

MEMORANDUM

TO: Chip Murray
FROM: Esperance Wildflower Society (Inc.)
DATE: May 3, 2000
SUBJECT: Vegetation survey

This report has been prepared in response to your request for a botanical survey of an area near Quallilup Lake intended for the purposes of mining lime sand.

The report addresses the associated criteria:

- 1 Geographic location.
- 2 Site ground data.
- 3 Vegetation structure and cover.
- 4 Vegetation condition.
- 5 Species present.

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Introduction

This report is in response to a verbal request from Chip Murray to undertake a botanical survey of an area approximating 14ha, near the south eastern edge of Quallilup Lake which is south/south west of Dalyup and 35 km west of Esperance.

Five sections of descriptive information are provided on recording sheets. (see Appendices)

- There are two sections on sheet one, the first details the location of the site and includes a mud map with roads or distinguishing landmarks, a GPS reading and the topographic position.
- The second section contains site data relating to ground aspects and soil conditions. A photographic record was made in the form of video footage. (owner)
- Another two sections on the second recording sheet describe the vegetation structure and percentage cover as well as the dominant species, and the condition of vegetation.
- A complete species list of the various plant life forms found at the main survey site is recorded on the third sheet.
- Different plant species found on an adjacent rise to the south west of the main survey site are listed on a separate recording sheet.

Method

A series of five 20m x 20m quadrats was used at the main site, commencing from the lower slope on the northern end to just over the ridge. A narrow belt along the ridge was viewed to look for additional plant species not encountered in the quadrats.

Visual observation at the second site was for the purposes of plant identification only and the recording of different species.

The recording method was based on '*Bushland Plant Survey*', a Wildflower Society of WA (Inc.) Publication.

Vegetation

At the first site, the plant species identified were found to be relatively common and dominant in each quadrat, from the lower slope on the northern aspect up to the southern aspect of the ridge. Different variations of plant associations occurred with lower plant height on the lower slope and taller vegetation along the ridge. Further variations of plant communities were found in the fifth quadrat and some different species along the ridge.

Similar plant associations were found at the second site. However, some entirely different plant species were also discovered. The vegetation at this site was observed generally as Dense Low Heath on the southern and northern aspects, with Very Open Herbs on the eastern perimeter.

Muir's¹ classification of vegetation was used for the description of each quadrat at Site 1 as follows:

- 1) Dense Low Heath >1.0m, over Open Low Sedges, over Very Open Mosses.
- 2) Open Low Scrub 1.5-2.0m, over Low Heath >1.0m, over Very Open Low Sedges, over Very Open Mosses.
- 3) Open Scrub exceeding 2.0m, over Open Low Scrub 1.0-2.0m, over Low Heath > 1.0m, over Very Open Herbs, over Open Low Sedges and Very Open Mosses.
- 4) Open Scrub exceeding 2m, over Open Low Scrub 1.0-2.0m, over Low Heath > 1.0m, over Very Open Herbs, over Open Low Sedges and Very Open Mosses.
- 5) Open Scrub exceeding 2m, over Heath 1.0-2.0m, over Dwarf scrub >1.0m, over Very Open Herbs, over Open Low Sedges and Very Open Mosses.

Flora

A total of 41 species from 26 plant families are listed on the third recording sheet. An inventory of the plant families is also included in the Appendices.

There are no recorded Declared Rare Flora or Priority species known at the site (Coyne 2000). None were observed whilst undertaking recording activities in the areas surveyed.

Only two introduced weed species, in the plant family Poaceae, were detected – the grasses, Sweet Vernal Grass and Perennial Veldt Grass.

It was difficult to determine purely by observations made during the survey, for any dead plants of which the cause could be likely attributed to dieback (*Phytophthora sp.*). This was due to the lack of suitable susceptible indicator species. No soil samples were taken for testing by the Esperance Wildflower Society. Inquiries at the Esperance Department of Conservation and Land Management offices revealed no further information.

