



WALPOLE WILDERNESS BIOBLITZ 2021

Walpole-Nornalup National Parks Association Inc.

Discover the Diversity



Acknowledgement of Country

We would like to acknowledge the Noongar/Nyungar traditional custodians of the land on which the Walpole Wilderness BioBlitz was held. We wish to acknowledge and pay respect to their ancestors and for the continuing culture and care of this land.



Department of
Local Government, Sport
and Cultural Industries



Department of Biodiversity,
Conservation and Attractions



WESTERN
AUSTRALIAN
MUSEUM



ACKNOWLEDGEMENTS

Funding support

We are very grateful for the generous funding support provided by Walpole Nornalup National Park Association (WNNPA), Lotterywest and the WA Parks Foundation to undertake the inaugural Walpole Wilderness BioBlitz 2021.

Organisers, Team leaders, Tail-end Charlies & Specialists

Thank you to the volunteers and specialists that dedicated their time, energy and expertise as team leaders, assistant leaders, tail-end Charlies (bringing up the rear to accompany the slower and more distractible participants) and specialists that assisted with species identification and provided identification resources and equipment. Special thanks to the caterers for providing an amazing dinner.

Walpole Wilderness BioBlitz Participants

Many thanks to all participants who were involved in the inaugural Walpole Wilderness BioBlitz whether it was in person or your assistance with organisation, identification or evaluation. Your contribution was greatly appreciated.

Speakers

Viv Read – Birdlife Western Australia
 Dr Joanna Young –History in the making
 Dr Mark Harvey – Walpole Spiders
 Gary Muir –Seven Wonders of the Walpole Wilderness
 Tim Andrews – WNNPA President and emcee
 Dr David Edmonds – WWBB Project Coordinator and WNNPA committee member

Participating Organisations

Walpole-Nornalup National Park Association (WNNPA)
 WA Museum
 Birdlife Western Australia
 Biologic Environmental Survey
 WA Native Orchid Society and Conservation Group
 Department of Biodiversity, Conservation and Attractions (DBCA)

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EXECUTIVE SUMMARY



WALPOLE WILDERNESS BIOBLITZ 2021

The Walpole Wilderness BIOblitz (WWBB) is a citizen science project where volunteers from across the community join with local enthusiasts, amateur experts and scientists to survey the species found in an area over a short period of time. The information gathered provides a snapshot in time of the biodiversity of the area and can be used to help improve our understanding and long term management. The inaugural WWBB took place over the weekend of 2 + 3 October, 2021 celebrating the following outcomes:



1,461
Volunteer
hours



165
Participants



1,912
Observations



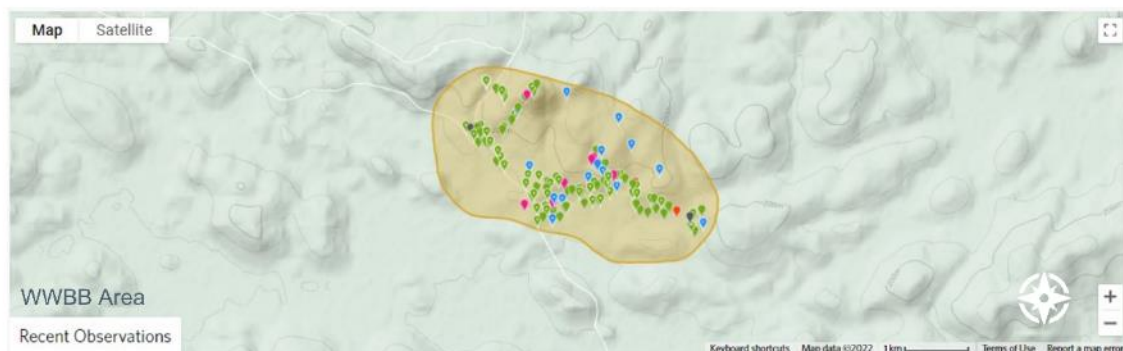
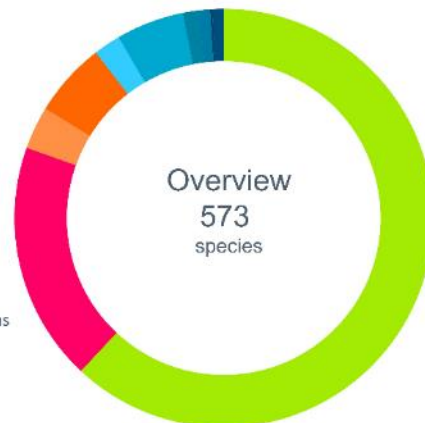
573
Species identified
to genus level



