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Vertebrate Fauna Assessment Review - Lot 500 Great Eastern Highway, Yilkari

Introduction

Onshore Environmental Consultants Pty Ltd (Onshore Environmental) was engaged by Lynas Kalgoorlie Pty Ltd (Lynas) to undertake a review of vertebrate fauna assessment work for Lot 500 Great Eastern Highway, Yilkari (referred to as the project area).

This review will consist of:

- A database and literature review of information around the project area;
- A review of previous works specific to the project area;
- Update of any taxonomic/status changes to vertebrate fauna species listed in the previous fauna report with a focus on fauna species protected under Federal and State Acts (conservation significant fauna);
- Determine the adequacy of the data in relation to the current set of survey and referral guideline for threatened species; and
- An assessment of efficacy of previous fauna survey work and identify any gaps that may require any further investigation.

The main focus of this assessment is on threatened and priority fauna species, especially species that are federally listed through the EPBC Act 1999, as these represent the group most likely to result in a referral of the project under Federal legislation.

The project area is located eight kilometres west of Kalgoorlie in the Goldfields region of Western Australia. It is within the Coolgardie (C003) Interim Biogeographic Region of Australia (IBRA) with the subregion being the Yilgarn Craton (Department of Environment, 2012). The project area covers approximately 146.5 hectares (ha) of remnant vegetation.

Database searches were undertaken from:

- Department of Agriculture, Water, and the Environment's (DAWA) Environment Protection and Biodiversity Conservation (EPBC) Protected Matters Search Tool (Department of Agriculture Water and the Environment, 2020b);
- Western Australian Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap (NatureMap, 2020); and
- Atlas of Living Australia (ALA) database (Atlas of Living Australia, n.d.).

The database searches coordinates used were -30.80105 degrees south, 121.42523 degrees east with a 50 kilometre (km) buffer. This was done to replicate the results of the Terrestrial Ecosystems study (Terrestrial Ecosystems 2018).

Taxonomic status and nomenclature of species were standardised using the Western Australian Museum's (WAM) Checklist of the Terrestrial Vertebrate Fauna of Western Australia (Western Australian Museum, 2020) and the DBCA's Threatened and Priority Fauna List (Department of Biodiversity Conservation and Attractions, 2020).

Fauna Species of Conservation Significance

The conservation significance of flora, fauna and ecological communities are classified at a Commonwealth, State and Local level based on various Acts and Agreements, including:

International Level:

- International Conventions: Migratory taxa listed under the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA), Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA), and Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Commonwealth Level:

- EPBC Act: The DAWA lists Threatened flora, fauna and ecological communities, which are determined by the Threatened Species Scientific Committee according to criteria set out in the Act. The Act lists fauna that are considered to be of conservation significance under one of six categories (Appendix 1).

State Level:

- BC Act: At a State level, native flora and fauna species are protected under the *Biodiversity Conservation Act 2016*. A number of species are assigned an additional level of conservation significance based on a limited number of known populations and the perceived threats to these locations (Appendix 2).
- DBCA Priority list: DBCA produces a list of Priority species and ecological communities that have not been assigned statutory protection under the BC Act. Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added under Priorities 1, 2 or 3. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been removed from the threatened species list for other taxonomic reasons, are placed in Priority 4. These species require regular monitoring (see Appendix 2).

Database Searches

A search of the EPBC Act Protected Matters database, the DBCA's NatureMap and the Atlas of Living Australia was undertaken for a 50 km buffer around the study. The database searches listed 19 Threatened or Migratory fauna species listed under the EPBC Act (Federal); 14 Threatened or Migratory fauna species listed under the BC Act (State); and four Priority species that have the potential to occur in the study area.

Threatened and Migratory Fauna listed under the EPBC Act

- Curlew Sandpiper (*Calidris ferruginea*) - listed as Critically Endangered and Migratory;
- Malleefowl (*Leipoa ocellata*) - listed as Vulnerable;
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) - Endangered;
- Night Parrot (*Pezoporus occidentalis*) - listed as Endangered;
- Chuditch (*Dasyurus geoffroii*) - listed as Vulnerable;
- Bilby (*Macrotis lagotis*) - listed as Vulnerable;
- Numbat (*Myrmecobius fasciatus*) - listed as Endangered;
- Western Spiny-tailed Skink (*Egernia stokesii badia*) - listed as Endangered; and
- Arid Bronze Azure (*Ogyris subterrestris petrina*) - listed as Critically Endangered.

