

BIOSTAT Pty LtdWhen Experience Counts

ABN: 87 092 767 032

13 March 2017

Att: Jeremy Shepherdson

RE: Risk Assessment (Fauna) – Bald Hill Tantalum Project

BIOSTAT has been asked to undertake a risk assessment for fauna related to the Bald Hill Tantalite Mine Project by HRM Resources Australia Ltd (HRM).

The site is bounded within the tenement M15/400, G15/17 and L15/264-270 and is about 5 km² in size (Figure 1). It covers areas of existing mine works at the northern edge of Lake Cowan. The proposal is to re-open existing works and to extend into areas already disturbed by historical mining operations (Al Maynard & Associates 2013). The intention is for minimal disturbance of remnant native vegetation although revegetated old working will be affected. Mining activity in the Lake Lefroy and Lake Cowan area primarily involve non-ferrous metals (nickel) and precious metals (gold).

This short note will outline the findings of data and literature searches and the assessment of fauna listed under State (Wildlife Conservation Act 1950 - WC) and Federal legislation (Environment Protection and Biodiversity Conservation Act 1999 - EPBC). This note will consider an assessment of potential areas of concerns in regards to fauna relating to the development of the project.

A database search of an area centred on the Bald Hill project area and with a radius of 20km was undertaken from BIOSTAT's own database, NatureMap (Western Australian, Department of Parks and Wildlife - DPaW), Protected Matters Search Tool (Federal, Department of Environment and Energy - DEE) and the Australian Living Atlas. The DEE and DPaW search results are included as attachments to this note. Information from surveys and impact assessment documents from the St Ives and Kambalda mines were used to provide a reference fauna data set for review (Dames & Moore Pty Ltd 1999; Ninox Wildlife Consulting 1999; Western Wildlife 2006).

The available information highlighted the dearth of data relating to the project site.

A preliminary search indicated there are no threatened ecological communities located in the search area containing the project site. There are no DPaW managed lands (reserves and conservation parks) within the search radius. The descriptions of vegetation communities (Al Maynard & Associates 2013) indicated fairly typical habitats for the area.

There is no available information on invertebrate fauna, including stygofauna and troglofauna although desktop assessments are available for the St Ives mine site (Subterranean Ecology Pty Ltd 2010a, 2010b). A more comprehensive assessment of these groups should be considered if the project is referred for further assessment.

The proximity of the site to the ephemeral Lake Cowan system would increase the potential of a number of migratory waterbird species of being found in or near the project area (Table 1). Most of the species listed under legislation is of a low likelihood of occurrence n the project area. The Rainbow Bee-eater and the Fork-tailed Swift can be seasonally abundant.

There is no information available on the mammal and herpetofauna in the immediate vicinity of the project area. Surveys undertaken in the St Ives, Widgiemooltha and Kambalda areas suggest a relatively diverse ground herpetofauna and a depauperate ground mammal fauna.

The extent of the proposed disturbance is unlikely to impact on a broader scale on the local terrestrial vertebrate fauna populations. However, the site is located in lake systems that are under increasing pressures from mining operations.

From the proposed project scope and the available biological information there are no potential high or medium risk operations that should cause anything more than short term impacts on the project area. Issues of potential concern include:

- minimising impacts on surface hydrology, including downstream impacts from mine run-off;
- the potential for human habitation to attract introduced predators (fox and cat) has to be incorporated into management programs;
- development of revegetation/rehabilitation programs to minimise impact of vegetation clearing, even if it involved revegetated old mine working; and
- a more comprehensive assessment of stygofauna/troglofauna would be beneficial to assess potential impacts of de-watering.

Low risk impacts have already been addressed in the proposal for mining (Al Maynard & Associates 2013). A commitment for the development of suitable site relevant environmental management programs is recommended.

Regards

Eddy Cannella

Director/Principal Zoologist

BIOSTAT Pty Ltd

REFERENCES

Al Maynard & Associates 2013, *Bald Hill Tantalite Project mining proposal M15/400, G15/17 & L15/264-270*, unpublished report prepared for HRM Resources Australia Limited, 30 December, Al Maynard & Associates, Perth, p. 111.

Barrett, G, Silcocks, A, Barry, S, Cunningham, R & Poulter, R 2003, *The new atlas of Australian birds*, 2nd edn, Royal Australasian Ornithologists Union (Birds Australia), Hawthorn.

