Department for Environment and Heritage

A Biological Survey of the Yalata Indigenous Protected Area South Australia

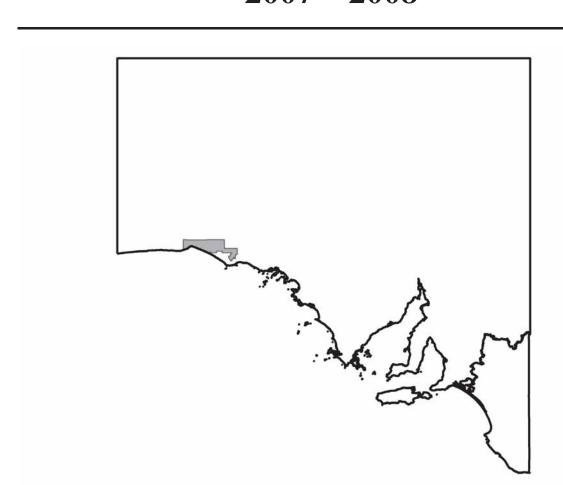








A BIOLOGICAL SURVEY OF THE YALATA INDIGENOUS PROTECTED AREA, SOUTH AUSTRALIA 2007 – 2008





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Information, Science and Technology Directorate
Department for Environment and Heritage, South Australia
2009

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The views and opinions expressed in this report are those of the author and do not necessarily represent the views or policies of the Alinytjara Wilurara Natural Resources Management Board or the Government of South Australia.

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Cover Photograph:

Eucalyptus oleosa ssp. ampliata (Red Mallee) Low Woodland near Nanwoora Well.

Photo: P. Brissenden

EXECUTIVE SUMMARY

A biological survey was conducted in the Yalata Indigenous Protected Area (IPA) between May 2007 and April 2008 with funding provided by the Alinytjara Wilurara Natural Resource Management (AWNRM) Board from the Natural Heritage Trust. The Yalata IPA lies in the south east of the Nullarbor Bioregion and incorporates the eastern portion of the Nullarbor Plain, extensive coastal dunes and sea cliffs, an undulating calcrete plain and arguably the largest relatively undisturbed semi-arid woodland remaining in South Australia.

The main aim of this survey was to sample the major habitats and associated flora and fauna for the AWNRM Board to assist with the management of the area for biodiversity. A total of 32 sites were sampled for vertebrate fauna and 55 for vascular plants. Data from six other surveys conducted in the region were included in a floristic vegetation analysis of site data for the IPA. This resulted in the identification and description of 25 floristic vegetation groups belonging to nine broader vegetation types – Western Myall Low Woodland, Mallee Communities, *Melaleuca* Shrublands, Low Shrublands (mainly chenopods), Clearings in the Mallee, Coastal Shrublands, Saltmarsh Communities, Grasslands and Herblands. Included as one of the Grassland groups is *Lomandra effusa* Open Tussock Grassland, a community rated Critically Endangered Nationally. A vegetation map of the IPA was produced to represent these groups.

A total of 205 plant taxa were recorded during the survey, comprising 179 natives and 26 exotics. Exotic taxa accounted for only 12.7% of all records. Ten plant species of conservation significance were recorded, of which four are considered Rare at State level – Knotted Poa, Spiny Templetonia, Small-leaf Emubush and *Eremophila* sp. Praecox – as well as 33 (26 native and seven exotic) species not previously known to occur in the Yalata IPA.

Twenty-two mammal species were recorded during the survey, of which 18 are native and four exotic. Small and medium sized native terrestrial mammal captures were very low, with no species captured on more than five occasions. Bat records were higher, with nine species being detected via the use of mist nets, harp traps and 'Anabat' call recording equipment. Four new species were recorded for the IPA, including three bats only detected by calls - Inland Broad-nosed Bat, Inland Forest Bat and Inland Freetail-bat.

The survey recorded 111 bird species including only two exotic species. Birds of eucalypt woodlands are particularly well represented. The area supports significant populations of Major Mitchell's Cockatoo, Naretha Bluebonnet, Rufous Treecreeper, Shy Heathwren, Chestnut Quail-thrush, Restless Flycatcher and possibly the Square-tailed Kite. Fifteen species of conservation significance were recorded, including two rated Vulnerable nationally – Slender-billed Thornbill (western subspecies) and Shy Albatross.

Of the 50 species of reptiles known to occur in the IPA all but four were recorded during the Yalata IPA Survey. Fifteen of these had not previously been recorded in the IPA. As all of these are known from the general area their hitherto absence from the known reptile fauna highlights the previous lack of systematic survey within the IPA. Three species of conservation significance were recorded – Heath Goanna is rated Vulnerable and both McKenzie's Dragon and Carpet Python are rated Rare in South Australia.

The total number of records contributed to the Department for Environment and Heritage's (DEH) Survey database as a result of this survey were -1390 plants, 471 mammals, 1102 birds and 619 reptiles. A further 597 records were collected away from sites on the survey and contributed to DEH's Opportunistic Sightings database, comprising 100 plants, 86 mammals, 359 birds and 72 reptiles.

The major conservation management issues arising from the survey have been identified as:-

- Control of African Boxthorn, Ward's Weed and Sea Spurge.
- Monitoring of the grazing impact of Rabbits.
- Control of Foxes and Feral Cats to help conserve native fauna.
- Sustainable management of traditional food sources.
- Management of 4WD vehicles on beaches.

In addition, a number of flora and fauna species and one plant community requiring further study and/or targeted searching have been identified, including eight plant species whose presence in the IPA requires confirmation, coastal waterbirds and seabirds, Fairy-wrens, Carpet Python, Heath Goanna and *Lomandra effusa* Open Tussock Grassland.



Figure 1. Eucalyptus calcareana (Nundroo Mallee), E. gracilis (Yorrell), E. oleosa ssp. ampliata (Red Mallee) Low Woodland on Coombra Track (Photo: N. Neagle).



Figure 2. Sea cliffs at the Head of the Bight (Photo: P. Brissenden).

CONTENTS

EXECUTIVE SUMMARY	i
CONTENTS	iii
FIGURES	v
TABLES	ix
APPENDICES	X
ACKNOWLEDGEMENTS	xi
INTRODUCTION	1
Background and Aims	
PHYSICAL ENVIRONMENT	2
IBRA Bioregions, Subregions and Environmental Associations. Pastoralism Climate and Rainfall	3
SURVEY METHODS	5
The Yalata IPA Biological Survey Site Selection and Nomenclature Sampling Additional Activities Data Analysis	5 5
RESULTS	9
VEGETATION	9
Physical Attributes of Sites Vegetation Structure	11 12 13 14 16 21 22 29 29 30 31 32
Species Richness Floristic Vegetation Communities Floristic Vegetation Community Descriptions MAMMALS	36
Introduction	85 85

Yalata I.P.A. Biological Survey Species Richness 89 Significant Species ________98 Coastal Birds 103 Collection of Specimens 103 Discussion 104 Summary of Reptile Records 105 Species of Conservation Significance 109

FIGURES

Figure 1. Eucalyptus calcareana (Nundroo Mallee), E. gracilis (Yorrell), E. oleosa ssp. ampliata (Red	
Mallee) Low Woodland on Coombra Track (Photo: N. Neagle).	
Figure 2. Sea cliffs at the Head of the Bight (Photo: P. Brissenden).	11
Figure 3. Atriplex vesicaria (Bladder Saltbush), Lawrencia squamata (Thorny Lawrencia) Low Open Shrubland on the Nullarbor Plain (Photo: N. Neagle)	w.:::
· · · · · · · · · · · · · · · · · · ·	
Figure 4. Dunes near Coombra Beach (Photo: N. Neagle)	XIII
Brissenden).	v.i.v.
Figure 6. Mallee and coast from the Coombra Track (Photo: N. Neagle).	
Figure 7. Environmental associations present in the Yalata IPA	
Figure 8. Mean monthly maximum and minimum temperatures and mean monthly rainfall for Nullarbor from	3
1986 to 2008.	4
Figure 9. Installing pitfall line at site NAN00701 (Photo: P. Brissenden).	
Figure 10. Survey biologists processing animals at night in work tent (Photo: P. Brissenden)	
Figure 11. A pitfall line showing the drift fence positioned across the top of one of the pitfall traps (Photo: N.	
Neagle)	6
Figure 12. General location of Yalata IPA Survey sites based on camp locations (COL = Colona; COO =	
Coombra Track; HOB = Head of Bight; NAN = Nanwoora Well; YAL = Yalata (vegetation	
only sites))	7
Figure 13. Harp trap set up in grassland beside artificial waterhole (i.e. water poured on nylon sheet) (Photo: P. Brissenden).	
Figure 14. An Anabat kit with microphone in plastic tube for recording bat calls (Photo: P. Brissenden)	
Figure 15. DEH Senior Wildlife Ranger, Dave Armstrong, showing a Western Bluetongue to children from	
the Yalata School (Photo: N. Neagle).	8
Figure 16. A star dropper with photopoint identification disc used to mark a site (Photo: N. Neagle)	
Figure 17. Yalata IPA Survey team members being filmed checking traps for the ABC television show	
'Message Stick' (Photo: T. Gurney, AW NRM)	8
Figure 18. An Elliott trap placed in the shade of bush and marked with flagging tape (Photo: N. Neagle)	
Figure 19. Distribution of all 183 sites where vegetation has been sampled in the Yalata IPA.	
Figure 20. This Atriplex vesicaria (Bladder Saltbush), Tecticornia sp. (Samphire) Low Shrubland is an	
example of the most commonly recorded structural vegetation community recorded in the	
Yalata IPA (Photo: N. Neagle).	11
Figure 21. Maireana erioclada (Rosy Bluebush) is a low shrub species common throughout the Yalata IPA.	
(Photo: P. Lang).	13
Figure 22. The Yalata IPA is bisected by the Nullarbor and Eyre Peninsula Herbarium Regions	15
Figure 23. Eremophila parviflora (Small-leaf Emubush) occurs in mallee communities in the Yalata IPA.	
(Photo: P. Lang).	16
Figure 24. Pomaderris forrestiana has been recorded once by the Coombra Track in the Yalata IPA. (Photo:	
P. Lang)	17
Figure 25. Scaevola bursariifolia (Bursaria Fanflower) was recorded at seven sites in the Yalata IPA, mainly	
in mallee communities. (Photo: A. Robinson).	17
Figure 26. Acacia cyclops (Western Coast Wattle) has been recorded twice on the edge of the Yalata IPA	
near Coorabie. (Photo: R. Sandercock)	17
Figure 27. The first records of <i>Maireana appressa</i> (Pale-fruit Bluebush) in the Yalata IPA were recorded on	
this survey. (Photo: P. Lang)	18
Figure 28. Olearia magniflora (Splendid Daisy-bush) was recorded in the Eyre Peninsula Herbarium region.	
(Photo: A. Robinson).	18
Figure 29. Santalum spicatum (Sandalwood) has been recorded along the northern boundary of the former	
Colona station and on the road north to Ooldea. (Photo: P. Lang).	19
Figure 30. Brachyscome tatei (Nullarbor Daisy) has not been reported from within the Yalata IPA since the	
early 1960s. (Photo: P. Lang)	19
Figure 31. <i>Microlepidium pilosulum</i> (Hairy Shepherd's-purse) is likely to occur within the Yalata IPA as	•
there have been several nearby collections. (Photo: P. Lang)	20
Figure 32. <i>Darwinia salina</i> (Salt Darwinia) is found on the margin of salt lakes and clay pans, as well as on	20
gypsum sand dunes. (Photo: P. Lang).	20
Figure 33. The collection of <i>Acacia spinescens</i> (Spiny Wattle) from near Nanwoora Well on this survey is the	~~
first for the Nullarbor Herbarium Region. (Photo: A. Robinson).	22

Figure	34.	Atriplex suberecta (Lagoon Saltbush) was recorded from a single site on the former Colona station. (Photo: P. Lang).	22
Figure	35.	Calotis cymbacantha (Showy Burr-daisy) was recorded at a single site near the Head of the Bight.	
Figure	36.	(Photo: A. Robinson). Lepidium phlebopetalum (Veined Peppercress) was recorded at eight sites on this survey. (Photo: A. Robinson).	23
Figure	37.	Olearia calcarea (Crinkle-leaf Daisy-bush) was recorded at one site on the Coombra track. (Photo: P. Lang)	
Figure	38.	Pycnosorus eremaeus (Golden Billy-buttons) was recorded at three sites on the former Colona station during this survey. (Photo: P. Canty).	
Figure	39	Senna artemisioides ssp. petiolaris was recorded three times on this survey. (Photo: DEH)	
		The nearest previous record of <i>Senna artemisioides</i> ssp. <i>quadrifolia</i> (Four-leaf Desert Senna) was from Watson Railway Siding. (Photo: A. Robinson)	
Figure	41.	Tecticornia indica ssp. leiostachya (Brown-head Samphire) was recorded during this survey as an overstorey dominant in a low open shrubland near the Head of the Bight. (Photo: J. Gillen)	
Figure	42.	Acacia papyrocarpa (Western Myall) Low Open Woodland over Cratystylis conocephala (Bluebush Daisy) on the former Colona station. (Photo: N. Neagle)	
Figure	43.	Eucalyptus gracilis (Yorrell), E. oleosa ssp. ampliata (Red Mallee) over Atriplex vesicaria	
Figure	44.	(Bladder Saltbush) beside the Coombra Track. (Photo: S. Kenny)	
Figure	45.	N. Neagle)	
Figure	46.	Rhodanthe floribunda (White Everlasting) north east of Nanwoora Well. (Photo: N. Neagle) Erymophyllum ramosum ssp. ramosum was recorded from a single site on the former Colona	
Figure	47.	station. (Photo: P. Lang). *Euphorbia paralias (Sea Spurge) is widespread along the Yalata coastline east of the Head of the Bight. (Photo: A. Robinson).	
Figure	48.	Acacia papyrocarpa +/- Myoporum platycarpum Very Low Woodland was one of the most diverse communities sampled in the Yalata IPA. (Photo: N. Neagle)	
Figure	49.	Atriplex vesicaria (Bladder Saltbush), Tecticornia sp. (Samphire) Low Shrubland averaged 21 taxa per site. (Photo: N. Neagle)	
Figure	50.	Nitraria billardierei Low Open Shrubland near the Head of the Bight. One of the least diverse communities recorded in the Yalata IPA. (Photo: N. Neagle).	
Figure	51.	Myoporum insulare +/- Nitraria billardierei Open Shrubland in coastal dunes near the Head of the Bight. Sand dunes tended to be the least diverse of all landforms in the Yalata IPA. (Photo: N. Neagle)	
Figure	52.	Acacia papyrocarpa Very Low Woodland at site VMSDT20101 at the eastern end of the former Colona station (Floristic Vegetation Community 1)	
Figure	53.	Acacia papyrocarpa, Myoporum platycarpum ssp. platycarpum Very Low Open Woodland at site VMSDT17501 north west of the Yalata Community (Floristic Vegetation Community 1)	
Figure	54.	Eucalyptus calcareana, E. oleosa ssp. ampliata Low Woodland at site VMSSK09601 near Nanwoora Well (Floristic Vegetation Community 2)	
Figure	55.	Eucalyptus gracilis, E. oleosa ssp. ampliata, E. calcareana Open Mallee at site COO00101 on the Coombra Track (Floristic Vegetation Community 2)	
Figure	56.	Eucalyptus oleosa ssp. ampliata Open Mallee over Melaleuca pauperiflora ssp. mutica at site VMSSK09201 near Tallowan Well north west of the Yalata Community (Floristic Vegetation	
Figure	57.	Community 3). Eucalyptus oleosa ssp., E. gracilis Open Mallee over Melaleuca pauperiflora ssp. mutica at site YAL01901 on the Dog Fence Track south of the Yalata Community (Floristic Vegetation Community 3).	
Figure	58.	Eucalyptus oleosa ssp. ampliata Open Mallee at site VMSSK10801 north of Colona woolshed (Floristic vegetation Community 4).	
Figure	59.	Eucalyptus oleosa ssp. ampliata Open Mallee at site VMSDT17101 north east of the Yalata Community (Floristic vegetation Community 4)	
Figure	60.	Eucalyptus gracilis, Eucalyptus yalatensis Open Mallee at site COO00301 on the Coombra Track (Floristic vegetation Community 5)	
Figure	61.	Eucalyptus gracilis, Eucalyptus calcareana, Melaleuca lanceolata Open Low Mallee at site YAL01401 on track to Granites (Floristic Vegetation Community 6).	
Figure	62.	Eucalyptus calcareana, Eucalyptus oleosa ssp. ampliata Very Open Mallee at site COO00501 on	→೨
		the Coombra Track (Floristic Vegetation Community 6). Melaleuca lanceolata Shrubland at site COY00202 near Coombra Beach (Floristic Vegetation	49
Ü		Community 7)	51
- 15u1C	υт.	Community 7)	51

Figure 65	. <i>Melaleuca pauperiflora</i> ssp. <i>mutica</i> Shrubland at site HOB00401 near the Head of the Bight (Floristic Vegetation Community 8).	53
Figure 66	. Cratystylis conocephala Open Shrubland at site VMSSK09001 north east of the Yalata	33
8	Community (Floristic Vegetation Community 9).	55
Figure 67	. Cratystylis conocephala Low Open Shrubland at site YAL00601 to the east of the extensive dunefield at the Head of the Bight (Floristic Vegetation Community 9)	55
Figure 68	. Atriplex vesicaria ssp., Tecticornia sp. Low Open Shrubland at site VMSDT20701 (Floristic Vegetation Community 10)	
Figure 69	. Tecticornia sp., Maireana oppositifolia, Atriplex vesicaria ssp. Low Shrubland at site COL00601 (Floristic Vegetation Community 10).	
Figure 70	. Atriplex vesicaria ssp. Low Open Shrubland at site VMSDT17801 north of Nanwoora Well (Floristic Vegetation Community 11).	
Figure 71	Atriplex vesicaria ssp. Low Shrubland at site YAL01701 in natural clearing in mallee south west of the Yalata Community (Floristic Vegetation Community 11)	
Figure 72	. Maireana sedifolia, Tecticornia sp. Low Open Shrubland over Atriplex vesicaria at site	50
	VMSDT20201 at the eastern end of the former Colona station (Floristic Vegetation Community 12).	60
Figure 73	Maireana sedifolia, Atriplex vesicaria, Tecticornia disarticulata Low Open Shrubland over at site YAL00101 on the Nullarbor Plain at the western end of the Yalata IPA (Floristic Vegetation	00
	Community 12).	60
Figure 74	. Lawrencia squamata, Atriplex vesicaria Low Shrubland at site VMSSK09701 near Nanwoora Well (Floristic Vegetation Community 13).	
Figure 75	. Lawrencia squamata Low Open Shrubland at site HOB00601 just to the east of the extensive	
	dunefield at the Head of the Bight (Floristic Vegetation Community 13).	62
Figure 76	. Geijera linearifolia, Pittosporum angustifolium Tall Open Shrubland at site YAL01601 in a	- 1
Ei 77	clearing in the mallee south of the Yalata Roadhouse (Floristic Vegetation Community 14)	64
Figure //	. Atriplex stipitata Low Shrubland over Maireana erioclada at site COO00201 in a natural clearing in the mallee on the Coombra Track (Floristic Vegetation Community 15)	66
Figure 78	Myoporum insulare, Nitraria billardierei Tall Open Shrubland at site COY00402 near the coast east of the Coombra Track (Floristic Vegetation Community 16)	
Figure 79	. Nitraria billardierei Open Shrubland at site HOB00701 near the Head of the Bight (Floristic Vegetation Community 17)	
Figure 80	Nitraria billardierei Tall Open Shrubland at site COY00203 near Coombra Beach (Floristic Vegetation Community 17)	
Figure 81	Leucophyta brownii, Maireana oppositifolia, Hemichroa diandra Low Shrubland at site	09
118010 01	COY00601 where the Red Gate Track reaches the beach (Floristic Vegetation Community 19)	72
Figure 82	. Spinifex hirsutus, *Euphorbia paralias Tussock Grassland at site COY00205 near Coombra Beach (Floristic Vegetation Community 20).	
Figure 83	. Tecticornia sp., Maireana oppositifolia Low Shrubland at site COY00103 on flats behind coastal	
	dunes near Coombra Beach (Floristic Vegetation Community 21).	75
Figure 84	. Tecticornia indica ssp. leiostachya, Maireana oppositifolia, Hemichroa diandra Low Open Shrubland at site YAL00501 west of Red Gate Tank (Floristic Vegetation Community 21)	75
Figure 85	. Frankenia sessilis, Sclerolaena brevifolia Low Shrubland at site COY00303 near where the	
Figure 86	Coombra Track meets the coastal dunes (Floristic Vegetation Community 22)	77
	22).	77
Figure 87	. Lomandra effusa Open Tussock Grassland at site VMSSK10301 in a large natural opening in the mallee near Chinalumba Well west of Colona Woolshed (Floristic Vegetation Community 23)	79
Figure 88	. Lomandra effusa Open Tussock Grassland at site VMSDT19601 on the road to Ooldea just north of Colona Woolshed (Floristic Vegetation Community 23).	79
Figure 89	. Austrostipa sp., Podolepis rugata Tussock Grassland at site YAL01501 in a natural clearing in the mallee south of the Yalata Roadhouse (Floristic Vegetation Community 24)	
Figure 90	. Austrostipa nitida, Austrostipa drummondii Tussock Grassland at site NAN00501 near the Old Eyre Highway north west of the Yalata Community (Floristic Vegetation Community 24)	
Figure 91	Trichanthodium skirrophorum Herbland at site COL00101 9km east of Colona homestead (Floristic Vegetation Community 25)	
Figure 92	. Zygophyllum ovatum Open Herbland at site VMSDT20001 at the eastern end of the former Colona	
Figure 02	station (Floristic Vegetation Community 25)	83
	survey (post-2007).	86
rigure 94	. Location of areas sampled (clusters of quadrats) in the Yalata IPA during this survey and their site code prefix.	86
Figure 95	. Mammal species richness within each cluster of sites from the Yalata IPA Survey	

Figure	96.	The first records of the Echidna (<i>Tachyglossus aculeatus</i>) in the Yalata IPA were collected during this survey (Photo: P. Canty)	80
Figure	97.	All four records of the Little Long-tailed Dunnart (<i>Sminthopsis dolichura</i>) recorded on this survey	09
1 15410	<i>,</i> , , ,	were from within mallee communities (Photo: A. Robinson).	90
Figure	98.	The Western Pygmy-possum (<i>Cercartetus concinnus</i>) was recorded at four locations during the survey (Photo: A. Robinson)	
Figure	99.	Only a single Mitchell's Hopping-mouse (<i>Notomys mitchellii</i>) was recorded during this survey (Photo: A. Robinson).	
Figure	100	. Dingoes (Canis lupus dingo) were recorded at eight sites during this survey (Photo: A. Robinson)	
Figure	101	. <i>Mormopterus</i> species 3 was one of possibly two <i>Mormopterus</i> bats recorded for the first time in the Yalata IPA during this survey (Photo: A. Robinson)	92
Figure	102	. Five individuals of the Lesser Long-eared Bat (<i>Nyctophilus geoffroyi</i>) were captured using a harp trap at opportune locations during the Yalata IPA Survey (Photo: P. Canty)	92
		. The Southern Forest Bat (<i>Vespadelus regulus</i>) was predominantly recorded in mallee communities during this survey (Photo: P. Canty).	93
_		. Feral Camels (<i>Camelus dromedarius</i>) are relatively common outside the dog fence within the Yalata IPA (Photo: P. Canty)	94
Ü		. The Western Barred Bandicoot (<i>Perameles bougainville</i>) is likely to have been present in the Yalata area as recently as the 1920s (Photo: A. Robinson).	95
		. The former range of the Greater Stick-nest Rat (<i>Leporillus conditor</i>) included what is now the Yalata IPA (Photo: A. Robinson).	
		. Location of Yalata IPA Survey and 1984 Nullarbor Survey (BS14) sites.	97
_		. The Singing Honeyeater <i>Lichenostomus virescens</i> was recorded at more sites than other species (Photo: Anon.).	98
		. Square-tailed Kite <i>Lophoictinia isura</i> observed near Red Gate Tank during this survey (Photo: P. Brissenden).	
		. The Australian Bustard Ardeotis australis was observed at four survey sites (Photo: L. Pedler)	99
Figure	111	. A flock of ten Sooty Oystercatchers <i>Haematopus fuliginosus</i> were observed on Coombra Beach during this survey (Photo: P. Canty).	100
Figure	112	The Restless Flycatcher <i>Myiagra inquieta</i> was recorded mainly in woodlands during this survey (Photo: L. Pedler)	
Figure	113	. The Grey Butcherbird <i>Cracticus torquatus</i> was recorded at all 12 Mallee Low Woodland sites (Photo: Anon.).	
Figure	114	. The Welcome Swallow <i>Hirundo neoxena</i> is a characteristic species of coastal low shrublands (Photo: P. Canty).	102
Figure	115	. Hooded Plovers were observed on Coombra Beach (Photo: A. Robinson)	103
Figure	116	. Distribution of sites where reptiles recorded during the Yalata IPA Survey and 1984 Nullarbor Region (BS14) Survey.	105
		. Diplodactylus granariensis (Western Stone Gecko) is currently under taxonomic review and is included here within the D. vittatus complex (Photo: P. Canty)	106
Ü		. Ctenophorus pictus (Painted Dragon) was the most frequently recorded reptile species in the Yalata IPA (Photo: P. Canty)	106
_		. <i>Tiliqua rugosa</i> (Sleepy Lizard) was one of the most commonly recorded reptiles as it was observed at 26 sites (Photo: P. Canty).	107
		. The only record of <i>Acanthopis antarcticus</i> (Common Death Adder) recorded during this survey was a specimen collected by Murray Greenaway at Yalata township (Photo: A. Robinson)	108
Ü		. The 11 records of <i>Strophurus intermedius</i> (Southern Spiny-tailed Gecko) recorded during this survey are the first for this species in the Yalata IPA (Photo: P. Canty).	108
		. Ctenotus regius (Eastern Desert Ctenotus) were recorded from a range of woodland and shrubland communities (Photo: A. Robinson).	108
		. The distribution of <i>Ctenophorus mckenziei</i> (McKenzie's Dragon) is limited to two relatively small areas on opposite sides of the Nullarbor Plain (Photo: P. Canty)	109
_		There have been several recent sightings of <i>Morelia spilota</i> (Carpet Python) within the Yalata IPA (Photo: A. Robinson)	109
		. Morethia obscura (Mallee Snake-eye) is one of a suite of southern coastal reptiles recorded in the Yalata IPA (Photo: A. Robinson).	110
Ü		. Pogona nullarbor (Nullarbor Bearded Dragon) is regarded as endemic to the Nullarbor Plain (Photo: D. Armstrong)	110
		. Nephrurus milii (Barking Gecko) is an example of an Eyrean species occurring in the Yalata IPA (Photo: A. Robinson)	111
rigure	128	. <i>Heteronotia binoei</i> (Bynoe's Gecko) is occurs throughout much of South Australia in a variety of habitats (Photo: P. Brissenden)	111

TABLES

Table 1. IBRA Bioregions, Subregions and Environmental Associations (plus codes) in the Yalata IPA	3
Table 2. Trapping effort at sites for each camp. Trap effort is summarised as trap nights (number of traps x	
number of nights) and the number of nights that Anabats were used.	7
Table 3. Number of vegetation sites surveyed within the Yalata IPA	
Table 4. Frequency of soil types and surface soil texture class summary for sites in the Yalata IPA	9
Table 5. Vegetation sampling effort within landform patterns and elements in the Yalata IPA.	10
Table 6. Vegetation structural formation summary for vegetation survey sites in the Yalata IPA	
Table 7. Number of plant taxa per Family recorded within the Yalata IPA prior to 2007 and on the current	
survey	12
Table 8. The most commonly recorded plant taxa at the 55 vegetation survey sites sampled for the Yalata	
IPA Biological Survey.	13
Table 9. Plant species of National, State and Regional conservation significance recorded within the Yalata	
IPA. 14	
Table 10. Plant species of conservation significance recorded in the NULLARBOR Herbarium Region within	
the Yalata IPA (both confirmed and unconfirmed records).	15
Table 11. Plant species of conservation significance recorded in the EYRE PENINSULA Herbarium Region	
within the Yalata IPA (both confirmed and unconfirmed records).	16
Table 12. Status and frequency of new plant species records from the Yalata IPA Biological Survey	21
Table 13. Plant taxa recorded during the Yalata IPA Biological Survey that were not previously recorded in	
the NULLARBOR Herbarium Region	29
Table 14. Plant taxa recorded during the Yalata IPA Biological Survey that were not previously recorded in	
the EYRE PENINSULA Herbarium Region.	30
Table 15. The ten most commonly recorded introduced plant taxa for the Yalata IPA Survey	31
Table 16. Tally of cover/abundance estimates for introduced plant taxa recorded at sites on the Yalata IPA	
Biological Survey	32
Table 17. Frequency of sites within weed species richness classes for Yalata IPA Biological Survey	32
Table 18. Average number and range of plant taxa recorded per site in each Floristic Vegetation Community	
within the Yalata IPA	
Table 19. Frequency of sites and average number of plant taxa per site in each broad vegetation type	
Table 20. Frequency of sites and average number of plant taxa per site for each landform element	35
Table 21. Frequency of sites and average number of plant taxa per site for each surface soil texture	35
Table 22. Floristic Vegetation Communities identified in the Yalata IPA.	36
Table 23: Number of individual mammal species recorded prior to this survey (pre-2007) and during the	
Yalata IPA Survey (2007-08).	87
Table 24: Relative abundance of mammal species recorded during the Yalata IPA Survey (total number of	
quadrats sampled n=32).	
Table 25. Common birds of the Yalata survey area.	
Table 26. Rare and threatened bird species known to occur in the Yalata IPA	
Table 27. Use of vegetation types by birds in the Yalata survey area.	101
Table 28. Birds of Western Myall - False Sandalwood Low Woodlands	
Table 29. Birds of Mallee Low Woodlands	
Table 30. Birds of Tea-tree Shrublands.	
Table 31. Birds of Chenopod Low Shrublands.	
Table 32. Birds of Coastal Low Shrublands.	
Table 33. Birds of Grasslands.	
Table 34. Numbers of coastal waterbirds recorded during the survey	
Table 35. Bird specimens collected during the Yalata IPA Survey	103
Table 36. The six most frequently recorded reptile species in the Yalata IPA in terms of total records and	
total sites	
Table 37. Yalata IPA Survey records of reptile species not previously recorded in the IPA.	108

APPENDICES

APPENDIX 1.	LIST OF BIOLOGICAL SURVEY SITES WITHIN THE YALATA IPA	127
APPENDIX 2.	PLANT TAXA RECORDED IN THE YALATA IPA	134
APPENDIX 3.	PLANT TAXA FREQUENCY FROM VARIOUS SOURCES FOR THE YALATA IPA.	142
APPENDIX 4a.	PLANT TAXA RECORDED AT EACH COL, COO, HOB AND NAN SITE DURING	
THE	E YALATA IPA SURVEY AND THEIR COVER/ABUNDANCE ESTIMATE	149
APPENDIX 4b.	PLANT TAXA RECORDED AT EACH YAL SITE DURING THE YALATA IPA	
SUR	EVEY AND THEIR COVER/ABUNDANCE ESTIMATE	156
APPENDIX 5.	SUMMARY OF ENVIRONMENTAL VARIABLES FOR EACH FLORISTIC	
VEC	GETATION COMMUNITY	
APPENDIX 6.	MAMMAL SPECIES RECORDED IN THE YALATA IPA	164
APPENDIX 7.	MAMMAL SPECIES RECORDED AT EACH SITE DURING THE YALATA IPA	
SUR	VEY	165
APPENDIX 8.	BIRD SPECIES RECORDED IN THE YALATA IPA	166
APPENDIX 9.	BIRD SPECIES RECORDED AT EACH SITE DURING THE YALATA IPA	
SUR	VEY	170
APPENDIX 10.	BIRD SPECIES RECORDED AT KO AND YA SITES DURING THE 1984	
	LLARBOR SURVEY	
APPENDIX 11.	REPTILE SPECIES RECORDED IN THE YALATA IPA	176
APPENDIX 12.	REPTILE SPECIES RECORDED AT EACH SITE DURING THE YALATA IPA	
SUR	VEY	178

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Previous Biological Surveys in the Area

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Temperate Grasslands (1991) coordinated by Michael Hyde.

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Figure 3. Atriplex vesicaria (Bladder Saltbush), Lawrencia squamata (Thorny Lawrencia) Low Open Shrubland on the Nullarbor Plain (Photo: N. Neagle).



Figure 4. Dunes near Coombra Beach (Photo: N. Neagle).



Figure 5. Rain clouds over mallee and *Austrostipa* spp. Grassland near Nanwoora Well (Photo: P. Brissenden).



Figure 6. Mallee and coast from the Coombra Track (Photo: N. Neagle).

INTRODUCTION

D. Wallace-Ward¹ and N. Neagle¹

Background and Aims

The Biological Survey of South Australia is a program of systematic surveys, established in 1971 by the Biological Survey Coordinating Committee (BSCC) with the aim of providing a broad baseline inventory of the State's vascular plants and vertebrate fauna. The BSCC is an interdepartmental committee with representatives from Environment and Heritage, SA Museum, SA Research and Development Institute (SARDI), and Primary Industries and Resources SA (Foulkes and Gillen 2000). The objectives of these surveys are to systematically and consistently sample the range of ecological habitats located in South Australia (Brandle 2001). The comprehensive data and information collected supports the long-term natural resource management and conservation of the biological diversity of South Australia (Neagle 2008).

The Yalata Indigenous Protected Area (IPA) Biological Survey was conducted for the Alinytjara Wilurara Natural Resources Management Board. The specific aims of the survey were:

- 1. To observe, collect and identify species of vascular plants and vertebrate fauna present in the area by sampling an array of fixed quadrats representing the geographical and biological diversity of the region.
- 2. To systematically collect data on the relative abundances of plants at the fixed quadrats as well as a description of the soils, landform and degree of disturbance.
- To establish a comprehensive database of the flora and associated vertebrate communities of the Yalata IPA that is amenable to ecological analyses.
- 4. To establish a set of permanently marked relocatable sites to enable revisits to take place.
- 5. To document and clarify the various assemblages/communities of plants and animals that occur in the Yalata IPA.
- 6. To identify, describe and map the vegetation communities present in the Yalata IPA at a scale of 1:100,000.
- 7. 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.
- 8. To provide broad conservation recommendations on the basis of data collected.

Biological Surveys included in this Report

Data from seven surveys have been used in this report. Field data for all of these surveys has been extracted from the Department for Environment and Heritage's Survey and Opportunistic Sightings databases.

The seven surveys and their scope are:

- Nullarbor, 1984 and 2001 (McKenzie and Robinson 1987) - broad regional survey covering the entire bioregion across two states conducted in conjunction with the Western Australian Department of Conservation and Land Management in 1984. Further vegetation sampling occurred in 2001 to aid vegetation mapping (vegetation and vertebrates).
- Temperate Grasslands (World Wildlife Fund Grant), 1991-1995 (Hyde 1995) to classify the temperate grassland communities in South Australia, and assess their conservation status (vegetation only). Only one site within the Yalata IPA.
- Coastal Dune and Clifftop Vegetation, 1995-96 (Oppermann 1999) - dune and clifftop communities along the entire coast of mainland SA (vegetation only).
- Yalata Land Use, 1999 (Landless 2000) survey of coastal vegetation communities from the Head of Bight to the south eastern Yalata boundary to inform management, especially in relation to fishers' camping areas and 4WD access (vegetation only).
- Yellabinna Regional Reserve (Iluka Resources), 2005 (Badman 2007) to define vegetation communities and establish a monitoring program for the proposed mineral sands mining area and transport access route (vegetation only).
- Gawler Craton, 2006 (Kenny and Thompson 2008) mapping vegetation communities of the Gawler Craton and Nullarbor regions (vegetation only).
- Yalata IPA, 2007-08 conducted within the IPA for AW NRM Board (vegetation and vertebrates).

A complete list of all 183 sites from these surveys, including the date of survey, AMG coordinates, location, landform pattern and element, surface soil texture, dominant overstorey plant species and vegetation structural description are provided in Appendix 1.

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PHYSICAL ENVIRONMENT

IBRA Bioregions, Subregions and Environmental Associations.

The Yalata Indigenous Protected Area (IPA) lies across two Interim Biogeographic Regionalisation of Australia (IBRA) bioregions - the Nullarbor and a very small area of the Eyre Yorke Block (Thackway and Cresswell 1995).

Each bioregion may be subdivided into subregions which, in turn, are further subdivided into environmental associations. The Yalata IPA straddles three subregions (Nullarbor, Yalata and Eyre Mallee) and six environmental associations (Nullarbor, Yalata, Kroonilla, Chintumba, Bight and Bookabie) as listed in Table 1 and mapped in Figure 7 (Thackway and Cresswell 1995).

This method of landscape description is a nested hierarchical system with bioregions being the broadest unit. These are distinctive landscapes with characteristic patterns of landforms, soils and vegetation (Thackway and Cresswell 1995). Each environmental association is described below (adapted from Laut *et al.* 1977).

Nullarbor Environmental Association

The western end of the IPA lies within the Nullarbor Environmental Association. This corresponds to the Nullarbor Plain, a featureless limestone plain with occasional sinkholes and caves, and prominent cliffs along the coast. The vegetation is characterised by the almost complete absence of trees and is dominated by *Maireana sedifolia* (Bluebush) +/- *Atriplex vesicaria* (Bladder Saltbush) +/- *Tecticornia* sp. (Samphire) Low Open Shrubland and *A. vesicaria*, *Tecticornia* sp. Low Shrubland.

Yalata Environmental Association

The Yalata Environmental Association is a sandy plain with deep sand and low parabolic dunes. Within the portion of this EA that lies within the Yalata IPA the vegetation is principally *Eucalyptus oleosa* (Red Mallee) Open Mallee and *Acacia papyrocarpa* (Western Myall) +/- *Myoporum platycarpum* (False Sandalwood) Very Low Woodland. *Atriplex vesicaria* (Bladder Saltbush) and *Cratystylis conocephala* (Bluebush Daisy) dominate the understorey of both. Interspersed within these communities are pockets of low shrublands dominated by *A. vesicaria* and/or *C. conocephala*.

Kroonilla Environmental Association

The Kroonilla Environmental Association is a calcreted plain with occasional granitic inselbergs (though these are not apparent within the IPA) which relates to much of the IPA north of the Eyre Highway and east of the Nullarbor Plain. The vegetation is

similar to the Yalata EA, primarily E. oleosa (Red Mallee) Open Mallee/Low Woodland and A. papyrocarpa (Western Myall) +/- M. platycarpum (False Sandalwood) Very Low Woodland, though with more extensive areas of chenopod shrublands, grasslands and herblands. The low shrublands are variously dominated by A. vesicaria, Tecticornia sp., M. sedifolia and/or C. conocephala, the grasslands by Lomandra effusa (Scented Mat-rush), Austrostipa sp. (Spear-grass) and Austrodanthonia caespitosa (Common Wallaby-grass), and the herblands by Trichanthodium skirrophorum (Woolly Heads).

Chintumba Environmental Association

The Chintumba Environmental Association is characterised by an undulating calcrete plain and low consolidated dunes between the coast (east of the Head of the Bight) and the Eyre Highway. The vegetation is dominated by mallee, which grades in height from low near the coast to tall inland, and is dominated by Eucalyptus gracilis (Yorrell), E. oleosa (Red Mallee) and E. calcareana (Nundroo Mallee). The clearings in the mallee contain limited examples of Geijera linearifolia (Sheep Bush), Pittosporum angustifolium (Native Apricot) Tall Open Shrubland, Atriplex stipitata (Bitter Saltbush) Low Shrubland and A. vesicaria Low Open Shrubland.

Bight Environmental Association

The Bight Environmental Association is a coastal complex with dunes, lagoons, cliffs and tidal flats. The vegetation is a mix of coastal shrublands and low mallee. The foredunes feature Atriplex cinerea (Grey Saltbush) Open Shrubland, Leucophyta brownii (Cushion Bush) Low Shrubland and Spinifex hirsutus (Rolling Spinifex), *Euphorbia paralias (Sea Spurge) Tussock Grassland. The dunes grade from Nitraria billardierei (Nitre Bush) Low Open Shrubland to Myoporum insulare (Common Boobialla) +/- N. billardierei Open Shrubland. Saltmarsh communities of Tecticornia sp., Maireana oppositifolia (Salt Bluebush) Low Shrubland occur in low-lying saline areas often at the inland margin of the coastal dunes. Further inland on the consolidated dunes, with some outcropping limestone, is found Melaleuca lanceolata (Dryland Tea Tree) Shrubland and E. calcareana, E. gracilis, E. oleosa and M. lanceolata Open Low Mallee.

Bookabie Environmental Association

The portion of the IPA that lies within the Bookabie EA is approximately 10km^2 in the far south east near Coorabie. This area has been almost totally cleared for agriculture and now contains only very small patches of degraded mallee.

Table 1. IBRA Bioregions, Subregions and Environmental Associations (plus codes) in the Yalata IPA.

IBRA BIOREGION	SUBREGION	ENVIRONMENTAL ASSOCIATION
	Nullarbor Plain (NUL2)	Nullarbor (7.6.5)
Nullarbor (NUL)		Yalata (7.6.4)
	Yalata (NUL3)	Kroonilla (7.6.1)
	Talata (NOLS)	Chintumba (7.6.2)
		Bight (7.6.3)
Eyre Yorke Block (EYB)	Eyre Mallee (EYB5)	Bookabie (4.3.26)

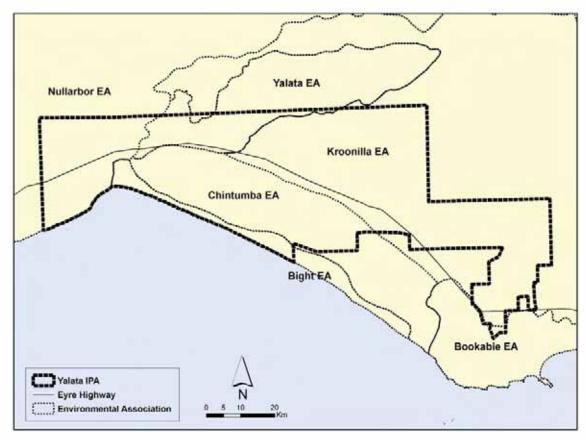


Figure 7. Environmental associations present in the Yalata IPA.

Pastoralism

Early pioneers were interested in the grazing possibilities on the Nullarbor but were restricted by the lack of water for stock or human consumption. The location of palatable bore water enabled William Robert Swan to establish Yalata Station (located near Fowler's Bay) in 1858. It expanded over time to eventually stock land all the way to near the Head of the Bight, with even an outstation established at White Well (Allen 1987) and a total holding of over 2,000 square miles (Cockburn 1974). Following a run of good seasons in the 1870s and 1880s stock numbers reached a maximum in excess of 122,000 in 1885 (Cockburn 1974).

Sheep grazing ceased on Colona (east end of current IPA) in the late 1980s and much earlier on the rest of the IPA (B. Lay pers. comm.). While much of the IPA shows little sign today of past grazing some

infrastructure is still apparent, particularly fences, tanks and wells. Evidence of the impact of historic grazing on the vegetation is most marked within a radius of approximately 10km of the Colona Woolshed. Much of what is now ephemeral herbland in this area was most likely formerly chenopod shrubland - particularly *Atriplex vesicaria* (Bladder Saltbush) Low Shrubland - that has subsequently been removed through overgrazing.

Climate and Rainfall

The Yalata IPA has a semi-arid climate with warm dry summers and mild wet winters. Summers are influenced by anti-cyclone systems moving from west to east across southern Australia and are characterised by a number of hot days, coupled with air movements moving south off the arid interior, alternating with

cooler days influenced by air flow off the Southern Ocean. While on average the maximum summer daytime temperature is around 26°C (BOM 2008) it can, on occasions, surpass 50°C (Curry 1987).

Cooler winter weather is the product of winds blowing off the Southern Ocean and from radiation frosts caused by high pressure systems producing cloudless nights. Winds off the warmer land mass to the north tend to create mild winter conditions (Curry 1987).

The nearest weather station site to Yalata is at Nullarbor, situated just outside the IPA to the west. The collection of statistical climate data commenced in 1986, though rainfall records date from 1888. The

mean monthly temperature for Nullarbor from 1986-2008 is characterised by mild winters and warm summers. In winter the average monthly minimum ranges between 5°C and 6°C and the average monthly maximum from 18°C to 20°C. For summer the average monthly minimum is between 14°C and 16°C and the average maximum between 26°C and 27°C (BOM 2008) (refer Figure 8).

The mean annual rainfall for Nullarbor is 245.8mm (BOM 2008) and the mean annual evaporation is 2600mm (Laut *et al.* 1977). The mean annual rainfall (Figure 8) for the winter months ranged between 24mm and 30mm and during summer from 11mm to 14mm (BOM 2008).

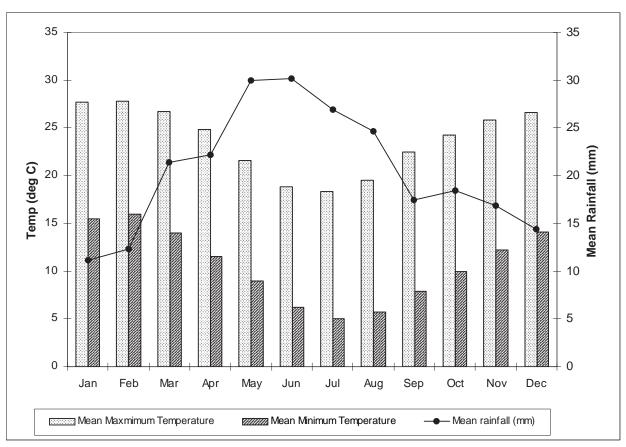


Figure 8. Mean monthly maximum and minimum temperatures and mean monthly rainfall for Nullarbor from 1986 to 2008.

Source: Bureau of Meteorology, http://www.bom.gov.au/climate/averages/tables/cw_018106.shtml

SURVEY METHODS

N. Neagle¹

The Yalata IPA Biological Survey

This survey forms part of the Biological Survey of The methods used for it are South Australia. 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) and vertebrate fauna surveys in 'Guidelines for Vertebrate Surveys in South Australia Using the Biological Survey of South Australia' (Owens 2000). Both of these manuals are available for download from the South Australian Department for Environment and Heritage (DEH) website under 'Ecological Communities - Biological Surveys' at http://www.environment.sa.gov.au/biodiversity/biosur veys.html

Site Selection and Nomenclature

As with other biological surveys conducted in South Australia by DEH, sites were chosen to represent the biological and geographical diversity of the study area. In addition, the location of sites where biological data had already been collected (using the same or very similar methodology) was taken into consideration to avoid the duplication of sampling effort. Site-based fauna sampling, in particular, had been scarce in the Yalata IPA prior to this survey, with only ten sites having been sampled. All were part of the 1984 Nullarbor Survey and confined to three locations – the Red Gate Track and a now closed track near the Coombra Track (sites YA00101 to YA00501) and along the dog fence on the northern boundary of the former Colona station (sites KO00101 to KO00501).

Initially, 23 sites were selected for vegetation sampling (using satellite imagery) to supplement existing sites and enable a draft vegetation map to be produced. Vegetation communities that were previously underrepresented with sites or that had not been sampled at all were targeted. These sites, located throughout the IPA, were then sampled in May 2007.

Vegetation sampling had been conducted at many more sites (128, refer Vegetation chapter), though some areas of the IPA were still poorly represented, particularly the extensive area of mallee south of the Eyre Highway and east of the Head of the Bight.

In the second phase of the Yalata IPA Survey satellite imagery, 1:250,000 topographic maps and the draft

vegetation map were used, together with experience gained on the May 2007 visit, to determine the range of landform types and vegetation communities likely to occur, and their potential distribution across the IPA. Using this information, and making reference to the location of accessible tracks, enabled the selection of four sampling areas. Sites were then selected in these areas during a reconnaissance trip in August 2007. At this time the Yalata Community was approached to check whether there were any areas of Aboriginal cultural significance that should be avoided during the survey.

Eight sites were selected within each of the four sampling areas and based around a central camp, which was named from a local feature. The four camps were (1) near the Head of the Bight, (2) around Nanwoora Well, (3) along the Coombra Track and (4) on the former Colona station.

Site identification codes followed the Biological Survey of South Australia standard eight character alpha-numeric code. The first three characters are alphabetic and generally refer to either the map sheet or camp location. The next three are numeric and refer to the site number, where sites are numbered sequentially within a map sheet or associated with a camp. The final two numeric characters allow for the sequential numbering of patches associated with one site. The vegetation sites sampled in May 2007 were all numbered sequentially following the YAL (for Yalata) prefix, hence YAL00101 to YAL02301.

The remaining 32 sites were numbered 1 to 8 within each camp, i.e. HOB00101 to HOB00801, NAN00101 to NAN00801, COO00101 to COO00801 and COL00101 to COL00801. For general location of all 55 sites on this survey refer Figure 12 and Appendix 1.

Sampling

At each site a 100m x 100m vegetation quadrat was sampled and physical information recorded following the method described in Heard and Channon (1997). The physical description of a site included information on its location (using 1:250,000 topographic maps, AMG zone and coordinates and a hand drawn 'mud map') and the physical environment (landform pattern and element, slope, aspect, outcrop and surface strew lithology, and the surface soil texture) using standard data sheets. All vascular plants were recorded along with a measure of their cover/abundance and a

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structural classification of life form. Dominant species in both the overstorey and understorey were also noted at each site.



Figure 9. Installing pitfall line at site NAN00701 (Photo: P. Brissenden).

For each camp area a representative collection of all plant species recorded was vouchered for later verification and incorporation into the State Herbarium collection. Interesting plant species observed outside the specified quadrats were also collected, but recorded as opportunistic sightings on separate data sheets with location and habitat details.

Fauna sampling followed the standard Biological Survey method described in Owens (2000). At each site reptiles and small terrestrial mammals were sampled using two fenced pitfall lines (approximately 200m apart) consisting of six pits (40cm deep and 15cm in diameter) dug 10m apart along a 55m flywire drift fence (Figures 9 and 11). Associated with each pitfall trap-line was a line of 15 baited Elliott traps with a baited wire cage trap at each end. The bait used was a mixture of peanut butter and rolled oats. Each site was sampled for four days and nights and trapping was consistent for all 32 sites. Explosives were required to create holes for pits at several sites on sheet limestone at Head of the Bight and Coombra Track.

Mammals and reptiles were also recorded by an hour of active searching at each site for individuals or signs, such as scats, diggings or burrows. Spotlight searches were made at night at some sites where time, weather and habitat permitted.



Figure 10. Survey biologists processing animals at night in work tent (Photo: P. Brissenden).

Bats were sampled using harp traps, mist nets and 'Anabat' recording equipment (Figures 13 and 14). It was not possible to have consistent effort with this across all sites due to the number of harp traps and Anabats available, weather conditions at time of survey, suitability of habitat at sites and presence of preferable opportune locations (particularly for harp traps).



Figure 11. A pitfall line showing the drift fence positioned across the top of one of the pitfall traps (Photo: N. Neagle).

Birds were sampled via two one hour search efforts, one in the early morning and one in the late afternoon.

All fauna observations were recorded on standard data sheets and included location, method of capture or sighting, microhabitat, number of individuals and (for small mammals) weight. Generally one specimen of each reptile and small mammal species from each camp area was preserved as a museum specimen depending on the advice of museum curators. Standard collection, killing and preservation methods were employed with approval from the Department for Environment and Heritage's Animal Ethics Committee. Samples of liver tissue were taken from all specimens collected, plus tissue samples from some released animals, and stored in liquid nitrogen for the Evolutionary Biology Unit of the South Australian Museum to use in DNA studies.

A summary of trapping effort at sites is provided in Table 2. In addition to this, any fauna encountered outside the specific sites were recorded as opportunistic sightings on separate data sheets with location and habitat details. These records provide a more thorough inventory of the fauna of each camp area, particularly species using smaller or more heterogeneous habitats not sampled by the sites. This was particularly the case for birds, for which many significant observations were made away from sites.

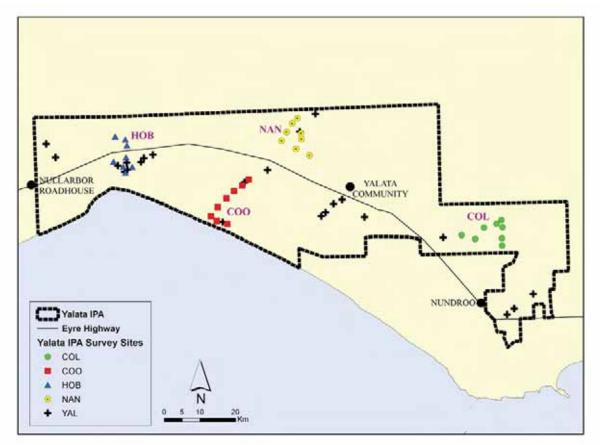


Figure 12. General location of Yalata IPA Survey sites based on camp locations (COL = Colona; COO = Coombra Track; HOB = Head of Bight; NAN = Nanwoora Well; YAL = Yalata (vegetation only sites)).

Table 2. Trapping effort at sites for each camp. Trap effort is summarised as trap nights (number of traps x number of nights) and the number of nights that Anabats were used.

Date	Camp	Pit Trap Nights	Elliott Trap Nights	Cage Trap Nights	Harp Trap Nights	Anabat Nights
Oct 2007	Head of the Bight	384	960	128	12	12
Oct 2007	Nanwoora Well	384	960	128	3	5
April 2008	Coombra Track	384	960	128	6	10
April 2008	Colona	384	960	128	2	8
Total		1536	3840	512	23	35



Figure 13. Harp trap set up in grassland beside artificial waterhole (i.e. water poured on nylon sheet) (Photo: P. Brissenden).



Figure 14. An Anabat kit with microphone in plastic tube for recording bat calls (Photo: P. Brissenden).

Additional Activities

During the April 2008 survey trip DEH Senior Ranger Dave Armstrong (with support from the survey team) ran two fauna information sessions with children from the Yalata and Penong Schools (Figure 15). These were well attended and provided the children with exposure to many animals they might not otherwise encounter, whilst raising awareness of their habits and habitat requirements.



Figure 15. DEH Senior Wildlife Ranger, Dave Armstrong, showing a Western Bluetongue to children from the Yalata School (Photo: N. Neagle).

In addition, a film crew interviewed Biological Survey staff and filmed survey activities (including the involvement of members of the Yalata Land Management Team and Alinytjara Wilurara Natural Resource Management staff) for a segment to appear on the ABC's 'Message Stick' television program.



Figure 16. A star dropper with photopoint identification disc used to mark a site (Photo: N. Neagle).

The filming included the installation of a pitfall line, checking pitfall traps (Figure 17), an explanation of how cage and Elliott traps are used and a discussion of some of the animals collected in traps with members of the Yalata Land Management Team.



Figure 17. Yalata IPA Survey team members being filmed checking traps for the ABC television show 'Message Stick' (Photo: T. Gurney, AW NRM).

Data Analysis

Statistical examination using exploratory data analysis software (such as PATN or PC-ORD) was not conducted on the data collected for this survey. Instead a modified floristic vegetation analysis was performed that grouped sites based on the similarity of dominant overstorey and understorey species, their cover/abundance scores and the structural formation description for each site. Species data from 183 sites sampled in the Yalata IPA was used for this process and 25 distinctive floristic vegetation communities were identified. These are ecologically meaningful groups in which many species commonly and repeatedly occur together (and in similar relative abundances) due to the particular environmental factors where they occur.



Figure 18. An Elliott trap placed in the shade of bush and marked with flagging tape (Photo: N. Neagle).

RESULTS

VEGETATION

N. Neagle¹

Physical Attributes of Sites

A total of 55 vegetation sites were sampled during the Yalata IPA Biological Survey (refer Figure 12 in previous chapter). Site selections were made to represent the range of biological and geographical diversity occurring across the area and to supplement the set of 128 sites previously sampled. A summary of sites sampled per survey is provided in Table 3 and their distribution is shown in Figure 19. Of the total 183 sites, 132 were standard Biological Survey of South Australia vegetation sites (refer Heard and Channon 1997) and the remaining 51 were vegetation mapping sites where only perennial plant taxa with a cover of at least 5% are recorded (refer Kenny and Thompson 2008).

Surface soil textures ranged from skeletal to medium clay (Table 4). Soils of mixed sand and loam were the most common (35% of sites where soil type recorded) followed by sand (30%) and mixed sand, clay and loam (13%).

Broad landform patterns and the more localised landform elements recorded for each site are shown in Table 5. Landform pattern diversity is low with 90%

Table 3. Number of vegetation sites surveyed within the Yalata IPA.

Survey Name	Year	Survey Number	No. of Sites Within Yalata IPA	
Nullarbor	1984	14	30	
Temperate Grasslands	1991	46	1	
Coastal Dune & Clifftop Vegetation	1995 - 96	82	13	
Yalata Land Use	1999	100	23	
Yellabinna RR (Iluka Resources)	2005	428	10	
Gawler Craton	2006	430	51	
Yalata IPA	2007 - 08	575	55	
Total Sites			183	

of all sites (where recorded) being on plains, low hills or dunefields. Plains, hill slopes, dunes/consolidated dunes and dune slopes are the most significant landform elements in the Yalata IPA and were represented by 31%, 17%, 10% and 8% respectively of all sites.

Table 4. Frequency of soil types and surface soil texture class summary for sites in the Yalata IPA.

Soil Type	Sites	Surface Soil Texture	Sites
skeletal	1	skeletal	1
sand	39	sand	39
sand/loam	46	loamy sand	24
		sandy loam	22
loam	10	loam	9
		silty loam	1
sand/loam/clay	17	sandy clay loam	14
		clay loam, sandy	3
loam/clay	7	clay loam	7
sand/clay	7	clayey sand	6
		sandy clay	1
clay	4	light clay	2
Section 1		medium clay	2
not recorded	52	not recorded	52
Total Sites	183		183

¹ Bioknowledge SA, Information, Science and Technology Directorate, Department for Environment and Heritage, GPO Box 1047, Adelaide SA 5001

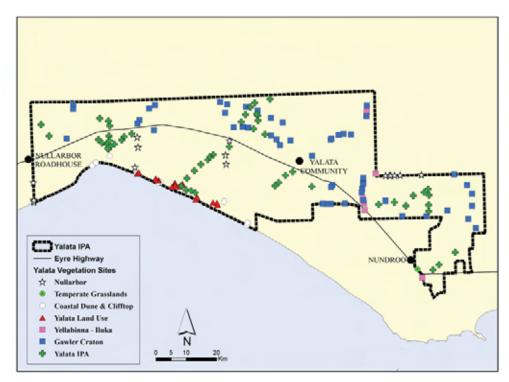


Figure 19. Distribution of all 183 sites where vegetation has been sampled in the Yalata IPA.

Table 5. Vegetation sampling effort within landform patterns and elements in the Yalata IPA.

	Landform Pattern									
				Land	OFIII P	attern				
Landform Element	Plain	Playa plain	Rises	Low hills	Consolidated dunefield	Dunefield	Beach ridge plain	Escarpment	not recorded	Total Sites
swamp				1						1
closed depression					2					2
open depression			1						3	4
playa/pan							2		1	3
flat				3	1					4
plain (incl. undulating plain)	49			1					6	56
sandy plain	6		1							7
limestone plain	6									6
dune/consolidated dune					12	1		1	5	19
swale					4		1			5
interdune corridor					1					1
interdune low					1				1	2
dune footslope					1	2				3
dune slope					5	8		1		14
dune crest					1	2				3
hill footslope			1	4					1	6
hill slope	1		6	23	1				1	32
hill crest				1						1
hill/mountain									4	4
ridge									6	6
rock outcrop - on hill					1		1			2
rock outcrop - on plain		1								1
not recorded									1	1
Total Sites	62	1	9	33	30	13	4	2	29	183

Vegetation Structure

The structural vegetation formations at sites ranged from ephemeral herblands dominated by annuals such as Woolly Yellow-heads (*Trichanthodium skirrophorum*) or Dwarf Twinleaf (*Zygophyllum ovatum*) to Western Myall (*Acacia papyrocarpa*) or Red Mallee (*Eucalyptus oleosa* ssp. *ampliata*), Nundroo Mallee (*E. calcareana*) Low Woodlands and one instance of Yorrell (*E. gracilis*), Nundroo Mallee Open Forest (Table 6).

The most commonly recorded structural formation was low shrubland (37% of sites sampled), which mainly comprises the chenopod shrublands of Bladder Saltbush (*Atriplex vesicaria*), Pearl Bluebush (*Maireana sedifolia*) and Samphires (*Tecticornia* spp.), particularly on the treeless plain, but scattered throughout the whole region (Figure 20). Also prominent are the mallee communities (21% of sites), particularly south of the Eyre Highway, low woodlands (of either Western Myall or eucalypts) (19% of sites) and shrublands (11% of sites).



Figure 20. This *Atriplex vesicaria* (Bladder Saltbush), *Tecticornia* sp. (Samphire) Low Shrubland is an example of the most commonly recorded structural vegetation community recorded in the Yalata IPA (Photo: N. Neagle).

Table 6. Vegetation structural formation summary for vegetation survey sites in the Yalata IPA.

Generalised Structural Formation	eralised Structural Formation Sites Structural Formation		Sites	
Herbland	3	Open Herbland	2	
		Herbland	1	
(Tussock) Grassland	13	Very Open (Tussock) Grassland	1	
		Open (Tussock) Grassland	2	
		(Tussock) Grassland	9	
		Closed (Tussock) Grassland	1	
Sedgeland	3	Very Open Sedgeland	1	
		Open Sedgeland	2	
Low Shrubland	67	Low Very Open Shrubland	7	
		Low Open Shrubland	23	
		Low Shrubland	35	
		Low Closed Shrubland	2	
Shrubland	20	Very Open Shrubland	3	
		Open Shrubland	7	
		Shrubland	10	
Tall Shrubland	4	Tall Open Shrubland	3	
		Tall Closed Shrubland	1	
Low Mallee	5	Open Low Mallee	4	
		Low Mallee	1	
Mallee	33	Very Open Mallee	7	
		Open Mallee	16	
		Mallee	10	
Very Low Woodland	21	Very Low Open Woodland	7	
		Very Low Woodland	12	
		Very Low Open Forest	2	
Low Woodland	13	Low Open Woodland	2	
		Low Woodland	10	
		Low Open Forest	1	
Open Forest	1	Open Forest	1	
Total Sites	183		183	

Taxonomic Summary

The 183 vegetation survey sites in the Yalata IPA represent 3091 plant records. A further 669 records come from opportunistic sightings, including State Herbarium of South Australia specimens. A total of

330 plant taxa have been recorded, of which 286 (86.7%) are native and 44 (13.3%) are introduced.

The Yalata IPA Biological Survey alone sampled 55 sites and collected 1390 plant records. An additional

Table 7. Number of plant taxa per Family recorded within the Yalata IPA prior to 2007 and on the current survey.

	Prior to 20	007	Yalata IPA S	Yalata IPA Survey			
Family Name	No. of Taxa Recorded	No. of Records	No. of Taxa Recorded	No. of Records			
CASUARINACEAE	1	2					
URTICACEAE	1	5					
SANTALACEAE	4	47	2	27			
LORANTHACEAE	5	35	4	11			
AIZOACEAE	7	65	5	30			
PORTULACACEAE	1	1					
CARYOPHYLLACEAE			1	2			
CHENOPODIACEAE	40	606	32	391			
AMARANTHACEAE	2	20	2	9			
LAURACEAE	1	3	2	3			
CRUCIFERAE	13	59	6	54			
CRASSULACEAE	5	31	1	12			
PITTOSPORACEAE	1	34	1	17			
LEGUMINOSAE	20	111	12	60			
OXALIDACEAE	1	1	1	1			
GERANIACEAE	3	16	4	14			
ZYGOPHYLLACEAE	8	79	8	75			
EUPHORBIACEAE	4	21	2	20			
RUTACEAE	1	40	1	24			
POLYGALACEAE	1	2	1	2			
SAPINDACEAE	1	6	1	1			
RHAMNACEAE	2	4					
MALVACEAE	3	15	4	18			
THYMELAEACEAE	2	6	1	2			
FRANKENIACEAE	5	51	3	28			
MYRTACEAE	17	192	8	63			
UMBELLIFERAE	2	14	2	15			
EPACRIDACEAE	1	3	1	1			
PRIMULACEAE	2	6					
GENTIANACEAE	1	2	1	1			
APOCYNACEAE	1	1					
CONVOLVULACEAE	1	1	2	3			
BORAGINACEAE	1	4	2	4			
LABIATAE	5	22	2	9			
SOLANACEAE	6	51	6	29			
MYOPORACEAE	9	101	8	69			
PLANTAGINACEAE	4	8	2	8			
CAMPANULACEAE	1	1					
GOODENIACEAE	7	35	4	24			
COMPOSITAE	49	281	40	260			
JUNCAGINACEAE	1	1	2	2			
LILIACEAE	8	25	7	36			
HYPOXIDACEAE	1	4	1	1			
IRIDACEAE	1	1	1	6			
GRAMINEAE	34	254	22	158			
CYPERACEAE	1	2					
ORCHIDACEAE	1	1					
No. of Taxa	286		205				
No. of Families	46		38				
No. of Records		2270		1490			

100 plant records came from opportunistic sightings. This resulted in a total of 205 unique plant taxa from 38 families (Table 7). Of these, 179 (87.3%) were native and 26 (12.7%) introduced. During the survey 819 plant specimens were collected and lodged with the State Herbarium. This adds significantly to existing Herbarium collections from the IPA, of which there were approximately 560.

Compositae (with 40 taxa), Chenopodiaceae (32 taxa) and Gramineae (22 taxa) were the most commonly recorded Families on the Yalata IPA Biological Survey, comprising 46% of the total plant

taxa recorded. Despite there being fewer chenopods than daisies recorded on the survey there were 50% more individual chenopod records, no doubt reflecting the extent of chenopod shrubland communities in the IPA.

Appendix 2 provides a full list of all plant taxa recorded in the Yalata IPA with some taxonomic notes. Appendix 3 provides the frequency of recordings for each taxon from a variety of sources. Appendices 4a and 4b list all taxa recorded per site for this survey.

Common Species

Only 23 taxa were recorded at more than one third of the 55 sites sampled on this survey and only seven at more than 50% (Table 8). This reflects the diversity of the vegetation communities sampled and the widespread nature of Bladder Saltbush (*Atriplex vesicaria*) (49 sites - 89%) and Rosy Bluebush (*Maireana erioclada*) (43 sites - 78%) in the area. The frequency of occurrence of chenopod and daisy taxa is again evident, with these two families containing all of the 11 most commonly recorded taxa, seven of which were chenopods and four being daisies.

The most commonly recorded introduced species were Common Sow-thistle (*Sonchus oleraceus*) at 34 sites (62%) and Ward's Weed (*Carrichtera annua*) at 22 sites (40%).



Figure 21. *Maireana erioclada* (Rosy Bluebush) is a low shrub species common throughout the Yalata IPA. (Photo: P. Lang).

Table 8. The most commonly recorded plant taxa at the 55 vegetation survey sites sampled for the Yalata IPA Biological Survey.

Family Name	Species Name	Common Name	No. of Sites	% of Sites
CHENOPODIACEAE	Atriplex vesicaria ssp.	Bladder Saltbush	49	89
CHENOPODIACEAE	Maireana erioclada	Rosy Bluebush	43	78
COMPOSITAE	*Sonchus oleraceus	Common Sow-thistle	34	62
CHENOPODIACEAE	Threlkeldia diffusa	Coast Bonefruit	31	56
CHENOPODIACEAE	Rhagodia crassifolia	Fleshy Saltbush	30	55
COMPOSITAE	Cratystylis conocephala	Bluebush Daisy	29	53
CHENOPODIACEAE	Enchylaena tomentosa var. tomentosa	Ruby Saltbush	28	51
COMPOSITAE	Trichanthodium skirrophorum	Woolly Yellow-heads	26	47
CHENOPODIACEAE	Sclerolaena obliquicuspis	Oblique-spined Bindyi	25	45
COMPOSITAE	Brachycome ciliaris var.	Variable Daisy	24	44
CHENOPODIACEAE	Sclerolaena uniflora	Small-spine Bindyi	24	44
LEGUMINOSAE	Acacia oswaldii	Umbrella Wattle	23	42
RUTACEAE	Geijera linearifolia	Sheep Bush	23	42
CRUCIFERAE	*Carrichtera annua	Ward's Weed	22	40
CHENOPODIACEAE	Salsola tragus	Buckbush	22	40
CHENOPODIACEAE	Eriochiton sclerolaenoides	Woolly-fruit Bluebush	21	38
ZYGOPHYLLACEAE	Zygophyllum aurantiacum ssp.	Shrubby Twinleaf	21	38
ZYGOPHYLLACEAE	Zygophyllum ovatum	Dwarf Twinleaf	20	36
GRAMINEAE	Austrostipa nitida	Balcarra Spear-grass	19	35
MYOPORACEAE	Eremophila deserti	Turkey-bush	19	35
MYOPORACEAE	Myoporum platycarpum ssp.	False Sandalwood	19	35
ZYGOPHYLLACEAE	Nitraria billardierei	Nitre-bush	19	35
LILIACEAE	Thysanotus baueri	Mallee Fringe-lily	19	35

Plant Species of Conservation Significance

None of the plant taxa known to definitely occur within the Yalata IPA have a national conservation rating under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as at February 2008 (Table 9). However, seven species considered rare at state level have been recorded, including four that were collected on this survey -(Eremophila Small-leaf Emubush parvifolia), Knotted Poa (Poa drummondiana), Templetonia (Templetonia battii) and a second emubush (Eremophila sp. Praecox [R.H.Ashby 131]). In addition, a further two taxa recorded in the IPA are considered to be of conservation significance in the Nullarbor Herbarium Region (Figure 22 and Table 10) and seven taxa in the Eyre Peninsula Herbarium Region (Table 11). Six of these were recorded on this survey. These taxa are discussed in detail below.

There are a further eight taxa of conservation significance that may occur in the IPA but whose presence cannot be confirmed for one of several reasons:-

- the exact location of some collections cannot be determined accurately enough to positively locate them within the IPA.
- the identification of the specimen(s) is in question.
- the identification and location are correct but there has been no subsequent collection for over 30 years to confirm the species still occurs in the IPA.
- one species, Nullarbor Cress (*Phlegmatospermum richardsii*), is an ephemeral that has been collected once in the area in 1987 but could not be found again at this site despite two recent revisits.

Table 9. Plant species of National, State and Regional conservation significance recorded within the Yalata IPA.

Species Name	C N	Con	servat	ion Rat	ting	Source	e of Yalata IPA	Collections
	Common Name	Aus	SA	NU	EP	AD	Other SU	Yalata Survey
Confirmed Records								
Austrostipa velutina				U		+	+	+
Eremophila parvifolia	Small-leaf Emubush		R	R	K		+	+
Poa drummondiana	Knotted Poa		R	#				+
Pomaderris forrestiana			R	K			+	
Scaevola bursariifolia	Bursaria Fanflower			U	U		+	+
Templetonia battii	Spiny Templetonia		R	#				+
Acacia cyclops	Western Coastal Wattle				U	+		
Atriplex pumilio	Mat Saltbush				U	+		
Bothriochloa macra	Red-leg Grass		R		R	+		
Eremophila sp. Praecox			R		R			+
(R.H.Ashby 131)			K		K			+
Maireana appressa	Pale-fruit Bluebush				U			+
Maireana rohrlachii	Rohrlach's Bluebush		R		K	+		
Olearia magniflora	Splendid Daisy-bush				U	+	+	+
Osteocarpum salsuginosum	Inland Bonefruit				V			+
Podolepis canescens	Grey Copper-wire Daisy				U	+	+	+
Unconfirmed Records								
Brachyscome tatei	Nullarbor Daisy		R	K		+		
Microlepidium alatum		V	V			+		
Microlepidium pilosulum	Hairy Shepherd's-purse		R			+		
Phlegmatospermum richardsii	Nullarbor Cress		V	V			+	
Santalum spicatum	Sandalwood		V	T	V	+	+	
Darwinia salina	Salt Darwinia				U	+		
Daviesia benthamii ssp. humilis	Mallee Bitter-pea		R		R		+	
Wahlenbergia luteola	Yellow-wash Bluebell				U		+	

Aus Australian status under the Environment Protection and Biodiversity Conservation Act 1999 as at February 2008. SA South Australian status under the National Parks and Wildlife Act 1972 (2007 update of schedules 7, 8 and 9).

NU & EP Regional status for the Nullarbor and Eyre Peninsula Herbarium Regions as per the SA FLORA database (February 2008), which provides an update of the original assessments of Lang and Kraehenbuehl (1987).

A rating in both regions indicates that species has been recorded in both within the Yalata IPA.

Status Codes: E = endangered; V = vulnerable; T = threatened (either endangered or vulnerable but insufficient data to enable accurate assessment); R = rare; K = uncertain (either rare or threatened but insufficient data to enable accurate assessment); U = uncommon; # = new records for region and therefore not rated, but likely to be K.

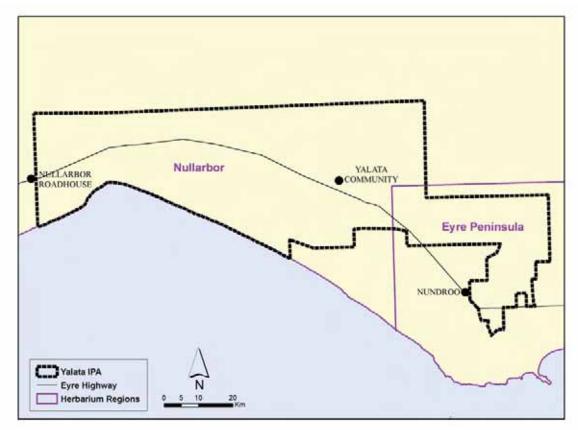


Figure 22. The Yalata IPA is bisected by the Nullarbor and Eyre Peninsula Herbarium Regions.

Table 10. Plant species of conservation significance recorded in the NULLARBOR Herbarium Region within the Yalata IPA (both confirmed and unconfirmed records).

