Sminthopsis crassicaudata	**4**	**2**	1	0	7	9.334	0.025	*	0.0184
Sminthopsis dolichura	9	1	11	8	29	1.601	0.659		
Sminthopsis griseoventer	3	0	6	2	11	4.086	0.252		
Sminthopsis psammophila	0	0	0	1	1	2.5	0.475		
Tachyglossus aculeatus	10	0	5	6	21	1.963	0.58		
Trichosurus vulpecula	3	0	0	0	3	5.022	0.17	ns	0.161
INTRODUCED SPECIES									
Bos taurus	2	0	0	0	2	3.348	0.341		
Camelus dromedarius	1	1	0	0	2	7.837	0.05		
Capra hircus	0	0	3	3	6	4.578	0.205		
Equus caballus	0	0	0	1	1	2.5	0.475		
Felis catus	2	0	7	5	14	5.447	0.142		
Mus musculus	55	11	34	36	136	2.152	0.541		
Oryctolagus cuniculus	27	6	27	15	75	4.181	0.243		
Ovis aries	8	1	0	4	13	5.78	0.123		
Rattus rattus	1	1	1	1	4	2.682	0.443		
Vulpes vulpes	23	4	14	30	71	6.928	0.074	ns	0.0725
Canis lupus	1	0	0	1	2	1.087	0.78		
# sites per landform	89	14	67	68	238				
proportions	0.374	0.059	0.282	0.286					

Appendix 16. Mammal site frequency within structural vegetation categories showing Pearson's Chi-square statistics. Exact *p*-values were calculated using Statexact 4 with 1000 iterations where *p* was less than 0.1 and total N >3. Where frequencies were too high to calculate exact *p*-values 99% confidence limits were calculated using Monte Carlo estimates. The number of sites sampled per category were used to calculate the proportions against which the observed values were compared – numbers highlighted in bold indicate higher than expected values. Bats were excluded from this analysis because of differences in sampling effort.

NATIVE SPECIES	Low Mallee	Low Shrubland	Low Woodland	Mallee	Sedgeland	Shrubland	Woodland	Total N	CHISQ total	*p*	significance at .05	exact *P*-value	99% Confidence limits for *p*
Cercartetus concinnus	6	1	3	28	0	6	5	49	11.34	0.078			
Lasiorhinus latifrons	0	0	1	6	0	3	1	11	3.408	0.756			
Macropus eugenii	0	0	0	0	0	1	0	1	3.849	0.697			
Macropus fuliginosus	11	9	18	42	2	21	19	122	9.124	0.167			
Macropus robustus	0	0	3	4	0	4	0	11	6.279	0.393			
Macropus rufus	0	0	1	0	1	0	0	2	44.73	0.000			
Ningaui yvonneae	**5**	0	0	**6**	0	1	0	12	15.47	0.017	*	0.0261	
Notomys mitchellii	**9**	0	0	**15**	0	9	1	34	17.3	0.008	*	0.0156	
Phascolarctos cinereus	0	0	1	1	0	0	2	4	10.29	0.113			
Pseudomys bolami	0	0	1	0	0	1	0	2	4.318	0.634			
Pseudomys hermannsburgensis	1	0	0	0	0	1	0	2	5.014	0.542			
Rattus fuscipes	2	**3**	8	4	**1**	**10**	**6**	34	15.38	0.018	*	0.0241	
Sminthopsis crassicaudata	**1**	**3**	0	0	0	**4**	0	8	16.61	0.011	*	0.0213	
Sminthopsis dolichura	4	4	5	15	0	8	1	37	2.338	0.886			
Sminthopsis griseoventer	**5**	0	0	**6**	0	0	0	11	18.53	0.005	*	0.0144	
Sminthopsis psammophila	1	0	0	0	0	0	0	1	8.179	0.225			
Tachyglossus aculeatus	3	0	4	10	0	4	0	21	5.178	0.521			
Trichosurus vulpecula	0	0	**1**	0	0	0	**4**	5	33.94	0.000	*	0.0019	
INTRODUCED SPECIES													
Bos taurus	0	0	0	1	0	1	0	2	1.749	0.941			
Camelus dromedarius	0	1	0	1	0	0	0	2	5.444	0.488			
Capra hircus	1	0	2	2	0	1	0	6	3.296	0.771			
Equus caballus	1	0	0	0	0	0	0	1	8.179	0.225			
Felis catus	2	0	1	4	0	7	0	14	9.178	0.164			
Mus musculus	13	**18**	**21**	41	**3**	**45**	10	151	15.64	0.016	*	0.0168	.014 - .02
Oryctolagus cuniculus	6	**9**	**15**	16	**2**	**28**	**11**	87	20.01	0.003	*	0.0037	.002-.005
Ovis aries	1	2	1	6	0	3	1	14	1.473	0.961			
Rattus rattus	0	**1**	0	0	**1**	**2**	**2**	6	21.34	0.002	*	0.008	
Vulpes vulpes	12	5	8	27	2	17	6	77	3.807	0.703			
Canis lupus	0	0	0	2	0	0	0	2	3.299	0.770			
# sites per landform	28	21	33	97	3	53	22						
proportions	0.109	0.082	0.128	0.377	0.012	0.206	0.086						

Appendix 17. Bird species recorded on Eyre Peninsula currently held electronically in the Biological Databases of South Australia (Taxonomy follows Christidis and Boles 2008). Species are listed in taxonomic Family order.