\$113,000
Project value

2 Days
24 Surveys
10 Habitats
15 Likely new
species
38 Significant
species
50 Undescribed
species

- Plants
- Fungi
- Arachnids
- Insects
- Mammals
- Birds
- Reptiles
- Amphibians
- Molluscs



WALPOLE WILDERNESS BIOBLITZ 2021

Over the weekend of Saturday 2nd to Sunday 3rd October 2021, over 150 participants gathered to be involved in the inaugural Walpole Wilderness BioBlitz (WWBB) coordinated by volunteers from the Walpole Nornalup National Park Association (WNNPA).

The Walpole Wilderness Bioblitz aims are to:

- Create an inventory of species in the survey area.
- Identify and map the natural assets of the target area, including species abundances and distribution, geological and hydrological features and vegetation communities.
- Identify new, threatened or rare species.
- Identify and record evidence of invasive species.
- Ensure that the information gathered is shared amongst land managers to inform conservation practice and policy, improve planning and management outcomes in the future.
- Encourage participants to develop an appreciation for nature and promote community involvement in protecting the natural environment, whilst inspiring the next generation of scientists, community volunteers and naturalists.
- Through volunteerism, create a sense of identity, stimulate behavioural change, and improve wellbeing amongst participants.
- In a post COVID world create the opportunity for people to experience their own backyard in new, invigorating, and exciting ways - by having citizens scientists work alongside experts, by discovering biodiversity at many levels and through the opportunity to see new landscapes that are not part of the regular tourist trails.
- By engaging with local communities on their own 'patch', aim to lower barriers to engagement with nature and science and build support for local conservation activities. Bring together diverse groups of people from the community, contributing to improved social cohesion and communities of practice.
- Create networking and membership recruitment opportunities for the WNNPA and help to leverage future funding.
- Facilitate more nature based or volunteer events.

The WWBB comprised a series of surveys conducted in a diversity of vegetation types and habitats within the core of the Walpole Wilderness Area including jarrah-marri forest, bullich forest, karri forest, banksia woodland, jarrah woodland, peatlands, heathlands, granite outcrops and boulders, paperbark wetlands and riparian zones.

"The Walpole Wilderness BioBlitz was a chance to discover more about this unique and special area, but also to connect with other likeminded people from all walks of life in a positive way. In a time when the work of conservation volunteers can often revolve around endless lobbying, submissions and protests, often with no positive outcomes, it was a refreshing opportunity to enjoy time on Country with people of such a diverse skill set, all sharing and learning from each other."

Kelly Lamp, Ecologist
WWBB participant



There was a mix of activities to cater for differing levels of field experience and fitness. Most activities included “off trail” walking through vegetation and on uneven ground with participants walking from 1km to over 10km. Each group was led by an experienced volunteer or specialist who guided the groups to best document the occurrence of flora, fauna and fungi species in the area.

The aim was to capture as much information as possible through the online platform of iNaturalist. This application allowed us to take a photo of a

specimen, upload it, then a community of naturalists offered suggestions on its identity – it is a widely recognised database with all observations being collated into the Atlas of Living Australia. This allowed a wider range of participants to contribute to the WWBB even from their own home or workplace, originating from anywhere in the world.

You can access the Walpole Wilderness BioBlitz 2021 project through this link:

<https://www.inaturalist.org/projects/walpole-wilderness-BioBlitz-2021>

Walpole Wilderness Area

The Walpole Wilderness Area concept was part of a proposal developed by the local community in 1998 to incorporate these reserves into a single integrated conservation reserve for nature conservation and was formally adopted by the WA Labor Government as an election commitment in 2001.