Species Name	Common Name	Aus	SA	NU	NU in Census?	Confirmed record?	Records	Source
							_	1 x AD,
Austrostipa velutina				U	yes	yes	3	1 x BS82 &
			ļ					1 x BS575
								1 x BS14,
Eremophila parvifolia	Small-leaf Emubush		R	R	yes	yes	9	2 x BS428 &
								6 x BS575
Poa drummondiana	Knotted Poa		R		no	yes	1	BS575
Pomaderris forrestiana			R	K	yes	yes	1	BS100
C 1 - 1	D		1	U			7	1 x BS430 &
Scaevola bursariifolia	Bursaria Fanflower			U	yes	yes		6 x BS575
Templetonia battii	Spiny Templetonia	•	R		no	yes	1	BS575
Brachyscome tatei	Nullarbor Daisy		R	K	yes	old	2	2 x AD
Microlepidium alatum		V	V		no	old	1	AD
Microlepidium pilosulum	Hairy Shepherd's-purse		R		no	old	1	AD
Phlegmatospermum richardsii	Nullarbor Cress		V	V	yes	possible	1	OP
Santalum spicatum	Sandalwood		V	T	yes	possible	1	AD

Aus Australian status under the Environment Protection and Biodiversity Conservation Act 1999 as at February 2008.

SA South Australian status under the National Parks and Wildlife Act 1972 (2007 update of schedules 7, 8 and 9).

NU Regional status for the Nullarbor Herbarium Region as per the SA FLORA database (February 2008), which provides an update of the original assessments of Lang and Kraehenbuehl (1987).

Status Codes: E = endangered; V = vulnerable; T = threatened (either endangered or vulnerable but insufficient data to enable accurate assessment); R = rare; K = uncertain (either rare or threatened but insufficient data to enable accurate assessment); U = uncommon.

NU in Census? – Asks whether each taxon was recognised as occurring within the Nullarbor Herbarium Region in the Census of South Australian Vascular Plants (Barker et al. 2005).

Confirmed record? yes = specimen identification and location correct; old = identification correct but no collection for over 30 years; possible = identification correct but no collection for 20 years.

Source: AD = State Herbarium of SA; BS14 = Nullarbor Survey (1984); BS82 = Coastal Dune & Clifftop Survey (1995-96); BS100 = Yalata Land Use Survey (1999); BS428 = Iluka Resources Survey (2005); BS430 = Gawler Craton Survey (2006).

Table 11. Plant species of conservation significance recorded in the EYRE PENINSULA Herbarium Region within the Yalata IPA (both confirmed and unconfirmed records).

Species Name	Common Name	Aus	SA	EP	EP in Census?	Confirmed record?	Records	Source
Acacia cyclops	Western Coastal Wattle			U	yes	yes	2	2 x AD
Atriplex pumilio	Mat Saltbush			U	yes	yes	1	AD
Bothriochloa macra	Red-leg Grass		R	R	yes	yes	1	AD
Eremophila parvifolia	Small-leaf Emubush		R	K	yes	yes	3	1 x BS14, 1 x BS428 & 1 x BS575
Eremophila sp. Praecox (R.H.Ashby 131)			R	R	yes	yes	1	BS575
Maireana appressa	Pale-fruit Bluebush			U	yes	yes	1	BS575
Maireana rohrlachii	Rohrlach's Bluebush		R	K	yes	yes	1	AD
Olearia magniflora	Splendid Daisy-bush			U	yes	yes	7	2 x AD, 1 x BS14, 1 x BS428 & 3 x BS575
Osteocarpum salsuginosum	Inland Bonefruit			V	yes	yes	1	BS575
Podolepis canescens	Grey Copper-wire Daisy			U	yes	yes	4	2 x AD, 1 x BS428 & 1 x BS575
Scaevola bursariifolia	Bursaria Fanflower			U	yes	yes	1	BS575
Darwinia salina	Salt Darwinia			U	yes	locn?	2	AD
Daviesia benthamii ssp. humilis	Mallee Bitter-pea		R	R	yes	ID?	1	BS428
Santalum spicatum	Sandalwood		V	V	yes	locn?	2	1 x AD, 1 x BS14
Wahlenbergia luteola	Yellow-wash Bluebell			U	yes	ID?	1	BS46

Aus Australian status under the Environment Protection and Biodiversity Conservation Act 1999 as at February 2008.

SA South Australian status under the National Parks and Wildlife Act 1972 (2007 update of schedules 7, 8 and 9).

EP Regional status for the Eyre Peninsula Herbarium Region as per the SA FLORA database (February 2008), which provides an update of the original assessments of Lang and Kraehenbuehl (1987).

Status Codes: E = endangered; V = vulnerable; T = threatened (either endangered or vulnerable but insufficient data to enable accurate assessment); R = rare; K = uncertain (either rare or threatened but insufficient data to enable accurate assessment); U = uncommon.

EP in Census? – Asks whether each taxon was recognised as occurring within the Eyre Peninsula Herbarium Region in the *Census of South Australian Vascular Plants* (Barker *et al.* 2005).

Confirmed record? yes = specimen identification and location correct; locn? = location description vague, but most likely outside Yalata IPA; ID? = specimen identification is possibly incorrect.

Source: AD = State Herbarium of SA; BS14 = Nullarbor Survey (1984); BS46 = Temperate Grasslands Survey (1991); BS82 = Coastal Dune & Clifftop Survey (1995-96); BS100 = Yalata Land Use Survey (1999); BS428 = Iluka Resources Survey (2005); BS430 = Gawler Craton Survey (2006).

Descriptions of Species with Conservation Ratings – Confirmed Records

Austrostipa velutina U - NU

This rarely recorded tussock grass is known in South Australia from limestone cliffs and offshore islands from Point Labatt CP west to the Western Australia border (Jessop *et al.* 2006). It was recorded at two sites in coastal dunes in the Yalata IPA. Firstly, near Yalata Beach (BS82-PIL00103) in a Pale Turpentine Bush (*Beyeria lechenaultii*), Dryland Tea-tree (*Melaleuca lanceolata*) Low Shrubland on sand and, on the Yalata IPA Survey, on the track to Granites in Dryland Tea-tree Shrubland on loamy sand (BS575-COO00701).

Eremophila parvifolia (Small-leaf Emubush) R - SA; R - NU; K - EP

The Small-leaf Emubush is a low shrub to 1.2m tall that occurs from near Yalata west along the Nullarbor to near Caiguna in Western Australia in mallee woodland on skeletal light brown calcareous loams (Chinnock 2007). Within the Yalata IPA it is known from eight site records and one opportunistic sighting in the Nullarbor Herbarium Region and three site records in the Eyre Peninsula Herbarium Region.

These records are scattered across the Yalata IPA from Colona to the Head of the Bight.



Figure 23. *Eremophila parviflora* (Small-leaf Emubush) occurs in mallee communities in the Yalata IPA. (Photo: P. Lang).

Poa drummondiana (Knotted Poa) R - SA; possible new record for NU

Knotted Poa is a perennial tussock grass which occurs in the Eyre Peninsula, Northern Lofty, Yorke Peninsula and Murray Herbarium Regions (Jessop *et*

al. 2006). It was recorded near the coast on the track Granites (BS575-YAL01401) in Yorrell (Eucalyptus gracilis), Nundroo Mallee calcareana), Dryland Tea-tree (Melaleuca lanceolata) Open Low Mallee on sandy loam and may be the first collection of this species in the Nullarbor Herbarium Region. There is a specimen in the State Herbarium collected in 1952 by J.B. Cleland from "Yalata Station near Fowler's Bay", but it is unclear as to whether this was within the Nullarbor or Eyre Peninsula Herbarium Regions.

Pomaderris forrestiana R - SA; K - NU

A low shrub to 75cm restricted to the Nullarbor Herbarium Region in SA, where it occurs on limestone, particularly on the tops of the sea cliffs overlooking the Bight (Jessop 1986b). Within the Yalata IPA there is one record from near the coast by the Coombra Track (BS100-COY00304) in Red Mallee (*Eucalyptus oleosa*), Dryland Tea-tree (*Melaleuca lanceolata*) Low Mallee on loamy sand.



Figure 24. *Pomaderris forrestiana* has been recorded once by the Coombra Track in the Yalata IPA. (Photo: P. Lang).

Scaevola bursariifolia (Bursaria Fanflower) U - NU: U - EP

Known from mallee communities along the far west coast of the Eyre Peninsula and Nullarbor Herbarium Regions (Cooke and Carolin 1986), this shrub species was recorded at seven sites and once opportunistically. Within the Nullarbor portion of the Yalata IPA it was recorded from the Coombra Track,



Figure 25. Scaevola bursariifolia (Bursaria Fanflower) was recorded at seven sites in the Yalata IPA, mainly in mallee communities. (Photo: A. Robinson).

in the vicinity of Nanwoora Well and south of the Yalata Community. In the Eyre Peninsula portion it was recorded once on old Colona station. All but one of these observations were from mallee communities.

Templetonia battii (Spiny Templetonia) R - SA; new record for NU

A rigid shrub with branches ending in a short spine, this species is restricted to the far west coast of SA between Ceduna and Nundroo (Weber 1986b). It was recorded as very sparsely present at one site (BS575-NAN00101) near Nanwoora Well in Nundroo Mallee (*Eucalyptus calcareana*), Red Mallee (*E. oleosa* ssp. *ampliata*) Low Woodland on clayey sand. This represents a westward extension of its range into the Nullarbor Herbarium Region.

Acacia cyclops (Western Coast Wattle) U - EP

Western Coast Wattle is a spreading rounded shrub 2-4m high that mostly occurs in calcareous sands along the coast (Whibley and Symon 1992). Barker *et al.* (2005) suggest that the Nullarbor populations are the only truly native occurrences of this species in SA. There are two recent (1993 and 2005) Herbarium specimens of this species collected from the edge of the Yalata IPA near the Coorabie turn off from the Eyre Highway (State Herbarium of SA 2008a).



Figure 26. Acacia cyclops (Western Coast Wattle) has been recorded twice on the edge of the Yalata IPA near Coorabie. (Photo: R. Sandercock).

$\begin{array}{ll} \textit{Bothriochloa macra} \ (\text{Red-leg Grass}) & R \text{ - SA}; \ R \text{ - EP} \end{array}$

A tufted perennial tussock grass to 0.9m tall occurring widely across the agricultural area of SA, often in disturbed sites (Jessop *et al.* 2006). There is one specimen in the State Herbarium collected by D.E. Murfet in 1997 within the Yalata IPA from a disturbed roadside west of Nundroo (State Herbarium of SA 2008a).

Eremophila sp. Praecox (R.H.Ashby 131) R - SA; R - EP

A small broom-like shrub to 1.5m, this species is known from just north of Kalgoorlie to near Coolgardie in Western Australia and on western Eyre Peninsula on compact red-brown earth in *Eucalyptus* woodland. It usually occurs as scattered individuals with no large populations having been located, suggesting it may be of hybrid origin. However, the

possible species combinations which might result in a plant with the features of *E. praecox* do not occur in both the WA and SA locations (Chinnock 2007).

There had been one collection of this taxon from within the Yalata IPA prior to 2007 from a "lone specimen...4 km NW Colona St[atio]n, Wool Shed NE side of road" in May 1996. This is, in fact, the specimen that this entity was based on in SA and was growing under mallee with Broom Emubush (*Eremophila scoparia*), Small-leaf Emubush (*E. parvifolia*), Tar Bush (*E. glabra*), Turkey-bush (*E. deserti*) and Stiff Westringia (*Westringia rigida*).

A specimen collected during the Yalata Biological Survey from site COL00501 was also determined as this taxon. It was also an isolated plant occurring with *E. scoparia*, *E. deserti* and *E. parvifolia* in Red Mallee (*Eucalyptus oleosa* ssp. *ampliata*) Low Woodland on calcareous sandy loam.

Maireana appressa (Pale-fruit Bluebush) U - EP

The Pale-fruit Bluebush is an intricately branched low perennial shrub to 60cm high that occurs in a range of situations, including sandy saline or calcareous soils (Wilson 1986, Cunningham *et al.* 1992). Although widespread in semi-arid and arid SA, the two collections made of this species during the Yalata IPA Survey represent the first records for this area. The nearest previous recordings were from Lake Yarle (near Maralinga to the north) and Pinjarra Lake (to the east of Ceduna).



Figure 27. The first records of *Maireana appressa* (Pale-fruit Bluebush) in the Yalata IPA were recorded on this survey. (Photo: P. Lang).

On this survey it was collected once near the Head of the Bight (YAL00501 - Nullarbor Herbarium Region) where it was sparsely present, and also east of Colona homestead (COL00601 - Eyre Peninsula Herbarium Region) where it was plentiful but of low cover. Both were in light clay in Samphire (*Tecticornia* sp.), Salt Bluebush (*Maireana oppositifolia*) Low Shrubland.

Maireana rohrlachii (Rohrlach's Bluebush) R · SA; K · EP

An intricately branched shrub to 1m high, this species is known to occur infrequently in heavy soil in the Eyre Peninsula, Gairdner-Torrens, Flinders Ranges,

Yorke Peninsula, Northern Lofty, Murray and Southern Lofty Herbarium Regions. Within the Yalata IPA it is known from a single Herbarium collection from "west of Nundroo" by D.E. Murfet in March 1997 (State Herbarium of SA 2008a). It was growing with Spear-grass (*Austrostipa* sp.), Common Wallaby-grass (*Austrodanthonia caespitosa*), Rosy Bluebush (*Maireana erioclada*) and Twinleaf (*Zygophyllum* sp.) on clay loam over limestone.

Olearia magniflora (Splendid Daisy-bush) U - EP The Splendid Daisy-bush is an open shrub to 1m high with sticky leaves and large showy flowers (Cooke 1986a, Cunningham et al. 1992). In South Australia it occurs in the Nullarbor, Eyre Peninsula, Flinders Ranges, Murray and Yorke Peninsula Herbarium Regions in mallee and arid woodland communities (Cooke 1986a, Barker et al. 2005). Within the Eyre Peninsula Herbarium Region portion of the Yalata IPA it was recorded at four sites, once opportunistically and there are a further two Herbarium specimens. All these records are from Red Mallee (Eucalyptus oleosa) Open Mallee or Low Woodland communities.



Figure 28. *Olearia magniflora* (Splendid Daisybush) was recorded in the Eyre Peninsula Herbarium region. (Photo: A. Robinson).

$\textit{Osteocarpum salsuginosum} \ (\textbf{Inland Bonefruit}) \quad \textbf{V-EP}$

Inland Bonefruit is a low, rounded perennial shrub to 20cm high that generally occurs in clay soil subject to periodic flooding or on the outer margins of salt lakes (Wilson 1986). It is a relatively widespread species in the semi-arid and arid areas of the state. The collection of this species on this survey represents the first record within the Yalata IPA, with the previous nearest recording to Yalata at Lake Ifould in 1969.

On the Yalata IPA Survey it was recorded at site COL00801 on old Colona station in a Samphire (*Tecticornia* sp.), Bladder Saltbush (*Atriplex vesicaria*), Salt Bluebush (*Maireana oppositifolia*) Low Shrubland in an open depression.

Podolepis canescens (Grey Copper-wire Daisy) U - EP

A widespread annual herb to 80cm high (Cooke 1986a, Barker *et al.* 2005), the Grey Copper-wire Daisy was recorded at one site (BS428-OR02101) in

Nundroo Mallee (*Eucalyptus calcareana*) Open Mallee and once opportunistically on the Yalata IPA Survey in Spear-grass (*Austrostipa* spp.) Grassland. It is also known from two Herbarium records. All these records are from within 5km of the Colona Woolshed.

Santalum spicatum (Sandalwood) V - SA; T - NU; V - EP

Sandalwood is a shrub or tree 3-8m high that occurs in the North-Western, Nullarbor, Gairdner-Torrens, Eyre Peninsula, Flinders Ranges and Eastern Herbarium Regions. It has been extensively harvested for its timber and is considered threatened in all of these regions (Jessop 1986a). Its presence within the Yalata IPA is uncertain and based on three records, two of which are from the early 1980s. The first is from a site (BS14-KO00501) that is only metres outside the IPA, just north of the track along the dog fence on the northern boundary of old Colona station. This was in Red Mallee (Eucalyptus oleosa), Western Myall (Acacia papyrocarpa) Mallee on loam soils on a consolidated dune. The location of the second record (a Herbarium specimen collected in July 1983) is given as "Colona to Ooldea" and may well be some distance north of the IPA.



Figure 29. Santalum spicatum (Sandalwood) has been recorded along the northern boundary of the former Colona station and on the road north to Ooldea. (Photo: P. Lang).

More recently a collection was made in February 2005 from "34 km N of Yalata Aboriginal Community" in an open woodland on a small sand dune (State Herbarium of SA 2008a). If, as seems likely, this location is beside the road to Ooldea, then it probably is within the Yalata IPA and almost certainly within the Nullarbor Herbarium Region.

Descriptions of Species with Conservation Ratings – Unconfirmed Records

Brachyscome tatei (Nullarbor Daisy) R - SA; K - NII

A low perennial herb to 8cm high that is restricted to the limestone sea cliffs of the Great Australian Bight (Cooke 1986a). There are two specimens of this species in the State Herbarium that have been collected within the Yalata IPA. Both were collected near the Head of the Bight in the early 1960s (State Herbarium of SA 2008a). In the absence of collections since that time its presence here cannot be confirmed.



Figure 30. *Brachyscome tatei* (Nullarbor Daisy) has not been reported from within the Yalata IPA since the early 1960s. (Photo: P. Lang).

Microlepidium alatum V - Aus; V - SA; no rating - NU

An annual herb endemic to the west coast of Eyre Peninsula that grows in protected places (Hewson 1986). There is one specimen in the State Herbarium collected from Bight Well (in Yalata IPA) by J.B. Cleland in 1957, plus a further three specimens outside the IPA from between Yalata and Fowler's Bay (Eyre Peninsula Herbarium Region) in 1960s and early 1970s (State Herbarium of SA 2008a). Given there has been no subsequent recording from the Yalata IPA its presence here must be regarded as questionable.

Microlepidium pilosulum (Hairy Shepherd's-purse) R - SA; no rating - NU

An annual herb occurring in the Eyre Peninsula, Yorke Peninsula, Murray and Kangaroo Island Herbarium Regions (Hewson 1986) as well as southern Western Australia and Victoria (primarily near coastal sites west of Cape Otway - Entwisle 1996). There is one specimen in the State Herbarium collected from "5km SE of Yalata" by B. Copley in 1969 (State Herbarium of SA 2008a). A further three specimens have been collected nearby (outside the IPA) between Yalata and Bookabie, the most recent from within Wahgunyah CP in 2005 by P. Lang (DEH Eyre Peninsula Biological Survey) in Yorrell (Eucalyptus gracilis), Nundroo Mallee calcareana) Mallee on a sandy plain in a consolidated dunefield.



Figure 31. *Microlepidium pilosulum* (Hairy Shepherd's-purse) is likely to occur within the Yalata IPA as there have been several nearby collections. (Photo: P. Lang).

Phlegmatospermum richardsii (Nullarbor Cress) V - SA; V - NU

A rarely collected annual herb known from only two collections in SA, one of which is from the Yalata IPA. A specimen was collected approximately 50km WNW of the Yalata Community beside the underground Telstra cable by G. Carpenter in July 1995. There were reportedly hundreds of plants in an area of one hectare in Nundroo Mallee (*Eucalyptus calcareana*) Open Mallee over Tar Bush (*Eremophila glabra*), Fleshy Saltbush (*Rhagodia crassifolia*), Purple Emubush (*E. weldii*) (State Herbarium of SA 2008a). The site was revisited with the original collector during the October 2007 Yalata IPA Survey trip but this species could not be relocated. The other SA record is from Coorabie and was collected by J.B. Cleland in 1957 (State Herbarium of SA 2008a).

Atriplex pumilio (Mat Saltbush) U - EP

An infrequently recorded prostrate perennial shrub, this species is possibly known in the study area from a single collection in the State Herbarium by D.E. Symon from the side of the Eyre Highway "12 miles E of Nundroo Station" in February 1967 (State Herbarium of SA 2008a). Due to the age and vague location description of this record the species' presence in the Yalata IPA requires confirmation.

Darwinia salina (Salt Darwinia) U - EP

A small-leaved prostrate to erect shrub to 50cm high, this species occurs from the Great Victoria Desert south-eastwards to Eyre Peninsula (Craven and Jones 1991). It is thus in the North-Western, Nullarbor, Gairdner-Torrens and Eyre Peninsula Herbarium Regions (Barker *et al.* 2005). Salt Darwinia has been recorded as occurring on the fringes of salt lakes in

mallee scrub, gypsum sand dunes and the sandy margins of clay pans (Craven and Jones 1991).



Figure 32. *Darwinia salina* (Salt Darwinia) is found on the margin of salt lakes and clay pans, as well as on gypsum sand dunes. (Photo: P. Lang).

The presence of this species within the Yalata IPA is uncertain and based on two Herbarium specimens with vague location descriptions. The location of both is given as "Colona to Ooldea" (State Herbarium of SA 2008a) and therefore may well be outside the IPA to the north.

Daviesia benthamii ssp. humilis (Mallee Bitter-pea) R – SA; R - EP

A slender shrub to 60cm high with short, pungent phyllodes, this species occurs across much of the agricultural region of the state (Weber 1986b). It has been recorded at one site (BS428-OR02301) within the Yalata IPA in Nundroo Mallee (*Eucalyptus calcareana*), Gilja (*E. brachycalyx*) Open Mallee on clay loam soils near the old Colona homestead. This is, however, a collection of poor quality material with the determination based on a single small flower (Badman 2006). As such the presence of this taxon within the Yalata IPA requires confirmation.

Wahlenbergia luteola (Yellow-wash Bluebell) U - FP

This perennial tufted herb is a common species across much of the agricultural region of SA (Barker *et al.* 2005). The only record west of Penong may just lie within the Yalata IPA. It was observed at a site (BS46-TG025) on the side of the Eyre Highway about 1km SE of Nundroo in Balcarra Spear-grass (*Austrostipa nitida*), Rusty Spear-grass (*A. eremophila*) Open Tussock Grassland in sandy clay loam soils. However, no specimen was vouchered at the time of that survey. Hence the presence of this species within the Yalata IPA requires confirmation.

New Species Records for the Yalata IPA

A total of 33 plant taxa not previously known to occur in the Yalata IPA were recorded on this survey (Table 12). Of these, ten are daisies (Family Compositae), five are wattles or legumes (Family Leguminosae) and five are chenopods (Family Chenopodiaceae).

The relatively high number of new species' records reflects the coverage of this survey in that it sought to sample the range of major habitats, landforms and soil types present in the IPA. Previous survey site coverage in the area was less comprehensive. Additionally, a significant proportion of existing sites

(51 of 128), those sampled as vegetation mapping sites for the Gawler Craton Survey (BS430), were sampled using a different method. At these, only species with a cover of at least 5% at the site were recorded, thereby overlooking all less abundant species.

Most of the other botanical work conducted in the IPA has been limited to roadside collections along the Eyre Highway. Finally, the Yalata region had received reasonable rainfall prior to both survey trips in 2007 (May and October) resulting in a relatively abundant coverage of herbs and grasses.

Table 12. Status and frequency of new plant species records from the Yalata IPA Biological Survey.

Species Name	Common Name	SA	SU	OP	Location
*Acacia saligna	Golden Wreath Wattle			1	edge of Eyre Hway near Nullarbor Roadhouse
Acacia spinescens	Spiny Wattle		1		NE of Nanwoora Well in E. oleosa Low Woodland
Atriplex suberecta	Lagoon Saltbush		1		E of Colona HS in Open Herbland
Calotis cymbacantha	Showy Burr-daisy		1		Head of Bight in <i>Melaleuca lanceolata</i> , <i>Myoporum insulare</i> Tall Open Shrubland
*Carthamus lanatus	Saffron Thistle		1	1	N of Pintumba in <i>Lycium australe</i> , <i>Atriplex stipitata</i> Low Open Shrubland; Toolgerie Rockhole in <i>Atriplex vesicaria</i> Low Shrubland
Cassytha peninsularis	Peninsula Dodder-laurel		1		Coombra Track near coast in <i>E. gracilis, E. calcareana, Melaleuca lanceolata</i> Open Low Mallee
Convolvulus recurvatus ssp. nullarborensis				1	Toolgerie Rockhole in Atriplex vesicaria Low Shrubland
Convolvulus remotus	Grassy Bindweed		2		E of Colona HS in Open Herbland; N of Pintumba in <i>Lycium australe</i> , <i>Atriplex stipitata</i> Low Open Shrubland
Erodium crinitum	Blue Heron's-bill		2		2 Colona sites in <i>Tecticornia</i> sp., <i>Atriplex vesicaria</i> , <i>Maireana oppositifolia</i> Low Shrubland
Lepidium phlebopetalum	Veined Peppercress		8		3 x Head of Bight sites, 4 x Nanwoora Well sites & 1 x Coombra Track site in a variety of habitats – Acacia papyrocarpa Very Low Woodland; E. calcareana-E. yalatensis Open Mallee; Tecticornia sp. Low Shrubland; and Austrostipa spp. Grassland
Maireana appressa	Pale-fruit Bluebush		2		2 sites in Tecticornia sp., Maireana oppositifolia Low Shrubland
Maireana brevifolia	Short-leaf Bluebush		1		Coombra Track near coast in <i>Melaleuca lanceolata</i> Shrubland
*Medicago minima var. minima	Little Medic		4		4 sites at Colona – 2 in <i>Trichanthodium</i> skirrophorum Open Herbland; 1 in <i>Austrostipa</i> spp. Open Grassland; and 1 in <i>Acacia papyrocarpa</i> Very Low Open Woodland
Minuria cunninghamii	Bush Minuria		1		N of Nanwoora Well in <i>Maireana sedifolia</i> Low Open Shrubland
Nicotiana rosulata ssp.			1		Head of Bight in Melaleuca lanceolata, Myoporum insulare Tall Open Shrubland
Olearia calcarea	Crinkle-leaf Daisy-bush		1		Coombra Track site in E. gracilis, E. calcareana Low Woodland
Olearia pimeleoides ssp. incana	Showy Daisy-bush		1		Colona site in E. oleosa Open Mallee
Osteocarpum salsuginosum	Inland Bonefruit		1		Colona site in <i>Tecticornia</i> sp., <i>Atriplex vesicaria</i> , <i>Maireana oppositifolia</i> Low Shrubland
*Poa bulbosa	Bulbous Meadow-grass		1		Coombra Track site in <i>E. gracilis</i> , <i>E. yalatensis</i> Open Mallee
Poa drummondiana	Knotted Poa	R	1		Coombra Track near coast in <i>E. gracilis, E.</i> calcareana, <i>Melaleuca lanceolata</i> Open Low Mallee
Pycnosorus eremaeus	Golden Billy-buttons		3		3 sites at Colona – 2 in <i>Tecticornia</i> sp., <i>Atriplex</i> vesicaria, <i>Maireana oppositifolia</i> Low Shrubland; 1 in <i>Acacia papyrocarpa</i> Very Low Open Woodland
*Reichardia tingitana	False Sowthistle		2	1	2 records in Melaleuca lanceolata, Myoporum insulare Tall Open Shrubland at Head of Bight; 1 at Colona in Trichanthodium skirrophorum Open Herbland

Species Name	Common Name	SA	SU	OP	Location
Rhodanthe corymbiflora	Paper Everlasting		3		3 sites N of Nanwoora Well - Maireana sedifolia Low Open Shrubland; Atriplex vesicaria, Nitraria billardierei, Maireana erioclada Low Very Open Shrubland; Acacia papyrocarpa Very Low Woodland
Senna artemisioides ssp. petiolaris			2	1	2 sites in clearings in mallee – near Coolabbie Tank in Cratystylis conocephala, Atriplex stipitata Low Shrubland & SW of Yalata Community in Geijera linearifolia, Pittosporum angustifolium Tall Open Shrubland; 1 site in Acacia papyrocarpa, Myoporum platycarpum Low Woodland near Red Gate Tank
Senna artemisioides ssp. quadrifolia	Four-leaf Desert Senna		1		Austrostipa sp., Austrodanthonia sp. Open Grassland N of Pintumba
Sida corrugata var.	Corrugated Sida		1		N of Pintumba in <i>Lycium australe</i> , <i>Atriplex stipitata</i> Low Open Shrubland
Sida spodochroma	Limestone Sida		1		SW of Yalata Community in <i>Atriplex vesicaria</i> , <i>Maireana erioclada</i> , <i>Sclerolaena diacantha</i> Low Shrubland
*Spergularia diandra	Lesser Sand-spurrey		2		2 sites at Colona in <i>Tecticornia</i> sp., <i>Atriplex</i> vesicaria, <i>Maireana oppositifolia</i> Low Shrubland
Tecticornia indica ssp. leiostachya	Brown-head Samphire		1		Head of Bight in Tecticornia indica ssp. leiostachya, Maireana oppositifolia, Hemichroa diandra Low Open Shrubland
Templetonia battii	Spiny Templetonia	R	1		N of Nanwoora Well in <i>E. calcareana</i> , <i>E. oleosa</i> , Low Woodland
Triglochin sp. A (N.N.Donner 3596)	Spurred Arrowgrass		1		Colona site in <i>Tecticornia</i> sp., <i>Atriplex vesicaria</i> , <i>Maireana oppositifolia</i> Low Shrubland
Vittadinia arida			1		Colona site in <i>Trichanthodium skirrophorum</i> Open Herbland
*Vulpia myuros f.	Fescue		1		Coombra Track site in clearing in mallee in Atriplex stipitata, Maireana erioclada Low Shrubland

Naturalised alien taxa are designated with an asterisk (*).

SA = State conservation ratings (R = rare). Note: none of these species are rated nationally.

SU = number of records from Yalata IPA Biological Survey sites.

 $OP = number\ of\ opportunistic\ sightings\ recorded\ during\ the\ Yalata\ IPA\ Biological\ Survey.$

Descriptions of Species that are New Records for the Yalata IPA

*Acacia saligna (Golden Wreath Wattle)

A dense bushy shrub or small tree to 8m high that is endemic to Western Australia and introduced to South Australia (Whibley and Symon 1992). It is known to be naturalised in parts of the southern agricultural zone of the state, particularly in the Southern Lofty and South East Herbarium Regions. The nearest previous records to Yalata were from Cowell and Coffin Bay (State Herbarium of SA 2008a).

It was recorded once on this survey, beside the Eyre Highway approximately 10km east of the Nullarbor Roadhouse emergent in a Bladder Saltbush (*Atriplex vesicaria*), Samphire (*Tecticornia* sp.) Low Shrubland. This constitutes the first record for the Nullarbor Herbarium Region.

Acacia spinescens (Spiny Wattle)

A small erect shrub to 1m high this species occurs across much of the agricultural area of the state in a wide variety of soil types (Whibley and Symon 1992). The nearest known record was collected near Kalanbi north of Ceduna in 1984 (State Herbarium of SA 2008a). On this survey it was recorded as very sparsely present at one site (NAN00601) north east of Nanwoora Well in a Red Mallee (*Eucalyptus oleosa* ssp. *ampliata*) Low Woodland in loamy sand. This is the first record for the Nullarbor Herbarium Region.



Figure 33. The collection of *Acacia spinescens* (Spiny Wattle) from near Nanwoora Well on this survey is the first for the Nullarbor Herbarium Region. (Photo: A. Robinson).

Atriplex suberecta (Lagoon Saltbush)

A prostrate to sprawling herb to 60cm high this plant is generally found around lakes or dams but may also occur near the coast (Wilson 1986). The nearest recording was from near Yardea in the Gawler Ranges from 1972 (State Herbarium of SA 2008a). During the Yalata IPA Survey it was recorded as very sparsely present at site YAL02001 on old Colona station. This site was on a sandy loam plain that looked to have been modified by past grazing and now supported a Cut-leaf Goodenia (Goodenia

pinnatifida), Thread Iris (*Moraea setifolia), Woolly Yellow-heads (*Trichanthodium skirrophorum*) Open Herbland.



Figure 34. Atriplex suberecta (Lagoon Saltbush) was recorded from a single site on the former Colona station. (Photo: P. Lang).

Calotis cymbacantha (Showy Burr-daisy)

An erect branching annual or perennial herb to 40cm high, this species grows on sand plains and dunefields (Cooke 1986a, Cunningham *et al.* 1992) and is widespread across semi-arid and arid South Australia. On this survey it was recorded as sparsely



Figure 35. Calotis cymbacantha (Showy Burrdaisy) was recorded at a single site near the Head of the Bight. (Photo: A. Robinson).

present at one site (HOB00501) near the Head of the Bight. This was on loamy sand on the edge of the extensive dunefield in this area in Dryland Tea-tree (Melaleuca lanceolata), Common Boobialla (Myoporum insulare) Tall Open Shrubland.

*Carthamus lanatus (Saffron Thistle)

A rigid annual herb to 1m high this introduced species is widespread in the agricultural areas of the state (Cooke 1986a). During this survey it was recorded once opportunistically at Toolgerie Rockhole in Bladder Saltbush (*Atriplex vesicaria*) Low Shrubland and at one site (YAL02201) north of Pintumba. It was sparsely present at this site on a medium clay flat in an Australian Boxthorn (*Lycium australe*), Bitter Saltbush (*Atriplex stipitata*) Low Open Shrubland.

Cassytha peninsularis (Peninsula Dodder-laurel)

A pubescent twining plant that parasitises its host, this species was previously only known from Eyre Peninsula, Yorke Peninsula and Kangaroo Island (Weber 1986a). On this survey it was recorded as plentiful but with cover less than 5% at one site (YAL01401) on the Coombra Track within the Nullarbor Herbarium Region. This was in Yorrell (Eucalyptus gracilis), Nundroo Mallee (E. calcareana), Dryland Tea-tree (M. lanceolata) Open Low Mallee in sandy loam.

Convolvulus recurvatus ssp. nullarborensis

This perennial species was originally described from collections on the Nullarbor Plain where it grows in chenopod shrublands on clay loam soils derived from limestone (Johnson 2001). It has since been recorded in the North-Western, Eyre Peninsula, Flinders Ranges, Eastern, Northern Lofty, Murray and South East Herbarium Regions (Barker *et al.* 2005). During the Yalata IPA Survey it was recorded once opportunistically at Toolgerie Rockhole in Bladder Saltbush (*Atriplex vesicaria*) Low Shrubland.

Convolvulus remotus (Grassy Bindweed)

This perennial species occurs in all mainland states and in all Herbarium Regions in SA. It is found on a wide variety of soil types from clays through loams to sands and has also been recorded in a variety of vegetation communities (Johnson 1986, Johnson 2001). However, in semi-arid to arid areas it commonly occurs in chenopod shrublands with Pearl Bluebush and Bladder Saltbush (Johnson 1986, Johnson 2001).

On this survey it was recorded at two sites on old Colona station – at YAL02001 it was very sparsely present in Cut-leaf Goodenia (Goodenia pinnatifida), Thread Iris (*Moraea setifolia), Woolly Yellowheads (Trichanthodium skirrophorum) Open Herbland on a sandy loam plain; and at YAL02201 it was plentiful but of low cover in an Australian Boxthorn (Lycium australe), Bitter Saltbush (Atriplex stipitata) Low Open Shrubland on a medium clay flat.

Erodium crinitum (Blue Heron's-bill)

A decumbent to ascending herb with stems to 50cm long this is a widespread species that occurs in a wide

variety of soil types and plant communities (Carolin 1986, Cunningham *et al.* 1992). It has been recorded in all Herbarium Regions in SA though rarely from the Nullarbor. The nearest previous record to Yalata was from 50km north of Colona Homestead in 1984 (State Herbarium of SA 2008a).

On this survey it was recorded at two sites (sparsely present at COL00601 and plentiful but of low cover at COL00801) on the former Colona station in clay soils in Samphire (*Tecticornia* sp.), Bladder Saltbush (*Atriplex vesicaria*), Salt Bluebush (*Maireana oppositifolia*) Low Shrubland.

Lepidium phlebopetalum (Veined Peppercress)

This annual or perennial herb to 30cm high is widespread across semi-arid and arid areas of the state (Hewson 1986) and has previously been collected close to the Yalata IPA - 7km west of Nullarbor Roadhouse in 1984 (State Herbarium of SA 2008a). It is known to occur in a range of soil types and plant communities (Cunningham *et al.* 1992).

On this survey it was recorded at eight sites (HOB00101, HOB00201, HOB00301, NAN00301, NAN00401, NAN00501, NAN00801 and COO00301) in grasslands, chenopod shrublands mallee and low woodlands and mostly in sandy clay loam soils. In most of these instances it was found to be sparsely present.



Figure 36. Lepidium phlebopetalum (Veined Peppercress) was recorded at eight sites on this survey. (Photo: A. Robinson).

Maireana appressa (Pale-fruit Bluebush)

Refer to description in previous section.

Maireana brevifolia (Short-leaf Bluebush)

A chenopod shrub to 1m high that is usually found in slightly saline soils (Wilson 1986). The nearest previous records of this species were from near Penong in 1973 and south east of Koonibba in 2005 (State Herbarium of SA 2008a). It is known to occur widely across the northern agricultural areas of the state.

On this survey it was recorded as plentiful but of low cover at one site (COO00701) in loamy sand in Dryland Tea-tree (*Melaleuca lanceolata*) Shrubland in coastal dunes.

*Medicago minima var. minima (Little Medic)

A prostrate to ascending annual herb with long soft hairs, this introduced species is very widespread in the agricultural areas of the state (Weber 1986b). The nearest recording was from 7km north west of Fowler's Bay from 2005 (State Herbarium of SA 2008a).

On this survey it was recorded as sparsely present at four sites in sandy loam in a variety of plant communities on the former Colona station at the eastern end of the IPA. Two of these were in Woolly Yellow-heads (*Trichanthodium skirrophorum*) Herblands, one in a Spear-grass (*Austrostipa* sp.), Wallaby-grass (*Austrodanthonia* sp.) Open Grassland and one in Western Myall (*Acacia papyrocarpa*) Very Low Open Woodland.

Minuria cunninghamii (Bush Minuria)

A low shrub to 90cm high, this daisy species is widespread in the arid regions of the state (Cooke 1986a). The nearest previous recording was from just outside the IPA near Nundroo in 1990 (State Herbarium of SA 2008a).

On this survey it was recorded as very sparsely present at one site north of Nanwoora Well (NAN00201) in loamy sand in Pearl Bluebush (*Maireana sedifolia*) Low Open Shrubland.

Nicotiana rosulata ssp.

This herb to 80cm high grows mostly in sandy areas, often along creeklines under trees (Haegi and Symon 1986). It has been recorded in the North-Western, Lake Eyre, Gairdner-Torrens, Eyre Peninsula and Eastern Herbarium Regions. The nearest previous recording was at Mount Finke in 2004 (State Herbarium of SA 2008a).

On this survey one specimen that was not identified beyond species level was recorded as very sparsely present at site HOB00501 in dunes near the Head of the Bight. This is the first record for the Nullarbor Herbarium Region. It was recorded as very sparsely present in sand in Dryland Tea-tree (*Melaleuca lanceolata*), Common Boobialla (*Myoporum insulare*) Tall Open Shrubland.

Olearia calcarea (Crinkle-leaf Daisy-bush)

A spreading shrub to 1m, this species occurs mainly in mallee and woodland on loam and sandy soils (Cooke 1986a). It is found across semi-arid SA with most records from the north of the Eyre Peninsula Herbarium Region. The nearest previous record was from Yellabinna Regional Reserve in 2006 (State Herbarium of SA 2008a).

On this survey it was recorded as plentiful but with cover less than 5% at one site (COO00401) on the Coombra Track. This was in sandy loam on a dune slope in Yorrell (*Eucalyptus gracilis*), Nundroo Mallee (*E. calcareana*) Low Woodland.



Figure 37. Olearia calcarea (Crinkle-leaf Daisybush) was recorded at one site on the Coombra track. (Photo: P. Lang).

Olearia pimeleoides ssp. incana (Showy Daisybush)

An erect branching shrub to 1m, this daisy is only known from the North-Western, Nullarbor and Eastern Herbarium Regions (Cooke 1986a, State Herbarium of SA 2008a). This, however, may be a function of most specimens in the Adelaide Herbarium only being determined to the broader species level (i.e. as *O. pimeleoides*).

The previous nearest record of this subspecies to Yalata was on the Nullarbor Plain 57km north of Cook in 1995 (State Herbarium of SA 2008a). On the Yalata IPA Survey it was recorded as very sparsely present at one site (COL00401) in clay loam in Red Mallee (*Eucalyptus oleosa* ssp. *ampliata*) Open Mallee.

Osteocarpum salsuginosum (Inland Bonefruit) Refer to description in previous section.

*Poa bulbosa (Bulbous Meadow-grass)

A tufted perennial grass with many swollen bulb-like bases, this introduced species occurs mainly in the agricultural areas in SA, where it grows on a wide range of soil types including ironstone and calcareous (Jessop *et al.* 2006). The nearest previous record was from Mount Hope on southern Eyre Peninsula (State Herbarium of SA 2008a).

On this survey it was recorded as very sparsely present at one site (COO00301) on the Coombra Track in loamy sand in Yorrell (*Eucalyptus gracilis*), Yalata Mallee (*E. yalatensis*) Open Mallee. This is the first record for the Nullarbor Herbarium Region.

Poa drummondiana (Knotted Poa) R - SA Refer to description in previous section.

Pycnosorus eremaeus (Golden Billy-buttons)

An ascending or erect herbaceous daisy to 35cm high, this species is mostly found on heavy or rocky soils in Central Australia (Everett and Doust 1992). In South Australia it had previously been recognised as only occurring in the Lake Eyre and Flinders Ranges Herbarium Regions, with the nearest records being in the vicinity of Coober Pedy (State Herbarium of SA 2008a).



Figure 38. *Pycnosorus eremaeus* (Golden Billybuttons) was recorded at three sites on the former Colona station during this survey. (Photo: P. Canty).

On the Yalata IPA Survey it was recorded as sparsely present at three sites on the former Colona station. Two of these (COL00601 and COL00801) were in clay soils in Samphire (*Tecticornia* sp.), Bladder Saltbush (*Atriplex vesicaria*), Salt Bluebush (*Maireana oppositifolia*) Low Shrubland. The third (COL00201) was in sandy clay loam in Western Myall (*Acacia papyrocarpa*) Very Low Open Woodland over Bluebush Daisy (*Cratystylis conocephala*) and Samphire (*Tecticornia* sp.).

*Reichardia tingitana (False Sowthistle)

A branching annual herb to 50cm high, this introduced species is usually found in disturbed areas (Cooke 1986a). It is widespread across the agricultural areas of the state but far less common in arid regions. The nearest previous records were from Tallacootra Rockhole on the Yalata-Ooldea Road in 2006 and near Penong in 2005 (State Herbarium of SA 2008a).

On this survey it was recorded twice in loamy sand in dunes near the Head of the Bight, as plentiful but of low cover at site HOB00501 and opportunistically nearby. Both were in Dryland Tea-tree (*Melaleuca lanceolata*), Common Boobialla (*Myoporum insulare*) Tall Open Shrubland. These are only the second and third records for the Nullarbor Herbarium Region.

A third collection was made at a site (COL00101) east of Colona Homestead where it was recorded as very sparsely present in loamy sand in a Woolly Yellow-heads (*Trichanthodium skirrophorum*) Herbland.

Rhodanthe corymbiflora (Paper Everlasting)

The Paper Everlasting is an erect annual herb to 30cm with woolly, whitish-grey stems that is found in a variety of communities, though mainly on heavy soils (Cooke 1986a, Cunningham *et al.* 1992). It is widespread in and near the Flinders Ranges and Northern Lofty Herbarium Regions, but was not previously known from west of the Gawler Ranges (State Herbarium of SA 2008a).

On this survey it was recorded three times (including two collections) at sites north of Nanwoora Well. Here it was found to be sparse in Bladder Saltbush (Atriplex vesicaria), Nitre-bush (Nitraria billardierei), Rosy Bluebush (Maireana erioclada) Low Very Open Shrubland on sandy clay loam (NAN00301), and plentiful but of low cover in both Pearl Bluebush (Maireana sedifolia) Low Open Shrubland on loamy sand (NAN00201) and Western Myall (Acacia papyrocarpa) Very Low Woodland over Bladder Saltbush and Bluebush Daisy (Cratystylis conocephala) on sandy clay loam (NAN00401).

Senna artemisioides ssp. petiolaris

A medium to tall (1-3m) shrub, usually with several stems and with laterally compressed petioles, this subspecies is widespread across South Australia in a variety of habitats from rocky slopes to deep sand (Randell 1989). The previous nearest records to Yalata were to the north at Pidinga Rockhole in Yellabinna Regional Reserve, and to the east at Inila Rock in Yumbarra Conservation Park (State Herbarium of SA 2008a).

On the Yalata IPA Survey it was recorded twice in clearings in the tall mallee south of the Eyre Highway

once opportunistically in Bluebush Daisy



Figure 39. Senna artemisioides ssp. petiolaris was recorded three times on this survey. (Photo: DEH).

(Cratystylis conocephala), Bitter Saltbush (Atriplex stipitata) Low Shrubland and once as very sparsely present at a site (YAL01601) in sandy loam in Sheep Bush (Geijera linearifolia), Native Apricot (Pittosporum angustifolium) Tall Open Shrubland – and once as sparsely present at a site (YAL00301) near the Head of the Bight in sandy loam in Western Myall (Acacia papyrocarpa), False Sandalwood (Myoporum platycarpum ssp. platycarpum) Low Woodland over Bladder Saltbush (Atriplex vesicaria), Spear-grass (Austrostipa sp.) and Small-spine Bindyi (Sclerolaena uniflora).

Senna artemisioides ssp. quadrifolia (Four-leaf Desert Senna)

Four-leaf Desert Senna is a medium to tall (1-3m) shrub that differs from other subspecies of *Senna artemisioides* in that the leaflets are narrow elliptic, usually occur in two pairs, have a sparse covering of erect or appressed hairs and a terete petiole 15-25mm long (Randell 1989). It has been recorded in a variety of habitats from rocky hillsides to deep sand (Randell 1989) across much of northern South Australia in the North-Western, Lake Eyre, Nullarbor, Gairdner-Torrens, Flinders Ranges and Eastern Herbarium Regions (Barker *et al.* 2005).



Figure 40. The nearest previous record of *Senna* artemisioides ssp. quadrifolia (Four-leaf Desert Senna) was from Watson Railway Siding. (Photo: A. Robinson).

The nearest previous records to Yalata are from Watson Railway Siding in 1977 and west of Tarcoola in 2000 (State Herbarium of SA 2008a). On this

survey it was recorded as sparsely present at one site (YAL02101) north of Pintumba in sandy loam in Spear-grass (*Austrostipa* sp.), Wallaby-grass (*Austrodanthonia* sp.) Open Tussock Grassland.

Sida corrugata var. (Corrugated Sida)

Corrugated Sida is a prostrate or decumbent herb or sub shrub that has been recorded in a wide variety of habitats (Barker and Jessop 1986, Barker 1996). There are two varieties of this species currently recognised in South Australia (State Herbarium of SA 2008b), though the one record collected on this survey was only identified to species level.

The species has been recorded broadly across the agricultural areas of South Australia but most often in the Flinders Ranges, Northern Lofty, Murray and Southern Lofty Herbarium Regions (Barker *et al.* 2005). The nearest previous record to Yalata of *S. corrugata* var. *angustifolia* was west of Koonibba in 2005, and for *S. corrugata* var. *corrugata* was Ooldea Railway Siding in 1922 and Tarcoola Railway Siding 1n 1912 (State Herbarium of SA 2008a).

On the Yalata IPA Survey *Sida corrugata* var. was recorded as plentiful but with cover less than 5% at one site (YAL02201) north of Pintumba in medium clay in Australian Boxthorn (*Lycium australe*), Bitter Saltbush (*Atriplex stipitata*) Low Open Shrubland. The specimen was not identified to sub-specific level.

Sida spodochroma (Limestone Sida)

A prostrate or decumbent shrub to 20cm high, this species is found in woodlands and chenopod shrublands on limestone soils (Barker and Jessop 1986, Barker 1996). It has been recorded widely across semi-arid to arid South Australia, though not in the far north of the state (Barker *et al.* 2005). The nearest previous records to Yalata are from Euria Rockhole north of Penong in 1987 and Pidinga Sheds on the Colona-Ooldea Road in 2006 (State Herbarium of SA 2008a).

On this survey it was recorded as very sparse at one site (YAL01701) on the Yalata Beach Track in sandy loam in Bladder Saltbush (*Atriplex vesicaria*), Rosy Bluebush (*Maireana erioclada*), Grey Bindyi (*Sclerolaena diacantha*) Low Shrubland.

$*Spergularia\ diandra\ (Lesser\ Sand-spurrey)$

This exotic perennial or annual slender herb has decumbent or ascending stems to 20cm high (Chorney 1986) and is an ephemeral weed that occurs mostly in damp, clayey or sandy, salt-affected or calcareous soils (Adams and West 1996). In South Australia it has been recorded widely across the drier parts of the agricultural areas and into the margins of the arid zone. Prior to the survey the nearest previous record was from a saltmarsh 10km north of Fowler's Bay in 2005 (State Herbarium of SA 2008a).

During the Yalata IPA Survey it was recorded as plentiful but of low cover at two sites (COL00601 and COL00801) on the former Colona station in clay

soils in Samphire (*Tecticornia* sp.), Bladder Saltbush (*Atriplex vesicaria*), Salt Bluebush (*Maireana oppositifolia*) Low Shrubland.

Tecticornia indica ssp. leiostachya (Brown-head Samphire)

Brown-head Samphire is a perennial decumbent to erect shrub to 80cm high that is widespread along the South Australian coast and inland around salt lakes (Wilson 1986). The previous nearest records are from Lake Yarle (south of Maralinga) in 1977 and from south of Streaky Bay in 1999 and 2001 (State Herbarium of SA 2008a).



Figure 41. Tecticornia indica ssp. leiostachya (Brown-head Samphire) was recorded during this survey as an overstorey dominant in a low open shrubland near the Head of the Bight. (Photo: J. Gillen).

On this survey it was recorded as plentiful (cover 5-25%) at one site (YAL00501) as a dominant species in a Brown-head Samphire, Salt Bluebush (*Maireana oppositifolia*), Mallee Hemichroa (*Hemichroa diandra*) Low Open Shrubland in light clay in a swamp.

Templetonia battii (Spiny Templetonia) R - SA Refer to description in previous section.

Triglochin sp. A (N.N.Donner 3596) (Spurred Arrowgrass)

A small slender annual herb with thread-like leaves, this species occurs in temporarily damp areas, e.g. bordering swamps and in sandy creek beds (Randell 1986, Cunningham *et al.* 1992). In South Australia it is known to occur in the Lake Eyre, Gairdner-Torrens, Flinders Ranges and Eastern Herbarium Regions (Barker *et al.* 2005).

This taxon has resulted from a recent taxonomic division. A detailed description of it is yet to be published and, as such, information on its distribution and habitat preferences are unavailable.

On this survey it was recorded as sparsely present at one site (COL00801) on the former Colona station in medium clay in Samphire (*Tecticornia* sp.), Bladder Saltbush (*Atriplex vesicaria*), Salt Bluebush (*Maireana oppositifolia*) Low Shrubland.

Vittadinia arida

This erect annual herb to 30cm has mainly been recorded (in South Australia) in rocky areas, particularly in the Northern Flinders Ranges (Cooke 1986a). It is also known to occur in the North-Western, Lake Eyre, Gairdner-Torrens and Eastern Herbarium Regions. The previous nearest record to Yalata was from an island in Lake Gairdner in 1993 (State Herbarium of SA 2008a).

During the Yalata IPA Survey it was recorded as very sparse at one site east of Colona homestead in loamy sand in a Woolly Yellow-heads (*Trichanthodium skirrophorum*) Herbland. This represents the first collection in the Eyre Peninsula Herbarium Region.

*Vulpia myuros f. (Fescue)

A tufted annual grass to 55cm high that has two forms in South Australia, both of which have been

recorded from a wide range of habitats but principally from seasonally wet disturbed areas (Jessop *et al.* 2006). Both are also regularly found in native vegetation across the agricultural region of the state (Jessop *et al.* 2006). The one specimen collected on this survey was identified only to species level.

The nearest previous records were from Wahgunyah Conservation Park in 2005 and Chadinga Conservation Reserve, also in 2005. Both of these were *Vulpia myuros* forma *myuros* (State Herbarium of SA 2008a).

On the Yalata IPA Survey it was recorded as plentiful but with cover less than 5% at one site on a sandy loam flat on the Coombra Track (COO00201) in Bitter Saltbush (*Atriplex stipitata*), Rosy Bluebush (*Maireana erioclada*) Low Shrubland.



Figure 42. Acacia papyrocarpa (Western Myall) Low Open Woodland over Cratystylis conocephala (Bluebush Daisy) on the former Colona station. (Photo: N. Neagle).



Figure 44. Atriplex vesicaria (Bladder Saltbush) Low Shrubland near the coast on Coombra Track. (Photo: N. Neagle).



Figure 43. Eucalyptus gracilis (Yorrell), E. oleosa ssp. ampliata (Red Mallee) over Atriplex vesicaria (Bladder Saltbush) beside the Coombra Track. (Photo: S. Kenny).



Figure 45. Austrostipa nitida (Balcarra Speargrass), A. drummondii (Cottony Spear-grass) Grassland with Rhodanthe floribunda (White Everlasting) north east of Nanwoora Well. (Photo: N. Neagle).

New Species Records from the Yalata IPA Biological Survey for the Nullarbor or Eyre Peninsula Herbarium Regions

In addition to this survey recording new species records for the Yalata IPA itself the following tables (Tables 13 and 14) list those taxa that were recorded for the first time in either the Nullarbor or Eyre Peninsula Herbarium Regions. While it is recognised that Herbarium Region boundaries have less biogeographic significance than those of IBRA bioregions, there has as yet been no systematic attempt to rate species based on the latter in South Australia.

As some of the species listed below had previously been collected from nearby locations these new finds were not unexpected and therefore represent only minor range extensions. For others the distance to the previous nearest records suggest more significant range extensions and demonstrate the value of broadscale survey. The implications for the spread of exotic species into new areas are discussed in the next section.

Table 13. Plant taxa recorded during the Yalata IPA Biological Survey that were not previously recorded in the NULLARBOR Herbarium Region.

Species Name	Common Name	SA	Records	Notes
Acacia spinescens	Spiny Wattle		1 site near Nanwoora Well	nearest record near Kalanbi (EP)
Cassytha peninsularis	Peninsula Dodder- laurel		1 site on Coombra Track	nearest record at Coorabie (EP)
Nicotiana rosulata ssp.			1 site near Head of Bight	nearest record at Mt Finke (GT)
Olearia brachyphylla	Short-leaf Daisy-bush		1 site on Coombra Track	2005 Herbarium record from "Eyre Highway between Colona and Yalata Roadhouse" could be either EP or NU: other records near Coorabie (EP)
Poa drummondiana	Knotted Poa	R	1 site on Coombra Track	nearest record at Fowler's Bay in 1960 (EP)
Rhodanthe corymbiflora	Paper Everlasting		3 sites near Nanwoora Well	nearest records in Gawler Ranges (EP)
Templetonia battii	Spiny Templetonia	R	1 site near Nanwoora Well	nearest records at Nundroo (EP); in SA species is confined to Nundroo-Ceduna region
*Acacia saligna	Golden Wreath Wattle		1 shrub on roadside 10km E of Nullarbor	nearest records at Cowell & Coffin Bay (EP)
*Moraea setifolia	Thread Iris		2 sites & 1 OP near Nanwoora Well	nearest record at Coorabie (EP)
*Plantago bellardii	Hairy Plantain		3 sites near Head of Bight	nearest record at Lake Everard (GT)
*Poa bulbosa	Bulbous Meadow- grass		1 site on Coombra Track	nearest record at Mt Hope (EP)

^{* =} Naturalised alien taxa.

Descriptions of Species that are New Records for the Nullarbor Herbarium Region

Acacia spinescens (Spiny Wattle)

Refer to description in previous section.

Cassytha peninsularis (Peninsula Dodder-laurel)

Refer to description in previous section.

Nicotiana rosulata ssp.

Refer to description in previous section.

Olearia brachyphylla (Short-leaf Daisy-bush)

An aromatic shrub to 1.2m high this species occurs in mallee and heath communities across drier areas of the agricultural region of South Australia (Cooke 1986a, Barker *et al.* 2005).

There is a 2005 State Herbarium record collected from the "Eyre Highway between Colona and Yalata Roadhouse". This could be from either the Nullarbor or Eyre Peninsula Herbarium Regions. In any case there have previously been several collections from near this regional boundary from Fowler's Bay across to Wahgunyah Conservation Park (State Herbarium of SA 2008a), so its presence within the Nullarbor Herbarium Region is not unexpected.

On this survey it was recorded as very sparsely present at one site (within the Nullarbor Herbarium Region) on the Coombra Track (COO00301) in loamy sand in Yorrell (*Eucalyptus gracilis*), Yalata Mallee (*E. yalatensis*) Open Mallee.

Poa drummondiana (Knotted Poa)

Refer to description in previous section.

Rhodanthe corymbiflora (Paper Everlasting)

Refer to description in previous section.

Templetonia battii (Spiny Templetonia)

Refer to description in previous section.

*Acacia saligna (Golden Wreath Wattle)

Refer to description in previous section.

*Moraea setifolia (Thread Iris)

A dwarf perennial to 20cm high that rises annually from a corm, this species can be a locally abundant weed of dry pastures, roadsides and in native vegetation (Cooke 1986b, Cunningham *et al.* 1992). It occurs across the agricultural region of the state

SA = State conservation ratings (R = rare). Note: none of these species are rated nationally.

EP = Eyre Peninsula Herbarium Region; NU = Nullarbor Herbarium Region; GT = Gairdner-Torrens Herbarium Region.

with the previous nearest record being 7km east of Coorabie (State Herbarium of SA 2008a). The proximity of this record means that its discovery within the Nullarbor Herbarium Region is not unexpected.

On the Yalata IPA Survey it was recorded three times (within the Nullarbor Herbarium Region) near Nanwoora Well — as sparsely present at site NAN00701 in clayey sand in Rusty Spear-grass (Austrostipa eremophila), Balcarra Spear-grass (A. nitida), Cottony Spear-grass (A. drummondii) Tussock Grassland; as very sparsely present at site NAN00801 in sandy clay loam in Western Myall (Acacia papyrocarpa) Very Low Woodland; and at Toolgerie Rockhole, where it was recorded opportunistically in Bladder Saltbush (Atriplex vesicaria) Low Shrubland.

*Plantago bellardii (Hairy Plantain)

Hairy Plantain is an annual with leaves in a basal rosette that has long fine hairs, particularly on the peduncle and long lower bracts (Toelken 1986). It has been recorded across the agricultural region of the state. The nearest previous record is uncertain, though possibly from Lake Everard (in the Gairdner-Torrens Herbarium Region) in 1980 (State Herbarium of SA 2008a).

On this survey it was recorded as sparsely present at three sites near the Head of the Bight (within the Nullarbor Herbarium Region) - at site YAL00501 it occurred in light clay in Brown-head Samphire (Tecticornia indica ssp. leiostachya), Salt Bluebush (Maireana oppositifolia), Mallee Hemichroa (Hemichroa diandra) Low Open Shrubland; at YAL00701 in sandy loam in Nitre-bush (Nitraria billardierei) Very Open Shrubland; and at YAL00801 in sandy loam in Thorny Lawrencia (Lawrencia squamata), Small-leaf Sea-heath (Frankenia sessilis) Low Shrubland.

**Poa bulbosa* (Bulbous Meadow-grass) Refer to description in previous section.

Descriptions of Species that are New Records for the Eyre Peninsula Herbarium Region

Table 14. Plant taxa recorded during the Yalata IPA Biological Survey that were not previously recorded in the EYRE PENINSULA Herbarium Region.

Species Name	Common Name	Records	Notes
Erymophyllum ramosum ssp. ramosum		1 site at Colona (1954 ADHERB record probably outside IPA & EP region)	only listed for NU in SA; nearest confirmed locality record at Lake Ifould
Olearia pimeleoides ssp. incana	Showy Daisy-bush	1 site at Colona	nearest record north of Cook (NU)
Pycnosorus eremaeus	Golden Billy-buttons	3 sites at Colona	nearest record at Coober Pedy (LE)
Rhodanthe chlorocephala ssp. rosea	Western Sunray	1 OP record at Colona	2 x 1960s' records in NU portion of IPA (NU)
Senna artemisioides ssp. quadrifolia	Four-leaf Desert Senna	1 site at Colona	nearest record at Nullarbor (anonymous collector) (NU)
Triglochin sp. A (N.N.Donner 3596)	Spurred Arrowgrass	1 site at Colona	taxon is result of recent taxonomic division
Vittadinia arida		1 site at Colona	nearest record at Lake Gairdner (GT)

Note: none of these species are of national or state conservation significance.

NU = Nullarbor Herbarium Region; GT = Gairdner-Torrens Herbarium Region; LE = Lake Eyre Herbarium Region.

Erymophyllum ramosum ssp. ramosum

An annual herb to 20cm high, this daisy is listed for both the Nullarbor and Eyre Peninsula Herbarium Regions in South Australia (Cooke 1986a). However, the latter region is based on a single 1954 collection where the location was given as "Colona to Ooldea Road" (State Herbarium of SA 2008a). This is most likely to be outside the EP region and possibly outside the Yalata IPA as well. The nearest other record is from Lake Ifould, also on the Colona-Ooldea Road, in 2004 (State Herbarium of SA 2008a).

On the Yalata IPA Survey it was recorded as sparsely present at one site on the former Colona station (COL00201) in sandy clay loam in Western Myall (*Acacia papyrocarpa*) Very Low Open Woodland over Bluebush Daisy (*Cratystylis conocephala*), Grey Samphire (*Tecticornia halocnemoides* ssp.) and Bladder Saltbush (*Atriplex vesicaria*).



Figure 46. *Erymophyllum ramosum* ssp. *ramosum* was recorded from a single site on the former Colona station. (Photo: P. Lang).

Olearia pimeleoides ssp. incana (Showy Daisybush)

Refer to description in previous section.

Pycnosorus eremaeus (Golden Billy-buttons)

Refer to description in previous section.

Rhodanthe chlorocephala ssp. rosea (Western Sunray)

An erect to ascending annual herb to 18cm high, this daisy has been recorded on sand hills and clay pans (Cooke 1986a). In South Australia the Western Sunray has been recorded in the North-Western, Nullarbor and Gairdner-Torrens Herbarium Regions, with the nearest previous records being from "10 miles north of Yalata" in 1969 and "near White Wells, on Eyre Highway" (approximately 10km east of Nullarbor Roadhouse) in 1962 (State Herbarium of SA 2008a).

On this survey it was recorded once opportunistically east of Colona Homestead in Western Myall (*Acacia papyrocarpa*) Low Open Woodland over Bladder Saltbush (*Atriplex vesicaria*) and Samphire (*Tecticornia* sp.).

Senna artemisioides ssp. quadrifolia (Four-leaf Desert Senna)

Refer to description in previous section.

Triglochin sp. A (N.N.Donner 3596) (Spurred Arrowgrass)

Refer to description in previous section.

Vittadinia arida

Refer to description in previous section.

Introduced Species

A total of 26 introduced plant taxa were recorded during the Yalata IPA Survey. These accounted for 128 (9.2%) of all 1390 plant records at sites. In addition, a further 18 taxa had previously been recorded in the IPA, either on earlier surveys or lodged as collections in the State Herbarium. The most frequently recorded on this survey (i.e. at the most sites) are shown in Table 15. Of these, Common Sow-thistle (Sonchus oleraceus) was the most frequently recorded, being found at 34 sites

(62% of all sites sampled). Ward's Weed (*Carrichtera annua*), recorded at 22 sites (40%), and Wild Turnip (*Brassica tournefortii*), at 14 sites (25%), were also widespread.

Most of these introduced species are annuals, with the principal exception being African Boxthorn (*Lycium ferocissimum*). Though rarely recorded in the Yalata area (see below), it has the potential to spread widely and can be a significant pest plant.

Table 15. The ten most commonly recorded introduced plant taxa for the Yalata IPA Survey.

Species Name	Common Name	Pre 2007 Records	BS575 Total	Total Records
*Sonchus oleraceus	Common Sow-thistle	23	35#	58
*Carrichtera annua	Ward's Weed	16	22	38
*Brassica tournefortii	Wild Turnip	13	14	27
*Erodium cicutarium	Cut-leaf Heron's-bill	11	9	20
*Schismus barbatus	Arabian Grass	16	7	23
*Moraea setifolia	Thread Iris	1	6	7
*Rostraria pumila	Tiny Bristle-grass	21	5	26
*Sisymbrium erysimoides	Smooth Mustard	2	5	7
*Bromus rubens	Red Brome	4	4	8
*Medicago minima var. minima	Little Medic		4	4

^{# =} Common Sow-thistle (Sonchus oleraceus) tally of 35 includes one opportunistic sighting record (i.e. not at a site).

The tally of cover/abundance estimates recorded for introduced taxa at sites on the Yalata IPA Survey are provided in Table 16. On most occasions introduced taxa were recorded in low densities at sites, with only three exceptions. Ward's Weed was recorded with cover of 5 – 25% at COL00201 east of Colona Homestead in sandy clay loam in Western Myall (*Acacia papyrocarpa*) Very Low Open Woodland and north of Pintumba at YAL02201 in medium clay in Native Boxthorn (*Lycium australe*), Bitter Saltbush (*Atriplex stipitata*) Low Open Shrubland. The third instance was of Barrel Medic (*Medicago truncatula*), also at YAL02201.

Most sites (44 or 80%) had three or fewer introduced taxa (Table 17). Nine had four or five exotic taxa and, of these, six were herblands, grasslands or low shrublands. The two sites with eight exotic taxa are both on the former Colona station. COL00101 is on loamv sand in Woolly Yellow-heads (Trichanthodium *skirrophorum*) Herbland and COL00801 is on medium clay in Samphire (Tecticornia sp.), Bladder Saltbush vesicaria), Salt Bluebush (Maireana oppositifolia) Low Shrubland. With 11 of the 13 sites where no introduced taxa were recorded, the mallee and mallee woodland communities tended to be the most intact.

Table 16. Tally of cover/abundance estimates for introduced plant taxa recorded at sites on the Yalata IPA Biological Survey.

Species Name	Common Name	No. of Sites	Co	over/A	bundaı	ıce
Species Name	Common Name	No. of Sites	N	Т	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2
*Sonchus oleraceus	Common Sow-thistle	34	6	27	1	
*Carrichtera annua	Ward's Weed	22	1	14	5	2
*Brassica tournefortii	Wild Turnip	14	7	6	1	
*Erodium cicutarium	Cut-leaf Heron's-bill	9		9		
*Schismus barbatus	Arabian Grass	7		3	4	
*Moraea setifolia	Thread Iris	6	1	3	2	
*Rostraria pumila	Tiny Bristle-grass	5		5		
*Sisymbrium erysimoides	Smooth Mustard	5	2	3		
*Medicago minima var. minima	Little Medic	4		4		
*Bromus rubens	Red Brome	4	1	3		
*Plantago bellardii	Hairy Plantain	3		3		
*Spergularia diandra	Lesser Sand-spurrey	2			2	
*Bupleurum semicompositum	Hare's Ear	2		1	1	
*Centaurea melitensis	Malta Thistle	2		1	1	
*Reichardia tingitana	False Sowthistle	2	1		1	
*Medicago truncatula	Barrel Medic	1				1
*Vulpia myuros f.	Fescue	1			1	
*Carthamus lanatus	Saffron Thistle	1		1		
*Centaurium erythraea	Common Centaury	1		1		
*Mesembryanthemum crystallinum	Common Iceplant	1		1		
*Hordeum glaucum	Blue Barley-grass	1	1			
*Lycium ferocissimum	African Boxthorn	1	1			
*Poa bulbosa	Bulbous Meadow-grass	1	1			

Cover/abundance codes: N = very sparsely present (1-10 plants and <5% cover; T = sparsely present (<5% cover); 1 = plentiful, but of small cover (<5%); 2 = any number of individuals covering 5-25% of area.

Table 17. Frequency of sites within weed species richness classes for Yalata IPA Biological Survey.

No. of Weeds Per Site	No. of Sites (n = 55)
8	2
7	0
6	0
5	5
4	4
3	14
2	13
1	4
0	13

As discussed in the previous sections, seven (or 27%) of the 26 introduced taxa recorded on this survey are new records for Yalata IPA and/or new records for the Nullarbor Herbarium Region. This is most likely

a result of this being the first broadscale systematic survey to be conducted in the IPA. In the past, site sampling was mainly restricted to the margins of the area or along the coastal dunes, while many of the State Herbarium specimens were collected along the Eyre Highway or Colona-Ooldea Road. The greater geographic spread and habitat coverage has made this survey's sampling far more comprehensive. As a result many of these "new" exotic taxa records may not necessarily represent a recent extension of distribution.

The most likely sources of exotic plant taxa are from vehicular activity (off road, and particularly off track, but also along the Eyre Highway) and the extensive populations and seed source left over from past stock grazing on the former Colona station.

Descriptions of Significant Introduced Species Present in the Yalata IPA

*Carrichtera annua (Ward's Weed)

A rough erect herb to 40cm tall, this species is a common weed of roadsides and degraded pastures in semi-arid areas (Hewson 1986, Auld and Medd 1992) and is widespread across this part of SA. It was recorded at 22 sites on this survey and at 16 sites on previous surveys in the IPA. These locations are spread across much of the IPA with the exception of the mallee south of the Eyre Highway and coastal areas.

Ward's Weed was described as an understorey dominant at five of these sites - BS14-CA00801 and BS14-CA00901 (south of Nullarbor Roadhouse), BS428-OR01901 (on the Colona-Ooldea Road in the north east of the IPA), BS428-OR02701 (on the road to Coorabie near Pintumba) and BS575-YAL02201 (just north of the Eyre Highway near Pintumba).

*Brassica tournefortii (Wild Turnip)

An erect herb to 60cm, Wild Turnip is a widespread aggressive weed that is established in a wide range of habitats from the coast to semi-arid inland regions (Hewson 1986). It has been recorded throughout the IPA - at 14 sites on this survey, 12 from previous surveys as well as one State Herbarium record. At ten of these sites this species was recorded as plentiful (but cover less than 5%), but never as more abundant than this.

*Euphorbia paralias (Sea Spurge)

An erect fleshy perennial half-shrub with stems to 70cm tall, this species grows on sandy sea shores (Weber 1986c) along most of the SA coast. It is widespread along the Yalata coast and during this survey was observed to be a significant component of local beach foredune communities.

Sea Spurge has been recorded at six coastal sites on previous surveys in the Yalata IPA. At three of these it was either an overstorey or understorey dominant, with cover of 5–25%.



Figure 47. *Euphorbia paralias (Sea Spurge) is widespread along the Yalata coastline east of the Head of the Bight. (Photo: A. Robinson).

*Lycium ferocissimum (African Boxthorn)

An intricately branched perennial shrub to 2.5m (though occasionally taller) with lateral branches ending in a stiff spine, this species is a widespread and common weed, particularly in the agricultural

region of the state (Haegi and Symon 1986, Cunningham *et al.* 1992). African Boxthorn was introduced from South Africa in the 19th Century and planted around many old homesteads and country towns as a hedge plant. Its subsequent spread has been aided by birds, which eat the succulent berries (Haegi and Symon 1986, Cunningham *et al.* 1992).

This species has only been recorded at two sites in the Yalata IPA - as sparsely present at BS14-YA00505 in Nitre-bush (*Nitraria billardierei*), Common Boobialla (*Myoporum insulare*) Low Closed Shrubland in coastal dunes on the Red Gate Track and as very sparsely present at YAL02301 (on this survey) in Yorrell (*Eucalyptus gracilis*), Red Mallee (*E. oleosa*) Mallee in sandy loam approximately 2km north east of the old Pintumba homestead. It is, however, known to be more widespread, particularly around Pintumba.

*Sonchus oleraceus (Common Sow-thistle)

A smooth annual herb 20 to 110cm high, this species is a weed that occurs in disturbed areas in virtually all plant communities and throughout all regions of the state (Cooke 1986a, Cunningham *et al.* 1992).

Common Sow-thistle has been recorded at 57 sites throughout the Yalata IPA, though less commonly in the mallee south of the Eyre Highway and along the coast. Although relatively widespread it has mostly been recorded as either sparsely or very sparsely present at sites.

*Acacia saligna (Golden Wreath Wattle)

Refer to description in previous section. Golden Wreath Wattle was recorded for the first time in the Nullarbor Herbarium Region on this survey, beside the Eyre Highway approximately 10km east of the Nullarbor Roadhouse. Its roadside location suggests its presence here is associated with human traffic. And although its suckering habit means plants once established may last for some time (Whibley and Symon 1992) it is unlikely to present a major concern in the IPA.

Significant Plant Community

Of the 25 Floristic Vegetation Communities described for the Yalata IPA in this report one is considered to be of conservation significance and has a national rating under the *EPBC Act 1999. Lomandra effusa* Open Tussock Grassland is a component of the 'Irongrass Natural Temperate Grassland of South Australia' listed as Critically Endangered in the Act. It is also recognised as being an Endangered ecosystem (DEH 2001) and a Priority 1 plant association in South

Australia (Neagle 1995). Its scattered occurrence interspersed with mallee and Western Myall communities near to, and north, of the Eyre Highway, between Colona woolshed and the edge of the Nullarbor Plain constitutes an extension of its previously documented range. Its presence here represents a major disjunct occurrence from its main distribution between Peterborough and Tailem Bend.

Species Richness

Of the 183 vegetation survey sites in the Yalata IPA, the 51 vegetation mapping sites were omitted due to their non-standard methodology (refer earlier in chapter and Kenny and Thompson 2008).

Species richness at the remaining 132 survey sites varied from 4 to 46. The four least rich sites (those with only four species present) are all coastal. Two are Samphire (*Tecticornia* sp.), Salt Bluebush (*Maireana oppositifolia*) Low Shrublands in clayey sands in saline playas/pans, one is Coast Saltbush (*Atriplex cinerea*) Open Shrubland on the crest of the foredune in deep sand, and one is Common Boobialla (*Myoporum insulare*), *Acacia anceps* Tall Closed Shrubland on a dune footslope in sand on the margin of the extensive dunefield at the Head of the Bight.

The most species rich site is a Western Myall (*Acacia papyrocarpa*) Very Low Woodland on a plain in sandy clay loam east of Nanwoora Well.

As many of the floristic vegetation communities identified in the region (refer next section) had few sites sampled within them, it is difficult to make significant observations as to their relative plant species richness. Of those that were sampled at least

five times the *Acacia papyrocarpa* +/- *Myoporum* platycarpum Very Low Woodland was the most species rich (Table 18) with an average of 29.7 species per site. This community was mostly recorded on loam soils of plains north of the Eyre Highway and east of the Nullarbor Plain.