The database search listed the following Migratory fauna species, or species habitat, that may occur in the study area:

- Fork-tailed Swift (*Apus pacificus*);
- Grey Wagtail (*Motacilla conera*);
- Common Sandpiper (*Actitis hypoleucos*);

- Sharp-tailed Sandpiper (*Calidris acuminata*);
- Curlew Sandpiper (*Calidris ferruginea*);
- Wood Sandpiper (*Tringa glareola*);
- Pectoral Sandpiper (*Calidris melanotos*);
- Sanderling (*Calidris alba*);
- Red-necked Stint (*Calidris ruficollis*); and
- Common Greenshank (*Tringa nebularia*).

Fauna listed under the BC Act

- Curlew Sandpiper (*Calidris ferruginea*) - listed as Critically Endangered;
- Night Parrot (*Pezoporus occidentalis*) - listed as Critically Endangered;
- Arid Bronze Azure (*Ogyris subterrestris petrina*) - listed as Critically Endangered
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) - listed as Endangered;
- Numbat (*Myrmecobius fasciatus*) - listed as Endangered;
- Malleefowl (*Leipoa ocellata*) - listed as Vulnerable;
- Western Spiny-tailed Skink (*Egernia stokesii badia*) - listed as Vulnerable;
- Bilby (*Macrotis lagotis*) - listed as Vulnerable;
- Wood Sandpiper (*Tringa glareola*) - listed as Migratory;
- Red-necked Stint (*Calidris ruficollis*) - listed as Migratory;
- Common Sandpiper (*Actitis hypoleucos*) - listed as Migratory;
- Sharp-tailed Sandpiper (*Calidris acuminata*) - listed as Migratory;
- Sanderling (*Calidris alba*) - listed as Migratory; and
- Common Greenshank (*Tringa nebularia*) - listed as Migratory.

Fauna listed as Priority

In addition to the fauna protected by the Federal and State legislations, the DBCA recognised fauna that is possibly threatened but do not meet survey criteria or are otherwise data deficient. This fauna is classified as Priority by the DBCA. The search of the NatureMap database identified four species as Priority fauna species. These are:

- Desert Blue Butterfly (*Jalmenus aridus*) - listed as Priority 1;
- Fairy Shrimp (*Branchinella denticulate*) - listed as Priority 3;
- Hooded Plover (*Thinornis rubricollis*) - listed as Priority 4; and
- Grey-tailed Tattler (*Tringa brevipes*) - listed as Priority 4.

Previously Identified Conservation Significant Fauna

The Level 1 Vertebrate Fauna Risk Assessment for Lot 500 Kalgoorlie West (Terrestrial Ecosystems, 2018) identified a total of 15 conservation significant fauna species that could occur in the bioregion. Of these species, seven are protected under Federal and State legislations, one is protected under State legislation, and the remaining seven identified as Priority species. This fauna can be found in Table 1.

Table 1 Assessment of the potential impact on conservation significant fauna that could occur in the bioregion.