AUS: = Australian conservation rating (Commonwealth EPBC Act) EN = Endangered, VU = Vulnerable.
SA: = South Australian conservation rating (SA NPW Act) E = Endangered, V = Vulnerable, R = Rare.
* preceding species name indicates non-native species with feral populations

For the Opportune and Other record columns **** = very common with more than 1000 records, *** = common with 101 – 1000 records, ** = less common with 11 – 100 records and * = rarely recorded 1-10 records.

The number in the survey column indicates the number of sites at which a species was recorded, for the small number of sites that have more than one visit there may be more than one record attributed to it.

Family Name	Species Name and Conservation Status	Common Name	Survey	Opportune	Other
CASUARIIDAE	*Dromaius novaehollandiae*	Emu	115	***	**
STRUTHIONIDAE	**Struthio camelus*	Ostrich		*	
MEGAPODIIDAE	*Leipoa ocellata AUS: VU SA: V*	Malleefowl	18	****	**
PHASIANIDAE	**Gallus gallus*	Feral Chicken		*	
PHASIANIDAE	*Coturnix pectoralis*	Stubble Quail	8	**	*
PHASIANIDAE	*Coturnix ypsilophora SA: V*	Brown Quail		*	
ANATIDAE	**Anas platyrhynchos*	Northern Mallard		*	
ANATIDAE	*Anas castanea*	Chestnut Teal	3	***	**
ANATIDAE	*Anas gracilis*	Grey Teal		***	*
ANATIDAE	*Anas rhynchotis SA: R*	Australasian Shoveler		**	
ANATIDAE	*Anas superciliosa*	Pacific Black Duck		**	*
ANATIDAE	*Aythya australis*	Hardhead		**	
ANATIDAE	*Biziura lobata SA: R*	Musk Duck		**	*
ANATIDAE	*Cereopsis novaehollandiae SA: R*	Cape Barren Goose	1	**	*
ANATIDAE	*Chenonetta jubata*	Australian Wood Duck		**	
ANATIDAE	*Cygnus atratus*	Black Swan		***	**
ANATIDAE	*Malacorhynchus membranaceus*	Pink-eared Duck		**	
ANATIDAE	*Oxyura australis SA: R*	Blue-billed Duck		*	
ANATIDAE	*Stictonetta naevosa SA: V*	Freckled Duck		*	
ANATIDAE	*Tadorna tadornoides*	Australian Shelduck		**	
PODICIPEDIDAE	*Podiceps cristatus SA: R*	Great Crested Grebe		**	
PODICIPEDIDAE	*Poliocephalus poliocephalus*	Hoary-headed Grebe		***	**
PODICIPEDIDAE	*Tachybaptus novaehollandiae*	Australasian Grebe		**	**
SPHENISCIDAE	*Eudyptula minor*	Little Penguin	1	*	*
OCEANITIDAE	*Oceanites oceanicus*	Wilson's Storm-Petrel		*	
OCEANITIDAE	*Pelagodroma marina*	White-faced Storm-Petrel		*	
DIOMEDEIDAE	*Diomedea exulans AUS: ssp SA: V*	Wandering Albatross		*	
DIOMEDEIDAE	*Phoebetria palpebrata SA: V*	Light-mantled Sooty Albatross		*	
DIOMEDEIDAE	*Thalassarche chlororhynchos SA: ssp*	Yellow-nosed Albatross		*	
DIOMEDEIDAE	*Thalassarche melanophris AUS: VU SA: V*	Black-browed Albatross		*	
PROCELLARIIDAE	*Aphodroma brevirostris*	Kerguelen Petrel		**	
PROCELLARIIDAE	*Ardenna carneipes SA: R*	Flesh-footed Shearwater		*	
PROCELLARIIDAE	*Ardenna tenuirostris*	Short-tailed Shearwater		**	*
PROCELLARIIDAE	*Daption capense*	Cape Petrel		*	
PROCELLARIIDAE	*Fulmarus glacialoides*	Southern Fulmar		*	
PROCELLARIIDAE	*Halobaena caerulea*	Blue Petrel		*	
PROCELLARIIDAE	*Macronectes giganteus AUS: EN SA: V*	Southern Giant-Petrel		*	
PROCELLARIIDAE	*Pachyptila belcheri*	Slender-billed Prion		*	
PROCELLARIIDAE	*Pachyptila desolata*	Antarctic Prion		*	
PROCELLARIIDAE	*Pachyptila turtur*	Fairy Prion		*	
PROCELLARIIDAE	*Pachyptila vittata*	Broad-billed Prion		*	
PROCELLARIIDAE	*Pterodroma lessonii*	White-headed Petrel		*	
PROCELLARIIDAE	*Pterodroma macroptera*	Great-winged Petrel		*	
PROCELLARIIDAE	*Puffinus gavia*	Fluttering Shearwater		*	
SULIDAE	*Morus serrator*	Australasian Gannet	3	***	*
ANHINGIDAE	*Anhinga novaehollandiae SA: R*	Australasian Darter		*	
PHALACROCORACIDAE	*Microcarbo melanoleucos*	Little Pied Cormorant		***	**
PHALACROCORACIDAE	*Phalacrocorax carbo*	Great Cormorant		**	*
PHALACROCORACIDAE	*Phalacrocorax fuscescens*	Black-faced Cormorant		***	**
PHALACROCORACIDAE	*Phalacrocorax sulcirostris*	Little Black Cormorant	1	***	**
PHALACROCORACIDAE	*Phalacrocorax varius*	Pied Cormorant	2	***	**
PELECANIDAE	*Pelecanus conspicillatus*	Australian Pelican		***	*
ARDEIDAE	*Ardea alba*	Great Egret		***	
ARDEIDAE	*Ardea ibis SA: R*	Cattle Egret		**	
ARDEIDAE	*Ardea intermedia SA: R*	Intermediate Egret		*	
ARDEIDAE	*Ardea pacifica*	White-necked Heron		**	*
ARDEIDAE	*Botaurus poiciloptilus SA: V*	Australasian Bittern		*	
ARDEIDAE	*Egretta garzetta SA: R*	Little Egret		**	*