Figure 48. Acacia papyrocarpa +/- Myoporum platycarpum Very Low Woodland was one of the most diverse communities sampled in the Yalata IPA. (Photo: N. Neagle).

Table 18. Average number and range of plant taxa recorded per site in each Floristic Vegetation Community within the Yalata IPA.

Com Nr	Floristic Vegetation Community	No. of Sites	Ave Spp	Low	High
5	Eucalyptus gracilis, Eucalyptus yalatensis Open Mallee	1	39.0	39	39
25	Trichanthodium skirrophorum Herbland	2	34.0	29	39
14	Geijera linearifolia, Pittosporum angustifolium Tall Open Shrubland	1	30.0	30	30
1	Acacia papyrocarpa +/- Myoporum platycarpum Very Low Woodland	15	29.7	14	46
4	Eucalyptus oleosa Open Mallee/Low Woodland	7	28.6	24	39
2	Eucalyptus gracilis, Eucalyptus oleosa, Eucalyptus calcareana Open Mallee/Low Woodland (Inland)	14	26.6	21	34
12	Maireana sedifolia +/- Atriplex vesicaria +/- Tecticornia sp. Low Open Shrubland	2	22.5	21	24
9	Cratystylis conocephala Open Shrubland	2	22.0	20	24
15	Atriplex stipitata Low Shrubland	2	21.5	21	22
10	Atriplex vesicaria, Tecticornia sp. Low Shrubland	9	21.3	6	41
24	Austrostipa sp., Austrodanthonia caespitosa Tussock Grassland	9	20.4	13	38
8	Melaleuca pauperiflora ssp. mutica Shrubland	1	20.0	20	20
6	Eucalyptus calcareana, Eucalyptus gracilis, Eucalyptus oleosa, Melaleuca lanceolata Open Low Mallee (Coastal)	9	19.4	7	36
11	Atriplex vesicaria Low Open Shrubland (NO samphires)	10	19.1	6	41
3	Eucalyptus gracilis, Eucalyptus oleosa +/- Eucalyptus calcareana Open Mallee over Melaleuca pauperiflora ssp. mutica	2	18.5	18	19
7	Melaleuca lanceolata Shrubland	12	18.5	7	30
13	Lawrencia squamata Low Shrubland	4	17.0	12	22
22	Frankenia sp. Low Shrubland	4	15.0	9	21
21	Tecticornia sp., Maireana oppositifolia Low Shrubland	7	13.4	4	25
19	Leucophyta brownii Low Shrubland	3	13.3	11	16
23	Lomandra effusa Open Tussock Grassland	1	13.0	13	13
17	Nitraria billardierei Low Open Shrubland	6	12.7	7	19
16	Myoporum insulare +/- Nitraria billardierei Open Shrubland	7	11.6	4	23
20	Spinifex hirsutus, *Euphorbia paralias Tussock Grassland	1	7.0	7	7
18	Atriplex cinerea Open Shrubland	1	4.0	4	4
Total		132	20.8	4	46

Com Nr = Floristic Vegetation Community number; No. of Sites = Number of full (i.e. not vegetation mapping) sites sampled in community; Ave Spp = Average number of taxa recorded in community; Low/High = Lowest/highest number of taxa recorded at a site in community.



Figure 49. Atriplex vesicaria (Bladder Saltbush), Tecticornia sp. (Samphire) Low Shrubland averaged 21 taxa per site. (Photo: N. Neagle).



Figure 50. Nitraria billardierei Low Open Shrubland near the Head of the Bight. One of the least diverse communities recorded in the Yalata IPA. (Photo: N. Neagle).

Perhaps more meaningful is the relative species richness of the broader vegetation types (refer Table 22) as shown in Table 19. At least ten sites were sampled in all but two of these broader groups. Of these the Low Woodland is the most species rich with 29.7 taxa per site followed by the Mallee communities, which averaged 25.0 taxa per site.

Table 19. Frequency of sites and average number of plant taxa per site in each broad vegetation type.

Broad Veg Types	Veg Grps	No. of Sites	Ave Spp Per Site
Low Woodland	1	15	29.7
Mallee	2-6	33	25.0
Shrubland	7-8	13	18.6
Low Shrubland	9-13	27	20.0
Clearings in Mallee	14-15	3	24.3
Coastal Shrubland	16-20	18	11.6
Saltmarsh	21-22	11	14.0
Grassland	23-24	10	19.7
Herbland	25	2	34.0
		132	20.85

The Shrublands (dominated by *Melaleuca* spp.), Low Shrublands (mostly chenopods) and Grasslands

occupy the mid range, with between 18 and 20 taxa per site. The least diverse groups are the Saltmarsh communities (14.0 taxa per site) and Coastal Shrublands (11.6 taxa per site).

Sites on areas characterised as hills had consistently higher numbers of species (25.8 per site) than other landform elements (Table 20) with depressions (18.2 species per site) and dunes (15.5 species per site) being the least species rich.

Table 20. Frequency of sites and average number of plant taxa per site for each landform element.

Landform Element	No. of Sites	Ave No. of Spp Per Site
hill	31	25.8
plain	46	22.4
swale	8	20.0
not recorded	1	20.0
depression	10	18.2
dune	36	15.5
Total	132	20.8

There appears to be no discernible difference in species richness between sites on loam or clay soils (Table 21), though with only five sites sampled on the latter this may be misleading. Sites on sand, however, did have consistently fewer species than did all others with an average of only 18.6 species per site. This is consistent with coastal dune floristic vegetation communities and dune sites also having low species richness (see above).

Table 21. Frequency of sites and average number of plant taxa per site for each surface soil texture.

Soil	No. of Sites	Ave No. of Spp Per Site
skeletal	1	27.0
loam	56	23.3
clay	5	23.0
not recorded	1	23.0
sand	69	18.6
Total	132	20.8



Figure 51. Myoporum insulare +/- Nitraria billardierei Open Shrubland in coastal dunes near the Head of the Bight. Sand dunes tended to be the least diverse of all landforms in the Yalata IPA. (Photo: N. Neagle).

Floristic Vegetation Communities

It is acknowledged that in reality vegetation communities rarely exist as discrete entities as they are influenced by various environmental factors (such as depth and type of soil, available moisture and nutrients, slope and aspect) and tend to grade into one another across the landscape. However, distinct patterns of species associations can be detected and provide a basis for description of the flora.

Data from 183 vegetation survey sites sampled as part of seven separate surveys (refer Table 3) have been used to define 25 Floristic Vegetation Communities within the Yalata IPA (Table 22). This was achieved by analysing site data for the species that dominated the overstorey and understorey, their cover/abundance scores (as assessed at each site using the modified Braun-Blanquet scale [Heard and Channon 1997]) as well as the structural formation description for each site.

Group 1 is a low woodland community which occurs mostly on plains north of the Eyre Highway and east of the treeless plain. Groups 2 to 6 are mallee communities. These are particularly prominent south of the Eyre Highway, but inland from the coastal dunes, and scattered across the north and east of the IPA. Groups 7 and 8 are shrublands of sub-coastal areas east of the Head of the Bight. Groups 9 to 13 are low shrublands (mostly chenopods) common on the Nullarbor Plain and scattered across the north and east. Groups 14 and 15 are shrubland communities found in the natural openings in the extensive mallee south of the Eyre Highway. Groups 16 to 20 are all near coastal communities occurring east of the Head of the Bight. Groups 21 and 22 are low shrublands associated with saline areas occurring along the coast and inland from the dunes at the Head of the Bight. Groups 23 and 24 are grasslands occurring in open areas in the north and east of the IPA. Group 25 is a

Table 22. Floristic Vegetation Communities identified in the Yalata IPA.

Group No.	Floristic Vegetation Community	No. of Sites
	Low Woodland	
1	Acacia papyrocarpa +/- Myoporum platycarpum Very Low Woodland	25
	Mallee Communities	
2	Eucalyptus gracilis, Eucalyptus oleosa, Eucalyptus calcareana Open Mallee/Low Woodland (Inland)	18
3	Eucalyptus gracilis, Eucalyptus oleosa +/- Eucalyptus calcareana Open Mallee over Melaleuca pauperiflora ssp. mutica	4
4	Eucalyptus oleosa Open Mallee/Low Woodland	16
5	Eucalyptus gracilis, Eucalyptus yalatensis Open Mallee	1
6	Eucalyptus calcareana, Eucalyptus gracilis, Eucalyptus oleosa, Melaleuca lanceolata Open Low Mallee (Coastal)	9
	Shrublands	
7	Melaleuca lanceolata Shrubland	12
8	Melaleuca pauperiflora ssp. mutica Shrubland	1
	Low Shrublands	
9	Cratystylis conocephala Open Shrubland	5
10	Atriplex vesicaria, Tecticornia sp. Low Shrubland	11
11	Atriplex vesicaria Low Open Shrubland (No samphires)	17
12	Maireana sedifolia +/- Atriplex vesicaria +/- Tecticornia sp. Low Open Shrubland	6
13	Lawrencia squamata Low Shrubland	5
	Clearings in Mallee	
14	Geijera linearifolia, Pittosporum angustifolium Tall Open Shrubland	1
15	Atriplex stipitata Low Shrubland	2
	Coastal Shrublands	
16	Myoporum insulare +/- Nitraria billardierei Open Shrubland	7
17	Nitraria billardierei Low Open Shrubland	6
18	Atriplex cinerea Open Shrubland	1
19	Leucophyta brownii Low Shrubland	3
20	Spinifex hirsutus, *Euphorbia paralias Tussock Grassland	1
	Saltmarsh Communities	
21	Tecticornia sp., Maireana oppositifolia Low Shrubland	8
22	Frankenia sp. Low Shrubland	4
	Grasslands	
23	Lomandra effusa Open Tussock Grassland	3
24	Austrostipa sp., Austrodanthonia caespitosa Tussock Grassland	12
	Herbland	
25	Trichanthodium skirrophorum Herbland	5

herbland which was observed only on the former Colona station and may represent former grassland or chenopod shrubland communities degraded by historic heavy grazing. Details of the environmental variables recorded at sites are summarised for each floristic vegetation community in **Appendix 5**.

Floristic Vegetation Community Descriptions

Detailed descriptions of the 25 Floristic Vegetation Communities are provided in the following format.

Floristic group number as per Table 22.

Floristic Vegetation Community name is the descriptive title that includes the dominant (and possibly co-dominant and/or subdominant) overstorey species, the vegetation structural formation classification for South Australia (as per Heard and Channon 1997) and, in most cases, the dominant understorey species.

Description of community: a summary of the most common overstorey, mid-stratum (if necessary) and ground layer taxa (perennial and annual), the soil types and landforms where it typically occurs.

Distribution map: displays the location of all sites sampled in the Yalata IPA (small open circles) and the site(s) that represent the Floristic Vegetation Community (larger black dots).

Number of sites in the group as determined in the analysis.

Total taxa in group: the total number of unique plant taxa recorded at sites representing the group.

Average number of taxa per group and range: determined using only sites where full plant lists were compiled. Vegetation mapping sites have been excluded from these calculations as the sampling methodology employed at these sites allows for only those taxa with a cover/abundance score of at least 1 (plentiful, but of cover less than 5%) to be recorded.

Number of introduced taxa in group: the total number of exotic taxa recorded at sites representing the group (includes both perennial and annual taxa).

Species of conservation significance: taxa with a state or national conservation rating that were recorded

at sites representing the group. The Australian ratings are based on the *Environment Protection and Biodiversity Conservation Act 1999* as at February 2008 and the South Australian on the *National Parks and Wildlife Act 1972* (2007 update of schedules 7, 8 and 9).

Sites: a list of the site identifier codes for all sites representing a group. (Note: there is some overlap in site codes between the Coastal Dune and Clifftop and Yalata Land Use Surveys. Where this occurs the former are identified with the prefix 82 and the latter with the prefix 100.)

Group taxa list: provides a list with statistics of all perennial and annual taxa that were recorded at 30% or more of sites representing the Floristic Vegetation Community.

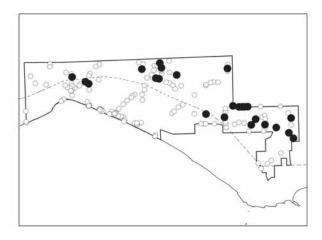
The statistics provided for each taxon are:-

- frequency of occurrence at sites in the group (Freq),
- percentage of all sites in the group at which they occurred (% Freq),
- frequency of occurrence in each cover/abundance category (N, T, 1, 2, 3, 4 and 5),
- average cover/abundance for sites at which they were recorded (N scored as 0.01 and T as 0.1) (C/A Ave),
- total number of records at sites in the Yalata IPA (Tot Recs).
- number of records at sites in this group as a percentage of all site records in the Yalata IPA (% Recs), and
- total number of floristic groups in which they were recorded (Tot Grps).

Figure: image(s) of a site(s) representing the Floristic Vegetation Community.

Floristic Group 1 Acacia papyrocarpa (Western Myall) +/- Myoporum platycarpum ssp. (False Sandalwood) Very Low Woodland over Cratystylis conocephala (Bluebush Daisy), Atriplex vesicaria ssp. (Bladder Saltbush), Maireana erioclada (Rosy Bluebush)

This Very Low Woodland community is associated with sandy loam to sandy clay loam soils on plains and, to a lesser extent, hill slopes, mainly north of the Eyre Highway and east of the Head of the Bight. It is dominated by *Acacia papyrocarpa* and, less frequently, *Myoporum platycarpum*. The understorey consists of low shrubs to around 1m high and is dominated by *Cratystylis conocephala* and the chenopods *Atriplex vesicaria*, *Maireana erioclada*, *Rhagodia crassifolia* and *Sclerolaena obliquicuspis*. There were a relatively high number of exotic species (14 in total), with *Sonchus oleraceus* and *Carrichtera annua* being the most common. The mistletoe, *Amyema quandang* var. *quandang*, is a distinctive species in this community. It parasitises *Acacia* species, and in this case *A. papyrocarpa*, and was recorded in only one other vegetation community.



No. of sites in group: 25
Total taxa in group: 118
Average no. of taxa per site: 29.7
Range: 14 - 46

No. of introduced taxa in group: 14

Soils: sand, clayey sand, sandy loam, loam and sandy clay loam

Landforms: plains and hill slopes

Species of conservation significance:

Eremophila parvifolia (Small-leaf Emubush) SA: R

Sites: KO00101, KO00103, KO00202, KO00301, KO00401, YA00302, OR01801, OR03201, VMSDT17301, VMSDT17501, VMSDT20101, VMSDT20301, VMSDT20401, VMSDT20501, VMSSK09501, VMSSK09801, VMSSK10201, VMSSK10701, COL00201, COL00301, COL00701, HOB00301, NAN00401, NAN00801, YAL00301

Species Name	Common Name	Freq	%	N	Т	1	2	3	C/A	Tot	%	Tot
*	D1 11 C 11 1	25	Freq		1	4	10		Ave	Recs	Recs	Grps
Atriplex vesicaria ssp.	Bladder Saltbush	25	100		1	4	18	2	1.84	136	18.4	22
Acacia papyrocarpa	Western Myall	24	96	1		1	18	4	2.04	50	48.0	12
Cratystylis conocephala	Bluebush Daisy	18	72	1	1	2	8	6	2.01	72	25.0	14
Maireana erioclada	Rosy Bluebush	18	72	2	2	11	3		0.96	94	19.1	20
Myoporum platycarpum ssp.	False Sandalwood	15	60	3	4	3	5		0.90	45	33.3	11
Rhagodia crassifolia	Fleshy Saltbush	15	60	5	3	7			0.49	89	16.9	18
Sclerolaena obliquicuspis	Oblique-spined Bindyi	14	56	1	2	9	2		0.94	47	29.8	14
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	14	56	4	6	3	1		0.40	60	23.3	21
Brachyscome ciliaris var.	Variable Daisy	12	48		3	7	2		0.94	45	26.7	16
Amyema quandang var. quandang	Grey Mistletoe	12	48	2	5	5			0.46	14	85.7	2
Salsola tragus	Buckbush	11	44	2	5	2	1	1	0.68	59	18.6	17
Threlkeldia diffusa	Coast Bonefruit	11	44	2	5	3	1		0.50	77	14.3	18
*Sonchus oleraceus	Common Sow-thistle	11	44	1	6	4			0.42	57	19.3	16
Austrostipa nitida	Balcarra Spear-grass	10	40		3		4	3	1.73	51	19.6	15
*Carrichtera annua	Ward's Weed	10	40		4	3	2	1	1.04	38	26.3	13
Rhagodia spinescens	Spiny Saltbush	10	40	2	3	3	2		0.73	19	52.6	6
Geijera linearifolia	Sheep Bush	10	40	5	2	2	1		0.43	54	18.5	10
Exocarpos aphyllus	Leafless Cherry	10	40	6	1	2	1		0.42	46	21.7	11
Pittosporum angustifolium	Native Apricot	9	36	5		3	1		0.56	46	19.6	11
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	9	36	2	5	2			0.28	31	29.0	11
Trichanthodium skirrophorum	Woolly Yellow-heads	8	32	1	1	2	4		1.26	39	20.5	12
Austrostipa drummondii	Cottony Spear-grass	8	32		2	5	1		0.90	34	23.5	13
Zygophyllum aurantiacum ssp.	Shrubby Twinleaf	8	32	3	3	2			0.29	32	25.0	8



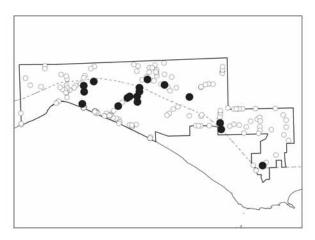
Figure 52. Acacia papyrocarpa Very Low Woodland at site VMSDT20101 at the eastern end of the former Colona station (Floristic Vegetation Community 1).



Figure 53. Acacia papyrocarpa, Myoporum platycarpum ssp. platycarpum Very Low Open Woodland at site VMSDT17501 north west of the Yalata Community (Floristic Vegetation Community 1).

Floristic Group 2 Eucalyptus oleosa ssp. (Red Mallee), E. gracilis (Yorrell), E. calcareana (Nundroo Mallee) Open Mallee/Low Woodland over Cratystylis conocephala (Bluebush Daisy), Atriplex vesicaria (Bladder Saltbush), Rhagodia crassifolia (Fleshy Saltbush), Geijera linearifolia (Sheep Bush)

This community dominates the region east of the dunes at the Head of the Bight and south of the Eyre Highway, where it grades from Mallee to Low Woodland. The lower mallee form tends to be more prevalent in sandier soils nearer the coast. South of the Yalata Roadhouse it grades into *Eucalyptus oleosa*, *E. gracilis* +/- *E. calcareana* Open Mallee over *Melaleuca pauperiflora* ssp. *mutica*. It is associated with sand and sandy loam soils on plains and hill slopes and is dominated by *Eucalyptus oleosa* ssp. *ampliata*, *E. gracilis* and *E. calcareana*. The understorey is open with low shrubs being most common, particularly *Atriplex vesicaria*, *Cratystylis conocephala* and *Rhagodia crassifolia*. *Geijera linearifolia*, *Exocarpos aphyllus*, *Acacia oswaldii* and *Myoporum platycarpum* occur infrequently in the sparse mid-storey.



No. of sites in group: 18
Total taxa in group: 111
Average no. of taxa per site: 26.6
Range: 21 - 34
No. of introduced taxa in group 11

Soils: sand, loamy sand, sandy loam and clay loam **Landforms:** plain, hill slope, hill crest, ridge, dune slope and swale

Species of conservation significance:

Daviesia benthamii ssp. humilis (Mallee Bitter-pea) **SA: R**, Eremophila parvifolia (Small-leaf Emubush) **SA: R**

Sites: YA00101, YA00201, YA00202, YA00203, YA00303, YA00401, YA00508, OR02101, OR02301, VMSDT18701, VMSSK09101, VMSSK09401, VMSSK09601, COO00101, COO00401, YAL01201, YAL01301, YAL02301

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	4	5	C/A Ave	Tot Recs	% Recs	Tot Grps
Atriplex vesicaria ssp.	Bladder Saltbush	17	94.4			4	11	2			1.88	136	12.5	22
Cratystylis conocephala	Bluebush Daisy	16	88.9	2	2	2	8	2			1.51	72	22.2	14
Eucalyptus calcareana	Nundroo Mallee	15	83.3	2			13				1.73	27	55.6	5
Rhagodia crassifolia	Fleshy Saltbush	15	83.3	2	4	7	2				0.76	89	16.9	18
Eucalyptus gracilis	Yorrell	13	72.2				12	1			2.08	27	48.1	8
Eucalyptus oleosa ssp.	Red Mallee	12	66.7			1	11				1.92	39	30.8	8
Maireana erioclada	Rosy Bluebush	12	66.7		2	5	5				1.27	94	12.8	20
Geijera linearifolia	Sheep Bush	12	66.7	1	2	6	3				1.02	54	22.2	10
Austrostipa acrociliata	Graceful Spear-grass	11	61.1		5	2	4				0.95	29	37.9	10
Threlkeldia diffusa	Coast Bonefruit	11	61.1	5		3	3				0.82	77	14.3	18
Exocarpos aphyllus	Leafless Cherry	11	61.1	4	2	2	3				0.75	46	23.9	11
Eremophila glabra ssp. glabra	Tar Bush	11	61.1	3	2	4	2				0.75	23	47.8	10
Myoporum platycarpum ssp.	False Sandalwood	10	55.6	3	1		6				1.21	45	22.2	11
Acacia oswaldii	Umbrella Wattle	10	55.6	7	2		1				0.23	43	23.3	12
Pittosporum angustifolium	Native Apricot	9	50.0	6		2	1				0.45	46	19.6	11
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	9	50.0	5	2	1	1				0.36	60	15.0	21
Sclerolaena uniflora	Small-spine Bindyi	8	44.4		2	2	4				1.28	38	21.1	16
Scaevola spinescens	Spiny Fanflower	8	44.4	3	2	3					0.40	15	53.3	5
Melaleuca lanceolata	Dryland Tea-tree	7	38.9	2	1		3			1	1.59	36	19.4	10
Westringia rigida	Stiff Westringia	7	38.9	2	1	2	2				0.87	18	38.9	7
*Sonchus oleraceus	Common Sow-thistle	7	38.9	1	5		1				0.36	57	12.3	16
Olearia muelleri	Mueller's Daisy-bush	6	33.3	1	1	1	3				1.19	14	42.9	6
*Schismus barbatus	Arabian Grass	6	33.3		1	4	1				1.02	19	31.6	8
Austrostipa nitida	Balcarra Spear-grass	6	33.3	1	1	3	1				0.85	51	11.8	15
Acacia papyrocarpa	Western Myall	6	33.3	4			2				0.67	50	12.0	12
*Rostraria pumila	Tiny Bristle-grass	6	33.3		4	1	1				0.57	25	24.0	10



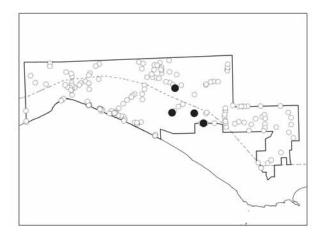
Figure 54. Eucalyptus calcareana, E. oleosa ssp. ampliata Low Woodland at site VMSSK09601 near Nanwoora Well (Floristic Vegetation Community 2).



Figure 55. Eucalyptus gracilis, E. oleosa ssp. ampliata, E. calcareana Open Mallee at site COO00101 on the Coombra Track (Floristic Vegetation Community 2).

Floristic Group 3 Eucalyptus oleosa ssp. (Red Mallee), E. gracilis (Yorrell) +/- E. calcareana (Nundroo Mallee) Open Mallee over Melaleuca pauperiflora ssp. mutica (Boree), Atriplex vesicaria (Bladder Saltbush), Rhagodia crassifolia (Fleshy Saltbush)

This community is prevalent between the coast and the Eyre Highway south of the Yalata Roadhouse. It is associated with loamy sand and sandy loam soils on slopes of low hills and is dominated by *Eucalyptus oleosa* ssp. *ampliata*, *E. gracilis* and occasionally *E. calcareana*. A feature of this community is the prominent sparse to middense mid-storey layer dominated by *Melaleuca pauperiflora* ssp. *mutica*. The ground layer is open and commonly contains *Atriplex vesicaria* and *Rhagodia crassifolia*. *Melaleuca pauperiflora* ssp. *mutica* is less apparent to the west where this community grades into *Eucalyptus gracilis*, *E. oleosa*, *E. calcareana* Open Mallee/Low Woodland.



No. of sites in group: 4
Total taxa in group: 25
Average no. of taxa per site: 18.5
Range: 18 - 19
No. of introduced taxa in group 0

Soils: loamy sand and sandy loam

Landforms: hill slopes

Species of conservation significance:

None

Sites: VMSSK09201, VMSSK10501, YAL01801, YAL01901

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Melaleuca pauperiflora ssp. mutica	Boree	4	100				3	1	2.25	5	80.0	2
Atriplex vesicaria ssp.	Bladder Saltbush	4	100			2	2		1.50	136	2.9	22
Rhagodia crassifolia	Fleshy Saltbush	4	100	1		2	1		1.00	89	4.5	18
Exocarpos aphyllus	Leafless Cherry	4	100	1	1	2			0.53	46	8.7	11
Eucalyptus gracilis	Yorrell	3	75				2	1	2.33	27	11.1	8
Eucalyptus oleosa ssp.	Red Mallee	3	75				2	1	2.33	39	7.7	8
Eremophila deserti	Turkey-bush	3	75	1	1	1			0.37	27	11.1	9
Sclerolaena uniflora	Small-spine Bindyi	2	50			1	1		1.50	38	5.3	16
Geijera linearifolia	Sheep Bush	2	50		1		1		1.05	54	3.7	10
Cratystylis conocephala	Bluebush Daisy	2	50	1			1		1.01	72	2.8	14
Olearia muelleri	Mueller's Daisy-bush	2	50		1	1			0.55	14	14.3	6
Eremophila scoparia	Broom Emubush	2	50		2				0.10	18	11.1	5
Santalum acuminatum	Quandong	2	50	1	1				0.06	13	15.4	7
Threlkeldia diffusa	Coast Bonefruit	2	50	1	1				0.06	77	2.6	18
Acacia oswaldii	Umbrella Wattle	2	50	2					0.01	43	4.7	12
Eremophila glabra ssp. glabra	Tar Bush	2	50	2					0.01	23	8.7	10
Eucalyptus calcareana	Nundroo Mallee	1	25				1		2.00	27	3.7	5



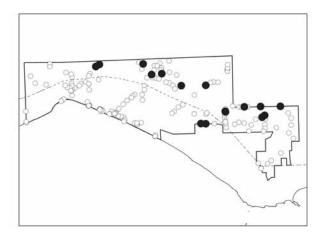
Figure 56. Eucalyptus oleosa ssp. ampliata Open Mallee over Melaleuca pauperiflora ssp. mutica at site VMSSK09201 near Tallowan Well north west of the Yalata Community (Floristic Vegetation Community 3).



Figure 57. Eucalyptus oleosa ssp., E. gracilis Open Mallee over Melaleuca pauperiflora ssp. mutica at site YAL01901 on the Dog Fence Track south of the Yalata Community (Floristic Vegetation Community 3).

Floristic Group 4 Eucalyptus oleosa ssp. (Red Mallee) Open Mallee/Low Woodland over Cratystylis conocephala (Bluebush Daisy), Atriplex vesicaria ssp. (Bladder Saltbush), Maireana erioclada (Rosy Bluebush), Rhagodia crassifolia (Fleshy Saltbush)

This Open Mallee/Low Woodland community is dominated by *Eucalyptus oleosa* ssp. *ampliata* and is widespread north of the Eyre Highway and east of the treeless plain. It occurs in loamy sand to clay loam soils on plains and slopes of low hills. There is a very sparse mid-storey of *Eremophila scoparia*, *Acacia oswaldii* and/or *Myoporum platycarpum* and a mid dense low shrub layer dominated by *Cratystylis conocephala*, *Atriplex vesicaria*, *Maireana erioclada*, *Rhagodia crassifolia* and *Zygophyllum aurantiacum* ssp. *aurantiacum*.



No. of sites in group: 16
Total taxa in group: 71
Average no. of taxa per site: 28.6
Range: 24 - 39

No. of introduced taxa in group: 2

Soils: loamy sand, clayey sand, sandy loam, loam and clay loam

Landforms: plain, sandy plain, hill slope, ridge and dune

Species of conservation significance:

Santalum spicatum (Sandalwood) SA: V, Eremophila parvifolia (Small-leaf Emubush) SA: R, Eremophila sp. Praecox (R.H.Ashby 131) SA: R, Templetonia battii (Spiny Templetonia) SA: R

Sites: KO00302, KO00501, OR02001, VMSDT17101, VMSDT17201, VMSDT17701, VMSDT19901, VMSSK09901, VMSSK10001, VMSSK10401, VMSSK10601, VMSSK10801, COL00401, COL00501, NAN00101, NAN00601

Species Name	Common Name	Frog	%	N	Т	1	2	3	C/A	Tot	%	Tot
Species Name	Common Name	Freq	Freq	111	1	1		3	Ave	Recs	Recs	Grps
Eucalyptus oleosa ssp.	Red Mallee	15	93.8			1	8	6	2.33	39	38.5	8
Cratystylis conocephala	Bluebush Daisy	14	87.5				9	5	2.36	72	19.4	14
Atriplex vesicaria ssp.	Bladder Saltbush	13	81.3			3	10		1.77	136	9.6	22
Maireana erioclada	Rosy Bluebush	12	75.0		2	6	4		1.18	94	12.8	20
Rhagodia crassifolia	Fleshy Saltbush	12	75.0	1	2	8	1		0.85	89	13.5	18
Zygophyllum aurantiacum ssp.	Shrubby Twinleaf	9	56.3		2	4	2	1	1.24	32	28.1	8
Eremophila scoparia	Broom Emubush	9	56.3	1	4	3	1		0.60	18	50.0	5
Acacia oswaldii	Umbrella Wattle	9	56.3	3	3	3			0.37	43	20.9	12
Geijera linearifolia	Sheep Bush	8	50.0	2	2	3		1	0.78	54	14.8	10
Myoporum platycarpum ssp.	False Sandalwood	8	50.0	4	1	3			0.39	45	17.8	11
Sclerolaena uniflora	Small-spine Bindyi	7	43.8		3	4			0.61	38	18.4	16
Austrostipa nitida	Balcarra Spear-grass	7	43.8		5	2			0.36	51	13.7	15
Acacia papyrocarpa	Western Myall	6	37.5	1	2		3		1.04	50	12.0	12
Threlkeldia diffusa	Coast Bonefruit	6	37.5		2	3	1		0.87	77	7.8	18
Exocarpos aphyllus	Leafless Cherry	6	37.5	4		2			0.34	46	13.0	11
Olearia magniflora	Splendid Daisy-bush	6	37.5		6				0.10	12	50.0	4
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	6	37.5	5	1				0.03	60	10.0	21



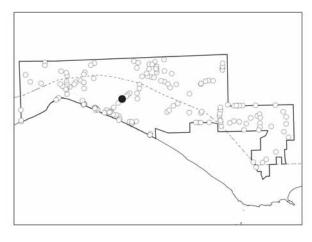
Figure 58. Eucalyptus oleosa ssp. ampliata Open Mallee at site VMSSK10801 north of Colona woolshed (Floristic vegetation Community 4).



Figure 59. Eucalyptus oleosa ssp. ampliata Open Mallee at site VMSDT17101 north east of the Yalata Community (Floristic vegetation Community 4).

Floristic Group 5 Eucalyptus gracilis (Yorrell), Eucalyptus yalatensis (Yalata Mallee) Open Mallee over +/Melaleuca lanceolata (Dryland Tea-tree), Atriplex vesicaria ssp. (Bladder Saltbush)

This Open Mallee community occurs in pockets within the more extensive *Eucalyptus gracilis*, *Eucalyptus oleosa*, *Eucalyptus calcareana* Open Mallee/Low Woodland south of the Eyre Highway. The single site representing this community was located on loamy sand on a dune slope and was dominated by *Eucalyptus gracilis* and *E. yalatensis*. The understorey was dominated by a mid dense mid-shrub layer of *Melaleuca lanceolata* and a more open low shrub layer of *Atriplex vesicaria*, *Threlkeldia diffusa*, *Sclerolaena uniflora* and *Austrostipa acrociliata*.



No. of sites in group: 1
Total taxa in group: 39
No. of introduced taxa in group: 3

Soils: loamy sand **Landforms:** dune slope

Species of conservation significance:

Eremophila parvifolia (Small-leaf Emubush) SA: R

Sites: COO00301

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Melaleuca lanceolata	Dryland Tea-tree	1	100					1	3.00	36	2.8	10
Atriplex vesicaria ssp.	Bladder Saltbush	1	100				1		2.00	136	0.7	22
Eucalyptus gracilis	Yorrell	1	100				1		2.00	27	3.7	8
Austrostipa acrociliata	Graceful Spear-grass	1	100			1			1.00	29	3.4	10
*Schismus barbatus	Arabian Grass	1	100			1			1.00	19	5.3	8
Sclerolaena uniflora	Small-spine Bindyi	1	100			1			1.00	38	2.6	16
Threlkeldia diffusa	Coast Bonefruit	1	100			1			1.00	77	1.3	18
Angianthus tomentosus	Hairy Angianthus	1	100		1				0.10	8	12.5	6
Atriplex stipitata	Bitter Saltbush	1	100		1				0.10	12	8.3	9
Austrodanthonia setacea	Small-flower Wallaby- grass	1	100		1				0.10	21	4.8	13
Austrostipa elegantissima	Feather Spear-grass	1	100		1				0.10	9	11.1	6
Austrostipa nitida	Balcarra Spear-grass	1	100		1				0.10	51	2.0	15
Brachyscome ciliaris var.	Variable Daisy	1	100		1				0.10	45	2.2	16
Crassula colorata var. colorata	Dense Crassula	1	100		1				0.10	20	5.0	10
Dianella revoluta var. divaricata	Broad-leaf Flax-lily	1	100		1				0.10	5	20.0	4
Eremophila glabra ssp. glabra	Tar Bush	1	100		1				0.10	23	4.3	10
Eucalyptus oleosa ssp.	Red Mallee	1	100		1				0.10	39	2.6	8
Eucalyptus yalatensis	Yalata Mallee	1	100		1				0.10	4	25.0	4
Goodenia pinnatifida	Cut-leaf Goodenia	1	100		1				0.10	14	7.1	7
Lepidium phlebopetalum	Veined Peppercress	1	100		1				0.10	8	12.5	6
Rhagodia crassifolia	Fleshy Saltbush	1	100		1				0.10	89	1.1	18
*Rostraria pumila	Tiny Bristle-grass	1	100		1				0.10	25	4.0	10
Senecio glossanthus	Annual Groundsel	1	100		1				0.10	12	8.3	7
Senecio pinnatifolius	Variable Groundsel	1	100		1				0.10	43	2.3	16
Thysanotus baueri	Mallee Fringe-lily	1	100		1				0.10	19	5.3	12
Zygophyllum ovatum	Dwarf Twinleaf	1	100		1				0.10	25	4.0	14
Chenopodium curvispicatum	Cottony Goosefoot	1	100	1					0.01	14	7.1	8
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	1	100	1					0.01	60	1.7	21
Eremophila parvifolia SA:R	Small-leaf Emubush	1	100	1					0.01	11	9.1	6
Eutaxia microphylla	Common Eutaxia	1	100	1					0.01	4	25.0	4
Frankenia serpyllifolia	Thyme Sea-heath	1	100	1					0.01	23	4.3	12
Olearia brachyphylla	Short-leaf Daisy-bush	1	100	1					0.01	1	100.0	1
Olearia magniflora	Splendid Daisy-bush	1	100	1					0.01	12	8.3	4
Olearia muelleri	Mueller's Daisy-bush	1	100	1					0.01	14	7.1	6

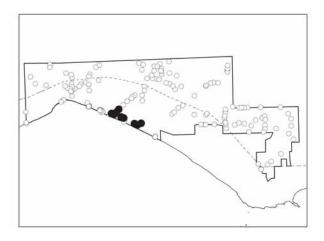
Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
*Poa bulbosa	Bulbous Meadow- grass	1	100	1					0.01	1	100.0	1
Podolepis rugata var.	Pleated Copper-wire Daisy	1	100	1					0.01	14	7.1	7
Santalum acuminatum	Quandong	1	100	1					0.01	13	7.7	7
Vittadinia australasica var.	Sticky New Holland Daisy	1	100	1					0.01	8	12.5	7
Westringia rigida	Stiff Westringia	1	100	1					0.01	18	5.6	7



Figure 60. Eucalyptus gracilis, Eucalyptus yalatensis Open Mallee at site COO00301 on the Coombra Track (Floristic vegetation Community 5).

Floristic Group 6 Eucalyptus calcareana (Nundroo Mallee), Eucalyptus gracilis (Yorrell), Eucalyptus oleosa ssp. (Red Mallee), Melaleuca lanceolata (Dryland Tea-tree) Open Low Mallee (Coastal) over Geijera linearifolia (Sheep Bush), Atriplex vesicaria ssp. (Bladder Saltbush), Beyeria lechenaultii (Pale Turpentine Bush), Pittosporum angustifolium (Native Apricot)

This Open Low Mallee community occurs on sand and loamy sand soils of low coastal dunes east of the Head of the Bight. It occupies a zone between the coastal shrublands on the less stable foredunes and the taller mallee occurring on loamy soils further inland. It is dominated by the mallee eucalypts *Eucalyptus calcareana*, *E. gracilis* and *E. oleosa* in conjunction with *Melaleuca lanceolata*, all of which only tend to reach a maximum height of 2-3m. The understorey is diverse with numerous species occurring regularly, particularly *Geijera linearifolia*, *Atriplex vesicaria*, *Beyeria lechenaultii*, *Pittosporum angustifolium*, *Rhagodia crassifolia* and *Threlkeldia diffusa*.



No. of sites in group: 9
Total taxa in group: 57
Average no. of taxa per site: 19.4
Range: 7 - 36
No. of introduced taxa in group: 1

Soils: sand, loamy sand and sandy loam **Landforms:** dune crest, dune slope and swale

Species of conservation significance:

Eremophila parvifolia (Small-leaf Emubush) **SA: R**, *Poa drummondiana* (Knotted Poa) **SA: R**, *Pomaderris forrestiana* **SA: R**

Sites: NUL03, COY00204, COY00302, COY00304, PIL00501, PIL00504, COO00501, COO00801, YAL01401

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Melaleuca lanceolata	Dryland Tea-tree	9	100.0		1		7	1	1.90	36	25.0	10
Atriplex vesicaria ssp.	Bladder Saltbush	9	100.0		1	7	1		1.01	136	6.6	22
Eucalyptus calcareana	Nundroo Mallee	8	88.9				7	1	2.13	27	29.6	5
Geijera linearifolia	Sheep Bush	8	88.9			2	6		1.75	54	14.8	10
Pittosporum angustifolium	Native Apricot	8	88.9		2	4	2		1.03	46	17.4	11
Threlkeldia diffusa	Coast Bonefruit	8	88.9		3	5			0.66	77	10.4	18
Rhagodia crassifolia	Fleshy Saltbush	8	88.9		4	4			0.55	89	9.0	18
Eucalyptus gracilis	Yorrell	6	66.7	1	1		4		1.35	27	22.2	8
Eremophila deserti	Turkey-bush	6	66.7	1	3	2			0.39	27	22.2	9
Exocarpos aphyllus	Leafless Cherry	6	66.7	4	1	1			0.19	46	13.0	11
Acacia oswaldii	Umbrella Wattle	6	66.7	5		1			0.18	43	14.0	12
Tetragonia implexicoma	Bower Spinach	6	66.7	1	5				0.09	30	20.0	11
Eucalyptus oleosa ssp.	Red Mallee	5	55.6	1	1		3		1.22	39	12.8	8
Beyeria lechenaultii	Pale Turpentine Bush	5	55.6		1	2	2		1.22	15	33.3	4
Frankenia sessilis	Small-leaf Sea-heath	5	55.6		1	4			0.82	34	14.7	12
Olearia exiguifolia	Lobed-leaf Daisy-bush	5	55.6		3	2			0.46	9	55.6	3
Cratystylis conocephala	Bluebush Daisy	4	44.4		2		2		1.05	72	5.6	14
Carpobrotus rossii	Native Pigface	4	44.4		1	3			0.78	19	21.1	8
Atriplex paludosa ssp. cordata	Marsh Saltbush	4	44.4		2	2			0.55	27	14.8	7
Maireana oppositifolia	Salt Bluebush	4	44.4		2	2			0.55	34	11.8	12
Westringia rigida	Stiff Westringia	3	33.3	1	1	1			0.37	18	16.7	7
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	3	33.3		3				0.10	60	5.0	21
Senecio pinnatifolius	Variable Groundsel	3	33.3	1	2				0.07	43	7.0	16



Figure 61. Eucalyptus gracilis, Eucalyptus calcareana, Melaleuca lanceolata Open Low Mallee at site YAL01401 on track to Granites (Floristic Vegetation Community 6).

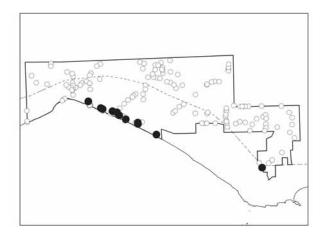


Figure 62. Eucalyptus calcareana, Eucalyptus oleosa ssp. ampliata Very Open Mallee at site COO00501 on the Coombra Track (Floristic Vegetation Community 6).

Floristic Group 7

Melaleuca lanceolata (Dryland Tea-tree) Shrubland over Atriplex vesicaria ssp. (Bladder Saltbush), Pittosporum angustifolium (Native Apricot), Threlkeldia diffusa (Coast Bonefruit), Rhagodia crassifolia (Fleshy Saltbush) +/- Geijera linearifolia (Sheep Bush) +/- Beyeria lechenaultii (Pale Turpentine Bush)

This is similar to the previous vegetation community with the main difference being the absence of the mallee eucalypts. It is a Shrubland community dominated by *Melaleuca lanceolata* that occurs on sand and loamy sand on dunes and plains (often with outcropping limestone) along the coast east of the Head of the Bight. The understorey is mid dense, diverse and dominated by *Atriplex vesicaria*, *Pittosporum angustifolium*, *Rhagodia crassifolia*, *Threlkeldia diffusa*, *Geijera linearifolia*, *Beyeria lechenaultii* and *Frankenia sessilis*.



No. of sites in group: 12
Total taxa in group: 97
Average no. of taxa per site: 18.5
Range: 7 - 30
No. of introduced taxa in group: 12

Soils: sand and loamy sand **Landforms:** plain and dune

Species of conservation significance: none

Sites: YA00501, YA00502, PIL00103, 100COY00101, COY00104, COY00202, COY00301, COY00403, PIL00502, PIL00503, OR02601, COO00701

Species Name	Common Name	Freq	% Frea	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Melaleuca lanceolata	Dryland Tea-tree	12	100.0		1	1	6	4	2.09	36	33.3	10
Threlkeldia diffusa	Coast Bonefruit	12	100.0	1	3	7	1		0.78	77	15.6	18
Atriplex vesicaria ssp.	Bladder Saltbush	11	91.7		1	3	7		1.55	136	8.1	22
Pittosporum angustifolium	Native Apricot	10	83.3	3		6	1		0.80	46	21.7	11
Rhagodia crassifolia	Fleshy Saltbush	10	83.3	1	3	6			0.63	89	11.2	18
Geijera linearifolia	Sheep Bush	8	66.7	3	1		4		1.02	54	14.8	10
Frankenia sessilis	Small-leaf Sea-heath	8	66.7		2	6			0.78	34	23.5	12
Beyeria lechenaultii	Pale Turpentine Bush	6	50.0			1	4	1	2.00	15	40.0	4
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	5	41.7		3	1	1		0.66	60	8.3	21
Atriplex paludosa ssp. cordata	Marsh Saltbush	4	33.3			3	1		1.25	27	14.8	7
Exocarpos aphyllus	Leafless Cherry	4	33.3	2			2		1.01	46	8.7	11
Maireana oppositifolia	Salt Bluebush	4	33.3	1		2	1		1.00	34	11.8	12
Senecio pinnatifolius	Variable Groundsel	4	33.3		2	2			0.55	43	9.3	16



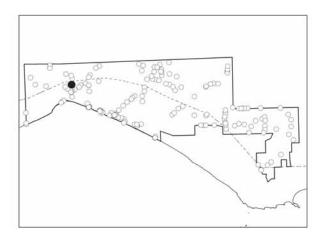
Figure 63. *Melaleuca lanceolata* Shrubland at site COY00202 near Coombra Beach (Floristic Vegetation Community 7).



Figure 64. *Melaleuca lanceolata* Shrubland at site COO00701 on track to Granites (Floristic Vegetation Community 7).

Floristic Group 8 *Melaleuca pauperiflora* ssp. *mutica* (Boree) Shrubland over *Tecticornia* sp. (Samphire), *Atriplex vesicaria* ssp. (Bladder Saltbush), *Zygophyllum ovatum* (Dwarf Twinleaf)

This atypical Shrubland community dominated by *Melaleuca pauperiflora* ssp. *mutica* is of very limited distribution in the Yalata IPA. It is represented by a single site just east of the extensive dunefield at the Head of the Bight on sandy loam in a closed depression. The understorey is sparse with *Tecticornia* sp., *Atriplex vesicaria* and *Zygophyllum ovatum* being the most common components.



No. of sites in group: 1
Total taxa in group: 20
No. of introduced taxa in group: 1

Soils: sandy loam

Landforms: closed depression

Species of conservation significance: none

Sites: HOB00401

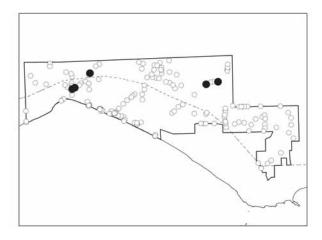
Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Melaleuca pauperiflora ssp. mutica	Boree	1	100					1	3.00	5	20.0	2
Zygophyllum ovatum	Dwarf Twinleaf	1	100			1			1.00	25	4.0	14
Atriplex vesicaria ssp.	Bladder Saltbush	1	100		1				0.10	136	0.7	22
*Mesembryanthemum crystallinum	Common Iceplant	1	100		1				0.10	6	16.7	6
Sclerolaena obliquicuspis	Oblique-spined Bindyi	1	100		1				0.10	47	2.1	14
Tecticornia sp.	Samphire	1	100		1				0.10	22	4.5	11
Amyema melaleucae	Tea-tree Mistletoe	1	100	1					0.01	3	33.3	2
Austrostipa acrociliata	Graceful Spear-grass	1	100	1					0.01	29	3.4	10
Austrostipa nitida	Balcarra Spear-grass	1	100	1					0.01	51	2.0	15
Chenopodium curvispicatum	Cottony Goosefoot	1	100	1					0.01	14	7.1	8
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	1	100	1					0.01	60	1.7	21
Eucalyptus gracilis	Yorrell	1	100	1					0.01	27	3.7	8
Eucalyptus yalatensis	Yalata Mallee	1	100	1					0.01	4	25.0	4
Maireana erioclada	Rosy Bluebush	1	100	1					0.01	94	1.1	20
Nitraria billardierei	Nitre-bush	1	100	1					0.01	45	2.2	16
Ptilotus obovatus var. obovatus	Silver Mulla Mulla	1	100	1					0.01	10	10.0	6
Rhagodia crassifolia	Fleshy Saltbush	1	100	1					0.01	89	1.1	18
Sclerolaena uniflora	Small-spine Bindyi	1	100	1					0.01	38	2.6	16
Tetragonia implexicoma	Bower Spinach	1	100	1					0.01	30	3.3	11
Threlkeldia diffusa	Coast Bonefruit	1	100	1					0.01	77	1.3	18



Figure 65. *Melaleuca pauperiflora* ssp. *mutica* Shrubland at site HOB00401 near the Head of the Bight (Floristic Vegetation Community 8).

Floristic Group 9 Cratystylis conocephala (Bluebush Daisy) Open Shrubland over Atriplex vesicaria ssp. (Bladder Saltbush), Maireana erioclada (Rosy Bluebush), Austrodanthonia caespitosa (Common Wallaby-grass), Austrostipa sp. (Spear-grass)

Cratystylis conocephala Open Shrubland occurs mainly as pockets in the matrix of Acacia papyrocarpa +/Myoporum platycarpum Very Low Woodland and Eucalyptus oleosa ssp. ampliata Open Mallee/Low Woodland
that dominate the landscape east of the treeless plain and north of the Eyre Highway. It is similar in many respects
to the understoreys of these two communities, particularly the former which it grades into. However, it tends to lack
the diversity of these communities. It is an open community dominated by Cratystylis conocephala and with
Atriplex vesicaria, Maireana erioclada, Austrodanthonia caespitosa and Austrostipa sp. prevalent in the
understorey. Acacia papyrocarpa is an occasional emergent.



No. of sites in group: 5
Total taxa in group: 41
Average no. of taxa per site: 22.0
Range: 20 - 24

No. of introduced taxa in group: 4

Soils: loamy sand

Landforms: plain and hill slope

Species of conservation significance: none

Sites: VMSDT16901, VMSDT18501, VMSSK09001,

HOB00801, YAL00601

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Cratystylis conocephala	Bluebush Daisy	5	100			2	2	1	1.80	72	6.9	14
Atriplex vesicaria ssp.	Bladder Saltbush	5	100	1		3	1		1.00	136	3.7	22
Maireana erioclada	Rosy Bluebush	4	80		1	2	1		1.03	94	4.3	20
Austrodanthonia sp.	Wallaby-grass	3	60			2	1		1.33	22	13.6	12
Austrodanthonia caespitosa	Common Wallaby- grass	2	40				1	1	2.50	31	6.5	12
Austrostipa sp.	Spear-grass	2	40				1	1	2.50	26	7.7	13
*Carrichtera annua	Ward's Weed	2	40		1			1	1.55	38	5.3	13
Austrostipa nitida	Balcarra Spear-grass	2	40			1	1		1.50	51	3.9	15
Lawrencia squamata	Thorny Lawrencia	2	40		1		1		1.05	23	8.7	13
Chamaesyce drummondii	Caustic Weed	2	40		1	1			0.55	18	11.1	9
Salsola tragus	Buckbush	2	40		1	1			0.55	59	3.4	17
Sclerolaena obliquicuspis	Oblique-spined Bindyi	2	40		1	1			0.55	47	4.3	14
Trichanthodium skirrophorum	Woolly Yellow-heads	2	40		1	1			0.55	39	5.1	12
Acacia papyrocarpa	Western Myall	2	40		2				0.10	50	4.0	12
Nitraria billardierei	Nitre-bush	2	40	1	1				0.06	45	4.4	16
Rhagodia crassifolia	Fleshy Saltbush	2	40	1	1				0.06	89	2.2	18
*Sonchus oleraceus	Common Sow-thistle	2	40	1	1				0.06	57	3.5	16



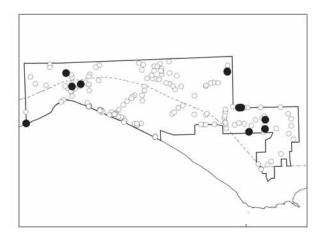
Figure 66. Cratystylis conocephala Open Shrubland at site VMSSK09001 north east of the Yalata Community (Floristic Vegetation Community 9).



Figure 67. Cratystylis conocephala Low Open Shrubland at site YAL00601 to the east of the extensive dunefield at the Head of the Bight (Floristic Vegetation Community 9).

Floristic Group 10 Atriplex vesicaria ssp. (Bladder Saltbush), Tecticornia sp. (Samphire) Low Shrubland over Maireana erioclada (Rosy Bluebush), Disphyma crassifolium ssp. clavellatum (Round-leaf Pigface), Austrostipa spp. (Spear-grasses)

This Low Shrubland is dominated by both *Atriplex vesicaria* and *Tecticornia* sp. and occurs predominantly on loam and light clay soils of plains. Sites representing this community were located on the Nullarbor Plain at the Head of the Bight and on the former Colona station at the eastern end of the IPA. Where the *Tecticornia* species were able to be identified at these sites *T. disarticulata* and *T. halocnemoides* were both recognised. The understorey is dominated by salt tolerant species, particularly *Maireana erioclada*, *Disphyma crassifolium* ssp. *clavellatum*, *Austrostipa* spp. and, on occasions, *Maireana oppositifolia*. The annual exotics *Sonchus oleraceus* and *Carrichtera annua* were also prominent in this community after rain.



No. of sites in group: 11
Total taxa in group: 75
Average no. of taxa per site: 21.3
Range: 6 - 41
No. of introduced taxa in group 11

Soils: loam, sandy clay loam, clay loam, light clay and medium clay

Landforms: plain, limestone plain and open depression

Species of conservation significance: none

Sites: CA00601, KO00102, KO00201, OR01901, VMSDT20701, VMSSK08801, COL00601, COL00801, HOB00101, YAL00401, YAL00901

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Atriplex vesicaria ssp.	Bladder Saltbush	11	100.0			İ	9	2	2.18	136	8.1	22
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	8	72.7		1	6	1		1.01	25	32.0	8
*Sonchus oleraceus	Common Sow-thistle	8	72.7	1	6	1			0.20	57	14.0	16
Maireana erioclada	Rosy Bluebush	7	63.6		1	5	1		1.01	94	7.4	20
Brachyscome ciliaris var.	Variable Daisy	6	54.5		2	4			0.70	45	13.3	16
*Carrichtera annua	Ward's Weed	6	54.5		3	3			0.55	38	15.8	13
Daucus glochidiatus	Native Carrot	6	54.5		5	1			0.25	18	33.3	11
Trichanthodium skirrophorum	Woolly Yellow-heads	6	54.5	1	4	1			0.24	39	15.4	12
Tecticornia sp.	Samphire	5	45.5				2	3	2.60	22	22.7	11
Tecticornia disarticulata		5	45.5				4	1	2.20	20	25.0	11
Austrostipa nitida	Balcarra Spear-grass	5	45.5		2	2	1		0.84	51	9.8	15
Bromus arenarius	Sand Brome	5	45.5	1	2	1	1		0.64	8	62.5	2
Sclerolaena obliquicuspis	Oblique-spined Bindyi	5	45.5		3	2			0.46	47	10.6	14
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	5	45.5	1	4				0.08	31	16.1	11
Senecio pinnatifolius	Variable Groundsel	4	36.4		1	2	1		1.03	43	9.3	16
Austrostipa drummondii	Cottony Spear-grass	4	36.4		2	2			0.55	34	11.8	13
Austrostipa eremophila	Rusty Spear-grass	4	36.4		2	2			0.55	28	14.3	13
Brachyscome lineariloba	Hard-head Daisy	4	36.4		2	2			0.55	13	30.8	6
Crassula colorata var. colorata	Dense Crassula	4	36.4		3	1			0.33	20	20.0	10
Chamaesyce drummondii	Caustic Weed	4	36.4	1	3				0.08	18	22.2	9
Maireana oppositifolia	Salt Bluebush	3	27.3				3		6.00	2.00	34	12
Tecticornia halocnemoides ssp.	Grey Samphire	1	9.1		:		1		2.00	5	20.0	4



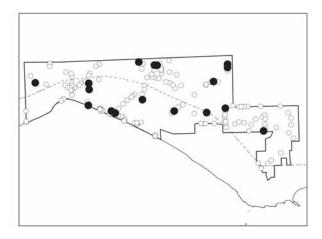
Figure 68. Atriplex vesicaria ssp., Tecticornia sp. Low Open Shrubland at site VMSDT20701 (Floristic Vegetation Community 10).



Figure 69. Tecticornia sp., Maireana oppositifolia, Atriplex vesicaria ssp. Low Shrubland at site COL00601 (Floristic Vegetation Community 10).

Floristic Group 11 Atriplex vesicaria ssp. (Bladder Saltbush) Low Open Shrubland (No samphires) over Maireana erioclada (Rosy Bluebush), Salsola tragus (Buckbush), Austrostipa spp. (Spear-grasses)

This Low Open Shrubland community is similar to the previous except that it occurs on lighter soils (including sand and sandy loam), in a wider range of habitats (being found on plains, depressions, hill slopes, dune slopes and swales) and samphire species are absent. It was recorded from locations across the whole of the IPA. South of the Eyre Highway it occurs in natural openings in the mallee and just inland of the larger coastal dunes. North of the highway it is interspersed with the *Acacia papyrocarpa* +/- *Myoporum platycarpum* Very Low Woodland, *Eucalyptus oleosa* ssp. *ampliata* Open Mallee/Low Woodland and *Cratystylis conocephala* Open Shrubland communities. *Atriplex vesicaria* is the sole dominant with *Maireana erioclada*, *Salsola tragus*, *Austrostipa* spp. and occasionally *Lycium australe* dominating the understorey.



No. of sites in group: 17
Total taxa in group: 93
Average no. of taxa per site: 19.1
Range: 6 - 41
No. of introduced taxa in group: 10

Soils: sand, loamy sand, sandy loam, sandy clay loam and clay loam

Landforms: plain, open depression, closed depression, hill slope, dune slope and swale

Species of conservation significance:

Eremophila parvifolia (Small-leaf Emubush) SA: R

Sites: YA00204, YA00301, YA00402, 82COY00102, COY00201, OR01701, VMSDT16801, VMSDT17601, VMSDT17801, VMSDT19801, VMSDT20601, VMSSK08901, VMSSK10101, COO00601, NAN00301, YAL00201, YAL01701

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3		C/A Ave	Tot Recs	% Recs	Tot Grps
Atriplex vesicaria ssp.	Bladder Saltbush	17	100.0			2	10	3	2	2.29	136	12.5	22
Maireana erioclada	Rosy Bluebush	10	58.8	1	3	3	3			0.93	94	10.6	20
Salsola tragus	Buckbush	10	58.8		4	6				0.64	59	16.9	17
Austrostipa drummondii	Cottony Spear-grass	8	47.1		1	3	2	1	1	1.76	34	23.5	13
Lycium australe	Australian Boxthorn	7	41.2		3	2	2			0.90	28	25.0	12
Austrostipa nitida	Balcarra Spear-grass	6	35.3			3	3			1.50	51	11.8	15



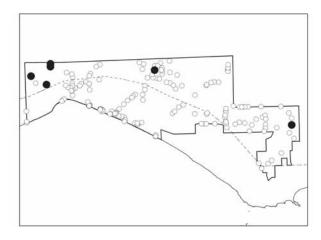
Figure 70. Atriplex vesicaria ssp. Low Open Shrubland at site VMSDT17801 north of Nanwoora Well (Floristic Vegetation Community 11).



Figure 71. Atriplex vesicaria ssp. Low Shrubland at site YAL01701 in natural clearing in mallee south west of the Yalata Community (Floristic Vegetation Community 11).

Floristic Group 12 *Maireana sedifolia* (Bluebush) +/- *Atriplex vesicaria* ssp. (Bladder Saltbush) +/- *Tecticornia* sp. (Samphire) Low Open Shrubland over *Austrodanthonia* sp, (Wallaby-grass), *Sclerolaena obliquicuspis* (Oblique-spined Bindyi)

This Low Open Shrubland community is dominated mainly by *Maireana sedifolia*, though occasionally in conjunction with *Atriplex vesicaria* and *Tecticornia* sp. It is the predominant community of the Nullarbor Plain at the western end of the Yalata IPA. Elsewhere in the IPA it occurs in pockets across the north and, more extensively, at the eastern end of the former Colona station. Grasses are prominent in the understorey, particularly *Austrodanthonia caespitosa*, and short-lived perennial chenopods such as *Sclerolaena obliquicuspis*.



No. of sites in group: 6
Total taxa in group: 40
Average no. of taxa per site: 22.5
Range: 21 - 24

Soils: loamy sand and clay loam **Landforms:** plain and limestone plain

No. of introduced taxa in group:

Species of conservation significance: none

Sites: VMSDT15001, VMSDT15101, VMSDT15201, VMSDT20201, NAN00201, YAL00101

3

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Maireana sedifolia	Bluebush	6	100.0			1	5		1.83	11	54.5	5
Atriplex vesicaria ssp.	Bladder Saltbush	4	66.7			1	3		1.75	136	2.9	22
Austrodanthonia caespitosa	Common Wallaby- grass	3	50.0					3	3.00	31	9.7	12
Sclerolaena obliquicuspis	Oblique-spined Bindyi	3	50.0	1		2			0.67	47	6.4	14
Austrodanthonia sp.	Wallaby-grass	2	33.3				1	1	2.50	22	9.1	12
Erodium cygnorum	Blue Heron's-bill	2	33.3				2		2.00	2	100.0	1
Austrostipa nitida	Balcarra Spear-grass	2	33.3			1	1		1.50	51	3.9	15
Austrostipa sp.	Spear-grass	2	33.3			1	1		1.50	26	7.7	13
Salsola tragus	Buckbush	2	33.3		1		1		1.05	59	3.4	17
Lycium australe	Australian Boxthorn	2	33.3			2			1.00	28	7.1	12
Zygophyllum ovatum	Dwarf Twinleaf	2	33.3		1	1			0.55	25	8.0	14
Maireana erioclada	Rosy Bluebush	2	33.3	1		1			0.51	94	2.1	20
Senecio glossanthus	Annual Groundsel	2	33.3		2				0.10	12	16.7	7
*Sonchus oleraceus	Common Sow-thistle	2	33.3		2				0.10	57	3.5	16
Trichanthodium skirrophorum	Woolly Yellow-heads	2	33.3		2				0.10	39	5.1	12
Tecticornia disarticulata		1	16.7				1		2.00	20	5.0	11
Tecticornia sp.	Samphire	1	16.7				1		2.00	22	4.5	11

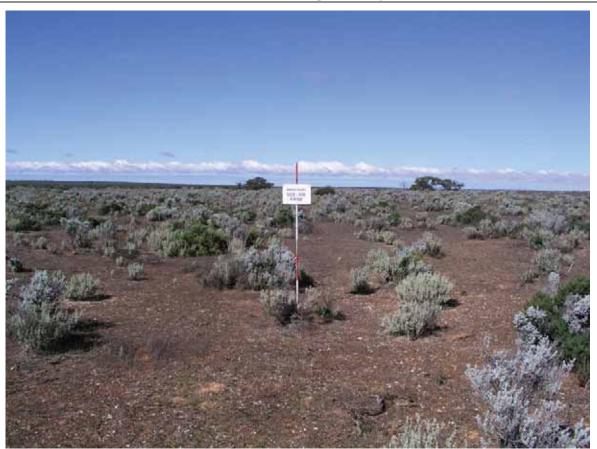


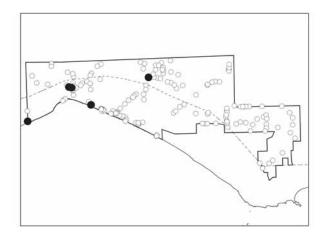
Figure 72. Maireana sedifolia, Tecticornia sp. Low Open Shrubland over Atriplex vesicaria at site VMSDT20201 at the eastern end of the former Colona station (Floristic Vegetation Community 12).



Figure 73. Maireana sedifolia, Atriplex vesicaria, Tecticornia disarticulata Low Open Shrubland over at site YAL00101 on the Nullarbor Plain at the western end of the Yalata IPA (Floristic Vegetation Community 12).

Floristic Group 13 Lawrencia squamata (Thorny Lawrencia) Low Shrubland over Atriplex vesicaria ssp. (Bladder Saltbush), Maireana erioclada (Rosy Bluebush), Nitraria billardierei (Nitre-bush)

Lawrencia squamata Low Shrubland is a minor component of the shrub communities of the Nullarbor Plain portion of the Yalata IPA and grades into the more extensive Maireana sedifolia (Bluebush) +/- Atriplex vesicaria ssp. (Bladder Saltbush) +/- Tecticornia sp. (Samphire) Low Open Shrubland. It tends to occur on loamy soils and is most evident on the eastern side of the large dunefield at the Head of the Bight. Minor occurrences can also be found on the inland side of coastal dunes to the east of the Head of the Bight. The most common associated species are Atriplex vesicaria (which occurs as either a co-dominant or understorey dominant), Maireana erioclada, Nitraria billardierei, Frankenia sessilis, Austrodanthonia caespitosa, Austrostipa eremophila and Trichanthodium skirrophorum.



No. of sites in group: 5
Total taxa in group: 40
Average no. of taxa per site: 17.0
Range: 12-22
No. of introduced taxa in group: 3

Soils: clayey sand, sandy loam, silty loam and sandy clay loam

Landforms: sandy plain, limestone plain and hill slope

Species of conservation significance: none

Sites: CA00801, COY00603, VMSSK09701, HOB00601, YAL00801

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Lawrencia squamata	Thorny Lawrencia	5	100				4	1	2.20	23	21.7	13
Atriplex vesicaria ssp.	Bladder Saltbush	5	100	1	1		3		1.22	136	3.7	22
Maireana erioclada	Rosy Bluebush	4	80		2	1	1		0.80	94	4.3	20
Nitraria billardierei	Nitre-bush	4	80	1	2	1			0.30	45	8.9	16
Frankenia sessilis	Small-leaf Sea-heath	3	60			1	2		1.67	34	8.8	12
Austrodanthonia sp.	Wallaby-grass	3	60			2	1		1.33	22	13.6	12
Trichanthodium skirrophorum	Woolly Yellow-heads	3	60		1	1	1		1.03	39	7.7	12
Austrostipa eremophila	Rusty Spear-grass	3	60			3			1.00	28	10.7	13
Senecio pinnatifolius	Variable Groundsel	3	60	1	2				0.07	43	7.0	16
Austrodanthonia caespitosa	Common Wallaby- grass	2	40			1		1	2.00	31	6.5	12
Brachyscome ciliaris var.	Variable Daisy	2	40			1	1		1.50	45	4.4	16
Salsola tragus	Buckbush	2	40		1	1			0.55	59	3.4	17
Austrostipa drummondii	Cottony Spear-grass	2	40	1		1			0.51	34	5.9	13
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	2	40	1		1			0.51	25	8.0	8
Sclerolaena uniflora	Small-spine Bindyi	2	40		2				0.10	38	5.3	16
*Sonchus oleraceus	Common Sow-thistle	2	40		2				0.10	57	3.5	16
Tecticornia disarticulata		2	40		2				0.10	20	10.0	11
Tecticornia sp.	Samphire	2	40		2				0.10	22	9.1	11
Zygophyllum ovatum	Dwarf Twinleaf	2	40		2				0.10	25	8.0	14
Austrostipa sp.	Spear-grass	2	40	1	1				0.06	26	7.7	13
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	2	40	1	1				0.06	31	6.5	11
Carpobrotus rossii	Native Pigface	2	40	2					0.01	19	10.5	8



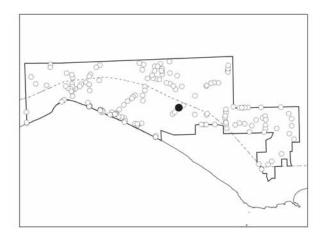
Figure 74. Lawrencia squamata, Atriplex vesicaria Low Shrubland at site VMSSK09701 near Nanwoora Well (Floristic Vegetation Community 13).



Figure 75. Lawrencia squamata Low Open Shrubland at site HOB00601 just to the east of the extensive dunefield at the Head of the Bight (Floristic Vegetation Community 13).

Floristic Group 14 Geijera linearifolia (Sheep Bush), Pittosporum angustifolium (Native Apricot) Tall Open Shrubland over Atriplex vesicaria ssp. (Bladder Saltbush), Eremophila deserti (Turkey-bush), Podolepis rugata var. (Pleated Copper-wire Daisy)

This Tall Open Shrubland community occurs on sandy loam soils in natural openings in the extensive mallee communities south of the Eyre Highway. It has a very limited extent in the Yalata IPA and is represented by only one site. The understorey is sparse with *Atriplex vesicaria*, *Eremophila deserti* and *Podolepis rugata* being most prominent.



No. of sites in group: 1
Total taxa in group: 30
No. of introduced taxa in group: 4

Soils: sandy loam Landforms: hill slope

Species of conservation significance: none

Sites: YAL01601

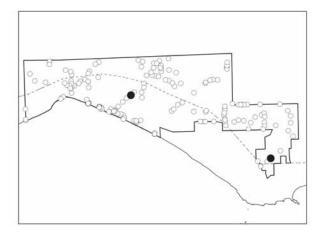
Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Geijera linearifolia	Sheep Bush	1	100				1		2.00	54	1.9	10
Pittosporum angustifolium	Native Apricot	1	100				1		2.00	46	2.2	11
Atriplex vesicaria ssp.	Bladder Saltbush	1	100				1		2.00	136	0.7	22
Eremophila deserti	Turkey-bush	1	100				1		2.00	27	3.7	9
Acacia oswaldii	Umbrella Wattle	1	100			1			1.00	43	2.3	12
Austrodanthonia sp.	Wallaby-grass	1	100			1			1.00	22	4.5	12
Isoetopsis graminifolia	Grass Cushion	1	100			1			1.00	6	16.7	4
Myoporum platycarpum ssp.	False Sandalwood	1	100			1			1.00	45	2.2	11
Olearia muelleri	Mueller's Daisy-bush	1	100			1			1.00	14	7.1	6
Podolepis rugata var.	Pleated Copper-wire Daisy	1	100			1			1.00	14	7.1	7
Rhagodia crassifolia	Fleshy Saltbush	1	100			1			1.00	89	1.1	18
Threlkeldia diffusa	Coast Bonefruit	1	100			1			1.00	77	1.3	18
Austrostipa acrociliata	Graceful Spear-grass	1	100		1				0.10	29	3.4	10
Austrostipa elegantissima	Feather Spear-grass	1	100		1				0.10	9	11.1	6
*Brassica tournefortii	Wild Turnip	1	100		1				0.10	26	3.8	14
*Carrichtera annua	Ward's Weed	1	100		1				0.10	38	2.6	13
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	1	100		1				0.10	60	1.7	21
*Erodium cicutarium	Cut-leaf Heron's-bill	1	100		1				0.10	13	7.7	9
Exocarpos aphyllus	Leafless Cherry	1	100		1				0.10	46	2.2	11
Santalum acuminatum	Quandong	1	100		1				0.10	13	7.7	7
Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna	1	100		1				0.10	1	100.0	1
*Sonchus oleraceus	Common Sow-thistle	1	100		1				0.10	57	1.8	16
Vittadinia australasica var.	Sticky New Holland Daisy	1	100		1				0.10	8	12.5	7
Wurmbea sp.	Nancy	1	100		1				0.10	2	50.0	2
Comesperma volubile	Love Creeper	1	100	1					0.01	2	50.0	2
Cratystylis conocephala	Bluebush Daisy	1	100	1					0.01	72	1.4	14
Eremophila scoparia	Broom Emubush	1	100	1					0.01	18	5.6	5
Maireana sp.	Bluebush/Fissure-plant	1	100	1					0.01	14	7.1	10
Sclerolaena brevifolia	Small-leaf Bindyi	1	100	1					0.01	11	9.1	8
Senna artemisioides ssp. petiolaris		1	100	1					0.01	2	50.0	2



Figure 76. Geijera linearifolia, Pittosporum angustifolium Tall Open Shrubland at site YAL01601 in a clearing in the mallee south of the Yalata Roadhouse (Floristic Vegetation Community 14).

Floristic Group 15 Atriplex stipitata (Bitter Saltbush) Low Shrubland over Maireana erioclada (Rosy Bluebush), Podolepis rugata var. (Pleated Copper-wire Daisy)

This Low Shrubland community is mostly found in the natural openings in the extensive mallee communities south of the Eyre Highway and in the far south east of the Yalata IPA. While it is common in this area its extent is limited by the small size and disjunct nature of the natural openings in the mallee. Hence only two sites represent this community in the IPA. The understorey is sparse and variable but tends to mostly feature *Maireana erioclada* and *Podolepis rugata*.



No. of sites in group: 2
Total taxa in group: 42
Average no. of taxa per site: 21.5
Range: 21 - 22

9

No. of introduced taxa in group:

Soils: sandy loam and medium clay

Landforms: flats

Species of conservation significance: none

Sites: COO00201, YAL02201

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Atriplex stipitata	Bitter Saltbush	2	100				2		2.00	12	16.7	9
*Carrichtera annua	Ward's Weed	1	50				1		2.00	38	2.6	13
Frankenia serpyllifolia	Thyme Sea-heath	1	50				1		2.00	23	4.3	12
Lycium australe	Australian Boxthorn	1	50				1		2.00	28	3.6	12
Maireana erioclada	Rosy Bluebush	1	50				1		2.00	94	1.1	20
*Medicago truncatula	Barrel Medic	1	50				1		2.00	2	50.0	2
Podolepis rugata var.	Pleated Copper-wire Daisy	1	50				1		2.00	14	7.1	7
Angianthus tomentosus	Hairy Angianthus	1	50			1			1.00	8	12.5	6
Austrodanthonia setacea	Small-flower Wallaby- grass	1	50			1			1.00	21	4.8	13
Austrodanthonia sp.	Wallaby-grass	1	50			1			1.00	22	4.5	12
Austrostipa drummondii	Cottony Spear-grass	1	50			1			1.00	34	2.9	13
Austrostipa nitida	Balcarra Spear-grass	1	50			1			1.00	51	2.0	15
Brachyscome ciliaris var.	Variable Daisy	1	50			1			1.00	45	2.2	16
Convolvulus remotus	Grassy Bindweed	1	50			1			1.00	2	50.0	2
Crassula colorata var. colorata	Dense Crassula	1	50			1			1.00	20	5.0	10
Daucus glochidiatus	Native Carrot	1	50			1			1.00	18	5.6	11
*Moraea setifolia	Thread Iris	1	50			1			1.00	6	16.7	4
Sida corrugata var.	Corrugated Sida	1	50			1			1.00	1	100.0	1
Vittadinia australasica var.	Sticky New Holland Daisy	1	50			1			1.00	8	12.5	7
*Vulpia myuros f.	Fescue	1	50			1			1.00	1	100.0	1
Zygophyllum ovatum	Dwarf Twinleaf	1	50			1			1.00	25	4.0	14
Austrostipa sp.	Spear-grass	1	50		1				0.10	26	3.8	13
*Bromus rubens	Red Brome	1	50		1				0.10	5	20.0	5
*Carthamus lanatus	Saffron Thistle	1	50		1				0.10	1	100.0	1
*Centaurea melitensis	Malta Thistle	1	50		1				0.10	7	14.3	5
Erodium sp.	Heron's-bill/Crowfoot	1	50		1				0.10	6	16.7	4
Hypoxis glabella var. glabella	Tiny Star	1	50		1				0.10	4	25.0	4
*Sonchus oleraceus	Common Sow-thistle	1	50		1				0.10	57	1.8	16
Acacia oswaldii	Umbrella Wattle	1	50	1					0.01	43	2.3	12
Acacia papyrocarpa	Western Myall	1	50	1					0.01	50	2.0	12
*Brassica tournefortii	Wild Turnip	1	50	1					0.01	26	3.8	14
Chamaesyce drummondii	Caustic Weed	1	50	1					0.01	18	5.6	9
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	1	50	1					0.01	60	1.7	21
Eremophila glabra ssp. glabra	Tar Bush	1	50	1					0.01	23	4.3	10

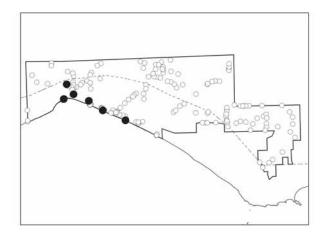
Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Exocarpos aphyllus	Leafless Cherry	1	50	1					0.01	46	2.2	11
Geijera linearifolia	Sheep Bush	1	50	1					0.01	54	1.9	10
Pittosporum angustifolium	Native Apricot	1	50	1					0.01	46	2.2	11
Salsola tragus	Buckbush	1	50	1					0.01	59	1.7	17
Senecio pinnatifolius	Variable Groundsel	1	50	1					0.01	43	2.3	16
Solanum hystrix	Afghan Thistle	1	50	1					0.01	3	33.3	3
Vittadinia sp.	New Holland Daisy	1	50	1					0.01	1	100.0	1
Zygophyllum sp.	Twinleaf	1	50	1					0.01	26	3.8	10



Figure 77. Atriplex stipitata Low Shrubland over Maireana erioclada at site COO00201 in a natural clearing in the mallee on the Coombra Track (Floristic Vegetation Community 15).