Common Name	Scientific Name	Status under BC Act 2016	Status under EPBC Act 1999	Comments
Arid Bronze Azure	<i>Ogyris subterrestris petrina</i>	Critically Endangered	Critically Endangered	Unlikely to be in the project area, so the potential impact on this species is low.
Night Parrot	<i>Pezoporus occidentalis</i>	Critically Endangered	Endangered	Unlikely to be in the project area, so the potential impact on this species is low.
Malleefowl	<i>Leipoa ocellata</i>	Vulnerable	Vulnerable	Unlikely to be in the project area, so the potential impact on this species is low.
Chuditch	<i>Dasyurus geoffroii</i>	Vulnerable	Vulnerable	Unlikely to be in the project area, so the potential impact on this species is low.
Peregrine Falcon	<i>Falco peregrinus</i>	Other specially protected fauna		Potentially be seen in the general area, but the potential impact on this species is low.
Princess Parrot	<i>Polytelis alexandrae</i>	Priority 4		Unlikely to be in the project area, so the potential impact on this species is low.
Woma	<i>Aspidites ramsayi</i> (southwest subpop.)	Priority 1		Unlikely to be in the project area, so the potential impact on this species is low.
Fairy Shrimp (Laverton)	<i>Branchinella apophysata</i>	Priority 1		Unlikely to be in the project area, so the potential impact on this species is low.
Fairy Shrimp (Geraldton to Kalgoorlie)	<i>Branchinella denticulata</i>	Priority 1		Unlikely to be in the project area, so the potential impact on this species is low.
Fairy Shrimp (inland WA)	<i>Branchinella simplex</i>	Priority 1		Unlikely to be in the project area, so the potential impact on this species is low.
Desert Blue Butterfly	<i>Jalmenus aridus</i>	Priority 1		Unlikely to be in the project area, so the potential impact on this species is low.
Western Rosella	<i>Platycercus icterotis xanthogenys</i>	Priority 4		Potentially in the general area, but potential impact on this species is low.
Central Long-eared Bat	<i>Nyctophilus major tor</i>	Priority 3		Potentially in the general area, but the potential for impact on this species is low.
Grey Wagtail	<i>Motacilla cinerea</i>	Migratory	Migratory	Unlikely to be in the general are, but the potential impact on this species is low.
Fork-tailed Swift	<i>Apus pacificus</i>	Migratory	Migratory	May infrequently be seen in the general area, but the potential for impact on this species is low.

NOTE: Table is a reproduction of Table 6 from Level 1 Vertebrate Fauna Risk Assessment for Lot 500 Kalgoorlie West (Terrestrial Ecosystems, 2018).

Of the fauna species identified in the current database searches, twelve were not addressed in the previous Level 1 Vertebrate Fauna Risk Assessment (Terrestrial Ecosystems, 2018). These species are:

- Bilby (*Macrotis lagotis*) - listed as Vulnerable;
- Numbat (*Myrmecobius fasciatus*) - listed as Endangered;
- Curlew Sandpiper (*Calidris ferruginea*) - listed as Critically Endangered;
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) - Endangered;
- Western Spiny-tailed Skink (*Egernia stokesii badia*) - listed as Endangered
- Common Greenshank (*Tringa nebularia*) - listed as Migratory;
- Common Sandpiper (*Actitis hypoleucos*) - listed as Migratory;
- Pectoral Sandpiper (*Calidris melanotos*) - listed as Migratory;
- Red-necked Stint (*Calidris ruficollis*) - listed as Migratory;
- Sanderling (*Calidris alba*) - listed as Migratory;
- Sharp-tailed Sandpiper (*Calidris acuminata*) - listed as Migratory; and
- Wood Sandpiper (*Tringa glareola*) - listed as Migratory.

These species were likely to have been excluded due to potentially being erroneous records, vagrant species, or historical records that are no longer representative of the fauna's known distribution. An assessment of the potential impacts on these additional fauna species can be found in Table 2.

Table 2 Assessment of the potential impact on additional conservation significant fauna that could occur in the bioregion.