Family Name	Species Name and Conservation Status	Common Name	Survey	Opportune	Other
ARDEIDAE	*Egretta novaehollandiae*	White-faced Heron		***	**
ARDEIDAE	*Egretta sacra SA: R*	Eastern Reef Egret		**	*
ARDEIDAE	*Ixobrychus dubius SA: E*	Australian Little Bittern		*	
ARDEIDAE	*Nycticorax caledonicus*	Nankeen Night-Heron		*	
THRESKIORNITHIDAE	*Platalea flavipes*	Yellow-billed Spoonbill		*	
THRESKIORNITHIDAE	*Platalea regia*	Royal Spoonbill		**	
THRESKIORNITHIDAE	*Plegadis falcinellus SA: R*	Glossy Ibis		*	
THRESKIORNITHIDAE	*Threskiornis molucca*	Australian White Ibis		*	
THRESKIORNITHIDAE	*Threskiornis spinicollis*	Straw-necked Ibis		**	*
LARIDAE	*Hydroprogne caspia*	Caspian Tern	1	***	*
LARIDAE	*Thalasseus bergii*	Crested Tern	2	***	**
PHALACROCORACIDAE	*Phalacrocorax fuscescens*	Black-faced Cormorant		***	**
ACCIPITRIDAE	*Pandion cristatus SA: E*	Eastern Osprey		**	*
ACCIPITRIDAE	*Accipiter cirrocephalus*	Collared Sparrowhawk	17	**	*
FALCONIDAE	*Falco berigora*	Brown Falcon	17	***	**
FALCONIDAE	*Falco cenchroides*	Nankeen Kestrel	41	***	**
FALCONIDAE	*Falco hypoleucos SA: R*	Grey Falcon		*	
FALCONIDAE	*Falco longipennis*	Australian Hobby	4	***	*
FALCONIDAE	*Falco peregrinus SA: R*	Peregrine Falcon	2	**	*
FALCONIDAE	*Falco subniger*	Black Falcon	1	*	
RALLIDAE	*Fulica atra*	Eurasian Coot		**	
RALLIDAE	*Gallirallus philippensis*	Buff-banded Rail		**	*
RALLIDAE	*Porphyrio porphyrio*	Purple Swamphen		*	
RALLIDAE	*Porzana fluminea*	Australian Spotted Crake		**	*
RALLIDAE	*Porzana pusilla*	Baillon's Crake		*	
RALLIDAE	*Tribonyx ventralis*	Black-tailed Native-hen	3	***	*
OTIDIDAE	*Ardeotis australis SA: V*	Australian Bustard		*	*
TURNICIDAE	*Turnix varius SA: R*	Painted Button-quail	12	**	*
BURHINIDAE	*Burhinus grallarius SA: R*	Bush Stone-curlew		**	
HAEMATOPODIDAE	*Haematopus fuliginosus SA: R*	Sooty Oystercatcher	2	***	**
HAEMATOPODIDAE	*Haematopus longirostris SA: R*	Australian Pied Oystercatcher		***	**
RECURVIROSTRIDAE	*Cladorhynchus leucocephalus SA: V*	Banded Stilt		***	*
RECURVIROSTRIDAE	*Himantopus himantopus*	Black-winged Stilt		***	*
RECURVIROSTRIDAE	*Recurvirostra novaehollandiae*	Red-necked Avocet		**	*
CHARADRIIDAE	*Charadrius australis*	Inland Dotterel		*	
CHARADRIIDAE	*Charadrius bicinctus*	Double-banded Plover		**	*
CHARADRIIDAE	*Charadrius dubius*	Little Ringed Plover		*	
CHARADRIIDAE	*Charadrius leschenaultii SA: R*	Greater Sand Plover		**	
CHARADRIIDAE	*Charadrius mongolus SA: R*	Lesser Sand Plover		**	
CHARADRIIDAE	*Charadrius ruficapillus*	Red-capped Plover	2	***	**
CHARADRIIDAE	*Charadrius veredus*	Oriental Plover		*	
CHARADRIIDAE	*Elseyornis melanops*	Black-fronted Dotterel		**	*
CHARADRIIDAE	*Erythrogonys cinctus*	Red-kneed Dotterel		**	*
CHARADRIIDAE	*Pluvialis fulva SA: R*	Pacific Golden Plover		**	
CHARADRIIDAE	*Pluvialis squatarola*	Grey Plover		***	*
CHARADRIIDAE	*Thinornis rubricollis SA: V*	Hooded Plover	3	***	**
CHARADRIIDAE	*Vanellus miles*	Masked Lapwing		***	**
CHARADRIIDAE	*Vanellus tricolor*	Banded Lapwing		***	**
HAEMATOPODIDAE	*Haematopus longirostris SA: R*	Australian Pied Oystercatcher		***	**
LARIDAE	*Chlidonias hybrida*	Whiskered Tern		**	*
PEDIONOMIDAE	*Pedionomus torquatus AUS: VU SA: E*	Plains-wanderer		*	
ROSTRATULIDAE	*Rostratula australis SA: V*	Australian Painted Snipe		*	
SCOLOPACIDAE	*Actitis hypoleucos SA: R*	Common Sandpiper	2	***	*
SCOLOPACIDAE	*Arenaria interpres SA: R*	Ruddy Turnstone		***	*
SCOLOPACIDAE	*Calidris acuminata*	Sharp-tailed Sandpiper		***	*
SCOLOPACIDAE	*Calidris alba SA: R*	Sanderling		**	
SCOLOPACIDAE	*Calidris canutus*	Red Knot		**	
SCOLOPACIDAE	*Calidris ferruginea*	Curlew Sandpiper		***	*
SCOLOPACIDAE	*Calidris melanotos SA: R*	Pectoral Sandpiper		*	
SCOLOPACIDAE	*Calidris ruficollis*	Red-necked Stint		***	*
SCOLOPACIDAE	*Calidris subminuta SA: R*	Long-toed Stint		*	
SCOLOPACIDAE	*Calidris tenuirostris SA: R*	Great Knot		**	*
SCOLOPACIDAE	*Gallinago stenura*	Pintail Snipe		*	
SCOLOPACIDAE	*Limosa lapponica SA: R*	Bar-tailed Godwit		**	*
SCOLOPACIDAE	*Limosa limosa SA: R*	Black-tailed Godwit		*	
SCOLOPACIDAE	*Numenius madagascariensis SA: V*	Eastern Curlew		**	
SCOLOPACIDAE	*Numenius phaeopus SA: R*	Whimbrel		*	
SCOLOPACIDAE	*Tringa brevipes SA: R*	Grey-tailed Tattler		***	
SCOLOPACIDAE	*Tringa glareola SA: R*	Wood Sandpiper		**	
SCOLOPACIDAE	*Tringa nebularia*	Common Greenshank	1	***	**
SCOLOPACIDAE	*Tringa stagnatilis*	Marsh Sandpiper		**	
SCOLOPACIDAE	*Xenus cinereus SA: R*	Terek Sandpiper		*	