Floristic Group 16 Myoporum insulare (Common Boobialla) +/- Nitraria billardierei (Nitre-bush) Open Shrubland over Rhagodia crassifolia (Fleshy Saltbush), Threlkeldia diffusa (Coast Bonefruit)

This Open Shrubland community is confined to the deeper sand of dune slopes in near coastal areas from the Head of the Bight eastwards. It is dominated by *Myoporum insulare* and, on occasions, *Nitraria billardierei*. This is a variable community with the overstorey structure ranging in density from very sparse (<10% projected foliage cover) to dense (70-100%), and in height from low (<1m) to tall (>2m). The understorey varies too, though *Rhagodia crassifolia, Threlkeldia diffusa, Maireana oppositifolia, Carpobrotus rossii* and *Atriplex vesicaria* are common components.



No. of sites in group: 7
Total taxa in group: 44
Average no. of taxa per site: 11.6
Range: 4 - 23

No. of introduced taxa in group:

Soils: sand and loamy sand **Landforms:** dune slopes

Species of conservation significance: none

Sites: YA00505, YA00506, ILL00101, ILL00303,

5

NUL07, COY00402, HOB00501

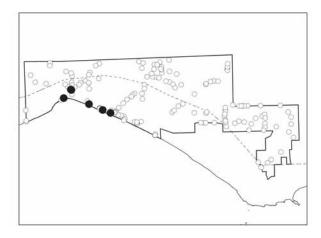
Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Myoporum insulare	Common Boobialla	7	100.0		2	1	3	1	1.46	9	77.8	2
Nitraria billardierei	Nitre-bush	6	85.7		3	1	2		0.88	45	13.3	16
Threlkeldia diffusa	Coast Bonefruit	6	85.7	1	2	1	2		0.87	77	7.8	18
Rhagodia crassifolia	Fleshy Saltbush	6	85.7	2	1	2		1	0.85	89	6.7	18
Maireana oppositifolia	Salt Bluebush	4	57.1	1	1		1	1	1.28	34	11.8	12
Carpobrotus rossii	Native Pigface	4	57.1	1	1	1		1	1.03	19	21.1	8
Atriplex vesicaria ssp.	Bladder Saltbush	4	57.1	1	1	1	1		0.78	136	2.9	22



Figure 78. Myoporum insulare, Nitraria billardierei Tall Open Shrubland at site COY00402 near the coast east of the Coombra Track (Floristic Vegetation Community 16).

Floristic Group 17 *Nitraria billardierei* (Nitre-bush) Low Open Shrubland over *Rhagodia crassifolia* (Fleshy Saltbush), *Threlkeldia diffusa* (Coast Bonefruit) +/- *Atriplex vesicaria* ssp. (Bladder Saltbush) +/- *Frankenia sessilis* (Small-leaf Sea-heath)

Nitraria billardierei Low Open Shrubland is associated with deep sands of coastal dunes. Most sites representing this community are situated on the margin of the bare, drifting dunes along the coast, and thus it appears to be able to tolerate deep, unstable sands. While the generally sparse overstorey is dominated by Nitraria billardierei, the major components of the understorey are Rhagodia crassifolia, Threlkeldia diffusa and, on occasions, Atriplex vesicaria and Frankenia sessilis.



No. of sites in group: 6
Total taxa in group: 45
Average no. of taxa per site: 12.7
Range: 7-19
No. of introduced taxa in group: 6

Soils: sand, loamy sand and sandy loam **Landforms:** sand plain, dune slope, dune crest and hill slope

Species of conservation significance: none

Sites: 82COY00103, ILL00103, NUL06, COY00203, HOB00701, YAL00701

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Nitraria billardierei	Nitre-bush	6	100.0			1	4	1	2.00	45	13.3	16
Rhagodia crassifolia	Fleshy Saltbush	5	83.3	1	2	1		1	0.84	89	5.6	18
Threlkeldia diffusa	Coast Bonefruit	5	83.3	1	3		1		0.46	77	6.5	18
Tetragonia implexicoma	Bower Spinach	4	66.7	1	3				0.08	30	13.3	11
Frankenia sessilis	Small-leaf Sea-heath	3	50.0		1		2		1.37	34	8.8	12
Atriplex vesicaria ssp.	Bladder Saltbush	3	50.0	1		1		1	1.34	136	2.2	22
Nicotiana goodspeedii	Small-flower Tobacco	3	50.0	1	2				0.07	17	17.6	11
Frankenia pauciflora var.	Southern Sea-heath	2	33.3				1	1	2.50	12	16.7	8
Maireana erioclada	Rosy Bluebush	2	33.3			1	1		1.50	94	2.1	20
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	2	33.3		1		1		1.05	60	3.3	21
Trichanthodium skirrophorum	Woolly Yellow-heads	2	33.3			2			1.00	39	5.1	12
Senecio pinnatifolius	Variable Groundsel	2	33.3	1		1			0.51	43	4.7	16
Atriplex cinerea	Coast Saltbush	2	33.3	1	1				0.06	9	22.2	6
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	2	33.3	1	1				0.06	31	6.5	11
Maireana oppositifolia	Salt Bluebush	2	33.3	1	1				0.06	34	5.9	12
*Sonchus oleraceus	Common Sow-thistle	2	33.3	1	1				0.06	57	3.5	16



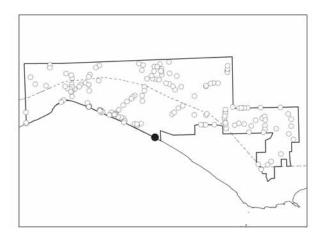
Figure 79. Nitraria billardierei Open Shrubland at site HOB00701 near the Head of the Bight (Floristic Vegetation Community 17).



Figure 80. Nitraria billardierei Tall Open Shrubland at site COY00203 near Coombra Beach (Floristic Vegetation Community 17).

Floristic Group 18 Atriplex cinerea (Coast Saltbush) Open Shrubland over Spinifex hirsutus (Rolling Spinifex)

This Open Shrubland community is found on the deep sand of the crests of foredunes. Plant diversity was very low at the one site representing the community, located at Yalata Beach. The sparse overstorey was dominated by *Atriplex cinerea*, while the understorey featured *Spinifex hirsutus* and, to a lesser extent, the exotic *Euphorbia paralias*. This community is of limited extent in the IPA.



No. of sites in group: 1
Total taxa in group: 4
No. of introduced taxa in group: 1

Soils: sand

Landforms: dune crest

Species of conservation significance: none

Sites: PIL00102

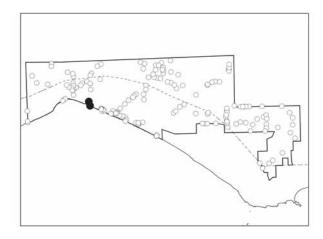
Group Taxa List

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Atriplex cinerea	Coast Saltbush	1	100				1		2.00	9	11.1	6
Spinifex hirsutus	Rolling Spinifex	1	100				1		2.00	4	25.0	4
*Euphorbia paralias	Sea Spurge	1	100		1				0.10	6	16.7	4
Senecio pinnatifolius	Variable Groundsel	1	100	1					0.01	43	2.3	16

No site photo available.

Floristic Group 19 Leucophyta brownii (Coast Cushion Bush) Low Shrubland over Maireana oppositifolia (Salt Bluebush), Nitraria billardierei (Nitre-bush), Hemichroa diandra (Mallee Hemichroa), Carpobrotus rossii (Native Pigface), *Euphorbia paralias (Sea Spurge) and Atriplex cinerea (Coast Saltbush)

This Low Shrubland community is dominated by *Leucophyta brownii* and occurs on deep sand of the slopes of coastal foredunes where it may grade into *Atriplex cinerea* Open Shrubland. The main differences from that community are the abundance and dominance of *L. brownii* and the presence of *A. cinerea* as only an occasional emergent. The main components of the understorey are *Maireana oppositifolia*, *Nitraria billardierei*, *Hemichroa diandra*, *Carpobrotus rossii*, **Euphorbia paralias* and *Threlkeldia diffusa*. It is of limited extent in the IPA with the three sites representing it being located near where the Red Gate Track meets the coast.



No. of sites in group: 3
Total taxa in group: 19
Average no. of taxa per site: 13.3
Range: 11-16
No. of introduced taxa in group: 2

Soils: sand

Landforms: dune slopes

Species of conservation significance: none

Sites: YA00507, 82COY00101, COY00601

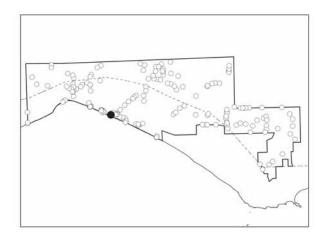
Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Leucophyta brownii	Coast Cushion Bush	3	100.0				1	2	2.67	3	100.0	1
Maireana oppositifolia	Salt Bluebush	3	100.0				2	1	2.33	34	8.8	12
Nitraria billardierei	Nitre-bush	3	100.0		1		2		1.37	45	6.7	16
Hemichroa diandra	Mallee Hemichroa	3	100.0	1			2		1.34	11	27.3	7
Atriplex cinerea	Coast Saltbush	3	100.0		1	1	1		1.03	9	33.3	6
Carpobrotus rossii	Native Pigface	3	100.0	1		1	1		1.00	19	15.8	8
*Euphorbia paralias	Sea Spurge	3	100.0	1		1	1		1.00	6	50.0	4
Threlkeldia diffusa	Coast Bonefruit	3	100.0	1		2			0.67	77	3.9	18
Myoporum insulare	Common Boobialla	2	66.7		1		1		1.05	9	22.2	2
Rhagodia crassifolia	Fleshy Saltbush	2	66.7	1			1		1.01	89	2.2	18
Zygophyllum sp.	Twinleaf	2	66.7	1			1		1.01	26	7.7	10
Tetragonia implexicoma	Bower Spinach	2	66.7	1		1			0.51	30	6.7	11
*Arctotheca populifolia	Beach Daisy	2	66.7	1	1				0.06	2	100.0	1
Frankenia pauciflora var.	Southern Sea-heath	1	33.3				1		2.00	12	8.3	8
Atriplex paludosa ssp. cordata	Marsh Saltbush	1	33.3		1				0.10	27	3.7	7
Spinifex hirsutus	Rolling Spinifex	1	33.3		1				0.10	4	25.0	4
Zygophyllum angustifolium	Scrambling Twinleaf	1	33.3		1				0.10	5	20.0	4
Atriplex vesicaria ssp.	Bladder Saltbush	1	33.3	1					0.01	136	0.7	22
Senecio pinnatifolius	Variable Groundsel	1	33.3	1					0.01	43	2.3	16



Figure 81. Leucophyta brownii, Maireana oppositifolia, Hemichroa diandra Low Shrubland at site COY00601 where the Red Gate Track reaches the beach (Floristic Vegetation Community 19).

Floristic Group 20 Spinifex hirsutus (Rolling Spinifex), *Euphorbia paralias (Sea Spurge) Tussock Grassland

This Tussock Grassland community is dominated by *Spinifex hirsutus* in association with the exotic *Euphorbia paralias*. It occurs on deep sand on dune slopes close to the sea shore and grades into the *Atriplex cinerea* (Coast Saltbush) Open Shrubland. It differs from that community in that the shrub overstorey of *A. cinerea* is virtually absent. The one site representing this community is located near Coombra Beach.



No. of sites in group: 1
Total taxa in group: 7
No. of introduced taxa in group: 1

Soils: sand

Landforms: dune slope

Species of conservation significance: none

Sites: COY00205

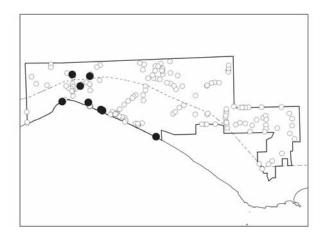
Oloup Taxa List												
Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Spinifex hirsutus	Rolling Spinifex	1	100				1		2.00	4	25.0	4
*Euphorbia paralias	Sea Spurge	1	100				1		2.00	6	16.7	4
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	1	100			1			1.00	60	1.7	21
Rhagodia crassifolia	Fleshy Saltbush	1	100			1			1.00	89	1.1	18
Tecticornia sp.	Samphire	1	100			1			1.00	22	4.5	11
Threlkeldia diffusa	Coast Bonefruit	1	100			1			1.00	77	1.3	18
Atriplex cinerea	Coast Saltbush	1	100	1					0.01	9	11.1	6



Figure 82. Spinifex hirsutus, *Euphorbia paralias Tussock Grassland at site COY00205 near Coombra Beach (Floristic Vegetation Community 20).

Floristic Group 21 Tecticornia sp. (Samphire), Maireana oppositifolia (Salt Bluebush) Low Shrubland over Disphyma crassifolium ssp. clavellatum (Round-leaf Pigface), Frankenia sessilis (Small-leaf Sea-heath), Atriplex vesicaria ssp. (Bladder Saltbush)

This Low Shrubland community occurs in sand, loam and light clay soils in low-lying swampy saline areas along the coast and inland around the Head of the Bight. It occurs in more saline areas than the *Atriplex vesicaria*, *Tecticornia* sp. Low Shrubland and may be dominated by one of several samphire species, particularly *Tecticornia pterygosperma* ssp. *pterygosperma* (Winged-seed Samphire) or *T. leiostachya* ssp. *indica* (Brown-head Samphire), as well as *Maireana oppositifolia*. The understorey is open and features the salt tolerant species *Disphyma crassifolium* ssp. *clavellatum*, *Frankenia sessilis* and *Atriplex vesicaria*.



No. of sites in group:

Total taxa in group:

Average no. of taxa per site:
Range:
4 - 25

No. of introduced taxa in group:

9

Soils: sand, clayey sand, sandy clay loam and light clay **Landforms:** playa/pan, swamp, plain and swale

Species of conservation significance: none

Sites: YA00503, ILL00102, PIL00101, 100COY00102, 100COY00103, VMSDT18601, HOB00201, YAL00501

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	4	C/A Ave	Tot Recs	% Recs	Tot Grps
Tecticornia sp.	Samphire	7	87.5			1	3	2	1	2.43	51	13.7	15
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	7	87.5		1	6				0.87	25	28.0	8
Maireana oppositifolia	Salt Bluebush	6	75.0				5		1	2.33	34	17.6	2
Atriplex vesicaria ssp.	Bladder Saltbush	5	62.5	1	1	3				0.62	136	3.7	22
Frankenia sessilis	Small-leaf Sea- heath	4	50.0		1	1	2			1.28	34	11.8	12
Senecio pinnatifolius	Variable Groundsel	4	50.0	1		3				0.75	43	9.3	16
Sclerolaena uniflora	Small-spine Bindyi	4	50.0		2	2				0.55	38	10.5	16
Hemichroa diandra	Mallee Hemichroa	3	37.5		1		2			1.37	11	27.3	7
Maireana erioclada	Rosy Bluebush	3	37.5	1		1	1			1.00	94	3.2	20
Trichanthodium skirrophorum	Woolly Yellow- heads	3	37.5		1	2				0.70	39	7.7	12
*Sonchus oleraceus	Common Sow- thistle	3	37.5	1	2					0.07	57	5.3	16



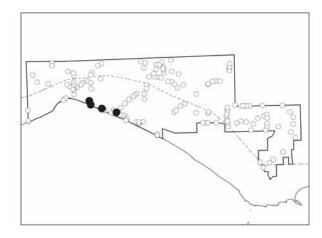
Figure 83. *Tecticornia* sp., *Maireana oppositifolia* Low Shrubland at site COY00103 on flats behind coastal dunes near Coombra Beach (Floristic Vegetation Community 21).



Figure 84. Tecticornia indica ssp. leiostachya, Maireana oppositifolia, Hemichroa diandra Low Open Shrubland at site YAL00501 west of Red Gate Tank (Floristic Vegetation Community 21).

Floristic Group 22 Frankenia sp. (Sea-heath) Low Shrubland over Atriplex vesicaria ssp. (Bladder Saltbush), A. paludosa ssp. cordata (Marsh Saltbush), Disphyma crassifolium ssp. clavellatum (Round-leaf Pigface)

This Low Shrubland community occurs in low-lying sandy saltmarsh areas along the coast east of the Head of the Bight. It may be dominated by one of several *Frankenia* species, particularly *F. pauciflora* var. *fruticulosa* (Southern Sea-heath), *F. foliosa* (Leafy Sea-heath) or *F. sessilis* (Small-leaf Sea-heath). The understorey is variable but features a number of salt tolerant species including *Atriplex vesicaria*, *A. paludosa* ssp. *cordata*, *Disphyma crassifolium* ssp. *clavellatum* and the exotic *Schismus barbatus*.



No. of sites in group: 4
Total taxa in group: 41
Average no. of taxa per site: 15.0
Range: 9 - 21
No. of introduced taxa in group: 7

Soils: sand and loamy sand Landforms: swale and dune slope

Species of conservation significance: none

Sites: YA00504, COY00105, COY00303, COY00602

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	4	C/A Ave	Tot Recs	% Recs	Tot Grps
Frankenia sp.	Sea-heath	4	100				2	1	1	2.75	68	5.9	18
Nitraria billardierei	Nitre-bush	4	100	3	1					0.03	45	8.9	16
Atriplex vesicaria ssp.	Bladder Saltbush	3	75			1	2			1.67	136	2.2	22
*Schismus barbatus	Arabian Grass	3	75		1	2				0.70	19	15.8	8
Atriplex paludosa ssp. cordata	Marsh Saltbush	2	50			2				1.00	27	7.4	7
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	2	50			2				1.00	25	8.0	8
Threlkeldia diffusa	Coast Bonefruit	2	50			2				1.00	77	2.6	18
Austrodanthonia caespitosa	Common Wallaby- grass	2	50		1	1				0.55	31	6.5	12
Rhagodia crassifolia	Fleshy Saltbush	2	50		1	1				0.55	89	2.2	18
Salsola tragus	Buckbush	2	50		1	1				0.55	59	3.4	17
Sclerolaena brevifolia	Small-leaf Bindyi	2	50		1	1				0.55	11	18.2	8
Angianthus tomentosus	Hairy Angianthus	2	50	1		1				0.51	8	25.0	6
Maireana triptera	Three-wing Bluebush	2	50	1	1					0.06	9	22.2	5
Tetragonia implexicoma	Bower Spinach	2	50	1	1					0.06	30	6.7	11



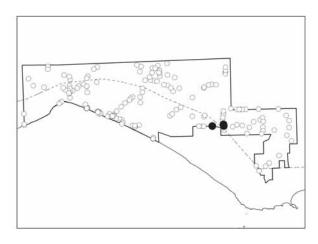
Figure 85. Frankenia sessilis, Sclerolaena brevifolia Low Shrubland at site COY00303 near where the Coombra Track meets the coastal dunes (Floristic Vegetation Community 22).



Figure 86. Frankenia pauciflora ssp. fruticulosa, Atriplex vesicaria, Rhagodia crassifolia Low Shrubland at site COY00602 where the Red Gate Track meets the coast (Floristic Vegetation Community 22).

Floristic Group 23 Lomandra effusa (Scented Mat-rush) Open Tussock Grassland over Austrostipa spp. (Speargrasses), Podolepis rugata var. (Pleated Copper-wire Daisy), Salsola tragus (Buckbush)

This Open Tussock Grassland community occurs on clay loam soil on plains and hill slopes in scattered locations interspersed amongst the mallee and Western Myall communities near to, and north, of the Eyre Highway, between Colona Woolshed and the edge of the Nullarbor Plain. The understorey is variable, but tends to be dominated by Austrostipa spp., Podolepis rugata and Salsola tragus. This community is listed (as 'Iron-grass Natural Temperate Grassland of South Australia') under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 as a critically endangered ecological community. Its incidence in the Yalata IPA represents a major disjunct occurrence from its main South Australian distribution between Peterborough and Tailem Bend.



No. of sites in group:

Total taxa in group:

Average no. of taxa per site:
Range:
13 - 13

No. of introduced taxa in group:

Soils: clay loam

Landforms: plain and hill slope

Species of conservation significance: none

Sites: OR02201, VMSDT19601, VMSSK10301

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Lomandra effusa	Scented Mat-rush	3	100.0				3		2.00	8	37.5	4
Podolepis rugata var.	Pleated Copper-wire Daisy	2	66.7			2			1.00	14	14.3	7
Salsola tragus	Buckbush	2	66.7		1	1			0.55	59	3.4	17
Austrostipa eremophila	Rusty Spear-grass	1	33.3					1	3.00	28	3.6	13
Acacia papyrocarpa	Western Myall	1	33.3				1		2.00	50	2.0	12
Aristida contorta	Curly Wire-grass	1	33.3				1		2.00	4	25.0	4
Zygophyllum ovatum	Dwarf Twinleaf	1	33.3				1		2.00	25	4.0	14
Austrostipa elegantissima	Feather Spear-grass	1	33.3			1			1.00	9	11.1	6
Brachyscome ciliaris var.	Variable Daisy	1	33.3			1			1.00	45	2.2	16
Goodenia pinnatifida	Cut-leaf Goodenia	1	33.3			1			1.00	14	7.1	7
Lawrencia squamata	Thorny Lawrencia	1	33.3			1			1.00	23	4.3	13
Vittadinia cuneata var. cuneata f. cuneata	Fuzzy New Holland Daisy	1	33.3			1			1.00	1	100.0	1
Austrostipa drummondii	Cottony Spear-grass	1	33.3		1				0.10	34	2.9	13
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	1	33.3		1				0.10	60	1.7	21
Maireana sp.	Bluebush/Fissure-plant	1	33.3		1				0.10	14	7.1	10
Maireana trichoptera	Hairy-fruit Bluebush	1	33.3		1				0.10	13	7.7	7
Atriplex vesicaria ssp.	Bladder Saltbush	1	33.3	1					0.01	136	0.7	22
Cratystylis conocephala	Bluebush Daisy	1	33.3	1					0.01	72	1.4	14
Geijera linearifolia	Sheep Bush	1	33.3	1					0.01	54	1.9	10
Hypoxis glabella var. glabella	Tiny Star	1	33.3	1		:			0.01	4	25.0	4
Maireana erioclada	Rosy Bluebush	1	33.3	1					0.01	94	1.1	20
*Marrubium vulgare	Horehound	1	33.3	1					0.01	3	33.3	3
Senecio glossanthus	Annual Groundsel	1	33.3	1					0.01	12	8.3	7



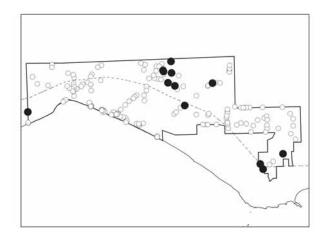
Figure 87. Lomandra effusa Open Tussock Grassland at site VMSSK10301 in a large natural opening in the mallee near Chinalumba Well west of Colona Woolshed (Floristic Vegetation Community 23).



Figure 88. Lomandra effusa Open Tussock Grassland at site VMSDT19601 on the road to Ooldea just north of Colona Woolshed (Floristic Vegetation Community 23).

Floristic Group 24 Austrostipa sp. (Spear-grass), Austrodanthonia caespitosa (Common Wallaby-grass) Tussock Grassland over Trichanthodium skirrophorum (Woolly Yellow-heads), *Carrichtera annua (Ward's Weed), Maireana erioclada (Rosy Bluebush), Goodenia pinnatifida (Cut-leaf Goodenia)

This Tussock Grassland community occurs on clayey sand, sandy loam and sandy clay loam soils on plains and hill slopes throughout much of the Yalata IPA. The most extensive examples occur to the north west of the Yalata Community in the vicinity of the Old Eyre Highway, and in the south east around Pintumba. Minor occurrences can be found interspersed with the chenopod shrublands on the Nullarbor Plain and in natural openings in the mallee south of the Eyre Highway. The overstorey is dominated by one or more Austrostipa species (particularly A. nitida, A. eremophila and A. drummondii) and Austrodanthonia caespitosa, while the main understorey components are Trichanthodium skirrophorum, *Carrichtera annua, Maireana erioclada and Goodenia pinnatifida. Acacia papyrocarpa also occurs as an occasional emergent. This has the highest number of introduced taxa (19) of any community, possibly as a result of historic grazing, with *C. annua and *Sonchus oleraceus being most common.



No. of sites in group: 12
Total taxa in group: 87
Average no. of taxa per site: 20.3
Range: 13 - 38

No. of introduced taxa in group: 19

Soils: clayey sand, sandy loam and sandy clay loam **Landforms:** plain, limestone plain and hill slope

Species of conservation significance: none

Sites: CA00901, TG025, OR02701, VMSDT17001, VMSDT17401, VMSSK09301, NAN00501, NAN00701, YAL01001, YAL01101, YAL01501, YAL02101

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	4	C/A Ave	Tot Recs	% Recs	Tot Grps
Austrostipa sp.	Spear-grass	11	91.7			1	6	3	1	2.36	111	9.9	21
Maireana erioclada	Rosy Bluebush	9	75.0		6	3				0.40	94	9.6	20
Austrodanthonia sp.	Wallaby-grass	8	66.7			4	3		1	1.75	72	11.1	18
Trichanthodium skirrophorum	Woolly Yellow-heads	7	58.3		2	4	1			0.89	39	17.9	12
*Carrichtera annua	Ward's Weed	7	58.3	1	2	3	1			0.74	38	18.4	13
Salsola tragus	Buckbush	7	58.3		5	1	1			0.50	59	11.9	17
*Sonchus oleraceus	Common Sow-thistle	7	58.3	2	5					0.07	57	12.3	16
Sclerolaena obliquicuspis	Oblique-spined Bindyi	6	50.0		5	1				0.25	47	12.8	14
Atriplex vesicaria ssp.	Bladder Saltbush	6	50.0	4	1	1				0.19	136	4.4	22
Goodenia pinnatifida	Cut-leaf Goodenia	5	41.7		2	3				0.64	14	35.7	7
Brachyscome ciliaris var.	Variable Daisy	5	41.7	1	1	3				0.62	45	11.1	16
Zygophyllum aurantiacum ssp.	Shrubby Twinleaf	5	41.7	1	4					0.08	32	15.6	8
Podolepis rugata var.	Pleated Copper-wire Daisy	4	33.3	1		2	1			1.00	14	28.6	7
Acacia papyrocarpa	Western Myall	4	33.3	3		1				0.26	50	8.0	12
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	4	33.3		4					0.10	31	12.9	11
*Erodium cicutarium	Cut-leaf Heron's-bill	4	33.3		4					0.10	13	30.8	9
Maireana radiata	Radiate Bluebush	4	33.3	4						0.01	8	50.0	3



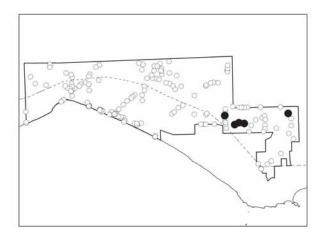
Figure 89. Austrostipa sp., Podolepis rugata Tussock Grassland at site YAL01501 in a natural clearing in the mallee south of the Yalata Roadhouse (Floristic Vegetation Community 24).



Figure 90. Austrostipa nitida, Austrostipa drummondii Tussock Grassland at site NAN00501 near the Old Eyre Highway north west of the Yalata Community (Floristic Vegetation Community 24).

Floristic Group 25 Trichanthodium skirrophorum (Woolly Yellow-heads) Herbland over +/- Salsola tragus (Buckbush) +/- Zygophyllum sp. (Twinleaf), Goodenia pinnatifida (Cut-leaf Goodenia)

This Herbland community occurs on loamy sand and sandy loam soils on plains and hill slopes mainly within the former Colona station. It may be the result of prolonged and/or intense historic grazing on this former pastoral lease that has led to the removal of the shrub layer. It is likely, however, that at least some examples are naturally occurring in this region. The overstorey is ephemeral and usually dominated by *Trichanthodium skirrophorum* following rainfall, though in some instances this was replaced by *Salsola tragus* and/or *Zygophyllum ovatum*. Regularly associated species include *Goodenia pinnatifida*, *Zygophyllum aurantiacum* and the exotics *Carrichtera annua*, *Medicago minima* var. *minima* and *Sonchus oleraceus*.



No. of sites in group: 5
Total taxa in group: 54
Average no. of taxa per site: 34.0
Range: 29 - 39
No. of introduced taxa in group: 10

Soils: loamy sand and sandy loam **Landforms:** plain, sandy plain and hill slope

Species of conservation significance: none

Sites: VMSDT19701, VMSDT20001, VMSDT20801, COL00101, YAL02001

Species Name	Common Name	Freq	% Freq	N	Т	1	2	3	C/A Ave	Tot Recs	% Recs	Tot Grps
Salsola tragus	Buckbush	4	80		2		1	1	1.30	59	6.8	17
Goodenia pinnatifida	Cut-leaf Goodenia	3	60			3			1.00	14	21.4	7
Trichanthodium skirrophorum	Woolly Yellow-heads	2	40			1		1	2.00	39	5.1	12
Zygophyllum ovatum	Dwarf Twinleaf	2	40		1			1	1.55	25	8.0	14
*Carrichtera annua	Ward's Weed	2	40		2				0.10	38	5.3	13
Chamaesyce drummondii	Caustic Weed	2	40		2				0.10	18	11.1	9
*Medicago minima var. minima	Little Medic	2	40		2				0.10	4	50.0	3
*Sonchus oleraceus	Common Sow-thistle	2	40		2				0.10	57	3.5	16
Zygophyllum aurantiacum ssp.	Shrubby Twinleaf	2	40		2				0.10	32	6.3	8
Atriplex stipitata	Bitter Saltbush	2	40	1	1				0.06	12	16.7	9
Atriplex vesicaria ssp.	Bladder Saltbush	2	40	1	1				0.06	136	1.5	22
Maireana erioclada	Rosy Bluebush	2	40	1	1				0.06	94	2.1	20
Acacia oswaldii	Umbrella Wattle	2	40	2					0.01	43	4.7	12
Chenopodium curvispicatum	Cottony Goosefoot	2	40	2					0.01	14	14.3	8
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	2	40	2					0.01	60	3.3	21
Podolepis rugata var.	Pleated Copper-wire Daisy	2	40	2					0.01	14	14.3	7



Figure 91. *Trichanthodium skirrophorum* Herbland at site COL00101 9km east of Colona homestead (Floristic Vegetation Community 25).



Figure 92. Zygophyllum ovatum Open Herbland at site VMSDT20001 at the eastern end of the former Colona station (Floristic Vegetation Community 25).

MAMMALS

J.N. Foulkes¹ and N. Neagle¹

Introduction

This section summarises the knowledge of the mammal fauna of the Yalata IPA prior to the biological survey which began in 2007. It then discusses the results of this survey and integrates it with previously recorded information. All mammals are discussed using their European common and scientific names for clarity.

Appraisal of Species' Records Prior to the Survey

Museum and Published Records

Gara (1996) has reviewed the earliest non-Aboriginal observations of mammals from the Nullarbor Plain and the Great Victoria Desert to the north. From this review, there are few specific references to the Yalata area, however inferences can be made as to which mammal species occur or occurred in the area.

Edward Eyre was the first white man to cross the Nullarbor in 1841 and his route passed through the coastal portion of what is now the Yalata IPA (Eyre 1845). John Forrest followed a route along the south coast to the north of the route taken by Eyre in 1870 (Forrest 1875). Ernest Giles crossed the Nullarbor in 1875 further to the north again of both Eyre and Forrest. These explorers and others, such as the Chief Surveyor, J. Jones (1880) and Earle *et al.* (1887), all made observations on the differences in the presence and absence of mammals in both the treeless plain, the eucalypt and acacia woodlands and heaths on the southern and eastern margins of the Nullarbor Plain.

Mammal records and specimens for the area are sparse, with some of the earlier specimens being collected by Daisy Bates and Anthony Bolam north of the Yalata IPA.

During a joint biological survey of the Nullarbor Region between South Australian National Parks and Wildlife Service (SANPWS) and the Western Australian Department of Conservation and Land Management (WA CALM) in 1984 (McKenzie & Robinson 1987) trapping was undertaken at sites west of the Yalata Roadhouse and south of the Eyre Highway (YA sites) and along the dog fence north east of the old Colona Homestead (KO sites).

Distribution of mammal records collected prior to the Yalata IPA Survey is provided in Figure 87.

Total Mammal Fauna - Current and Extinct

Since 2007, the Biological Survey of the Yalata IPA has added significantly to scientific understanding of the ecological requirements of the region's mammals and of their current distributions. All mammal records from the South Australian Museum, from the Biological Survey and Opportunistic Sightings databases, and from published records with reliable species identifications have now been collated for the study area (refer Appendix 6).

This compilation of records indicates that up to 30 native and 5 introduced mammal species are likely to have existed within the Yalata IPA within the past two hundred years.

The Yalata IPA Biological Survey sampled an additional 32 quadrats centred on four camp locations – Head of the Bight (HOB), Nanwoora Well (NAN), Coombra Track (COO) and Colona (COO) (refer Figure 88).

In the course of the survey 54 mammal specimens, representing 13 species (11 native and 2 introduced), were collected and deposited with the South Australian Museum. This constitutes a significant addition to the existing 65 specimens held by the Museum from the Yalata IPA.

Extant Species

The fauna survey activity in the region since 2007 has recorded 18 extant native species (refer Table 23). Five of these represent additions to the list of native species collated for the region.

There are therefore at least 18 extant native mammal species currently occurring on the Yalata IPA including:

- one monotreme,
- · two species of carnivorous marsupial,
- one wombat,
- one pygmy possum,
- two species of macropod,
- one species of native rodent,
- nine species of insectivorous bat, and
- the Dingo.

¹ Bioknowledge SA, Information, Science and Technology Directorate, Department for Environment and Heritage, GPO Box 1047, ADELAIDE SA 5001.

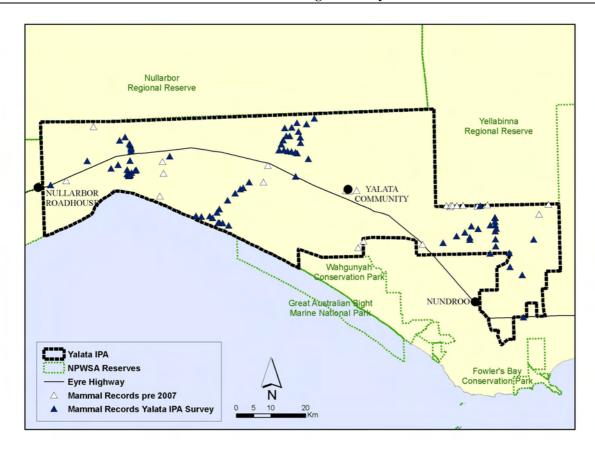


Figure 93. Distribution of mammal records for the Yalata IPA prior to this survey (pre-2007) and from this survey (post-2007).

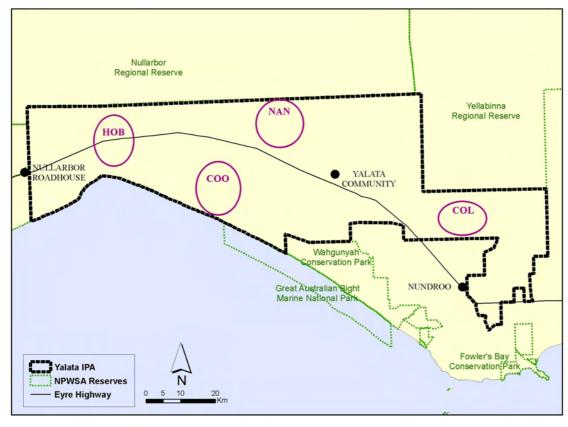


Figure 94. Location of areas sampled (clusters of quadrats) in the Yalata IPA during this survey and their site code prefix.

Extinct Species

Unfortunately, the information above suggests that, of the 30 native species listed for the Yalata IPA, at least 11 must now be presumed extinct. Species included in this category have not been recorded in the region for at least 50 years despite systematic and relatively intensive searches. These include:

- one species of carnivorous marsupial (Dasyuridae)
- three species of macropod (Potoroidae, Macropodidae)
- three bandicoot and bilby species (Peramelidae),
- the Numbat (Myrmecobidae)
- the Common Brushtail Possum (Phalangeridae)
- two species of native rodent (Muridae)

Table 23: Number of individual mammal species recorded prior to this survey (pre-2007) and during the Yalata IPA Survey (2007-08).

Family	Species Name (Common Name)	Pre-2007	2007-08	Total
Tachyglossidae	+ Tachyglossus aculeatus (Short-beaked Echidna)	0	5	5
Dasyuridae	Sminthopsis crassicaudata (Fat-tailed Dunnart)	1	4	5
	Sminthopsis dolichura (Little Long-tailed Dunnart)	11	4	15
Vombatidae	Lasiorhinus latifrons (Southern Hairy-nosed Wombat)	12	35	47
Macropodidae	Macropus fuliginosus (Western Grey Kangaroo)	13	37	50
	Macropus rufus (Red Kangaroo)	9	17	26
	Macropus sp.	8	13	21
Burramyidae	Cercartetus concinnus (Western Pygmy-possum)	3	4	7
Mollossidae	+ Mormopterus species (Freetail-bats) \$	0	436#	436#
	+ Tadarida australis (White-striped Freetail-bat)	0	50#	50#
Vespertilionidae	Chalinolobus gouldii (Gould's Wattled Bat)	3	1331#	1334#
	Chalinolobus morio (Chocolate Wattled Bat)	2	108#	110#
	Nyctophilus geoffroyi (Lesser Long-eared Bat)	1	5	6
	Nyctophilus timoriensis/geoffroyi (Long-eared Bat) \$	0	460#	460#
	Nyctophilus timoriensis (Greater Long-eared Bat)	2	8	10
	+ Scotorepens balstoni (Inland Broad-nosed Bat)	0	13#	13#
	+ Vespadelus baverstocki (Inland Forest Bat)	0	84#	84#
	Vespadelus regulus (Southern Forest Bat)	8	230#	238#
Muridae	Leporillus spp. (Stick-nest Rats)	1		1
	*Mus musculus (House Mouse)	119	226	345
	Notomys mitchellii (Mitchell's Hopping-mouse)	8	1	9
Canidae	Canis lupus dingo (Dingo)	9	25	34
	*Canis sp. (Dog, domestic or feral)	0	2	2
	*Vulpes vulpes (Fox)	5	2	7
Felidae	*Felis catus (Cat)	1		1
Camelidae	*Camelus dromedarius (One-humped Camel)	9	33	42
Leporidae	*Oryctolagus cuniculus (Rabbit)	17	49	66
•	Grand Total	242	3182#	3424#

^{+ =} new species for IPA.

Relative Abundance of Mammal Species

The relative abundance of mammals observed during the survey of the Yalata IPA is shown in Table 24. Sixteen of the species recorded during the site surveys were detected at more than 10% of the 32 survey sites sampled in the region. These 16 species included 13 native species (5 terrestrial and 8 bats) and 3 introduced species.

^{\$ =} Calls of *Mormopterus* species 3 and *Mormopterus* species 4 cannot be readily separated and are therefore combined. Calls of *Nyctophilus timoriensis* and *N. geoffroyi* also cannot be readily separated and are therefore combined. Individual tallies for these two species refer to those individuals caught in harp traps or mist nets.

^{# =} number of records yet to be determined as number of bat records do not necessarily relate to number of individuals as some animals may have been recorded numerous times using Anabat recorder.

^{* =} introduced species.

Table 24: Relative abundance of mammal species recorded during the Yalata IPA Survey (total number of quadrats sampled n=32).

FAMILY / Species Name	Common Name	No. Quadrats	No. of individuals at quadrats	Proportion of quadrats (%)	No. observed (opportune)	Total
TACHYGLOSSIDAE			•			
+ Tachyglossus aculeatus	Short-beaked Echidna	5	5	15.6	0	5
DASYURIDAE						
Sminthopsis crassicaudata	Fat-tailed Dunnart	2	4	6.3	0	4
Sminthopsis dolichura	Little Long-tailed Dunnart	4	4	12.5	0	4
VOMBATIDAE						
Lasiorhinus latifrons	Southern Hairy-nosed Wombat	15	28	46.9	7	35
MACROPODIDAE						
Macropus fuliginosus	Western Grey Kangaroo	3	6	9.4	31	37
Macropus rufus	Red Kangaroo	0	0	0.0	17	17
Macropus sp.		12	13	37.5	0	13
BURRAMYIDAE						
Cercartetus concinnus	Western Pygmy-possum	4	4	12.5	0	4
MOLOSSIDAE						
+ Mormopterus species	Freetail-bats	17	199#	53.1	237#	436#
+ Tadarida australis	White-striped Freetail-bat	8	14#	25.0	36#	50#
VESPERTILIONIDAE						
Chalinolobus gouldii	Gould's Wattled Bat	18	132#	56.3	1199#	1331#
Chalinolobus morio	Chocolate Wattled Bat	7	108#	21.9	0	108#
Nyctophilus geoffroyi	Lesser Long-eared Bat	0	0	0.0	5	5
Nyctophilus timoriensis	Greater Long-eared Bat	4	5	12.5	3	8
Nyctophilus timoriensis/geoffroyi	Long-eared Bat	19	260#	59.4	200#	460#
+ Scotorepens balstoni	Inland Broad-nosed Bat	2	13#	6.3	0	13#
+ Vespadelus baverstocki	Inland Forest Bat	5	25#	15.6	59#	84#
Vespadelus regulus	Southern Forest Bat	5	56#	15.6	174#	230#
CANIDAE						
Canis lupus dingo	Dingo	8	13	25.0	12	25
Canis sp.	Dog/Dingo	1	2	3.1	0	2
*Vulpes vulpes	Fox	2	2	6.3	0	2
CAMELIDAE						
*Camelus dromedarius	One-humped Camel	7	12	21.9	21	33
MURIDAE						
*Mus musculus	House Mouse	32	226	100.0	0	226
Notomys mitchellii	Mitchell's Hopping-mouse	1	1	3.1	0	1
LEPORIDAE						
*Oryctolagus cuniculus	Rabbit	20	30	62.5	19	49

Notes:

The most frequently trapped species was the introduced House Mouse (*Mus musculus*), which were recorded at all quadrats sampled with a total of 226 captures. Captures of other small terrestrial mammals were very low, with no species captured on more than five occasions during the survey. The three most abundant and frequently recorded small terrestrial native mammal species were the marsupials - Fattailed Dunnart (*Sminthopsis crassicaudata*), Little Long-tailed Dunnart (*S. dolichura*) and the Western Pygmy-possum (*Cercartetus concinnus*) - each

captured on four occasions. Notably, there was only a single capture of a native rodent, Mitchell's Hopping Mouse (*Notomys mitchellii*), during the survey. The Southern Hairy-nosed Wombat (*Lasiorhinus latifrons*) was the most widespread of the larger mammals, being recorded at 47% of quadrats, though not in the COO cluster of sites.

Anabat calls are yet to be fully analysed to determine relative abundance, however the three most widely distributed bat species were Long-eared Bats

^{+ =} new species for IPA.

^{* =} introduced species.

^{# =} number of records yet to be determined.

(*Nyctophilus geoffroyi/timoriensis* - 59% of quadrats), Gould's Wattled Bat (*Chalinolobus gouldii* - 56%), and the Freetail-bats (*Mormopterus* spp. - 53%).

Common and widespread introduced species include the Rabbit (*Oryctolagus cuniculus* - 63% of quadrats) and One-humped Camel (*Camelus dromedarius* - 22%). The Feral Cat (*Felis catus*) was not recorded on this survey and the Fox (*Vulpes vulpes*) was only recorded twice. Records of all mammal species recorded at sites on the Yalata IPA Survey are provided in Appendix 7.

Species Richness

Mammal species richness (including introduced species) ranged from 13 (COL cluster of sites) to 16 (NAN cluster) (Figure 89). The quadrat with the highest species richness was HOB00501 with 14 species (*Melaleuca lanceolata*, *Myoporum insulare* Tall Open Shrubland), whereas three quadrats had only two species recorded at them. HOB00501 also had the highest native mammal species richness (10 species), while COO00601 (*Atriplex vesicaria*, *Maireana oppositifolia* Low Shrubland) was the only site where no native mammal species were recorded.

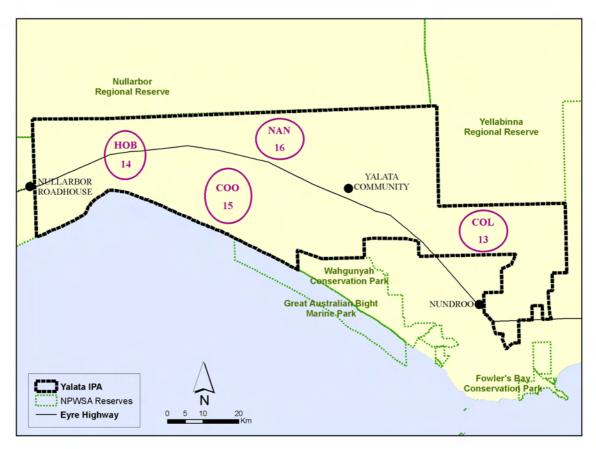


Figure 95. Mammal species richness within each cluster of sites from the Yalata IPA Survey.

Rare Species

There are no terrestrial mammal species on the Yalata IPA that have a National or State conservation status rating.

Populations of the Western Pygmy-possum in the Yalata IPA are on the extreme western edge of its distribution in South Australia.

Current Mammal Fauna

Tachyglossus aculeatus (Short-beaked Echidna)

Echidna signs were recorded from only five quadrats during the survey period. It was most commonly recorded in the COL cluster of sites in *Eucalyptus oleosa*, *E. calcareana* and *Acacia papyrocarpa* woodlands. No observations of Echidnas or signs of their presence were made at sites sampled within the Yalata IPA during the Nullarbor Survey (McKenzie and Robinson 1987).



Figure 96. The first records of the Echidna (*Tachyglossus aculeatus*) in the Yalata IPA were collected during this survey (Photo: P. Canty).

This species is likely to be more widespread; occurring in most habitats at low densities. It is apparently secure but there is little information on threats and there is some evidence for predation by Foxes and Dingoes (Foulkes 2001).

Sminthopsis crassicaudata (Fat-tailed Dunnart)

Four individuals were recorded from two quadrats (6.3% of total) during the survey. Vegetation at both quadrats where it was captured was *Acacia papyrocarpa* +/- *Myoporum platycarpum* Very Low Woodland. The Fat-tailed Dunnart occurs in a broad range of habitats across central and southern Australia.

During the Nullarbor Survey (McKenzie and Robinson 1987) a single capture was made north of Colona in *A. papyrocarpa* woodland. The population density of dunnarts tends to fluctuate according to rainfall and invertebrate availability. It is considered common across its range and is of no conservation concern in the Yalata IPA.

Sminthopsis dolichura (Little Long-tailed Dunnart)

The Little Long-tailed Dunnart was represented by four captures from four quadrats (12.5%) (Table 24), with most from *Eucalyptus oleosa* Low Woodland with a *Cratystylis* and chenopod dominated understorey. Across its range it occurs in a variety of different habitats in semi-arid and arid South Australia (west of Pt Augusta) and south west Western Australia.



Figure 97. All four records of the Little Long-tailed Dunnart (*Sminthopsis dolichura*) recorded on this survey were from within mallee communities (Photo: A. Robinson).

This species was recorded from around Ooldea during the Yellabinna Biological Survey (Copley and Kemper 1992) and from Yalata (YA) and Colona (KO) quadrats during the Nullarbor Biological Survey (McKenzie and Robinson 1987). It is considered common across its range. However, populations may fluctuate in response to seasonal conditions. It is of no conservation concern in the Yalata IPA.

Lasiorhinus latifrons (Hairy-nosed Wombat)

Southern Hairy-nosed Wombats are large semifossorial marsupials that feed mostly on native perennial grasses and forbs. They were recorded from 15 of 32 quadrats sampled during the survey (46.9%) which were evenly distributed over the HOB, NAN and COL clusters of sites comprised of woodlands and shrublands. A further seven opportune locations were also made during the survey. During the Nullarbor survey, Southern Hairy-nosed Wombats were recorded at Yalata (YA) and Colona (KO) clusters of sites (McKenzie and Robinson 1987).

Macropus fuliginosus (Western Grey Kangaroo)

Six Western Grey Kangaroos were recorded from 3 of 32 quadrats sampled during the survey (9.4%). They were recorded from two *Eucalyptus oleosa* dominated quadrats and a single *Austrostipa* sp., *Austrodanthonia caespitosa* tussock grassland quadrat. A further 31 were recorded opportunistically during the survey. They were also recorded on the Colona (KO) quadrats during the Nullarbor Survey (McKenzie and Robinson 1987)

Macropus rufus (Red Kangaroo)

Red Kangaroos were not recorded on quadrats during the survey, however 17 were observed opportunistically at a number of locations across the IPA. *Macropus rufus* was commonly observed on the more open country of the Nullarbor (McKenzie and Robinson 1987), but they were still recorded on the Colona (KO) quadrats.

Finlayson (1961) observed that:

"...normally it is absent from the major sand ridge areas and from the larger expanses of spinifex flats, but its phenomenal mobility enables it to exploit all types of country when favourable changes in the vegetation occur".

They are widespread, but mostly at very low densities, especially where Anangu hunt them regularly. Their continued existence in the Yalata IPA is probably secure, but can be patchy due to hunting pressures and competition from introduced herbivores. It is likely that deaths from vehicle collisions on the Eyre Highway would be the greatest cause of mortality for Red Kangaroo in the region.

Cercartetus concinnus (Western Pygmy-possum)

Four captures were made at four (12.5%) quadrats including *Acacia papyrocarpa* Very Low Woodland, *Atriplex vesicaria* Low Very Open Shrubland, *Eucalyptus gracilis, E. oleosa, E. calcareana* Open



Figure 98. The Western Pygmy-possum (Cercartetus concinnus) was recorded at four locations during the survey (Photo: A. Robinson).

Mallee and *Trichanthodium skirrophorum* Herbland at scattered localities across the Yalata IPA.

There were few records of this species from the area prior to the survey, possibly reflecting the previous lack of systematic survey conducted here. It is likely that the diversity of mallee species and Western Myall provides both a variety of food sources (i.e. nectar and arthropods) and nesting hollows within mature trees.

Notomys mitchellii (Mitchell's Hopping-mouse)

Mitchell's Hopping-mouse is widespread but uncommon in the semi-arid mallee regions of Australia, and is the largest of the extant species of hopping-mouse. A single individual was captured at COO00501 on the Coombra Track. During the Nullarbor Biological Survey two individuals were captured at one site (YA00201) in the Yalata IPA (McKenzie and Robinson 1987), close to where it was captured on the current survey. These two sites were both in mallee communities – *Eucalyptus calcareana*, *E. oleosa* Very Open Mallee at COO00501 and *E. gracilis*, *E. calcareana* at YA00201.

There are also six SA Museum specimens of this species collected within the Yalata IPA in the 1970s.



Figure 99. Only a single Mitchell's Hopping-mouse (*Notomys mitchellii*) was recorded during this survey (Photo: A. Robinson).

Pseudomys bolami (Bolam's Mouse) and P. hermannsburgensis (Sandy Inland Mouse)

Although not recorded in the area Bolam's Mouse is possibly present in the chenopod dominated shrublands and woodlands of the southern Yalata IPA. It is similar in appearance to the Sandy Inland Mouse and to a lesser degree House Mouse (*Mus musculus*), and overlap in its habitat preferences in parts of its range. The Sandy Inland Mouse is likely to occur in the Yalata IPA as it has been recently captured in the neighbouring Wahgunyah Conservation Park (M. Letnic, pers. comm., 2008).

Canis lupus dingo (Dingo)

Early explorers' accounts of Dingoes in the vicinity of the Yalata IPA were relatively rare. For example, Giles (1889) commented only on seeing tracks of Dingoes at Boundary Dam, north of the Nullarbor Plain and Jones (1880) reported that Dingoes were common along the southern fringe of the Nullarbor, with lairs in the sinkholes and caves. They were regarded as largely absent from the treeless plain.

The spread of Rabbits seems to have had a major positive effect on populations of the Dingo. Dingoes are still widespread across the Yalata IPA and can be relatively common following good seasons. During the Yalata IPA Survey Dingoes were recorded at 25% of quadrats. However they are less common on the southern side of the dog fence due to baiting. None were recorded on Colona. Other recent survey work in the Maralinga Tjarutja Lands north of the dog fence recorded sign of Dingoes at 45% of quadrats (Foulkes & Thompson 2008).

Evidence for their presence was most commonly noted through tracks and scats. They were rarely seen. Dingoes are widespread and appear to be secure on the Yalata IPA.



Figure 100. Dingoes (*Canis lupus dingo*) were recorded at eight sites during this survey (Photo: A. Robinson).

Microbat Species

Bats were sampled using harp traps, mist nets and 'Anabat' call recording equipment. Unfortunately it was not always possible to have consistent sampling effort across all sites due the number of available traps, nets and Anabat units, as well as the varying weather conditions between each survey trip.

Prior to this survey, five species of bats were known from the Yalata IPA, represented by only ten SA Museum records. This survey added a further four species and numerous records across the Yalata IPA. All species of micro-chiropteran bat appear to be secure in the Yalata IPA.

Mormopterus species (Freetail-bats)

It is likely that two species of Freetail-bats occur in the Yalata IPA, currently known as *Mormopterus* species 3 and 4. *Mormopterus* bats are rarely caught and it is not possible to distinguish the two species on Anabat calls alone. They were, however, the third most commonly recorded bat taxa during the survey.

The first records of these species for the Yalata IPA were made on this survey. *Mormopterus* species 3 is

more common in the more arid parts of Australia and *M.* species 4 would be on the western limits of its range within the Yalata IPA. *Mormopterus* spp. were recorded from 17 of 32 quadrats (53% of quadrats consisting of 199 calls) during the survey. While seven of these quadrats were in *Eucalyptus* dominated Open Mallee/Low Woodland communities, it was also found in a wide range of shrubland communities. A further 237 opportune records were made from throughout the IPA. They roost in trees and forage in open unobstructed areas (Churchill 1998). It appears that the distribution recorded on this survey reflects both bats emerging from roosts and bats foraging over more open habitats.



Figure 101. *Mormopterus* species 3 was one of possibly two *Mormopterus* bats recorded for the first time in the Yalata IPA during this survey (Photo: A. Robinson).

Tadarida australis (White-striped Free-tail Bat)

Surprisingly this species had not been recorded in the Yalata IPA prior to this survey despite it being a large, widely distributed species, with a distinctive audible search call (Churchill 1998).

On this survey it was recorded from 25% of quadrats, spread evenly across the four survey site clusters (Table 24 and Figure 88). Two individuals were heard at quadrats and an additional two were heard flying over the survey campsite near Nanwoora Well. A further 46 Anabat calls were recorded from quadrats and opportune locations.

This species is rarely captured as it typically forages for moths high above the canopy. Typically they use a wide range of habitats from forests to grasslands (Churchill 1998), and this was also reflected in the findings of this survey, with their presence recorded from seven floristic vegetation communities ranging from low woodlands to tussock grassland.

Nyctophilus geoffroyi (Lesser Long-eared Bat)

The Lesser Long-eared Bat was represented from only five opportunistic records. Surprisingly, it was not captured at any quadrats as it is usually one of the most commonly captured and widespread bat species recorded on arid zone biological surveys (e.g. Robinson *et al.* 2003, Foulkes & Thompson 2008). It is widely distributed throughout most of Australia in a wide range of habitats (Churchill 1998).



Figure 102. Five individuals of the Lesser Longeared Bat (*Nyctophilus geoffroyi*) were captured using a harp trap at opportune locations during the Yalata IPA Survey (Photo: P. Canty).

While it was not recorded at sites within the Yalata IPA during the Nullarbor Biological Survey (McKenzie and Robinson 1987) one individual was collected opportunistically at Colona Well.

Nyctophilus timoriensis (Greater Long-eared Bat)

The Greater Long-eared Bat is distributed across southern mainland Australia in semi-arid habitats (Churchill 1998). On this survey it was recorded from 12.5% of quadrats as well as from one opportune location (three captured at the Nanwoora Well survey campsite). Most records were associated with sites dominated by *Eucalyptus calcareana* and/or *E. oleosa*, which presumably provide an abundance of roosting hollows. This species is rarely caught and overall it is poorly known (Churchill 1998), so these results provide more insight into its ecology.

It was also captured at two sites (YA00101 and YA00301) within the Yalata IPA during the Nullarbor Biological Survey (McKenzie and Robinson 1987) – once in *Eucalyptus oleosa*, *E. calcareana* Open Mallee and once in *Myoporum platycarpum* Very Low Open Woodland.

Additionally, its calls are very difficult to distinguish from those of *N. geoffroyi*, and until further reference calls are collected the distribution and abundance of this species will remain uncertain. As a consequence a

total of 460 calls attributed to *N. timoriensis/geoffroyi* were recorded during the survey.

Chalinolobus gouldii (Gould's Wattled Bat)

Gould's Wattled Bat was the most widely distributed and frequently recorded bat species during this survey, with records (Anabat calls only) from 18 quadrats (56%) (132 calls), plus a further 1199 calls recorded at opportune locations (the Coombra Track and Colona survey campsites). Significantly, no captures were made as they tend to fly at the lower level of the tree canopy but above the reach of harp traps and mist nets. Calls were recorded throughout all four clusters of sites (Figure 88), with Eucalyptus spp. Open Mallee/Low Woodland communities (12 quadrats) and Acacia papyrocarpa Low Woodlands (four quadrats) appearing to be strongly preferred habitats. However, records were also collected from shrubland, grassland and herbland communities. This species is found throughout Australia in a wide range of habitats (Churchill 1998).

Gould's Wattled Bat was recorded at three sites (KO00201, YA00101 and YA00301) within the Yalata IPA during the Nullarbor Biological Survey (McKenzie and Robinson 1987) in *Eucalyptus oleosa*, *E. calcareana* Open Mallee and *Acacia papyrocarpa*, *Myoporum platycarpum* Very Low Open Woodland.

Chalinolobus morio (Chocolate Wattled Bat)

The Chocolate Wattled Bat was recorded (via calls) at 21.9% of quadrats during the survey (in mallee and a variety of shrubland communities). In addition, 29 individuals were captured in a *Melaleuca lanceolata*, *Myoporum insulare* Tall Open Shrubland at site HOB00501 near the Head of the Bight. A total of 108 records of this species were made from survey quadrats (including 79 Anabat calls), however no opportune records were collected.

It was recorded opportunistically in the vicinity of the Yalata (YA) cluster of sites during the Nullarbor Biological Survey, where two specimens were collected near the Red Gate Tank (McKenzie and Robinson 1987). It is found widely across southern Australia and along the east coast. They occur in dry sclerophyll forests and woodlands, shrublands and treeless areas such as the Nullarbor. They typically roost in trees, however in locations such as the Nullarbor they roost in caves (Churchill 1998).

Scotorepens balstoni (Inland Broad-nosed Bat)

Although not known from the Yalata IPA prior to the survey, the Inland Broad-nosed Bat was detected from calls at two quadrats (6%). A total of 13 records (Anabat calls only) were made for this species on the survey. The two communities it was recorded from were *Acacia papyrocarpa +/- Myoporum platycarpum* Low Woodland and *Myoporum insulare +/- Nitraria billardierei* Open Shrubland, both from the HOB cluster of sites (Figure 88).

This species was not recorded from the Yalata IPA during the Nullarbor Biological Survey (McKenzie

and Robinson 1987) but was recorded from around Maralinga on the Yellabinna Biological Survey (Copley & Kemper 1992) and Maralinga Lands Biological Survey (Foulkes & Thompson 2008). It is distributed widely through arid and semi-arid inland Australia. The records from this survey are the most southerly recorded in the western half of South Australia.

Vespadelus baverstocki (Inland Forest Bat)

This very small bat is widely distributed in arid and semi-arid Australia (Churchill 1998). However, prior to the survey it was not known from the Yalata IPA. During the survey calls were recorded from five quadrats (15.6%) - four within the HOB cluster of sites plus COL00401 (Figure 88 and Table 24). A total of 84 call records were collected of the Inland Forest Bat, with 59 from one opportune location (the Colona survey campsite). It was recorded in *Eucalyptus oleosa* Open Mallee and four different shrubland communities, where they are able to roost in extremely small hollows in taller shrubs and stunted trees. It was not recorded at any sites on the Nullarbor Biological Survey (McKenzie and Robinson 1987).

Vespadelus regulus (Southern Forest Bat)

The Southern Forest Bat is an aerial insectivore and is found in a wide range of habitats in southern and south-eastern Australia. It is similar in size to *V. baverstocki*. Prior to the survey it was known from two specimens collected in 1984 from site YA00101 west of the Yalata Community during the Nullarbor Biological Survey (McKenzie and Robinson 1987).



Figure 103. The Southern Forest Bat (*Vespadelus regulus*) was predominantly recorded in mallee communities during this survey (Photo: P. Canty).

During this survey it was recorded from 5 quadrats, four of which were in *Eucalyptus* spp. Open Mallee or Low Woodland communities. Ten individuals were captured, nine at quadrats and one opportunistically at

the Colona survey campsite. A total of 47 confirmed Anabat calls were also recorded from quadrats and a further 173 at the Colona survey campsite.

Introduced Mammals

Vulpes vulpes (Red Fox)

Foxes were first reported in the Eucla area around the SA-WA border in 1911-12 (Long 1988) and they occurred throughout WA, except for the Kimberley region, by 1940. Daisy Bates recorded the presence of the Fox in the Eucla area in 1913 (see Gara 1996), but noted in the following year that: 'this pest has not yet become numerous' in the Fowler's Bay area'.

A few years later Brown (1919) noted that the Fox was already numerous 'all along the west coast' of SA, and was being accused of causing the decline of Bustards and Malleefowl.

By the early 1920s, Foxes had become common in the Ooldea area, and Bolam, who lived there at the time, noted that the Fox was:

'multiplying at an alarming rate and the sandhills are covered with their tracks.' (Bolam 1923).

High densities of Foxes were observed in coastal areas and on the treeless plain during the 1984 Nullarbor Biological Survey (McKenzie and Robinson 1987), but were recorded at only three sites in the Yalata IPA, all within the Yalata (YA) cluster. During this survey however, Foxes were recorded only twice, and then only via signs (not actual sightings of animals) – tracks at HOB00501 and dung at NAN00301.

Felis catus (Feral Cat)

Feral Cats have been present on the Nullarbor Plain since at least the late 1800s. Mason (1897) cited in Gara (1996), who was sent to investigate the spread of Rabbits into Western Australia in 1896, reported 'innumerable tracks of wild cats' in the coastal sandhills at Eucla and noted that the cats helped to keep Rabbit numbers down.

Richard Maurice was expressing concern about their impact in the Ooldea area as early as 1901-02. He observed that:

'The anteater, Myrmecobius, Perameles or rabbit bandicoot, large-nesting rats and kangaroos and emus used to be got here but now it is mostly rabbits and cats gone wild' (quoted in Gara 1996).

Recent survey and SA Museum records are, however, scarce. One individual was captured at site KO00401 north east of Colona Homestead during the Nullarbor Biological Survey (McKenzie and Robinson 1987) but none were recorded on the Yalata IPA Survey.

Camelus dromedarius (Feral Camel)

Feral Camels are very numerous and widespread across the Yalata IPA. The old dog fence on the northern boundary of the IPA may serve as a barrier to Camels being more abundant in the area.

Ernest Giles was the first explorer to use Camels in the far west of South Australia in 1875. Subsequent explorers relied heavily on Camels and they were used extensively as pack-animals well into the 1930s and 1940s.

During this survey Camels were recorded at 22% of all sites (though none were recorded inside the dog fence, e.g. at Colona sites). They were recorded at all five of the Yalata (YA) sites during the Nullarbor Biological Survey (McKenzie and Robinson 1987), but again not at the Colona (KO) sites.



Figure 104. Feral Camels (*Camelus dromedarius*) are relatively common outside the dog fence within the Yalata IPA (Photo: P. Canty).

Feral Camels are now a serious problem across the Yalata IPA and the central deserts to the north. They disturb or damage significant Aboriginal sites, particularly waterholes, and may drink them dry, leaving nothing for native wildlife.

Widespread and increasing in abundance (estimated at doubling every 8 years), Feral Camels have flourished because of lack of disease and predators and relative drought resistance due to high mobility and aridadapted physiology.

Their grazing/browsing impacts may be slight across the broad landscape (because they are such mobile animals) but can be very destructive locally if they congregate in one area (e.g. around water). Where they can access them, Feral Camels can kill Quandongs *Santalum acuminatum* (and other high moisture content foliage such as Plumbush *Santalum lanceolatum*) by breaking all branches to access the highly favoured foliage (Foulkes 2001, Dörges and Heucke 2008). This impact is exacerbated during extended dry periods.

Mus musculus (House Mouse)

The House Mouse was the most abundant and widespread of the terrestrial mammals (226 observations from all 32 quadrats) recorded during the survey. They are a ubiquitous species; found in all habitat types. They are rare during dry conditions, but irruptive following good rainfall.

They were also abundant and widespread in the Yalata IPA during the Nullarbor Biological Survey - 119

records from nine sites (McKenzie and Robinson 1987). There was, however, one site on that survey where they were not recorded - YA00101.

Oryctolagus cuniculus (Rabbit)

The arrival and spread of the Rabbit in central Australia has been well documented by many authors (e.g. Rolls 1969). Rabbits also appear to have spread northwards from the far west coast of South Australia at about the same time. Gara (1996) suggests that Rabbits were plentiful in the Streaky Bay district in 1887, but were not reported at Nullarbor Station until August 1893 when they had also reached the northern edge of the Nullarbor Plain. By 1894 they had reached Eucla.

Rabbits were recorded from 20 of 32 survey (63%) quadrats in the Yalata IPA on this survey and at ten sites during the Nullarbor Biological Survey (McKenzie and Robinson 1987).

Extinct Mammal Fauna

At least 11 of the medium-sized native mammal species are now extinct in the area. A number of hypotheses exist to explain these losses, including:

- The extreme drought in the 1930s.
- Predation from the combined effects of Dingoes, Feral Cats and Foxes.
- Competition from Rabbits moving into the country where the native animals were living.
- Collections by Europeans. Exploration surveys travelled through the area collecting large numbers of these species and 'white fellas then took them back to Adelaide'.

The first three points above are jointly considered as the major contributors (see Morton (1990) for a proposed model). Foulkes (2001) shed further light on the combination of factors responsible for the decline in mammal populations and characteristics of habitats where animals may remain.

Myrmecobius fasciatus (Numbat)

Regionally Extinct. The Numbat was formerly distributed from western New South Wales, South Australia and the southern half of Western Australia. The Numbat apparently occurred in the Fowler's Bay area (Gara 1996) and from around Ooldea around 1900, so it is likely they occurred in the Yalata area. Finlayson (1961) commented that the Numbat appeared to have suffered from the arrival of the Fox.

Dasyurus geoffroii (Western Quoll)

Regionally Extinct. The Western Quoll once occurred over much of mainland Australia, including the area now covered by the Yalata IPA. However it is believed to have disappeared from arid Australia by the mid 1940s. Gara (1996) believed that Daisy Bates had seen them, as she was able to accurately describe and identify it, suggesting it was still present in the Ooldea area up to 1917. Bates also recorded Aboriginal names for this species from Fowler's Bay (Gara 1996). Analysis of bone deposits from

Nullarbor caves showed that the Western Quoll occurred in the area (Baynes in McKenzie and Robinson 1987).

Chaeropus ecaudatus (Pig-footed Bandicoot)

Extinct. Maurice (cited in Gara 1996) was familiar with the species, noting that it occurred in the sandhill country north of Ooldea. He observed that '... we are now in the country of the notoryctes and castanotis ... the latter is a peculiar little animal called the pigfooted bandicoot, possessing front feet like the These animals use little water.' common pig. Maurice obtained the first of his specimens of the Pigfooted Bandicoot at Ooldea during an early visit there, and obtained several more on a trip along the northern edge of the Nullarbor Plain, westwards from Ooldea in 1897. Sub-fossil remains are also present in Nullarbor caves (Baynes 1987), indicating that they could have been present in the Yalata area prior to European settlement. Burbidge et al. (1988) suggested they became extinct during the 1920s, which is supported by Finlayson's (1961) account.

Perameles bougainville (Western Barred Bandicoot)

Regionally Extinct. The most recent museum (WA) specimens of this species from the Australian mainland were collected from Ooldea in 1922. Around that time Wood Jones (1925) assessed the status of this species in SA and considered it to be restricted to the sub-desert western portion of the state. Carlisle (cited in Boscacci *et al.* 1987) stated they were common around Ooldea, Nullarbor Station and Koonalda Station from about 1927 to 1930. Sub-fossil remains have been recorded in cave deposits across much of the southern Nullarbor (Baynes 1987).



Figure 105. The Western Barred Bandicoot (*Perameles bougainville*) is likely to have been present in the Yalata area as recently as the 1920s (Photo: A. Robinson).

Macrotis lagotis (Greater Bilby)

Regionally Extinct. There are few references to the Bilby in coastal regions and the southern Nullarbor, suggesting that it was rare or extinct in the Yalata region before European settlement. Sub-fossil remains occur widely in the cave deposits of the southern Nullarbor (Baynes 1987).

Trichosurus vulpecula (Common Brushtail Possum)

Regionally Extinct. The Common Brushtail Possum was formerly distributed throughout most of mainland Australia. Extended droughts, altered food productivity due to changed fire frequencies, the impact of predators and competition from Rabbits have been implicated in their decline (Finlayson 1961, Kerle *et al.* 1992, Foulkes 2001).

Possums appear to have become extinct in the west coast area in the early 1900s and further inland by about the 1950s or early 1960s (Burbidge *et al.* 1988).

It is widely thought that predation by Foxes has been the primary cause of their demise over most of their former arid distribution (Finlayson 1961).

Bettongia lesueur (Burrowing Bettong)

Regionally Extinct. Finlayson (1961) wrote that '...Daisy Bates while at Ooldea collected considerable evidence from the Aborigines to show that its numbers had diminished markedly in the coastal areas at the Head of The Bight before European influence...' Gara (1996) stated that there were a number of historical and ethnographic sources indicating the persistence of the Burrowing Bettong in the southern Nullarbor in the early years of European settlement. Clearly they would have inhabited the Yalata IPA, but there are no specific records relating to locations other than the Head of the Bight.

Bettongia penicillata (Brush-tailed Bettong, Woylie)

Regionally Extinct. This species was known to occur throughout the arid and semi-arid regions of Southern Australia, including the area now covered by the Yalata IPA, from sub-fossil deposits and a small number of ethnographic accounts. Burbidge *et al.* (1988) concluded from Aboriginal accounts that the species became extinct in the central deserts in about the 1950s to 1960s and it is thought that the Fox was strongly linked to its demise.

Onychogalea lunata (Crescent Nailtail Wallaby)

Regionally Extinct. Sub-fossil remains have been found in cave deposits on the southern Nullarbor (Baynes 1987) but no clear historical or ethnographic evidence for the Yalata region post European settlement. Daisy Bates recorded the name for vocabularies in the Ooldea area.

It appears to have become extinct further inland by the 1930s or 1940s. Burbidge *et al.* (1988) indicate that Crescent Nailtail Wallabies inhabited a wide range of habitats in the central deserts. They sheltered beneath a low shady tree or shrub, or sometimes beneath a spinifex hummock, and early accounts record that they often sought refuge in a hollow log or tree, or in a burrow, when pursued.

Leporillus apicalis and L. conditor (Lesser and Greater Stick-nest Rats)

Extinct. Both these species occurred widely across the arid and semi-arid zones of South Australia including the current Yalata IPA area. However, it is most likely that only *L. conditor* (Greater Stick-nest Rat) was present in any numbers in the Yalata area. The former range and extinction of this species on the mainland has been described by Copley (1999).



Figure 106. The former range of the Greater Sticknest Rat (*Leporillus conditor*) included what is now the Yalata IPA (Photo: A. Robinson).

BIRDS

G. Carpenter¹

Introduction

The birdlife of the Yalata area is comparatively poorly known, largely because of its distance from major centres of population. McKenzie and Robinson (1987) included the area in a larger survey of the Nullarbor region. Various studies (Ford and Sedgwick 1967, Ford 1969 and 1971, Black and Badman 1986, Carpenter and Matthew 1997) have alluded to the biogeographic importance of the area in providing a link between the southern (Bassian) avifaunas of South and Western Australia, either around the Great Victoria Desert or across the southern edge of the Nullarbor Plain. The region has also been visited as

part of the Birds Australia bird atlases (Blakers *et al.* 1984, Barrett *et al.* 2003).

Survey Coverage

A total of 42 survey sites were sampled in the Yalata survey area. Of these, 32 were sampled during the current survey in 2007-2008 and the remainder during a survey of the Nullarbor bioregion in Spring 1984 (McKenzie and Robinson 1987) where it overlaps the survey area (Figure 101 showing sites). These sites give a good representation of terrestrial bird habitats throughout the survey area. Coastal birds were surveyed opportunistically.