Dames & Moore Pty Ltd 1999, *Gold mine developments on Lake Lefroy*, Public Environmental Review, EPA Assessment Number 1250, report for WMC Resources Ltd (St Ives Gold), Dames & Moore Pty Ltd, Perth.

Garnett, ST, Szabo, JK & Dutson, G 2011, *The action plan for Australian birds 2010*, CSIRO Publishing, Collingwood.

Ninox Wildlife Consulting 1999, A Continuation of Vertebrate Fauna Surveys of Gold & Nickel Leases near Kambalda & Widgiemooltha, unpublished report for Western Mining Corporation Limited, Ninox Wildlife Consulting, Perth.

Saunders, DA & Ingram, JA 1995, Birds of Southwestern Australia, Surrey Beatty & Sons, Perth.

Subterranean Ecology Pty Ltd 2010a, *Gold Fields, St Ives gold mine development. Stygofauna desktop assessment*, unpublished report prepared for Gold Fields Pty Ltd, Subterranean Ecology Pty Ltd, Perth, p. 39.

— 2010b, Gold Fields, St Ives gold mine development. Troglofauna desktop assessment, unpublished report prepared for Gold Fields Pty Ltd, Subterranean Ecology Pty Ltd, Perth, p. 27.

Western Wildlife 2006, *St Ives Gold Fauna Survey; Spring 2005*, unpublished report prepared for Jim's Seeds, Weeds and Trees, Western Wildlife, Perth, p. 52.

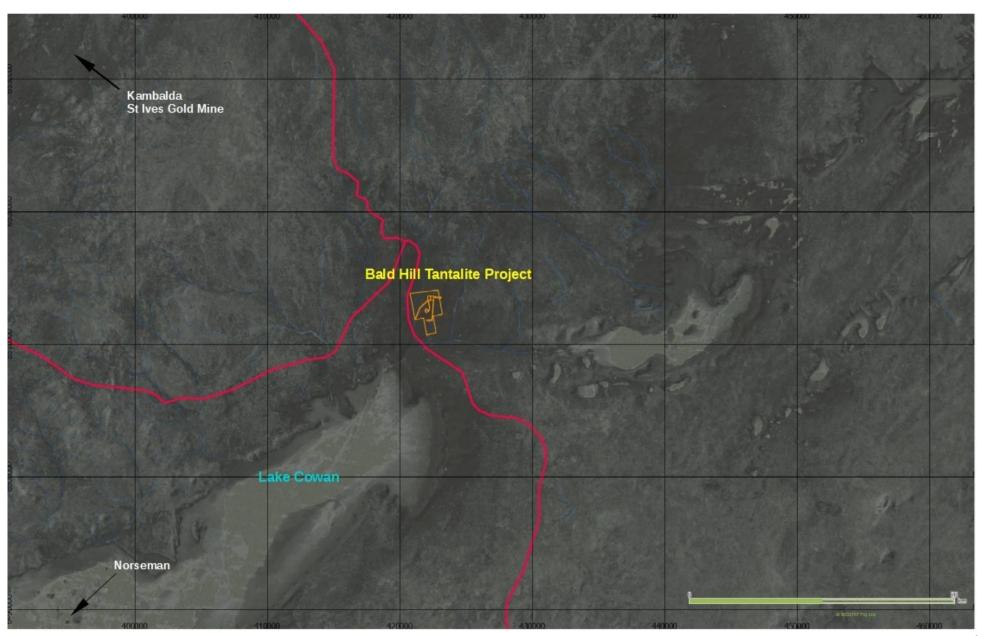


Table 1: Species listed under Federal and State legislation

Status – Australian Government (EPBC Act 1999)			Status – Western Australia (WC Act 1950 and DPaW Priority Species)		
CE	Critically Endangered	\$1 Schedule 1 of the WC Act 1950 (Critically Endangered fauna)			
EN	Endangered	S3	Schedule 3 of the WC Act 1950 (Vulnerable fauna)		
٧U	Vulnerable	S 5	Schedule 5 of the WC Act 1950 (Protected under international agreements)		
М	Migratory species	P4	DPaW Priority 4 – Rare, near threatened and other taxa in need of monitoring		
J	JAMBA international agreement				
С	CAMBA international agreement				
R	ROKAMBA international agreement				