Summary

Our observations and recordings in the field of the vast number of flowering and seed bearing plants, and the extent of natural regeneration, suggests to us that the majority of the vegetation and the overall site is in very good to excellent condition. The lack of weed invasion and general stable nature of the site supports this.

Future Monitoring and Evaluation

At the request of Mr Chip Murray, the Esperance Wildflower Society has agreed to undertake a series of site visits over the life of the proposed project for the purposes of monitoring and evaluating regeneration of the site. Suitable timeframes will be determined sometime after the commencement of the project and all necessary criteria will be conformed to as required by the relevant authorities.

NONE

Acknowledgments

The Esperance CALM Regional Herbarium resources, in conjunction with the WA Herbarium, were used for identification purposes.

Notes

- 1 Muir, B. G., 1977: *Records of the Western Australian Museum, Supplement No. 3.*

References

- Blackall, W. E., & Grieve, B.J., *How to Know Western Australian Wildflowers*, Part IIIB, UWA Press, Western Australia, 1981.
- Coyne, L. 2000. Wildlife Officer, Department of Conservation and Land Management. Esperance Western Australia.
- Grieve, B. J., *How to Know Western Australian Wildflowers*, Part II Second Edition, UWA Press, Western Australia, 1998.
- Keighery, Bronwen, *Bushland Plant Survey*, Wildflower Society of WA (Inc.) Publication, September 1994.
- Meney, Kathy, & Pate, John, *Australian Rushes*, UWA Press, Western Australia, 1999.

FLORA INVENTORY - 26 Plant families - 41 Plant species

Poaceae

- **Anthoxanthum odoratum*
- **Ehrharta calycina*

Cyperaceae

- Gahnia* sp
- Lepidosperma squamatum*

Restionaceae

- Desmocladius flexuosus*

Dasyogonaceae

- Lomandra micrantha* subsp *teretifolia*

Phormiaceae

- Dianella revoluta* subsp *brevicaulis*

Iridaceae

- Patersonia* sp

Proteaceae

- Grevillea pauciflora* *oligantha*
- Hakea nitida*

Chenopodiaceae

- Rhagodia preissii*

Ranunculaceae

- Clematis linearifolia*
- Clematis pubescens*

Lauraceae

- Cassytha racemosa*

Pittosporaceae

- Sollya heterophylla*

Mimosaceae

- Acacia cochlearis*
- Acacia cyclops*
- Acacia rostellifera*

Papilionaceae

- Pultenaea obcordata*
- Templetonia retusa*

Rutaceae

- Rhadinothamnus rudis*

Polygalaceae

- Comesperma virgatum*

Euphorbiaceae

- Phyllanthus calycinus*

Rhamnaceae

- Pomaderris myrtilloides*
- Spyridium globulosum*

Sterculiaceae

- Lasiopetalum discolor*

Dilleniaceae

- Hibbertia racemosa*

Thymelaceae

- Pimelea ferruginea*

Myrtaceae

- Melaleuca pentagona* *subsp.*
- Melaleuca pulchella*

Epacridaceae

- Leucopogon obovatus*
- Leucopogon parviflorus*
- Leucopogon* sp
- Leucopogon* sp

Loganiaceae

- Logania fasciculata*

Goodeniaceae

- Goodenia filiformis*
- Goodenia tripartita*

Stylidiaceae

- Stylidium pilosum*

Asteraceae

- Brachyscome ciliaris*
- Olearia axillaris*
- Senecio lautus* subsp *maritimus*

* = Introduced species

Appendix E

Quallilup Vegetation Report



Prepared for N D Murray

By

Esperance Wildflower Society (Inc)

March 2009



□ Site 1

△ Site 2

Vegetation Report for proposed second Quallilup site

TO: Chip Murray

FROM: Esperance Wildflower Society (Inc)

DATE: March 2009

SUBJECT: Vegetation Report at location indicated on aerial photo provided.