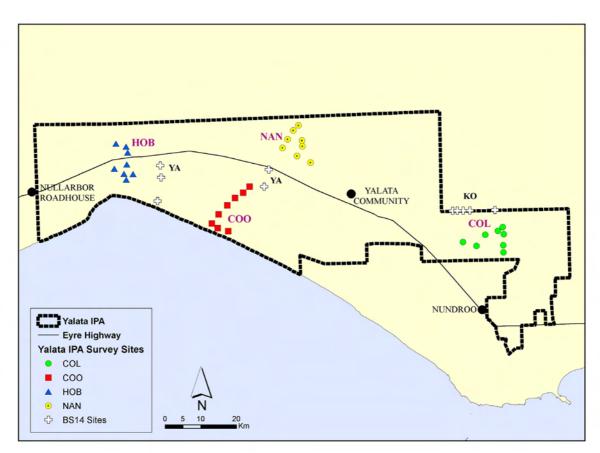


Figure 107. Location of Yalata IPA Survey and 1984 Nullarbor Survey (BS14) sites.

Total Bird Species

A total of 97 bird species were recorded from the 42 survey sites. A further 20 were recorded from opportunistic sightings during field survey trips. An additional 30 are known from the study area from specimen records provided by the South Australian Museum, Birds Australia and other published and unpublished reports. The total species from the survey

area is therefore 147. A list of records and their sources is appended (Appendix 8).

The list includes three introduced species (Common Starling, House Sparrow and Rock Dove) that have limited distributions within the survey area. In addition there are recent reports of Common

¹ Native Vegetation Section, Department of Water, Land and Biodiversity Conservation, GPO Box 2834, Adelaide SA 5001.

Blackbirds within the township of Yalata that require confirmation.

Birds well represented are raptors (14 species), parrots and cockatoos (10 species), thornbills and allies (10 species), honeyeaters (11 species) and whistlers and allies (5 species).

One species, the Bush Stone-curlew, may be extinct in the study area but in July 1998 was recorded nearby on the coast south of Nullarbor (G. Wright, SAOA NL 168). In addition, it is uncertain whether the Malleefowl *Leipoa ocellata* occurs in the study area. Brown (1919) described it as very rare in the timbered country between Fowler's Bay and Eucla, and local residents have reported old mounds west of Fowler's Bay (Carpenter 1988).

Common Species

Species recorded at the most sites were Singing Honeyeater (71% of sites), Grey Butcherbird (64%), Yellow-throated Miner (62%), Grey Shrike-thrush (60%) and Spiny-cheeked Honeyeater (57%) (Table 25).

Table 25. Common birds of the Yalata survey area.

Common Name	% Sites Recorded
Singing Honeyeater	71
Grey Butcherbird	64
Yellow-throated Miner	62
Grey Shrike-thrush	60
Spiny-cheeked Honeyeater	57
Australian Ringneck	52
White-browed Babbler	52
Major Mitchell's Cockatoo	50
Mulga Parrot	50
Richard's Pipit	48
Inland Thornbill	45
Yellow-rumped Thornbill	43
Yellow-plumed Honeyeater	43
Southern Whiteface	40
Nankeen Kestrel	38
Red Wattlebird	38
White-fronted Honeyeater	38
Dusky Woodswallow	38
Australian Magpie	38
Weebill	36
Crested Bellbird	36
Australian Raven	36
Little Crow	36
Tree Martin	36

Species Richness

Species richness at the 42 survey sites varied from three (COL00601 – saltbush and samphire low shrubland near Colona) to 42 (NAN00601 – mallee low woodland west of Yalata) and averaged 20.3 species. Bird species recorded at each of the 32 sites

sampled for this survey are shown in Appendix 9 and for the 10 sites from the 1984 Nullarbor Survey in Appendix 10.



Figure 108. The Singing Honeyeater *Lichenostomus* virescens was recorded at more sites than other species (Photo: Anon.).

Significant Species

Of the 147 species in the study area, 22 (15%) are considered to be rare or threatened in South Australia (*National Parks & Wildlife Act 1972* schedules, February 2008) (Table 26). Of these, two are seabirds that may occasionally be seen off the coast or occur as beach-washed specimens (Shy Albatross, Southern Giant-Petrel) and seven are waterbirds generally found on coastal beaches and reefs (Eastern Reef Egret, Grey-tailed Tattler, Ruddy Turnstone, Hooded Plover, Sooty Oystercatcher, Pied Oystercatcher and Banded Stilt). Two are coastal raptors (Osprey and Whitebellied Sea-eagle). Of the remainder, eight were found at sites and two were recorded opportunistically during the survey.

Slender-billed Thornbill *Acanthiza iredalei iredalei* (Aus - VU, SA - R)

The western subspecies of the Slender-billed Thornbill occurs sparsely throughout inland Australia wherever chenopod low shrublands with Pearl Bluebush (Maireana sedifolia) predominate. In South Australia the nominate subspecies occurs in coastal samphire (Spencer Gulf) and chenopod shrublands, particularly those with Pearl Bluebush (Matthew 1994). It is widely distributed in this habitat on the Nullarbor Plain. During the survey it was recorded at one site, a group of six in Pearl Bluebush Low Shrubland at The record is of particular interest NAN00201. because it is from a patch of habitat isolated from the main part of the Nullarbor Plain by about 20km of mallee and Western Myall Low Woodlands on sandy soils.

Osprey Pandion haliaetus (SA - E)

The Osprey is sparsely distributed in South Australia with an estimated 52 breeding pairs in 2005 and occurring west to the Head of the Bight (Dennis 2007). Breeding sites are mostly in exposed sites on sea stacks. It was not recorded during the survey but there are two recent Birds Australia atlas records, and C. Kemper and M. Sacchi observed three 3km east of Twin Rocks on 16 July 2001.

Table 26. Rare and threatened bird species known to occur in the Yalata IPA.

pecies Name Common Name		Aus	SA	Total Sites	
Diomedea cauta	Shy Albatross	VU	V		
Acanthiza iredalei iredalei	Slender-billed Thornbill	VU	R	1	
Pandion haliaetus	Osprey		Е		
Haliaeetus leucogaster	White-bellied Sea-Eagle		Е		
Lophoictinia isura	Square-tailed Kite		Е		
Ardeotis australis	Australian Bustard		V	4	
Macronectes giganteus	Southern Giant-Petrel		V		
Cladorhynchus leucocephalus	Banded Stilt		V		
Thinornis rubricollis	Hooded Plover		V		
Egretta sacra	Eastern Reef Egret		R		
Heteroscelus brevipes	Grey-tailed Tattler		R		
Arenaria interpres	Ruddy Turnstone		R		
Haematopus longirostris	Pied Oystercatcher		R		
Haematopus fuliginosus	Sooty Oystercatcher		R		
Cacatua leadbeateri	acatua leadbeateri Major Mitchell's Cockatoo		R	21	
Northiella haematogaster narethae Naretha Bluebonnet			R	2	
Neophema splendida			R	2	
Myiagra inquieta	Restless Flycatcher		R	7	
Pachycephala inornata	Gilbert's Whistler		R	6	
Calamanthus cautus	Shy Heathwren		R	4	
Lichenostomus cratitius	nostomus cratitius Purple-gaped Honeyeater		R		
Corcorax melanorhamphos	White-winged Chough		R		

Aus Australian status under the *Environment Protection and Biodiversity Conservation Act 1999* as at December 2008. SA South Australian status under the *National Parks and Wildlife Act 1972* (2007 update of schedules 7, 8 and 9). Status Codes: Aus - VU = Vulnerable. SA - E = endangered; V = vulnerable; R = rare.

White-bellied Sea-Eagle *Halieetus leucogaster* (SA - E)

The sea-eagle is sparsely distributed in South Australia with about 55 occupied territories in 1994 (Dennis and Lashmar 1996). Occupied nesting sites occur west to about Ceduna. It was not recorded during the survey but there is one recent Birds Australia atlas record.



Figure 109. Square-tailed Kite *Lophoictinia isura* observed near Red Gate Tank during this survey (Photo: P. Brissenden).

Square-tailed Kite Lophoictinia isura (SA - E)

The Square-tailed Kite is rarely recorded in South Australia with few breeding sites known (Jolly 1989, Fraser 1983 and 1993, Debus 1991 and 1993). Ashton and Ashton (1983) observed three near Nullarbor Roadhouse on 2 September 1982. During the survey

an adult was recorded in mallee low woodland about 5km east of Red Gate Tank on 2 November 2007, where it was observed feeding on a Yellow-throated Miner chick (G. Carpenter *et al.*). These observations suggest that the mallee woodlands of the Yalata area could provide a significant breeding habitat for the species in South Australia.



Figure 110. The Australian Bustard Ardeotis australis was observed at four survey sites (Photo: L. Pedler).

Australian Bustard Ardeotis australis (SA - R)

The Australian Bustard was formerly common in the region, with occasionally hundreds seen (e.g. Brown

1919). Pairs or single birds were observed at four survey sites including one in eucalypt woodland, two in chenopod shrublands and one in grassland. Fruits of Turkey Bush (*Eremophila deserti*) are eaten when ripe during summer. It is probable that the species breeds in the study area but this requires confirmation. The survey confirms that the region is important for the conservation of the species in South Australia.

Banded Stilt Cladorhynchus leucocephalus (SA - V)

Banded Stilts breed mostly on inland salt lakes. Small numbers have been recorded in the Yalata area, presumably en-route between eastern and western Australia.

Hooded Plover Thinornis rubricollis (SA - V)

The Hooded Plover is sparsely distributed on sandy beaches in South Australia, and has declined in several areas. A pair was observed on Coombra Beach during the survey, which is the western-most record in South Australia.

Eastern Reef Egret Egretta sacra (SA - R)

The Eastern Reef Egret is sparsely distributed in South Australia. It inhabits rocky shores and islands, with Eyre Peninsula being its main stronghold. One was seen at the Head of Bight on 11 August 1994 (pers. obs.).

Ruddy Turnstone Arenaria interpres (SA - R)

The Ruddy Turnstone breeds in Asia then migrates to Australia, where it occurs mainly around rocky coasts. A group of 12 were seen near Twin Rocks during the survey.

Grey-tailed Tattler Heteroscelus brevipes (SA - R)

The Grey-tailed Tattler breeds in Asia then migrates to Australia, where it occurs in small numbers often around rocky coasts. There is a Birds Australia atlas record from the study area.

Pied and Sooty Oystercatchers *Haematopus* longirostris and *H. fuliginosus* (SA - R)

These coastal waders favour sandy or rocky shorelines respectively. Small numbers occur along the Yalata shoreline (see below).



Figure 111. A flock of ten Sooty Oystercatchers *Haematopus fuliginosus* were observed on Coombra Beach during this survey (Photo: P. Canty).

Major Mitchell's Cockatoo Cacatua leadbeateri (SA - R)

The Major Mitchell's Cockatoo has declined in the eastern parts of its distribution due to habitat degradation, competition with Galahs and poaching. Pairs or small groups (up to 17) of this cockatoo were widely distributed in the survey area, being recorded at half of the survey sites and the eighth most common species. Birds were seen near nest hollows in eucalypt woodlands and feeding elsewhere (seed of *Acacia oswaldii*, fruits of *Exocarpos aphyllus* and *Eremophila deserti*). There are reports of birds breeding in hollows on coastal cliff faces west of Fowler's Bay that require confirmation.

The Yalata survey area is considered the stronghold for this species in South Australia.

Naretha Bluebonnet Northiella haematogaster narethae (SA - R)

The Naretha Bluebonnet is endemic to the open Western Myall - False Sandalwood Low Woodlands that fringe the Nullarbor Plain. A pair was recorded at one survey site (NAN00401) and four were seen opportunistically about 30km NNE of Nundroo. Other records are from north of Colona homestead (pers. obs.). These indicate that the Yalata IPA is important for this taxon.

Scarlet-chested Parrot Neophema splendida (SA - R)

The Scarlet-chested Parrot is a rare species of the mallee-spinifex dunefields, whose main stronghold is the Great Victoria Desert. A pair was observed at one survey site (COO00301) in the western part of the survey area, in mallee low woodland. This record is new for the area, with the nearest previous reports being from Yumbarra Conservation Park and Chundaria Lakes to the north.

Restless Flycatcher Myiagra inquieta (SA - R)

The Restless Flycatcher has declined extensively in the more temperate woodlands of south-eastern Australia (e.g. Robinson 1991). Singles or pairs were observed at seven sites, mainly in mallee woodlands. The survey confirms that the Yalata area is important for this species.



Figure 112. The Restless Flycatcher *Myiagra* inquieta was recorded mainly in woodlands during this survey (Photo: L. Pedler).

Gilbert's Whistler Pachycephala inornata (SA - R)

The Gilbert's Whistler occurs sparsely (mainly) in drier mallee with larger shrubs prominent in the understorey. It was found at six survey sites in the eastern part of the survey area, mainly where Sheep Bush *Geijera linearifolia* is prominent in the understorey.

Shy Heathwren Calamanthus cautus (SA - R)

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 four survey sites in mallee low woodland with Bluebush Daisy *Cratystylis conocephala* prominent in the understorey. The records are at the western limit of distribution in South Australia, and are of interest because the habitat is unique to this area

Purple-gaped Honeyeater *Lichenostomus cratitius* (SA - R)

The Purple-gaped Honeyeater is widely distributed in the mallee-heathlands of southern Australia. It was not recorded during the survey but there is one recent Birds Australia atlas record. It occasionally occurs in large numbers immediately to the east of the survey area within Wahgunyah Conservation Park (e.g. 200+ on 12 February 1993). This mobile species is most likely to occur in the survey area when eucalypts are flowering profusely, which was not the case during the survey.

White-winged Chough Corcorax melanorhamphos (SA - R)

The White-winged Chough occurs in eucalypt woodlands throughout south-eastern Australia. Two groups (of 6 and 8) were observed opportunistically during the survey, 30km NNE Nundroo and along the dog fence 7km SE of Yalata. These records are west of previous reports on Eyre Peninsula and are at the western limit of the species.

Habitats

The bird species richness for each of the six main vegetation types surveyed is shown in Table 27. Mallee woodlands and Western Myall Low Woodlands had higher bird species diversity than the shrublands and grasslands.

Table 27. Use of vegetation types by birds in the Yalata survey area.

Vegetation Type	No. sites	No. species	Mean species/ site
Western Myall - False Sandalwood Low Woodland	10	65	23.9
Mallee Low Woodland	12	72	26.8
Tea-tree Shrubland	5	46	19.8
Chenopod Low Shrubland	10	48	11.6
Coastal Low Shrubland	3	22	11.7
Grassland	2	28	15.0

The avian features of each of the main vegetation types are described below. Species tabled are those with a high frequency of occurrence (>80%) and/or those which predominate in that vegetation type.

Western Myall - False Sandalwood Low Woodland (10 sites)

This vegetation type has low trees with an open understorey often dominated by chenopods. Its birds exploit a range of feeding substrates and are typically widespread throughout non-eucalypt semi-arid low woodlands throughout southern Australia (Table 28).

Bird species of conservation significance are Major Mitchell's Cockatoo (60% of sites), a species that uses the habitat primarily for feeding, and the Naretha subspecies of the Bluebonnet *Northiella haematogaster narethae*, recorded at one site (NAN00401). This distinctive bird is confined to this habitat around the fringes of the Nullarbor.

Table 28. Birds of Western Myall - False Sandalwood Low Woodlands.

Common Name	% sites	Characteristic
White-browed Babbler	100	
Singing Honeyeater	100	X
Hooded Robin	90	X
Grey Shrike-thrush	90	
Yellow-throated Miner	80	
Spiny-cheeked Honeyeater	80	X
Mulga Parrot	70	X
Black-faced Woodswallow	70	X
Southern Whiteface	70	X
Red-capped Robin	70	X
Crested Bellbird	60	X
Chestnut-rumped Thornbill	50	X
Varied Sittella	50	X

Mallee Low Woodland (12 sites)

Mallee low woodland (particularly with *E. calcareana*) characterises the study area, with a variety of shrubs and leaf litter in the understorey. Common birds in this vegetation type are those that feed in eucalypt canopies or nest in tree hollows, and are typical of mallee woodlands across south-eastern Australia (Table 29). High species richness is also typical. Other species likely to be strongly associated with this habitat but were sparsely recorded include Australian Owlet-nightjar, Southern Boobook, Shy Heathwren, Rufous Treecreeper, Brown-headed Honeyeater, plus the White-winged Chough (recorded opportunistically).

Bird species of conservation significance include Major Mitchell's Cockatoo (58%, breeding habitat), Shy Heathwren (4 sites), Australian Bustard and Scarlet-chested Parrot (1 site). The observation of a pair of Scarlet-chested Parrots at COO00301 is the first recorded in the district, well south of its usual mallee over *Triodia* habitat in the Barton Sandhills (e.g. Yumbarra Conservation Park).

Table 29. Birds of Mallee Low Woodlands.

Common Name	% sites	Characteristic
Grey Butcherbird	100	
Weebill	92	X
Yellow-throated Miner	92	
Grey Shrike-thrush	92	
Australian Ringneck	92	
Yellow-plumed Honeyeater	83	X
Inland Thornbill	83	
Spiny-cheeked Honeyeater	83	
White-fronted Honeyeater	83	
Red Wattlebird	75	X
Dusky Woodswallow	75	X
Jacky Winter	75	X
Striated Pardalote	67	X
Grey Currawong	58	X
Tree Martin	50	X
Chestnut Quail-thrush	42	X
Restless Flycatcher	42	X



Figure 113. The Grey Butcherbird *Cracticus torquatus* was recorded at all 12 Mallee Low Woodland sites (Photo: Anon.).

Teatree Shrubland (5 sites)

Tea-tree shrublands are dominated by either *Melaleuca lanceolata* or *M. pauperiflora* ssp. *mutica* in the upper storey, and are characterised by their dense canopy. Again, Major Mitchell's Cockatoos feed in this habitat (4 sites). Other species likely to be associated are Western Yellow Robin and Golden Whistler, both recorded opportunistically within this habitat (Table 30).

Table 30. Birds of Tea-tree Shrublands.

Common Name	% sites	Characteristic
White-browed Scrubwren	100	X
Major Mitchell's Cockatoo	80	
Silvereye	60	X

Chenopod Low Shrubland (10 sites)

Chenopod low shrublands in the area are dominated by *Atriplex vesicaria*, *Maireana sedifolia* and/or samphires (*Tecticornia* spp.). In the study area it occurs mainly as patches within Western Myall Low Woodland, becoming extensive on the Nullarbor Plain proper. Bird species are mostly typical of the low chenopod shrublands throughout southern inland South Australia (Table 31).

Significant birds include Major Mitchell's Cockatoo (3 sites, feeding habitat), Australian Bustard (2 sites)

Slender-billed Thornbill (1 site) and the Nullarbor endemic subspecies of the Cinnamon Quail-thrush *Cinclosoma cinnamomeum alisteri* (1 site). Another potential species of significance is the Thick-billed Grasswren *Amytornis textilis*, although whether it occurs or ever occurred in the chenopod shrublands of the Nullarbor area in South Australia are uncertain (Black 2004).

Table 31. Birds of Chenopod Low Shrublands.

Common Name	% sites	Characteristic
Richard's Pipit	80	
Nankeen Kestrel	60	X
Rufous Fieldwren	50	
White-winged Fairy-wren	50	X

Coastal Low Shrubland (3 sites)

Coastal low shrublands occur on clifftops and coastal dunes. The most characteristic species is the Welcome Swallow, which nests under cliff overhangs (Table 32). Major Mitchell's Cockatoos use the shrubland as feeding habitat, particularly when acacias are seeding or *Eremophila deserti* is fruiting.

Table 32. Birds of Coastal Low Shrublands.

Common Name	% sites	Characteristic
Welcome Swallow	100	X
Richard's Pipit	100	
Australian Raven	100	
Rufous Fieldwren	100	
Singing Honeyeater	100	



Figure 114. The Welcome Swallow *Hirundo* neoxena is a characteristic species of coastal low shrublands (Photo: P. Canty).

Grassland (2 sites)

Grasslands dominated by Spear-grass *Austrostipa* spp. are mostly confined to limited areas within mallee low woodlands. Abundant and distinctive species are shown in Table 33. The Australian Bustard was recorded at one site.

Table 33. Birds of Grasslands.

Common Name	% sites	Characteristic
Australian Magpie	100	X
Richard's Pipit	100	

Coastal Birds

During the survey visits were made to the beach at Twin Rocks (25 October 2007) and Coombra Beach (5 April 2008) to survey coastal waterbirds. Twelve species were recorded (Table 34).

Table 34. Numbers of coastal waterbirds recorded during the survey.

Common Name	Twin Rocks	Coombra
Black-fronted Dotterel	1	
Caspian Tern	1	
Hooded Plover		2
Pacific Gull	1	
Pied Cormorant	1	
Pied Oystercatcher	1	1
Red-capped Plover		6
Red-necked Stint	7	
Ruddy Turnstone	12	
Sharp-tailed Sandpiper	15	
Silver Gull	8	
Sooty Oystercatcher	3	10



Figure 115. Hooded Plovers were observed on Coombra Beach (Photo: A. Robinson).

Collection of Specimens

Prior to this survey the South Australian Museum held only 12 individual bird specimens (representing seven species) collected from within the Yalata IPA. In the course of two trips for this survey (October 2007 and April 2008) ornithologist Lynn Pedler added significantly to this with a further 62 bird specimen collections (representing 35 species). These are listed in Table 35.

Table 35. Bird specimens collected during the Yalata IPA Survey.

Common Name	Species Name	Oct- 07	Apr- 08
Shy Albatross	Diomedia cautus		1a
Little Button-quail	Turnix velox	2b	
Galah	Cacatua roseicapilla	3	3
Purple-crowned	Glossopsitta	2	
Lorikeet	porphyrocephala		
Australian Ringneck	Barnardius zonarius		2
Naretha Bluebonnet	Northiella		1
Natetha Biueoonnet	haematogaster narethae		1
Variegated Fairy-wren	Malurus lamberti		1
Striated Pardalote	Pardalotus striatus		1
White-browed	Cariaarnia frantalia		1
Scrubwren	Sericornis frontalis	ļ	1
Shy Heathwren	Calamanthus cautus		2
Rufous Fieldwren	Calamanthus	2	1
	campestris Pyrrholaemus	 I	
Redthroat	brunneus		1
Weebill	Smicrornis	1	
	brevirostris		
Inland Thornbill	Acanthiza apicalis	1	1
Yellow-rumped Thornbill	Acanthiza chrysorrhoa		1
	Aphelocephala		
Southern Whiteface	leucopsis	1	
Red Wattlebird	Anthochaera	1	1
	carunculata		
Singing Honeyeater	Lichenostomus virescens	2	
White-eared	Lichenostomus		1
Honeyeater	leucotis		1
Yellow-plumed	Lichenostomus	1	
Honeyeater Brown-headed	ornatus Melithreptus		
Honeyeater	brevirostris		1
Jacky Winter	Microeca fascinans		3
Western Yellow Robin	Eopsaltria	1	1
Western Tenow Room	griseogularis		1
Chestnut Quail-thrush	Cinclosoma castanotus	1	1
C'II d WILL I	Pachycephala		
Gilbert's Whistler	inornata		1
Rufous Whistler	Pachycephala		1
	rufiventris Colluricincla	.	
Grey Shrike-thrush	harmonica		1
Black-faced Cuckoo-	Coracina	1c	1
shrike	novaehollandiae	10	
Ground Cuckoo-shrike	Coracina maxima		1
Dusky Woodswallow	Artamus cyanopterus	1	1
Grey Butcherbird	Cracticus torquatus	1	2
Australian Magpie	Gymnorhina tibicen	3	2
Grey Currawong	Strepera versicolor	1	1
Little Raven	Corvus mellori		1
Richard's Pipit	Anthus novaeseelandiae		1
Total Collections	почисьсенищие	25	37

Notes: a = dry skull only.

b = downy juveniles.

 $c=wing\ only.$

Discussion

The Yalata area supports a high diversity of terrestrial bird species that reflects the variety of vegetation types present. Birds of eucalypt woodlands (a habitat that has been severely degraded elsewhere in the State) are particularly well represented. At the State level the region supports significant populations of Major Mitchell's Cockatoo, Naretha Bluebonnet, Rufous Treecreeper, Shy Heathwren, Chestnut Quail-thrush and Restless Flycatcher, plus possibly the Squaretailed Kite.

Species not recorded in the study area but are known from immediately adjacent areas include Australian Pratincole *Stiltia isabella* (pair at Nullarbor Roadhouse on 14 October 1982 – C. Ashton pers. comm.), Bluebreasted Fairy-wren *Malurus pulcherrimus* (several groups in dense mallee at rear of dunes in Wahgunyah CP – pers. obs.), Cattle Egret *Ardea ibis* (one at Nullarbor Roadhouse on 13 July 1990 – R.P. Allen SAOA NL 135), Tawny-crowned Honeyeater *Phylidonyris melanops* (one 60km east of Border Village on 20 October 1986 – R. Whatmough SAOA NL 121) and Royal Spoonbill *Platalea regia* (freshly dead bird in coastal foredune at Wahgunyah CP on 26 May 2004 – pers. obs.).

Further survey work in particular is required to determine the distribution of the two fairy-wrens, Variegated and Blue-breasted, in the western Eyre Peninsula region. In addition, a greater variety of coastal waterbirds and seabirds would be expected. Ocean beaches along the Nullarbor are thought to be important staging areas for northern hemisphere waders that migrate across central Australia during spring (Higgins and Davies 1996), so specific surveys of the Yalata beaches are warranted.

The study area is of biogeographical interest because it incorporates the western limit of the South Australian coastal mallee, lying immediately east of a gap in mallee habitats formed by the Nullarbor Plain between south-west Western Australia and Eyre Peninsula. Its area forms the approximate western limit for the White-winged Chough, Grey Currawong (Eyre and Yorke Peninsula subspecies intermedia), Shy Heathwren (nominate ssp.), Little Raven, Common Starling and House Sparrow (Blakers et al. 1984, Schodde and Mason 1999, this study). The Whitewinged Chough is perhaps surprisingly scarce in the region, although the lack of surface water in the mallee areas would inhibit breeding because mud is generally used in nest construction. The Shy Heathwren is separated from the nearest population in coastal Western Australia by about 500km, with the Redthroat occurring instead in similar habitat in the intervening mallee of far south-western South Australia (Carpenter and Matthew 1997).

The Little Raven, House Sparrow and Starling have spread westwards since the mallee was cleared for croplands. The House Sparrow is generally confined to human habitation and also occurs just west of the survey area at Nullarbor Roadhouse (pers. obs.), while authorities have exterminated birds that have extended into Western Australia (Johnstone and Storr 2004). One House Sparrow was observed east of Colona Homestead during the survey. Flocks of up to 200 Common Starlings were seen near old pastoral infrastructure or along the beach at various sites in the survey area. The Western Australian government has attempted to prevent the spread of starlings into that State by trapping and destroying birds across the southern Nullarbor in both States (Johnstone and Storr 2004). Conversely it is likely that the western form of Galah Cacatua roseicapilla assimilis, with its pink forehead and crown, is spreading along the coast into South Australia. Specimens were taken during the survey from as far east as Colona Homestead, where both forms were present. The interactions and breeding of these two forms provides interest for further study.

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 that breed at the higher rainfall limit (e.g. Western Whipbird Psophodes nigrogularis - Schodde and 1991, Southern Emu-wren Stipiturus Mason malachurus - 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 Most mallee woodland birds have (Ford 1987). proved to be linked inland north of the Nullarbor Plain via the Great Victoria Desert (e.g. Malleefowl, Purplecrowned 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 30km gap immediately west of the Head of the Bight) along the southern margin of the plain (e.g. Western Yellow Robin, Dusky Woodswallow, Spotted (Yellow-rumped) Pardalote, Golden Whistler, Blue-breasted Fairy-wren, Red Wattlebird and Brush Bronzewing - Ford 1971, Carpenter and Matthew 1987).

The variation in distribution and abundance of mallee birds across the region is also of interest to ecologists. Birds of denser mallee (e.g. Purple-gaped Honeyeater, Golden Whistler, White-eared Honeyeater and Western Yellow Robin) become scarcer towards the west of the region. The narrow strip of denser mallee that extends westwards along a low escarpment to near Red Gate Tank is probably important for these species, an aspect that requires further study.

REPTILES

D. Armstrong¹

Summary of Reptile Records

Prior to the Yalata IPA Survey the reptile records available for the area were from two main sources. The majority of these, 211 records of 27 species, came from 11 survey sites located within the IPA during 1984, as part of a joint Biological Survey of the Nullarbor Region by DEH and the West Australian Department of Conservation and Land Management (CALM). Specimen records of the South Australian Museum provided an additional 69 records of 20 species. Three records were provided by the DEH Opportunistic Sightings database.

The Yalata IPA Survey collected a further 619 reptile records from 32 sites plus 72 opportunistic records. This recent survey therefore provides the majority (71%), or 691 of a total of 972, of all records available for reptiles within the Yalata IPA. In addition, a total of 241 reptile specimens were collected for this survey

and lodged with the South Australian Museum. The distribution of all 43 sites is shown in Figure 110.

These combined records provide evidence of the occurrence of 50 reptile species (refer Appendix 11), but no frog species. Thirty-five of these were known from the earlier records, although three have been recently renamed as part of taxonomic reviews. The recent survey located an additional 15 new species and recorded a total of 46 species. The four species known from earlier records but not recorded during this survey were a single Cryptoblepharus australis (Desert Wall Skink) recorded during the 1984 Nullarbor Survey, two specimens of Pseudonaja nuchalis (Western Brown Snake) in the SA Museum that were collected in 1981, and single records of Morelia spilota (Carpet Python) and Varanus rosenbergi (Heath Goanna) from the DEH Opportunistic Sightings database.

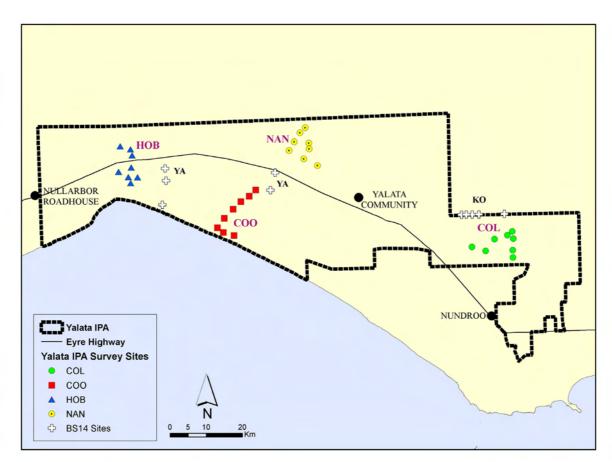


Figure 116. Distribution of sites where reptiles recorded during the Yalata IPA Survey and 1984 Nullarbor Region (BS14) Survey.

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The 43 standard effort survey sites from combining the results of the 1984 Nullarbor Survey and the Yalata IPA Survey recorded 45 of the 50 species of reptiles known from the IPA. The five species not found at sites were three from earlier records described above, *Pseudonaja nuchalis, Morelia spilota* and *Varanus rosenbergi*, plus *Varanus gouldii* (Sand Goanna) and *Acanthopis antarcticus* (Common Death Adder), which were both recorded opportunistically during the Yalata IPA survey.

The 50 reptile species recorded within the Yalata IPA includes representatives of all four Australian lizard families and three snake families. The lizard families are Agamidae (Dragon Lizards) - seven species; Gekkonidae (Geckos and Legless Lizards) - nine gecko and four legless lizard species; Scincidae (Skinks) - 18 species; and Varanidae (Goannas) - two species. As is usual in southern and arid Australia, the majority of snake species present were from the family Elapidae (Front-fanged Venomous Land Snakes) with seven species. The remaining snake species were two Typhlopidae (Blind Snakes) and one member of the Boidae (Boas and Pythons).

Renamed Species

The following three species are in the process of being renamed as the result of a number of taxonomic reviews. The new names indicated here are adopted throughout this report.

The Southern Rock Dtella previously known only by its chromosome code as *Gehyra* 2n=44 has been recognised as *Gehyra lazelli* (M. Hutchinson, pers. comm.).

As part of a review of the genus *Pseudonaja*, Skinner (in press) determined that specimens from the Yalata IPA which had been identified as *Pseudonaja inframacula* (Peninsula Brown Snake) are in fact *P. affinis* (Dugite). However, the review indicated that there is an isolated population of *P. inframacula* in a small area to the west of the Head of the Bight which is located close to the western boundary of the IPA. It is therefore possible that *P. inframacula* may eventually be confirmed within the IPA by further



Figure 117. Diplodactylus granariensis (Western Stone Gecko) is currently under taxonomic review and is included here within the D. vittatus complex (Photo: P. Canty).

collection of specimens. Currently the nearest other confirmed records of *P. inframacula* are several hundred kilometres to the south-east, between Venus Bay and Elliston.

The taxonomy of a group of similar gecko species, including specimens previously recorded from within the IPA as the Western Stone Gecko (*Diplodactylus granariensis*) is currently being reviewed. Until this is completed and which species name will be applied to the Yalata IPA specimens is determined, these are collectively described here as the *D. vittatus* complex (M. Hutchinson pers. comm.).

Species Distribution and Abundance

By far the most frequently recorded and widely distributed reptile species was Ctenophorus pictus (Painted Dragon) which accounted for 14.2% of all records and occurred at 29 of the 43 (67%) survey sites (Table 36). Three skink species - Tiliqua rugosa (Sleepy Lizard), Morethia adelaidensis (Adelaide Snake-eye) and *Morethia obscura* (Mallee Snake-eye) - were high in both numbers of records and sites at which they were recorded. The Diplodactylus vittatus complex (Stone Gecko species group) and Lerista edwardsae (Myall Slider) were also amongst the species recorded at the most sites, with 19 and 17 sites respectively. Nephrurus milii (Barking Gecko), with 52 records and present at 13 sites, and Ctenotus schomburgkii (Sandplain Ctenotus), with 51 records and present at 12 sites, were also amongst the most common and widespread species.



Figure 118. Ctenophorus pictus (Painted Dragon) was the most frequently recorded reptile species in the Yalata IPA (Photo: P. Canty).

At the other end of the scale, eight of the 50 species were recorded at only one site or from only one specimen or observation. Five of these were from the Yalata IPA Survey. These were Acanthopis antarcticus (Common Death Adder) - recorded once opportunistically; Aprasia inaurita (Red-tailed Worm Lizard), Cyclodomorphus melanops (Spinifex Slender Bluetongue) and Pseudechis australis (Mulga Snake) - single records at sites; and Egernia richardi (Western Tree Skink) - recorded twice at one site. Cryptoblepharus australis (Desert Wall Skink) was recorded once during the 1984 Nullarbor Survey. There were also single records from the DEH

Table 36. The six most frequently recorded reptile species in the Yalata IPA in terms of total records and total sites.

Species Name	Records	%	Species Name	Sites	%
Ctenophorus pictus	138	14.2	Ctenophorus pictus	29	67
Morethia adelaidensis	71	7.3	Tiliqua rugosa	26	60
Tiliqua rugosa	70	7.2	Morethia adelaidensis	19	44
Nephrurus milii	52	5.3	Diplodactylus vittatus complex	19	44
Ctenotus schomburgkii	51	5.2	Lerista edwardsae	17	40
Morethia obscura	45	4.6	Morethia obscura	15	35
Total Records	972		Total Sites	43	

Opportunistic Sightings database of *Morelia spilota* (Carpet Python) and *Varanus rosenbergi* (Heath Goanna).

Records of all reptile species recorded at sites on the Yalata IPA Survey are provided in Appendix 12.



Figure 119. *Tiliqua rugosa* (Sleepy Lizard) was one of the most commonly recorded reptiles as it was observed at 26 sites (Photo: P. Canty).

Relative Abundance at Sites

Combining the 11 survey sites located within the Yalata IPA during the 1984 Nullarbor Survey and the 32 sites from the 2007-08 Yalata IPA Survey provides a total of 43 sites at which records were systematically collected. At twelve of these sites 10 or more reptile species were recorded. Ten species were recorded at five sites, 11 species at six sites and one site had 14 species. This was COO00301, located in Eucalyptus gracilis (Yorrell), E. yalatensis (Nundroo Mallee) Open Mallee on a consolidated dunefield slope, with an understorey of Melaleuca lanceolata (Dryland Teatree), Atriplex vesicaria (Bladder Saltbush) and Austrostipa sp. (Spear-grass). The average number of reptile species recorded at these sites was 7.9. The lowest number recorded at a site was three species at KO00302 during the 1984 survey. This was in Eucalyptus oleosa (Red Mallee), Acacia papyrocarpa (Western Myall) Mallee with an understorey of Cratystylis conocephala (Bluebush Daisy) and other chenopod species.

Nine sites provided 10 or less records, while four sites had 40 or more. The average was 18.9 records per site. The lowest number of records was three at KO00302, as described above. The highest was 47 at YA00501, also from the 1984 survey, including 10

records of *Ctenophorus pictus* (Painted Dragon) and 10 of *Rankinia chapmani* (Prickly Dragon). This was in *Melaleuca lanceolata* (Dryland Tea-tree), *Nitraria billardierei* (Nitre-bush) Shrubland on a consolidated dune.

New Records from the Yalata IPA Survey

Most of the 15 new species recorded during the Yalata IPA Survey were represented by less than a handful of records (Table 37). This is to be expected as it is natural that the earlier collections would account for the more common and easily encountered species.

Two of these newly recorded species were not encountered at any of the 32 survey sites, but were recorded opportunistically. Varanus gouldii (Sand Goanna) is generally a highly visible species when active in warmer months. That only three records were obtained may indicate relatively low numbers within the IPA. However, the single record of Acanthopis antarcticus (Common Death Adder) does not necessarily mean the same, as it is a highly secretive ambush predator which is infrequently encountered even in areas where it is relatively common. It is most often seen during spring months when moving about in search of mating opportunities, particularly around times of thunderstorm activity. It appears to be relatively common in many coastal areas west of Port Lincoln, so may prove more abundant in this habitat within the IPA.

There were a total of 12 records between the two species of blind snakes, *Ramphotyphlops* bituberculatus (Rough-nosed Blind Snake) and R. bicolor (Southern Blind Snake) for the Yalata IPA Survey. That they were not recorded previously may reflect the considerably greater sampling effort during this survey, but may also reflect the secretive subterranean lifestyle of this family of small harmless snakes. Blind snakes feed on termites and ant eggs and larvae and spend the majority of their lives within the nests of their prey or sheltering in similarly deep well protected locations underground, occasionally emerging onto the surface at night during periods of storm activity in warmer months. Such weather occurred during the survey, enabling a relatively high number of the captures of these two species, mostly in pitfall traps, but two were found while spotlighting along vehicle tracks during one of these weather events.

Table 37. Yalata IPA Survey records of reptile species not previously recorded in the IPA.

Species Name	Common Name	Opportune Records	No. of Sites	Site Records	Total Records
Acanthophis antarcticus	Common Death Adder	1			1
Aprasia inaurita	Red-tailed Worm-lizard		1	1	1
Cyclodomorphus melanops	Spinifex Slender Bluetongue		1	1	1
Pseudechis australis	Mulga Snake		1	1	1
Egernia multiscutata	Bull Skink		2	2	2
Egernia richardi	Western Tree Skink		1	2	2
Cryptoblepharus pulcher clarus	Striped Wall Skink	1	2	2	3
Tiliqua occipitalis	Western Bluetongue	1	2	2	3
Varanus gouldii	Sand Goanna	3			3
Lerista terdigitata	Southern Three-toed Slider	1	2	3	4
Lucasium damaeum	Beaded Gecko		3	5	5
Ramphotyphlops bicolor	Southern Blind Snake		4	5	5
Ramphotyphlops bituberculatus	Rough-nosed Blind Snake	2	3	5	7
Strophurus intermedius	Southern Spiny-tailed Gecko	1	6	10	11
Ctenotus regius	Eastern Desert Ctenotus		7	18	18



Figure 120. The only record of *Acanthopis* antarcticus (Common Death Adder) recorded during this survey was a specimen collected by Murray Greenaway at Yalata township (Photo: A. Robinson).

Two species recorded for the first time in the IPA during the recent survey were located at a significant number of sites. That they were not recorded previously can only be attributed to lack of sampling in appropriate habitat or inactivity by these species during the less extensive previous sampling efforts.

Strophurus intermedius (Southern Spiny-tailed Gecko) were recorded at six sites (10 records plus one opportunistic record) which had little in common, other than they were all varieties of low woodland or shrubland. This broad preference may indicate a need

for opportunities to climb into the relatively low to the ground lateral branches of shrubs for diurnal refuge, a habit which has been observed in this and other spinytailed gecko species.



Figure 121. The 11 records of *Strophurus intermedius* (Southern Spiny-tailed Gecko) recorded during this survey are the first for this species in the Yalata IPA (Photo: P. Canty).

Ctenotus regius (Eastern Desert Ctenotus) were recorded at seven of the 32 sites (18 records). These sites were a variety of low woodlands or shrublands and one grassland site, with medium loamy sand soil types, but showed little similarity in dominant vegetation species.



Figure 122. Ctenotus regius (Eastern Desert Ctenotus) were recorded from a range of woodland and shrubland communities (Photo: A. Robinson).

Species of Conservation Significance

Three species of reptiles recorded within the Yalata IPA are rated under the South Australian *National Parks and Wildlife Act 1972* (2007 update of Schedules 7, 8 and 9). Two are considered Rare and one Vulnerable in South Australia.

Ctenophorus mckenziei (McKenzie's Dragon) SA:R

This species is known from only a small number of locations clustered within two relatively small areas on opposite sides of the Nullarbor in Western Australia and South Australia. It was first recorded in SA at two sites only three or four kilometres apart (within the Yalata IPA on Colona station during the 1984 Nullarbor Survey) after being described as a species only three years earlier. It was recorded at a similarly small number of locations a few kilometres to the east of the IPA during the 1987 DEH Biological Survey of the Yellabinna Region (Copley and Kemper 1992).

The total of six sites at which *C. mckenziei* has been recorded within the IPA, two in 1984 and a further four in 2007-08, are all within 10 to 12 kilometres of each other. Its range within SA is expected to be more extensive within adjacent suitable habitat, but inaccessibility of much of this area and its isolation from major population centres restricting visitation generally constrain efforts to improve knowledge of this species.



Figure 123. The distribution of *Ctenophorus mckenziei* (McKenzie's Dragon) is limited to two relatively small areas on opposite sides of the Nullarbor Plain (Photo: P. Canty).

Wilson and Swan (2003) reported that the SA population forages in open spaces between shrubs, sheltering in burrows at their bases. Observations of specimens caught during the 1987 Yellabinna Survey and in 2008 during the Yalata IPA survey contradict this statement. Whilst they do move about between shrubs, mostly chenopods, they appear to use the bushes as shelter only. When persistently pursued they move from bush to bush, skirting the edges and occasionally diving into the larger bushes, in a similar fashion to the way the more widely distributed *Ctenophorus isolepis* (Military Dragon) and *Ctenophorus fordi* (Mallee Dragon) use *Triodia* sp. hummocks. At no stage were any of a dozen or more specimens seen to enter a burrow.

Morelia spilota (Carpet Python) SA:R

Prior to 2008 this species was known in the IPA from a single specimen caught by a Yalata resident on the Yalata Airstrip access track in November 1999 and photographed by H. Ehmann (Ehmann 2005). Subsequent to this survey drawing attention to the occurrence of the Carpet Python within the IPA one specimen, which was injured by a vehicle and later died, was collected in late August 2008 beside the Eyre Highway, approximately half way between Nundroo and Yalata. Another was caught and released along the dog fence and several more sightings were reported by Yalata community residents during the year (M. Greenaway pers. comm.).

In view of the number of Carpet Python records over the last decade from areas west of Ceduna and south of the railway line, including several live animals brought into the DEH Ceduna office, it appears that the far west coast, including the Yalata IPA, may well be the most significant of a handful of areas where the Carpet Python still survives in SA. The other locations are the Flinders Ranges, Murray River Valley and flood channels in the north-east. These four locations have been recognised as distinct forms of the species (L. Rawlings pers. comm. in Ehmann 2005), with all Eyre Peninsula, Gawler Ranges and West Coast populations recognised as *M. spilota imbricata*.



Figure 124. There have been several recent sightings of *Morelia spilota* (Carpet Python) within the Yalata IPA (Photo: A. Robinson).

This species is rated as Rare in South Australia. Interestingly, most available text books on Australian reptiles do not include the far west coast of SA, to the west of Ceduna, on distribution maps for this species.

Varanus rosenbergi (Heath Goanna) SA:V

Varanus rosenbergi (Heath Goanna) is known in the Yalata IPA by a single roadkill record photographed by J. Lebois in summer 1996/97 on the track that leads south from the Yalata Roadhouse to Yalata Beach. It is expected to still occur in low numbers in heathland along the coast (Ehmann 2005). Recent evidence of this was recorded by SA Museum staff when they trapped an individual specimen in the Merdayerrah Sandpatch to the west of the Yalata IPA near the Western Australian border (M. Hutchinson pers. comm.).

Much of the former range of this species in south-west and south-eastern Australia has been cleared for agriculture resulting in a highly fragmented distribution pattern. Within these locations it is further threatened by predation from introduced predators.

Notable Species Absences

Several other species may eventually be recorded within the Yalata IPA if areas of preferred habitat or climatic conditions are targeted. *Lerista arenicola* (Beach Slider) and *Pseudemoia baudini* (Bight Coast Skink) are coastal habitat specialist species which are rated Rare in SA. Both species were recorded in the WA section of the 1984 Nullarbor Survey area and are known to occur in a few scattered locations along the coast well in to both states. In SA they occur at least as far east as Port Lincoln. More concentrated effort searching appropriate habitat along the narrow coastal corridor may locate these within the IPA.

It is also possible that *Hemiergis peronii* (Four-toed Earless Skink) could occur in pockets of suitable cooler habitat along the coast. It is recorded from both sides of the Nullarbor and not far from the eastern boundary of the IPA. It is also recorded on most islands off the west coast of SA, clearly indicating it survives well in drier areas where the ocean's moderating influence on climate is present.

It may be that the calcareous limestone based soils which dominate the Yalata IPA are unsuitable for arid adapted burrowing frogs, but *Neobatrachus centralis* (Trilling Frog) is the only species with a geographic distribution which may extend into the IPA. Discussion with Yalata residents and searching during or after heavy summer rain would clarify this.

Biogeographic Species Groups

Southern Coastal Community

Amongst the reptile species recorded within the IPA are a significant group which have close affinity with southern Australian coastal and adjacent mallee areas with calcareous soil types along the southern edge of arid inland Australia. Many of these species also occur on offshore islands. Most have discontinuous populations in South Australia and Western Australia on opposite sides of the Nullarbor Plain.

This group consists of the following 17 species:
Aprasia inaurita (Red-tailed Worm-lizard)
Christinus marmoratus (Marbled Gecko)
Ctenophorus mckenziei (McKenzie's Dragon)
Ctenotus euclae (Bight Coast Ctenotus)
Drysdalia mastersi (Master's Snake)
Egernia multiscutata (Bull Skink)
Egernia richardi (Western Tree Skink)
Hemiergis initialis (Western Earless Skink)
Lerista dorsalis (Southern Four-toed Slider)
Lerista terdigitata (Southern Three-toed Slider)
Lerista edwardsae (Myall Slider)
Morethia obscura (Mallee Snake-eye)
Nephrurus stellatus (Starred Knob-tailed Gecko)

Pseudonaja affinis (Dugite) Rankinia chapmani (Prickly Dragon) Suta spectabalis (Mallee Black-headed Snake) Varanus rosenbergi (Heath Goanna)



Figure 125. *Morethia obscura* (Mallee Snake-eye) is one of a suite of southern coastal reptiles recorded in the Yalata IPA (Photo: A. Robinson).

Nullarbor Endemic Species

There are two reptile species which are regarded as endemic to the Nullarbor Plain. Both were recorded where it extends into the western side of the IPA. These are *Tympanocryptis houstoni* (Nullarbor Earless Dragon) and *Pogona nullarbor* (Nullarbor Bearded Dragon).



Figure 126. *Pogona nullarbor* (Nullarbor Bearded Dragon) is regarded as endemic to the Nullarbor Plain (Photo: D. Armstrong).

Eyrean Species

Most of the remaining species are largely inhabitants of the southern half of the arid/Eyrean region which often extends into the mallee and drier coastal areas. Within this region they show a marked preference for heavier soils. That is, there is a general absence amongst these species of the sandy desert *Triodia* hummock-dwelling species which inhabit the Great Victoria Desert to the north of the IPA, giving that area one of the most diverse reptile species assemblages in the world.

There is some clear overlap between these two larger groups. In some cases it is difficult to be sure that a species is not mainly a southern coastal calcareous substrate species, which extends into the arid interior

where areas of preferred heavier soils exist, or if the species is generally an arid zone species which extends to the coast or into the southern mallee for the same reason. Species which fall in to this overlap category include *Ctenophorus pictus* (Painted Dragon), *Ctenotus orientalis* (Eastern Spotted Ctenotus), *Diplodactylus vittatus* complex (Stone Geckoes) and *Nephrurus milii* (Barking Gecko).



Figure 127. *Nephrurus milii* (Barking Gecko) is an example of an Eyrean species occurring in the Yalata IPA (Photo: A. Robinson).

Widespread Generalist Species

Several of the reptile species recorded do not fit within any one bioregional classification as they are widespread across much of the country within arid, semi-arid and, in some cases, tropical areas. These species include *Heteronotia binoei* (Bynoe's Gecko), *Menetia greyi* (Dwarf Skink), *Lialis burtonis* (Burton's Legless Lizard), *Pseudechis australis* (Mulga Snake), *Pseudonaja nuchalis* (Western Brown Snake) and *Varanus gouldii* (Sand Goanna). Most were amongst the more infrequently recorded species within the IPA.



Figure 128. *Heteronotia binoei* (Bynoe's Gecko) is occurs throughout much of South Australia in a variety of habitats (Photo: P. Brissenden).

SUMMARY

N. Neagle¹

The Yalata IPA Study Area

The Yalata Indigenous Protected Area covers approximately 456,300 hectares in the far west of South Australia. Its biodiversity is reflected in its position at the south eastern margin of the Nullarbor Plain. Here the major biogeographical influences are the Nullarbor Plain at the western end, the long coastline with associated sea cliffs and dunefields, and the undulating calcrete plain that occupies much of the centre and eastern end.

The Nullarbor Plain features extensive chenopod shrublands on shallow calcareous loams over limestone. These terminate abruptly to the south at the dramatic sea cliffs of the Head of the Bight. To the east they grade into extensive mallee, Western Myall and chenopod communities on an undulating calcrete plain. East of the Head of the Bight the coastline features areas of bare mobile dunes and a range of coastal shrubland communities that grade inland to mallee and low woodland communities on consolidated dunefields.

The Yalata IPA forms part of a much larger area of land protected for conservation. The western boundary is shared with the Nullarbor National Park while, to the north, lies the Nullarbor and Yellabinna Regional Reserves. On the coast the IPA adjoins Wahgunyah Conservation Park to the south east and shares a coastline with part of the Great Australian Bight Marine National Park.

Plant Communities

Data from 183 sites sampled for vegetation in the Yalata IPA were used to identify 25 Floristic Vegetation Communities based on the similarity of dominant overstorey and understorey species, their cover/abundance scores and the structural formation description of each site.

These 25 communities can be grouped into nine broader vegetation types:-

- 1. Low Woodlands dominated by Western Myall and, to a lesser extent, False Sandalwood occur patchily across much of the undulating plain north of the Eyre Highway and east of the treeless plain.
- 2. Mallee communities range from low coastal form through to low woodlands further inland. They cover much of the consolidated dunefield south of the Eyre Highway (east of the Head of the Bight) and in patches to the north and east.

- 3. Shrubland communities dominated by *Melaleuca* spp. are found along the coast on low dunes and sandy plains, often with outcropping limestone.
- 4. Low Shrublands, dominated mainly by chenopods but also by Bluebush Daisy and Thorny Lawrencia, occur throughout the IPA. As well as being the chief component of the Nullarbor Plain vegetation they are a common feature north of the Eyre Highway interspersed with the Western Myall and mallee communities.
- 5. Clearings in the Mallee south of the Eyre Highway contain a mixture of minor communities, but mainly tall shrublands of Sheep Bush and Native Apricot and low shrublands of Bitter Saltbush.
- 6. Coastal Shrublands occur along a continuous strip of dunes east of the Head of the Bight.
- 7. Saltmarsh communities are particularly evident in low-lying swampy saline areas around the Head of the Bight and along the coast to the east. They are dominated by Samphire species.
- 8. Grasslands are found within the mosaic of mallee, myall and chenopod communities in the north and east of the IPA. Most commonly they are dominated by Spear-grasses and Common Wallaby-grass, though there are significant occurrences of Iron-grass Grassland (critically endangered nationally).
- 9 Herblands, some possibly resulting from historic over-grazing of domestic stock, mainly occur on the former Colona station.

One of the 25 Floristic Vegetation Communities is considered to be of state and national conservation significance. Lomandra effusa (Scented Mat-rush) Open Tussock Grassland, a component of the Irongrass Natural Temperate Grassland of South Australia, is rated as Critically Endangered under the EPBC Act 1999. It is also recognised as being an Endangered ecosystem (DEH 2001) and a Priority 1 plant association in South Australia (Neagle 1995). Although no sites were located in this community during this survey its presence was recognised at a number of locations near to the Eyre Highway between Colona Woolshed and the edge of the Nullarbor Plain. Its presence here represents a major disjunct occurrence from its main distribution between Peterborough and Tailem Bend.

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Vegetation

Plant species data were collated from 183 survey sites drawn from seven separate surveys within the Yalata IPA, representing 3,091 records. A further 669 plant records come from opportunistic sightings (i.e. not at survey sites), including State Herbarium specimens. From this 330 individual plant taxa were identified, of which 286 are native and 44 are introduced.

The Yalata IPA Biological Survey sampled vegetation at 55 sites and collected 1390 plant records. An additional 100 plant records came from opportunistic sightings. During the survey 819 plant specimens were collected and lodged with the State Herbarium. This comprised a significant addition to the existing 560 Herbarium collections from the IPA and resulted in 205 plant taxa being identified from 38 families. Of these 179 (87.3%) were native and 26 (12.7%) introduced.

The most commonly recorded species were the chenopods Atriplex vesicaria (Bladder Saltbush) at 49 sites, Maireana erioclada (Rosy Bluebush) at 43, Threlkeldia diffusa (Coast Bonefruit) at 31, Rhagodia crassifolia (Fleshy Saltbush) at 30 and Enchylaena tomentosa var. tomentosa (Ruby Saltbush) at 28, and the daisies *Sonchus oleraceus (Common Sow-thistle) at 34, Cratystylis conocephala (Bluebush Daisy) at 29 and Trichanthodium skirrophorum (Woolly Yellowheads) at 26.

Comparatively few introduced species were recorded during this survey - only 26 (12.7%) of all plant taxa and 128 (9.2%) of all plant records at sites. The only three to be recorded at more than 20% of the 55 sites sampled were *Sonchus oleraceus (Common Sowthistle) at 34 sites, *Carrichtera annua (Ward's Weed) at 22 and *Brassica tournefortii (Wild Turnip) at 14. All but three of the 26 introduced taxa are either annuals or short-lived perennials. The only true *Lycium ferocissimum perennials are (African Boxthorn), *Acacia saligna (Golden Wreath Wattle) and *Marrubium vulgare (Horehound), and each of these was recorded only once during the survey.

Ten plant species of conservation significance were recorded on the Yalata IPA Survey. Four of which are considered Rare at state level:-

Eremophila parvifolia (Small-leaf Emubush) Eremophila sp. Praecox (R.H.Ashby 131) Poa drummondiana (Knotted Poa) Templetonia battii (Spiny Templetonia)

The remainder have regional ratings in either the Nullarbor (NU) or Eyre Peninsula (EP) Herbarium Regions:-

Austrostipa velutina (NU:U)
Maireana appressa (Pale-fruit Bluebush) (EP:U)
Olearia magniflora (Splendid Daisy-bush) (EP:U)
Osteocarpum salsuginosum (Inland Bonefruit) (EP:V)
Podolepis canescens (Grey Copper-wire Daisy)
(EP:U)

Scaevola bursariifolia (Bursaria Fanflower) (NU:U; EP:U)

In addition 33 plant taxa not previously known to occur in the Yalata IPA were recorded on this survey, 26 of which are native and seven introduced. These are:-

*Acacia saligna (Golden Wreath Wattle) Acacia spinescens (Spiny Wattle) Atriplex suberecta (Lagoon Saltbush) Calotis cymbacantha (Showy Burr-daisy) *Carthamus lanatus (Saffron Thistle) Cassytha peninsularis (Peninsula Dodder-laurel) Convolvulus recurvatus ssp. nullarborensis Convolvulus remotus (Grassy Bindweed) Erodium crinitum (Blue Heron's-bill) Lepidium phlebopetalum (Veined Peppercress) Maireana appressa (Pale-fruit Bluebush) Maireana brevifolia (Short-leaf Bluebush) *Medicago minima var. minima (Little Medic) Minuria cunninghamii (Bush Minuria) Nicotiana rosulata ssp. Olearia calcarea (Crinkle-leaf Daisy-bush) Olearia pimeleoides ssp. incana (Showy Daisy-bush) Osteocarpum salsuginosum (Inland Bonefruit) *Poa bulbosa (Bulbous Meadow-grass) Poa drummondiana (Knotted Poa) (SA:R) Pycnosorus eremaeus (Golden Billy-buttons) *Reichardia tingitana (False Sowthistle) Rhodanthe corymbiflora (Paper Everlasting) Senna artemisioides ssp. petiolaris Senna artemisioides ssp. quadrifolia (Four-leaf Desert

Sida corrugata var. (Corrugated Sida)
Sida spodochroma (Limestone Sida)
*Spergularia diandra (Lesser Sand-spurrey)
Tecticornia indica ssp. leiostachya (Brown-head Samphire)
Templetonia battii (Spiny Templetonia) (SA:R)
Triglochin sp. A (N.N.Donner 3596) (Spurred Arrowgrass)
Vittadinia arida

Mammals

*Vulpia myuros f. (Fescue)

A total of 471 individual mammal observations and captures were made at sites during the Yalata IPA Survey, representing 20 confirmed species. A further 86 opportunistic sightings were made, including a further two species not recorded at sites - Red Kangaroo (Macropus rufus) and Lesser Long-eared Bat (Nyctophilus geoffroyi). Four bat species were only identified from calls (recorded using Anabat kits) Inland Freetail-bat (Mormopterus sp.), Gould's Wattled Bat (Chalinolobus gouldii), Inland Broadnosed Bat (Scotorepens balstoni) and Inland Forest Bat (Vespadelus baverstocki). This represents a combined tally of 22 species, of which 18 are native and four introduced. None of these species are considered to be of conservation significance.

In the course of the survey 54 mammal specimens, representing 13 species (11 native and 2 introduced),

were collected and deposited with the South Australian Museum. This constitutes a significant addition to the existing 65 specimens held by the Museum from the Yalata IPA.

Five new mammal species for the Yalata IPA were recorded on this survey:-

- Echidna (*Tachyglossus aculeatus*)
- White-striped Freetail-bat (*Tadarida australis*)
- Inland Broad-nosed Bat (Scotorepens balstoni)
- Inland Forest Bat (Vespadelus baverstocki)
- Inland Freetail-bat (*Mormopterus* sp.)

This is particularly surprising for the first two species, as both are common and widespread species and probably merely indicates the previous lack of systematic biological survey within the IPA. The detection of the three other bat species for the first time on this survey was only possible with the use of Anabat recording equipment.

The most frequently trapped mammal species was the introduced House Mouse (*Mus musculus), which were recorded at all 32 sites with a total of 226 captures. Captures of other small terrestrial mammals was very low, with no species captured on more than five occasions. The most frequently recorded small terrestrial native mammal species were the Fat-tailed Dunnart (Sminthopsis crassicaudata), Little Longtailed Dunnart (S. dolichura) and Western Pygmypossum (Cercartetus concinnus), each captured on four occasions.

The distribution of bat species has mostly been determined via calls detected using Anabat recording kits. The three most widely distributed species were the Long-eared Bats (*Nyctophilus geoffroyi/timoriensis* - unable to distinguish species by call) at 59% of sites, Gould's Wattled Bat (*Chalinolobus gouldii*) at 56% and the Inland Freetail-bat (*Mormopterus* sp.) at 53%.

Four introduced species were recorded during the survey. In addition to the House Mouse, the Rabbit (*Oryctolagus cuniculus) and One-humped Camel (*Camelus dromedarius) were both also abundant and widespread, while the Fox (*Vulpes vulpes) was only recorded twice and the Feral Cat (*Felis catus) not at all.

Birds

From previous observations and those made during this survey 147 bird species have been identified within the IPA. A total of 97 species were recorded from the 42 survey sites (includes ten sites from the 1984 Nullarbor Survey) and a further 20 from opportunistic observations off-sites. One species, the Bush Stone-curlew (*Burhinus grallarius*), may be extinct in the IPA and the status of a second, the Malleefowl (*Leipoa ocellata*), is uncertain.

The Yalata IPA supports a high diversity of terrestrial bird species reflecting the variety of vegetation types present. Birds of eucalypt woodlands are particularly well represented. The area supports significant populations of Major Mitchell's Cockatoo, Naretha Bluebonnet, Rufous Treecreeper, Shy Heathwren, Chestnut Quail-thrush, Restless Flycatcher and possibly the Square-tailed Kite.

The Yalata avifauna includes only three (possibly four) introduced species – House Sparrow (*Passer domesticus), Common Starling (*Sturnus vulgaris) and Rock Dove (*Columba livia). In addition there have been recent reports of Common Blackbirds (*Turdus merula) within the Yalata township that require confirmation.

Twenty-four bird species (25% of the total of 97 observed at sites) were recorded from at least 35% of the 42 sites sampled in the IPA. The most commonly recorded species (i.e. from most sites) was the Singing Honeyeater (*Lichenostomus virescens*), which was found at 30 sites (71%).

Those species that were observed at at least half of all sites were:-

Singing Honeyeater (*Lichenostomus virescens*) 30 sites (71%)

Grey Butcherbird (*Cracticus torquatus*) 27 sites (64%) Yellow-throated Miner (*Manorina flavigula*) 26 sites (62%)

Grey Shrike-thrush (*Colluricincla harmonica*) 25 sites (60%)

Spiny-cheeked Honeyeater (*Acanthagenys rufogularis*) 24 sites (57%)

Australian Ringneck (*Barnardius zonarius*) 22 sites (52%)

White-browed Babbler (*Pomatostomus superciliosus*) 22 sites (52%)

Major Mitchell's Cockatoo (*Cacatua leadbeateri*) 21 sites (50%)

Mulga Parrot (Psephotus varius) 21 sites (50%)

Of the 147 bird species in the area, two are considered to be of conservation significance nationally and 22 (15%) in South Australia. Six of these are also new records for the IPA. The rated species are:-

Shy Albatross (Diomedea cauta) (Aus:V; SA:V) New Record

Slender-billed Thornbill (western ssp) (*Acanthiza iredalei iredalei*) (Aus:V; SA:R)

Osprey (Pandion haliaetus) (SA: E)

Square-tailed Kite (*Lophoictinia isura*) (SA:E) **New Record**

White-bellied Sea-Eagle (*Haliaeetus leucogaster*) (SA: E)

Australian Bustard (*Ardeotis australis*) (SA:V) Banded Stilt (*Cladorhynchus leucocephalus*) (SA: V) Hooded Plover (*Thinornis rubricollis*) (SA:V) **New Record**

Southern Giant-Petrel (Macronectes giganteus) (SA: V)

Eastern Reef Egret (*Egretta sacra*) (SA: R) Gilbert's Whistler (*Pachycephala inornata*) (SA:R) Grey-tailed Tattler (*Heteroscelus brevipes*) (SA: R)

Major Mitchell's Cockatoo (*Cacatua leadbeateri*) (SA:R)

Naretha Bluebonnet (*Northiella haematogaster narethae*) (SA:R)

Pied Oystercatcher (*Haematopus longirostris*) (SA:R) Purple-gaped Honeyeater (*Lichenostomus cratitius*) (SA: R)

Restless Flycatcher (Myiagra inquieta) (SA:R) Ruddy Turnstone (Arenaria interpres) (SA:R) New Record

Scarlet-chested Parrot (Neophema splendida) (SA:R) **New Record**

Shy Heathwren (*Calamanthus cautus*) (SA:R) Sooty Oystercatcher (*Haematopus fuliginosus*) (SA:R)

White-winged Chough (*Corcorax melanorhamphos*) (SA:R) **New Record**

Prior to this survey the South Australian Museum had only 12 specimens (from seven species) from the Yalata IPA in their collection. A further 62 specimens were collected during this survey (25 from the Head of the Bight in October 2007 and 37 from the Coombra Track and Colona in April 2008) representing 35 individual species. This constitutes a major increase to the Museum's collections from the region, in terms of both numbers of birds and species.

Reptiles

During the Yalata IPA Survey 619 individual reptile observations and captures were made at the 32 sites sampled. A further 72 records came from opportunistic sightings (including some captures), including two extra species not recorded at sites - Acanthopsis antarcticus (Common Death Adder) and Varanus gouldii (Sand Goanna). Four more species known from earlier records but not recorded on this survey are Cryptoblepharus australis (Desert Wall Skink), Pseudonaja nuchalis (Western Brown Snake), Morelia spilota (Carpet Python) and Varanus rosenbergi (Heath Goanna).

The 50 reptile species recorded within the IPA include representatives of all four Australian lizard families and three snake families (Boidae, Elapidae and Typhlopidae). Three species of conservation significance are known to occur in the IPA - *Morelia spilota* (Carpet Python) and *Ctenophorus mckenziei* (McKenzie's Dragon) are rated Rare and *Varanus rosenbergi* (Heath Goanna) Vulnerable in South Australia.

A total of 241 reptile specimens were collected for this survey and deposited with the South Australian Museum, representing 46 confirmed species. As with mammals and birds the specimens collected on this survey constitute a major addition to the 165 previously held by the Museum for the Yalata IPA.

The 1984 Biological Survey of the Nullarbor Region sampled reptiles at 11 sites within the Yalata IPA. The most commonly recorded species from these sites and the current survey combined (a total of 43 sites) were *Ctenophorus pictus* (Painted Dragon) at 29 sites

(67%), Tiliqua rugosa (Sleepy Lizard) at 26 (60%), Morethia adelaidensis (Adelaide Snake-eye) at 19 (44%), Diplodactylus vittatus complex (Stone Gecko) at 19 (44%), Lerista edwardsae (Myall Slider) at 17 (40%) and Morethia obscura (Mallee Snake-eye) at 15 (35%). Nephrurus milii (Barking Gecko) and Ctenotus schomburgkii (Sandplain Ctenotus) were both also commonly encountered, with 52 and 51 total records respectively.

Fifteen of the species recorded on this survey had not previously been recorded in the Yalata IPA. As all of these are known from the general area their absence from the known reptile fauna highlights the previous lack of systematic survey within the IPA.

The additional species are:-

Acanthophis antarcticus (Common Death Adder)
Aprasia inaurita (Red-tailed Worm-lizard)
Cryptoblepharus pulcher clarus (Striped Wall Skink)
Ctenotus regius (Eastern Desert Ctenotus)
Cyclodomorphus melanops (Spinifex Slender
Bluetongue)

Egernia multiscutata Bull Skink)
Egernia richardi (Western Tree Skink)
Lerista terdigitata (Southern Three-toed Slider)
Lucasium damaeum (Beaded Gecko)
Pseudechis australis (Mulga Snake)
Ramphotyphlops bicolor (Southern Blind Snake)
Ramphotyphlops bituberculatus (Rough-nosed Blind Snake)

Strophurus intermedius (Southern Spiny-tailed Gecko) Tiliqua occipitalis (Western Bluetongue) Varanus gouldii (Sand Goanna)

Biogeographic Significance

The Yalata IPA is of biogeographic significance because it incorporates the eastern extremity of the Nullarbor Plain, extensive *Acacia papyrocarpa* (Western Myall) Low Woodlands and the western limit of the South Australian coastal mallee. This mallee woodland is recognised as one of largest areas of relatively undisturbed semi-arid woodland remaining in South Australia. The Nullarbor Plain forms a major interruption in the mallee communities of southern Australia, and as such the IPA represents the approximate western limit for a number of species, or at least their western limit in South Australia before reappearing in south west Western Australia.

Morphological differences in mallee birds on either side of the Nullarbor have been demonstrated for only a few species suggesting that most are still, or have until very recently been, in contact. Most mallee woodland birds have proved to be linked to the north via the Great Victoria Desert or, for those that inhabit mallee-heaths, via the thin strip of mallee shrubland that extends along the coast at the southern margin of the Nullarbor.

The reptile fauna of the Yalata IPA can be divided into four biogeographic groups:-

- (1) The Nullarbor endemics *Tympanocryptis houstoni* (Nullarbor Earless Dragon) and *Pogona nullarbor* (Nullarbor Bearded Dragon).
- (2) Southern coastal species that have a close affinity with southern Australian coastal and adjacent mallee areas with calcareous soil types, including *Lerista dorsalis* (Southern Four-toed Slider), *Rankinia chapmani* (Prickly Dragon) and *Morethia obscura* (Mallee Snake-eye).
- (3) Eyrean species that are largely inhabitants of the southern half of the arid region, such as *Ctenophorus pictus* (Painted Dragon), *Ctenotus orientalis* (Eastern Spotted Ctenotus) and *Nephrurus milii* (Barking Gecko).
- (4) Widespread generalist species that may be found in arid, semi-arid and, in some cases, tropical areas, such as *Heteronotia binoei* (Bynoe's Gecko), *Menetia greyi* (Dwarf Skink) and *Lialis burtonis* (Burton's Legless Lizard).

Species and Communities Requiring Further Investigation

The Yalata IPA Survey has provided an inventory of the vascular plants and vertebrate fauna currently extant in the area. As it was limited to 32 sites for fauna and 55 for flora across the entire 456,300 hectares of the IPA the survey could only adequately sample the major habitats. Hence rare species and vegetation communities of limited extent could not be specifically targeted.

Plant Communities

Further investigation is required to map the extent and assess the condition of the *Lomandra effusa* (Scented Mat-rush) Open Tussock Grassland, a component of the 'Iron-grass Natural Temperate Grassland of South Australia' rated as Critically Endangered under the *EPBC Act 1999*, within the IPA. Its occurrence here has only recently been recognised and represents a significant addition to its main distribution between Peterborough and Tailem Bend.

Areas Requiring Further Survey

In addition, there are two main areas of the IPA that require more vegetation sampling – (1) the sand plain defined by the Yalata Environmental Association (i.e. north of the Eyre Highway between the Nullarbor Plain and Nanwoora Well) and (2) the extensive area of mallee south of the Yalata Roadhouse. The latter would be particularly useful as an aid to delineating mallee communities for vegetation mapping. The limited existing site data in this area makes it difficult to distinguish between Eucalyptus gracilis, E. oleosa, E. calcareana Open Mallee/Low Woodland and Eucalyptus gracilis, E. oleosa +/- E. calcareana Open Mallee over Melaleuca pauperiflora ssp. mutica, as well as identifying the extent of Eucalyptus gracilis, E. yalatensis Open Mallee.

There is also one minor landform/habitat that was not investigated at all during this survey that may contain interesting and possibly as yet undetected species for the IPA. This is sinkholes. Although more extensive

further west and north on the Nullarbor Plain there are still some examples at the western end of the IPA. Depending on size these may provide roosting sites for bats or owls and act as natural "pitfall" traps for small terrestrial fauna.

Unconfirmed Plant Records

The discussion of plants of conservation significance (Vegetation chapter) listed eight species whose presence within the IPA could not be confirmed. These are:-

Brachyscome tatei (Nullarbor Daisy)
Microlepidium alatum
Microlepidium pilosulum (Hairy Shepherd's-purse)
Phlegmatospermum richardsii (Nullarbor Cress)
Santalum spicatum (Sandalwood)
Darwinia salina (Salt Darwinia)
Daviesia benthamii ssp. humilis (Mallee Bitter-pea)
Wahlenbergia luteola (Yellow-wash Bluebell)

Examination of these records may require redetermination of original specimens, checking location details on specimens, and searching at original collection locations and elsewhere in potential habitats within the IPA.

Rare Plants

Seven plant species rated Rare in South Australia are known to occur in the IPA. Work is required to determine their extent of occurrence and what, if any, are their main threats. This could be the basis for ongoing monitoring of populations, particularly to determine if regular recruitment and survival of seedlings is occurring.

The species rated Rare at state level are:Acacia cyclops (Western Coastal Wattle)
Atriplex pumilio (Mat Saltbush)
Bothriochloa macra (Red-leg Grass)
Eremophila parvifolia (Small-leaf Emubush)
Eremophila sp. Praecox (R.H.Ashby 131)
Maireana appressa (Pale-fruit Bluebush)
Maireana rohrlachii (Rohrlach's Bluebush)
Poa drummondiana (Knotted Poa)
Pomaderris forrestiana
Scaevola bursariifolia (Bursaria Fanflower)
Templetonia battii (Spiny Templetonia)

Mammal Species Requiring Targeted Surveys

The capture rate of small native mammals on this survey was very poor – only four each of Fat-tailed Dunnart (*Sminthopsis crassicaudata*), Little Longtailed Dunnart (*S. dolichura*), Western Pygmy-possum (*Cercartetus concinnus*) and Mitchells' Hoppingmouse (*Notomys mitchellii*). These animals were collected at scattered locations in the Nanwoora Well, Coombra Track and Colona clusters of sites. None were trapped at the Head of the Bight sites.

The two dunnart species are known to occur in a variety of habitats, while the Western Pygmy-possum is most likely to be found in mallee and Western Myall communities and Mitchell's Hopping-mouse in mallee on sand. Therefore, more targeted trapping is required

in these habitats in good seasons to determine the distribution of occurrence of these species in the IPA.

The one capture of a Mitchell's Hopping-mouse on this survey is the only recent record of a native rodent within the Yalata IPA. However, the Sandy Inland Mouse (*Pseudomys hermannsburgensis*) has recently been captured in Wahgunyah Conservation Park (adjacent to the southern boundary of the IPA on the coast). As similar mallee on sand communities occur within the IPA trapping in these areas is strongly recommended to determine this animal's presence.

