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# Baseline assessment of the biodiversity of the Canning Basin, Western Australia

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# Executive summary

The project was undertaken to provide a desktop assessment of the state of knowledge of the biodiversity of the Canning Basin, Western Australia. The Canning Basin is an extensive area in northern and central Western Australia that includes substantial parts of the Pilbara, Kimberley, and Western Deserts. Existing knowledge of the biodiversity of the Basin is patchy. Although considerable information is available, records have never been aggregated and interrogated at the scale of the Basin largely because the Canning Basin is a geological unit and biodiversity assessments have been undertaken at smaller geographical scales that are more meaningful from a biological perspective.

The project obtained records of plants and animals in the Canning Basin by searching relevant national and Western Australian databases and examining reports and research papers with usable spatial data. We obtained a total of 636,254 occurrence records using this approach. After vetting each record, a total of 400,340 animal and 36,663 plant records were retained. This approach produced records of 4,225 species of animals and 2,838 species of plants. A total of 2,937 species are invertebrates including similar numbers of species of arthropods (1,479 species) and other invertebrates (1,458 species). Among the 875 species of birds, mammals, reptiles and frogs in the Canning Basin, almost 50% are birds (437 species).

Of the species recorded, nearly 400 species, 220 plants and 168 animals, were classified as significant nationally under the *Environment Protection and Biodiversity Conservation Act 1999* and/or in Western Australia under the *Biodiversity Conservation Act 2016*. We found evidence from published sources of 432 species of plants that have significance to Aboriginal people representing 15% of the plant species recorded for the Canning Basin. We found evidence from published sources that 147 species of animal have significance to Aboriginal people. This total consisted of 52 species of birds, 34 species of reptiles, 33 mammals, 19 fish, six frogs and three invertebrates.

A total of 43 threatened and significant ecological communities listed under Western Australia's *Biodiversity Conservation Act 2016* occur in the Canning Basin. One of these is also listed nationally under the *Environment Protection and Biodiversity Conservation Act 1999*; 'monsoon vine thickets on the coastal sand dunes of Dampier Peninsula'.

Most animal groups, apart from birds, are poorly sampled within the Canning Basin. This undersampling precluded identification of biodiversity hotspots. Most groups have over 80% of cells with no records. For example, 96% of cells have no records of frogs. By comparison, 68% of cells have no records of birds. Although a lower percentage than for most other groups, this is still a very high proportion of cells (at a scale of 10 × 10 km) that do not have a single record of a bird. Among plants, species in the Phylum Charophyta have the lowest number of grid cells with no records (N = 3,555) of all the groups of plants and animals. Mapping indicates that charophyte plants have been sampled more uniformly than other groups.

The spatial distribution of records was mapped to identify large areas within the Canning Basin where there has been no or little sampling of the biota. Very poorly known areas were identified



by identifying so-called “voids” in records. Each void is at least 1,000 km<sup>2</sup> in area and has an edge that is never closer than 20 km from a record of any species. Eight such areas were identified all of which are in the arid interior of the Canning Basin in the Great Sandy and Gibson Deserts. They represent very remote areas that are rarely visited.

The project has confirmed that the Canning Basin is a region that is both poorly sampled but that supports a high richness of plants and animals of which a large proportion are significant from a cultural and conservation perspective. Given adequate sampling the species list is expected to increase substantially.

Proposed future approaches to survey the Canning Basin include to: focus geographically on areas of high prospectivity to the resource development industry, target survey effort within the voids identified in this project, undertake taxon-specific sampling that focuses on groups that are expected to be common in the Canning Basin but for which there are few records, and collate appropriate biocultural knowledge from across the Canning Basin.



# 1 Introduction

The Canning Basin is an extensive area in northern and central Western Australia (Figure 1) that includes substantial parts of the Pilbara, Kimberley, and Western Deserts. It is biodiverse; however, existing knowledge of the biodiversity of the Canning Basin is patchy. Although a variety of information sources are available and the region is included in state-wide assessments such as that of How and Cowan (2006), records have never been aggregated and interrogated at the scale of the Basin. A major reason for this is that the Canning Basin is a geological unit and biodiversity assessments have been undertaken at smaller geographical scales that are more meaningful from a biological perspective, such as the regions identified in the Interim Biogeographic Regionalisation of Australia; IBRA. The Canning Basin includes areas of eight IBRA regions i.e. Great Sandy Desert, Little Sandy Desert, Gibson Desert, Tanami, Dampierland, Pilbara, Central Kimberley, and Ord River Plain. Other surveys have focussed only on smaller areas identified for resource development.

The current project was undertaken to provide a desktop assessment of the state of knowledge of the biodiversity of the Canning Basin. The assessment was carried out using existing records of the occurrence of species of plants and animals in the Basin. The project searched for all records of plants and animals and consolidated these records into a single database. This report provides a summary and initial interpretation of these records. After summarising species numbers, the report proceeds to examine the occurrence of significant species both from a conservation status and from an Aboriginal cultural perspective. Poorly sampled species and species groups are then identified. The spatial distribution of these records is then mapped to identify large areas within the Canning Basin where there has been no or little sampling of the biota. The report closes with an outline of options for further biodiversity sampling and for further research related to the plants and animals of the Canning Basin.

The focus of the current project is to gain a better understanding of what is known and unknown in terms of the occurrence of plants and animals in the Canning Basin. This information will facilitate understanding of the Basin's biodiversity to gain initial insights into potential future development impacts that may eventually lead to full scale assessment. The database that has been compiled during the project provides an initial baseline that can be used to plan and implement future survey programs.

## 1.1 Study area

The "Canning Basin", is a poorly defined area generally denoting a potential mineral and fossil fuel extraction area of northern Western Australia. It is the largest sedimentary basin in Western Australia and has an estimated onshore area of 530,000 km<sup>2</sup> with an additional offshore area of up to 110,000 km<sup>2</sup>. The precise boundary varies depending on the source used (e.g. earthbyte.org, 2020; Geoscience Australia, 2020; Government of Western Australia, 2020). For the purposes of our assessment we used the extent given in Government of Western Australia (2020), and converted this to a shape file in ArcGis 10.5 (Esri, California) by georectifying the map found in the low resolution pdf and manually drawing the border in ArcGis 10.5, and clipping to the Australian coastline (Figure 1).

## 1.2 Study objectives

The study objectives are outlined in full in the Introduction (above) and are summarised below.

- Compile all available published and unpublished records of plants and animals of the Canning Basin.
- Identify which species that occur in the Canning Basin are significant, either from a conservation status or Aboriginal cultural perspective.
- Assemble a list of under-represented (as a result of inadequate survey effort) species and groups of species for the Canning Basin, with an emphasis on threatened species.
- Identify biodiversity hotspots and undersampled geographical locations.
- Outline options for future survey programs.

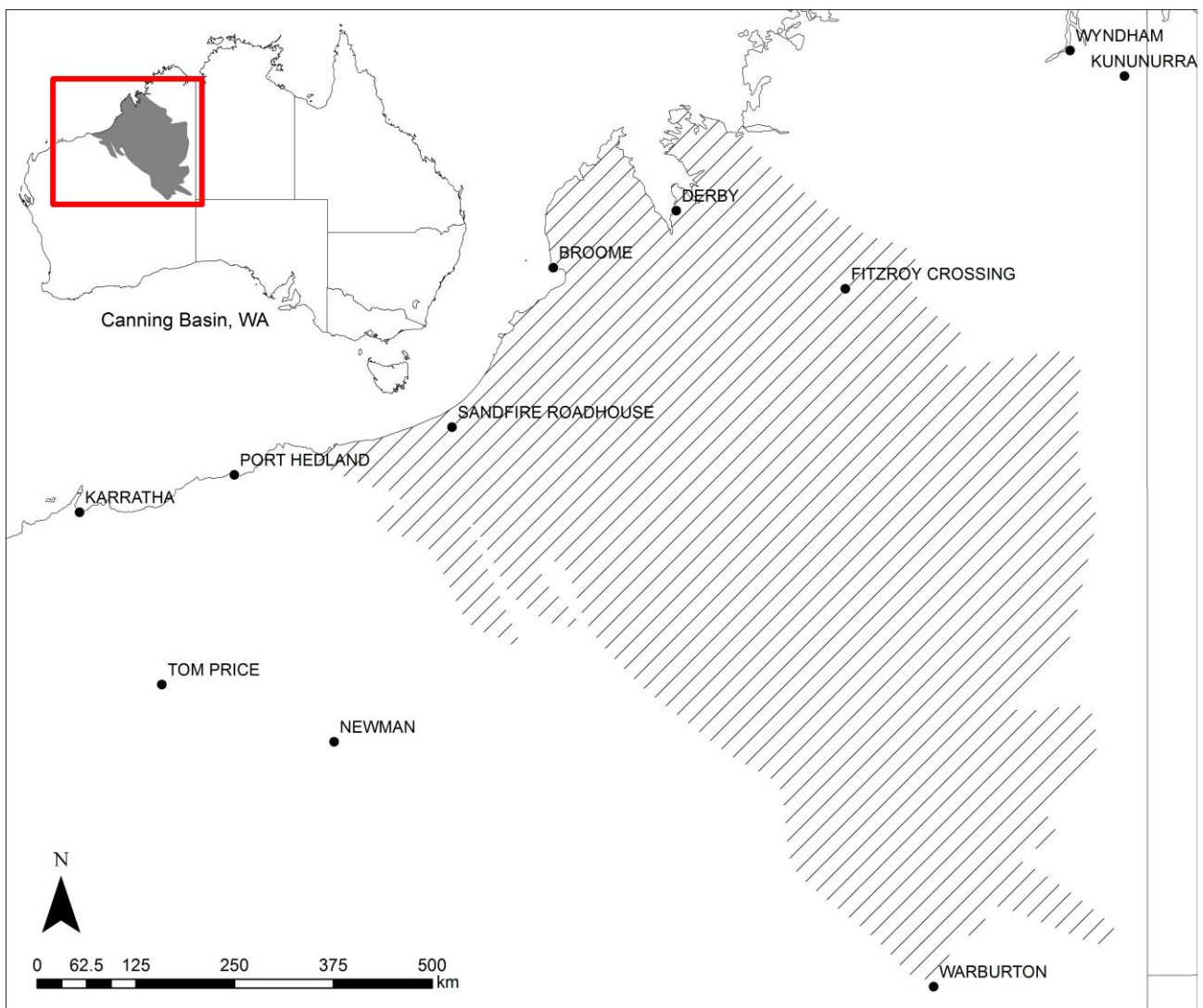


Figure 1 Map showing the location and extent of the Canning Basin in Western Australia

## 2 Methods

### 2.1 Compilation of species records

All publicly accessible sources of data on the occurrence of plants and animals from the Canning Basin were used. These sources are listed below.

- Records in the Atlas of Living Australia.
- Records in the Western Australia Department of Biodiversity, Conservation and Attractions (DBCA) Threatened and Priority Flora database.
- Records in the Western Australia Department of Biodiversity, Conservation and Attractions (DBCA) Threatened and Priority Fauna database.
- Records in the Western Australia Herbarium database.
- Environmental reports containing georeferenced data identified through a report-by-report search of the Index of Biodiversity Surveys for Assessments (IBSA) website run by the Western Australian Department of Water and Environmental Regulation at: <https://biocollect.ala.org.au/ibsa#max%3D20%26sort%3DdateCreatedSort>. The website was searched using the 'Filter by geographic region' function and searching for projects overlapping the following IBRA regions: Great Sandy Desert, Little Sandy Desert, Gibson Desert, Tanami, Dampierland, Pilbara, Central Kimberley, and Ord River Plain.
- Reports of EPA assessments identified through a report-by-report search of the EPA Assessment Reports webpage of the Western Australia EPA at: <https://www.epa.wa.gov.au/epa-assessment-reports>. The webpage was searched using keywords including: 'Theia', 'Buru', 'Black Mountain' and 'Great Sandy'.
- Georeferenced data available in the scientific literature.
- Unpublished data provided by scientists and naturalists.

Reports and sources that contained spatially identifiable data used in the final analyses are as follows: ALA (2020), Biologic (2014), Broome Bird Observatory (2017), CSIRO (2020), DBCA, (DBCA 2020b, 2020c, 2020d), Doughty et al. (2018), Doughty, Pepper, & Keogh (2010), Eastwood, Doughty, Hutchinson, & Pepper (2020), EOD (2020), and GHD (GHD, 2010, 2015). Records with no numerical location data (i.e., published with no latitude and longitude) were not added to the database.

The sources above yielded 636,254 spatially identified records of organisms. Notwithstanding inconsistent definitions of kingdoms within the field of biology, the following "kingdoms" (as defined in some of the data sources) are represented in the database: Animals, Plants, Bacteria, Chromista, Fungi, Protozoa and Viruses.

We retained all 636,254 records in a master database, and then applied a filtering process to arrive at a more useful set of data for the purposes of investigating significant and under-represented species and geographical gaps in sampling. This filtering process involved the four steps listed below.

1. Removing all records with no specific epithet associated (*ID\_Species\_undefined*): 33,721 records.
2. This left *ID\_Spp\_Loc\_Date*. We recognise that different data sources may have duplicate records and that the Atlas of Living Australia warehouses the data of other organisations. This situation may significantly inflate the apparent numbers of certain species or groups. Therefore, we removed any duplicates that were of the same species, on the same date,

and the same latitude and longitude, rounded to five decimal places. Included in this process were records of the same species, with the same latitude and longitude, and undated; that is, they may have represented multiple sightings of the same species at different times, but we have no way of discerning this. This process removed a large number of undated records, which are of limited use: 162,993 records removed; 439,540 retained in *ID\_No\_Duplicates*.

3. Removing all records that were not identifiable as plants or animals (i.e. kingdom Animalia or Plantae); 400,340 animal and 38,438 plant records retained. A further 110 plant records identified as "sp." were removed.
4. Recognising that plants are sessile, and that multiple records of the same species in the same location could be repeats of the same individual plant, we removed duplicates even if the dates were different or unspecified.

For the purposes of this study the Canning Basin was divided into 10 X 10 km grid cells giving a total of 5,422 grid cells (542,200 km<sup>2</sup>). We used this grid cell size because it is a typical size for assessments of regional biodiversity. We acknowledge that the study region is very large and, therefore, a grid cell size of 10 X 10 km is likely to result in many grids without records.

The number of records within each grid cell was assessed for each of mammals, birds, reptiles, amphibians, arthropods and non-arthropod invertebrates, higher plants (Charophyta) and non-Charophyta plants (e.g. "algae").

## 2.2 Identification of significant species and ecological communities

### 2.2.1 Conservation significance

The database was interrogated to identify significant species, here taken to be those that are:

- listed nationally under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or in Western Australia under the *Biodiversity Conservation Act 2016* (BC Act); and
- culturally significant to Aboriginal people.

Species listed under the EPBC Act that are regarded as 'significant' in this study include threatened, extinct and migratory species. The categories of threatened under the EPBC Act are critically endangered, endangered, vulnerable and conservation dependent. Extinct species are classified as extinct or extinct in the wild. Migratory species are those that are protected under bilateral international agreements. The EPBC Act list of migratory species is assembled from four bilateral agreements. These agreements are:

- China-Australia Migratory Bird Agreement (CAMBA)
- Japan-Australia Migratory Bird Agreement (JAMBA)
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
- Bonn Convention (Convention on Conservation of Migratory Species of Wild Animals).

Species listed under the BC Act that are regarded as 'significant' in this study include threatened, extinct, specially protected and priority 1 to 4 species as defined in DBCA (2016). 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. Schedules 1 to 3 of both groups are based on IUCN criteria and are critically endangered (schedule 1), endangered (schedule 2) and vulnerable (schedule 3). Extinct species are classified as extinct or extinct in the wild. Specially protected species are fauna that are migratory species, species of special conservation interest (conservation dependent fauna) and other specially protected species. Priority species are flora and fauna species that are possibly threatened but that do not meet survey criteria or are otherwise data deficient. There are four categories of priority species. Priority categories 1, 2 and 3 are ranked in order of priority for survey and evaluation of conservation status. Priority 4 covers species that are rare, near threatened or otherwise in need of monitoring.

The project also identified significant ecological communities that occur in the Canning Basin. These are ecological communities listed under the EPBC Act and/or the BC Act. For the purposes of this project significant ecological communities under the EPBC Act are those that are classified as threatened ecological communities (TECs). This list includes TECs classified as critically endangered, endangered, and vulnerable. Significant ecological communities under the BC Act include those that are classified as threatened ecological communities and those that are classified as priority ecological communities. TECs under WA legislation are in one of four categories; critically endangered, endangered, vulnerable and presumed totally destroyed. Priority ecological communities are possible TECs that do not meet survey criteria or that are not adequately defined. These communities are given a priority rating of 1 to 5.

### **2.2.2 Cultural significance**

Species of cultural significance were identified from available published sources. We assume that almost all species are of cultural significance to Aboriginal people and fully acknowledge that publication of cultural information is often not a desired outcome for Indigenous knowledge holders. However, here we looked for evidence from the literature that identified a particular type of significance. For plants, evidence of significance covered four broad categories; food and water sources, material culture, medicine, and weapons and implements. Material culture includes use as entertainment, toys, various forms of cosmetics and decorations, items such as belts and hairbrushes, fire holders and fire starters, ceremonial and religious uses, dying, calendar plants, rope, insect repellent, adhesives, shelter and tobacco. The main sources used for information on significance were the publications by Isaacs 1987; Latz 1995; Brock 2001; and Purdie et al. 2018. Species identified in these sources were cross-referenced with the plant list derived for the database. This approach was used because few published sources provide details on Aboriginal use of plants specifically within the Canning Basin. However, there are several publications that outline plants of specific use over large geographical areas such as northern Australia. The exception to this situation is the publication of Purdie et al. (2018) that covers ecological knowledge of the Gija people from an area of the East Kimberley that abuts the northern edge of the Canning Basin. Indigenous uses outlined in the sources are not comprehensive, nor are they necessarily uses of each particular plant species from within the Canning Basin, i.e., the plant occurs in the Canning Basin, and is, or was, used by Indigenous people somewhere, but not necessarily within the Canning Basin.

For animals, evidence of significance covered four broad categories. These categories differ from those used for plants and were adopted because some animals have cultural significance that is not related to everyday use. The categories were: food, spiritual (the species is totemic, used in ceremonies, possesses a dreamtime story or is mentioned as being of 'spiritual significance' in texts), cultural (the species is mentioned in lore, such as 'if young boys see this bird they cannot eat meat', without there being a clear spiritual significance) and other uses (including material culture and



medicine). The main sources used for information on significance of animals were Purdie et al. (2018) and Cheinmora et al. (2017). The publication by Cheinmora et al. (2018) covers ecological knowledge from an area of the far north Kimberley to the north-east of the Canning Basin. However, there is overlap in many of the coastal species found in the Canning Basin so it was included as a source. Species identified in these sources were cross-referenced with the animal lists derived for the database.

## 2.3 Identification of poorly sampled species

A consequence of the limited biodiversity survey effort across the Canning Basin is that some species that are likely to occur there have not yet been recorded and, therefore, will not appear in the project's database. It is a difficult process to identify such species. The approach taken was to compare the species lists compiled in this project with the potential occurrences of species within the Canning Basin based on knowledge of geographic distributions and habitat preferences. This approach used the expert knowledge of this report's authors with additional expert advice as needed.

## 2.4 Identification of geographical gaps in sampling

Identification of geographical gaps in records was undertaken as a mapping exercise. While maps of species records give a good indication of species' occurrence, they are not specifically designed to show geographic gaps in our knowledge of the biota of the Canning Basin. To better visualise geographical maps in sampling, the database was interrogated and searched for 'voids' i.e. areas where there are no records, or few records, of any species.