This report has been prepared in response to your request for a flora list of an area shown on the aerial photo provided, for the purpose of mining lime sand.

The first site visit was made with you in October 2008, traversing a broad area within the designated polygon, when many species were flowering. A comprehensive list was compiled to accompany the photos taken at that time, on the understanding that we could not proceed with the report until 2009.

A follow up site visit in April 2009 was conducted to finalise the specific site data at two focal points within the polygon of the defined survey area.

The flora descriptions refer to:-

- Site 1 - elevated areas of shallow soil over rocky limestone near the coast.
- Site 2 - low lying areas of shrub mallee and heath on sandy soil further inland.

See Appendix A: Recording sheets of each site.

Appendix B: The Plant Inventory lists 98 species within 39 plant families from an extended area surrounding the 2 studied sites. NB: Weed species are indicated thus *

Several healthy plants of a Priority 3 taxon *Leucopogon rotundifolius* were detected in the survey site of elevated coastal heath, recorded a Site 1.

The vegetation on the exposed elevated coastal section is mostly intact, due to wind pruning and shallow soil, whereas the more sheltered areas lower down support many of the same species in taller shrub forms and with an understorey of small herbaceous plants and orchids.

The general condition of the area is very good apart from the lower site immediately adjacent to the track, which has a previous history of disturbance in places and subsequently there is some weed presence. The 8 weed species are recorded in site 2.

There is a population of a serious environmental weed *Gomphocarpus fruticosus* (Narrow-leaf Cotton Bush) and a single plant of the introduced species *Melaleuca armillaris* (Bracelet Honey Myrtle) along the track north of the existing mine site.

Narrow-leaf Cotton Bush is a Declared Plant species requiring the landholder to carefully remove and destroy all fruiting bodies in situ then remove all the plants. The area should be monitored for several years as small plants will continue to regenerate from seeds dispersed in recent years.

An associate from Esperance Bird Observers Group was present when we visited the area in April and provided the enclosed Appendix C, listing 12 bird species present on the day.

Status	Family	Name	Common name	Elevated site	Lower site
	CUPRESSACEAE	<i>Callitris drummondii</i>	DRUMMOND'S CYPRESS PINE		✓
		<i>Callitris roei</i>	ROE'S CYPRESS PINE	✓	
	POACEAE	<i>Austrodanthonia sp caespitosa ?</i>		✓	✓
		<i>Austrostipa sp</i>	SPEAR GRASS		✓
*		<i>Briza minor</i>	SHIVERY GRASS		✓
*		<i>Lagurus ovatus</i>	HARE'S TAIL GRASS		✓
		<i>Poa poiformis</i>	COASTAL POA		✓
	CYPERACEAE	<i>Gahnia sp</i>		✓	
		<i>Ficinia nodosa</i>	KNOTTED CLUB RUSH	✓	✓
		<i>Lepidosperma gladiatum</i>	COAST SWORD SEDGE	✓	✓
		<i>Lepidosperma sp fine</i>			✓
		<i>Lepidosperma drummondii</i>			✓
		<i>Lepidosperma squamatum</i>		✓	
	RESTIONACEAE	<i>Desmocladus flexuosus</i>		✓	✓
	DASYPOGONACEAE	<i>Lomandra micrantha subsp teretifolia</i>		✓	✓
		<i>Lomandra nigricans</i>		✓	
	PHORMIACEAE	<i>Dianella brevicaulis</i>		✓	✓
	ANTHERICACEAE	<i>Thysanotus patersonii</i>	FRINGE LILY		
		<i>Tricoryne elatior</i>	YELLOW AUTUMN LILY		✓
	IRIDACEAE	<i>Orthrosanthos sp</i>			✓
		<i>Patersonia occidentalis</i>	PURPLE FLAG	✓	✓
		<i>Patersonia patersonii</i>			
	ORCHIDACEAE	<i>Caladenia sp</i>			✓
		<i>Cyrtostylis robusta</i>	MOSQUITO ORCHID		✓
*		<i>Disa bracteata</i>	SOUTH AFRICAN ORCHID		✓
		<i>Eriochilus dilatatus</i>	BUNNY ORCHID	✓	✓
		<i>Microtis media</i>	COMMON MIGNONETTE ORCHID		✓
		<i>Prasophyllum sp</i>	LEEK ORCHID		✓