It is also possible that Bolam's Mouse (*Pseudomys bolami*) occurs within the IPA as there are extensive areas of suitable habitat in the area – chenopod shrubland plains and low Acacia and Eucalyptus woodlands with loamy, clay or calcareous soils (Moseby and Read 2008). Further trapping in these areas is required to determine whether this species is present in the IPA.

Bird Species Requiring Targeted Surveys

The presence of two bird species, Common Blackbirds (*Turdus merula) and Malleefowl (Leipoa ocellata), in the Yalata IPA require confirmation. While there have been recent reports of Common Blackbirds in the Yalata township the presence of Malleefowl in the area is much more tenuous.

Several species that have been recorded close to, but not in, the IPA that require investigation include Australian Pratincole (*Stiltia isabella*), Blue-breasted Fairy-wren (*Malurus pulcherrimus*), Cattle Egret (*Ardea ibis*), Tawny-crowned Honeyeater (*Phylidonyris melanops*) and Royal Spoonbill (*Platalea regia*).

Several species that have been recorded infrequently in the area but which might be expected to be more widespread are the Slender-billed Thornbill (*Acanthiza iredalei iredalei*) (widely distributed in Pearl Bluebush on the Nullarbor), White-winged Chough (*Corcorax melanorhamphos*) (in eucalypt woodland) and Purplegaped Honeyeater (*Lichenostomus cratitius*) (in mallee-heathlands).

Records of coastal waterbirds and seabirds are underrepresented in the area, no doubt due to access and the absence of targeted surveys. Ocean beaches along the Nullarbor are thought to be important staging areas for northern hemisphere waders that migrate across central Australia in spring, so specific surveys at this time of year are required.

Further work is also required to determine the distribution of the Blue-breasted Fairy-wren (*Malurus pulcherrimus*) and the Variegated Fairy-wren (*M. lamberti*) on western Eyre Peninsula. As the two are difficult to separate in the field the collection of specimens is recommended.

It is likely the western form of Galah (*Cacatua roseicapilla assimilis*) is spreading east along the coast

into South Australia. Its interaction and breeding with the eastern form requires study.

There have been reports of Major Mitchell's Cockatoos (*Cacatua leadbeateri*) breeding in hollows on coastal cliff faces west of Fowler's Bay that require confirmation.

Reptile Species Requiring Targeted Surveys

A number of reptile species require more detailed searching to determine their distribution within the IPA and for some if present at all. This is particularly relevant for the species of conservation significance – *Morelia spilota* (Carpet Python), *Varanus rosenbergi* (Heath Goanna) and *Ctenophorus mckenziei* (McKenzie's Dragon). There is only a single specimen of Carpet Python (collected subsequent to this survey) and none of the Heath Goanna in the SA Museum from this area.

Both these species can be very difficult to detect and therefore require targeted searching (and collection of specimens if possible) assisted by local Yalata Community members being encouraged to report sightings and trained in the collection of the necessary supporting information.

The McKenzie's Dragon requires targeted searching in suitable habitat in areas adjacent to its known location on the former Colona station (including outside the IPA) to determine its full distribution on the eastern side of the Nullarbor. At present all known locations here are within an area of approximately 10 x 10km.

The distribution of the larger elapid snakes (except *Pseudonaja affinis* - Dugite) in the Yalata IPA also requires further study. At present there are few records of *Acanthophis antarcticus* (Common Death Adder), *Pseudochis australis* (Mulga Snake) or *Pseudonaja nuchalis* (Western Brown Snake), particularly the latter which has not been recorded since 1981.

In addition it is uncertain whether *Pseudonaja* inframacula (Peninsula Brown Snake) occurs in the IPA. A recent revision of this genus (Skinner in press) has determined that all previous specimens from the IPA that had been determined as this species are in fact *P. affinis*. However, the review indicated that there is an isolated population of *P. inframacula* in a small area to the west of the Head of the Bight which is located close to the western boundary of the IPA. Hence targeted searching and the collection of specimens in this area are required to determine this species' presence in the IPA.

Three *Varanus gouldii* (Sand Goanna) were observed opportunistically during this survey but no specimens collected. This species also requires further investigation to determine its extent of occurrence in the area.

Finally, there are several reptile species that may possibly occur within the IPA but have yet to be

recorded. These include two coastal habitat specialists *Lerista arenicola* (Beach Slider) and *Pseudemoia baudini* (Bight Coast Skink), both of which are Rare in South Australia. It is also possible that *Hemiergis peronii* (Four-toed Earless Skink) may occur along the Yalata coast as it has been recorded on both sides of the Nullarbor and not far from the eastern boundary of the IPA. More concentrated effort searching appropriate habitat along the narrow coastal corridor may locate these within the IPA.

No frogs have been recorded within the IPA and it may be that the calcareous soils are unsuitable for arid adapted burrowing species. *Neobatrachus centralis* (Trilling Frog) is the only species with a geographic distribution likely to extend into the area. Discussion with Yalata residents and searching during or after heavy summer rain would help to clarify this.

Conservation Management Issues

The mallee and myall woodlands in the south east of the Nullarbor IBRA Bioregion comprise the largest area of relatively undisturbed semi-arid woodland remaining in South Australia. As most of this lies within the Yalata IPA the conservation significance of this land cannot be over-emphasised (McKenzie *et al.* 1987). There are, however, still some significant conservation issues to address in the IPA.

Weeds

Much of the vegetation of the Yalata IPA is relatively weed free, as evidenced by 80% of the 55 sites sampled for this survey having three or fewer introduced species. However, there are several species of existing or potential concern. These are:-

- Lycium ferocissimum (African Boxthorn). Although only recorded at two sites this species is known to be more widespread, particularly around Pintumba. The current control program conducted by the Yalata Land Management Team needs to continue as this is a species that can spread widely through birds eating the succulent berries and depositing the seeds elsewhere in dung.
- Carrichtera annua (Ward's Weed) is one of the most widespread and abundant weed species present in the IPA. It is recognised as a common weed of degraded pastures in semi-arid areas. Not surprisingly then, several of the sites where it was recorded as an understorey dominant are on the former Colona station.
- Euphorbia paralias (Sea Spurge) is common and, at times abundant, along the Yalata coast. With Spinifex hirsutus (Rolling Spinifex) it forms a distinct vegetation community on coastal foredunes.
- Acacia saligna (Golden Wreath Wattle) is known from a single roadside location near the Nullarbor Roadhouse. While it is unlikely to become a major problem its spread via suckering needs to be monitored.

Another of the main vectors for the spread of weeds is vehicles. As such it is recommended that vehicular

traffic in the IPA be contained as much as possible to existing tracks and restricted on coastal dunes and beaches. The current uncontrolled access not only enhances the opportunity for wide dispersal of weeds but is also generally destructive to native vegetation and beach nesting sites (see below).

It may also be necessary to establish a formal monitoring program to track the success and spread of some weed species, and the efficacy of control measures, in areas where they are prevalent.

Feral Animals

Rabbits (Oryctolagus cuniculus) were recorded at all sites on this survey and are therefore likely to occur across the entire IPA. While it is not feasible to control them at such a large scale the establishment of a set of rabbit-proof exclosures, in conjunction with an appropriate monitoring program, would enable their grazing impacts to be assessed.

<u>Camels</u> (Camelus dromedarius) were reported widely across the IPA during this survey, though the dog fence does prevent their access to the eastern end. They are well adapted to arid areas and can travel long distances in a relatively short time. The absence of surface water in the area means they are less likely to congregate at one point. Hence the impact of their grazing/browsing on native vegetation is more dispersed and less noticeable than for other introduced herbivores. However, Camels do appear to target some plant species, such as Quandong (Santalum acuminatum) and Plumbush (S. lanceolatum), and may seriously damage individual plants while browsing.

<u>Foxes</u> (*Vulpes vulpes*) were only recorded at two sites on this survey. It is therefore difficult to speculate on their abundance in the IPA, though they tend to be much less common where Dingoes occur (Ehmann 2005). However, they are known to regularly scavenge road-killed wildlife and it is likely that the Eyre Highway would provide a steady, though relatively small, supply of this.

Predation by Foxes is listed as key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* and a threat abatement plan has been produced (Biodiversity Group Environment Australia 1999a). They constitute a major threat to many species of native fauna, particularly the critical weight range mammal species (those that weigh between 35 and 5500 grams) (Calaby 1969).

Control of Foxes is therefore an important component of protecting native mammal populations. However, control programs should only be undertaken in conjunction with predator monitoring, as Feral Cat numbers may increase as a response to Fox control.

<u>Feral Cat</u> (*Felis catus*) distribution is unknown in the Yalata IPA as none were observed during this survey. This is not to say they are not present, merely that they were not detected at the time of survey.

Cats are extremely predatory animals with body form, musculature and senses highly specialised for stalking and capturing prey (Biodiversity Group Environment Australia 1999b). Their nutrition and metabolism are such that they require large amounts of fresh animal protein (Biodiversity Group Environment Australia 1999b), yet do not appear to need fresh water (Newsome 1991).

Predation by Feral Cats is also listed as a key threatening process under the *Environment Protection* and *Biodiversity Conservation Act 1999* and a threat abatement plan has been produced (Biodiversity Group Environment Australia 1999b).

Common Starlings (Sturnus vulgaris) were observed on Colona and at several points along the coast during the survey. They compete aggressively with native birds for nesting hollows as well as being a pest of many agriculture crops. The Western Australian government has attempted to prevent their spread into that State by trapping and destroying birds across the southern Nullarbor in both States.

Sustainable Management of Traditional Food Sources

The hunting of native animal species by Yalata residents may be having a deleterious impact on some species, particularly Red Kangaroo (*Macropus rufus*), Australian Bustard (*Ardeotis australis*) and Sand Goanna (*Varanus gouldii*). The Australian Bustard (rated Rare in South Australia) in particular may be most at risk in the IPA and, as it is possible this

species breeds in the area, adult birds and eggs require protection.

Uncontrolled Vehicle Activity

Uncontrolled access of vehicles is a significant management issue in the Yalata IPA. Vehicle tracks can be seen throughout much of the more open country north of the Eyre Highway, particularly in the vicinity of Southern Hairy-nosed Wombat warrens. This is presumably associated with hunting of these animals by Yalata residents. These tracks are widespread and can be evident for many years. Those that are more evident can encourage others to follow, thereby adding to their impact. As well as the tracks being unsightly, uncontrolled vehicle activity can aid in the spread of weeds.

Vehicle activity in coastal areas can also be a problem. The Yalata beaches are a popular fishing location and attract many visitors throughout the year. The use of 4WD vehicles in the coastal dunes can lead to dune 'blowouts' and substantial erosion. More significant is the use of vehicles, generally quad bikes, on the beaches. This can threaten beach-nesting birds, in particular the Hooded Plover (*Thinornis rubricollis*), a species rated Vulnerable in South Australia, via interference with breeding behaviour and the crushing of nests (Buick and Paton 1989, Weston 2003).

It is recommended that the use of vehicles be restricted on beaches to prevent destruction and disturbance of nesting sites.

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APPENDIX 1. LIST OF BIOLOGICAL SURVEY SITES WITHIN THE YALATA IPA.

SU Survey Number (14 = Nullarbor; 46 = Temperate Grasslands; 82 = Coastal Dune and Clifftop; 100 = Yalata land Use; 428 = Yellabinna RR (Iluka Resources); 430 = Gawler

Craton; 575 = Yalata IPA).

SiteID Site identification code.

Veg Grp Floristic Group Number (refer Vegetation Chapter).

Vegetation

Overstorey Dominant vegetation species in the overstorey layer (numbers and letters in brackets following each species relate to the cover/abundance estimates – N = not many, 1-10

plants, cover <5%; T = sparsely present, cover small, <5%; 1 = plentiful, but of small cover, <5%; 2 = cover 5-25%; 3 = cover 25-50%; 4 = cover 50-75%).

N.B. A blank for any of the physical parameters indicates it was not recorded at the time of the survey.

SU	SiteID	Visit Date	Zone	Easting	Northing	Location	Landform Pattern	Landform Element	Soil	Veg Grp	Vegetation Overstorey	Structural Formation
14	CA00601	11/11/2001	52	681280	6505207	13.8 km SSE of Nullarbor Motel	Plain	limestone plain	sandy clay loam	10	Atriplex vesicaria ssp. (2), Sclerostegia disarticulata (2), Maireana erioclada (2)	Low Shrubland
14	CA00801	11/11/2001	52	681306	6505729	13.3 km SSE of Nullarbor Motel	Plain	limestone plain	sandy clay loam	13	Lawrencia squamata (2), Atriplex vesicaria ssp. (2), Maireana erioclada (2)	Low Open Shrubland
14	CA00901	11/11/2001	52	681410	6511455	7.6 km SSE of Nullarbor Motel	Plain	limestone plain	sandy clay loam	24	Austrostipa puberula (3)	(Tussock) Grassland
14	KO00101	26/09/1984	53	228374	6508104	7.2 km ENE of Black Hill		plain (incl undulating plain)	loam	1	Acacia papyrocarpa (2)	Very Low Woodland
14	KO00102	26/09/1984	53	228374	6508104	7.2 km ENE of Black Hill		plain (incl undulating plain)	loam	10	Atriplex vesicaria ssp. (3), Sclerostegia disarticulata (2)	Low Shrubland
14	KO00103	13/04/1984	53	228374	6508104	7.2 km ENE of Black Hill		hill slope	loam	1	Acacia papyrocarpa (N)	Very Low Open Woodland
14	KO00201	13/04/1984	53	229648	6508143	8.2 km ENE of Black Hill		plain (incl undulating plain)	loam	10	Sclerostegia disarticulata (3), Atriplex vesicaria ssp. (2)	Low Shrubland
14	KO00202	13/04/1984	53	230048	6508143	8.5 km ENE of Black Hill		plain (incl undulating plain)	loam	1	Acacia papyrocarpa (3), Myoporum platycarpum ssp. (2), Pittosporum angustifolium (N)	Very Low Open Forest
14	KO00301	13/04/1984	53	231331	6508118	9.6 km ENE of Black Hill		hill/mountain	loam	1	Acacia papyrocarpa (2)	Very Low Woodland
14	KO00302	27/09/1984	53	231331	6508118	9.6 km ENE of Black Hill		ridge	loam	4	Eucalyptus oleosa ssp. (3), Acacia papyrocarpa (2)	Mallee
14	KO00401	14/04/1984	53	233165	6508202	16.0 km ENE of Colona		plain (incl undulating plain)	loam	1	Acacia papyrocarpa (2)	Very Low Woodland
14	KO00501	14/04/1984	53	240245	6508328	21.8 km ENE of Colona		ridge	loam	4	Eucalyptus oleosa ssp. (3), Acacia papyrocarpa (2)	Mallee
14	YA00101	18/04/1984	52	747035	6521843	22.6 km WNW of Yalata Roadhouse		ridge	sand	2	Eucalyptus socialis ssp. (3), Eucalyptus oleosa ssp. (2), Eucalyptus calcareana (2)	Open Mallee
14	YA00201	18/04/1984	52	745498	6517097	22.5 km WNW of Yalata Roadhouse		ridge	sand	2	Eucalyptus gracilis (2), Eucalyptus calcareana (2)	Mallee
14	YA00202	18/04/1984	52	745498	6514097	22.0 km WNW of Yalata Roadhouse		hill footslope	sand	2	Eucalyptus gracilis (2), Eucalyptus yalatensis (2), Eucalyptus calcareana (N)	Open Low Mallee
14	YA00203	18/04/1984	52	745498	6514097	22.0 km WNW of Yalata Roadhouse		hill/mountain	sand	2	Eucalyptus gracilis (2), Eucalyptus oleosa ssp. (2), Eucalyptus calcareana (2)	Mallee
14	YA00204	18/04/1984	52	745498	6514097	22.0 km WNW of Yalata Roadhouse		open depression	sand	11	Atriplex vesicaria ssp. (3), Maireana erioclada (2)	Low Shrubland
14	YA00301	26/09/1984	52	716645	6524656	37.0 km ENE of Nullarbor Motel		open depression	sand	11	Myoporum platycarpum ssp. (N)	Very Low Open Woodland
14	YA00302	19/04/1984	52	716645	6524616	37.0 km ENE of Nullarbor Motel		ridge	sand	1	Acacia papyrocarpa (2), Eucalyptus gracilis (2), Myoporum platycarpum ssp. (2)	Very Low Woodland
14	YA00303	19/04/1984	52	716645	6524656	37.0 km ENE of Nullarbor Motel		ridge	sand	2	Eucalyptus oleosa ssp. (2), Eucalyptus calcareana (2), Myoporum platycarpum ssp. (2)	Low Woodland
14	YA00401	19/04/1984	52	716716	6521301	36.7 km ENE of Nullarbor Motel		hill/mountain	sand	2	Eucalyptus gracilis (2), Eucalyptus oleosa ssp. (2)	Open Mallee
14	YA00402	19/04/1984	52	716716	6521301	36.7 km ENE of Nullarbor Motel		open depression	sand	11	Atriplex vesicaria ssp. (2), Cratystylis conocephala (N), Geijera linearifolia (N)	Low Shrubland
14	YA00501	20/04/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		dune/consolidated dune	skeletal	7	Melaleuca lanceolata (3), Nitraria billardierei (2), Lawrencia squamata (N)	Shrubland

								Pattern	Element		Grp		
	14	YA00502	20/04/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		dune/consolidated dune	sand	7	Melaleuca lanceolata (3), Eucalyptus socialis ssp. (N), Eucalyptus calcareana (N)	Shrubland
ė.	14	YA00503	20/04/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		playa/pan	sandy clay loam	21	Halosarcia pterygosperma ssp. pterygosperma (4), Maireana oppositifolia (2)	Low Shrubland
ľ	14	YA00504	26/09/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		interdune low	sand	22	Frankenia foliosa (4), Lawrencia squamata (T)	Low Shrubland
a.	14	YA00505	20/04/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		dune/consolidated dune	sand	16	Nitraria billardierei (2), Myoporum insulare (1)	Low Closed Shrubland
	14	YA00506	20/04/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		dune/consolidated dune	sand	16	Myoporum insulare (T), Nitraria billardierei (T)	Open Shrubland
	14	YA00507	20/04/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		dune/consolidated dune	sand	19	Leucophyta brownii (3), Maireana oppositifolia (3), Atriplex cinerea (2)	Low Shrubland
*	14	YA00508	20/04/1984	52	715331	6514711	35.5 km ESE of Nullarbor Motel		hill/mountain	sand	2	Eucalyptus calcareana (2), Casuarina pauper (N)	Very Low Open Woodland
y.	46	TG025	11/10/1991	53	238928	6477172	11.3 km NNW of Coorabie		plain (incl undulating plain)	sandy clay loam	24	Austrostipa nitida (2), Austrostipa eremophila (1)	Open (Tussock) Grassland
	82	COY00101	2/05/1996	52	715851	6512396	36.4 km ESE of Nullarbor Motel	Dunefield	dune slope	sand	19	Leucophyta brownii (3)	Low Shrubland
*	82	COY00102	2/05/1996	52	715754	6512625	36.2 km ESE of Nullarbor Motel	Consolidated dunefield	dune slope	sand	11	Atriplex vesicaria ssp. (2)	Low Shrubland
y.	82	COY00103	2/05/1996	52	716142	6512861	36.6 km ESE of Nullarbor Motel	Consolidated dunefield	dune slope	sand	17	Nitraria billardierei (2)	Low Open Shrubland
	82	ILL00101	3/05/1996	52	701678	6516481	21.8 km ESE of Nullarbor Motel	Escarpment	dune/consolidated dune	sand	16	Myoporum insulare (2), Nitraria billardierei (2)	Open Shrubland
ĺ	82	ILL00102	3/05/1996	52	701084	6515945	21.3 km ESE of Nullarbor Motel	Escarpment	dune slope	sand	21	Halosarcia pterygosperma ssp. pterygosperma (2)	Low Shrubland
ĺ	82	ILL00103	3/05/1996	52	702517	6516964	22.6 km ESE of Nullarbor Motel	Dunefield	dune slope	sand	17	Nitraria billardierei (3), Rhagodia crassifolia (3)	Low Closed Shrubland
•	82	ILL00303	3/05/1996	52	707149	6518787	27.1 km ENE of Nullarbor Motel	Consolidated dunefield	dune footslope	sand	16	Myoporum insulare (3), Acacia anceps (3)	Tall Closed Shrubland
<u>.</u>	82	NUL03	25/01/1995	52	744134	6501746	25.3 km WSW of Yalata Roadhouse	Dunefield	dune slope	sand	6	Eucalyptus calcareana (3), Melaleuca lanceolata (2)	Mallee
5	82	NUL06	25/01/1995	52	723489	6509231	43.9 km WSW of Yalata Roadhouse	Dunefield	dune crest	sand	17	Templetonia retusa (2), Nitraria billardierei (2)	Low Open Shrubland
ĺ	82	NUL07	25/01/1995	52	722681	6509049	43.7 km ESE of Nullarbor Motel	Dunefield	dune slope	sand	16	Myoporum insulare (T)	Very Open Shrubland
	82	PIL00101	2/05/1996	52	751322	6493872	24.0 km SSW of Yalata Roadhouse	Consolidated dunefield	interdune corridor	sand	21	Maireana oppositifolia (4)	Low Shrubland
	82	PIL00102	2/05/1996	52	751283	6493763	24.1 km SSW of Yalata Roadhouse	Dunefield	dune crest	sand	18	Atriplex cinerea (2)	Open Shrubland
	82	PIL00103	2/05/1996	52	751556	6494471	23.4 km SSW of Yalata Roadhouse	Consolidated dunefield	interdune low	sand	7	Beyeria lechenaultii (3), Melaleuca lanceolata (T)	Low Shrubland
	100	COY00101	24/11/1999	52	722918	6510070	43.7 km ESE of Nullarbor Motel	Consolidated dunefield	rock outcrop - on hill	loamy sand	7	Melaleuca lanceolata (2)	Open Shrubland
	100	COY00102	30/11/1999	52	722799	6509848	43.7 km ESE of Nullarbor Motel	Beach ridge plain	playa/pan	clayey sand	21	Halosarcia sp. (3), Maireana oppositifolia (2)	Low Shrubland
	100	COY00103	23/12/1999	52	721956	6510365	42.7 km ESE of Nullarbor Motel	Beach ridge plain	playa/pan	clayey sand	21	Halosarcia sp. (2), Maireana oppositifolia (2)	Low Shrubland
*	100	COY00104	23/12/1999	52	721957	6510670	42.7 km ESE of Nullarbor Motel	Beach ridge plain	rock outcrop - on hill	loamy sand	7	Melaleuca lanceolata (3)	Low Shrubland
	100	COY00105	23/12/1999	52	721933	6510123	42.8 km ESE of Nullarbor Motel	Beach ridge plain	swale	sand	22	Frankenia pauciflora var. fruticulosa (2), Maireana oppositifolia (2)	Low Shrubland
	100	COY00201	30/11/1999	52	728181	6508816	39.2 km WSW of Yalata Roadhouse	Consolidated dunefield	closed depression	loamy sand	11	Atriplex vesicaria ssp. (4)	Low Shrubland
	100	COY00202	1/12/1999	52	728241	6508624	39.2 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	loamy sand	7	Melaleuca lanceolata (3)	Shrubland
	100	COY00203	17/12/1999	52	727622	6507403	39.9 km WSW of Yalata Roadhouse	Dunefield	dune footslope	sand	17	Nitraria billardierei (2)	Tall Open Shrubland
T I			E	:	:		:	C1: 1-4- 1	4	:	:		:

Consolidated

dunefield

Dunefield

dune/consolidated

dune footslope

dune

loamy sand

sand

20

Landform

Pattern

Landform

Element

Soil

Vegetation Overstorey

Eucalyptus calcareana (2), Eucalyptus gracilis (2)

*Euphorbia paralias (2), Spinifex hirsutus (2)

Grp

Structural Formation

Open Low Mallee

(Tussock) Grassland

100

COY00204

COY00205

22/12/1999

22/12/1999

728186

727053

52

52

6508011

6507474

39.3 km WSW of Yalata Roadhouse

40.5 km WSW of Yalata Roadhouse

SU

SiteID

Visit Date

Zone

Easting

Northing

Location

SU	SiteID	Visit Date	Zone	Easting	Northing	Location	Landform Pattern	Landform Element	Soil	Veg Grp	Vegetation Overstorey	Structural Formation
100	COY00301	9/12/1999	52	730646	6507847	36.9 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	loamy sand	7	Pittosporum angustifolium (2), Geijera linearifolia (2), Melaleuca lanceolata (2)	Shrubland
100	COY00302	9/12/1999	52	730685	6508373	36.8 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	loamy sand	6	Eucalyptus oleosa ssp. (2), Eucalyptus gracilis (2)	Very Open Mallee
100	COY00303	17/12/1999	52	729769	6507558	37.8 km WSW of Yalata Roadhouse	Consolidated dunefield	swale	loamy sand	22	Frankenia sessilis (3), Sclerolaena brevifolia (1)	Low Shrubland
100	COY00304	17/12/1999	52	729488	6507396	38.1 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	loamy sand	6	Eucalyptus oleosa ssp. (2), Melaleuca lanceolata (2)	Low Mallee
100	COY00402	18/12/1999	52	734745	6502957	33.7 km WSW of Yalata Roadhouse	Dunefield	dune slope	sand	16	Myoporum insulare (2), Nitraria billardierei (1)	Shrubland
100	COY00403	28/12/1999	52	735278	6503753	33.0 km WSW of Yalata Roadhouse	Consolidated dunefield	dune slope	sand	7	Melaleuca lanceolata (2), Pittosporum angustifolium (1)	Shrubland
100	COY00601	30/12/1999	52	715857	6512379	36.4 km ESE of Nullarbor Motel	Dunefield	dune slope	sand	19	Leucophyta brownii (2), Maireana oppositifolia (2), Hemichroa diandra (2)	Low Shrubland
100	COY00602	30/12/1999	52	715978	6512579	36.5 km ESE of Nullarbor Motel	Dunefield	dune slope	sand	22	Frankenia pauciflora var. fruticulosa (2), Atriplex vesicaria ssp. (2), Rhagodia crassifolia (1)	Low Shrubland
100	COY00603	30/12/1999	52	716478	6512874	36.9 km ESE of Nullarbor Motel	Playa plain	rock outcrop - on plain	clayey sand	13	Lawrencia squamata (2)	Low Shrubland
100	PIL00501	29/12/1999	52	741938	6500907	27.6 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	sand	6	Eucalyptus calcareana (2)	Open Mallee
100	PIL00502	29/12/1999	52	741776	6500838	27.8 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	sand	7	Melaleuca lanceolata (2), Geijera linearifolia (2)	Shrubland
100	PIL00503	29/12/1999	52	741767	6501584	27.5 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	loamy sand	7	Melaleuca lanceolata (2), Geijera linearifolia (2), Acrotriche patula (2)	Shrubland
100	PIL00504	29/12/1999	52	740488	6501776	28.6 km WSW of Yalata Roadhouse	Consolidated dunefield	swale	loamy sand	6	Eucalyptus calcareana (2), Myoporum platycarpum ssp. platycarpum (T)	Mallee
428	OR01701	25/08/2005	53	222114	6529542	30.8 km ENE of Yalata Roadhouse	Plain	plain (incl undulating plain)	clay loam	11	Atriplex vesicaria ssp. (2), Lawrencia squamata (1)	Low Open Shrubland
428	OR01801	25/08/2005	53	222088	6529229	30.6 km ENE of Yalata Roadhouse	Plain	plain (incl undulating plain)	sandy clay	1	Acacia papyrocarpa (2)	Low Open Woodland
428	OR01901	26/08/2005	53	222007	6527986	29.8 km ENE of Yalata Roadhouse	Plain	plain (incl undulating plain)	clay loam	10	Atriplex vesicaria ssp. (2), Halosarcia halocnemoides ssp. (2)	Low Open Woodland
428	OR02001	25/08/2005	53	220895	6505700	3.4 km NNW of Black Hill	Plain	plain (incl undulating plain)	clay loam	4	Eucalyptus oleosa ssp. ampliata (2)	Open Mallee
428	OR02101	25/08/2005	53	220795	6500342	3.1 km NNW of Colona	Plain	plain (incl undulating plain)	sandy loam	2	Eucalyptus calcareana (2)	Open Mallee
428	OR02201	26/08/2005	53	221185	6498969	1.7 km NNW of Colona	Plain	plain (incl undulating plain)	clay loam	23	Lawrencia squamata (1), Austrostipa elegantissima (1), Lomandra effusa	Very Open Sedgeland
428	OR02301	27/08/2005	53	221417	6496863	0.4 km SSE of Colona	Plain	plain (incl undulating plain)	clay loam	2	Eucalyptus calcareana (2), Eucalyptus brachycalyx (1)	Open Mallee
428	OR02601	27/08/2005	53	240504	6474460	8.2 km NNW of Coorabie	Plain	plain (incl undulating plain)		7	Melaleuca lanceolata (1), Pittosporum angustifolium (1), Eucalyptus brachycalyx (1)	Very Open (Tussock) Grassland
428	OR02701	27/08/2005	53	240490	6474340	8.1 km NNW of Coorabie	Plain	plain (incl undulating plain)	sandy loam	24	Austrostipa sp. (2)	(Tussock) Grassland
428	OR03201	13/11/2005	53	225049	6508660	5.8 km NNE of Black Hill			sandy clay loam	1	Acacia papyrocarpa (2)	Low Open Woodland
430	VMSDT15001	4/04/2006	52	696039	6536700	23.8 km NNE of Nullarbor Motel	Plain	plain (incl undulating plain)		12	Maireana sedifolia (2)	Low Open Shrubland
430	VMSDT15101	4/04/2006	52	695925	6535150	22.6 km NNE of Nullarbor Motel	Plain	plain (incl undulating plain)		12	Maireana sedifolia (1)	Low Open Shrubland
430	VMSDT15201	4/04/2006	52	693244	6525455	14.7 km ENE of Nullarbor Motel	Plain	plain (incl undulating plain)		12	Maireana sedifolia (2)	Open Shrubland
430	VMSDT16801	6/04/2006	53	222149	6531369	32.0 km ENE of Yalata Roadhouse	Plain	plain (incl undulating plain)		11	Lycium australe (2)	Low Open Shrubland
430	VMSDT16901	6/04/2006	53	216898	6521749	22.2 km ENE of Yalata Roadhouse	Rises	hill slope		9	Cratystylis conocephala (1)	Low Very Open Shrubland
430	VMSDT17001	6/04/2006	52	783272	6521667	18.6 km ENE of Yalata Roadhouse	Rises	hill footslope		24	Austrostipa nitida (3)	(Tussock) Grassland

	430	VMSDT17301	6/04/2006	52	765012	6526807	15.1 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	1	Myoporum platycarpum ssp. platycarpum (1)	Very Low Open Woodland
,,,,	430	VMSDT17401	6/04/2006	52	761158	6528468	17.7 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	24	Lycium australe (1), Maireana erioclada (1)	Low Very Open Shrubland
[430	VMSDT17501	6/04/2006	52	756912	6531195	22.0 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	1	Acacia papyrocarpa (1), Myoporum platycarpum ssp. platycarpum (1)	Very Low Open Woodland
	430	VMSDT17601	6/04/2006	52	753097	6532643	25.2 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	11	Lycium australe (1), Maireana erioclada (1), Atriplex vesicaria ssp. (1)	Low Very Open Shrubland
	430	VMSDT17701	6/04/2006	52	746984	6533877	30.0 km WNW of Yalata Roadhouse	Rises	sandy plain	4	Myoporum platycarpum ssp. platycarpum (1), Eucalyptus oleosa ssp. ampliata (1)	Very Open Mallee
ļ	430	VMSDT17801	6/04/2006	52	744657	6534801	32.2 km WNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	11	Atriplex vesicaria ssp. (2)	Low Open Shrubland
ļ	430	VMSDT18501	7/04/2006	52	717619	6530160	39.2 km ENE of Nullarbor Motel	Plain	plain (incl undulating plain)	9	Cratystylis conocephala (1)	Very Open Shrubland
ļ	430	VMSDT18601	7/04/2006	52	716929	6529049	38.2 km ENE of Nullarbor Motel	Plain	plain (incl undulating plain)	21	Halosarcia sp. (1)	Low Open Shrubland
ļ	430	VMSDT18701	7/04/2006	52	722235	6526615	42.8 km ENE of Nullarbor Motel	Rises	hill slope	2	Eucalyptus gracilis (2), Eucalyptus oleosa ssp. ampliata (2), Eucalyptus calcareana (2)	Very Open Mallee
ļ	430	VMSDT19601	7/04/2006	53	220970	6499883	2.7 km NNW of Colona	Plain	plain (incl undulating plain)	23	Lomandra effusa (2)	Open Sedgeland
ļ	430	VMSDT19701	7/04/2006	53	220599	6503625	2.5 km WNW of Black Hill	Plain	plain (incl undulating plain)	25	Salsola tragus (3)	Low Shrubland
)	430	VMSDT19801	8/04/2006	53	220957	6507227	4.6 km NNW of Black Hill	Plain	plain (incl undulating plain)	11	Atriplex vesicaria ssp. (2)	Low Very Open Shrubland
	430	VMSDT19901	8/04/2006	53	251050	6508403	40.3 km NNW of Glen Boree	Plain	sandy plain	4	Eucalyptus oleosa ssp. ampliata (2)	Very Open Mallee
, [430	VMSDT20001	8/04/2006	53	255348	6504818	35.6 km NNW of Glen Boree	Plain	sandy plain	25	Zygophyllum ovatum (3)	Open Herbland
	430	VMSDT20101	8/04/2006	53	256965	6501986	32.4 km NNW of Glen Boree	Plain	plain (incl undulating plain)	1	Acacia papyrocarpa (2)	Very Low Woodland
	430	VMSDT20201	8/04/2006	53	257003	6498184	28.8 km NNW of Glen Boree	Plain	plain (incl undulating plain)	12	Maireana sedifolia (2), Halosarcia sp. (2)	Low Open Shrubland
ļ	430	VMSDT20301	8/04/2006	53	255713	6493843	25.0 km NNW of Glen Boree	Plain	plain (incl undulating plain)	1	Acacia papyrocarpa (2)	Low Woodland
ļ	430	VMSDT20401	8/04/2006	53	258244	6490852	21.4 km NNW of Glen Boree	Plain	plain (incl undulating plain)	1	Acacia papyrocarpa (2)	Low Woodland
ļ	430	VMSDT20501	8/04/2006	53	248793	6496765	29.7 km NNE of Coorabie	Plain	plain (incl undulating plain)	1	Acacia papyrocarpa (2)	Very Low Woodland
ļ	430	VMSDT20601	8/04/2006	53	241855	6494780	15.1 km NNE of Nundroo	Rises	hill slope	11	Atriplex vesicaria ssp. (2)	Low Very Open Shrubland
ļ	430	VMSDT20701	8/04/2006	53	233871	6494819	12.7 km ESE of Colona	Plain	plain (incl undulating plain)	10	Atriplex vesicaria ssp. (2)	Low Open Shrubland
ļ	430	VMSDT20801	8/04/2006	53	228319	6499713	7.3 km ENE of Colona	Plain	sandy plain	25	Salsola tragus (2)	Low Very Open Shrubland
ļ	430	VMSSK08801	6/04/2006	53	222045	6527744	29.7 km ENE of Yalata Roadhouse	Plain	plain (incl undulating plain)	10	Atriplex vesicaria ssp. (3), Halosarcia sp. (2)	Low Shrubland
	430	VMSSK08901	6/04/2006	52	784941	6521901	20.2 km ENE of Yalata Roadhouse	Plain	plain (incl undulating plain)	11	Atriplex vesicaria ssp. (3)	Low Shrubland
<u></u>	430	VMSSK09001	6/04/2006	52	780832	6520594	16.0 km ENE of Yalata Roadhouse	Plain	hill slope	9	Cratystylis conocephala (2)	Open Shrubland
[430	VMSSK09101	6/04/2006	52	774095	6515260	4.8 km ENE of Yalata	Low hills	hill footslope	2	Eucalyptus calcareana (2)	Open Low Mallee
[:		1	1	1		

Low hills

Low hills

Low hills

hill slope

hill slope

hill slope

Landform

Pattern

Plain

Dunefield

Landform

dune slope

sandy plain

Element

Veg

Grp

4

3

24

2

Eucalyptus oleosa ssp. ampliata (3)

Eucalyptus gracilis (3), Eucalyptus oleosa ssp. ampliata (2)

Austrodanthonia caespitosa (4)

Vegetation Overstorey

Eucalyptus oleosa ssp. ampliata (2)

Eucalyptus oleosa ssp. ampliata (2)

Structural Formation

Very Open Mallee

Very Open Mallee

Open Mallee

Mallee

(Tussock) Grassland

Soil

SU

430

430

SiteID

VMSDT17101

VMSDT17201

VMSSK09201

VMSSK09301

VMSSK09401

430

430

Visit Date

6/04/2006

6/04/2006

Zone

52

52

52

52

52

763687

762616

760841

6519301

6521264

6522649

8.3 km NNW of Yalata Roadhouse

10.6 km NNW of Yalata Roadhouse

12.6 km NNW of Yalata Roadhouse

6/04/2006

6/04/2006

6/04/2006

Easting

780571

767212

Northing

6520236

6520783

Location

15.6 km ENE of Yalata Roadhouse

8.9 km NNW of Yalata Roadhouse

SU	SiteID	Visit Date	Zone	Easting	Northing	Location	Landform Pattern	Landform Element	Soil	Veg Grp	Vegetation Overstorey	Structural Formation
430	VMSSK09501	6/04/2006	52	753521	6525675	19.6 km WNW of Yalata Roadhouse	Low hills	hill footslope		1	Acacia papyrocarpa (2)	Low Woodland
430	VMSSK09601	6/04/2006	52	751678	6526147	21.2 km WNW of Yalata Roadhouse	Low hills	hill footslope		2	Eucalyptus calcareana (2), Eucalyptus oleosa ssp. ampliata (2)	Low Woodland
430	VMSSK09701	6/04/2006	52	748706	6526156	23.5 km WNW of Yalata Roadhouse	Low hills	hill slope		13	Lawrencia squamata (3), Atriplex paludosa ssp. cordata (2)	Low Shrubland
430	VMSSK09801	6/04/2006	52	746108	6531063	28.6 km WNW of Yalata Roadhouse	Low hills	hill slope		1	Acacia papyrocarpa (3)	Very Low Woodland
430	VMSSK09901	7/04/2006	52	723048	6534912	45.8 km ENE of Nullarbor Motel	Consolidated dunefield	dune/consolidated dune		4	Eucalyptus oleosa ssp. ampliata (3)	Mallee
430	VMSSK10001	7/04/2006	52	721045	6533867	43.6 km ENE of Nullarbor Motel	Consolidated dunefield	dune/consolidated dune		4	Eucalyptus oleosa ssp. ampliata (3)	Mallee
430	VMSSK10101	7/04/2006	52	780284	6505108	14.5 km ESE of Yalata Roadhouse	Low hills	hill slope		11	Atriplex paludosa ssp. cordata (2) ?? Probably either Atriplex vesicaria or A. stipitata	Low Open Shrubland
430	VMSSK10201	7/04/2006	52	779860	6504434	14.4 km ESE of Yalata Roadhouse	Low hills	hill footslope		1	Acacia papyrocarpa (3)	Very Low Open Forest
430	VMSSK10301	7/04/2006	52	784092	6498996	6.7 km WNW of Colona	Low hills	hill slope		23	Lomandra effusa (2)	Open Sedgeland
430	VMSSK10401	7/04/2006	52	779418	6499137	11.3 km WNW of Colona	Low hills	hill slope		4	Westringia rigida (3)	Low Shrubland
430	VMSSK10501	7/04/2006	52	778200	6499210	16.6 km SSE of Yalata Roadhouse	Low hills	hill slope		3	Eucalyptus gracilis (3), Eucalyptus calcareana (2)	Open Forest
430	VMSSK10601	7/04/2006	52	776783	6499358	15.6 km SSE of Yalata Roadhouse	Low hills	hill slope		4	Eucalyptus oleosa ssp. ampliata (3)	Low Open Forest
430	VMSSK10701	7/04/2006	53	220430	6502420	2.8 km WSW of Black Hill	Plain	plain (incl undulating plain)		1	Acacia papyrocarpa (2)	Very Low Woodland
430	VMSSK10801	7/04/2006	53	221009	6505332	3.0 km NNW of Black Hill	Low hills	hill slope		4	Eucalyptus oleosa ssp. ampliata (2)	Open Mallee
575	COL00101	30/10/2007	53	231256	6499287	10.0 km ENE of Colona	Rises	hill slope	loamy sand	25	Trichanthodium skirrophorum (3)	Herbland
575	COL00201	30/10/2007	53	235098	6498213	13.7 km ENE of Colona	Plain	plain (incl undulating plain)	clay loam, sandy	1	Acacia papyrocarpa (2)	Very Low Open Woodland
575	COL00301	30/10/2007	53	237537	6501367	16.6 km ENE of Colona	Rises	hill slope	sandy loam	1	Acacia papyrocarpa (2)	Very Low Open Woodland
575	COL00401	30/10/2007	53	241076	6502437	20.3 km ENE of Colona	Plain	plain (incl undulating plain)	clay loam, sandy	4	Eucalyptus oleosa ssp. ampliata (2)	Open Mallee
575	COL00501	30/10/2007	53	242443	6503491	21.9 km ENE of Colona	Plain	plain (incl undulating plain)	sandy loam	4	Eucalyptus oleosa ssp. ampliata (3)	Low Woodland
575	COL00601	30/10/2007	53	242771	6501493	21.7 km NNE of Nundroo	Plain	plain (incl undulating plain)	light clay	10	Tecticornia sp. (3), Maireana oppositifolia (2), Atriplex vesicaria ssp. (2)	Low Shrubland
575	COL00701	10/04/2008	53	242580	6498380	18.7 km NNE of Nundroo	Plain	plain (incl undulating plain)	clay loam, sandy	1	Acacia papyrocarpa (3)	Very Low Woodland
575	COL00801	31/10/2007	53	242627	6496377	16.9 km NNE of Nundroo	Rises	open depression	medium clay	10	Tecticornia sp. (3), Atriplex vesicaria ssp. (2), Maireana oppositifolia (2)	Low Shrubland
575	COO00101	3/04/2008	52	741408	6517380	26.5 km WNW of Yalata Roadhouse	Consolidated dunefield	swale	loamy sand	2	Eucalyptus gracilis (2), Eucalyptus oleosa ssp. ampliata (2), Eucalyptus calcareana (2)	Open Mallee
575	COO00201	27/10/2007	52	739554	6515782	28.0 km WNW of Yalata Roadhouse	Consolidated dunefield	flat	sandy loam	15	Atriplex stipitata (2), Maireana erioclada (2)	Low Shrubland
575	COO00301	31/10/2007	52	737142	6514372	30.3 km WNW of Yalata Roadhouse	Consolidated dunefield	dune slope	loamy sand	5	Eucalyptus gracilis (2), Eucalyptus yalatensis (T)	Open Mallee
575	COO00401	31/10/2007	52	734872	6512408	32.4 km WSW of Yalata Roadhouse	Consolidated dunefield	dune slope	sandy loam	2	Eucalyptus gracilis (2), Eucalyptus calcareana (2)	Low Woodland
575	COO00501	1/11/2007	52	732290	6510027	35.1 km WSW of Yalata Roadhouse	Consolidated dunefield	dune crest	loamy sand	6	Eucalyptus calcareana (2), Eucalyptus oleosa ssp. ampliata (2)	Very Open Mallee
575	COO00601	1/11/2007	52	730255	6507561	37.3 km WSW of Yalata Roadhouse	Consolidated dunefield	swale	loamy sand	11	Atriplex vesicaria ssp. (3), Maireana oppositifolia (1)	Low Shrubland
575	COO00701	3/04/2008	52	731800	6506158	35.9 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	loamy sand	7	Melaleuca lanceolata (2)	Shrubland
575	COO00801	1/11/2007	52	734751	6505145	33.2 km WSW of Yalata Roadhouse	Consolidated dunefield	dune/consolidated dune	sand	6	Eucalyptus calcareana (2), Eucalyptus gracilis (2)	Open Low Mallee
575	HOB00101	24/10/2007	52	704579	6531486	27.5 km ENE of Nullarbor Motel	Plain	plain (incl undulating plain)	sandy clay loam	10	Tecticornia sp. (3), Atriplex vesicaria ssp. (2)	Low Shrubland

SU	SiteID	Visit Date	Zone	Easting	Northing	Location	Landform Pattern	Landform Element	Soil	Veg Grp	Vegetation Overstorey	Structural Formation
575	HOB00201	24/10/2007	52	707378	6530478	29.6 km ENE of Nullarbor Motel	Plain	plain (incl undulating plain)	sandy clay loam	21	Tecticornia sp. (3)	Low Shrubland
575	HOB00301	25/10/2007	52	707743	6528801	29.4 km ENE of Nullarbor Motel	Plain	plain (incl undulating plain)	sandy loam	1	Acacia papyrocarpa (2), Myoporum platycarpum ssp. (2)	Very Low Woodland
575	HOB00401	25/10/2007	52	707297	6525475	28.0 km ENE of Nullarbor Motel	Consolidated dunefield	closed depression	sandy loam	8	Melaleuca pauperiflora ssp. mutica (3)	Shrubland
575	HOB00501	27/10/2007	52	703732	6524478	24.3 km ENE of Nullarbor Motel	Dunefield	dune/consolidated dune	loamy sand	16	Melaleuca lanceolata (2), Myoporum insulare (2)	Tall Open Shrubland
575	HOB00601	27/10/2007	52	706336	6522881	26.6 km ENE of Nullarbor Motel	Plain	limestone plain	silty loam	13	Lawrencia squamata (2)	Low Open Shrubland
575	HOB00701	25/10/2007	52	706917	6521188	26.9 km ENE of Nullarbor Motel	Plain	sandy plain	loamy sand	17	Nitraria billardierei (2)	Open Shrubland
575	HOB00801	25/10/2007	52	708888	6522669	29.1 km ENE of Nullarbor Motel	Consolidated dunefield	hill slope	loamy sand	9	Cratystylis conocephala (3)	Low Open Shrubland
575	NAN00101	28/10/2007	52	751291	6527791	22.6 km WNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	clayey sand	4	Eucalyptus calcareana (2), Eucalyptus oleosa ssp. ampliata (2)	Low Woodland
575	NAN00201	1/11/2007	52	752828	6530098	23.3 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	loamy sand	12	Maireana sedifolia (2)	Low Open Shrubland
575	NAN00301	29/10/2007	52	754591	6532502	24.3 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	sandy clay loam	11	Atriplex vesicaria ssp. (2), Nitraria billardierei (2), Maireana erioclada (2)	Low Very Open Shrubland
575	NAN00401	29/10/2007	52	756119	6533807	24.6 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	sandy clay loam	1	Acacia papyrocarpa (2)	Very Low Woodland
575	NAN00501	29/10/2007	52	756853	6529508	20.5 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	sandy clay loam	24	Austrostipa nitida (3), Austrostipa drummondii (3)	Closed (Tussock) Grassland
575	NAN00601	29/10/2007	52	756893	6527933	19.2 km NNW of Yalata Roadhouse	Rises	hill slope	loamy sand	4	Eucalyptus oleosa ssp. ampliata (2)	Low Woodland
575	NAN00701	2/11/2007	52	758904	6523177	14.1 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	clayey sand	24	Austrostipa eremophila (2), Austrostipa nitida (2), Austrostipa drummondii (2)	(Tussock) Grassland
575	NAN00801	1/11/2007	52	755213	6525222	18.1 km NW of Yalata Roadhouse	Plain	plain (incl undulating plain)	sandy clay loam	1	Acacia papyrocarpa (2)	Very Low Woodland
575	YAL00101	23/05/2007	52	685038	6530527	12.6 km NNE of Nullarbor Motel	Plain	limestone plain	clay loam	12	Maireana sedifolia (2), Atriplex vesicaria ssp. (2), Tecticornia disarticulata (2)	Low Open Shrubland
575	YAL00201	23/05/2007	52	687450	6526557	10.6 km NNE of Nullarbor Motel	Plain	plain (incl undulating plain)	clay loam	11	Atriplex vesicaria ssp. (1), Lawrencia squamata (1)	Low Open Shrubland
575	YAL00301	24/05/2007	52	714887	6525825	35.5 km ENE of Nullarbor Motel	Low hills	hill slope	sandy loam	1	Acacia papyrocarpa (2), Myoporum platycarpum ssp. platycarpum (2)	Low Woodland
575	YAL00401	24/05/2007	52	712282	6524991	32.8 km ENE of Nullarbor Motel	Low hills	flat	sandy clay loam	10	Atriplex vesicaria ssp. (2), Tecticornia disarticulata (2), Maireana oppositifolia (2)	Low Open Shrubland
575	YAL00501	24/05/2007	52	711408	6523923	31.7 km ENE of Nullarbor Motel	Low hills	swamp	light clay	21	Tecticornia indica ssp. leiostachya (2), Maireana oppositifolia (2), Hemichroa diandra (2)	Low Open Shrubland
575	YAL00601	24/05/2007	52	707482	6522057	27.6 km ENE of Nullarbor Motel	Low hills	hill slope	loamy sand	9	Cratystylis conocephala (2)	Low Open Shrubland
575	YAL00701	24/05/2007	52	706638	6521402	26.7 km ENE of Nullarbor Motel	Low hills	hill slope	sandy loam	17	Nitraria billardierei (1)	Very Open Shrubland
575	YAL00801	24/05/2007	52	704866	6523292	25.2 km ENE of Nullarbor Motel	Plain	sandy plain	sandy loam	13	Lawrencia squamata (2), Frankenia sessilis (2)	Low Shrubland
575	YAL00901	24/05/2007	52	707409	6523981	27.8 km ENE of Nullarbor Motel	Plain	limestone plain	sandy clay loam	10	Lawrencia squamata (2), Atriplex vesicaria ssp. (2), Tecticornia disarticulata (2)	Low Open Shrubland
575	YAL01001	25/05/2007	52	761209	6534795	23.7 km NNW of Yalata Roadhouse	Plain	plain (incl undulating plain)	clayey sand	24	Austrostipa sp. (2), Austrodanthonia sp. (2)	(Tussock) Grassland
575	YAL01101	25/05/2007	52	756530	6530050	21.2 km NNW of Yalata Roadhouse	Low hills	hill slope	sandy loam	24	Austrostipa sp. (2)	(Tussock) Grassland
575	YAL01201	25/05/2007	52	746902	6519734	21.9 km WNW of Yalata Roadhouse	Low hills	hill slope	sandy loam	2	Eucalyptus gracilis (2), Eucalyptus oleosa ssp. (2)	Open Mallee
575	YAL01301	25/05/2007	52	740220	6516649	27.5 km WNW of Yalata Roadhouse	Low hills	hill crest	sandy loam	2	Eucalyptus calcareana (2), Eucalyptus gracilis (2), Myoporum platycarpum ssp. platycarpum (2)	Open Mallee
575	YAL01401	25/05/2007	52	733445	6505824	34.4 km WSW of Yalata Roadhouse	Low hills	hill slope	sandy loam	6	Eucalyptus gracilis (2), Eucalyptus calcareana (2), Melaleuca lanceolata (2)	Open Low Mallee
575	YAL01501	26/05/2007	52	767425	6510239	1.6 km SSE of Yalata Roadhouse	Low hills	flat	sandy loam	24	Austrostipa sp. (3), Podolepis rugata var. (2)	(Tussock) Grassland
575	YAL01601	26/05/2007	52	764931	6509213	3.6 km SSW of Yalata Roadhouse	Low hills	hill slope	sandy loam	14	Geijera linearifolia (2), Pittosporum angustifolium (2)	Tall Open Shrubland

SU	SiteID	Visit Date	Zone	Easting	Northing	Location	Landform Pattern	Landform Element	Soil	Veg Grp	Vegetation Overstorey	Structural Formation
575	YAL01701	26/05/2007	52	762549	6506885	6.9 km SSW of Yalata Roadhouse	Low hills	hill slope	sandy loam	11	Atriplex vesicaria ssp. (2), Maireana erioclada (2), Sclerolaena diacantha (2)	Low Shrubland
575	YAL01801	26/05/2007	52	761291	6505933	8.5 km SSW of Yalata Roadhouse	Low hills	hill slope	sandy loam	3	Eucalyptus oleosa ssp. (2), Eucalyptus gracilis (2), Melaleuca pauperiflora ssp. mutica (2)	Open Mallee
575	YAL01901	26/05/2007	52	773419	6504981	9.1 km SSE of Yalata Roadhouse	Low hills	hill slope	loamy sand	3	Eucalyptus gracilis (2), Eucalyptus oleosa ssp. (2)	Open Mallee
575	YAL02001	26/05/2007	53	226043	6498665	4.9 km ENE of Colona	Low hills	plain (incl undulating plain)	sandy loam	25	Goodenia pinnatifida (1), *Moraea setifolia (1), Trichanthodium skirrophorum (1)	Open Herbland
575	YAL02101	27/05/2007	53	251416	6482756	16.9 km NNE of Coorabie	Low hills	hill slope	sandy loam	24	Austrostipa sp. (2), Austrodanthonia sp. (2)	Open (Tussock) Grassland
575	YAL02201	27/05/2007	53	246045	6478668	4.8 km NE of Pintumba	Low hills	flat	medium clay	15	Lycium australe (2), Atriplex stipitata (2)	Low Open Shrubland
575	YAL02301	27/05/2007	53	244035	6476931	2.1 km NNE of Pintumba	Low hills	hill slope	sandy loam	2	Eucalyptus gracilis (2), Eucalyptus oleosa ssp. (2)	Mallee

APPENDIX 2. PLANT TAXA RECORDED IN THE YALATA IPA

Taxonomy follows Barker et al. (2005) as updated by the DEH FLORA Database (as at May 2008).

- I Indigenous/alien designation. Naturalised alien taxa are designated with an asterisk (*).
- (NC) Appearing after a scientific name designates it as a non-current name in the SA FLORA Database 2008. A non-current name represents a previous taxonomic circumscription corresponding to one or more currently recognised taxa.

Conservation Status:

- Aus Australian status under the Environment Protection and Biodiversity Conservation Act 1999 as at May 2008.
- SA South Australian status under the National Parks and Wildlife Act 1972 (2007 update of schedules 7, 8 and 9).
- NU Regional status for the Nullarbor Herbarium Region as per the SA FLORA database (May 2008), which provides an update of the original assessments of Lang and Kraehenbuehl (1987).
- **EP** Regional status for the Eyre Peninsula Herbarium Region as per the SA FLORA database (May 2008), which provides an update of the original assessments of Lang and Kraehenbuehl (1987).
- Status Codes: $\mathbf{E} = \text{endangered}$; $\mathbf{V} = \text{vulnerable}$; $\mathbf{T} = \text{threatened}$ (either endangered or vulnerable but insufficient data to enable accurate assessment); $\mathbf{R} = \text{rare}$; $\mathbf{K} = \text{uncertain}$ (either rare or threatened but insufficient data to enable accurate assessment); $\mathbf{U} = \text{uncommon}$; $\mathbf{Q} = \text{not}$ yet assessed but considered to be of possible significance.

I	Species Name	Common Name	Aus	SA	NU	EP	Notes
	Acacia anceps						
	Acacia brachybotrya	Grey Mulga-bush					
	Acacia burkittii	Pin-bush Wattle					
	Acacia cyclops	Western Coastal Wattle				U	
	Acacia hakeoides	Hakea Wattle					
	Acacia ligulata	Umbrella Bush					
	Acacia merrallii	Merrall's Wattle					
	Acacia oswaldii	Umbrella Wattle					
	Acacia papyrocarpa	Western Myall					
*	Acacia saligna	Golden Wreath Wattle					
	Acacia sp. Winged (C.R.Alcock 4936)	Angled Wattle					
	Acacia spinescens	Spiny Wattle					New record for NU; nearest other record at Streaky bay
	Acacia victoriae ssp. arida	Downy Elegant Wattle					
	Acrotriche patula	Prickly Ground-berry					
	Alyxia buxifolia	Sea Box					
	Amyema maidenii ssp. maidenii	Pale-leaf Mistletoe					
	Amyema melaleucae	Tea-tree Mistletoe					
	Amyema miquelii	Box Mistletoe				i : :	
	Amyema quandang var. quandang	Grey Mistletoe					
*	Anagallis arvensis	Pimpernel					
	Angianthus conocephalus						
	Angianthus sp.						
	Angianthus tomentosus	Hairy Angianthus					
*	Arctotheca populifolia	Beach Daisy					
	Aristida contorta	Curly Wire-grass					
	Aristida sp.	Three-awn/Wire-grass					
	Arthropodium minus	Small Vanilla-lily					
	Atriplex acutibractea ssp. acutibractea	Pointed Saltbush					
	Atriplex cinerea	Coast Saltbush					
	Atriplex paludosa ssp. cordata	Marsh Saltbush					
	Atriplex pumilio	Mat Saltbush				U	
	Atriplex sp.	Saltbush					
	Atriplex stipitata	Bitter Saltbush					
	Atriplex suberecta	Lagoon Saltbush					
	Atriplex vesicaria (NC)						= Atriplex vesicaria ssp.
	Atriplex vesicaria ssp.	Bladder Saltbush					
	Austrodanthonia caespitosa	Common Wallaby-grass			7		

I Species Name Common Name Aus SA NU EP Austrodanthonia setacea Small-flower Wallaby-grass Image: Common Name of the Property of the Prop	Notes
Austrodanthonia sp. Austrostipa acrociliata Graceful Spear-grass Austrostipa drummondii Cottony Spear-grass	
Austrostipa acrociliata Graceful Spear-grass Austrostipa drummondii Cottony Spear-grass	
Austrostipa drummondii Cottony Spear-grass	
Austrostipa elegantissima Feather Spear-grass	
Austrostipa eremophila Rusty Spear-grass	
Austrostipa nitida Balcarra Spear-grass	
Austrostipa platychaeta Flat-awn Spear-grass	
Austrostipa puberula Fine-hairy Spear-grass	
Austrostipa sp. Spear-grass	
Austrostipa velutina U	
* Avena barbata Bearded Oat	
* Avena sp. Oat	
Beyeria lechenaultii Pale Turpentine Bush	
Boraginaceae sp. Borage Family	
Bothriochloa macra Red-leg Grass R R	
Brachyscome ciliaris var. Variable Daisy	
Brachyscome ciliaris var. ciliaris Variable Daisy	
Brachyscome lineariloba Hard-head Daisy	
Brachyscome sp. Native Daisy	
Brachyscome tatei Nullarbor Daisy R K	
* Brassica tournefortii Wild Turnip	
Bromus arenarius Sand Brome	
* Bromus rubens Red Brome	
Bromus sp. Brome	
Bulbine sp. Bulbine-lily	
* Bupleurum semicompositum Hare's Ear	
* Cakile edentula American Sea Rocket	
Calandrinia eremaea Dryland Purslane	
Calotis breviradiata	
Calotis cymbacantha Showy Burr-daisy	
Calotis hispidula Hairy Burr-daisy	
Carpobrotus rossii Native Pigface	
Carpobrotus rossii (NC) Native Pigface Jesso Carp	in the broad sense according to p (1993). Now may be either <i>obrotus rossii</i> (EP or NU) or <i>C.</i> sp. calyx (S.T.Blake 20451) (EP).
Carpobrotus sp. Pigface	
* Carrichtera annua Ward's Weed	
* Carthamus lanatus Saffron Thistle	
Coarse Dodder-laurel	
Cassytha peninsularis Peninsula Dodder-laurel Coord	record for NU; nearest record at abie
Casuarina pauper Black Oak	
* Centaurea melitensis Malta Thistle	
* Centaurium erythraea Common Centaury	
Cephalipterum drummondii Pompom Head	
Chamaesyce drummondii	
<u></u>	amaesyce drummondii
Chenopodium curvispicatum Cottony Goosefoot	
Chrysocephalum apiculatum Common Everlasting	
Comesperma volubile Love Creeper	
Compositae sp. Daisy Family	
Convolvulus recurvatus ssp.	
nullarborensis Convolvulus remotus Grassy Bindweed	
Crassula collinata ssp	
lamprosperma Australian Stonecrop	
Crassula colorata var. acuminata Dense Crassula	
Crassula colorata var. colorata Dense Crassula	

I	Species Name	Common Name	Aus	SA	NU	EP	Notes
	Crassula sieberiana ssp. tetramera (NC)	Australian Stonecrop					Used in the broad sense according to Jessop (1993). Now may refer to Crassula colligata ssp. lamprosperma (EP or NU), C. extrorsa (EP) or C. tetramera (EP).
	Crassula sp.	Crassula/Stonecrop		4			
	Cratystylis conocephala	Bluebush Daisy					
	Danthonia sp. (NC)						= Austrodanthonia sp.
	Darwinia salina	Salt Darwinia				U	
	Daucus glochidiatus	Native Carrot					
	Daviesia benthamii ssp. humilis	Mallee Bitter-pea		R		R	Questionable occurrence in Yalata IPA
	Dianella revoluta var. divaricata	Broad-leaf Flax-lily					
	Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface					
	Dissocarpus biflorus var. biflorus	Two-horn Saltbush		<u> </u>	ļ	ļ	
	Dodonaea stenozyga	Desert Hop-bush			ļ		
	Elachanthus pusillus	Elachanth				ļ	
	Enchylaena tomentosa var.		!	<u> </u>	<u> </u>	<u> </u>	= Enchylaena tomentosa var. tomentosa
	Enchylaena tomentosa var.	Ruby Saltbush					
	tomentosa Enneapogon sp.	Bottle-washers/Nineawn		<u> </u>	İ	<u> </u>	
*	Eragrostis curvula	African Love-grass		ļ	ļ		
	Eragrostis curvuta Eremophila deserti	Turkey-bush					
	Eremophila glabra (NC)	1 utroy-busii			ļ	ļ	= Eremophila glabra ssp. glabra
			_	<u> </u>	ļ	<u> </u>	4
	Eremophila glabra ssp. Eremophila glabra ssp. glabra	Tar Bush				ļ	= Eremophila glabra ssp. glabra
	Eremophila maculata ssp.	Spotted Emubush				<u> </u>	
	Eremophila parvifolia	Small-leaf Emubush	_	R	R	K	
	Eremophila scoparia	Broom Emubush		K	K	IX.	
	Eremophila sp. Praecox	DIOOIII EIIIuuusii			<u> </u>	<u> </u>	
	(R.H.Ashby 131)			R		R	
	Eriochiton sclerolaenoides	Woolly-fruit Bluebush					
*	Erodium cicutarium	Cut-leaf Heron's-bill					
	Erodium crinitum	Blue Heron's-bill					
	Erodium cygnorum	Blue Heron's-bill					
	Erodium sp.	Heron's-bill/Crowfoot					
	Erymophyllum ramosum ssp. ramosum						
	Eucalyptus brachycalyx	Gilja		İ	İ	İ	
	Eucalyptus calcareana	Nundroo Mallee			ļ		
	Eucalyptus concinna	Victoria Desert Mallee		ļ	<u> </u>	<u> </u>	
	Eucalyptus gracilis	Yorrell					
	Eucalyptus gypsophila	Kopi Mallee			İ	İ	
	Eucalyptus leptophylla	Narrow-leaf Red Mallee			4	4	4
	Eucalyptus oleosa (NC)	Red Mallee					Used in the broad sense according to Jessop (1993). Now may refer to either Eucalyptus oleosa ssp. ampliata or E. oleosa ssp. oleosa.
	Eucalyptus oleosa ssp.					ļ	
	Eucalyptus oleosa ssp. ampliata	Red Mallee					
	Eucalyptus oleosa ssp. oleosa	Red Mallee					
	Eucalyptus pileata	Capped Mallee			ļ	ļ	Questionable occurrence in NU
	Eucalyptus rugosa	Coastal White Mallee				ļ	
	Eucalyptus socialis (NC)	Beaked Red Mallee					Used in the broad sense according to Jessop (1993). Now may refer to Eucalyptus socialis ssp. Glossy green (P.J.Lang 804) (EP), E. socialis ssp. socialis (EP) or E. socialis ssp. South Great Victoria Desert (D.Nicolle 2667) (NU, but not in Yalata area). Six records of this entity from 1984 were possibly mis-identified.
	Eucalyptus yalatensis	Yalata Mallee		ļ	ļ	ļ	- ADDITION
	Eulalia aurea	Silky Brown-top		<u></u>	ļ	<u> </u>	
*	Euphorbia paralias	Sea Spurge					
	Euphorbia sp.	Spurge			<u> </u>	<u> </u>	
ļ	Eutaxia microphylla	Common Eutaxia		<u></u>	ļ	ļ	
	zaama microphyna	Common Luturia		!	:	:	

I	Species Name	Common Name	Aus	SA	NU	EP	Notes
	Exocarpos aphyllus	Leafless Cherry	1145	5.12	110		1,000
	Frankenia foliosa	Leafy Sea-heath				ļ	
	Frankenia pauciflora var.	Southern Sea-heath		L			
	Frankenia pauciflora var.						
	fruticulosa	Southern Sea-heath					
	Frankenia serpyllifolia	Thyme Sea-heath					
	Frankenia sessilis	Small-leaf Sea-heath					
	Frankenia sp.	Sea-heath					
	Geijera linearifolia	Sheep Bush					
	Glycine rubiginosa	Twining Glycine					
	Goodenia pinnatifida	Cut-leaf Goodenia				<u> </u>	
	Goodenia varia	Sticky Goodenia					
	Gramineae sp.	Grass Family				Ì	
	Gunniopsis calcarea			<u> </u>		<u> </u>	
*	Hedypnois rhagadioloides (NC)	Cretan Weed					Used in the broad sense according to Jessop (1993). Now may refer to either <i>Hedypnois rhagadioloides</i> ssp. <i>rhagadioloides</i> (EP or NU) or H. <i>rhagadioloides</i> ssp. <i>cretica</i> (EP).
	Helichrysum leucopsideum	Satin Everlasting					
	Hemichroa diandra	Mallee Hemichroa				Ĭ	
*	Hordeum glaucum	Blue Barley-grass				20000000000000000000000000000000000000	
*	Hornungia procumbens	Oval Purse					
	Hypoxis glabella var. glabella	Tiny Star				Ī	
	Isoetopsis graminifolia	Grass Cushion					
	Isolepis nodosa	Knobby Club-rush		L			
	Kippistia suaedifolia	Fleshy Kippistia				I	
	Lawrencia glomerata	Clustered Lawrencia					
	Lawrencia squamata	Thorny Lawrencia				ļ	
	Lepidium phlebopetalum	Veined Peppercress		<u> </u>			
	Lepidium sp.	Peppercress					
	Leptorhynchos waitzia	Button Immortelle				<u></u>	
	Leucophyta brownii	Coast Cushion Bush		ļ			
	Lomandra collina	Sand Mat-rush		ļ			
	Lomandra effusa	Scented Mat-rush		<u> </u>			
	Lycium australe	Australian Boxthorn				ļ	
*							
	Lycium ferocissimum	African Boxthorn		ļ		ļ	
	Lycium sp.	Boxthorn				ļ	
	Lysiana exocarpi ssp. exocarpi	Harlequin Mistletoe					
	Maireana appressa	Pale-fruit Bluebush		<u> </u>		U	
	Maireana brevifolia	Short-leaf Bluebush					
	Maireana erioclada	Rosy Bluebush		ļ		ļ	
ļ	Maireana georgei	Satiny Bluebush				ļ	
ļ	Maireana lobiflora	Lobed Bluebush					
ļ	Maireana oppositifolia	Salt Bluebush		ļ		ļ	
ļ	Maireana pentatropis	Erect Mallee Bluebush		<u> </u>	ļ	<u> </u>	
ļ	Maireana radiata	Radiate Bluebush		ļ	ļ	ļ	
ļ	Maireana rohrlachii	Rohrlach's Bluebush		R		K	
ļ	Maireana sedifolia	Bluebush				ļ	
ļ	Maireana sp.	Bluebush/Fissure-plant		ļ		ļ	
	Maireana trichoptera	Hairy-fruit Bluebush		ļ			
<u> </u>	Maireana triptera	Three-wing Bluebush				ļ	
	Maireana turbinata	Top-fruit Bluebush					
*	Marrubium vulgare	Horehound					
*	Medicago minima var. minima	Little Medic		L	l	L	
*	Medicago sp.	Medic					
*	Medicago truncatula	Barrel Medic					
	Melaleuca lanceolata	Dryland Tea-tree					
	Melaleuca lanceolata ssp. lanceolata (NC)	Dryland Tea-tree					= Melaleuca lanceolata
	Melaleuca lanceolata ssp. thaeroides (NC)						= Melaleuca lanceolata

I	Species Name	Common Name	Aus	SA	NU	EP	Notes
	Melaleuca pauperiflora (NC)	Boree					Used in the broad sense according to Jessop (1993). Now may refer to either <i>Melaleuca pauperiflora</i> ssp. <i>mutica</i> (EP or NU) or <i>M. xerophila</i> (EP).
	Melaleuca pauperiflora ssp. mutica	Boree					
*	Mesembryanthemum crystallinum	Common Iceplant			5 		
	Microlepidium alatum		VU	V	ļ		
	Microlepidium pilosulum	Hairy Shepherd's-purse		R	ļ		
	Minuria cunninghamii	Bush Minuria			ļ		
*	Moraea setifolia	Thread Iris					
	Myoporum brevipes	Warty Boobialla		ļ	ļ		
	Myoporum insulare Myoporum platycarpum (NC)	Common Boobialla False Sandalwood					Used in the broad sense according to Jessop and Toelken (1986). Now may refer to either <i>M. platycarpum</i> ssp. platycarpum (EP or NU) or <i>M. platycarpum</i> ssp. perbellum (EP).
	Myoporum platycarpum ssp.	False Sandalwood	•••••••				ชีกเกียวของเหมือนของเกียวของเกมของเกมของในของในของเกมของเกมของเกมของเกมของในของเกมของเกมของเกมของเกมของเกมของเ
	Myoporum platycarpum ssp. platycarpum	False Sandalwood					
	Nicotiana goodspeedii	Small-flower Tobacco				<u></u>	
	Nicotiana rosulata ssp.					<u> </u>	
	Nitraria billardierei	Nitre-bush	İ		İ		
	Olearia axillaris	Coast Daisy-bush	1		}		
	Olearia brachyphylla	Short-leaf Daisy-bush					New record for NU; nearest records at Colona & Wahgunyah CP
	Olearia calcarea	Crinkle-leaf Daisy-bush			ļ		
	Olearia exiguifolia	Lobed-leaf Daisy-bush			J	<u>.</u>	
	Olearia floribunda var. floribunda	Heath Daisy-bush					
	Olearia magniflora	Splendid Daisy-bush	•			U	
	Olearia minor	Heath Daisy-bush	•••••••				
	Olearia muelleri	Mueller's Daisy-bush					
	Olearia pimeleoides ssp. incana	Showy Daisy-bush					New record for EP; nearest records north of Cook
	Omphalolappula concava	Burr Stickseed				60000000000000000000000000000000000000	
	Osteocarpum salsuginosum	Inland Bonefruit				V	
	Oxalis perennans	Native Sorrel					
	Oxalis perennans (NC)	Native Sorrel					= Oxalis perennans
*	Parapholis incurva	Curly Ryegrass					
	Parietaria debilis (NC)	Smooth-nettle					Used in the broad sense according to Jessop (1993). Now may refer to either <i>Parietaria australis</i> or <i>P. debilis</i> .
	Phlegmatospermum cochlearinum	Downy Cress					
ļ	Phlegmatospermum richardsii	Nullarbor Cress		V	V		
	Pimelea micrantha	Silky Riceflower	ļ		ļ	<u>.</u>	
	Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower					
ļ	Pittosporum angustifolium	Native Apricot			ļ		
*	Plantago bellardii	Hairy Plantain	ļ		ļ	<u>.</u> 	
ļ	Plantago drummondii	Dark Plantain	1		<u> </u>		
*	Plantago lanceolata var. lanceolata	Ribwort					
	Plantago sp.	Plantain					
*	Poa bulbosa	Bulbous Meadow-grass	ļ		ļ		Now good for NU.
	Poa drummondiana	Knotted Poa		R	<u></u>		New record for NU; nearest record at Fowler's Bay
	Podolepis canescens	Grey Copper-wire Daisy				U	
ļ	Podolepis rugata var.	Pleated Copper-wire Daisy	ļ		ļ		
ļ	Podolepis rugata var. rugata	Pleated Copper-wire Daisy			ļ	<u> </u>	
ļ	Pomaderris forrestiana			R	K		
	Pterostylis nana	Dwarf Greenhood	1				
	Ptilotus obovatus (NC)						= Ptilotus obovatus var. obovatus
ļ	Ptilotus obovatus var.	Silver Mulla Mulla	ļ		ļ	<u> </u>	= Ptilotus obovatus var. obovatus
	Ptilotus obovatus var. obovatus	Silver Mulla Mulla					

I	Species Name	Common Name	Aus	SA	NU	EP	Notes
	Pycnosorus eremaeus	Golden Billy-buttons		222	-10		New record for EP; nearest records at
	Pycnosorus pleiocephalus	Soft Billy-buttons		ļ			Coober Pedy
*	Reichardia tingitana	False Sowthistle				Ī	
	Rhagodia candolleana ssp.	Sea-berry Saltbush		ļ			
	Rhagodia candolleana ssp.			ļ			
	candolleana	Sea-berry Saltbush		ļ		ļ	
	Rhagodia crassifolia	Fleshy Saltbush		ļ			
	Rhagodia spinescens	Spiny Saltbush		ļ		<u> </u>	
	Rhodanthe chlorocephala ssp. rosea	Western Sunray					New record for EP; nearest record north of Yalata (in NU)
	Rhodanthe corymbiflora	Paper Everlasting					New record for NU; nearest records in Gawler Ranges
	Rhodanthe floribunda	White Everlasting					
	Rhodanthe haigii	Haig's Everlasting					
	Rhodanthe pygmaea	Pigmy Daisy					
*	Rostraria cristata	Annual Cat's-tail					
*	Rostraria pumila	Tiny Bristle-grass					
	Salsola tragus	Buckbush					
*	Salvia verbenaca	Wild Sage					
*	Salvia verbenaca var. verbenaca	Wild Sage					
	Samolus repens	Creeping Brookweed					
	Santalum acuminatum	Quandong					
	Santalum lanceolatum	Plumbush					
	Santalum spicatum	Sandalwood		V	T	V	
	Sarcozona praecox	Sarcozona					
	Scaevola bursariifolia	Bursaria Fanflower			U	U	
	Scaevola collaris						
	Scaevola spinescens	Spiny Fanflower					
*	Schismus barbatus	Arabian Grass					
	Sclerolaena brevifolia	Small-leaf Bindyi					
	Sclerolaena diacantha	Grey Bindyi					
	Sclerolaena obliquicuspis	Oblique-spined Bindyi					
	Sclerolaena patenticuspis	Spear-fruit Bindyi					
	Sclerolaena uniflora	Small-spine Bindyi					
	Senecio glossanthus	Annual Groundsel		<u>.</u>		<u> </u>	
	Senecio glossanthus (NC)	Annual Groundsel					Used in the broad sense according to Jessop (1993). Now may refer to either <i>Senecio glossanthus</i> (EP or NU) or <i>S. serratiformis</i> ssp. <i>serratiformis</i> (EP, records from coastal dunes at Fowler's Bay).
	Senecio pinnatifolius	Variable Groundsel		<u> </u>		ā	
	Senna artemisioides ssp.						<u> </u>
	petiolaris	***************************************				ļ	
	Senna artemisioides ssp. quadrifolia	Four-leaf Desert Senna					New record for EP; present in NU, NW & GT
	Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna					
	Senna artemisioides ssp. X sturtii	Grey Senna					
	Senna cardiosperma ssp.	Curved-leaf Senna					
	microphylla S: L			<u> </u>			
	Sida corrugata var.	Corrugated Sida					
ļ	Sida sp. Sida spodochroma	Sida Limestone Sida				ļ	
*	Sisymbrium erysimoides	Smooth Mustard					
*	Sisymbrium irio	London Mustard					
*	Sisymbrium sp.	Wild Mustard		ļ		ļ	
	Solanum hystrix	Afghan Thistle		ļ			
	Solanum symonii	Symon's Kangaroo-apple		<u> </u>	ļ	<u> </u>	
*	Sonchus oleraceus	Common Sow-thistle		L		<u> </u>	
*	Sonchus oleraceus (NC)	Common Sow-thistle		ļ		ļ	= Sonchus oleraceus
	Sonchus sp.	Sow-thistle	_	 	ļ	ļ	Sometimes decreased
*	Spergularia diandra	Lesser Sand-spurrey					
	Spinifex hirsutus	Rolling Spinifex					
	Spinifex hirsutus (NC)	Rolling Spinifex				ļ	= Spinifex hirsutus
	or my on mount (110)	Spinier		<u> </u>	<u> </u>	<u> </u>	; -pmg-manus

I	Species Name	Common Name	Aus	SA	NU	EP	Notes
	Sporobolus virginicus	Salt Couch					
	Spyridium phylicoides	Narrow-leaf Spyridium					
	Stenopetalum lineare	Narrow Thread-petal					
	Tecticornia disarticulata		-		·	<u></u>	
	Tecticornia halocnemoides ssp.	Grey Samphire			:\$::::::::::::::::::::::::::::::::::::		
Ì	Tecticornia indica ssp. leiostachya	Brown-head Samphire	•			<u></u>	
	Tecticornia pruinosa	Bluish Samphire					
	Tecticornia pterygosperma ssp. pterygosperma	Winged-seed Samphire					
	Tecticornia sp.	Samphire			1		
İ	Tecticornia tenuis	Slender Samphire					
	Templetonia battii	Spiny Templetonia	_	R		<u></u>	New record for NU; nearest record at Nundroo Well (in EP)
	Templetonia retusa	Cockies Tongue	1				
	Tetragonia eremaea	Desert Spinach					
	Tetragonia implexicoma	Bower Spinach				L	
	Teucrium sessiliflorum	Mallee Germander			ļ	<u> </u>	
	Threlkeldia diffusa	Coast Bonefruit					
	Thysanotus baueri	Mallee Fringe-lily	-			<u> </u>	
		Woolly Yellow-heads			ļ	<u> </u>	
	Trichanthodium skirrophorum		ļ			<u></u>	T. 1 1. D. (17 W. 1. 1220)
	Triglochin calcitrapum (NC)	Spurred Arrowgrass	-		7	1	= Triglochin sp. B (J.Z.Weber 1330)
	Triglochin sp. A (N.N.Donner 3596) Triglochin sp. B (J.Z.Weber	Spurred Arrowgrass				<u></u>	New record for EP; known from GT
	1330)	Spurred Arrowgrass	-				
ļ	Triodia irritans	Spinifex	ļ	ļ	ļ	<u> </u>	
	Triodia sp.		•				
	Velleia arguta	Toothed Velleia				ļ	
	Velleia sp.	Velleia				ļ	
	Vittadinia arida						New record for EP; nearest record at Lake Gairdner
	Vittadinia australasica var.	Sticky New Holland Daisy				ļ	
	Vittadinia australasica var. australasica	Sticky New Holland Daisy	ļ				
	Vittadinia cuneata var. cuneata f. cuneata	Fuzzy New Holland Daisy	_				
	Vittadinia gracilis	Woolly New Holland Daisy	-	-			
	Vittadinia megacephala	Giant New Holland Daisy	ļ		ļ	ļ	
	Vittadinia sp.	New Holland Daisy				ļ	
*	Vulpia bromoides	Squirrel-tail Fescue				<u> </u>	
*	Vulpia muralis	Wall Fescue					
*	Vulpia myuros f.	Fescue					
	Wahlenbergia luteola	Yellow-wash Bluebell				U	Questionable occurrence in Yalata IPA
	Westringia rigida	Stiff Westringia					
	Wilsonia humilis	Silky Wilsonia					
Ì	Wurmbea dioica ssp.				1		
	Wurmbea dioica ssp. brevifolia	Early Nancy				 	
	Wurmbea dioica ssp. dioica	Early Nancy				¢	
	Wurmbea dioica ssp. dioica (NC)	Early Nancy					Used in the broad sense according to Jessop (1993). Now may refer to Wurmbea dioica ssp. "citrina" (EP), W. dioica ssp. dioica (EP or NU) or W. dioica ssp. Short upper leaf (S.Williams CBP23) (EP or NU).
	<i>Wurmbea</i> sp.	Nancy	••••••			 !	
	Zygophyllum angustifolium	Scrambling Twinleaf				ļ	
		Sciamoning I willeal			ļ		
	Zygophyllum aurantiacum ssp. Zygophyllum aurantiacum ssp.	Shrubby Twinleaf			ļ		
			1	1	1	1	
	aurantiacum Zygophyllum aurantiacum ssp. aurantiacum (NC)	Shrubby Twinleaf	_				= Zygophyllum aurantiacum ssp. aurantiacum

I	Species Name	Common Name	Aus	SA	NU	EP	Notes
	Zygophyllum billardierei (NC)	Coast Twinleaf					Used in the broad sense according to Jessop and Toelken (1986). Now may refer to <i>Zygophyllum angustifolium</i> (EP or NU), <i>Z. billardierei</i> (EP or NU), <i>Z. flavum</i> (EP) or <i>Z. confluens</i> (EP).
	Zygophyllum eremaeum						
	Zygophyllum ovatum	Dwarf Twinleaf					
	Zygophyllum sp.	Twinleaf					

APPENDIX 3. PLANT TAXA FREQUENCY FROM VARIOUS SOURCES FOR THE YALATA IPA.