Voids were mapped at two scales. The first involved identifying voids of  $>1000 \text{ km}^2$  where the edge of the void is never closer than 20 km from a record of any species. Such voids are considered to represent extremely remote areas and are considered to be very poorly known. The second approach was to identify groups of 10 X 10 km grid cells where there are fewer than 10 records. The number of 10 records is somewhat arbitrary. We used this approach rather than an alternative such as identifying cells that have less than the overall mean number of species.



## 3 Results

### 3.1 Summary of records

A total of 400,340 records of animals and 36,663 records of plants were used in the final database (Table 1). Most (93%) animal records are of birds (373,161 records), followed by mammals, reptiles and non-arthropod invertebrates. Only 978 frog records are included in the database (Table 2).

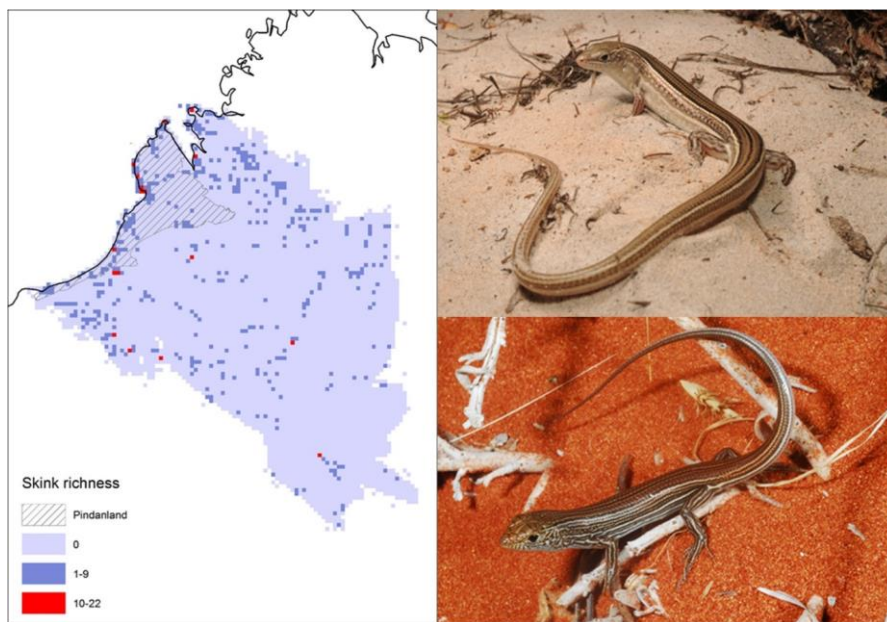
A total of 4,225 species of animals were recorded in the Canning Basin through this study. The total of plants was 2,838 species (Table 2). Of the animal records captured by the database, 2,937 species are invertebrates. This total includes similar numbers of species of arthropods (1,479 species) and other invertebrates (1,458 species). Of the mammals, birds, reptiles and amphibians (875 species) recorded in the Canning Basin, almost 50% are birds (437 species), reflecting the strong public interest in this group, and the many records obtained at one location, the Broome Bird Observatory. Recorded species richness is next highest for reptiles then mammals (Table 2). Within the reptiles, skinks are featured as an example group because of the high diversity within this family in the Canning Basin, and because there are several endemic or near-endemic species (see Feature Box).

## Skinks

Lizards, particularly skinks (family Scincidae) form a large proportion of the vertebrate richness in much of inland Australia. The family is well studied in Australia's deserts (e.g., Pianka, 1969a; Pianka, 1969b; Pianka & Schall, 1981). We focus here on the skinks as a case study of both species richness and data paucity within the Canning Basin. Of the 7,047 reptile records presented in Table 2, there are 2,094 skink records representing 90 species. The percentage of 100 km<sup>2</sup> cells with skink records is low, at 8%; just over 92% of cells have no skink data. This is in line with data for other groups in Table 2. The contrast between high richness and relative data paucity is most obvious when examining the richness of some cells that have had the most data collected.

The maximum number of species per cell is 22, but only 17 cells have records of 10 or more species. The Pindanland Subregion is over-represented in this respect, with 7 (51%) of its cells having over 10 species, despite it occupying only 6.7% of the Canning Basin. Cells having >10 skink species are distributed widely within the Canning Basin, suggesting that: 1) high skink richness is not restricted to the Pindanland Subregion, but rather the entire basin, and 2) the more arid inland areas are particularly poorly surveyed.

Similarly, the absolute number of records of any one species cannot necessarily be relied upon to give an idea of how common or ubiquitous it is. For example, while *Ctenotus inornatus* (see image below) is a common species, as reflected by the large number of records, other species such as *Liopholis kintorei*, the Great Desert Skink, is a Vulnerable species that is represented by approximately 80 records over much of the inland Canning Basin. This almost certainly reflects greater survey effort for this species resulting from its threatened status, rather than it being widespread and/or common.



Map on the left shows skink richness per 100 km<sup>2</sup> grid cell. Over 90% of grid cells have no skink records, despite skinks being a dominant vertebrate group across the vast inland of Australia. The Pindanland Subregion is hatched and has a high proportion of cells with 10 or more skink species recorded. The highest richness per single cell is 22 species.

Right top. *Ctenotus inornatus*. It is the most commonly recorded skink in the Canning Basin, present in the highest number of cells (114), distributed over the central and northern Canning Basin, and representing over 10% of all skink records.

Right below. *Ctenotus dux*. One of 15 species known from a single record from the Canning Basin, in this case, from the eastern edge of the Lateritic Plain Subregion of the Gibson Desert.

### References:

Pianka, E. R. (1969a) Habitat specificity, speciation, and species density in Australian desert lizards. *Ecology*, 50, 498-502.

Pianka, E. R. (1969b) Sympatry of desert lizards (*Ctenotus*) in Western Australia. *Ecology*, 50, 1011 - 1030.

Pianka, E. R. & Schall, J. J. (1981) Species densities of Australian vertebrates. In: A. Keast (Ed), *Ecological biogeography of Australia*. Dr W.Junk, The Hague, pp. 1677-1694.

**Table 1 Summary of number of records per phylum of animals and plants**

Phylum name	Common name	Number of records	Source table
<b>Animals</b>		400,340	<i>01_ANIMALS</i>
Acanthocephala	spiny-headed worms	1	
Annelida	segmented worms	133	
Arthropoda	arthropods (insects, crustaceans, spiders etc.)	3,905	
Brachiopoda	lamp shells	3	
Bryozoa		3	
Chordata	chordates (vertebrates: fish, frogs, reptiles, birds and mammals; and ascidians)	389,744	
Cnidaria	corals, jellyfish etc.	55	
Echinodermata	echinoderms (starfish, sea urchin etc.)	665	
Mollusca	molluscs	5,780	
Nematoda	roundworms	36	
Platyhelminthes	flatworms	2	
Porifera	sponges	11	
Sipuncula	peanut worms	2	
<b>Plants</b>		36,663	<i>02_PLANTS</i>
Bryophyta	mosses	21	
Charophyta		36,485	
Marchantiophyta	liverworts	28	
Rhodophyta	red algae	129	

**Table 2 Summary of the number of species and number of records of each major group of plants and animals together with details of the distribution of records across cells**

Group	Number of species	Number of records	Number of cells with no records (%)	Area with no records (km <sup>2</sup> )	Maximum number of records per cell
Mammals	122	7,060	4,776 (85%)	477,600	642
Birds	437	373,161	3,868 (68%)	386,800	115,446
Reptiles	281	7,047	4,772 (85%)	477,200	253
Amphibians	35	978	5,407 (96%)	540,700	75
Fish*	413	2,169	5,626 (98%)	562,600	787
Arthropods	1,479	3,905	5,123 (91%)	512,300	501
Non-arthropod invertebrates	1,458	6,691	5,365 (95%)	536,500	2,910
Charophyta	2,749	36,485	3,555 (62%)	355,500	1,044
Non-charophyte plants	89	178	5,705 (99%)	570,500	48

\* includes bony fish, Actinopterygii, and cartilaginous fish, that is, the sharks and rays, Chondrichthyes.

## 3.2 Identification of significant species and ecological communities

### 3.2.1 Conservation significance

Almost 400 species of plants and animals that are classified as significant nationally under the EPBC Act and/or in Western Australia under the BC Act occur in the Canning Basin. A full list of these species appears in Appendix A.1. A total of 115 animal species is listed under the EPBC Act whereas a total of 168 animal species is listed under the BC Act (Appendix A.1, Table A1). Of the 115 animals listed under the EPBC Act, 26 are mammals (of which six species are extinct), 77 are birds, nine are reptiles and there are three fish. Most of the significant species listed under the EPBC Act are migratory rather than threatened (66 species). Of the 168 animal species listed under the BC Act, 45 are mammals (of which seven species are extinct), 85 are birds, 21 are reptiles and five are fish. In addition, there are 12 species of significance that are invertebrates. All of these are land snails.

A total of 220 species of plants is classified as significant using the categories of the BC Act (Appendix A.1, Table A2). Three of the plants, *Eucalyptus mooreana*, *Seringia exastia* and *Pandanus spiralis* var. *flammeus*, are also listed as significant nationally.

The spatial distribution of the Canning Basin's significant species is shown in Figure 2. The upper two panels represent animals and the lower two panels show plants. There is an uneven spatial distribution of records of significant species from the Canning Basin with a broadly similar pattern for animals and plants. Most records of significant species are along the coast with a concentration in the north-west of the Canning Basin. For animals, records decline with distance from the coast and most of the interior of the Canning Basin has no records of significant animals (Figure 2). For plants, there are inland records for significant species including in the extreme south of the Basin. These include records of critically endangered and priority 1 plants.

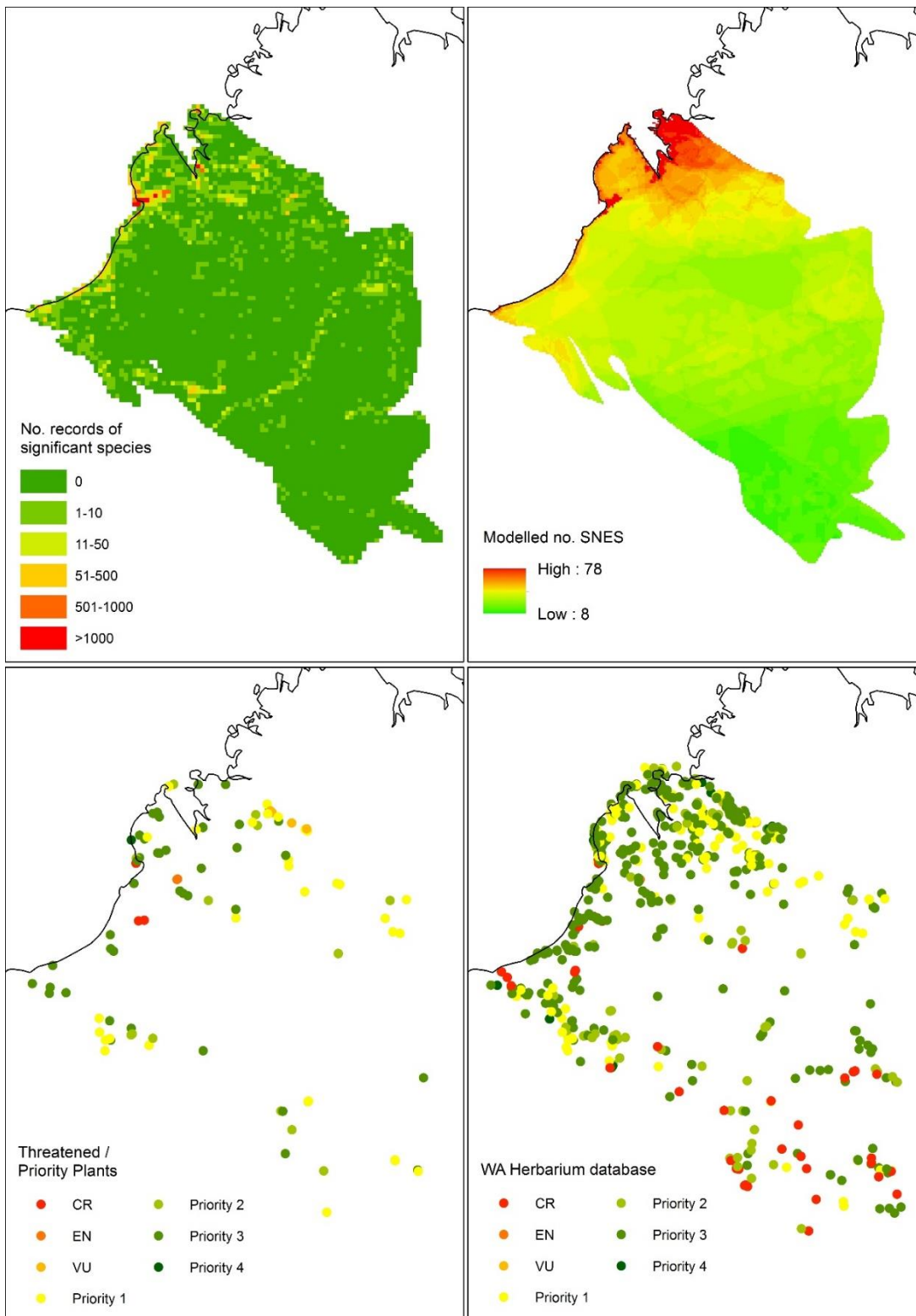


Figure 2 Spatial configuration of significant species under various classifications from the Canning Basin. Top left: Number of records of significant species per 10 X 10 km grid cell. All are animals, and most are migratory birds. Top right: ALA habitat modelling of the same significant species as in Top Left; this is extrapolated from the habitat models presented in ALA. Bottom left: Threatened and priority plant records by conservation status, from DBCA (2020c). Bottom right: Threatened and priority plant records by conservation status (from DBCA, 2020d).

Table 3 Threatened ecological communities (TECs) listed under the Western Australian *Biodiversity Conservation Act 2016* (DBCA, 2016), records obtained from DBCA (2020a), and threatened ecological communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The definition of TEC used here includes both threatened and priority ecological communities under Western Australian legislation

Ecological community name	Extent (ha)	Status	
		EPBC Act	BC Act
Bannerman Land System	8,480		P3
Big Springs	32,010		VU
Boab dominated assemblages (MVT limestone ranges)	1,100		P3
Bunda Bunda	3,170		VU
<i>Corymbia paractia</i>	8,340		P1
Disaster Bay	1,850		P3
Dragon Tree Soak	1,430		EN
Dwarf pindan heath	520		P1
Eighty Mile Land System	3,040		P3
Gogo Land System	940		P3
Gourdon Land System	9,680		P3
Lake Gregory Land System	16,420		P3
Leopold Land System	53,530		P3
Lime Land System	2,410		P3
Lolly Well springs	1,900		P3
Lowangan Land System	14,270		P3
Lucas Land System	16,240		P3
Mandora Land System	31,030		P3
Mandora Mounds	21,540		EN
Mangarr (Minyjuru)	3,400		P1
Napier Range Cave	80		P1

Ecological community name	Extent (ha)	Status	
		EPBC Act	BC Act
NapierRange	27,790		P1
Nimalarica Claypan	390		P4
Parda Land System	27,550		P3
Roebuck Bay mudflats	140,350		VU
Roebuck Land System	118,130		P3
Salt Creek	5,480		P1
Tunnel creek	160		P2
Vegetation Association 1271	2,310		P1
Vegetation Association 33	750		P1
Vegetation Association 37	27,330		P3
Vegetation Association 67	45,520		P3
Vegetation Association 718	210		P1
Vegetation Association 719	2,890		P1
Vegetation Association 73	90,880		P3
Vegetation Association 759	84,510		P3
Vegetation Association 760	950		P1
Vegetation Association 767	1,640		P1
Vegetation Association 770	2,570		P1
Vegetation Association 850	14,850		P3
Vegetation Association 872	4,200		P1
Vine thickets	149,840	EN	VU
Wolfe Land System	15,580		P3



A total of 43 threatened ecological communities (TECs) listed under the BC Act occur in the Canning Basin (this list includes priority ecological communities under the BC Act (Figure 3). One of these TECs is also listed nationally under the EPBC Act. The *monsoon vine thickets on the coastal sand dunes of Dampier Peninsula* is listed as endangered under the EPBC Act.

Significant ecological communities that occur in the Canning Basin have a patchy distribution (Figure 3). Most occur in the west and north of the Canning Basin with a concentration close to the coast. The majority of the Canning Basin does not support any significant ecological communities (Figure 3).

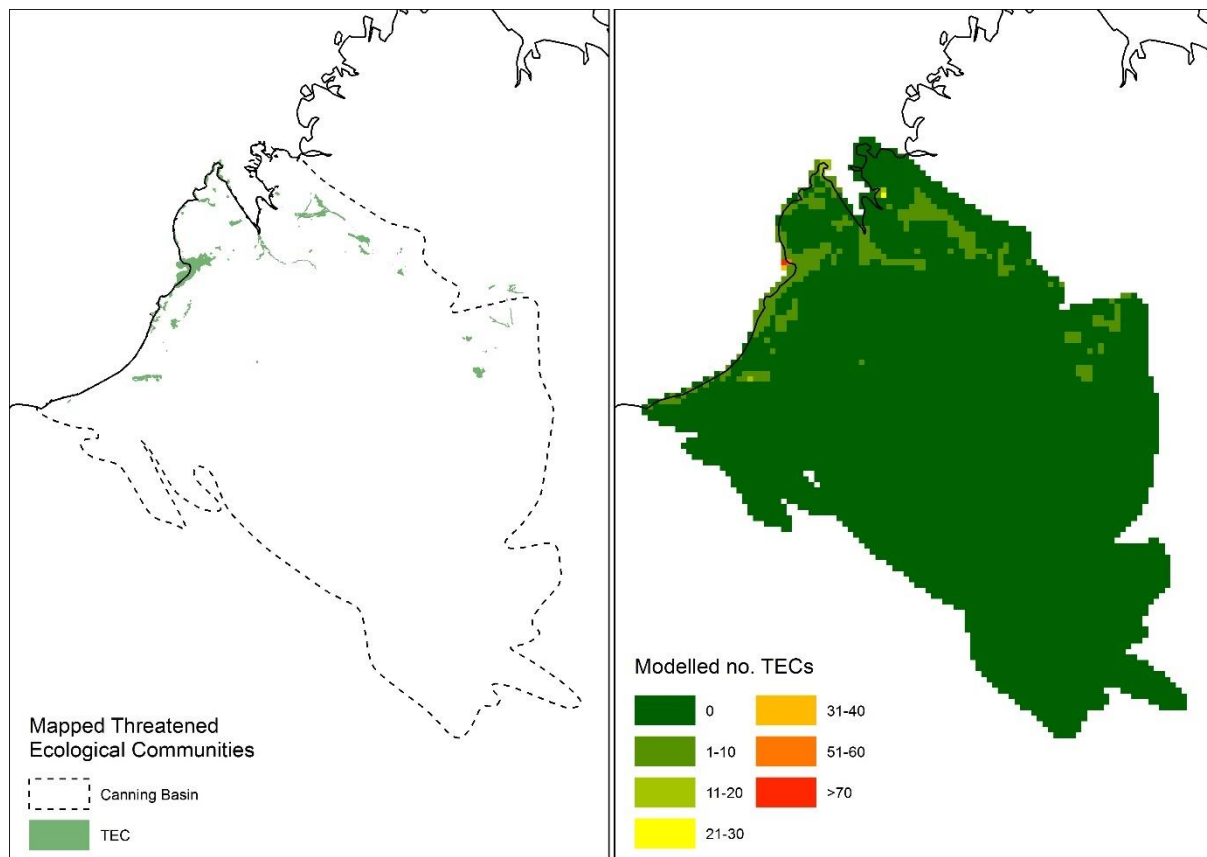


Figure 3 Threatened ecological communities (TECs) here including priority ecological communities under Western Australian legislation. Left: Locations of mapped threatened ecological communities in the Canning Basin. Right: Number of mapped TECs per 10 × 10 km grid cell.