Status	DICOTYLEDONS	Family	Name	Common name	Elevated site	Lower site
		APIACACAE	<i>Trachymene pilosa</i>	NATIVE PARSNIP		✓
		* ASTERACEAE	<i>Arctotheca calendula</i>	CAPE WEED		✓
			<i>Brachyscome ciliaris</i>	VARIABLE DAISY	✓	✓
			<i>Brachyscome iberidifolia</i>	SWAN RIVER DAISY		✓
		*	<i>Centaurea melitensis</i>	MALTESE COCKSPUR		✓
		*	<i>Cirsium vulgare</i>	SPEAR THISTLE		✓
			<i>Olearia axillaris</i>	COAST DAISY BUSH	✓	✓
			<i>Podolepis rugata</i>	PLEATED PODOLEPIS	✓	✓
			<i>Senecio pinnatifolius</i>	GROUNDSEL	✓	
			<i>Waitzia nitida</i>			✓
		CHENOPODIACEAE	<i>Rhagodia preissii</i>		✓	✓
		DILLENIACEAE	<i>Hibbertia cuneiformis</i>	CUT LEAF GUINEA FLOWER		✓
			<i>Hibbertia racemosa</i>	STALKED GUINEA FLOWER		✓
		EPACRIDACEAE	<i>Leucopogon obovatus</i>		✓	✓
			<i>Leucopogon parviflorus</i>	COAST BEARD HEATH	✓	✓
			<i>Leucopogon pleurandroides</i>		✓	
P3			<i>Leucopogon rotundifolius</i>		✓	
		EUPHORBIACEAE	<i>Adriana quadripartita</i>	BITTER BUSH	✓	✓
			<i>Phyllanthus calycinus</i>	FALSE BORONIA	✓	✓
		GERANIACEAE	<i>Pelargonium littorale</i>			✓
		GOODENIACEAE	<i>Goodenia concinna</i>	ELEGANT GOODENIA	✓	
			<i>Goodenia tripartita</i>		✓	
			<i>Scaevola crassifolia</i>	THICK-LEAVED FANFLOWER	✓	
			<i>Velleia trinervis</i>		✓	
		HALORAGACEAE	<i>Haloragis digyna</i>			✓
		LAMIACEAE	<i>Westringia dampieri</i>		✓	