Family Name	Species Name and Conservation Status	Common Name	Survey	Opportune	Other
TURNICIDAE	*Turnix varius SA: R*	Painted Button-quail	12	**	*
TURNICIDAE	*Turnix velox*	Little Button-quail	7	**	*
STERCORARIIDAE	*Stercorarius longicaudus*	Long-tailed Jaeger		*	
STERCORARIIDAE	*Stercorarius parasiticus*	Arctic Jaeger		*	
LARIDAE	*Chlidonias hybrida*	Whiskered Tern		**	*
LARIDAE	*Chroicocephalus novaehollandiae*	Silver Gull	10	****	**
LARIDAE	*Gelochelidon nilotica*	Gull-billed Tern		*	
LARIDAE	*Hydroprogne caspia*	Caspian Tern	4	***	**
LARIDAE	*Larus dominicanus SA: R*	Kelp Gull		*	
LARIDAE	*Larus pacificus*	Pacific Gull	6	***	**
LARIDAE	*Leucophaeus pipixcan*	Franklin's Gull		*	
LARIDAE	*Onychoprion fuscata*	Sooty Tern		*	
LARIDAE	*Sterna paradisaea*	Arctic Tern		*	
LARIDAE	*Sternula nereis SA: E*	Fairy Tern		***	**
LARIDAE	*Thalasseus bergii*	Crested Tern	6	***	**
COLUMBIDAE	**Columba livia*	Rock Dove		***	*
COLUMBIDAE	**Stigmatopelia chinensis*	Spotted Dove	4	***	
COLUMBIDAE	*Geopelia cuneata*	Diamond Dove		*	
COLUMBIDAE	*Geopelia placida*	Peaceful Dove	8	**	*
COLUMBIDAE	*Ocyphaps lophotes*	Crested Pigeon	84	***	**
COLUMBIDAE	*Phaps chalcoptera*	Common Bronzewing	134	***	**
COLUMBIDAE	*Phaps elegans*	Brush Bronzewing	47	***	**
CACATUIDAE	*Cacatua sanguinea*	Little Corella		*	
CACATUIDAE	*Calyptorhynchus funereus SA: V*	Yellow-tailed Black-Cockatoo	1	****	
CACATUIDAE	*Eolophus roseicapillus*	Galah	795	****	***
CACATUIDAE	*Lophocroa leadbeateri SA: R*	Major Mitchell's Cockatoo	3	**	*
CACATUIDAE	*Nymphicus hollandicus*	Cockatiel	6	**	
CACATUIDAE	*Eolophus roseicapillus*	Galah	265	***	**
PSITTACIDAE	*Barnardius zonarius*	Australian Ringneck	422	***	**
PSITTACIDAE	*Glossopsitta concinna*	Musk Lorikeet	14	**	*
PSITTACIDAE	*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	32	***	**
PSITTACIDAE	*Melopsittacus undulatus*	Budgerigar	12	**	*
PSITTACIDAE	*Neophema chrysostoma SA: V*	Blue-winged Parrot		*	*
PSITTACIDAE	*Neophema elegans SA: R*	Elegant Parrot	17	**	*
PSITTACIDAE	*Neophema petrophila SA: R*	Rock Parrot	10	**	**
PSITTACIDAE	*Neophema splendida SA: R*	Scarlet-chested Parrot		*	*
PSITTACIDAE	*Northiella haematogaster*	Blue Bonnet			*
PSITTACIDAE	*Psephotus haematonotus*	Red-rumped Parrot		*	
PSITTACIDAE	*Psephotus varius*	Mulga Parrot	65	***	**
PSITTACIDAE	*Trichoglossus haematodus*	Rainbow Lorikeet	16	**	
CUCULIDAE	*Cacomantis flabelliformis*	Fan-tailed Cuckoo	4	**	**
CUCULIDAE	*Cacomantis pallidus*	Pallid Cuckoo	4	***	**
CUCULIDAE	*Chalcites basalis*	Horsfield's Bronze-cuckoo	62	***	**
CUCULIDAE	*Chalcites lucidus*	Shining Bronze-Cuckoo	16	**	*
CUCULIDAE	*Chalcites osculans*	Black-eared Cuckoo	2	**	**
CUCULIDAE	*Scythrops novaehollandiae*	Channel-billed Cuckoo		*	
ACCIPITRIDAE	*Accipiter cirrocephalus*	Collared Sparrowhawk	17	**	*
ACCIPITRIDAE	*Accipiter fasciatus*	Brown Goshawk	9	**	*
ACCIPITRIDAE	*Aquila audax*	Wedge-tailed Eagle	19	***	**
ACCIPITRIDAE	*Circus approximans*	Swamp Harrier	6	**	*
ACCIPITRIDAE	*Circus assimilis*	Spotted Harrier	3	**	*
ACCIPITRIDAE	*Elanus axillaris*	Black-shouldered Kite	1	**	*
ACCIPITRIDAE	*Elanus scriptus SA: R*	Letter-winged Kite		*	
ACCIPITRIDAE	*Haliaeetus leucogaster SA: E*	White-bellied Sea-Eagle	3	**	**
ACCIPITRIDAE	*Haliastur sphenurus*	Whistling Kite		*	*
ACCIPITRIDAE	*Hieraaetus morphnoides*	Little Eagle	4	**	*
ACCIPITRIDAE	*Lophoictinia isura SA: E*	Square-tailed Kite	1	*	
ACCIPITRIDAE	*Milvus migrans*	Black Kite		*	
ACCIPITRIDAE	*Pandion cristatus SA: E*	Eastern Osprey		***	**
STRIGIDAE	*Ninox novaeseelandiae*	Southern Boobook	2	**	**
TYTONIDAE	*Tyto javanica*	Eastern Barn Owl	12	**	
PODARGIDAE	*Podargus strigoides*	Tawny Frogmouth	4	**	**
EUROSTOPODIDAE	*Eurostopodus argus*	Spotted Nightjar	6	**	**
AEGOTHELIDAE	*Aegotheles cristatus*	Australian Owlet-nightjar	7	**	**
APODIDAE	*Apus pacificus*	Fork-tailed Swift		**	
APODIDAE	*Hirundapus caudacutus*	White-throated Needletail		*	
HALCYONIDAE	*Todiramphus pyrrhopygius*	Red-backed Kingfisher	3	**	*
HALCYONIDAE	*Todiramphus sanctus*	Sacred Kingfisher	11	**	*
HALCYONIDAE	*Dacelo novaeguineae*	Laughing Kookaburra	28	**	
HALCYONIDAE	*Todiramphus pyrrhopygius*	Red-backed Kingfisher	3	**	*
HALCYONIDAE	*Todiramphus sanctus*	Sacred Kingfisher	11	**	*
MEROPIDAE	*Merops ornatus*	Rainbow Bee-eater	31	**	*