### 3.2.2 Endemic and geographically restricted species

Amongst vertebrates the only class that has endemic or near endemic taxa at the species-level is reptiles. Available taxonomic and distributional knowledge indicates that the following species are endemic to the Canning Basin:

- the blind snakes *Anilius micromma* and *Anilius yampiensis* (family Typhlopidae)
- the mangrove-inhabiting snake *Myron resetari* (family Homalopsidae)
- the burrowing snake *Simoselaps minimus* (family Elapidae)
- the skink *Lerista praefrontalis* (family Scincidae).

The skink *Cryptoblepharus tytthos* is likely to also be endemic to the Canning Basin pending taxonomic clarification of a population on Mornington Island (southern Gulf of Carpentaria,

Queensland). These records are assumed to have been erroneously assigned to *Cryptoblepharus tyttos*.

The following three skink species are also likely to be endemic to the Canning Basin; however, additional collecting is needed to verify this; *Ctenotus colletti*, *Lerista simillima*, *Lerista apoda*.

A number of reptiles are also near endemic to the Canning Basin. These species are:

- the dragon *Diporiphora pindan* (family Agamidae)
- the gecko *Diplodactylus savagei* (family Diplodactylidae)
- the skinks *Lerista separanda*, *Lerista vermicularis* and *Ctenotus angusticeps* (family Scincidae).

### 3.2.3 Cultural significance

Plant and animal species of significance to Aboriginal people are listed in Appendix A.2. We found evidence from published sources of 432 species of plants that occur in the Canning Basin having significance to Aboriginal people (Appendix A.2, Table A3). This total represents 15% of the 2,838 plant species recorded for the Canning Basin (Table 1).

We found evidence from published sources that 147 species of animal that occur in the Canning Basin have significance to Aboriginal people (Appendix A.2, Table A4). This total consisted of 52 species of birds, 34 species of reptiles, 33 mammals, 19 fish, six frogs and three invertebrates.

## 3.3 Identification of poorly sampled species

Most animal groups, apart from birds in coastal and near-coastal areas, are poorly sampled within the Canning Basin (Table 2), reflecting the inaccessibility of much of the arid area of the Basin. This pattern is widespread across most of inland Western Australia (M. Cowan pers. comm.). For birds, 68% of cells have no records, and the majority of these "empty cells" are inland. Most animal groups have over 80% of cells with no records at all. For example, 96% of cells have no frog records. This paucity of frog records is expected because of the aridity of the region, and the burrowing behaviour of most desert species. Similarly, 91% of cells have no records of arthropods. By comparison, 68% of cells have no records of birds. Although a lower percentage than for most other groups, this is still a very high proportion of cells (at a scale of 10 × 10 km) that do not have a single record of a bird.

Among plants, species in the Phylum Charophyta have the lowest number of grid cells with no records (N = 3,555) of all the groups of plants and animals summarised in Table 2. This total is still the majority of grid cells (62%) in the Canning Basin; however, plants clearly have been sampled more uniformly than other groups (Figures 4 and 5).

Given the undersampling across most animal groups only a few specific cases will be highlighted here. Among vertebrates, the small number and limited geographic coverage of frog records has been noted above. Many genera of lizards are underrepresented among database records for the Canning Basin. This issue is discussed in detail for skinks in the Feature Box (above). Typically, there are few records for species from genera that are expected to be widespread and common. Among geckoes, the genus *Crenadactylus* has 19 records from the 5 species present in the Basin and *Lucasium* has 56 records from 2 species. Several genera of snakes are also undersampled.

These include *Anilius* with 127 records of 13 species, *Brachyurophis* (24 records of 4 species), and *Pseudonaja* (87 records of 3 species).

Among mammals, there are some predictable genera that are undersampled. These include small carnivorous marsupials such as *Planigale* (14 records of 2 species) and *Pseudantechinus* (18 records of 2 species). Some bat genera are also undersampled including *Nyctophilus* (56 records of ~5 species) and *Vespadelus* (92 records of 3 species). However, there is also extreme underrepresentation of some iconic species that are expected to be common or widespread in the Canning Basin. Most notable among these species are the short-beaked echidna (*Tachyglossus aculeatus*) (3 records) and red kangaroo (6 records in total, one as *Macropus rufus* and 5 as *Osphranter rufus*). In contrast, the greater bilby (*Macrotis lagotis*), an iconic desert marsupial, is well represented with 850 records. The bilby is likely to be similar to the great desert skink (see Feature Box, above) in being a well-known threatened species that is of importance to Indigenous people and that has been the focus of targeted surveys.

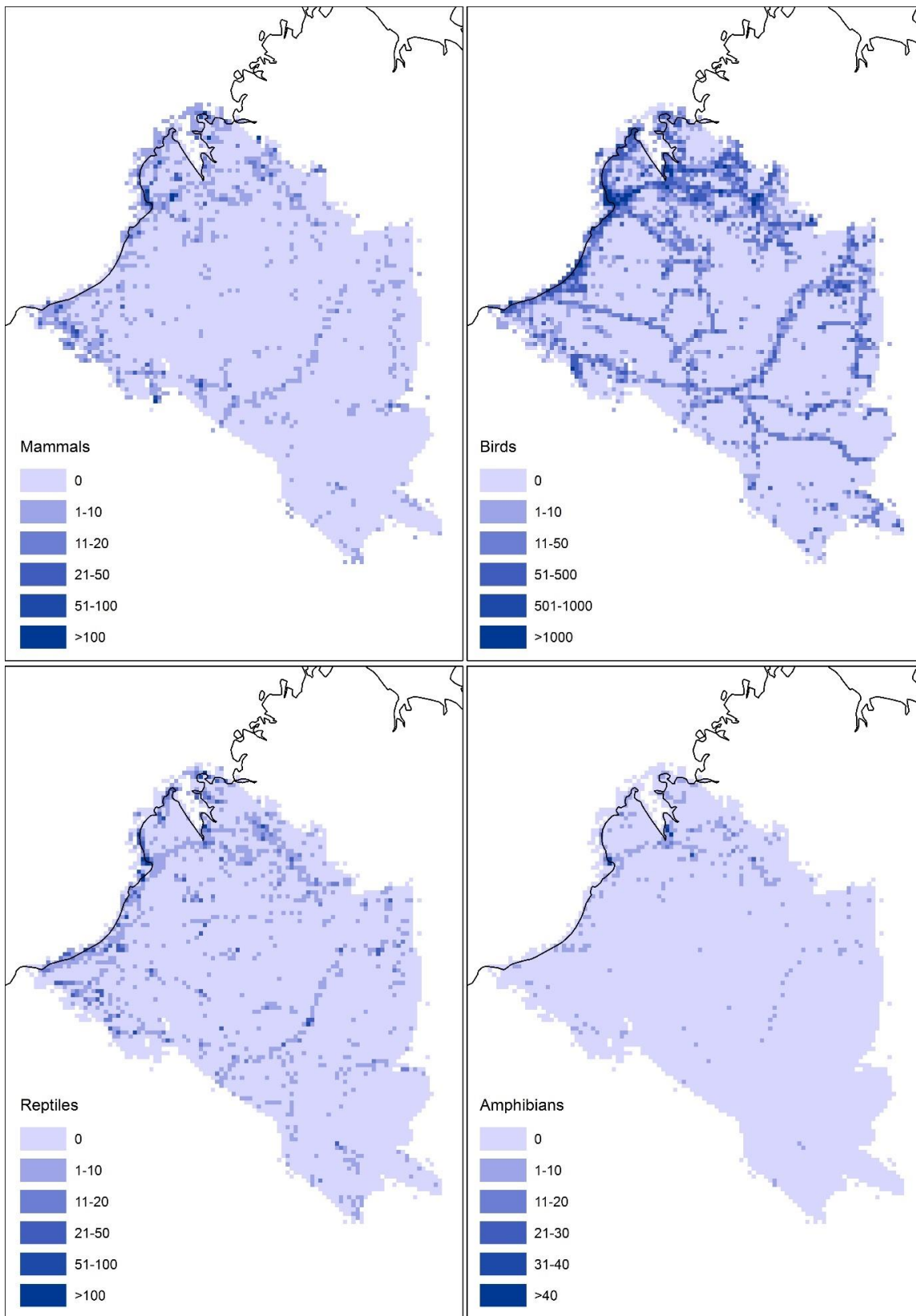
### 3.4 Identification of geographical gaps in sampling

The spatial distribution of records of birds, mammals, reptiles and frogs in the Canning Basin is shown in Figure 4 and of invertebrates and plants in Figure 5. These maps show the paucity of records of all groups except birds and charophyte plants. As with significant species of plants and animals (Figure 2), there is a strong bias among these groups for records along the coast and in the north-west of the Canning Basin. Among animals, reptiles are the group that is the most evenly distributed across the Canning Basin. There are records across the interior of the Basin and less of a concentration along the coast (Figure 4). This pattern likely reflects the high richness of reptiles, especially lizards, in the arid interior of Australia. Bird records are also dispersed with concentrations of records along roads in the interior of the Canning Basin (Figure 4). This pattern is also shown by non-arthropod invertebrates (Figure 5).

The undersampling across animals and plants and the bias of records towards the coast precludes identification of biodiversity hotspots for the Canning Basin at this stage. Instead of identifying hotspots, a focus of this report has been to identify geographical gaps in sampling. This was done in two ways. Very poorly known areas were identified by identifying so-called “voids” in records. Each void is at least 1,000 km<sup>2</sup> in area and has an edge that is never closer than 20 km from a record of any species. Eight such areas were identified in the Canning Basin through mapping of species records (Figure 6). These areas are all in the inland of the Basin within the Great Sandy Desert and the Gibson Desert. The most coastal void is ~200 km east of the coast and 51 km NNE of Telfer Mine (Figure 6). The next most westerly void is within 55 km north of Well 33 along the Canning Stock Route. Other voids are located in the vicinity of Patjarr community (one void begins within 77 km NW of Patjarr and another, 40 km east) in the Gibson Desert as well as near Lake Mackay (one void is within 67 km SSW of Lake Mackay and another is within 153 km NW) and Lake Gregory (one void is within 98 km south of Lake Gregory). The final and most northerly void has its north edge 70 km south of Highway 1 (Figure 6).

The voids represent very remote areas at a continental scale. These voids are in areas that are well away from the road and track network and, therefore, are not regularly visited by observers. Hence no records of the biota have been made from these areas.

The second approach was to identify groups of 10 X 10 km grid cells where there are fewer than 10 records. Unsurprisingly, the location of areas with a low density of records using this approach overlaps extensively, but not completely, with the location of voids (Figure 6).



**Figure 4** Spatial configuration of records of terrestrial vertebrates from the Canning Basin. Note the different scales for the number of records for the different vertebrate groups

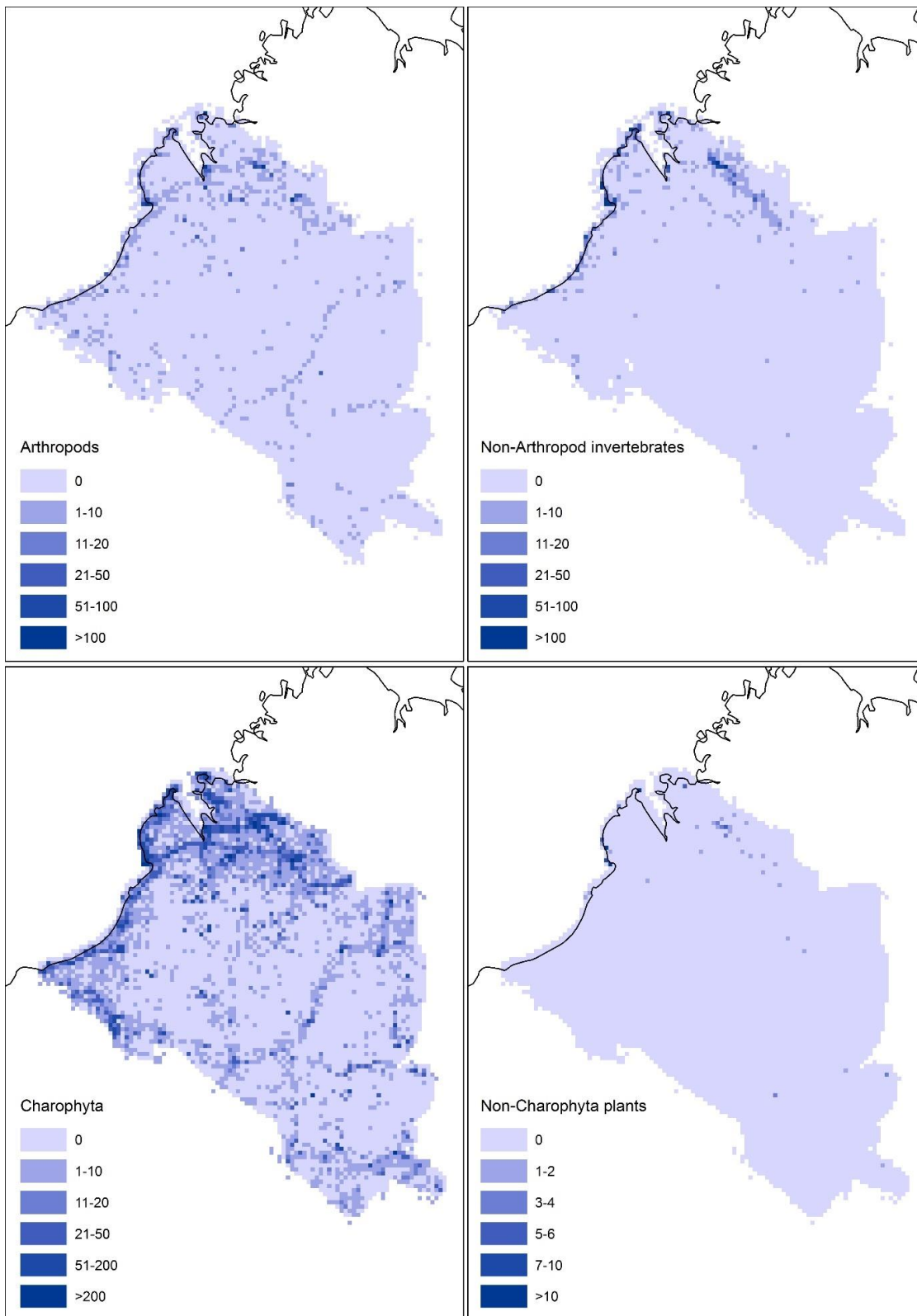


Figure 5 Spatial configuration of records of invertebrates and plants from the Canning Basin. Note the different scales for the number of records for the different groups

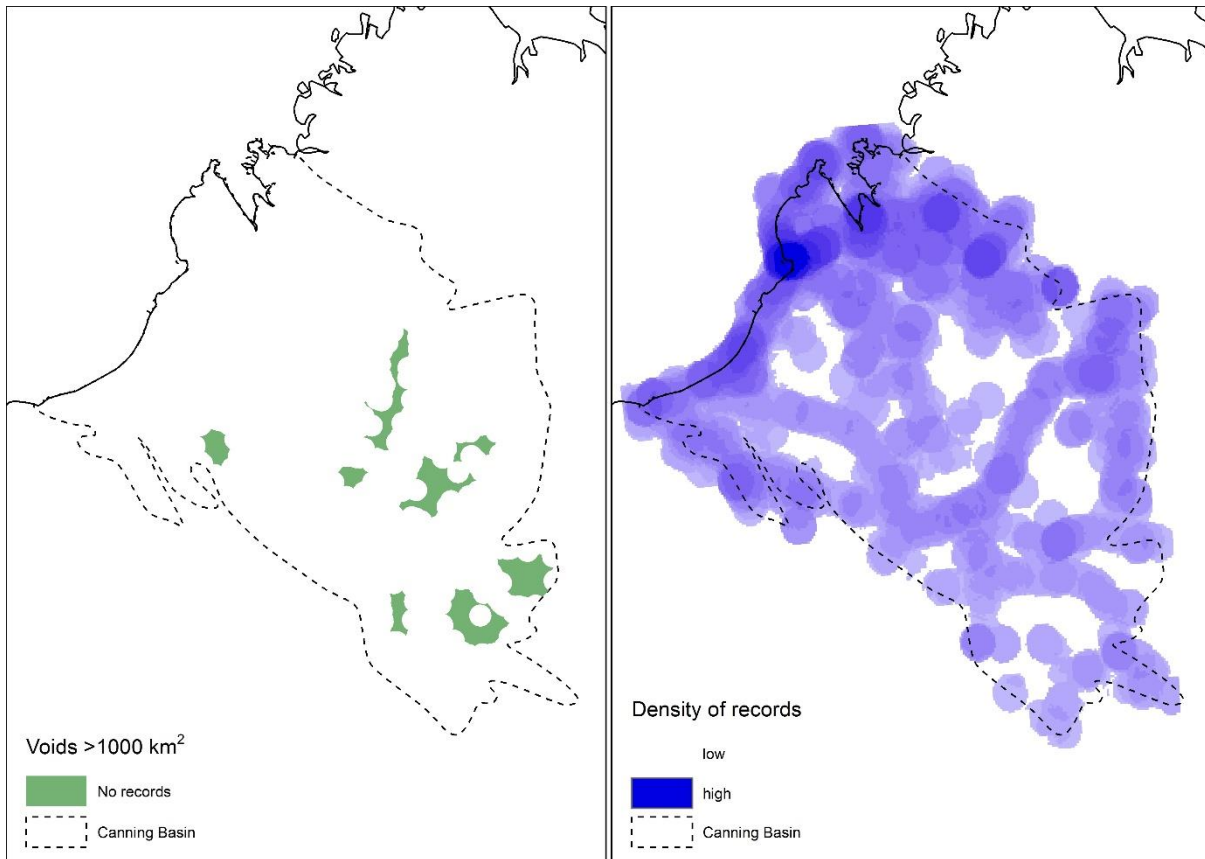


Figure 6 Gaps in data for the Canning Basin, visualised in two ways. Left: voids of >1000 km<sup>2</sup> where the edge of the void is never closer than 20 km from a record of any sort. Right: density map of all records of all species; white areas contain no or fewer than 10 records. The darkest blue areas contain thousands of records



## 4 Discussion

### 4.1 Overview of the main findings

The project has confirmed that the Canning Basin is a region that is both poorly sampled and that has a high richness of plants and animals of which a large number are significant from a cultural and conservation perspective. Given adequate sampling the number of species recorded is expected to increase substantially for some groups of animals and plants.

The study results show that there are biases in the adequacy of sampling across groups. Birds, the most recorded group among vertebrates, are easy to survey and identify and do not require specialised equipment (apart from binoculars) or special permits. In contrast, many other groups of animals as well as plants require more specialised equipment, survey effort and permits to collect. In addition, species-level identification is challenging for these groups and there is a shortage of expertise to accurately identify specimens to species.

### 4.2 Recommendations for future work in the Canning Basin

The current project was developed as a desktop study to collate and summarise existing information on the occurrence of the plants and animals of the Canning Basin. Through this process the project team has identified gaps in knowledge that may need to be addressed in the future. Several options for future work have been generated by the project and these are covered below.