Common Name	Scientific Name	Status under the BC Act 2016	Status under the EPBC Act 1999	Comments
Numbat	<i>Myrmecobius fasciatus</i>	EN	EN	Highly unlikely to be impacted. The project area is outside of the current known range of the Numbat. There is a historical record from 1927 which is likely to be erroneous (<i>NatureMap</i> , 2020).
Bilby	<i>Macrotis lagotis</i>	VU	VU	Highly unlikely to be impacted. The project area is outside of the current known range of the Bilby with only historical recordings within the region. Additionally, habitat in the project area is unsuitable and the close proximity to Kalgoorlie would result in heavy predation of this species by introduced animals.
Curlew Sandpiper	<i>Calidris ferruginea</i>	CR	CR & MI	Highly unlikely to be impacted as project area is outside of general distribution and there is no suitable habitat. Previously there has been one sighting in the region in October 1999 (Birdlife Australia, 2020), and it is possible that this species was a vagrant.
Carnaby's Black Cockatoo	<i>Calyptorhynchus latirostris</i>	EN	EN	Unlikely to be impacted as project area is outside of general distribution and there is no suitable habitat. Previously there has been one sighting in Kalgoorlie in August 2017 (Birdlife Australia, 2020).
Western Spiny-tailed Skink	<i>Egernia stokesii badia</i>	VU	EN	Highly unlikely to occur in the project area as the area is well outside of accepted distribution. One NatureMap vouchered individual has been recorded from Kalgoorlie in 1930 and is likely to be an erroneous record.
Common Greenshank	<i>Tringa nebularia</i>	MI	MI	Unlikely to occur in the project area as there is no suitable habitat present.
Common Sandpiper	<i>Actitis hypoleucos</i>	Mi	Mi	
Pectoral Sandpiper	<i>Calidris melanotos</i>	MI	MI	
Red-necked Stint	<i>Calidris ruficollis</i>	MI	MI	
Sanderling	<i>Calidris alba</i>	MI	MI	
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	MI	MI	
Wood Sandpiper	<i>Tringa glareola</i>	MI	MI	

Taxonomic Changes

A review of taxonomic changes and conservation status was undertaken using the most recent Vertebrate Fauna Checklist from the Western Australian Museum (Western Australian Museum, 2020), as well as the DBCA's Threatened and Priority Fauna List (Department of Biodiversity Conservation and Attractions, 2020). No taxonomic or conservation status changes have been made to fauna species for the region that affects the species identified in the previous report as protected under State and Federal legislation.

Current Survey and Assessment Guidelines

A review of the current EPBC Act referral guidelines for listed species have not changed since the Level 1 Vertebrate Fauna Risk Assessment for Lot 500 Kalgoorlie West was undertaken. Current guidelines can be found listed on the Department of Agriculture, Water and the Environment's web site (Department of Agriculture Water and the Environment, 2020a).

Conclusion

The previous vertebrate fauna report by Terrestrial Ecosystems (2018) assessed all the relevant conservation significant fauna species for the project area located at Lot 500 Great Eastern Highway, Yilkari. There were 12 additional conservation significant fauna species that were identified in the current database and background search; however, these records are likely to be either erroneous, historic, or related to vagrancy and therefore highly unlikely to be impacted. It is for these reasons that it is likely that they were excluded from the previous report.

A review of the current assessment guideline for EPBC Act referrals, as well as taxonomic and conservation status changes to potentially occurring fauna showed no alterations that would alter the findings of the initial report.

Regards



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References

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- Western Australian Museum (2020) *Checklist of the Terrestrial Vertebrate Fauna of Western Australia*. <http://museum.wa.gov.au/research/departments/terrestrial-zoology/checklist-terrestrial-vertebrate-fauna-western-australia>

APPENDIX 1

Conservation categories for species listed under the EPBC Act

Category	Description
Extinct	A species is extinct if there is no reasonable doubt that the last member of the species has died.
Extinct in the Wild	A species is categorised as extinct in the wild if it is only known to survive in cultivations, in captivity, or as a naturalised population well outside its past range; or if it has not been recorded in its known/expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered	The species is facing an extremely high risk of extinction in the wild and in the immediate future.
Endangered	The species is likely to become extinct unless the circumstances and factors threatening its abundance, survival, or evolutionary development cease to operate; or its numbers have been reduced to such a critical level, or its habitats have been so drastically reduced, that it is in immediate danger of extinction.
Vulnerable	Within the next 25 years, the species is likely to become endangered unless the circumstances and factors threatening its abundance, survival or evolutionary development cease to operate.
Conservation Dependent	The species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

APPENDIX 2

Conservation codes for Western Australian flora and fauna

The Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the Biodiversity Conservation Act 2016.

Threatened Species

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act). Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna. Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora. The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

Priority One: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

Priority Two: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

Priority Three: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

Priority Four: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.