Family Name	Species Name and Conservation Status	Common Name	Survey	Opportune	Other
CLIMACTERIDAE	*Climacteris affinis SA: R*	White-browed Treecreeper	1		
CLIMACTERIDAE	*Climacteris rufus*	Rufous Treecreeper	32	**	*
MALURIDAE	*Amytornis striatus SA: R*	Striated Grasswren	5	*	*
MALURIDAE	*Amytornis textilis myall AUS: VU*	Thick-billed Grasswren	4	*	
MALURIDAE	*Malurus cyaneus*	Superb Fairy-wren	97	***	**
MALURIDAE	*Malurus lamberti*	Variegated Fairy-wren	40	**	*
MALURIDAE	*Malurus leucopterus*	White-winged Fairy-wren	9	**	*
MALURIDAE	*Malurus pulcherrimus*	Blue-breasted Fairy-wren	117	***	**
MALURIDAE	*Malurus splendens*	Splendid Fairy-wren	23	**	*
MALURIDAE	*Stipiturus malachurus parimeda AUS: VU SA: E*	Southern Emu-wren (EP ssp)	4	***	*
ACANTHIZIDAE	*Acanthiza apicalis*	Inland Thornbill	346	***	**
ACANTHIZIDAE	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill	100	***	**
ACANTHIZIDAE	*Acanthiza iredalei*	Slender-billed Thornbill	2	*	
ACANTHIZIDAE	*Acanthiza uropygialis*	Chestnut-rumped Thornbill	20	**	*
ACANTHIZIDAE	*Aphelocephala leucopsis*	Southern Whiteface	51	***	**
ACANTHIZIDAE	*Calamanthus campestris*	Rufous Fieldwren	10	**	
ACANTHIZIDAE	*Gerygone fusca SA: R*	Western Gerygone	23	**	
ACANTHIZIDAE	*Hylacola cauta SA: R*	Shy Hylacola	204	***	***
ACANTHIZIDAE	*Pyrrholaemus brunneus*	Redthroat	2	*	*
ACANTHIZIDAE	*Sericornis frontalis*	White-browed Scrubwren	150	***	**
ACANTHIZIDAE	*Smicrornis brevirostris*	Weebill	444	***	**
PARDALOTIDAE	*Pardalotus punctatus*	Spotted Pardalote	187	***	**
PARDALOTIDAE	*Pardalotus striatus*	Striated Pardalote	208	***	**
MELIPHAGIDAE	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater	212	***	**
MELIPHAGIDAE	*Anthochaera carunculata*	Red Wattlebird	248	***	**
MELIPHAGIDAE	*Certhionyx variegatus*	Pied Honeyeater	1	**	*
MELIPHAGIDAE	*Epthianura albifrons*	White-fronted Chat	28	***	**
MELIPHAGIDAE	*Epthianura aurifrons*	Orange Chat	4	*	
MELIPHAGIDAE	*Epthianura tricolor*	Crimson Chat	10	**	*
MELIPHAGIDAE	*Glyciphila melanops*	Tawny-crowned Honeyeater	114	***	**
MELIPHAGIDAE	*Lichenostomus cratitius*	Purple-gaped Honeyeater	244	***	***
MELIPHAGIDAE	*Lichenostomus leucotis*	White-eared Honeyeater	210	***	**
MELIPHAGIDAE	*Lichenostomus ornatus*	Yellow-plumed Honeyeater	282	***	**
MELIPHAGIDAE	*Lichenostomus virescens*	Singing Honeyeater	702	****	**
MELIPHAGIDAE	*Manorina flavigula*	Yellow-throated Miner	111	***	**
MELIPHAGIDAE	*Melithreptus brevirostris*	Brown-headed Honeyeater	80	***	**
MELIPHAGIDAE	*Phylidonyris novaehollandiae*	New Holland Honeyeater	65	***	**
MELIPHAGIDAE	*Purnella albifrons*	White-fronted Honeyeater	450	***	**
MELIPHAGIDAE	*Sugomel niger*	Black Honeyeater		**	
POMATOSTOMIDAE	*Pomatostomus superciliosus*	White-browed Babbler	168	***	**
PSOPHODIDAE	*Cinclosoma castanotum*	Chestnut Quail-thrush	42	**	**
PSOPHODIDAE	*Psophodes nigrogularis*	Western Whipbird	3	**	*
NEOSITTIDAE	*Daphoenositta chrysoptera*	Varied Sittella	17	**	**
CAMPEPHAGIDAE	*Coracina maxima*	Ground Cuckoo-shrike		***	
CAMPEPHAGIDAE	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	80	***	**
CAMPEPHAGIDAE	*Lalage sueurii*	White-winged Triller	22	***	**
PACHYCEPHALIDAE	*Colluricincla harmonica*	Grey Shrike-thrush	620	****	***
PACHYCEPHALIDAE	*Oreoica gutturalis*	Crested Bellbird	78	***	**
PACHYCEPHALIDAE	*Pachycephala inornata SA: R*	Gilbert's Whistler	16	**	**
PACHYCEPHALIDAE	*Pachycephala pectoralis*	Golden Whistler	130	***	**
PACHYCEPHALIDAE	*Pachycephala rufiventris*	Rufous Whistler	76	***	**
PACHYCEPHALIDAE	*Pachycephala rufogularis AUS: VU SA: R*	Red-lored Whistler		*	
ARTAMIDAE	*Artamus cinereus*	Black-faced Woodswallow	3	**	
ARTAMIDAE	*Artamus cyanopterus*	Dusky Woodswallow	39	***	**
ARTAMIDAE	*Artamus leucorynchus*	White-breasted Woodswallow		*	
ARTAMIDAE	*Artamus minor*	Little Woodswallow		*	
ARTAMIDAE	*Artamus personatus*	Masked Woodswallow	24	**	*
ARTAMIDAE	*Artamus superciliosus*	White-browed Woodswallow	14	**	*
ARTAMIDAE	*Cracticus tibicen*	Australian Magpie	188	****	***
ARTAMIDAE	*Cracticus torquatus*	Grey Butcherbird	219	***	**
ARTAMIDAE	*Strepera versicolor*	Grey Currawong	221	***	**
MONARCHIDAE	*Myiagra inquieta SA: R*	Restless Flycatcher	17	**	*
RHIPIDURIDAE	*Rhipidura albiscapa*	Grey Fantail	81	***	**
RHIPIDURIDAE	*Rhipidura leucophrys*	Willie Wagtail	105	***	**
CORVIDAE	*Corvus bennetti*	Little Crow	9	**	*
CORVIDAE	*Corvus coronoides*	Australian Raven	66	***	**
CORVIDAE	*Corvus mellori*	Little Raven	134	***	**
MONARCHIDAE	*Grallina cyanoleuca*	Magpie-lark	9	***	*
MONARCHIDAE	*Myiagra cyanoleuca SA: E*	Satin Flycatcher		*	
MONARCHIDAE	*Myiagra inquieta SA: R*	Restless Flycatcher	17	**	*
CORCORACIDAE	*Corcorax melanorhamphos SA: R*	White-winged Chough	14	***	**
PETROICIDAE	*Drymodes brunneopygia*	Southern Scrub-robin	102	***	**