Species	Status	Notes	Potential Occurrence
Calidris ferruginea Curlew Sandpiper	S3, S5 CE, M, J, C, R	This is a coastal shorebird species that is sometimes seen inland during its migration wherever large vegetated water bodies occur. It may utilise pondage areas within the Project Area as a non permanent transitory.	Unlikely to Low
Pezoporus occidentalis Night Parrot	S1 EN	This species will utilise open shrubland but is more commonly associated with hummock grasslands and dense tussock grasslands (Garnett, Szabo & Dutson 2011). It has been in serious decline since European settlement and is found in very few locations across Australia.	Extremely
<i>Leipoa ocellata</i> Malleefowl	S3 VU	Malleefowl distributions have been generally restricted to the lower rainfall areas (<600mm isohyet) and predominantly absent from the higher rainfall areas (Saunders & Ingram 1995). There are records of this species from the St Ives and Fraser Range areas.	Unlikely
Apus pacificus Fork-tailed Swift	\$5	Spends summer and most of the autumn in Australia. Fork-tailed Swifts are almost entirely aerial. They feed and sleep on the wing, sometimes occurring in extremely large flocks of up to 2,000 individuals. They are likely to be recorded flying over the Study Area, especially during the onset of storms.	
<i>Motacilla cinerea</i> Grey Wagtail	S5 M	A vagrant recorded on very few occasions across Western Australia.	Unlikely
Ardea modesta Eastern Great Egret	S5 M, J, C	This bird is more commonly associated with northern Australia, although there has been an increased number recorded in the Southwest (Barrett et al. 2003). It usually occurs in shallow waters, both fresh and salt, including estuaries.	Moderate to Low
Ardea ibis Cattle Egret	S5 M, J, C	The Cattle Egret has a sporadic distribution in the more arid areas of Australia and is more likely to be recorded around the betterwatered areas of the State. It prefers damp grasslands and pastures and is often associated with Cattle.	Unlikely
Thinornis rubricollis Hooded Plover	M P4	The Hooded Plover will utilise several habitats ranging from estuarine, marine to wetland and riparian systems. Although more commonly associated with coastal areas, this species could utilise the habitats around Lake Cowan after good rains.	Moderate to Low
Merops ornatus Rainbow Bee-eater	M	This species are Spring/Summer migrants to southern Australia, but may be resident in the north. It prefers lightly wooded country near water and preferably with sandy soils suitable for its breeding burrows, i.e. soils that are easy to excavate, but firm enough to support burrows.	Seasonally High



Bald_Hill_Tantalum_Report

Created By Eddy Cannella on 28/02/2017

Kingdom Animalia

Current Names Only Yes

Species Group All Animals

Method 'By Circle'

Centre 122° 31' 49" E,31° 31' 04" S

Buffer 20km

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
1.	24559	Acanthagenys rufogularis (Spiny-cheeked Honeyeater)			
2.	24260	Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)			
3.	24265	Acanthiza uropygialis (Chestnut-rumped Thornbill)			
4.	25535	Accipiter cirrocephalus (Collared Sparrowhawk)			
5.		Agraptocorixa parvipunctata			
6.	24561	Anthochaera carunculata (Red Wattlebird)			
7.	24285	Aquila audax (Wedge-tailed Eagle)			
8.	24353	Artamus cyanopterus (Dusky Woodswallow)			
9.	24356	Artamus personatus (Masked Woodswallow)			
10.		Barnardius zonarius			
11.	42307	Cacomantis pallidus (Pallid Cuckoo)			
12.		Camponotus whitei			
13.	24321	Chenonetta jubata (Australian Wood Duck, Wood Duck)			
14.	24396	Climacteris rufa (Rufous Treecreeper)			
15.	25675	Colluricincla harmonica (Grey Shrike-thrush)			
16.		Coracina (Coracina) novaehollandiae			
17.	25568	Coracina novaehollandiae (Black-faced Cuckoo-shrike)			
18.	24416	Corvus bennetti (Little Crow)			
19.	25593	Corvus orru (Torresian Crow)			
20.	24420	Cracticus nigrogularis (Pied Butcherbird)			
21.	25595	Cracticus tibicen (Australian Magpie)			
22.	25596	Cracticus torquatus (Grey Butcherbird)			
23.	25673	Daphoenositta chrysoptera (Varied Sittella)			
24.	25607	Dicaeum hirundinaceum (Mistletoebird)			
25.	24470	Dromaius novaehollandiae (Emu)			
26.		Eolophus roseicapillus			
27.	24567	Epthianura albifrons (White-fronted Chat)			
28.	25621	Falco berigora (Brown Falcon)			
29.	25622	Falco cenchroides (Australian Kestrel)			
30.	24735	Glossopsitta porphyrocephala (Purple-crowned Lorikeet)			
31.	24443	Grallina cyanoleuca (Magpie-lark)			
32.		Iridomyrmex agilis			
33.		Iridomyrmex chasei			
34.		Iridomyrmex purpureus			
35.	24557	Leipoa ocellata (Malleefowl)		Т	
36.	42411	Lerista timida			
37.	25659	Lichenostomus leucotis (White-eared Honeyeater)			
38.	25661	Lichmera indistincta (Brown Honeyeater)			
39.		Lophoictinia isura			
40.	24551	Malurus pulcherrimus (Blue-breasted Fairy-wren)			
41.	24583	Manorina flavigula (Yellow-throated Miner)			
42.	25663	Melithreptus brevirostris (Brown-headed Honeyeater)			
43.	24598	Merops ornatus (Rainbow Bee-eater)		IA	
44.	25693	Microeca fascinans (Jacky Winter)			
45.		Myrmecia varians			
46.	25748	Ninox novaeseelandiae (Boobook Owl)			
47.		Opisthopsis rufithorax			
48.	24618	Oreoica gutturalis (Crested Bellbird)			
49.	24619	Pachycephala inornata (Gilbert's Whistler)			
50.	25679	Pachycephala pectoralis (Golden Whistler)			
51.	25680	Pachycephala rufiventris (Rufous Whistler)			
52.	25682	Pardalotus striatus (Striated Pardalote)			
				(Films)	***********