1. Target high prospectivity areas for future biodiversity surveys. The Canning Basin has been identified as an area for future gas development. Given the vast size of the Canning Basin and the large extent of areas that are poorly sampled, future biodiversity surveys could focus on those highly prospective sections of the Canning Basin i.e. those areas where onshore gas development is most likely to occur. Areas that are highly prospective for onshore gas can be overlain with records from the project's database to examine occurrence of species and gaps in records at finer spatial scales than has been undertaken in the current project. This type of analysis can inform the design and methodology of further biodiversity surveys and increase the effectiveness of information collection.
2. Facilitate collation of meaningful biocultural knowledge. Knowledge of culturally significant species and ecological communities within the Canning Basin is incomplete. The current project investigated this issue based only on published biocultural information of which there is a limited amount. This is an issue of central importance for future resource development in the Canning Basin. A standalone GISERA project that seeks to employ senior elders and linguists working with biologists to identify culturally significant species and ecological communities for each of the peoples within the Canning Basin is needed.
3. Fill the voids. Each of the "voids" identified in our project is >1,000 km<sup>2</sup> in area and has an edge that is never closer than 20 km from a record of any species (Figure 6). These are large areas even at a continental scale. Filling these voids by carrying out targeted biodiversity surveys will provide a more robust understanding of the biodiversity values of the Canning Basin.
4. Undertake taxon-specific sampling. The project has identified several groups of vertebrates that are expected to be common in the Canning Basin but for which there are few records.

Rather than sampling particular geographic areas, an alternative approach is to undertake taxon-specific sampling that aims to maximise records of particular groups of species. Foremost among the groups that are undersampled in the Canning Basin is reptiles including geckoes, skinks, dragons and snakes. This undersampling could also be hiding cryptic diversity with undescribed species being present. This hidden diversity could be significant at a continental scale. As an example, recently Oliver et al. (2017) identified a novel hotspot of lizards based on an analysis of genetic divergence of saxicoline geckoes (*Gehyra*, *Heteronotia*, *Oedura*, *Nephurus*) in the Devonian Reef System in the north of the Canning Basin. Similar hotspot areas, especially for lizards but potentially also other undersampled groups, may occur elsewhere in the Canning Basin. Rocky ranges that provide refugia over geological time may be of relevance to this undertaking.



## 5 References

- ALA (2020). Atlas of Living Australia; <http://www.ala.org.au/>, area search of Canning Basin. downloaded 22 December 2020.
- Biologic (2014). Pilbara Regional Ghost Bat Review. Prepared by Biologic Bat Call WA Pty Ltd, for BHP Billiton Iron Ore Pty Ltd.
- Brock, J. (2001). Native Plants of Northern Australia. Sydney: New Holland publishers (Australia) Pty Ltd.
- Broome Bird Observatory (2017). Conservation significant vertebrate fauna assessment, Mandora Station Irrigated Fodder Production Project – Stage 1. Report for Mandora Cattle Company Pty Ltd.
- Burbidge, A. A., Johnson, K. A., Fuller, P. J. & Southgate, R. I. (1988). Aboriginal knowledge of the mammals of the central deserts of Australia. *Australian Wildlife Research* 15, 9-39.
- Cheinmora, D., Charles, A., Karadada, T., Waina, B., Nyalerin, F., Waina, L., Punchi, M., Chalarimeri, A., Unghango, D., Saunders, T., Sefton, M., Vigilante, T. & Wightman, G. (2017). Belaa plants and animals, biocultural knowledge of the Kwini people of the far north Kimberley, Australia. Northern Territory Botanical Bulletin number 46. Published jointly by Kwini people through Balanggarra Aboriginal Corporation and NT Department of Environment and Natural Resources.
- How, R. A. & Cowan, M. A. (2006). Collections in space and time: geographical patterning of native frogs, mammals and reptiles through a continental gradient. *Pacific Conservation Biology*, 12(2), 111-133.
- CSIRO (2020). Land and Water database, incidental records.
- DBCA (2016). Biodiversity Conservation Act, Conservation Codes for Western Australian Flora and Fauna. Available from <https://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Conservation%20code%20definitions.pdf>
- DBCA (2020a). Department of Biodiversity, Conservation and Attractions, Threatened and Priority Ecological Communities Database Search for Canning Basin. Accessed 11/11/2020. Prepared by the Species and Communities Program for Eric Vanderduys, CSIRO.
- DBCA (2020b). Department of Biodiversity, Conservation and Attractions, Threatened and Priority Fauna Database Search for Canning Basin. Accessed 2/11/2020. Prepared by the Species and Communities Program for Eric Vanderduys, CSIRO.
- DBCA (2020c). Department of Biodiversity, Conservation and Attractions, Threatened and Priority Flora Database (TPFL) Search for Canning Basin. Accessed 2/11/2020. Prepared by the Species and Communities Program for Eric Vanderduys, CSIRO.
- DBCA (2020d). Department of Biodiversity, Conservation and Attractions, WA Herbarium Database (WAHERB) Search for Canning Basin. Accessed 2/11/2020. Prepared by the Species and Communities Program for Eric Vanderduys, CSIRO.
- Doughty, P., Bourke, G., Tedeschi, L. G., Pratt, C., Oliver, P. M., Palmer, R. A., et al. (2018). Species delimitation in the *Gehyra nana* (Squamata: Gekkonidae) complex: cryptic and divergent

morphological evolution in the Australian Monsoonal Tropics, with the description of four new species. *Zootaxa*, 4403, 201-244.

Doughty, P., Pepper, M. & Keogh, J. S. (2010). Morphological and molecular assessment of the *Diplodactylus savagei* species complex in the Pilbara region, Western Australia, with a description of a new species. *Zootaxa*, 2393, 33-45.

earthbyte.org (2020). ICONS atlas: AUS - Canning Basin. Available from <https://www.earthbyte.org/Resources/ICONS/AUS/CanningBasin/AUS.CanningBasin.html>

Eastwood, J. A., Doughty, P., Hutchinson, M. N. & Pepper, M. (2020). Revision of *Lucasium stenodactylus* (Boulenger, 1896; Squamata: Diplodactylidae), with the resurrection of *L. woodwardi* (Fry, 1914) and the description of a new species from south-central Australia. *Records of the Western Australian Museum*, 35, 063-086.

EOD (2020) eBird Observation Dataset, for years 2000 – 2020. Downloaded from <https://www.gbif.org/doi/10.15468/dl.wuzr3z>.

EPBC (1999). Environment Protection and Biodiversity Conservation Act. Commonwealth of Australia.

Geoscience Australia (2020). Canning Basin. Australian Government. Available from <http://www.ga.gov.au/scientific-topics/energy/province-sedimentary-basin-geology/petroleum/onshore-australia/canning-basin>

GHD (2010). Report for Broome Road Industrial Area. Preliminary Environmental Impact Assessment and Biological Survey report. Prepared for LandCorp.

GHD (2015). Broome Road Subdivision Area, Conservation Significant Fauna Survey report. Prepared for LandCorp.

Government of Western Australia (2020). Canning Basin. Department of Mines, Industry Regulation and Safety. Available from <https://www.dmp.wa.gov.au/Petroleum/Canning-Basin-10989.aspx>

Isaacs, J. (1987). *Bush Food: Aboriginal Food and Herbal Medicine*. Sydney: Weldons Pty Ltd.

Johnson, K. A. & Roff, D. (1982). The western quoll, *Dasyurus geoffroii* (Dasyuridae, Marsupialia) in the Northern Territory: historical records from venerable sources. Pp. 221-226 in *Carnivorous marsupials*. (M. Archer, ed.). Sydney: Royal Zoological Society of New South Wales.

Lassak, E. V. & McCarthy, T. (2001). *Australian Medicinal Plants*. Sydney: New Holland Publishers (Australia) Pty Ltd.

Latz, P. (1995). *Bushfires and Bushtucker: Aboriginal plant use in Central Australia*. Alice Springs: IAD Press.

Oliver, P. M., Laver, R. J., Martins, F. D. M., Pratt, R. C., Hunjan, S. & Moritz, C. C. (2017). A novel hotspot of vertebrate endemism and an evolutionary refugium in tropical Australia. *Diversity and Distributions*, 23, 53-66.

Purdie, S., Patrick, P., Nyadbi, L., Thomas, P., Fletcher, D., Barrett, G., Ramsay, M., Wathi, D., Martin, M., Thomas, M., Thomas, M., Widalji, P., Kofod, F., Thomas, S., Mung Mung, P., Peters, R., Blythe, J. & Wightman, G. (2018). *Gija plants and animals: Aboriginal flora and*

fauna knowledge from the east Kimberley, north Australia. Northern Territory Botanical Bulletin number 47. Published jointly by Batchelor Institute Press and NT Department of Environment and Natural Resources.

WA Government (2018). Biodiversity Conservation Regulations 2018.

# Appendix A

## A.1 Significant Species

Table A1 The number of records of significant species of animals recorded from the Canning Basin. The EPBC Act and BC Act statuses are presented in the last two columns

Class	Order	Family	Common name	Species	No. records		Status	
					ALA	WA	EPBC	WA
Mammalia	Dasyuromorphia	Dasyuridae	brush-tailed mulgara	<i>Dasyercus blythi</i>		70		P4
Mammalia	Dasyuromorphia	Dasyuridae	crest-tailed mulgara	<i>Dasyercus cristicauda</i>		62		P4
Mammalia	Dasyuromorphia	Dasyuridae		<i>Dasyercus sp.</i>		13		P4
Mammalia	Dasyuromorphia	Dasyuridae	western quoll	<i>Dasyurus geoffroii</i>		1	VU	VU
Mammalia	Dasyuromorphia	Dasyuridae	northern quoll	<i>Dasyurus hallucatus</i>	5	1046	EN	EN
Mammalia	Dasyuromorphia	Dasyuridae	red-tailed phascogale	<i>Phascogale calura</i>		5	VU	CD
Mammalia	Dasyuromorphia	Dasyuridae	brush-tailed phascogale	<i>Phascogale tapoatafa kimberleyensis</i>		15	VU	VU
Mammalia	Dasyuromorphia	Dasyuridae	long-tailed dunnart	<i>Sminthopsis longicaudata</i>		4		P4
Mammalia	Dasyuromorphia	Myrmecobiidae	numbat	<i>Myrmecobius fasciatus</i>		1	EN	EN
Mammalia	Peramelemorphia	Peramelidae	golden bandicoot	<i>Isoodon auratus auratus</i>		84	VU	VU
Mammalia	Peramelemorphia	Peramelidae	Shark Bay bandicoot	<i>Perameles bougainville</i>		8	EN	VU
Mammalia	Peramelemorphia	Peramelidae	desert bandicoot	<i>Perameles eremiana</i>		2	EX	EX
Mammalia	Peramelemorphia	Thylacomyidae	bilby	<i>Macrotis lagotis</i>	21	1152	VU	VU
Mammalia	Peramelemorphia	Thylacomyidae	lesser bilby	<i>Macrotis leucura</i>		4	EX	EX
Mammalia	Notoryctemorphia	Notoryctidae	northern marsupial mole	<i>Notoryctes caurinus</i>	13	38		P4
Mammalia	Notoryctemorphia	Notoryctidae	southern marsupial mole	<i>Notoryctes typhlops</i>		3		P4
Mammalia	Notoryctemorphia	Notoryctidae		<i>Notoryctes sp.</i>		5		P4
Mammalia	Diprotodontia	Pseudocheiridae	rock ringtail possum	<i>Petroseudes dahli</i>		9		P3
Mammalia	Diprotodontia	Phalangeridae	common brushtail possum	<i>Trichosurus vulpecula arnhemensis</i>		17		VU
Mammalia	Diprotodontia	Phalangeridae	scaly-tailed possum	<i>Wyulda squamicaudata</i>		7		P4
Mammalia	Diprotodontia	Macropodidae	central hare-wallaby	<i>Lagorchestes asomatus</i>		2	EX	EX
Mammalia	Diprotodontia	Macropodidae	spectacled hare-wallaby	<i>Lagorchestes conspicillatus leichardti</i>		436		P4
Mammalia	Diprotodontia	Macropodidae	rufous hare-wallaby (south western)	<i>Lagorchestes hirsutus hirsutus</i>		11	EX	EX
Mammalia	Diprotodontia	Macropodidae	crescent nailtail wallaby	<i>Onychogalea lunata</i>		1	EX	EX

Class	Order	Family	Common name	Species	No. records		Status	
					ALA	WA	EPBC	WA
Mammalia	Diprotodontia	Macropodidae	nabarlek	<i>Petrogale concinna monastria</i>		4	EN	EN
Mammalia	Diprotodontia	Macropodidae		<i>Petrogale lateralis lateralis</i>		37	EN	EN
Mammalia	Diprotodontia	Macropodidae		<i>Petrogale lateralis centralis</i>		1	VU	VU
Mammalia	Diprotodontia	Macropodidae		<i>Petrogale lateralis kimberleyensis</i>		45	VU	EN
Mammalia	Diprotodontia	Potoroidae	burrowing bettong	<i>Bettongia lesueur graii</i>		2	EX	EX
Mammalia	Paenungulata	Dugonidae	dugong	<i>Dugong dugon</i>		28		OS
Mammalia	Rodentia	Muridae	brush-tailed tree-rat	<i>Conilurus penicillatus penicillatus</i>		1	VU	VU
Mammalia	Rodentia	Muridae	water rat	<i>Hydromys chrysogaster</i>		4		P4
Mammalia	Rodentia	Muridae	short-tailed mouse	<i>Leggadina lakedownensis</i>		92		P4
Mammalia	Rodentia	Muridae	golden-backed tree-rat	<i>Mesembriomys macrurus</i>		44		P4
Mammalia	Rodentia	Muridae	western pebble-mound mouse	<i>Pseudomys chapmani</i>		42		P4
Mammalia	Chiroptera	Hipposideridae	northern leaf-nosed bat	<i>Hipposideros stenotis</i>		21		P2
Mammalia	Chiroptera	Molossidae	northern coastal free-tailed bat	<i>Mormopterus cobourgianus</i>		5		P1
Mammalia	Chiroptera	Rhinonycteridae	orange leaf-nosed bat	<i>Rhinonicteris aurantia</i>	8	55		VU/P4
Mammalia	Chiroptera	Rhinonycteridae	orange leaf-nosed bat (Pilbara)	<i>Rhinonicteris aurantia</i>		23	VU	VU
Mammalia	Chiroptera	Megadermatidae	ghost bat	<i>Macroderma gigas</i>		94	VU	VU
Mammalia	Chiroptera	Vespertilionidae	yellow-lipped cave bat	<i>Vespadelus douglasorum</i>		45		P2
Mammalia	Artiodactyla	Balaenopteridae	humpback whale	<i>Megaptera novaeangliae</i>		10	VU	CD
Mammalia	Artiodactyla	Physeteridae	sperm whale	<i>Physeter macrocephalus</i>		1	MI	VU
Mammalia	Artiodactyla	Delphinidae	Australian snubfin dolphin	<i>Orcaella heinsohni</i>		7	MI	P4
Mammalia	Artiodactyla	Delphinidae	Indo-Pacific humpback dolphin	<i>Sousa sahalensis</i>		1	MI	P4
Mammalia	Artiodactyla	Delphinidae	spinner dolphin	<i>Stenella longirostris</i>		1	MI	P4
Aves	Anseriformes	Anatidae	garganey	<i>Anas querquedula</i>	1		MI	MI
Aves	Galliformes	Megapodiidae	malleefowl	<i>Leipoa ocellata</i>		1	VU	VU
Aves	Procellariiformes	Procellariidae	northern giant petrel	<i>Macronectes halli</i>		1	MI	MI
Aves	Procellariiformes	Procellariidae	streaked shearwater	<i>Calonectris leucomelas</i>		2	MI	MI
Aves	Procellariiformes	Procellariidae	wedge-tailed shearwater	<i>Ardenna pacifica</i>		2	MI	MI
Aves	Procellariiformes	Procellariidae	short-tailed shearwater	<i>Ardenna tenuirostris</i>		1	MI	MI
Aves	Procellariiformes	Procellariidae	Hutton's shearwater	<i>Puffinus huttoni</i>		4		EN
Aves	Procellariiformes	Procellariidae	Bulwer's petrel	<i>Bulweria bulwerii</i>		1	MI	MI
Aves	Procellariiformes	Hydrobatidae	Wilson's storm petrel	<i>Oceanites oceanicus</i>		4	MI	MI
Aves	Phaethontiformes	Phaethontidae	red-tailed tropicbird	<i>Phaethon rubricauda</i>		1	MI	P4
Aves	Pelecaniformes	Threskiornithidae	glossy ibis	<i>Plegadis falcinellus</i>	874	14	MI	MI
Aves	Pelecaniformes	Ardeidae	Australasian bittern	<i>Botaurus poiciloptilus</i>		1	EN	EN
Aves	Pelecaniformes	Ardeidae	Australian little bittern	<i>Ixobrychus dubius</i>		2		P4

Class	Order	Family	Common name	Species	No. records		Status	
					ALA	WA	EPBC	WA
Aves	Pelecaniformes	Ardeidae	cattle egret	<i>Ardea ibis</i>	131			
Aves	Pelecaniformes	Ardeidae	eastern great egret	<i>Ardea modesta</i>	1496			
Aves	Suliformes	Fregatidae	greater frigatebird	<i>Fregata minor</i>		2	MI	MI
Aves	Suliformes	Fregatidae	lesser frigatebird	<i>Fregata ariel</i>	96	24	MI	MI
Aves	Suliformes	Sulidae	masked booby	<i>Sula dactylatra</i>		2	MI	MI
Aves	Suliformes	Sulidae	brown booby	<i>Sula leucogaster</i>	220	7	MI	MI
Aves	Accipitriformes	Pandionidae	osprey	<i>Pandion cristatus</i>	315	20	MI	MI
Aves	Accipitriformes	Accipitridae	letter-winged kite	<i>Elanus scriptus</i>		6		P4
Aves	Accipitriformes	Accipitridae	red goshawk	<i>Erythrotriorchis radiatus</i>		1	VU	VU
Aves	Accipitriformes	Accipitridae	white-bellied sea-eagle	<i>Haliaeetus leucogaster</i>	653			
Aves	Charadriiformes	Recurvirostridae	black-winged stilt	<i>Himantopus himantopus</i>	647			
Aves	Charadriiformes	Recurvirostridae	red-necked avocet	<i>Recurvirostra novaehollandiae</i>	208			
Aves	Charadriiformes	Charadriidae	Pacific golden plover	<i>Pluvialis fulva</i>	163	15	MI	MI
Aves	Charadriiformes	Charadriidae	grey plover	<i>Pluvialis squatarola</i>	312	18	MI	MI
Aves	Charadriiformes	Charadriidae	little ringed plover	<i>Charadrius dubius</i>	1		MI	MI
Aves	Charadriiformes	Charadriidae	red-capped plover	<i>Charadrius ruficapillus</i>	558			
Aves	Charadriiformes	Charadriidae	lesser sand plover	<i>Charadrius mongolus</i>	265	16	EN	EN
Aves	Charadriiformes	Charadriidae	greater sand plover	<i>Charadrius leschenaultii</i>	566	88	MI	VU
Aves	Charadriiformes	Charadriidae	Oriental plover	<i>Charadrius veredus</i>	47	15	MI	MI
Aves	Charadriiformes	Rostratulidae	Australian painted snipe	<i>Rostratula australis</i>	57	20	EN	EN
Aves	Charadriiformes	Scolopacidae	pin-tailed snipe	<i>Gallinago stenura</i>		2	MI	MI
Aves	Charadriiformes	Scolopacidae	Swinhoe's snipe	<i>Gallinago megala</i>		4	MI	MI
Aves	Charadriiformes	Scolopacidae	Asian dowitcher	<i>Limnodromus semipalmatus</i>	109	4	MI	MI
Aves	Charadriiformes	Scolopacidae	black-tailed godwit	<i>Limosa limosa</i>	341	11	MI	MI
Aves	Charadriiformes	Scolopacidae	bar-tailed godwit	<i>Limosa lapponica</i>	1030	29	MI	CR/MI
Aves	Charadriiformes	Scolopacidae	bar-tailed godwit	<i>Limosa lapponica menzbieri</i>		27	CR	CR
Aves	Charadriiformes	Scolopacidae	little curlew	<i>Numenius minutus</i>	497	47	MI	MI
Aves	Charadriiformes	Scolopacidae	whimbrel	<i>Numenius phaeopus</i>	1242	8	MI	MI
Aves	Charadriiformes	Scolopacidae	eastern curlew	<i>Numenius madagascariensis</i>	766	10	CR	CR
Aves	Charadriiformes	Scolopacidae	common redshank	<i>Tringa totanus</i>		61	MI	MI
Aves	Charadriiformes	Scolopacidae	marsh sandpiper	<i>Tringa stagnatilis</i>	65	12	MI	MI
Aves	Charadriiformes	Scolopacidae	common greenshank	<i>Tringa nebularia</i>	1705	29	MI	MI
Aves	Charadriiformes	Scolopacidae	wood sandpiper	<i>Tringa glareola</i>	11	28	MI	MI