WALPOLE WILDERNESS AREA

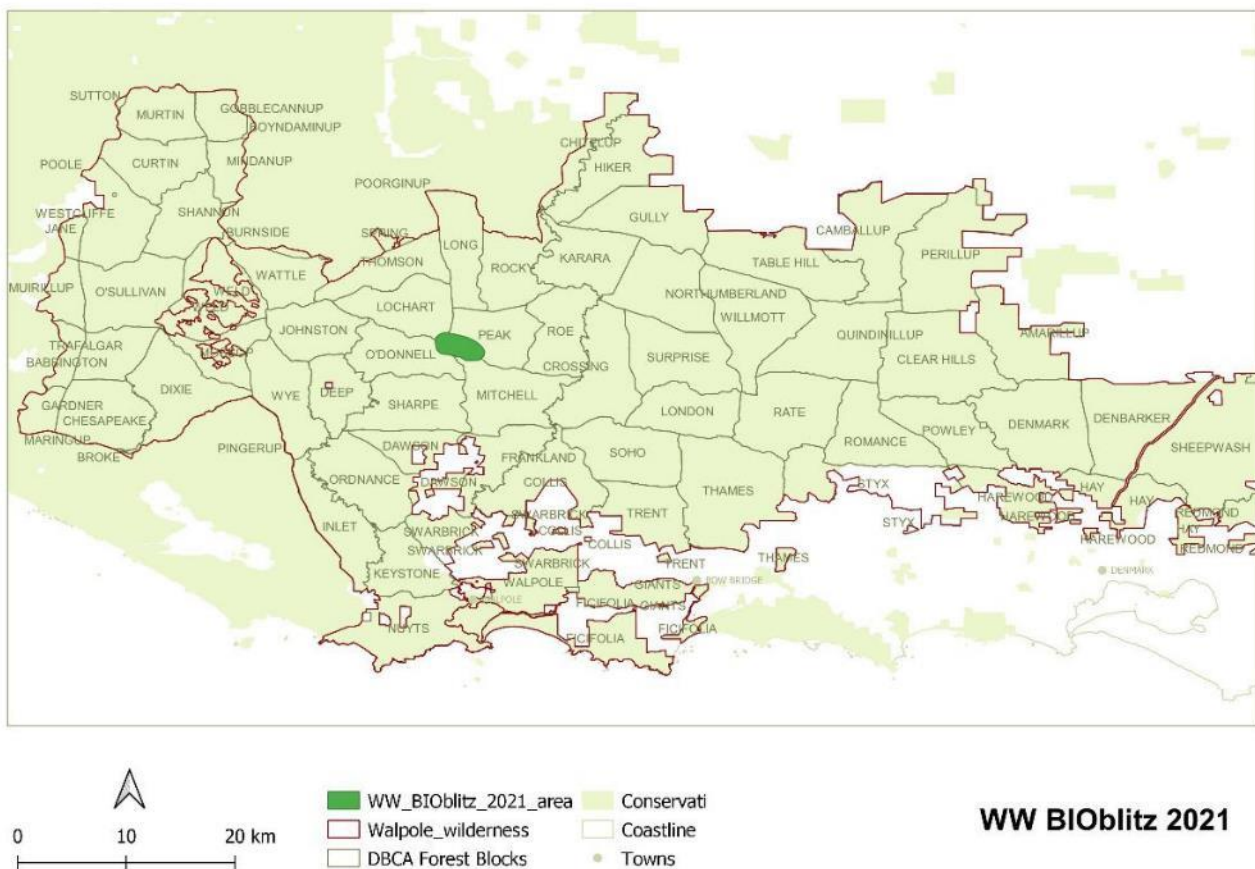
The Walpole Wilderness Area is the only gazetted wilderness in Western Australia. It consists of a group of conservation reserves totaling 377,714 hectares of some of the most ecologically rich and unique areas on Earth.