Family Name	Species Name and Conservation Status	Common Name	Survey	Opportune	Other
PETROICIDAE	*Eopsaltria griseogularis*	Western Yellow Robin	81	***	**
PETROICIDAE	*Melanodryas cucullata*	Hooded Robin	1	*	*
PETROICIDAE	*Microeca fascinans*	Jacky Winter	88	***	**
PETROICIDAE	*Petroica boodang SA: V*	Scarlet Robin	2	**	*
PETROICIDAE	*Petroica goodenovii*	Red-capped Robin	60	***	**
ALAUDIDAE	**Alauda arvensis*	Eurasian Skylark	7	**	
ALAUDIDAE	*Mirafra javanica*	Horsfield's Bushlark		**	*
ACROCEPHALIDAE	*Acrocephalus australis*	Australian Reed-Warbler		*	
MEGALURIDAE	*Cincloramphus cruralis*	Brown Songlark	22	***	*
MEGALURIDAE	*Cincloramphus mathewsi*	Rufous Songlark	6	**	*
MEGALURIDAE	*Megalurus gramineus*	Little Grassbird		**	*
TIMALIIDAE	*Zosterops lateralis*	Silvereye	252	***	**
HIRUNDINIDAE	*Cheramoeca leucosterna*	White-backed Swallow	9	**	*
HIRUNDINIDAE	*Hirundo neoxena*	Welcome Swallow	204	****	**
HIRUNDINIDAE	*Petrochelidon ariel*	Fairy Martin	4	**	*
HIRUNDINIDAE	*Petrochelidon nigricans*	Tree Martin	76	***	**
TURDIDAE	**Turdus merula*	Common Blackbird	13	***	*
STURNIDAE	**Sturnus vulgaris*	Common Starling	60	***	**
NECTARINIIDAE	*Dicaeum hirundinaceum*	Mistletoebird	7	**	*
ESTRILDIDAE	*Stagonopleura guttata SA: V*	Diamond Firetail	48	***	**
ESTRILDIDAE	*Taeniopygia guttata*	Zebra Finch		*	*
PASSERIDAE	**Passer domesticus*	House Sparrow	1	***	*
MOTACILLIDAE	*Anthus novaeseelandiae*	Australasian Pipit	33	***	**
	Number of species	285	150	283	180
	Aus: Endangered	1			
	Vulnerable	6			
	SA: Endangered	8			
	Vulnerable	16			
	Rare	47			
	*Non-natives	9			