Class	Order	Family	Common name	Species	No. records		Status	
					ALA	WA	EPBC	WA
Aves	Charadriiformes	Scolopacidae	grey-tailed tattler	<i>Tringa brevipes</i>		6	MI	P4
Aves	Charadriiformes	Scolopacidae	terek sandpiper	<i>Xenus cinereus</i>	491	10	MI	MI
Aves	Charadriiformes	Scolopacidae	common sandpiper	<i>Actitis hypoleucos</i>	335	11	MI	MI
Aves	Charadriiformes	Scolopacidae	ruddy turnstone	<i>Arenaria interpres</i>	438	29	MI	MI
Aves	Charadriiformes	Scolopacidae	great knot	<i>Calidris tenuirostris</i>	587	66	CR	CR
Aves	Charadriiformes	Scolopacidae	red knot	<i>Calidris canutus</i>	1017	50	EN	EN
Aves	Charadriiformes	Scolopacidae	sanderling	<i>Calidris alba</i>	75	30	MI	MI
Aves	Charadriiformes	Scolopacidae	red-necked stint	<i>Calidris ruficollis</i>	433	115	MI	MI
Aves	Charadriiformes	Scolopacidae	long-toed stint	<i>Calidris subminuta</i>	8	1	MI	MI
Aves	Charadriiformes	Scolopacidae	pectoral sandpiper	<i>Calidris melanotos</i>	1		MI	MI
Aves	Charadriiformes	Scolopacidae	sharp-tailed sandpiper	<i>Calidris acuminata</i>	135	29	MI	MI
Aves	Charadriiformes	Scolopacidae	curlew sandpiper	<i>Calidris ferruginea</i>	386	40	CR	CR
Aves	Charadriiformes	Scolopacidae	broad-billed sandpiper	<i>Limicola falcinellus</i>	53	3	MI	MI
Aves	Charadriiformes	Scolopacidae	ruff	<i>Philomachus pugnax</i>	1		MI	MI
Aves	Charadriiformes	Scolopacidae	red-necked phalarope	<i>Phalaropus lobatus</i>		13	MI	MI
Aves	Charadriiformes	Glareolidae	Australian pratincole	<i>Stiltia isabella</i>	827			
Aves	Charadriiformes	Glareolidae	Oriental pratincole	<i>Glareola maldivarum</i>	324	18	MI	MI
Aves	Charadriiformes	Laridae	common noddy	<i>Anous stolidus</i>		4	MI	MI
Aves	Charadriiformes	Laridae	gull-billed tern	<i>Gelochelidon nilotica</i>	523	38	MI	MI
Aves	Charadriiformes	Laridae	Caspian tern	<i>Hydroprogne caspia</i>	412	18	MI	MI
Aves	Charadriiformes	Laridae	crested tern	<i>Thalasseus bergii</i>		12	MI	MI
Aves	Charadriiformes	Laridae	little tern	<i>Sternula albifrons</i>	248	8	MI	MI
Aves	Charadriiformes	Laridae	bridled tern	<i>Onychoprion anaethetus</i>		1	MI	MI
Aves	Charadriiformes	Laridae	roseate tern	<i>Sterna dougallii</i>	17	24	MI	MI
Aves	Charadriiformes	Laridae	black-naped tern	<i>Sterna sumatrana</i>		1	MI	MI
Aves	Charadriiformes	Laridae	common tern	<i>Sterna hirundo</i>		15	MI	MI
Aves	Charadriiformes	Laridae	white-winged black tern	<i>Chlidonias leucopterus</i>		11	MI	MI
Aves	Charadriiformes	Stercorariidae	Arctic skua	<i>Stercorarius parasiticus</i>		1	MI	MI
Aves	Columbiformes	Columbidae	partridge pigeon	<i>Geophaps smithii blaauwi</i>		14	VU	VU
Aves	Cuculiformes	Cuculidae	Oriental cuckoo	<i>Cuculus optatus</i>		3	MI	MI
Aves	Strigiformes	Tytonidae	masked owl	<i>Tyto novaehollandiae kimberli</i>		3	VU	P1
Aves	Strigiformes	Tytonidae	masked owl	<i>Tyto novaehollandiae novaehollandiae</i>		2		P3
Aves	Strigiformes	Strigidae	barking owl	<i>Ninox connivens connivens</i>		6		P3
Aves	Apodiformes	Apodidae	fork-tailed swift	<i>Apus pacificus</i>	134	35	MI	MI
Aves	Coraciiformes	Meropidae	rainbow bee-eater	<i>Merops ornatus</i>	3529			



Class	Order	Family	Common name	Species	No. records		Status	
					ALA	WA	EPBC	WA
Aves	Falconiformes	Falconidae	grey falcon	<i>Falco hypoleucos</i>		8		VU
Aves	Falconiformes	Falconidae	peregrine falcon	<i>Falco peregrinus</i>		18		OS
Aves	Psittaciformes	Psittacidae	night parrot	<i>Pezoporus occidentalis</i>	4	1	EN	CR
Aves	Psittaciformes	Psittacidae	princess parrot	<i>Polytelis alexandrae</i>	35	63	VU	P4
Aves	Passeriformes	Maluridae	purple-crowned fairywren	<i>Malurus coronatus coronatus</i>		16	EN	EN
Aves	Passeriformes	Maluridae	striated grasswren	<i>Amytornis striatus striatus</i>		44		P4
Aves	Passeriformes	Pachycephalidae	crested shrike-tit	<i>Falcunculus frontatus whitei</i>		1	VU	P3
Aves	Passeriformes	Hirundinidae	barn swallow	<i>Hirundo rustica</i>	277	7	MI	MI
Aves	Passeriformes	Hirundinidae	red-rumped swallow	<i>Cecropis daurica</i>		3	MI	MI
Aves	Passeriformes	Estrildidae	Gouldian finch	<i>Erythrura gouldiae</i>		45	EN	P4
Aves	Passeriformes	Motacillidae	yellow wagtail	<i>Motacilla flava</i>		7	MI	MI
Aves	Passeriformes	Motacillidae	grey wagtail	<i>Motacilla cinerea</i>		1	MI	MI
Reptilia	Crocodylia	Crocodylidae	freshwater crocodile	<i>Crocodylus johnstoni</i>		48		OS
Reptilia	Crocodylia	Crocodylidae	saltwater crocodile	<i>Crocodylus porosus</i>		3	MI	OS
Reptilia	Testudines	Cheloniidae	green turtle	<i>Chelonia mydas</i>		22	VU	VU
Reptilia	Testudines	Cheloniidae	hawksbill turtle	<i>Eretmochelys imbricata</i>		4	VU	VU
Reptilia	Testudines	Cheloniidae	olive ridley turtle	<i>Lepidochelys olivacea</i>		3	EN	EN
Reptilia	Testudines	Cheloniidae	flatback turtle	<i>Natator depressus</i>		639	VU	VU
Reptilia	Squamata	Agamidae	gravel dragon	<i>Cryptagama aurita</i>		5		P1
Reptilia	Squamata	Scincidae	Airlie Island skink	<i>Ctenotus angusticeps</i>	8	38	VU	P3
Reptilia	Squamata	Scincidae	ten-lined skink	<i>Ctenotus decaneurus yampiensis</i>		7		P2
Reptilia	Squamata	Scincidae	spotted ctenotus	<i>Ctenotus uber johnstonei</i>		64		P2
Reptilia	Squamata	Scincidae	a burrowing skink	<i>Lerista praefrontalis</i>	1	1		VU
Reptilia	Squamata	Scincidae	a burrowing skink	<i>Lerista robusta</i>		7		P1
Reptilia	Squamata	Scincidae	a burrowing skink	<i>Lerista separanda</i>		38		P2
Reptilia	Squamata	Scincidae	great desert skink	<i>Liopholis kintorei</i>	7	27	VU	VU
Reptilia	Squamata	Varanidae	Dampierland goanna	<i>Varanus sparnus</i>		9		P1
Reptilia	Squamata	Typhlopidae	a blind snake	<i>Anilius micromma</i>		2		P1
Reptilia	Squamata	Typhlopidae	a blind snake	<i>Anilius troglodytes</i>		6		P1
Reptilia	Squamata	Typhlopidae	a blind snake	<i>Anilius yampiensis</i>		1		P2
Reptilia	Squamata	Boidae	Pilbara olive python	<i>Liasis olivaceus barroni</i>		2	VU	VU
Reptilia	Squamata	Elapidae	a burrowing snake	<i>Simoselaps minimus</i>		14		P2
Reptilia	Squamata	Elapidae	short-nosed sea snake	<i>Aipysurus apraefrontalis</i>		2	CR	CR



Class	Order	Family	Common name	Species	No. records		Status	
					ALA	WA	EPBC	WA
Chondrichthyes	Carcharhiniformes	Carcharhinidae	northern river shark	<i>Glyphis garricki</i>		7	EN	P1
Chondrichthyes	Pristiformes	Pristidae	dwarf sawfish	<i>Pristis clavata</i>		7	VU	P1
Chondrichthyes	Pristiformes	Pristidae	freshwater sawfish	<i>Pristis pristis</i>		73	VU	P3
Actinopterygii	Atheriniformes	Atherinidae	freckled hardyhead	<i>Craterocephalus lentiginosus</i>		42		P2
Actinopterygii	Perciformes	Terapontidae	Greenway's grunter	<i>Hannia greenwayi</i>		3		P1
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Amplirhagada astuta</i>		6		VU
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Kimboraga micromphala</i>		11		P2
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Kimboraga yammerana</i>		2		P1
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Mouldingia occidentalis</i>		4		CR
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Rhagada gibbensis</i>		2		P1
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Westraltrachia alterna</i>		14		VU
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Westraltrachia inopinata</i>		1		VU
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Westraltrachia lievreana</i>		2		P2
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Westraltrachia recta</i>		2		P1
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Westraltrachia subtila</i>		1		P2
Gastropoda	Stylommatophora	Camaenidae	a snail	<i>Westraltrachia turbinata</i>		3		VU
Gastropoda	Stylommatophora	Charopidae	a snail	<i>Pilsbrycharopa tumida</i>		1		P1

Table A2 The number of records of significant species of plants recorded from the Canning Basin. Abbreviations: CR = critically endangered; EN = endangered; VU = vulnerable. Columns 1 to 4 are Priority 1 to 4 listed species in Western Australia under the DBCA conservation codes. All plants in the Table are Angiosperms except for the last three

Family	Species	CR		EN		VU		1		2		3		4	
		TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB
Acanthaceae	<i>Rostellularia adscendens</i> var. <i>latifolia</i>														2
Aizoaceae	<i>Trianthema kimberleyi</i>							1	1						
Amaranthaceae	<i>Amaranthus centralis</i>														2
Amaranthaceae	<i>Ptilotus marduguru</i>									2	6				
Amaranthaceae	<i>Ptilotus mollis</i>														4
Amaranthaceae	<i>Ptilotus royceanus</i>								3						
Amaranthaceae	<i>Ptilotus wilsonii</i>								1						
Apiaceae	<i>Trachymene dusenii</i>													3	
Apiaceae	<i>Trachymene oleracea</i> subsp. <i>Sedimenta</i>							1	1						
Apiaceae	<i>Trachymene villosa</i>								1						
Apocynaceae	<i>Parsonsia kimberleyensis</i>								2						
Araceae	<i>Colocasia esculenta</i> var. <i>aquatilis</i>														3
Asclepiadaceae	<i>Gymnanthera cunninghamii</i>												1	3	
Asteraceae	<i>Acmella grandiflora</i> var. <i>brachyglossa</i>													1	
Asteraceae	<i>Blumea pungens</i>									1	3				
Asteraceae	<i>Olearia arguta</i> var. <i>arguta</i>														1
Asteraceae	<i>Olearia arguta</i> var. glabrous narrow leaves (E.M. Goble-Garratt 610)														2
Asteraceae	<i>Peripleura spechtii</i> var. <i>kimberleyensis</i>														
Asteraceae	<i>Pterocaulon globuliflorum</i>														
Asteraceae	<i>Pterocaulon xenicum</i>														7
Asteraceae	<i>Thespidium basiflorum</i>								4						
Asteraceae	<i>Vittadinia</i> sp. A Kimberley Flora (R.J. Cranfield 6527)														2
Boraginaceae	<i>Heliotropium aenigmatum</i>									3					
Boraginaceae	<i>Heliotropium calvariavis</i>									2					
Boraginaceae	<i>Heliotropium foveolatum</i>									4					
Boraginaceae	<i>Heliotropium geocharis</i>									4					
Boraginaceae	<i>Heliotropium murinum</i>														1
Boraginaceae	<i>Heliotropium parviantrum</i>									3					
Boryaceae	<i>Borya subulata</i>														

Family	Species	CR		EN		VU		1		2		3		4	
		TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB
Brassicaceae	<i>Lepidium amelum</i>							4	6						
Byblidaceae	<i>Byblis guehoi</i>								2						
Chenopodiaceae	<i>Atriplex eremitis</i>								6						
Chenopodiaceae	<i>Atriplex flabelliformis</i>												1		
Chenopodiaceae	<i>Maireana prosthocochaeta</i>												1		
Chenopodiaceae	<i>Maireana</i> sp. Patience (C.P. Campbell 1052)							2	2						
Chenopodiaceae	<i>Tecticornia enodis</i>								1						
Combretaceae	<i>Terminalia kumpaja</i>												20		
Convolvulaceae	<i>Bonamia oblongifolia</i>												5		
Convolvulaceae	<i>Ipomoea gracilis</i>														1
Convolvulaceae	<i>Ipomoea johnsoniana</i>								2						
Convolvulaceae	<i>Ipomoea tolmerana</i> subsp. <i>occidentalis</i>							1	5						
Convolvulaceae	<i>Polymeria</i> sp. Broome (K.F. Kenneally 9759)												6		
Cucurbitaceae	<i>Cucumis</i> sp. Bastion Range (A.A. Mitchell et al. AAM 10710)								6						
Cyperaceae	<i>Cyperus haspan</i> subsp. <i>haspan</i>								1						
Cyperaceae	<i>Cyperus victoriensis</i>								1						
Cyperaceae	<i>Eleocharis philippinensis</i>												1		
Cyperaceae	<i>Fimbristylis dictyocolea</i>								1						
Cyperaceae	<i>Fimbristylis pachyptera</i>								1						
Cyperaceae	<i>Fimbristylis pilifera</i>							1	1						
Cyperaceae	<i>Fimbristylis sieberiana</i>											1	5		
Cyperaceae	<i>Fimbristylis</i> sp. H Kimberley Flora (Carr 3944 & Beaglehole 47722)								1						
Cyperaceae	<i>Fimbristylis</i> sp. Shay Gap (K.R. Newbey 10293)								1						
Cyperaceae	<i>Fimbristylis subaristata</i>								1						
Cyperaceae	<i>Schoenus centralis</i>								1						
Cyperaceae	<i>Schoenus punctatus</i>												2		
Cyperaceae	<i>Scleria polycarpa</i>								1						
Elatinaceae	<i>Elatine macrocalyx</i>											1	1		
Euphorbiaceae	<i>Croton aridus</i>												6		
Euphorbiaceae	<i>Phyllanthus fuernrohrii</i>												1		
Euphorbiaceae	<i>Sauropus arenosus</i>												5		
Fabaceae	<i>Alysicarpus major</i>											2	8		

Family	Species	CR		EN		VU		1		2		3		4	
		TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB
Fabaceae	<i>Alysicarpus suffruticosus</i>									2	5				
Fabaceae	<i>Aphyllodium beardii</i>							4							
Fabaceae	<i>Aphyllodium glossocarpum</i>											3	6		
Fabaceae	<i>Aphyllodium parvifolium</i>							2	5						
Fabaceae	<i>Crotalaria smithiana</i>												1		
Fabaceae	<i>Cullen candidum</i>							3	5						
Fabaceae	<i>Daviesia arthropoda</i>													1	
Fabaceae	<i>Dendrolobium cheelii</i>											1	2		
Fabaceae	<i>Glycine falcata</i>													1	
Fabaceae	<i>Glycine pindanica</i>											5	19		
Fabaceae	<i>Indigofera ammobia</i>											3	14		
Fabaceae	<i>Indigofera gilesii</i>													3	
Fabaceae	<i>Isotropis browniae</i>													1	
Fabaceae	<i>Isotropis parviflora</i>										3				
Fabaceae	<i>Isotropis winneckeii</i>							2	2						
Fabaceae	<i>Rhynchosia rostrata</i>							1	1						
Fabaceae	<i>Rothia indica</i> subsp. <i>australis</i>													3	
Fabaceae	<i>Tephrosia andrewii</i>											2	8		
Fabaceae	<i>Tephrosia pedleyi</i>													10	
Fabaceae	<i>Tephrosia rosea</i> var. <i>Napier Range</i> (C.R. Dunlop 7760 & B.K. Simon)													6	
Fabaceae	<i>Tephrosia rosea</i> var. <i>Port Hedland</i> (A.S. George 1114)								2						
Fabaceae	<i>Tephrosia</i> sp. <i>Central</i> (P.K. Latz 17037)													2	
Fabaceae	<i>Tephrosia</i> sp. <i>Kununurra</i> (T. Handasyde TH00 250)										1				
Fabaceae	<i>Tephrosia</i> sp. <i>Mistake Creek</i> (A.C. Beaglehole 54424)													2	
Fabaceae	<i>Tephrosia</i> sp. <i>Yampi</i> (A.N. Start per R.L. Barrett RLB 2291)													4	
Fabaceae	<i>Tephrosia vallecuate</i>													5	
Goodeniaceae	<i>Dampiera atriplicina</i>												1	8	
Goodeniaceae	<i>Goodenia byrnesii</i>												1	6	
Goodeniaceae	<i>Goodenia crenata</i>													2	
Goodeniaceae	<i>Goodenia gibbosa</i>													1	
Goodeniaceae	<i>Goodenia hartiana</i>									3	24				
Goodeniaceae	<i>Goodenia lunata</i>								1						