Taxonomy follows Barker et al. (2005) as updated by the DEH FLORA Database (as at May 2008).

I Indigenous/alien designation. Naturalised alien taxa are designated with an asterisk (*).

(NC) Appearing after a scientific name designates it as a non-current name in the SA FLORA Database 2008. A non-current name represents a previous taxonomic circumscription corresponding to one or more currently recognised taxa.

Conservation Status:

Aus Australian status under the Environment Protection and Biodiversity Conservation Act 1999 as at May 2008

SA South Australian status under the National Parks and Wildlife Act 1972 (2007 update of schedules 7, 8 and 9).

Status Codes: E = endangered; V = vulnerable; R = rare.

SU pre 2007 Number of site records from Biological Surveys (Nullarbor, Temperate Grasslands, Coastal

Dune and Clifftop, Yalata Land Use, Iluka Resources, and Gawler Craton) prior to 2007.

OP pre 2007 Number of opportunistic records from Biological Surveys prior to 2007.

Adel Herb Number of specimens held in the Adelaide Herbarium (includes only records databased as of

May 2007).

SU BS575 Number of site records from the Yalata IPA Biological Survey in 2007.

OP BS575 Number of opportunistic records from the Yalata IPA Biological Survey in 2007 & 2008.

Total Records Total number of records from all sources.

I	Species Name	Common Name	Aus	SA	SU pre 2007	OP pre 2007	Adel Herb	SU BS575	OP BS575	Total Records
	Acacia anceps				2					2
	Acacia brachybotrya	Grey Mulga-bush		•		İ	2			2
	Acacia burkittii	Pin-bush Wattle				\$	1			1
	Acacia cyclops	Western Coastal Wattle				A	2			2
	Acacia hakeoides	Hakea Wattle			1		3	1	1	6
	Acacia ligulata	Umbrella Bush				i	1			1
	Acacia merrallii	Merrall's Wattle					1			1
	Acacia oswaldii	Umbrella Wattle			20		8	23		51
	Acacia papyrocarpa	Western Myall			33		9	17	3	62
*	Acacia saligna	Golden Wreath Wattle							1	1
	Acacia sp. Winged (C.R.Alcock 4936)	Angled Wattle			3		1			4
	Acacia spinescens	Spiny Wattle						1		1
	Acacia victoriae ssp. arida	Downy Elegant Wattle					1			1
	Acrotriche patula	Prickly Ground- berry			3			1		4
	Alyxia buxifolia	Sea Box				1				1
	Amyema maidenii ssp. maidenii	Pale-leaf Mistletoe			6					6
	Amyema melaleucae	Tea-tree Mistletoe			2		1	1		4
	Amyema miquelii	Box Mistletoe			1		4	3	1	9
	Amyema quandang var. quandang	Grey Mistletoe			9		8	5		22
*	Anagallis arvensis	Pimpernel			1					1
	Angianthus conocephalus						1			1
	Angianthus sp.				1					1
	Angianthus tomentosus	Hairy Angianthus			4	9	6	4		14
*	Arctotheca populifolia	Beach Daisy			2		1			3
	Aristida contorta	Curly Wire-grass			4					4
	Aristida sp.	Three-awn/Wire- grass			1					1
	Arthropodium minus	Small Vanilla-lily			1					1
	Atriplex acutibractea ssp. acutibractea	Pointed Saltbush					1	1		2
	Atriplex cinerea	Coast Saltbush			8		1	1	1	11
	Atriplex paludosa ssp. cordata	Marsh Saltbush			27		2			29
	Atriplex pumilio	Mat Saltbush					1			1
	Atriplex sp.	Saltbush					3			3
	Atriplex stipitata	Bitter Saltbush			2	\$	2	10	4	18
	Atriplex suberecta	Lagoon Saltbush	· · ·					1	G	1

Ι	Species Name	Common Name	Aus	SA	SU pre 2007	OP pre 2007	Adel Herb	SU BS575	OP BS575	Total Records
	Atriplex vesicaria ssp.	Bladder Saltbush			87			49	4	140
	Austrodanthonia caespitosa	Common Wallaby- grass			24		6	7	2	39
	Austrodanthonia setacea	Small-flower Wallaby-grass			13		1	8		22
	Austrodanthonia sp.				4		2	18		24
	Austrostipa acrociliata	Graceful Spear-grass			14		4	15	1	34
	Austrostipa drummondii	Cottony Spear-grass			22		3	12	3	40
	Austrostipa elegantissima	Feather Spear-grass			5		1	4		10
	Austrostipa eremophila	Rusty Spear-grass			12		2	16	4	34
	Austrostipa nitida	Balcarra Spear-grass			32		13	19	3	67
	Austrostipa platychaeta	Flat-awn Spear-grass			2			2		4
	Austrostipa puberula	Fine-hairy Spear- grass					1			1
	Austrostipa sp.	Spear-grass			9			17		26
	Austrostipa velutina				1		1	1		3
*	Avena barbata	Bearded Oat	4		1		1	\$======== : : :		2
*	Avena sp.	Oat			2			<u> </u>		2
	Beyeria lechenaultii	Pale Turpentine Bush			9			6		15
	Boraginaceae sp.	Borage Family	4			ē 1 1 1 1		3		3
	Bothriochloa macra	Red-leg Grass		R		<u> </u>	1			1
	Brachyscome ciliaris var.	Variable Daisy			1			14		15
	Brachyscome ciliaris var. ciliaris	Variable Daisy			20			10	2	32
	Brachyscome lineariloba	Hard-head Daisy			3			10		13
	Brachyscome sp.	Native Daisy			1			å		1
	Brachyscome tatei	Nullarbor Daisy		R			2			2
*	Brassica tournefortii	Wild Turnip			12		1	14		27
	Bromus arenarius	Sand Brome		†	5		1	3		9
*	Bromus rubens	Red Brome		·	1		3	4		8
	Bromus sp.	Brome			1			å		1
	Bulbine sp.	Bulbine-lily			1	.				1
*	Bupleurum semicompositum	Hare's Ear			2		2	2		6
*	Cakile edentula	American Sea Rocket					2		1	3
	Calandrinia eremaea	Dryland Purslane			1	ā		å		1
	Calotis breviradiata					ł	1			1
	Calotis cymbacantha	Showy Burr-daisy		<u> </u>				1		1
	Calotis hispidula	Hairy Burr-daisy		·	3		1	6		10
	Carpobrotus rossii	Native Pigface						4		4
	Carpobrotus rossii (NC)	Native Pigface			15		1	<u> </u>		16
	Carpobrotus sp.	Pigface			-	Į		2		2
*	Carrichtera annua	Ward's Weed			16			22		38
*	Carthamus lanatus	Saffron Thistle			-			1	1	2
	Cassytha melantha	Coarse Dodder- laurel			3			2		5
	Cassytha peninsularis	Peninsula Dodder- laurel		<u> </u>				1		1
	Casuarina pauper	Black Oak	!	<u> </u>	1	<u>.</u>	1			2
*	Centaurea melitensis	Malta Thistle			5		1	2		8
*	Centaurium erythraea	Common Centaury		<u> </u>	1		1	1		3
	Cephalipterum drummondii	Pompom Head			-		1	-		1
	Chamaesyce drummondii	. r			4	4	1	14		19
	Chenopodium curvispicatum	Cottony Goosefoot	4			ā	1	14		15
	Chrysocephalum apiculatum	Common Everlasting					1			1
	Comesperma volubile	Love Creeper					2	2		4
	Compositae sp.	Daisy Family			1			1		2
	Convolvulus recurvatus ssp.			.}	-			ļ	1	
	nullarborensis			ļ				ļ	1	1
	Convolvulus remotus	Grassy Bindweed		<u> </u>				2		2
	Crassula colligata ssp. lamprosperma	Australian Stonecrop					3			3
	Crassula colorata var. acuminata	Dense Crassula				Į	1			1
	Crassula colorata var. colorata	Dense Crassula			8			12		20

I	Species Name	Common Name	Aus	SA	SU pre 2007	OP pre 2007	Adel Herb	SU BS575	OP BS575	Total Records
	Crassula sieberiana ssp. tetramera (NC)	Australian Stonecrop			18					18
***	Crassula sp.	Crassula/Stonecrop			1	Ì		İ		1
	Cratystylis conocephala	Bluebush Daisy			43		6	29	2	80
	Darwinia salina	Salt Darwinia			5 		2			2
	Daucus glochidiatus	Native Carrot			5		5	13		23
	Daviesia benthamii ssp. humilis	Mallee Bitter-pea		R	1	**************************************	1			2
Ì	Dianella revoluta var. divaricata	Broad-leaf Flax-lily			3		1	2	1	7
	Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface			17		3	8		28
	Dissocarpus biflorus var. biflorus	Two-horn Saltbush			2					2
	Dodonaea stenozyga	Desert Hop-bush			5	İ	1	1		7
	Elachanthus pusillus	Elachanth					1			1
	Enchylaena tomentosa var. tomentosa	Ruby Saltbush			32		1	28		61
	Enneapogon sp.	Bottle-washers/ Nineawn			2					2
*	Eragrostis curvula	African Love-grass		-		ļ	2			2
7	Eremophila deserti	Turkey-bush		†	8	ļ	5	19		32
	Eremophila glabra ssp. glabra	Tar Bush	ļ Ī	ļ	10	<u> </u>	7	13		30
	Eremophila maculata ssp.	Spotted Emubush			1	<u>.</u>			<u></u>	1
	Eremophila parvifolia	Small-leaf Emubush		R	5			6	1	12
	Eremophila scoparia	Broom Emubush		1	9		12	9		30
	Eremophila sp. Praecox (R.H.Ashby 131)	Broom Emadusii		R			12	1		1
	Eriochiton sclerolaenoides	Woolly-fruit		J	10	A	6	21		37
*	Englisses significant	Bluebush Cut-leaf Heron's-bill		ļ	4	ĺ	7	9		20
	Erodium cicutarium	Blue Heron's-bill		ļ	4	<u> </u>	/	ļ	<u> </u>	ļ
	Erodium crinitum	ļ		ļ	1	<u> </u>		2	<u> </u>	2
	Erodium cygnorum Erodium sp.	Blue Heron's-bill Heron's-			1 4			1 2		2 6
	*	bill/Crowfoot		ļ						
	Erymophyllum ramosum ssp. ramosum						1	1		2
	Eucalyptus brachycalyx	Gilja			2		2	1		5
	Eucalyptus calcareana	Nundroo Mallee			19	<u>.</u>	27	8	3	57
	Eucalyptus concinna	Victoria Desert Mallee			1		1			2
	Eucalyptus gracilis	Yorrell			13		8	14	2	37
	Eucalyptus gypsophila	Kopi Mallee			9	**************************************	1	: :		1
	Eucalyptus leptophylla	Narrow-leaf Red Mallee					1			1
	Eucalyptus oleosa (NC)	Red Mallee			12		1			13
	Eucalyptus oleosa ssp.							6	1	7
	Eucalyptus oleosa ssp. ampliata	Red Mallee			13	1	14	8	1	37
	Eucalyptus oleosa ssp. oleosa	Red Mallee					1			1
	Eucalyptus pileata	Capped Mallee					1			1
	Eucalyptus rugosa	Coastal White Mallee				\$	1			1
	Eucalyptus socialis (NC)	Beaked Red Mallee			6					6
	Eucalyptus yalatensis	Yalata Mallee			2		26	2	3	33
	Eulalia aurea	Silky Brown-top		<u> </u>	B	4	1			1
*	Euphorbia paralias	Sea Spurge	:		6		<u>.</u>			6
	Euphorbia sp.	Spurge			1					1
-	Eutaxia microphylla	Common Eutaxia			3	÷	1	1		5
	Exocarpos aphyllus	Leafless Cherry		†	28	ļ	9	18		55
	Frankenia foliosa	Leafy Sea-heath	ļ		6	ļ	ļ	<u> </u>	<u> </u>	6
	Frankenia pauciflora var.	Southern Sea-heath	<u></u>	<u> </u>	3	ļ			<u>L</u>	3
	Frankenia pauciflora var.	6			9	<u> </u>				9
	fruticulosa	Southern Sea-heath		ļ	= =	<u> </u>	<u> </u>	<u> </u>	<u> </u>	ļ
	Frankenia serpyllifolia	Thyme Sea-heath		ļ	10	ļ	1	13	1	25
	Frankenia sessilis	Small-leaf Sea-heath			22			12		34
	Frankenia sp.	Sea-heath			= = = = =			2		2
[Geijera linearifolia	Sheep Bush			31		9	23	1	64
_]	Glycine rubiginosa	Twining Glycine		<u></u>		<u></u>	1			1
	Goodenia pinnatifida	Cut-leaf Goodenia		1	3		7	11		21

I	Species Name	Common Name	Aus	SA	SU pre 2007	OP pre 2007	Adel Herb	SU BS575	OP BS575	Total Records
	Goodenia varia	Sticky Goodenia	ļ		2		5			7
	Gramineae sp.	Grass Family			3			1		4
	Gunniopsis calcarea					1				1
*	Hedypnois rhagadioloides (NC)	Cretan Weed	ļ		1					1
	Helichrysum leucopsideum	Satin Everlasting	ļ				1			1
	Hemichroa diandra	Mallee Hemichroa			9		4	2	1	16
*	Hordeum glaucum	Blue Barley-grass	ļ		2		3	1		6
*	Hornungia procumbens	Oval Purse	ļ 		1		2	7		3
ļ	Hypoxis glabella var. glabella	Tiny Star			3		1	1		5
	Isoetopsis graminifolia	Grass Cushion		ļ	3		3	3		9
	Isolepis nodosa	Knobby Club-rush			1		1			2
ļ	Kippistia suaedifolia	Fleshy Kippistia					4	2	3	9
	Lawrencia glomerata	Clustered Lawrencia	7		1		1	1		3
ļ	Lawrencia squamata	Thorny Lawrencia	ļ		10		2	13	2	27
	Lepidium phlebopetalum	Veined Peppercress	ļ	ļ				8		8
	Lepidium sp.	Peppercress	ļ		1					1
	Leptorhynchos waitzia	Button Immortelle			1		4	2		7
	Leucophyta brownii	Coast Cushion Bush			3		2			5
	Lomandra collina	Sand Mat-rush					2			2
	Lomandra effusa	Scented Mat-rush			8		2		3	13
	Lycium australe	Australian Boxthorn	<u> </u>		17		1	11		29
*	Lycium ferocissimum	African Boxthorn			1		1	1		3
	Lycium sp.	Boxthorn			1					1
	Lysiana exocarpi ssp. exocarpi	Harlequin Mistletoe			3		1	1		5
	Maireana appressa	Pale-fruit Bluebush						2		2
	Maireana brevifolia	Short-leaf Bluebush						1		1
	Maireana erioclada	Rosy Bluebush			51		7	43	1	102
	Maireana georgei	Satiny Bluebush			1		1			2
	Maireana lobiflora	Lobed Bluebush					1	1		2
	Maireana oppositifolia	Salt Bluebush			24		2	10	1	37
	Maireana pentatropis	Erect Mallee Bluebush			2		3	1		6
	Maireana radiata	Radiate Bluebush			3		2	5		10
	Maireana rohrlachii	Rohrlach's Bluebush		R			1			1
	Maireana sedifolia	Bluebush			4		2	7		13
	Maireana sp.	Bluebush/Fissure- plant			9			5		14
	Maireana trichoptera	Hairy-fruit Bluebush			5		1	8		14
	Maireana triptera	Three-wing Bluebush			9					9
	Maireana turbinata	Top-fruit Bluebush			1		3	4		8
*	Marrubium vulgare	Horehound			3		1		1	5
*	Medicago minima var. minima	Little Medic						4		4
*	Medicago sp.	Medic			2					2
*	Medicago truncatula	Barrel Medic			1			1		2
	Melaleuca lanceolata	Dryland Tea-tree			26		5	10	1	42
	Melaleuca pauperiflora (NC)	Boree			1					1
	Melaleuca pauperiflora ssp. mutica	Boree			2		3	3		8
*	Mesembryanthemum crystallinum	Common Iceplant			5			1	1	7
	Microlepidium alatum		VU	V			1			1
	Microlepidium pilosulum	Hairy Shepherd's- purse		R			1			1
	Minuria cunninghamii	Bush Minuria						1		1
*	Moraea setifolia	Thread Iris	T		1			5	1	7
	Myoporum brevipes	Warty Boobialla	Ĭ				1			1
	Myoporum insulare	Common Boobialla	! ! ! !		8	======================================	5	1		14
	Myoporum platycarpum ssp.	False Sandalwood			15	======================================		2		17
	Myoporum platycarpum ssp.	False Sandalwood	•		11		4	17		32
	platycarpum Nicotiana goodspeedii	Small-flower			9		6	8		23
		Tobacco	ļ		,		Ü			
	Nicotiana rosulata ssp.				<u> </u>			1		1
Ш	Nitraria billardierei	Nitre-bush	<u> </u>		26		3	19	3	51

I	Species Name	Common Name	Aus	SA	SU pre 2007	OP pre 2007	Adel Herb	SU BS575	OP BS575	Total Records
	Olearia axillaris	Coast Daisy-bush			2					2
	Olearia brachyphylla	Short-leaf Daisy- bush					1	1		2
	Olearia calcarea	Crinkle-leaf Daisy- bush						1		1
	Olearia exiguifolia	Lobed-leaf Daisy- bush			4			5		9
	Olearia floribunda var. floribunda	Heath Daisy-bush	<u> </u>		1			<u> </u>		1
	Olearia magniflora	Splendid Daisy-bush		1	4		4	8	3	19
	Olearia minor	Heath Daisy-bush		1	1	ļ			3	1
	Olearia muelleri	Mueller's Daisy-bush	<u></u>		7		1	7		15
	Olearia pimeleoides ssp. incana	Showy Daisy-bush	<u></u>			<u>.</u>		1		1
	Omphalolappula concava	Burr Stickseed		<u> </u>	2	<u> </u>	2	1		5
	Osteocarpum salsuginosum	Inland Bonefruit	<u> </u>	-				1		1
	Oxalis perennans	Native Sorrel	<u> </u>	-	1			1		2
*	Parapholis incurva	Curly Ryegrass	ļ				2			2
	Parietaria debilis (NC)	Smooth-nettle	<u> </u>		5					<u> </u>
	Phlegmatospermum cochlearinum	Downy Cress			1	<u> </u>	5			6
	Phlegmatospermum richardsii	Nullarbor Cress	<u> </u>	V		1		<u> </u>		1
	Pimelea micrantha	Silky Riceflower	<u> </u>	1			1			1
	Pimelea serpyllifolia ssp.	1	ļ	.	_	ļ		_		
	serpyllifolia	Thyme Riceflower	ļ	<u> </u>	3	ļ	2	2		7
	Pittosporum angustifolium	Native Apricot	<u></u>		30		4	16	1	51
*	Plantago bellardii	Hairy Plantain	<u></u>		1			3		4
	Plantago drummondii	Dark Plantain	<u>.</u>				2	5		7
*	Plantago lanceolata var.	Ribwort			4					4
	lanceolata		ļ	-		1				
	Plantago sp.	Plantain Bulbous Meadow-	ļ		1	ļ				1
*	Poa bulbosa	grass						1		1
	Poa drummondiana	Knotted Poa		R				1		1
	Rodolonia con coccus	Grey Copper-wire	İ	İ	1	<u> </u>	2		1	
	Podolepis canescens	Daisy	ļ	<u> </u>	1	ļ	3	ļ	1	5
	Podolepis rugata var.	Pleated Copper-wire Daisy			1			6	2	9
	Podolepis rugata var. rugata	Pleated Copper-wire Daisy	å		3		5	4	3	15
	Pomaderris forrestiana	Daisy		R	1					1
	Pterostylis nana	Dwarf Greenhood	<u> </u>	1	l	ļ	1			1
	Ptilotus obovatus var. obovatus	Silver Mulla Mulla	<u></u>		5		2	5	1	13
	Pycnosorus eremaeus	Golden Billy-buttons	<u> </u>					3		3
	Pycnosorus pleiocephalus	Soft Billy-buttons			4			1	1	6
*	Reichardia tingitana	False Sowthistle			7			2	1	3
	Rhagodia candolleana ssp.	Sea-berry Saltbush	ļ		1	ļ			1	1
	Rhagodia candolleana ssp.		<u></u>					_		
	candolleana	Sea-berry Saltbush			2			3		5
	Rhagodia crassifolia	Fleshy Saltbush			59		8	30		97
	Rhagodia spinescens	Spiny Saltbush			19		2			21
	Rhodanthe chlorocephala ssp. rosea	Western Sunray					2		2	4
	Rhodanthe corymbiflora	Paper Everlasting	İ	<u> </u>		<u> </u>		3		3
	Rhodanthe floribunda	White Everlasting	<u> </u>			J	2	4	2	8
	Rhodanthe haigii	Haig's Everlasting	<u></u>	<u> </u>	2	<u></u>	7	6	2	17
	Rhodanthe pygmaea	Pigmy Daisy		-			1	1		2
*	Rostraria cristata	Annual Cat's-tail	<u></u>		1	\$				1
*	Rostraria pumila	Tiny Bristle-grass	<u></u>	†	20	<u> </u>	1	5		26
	Salsola tragus	Buckbush	\$! !	<u> </u>	37	\$	5	22		64
*	Salvia verbenaca	Wild Sage	<u></u>	<u> </u>	1	<u> </u>				1
*	Salvia verbenaca var. verbenaca	Wild Sage	6	n (1	1	((m		2
	Samolus repens	Creeping Brookweed	ò	n (5	<u> </u>	5			5
	Santalum acuminatum	Quandong	İ	1	5	<u> </u>	1	8	1	15
	Santalum lanceolatum	Plumbush	ļ	-	2	ļ		<u> </u>		2
	Santalum spicatum	Sandalwood	<u></u>	V	1	4	1	<u> </u>	<u> </u>	2
	Sarcozona praecox	Sarcozona	<u> </u>	•	1	ė		<u> </u>		1
	Scaevola bursariifolia	Bursaria Fanflower	i	<u> </u>	1			6	1	8
	J		:			:	:	:	:	

I	Species Name	Common Name	Aus	SA	SU pre 2007	OP pre 2007	Adel Herb	SU BS575	OP BS575	Total Records
	Scaevola collaris		·	ļ ļ			1	ş		1
	Scaevola spinescens	Spiny Fanflower			10		4	5		19
*	Schismus barbatus	Arabian Grass		ļ	12		4	7		23
	Sclerolaena brevifolia	Small-leaf Bindyi		ļ	3		2	8		13
ļļ	Sclerolaena diacantha	Grey Bindyi	ļ	ļ	10		1	1		12
	Sclerolaena obliquicuspis	Oblique-spined Bindyi			22		5	25		52
	Sclerolaena patenticuspis	Spear-fruit Bindyi			7		3			10
	Sclerolaena uniflora	Small-spine Bindyi		}	14		4	24		42
	Senecio glossanthus	Annual Groundsel			1		2	11		14
	Senecio glossanthus (NC)	Annual Groundsel			4		1			5
	Senecio pinnatifolius	Variable Groundsel			31		6	12	1	50
	Senna artemisioides ssp. petiolaris							2	1	3
	Senna artemisioides ssp.	Four-leaf Desert						1		1
	quadrifolia Senna artemisioides ssp. X	Senna Broad-leaf Desert						<u> </u> 		
	coriacea	Senna					4	1	1	6
1	Senna artemisioides ssp. X sturtii	Grey Senna	<u> </u>	<u> </u>	1		<u></u>	<u> </u>		1
	Senna cardiosperma ssp.	Curved-leaf Senna					1			1
	microphylla	Curved-lear Sellila	.	ļ.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			1	<u>.</u> 		1
	Sida corrugata var.	Corrugated Sida		ļ				1		1
	Sida sp.	Sida			1					1
	Sida spodochroma	Limestone Sida		ļ				1		1
*	Sisymbrium erysimoides	Smooth Mustard	ļ	ļ	1		1	5		7
*	Sisymbrium irio	London Mustard	ļ	ļ	2		201000000000000000000000000000000000000			2
*	Sisymbrium sp.	Wild Mustard	ļ	ļ	4		ļ	ļ 		4
	Solanum hystrix	Afghan Thistle		ļ			7	3	1	11
	Solanum symonii	Symon's Kangaroo- apple			1		7	1	3	12
*	Sonchus oleraceus	Common Sow-thistle			23			34	1	58
	Sonchus sp.	Sow-thistle			3					3
*	Spergularia diandra	Lesser Sand-spurrey						2		2
	Spinifex hirsutus	Rolling Spinifex			4				1	5
	Sporobolus virginicus	Salt Couch					1			1
	Spyridium phylicoides	Narrow-leaf Spyridium			2		1			3
	Stenopetalum lineare	Narrow Thread-petal	1	<u> </u>	4		3	4		11
	Tecticornia disarticulata			}	11		1	9		21
	Tecticornia halocnemoides ssp.	Grey Samphire	4	<u> </u>	3			2		5
	Tecticornia indica ssp. leiostachya	Brown-head Samphire		<u> </u>	·			1		1
	Tecticornia pruinosa	Bluish Samphire	ļ	ļ			1	ļ		1
	Tecticornia pterygosperma ssp.	Winged-seed	İ	L	_		B	<u> </u>		
	pterygosperma	Samphire			6		2			8
j	Tecticornia sp.	Samphire	ļ	<u> </u>	11			11		22
	Tecticornia tenuis	Slender Samphire	<u> </u>				1	<u></u>		1
	Templetonia battii	Spiny Templetonia		R				1		1
	Templetonia retusa	Cockies Tongue		ļ	5	1	1			7
	Tetragonia eremaea	Desert Spinach	ļ	ļ			1	ļ		1
	Tetragonia implexicoma	Bower Spinach	ļ		16		5	14		35
<u> </u>	Teucrium sessiliflorum	Mallee Germander	ļ	<u> </u>			2	<u> </u>		2
	Threlkeldia diffusa	Coast Bonefruit	ļ	ļ Ļ	46		2	31		79
	Thysanotus baueri	Mallee Fringe-lily	ē				2	19		21
	Trichanthodium skirrophorum	Woolly Yellow- heads			13		6	26	2	47
	Triglochin sp. A (N.N.Donner 3596)	Spurred Arrowgrass						1		1
Ī	Triglochin sp. B (J.Z.Weber 1330)	Spurred Arrowgrass		[1	Î		1		2
	Triodia irritans	Spinifex	4	30000000000000000000000000000000000000	1		20100000000000000000000000000000000000	0		1
	Triodia sp.								1	1
	Velleia arguta	Toothed Velleia			1		2	1		2
	Velleia sp.	Velleia			1					1
	Vittadinia arida		<u> </u>					1		1
	Vittadinia australasica var.	Sticky New Holland Daisy						5		5
ٺــــــا		Luisy	1	1		<u> </u>	<u> </u>	l	l	

I	Species Name	Common Name	Aus	SA	SU pre 2007	OP pre 2007	Adel Herb	SU BS575	OP BS575	Total Records
	Vittadinia australasica var. australasica	Sticky New Holland Daisy			2		1	1		4
	Vittadinia cuneata var. cuneata f. cuneata	Fuzzy New Holland Daisy			1					1
	Vittadinia gracilis	Woolly New Holland Daisy			1					1
	Vittadinia megacephala	Giant New Holland Daisy					1			1
	Vittadinia sp.	New Holland Daisy						1		1
*	Vulpia bromoides	Squirrel-tail Fescue			1					1
*	Vulpia muralis	Wall Fescue					1			1
*	Vulpia myuros f.	Fescue						1		1
	Wahlenbergia luteola	Yellow-wash Bluebell			1					1
	Westringia rigida	Stiff Westringia			10		3	8		21
	Wilsonia humilis	Silky Wilsonia					1			1
	Wurmbea dioica ssp.				2		2	7		11
	Wurmbea dioica ssp. brevifolia	Early Nancy					1	1		2
	Wurmbea dioica ssp. dioica	Early Nancy						1		1
	<i>Wurmbea</i> sp.	Nancy						2		2
	Zygophyllum angustifolium	Scrambling Twinleaf			3			2		5
	Zygophyllum aurantiacum ssp.				10			10		20
	Zygophyllum aurantiacum ssp. aurantiacum	Shrubby Twinleaf			1		6	11		18
	Zygophyllum billardierei	Coast Twinleaf					1	1		2
	Zygophyllum eremaeum				2			1		3
	Zygophyllum ovatum	Dwarf Twinleaf			5		4	20		29
	Zygophyllum sp.	Twinleaf			18			8		26
	TOTAL TAXA (286 Native and 4	4 Exotic)	1	13	1701	6	563	1390	100	3760

APPENDIX 4a. PLANT TAXA RECORDED AT EACH COL, COO, HOB AND NAN SITE DURING THE YALATA IPA SURVEY AND THEIR COVER/ABUNDANCE ESTIMATE.

Tot Total number of sites taxon recorded at (of a total of 55, also includes YAL sites).

N = Not many (1-10 plants & <5% cover); T = sparsely present (cover <5%); 1 = plentiful, but of small cover (<5%); 2 = any number of individuals covering 5-25% of area; 3 = any number of individuals covering 25-50% of area. Cover/Abundance scores

G . N	G N	TD 4			Col	ona S	ites (C	COL)				Co	ombr	a Tra	ck Sit	es (Co	00)			Hea	d of t	he Biş	ght Sit	tes (H	IOB)				Nai	nwoo	ra We	ell Site	es (NA	AN)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	8	01	02	03	04	05	06	07	08
Acacia hakeoides	Hakea Wattle	1																																	
Acacia oswaldii	Umbrella Wattle	23	N	N	N	N	N		N		N				N			1										1					Т	N	i
Acacia papyrocarpa	Western Myall	17		2	2	N	Т		3											N	2										2	N	Т	N	2
Acacia spinescens	Spiny Wattle	1		Ī			Ī																										N		
Acrotriche patula	Prickly Ground- berry	1																																	
Amyema melaleucae	Tea-tree Mistletoe	1																				N													
Amyema miquelii	Box Mistletoe	3											ļ				<u></u>			ļ					<u> </u>			1					1		
Amyema quandang var. quandang	Grey Mistletoe	5		1	Т		<u></u>		1	ļ			<u></u>				ļ			ļ											1				1
Angianthus tomentosus	Hairy Angianthus	4		ļ		<u>.</u>	ļ					1	Т			2	1	ļ							ļ								ļ		
Atriplex acutibractea ssp. acutibractea	Pointed Saltbush	1	N																																
Atriplex cinerea	Coast Saltbush	1															T																		
Atriplex stipitata	Bitter Saltbush	10	T			2						2	Т					1																	1
Atriplex suberecta	Lagoon Saltbush	1																																	
Atriplex vesicaria ssp.	Bladder Saltbush	49	Т	2	2		2	2	2	2	3		2	2	1	3	2	1	2	Т	2	Т	Т	N		2	2	2	2	2	2	Т	2	N	2
Austrodanthonia caespitosa	Common Wallaby-grass	7	Т		T					Т						1	1													2				1	
Austrodanthonia setacea	Small-flower Wallaby-grass	8		1				å				1	T		Т								N		2	1	l								1
Austrodanthonia sp.	7. 9.	18	1	†	1		1		Т		•]	d	ļ		ļ	†	1	2	1			1	†	1	l l		3			1			
Austrostipa acrociliata	Graceful Spear- grass	15			. 4			<u></u>		.4	1	4	1	Т	Т		1	Т				N		4				Т					N	-	Т
Austrostipa drummondii	Cottony Spear- grass	12	Т	1						Т		1								2			N							2	Т	3		2	1
Austrostipa elegantissima	Feather Spear- grass	4		Т	N								Т																						
Austrostipa eremophila	Rusty Spear-grass	16	Т		T					Т						1			Т		1			1	2	Т	Γ		2		Т	1		2	Т
Austrostipa nitida	Balcarra Spear- grass	19			Т	Т	Т	1	Т	Т		1	Т		Т	1						N						Т	1	2	3	3	Т	2	2
Austrostipa platychaeta	Flat-awn Spear- grass	2		Т																	1														
Austrostipa sp.	Spear-grass	17					l	<u> </u>					<u></u>				<u> </u>								<u> </u>							1			
Austrostipa velutina		1					l										Т																		
Beyeria lechenaultii	Pale Turpentine Bush	6													Т	Т	2	1																	

~	_	_			Col	ona S	ites (C	COL)				Co	ombra	a Tra	ck Sit	es (C	00)			Hea	d of t	he Big	ght Si	tes (I	IOB)			N	anwo	ora W	ell Si	tes (NA	AN)	
Species Name	Common Name	Tot	01	02	03		05	06	07	08	01	02	03	04		06	07	08	01	02	03	04	05	06	07		01							08
Boraginaceae sp.	Borage Family	3																																\neg
Brachyscome ciliaris	Variable Daisy	14		1	İ			Т	1	İ	•	1					1		1	1	1			1	N	Т		Т		Т	1			
Brachyscome ciliaris var. ciliaris	Variable Daisy	10	1		Т					1	•		Т			Т													1				1	1
Brachyscome lineariloba	Hard-head Daisy	10	Т	Т	Т			1		1	•					Т												Т			Т		Т	Т
*Brassica tournefortii	Wild Turnip	14	N		İ		1	1		N	N	N		1		Т	1					<u> </u>	1	1	1					Т			N	N
Bromus arenarius	Sand Brome	3		Т	4		1	Т		Т	•	å								-														
*Bromus rubens	Red Brome	4					1	1		N	•	Т			1		1							1				Т			Т			
*Bupleurum semicompositum	Hare's Ear	2		Т						1	•																							
Calotis cymbacantha	Showy Burr- daisy	1			4					Å	•	Å					. 4						Т	.4										
Calotis hispidula	Hairy Burr-daisy	6	Ì	Т	Т		1	Т			•						1							1	Ī									
Carpobrotus rossii	Native Pigface	4			4		 [•	å	B					1					N	N										
Carpobrotus sp.	Pigface	2			**************************************		•	. 			•	ė	5 				- 	.(.5	ē													
*Carrichtera annua	Ward's Weed	22	Т	2	T		1	1		Т	•	1		Ī	<u> </u>		· [<u> </u>	Т	1	1	1		1	T						1		N	Т
*Carthamus lanatus	Saffron Thistle	1		İ	Ì	1	1	Ì	<u> </u>	j	•	İ	Ì	Î			1	İ		Ì			İ	1	T			<u> </u>			1	T		
Cassytha melantha	Coarse Dodder- laurel	2			4			.		<u> </u>	•	4		ā	Т		. 4					4	N	4									4	
Cassytha peninsularis	Peninsula Dodder-laurel	1									•			¢				•																
*Centaurea melitensis	Malta Thistle	2		•							•	Т	5								ē		1											
*Centaurium erythraea	Common Centaury	1	Т		İ					İ	•				İ																			
Chamaesyce drummondii		14	Т	Т				Т		Т	•	N				Т				Т					N						Т			
Chenopodium curvispicatum	Cottony Goosefoot	14	N	1	N	1					•		N							N	Т	N						N		N			N	Т
Comesperma volubile	Love Creeper	2													N																			
Compositae sp.	Daisy Family	1																																
Convolvulus remotus	Grassy Bindweed	2																																
Crassula colorata var. colorata	Dense Crassula	12	N	Т				Т		Т	1	1	Т			Т	Т	1															Т	Т
Cratystylis conocephala	Bluebush Daisy	29		3	3	2	3		3		2	4		2	Т			2		3	2		N			3	3			2		3	N	Т
Daucus glochidiatus	Native Carrot	13					I	T		T		1				Т			Т															
Dianella revoluta var.	Broad-leaf Flax-	2					Ī					Ĭ	Т		N		Ī																	
divaricata	lily		<u> </u>	ļ	ļ		ļ	ļ	ļ	ļ	ļ	ļ		ļ	13	ļ	ļ	ļ	ļ	ļ	ļ	ļ	ļ	ļ	ļ								ļ	
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	8		ļ	<u> </u>	<u> </u>		1		1				Т	<u> </u>	ļ		<u> </u>	Т	1		<u> </u>	<u> </u>	N	<u> </u>			_	<u> </u>			<u> </u>	ļ	
Dodonaea stenozyga	Desert Hop-bush	1	<u> </u>	ļ	ļ		ļ	ļ	ļ			ļ	ļ		N		ļ	ļ			ļ		ļ	ļ										
Enchylaena tomentosa var.	Ruby Saltbush	4																																

a					Col	ona S	ites (C	COL)				Co	ombr	a Tra	ck Sit	es (CC	OO)			Hea	ad of t	he Bi	ght Si	ites (1	HOB))			Nai	1W00	ra We	ell Sit	es (N	AN)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	0	8 0	1	02	03	04	05	06	07	08
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	24	N	N	Т	Т	N		1		Т		N		Т	N	1	Т		N	Т	N	Т											N	Т
Eremophila deserti	Turkey-bush	19		N		N	Т		N		N				T		1	1			N						1		1				2		
Eremophila glabra ssp. glabra	Tar Bush	13									Т	N	Т	N	Т	N																		N	Т
Eremophila parvifolia	Small-leaf Emubush	6					1						N		N						N		•				2	2				•	2		
Eremophila scoparia	Broom Emubush	9	1		1		Т	1					1	1			Ì			l	1			Ì			1					1	Т		N
Eremophila sp. Praecox (R.H.Ashby 131)		1					N										4																\$		
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	21	Т			Т			Т	N									Т	N	N			N	N				Т	1	1	Т	Т	Т	Т
*Erodium cicutarium	Cut-leaf Heron's- bill	9																																	
Erodium crinitum	Blue Heron's-bill	2						Т		1																									<u> </u>
Erodium cygnorum	Blue Heron's-bill	1																						1											
Erodium sp.	Heron's- bill/Crowfoot	2																																	
Erymophyllum ramosum ssp. ramosum		1		Т																															
Eucalyptus brachycalyx	Gilja	1			1] 		Ì									1								1			<u></u>
Eucalyptus calcareana	Nundroo Mallee	8									2		3	2	2			2									2	2							
Eucalyptus gracilis	Yorrell	14									2		2	2	Т		N	2				N										6	T		<u></u>
Eucalyptus oleosa ssp.		6																																	i
Eucalyptus oleosa ssp. ampliata	Red Mallee	8				2	3				2		Т		2								N				2	2					2		
Eucalyptus yalatensis	Yalata Mallee	2			1		1	1	1	1			Т	1	1		1	<u> </u>		1	1	N		1								1			<u></u>
Eutaxia microphylla	Common Eutaxia	1		İ	1		1	Ì	<u> </u>	i		Ì	N	1	1		Ì			Ī	1	1		İ				T				1			<u>.</u>
Exocarpos aphyllus	Leafless Cherry	18	N		N	N	N		2		N	N	!	N	N		ļ	N		!	4	<u> </u>									ļ	4		ļ	N
Frankenia serpyllifolia	Thyme Sea-heath	13		1	N	•	Т	1		N			N	Ţ	<u> </u>		N			-	Т		•								<u> </u>	f	T		<u></u>
Frankenia sessilis	Small-leaf Sea- heath	12												2	Т	1	1	1						2	2										Т
Frankenia sp.	Sea-heath	2											2				A															N			
Geijera linearifolia	Sheep Bush	23			Т	1	Т		2		N			1	1	Т	2	1			N						N	1			N		N		N
Goodenia pinnatifida	Cut-leaf Goodenia	11	1										Т																1	1	Т			Т	Т
Gramineae sp.	Grass Family	1					•						5	Ī	-					-	-										<u> </u>				<u></u>
Halosarcia sp. (NC)	Samphire	8		Ť	1		1	3	<u> </u>	3]	Ī	İ	<u> </u>		Ì	3	3	N	Т		ĺ	Т	1	2	7	Ì		Ì	1			 [
Hemichroa diandra	Mallee Hemichroa	2																																	
*Hordeum glaucum	Blue Barley-grass	1		1	1	***************************************	1	1	<u> </u>	1		1]	1	1	1	1	1	1	1	1			1							1	1		N	<u></u>
Hypoxis glabella var. glabella	Tiny Star	1											3																						
Isoetopsis graminifolia	Grass Cushion	3						Т											.																<u></u>
Kippistia suaedifolia	Fleshy Kippistia	2		1	1		1		T					T	1	1]		1		1	Ī					Ì		Ĭ	1		1	N

C N	C N	T-4			Cole	ona Si	ites (C	COL)				Co	ombr	a Tra	ck Sit	es (CC	OO)			Hea	d of t	he Bi	ght Si	tes (F	IOB)			Na	nwoo	ra W	ell Site	es (NA	AN)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
Lawrencia glomerata	Clustered Lawrencia	1																																
Lawrencia squamata	Thorny Lawrencia	13																	N		N			2		2							N	2
Lepidium	Veined	8											Т						N	1	N								Т	Т	Т			Т
phlebopetalum	Peppercress	0	ļ	ļ	ļ	ļ	ļ	ļ		ļ		ļ	1	ļ	<u> </u>	ļ	ļ	ļ	11	1	11	ļ	ļ	ļ	ļ			.	1	1	1	ļ	ļ	
Leptorhynchos waitzia	Button Immortelle	2	Т		<u></u>					Т							<u></u>	<u></u>			<u> </u>										<u></u>			
Lycium australe	Australian Boxthorn	11	N			1	Т			N											N							1						Т
*Lycium ferocissimum	African Boxthorn	1																																
Lysiana exocarpi ssp.	Harlequin	1			<u></u>		•			<u> </u>	•		5	-		•	<u>.</u>			-											d	<u></u>		ļ
exocarpi	Mistletoe	1	ļ	ļ	ļ		Į	ļ		ļ		ļ	ļ	Į		ļ	ļ	ļ		ļ	ļ	ļ		ļ	ļ			ļ	ļ		ļ			<u> </u>
Maireana appressa	Pale-fruit Bluebush	2						1																										
Maireana brevifolia	Short-leaf Bluebush	1															1																	
Maireana erioclada	Rosy Bluebush	43	Т	1	1	1	Т		2	Т	1	2			Т	Т			1	1	1	N	N	Т	2	1	1	1	2	1	1	Т	Т	Т
Maireana lobiflora	Lobed Bluebush	1											5 							9	6										é			ļ
Maireana oppositifolia	Salt Bluebush	10	1	1	İ		1	2		2	•	İ	Ì	2	Т	1	1	1		i e	İ		1	İ		1		<u> </u>	1		1			
Maireana pentatropis	Erect Mallee Bluebush	1		1	!						•				ļ		ļ				Į				-			-			J			<u> </u>
Maireana radiata	Radiate Bluebush	5	ļ							ļ 	•		ļ										ļ		·			•			N		N	<u> </u>
Maireana sedifolia	Bluebush	7	 		ļ	1	N	ļ		ļ	·	ļ	ļ		 	ļ	ļ	ļ			å	ļ	ļ	ļ	- 	N		2						ļ
Maireana sp.	Bluebush/Fissure- plant	5			<u></u>	1 1	1 1	<u> </u>		<u> </u>		I	<u> </u>		<u></u>			<u> </u>		Т		<u> </u>		<u> </u>	<u> </u>	Т		1	<u> </u>	<u> </u>	J	N		
Maireana trichoptera	Hairy-fruit Bluebush	8			Т		Т				•																							Т
Maireana turbinata	Top-fruit Bluebush	4								Т									1	1														
*Medicago minima var. minima	Little Medic	4	Т		Т																													
*Medicago truncatula	Barrel Medic	1					Ĭ							Ì																				
Melaleuca lanceolata	Dryland Tea-tree	10	1				Ĭ			<u></u>	<u> </u>	Ĭ	3	2	3	N	2	2]				2	Ĭ	-		N	<u> </u>			Ĭ	[
Melaleuca pauperiflora ssp. mutica	Boree	3			**************************************	() 	. 			***************************************			5				***************************************			.5	ē	3								(m	6			<u> </u>
*Mesembryanthemum crystallinum	Common Iceplant	1									•											Т												
Minuria cunninghamii	Bush Minuria	1	†	<u> </u>	İ		Ì	<u> </u>	İ	Ì	•	İ] [Ì	1	•	İ	Ì	1	1	İ	<u> </u>	<u> </u>	İ	<u> </u>			N			İ		İ	<u> </u>
*Moraea setifolia	Thread Iris	5	 	†	ļ			ļ		ļ	<u> </u>	ļ	}	4	†	†	ļ	 	1		å	ļ	†	ļ	†			-			ļ	ļ	Т	N
Myoporum insulare	Common Boobialla	1		<u> </u>	<u> </u>		<u></u>	<u></u>		<u> </u>		<u></u>	I	<u></u>	<u> </u>		<u> </u>	<u> </u>		<u> </u>	<u></u>	<u> </u>	2					-			J			
Myoporum	False	ļ	ł	ļ	i		ļ			i		i		ļ		ļ	ļ						ļ	i				.			i			İ
platycarpum ssp.	Sandalwood	2	ļ	<u> </u>	ļ	ļ	<u> </u>	<u> </u>	<u> </u>	<u> </u>	2	<u> </u>	<u> </u>	<u> </u>		<u> </u>	ļ	<u> </u>	<u> </u>	<u> </u>	2	<u> </u>	<u> </u>	<u> </u>	<u> </u>			<u> </u>		ļ				<u> </u>
Myoporum platycarpum ssp. platycarpum	False Sandalwood	17		N	Т	N			1					2	Т		N										1					1		Т

a					Cole	ona Si	tes (C	COL)				Co	ombr	a Trac	ck Site	es (CC	00)			Hea	d of t	he Big	ght Si	tes (H	HOB)				Nan	wooi	ra We	ell Site	es (NA	AN)	
Species Name	Common Name	Tot	01	02	03		05	06	07	08	01	02		04	05	06	07	08	01	02	03	04	-		07		3 0			03	04	05	06	07	08
Nicotiana goodspeedii	Small-flower Tobacco	8	Т													T				1															
Nicotiana rosulata ssp.		1																					N												
Nitraria billardierei	Nitre-bush	19														T	N					N	T	T	2	N				2	1			N	N
Olearia brachyphylla	Short-leaf Daisy- bush	1											N																						
Olearia calcarea	Crinkle-leaf Daisy-bush	1		ÇOTOTOTOTO				ç		.			2	1									Ç00000000000	4											
Olearia exiguifolia	Lobed-leaf Daisy-bush	5						ļ		ļ					Т	N	1	1																	
Olearia magniflora	Splendid Daisy- bush	8			ļ	Т	Т	ļ		ļ		ļ	N	1						<u></u>					<u> </u>		,	Γ					Т		<u> </u>
Olearia muelleri	Mueller's Daisy- bush	7		Ç	4			<u></u>			N		N		Т									4											
Olearia pimeleoides ssp. incana	Showy Daisy- bush	1				N							ļ								ļ														
Omphalolappula concava	Burr Stickseed	1			ļ								<u></u>	ļ		T			•																
Osteocarpum salsuginosum	Inland Bonefruit	1								T			ļ 																						
Oxalis perennans	Native Sorrel	1		ļ	ļ				ļ	ļ		ļ	ļ	ļ						ļ	ļ		ļ	ļ	.ļ										ļ
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	2													Т			N		<u></u>															
Pittosporum angustifolium	Native Apricot	16		N	N			ļ	1		N	ļ	ļ		Т	N	1	1		ļ			ļ					l							
*Plantago bellardii	Hairy Plantain	3		ļ	ļ	ļ		<u> </u>		ļ		ļ	ļ	<u>.</u>									ļ	ļ									ļ		ļ
Plantago drummondii	Dark Plantain	5	<u></u>	ļ	<u> </u>			T		T		<u>.</u>		<u> </u>		T			1	Т	<u> </u>		ļ	<u> </u>	<u> </u>									ļ	<u></u>
*Poa bulbosa	Bulbous Meadow-grass	1						Ş					N																						
Poa drummondiana	Knotted Poa	1																							<u>.</u>										<u>:</u>
Podolepis rugata var.	Pleated Copper- wire Daisy	6										2																							
Podolepis rugata var. rugata	Pleated Copper- wire Daisy	4	N										N			T																		1	
Ptilotus obovatus var.	Silver Mulla Mulla	3		<u></u>								ģ										N		N			,	Γ							
Ptilotus obovatus var. obovatus	Silver Mulla Mulla	2																																N	
Pycnosorus eremaeus	Golden Billy-	3		Т	İ			Т		Т		ļ	š	ā					l 						ļ	<u> </u>									
Pycnosorus pleiocephalus	buttons Soft Billy-buttons	1	<u></u>																													Т			
*Reichardia tingitana	False Sowthistle	2	N	L	ļ					ļ		<u> </u>	<u> </u>						 				1	<u> </u>	<u> </u>	_		<u> </u>					<u> </u>		
Rhagodia candolleana	Sea-berry		<u> </u>	ļ	ļ			ļ	ļ	ļ		ļ	ļ	ļ										ļ		_		_							 !
ssp. candolleana	Saltbush	3	ļ	ļ	ļ	ļ				ļ		ļ		<u> </u>		N					<u> </u>		ļ	<u> </u>											<u></u>
Rhagodia crassifolia	Fleshy Saltbush	30	N	N	Т	1	Т		1	ļ	N	ļ	Т	1	Т	N	1	1	ļ	ļ	N	N	Т	ļ	Т	N		1					Т	N	
Rhodanthe corymbiflora	Paper Everlasting	3																											1	Т	1				

a					Colo	ona Si	ites (C	COL)				Co	ombr	a Tra	ck Site	es (CO	00)			Hea	d of t	he Big	ght Si	tes (H	(OB)			Na	nwoo	ra We	ell Sit	es (NA	AN)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
Rhodanthe floribunda	White Everlasting	4																	1	T											2			N
Rhodanthe haigii	Haig's Everlasting	6		Т	Т				1		•										Т				N	Т								
Rhodanthe pygmaea	Pigmy Daisy	1								Т	•						1																	
*Rostraria pumila	Tiny Bristle-grass	5	Т							Т			Т			Т																		Т
Salsola tragus	Buckbush	22	Т		Т	Т	N		Т			N				Т					N		T					Т	Т	Т		Т	Т	
Samphire sp.		2								T														T										
Santalum acuminatum	Quandong	8			N						N		N	N	N																			
Scaevola bursariifolia	Bursaria Fanflower	6					N				N				Т												1							N
Scaevola spinescens	Spiny Fanflower	5							N					N														N						
*Schismus barbatus	Arabian Grass	7	Т					Т		T	1		1			1	1																	
Sclerolaena brevifolia	Small-leaf Bindyi	8																																
Sclerolaena diacantha	Grey Bindyi	1																																
Sclerolaena obliquicuspis	Oblique-spined Bindyi	25	Т	1	Т	1		Т	1	Т						Т			1	1	N	Т			Т	Т		1	1	1	1	Т	Т	Т
Sclerolaena uniflora	Small-spine Bindyi	24				1	Т				1		1	Т		Т	1	1			Т	N		Т			1					Т		
Sclerostegia sp. (NC)	Samphire	2						<u> </u>	N	<u> </u>		<u> </u>			<u></u>		<u> </u>					<u></u>										<u> </u>		N
Senecio glossanthus	Annual Groundsel	11		Т				1		Т	1		Т															Т		Т				Т
Senecio pinnatifolius	Variable Groundsel	12									N	N	Т		N	Т	Т	Т																
Senna artemisioides ssp. petiolaris		2																																
Senna artemisioides ssp. quadrifolia	Four-leaf Desert Senna	1																																
Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna	1																																
Sida corrugata var.	Corrugated Sida	1																																
Sida spodochroma		1																																
*Sisymbrium erysimoides	Smooth Mustard	5																		N	Т				N	Т								
Solanum hystrix	Afghan Thistle	3										N																						
Solanum symonii	Symon's Kangaroo-apple	1																					Т											
*Sonchus oleraceus	Common Sow- thistle	34	Т	Т	N			T		Т						1			N	N	Т			Т	N	N		Т		Т	T		Т	Т
*Spergularia diandra	Lesser Sand- spurrey	2						1		1																								
Stenopetalum lineare	Narrow Thread- petal	4							Т	Т																				Т				Т
Tecticornia disarticulata		9																																
Tecticornia halocnemoides ssp.	Grey Samphire	2		2		N																												

Species Name Tecticornia indica ssp.	Common Name						1000 (0	COL)				C00	ombra	a 1rac	ck Sit	es (Co	00)			неа	a or t	he Big	gnt Si	ies (H	OD)			INa	11W00	ra W	ell Sit	es (INA	AN)	
* :	1	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
1 1	Brown-head	1																																
leiostachya	Samphire	1		ļ	ļ	ļ	.ļ	<u> </u>	ļ	ļ	•	ļ	<u> </u>	ļ	<u> </u>	ļ	ļ	ļ		<u></u>	<u> </u>	<u></u>	ļ	ļ		ļ		ļ	ļ	ļ	ļ		ļ	<u> </u>
Templetonia battii	Spiny Templetonia	1																									N							
Tetragonia implexicoma	Bower Spinach	14									1			1	Т	Т	1	Т			N	N	Т		Т									
Threlkeldia diffusa	Coast Bonefruit	31	N	1	T	1	Т		1		2	1	1	1	1	1	1	1			N	N	T		N		1			1		Т	N	Т
Thysanotus baueri	Mallee Fringe- lily	19	N	Т						N		İ	Т			Т	Т		N	Т	Т			1				Т	1	1		N	Т	Т
Trichanthodium	Woolly Yellow-		_	L	ļ		•				•			Į	ļ						Į			l				ļ						ļ
skirrophorum	heads	26	3	2	2				2	Т									1	1				1	1	1		Т	1		1		2	1
Triglochin sp. A	Spurred	1			<u></u>				·	Т	•	·	}		1			•						i				-						**************************************
(N.N.Donner 3596)	Arrowgrass	1		<u> </u>		<u>.</u>				1				: : :		1				Ī	! !			<u> </u>										<u> </u>
Triglochin sp. B	Spurred	1		Т																														
(J.Z.Weber 1330)	Arrowgrass	1		1	<u> </u>	<u> </u>	<u> </u>	<u> </u>		<u> </u>	_	<u> </u>	<u> </u>	<u> </u>]	<u> </u>	<u> </u>		<u> </u>	<u> </u>		<u> </u>	<u> </u>		<u> </u>		<u> </u>	<u> </u>	<u> </u>	<u> </u>			
Velleia arguta	Toothed Velleia	1																																
Vittadinia arida		1	N		Ì			Î				Ì												Ì										
Vittadinia australasica	Sticky New	_			å					4	•			ā	ļ		4				å	d		d		4								
var.	Holland Daisy	5										1	N			N																	N	i '
Vittadinia australasica	Sticky New	1			ļ	1	1			<u> </u>	•	1	}	f	†		1	<u> </u>			1	<u> </u>		1				1	ļ		1			ļ
var. australasica	Holland Daisy	1																																'
Vittadinia sp.	New Holland Daisy	1																																
*Vulpia myuros f.	Fescue	1			1		•		<u> </u>	1	•	1	}	Ç	1	•	1	•		1	\$	1		4 !				1			1			<u></u>
Westringia rigida	Stiff Westringia	8			İ			·		·	•	İ	N	1	Т	•		1		·				ļ										<u></u>
Wurmbea dioica ssp.		7	Т	İ			·		·	Т	•		ļ		İ	Т		<u> </u>						N		İ		İ		ļ	Т		T	
Wurmbea dioica ssp.		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1	ļ	ļ	ļ		ļ	ļ	1		ļ	ļ	ļ	ļ	ļt	ļ	ļ		ļ		ļ		1 1		ļ		ļ	ļ	ļ	ļ <u>.</u>	ļ	1	i
brevifolia	Early Nancy	1																																1 '
Wurmbea dioica ssp.				ļ	ļ		1	!	ļ			ļ	ļ	ļ	 	·	ļ	.		ļ	ļ	ļ	ļ	ļ		ļ		<u> </u>	ļ	ļ	ļ		J	ļ
dioica	Early Nancy	1																																
Wurmbea sp.	Nancy	2			å	•		· •	•		•	å		<u> </u>		•					ė			å							.			<u></u>
Zygophyllum	Scrambling													ļ	ļ	·			•		ļ			ļ					ļ					
angustifolium	Twinleaf	2																																T
Zygophyllum	1 11111001				š	·					•	å	ļ	ā	i				•		ā			å !					·					į
aurantiacum ssp.		10		N		2			1												T			N			1			1	T			
Zygophyllum					İ	1	1	<u> </u>	T	<u> </u>	•	İ		Í	1		1	†		<u> </u>	Ī	<u> </u>		İ		İ		İ	T	1	İ			
aurantiacum ssp.	Shrubby Twinleaf	11	T		Т		1																			N						Т	Т	T
aurantiacum				<u> </u>	<u> </u>	<u>.</u>				<u> </u>		<u> </u>	<u> </u>]	<u> </u>	<u>.</u>		<u></u>	<u></u>		<u> </u>	<u> </u>				<u>.</u>	L	<u> </u>	<u> </u>			Ĺ
Zygophyllum billardierei	Coast Twinleaf	1															Т																	
Zygophyllum eremaeum		1				T										1]]				1						
Zygophyllum ovatum	Dwarf Twinleaf	20	Т	Т	1	1	1		1	N	•	1	Т	ā		†		†	1	1	1	1	N	ļ		1		1	ļ	†	Т		Т	Т
Zygophyllum sp.	Twinleaf	8			å			.		4	•	å	5	ā		Т					ā	<u>.</u>		å					.		.			<u>.</u>
->0-k>	Taxa Per Site	,	39	39	33	25	25	22	27	42	27	22	39	22	36		30	26	19	25	33	20	23	19	17	20	24	24	15	25	25	27	38	46

APPENDIX 4b. PLANT TAXA RECORDED AT EACH YAL SITE DURING THE YALATA IPA SURVEY AND THEIR COVER/ABUNDANCE ESTIMATE.

Total number of sites taxon recorded at (of a total of 55, also includes COL, COO, HOB and NAN sites).

Cover/Abundance scores N = Not many (1-10 plants & <5% cover); T = sparsely present (cover <5%); 1 = plentiful, but of small cover (<5%); 2 = any number of individuals covering 5-25% of area; 3 = any number of individuals covering 25-50% of area.