Although recognised for its outstanding beauty, highly specialised habitats, old growth forests, unique species and incredible biodiversity, this area is poorly surveyed and studied. Located in the highest rainfall zone of WA, it contains a number of specialised habitats that act as refugia for species that are relics from ancient times. The area is also recognised for its Aboriginal sites and landscapes of mythological, ceremonial, cultural and spiritual significance.

Climate change has caused a significant decrease in rainfall over the past few decades which has led to the decline or disappearance of some of these important relictual habitats. Other threats to the area include hydrological change, inappropriate fire regimes, invasive plant and animal species and diseases.

The WWBB recorded valuable information on threatened, rare, common and even new species in the Walpole Wilderness Area which will contribute to our greater understanding of the area and help to inform the future protection, conservation and management of this unique environment.

WALPOLE WILDERNESS AREA & WWBB LOCATION



WWBB OBSERVATIONS SO FAR...

In total, approximately 44.05% of iNaturalist observations have been identified to species level and qualified as research grade (711 observations making up 216 species with 61 observers and 104 identifiers).

Approximately 54.52% of observations have been identified to genus or species level but need to be verified by an additional identification and/or to species level (880 observations making up 229 species with 56 observers and 98 identifiers).

There were 23 casual observations making up 1.43% of total species observed which were predominantly erroneous and/or had no photo or other evidence provided to verify the observations.

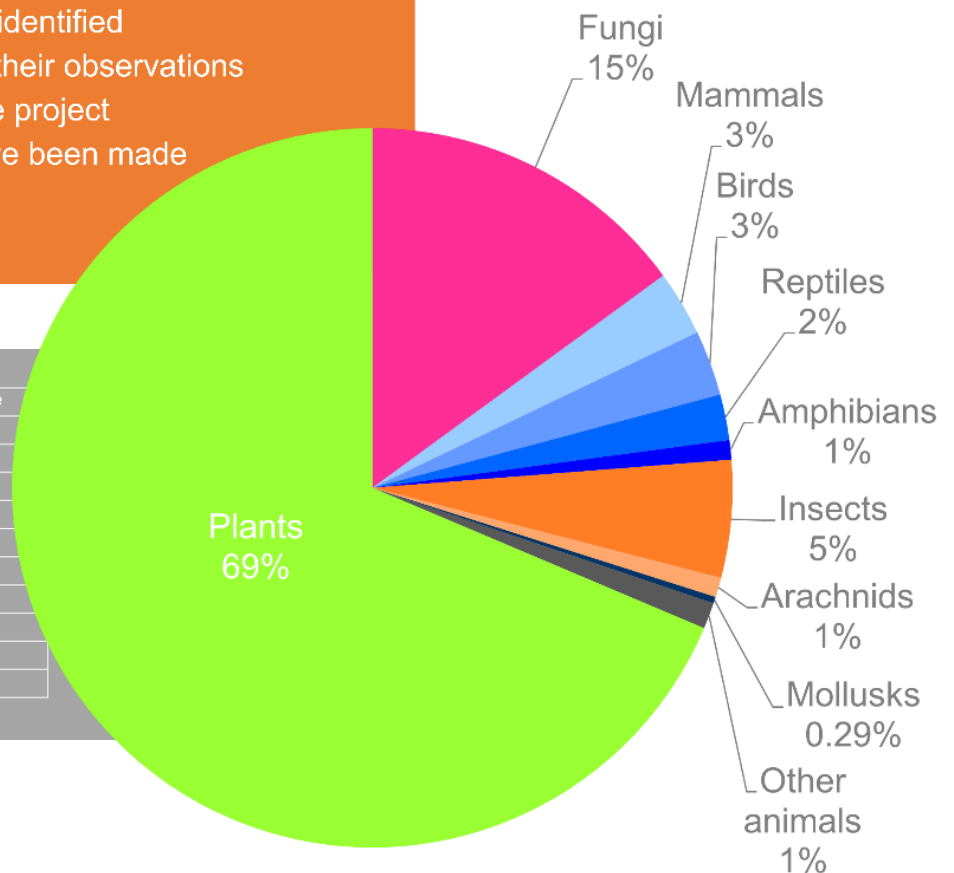
Additional flora, fungi, bird, invertebrate and macro-aquatic fauna species were observed, identified and submitted in individual reports or species lists to the Walpole-Nornalup National Park Association (WNNPA). These species lists are also summarised in the Appendices.