Status	Family	Name	Common name	Elevated site	Lower site
	LAURACEAE	<i>Cassytha racemosa</i>	DODDER LAUREL	✓	
	LINACEAE	<i>Linum marginale</i>	WILD FLAX		✓
	LOGANIACEAE	<i>Logania fasciculata</i>		✓	✓
	MIMOSACEAE	<i>Acacia cochlearis</i>	RIGID WATTLE	✓	
		<i>Acacia cyllops</i>	COASTAL WATTLE	✓	✓
		<i>Acacia nigricans</i>		✓	✓
		<i>Acacia rostellifera</i>		✓	✓
		<i>Acacia saligna</i>	ORANGE WATTLE	✓	✓
	MYRTACEAE	<i>Calothamnus quadrifidus</i>	ONE-SIDED BOTTLEBRUSH	✓	
		<i>Darwinia vestita</i>	POM POM DARWINIA		✓
		<i>Eucalyptus angulosa</i>	RIDGE-FRUITED MALLEE	✓	✓
		<i>Melaleuca brevifolia</i>			✓
		<i>Melaleuca lanceolata</i>	ROTTNEST TEATREE	✓	
		<i>Melaleuca pentagona</i> subsp <i>latifolia</i>		✓	✓
		<i>Melaleuca pulchella</i>	CLAW HONEY-MYRTLE	✓	✓
	PAPILIONACEAE	<i>Gompholobium</i> sp			✓
		<i>Pultenaea quaerita</i>		✓	✓
		<i>Pultenaea tenuifolia</i>			✓
		<i>Templetonia retusa</i>	COCKIES TONGUE	✓	✓
	PITTOSPORACEAE	<i>Billardiera heterophylla</i>	AUSTRALIAN BLUEBELL	✓	✓
	POLYGALACEAE	<i>Comesperma virgatum</i>	MILK WORT		✓
	POLYGONACEAE	<i>Muehlenbeckia adpressa</i>	CLIMBING LIGNUM		✓
	* PRIMULACEAE	<i>Anagalis arvensis</i>	PIMPERNEL		✓
	PROTEACEAE	<i>Banksia speciosa</i>	SHOWY BANKSIA	✓	
		<i>Grevillea oligantha</i>		✓	
		<i>Hakea nitida</i>	FROG HAKEA	✓	✓
		<i>Hakea prostrata</i>	HARSH HAKEA	✓	

Status	Family	Name	Common name	Elevated site	Lower site
	RANUNCULACEAE	<i>Clematis linearifolia</i>	SLENDER CLEMATIS	✓	✓
		<i>Clematis pubescens</i>	OLD MANS BEARD	✓	✓
	RHAMNACEAE	<i>Pomaderris myrtilloides</i>		✓	✓
		<i>Spyridium globulosum</i>	BASKET BUSH	✓	✓
	RUTACEAE	<i>Nematolepis phebalioides</i>		✓	
		<i>Rhadinothamnus rudis</i> subsp <i>rudis</i>		✓	✓
	SCROPHULARIACEAE	<i>Euphrasia collina</i> subsp <i>tetragona</i>	PURPLE EYE-BRIGHT	✓	✓
	SOLANACEAE	<i>Anthocercis littorea</i>	YELLOW TAILFLOWER	✓	✓
*		<i>Solanum nigrum</i>	BLACKBERRY NIGHTSHADE		✓
		<i>Solanum symonii</i>		✓	✓
	STERCULIACEAE	<i>Guichenotia ledifolia</i>			✓
		<i>Lasiopetalum discolor</i>		✓	✓
		<i>Lasiopetalum quinquenervium</i>		✓	✓
		<i>Thomasia</i> sp		✓	✓
	STYLIDIACEAE	<i>Stylidium pilosum</i>	SILKY TRIGGER PLANT	✓	
	THYMELAEACEAE	<i>Pimelea ferruginea</i>		✓	✓
	ZYGOPHYLLACEAE	<i>Zygophyllum billardierei</i>	COAST TWINLEAF		✓



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 05/02/18 15:36:49

[Summary](#)

[Details](#)