Family	Species	CR		EN		VU		1		2		3		4	
		TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB
Goodeniaceae	<i>Goodenia lyrata</i>											1	3		
Goodeniaceae	<i>Goodenia modesta</i>											2	8		
Goodeniaceae	<i>Goodenia pedicellata</i>							1	2						
Goodeniaceae	<i>Goodenia sepalosa</i> var. <i>glandulosa</i>												14		
Goodeniaceae	<i>Goodenia strangfordii</i>							1	3						
Goodeniaceae	<i>Goodenia suffrutescens</i>							3	3						
Goodeniaceae	<i>Goodenia virgata</i>										3				
Haemodoraceae	<i>Haemodorum basalticum</i>										1				
Haemodoraceae	<i>Haemodorum capitatum</i>								4						
Hemerocallidaceae	<i>Corynotheca asperata</i>												4		
Lamiaceae	<i>Clerodendrum inerme</i>								1						
Lamiaceae	<i>Physopsis chrysotricha</i>									1					
Lamiaceae	<i>Pityrodia obliqua</i>												2		
Lamiaceae	<i>Prostanthera centralis</i>												10		
Lamiaceae	<i>Dasymalla chorisepala</i>												8		
Lamiaceae	<i>Teucrium</i> sp. Sturt Creek (A.A. Mitchell 5536)							1	1						
Laxmanniaceae	<i>Thysanotus</i> sp. Desert East of Newman (R.P. Hart 964)										5				
Lentibulariaceae	<i>Utricularia bidentate</i>												5		
Lentibulariaceae	<i>Utricularia muelleri</i>												1		
Lentibulariaceae	<i>Utricularia stellaris</i>								2						
Lentibulariaceae	<i>Utricularia tubulata</i>								1						
Loranthaceae	<i>Dendrophthoe odontocalyx</i>												2		
Lythraceae	<i>Lythrum paradoxum</i>												2		
Malvaceae	<i>Hibiscus calcicola</i>										1				
Malvaceae	<i>Hibiscus kenneallyi</i>												1		
Malvaceae	<i>Hibiscus marenitensis</i>												4		
Malvaceae	<i>Lawrenzia</i> sp. Anna Plains (N.T. Burbidge 1433)												12		
Menyanthaceae	<i>Nymphoides beaglensis</i>											8	10		
Mimosaceae	<i>Acacia capillaris</i>										9				
Mimosaceae	<i>Acacia fecunda</i>								2						
Mimosaceae	<i>Acacia gloeotricha</i>							3	14						
Mimosaceae	<i>Acacia manipularis</i>								1						

Family	Species	CR		EN		VU		1		2		3		4	
		TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB
Mimosaceae	<i>Acacia monticola</i> x <i>tumida</i> var. <i>kulparn</i>														15
Mimosaceae	<i>Acacia phacelia</i>														2
Mimosaceae	<i>Acacia</i> sp. Edgar Range (S.D. Hopper 1763)								6						
Myoporaceae	<i>Eremophila forrestii</i> subsp. <i>viridis</i>														1
Myoporaceae	<i>Eremophila jamesiorum</i>										7				
Myoporaceae	<i>Eremophila maculata</i> subsp. <i>Filifolia</i>								3						
Myoporaceae	<i>Eremophila pallida</i>										3	8			
Myoporaceae	<i>Eremophila</i> sp. Rudall River (P.G. Wilson 10512)											7			
Myoporaceae	<i>Eremophila tenella</i>							1	7						
Myoporaceae	<i>Eremophila viscimarginata</i>							1	1						
Myrtaceae	<i>Corymbia paractia</i>								27						
Myrtaceae	<i>Corymbia pedimontana</i>								3						
Myrtaceae	<i>Corymbia</i> sp. Yampi Peninsula (R.L. Barrett & A.N. Start RLB 2280)								1						
Myrtaceae	<i>Eucalyptus distans</i>								1						
Myrtaceae	<i>Eucalyptus mooreana</i>					6	32								
Myrtaceae	<i>Eucalyptus revelata</i>										18				
Myrtaceae	<i>Eucalyptus sparsa</i>														1
Myrtaceae	<i>Lophostemon grandiflorus</i> subsp. <i>grandiflorus</i>														6
Myrtaceae	<i>Melaleuca nanophylla</i>														3
Nymphaeaceae	<i>Nymphaea carpentariae</i>								4						
Nymphaeaceae	<i>Nymphaea kimberleyensis</i>								4						
Olacaceae	<i>Olax sparteae</i>										2	4			
Orchidaceae	<i>Eulophia bicallosa</i>														3
Phrymaceae	<i>Elacholoma</i> sp. Showy flowers (C.P. Campbell 1762)								3						
Pittosporaceae	<i>Pittosporum moluccanum</i>														1
Poaceae	<i>Aristida polyclados</i>								3						11
Poaceae	<i>Elionurus tylophorus</i>										6				
Poaceae	<i>Eragrostis crateriformis</i>														5
Poaceae	<i>Eragrostis lanicaulis</i>														5
Poaceae	<i>Eragrostis petraea</i>								1						
Poaceae	<i>Eragrostis spartinoides</i>														2
Poaceae	<i>Eriochloa fatmensis</i>														2

Family	Species	CR		EN		VU		1		2		3		4	
		TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB
Poaceae	<i>Neurachne lanigera</i>							2							
Poaceae	<i>Sporobolus blakei</i>												2		
Poaceae	<i>Triodia acutispicula</i>												4		
Poaceae	<i>Triodia infesta</i>										3				
Poaceae	<i>Triodia latzii</i>												1		
Poaceae	<i>Triodia pascoeana</i>							4							
Poaceae	<i>Triodia</i> sp. Hidden Island (T. Handasyde TH 6109)							7							
Poaceae	<i>Triodia</i> sp. Kurungal (A.B. Craig ABC 1675)							1							
Polygalaceae	<i>Comesperma sabulosum</i>											3	8		
Polygalaceae	<i>Comesperma viscidulum</i>														1
Proteaceae	<i>Grevillea aspera</i>							1	1						
Proteaceae	<i>Grevillea miniata</i>														4
Rhamnaceae	<i>Alphitonia excelsa</i>										1				
Rubiaceae	<i>Gardenia gardineri</i>												1		
Rubiaceae	<i>Kohautia australiensis</i>									1	1				
Rubiaceae	<i>Spermacoce</i> sp. Mt Hart (D. Dureau 159)								1						
Rutaceae	<i>Boronia pauciflora</i>												2	5	
Solanaceae	<i>Nicotiana umbratical</i>													2	
Sterculiaceae	<i>Dicarpidium</i> sp. B Kimberley Flora (G.J. Keighery 10138)							1							
Sterculiaceae	<i>Dicarpidium</i> sp. Mt Leake (T. Willing 469)													4	
Sterculiaceae	<i>Helicteres</i> sp. Mertens Falls (K.F. Kenneally 7887)													2	
Sterculiaceae	<i>Seringia exastia</i>	3	67												
Sterculiaceae	<i>Seringia katatona</i>												7	1	
Sterculiaceae	<i>Seringia x katatona</i>													39	
Stylidiaceae	<i>Stylidium costulatum</i>													7	
Stylidiaceae	<i>Stylidium pindanicum</i>													17	
Stylidiaceae	<i>Stylidium prophyllum</i>													2	
Tiliaceae	<i>Corchorus fitzroyensis</i>													24	
Tiliaceae	<i>Corchorus</i> sp. Yarrrie (J. Bull & D. Roberts CAL 01.05)									2					
Tiliaceae	<i>Triumfetta hapala</i>							2	3						
Viscaceae	<i>Viscum ovalifolium</i>								1						
Zygophyllaceae	<i>Tribulopsis marliesiae</i>													7	

Family	Species	CR		EN		VU		1		2		3		4	
		TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB	TPFL	HERB
Zygophyllaceae	<i>Tribulopsis</i> sp. Koolan Island (K.F. Kenneally 8278)							1							
Zygophyllaceae	<i>Tribulus minutus</i>							1							
Amaranthaceae	<i>Gomphrena cucullata</i>											1	8		
Amaranthaceae	<i>Gomphrena leptophylla</i>												2		
Amaranthaceae	<i>Gomphrena pusilla</i>									1	10				
Asteraceae	<i>Diodontium filifolium</i>							1							
Asteraceae	<i>Minuria macrorhiza</i>										3				
Asteraceae	<i>Pentalepis eclipoides</i> subsp. <i>Hirsuta</i>							1							
Asteraceae	<i>Pentalepis walcottii</i>												1		
Convolvulaceae	<i>Jacquemontia</i> sp. Broome (A.A. Mitchell 3028)								7						
Convolvulaceae	<i>Jacquemontia</i> sp. Keep River (J.L. Egan 5015)								2						
Cyperaceae	<i>Bulbostylis burbridgeae</i>														1
Cyperaceae	<i>Fuirena incrassata</i>											2	6		
Cyperaceae	<i>Fuirena nudiflora</i>											1	2		
Cyperaceae	<i>Schoenoplectiella humillima</i>										4				
Euphorbiaceae	<i>Euphorbia australis</i> var. <i>glabra</i>													1	
Euphorbiaceae	<i>Euphorbia clementii</i>											4	6		
Goodeniaceae	<i>Scaevola</i> sp. Isabella Range (R.D. Royce 1918)								2						
Loganiaceae	<i>Mitrasacme katjarranka</i>								2						
Loganiaceae	<i>Mitrasacme</i> sp. I Kimberley Flora (K.F. Kenneally s.n. PERTH 04115058)								1						
Loranthaceae	<i>Decaisnina biangulata</i>													9	
Najadaceae	<i>Najas foveolata</i>													1	
Pandanaceae	<i>Pandanus spiralis</i> var. <i>flammeus</i>			2	2										
Solanaceae	<i>Solanum carduiforme</i>										1				
Solanaceae	<i>Solanum leopoldense</i>												32		
Solanaceae	<i>Solanum oligandrum</i>										7				
Solanaceae	<i>Solanum vansittartense</i>										1				
Vitaceae	<i>Cayratia cardiophylla</i>										4				
Ophioglossaceae	<i>Helminthostachys zeylanica</i> *													1	
Pteridaceae	<i>Acrostichum aureum</i> *								1						
Erpodiaceae	<i>Erpodium coronatum</i> var. <i>australiense</i> **										1	1			

\*Pteridophyte \*\*Equisetopsida



## A.2 Species of cultural significance

Table A3 A list of plants with known Indigenous uses that occur in the Canning Basin. The list only includes plants that were identified at the level of species or genus. The references are given only as the surname of the first author. References are: Brock (2001), Isaacs (1987), Lassak & McCarthy (2001), Latz (1995), Pascoe (2019) and Purdie et al. (2018).

Family	Species	Reference
Acanthaceae	<i>Avicennia marina</i>	Brock; Isaacs
Amaranthaceae	<i>Achyranthes aspera</i>	Latz (Table 4)
Amaranthaceae	<i>Amaranthus mitchellii</i>	Isaacs; Latz (Table 5)
Amaranthaceae	<i>Ptilotus helipteroides</i>	Latz (Table 3)
Amaranthaceae	<i>Ptilotus obovatus</i>	Latz (Table 3)
Amaryllidaceae	<i>Curculigo ensifolia</i>	Purdie
Anacardiaceae	<i>Buchanania obovata (oblongifolia)</i>	Brock; Isaacs; Purdie
Apocynaceae	<i>Alstonia actinophylla</i>	Brock; Isaacs
Apocynaceae	<i>Brachystelma glabriflorum</i>	Purdie
Apocynaceae	<i>Cynanchum floribundum</i>	Latz (Table 3)
Apocynaceae	<i>Cynanchum vinimale</i>	Purdie
Apocynaceae	<i>Marsdenia australis</i>	Latz (Table 3)
Apocynaceae	<i>Marsdenia viridiflora</i>	Purdie
Apocynaceae	<i>Rhyncharrhena linearis</i>	Isaacs; Latz (Table 3)
Apocynaceae	<i>Wrightia saligna</i>	Purdie
Aponogetonaceae	<i>Aponogeton elongatus</i>	Isaacs
Aponogetonaceae	<i>Aponogeton euryspermus</i>	Purdie
Araceae	<i>Colocasia esculenta</i>	Brock; Isaacs; Purdie
Araceae	<i>Typhonium liliifolium</i>	Isaacs; Purdie
Arecaceae	<i>Livistona humilis</i>	Brock; Isaacs
Arecaceae	<i>Livistona victoriae</i>	Purdie
Asparagaceae	<i>Asparagus racemosus</i>	Isaacs; Lassak
Asteraceae	<i>Apowollastonia verbesinoides</i>	Purdie
Asteraceae	<i>Calocephalus platycephalus</i>	Latz (Table 3)
Asteraceae	<i>Centipeda minima</i>	Latz (Table 6)
Asteraceae	<i>Pluchea tetranthera</i>	Latz (Table 3)
Asteraceae	<i>Pterocaulon serrulatum</i>	Isaacs; Latz (Table 3); Purdie
Asteraceae	<i>Pterocaulon sphacelatum</i>	Isaacs; Latz (Table 5); Purdie
Asteraceae	<i>Sonchus oleraceus</i>	Purdie
Asteraceae	<i>Streptoglossa bubakii</i>	Isaacs
Asteraceae	<i>Streptoglossa odora</i>	Purdie
Asteraceae	<i>Streptoglossa odora</i>	Latz (Table 3); Purdie
Bignoniaceae	<i>Dolichandrone occidentalis</i>	Purdie
Bixaceae	<i>Cochlospermum fraseri</i>	Purdie
Bixaceae	<i>Cochlospermum fraseri</i>	Brock; Purdie
Blechnaceae	<i>Blechnum orientale</i>	Brock
Boraginaceae	<i>Trichodesma zeylanicum</i>	Brock
Brassicaceae	<i>Lepidium oxytrichum</i>	Isaacs
Brassicaceae	<i>Lepidium phlebopetalum</i>	Isaacs
Burseraceae	<i>Canarium australicum</i>	Brock; Isaacs
Campanulaceae	<i>Lobelia arnhemica</i>	Purdie
Cannabaceae	<i>Celtis philippensis</i>	Brock
Cannabaceae	<i>Celtis strychnoides</i>	Purdie

Family	Species	Reference
		Isaacs; Latz (Table 3); Purdie
Capparaceae	<i>Capparis lasiantha</i>	
Capparaceae	<i>Capparis mitchellii</i>	Isaacs; Latz (Table 6)
Capparaceae	<i>Capparis spinosa</i>	Latz (Table 3)
		Brock; Isaacs; Latz (Table 7); Purdie
Capparaceae	<i>Capparis umbonata</i>	Isaacs; Latz (Table 5); Purdie
Capparaceae	<i>Carissa lanceolata</i>	Purdie
Casuarinaceae	<i>Allocasuarina decaisneana</i>	Latz (Table 6)
Celastraceae	<i>Denhamia obscura</i>	Brock; Isaacs
Characeae	<i>Chara</i> spp.	Purdie
Chenopodiaceae	<i>Atriplex elachophylla</i>	Latz (Table 3)
Chenopodiaceae	<i>Dysphania kalpari</i>	Latz (Table 3)
Chenopodiaceae	<i>Dysphania rhadinostachya</i>	Latz (Table 3)
Chenopodiaceae	<i>Einadia nutans</i>	Latz (Table 3)
Chenopodiaceae	<i>Enchylaena tomentosa</i>	Latz (Table 3)
Chenopodiaceae	<i>Rhagodia eremaea</i>	Latz (Table 3)
Chenopodiaceae	<i>Tecticornia verrucosa</i>	Latz (Table 3)
Chrysobalanaceae	<i>Parinari nonda</i>	Isaacs
Cleomaceae	<i>Cleome viscosa</i>	Brock; Isaacs; Latz (Table 3)
Colchicaceae	<i>Wurmbea deserticola</i>	Latz (Table 3)
Combretaceae	<i>Lumnitzera racemosa</i>	Brock
Combretaceae	<i>Terminalia arostrata</i>	Purdie
Combretaceae	<i>Terminalia bursarina</i>	Purdie
Combretaceae	<i>Terminalia canescens</i>	Purdie
Combretaceae	<i>Terminalia carpentariae</i>	Brock; Isaacs
Combretaceae	<i>Terminalia ferdinandiana</i>	Brock; Isaacs
Combretaceae	<i>Terminalia grandiflora</i>	Brock; Isaacs
Combretaceae	<i>Terminalia platyphylla</i>	Brock; Purdie
Combretaceae	<i>Terminalia platyptera</i>	Purdie
Combretaceae	<i>Terminalia pterocarya</i>	Brock
Combretaceae	<i>Terminalia volucris</i>	Purdie
Commelinaceae	<i>Cartonema parviflorum</i>	Isaacs
Commelinaceae	<i>Cartonema spicatum</i>	Brock
Commelinaceae	<i>Murdannia graminea</i>	Isaacs
Convolvulaceae	<i>Convolvulus erubescens</i>	Isaacs; Latz (Table 7)
Convolvulaceae	<i>Evolvulus alsinoides</i>	Latz (Table 4)
Convolvulaceae	<i>Ipomoea abrupta</i>	Brock; Isaacs
Convolvulaceae	<i>Ipomoea costata</i>	Latz (Table 3); Purdie
Convolvulaceae	<i>Ipomoea gracilis</i>	Isaacs
Convolvulaceae	<i>Ipomoea pes-caprae</i>	Brock
Convolvulaceae	<i>Ipomoea polymorpha</i>	Latz (Table 4)
Convolvulaceae	<i>Ipomoea</i> sp. aff. <i>graminea</i>	Purdie
Convolvulaceae	<i>Operculina brownii</i>	Isaacs
		Isaacs; Latz (Table 3); Purdie
Convolvulaceae	<i>Tinospora smilacina</i>	Isaacs; Latz (Table 6); Purdie
Cucurbitaceae	<i>Citrullus colocynthis</i>	Purdie
Cucurbitaceae	<i>Citrullus lanatus</i>	Latz (Table 6)
Cucurbitaceae	<i>Cucumis melo</i>	Purdie
Cucurbitaceae	<i>Cucumis picrocarpus</i>	Purdie
Cucurbitaceae	<i>Diplocyclos palmatus</i>	Lassak
Cupressaceae	<i>Callitris columellaris</i>	Isaacs

Family	Species	Reference
Cupressaceae	<i>Callitris glaucophylla</i>	Latz (Table 3)
Cupressaceae	<i>Callitris intratropica</i>	Brock; Purdie
Cycadaceae	<i>Cycas pruinosa</i>	Purdie
Cyperaceae	<i>Cyperus bifax</i>	Lassak
Cyperaceae	<i>Cyperus bulbosus</i>	Isaacs; Latz (Table 6); Pascoe; Purdie
Cyperaceae	<i>Cyperus ixiocarpus</i>	Latz (Table 5)
Cyperaceae	<i>Cyperus vaginatus</i>	Latz (Table 5)
Cyperaceae	<i>Eleocharis dulcis</i>	Isaacs; Lassak
Cyperaceae	<i>Fimbristylis oxystachya</i>	Latz (Table 3)
Dioscoreaceae	<i>Dioscorea bulbifera</i>	Isaacs; Purdie
Dioscoreaceae	<i>Dioscorea transversa</i>	Isaacs; Purdie
Dioscoreaceae	<i>Dodonaea lanceolata</i>	Isaacs
Dioscoreaceae	<i>Dodonaea polyzyga</i>	Purdie
Droseraceae	<i>Drosera indica</i>	Latz (Table 3)
Ebenaceae	<i>Diospyros maritima</i>	Brock
Erythroxylaceae	<i>Erythroxylum ellipticum</i>	Brock; Purdie
Euphorbiaceae	<i>Bridelia tomentosa</i>	Brock
Euphorbiaceae	<i>Euphorbia drummondii</i>	Isaacs; Latz (Table 3)
Euphorbiaceae	<i>Euphorbia tannensis</i>	Latz (Table 3)
Euphorbiaceae	<i>Mallotus nesophilus</i>	Brock; Isaacs; Purdie
Fabaceae	<i>Abrus precatorius</i>	Brock; Purdie
Fabaceae	<i>Acacia acradenia</i>	Latz (Table 3); Purdie
Fabaceae	<i>Acacia adsurgens</i>	Latz (Table 3)
Fabaceae	<i>Acacia ampliceps</i>	Purdie et al. (2018)
Fabaceae	<i>Acacia ancistrocarpa</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Acacia aneura</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Acacia colei</i>	Latz (Table 3); Purdie
Fabaceae	<i>Acacia coriacea</i>	Isaacs; Latz (Table 3, 6); Purdie
Fabaceae	<i>Acacia cowleana</i>	Isaacs; Latz (Table 3); Purdie
Fabaceae	<i>Acacia cuthbertsonii</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Acacia dictyophleba</i>	Latz (Table 3)
Fabaceae	<i>Acacia difficilis</i>	Brock; Isaacs
Fabaceae	<i>Acacia dunnii</i>	Brock; Isaacs
Fabaceae	<i>Acacia estrophiolata</i>	Isaacs; Latz (Table 5)
Fabaceae	<i>Acacia gonocarpa</i>	Brock
Fabaceae	<i>Acacia hemignosta</i>	Brock; Latz (Table 3); Purdie
Fabaceae	<i>Acacia holosericea</i>	Brock; Isaacs; Latz (Table 6); Purdie
Fabaceae	<i>Acacia humifusa</i>	Brock
Fabaceae	<i>Acacia inaequilatera</i>	Latz (Table 3)
Fabaceae	<i>Acacia kempeana</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Acacia lamprocarpa</i>	Purdie
Fabaceae	<i>Acacia latescens</i>	Brock
Fabaceae	<i>Acacia ligulata</i>	Isaacs; Latz (Table 3) Isaacs; Latz (Table 3);
Fabaceae	<i>Acacia lysiphloia</i>	Purdie
Fabaceae	<i>Acacia maitlandii</i>	Latz (Table 3)
Fabaceae	<i>Acacia minyura</i>	Latz (Table 3)
Fabaceae	<i>Acacia monticola</i>	Latz (Table 3)