iNaturalist Species Observations

- ✦ 1,612 observations have been made
- ✦ 341 species have been identified
- ✦ 61 observers uploaded their observations
- ✦ 153 identifiers joined the project
- ✦ 2,746 identifications have been made

Observations	Number of Species	Percentage
Plants	234	68.2%
Fungi	51	14.96%
Mammals	10	2.93%
Birds	10	2.93%
Reptiles	7	2.05%
Amphibians	3	0.88%
Arachnids	3	0.88%
Insects	18	5.28%
Mollusks	1	0.29%
Other animals	4	1.17%



SURVEYING, RECORDING AND IDENTIFICATION

The WWBB surveys were undertaken by numerous groups of up to 10 individuals in different vegetation and habitat types throughout the Walpole Wilderness. Within each group there was an experienced volunteer or specialist who guided the groups to best capture the presence of flora, fauna and fungi species in the area. Most surveys were about 3 hours duration, but some groups ventured out for longer.

It is not intended that the WWBB be regarded as a formal or comprehensive study of the species occurring within the area. Many species were identified by photographs only and were not collected or vouchered (submitted to specialists for identification). Limited skills and knowledge of

some participants may have resulted in some errors in species identifications.

To counter this, there were experienced plant botanists, mycologists, ecologists and fauna specialists with experience in the region that made efforts to assist with species identifications and curate the data at basecamp or subsequently through the iNaturalist platform. Some flora, fungi and fauna specimens were collected, vouchered and identified following the WWBB.

Numerous nocturnal and cryptic species known to occur in the area would not have been adequately accounted for, apart from species detected by fauna motion cameras set in place before the WWBB in September 2021.



SPECIES OBSERVATIONS SO FAR . . .

FLORA SPECIES

The South West Botanic Province is recognised as an internationally significant biodiversity 'hotspot'.

The flora within the Walpole Wilderness area is renowned for its diversity, high level of endemism and relictual species and habitats. The area of shrub, herb and sedgelands and mixed tingle forest between the Shannon River east to Denmark is one of two main species-rich areas within the south-west (Hearn et al. 2003) and is important for the conservation of high rainfall taxa (Lyons *et al.* 2000 cited by DEC, 2008).

There are about 1996 native vascular flora taxa representing 197 families and 689 genera recorded in the Walpole Wilderness and adjacent reserves (DEC, 2008). The most dominant plant families occurring within the Walpole Wilderness area are Orchidaceae (orchid family – 235 species), Proteaceae (banksia and grevillea family – 157 species), Papilionaceae (pea family – 153 species), Epacridaceae (heath family – 137 species) and Cyperaceae (sedge family – 120 species) (DEC, 2008).

Major plant genera include *Stylidium* (76 species), *Acacia* (74 species), *Caladenia* (70 species), *Leucopogon* (61 species), *Eucalyptus* (45 species), *Drosera* (43 species) and *Hibbertia* (42 species) (DEC, 2008).

Mapping of vegetation within the southwest region has identified 81 different vegetation complexes occurring within the Walpole

Wilderness and adjacent reserves. Of these, to date, 52 vegetation complexes are known to contain rare and/or priority flora species.

Total number of Flora Species
OBSERVED during the WWBB
(Appendix 2)



iNaturalist FLORA Species Observations

- ✦ 236 flora species have been identified to species level
- ✦ 1,256 observations have been made
- ✦ 53 observers uploaded their observations
- ✦ 94 identifiers joined the project to assist



Most observed FLORA species

Crowea
Crowea angustifolia

Description:
Shrub, 0.3-3.5 m high.
Flowers pink/white,
September to
December. Sandy soils,
gravel, granite. Ridge
tops & slopes, outcrops.