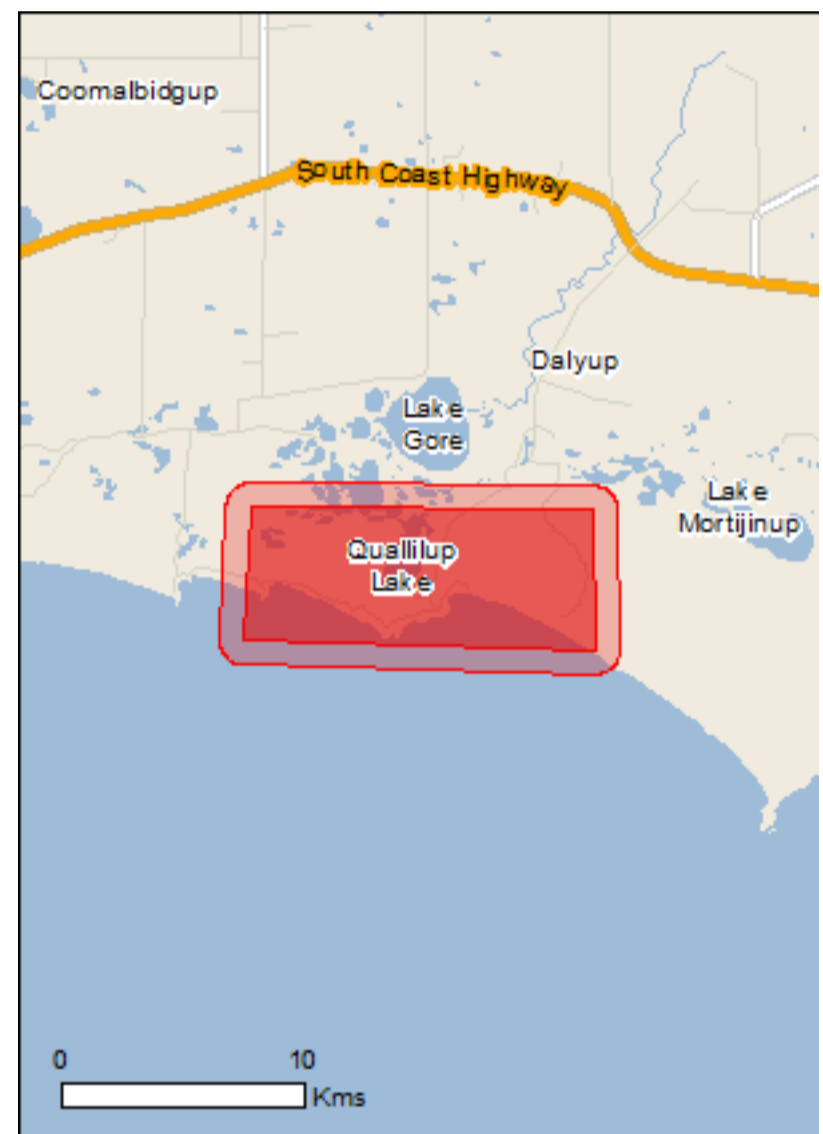
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

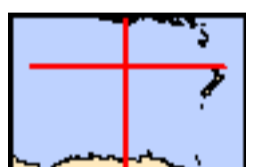
[Acknowledgements](#)



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[Coordinates](#)

[Buffer: 1.0Km](#)



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	39
Listed Migratory Species:	33

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	66
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	3
Regional Forest Agreements:	None
Invasive Species:	12
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name Lake gore	Proximity Within Ramsar site

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.	

Name	Status	Type of Presence
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area

Listed Threatened Species	[Resource Information]
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Name	Status	Type of Presence
Birds		

Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
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Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
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Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
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Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat likely to occur within area
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Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Species or species habitat likely to occur within area
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Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
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Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
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Name	Status	Type of Presence
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area

Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Plants		
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species [Resource Information]		
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Pachyptila turtur Fairy Prion [1066]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Foraging, feeding or related behaviour likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stigmatopora olivacea a pipefish [74966]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species

Name	Status	Type of Presence
		habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Recherche Archipelago	WA
Unnamed WA26885	WA
Unnamed WA50792	WA

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
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Birds

Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area

Mammals

Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area

Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Lake Gore System	WA

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.799064 121.455546,-33.79992 121.582233,-33.79992 121.582233,-33.842704 121.582919,-33.839852 121.453143,-33.799064 121.455546

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- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
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- [-Ocean Biogeographic Information System](#)
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- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Proteaceae Dominated Kwongkan Shrubland: a nationally-protected ecological community

This guide is intended to help the public understand what the Proteaceae Dominated Kwongkan Shrubland ecological community is, why it is nationally protected, what the listing aims to achieve, and what the listing means for people in the region.