Family	Species	Reference
Fabaceae	<i>Acacia multisiliqua</i>	Brock
Fabaceae	<i>Acacia murrayana</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Acacia olgana</i>	Latz (Table 3)
Fabaceae	<i>Acacia oswaldii</i>	Latz (Table 3)
Fabaceae	<i>Acacia pachyacra</i>	Latz (Table 3)
Fabaceae	<i>Acacia paraneura</i>	Latz (Table 3)
Fabaceae	<i>Acacia pellita</i>	Isaacs; Purdie
Fabaceae	<i>Acacia platycarpa</i>	Brock; Purdie
Fabaceae	<i>Acacia plectocarpa</i>	Brock; Purdie
Fabaceae	<i>Acacia pruinocarpa</i>	Latz (Table 3)
Fabaceae	<i>Acacia pyrifolia</i>	Isaacs
Fabaceae	<i>Acacia ramulosa</i>	Latz (Table 3)
Fabaceae	<i>Acacia salicina</i>	Isaacs; Latz (Table 7)
Fabaceae	<i>Acacia spondylophylla</i>	Latz (Table 3)
Fabaceae	<i>Acacia stenophylla</i>	Isaacs
Fabaceae	<i>Acacia stipuligera</i>	Latz (Table 3)
Fabaceae	<i>Acacia tenuissima</i>	Latz (Table 3)
Fabaceae	<i>Acacia tetragonophylla</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Acacia tumida</i>	Isaacs; Purdie
Fabaceae	<i>Acacia umbellata</i>	Purdie
Fabaceae	<i>Acacia victoriae</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Bossiaea bossiaeooides</i>	Brock
Fabaceae	<i>Canavalia papuana</i>	Purdie
Fabaceae	<i>Canavalia rosea</i>	Brock
Fabaceae	<i>Crotalaria cunninghamii</i>	Isaacs; Latz (Table 3)
Fabaceae	<i>Crotalaria eremaea</i>	Latz (Table 3)
Fabaceae	<i>Erythrina vespertilio</i>	Brock; Isaacs; Latz (Table 3); Purdie
Fabaceae	<i>Erythrophleum chlorostachys</i>	Brock; Isaacs; Purdie
Fabaceae	<i>Leptosema chambersii</i>	Latz (Table 3)
Fabaceae	<i>Lysiphyllum cunninghamii</i>	Purdie
Fabaceae	<i>Lotus australis</i>	Isaacs
Fabaceae	<i>Lotus corniculatus</i>	Isaacs
Fabaceae	<i>Nomismia rhomboidea</i>	Purdie
Fabaceae	<i>Parkinsonia aculeata</i>	Latz (Table 3)
Fabaceae	<i>Petalostylis cassioides</i>	Latz (Table 5)
Fabaceae	<i>Senna artemisioides</i>	Latz (Table 5)
Fabaceae	<i>Senna notabilis</i>	Purdie
Fabaceae	<i>Senna planitiicola</i>	Latz (Table 3)
Fabaceae	<i>Senna pleurocarpa</i>	Latz (Table 3)
Fabaceae	<i>Sesbania cannabina</i>	Purdie
Fabaceae	<i>Sesbania formosa</i>	Brock; Purdie
Fabaceae	<i>Sesbania simpliciuscula</i>	Purdie
Fabaceae	<i>Tamarindus indica</i>	Brock; Isaacs
Fabaceae	<i>Tephrosia phaeosperma</i>	Isaacs
Fabaceae	<i>Tephrosia rosea</i>	Purdie
Fabaceae	<i>Trigonella suavissima</i>	Pascoe
Fabaceae	<i>Vachellia farnesiana</i>	Purdie
Fabaceae	<i>Vigna lanceolata</i>	Isaacs; Latz (Table 3); Purdie
Fabaceae	<i>Vigna vexillata</i>	Brock; Isaacs; Purdie
Flagellariaceae	<i>Flagellaria indica</i>	Brock; Isaacs
Gentianaceae	<i>Centaurium erythraea</i>	Isaacs

Family	Species	Reference
Goodeniaceae	<i>Goodenia cycloptera</i>	Latz (Table 4)
Goodeniaceae	<i>Goodenia lunata</i>	Latz (Table 3)
Goodeniaceae	<i>Scaevola spinescens</i>	Isaacs
Goodeniaceae	<i>Scaevola taccada</i>	Isaacs
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>	Latz (Table 3)
Gyrostemonaceae	<i>Gyrostemon ramulosus</i>	Latz (Table 3)
Gyrostemonaceae	<i>Gyrostemon tepperi</i>	Latz (Table 3)
Haemodoraceae	<i>Haemodorum ensifolium</i>	Purdie
Hernandiaceae	<i>Gyrocarpus americanus</i>	Brock; Isaacs; Purdie
Hydrocharitaceae	<i>Ottelia ovalifolia</i>	Purdie
Hydrocharitaceae	<i>Vallisneria nana</i>	Purdie
Juncaginaceae	<i>Cycnogeton dubium</i>	Purdie
		Brock; Latz (Table 3);
Lamiaceae	<i>Clerodendrum floribundum</i>	Purdie
Lamiaceae	<i>Clerodendrum inerme</i>	Brock
Lamiaceae	<i>Dicrastylis exsuccosa</i>	Latz (Table 3)
Lamiaceae	<i>Newcastelia spodiotricha</i>	Latz (Table 3)
Lamiaceae	<i>Ocimum caryophyllum</i>	Purdie
Lamiaceae	<i>Plectranthus congestus</i>	Lassak
Lamiaceae	<i>Premna acuminata</i>	Brock; Purdie
Lamiaceae	<i>Premna serratifolia</i>	Brock
Lamiaceae	<i>Prostanthera striatiflora</i>	Isaacs
Lamiaceae	<i>Vitex acuminata</i>	Brock; Purdie
Lamiaceae	<i>Vitex glabrata</i>	Brock; Isaacs; Purdie
Lauraceae	<i>Cassytha filiformis</i>	Brock; Purdie
Lecythidaceae	<i>Barringtonia acutangula</i>	Brock; Isaacs; Purdie
Lecythidaceae	<i>Planchonia careya</i>	Brock; Isaacs
Loganiaceae	<i>Strychnos lucida</i>	Brock
Loranthaceae	<i>Amyema maidenii</i>	Isaacs
Loranthaceae	<i>Amyema sanguinea</i>	Brock
Loranthaceae	<i>Lysiana exocarpi</i>	Isaacs
Loranthaceae	<i>Lysiana subfalcata</i>	Purdie
Lythraceae	<i>Pemphis acidula</i>	Brock; Isaacs
Malvaceae	<i>Abelmoschus ficulneus</i>	Purdie
Malvaceae	<i>Abutilon indicum</i>	Brock
Malvaceae	<i>Abutilon leucopetalum</i>	Latz (Table 3)
Malvaceae	<i>Abutilon otocarpum</i>	Latz (Table 3)
Malvaceae	<i>Adansonia gregorii</i>	Brock; Isaacs; Purdie
Malvaceae	<i>Brachychiton diversifolius</i>	Brock
Malvaceae	<i>Brachychiton fitzgeraldianus</i>	Purdie
Malvaceae	<i>Brachychiton gregorii</i>	Isaacs; Latz (Table 3)
Malvaceae	<i>Brachychiton tuberculatus</i>	Purdie
Malvaceae	<i>Grewia breviflora</i>	Brock
Malvaceae	<i>Grewia retusifolia</i>	Brock; Isaacs; Purdie
Malvaceae	<i>Hibiscus heterophyllus</i>	Isaacs
Malvaceae	<i>Hibiscus leptocladus</i>	Brock
Malvaceae	<i>Hibiscus meraukensis</i>	Brock
Malvaceae	<i>Sida platycalyx</i>	Latz (Table 3)
Malvaceae	<i>Sida rohlenae</i>	Latz (Table 3)
Malvaceae	<i>Thespesia populneoides</i>	Brock
Marsileaceae	<i>Marsilea crenata</i>	Purdie
Marsileaceae	<i>Marsilea drummondii</i>	Isaacs; Pascoe
Meliaceae	<i>Owenia reticulata</i>	Latz (Table 3)

Family	Species	Reference
Meliaceae	<i>Owenia vernicosa</i>	Brock; Purdie
Menispermaceae	<i>Tinospora smilacina</i>	Isaacs; Latz (Table 3)
Menyanthaceae	<i>Nymphoides crenata</i>	Purdie
Montiaceae	<i>Calandrinia balonensis</i>	Isaacs
Montiaceae	<i>Calandrinia uniflora</i>	Purdie
Moraceae	<i>Ficus aculeata</i>	Purdie
Moraceae	<i>Ficus coronulata</i>	Brock; Purdie
Moraceae	<i>Ficus opposita</i>	Brock; Isaacs
Moraceae	<i>Ficus platypoda</i>	Brock; Isaacs; Latz (Table 6); Purdie
Moraceae	<i>Ficus racemosa</i>	Brock; Isaacs; Purdie
Moraceae	<i>Ficus scobina</i>	Brock
Moraceae	<i>Ficus virens</i>	Brock; Purdie
Musaceae	<i>Musa acuminata</i>	Isaacs; Pascoe
Myrtaceae	<i>Calytrix achaeta</i>	Brock
Myrtaceae	<i>Calytrix brownii</i>	Brock; Purdie
Myrtaceae	<i>Calytrix exstipulata</i>	Brock; Purdie
Myrtaceae	<i>Corymbia abbreviata</i>	Purdie
Myrtaceae	<i>Corymbia bella</i>	Purdie
Myrtaceae	<i>Corymbia collina</i>	Purdie
Myrtaceae	<i>Corymbia confertiflora</i>	Purdie
Myrtaceae	<i>Corymbia grandifolia</i>	Purdie
Myrtaceae	<i>Corymbia flavescens</i>	Purdie
Myrtaceae	<i>Corymbia dichromophloia</i>	Purdie
Myrtaceae	<i>Corymbia polycarpa</i>	Purdie
Myrtaceae	<i>Corymbia ptychocarpa</i>	Purdie
Myrtaceae	<i>Corymbia terminalis</i>	Purdie
Myrtaceae	<i>Corymbia opaca</i>	Purdie
Myrtaceae	<i>Eucalyptus alba</i>	Brock
Myrtaceae	<i>Eucalyptus brevifolia</i>	Purdie
Myrtaceae	<i>Eucalyptus camaldulensis</i>	Brock; Isaacs; Latz (Table 6); Purdie
Myrtaceae	<i>Eucalyptus confluens</i>	Purdie
Myrtaceae	<i>Eucalyptus coolabah</i>	Latz (Table 6)
Myrtaceae	<i>Eucalyptus cupularis</i>	Purdie
Myrtaceae	<i>Eucalyptus gamophylla</i>	Latz (Table 6)
Myrtaceae	<i>Eucalyptus herbertiana</i>	Brock; Purdie
Myrtaceae	<i>Eucalyptus jensenii</i>	Purdie
Myrtaceae	<i>Eucalyptus leucophloia</i>	Latz (Table 3)
Myrtaceae	<i>Eucalyptus limitaris</i>	Purdie
Myrtaceae	<i>Eucalyptus microtheca</i>	Isaacs; Purdie
Myrtaceae	<i>Eucalyptus miniata</i>	Brock; Isaacs; Purdie
Myrtaceae	<i>Eucalyptus obconica</i>	Purdie
Myrtaceae	<i>Eucalyptus oxymitra</i>	Latz (Table 3)
Myrtaceae	<i>Eucalyptus pachyphylla</i>	Latz (Table 3)
Myrtaceae	<i>Eucalyptus pruinosa</i>	Brock; Purdie
Myrtaceae	<i>Eucalyptus sessilis</i>	Latz (Table 3)
Myrtaceae	<i>Eucalyptus socialis</i>	Latz (Table 3)
Myrtaceae	<i>Eucalyptus tectifera</i>	Brock
Myrtaceae	<i>Eucalyptus tephrodes</i>	Purdie
Myrtaceae	<i>Leptospermum madidum</i>	Purdie
Myrtaceae	<i>Lophostemon grandiflorus</i>	Purdie
Myrtaceae	<i>Melaleuca alsophila</i>	Purdie



Family	Species	Reference
Myrtaceae	<i>Melaleuca argentea</i>	Brock
Myrtaceae	<i>Melaleuca bracteata</i>	Purdie
Myrtaceae	<i>Melaleuca cajuputi</i>	Brock; Isaacs
Myrtaceae	<i>Melaleuca dealbata</i>	Brock
Myrtaceae	<i>Melaleuca glomerata</i>	Latz (Table 3)
Myrtaceae	<i>Melaleuca lasiandra</i>	Latz (Table 3); Purdie
Myrtaceae	<i>Melaleuca leucadendra</i>	Brock; Purdie
Myrtaceae	<i>Melaleuca minutifolia</i>	Purdie
Myrtaceae	<i>Melaleuca nervosa</i>	Brock; Purdie
Myrtaceae	<i>Melaleuca viridiflora</i>	Brock; Purdie
Myrtaceae	<i>Osbornia octodonta</i>	Brock
Myrtaceae	<i>Syzygium angophoroides</i>	Brock
Myrtaceae	<i>Syzygium eucalyptoides</i>	Brock; Purdie
Myrtaceae	<i>Syzygium suborbiculare</i>	Isaacs
Myrtaceae	<i>Verticordia cunninghamii</i>	Brock
Nyctaginaceae	<i>Boerhavia diffusa</i>	Isaacs
Nymphaeaceae	<i>Nymphaea violacea</i>	Purdie
Opiliaceae	<i>Opilia amentacea</i>	Brock; Purdie
Orchidaceae	<i>Cymbidium canaliculatum</i>	Brock; Isaacs; Purdie
Oxalidaceae	<i>Oxalis corniculata</i>	Isaacs
Pandanaceae	<i>Pandanus aquaticus</i>	Brock; Purdie
Pandanaceae	<i>Pandanus spiralis</i>	Brock; Isaacs; Purdie
Phyllanthaceae	<i>Antidesma ghaesembilla</i>	Brock; Isaacs; Purdie
Phyllanthaceae	<i>Flueggea virosa</i>	Brock; Purdie
Phyllanthaceae	<i>Phyllanthus maderaspatensis</i>	Latz (Table 7)
		Brock; Isaacs; Lassak;
Picrodendraceae	<i>Petalostigma pubescens</i>	Purdie
Picrodendraceae	<i>Petalostigma quadriloculare</i>	Isaacs
Plantaginaceae	<i>Stemodia grossa</i>	Isaacs
Plantaginaceae	<i>Stemodia lythrifolia</i>	Isaacs; Purdie
Plantaginaceae	<i>Stemodia viscosa</i>	Isaacs; Latz (Table 3)
Plumbaginaceae	<i>Aegialitis annulata</i>	Brock
Poaceae	<i>Aristida inaequiglumis</i>	Latz (Table 3)
Poaceae	<i>Arundinella nepalensis</i>	Purdie
Poaceae	<i>Astrebla pectinata</i>	Latz (Table 4)
Poaceae	<i>Chrysopogon fallax</i>	Latz (Table 3); Purdie
Poaceae	<i>Cymbopogon ambiguus</i>	Isaacs; Latz (Table 3)
Poaceae	<i>Cymbopogon bombycinus</i>	Purdie
Poaceae	<i>Cymbopogon procerus</i>	Purdie
Poaceae	<i>Cynodon dactylon</i>	Purdie
Poaceae	<i>Dactyloctenium radulans</i>	Isaacs; Latz (Table 3)
Poaceae	<i>Cyperus javanicus</i>	Purdie
Poaceae	<i>Cyperus vaginatus</i>	Purdie
Poaceae	<i>Enteropogon acicularis</i>	Latz (Table 3)
Poaceae	<i>Eragrostis eriopoda</i>	Latz (Table 5)
Poaceae	<i>Eragrostis laniflora</i>	Latz (Table 6)
Poaceae	<i>Eragrostis tenellula</i>	Purdie
Poaceae	<i>Eriochloa pseudoacrotricha</i>	Latz (Table 4)
Poaceae	<i>Heteropogon contortus</i>	Lassak; Purdie
Poaceae	<i>Imperata cylindrica</i>	Isaacs
Poaceae	<i>Mnesithea rottboellioides</i>	Purdie
		Latz (Table 3); Pascoe;
Poaceae	<i>Panicum decompositum</i>	Purdie

Family	Species	Reference
Poaceae	<i>Panicum effusum</i>	Isaacs
Poaceae	<i>Panicum laevinode</i>	Pascoe
Poaceae	<i>Paspalidium basicladum</i>	Latz (Table 3)
Poaceae	<i>Phragmites karka</i>	Purdie
Poaceae	<i>Spinifex longifolius</i>	Isaacs
Poaceae	<i>Sporobolus australasicus</i>	Purdie
Poaceae	<i>Themeda avenacea</i>	Latz (Table 3)
Poaceae	<i>Themeda triandra</i>	Pascoe
Poaceae	<i>Triodia basedowii</i>	Latz (Table 3)
Poaceae	<i>Triodia longiceps</i>	Latz (Table 3)
Poaceae	<i>Triodia bitextura</i>	Purdie
Poaceae	<i>Triodia pungens</i>	Latz (Table 3); Purdie
Poaceae	<i>Triodia stenostachya</i>	Purdie
Poaceae	<i>Yakirra australiensis</i>	Latz (Table 3)
Pontederiaceae	<i>Monochoria cyanea</i>	Purdie
Portulacaceae	<i>Portulaca intraterranea</i>	Latz (Table 4)
Portulacaceae	<i>Portulaca oleracea</i>	Isaacs; Latz (Table 5)
Portulacaceae	<i>Portulaca pilosa</i>	Isaacs; Latz (Table 3)
Primulaceae	<i>Aegiceras corniculatum</i>	Brock
Proteaceae	<i>Banksia dentata</i>	Brock; Isaacs
Proteaceae	<i>Grevillea dimidiata</i>	Brock
Proteaceae	<i>Grevillea eriostachya</i>	Isaacs
Proteaceae	<i>Grevillea heliosperma</i>	Brock; Isaacs
Proteaceae	<i>Grevillea mimosoides</i>	Brock
Proteaceae	<i>Grevillea pteridifolia</i>	Brock; Purdie
Proteaceae	<i>Grevillea pyramidalis</i>	Brock; Isaacs; Purdie
Proteaceae	<i>Grevillea refracta</i>	Purdie
Proteaceae	<i>Grevillea stenobotrya</i>	Latz (Table 3)
Proteaceae	<i>Grevillea striata</i>	Isaacs; Latz (Table 5); Purdie
Proteaceae	<i>Grevillea wickhamii</i>	Latz (Table 6); Purdie
Proteaceae	<i>Hakea arborescens</i>	Brock; Isaacs; Purdie
Proteaceae	<i>Hakea chordophylla</i>	Latz (Table 5)
Proteaceae	<i>Hakea divaricata</i>	Latz (Table 3)
Proteaceae	<i>Hakea macrocarpa</i>	Isaacs; Latz (Table 6); Purdie
Proteaceae	<i>Persoonia falcata</i>	Purdie
Proteaceae	<i>Stenocarpus cunninghamii</i>	Brock; Isaacs; Purdie
Rhamnaceae	<i>Alphitonia excelsa</i>	Brock
Rhamnaceae	<i>Ventilago viminalis</i>	Brock; Isaacs
Rhamnaceae	<i>Ziziphus quadrilocularis</i>	Isaacs; Latz (Table 3); Purdie
Rhizophoraceae	<i>Bruguiera exaristata</i>	Purdie
Rhizophoraceae	<i>Bruguiera parviflora</i>	Brock
Rhizophoraceae	<i>Carallia brachiata</i>	Brock
Rhizophoraceae	<i>Carallia brachiata</i>	Brock; Purdie
Rhizophoraceae	<i>Ceriops tagal</i>	Brock; Purdie
Rhizophoraceae	<i>Rhizophora stylosa</i>	Brock; Isaacs
Rubiaceae	<i>Aidia racemosa</i>	Brock; Isaacs
Rubiaceae	<i>Gardenia dacryoides</i>	Brock
Rubiaceae	<i>Gardenia megasperma</i>	Purdie
Rubiaceae	<i>Morinda citrifolia</i>	Brock; Isaacs
Rubiaceae	<i>Nauclea orientalis</i>	Brock; Isaacs
Rubiaceae	<i>Nauclea orientalis</i>	Brock; Isaacs; Purdie
Rubiaceae	<i>Timonius timon</i>	Brock