	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
53.	24659	Petroica goodenovii (Red-capped Robin)			
54.	24409	Phaps chalcoptera (Common Bronzewing)			
55.	25720	Platycercus icterotis (Western Rosella)			
56.	25722	Polytelis anthopeplus (Regent Parrot)			
57.	24683	Pomatostomus superciliosus (White-browed Babbler)			
58.	42344	Purnella albifrons (White-fronted Honeyeater)			
59.	24278	Pyrrholaemus brunneus (Redthroat)			
60.	25614	Rhipidura leucophrys (Willie Wagtail)			
61.	30948	Smicromis brevirostris (Weebill)			
62.	25597	Strepera versicolor (Grey Currawong)			
63.		Uraba lugens			
64.	25765	Zosterops lateralis (Grey-breasted White-eye, Silvereye)			

- Conservation Codes

 1 Rare or likely to become extinct
 X Presumed extinct
 IA Protected under international agreement
 5 Other specially protected fauna
 1 Priority 1
 2 Priority 2
 3 Priority 2
 4 Priority 4
 5 Priority 5

- ¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.



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 <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

Report created: 12/03/17 20:03:31

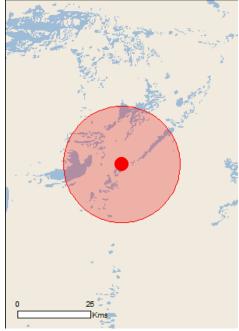
Summary

Details

Matters of NES
Other Matters Protected by the EPBC Act
Extra Information

Caveat

<u>Acknowledgements</u>



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 20.0Km



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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	3
Listed Migratory Species:	3

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 <u>permit</u> 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:	7
Whales and Other Cetaceans:	None
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:	None
Regional Forest Agreements:	None
Invasive Species:	8
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the		-
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name or	n the EPBC Act - Threat	tened Species list.
Name	Threatened	Type of Presence
Birds		
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

Name	Threatened	Type of Presence
Ardea ibis		habitat likely to occur within area
		Cassias ar anasias habitat
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat
Curiow Carrapipor [COO]	Ontoday Endangered	may occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat
rambon boo oator [or o]		may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat
Croy Wagian [012]		may occur within area
Thinornis rubricollis		
Hooded Plover [59510]		Species or species habitat
•		may occur within area

Extra Information

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 Resouces Audit, 2001.

Name	Status	Type of Presence
Mammals		
Camelus dromedarius		
Dromedary, Camel [7]		Species or species habitat likely to occur within area
Canis lupus familiaris		
Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus		
Goat [2]		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
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
Vulpes vulpes		
Red Fox, Fox [18]		Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Plants		
Carrichtera annua		
Ward's Weed [9511]		Species or species habitat likely to occur within area

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 lavers.

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

-31.51778 122.53029

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- -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
- -University of New England
- -Ocean Biogeographic Information System
- -Australian Government, Department of Defence
- Forestry Corporation, NSW
- -Geoscience Australia
- -CSIRO
- -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.