Threatened & Priority Flora Species & Communities within the Walpole Wilderness

Walpole Wilderness area is host to numerous threatened and priority (poorly-known) flora species and communities as well as endemic species with limited distributions and specific habitat requirements that occur nowhere else on Earth (Appendix 1).

To date, there are 19 threatened species (also known as Declared Rare Flora (DRF)), 145 priority species, 93 locally endemic species, 58 relictual species and 39 species with disjunct populations within the Walpole Wilderness and adjacent reserves (DEC, 2008).

One threatened ecological community and one Priority 1 ecological community occur within the Walpole Wilderness area and WWBB.

At the time of writing, a nomination has been submitted to the Australian Government, by the WNNPA, to recognise the peatlands of the high rainfall zone as a nationally Threatened Ecological Community due to the threats from climate change, altered fire regimes and feral pigs. This nomination is in the process of being assessed. It is recognised that numerous threatened and priority flora and fauna species within the Walpole

Wilderness area rely on peatland habitats to persist.

Threatened & Priority Flora Species OBSERVED during the WWBB

Seven priority flora species were observed and identified during the WWBB, although three of these species remain unconfirmed at a species level. There were four Priority 2 flora species identified being: *Andersonia redolens*, *Andersonia ?hammersleyana*, *Aotus ?franklandii* and *Chamelaucium forestii* (Waxflowers); two Priority 3 species being: *Andersonia ?auriculata* and *Corybas abditus*; and one Priority 4 species being *Boronia virgata*.



ENDANGERED (WA); VULNERABLE (NATIONAL)

Dwarf Hammer Orchid
Drakaea micrantha

Description:
Tuberous, perennial, herb, 0.15-0.3 m high.
Flowers red & yellow, September to October.
White-grey sand.

The Dwarf Hammer-orchid is known from less than 30 small, scattered populations over a wide area from Perth to Albany, Western Australia. Secure populations occur within the Mount Frankland National Park. The species' total population size is estimated to be approximately 500 mature plants.

The Dwarf Hammer-orchid occurs in infertile grey sands, in Banksia, Jarrah (*Eucalyptus marginata*) and Western Sheoak (*Allocasuarina fraseriana*) woodland or forest. It is often found under thickets of Spearwood (*Kunzea ericifolia*) with Flying Duck orchid (*Paracaleana nigrita*) and other *Drakaea* species (Hoffman & Brown, 1992; Robinson & Coates, 1995; Brown et al., 1998). Pollinated by a single species of male thynnid wasp using sexual deception. This pollinator requires Banksia woodland habitat adjacent to the orchid's preferred habitat, as it feeds on the nectar-producing plants abundant in that woodland.

Sources:
Department of Environment, Water and Arts (2008)
DBCA Florabase (2022)

PRIORITY 2 FLORA SPECIES: Poorly-known



Andersonia
?hammersleyana

Description:
Erect to straggling shrub, 0.3-0.8 m high. Flowers blue/blue & white, August to October. Granitic sand, gravelly clay loam. Granite outcrops, slopes.



Andersonia
redolens

Description:
Shrub, 0.2 m high. Flowers white, October. Lateritic gravel. Upper slope.



Aotus ?*franklandii*

Description:
Shrub, to 1.3 m high. Flowers orange-yellow, October. Grey humic sand. Flats, lower slopes, swamps.



Chamelaucium
forestii

Description:
Shrub, to 1.3 m high. Flowers orange-yellow, October. Grey humic sand. Flats, lower slopes, swamps.

PRIORITY 3 FLORA SPECIES: Poorly-known



Andersonia
?auriculata

Description:
Shrub, 0.3-2 m high. Flowers white-cream-green, September to December. Grey sand or shallow sandy loam. Granite outcrops, rocky crevices, hills.



Swamp Helmet
Orchid
Corybas abditus

Description:
Tuberous, perennial, dwarf herb, 0.01-0.02 m high. Flowers red-purple, October to November. Black peaty soils. Winter-wet swamps.