Family	Species	Reference
Santalaceae	<i>Exocarpos latifolius</i>	Brock
Santalaceae	<i>Santalum acuminatum</i>	Isaacs; Latz (Table 3)
Santalaceae	<i>Santalum lanceolatum</i>	Isaacs; Latz (Table 3); Purdie
Sapindaceae	<i>Atalaya hemiglauca</i>	Latz (Table 3); Purdie
Sapindaceae	<i>Atalaya variifolia</i>	Brock
Sapindaceae	<i>Distichostemon hispidulus</i>	Brock
Sapindaceae	<i>Dodonaea platyptera</i>	Brock
Sapindaceae	<i>Dodonaea viscosa</i>	Isaacs; Latz (Table 3)
Sapindaceae	<i>Ganophyllum falcatum</i>	Brock; Isaacs
Sapotaceae	<i>Mimusops elengi</i>	Brock
Sapotaceae	<i>Planchonella arnhemica</i>	Isaacs
Sapotaceae	<i>Planchonella pohlmaniana</i>	Brock; Isaacs
Sapotaceae	<i>Sersalisia sericea</i>	Purdie
Scrophulariaceae	<i>Eremophila alternifolia</i>	Isaacs
Scrophulariaceae	<i>Eremophila elderi</i>	Latz (Table 3)
Scrophulariaceae	<i>Eremophila gilesii</i>	Isaacs; Latz (Table 3)
Scrophulariaceae	<i>Eremophila latrobei</i>	Isaacs; Latz (Table 3)
Scrophulariaceae	<i>Eremophila longifolia</i>	Isaacs
Scrophulariaceae	<i>Myoporum acuminatum</i>	Latz (Table 3)
Scrophulariaceae	<i>Myoporum montanum</i>	Isaacs; Purdie
Solanaceae	<i>Duboisia hopwoodii</i>	Isaacs; Latz (Table 3)
Solanaceae	<i>Nicotiana benthamiana</i>	Isaacs; Latz (Table 3); Purdie
Solanaceae	<i>Nicotiana cavicola</i>	Isaacs
Solanaceae	<i>Nicotiana rosulata</i>	Latz (Table 6)
Solanaceae	<i>Nicotiana velutina</i>	Latz (Table 3)
Solanaceae	<i>Solanum centrale</i>	Isaacs; Latz (Table 3); Pascoe
Solanaceae	<i>Solanum chippendalei</i>	Isaacs; Latz (Table 3)
Solanaceae	<i>Solanum cleistogamum</i>	Isaacs; Latz (Table 6)
Solanaceae	<i>Solanum echinatum</i>	Purdie
Solanaceae	<i>Solanum ellipticum</i>	Latz (Table 3)
Solanaceae	<i>Solanum esuriale</i>	Isaacs; Latz (Table 3)
Solanaceae	<i>Solanum gilesii</i>	Latz (Table 3)
Solanaceae	<i>Solanum lasiophyllum</i>	Isaacs
Solanaceae	<i>Solanum nigrum</i>	Latz (Table 4)
Solanaceae	<i>Solanum orbiculatum</i>	Isaacs; Latz (Table 3)
Solanaceae	<i>Solanum phlomoides</i>	Isaacs
Surianaceae	<i>Stylobasium spathulatum</i>	Latz (Table 6)
Taccaceae	<i>Tacca leontopetaloides</i>	Brock; Isaacs
Typhaceae	<i>Typha domingensis</i>	Isaacs; Latz (Table 3); Purdie
Vitaceae	<i>Ampelocissus acetosa</i>	Brock; Isaacs; Lassak
Vitaceae	<i>Cayratia trifolia</i>	Purdie

**Table A4** A list of animals with known Indigenous uses that occur in the Canning Basin. The list only includes animals that were identified at the level of species or genus. The references are given only as the surname of the first author. References are: Burbidge et al. (1988), Cheinmora et al. (2017), Johnson & Roff (1982) and Purdie et al. (2018).


Common name	Scientific name	Recorded use	Source
<b>Birds</b>			
Emu	<i>Dromaius novaehollandiae</i>	Food, Spiritual	Purdie; Cheinmora
Australian bustard	<i>Ardeotis australis</i>	Food, Spiritual	Purdie; Cheinmora
Brolga	<i>Grus rubicundus</i>	Food, Spiritual	Purdie; Cheinmora
Darter	<i>Anhinga melanogaster</i>	Food	Cheinmora
Cormorants	<i>Phalacrocorax</i> spp.	Food	Cheinmora
Australian pelican	<i>Pelecanus conspicillatus</i>	Food	Purdie; Cheinmora
Australian white ibis	<i>Threskiornis molucca</i>	Food	Purdie
Straw-necked ibis	<i>Threskiornis spinicollis</i>	Food	Purdie
Spoonbill	<i>Platalea</i> spp.	Spiritual	Purdie
Black-necked stork	<i>Ephippiorhynchus asiaticus</i>	Food	Cheinmora
Magpie goose	<i>Anseranas semipalmata</i>	Food	Purdie; Cheinmora
Green pygmy-goose	<i>Nettapus pulchellus</i>	Food	Purdie; Cheinmora
Whistling ducks	<i>Dendrocygna</i> spp.	Food	Cheinmora
Grey teal	<i>Anas gracilis</i>	Food	Purdie; Cheinmora
Wedge-tailed eagle	<i>Aquila audax</i>	Spiritual	Purdie
Grey goshawk	<i>Accipiter novaehollandiae</i>	Cultural	Purdie
Australian kestrel	<i>Falco cenchroides</i>	Cultural	Purdie; Cheinmora
Orange-footed scrubfowl	<i>Megapodius reinwardt</i>	Food	Cheinmora
Quail	<i>Coturnix</i> spp.	Food	Purdie; Cheinmora
Bush stone-curlew	<i>Burhinus grallarius</i>	Spiritual	Purdie; Cheinmora
Terns	<i>Sterna</i> spp.	Food	Cheinmora
Spinifex pigeon	<i>Geophaps plumifera</i>	Food	Purdie
Common bronzewing	<i>Phaps chalcoptera</i>	Food	Cheinmora
Crested pigeon	<i>Ocyphaps lophotes</i>	Food	Cheinmora
Partridge pigeon	<i>Geophaps smithii</i>	Food	Cheinmora
Bar-shouldered dove	<i>Geopelia humeralis</i>	Food	Purdie; Cheinmora
Torres Strait pigeon	<i>Ducula bicolor</i>	Food	Cheinmora
White-quilled rock-pigeon	<i>Petrophassa albipennis</i>	Food	Cheinmora
Red-tailed black-cockatoo	<i>Calyptorhynchus banksii</i>	Spiritual, Ceremonial	Purdie; Cheinmora
Sulphur-crested cockatoo	<i>Cacatua galerita</i>	Spiritual; Food	Purdie; Cheinmora
Little Corella	<i>Cacatua sanguinea</i>	Food	Purdie
Red-winged parrot	<i>Aprosmictus erythropterus</i>	Spiritual	Cheinmora
Varied lorikeet	<i>Psitteuteles versicolor</i>	Spiritual	Purdie
Koel	<i>Eudynamis orientalis</i>	Cultural	Purdie; Cheinmora
Pheasant coucal	<i>Centropus phasianinus</i>	Food	Cheinmora
Channel-billed cuckoo	<i>Scythrops novaehollandiae</i>	Cultural	Purdie
Southern boobook	<i>Ninox boobook</i>	Cultural	Purdie; Cheinmora
Barking owl	<i>Ninox connivens</i>	Cultural	Purdie; Cheinmora
Australian owlet-nightjar	<i>Aegotheles cristatus</i>	Spiritual	Purdie; Cheinmora
Spotted nightjar	<i>Caprimulgus argus</i>	Spiritual	Purdie; Cheinmora
Blue-winged kookaburra	<i>Dacelo leachii</i>	Cultural	Cheinmora
Grey-crowned babbler	<i>Pomatostomus temporalis</i>	Cultural	Purdie
Sandstone shrike-thrush	<i>Colluricincla woodwardi</i>	Spiritual	Cheinmora
Rufous whistler	<i>Pachycephala rufiventris</i>	Cultural	Purdie
Willie wagtail	<i>Rhipidura leucophrys</i>	Cultural	Cheinmora
Black-tailed treecreeper	<i>Climacteris melanura</i>	Spiritual	Purdie

Common name	Scientific name	Recorded use	Source
Silver-crowned friarbird	<i>Philemon argenticeps</i>	Cultural	Purdie
Yellow-faced Miner	<i>Manorina flavigula</i>	Cultural	Purdie
Mistletoebird	<i>Dicaeum hirundinaceum</i>	Spiritual	Purdie
Zebra finch	<i>Taeniopygia guttata</i>	Spiritual	Purdie
Australian magpie	<i>Cracticus tibicen</i>	Cultural	Cheinmora
Torresian crow	<i>Corvus orru</i>	Spiritual	Purdie; Cheinmora
<b>Reptiles</b>			
Green turtle	<i>Chelonia mydas</i>	Food	Cheinmora
Hawksbill turtle	<i>Eretmochelys imbricata</i>	Other use	Cheinmora
Flatback turtle	<i>Natator depressus</i>	Food	Cheinmora
Loggerhead turtle	<i>Caretta caretta</i>	Food	Cheinmora
Long-necked turtle	<i>Chelodina rugosa</i>	Food	Purdie; Cheinmora
Northern snapping turtle	<i>Elseya dentata</i>	Food	Purdie; Cheinmora
Red-faced turtle	<i>Emydura australis</i>	Spiritual, Food	Cheinmora
Saltwater crocodile	<i>Crocodylus porosus</i>	Food	Cheinmora
Freshwater crocodile	<i>Crocodylus johnsonii</i>	Spiritual, Food	Purdie; Cheinmora
Merten's water monitor	<i>Varanus mertensi</i>	Cultural; Food	Purdie; Cheinmora
Mitchell's water monitor	<i>Varanus mitchelli</i>	Food	Purdie; Cheinmora
Tree goanna	<i>Varanus tristis</i>	Spiritual, Food	Cheinmora
Yellow-spotted monitor	<i>Varanus panoptes</i>	Food	Purdie; Cheinmora
Spotted tree goanna	<i>Varanus scalaris</i>	Food	Purdie; Cheinmora
Rough-tailed goanna	<i>Varanus storri</i>	Spiritual; Food	Purdie; Cheinmora
Sand goanna	<i>Varanus gouldii</i>	Food	Purdie; Cheinmora
Goanna	<i>Varanus kingorum</i>	Food	Purdie
Small rock goanna	<i>Varanus glebopalma</i>	Food	Purdie
Frill-necked lizard	<i>Chlamydosaurus kingii</i>	Spiritual; Food	Purdie; Cheinmora
Ta-ta dragon	<i>Gowidon temporalis</i>	Spiritual	Purdie
Central blue-tongue	<i>Tiliqua multifasciata</i>	Spiritual, Food	Purdie; Cheinmora
Northern blue-tongue	<i>Tiliqua scincoides</i>	Spiritual, Food	Purdie; Cheinmora
Chameleon dragon	<i>Chelosania brunnea</i>	Cultural	Cheinmora
Knob-tailed gecko	<i>Nephrurus asper</i>	Spiritual	Purdie; Cheinmora
Northern dtella	<i>Gehyra australis</i>	Cultural	Purdie
Burton's legless lizard	<i>Lialis burtonis</i>	Cultural	Purdie
Northern snake-lizard	<i>Delma borea</i>	Cultural	Purdie
Black-headed python	<i>Aspidites melanocephalus</i>	Cultural, Food	Purdie; Cheinmora
Water python	<i>Liasis fuscus</i>	Spiritual, Food	Purdie; Cheinmora
Olive python	<i>Liasis olivaceus</i>	Food	Purdie; Cheinmora
Children's python	<i>Antaresia childreni</i>	Cultural	Purdie
Arafura file snake	<i>Acrochordus granulatus</i>	Food	Cheinmora
Yellow tree snake	<i>Dendrelaphis punctulata</i>	Spiritual; Other use	Purdie; Cheinmora
Coastal taipan	<i>Oxyuranus scutellatus</i>	Cultural	Cheinmora
<b>Frogs</b>			
Ornate burrowing frog	<i>Platyplectrum ornatum</i> ( <i>Limnodynastes ornatus</i> )	Food, Other use	Purdie; Cheinmora
Green tree frog	<i>Litoria caerulea</i>	Other use	Cheinmora
Green tree frog	<i>Litoria splendida</i>	Other use	Cheinmora
Rocket frog	<i>Litoria nasuta</i>	Spiritual, Other use	Purdie
Giant frog	<i>Ranoidea australis</i>	Other use	Cheinmora
Northern burrowing frog	<i>Neobatrachus aquilonius</i>	Food, Other use	Purdie
<b>Fish</b>			
Freshwater eel	<i>Ophisternon gutturale</i>	Food	Purdie

Common name	Scientific name	Recorded use	Source
Barramundi	<i>Lates calcarifer</i>	Spiritual, Food	Purdie
Black bream	<i>Hephaestus jenkinsi</i>	Food	Purdie
Bonaparte grunter	<i>Syncomistes bonapartensis</i>	Food	Purdie
Barred grunter	<i>Amniataba percooides</i>	Food	Purdie
Bony bream	<i>Nematalosa erebi</i>	Food	Purdie
Oxeye herring	<i>Megalops cyprinoides</i>	Food	Purdie
Red-eye mullet	<i>Liza</i> spp.	Food	Purdie
Fork-tailed catfish	<i>Neoarius graeffei</i>	Food	Purdie
	<i>Neoarius midgleyi</i>	Food	Purdie
Rendahl's catfish	<i>Porochilus rendahli</i>	Food	Purdie
Hyrtil's eel-tailed catfish	<i>Neosilurus hyrtlii</i>	Food	Purdie
Freshwater longtom	<i>Strongylura krefftii</i>	Food	Purdie
Rainbow fish	<i>Melanotaenia</i> spp.	Food	Purdie
Archerfish	<i>Toxotes chatareus</i>	Food; Other use	Purdie
Sleepy cod	<i>Oxyeleotris lineolata</i>	Food	Purdie
	<i>Glossogobius giurus</i>	Food	Purdie
Spangled grunter	<i>Leiopotherapon unicolor</i>	Food, Other use	Purdie
Northwest glassfish	<i>Ambassis</i> spp.	Food, Other use	Purdie
Blackmast	<i>Craterocephalus stramineus</i>	Food	Purdie
Freshwater sawfish	<i>Pristis pristis</i>	Food	Purdie
<b>Mammals</b>			
Echidna	<i>Tachyglossus aculeatus</i>	Spiritual, Food	Purdie; Cheinmora; Burbidge
Southern marsupial mole	<i>Notoryctes typhlops</i>	Food	Burbidge
Northern quoll	<i>Dasyurus hallucatus</i>	Other use	Cheinmora
Western quoll	<i>Dasyurus geoffroii</i>	Spiritual	Johnson
Brush-tailed phascogale	<i>Phascogale tapoatafa</i>	Food	Cheinmora
Stripe-faced dunnart	<i>Sminthopsis macroura</i>	Cultural	Purdie
Red kangaroo	<i>Macropus rufus</i>	Spiritual, Food, Other use	Purdie; Cheinmora; Burbidge
Common wallaroo	<i>Osphranter robustus</i>	Food; Other use	Purdie; Cheinmora; Burbidge
Antilopine wallaroo	<i>Osphranter antilopinus</i>	Spiritual, Food; Other use	Purdie; Cheinmora
Agile wallaby	<i>Notamacropus agilis</i>	Food	Purdie; Cheinmora
Northern nail-tail wallaby	<i>Onychogalea unguifera</i>	Cultural, Food	Purdie; Cheinmora
Crescent nail-tail wallaby	<i>Onychogalea lunata</i>	Food	Burbidge
Short-eared rock wallaby	<i>Petrogale brachyotis</i>	Food	Purdie
Black-footed rock wallaby	<i>Petrogale lateralis</i>	Food	Burbidge
Burrowing bettong	<i>Bettongia lesueur</i>	Food	Burbidge
Spectacled hare-wallaby	<i>Lagorchestes conspicillatus</i>	Food	Purdie; Burbidge
Rufous hare-wallaby (Mala)	<i>Lagorchestes hirsutus</i>	Food, Other use	Burbidge
Central hare-wallaby	<i>Lagorchestes asomatus</i>	Food, Other use	Burbidge
Common brushtail possum	<i>Trichosurus vulpecula</i>	Food, Other use	Purdie; Cheinmora; Burbidge
Rock ringtail possum	<i>Petropseudes dahli</i>	Food	Purdie
Greater bilby	<i>Macrotis lagotis</i>	Food, Other use	Purdie; Cheinmora; Burbidge
Golden bandicoot	<i>Isoodon auratus</i>	Food	Purdie; Cheinmora; Burbidge
Northern brown bandicoot	<i>Isoodon macrourus</i>	Food	Cheinmora
Water-rat	<i>Hydromys chrysogaster</i>	Food	Purdie
Western chestnut mouse	<i>Pseudomys nanus</i>	Cultural	Purdie

Common name	Scientific name	Recorded use	Source
Desert mouse	<i>Pseudomys desertor</i>	Cultural	Purdie
Little red flying-fox	<i>Pteropus scapulatus</i>	Food	Purdie; Cheinmora
Black flying-fox	<i>Pteropus alecto</i>	Food	Purdie; Cheinmora
Inland broad-nosed bat	<i>Scotorepens</i>	Spiritual	Purdie
Yellow-bellied sheath-tail bat	<i>Saccolaimus flaviventris</i>	Spiritual	Purdie
Ghost bat	<i>Macroderma gigas</i>	Cultural	Cheinmora
Dingo	<i>Canis lupus dingo</i>	Spiritual, Food, Other use	Purdie; Cheinmora
Dugong	<i>Dugong dugon</i>	Food	Cheinmora
Invertebrates			
Freshwater mussel	<i>Velesunio wilsonii</i>	Cultural, Food	Purdie
Freshwater prawn	<i>Macrobrachium spinipes</i>	Food, Other use	Purdie
Freshwater crab		Food	Purdie





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