Species Name	Common Name	Tot							Yala	ıta Sit	tes (Y	AL) –	Vege	tation	sites	samp	led in	n Ma	y 200 ′	7						
Species Name	Common Name	101	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	1	8	19	20	21	22	23
Acacia hakeoides	Hakea Wattle	1									<u> </u>								N							
Acacia oswaldii	Umbrella Wattle	23							N	N				N	T			1		N	1	N	N	N	N	N
Acacia papyrocarpa	Western Myall	17			2							N							N				N		N	
Acacia spinescens	Spiny Wattle	1																								
Acrotriche patula	Prickly Ground-berry	1														Т										
Amyema melaleucae	Tea-tree Mistletoe	1																								
Amyema miquelii	Box Mistletoe	3										Ī		T												
Amyema quandang var. quandang	Grey Mistletoe	5																								
Angianthus tomentosus	Hairy Angianthus	4																		Ī						
Atriplex acutibractea ssp. acutibractea	Pointed Saltbush	1																								
Atriplex cinerea	Coast Saltbush	1																								
Atriplex stipitata	Bitter Saltbush	10															N						N	N	2	2
Atriplex suberecta	Lagoon Saltbush	1																		Ī			N			
Atriplex vesicaria ssp.	Bladder Saltbush	49	2	1	2	2	1	1		Т	2	N	N	2	2	2		2	2	2	2	1	N	N		1
Austrodanthonia caespitosa	Common Wallaby-grass	7							Ĭ		Ī	1]	1			1						
Austrodanthonia setacea	Small-flower Wallaby- grass	8																								
Austrodanthonia sp.		18	2	3				1	1	2		2				Т		1						2	1	
Austrostipa acrociliata	Graceful Spear-grass	15			1									1	Т			Т								Т
Austrostipa drummondii	Cottony Spear-grass	12				T														Ī						
Austrostipa elegantissima	Feather Spear-grass	4																Т								
Austrostipa eremophila	Rusty Spear-grass	16		Т						1																
Austrostipa nitida	Balcarra Spear-grass	19] 						Ī			İ						
Austrostipa platychaeta	Flat-awn Spear-grass	2												\$0000000000000000000000000000000000000											5	
Austrostipa sp.	Spear-grass	17	2		2	2	1	2	2	Т	2	2	2			Т	3		Т	Ī				2	Т	Т
Austrostipa velutina		1																								
Beyeria lechenaultii	Pale Turpentine Bush	6												1		2										
Boraginaceae sp.	Borage Family	3		Т				Т		Т										1						
Brachyscome ciliaris var.	Variable Daisy	14																		1						
Brachyscome ciliaris var. ciliaris	Variable Daisy	10				Ì		1		1		Т	N			Ī	1	ļ		Ť					İ	
Brachyscome lineariloba	Hard-head Daisy	10												<u> </u>												
*Brassica tournefortii	Wild Turnip	14	•		Т			Т								N		Т	Т	1						
Bromus arenarius	Sand Brome	3							· • · · · · · · · · · · · · · · · · · ·					\$1111111111111111111111111111111111111											90000000000	[
*Bromus rubens	Red Brome	4	•					1				1	1	T		Ī	1	T		T						[
*Bupleurum semicompositum	Hare's Ear	2]]						1			1						[

g . v	G N	m .							Yala	ata Si	tes (Y	AL) –	Vege	tation	sites	samp	led in	May	2007	'					
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	09	10		12				16	-	-	19	20	21	22	23
Calotis cymbacantha	Showy Burr-daisy	1																							
Calotis hispidula	Hairy Burr-daisy	6	T	T								T													
Carpobrotus rossii	Native Pigface	4								N															
Carpobrotus sp.	Pigface	2														N			Т						
*Carrichtera annua	Ward's Weed	22	T	1	Т	T		T			1						Т	T				Т	Т	2	Т
*Carthamus lanatus	Saffron Thistle	1																						Т	
Cassytha melantha	Coarse Dodder-laurel	2																							
Cassytha peninsularis	Peninsula Dodder-laurel	1														1									
*Centaurea melitensis	Malta Thistle	2											Î				Ī			Ī				Ĭ	
*Centaurium erythraea	Common Centaury	1				1	Ì	1					1			Ī	Î			1				Î	
Chamaesyce drummondii		14		Т	•	Т		T											1			Т			
Chenopodium curvispicatum	Cottony Goosefoot	14			•					•			***************************************		.							N	N		
Comesperma volubile	Love Creeper	2		1			<u> </u>	1		1			ĺ		Ī		Ī	N		ĺ				1	
Compositae sp.	Daisy Family	1		1			1			Т			1					1		1			1	1	
Convolvulus remotus	Grassy Bindweed	2		1	-		<u> </u>										Î					N	-	1	
Crassula colorata var. colorata	Dense Crassula	12		<u> </u>	-	1	•••••••			1			1				1	-			-		-	1	
Cratystylis conocephala	Bluebush Daisy	29			•	N		2			1			2	1		N	N	Т	2	N	N			N
Daucus glochidiatus	Native Carrot	13	N	1		1	İ	Т	Т	Т	Т	1	Т	İ	İ		Т	1	Т	1	·		1	1	
Dianella revoluta var. divaricata	Broad-leaf Flax-lily	2		1		1	-]						4	1	•	†		1	-		-	1	
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface	8			•	1	1		9					- Control (1990)			ē							ağırınınının	
Dodonaea stenozyga	Desert Hop-bush	1		1			·						1				1	1		1				1	
Enchylaena tomentosa var.	Ruby Saltbush	4		Ì		İ	Ì	Т		N		1	1		İ		1	1		1		N	N	1	
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	24		.4	Т	N				•			.4	•	Т		•	Т						N	N
Eremophila deserti	Turkey-bush	19		1		1								1	1		N	2		1	Т		1		N
Eremophila glabra ssp. glabra	Tar Bush	13		1							·		1	N	1		N	1		N	N				
Eremophila parvifolia	Small-leaf Emubush	6		1	•															1				1	
Eremophila scoparia	Broom Emubush	9		<u> </u>		1	<u> </u>]	•				2		ļ	1	N		Т	Т			1	T
Eremophila sp. Praecox (R.H.Ashby 131)		1		1		1	<u>.</u>			-							Î	<u> </u>					<u> </u>	1	<u></u>
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	21			•	Т			Т	•6		T	Т			.5							5	a61111111111111	N
*Erodium cicutarium	Cut-leaf Heron's-bill	9		1		Т	Т					Т	Т		İ		Т	Т	Т	1	<u> </u>	Т	Т	1	
Erodium crinitum	Blue Heron's-bill	2		1	-	1	<u> </u>						1				1	1		1			Ī	1	
Erodium cygnorum	Blue Heron's-bill	1	2	.4	•	.4							.4	-5	4									a\$111111111111	h
Erodium sp.	Heron's-bill/Crowfoot	2		2		1	••••••••	1		1			1		1		1	1					1	Т	
Erymophyllum ramosum ssp. ramosum		1		Ì	<u> </u>		<u> </u>	1		1	Ī		ĺ		1		Ī	1		ĺ			Ī	1	
Eucalyptus brachycalyx	Gilja	1		1					·											1	Т				
Eucalyptus calcareana	Nundroo Mallee	8			-				· 3				.4	•\$••••••••	2	2	•								N
Eucalyptus gracilis	Yorrell	14	•	1	-						<u> </u>			2	2	2	Ī	-		2	2		Ī		2
Eucalyptus oleosa ssp.		6												2	1	Т				2	2				2
Eucalyptus oleosa ssp. ampliata	Red Mallee	8		1		1	T	1]	1	1		1		1	Ī	1	1		1	1		1	1	
Eucalyptus yalatensis	Yalata Mallee	2		1] 				· •		4	· · · · · · · · · · · · · · · · · · ·		1					-	1	

G t N	G N	m 4							Yala	ıta Sit	tes (Y	AL) –	- Vege	tation	sites	samp	led in	n May	y 200 7	7					
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Eutaxia microphylla	Common Eutaxia	1																							
Exocarpos aphyllus	Leafless Cherry	18												T	T	Т		Т	N	1	Т				Ĺ
Frankenia serpyllifolia	Thyme Sea-heath	13				Т	1									2						Т		2	
Frankenia sessilis	Small-leaf Sea-heath	12						2	2	2	N														
Frankenia sp.	Sea-heath	2			N																				
Geijera linearifolia	Sheep Bush	23												2	T	2		2		2	T			N	T
Goodenia pinnatifida	Cut-leaf Goodenia	11										1	T									1	1		
Gramineae sp.	Grass Family	1																				1			
Halosarcia sp. (NC)	Samphire	8																							
Hemichroa diandra	Mallee Hemichroa	2				1	2	Ĩ														Ì		Ĭ	
*Hordeum glaucum	Blue Barley-grass	1																							
Hypoxis glabella var. glabella	Tiny Star	1							-															T	
Isoetopsis graminifolia	Grass Cushion	3	Т															1							
Kippistia suaedifolia	Fleshy Kippistia	2																							
Lawrencia glomerata	Clustered Lawrencia	1					T		<u></u>								1								
Lawrencia squamata	Thorny Lawrencia	13	1	1				Т	<u></u>	2	2					<u></u>						Т			N
Lepidium phlebopetalum	Veined Peppercress	8																							
Leptorhynchos waitzia	Button Immortelle	2			1	Ì	1	1	ļ	Í	1					Ī	İ			1			Ī		[
Lycium australe	Australian Boxthorn	11		Т	1		·	Т	3		1	Ť			4	3	1						-	2	
*Lycium ferocissimum	African Boxthorn	1							<u> </u>																N
Lysiana exocarpi ssp. exocarpi	Harlequin Mistletoe	1			1		<u> </u>	1		1	Ī	1								1		N			
Maireana appressa	Pale-fruit Bluebush	2			1	Ì	Т	1		Î	Ī					Ī	İ			1				İ	[
Maireana brevifolia	Short-leaf Bluebush	1							3	Ç	1				4	3	<u> </u>								[
Maireana erioclada	Rosy Bluebush	43	N	Т	Т	1		Т	1	Т	1	Т	Т	Т	4	Т	Т		2		-	N	1	***************************************	2
Maireana lobiflora	Lobed Bluebush	1			1		•	1]	1	1	1			1		1			1		Т	1		
Maireana oppositifolia	Salt Bluebush	10				2	2	1								Т								1	[
Maireana pentatropis	Erect Mallee Bluebush	1			-		<u> </u>	1]	4]	1						1	1	
Maireana radiata	Radiate Bluebush	5			<u> </u>		<u> </u>		<u> </u>		<u> </u>	N		Т			N						1	1	
Maireana sedifolia	Bluebush	7	2	Т					5	é	-	K				5							N	***************************************	
Maireana sp.	Bluebush/Fissure-plant	5		Т	<u> </u>	İ	1	1							İ			N		1		1		įi	
Maireana trichoptera	Hairy-fruit Bluebush	8	N		<u> </u>		<u> </u>	Т			1	Ť		N			Î							1	N
Maireana turbinata	Top-fruit Bluebush	4	1	4	•	.4		.4	\$	ā		K 000000000		-5	4	<u> </u>								<u> </u>	
*Medicago minima var. minima	Little Medic	4			•	1	•	1]	Î	1	<u> </u>			1	<u> </u>	1					Т	Т	1	
*Medicago truncatula	Barrel Medic	1			1		1	1	Ĭ	1	Ī	Ť			1	Ī	Ī			1				2	
Melaleuca lanceolata	Dryland Tea-tree	10		1				1]		1				2	2	•						-		[
Melaleuca pauperiflora ssp. mutica	Boree	3			-	•		.4	S	a		•		•\$••••••••	4	3	•			2	2		-	***************************************	
*Mesembryanthemum crystallinum	Common Iceplant	1			-			1			Ī				[Ī								
Minuria cunninghamii	Bush Minuria	1							,																
*Moraea setifolia	Thread Iris	5			<u> </u>	1	Ī	1] 		Ī	Ĭ			1] 	1			1		1	Т	1	
Myoporum insulare	Common Boobialla	1							}	a	-				4								1		

a		m .							Yala	ıta Sit	tes (Y	AL) -	Vege	tation	sites	samp	led in	ı May	y 2007	7					
Species Name	Common Name	Tot	01	02	03	04	05	06	07			10			13	14					19	20	21	22	23
Myoporum platycarpum ssp.	False Sandalwood	2																					T		
Myoporum platycarpum ssp. platycarpum	False Sandalwood	17			2									T	2			1		1		N	N		
Nicotiana goodspeedii	Small-flower Tobacco	8		Т		N		1	Т														N		
Nicotiana rosulata ssp.		1																							
Nitraria billardierei	Nitre-bush	19	1	1	N	N		Т	1	N	Т														
Olearia brachyphylla	Short-leaf Daisy-bush	1																							
Olearia calcarea	Crinkle-leaf Daisy-bush	1																							
Olearia exiguifolia	Lobed-leaf Daisy-bush	5				***************************************				ē		min na na na na na na na na na na na na na				1	•							.and minimum in	
Olearia magniflora	Splendid Daisy-bush	8								Ī	Ī	Ì	İ	Т			Ĭ			Т					
Olearia muelleri	Mueller's Daisy-bush	7] 		Ì	1	1	T] 	Î	1			Т				
Olearia pimeleoides ssp. incana	Showy Daisy-bush	1				A				<u> </u>															
Omphalolappula concava	Burr Stickseed	1					<u> </u>			ē	-			<u> </u>		5	ē								
Osteocarpum salsuginosum	Inland Bonefruit	1						1										Ì		1					
Oxalis perennans	Native Sorrel	1		·				1			1					ļ			1					andminimi	
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	2	•							ā	-	1					İ								
Pittosporum angustifolium	Native Apricot	16	•	-	1		ļ			ł	1	4		1	1	1	ļ	2			N		-	N	
*Plantago bellardii	Hairy Plantain	3					Т		Т	Т	İ														
Plantago drummondii	Dark Plantain	5		İ				İ		İ	1	†	İ				İ	1		_				1	
*Poa bulbosa	Bulbous Meadow-grass	1	•			J			·	ā	-	†						<u> </u>					-		
Poa drummondiana	Knotted Poa	1									-					Т									
Podolepis rugata var.	Pleated Copper-wire Daisy	6	•	<u> </u>				İ		Î	İ	İ	1			<u> </u>	2	1	2	<u> </u>		N	N		ļ
Podolepis rugata var. rugata	Pleated Copper-wire Daisy	4	•	İ				İ		ļ	İ	†	İ				İ	1				_		1	
Ptilotus obovatus var.	Silver Mulla Mulla	3				å		4		å						ļ									ļ
Ptilotus obovatus var. obovatus	Silver Mulla Mulla	2		<u> </u>							-	<u> </u>	1				N					_		-	
Pycnosorus eremaeus	Golden Billy-buttons	3		<u> </u>					ļ		1		-			ļ	ļ		-			_		-	
Pycnosorus pleiocephalus	Soft Billy-buttons	1		·							1														ļ
*Reichardia tingitana	False Sowthistle	2				ļ		ļ	ļ	å	ļ	†	1	ļ		ļ	ļ	1	-		-	_	-		
Rhagodia candolleana ssp. candolleana	Sea-berry Saltbush	3	•	<u> </u>	N	<u></u>	L	4		<u></u>	<u> </u>	<u> </u>		L		2	ł								!
Rhagodia crassifolia	Fleshy Saltbush	30			N	ė		Т	Т	ė	-			1	1		ė	1		2	1				Т
Rhodanthe corymbiflora	Paper Everlasting	3		<u> </u>		İ		İ			1	İ	İ				İ	†		<u> </u>		-			
Rhodanthe floribunda	White Everlasting	4	•	ļ		ļ			j	å	ļ	ļ													-
Rhodanthe haigii	Haig's Everlasting	6		<u></u>		.		4		4				<u> </u>			.								h
Rhodanthe pygmaea	Pigmy Daisy	1	•	<u> </u>		ļ				f	1	·	1				Î								
*Rostraria pumila	Tiny Bristle-grass	5	•	†		İ		İ		İ	İ	†	İ			İ	İ	†		<u> </u>		-	T		
Salsola tragus	Buckbush	22		·	1	å		Т	N	Т		Т	Т				Т					Т			ļ
Samphire sp.		2		<u> </u>				4		ā		<u></u>				5		<u> </u>							!
Santalum acuminatum	Quandong	8		<u> </u>			<u></u>	4	·	<u> </u>	-		4	<u></u>			ł	Т		Т	N				
Scaevola bursariifolia	Bursaria Fanflower	6	.					ė	5	6											N				
Scaevola spinescens	Spiny Fanflower	5		†	İ	Ì	<u> </u>	1	ļ	 	1	1	1	Т	N	}	İ	<u> </u>		<u> </u>		<u> </u>	1	1	†
*Schismus barbatus	Arabian Grass	7	·!······	<u> </u>	ļ	3	L !	4		ā			. 4	L ! !		3									

G. A.	C N	T. 4							Yala	ata Sit	tes (Y	AL) –	Vege	tation	sites	samp	led in	May	2007						
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	09	10	11			14	15	16	17	18	19	20	21	22	23
Sclerolaena brevifolia	Small-leaf Bindyi	8			N	Т			Т		N						N	N	1						Т
Sclerolaena diacantha	Grey Bindyi	1																	2						
Sclerolaena obliquicuspis	Oblique-spined Bindyi	25	N									Т	Т										Т		
Sclerolaena uniflora	Small-spine Bindyi	24			2	1	1	Т	N			Т		2	2	2				2	1				
Sclerostegia sp. (NC)	Samphire	2																							
Senecio glossanthus	Annual Groundsel	11	T			Т	Т																		
Senecio pinnatifolius	Variable Groundsel	12				Т	N		N	Т						Т									
Senna artemisioides ssp. petiolaris		2			T													N							
Senna artemisioides ssp. quadrifolia	Four-leaf Desert Senna	1																					T		
Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna	1										Ì	Ĭ					T							
Sida corrugata var.	Corrugated Sida	1																						1	
Sida spodochroma		1																	N						
*Sisymbrium erysimoides	Smooth Mustard	5			T																				
Solanum hystrix	Afghan Thistle	3			N												N								
Solanum symonii	Symon's Kangaroo-apple	1																							
*Sonchus oleraceus	Common Sow-thistle	34	T	Т	T	Т	Т	Т	Т	Т	Т	Т	Т				N	T	T			T	Т	Т	
*Spergularia diandra	Lesser Sand-spurrey	2																						300000000000	
Stenopetalum lineare	Narrow Thread-petal	4			l					Î		Ì	Ì				Î			1					
Tecticornia disarticulata		9	2	Т		2	Т	Т	Т	Т	2						 								N
Tecticornia halocnemoides ssp.	Grey Samphire	2			••••••••••••••••••••••••••••••••••••••)	
Tecticornia indica ssp. leiostachya	Brown-head Samphire	1					2																		
Templetonia battii	Spiny Templetonia	1																							
Tetragonia implexicoma	Bower Spinach	14			T				Т	N					N	3)	
Threlkeldia diffusa	Coast Bonefruit	31			T			Т						N	2	Т	Ī	1		N	Т				2
Thysanotus baueri	Mallee Fringe-lily	19											Т			N			1						
Trichanthodium skirrophorum	Woolly Yellow-heads	26	T			Т	1	Т	1	Т	Т	1	Т									1	1		
Triglochin sp. A (N.N.Donner 3596)	Spurred Arrowgrass	1							-																
Triglochin sp. B (J.Z.Weber 1330)	Spurred Arrowgrass	1																							
Unidentified sp.		1										1													
Velleia arguta	Toothed Velleia	1																				T			
Vittadinia arida		1							-																
Vittadinia australasica var.	Sticky New Holland Daisy	5																				Т			
Vittadinia australasica var. australasica	Sticky New Holland Daisy	1																T							
Vittadinia sp.	New Holland Daisy	1																						N	
*Vulpia myuros f.	Fescue	1		Ĭ		Ĭ				Ĭ		T			Ĭ		Ĭ	T						([
Westringia rigida	Stiff Westringia	8			Ì									N	d	N			Т	Т					[
Wurmbea dioica ssp.		7									N														
Wurmbea dioica ssp. brevifolia	Early Nancy	1	N																						
Wurmbea dioica ssp. dioica	Early Nancy	1		Ì	Ì	1		1	1	1] 	1	1	Ī	1		Î	1	1	1					<u> </u>
Wurmbea sp.	Nancy	2				•	•					Т	.4		4			Т			-				ļ

Species Name	Common Name	Tot							Yala	ta Sit	es (Y.	AL) –	Vege	tation	sites	samp	led in	May	2007						
Species Name	Common Name	101	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Zygophyllum angustifolium	Scrambling Twinleaf	2			Т																				
Zygophyllum aurantiacum ssp.		10																				T	Т		
Zygophyllum aurantiacum ssp. aurantiacum	Shrubby Twinleaf	11			N						1		Т												2
Zygophyllum billardierei	Coast Twinleaf	1																							
Zygophyllum eremaeum		1									1														
Zygophyllum ovatum	Dwarf Twinleaf	20	Т	Т						Т			1												
Zygophyllum sp.	Twinleaf	8				1					1	Т					Т		Т					N	Т
	Taxa Per Site		21	18	26	24	17	24	19	22	18	19	15	25	21	26	17	30	22	18	19	29	21	21	25

APPENDIX 5. SUMMARY OF ENVIRONMENTAL VARIABLES FOR EACH FLORISTIC VEGETATION COMMUNITY.

Y 16 D 11	N 1 6011											Floris	tic Veg	etation	1 Com	nunity										
Landform Pattern	No. of Sites	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Plain	62	13	2		6			1		2	7	8	6	3				1				2		2	6	3
Playa plain	1													1												
Consolidated dunefield	30		2		2	1	7	8	1	1	<u> </u>	3				1	1	1	<u> </u>			1	1			
Beach ridge plain	4							1														2	1			
Dunefield	13				1		1										3	3	1	2	1		1			
Rises	9	1	1		2					1	1	1					Î			Ì	Î				1	1
Low hills	33	4	6	4	3	4	1			1	1	2		1	1	1	• • • • • • • • • • • • • • • • • • •	1				1		1	4	1
Escarpment	2					÷				ē	**************************************						1			***************************************		1				
not recorded	29	7	7		2			2			2	3					2			1		1	1		1	
Landform Element		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
plain (incl undulating plain)	57	17	2		4			1		1	7	8	5									2		2	6	2
sandy plain	7				3				-					1				1								2
limestone plain	6										2		1	2											1	
playa/pan	3		1				1										Î		Ì	Ì		3				
rock outcrop - on plain	1									d	<u></u>			1		·3			\$							
dune/consolidated dune	19				2		5	7		ē							4			1						
dune crest	3						1											1	1							
dune slope	14		1		1	1	1	1				1					2	2	Ì	2		1	1			
dune footslope	3				<u> </u>			·		Ç	<u> </u>	S					1	1			1	<u></u>				
swale	5		1			4	1	İ		4	<u></u>	1							4				2			
interdune corridor	1																					1				
interdune low	2							1															1			
hill/mountain	4	1	3							d										1						
hill crest	1		1																							
hill slope	32	4	4	4	4		1			4	***************************************	3		1	1	9	(1						1	3	1
hill footslope	6	2	3				Ì												İ	1					1	
ridge	6	1	3		2			İ												<u> </u>				<u> </u>		
rock outcrop - on hill	2	4	4	.4		4	4	2		4	<u> </u>	·					<u> </u>		A	·		4	.4			
swamp	1		1	·			1			1	Ī						\$		<u></u>	1		1	1	1		1
open depression	4						1				1	3					Ì		Î	1						
closed depression	2		ļ	·				·	1	<u> </u>		1					Ç		d			•		<u> </u>		
flat	4	1		·		4	4	<u> </u>		ā	1					2	&		å				4	<u> </u>	1	1
Soil		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
skeletal	1							1																		
sand	39	1	7				3	4				4					6	4	1	3	1	2	3			
loamy sand	24	1	1	1	1	1	5	6		2		2	1				1	1			Ī		1	<u> </u>		1
clayey sand	6				1									1		5						2			2	
sandy loam	22	3	5	1	1		1	Ì	1	Ī		1		1	1	1	1	1	İ	1		1		İ	4	1

	37 8 G4:											Floris	tic Veg	etation	ı Comr	nunity											
Soil (continued)	No. of Sites	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19	20	21	22	23	24	25
loam	9	5			2						2																
silty loam	1													1													
sandy clay loam	14	3									4	1		1									2			3	
clay loam	7		1		1						1	2	1								Ī				1		
clay loam, sandy	3	2			1																						
sandy clay	1	1																									
light clay	2										1												1				
medium clay	2									6	1					1	Çınınınınınınını									<u> </u>	
not recorded	52	10	4	2	9			1		3	2	7	4	1									1		2	3	3
Structural Formation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19	20	21	22	23	24	25
Open Forest	1			1																							
Low Open Forest	1				1						2																
Low Woodland	10	4	3		3																						
Low Open Woodland	3	2																									
Very Low Open Forest	2	2			Î					ļ							Î				ĺ					Î	
Very Low Woodland	12	12	: : : :				: : : :			G						-3											
Very Low Open Woodland	7	5	1		5		***************************************			ē		1	6				6										
Mallee	10		4		4		2										Ì									Ì	
Open Mallee	15		8	3	3	1	1																				
Very Open Mallee	7		1		4		2										Connumentum ! ! !									60000000000000000000000000000000000000	
Low Mallee	1						1																				
Open Low Mallee	5		1				3																				
Tall Closed Shrubland	1									Î							1				ĺ						
Tall Open Shrubland	3							1							1		1	1									
Shrubland	10							8	1								1										
Open Shrubland	7							1		1			1				2	1	1								
Very Open Shrubland	3			İ						1							1	1									
Low Closed Shrubland	2									g							1	1									
Low Shrubland	35		\$4444444444444444444444444444444444444	A	1		\$1111111111111111111111111111111111111	2		ā	7	7		3		1	<u> </u>		.4	3	3		6	4			1
Low Open Shrubland	22									2	4	5	5	2		1	\$	2	1				2			••••••••••••••••••••••••••••••••••••••	1
Low Very Open Shrubland	7			Ì						1		4					Ì				ĺ					1	1
Closed (Tussock) Grassland	1			o						g						2	çı									1	
(Tussock) Grassland	9			<u></u>						a												1				8	
Open (Tussock) Grassland	2			1						Î									1	·						2	
Very Open (Tussock) Grassland	1																										
Open Sedgeland	2			Î						4							1			<u> </u>					2	1	ļ
Very Open Sedgeland	1		\$	å			\$			a		<u> </u>					4			.4					1		<u> </u>
Herbland	1		 ! !		8 		 ! !		ė	ē	*					·5	& ! !			· č						& ! !	1
Open Herbland	2			İ					1	Î	Ī		1				Ì			<u> </u>						Ì	2
No. of Sites per Veg Community	183	25	18	4	16	1	9	12	1	5	11	17	6	5	1	2	7	6	1	3	3	1	8	4	3	12	5

APPENDIX 6. MAMMAL SPECIES RECORDED IN THE YALATA IPA.

List of mammal species recorded within the Yalata IPA at survey sites or as opportune records (in the Environmental Database of South Australia) or held as specimens in the South Australian Museum collection.

Naturalised alien species are designated with an asterisk (*).

SAM Number of specimens of each species in the South Australian Museum collection from the Yalata IPA

prior to this survey.

general OP Number of opportunistic records for each species recorded in the Yalata IPA prior to May 2007.

BS575 OP Number of opportunistic records for each species from the 2007-08 Yalata IPA Biological Survey.

Figures in brackets refer to number of calls (of bat species) recorded using Anabats.

No. of Sites Number of sites within the Yalata IPA each species recorded at on Nullarbor (BS14) or Yalata IPA

(BS575) Biological Survey.

No. of Recs Number of individuals of each species recorded at sites within the Yalata IPA on these surveys.

Figures in brackets refer to number of calls (of bat species) detected using Anabat recorders.

Stick Nest Rat record is of a nest found in a cave north east of Nullarbor Roadhouse in May 1982.

Status None of these mammal species have a conservation rating at state or national level.

FAMILY NAME		1	No. of Recor	ds	BS14 -	12 sites	BS575	- 32 sites
Species Name	Common Name	SAM	general OP	BS575 OP	No. of Sites	No. of Recs	No. of Sites	No. of Recs
TACHYGLOSSIDAE								
Tachyglossus aculeatus	Short-beaked Echidna						5	5
DASYURIDAE								
Sminthopsis crassicaudata	Fat-tailed Dunnart				1	1	2	4
Sminthopsis dolichura	Little Long-tailed Dunnart	1			3	10	4	4
VOMBATIDAE								
Lasiorhinus latifrons	Southern Hairy-nosed Wombat	1		7	6	11	15	28
MACROPODIDAE								
Macropus fuliginosus	Western Grey Kangaroo	3	2	31	7	9	3	6
Macropus rufus	Red Kangaroo		2	17	3	7		
Macropus sp.					7	8	12	13
BURRAMYIDAE								
Cercartetus concinnus	Western Pygmy-possum	2	1				4	4
MOLOSSIDAE				(225)				(4.00)
Mormopterus sp.	Freetail-bats			(237)			17	(199)
Tadarida australis	White-striped Freetail-bat			2 (34)			10	2 (12)
VESPERTILIONIDAE								
Chalinolobus gouldii	Gould's Wattled Bat			(1199)	3	3	18	(132)
Chalinolobus morio	Chocolate Wattled Bat	2					7	29 (79)
Nyctophilus geoffroyi	Lesser Long-eared Bat	1		5				
Nyctophilus timoriensis	Greater Long-eared Bat			3	2	2	4	5
Nyctophilus geoffroyi/timoriensis	Long-eared Bat			(260)			19	(200)
Scotorepens balstoni	Inland Broad-nosed Bat						2	(13)
Vespadelus baverstocki	Inland Forest Bat			(59)			5	(25)
Vespadelus regulus	Southern Forest Bat	2		1 (173)	1	8	5	5 (51)
CANIDAE								
Canis lupus dingo	Dingo	4		12	5	5	8	13
Canis sp.							1	2
*Vulpes vulpes	Fox				3	5	2	2
FELIDAE								
*Felis catus	Cat				1	1		
CAMELIDAE								
*Camelus dromedarius	One-humped Camel			21	5	9	7	12
MURIDAE								
Leporillus sp.	Stick Nest Rat		1#		<u> </u>			
*Mus musculus	House Mouse		211		9	119	32	226
Notomys mitchellii	Mitchell's Hopping-mouse	6			1	2	1	1
LEPORIDAE					<u> </u>	1		ļ <u>.</u>
*Oryctolagus cuniculus	Rabbit			19	10	17	20	30
or yeromgus cumenus	Number of Species	9	4	14	16	1,	23	50
	Number of Records	22	6	118		217		391
	Number of Records	22	U	(1962)		217		(711)

APPENDIX 7. MAMMAL SPECIES RECORDED AT EACH SITE DURING THE YALATA IPA SURVEY.

g	g	TD.			Colo	ona Si	ites (C	COL)				Co	ombr	a Tra	ck Sit	es (CC	00)			Hea	d of t	he Big	ght Sit	tes (H	OB)			Na	nwoo	ra W	ell Sit	es (N	AN)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
Tachyglossus	Short-beaked	5			Х	v	X					1						v					v											
aculeatus	Echidna	3		<u> </u>	Λ	X	Λ	<u> </u>	<u> </u>	ļ		<u> </u>	<u> </u>	<u> </u>		<u> </u>		X		<u> </u>	<u> </u>		X		<u> </u>			<u> </u>	<u> </u>]	<u> </u>		<u> </u>	<u> </u>
Sminthopsis	Fat-tailed Dunnart	2																												X				X
crassicaudata				ļ	<u> </u>	ļ		ļ	<u> </u>	ļ		. 	ļ	ļ	ļ	ļ	ļ		ļ	ļ	ļ	ļ			ļ	ļ		ļ	<u> </u>	1 1	ļ	<u> </u>	ļ	
Sminthopsis	Little Long-tailed	4					X											X									X					X		
dolichura Lasiorhinus	Dunnart Southern Hairy-					ļ	ļ	ļ		ļ			ļ	ļ					ļ					ļ	ļ	ļ		ļ			ļ		ļ	
latifrons	nosed Wombat	15	X	X	X	X				X		İ				İ			X	X		X	X		X	X	X	X	X		X			İ
Macropus	Western Grey			ļ		ļ			 	Į		·		ļ	ļ	ļ	ļ				ł	ļ			ļ				 			 		ļ
fuliginosus	Kangaroo	3				X																					X						X	
Macropus sp.		12			<u> </u>	X	ļ	İ	<u> </u>	ļ	X	X	X	X	1			X	X	X	X				X		X	İ	<u> </u>	1	İ	<u> </u>	X	·
Cercartetus	Western Pygmy-									<u></u>					ļ															1				ļ
concinnus	possum	4	X						X		X																		X					
Mormopterus spp.	Freetail-bats	17			X	X	X	X	<u> </u>	X	X	·	X	X	X	<u> </u>	X			<u> </u>	<u> </u>	X	X	X	X	•	X	<u></u>	<u> </u>		ā	<u> </u>	X	X
	White-striped			.ļ	†	ļ				ļ			<u> </u>		1	ļ				ļ	ł							ļ			ļ		<u> </u>	
Tadarida australis	Freetail-bat	8			X	X							X		X								X			X						X	X	i
Chalinolobus	Gould's Wattled	18	X	X	Х	X	X		Х	X			X	X	X			X				Х	X				X				X	Х	X	X
gouldii	Bat	10	Λ	Λ	Λ	Λ	Λ	Į	Λ	Λ		ļ	Δ.	Λ	Λ	ļ		Λ		ļ	Į	Λ	Λ		ļ	ļ	Λ	Į	ļ	ļ	Λ	Λ	Λ	Λ
Chalinolobus	Chocolate Wattled	7												X			X					X	X	X	X	X								
morio	Bat			ļ	ļ	ļ		ļ	ļ	ļ		. ļ	<u> </u>	Į	ļ	ļ		ļ	ļ	ļ	Į	ļ			ļ	ļ		ļ	ļ	ļ	ļ	ļ	Į	ļ
Nyctophilus	Lama aanad Dat	19	X	X	X	X	X		X		X	X	X	X	X		X	X					X		X		X					X	X	X
geoffroyi/ timoriensis	Long-eared Bat	19	Λ	Λ	Λ	Λ	Λ		Λ		Λ	Λ	Λ	Λ	Λ		Λ	Λ					Λ		Λ		Λ					Λ	Λ	Λ
Nyctophilus	Greater Long-			·	İ	İ	İ	ļ	İ			ļ	ļ	İ	ļ	ļ		ļ		İ					ļ	ļ		İ	İ	İ	İ	İ	İ	İ
timoriensis	eared Bat	4										X			X												X					X		
Scotorepens	Inland Broad-					ļ		<u> </u>	<u> </u>	 !			<u> </u>	1	1			ļ		<u> </u>	***		37	·····	ļ	·!		<u> </u>	<u> </u>				<u> </u>	
balstoni	nosed Bat	2																			X		X											
Vespadelus	Inland Forest Bat	5				X				••••••••••••••••••••••••••••••••••••••								• • • • • • • • • • • • • • • • • • •				X	X	X	3	X								
baverstocki		3				Λ		<u>.</u>													<u>.</u>	Λ	Λ	Λ	ļ	Λ		ļ			ļ		Į	į
Vespadelus	Southern Forest	5				X							X		X																	X	X	
regulus	Bat			ļ	ļ	ļ	ļ	<u> </u>	ļ	ļ		<u> </u>	ļ	ļ	ļ	<u> </u>	ļ	ļ	ļ	ļ	ļ	ļ			ļ	<u> </u>		<u> </u>	<u> </u>	<u> </u>	<u> </u>		Į	
Canis lupus dingo	Dingo	8			ļ	ļ		ļ	ļ	ļ			Ļ	Į		ļ		X	X	ļ	ļ	ļ	X		X			X	X		X	ļ	X	
Canis sp.		1						<u></u>		<u>.</u>		ļ	<u> </u>				X											<u></u>			<u></u>		<u> </u>	ļ
*Vulpes vulpes	Fox	2																					X						X					
*Camelus	One-humped	7				İ				<u> </u>			X	X	1				X		X		X		Х	•	X						Ť	
dromedarius	Camel	/				<u>.</u>				<u>.</u>			A	Λ	<u>.</u>				Λ		Λ		А		Λ		A						<u>.</u>	
*Mus musculus	House Mouse	32	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Notomys mitchellii	Mitchell's Hopping-mouse	1													X																			
*Oryctolagus	Rabbit	20	X		X	X				Î	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X					
cuniculus	Species Per Site		6	4	8	12	6	2	4	4	6	5	9	7	9	2	6	8	6	4	5	7	14	4	9	6	11	4	6	2	4	7	9	5

APPENDIX 8. BIRD SPECIES RECORDED IN THE YALATA IPA.

List of bird species recorded within the Yalata IPA at survey sites (including relative site frequency for each of the two surveys), as opportune records (in the Environmental Database of South Australia), held as specimens in the South Australian Museum collection, from the Birds Australia Bird Atlas database and from all other known sources. Taxonomy as at 1/11/2008.

Naturalised alien species are designated with an asterisk (*).

Australian status under the Environment Protection and Biodiversity Conservation Act 1999 as at Aus

SA South Australian status under the National Parks and Wildlife Act 1972 (2007 update of schedules 7,

8 and 9).

Status Codes: $\mathbf{E} = \text{endangered}$; $\mathbf{V} = \text{vulnerable}$; $\mathbf{R} = \text{rare}$.

BS14 Sites Number of sites at which each species was recorded during the 1984 Nullarbor Biological Survey. **BS575 Sites**

Number of sites at which each species was recorded during the 2007-08 Yalata IPA Biological

Species recorded opportunistically within the Yalata IPA (primarily during the Yalata IPA Opp

Biological Survey).

SAM Species held in the SA Museum collected within the Yalata IPA prior to the 2007-08 Yalata IPA

Biological Survey.

Birds Aust Birds Australia Bird Atlas database (to February 2006) records within the Yalata IPA.

Other All other known observations in the Yalata IPA.

Note A 'Species Name' in the form Genus sp. (as in Malurus sp.) indicates an individual of this genus

was observed but it could not be identified to species level.

Refer to end of table for more information. Notes (a-k)

Species Name	Common Name	Aus	SA	BS14 Sites	BS575 Sites	Total Sites	Орр	SAM	Birds Aust	Other
Dromaius novaeholandiae	Emu			1	0	1				
Coturnix pectoralis	Stubble Quail			1	3	4	X	5		
Anas gracilis	Grey Teal	İ		0	0	0			x	
Malacorhynchus membranaceus	Pink-eared Duck			0	0	0		ax		
Macronectes giganteus	Southern Giant-Petrel		V	0	0	0				bx
Macronectes halli	Northern Giant-Petrel			0	0	0				bx
Puffinus tenuirostris	Short-tailed Shearwater			1	0	1				
Diomedea cauta	Shy Albatross	V	V	0	0	0	cx			
Morus serrator	Australasian Gannet			0	0	0			x	
Phalacrocorax varius	Pied Cormorant			0	0	0	X		X	
Pelecanus conspicillatus	Australian Pelican			0	0	0				x
Egretta novaehollandiae	White-faced Heron			0	0	0		3	X	
Egretta sacra	Eastern Reef Egret		R	0	0	0			х	dx
Threskiornis spinicollis	Straw-necked Ibis			0	0	0				ex
Pandion haliaetus	Osprey		Е	0	0	0			х	fx
Accipiter cirrhocephalus	Collared Sparrowhawk			0	0	0				х
Accipiter fasciatus	Brown Goshawk			0	1	1	X			
Aquila audax	Wedge-tailed Eagle			2	7	9	X		х	
Circus approximans	Swamp Harrier			0	1	1	X			
Circus assimilis	Spotted Harrier			0	2	2			X	
Elanus axillaris	Black-shouldered Kite			0	2	2	X		х	
Haliaeetus leucogaster	White-bellied Sea-Eagle		Е	0	0	0			х	
Hieraaetus morphnoides	Little Eagle			4	2	6	X		X	
Lophoictinia isura	Square-tailed Kite		Е	0	0	0	X			
Falco berigora	Brown Falcon			3	10	13	X		X	
Falco cenchroides	Nankeen Kestrel			6	10	16	X		X	
Falco longipennis	Australian Hobby			0	0	0			X	
Falco subniger	Black Falcon			0	0	0			х	
Ardeotis australis	Australian Bustard		V	0	4	4	X		X	
Turnix velox	Little Button-quail			2	7	9	X		x	
Heteroscelus brevipes	Grey-tailed Tattler		R	0	0	0			х	
Arenaria interpres	Ruddy Turnstone		R	0	0	0	X			

Species Name	Common Name	Aus	SA	BS14 Sites	BS575 Sites	Total Sites	Орр	SAM	Birds Aust	Other
Calidris acuminata	Sharp-tailed Sandpiper			0	0	0	Х			
Calidris ruficollis	Red-necked Stint			0	0	0	Х			
Haematopus fuliginosus	Sooty Oystercatcher		R	0	0	0	Х		X	•
Haematopus longirostris	Pied Oystercatcher		R	0	0	0	Х		X	
Cladorhynchus leucocephalus	Banded Stilt		V	0	0	0			X	
Recurvirostra novaehollandiae	Red-necked Avocet			0	0	0	***************************************		X	
Charadrius australis	Inland Dotterel			0	0	0			X	
Charadrius ruficapillus	Red-capped Plover			1	0	1	Х	åå	X	
Elseyornis melanops	Black-fronted Dotterel			0	0	0	gx			
Thinornis rubricollis	Hooded Plover		V	0	0	0	X			
Vanellus tricolor	Banded Lapwing		ļ	0	0	0	Х		X	
Vanellus miles	Masked Lapwing			0	0	0			X	
Catharacta skua	Great Skua			0	0	0			x	
Larus novaehollandiae	Silver Gull			1	0	1	X		X	
Larus pacificus	Pacific Gull			0	0	0	х		X	
Chlidonias hybridus	Whiskered Tern			0	0	0	å		X	
Sterna bergii	Crested Tern	-		0	0	0	ļ		X	
Sterna caspia	Caspian Tern			0	0	0	Х			
*Columba livia	*Rock Dove			0	0	0				hx
Ocyphaps lophotes	Crested Pigeon		L	0	0	0	İ		X	
Phaps chalcoptera	Common Bronzewing			1	0	1	X		X	
Phaps elegans	Brush Bronzewing	_		0	0	0	^		A	ix
Cacatua leadbeateri	Major Mitchell's Cockatoo	_	R	6	15	21	X		X	IA.
Cacatua roseicapilla	Galah	_		5	6	11	X	Х	X	
Nymphicus hollandicus	Cockatiel			1	0	11	^	Λ	A	
Barnardius zonarius	Australian Ringneck	_		8	14	22	X	X	X	
Glossopsitta porphyrocephala	Purple-crowned Lorikeet			0	1	1	X	Λ	X	
Melopsittacus undulatus	Budgerigar			0	0	0	^			iv
Neophema petrophila	Rock Parrot	_		0	0	0	ļ		X	jx lov
Neophema splendida	Scarlet-chested Parrot	-	R	0	1		ļ			kx
	Naretha Bluebonnet					1 2	ļ			
Northiella haematogaster narethae		_	R	1	1		X	Х		
Psephotus varius	Mulga Parrot			7	13	20	X		X	
Cacomantis flabelliformis	Fan-tailed Cuckoo	_		0	0	0	<u> </u>		X	
Chrysococcyx basalis	Horsfield's Bronze-cuckoo			2	1	3	X		X	
Chrysococcyx osculans	Black-eared Cuckoo	_	ļ	1	2	3	ļ			
Cuculus pallidus	Pallid Cuckoo			6	4	10	X		X	
Ninox novaeseelandiae	Southern Boobook	_	ļ	2	0	2	X		X	
Podargus strigoides	Tawny Frogmouth			5	4	9	X		X	
Eurostopodus argus	Spotted Nightjar	_	ļ	0	0	0	X			
Aegotheles cristatus	Australian Owlet-nightjar			1	3	4	X		X	
Todiramphus pyrrhopygia	Red-backed Kingfisher	_	ļ	3	4	7	X			
Todiramphus sanctus	Sacred Kingfisher	_		0	1	1	X		X	
Merops ornatus	Rainbow Bee-eater			0	3	3	X		X	
Climacteris rufa	Rufous Treecreeper		ļ	1	1	2	X	ļļ	X	
Malurus lamberti	Variegated Fairy-wren			0	6	6	Х		X	
Malurus leucopterus	White-winged Fairy-wren			0	8	8	X		X	
Malurus sp.				0	1	1	ļ			
Pardalotus punctatus xanthopyge	Spotted (Yellow-rumped) Pardalote			4	2	6	х		X	
Pardalotus striatus	Striated Pardalote			5	6	11	х		X	ļ
Acanthiza apicalis	Inland Thornbill	_	ļ	6	12	18	X	<u> </u>	X	ļ
Acanthiza chrysorrhoa	Yellow-rumped Thornbill		ļ	7	11	18	X		X	
Acanthiza iredalei iredalei	Slender-billed Thornbill	V	R	0	1	1			X	
Acanthiza uropygialis	Chestnut-rumped Thornbill			3	6	9	X		X	

Species Name	Common Name	Aus	SA	BS14 Sites	BS575 Sites	Total Sites	Орр	SAM	Birds Aust	Other
Aphelocephala leucopsis	Southern Whiteface			4	13	17	Х		Х	
Calamanthus campestris	Rufous Fieldwren			1	9	10	X		X	
Calamanthus cautus	Shy Heathwren		R	1	3	4	х	Х	х	
Pyrrholaemus brunneus	Redthroat			0	3	3	Х		Х	
Sericornis frontalis	White-browed Scrubwren			3	10	13	X		X	
Smicrornis brevirostris	Weebill			5	9	14	X	5	X	
Acanthagenys rufogularis	Spiny-cheeked Honeyeater			9	15	24	X		X	
Anthochaera carunculata	Red Wattlebird			6	10	16	X		X	
Certhionyx variegatus	Pied Honeyeater	İ		0	3	3	X		X	
Lichenostomus cratitius	Purple-gaped Honeyeater	ļ	R	0	0	0	1		X	
Lichenostomus leucotis	White-eared Honeyeater	ļ	ļ	2	1	3	Х		\	
Lichenostomus ornatus	Yellow-plumed Honeyeater			7	10	17	X		X	
Lichenostomus virescens	Singing Honeyeater		ļ	9	21	30	X		x	
Manorina flavigula	Yellow-throated Miner			9	17	26	X		x	
Melithreptus brevirostris	Brown-headed Honeyeater	ļ	ļ	1	6	7	X			
Phylidonyris albifrons	White-fronted Honeyeater	İ	ā	5	10	15	X		X	
Epthianura albifrons	White-fronted Chat	ļ	ļi	1	10	2	- 		^	
Epthianura aurifrons			ļ	0	-	ļ	X]	
	Orange Chat				1	1	X			
Epthianura tricolor	Crimson Chat			0	0	0	X	9	X	
Eopsaltria griseogularis	Western Yellow Robin			0	2	2	X		X	
Melanodryas cucullata	Hooded Robin		āā	4	7	11	X		X	
Microeca fascinans	Jacky Winter		g	3	7	10	X		X	
Petroica goodenovii	Red-capped Robin	ļ	ļ	6	8	14	X		X	
Pomatostomus superciliosus	White-browed Babbler			7	15	22	X		X	
Cinclosoma castanotus	Chestnut Quail-thrush		ļ	2	3	5	X		X	
Cinclosoma cinnamomeum alisteri	Cinnamon (Nullarbor) Quail- thrush			0	2	2			x	
Daphoenositta chrysoptera	Varied Sittella	ļ		3	4	7	X		X	
Colluricincla harmonica	Grey Shrike-thrush	ļ	ā	9	15	24	Х		Х	
Oreoica gutturalis	Crested Bellbird	ļ	åa	6	9	15	X		X	
Pachycephala inornata	Gilbert's Whistler		R	4	2	6	х			
Pachycephala pectoralis	Golden Whistler			3	1	4	X	X	X	
Pachycephala rufiventris	Rufous Whistler			0	0	0	X	Α	X	
Grallina cyanoleuca	Magpie-lark			0	0	0	X		X	
Myiagra inquieta	Restless Flycatcher	<u> </u>	R	4	3	7				
	•		Ι	1	0	1	X		X	
Rhipidura albiscapa	Grey Fantail	<u> </u>		5	9	ļ	ļ			X
Rhipidura leucophrys	Willie Wagtail				d	14	X		X	
Artamus cinereus	Black-faced Woodswallow			3	8	11	X		X	
Artamus cyanopterus	Dusky Woodswallow			6	9	15	X	9	X	
Artamus personatus	Masked Woodswallow			0	6	6	X		X	
Cracticus torquatus	Grey Butcherbird		ā	9	18	27	X		X	
Gymnorhina tibicen	Australian Magpie		g	3	13	16	X		X	
Strepera versicolor	Grey Currawong		ļ	4	4	8	Х		X	
Coracina maxima	Ground Cuckoo-shrike	ļ		0	4	4	Х			
Coracina novaehollandiae	Black-faced Cuckoo-shrike	ļ	ļ	6	5	11	X		X	
Lalage tricolor	White-winged Triller	ļl		2	5	7	X		X	
Corvus bennetti	Little Crow	ļ	ļ	7	8	15	X		X	
Corvus coronoides	Australian Raven		<u></u>	5	10	15	X		X	
Corvus mellori	Little Raven			0	3	3	X		X	Х
Corvus sp.		İ		6	1	7				
Corcorax melanorhamphos	White-winged Chough		R	0	0	0	х			
*Sturnus vulgaris	*Common Starling	[3	0	3	Х	,	Х	
* ***********************************	Common Starting]			,	^		71	
Cheramoeca leucosternus	White-backed Swallow			0	0	0	X	<u></u>		

Species Name	Common Name	Aus	SA	BS14 Sites	BS575 Sites	Total Sites	Орр	SAM	Birds Aust	Other
Petrochelidon ariel	Fairy Martin			0	0	0		X		
Petrochelidon nigricans	Tree Martin			5	10	15	X		X	
Zosterops lateralis	Silvereye			1	3	4	х		X	
Cincloramphus cruralis	Brown Songlark			0	6	6	Х		x	
Cincloramphus mathewsi	Rufous Songlark			0	2	2	X			
Dicaeum hirundinaceum	Mistletoebird		<u> </u>	3	4	7	X		X	***************************************
*Passer domesticus	*House Sparrow			0	0	0	х		x	
Anthus novaeseelandiae	Richard's Pipit		<u></u>	5	15	20	Х		X	
Taeniopygia guttata	Zebra Finch			1	0	1	Х			
TOTAL SPECIES (= 147)		2	22	74	87	97	105	7	105	13

Notes

- a. Dead bird collected from Twin Rocks, 23 June 1992 (SAMB46852).
- b. Three Southern and one Northern Giant-Petrel were at the carcase of a Southern Right Whale *Eubalaena australis* on 23 June 1992 when the whale was flensed and collected by the South Australian Museum 3km east of Twin Rocks (C. Kemper and M. Sacchi, pers. comm.).
- c. Skull of beach-washed bird collected from Yalata beach by M. Greenaway on 6 April 2008.
- d. One at Head of Bight on 11 August 1994 (G. Carpenter pers. obs.).
- e. 5 seen flying east by G. Carpenter, 13km east of Nullarbor Roadhouse on 17 November 1995 (Eckert and Sim 2006).
- f. Three overhead 3km east of Twin Rocks on 23 June 1992 (C. Kemper and M. Sacchi, pers. comm.).
- g. One on Yalata beach on 25 October 2007.
- h. One at Head of Bight on 28 September 1989 (R. Whatmough, SAOA NL 133).
- i. One at Head of Bight on 13 July 1990 (J. Matthew, SAOA NL 135).
- j. 500 at Head of Bight on 28 September 1989 (R. Whatmough, SAOA NL 133).
- k. Seen near Head of Bight in October 1931 (McGilp 1932).

APPENDIX 9. BIRD SPECIES RECORDED AT EACH SITE DURING THE YALATA IPA SURVEY.

					Cole	ona Si	ites (C	COL)				Co	ombr	a Trac	ck Sit	es (CC	00)			Hea	d of t	he Biş	ght Si	tes (H	(OB)			Na	nwoo	ra We	ell Site	es (NA	N)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
Coturnix pectoralis	Stubble Quail	3														X	X				X													
Accipiter fasciatus	Brown Goshawk	1					X																										<u> </u>	
Aquila audax	Wedge-tailed Eagle	7	X	X										X					X	X	X		X											
Circus approximans	Swamp Harrier	1																				X												
Circus assimilis	Spotted Harrier	2																	X						X								i I	
Elanus axillaris	Black-shouldered Kite	2																				X	X											
Hieraaetus morphnoides	Little Eagle	2																					X											X
Falco berigora	Brown Falcon	10			X		X						X			X	X				X								X		X	X		X
Falco cenchroides	Nankeen Kestrel	10														X			X	X	X				X	X	X		X	X			X	İ
Ardeotis australis	Australian Bustard V	4														Х															X	X	X	
Turnix velox	Little Button-quail	7																		X		X		X	X			X	X				X	
Cacatua leadbeateri	Major Mitchell's Cockatoo R	15							X	X	X		X	X				X			X	X	X		X	X	X	X				X		X
Cacatua roseicapilla	Galah	6				X																X			X	X			X	X				
Barnardius zonarius	Australian Ringneck, (Ring- necked Parrot)	14		X		Х	X				X		X	X				X									X	X	X	X	X	X		X
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	1											X																					
Neophema splendida	Scarlet-chested Parrot R	2											X																					
Northiella haematogaster narethae	Naretha Bluebonnet R	1																												X				
Psephotus varius	Mulga Parrot	14		X	X					X			X	X		X	X					X	X				X				X	X	X	
Chrysococcyx basalis	Horsfield's Bronze-cuckoo	1																					X											
Chrysococcyx osculans	Black-eared Cuckoo	2																						X								X		
Cuculus pallidus	Pallid Cuckoo	4				Î	Ĭ	Ĭ	X								[[[<u> </u>	I			Ĭ	Ĭ					f	X		X	X	
Podargus strigoides	Tawny Frogmouth	4											X		Х							X					X							
Aegotheles cristatus	Australian Owlet- nightjar	3						Ģ					X	X		·				Ö				•								X		
Todiramphus pyrrhopygia	Red-backed Kingfisher	4						1																				X	X		X	X		

					Co	lona S	ites (C	COL)				Co	ombr	a Tra	ck Sit	tes (C	00)			Hea	ad of t	he Big	ght Si	tes (H	OB)			Na	nwoo	ra We	ell Site	es (NA	N)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
Todiramphus sanctus	Sacred Kingfisher	2											X																					
Merops ornatus	Rainbow Bee- eater	4							<u> </u>			·	X										X				X		·					
Climacteris rufa	Rufous Treecreeper	1																									X							
Malurus lamberti	Variegated Fairy- wren	6					X									X	X										X	X				X		1
Malurus leucopterus	White-winged Fairy-wren	8								X										X				X	X	X		X	X		X			
Malurus sp.		1																X																
Pardalotus punctatus xanthopyge	Spotted (Yellow- rumped) Pardalote	2												X									X											
Pardalotus striatus	Striated Pardalote	7									X		X	X									X				X					X		
Acanthiza apicalis	Inland Thornbill	13			X				X		X		X	X	X			X				X	X				X					X		X
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	11				X	X		X	X	113			X	X								X				X				X	Х	X	
Acanthiza iredalei iredalei	Slender-billed Thornbill (western ssp) V :R	1																										X						
Acanthiza uropygialis	Chestnut-rumped Thornbill	6			X	X	X		X			<u> </u>																			X	X		
Aphelocephala leucopsis	Southern Whiteface	13		X	X	X		X	X	X											X		X		X	X		X	X		X			
Calamanthus campestris	Rufous Fieldwren	9														X	X		X	X	X			X	X	X			X					
Calamanthus cautus	Shy Heathwren (Shy Hylacola) R	3											X			<u> </u>	(11111111111111111111111111111111111111					,	ļ				X		ļ			X)
Pyrrholaemus brunneus	Redthroat	3			X				X						X																	į		
Sericornis frontalis	White-browed Scrubwren	10											X	X	X	X	X	X			X	X	X		X				<u></u>					
Smicrornis brevirostris	Weebill	10				X	X				X		X	X	X						İ		X				X					Х		
Acanthagenys rufogularis	Spiny-cheeked Honeyeater	15		X		X			X	X	X	-	X	X							X		X				X	X	<u> </u>	Х	X	X	X	
Anthochaera carunculata	Red Wattlebird	10		X		X	X				X		X	X	X			X				X	X											
Certhionyx variegatus	Pied Honeyeater	3	X											X			X																	
Epthianura albifrons	White-fronted Chat	1																											X					
Epthianura aurifrons	Orange Chat	1										X																						

					Cole	ona S	ites (C	COL)				Co	ombr	a Tra	ck Sit	es (CO	OO)			Hea	ad of t	he Bi	ght Si	tes (F	HOB)			Na	nwoo	ra We	ell Sit	es (NA	N)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06		08	01	02	03	04	05	06	07	08
Lichenostomus leucotis	White-eared Honeyeater	1											X																					
Lichenostomus	Yellow-plumed	11		_		X	X	1	ļ		X	†	X	X	}		ļ	·	1	1		<u> </u>	X				X		<u> </u>	X		X		X
ornatus	Honeyeater				ļ	ļ	ļ	ļ	<u>.</u>	ļ		<u> </u>	ļ		ļ	<u> </u>	ļ	ļ	ļ			<u> </u>	ļ	ļ		<u>.</u>			<u></u>		ļ	ļ	ļ	ļ
Lichenostomus virescens	Singing Honeyeater	21		X	X		X		X				X	X		X	X	X			X		X	X	X		X	X	X	X	X	X	X	X
Manorina flavigula	Yellow-throated Miner	17		X	X	X	X				X		X		X	X		X			X	X	X				X	X		X		X	X	
Melithreptus	Brown-headed	6				X	X		ļ		X		X					 							-		X	<u> </u>				X		
brevirostris Phylidonyris	Honeyeater White-fronted					- 71																										. .		
albifrons	Honeyeater	11					X				X		X	X	X	ļ		X					X				X					X	X	ļ
Eopsaltria griseogularis	Western Yellow Robin	2											X																			X		
Melanodryas cucullata	Hooded Robin	7		X	X				X										ļ									X		X	X			X
Microeca fascinans	Jacky Winter	7			ł	X	X	-	X		X			X		<u> </u>											X		!			X		
Petroica goodenovii	Red-capped Robin	8		X	X	X	X	X	X	X																							X	
Pomatostomus superciliosus	White-browed Babbler	15		X	X		X		X		X		X	X							X	X	X				X	X		X		X		X
Cinclosoma castanotus	Chestnut Quail- thrush	3					X						X																			X		
Cinclosoma cinnamomeum alisteri	Cinnamon (Nullarbor) Quail- thrush	2											X						X															
Daphoenositta chrysoptera	Varied Sittella	4			X				X																					X	X			
Colluricincla harmonica	Grey Shrike- thrush	16		X	X	X	X				X		X		X	X		X				X	X				X			X		X		X
Oreoica gutturalis	Crested Bellbird	9								X																	X	X	X	X	X	X	X	X
Pachycephala inornata	Gilbert's Whistler R	2			4			ā	X	X																								
Pachycephala pectoralis	Golden Whistler	1			İ				<u> </u>				X		ł		ļ						ļ		·			-	ļ					<u> </u>
Myiagra inquieta	Restless Flycatcher R	3				<u> </u>	J	.		!			X		L	<u></u>	.					<u> </u>	J				X		.			X	L	ļ
Rhipidura leucophrys	Willie Wagtail	9		X		X	X																				X	X		X	X	X	X	
Artamus cinereus	Black-faced Woodswallow	8		X	ļ			İ	X	X		İ							<u> </u>	İ	İ	<u> </u>				<u> </u>		X	X	X	X			X
Artamus	Dusky	10		X	X	X	X	Į	!	J	X	1	X		!	<u></u>	J	ļ	<u> </u>			<u> </u>	X		<u> </u>		X		<u> </u>	ļ		X		ļ
cyanopterus Artamus	Woodswallow Masked	6						<u></u>	<u></u>	<u></u>					<u></u>			<u></u>	<u> </u>			<u></u>					X	X	X		X	X		X
personatus	Woodswallow	U						<u> </u>												ĺ							Λ	Λ	Λ		Λ	Λ	<u> </u>	Λ

					Cole	ona S	ites (C	COL)				Co	ombr	a Tra	ck Sit	es (Co	00)			Hea	d of t	he Biş	ght Si	tes (H	IOB)			Na	nwoo	ra We	ell Site	es (NA	N)	
Species Name	Common Name	Tot	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
Cracticus torquatus	Grey Butcherbird	18		X		X	X		X		X		X	X	Х	X		X		X	X	X	X				X	X		X		X		
Gymnorhina tibicen	Australian Magpie	13	X												X	X		X			X	X		X		X	X	X	X	X	X			
Strepera versicolor	Grey Currawong	4									X			X													X					X		
Coracina maxima	Ground Cuckoo- shrike	4	X	X										X																		X		
Coracina novaehollandiae	Black-faced Cuckoo-shrike	5				X						X															X					X	X	
Lalage tricolor	White-winged Triller	6											X										X								X	X		X
Corvus bennetti	Little Crow	8					X													X	X	X						X		X	X	X		İ
Corvus coronoides	Australian Raven	10													X	X	X	X	X		X	X	X	X	X									
Corvus mellori	Little Raven	3						X																							X	X		
Corvus sp.		1											=							X														
Hirundo neoxena	Welcome Swallow	10														X	X	X				X	X	X	X			X			X	X		
Petrochelidon nigricans	Tree Martin	10			X		X					X		X		X							X				X				X	X	X	
Zosterops lateralis	Silvereye	3									X							X					X											
Cincloramphus cruralis	Brown Songlark	6																		X	X							X	X		X			X
Cincloramphus mathewsi	Rufous Songlark	2																															X	X
Dicaeum hirundinaceum	Mistletoebird	4							X																		X					X	X	
Anthus novaeseelandiae	Richard's Pipit	15	X	X						X		X				X			X	X				X	X			X	X	X	X		X	X
Total Taxa = 87	Taxa Per Site		5	18	15	18	23	3	18	11	18	4	33	23	13	17	10	15	7	10	17	18	29	9	13	7	33	23	17	20	25	42	18	17

174

APPENDIX 10. BIRD SPECIES RECORDED AT KO AND YA SITES DURING THE 1984 NULLARBOR SURVEY.

Charing Name	Common Name	Total		Col	ona Sites ((KO)			Yal	lata Sites (YA)	
Species Name	Common Name	Sites	01	02	03	04	05	01	02	03	04	05
Dromaius novaehollandiae	Emu	1		X								
Coturnix pectoralis	Stubble Quail	1				**************************************					X	
Puffinus tenuirostris	Short-tailed Shearwater	1										X
Aquila audax	Wedge-tailed Eagle	2				#3000000000000000000000000000000000000			X			X
Hieraaetus morphnoides	Little Eagle	4					X		X	X	X	
Falco berigora	Brown Falcon	3		X	X	•	X					
Falco cenchroides	Nankeen Kestrel	6	X	X	X	X				X		X
Turnix velox	Little Button-quail	2	X			**************************************				X		
Charadrius ruficapillus	Red-capped Plover	1										X
Larus novaehollandiae	Silver Gull	1										X
Phaps chalcoptera	Common Bronzewing	1				X						
Cacatua leadbeateri	Major Mitchell's Cockatoo	6		X	X	X	X			X	X	
Cacatua roseicapilla	Galah	5	X	X	X	X	X					
Nymphicus hollandicus	Cockatiel	1		X		***************************************						
Barnardius zonarius	Australian Ringneck	8	X	X	X	X	X	X	X	X		4
Northiella haematogaster narethae	Naretha Bluebonnet	1		X								
Psephotus varius	Mulga Parrot	7	X	X	X	X	X		X		X	
Chrysococcyx basalis	Horsfield's Bronze-cuckoo	2		X				X				
Chrysococcyx osculans	Black-eared Cuckoo	1					<u></u>	X				
Cuculus pallidus	Pallid Cuckoo	6		X		X	X	X		X		X
Ninox novaeseelandiae	Southern Boobook	2						X	X			
Podargus strigoides	Tawny Frogmouth	5			X	X		X		X	X	
Aegotheles cristatus	Australian Owlet-nightjar	1								X		
Todiramphus pyrrhopygia	Red-backed Kingfisher	3	X			X	X					
Climacteris rufa	Rufous Treecreeper	1				•••••••••••••••	<u> </u>	X				
Pardalotus punctatus xanthopyge	Spotted (Yellow-rumped) Pardalote	4				n (0.000.000.000.000.000.000.000.000.000.		X	X	X	X	4
Pardalotus striatus	Striated Pardalote	5			X	•	X	X	X		X	
Acanthiza apicalis	Inland Thornbill	6			X	.	X	X	X	X	X	
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	7		X	X	X	X	X	X	•	X	
Acanthiza uropygialis	Chestnut-rumped Thornbill	3		X	X	X						
Aphelocephala leucopsis	Southern Whiteface	4		X	X	X	X					
Calamanthus campestris	Rufous Fieldwren	1				••••••••••••••••••••••••••••••••••••••						X
Calamanthus cautus	Shy Heathwren	1				•	3		X			
Sericornis frontalis	White-browed Scrubwren	3			†	<u> </u>		-	X	X	X	<u> </u>
Smicrornis brevirostris	Weebill	5			X	1	X	X	X	1	X	1
Acanthagenys rufogularis	Spiny-cheeked Honeyeater	9	X	X	X	X	X	X	X	X	X	
Anthochaera carunculata	Red Wattlebird	6	X			X	-	X	X	X	X	

G . N	G V	Total		Col	ona Sites ((KO)			Ya	lata Sites ((YA)	
Species Name	Common Name	Sites	01	02	03	04	05	01	02	03	04	05
Epthianura albifrons	White-fronted Chat	1		X								
Lichenostomus leucotis	White-eared Honeyeater	2			X		5		X			
Lichenostomus ornatus	Yellow-plumed Honeyeater	7	X	X	X		X	X	X		X	
Lichenostomus virescens	Singing Honeyeater	9	X	X	X	X	X		X	X	X	X
Manorina flavigula	Yellow-throated Miner	9	X	X	X	X	X	X	X	X	X	
Melithreptus brevirostris	Brown-headed Honeyeater	1						-	X			1
Phylidonyris albifrons	White-fronted Honeyeater	5				X		X	X	X	X	
Melanodryas cucullata	Hooded Robin	4	X	X	X	X	5					
Microeca fascinans	Jacky Winter	3				•	X	X	X			
Petroica goodenovii	Red-capped Robin	6	X	X	X	X		X		.ā	X	· •
Pomatostomus superciliosus	White-browed Babbler	7	X	X	X	X	X	X	X			1
Cinclosoma castanotus	Chestnut Quail-thrush	2		B				X	X			
Daphoenositta chrysoptera	Varied Sittella	3		X		X		X				
Colluricincla harmonica	Grey Shrike-thrush	9	X	X	X	X	X	X	X	X	X	·
Oreoica gutturalis	Crested Bellbird	6	X	X	X	X	X	X				1
Pachycephala inornata	Gilbert's Whistler	4		X	X	X	X					
Pachycephala pectoralis	Golden Whistler	3			İ	•			X	X	X	1
Myiagra inquieta	Restless Flycatcher	4		}	X	X	X	X			·	1
Rhipidura fuliginosa	Grey Fantail	1			ļ						X	-
Rhipidura leucophrys	Willie Wagtail	5		B	X	X	X	X	X			
Artamus cinereus	Black-faced Woodswallow	3	X	X		X						
Artamus cyanopterus	Dusky Woodswallow	6		5 	X	X	X	X	X	·ā·······	X	†
Cracticus torquatus	Grey Butcherbird	9	X	X		X	X	X	X	X	X	X
Gymnorhina tibicen	Australian Magpie	3		B	ļ	•	B		X	X	X	
Strepera versicolor	Grey Currawong	4						X	X	X	X	·
Coracina novaehollandiae	Black-faced Cuckoo-shrike	6		X	X	X	X	X	X			
Lalage tricolour	White-winged Triller	2		X			X					
Corvus bennetti	Little Crow	7		5	X	X	X		X	X	X	X
Corvus coronoides	Australian Raven	5		X	<u></u>			X	X	X		X
Corvus sp.		6	X	8 1 1 1	X	X	X			X		X
*Sturnus vulgaris	Common Starling	3	X	9	X	•	X		(\$1100000000000000000000000000000000000		16000000000000000000000000000000000000	***************************************
Hirundo neoxena	Welcome Swallow	2				X						X
Petrochelidon nigricans	Tree Martin	5		X	X	X	X	X		·å····································	·•	1
Zosterops lateralis	Silvereye	1			ý						X	1
Dicaeum hirundinaceum	Mistletoebird	3		X	X	X	B					1
Anthus novaeseelandiae	Richard's Pipit	5	X	X	X	X						X
Taeniopygia guttata	Zebra Finch	1			1	•					X	1
Total Taxa = 74	Taxa Per Site		21	34	34	36	32	32	33	24	28	14

APPENDIX 11. REPTILE SPECIES RECORDED IN THE YALATA IPA.

List of reptile species recorded within the Yalata IPA at survey sites or as opportune records (in the Environmental Database of South Australia) or held as specimens in the South Australian Museum collection. Taxonomy as at 1/12/2008.

* Naturalised alien species are designated with an asterisk (*).

Aus Australian status under the Environment Protection and Biodiversity Conservation Act 1999 as at

June 2008.

SA South Australian status under the *National Parks and Wildlife Act 1972* (2007 update of schedules 7,

8 and 9).

Status Codes: $\mathbf{E} = \text{endangered}$; $\mathbf{V} = \text{vulnerable}$; $\mathbf{R} = \text{rare}$.

SAM Number of specimens of each species in the South Australian Museum collection from the Yalata

IPA prior to this survey (excluding those collected on the 1984 Nullarbor Biological Survey).

general OP BS575 OP

Sites

Number of opportunistic records for each species recorded in the Yalata IPA prior to May 2007. Number of opportunistic records for each species from the 2007-08 Yalata IPA Biological Survey. Number of sites within the Yalata IPA each species recorded at on **Nullarbor** (**BS14**) or **Yalata IPA**

(BS575) Biological Survey.

Recs Number of individuals of each species recorded at sites within the Yalata IPA on these surveys. **Note** Where 'Species Name' is given in the form Genus sp. (as in *Cryptoblepharus* sp.) this indicates

Where 'Species Name' is given in the form Genus sp. (as in *Cryptoblepharus* sp.) this indicates an individual of this genus was observed but it could not be identified to species level. It does not

indicate a new or as yet undescribed species was observed.

		Sta	tus	N	lo. of Reco	rds	BS14 -	11 sites	BS575 -	32 sites
Species Name	Common Name	Aus	SA	SAM	general OP	BS575 OP	Sites	Recs	Sites	Recs
Acanthophis antarcticus	Common Death Adder					1				
Aprasia inaurita	Red-tailed Worm-lizard								1	1
Christinus marmoratus	Marbled Gecko	***************************************		6		2			1	1
Cryptoblepharus australis	Desert Wall skink	Ç					1	1		
Cryptoblepharus pulcher clarus	Striped Wall Skink					1			2	2
Cryptoblepharus sp.									1	1
Ctenophorus cristatus	Crested Dragon	£:		1	1	2	2	5	1	2
Ctenophorus mckenziei	McKenzie's Dragon	***************************************	R	1			2	7	4	15
Ctenophorus pictus	Painted Dragon	***************************************		25		7	7	34	22	72
Ctenotus euclae	Bight Coast Ctenotus	¢		5	4		3	5	11	32
Ctenotus orientalis	Eastern Spotted Ctenotus					<u> </u>	3	4	3	10
Ctenotus regius	Eastern Desert Ctenotus					1			7	18
Ctenotus schomburgkii	Sandplain Ctenotus	¢					5	10	7	41
Ctenotus sp.							1	1		
Cyclodomorphus	Spinifex Slender	•							1	1
melanops	Bluetongue									
Delma australis	Barred Snake-lizard					4	3	5	3	5
Delma sp.						<u> </u>			1	1
Diplodactylus vittatus complex	Stone Gecko			1		6	5	10	14	27
Drysdalia mastersii	Master's Snake					1	3	4	2	2
Egernia multiscutata	Bull Skink	•							2	2
Egernia richardi	Western Tree Skink								1	2
Gehyra lazelli	Southern Rock Dtella			1			1	1	1	1
Gehyra sp.									2	3
Gehyra variegata	Tree Dtella			1		2	6	8	7	26
Hemiergis initialis	Western Earless Skink			1					3	4
Heteronotia binoei	Bynoe's Gecko			1		6	3	3	6	6
Lerista dorsalis	Southern Four-toed Slider]		4					11	23
Lerista edwardsae	Myall Slider					2	3	3	14	33
Lerista terdigitata	Southern Three-toed Slider					1			2	3
Lialis burtonis	Burton's Legless Lizard	K		1	***************************************				2	2
Lucasium damaeum	Beaded Gecko	*		Ç					1	1
Menetia greyii	Dwarf Skink	*	***************************************			<u> </u>	4	5	8	13
Morelia spilota	Carpet Python		R		1	<u> </u>				
Morethia adelaidensis	Adelaide Snake-eye					<u> </u>	5	17	14	54
Morethia obscura	Mallee Snake-eye	†	······	1		2	3	10	12	32
Morethia sp.	· · · · · · · · · · · · · · · · · · ·					<u> </u>			1	2

		Sta	tus	N	lo. of Reco	rds	BS14 -	11 sites	BS575 -	- 32 sites
Species Name	Common Name	Aus	SA	SAM	general OP	BS575 OP	Sites	Recs	Sites	Recs
Nephrurus milii	Barking Gecko			1		7	5	14	8	30
Nephrurus stellatus	Starred Knob-tailed Gecko					3	2	6	9	26
Pogona minor	Dwarf Bearded Dragon			5		2	4	4	7	8
Pogona nullarbor	Nullarbor Bearded Dragon			12		2			3	4
Pseudechis australis	Mulga Snake								1	1
Pseudonaja affinis	Dugite			1		1	2	2	6	8
Pseudonaja nuchalis	Western Brown Snake		1	2						
Pseudonaja sp.						1	2	3		
Pygopus lepidopodus	Common Scaly-foot		1				1	5	3	3
Ramphotyphlops bicolor	Southern Blind Snake								4	5
Ramphotyphlops bituberculatus	Rough-nosed Blind Snake					2			3	5
Rankinia chapmani	Prickly Dragon					2	3	15	5	9
Simoselaps bertholdi	Desert Banded Snake			1			1	1	2	3
Strophurus intermedius	Southern Spiny-tailed Gecko					1			6	10
Suta spectabilis	Mallee Black-headed Snake			1			1	1	3	3
Tiliqua occipitalis	Western Bluetongue					1			2	2
Tiliqua rugosa	Sleepy Lizard					8	8	25	18	37
Tiliqua sp.						1				
Tympanocryptis houstoni	Nullarbor Earless Dragon			2		1	1	1	10	23
Tympanocryptis sp.									3	4
Varanus gouldii	Sand Goanna					3				
Varanus rosenbergi	Heath Goanna		V		1					
Varanus sp.	Goanna						1	1		
Total Species = 50	Number of Species			20	3	27	30		52	
	Number of Records			69	3	72		211		619

APPENDIX 12. REPTILE SPECIES RECORDED AT EACH SITE DURING THE YALATA IPA SURVEY.

					Col	ona S	ites (C	COL				Co	ombr	a Tra	ck Sit	es (CC	00)			Hes	ıd of t	he Big	ght Si	tes (F	HOB))			Nar	awooi	ra We	ell Site	es (NA	(N)	
Species Name	Common Name	Tot	01	02	03			06	07	08	01	02	03	04	05	06	07	08	01	02	03	04		06		-	8 0		02	03	04	05	06	07	08
AGAMIDAE	Dragon Lizards		0.2	- 02	- 55	, ·	- 52						- 00		- 00	00	0.	00	0.2	02			- 52	- 00						- 00	Ŭ.	- 02	- 00		
Ctenophorus	Crested Dragon	1		1	<u> </u>	†	·	·	<u> </u>			·	<u> </u>	1	ļ					<u> </u>	<u> </u>	1	<u> </u>					T					X	<u> </u>	ļ
cristatus	_	1				•			ļ				ļ		.						g		ļ										Λ	ļ	
Ctenophorus	McKenzie's	4			X	X	X		X																					ļ					
mckenziei	Dragon			 	<u>.j</u>		. .	ļ	ļ	ļ		<u> </u>	 	ļ	ļ					 	ļ	ļ	 									 	ļ	 	
Ctenophorus pictus	Painted Dragon	22	X	X	X	X	X		X	X		X	X	ļ		X	X		X	X			ļ	X	X	X	Х		X		X	X	ļ	X	X
Pogona minor	Dwarf Bearded Dragon	7		X		X	X	X													X						X				X				
Pogona nullarbor	Nullarbor Bearded Dragon	3																	X		X		X												
Rankinia chapmani	Prickly Dragon	5		ļ	<u> </u>	X	ļ					ļ	X	ļ	ļ			X	<u></u>	<u> </u>	ļ	X	<u> </u>	-	X								<u> </u>	ļ	ļ
Tympanocryptis	Nullarbor			ļ		^	ļ	ļ	<u></u>			ļ	Λ	Į	ļ Ī			Λ	ļ	ļ	<u>.</u>	Λ	ļ Ī		Λ			!				 	<u></u>	Į	
houstoni	Earless Dragon	10	X					X		X									X	X				X		X			X	X		X			
Tympanocryptis sp.		3	X	1	<u> </u>	X	1	-	<u> </u>	X			<u> </u>	<u> </u>	ļ					<u> </u>	<u> </u>	<u></u>	ļ										<u></u>	I	İ
GEKKONIDAE	Diplodactylinae			1	1	1	·	-	<u> </u>	ļ		·	<u> </u>	1	İ					<u> </u>	f	†	ļ									}	<u> </u>	ļ	ļ
Diplodactylus vittatus complex	Stone Gecko	14	X	X	X	X	X	X	X	X			X	X						X									X				X		X
Lucasium damaeum	Beaded Gecko	1		1	-	<u> </u>			<u> </u>	ļ		·	<u> </u>	1							!	<u> </u>	ļ						X			ļ	<u> </u>	ļ	
Nephrurus milii	Barking Gecko	8		İ	1	X	†	X		X		X	<u> </u>	İ			X			ļ	Ī		ļ Ī		X	_			X		X				
Nephrurus stellatus	Starred Knob- tailed Gecko	9											X			X	X	X			ā	X	X				Х						X		X
Strophurus intermedius	Southern Spiny- tailed Gecko	6		ļ	X					X		. L	!	<u> </u>			X				X				X	X							<u></u>	ļ	
GEKKONIDAE	Gekkoninae	ļ	1			<u> </u>	. .		<u> </u>				<u> </u>	<u></u>	ļ				<u> </u>	<u> </u>	ļ	<u></u>	<u> </u>										<u> </u>	<u> </u>	
Christinus		İ	ļ			<u>.</u>	ļ		<u> </u>	ļ		ļ	<u> </u>	ļ					<u> </u>	ļ	<u> </u>	<u> </u>	ļ !									ļ	<u></u>	ļ	ļ
marmoratus	Marbled Gecko	1		ļ	ļ	<u>.</u>		ļ										X																	
Gehyra lazelli	Southern Rock Dtella	1				.		.,,	.				X		ļ	,				ļ	<u></u>	.	ļ										·	.	
Gehyra sp.		2			<u> </u>	<u> </u>	ļ	X	<u> </u>			. .	<u> </u>	<u> </u>						<u> </u>	X	<u> </u>	<u> </u>		<u> </u>								<u> </u>	_	ļ
Gehyra variegata	Tree Dtella	7		X	X	X	X		X	X	X	<u></u>	<u> </u>	<u> </u>						ļ	<u> </u>		ļ							j		<u></u>		Į	<u> </u>
Heteronotia binoei	Bynoe's Gecko	6									X			X					X										X			X	X		
GEKKONIDAE	Pygopodinae																																		
Aprasia inaurita	Red-tailed Worm-lizard	1																																X	
Delma australis	Barred Snake- lizard	3					X						X														Х								
Delma sp.		1		Ī		Ī	·		<u> </u>	[[· [Ī							Ī		X									Ĭ		Ĭ	
Lialis burtonis	Burton's Legless Lizard	2												X							X													B	
Pygopus	Common Scaly-	3) 		0 11 11 11 11 11 11 11 11 11 11 11 11 11	X				3	3		X			Q	X	Connument 									4		2000000000	
lepidopodus	foot	_					1	1	1	i .		1	1	1					1	1		1	1	1	1	1		- 1	- 1			i .	•	1	1

G · N	C N	TD. c			Cole	ona Si	ites (C	COL)				Co	ombr	a Trac	ek Site	es (CC	00)			Hea	d of t	he Big	ght Sit	tes (H	(OB)			Na	nwoo	ra We	ell Site	s (NA	N)	
Species Name	Common Name	Tot	01	02	03	04		06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08
SCINCIDAE	Skinks																																	
Cryptoblepharus pulcher clarus	Striped Wall Skink	2									X		X																					
Cryptoblepharus sp.		1					X																											
Ctenotus euclae	Bight Coast Ctenotus	11											X	X	X		X	X				X	X	X	X	X						X		
Ctenotus orientalis	Eastern Spotted Ctenotus	3								X									X	X														
Ctenotus regius	Eastern Desert Ctenotus	7																			X					X	X	X				X	X	X
Ctenotus schomburgkii	Sandplain Ctenotus	7		X	X	X	X		X											X														X
Cyclodomorphus melanops	Spinifex Slender Bluetongue	1															X																	
Egernia multiscutata	Bull Skink	2															X	X																
Egernia richardi	Western Tree Skink	1												2											301000000							X		
Hemiergis initialis	Western Earless Skink	3							X				X														X							
Lerista dorsalis	Southern Four- toed Slider	11				X		X	<u></u>							X			X	X			X	X	X	X		X	X					
Lerista edwardsae	Myall Slider	14		X	X				X		X			X	X	X					X					X	X		X	X		X	X	
Lerista terdigitata	Southern Three- toed Slider	2									X	X																						
Menetia greyii	Dwarf Skink	8		X	X				X				X							X		X	X		X									
Morethia adelaidensis	Adelaide Snake- eye	14	X	X	X	X	X	X		X		X								X			X	X		X			X	X				
Morethia obscura	Mallee Snake- eye	12			X	X	X		X				X		X			X				X		X	X	X						X		
Morethia sp.		1				X																<u> </u>												
Tiliqua occipitalis	Western Bluetongue	2													X																			X
Tiliqua rugosa	Sleepy Lizard	18		X			X			X			X			X		X	X	X		X	X	X	X	X	X	X	X	X	<u>[</u>]	X		
ELAPIDAE	Elapid Snakes																																	
Drysdalia mastersii	Master's Snake	2											X										X											
Pseudechis australis	Mulga Snake	1																										X						
Pseudonaja affinis	Dugite	6	X							Ī									X		X			X		X							X	
Simoselaps bertholdi	Desert Banded Snake	2		X			X																											
Suta spectabilis	Mallee Black- headed Snake	3									X					X				X														

Species Name	Species Name Common Name	Tot			Cole	lona Sites (COL)					Co	ombr	a Trac	ck Sit	es (CC	00)		Head of the Bight Sites (HOB)									Nanwoora Well Sites (NAN)								
Species Name	Common Name	101	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	01	02	03	04	05	06	07	08	
TYPHLOPIDAE	Blind Snakes																																		
Ramphotyphlops bicolor	Southern Blind Snake	4									***************************************		X														X				X			X	
Ramphotyphlops bituberculatus	Rough-nosed Blind Snake	3																		X									X	X					
	Species Per Site		6	10	10	13	12	7	9	10	7	4	14	5	4	6	7	8	8	11	8	7	9	8	9	11	9	10	6	7	4	10	5	7	