Appendix 18. Reptile species records from all electronically data-based sources within the Eyre Peninsula Block of the Eyre and Yorke Biogeographic Region (IBRA V6.1). Species are listed in taxonomic Family order.

SPECIES	EP Status (Gillam and Urban 2009)	OPPORTUNE DATABASE	FROG ATLAS (CENSUS)	PAMS - PARK ASSET DATABASE	LIPSON COVE (GOLDER ASSOCIATES)	GAWLER	KULLIPARU CONS_ PARK (NCS)	LAKE NEWLAND CONSERVATION PARK	LINCOLN NATIONAL PARK	NORTH WESTERN EYRE PENINSULA	PUREBA	RED-LORED WHISTLER SURVEYS -EP	SANDHILL DUNNART SURVEYS - EASTERN EP	SHIRROCOE MANAGEMENT PLAN SURVEY	SOUTHERN EYRE PENINSULA	VENUS BAY C P AND BETTONG MONITORING	YELLABINNA	EYRE PENINSULA FAUNA	SA HERPETOLOGY GROUP - GENERAL	SA MUSEUM NON-SPECIMEN RECORDS	SA MUSEUM VERTEBRATE DATA
AMPHIBIA - FROGS																					
Tree Frogs																					
Crinia signifera	VU	1	71															1			25
Ground Frogs																					
Limnodynastes tasmaniensis	RA	3	33															6			2
Neobatrachus centralis	RA		2													1					5
Neobatrachus pictus	LC	9	20				2											21			45
REPTILIA - LIZARDS																					
Agamida - Dragons																					
Amphibolurus norrisi	RA	3													1	1		5			15
Ctenophorus chapmani	LC						3									50		47	4		28
Ctenophorus cristatus	LC	2				1												56		2	28
Ctenophorus fionni	LC	13					1			1					5	23		58			225
Ctenophorus fordi	LC	2					7						4					125			92
Ctenophorus isolepis	RA																				3
Ctenophorus pictus	LC	14					1	4								34		75	7		50
Diporiphora linga	RA																	3			1
Moloch horridus	LC					1								1				6		1	12
Pogona barbata	LC	11													2	2	1	11		2	23
Pogona minor	LC	4				3	1											24	4		24
Pogona vitticeps	LC	2																21		1	10
Tympanocryptis lineata	LC	5			1													10		1	23
Carphodactylidae - Knob-tailed Geckoes																					
Nephrurus milii	LC	3					1			1					2	23		85	1		55
Nephrurus stellatus	LC	1					15						2	1				29		1	64
Diplodactylidae - Ground Geckoes																					
Diplodactylus calcicolus	na	1					1									4		36			57
Diplodactylus furcosus	na																	5			21
Diplodactylus wiru	na																	3			2
Lucasium bungabinna	LC																	8			6
Lucasium damaeum	LC																	17			25
Rhynchoedura ornata	RA																				1
Strophurus assimilis	RA																	3		1	17
Strophurus elderi	RA																				3
Strophurus intermedius	LC	2																2			9
Gekkonidae - Climbing Geckoes																					
Christinus marmoratus	LC	16													24	3		87			97
Gehyra lazelli	LC													2				54	2		52
Gehyra variegata	LC	1				1												6			2
Heteronotia binoei	LC	13			1									3				21			43
Pygopidae - Legless Lizards																					
Aprasia inaurita	LC	2														3		14		1	31