In summary:

- The Proteaceae Dominated Kwongkan Shrubland ecological community is now listed as endangered and protected under Australia's national environment law, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- The ecological community is found within the south coast region of Western Australia, and is dominated by flowering shrub species from the Proteaceae family (e.g. Banksias, Grevilleas, Hakeas).
- The national Threatened Species Scientific Committee found that the ecological community has undergone a severe reduction in integrity, and has a fragmented geographic distribution that means it is under a severe level of threat over the near future.
- The intent of the listing is to prevent its decline and to provide support to on-ground efforts that ensure its long-term survival and recovery. The Threatened Species Scientific Committee's **conservation advice** outlines a range of priority research and management actions that provide guidance on how to manage, restore and protect the ecological community.
- The listing promotes a co-ordinated, ecosystem-scale approach to threat abatement in the region and supports existing national protection of many threatened species that are found within the ecological community.
- Listing under the EPBC Act means that an activity that is likely to have a significant impact on the ecological community will need to be referred for an environmental impact assessment and approval.
- Routine property maintenance and land management practices carried out in line with laws and guidelines covering native vegetation are typically unlikely to require referral under national environment law. This includes most farming activities.
- The national environment law is triggered by activities that are likely to have a significant adverse impact on a listed ecological community; activities such as large new developments, works or infrastructures. For example, activities that involve permanently clearing large areas of intact and high-quality native vegetation.

Background

Australia's national environmental law, the EPBC Act, protects what are known as Matters of National Environmental Significance. The Act is only triggered if a particular activity is likely to have a significant impact on any of these matters.

Threatened species and ecological communities are Matters of National Environmental Significance. The EPBC Act defines an ecological community as an assemblage of native species that inhabits a particular area in nature. They often correspond with types of native vegetation, such as a certain kind of woodland or forest or shrubland.

The native plants and animals within an ecological community have different roles and relationships that, together, contribute to the healthy functioning of the environment. Protecting native communities also protects ecosystem services such as good quality air and water; healthy soils; natural prevention or control of erosion and salinity; shelter for stock; and carbon storage. These all contribute to better productivity of our land and water, which benefits people and society.

Human settlements and infrastructures where an ecological community formerly occurred do not form part of the natural environment and are therefore not part of the ecological community. This also applies to sites that have been replaced by crops and exotic pastures, or where the ecological community exists in a highly-degraded or unnatural state.



Kwongkan shrublands near Hopetoun (Department of the Environment)



Banksia speciosa (showy banksia), a key species in some parts of the ecological community (Department of the Environment)

What is the Proteaceae Dominated Kwongkan Shrubland ecological community?

The full name of the ecological community is the *Proteaceae dominated kwongkan shrublands of the southeast coastal floristic province of Western Australia*. Kwongkan (also known as kwongan) is a type of heathland found on the coastal plains of Western Australia. The name is derived from language of the Nyungar/Noongar people.

The key features of the ecological community are:

- The ecological community is mainly found within the Esperance Sandplains and Mallee bioregions with some patches occurring in the adjoining bioregions of south-west Western Australia (see Figure 1). Local government areas across this region are Albany City, Cranbrook Shire, Dundas Shire, Esperance Shire, Gnowangerup Shire, Jerramungup Shire, Kent Shire, Lake Grace Shire, Plantagenet Shire and Ravensthorpe Shire.
- The ecological community is typical of vegetation within some of the reserves across the region, such as Stirling Range National Park, Fitzgerald River National Park and Cape Le Grand National Park.
- The ecological community typically occurs on sandplains, occupying lower and upper slopes and ridges, as well as uplands across its range, where rainfall ranges from approximately 400 to 800 millimetres a year. It typically occurs on:
 - duplex soils and deep to shallow soils on the sandplains
 - sandy soils to clay loam, gravelly loam and loam on quartzite (e.g. The Barrens, Stirlings and Russell Range)
 - greenstone ranges (e.g. Ravensthorpe Range).