SPECIES	EP Status (Gillam and Urban 2009)	OPPORTUNE DATABASE	FROG ATLAS (CENSUS)	PAMS - PARK ASSET DATABASE	LIPSON COVE (GOLDER ASSOCIATES)	GAWLER	KULLIPARU CONS_ PARK (NCS)	LAKE NEWLAND CONSERVATION PARK	LINCOLN NATIONAL PARK	NORTH WESTERN EYRE PENINSULA	PUREBA	RED-LORED WHISTLER SURVEYS -EP	SANDHILL DUNNART SURVEYS - EASTERN EP	SHIRROCOE MANAGEMENT PLAN SURVEY	SOUTHERN EYRE PENINSULA	VENUS BAY C P AND BETTONG MONITORING	YELLABINNA	EYRE PENINSULA FAUNA	SA HERPETOLOGY GROUP - GENERAL	SA MUSEUM NON-SPECIMEN RECORDS	SA MUSEUM VERTEBRATE DATA
Aprasia striolata	LC			1				1								1		3			6
Delma australis	LC	12											2		3			78		1	42
Delma butleri	LC	2														2		24			24
Delma petersoni	LC	1					1											14			19
Lialis burtonis	LC	4					1						1			2		10			27
Pygopus lepidopodus	LC	4		1												10		23	1	4	45
Scincidae - Skinks																					
Bassiana trilineata SA:R	RA	3													3			1			12
Cryptoblepharus australis	LC													2				8			17
Cryptoblepharus pulcher	LC	4					2									3		44	1		31
Ctenotus atlas	LC												2					71			38
Ctenotus euclae	LC						1									35		83	7		14
Ctenotus leae	RA																				7
Ctenotus orientalis	LC	2													4			64			17
Ctenotus regius	RA																	6			3
Ctenotus robustus	RA	3																8			11
Ctenotus schomburgkii	LC						3							1				126			35
Cyclodomorphus melanops	RA	3																11			18
Egernia richardi	RA										1							1			5
Egernia stokesii	RA																				2
Egernia striolata	RA	1																			7
Eremiascincus richardsonii	RA																	2			1
Hemiergis initialis	LC																	15		1	8
Hemiergis millewae	LC	4					2											19			50
Hemiergis peronii	LC	52					1								58	9		218			186
Lampropholis delicata	LC														1			40		1	20
Lerista arenicola SA: R	RA	3							1									1			2
Lerista bougainvillii	LC	4													3			37			19
Lerista distinguenda SA: R	RA						1											11			13
Lerista dorsalis	LC	10			1		3								25	17		55	2		62
Lerista edwardsae	LC	8					1						2					103	5		51
Lerista taeniata	RA																	4			3
Lerista terdigitata	LC	2					1											28			28
Lerista timida	RA																	1			
Liopholis inornata	LC						1							1				18			19
Liopholis multiscutata	RA														8	6		22			10
Menetia greyii	LC	11					2								8	23		170			91
Morethia adelaidensis	RA	1					1											29			21
Morethia boulengeri	RA	1			3	1								1				3			9
Morethia butleri	RA																	12			4
Morethia obscura	LC	38						2							20	30		242	4	2	80
Pseudemoia baudini SA:	RA																	2			1

SPECIES	EP Status (Gillam and Urban 2009)	OPPORTUNE DATABASE	FROG ATLAS (CENSUS)	PAMS - PARK ASSET DATABASE	LIPSON COVE (GOLDER ASSOCIATES)	GAWLER	KULLIPARU CONS_ PARK (NCS)	LAKE NEWLAND CONSERVATION PARK	LINCOLN NATIONAL PARK	NORTH WESTERN EYRE PENINSULA	PUREBA	RED-LORED WHISTLER SURVEYS -EP	SANDHILL DUNNART SURVEYS - EASTERN EP	SHIRROCOE MANAGEMENT PLAN SURVEY	SOUTHERN EYRE PENINSULA	VENUS BAY C P AND BETTONG MONITORING	YELLABINNA	EYRE PENINSULA FAUNA	SA HERPETOLOGY GROUP - GENERAL	SA MUSEUM NON-SPECIMEN RECORDS	SA MUSEUM VERTEBRATE DATA
R																					
Tiliqua occipitalis	LC	10			2	2								1	1	1		30		1	13
Tiliqua rugosa	LC	33			2			3							10	21		381	5		31
Tiliqua scincoides	RA	3																4			2
Varanidae – Goannas																					
Varanus eremius	RA																	1			
Varanus gouldii	RA	3										1						7			2
Varanus rosenbergi SA: V	VU	5													1					2	1
REPTILIA - SNAKES																					
Typhlopidiae - Blind Snakes																					
Ramphotyphlops bicolor	RA						1											6		1	16
Ramphotyphlops bituberculatus	RA						1									1		5		1	20
Biodae - Pythons																					
Morelia spilota SA: R	VU	2																		2	2
Elapidae - Venomous Snakes																					
Acanthophis antarcticus	RA	11		1											1					3	24
Demansia reticulata	LC	1				1												8		4	15
Drysdalia mastersii	RA	3													3	8		9			27
Echiopsis curta SA:R	RA																	1			16
Notechis scutatus	RA	3													2			2		1	19
Parasuta nigriceps	RA	1														1				1	4
Parasuta spectabilis	RA	2														2		2			17
Pseudechis australis	RA	4												1		3		5		1	17
Pseudonaja affinis	RA																	14	5	2	12
Pseudonaja aspidorhyncha	na															4					6
Pseudonaja inframacula	LC	10		1											8	1		18		2	92
Pseudonaja mengdeni	na																				1
Simoselaps bertholdi	RA																	8			26
TOTALS	**96**	**56**	**4**	**4**	**6**	**7**	**25**	**4**	**1**	**2**	**1**	**1**	**6**	**10**	**22**	**30**	**1**	**83**	**13**	**25**	**94**

Regional ratings totals (Gillam and Urban 2009)

VU = Vulnerable	**2**
RA = Rare	**29**
LC = Least Concern	**46**
na = not assessed	**3**