PRIORITY 4 FLORA SPECIES:

Rare, near threatened or other species in need of monitoring



Boronia virgata

Description:
Slender, erect or sprawling shrub, 0.3-2 m high. Flowers pink, August to December or January to February. Peaty sand or clay. Swampy or waterlogged places.



FUNGI & BRYOPHYTES

In WA, about 500 species of larger fungi have been recorded, mostly from the south-west (DEC, 2008). 206 named fungi species have been recorded in the Frankland/Kent area, and another 434 unnamed species and 61 unnamed genera have been recorded from the Walpole Wilderness area (Syme, 2004 cited by DEC, 2008). A regional survey of fungi and non-vascular flora has not been undertaken (DEC, 2008).

The Walpole Wilderness area contains more than 500 species of non-vascular flora, which includes algae, bryophytes, fungi and lichens. Bryophytes (mosses, liverworts and hornworts), fungi and lichens, have not been well studied within WA, and many unnamed, undescribed and unknown species exist (DEC, 2008). The Warren subregion contains the state's richest area for bryophytes, many of which are normally associated with rainforests (Hearn et al., 2003).

Threatened & Priority Fungi & Bryophyte species within the Warren Region

Very few non-vascular plants (algae, fungi, bryophytes and lichens) are contained within WA threatened and priority listings. These fungi and flora are poorly known in a taxonomic and conservation sense. It has been estimated that only 1% of WA's non-vascular flora is formally named and, therefore, it is assumed their low representation on threatened and priority lists does not reflect their true conservation status (DEC, 2008; DBCA, 2022).

There is one threatened ('critically endangered' in WA) and twelve priority non-vascular species currently known to occur within the Warren subregion. Six of these species are bryophytes. Four of the bryophyte priority listed species are Priority 2 and one is Priority 4. Seven species are lichens: one is listed as Priority 1; three are listed as Priority 2; and three are listed as Priority 3 (DBCA, 2022).

NON-VASCULAR FLORA DEFINITIONS

Non-vascular flora/cryptogams: any species of plant which does not have specialized vascular tissues. Includes everything from higher structured forms of green algae, which have plant-like characteristics, to mosses, liverworts and hornworts. Includes algae, fungi, bryophytes and lichens.

Fungi: form the second-largest group of organisms in the world (second to insects), with about 1.5 million species across a diversity of subgroups. They are one of the least known major groups of biota, especially in Australia. Globally, it is estimated there are 10 times more fungi than there are vascular plants.

Bryophytes: comprising mosses, liverworts and hornworts, are distinct groups of non-vascular plants which are very ancient in their origins.

Lichens: complex group of organisms is also known as the 'lichenised fungi', since each species is formed by a unique symbiosis (or collaboration) of a fungal and an algal species.

There are 72 liverwort families documented in Western Australia, although none of them are currently listed as threatened or priority species. The status of many species remains largely unknown, and further assessment is required (DEC, 2008; DBCA, 2022).

To date, no confirmed threatened fungi, bryophyte or lichen species were known to be observed or identified during the WWBB.

Total number of Fungi and Bryophyte species OBSERVED during the WWBB

A total of 51 species of fungi, including lichens, were observed during the WWBB and identified on iNaturalist (Appendix 3).

Multiple surveys were conducted seasonally to ensure a diversity of fungi was captured. All specimens were photographed, and some samples were collected for identification purposes and to derive a DNA sample from.

In addition to the iNaturalist observations, a list of 60 species of fungi (as well as 2 bryophytes and 5 liverworts) were identified prior to and during the WWBB that were not all uploaded to iNaturalist. It should be noted that some of these species were recorded by both methods.



iNaturalist FUNGI Species Observations

- ✦ 51 fungi & bryophyte species have been identified
- ✦ 200 observations have been made
- ✦ 40 observers uploaded their observations
- ✦ 35 identifiers joined the project to assist



FIRST RECORD FOR WESTERN AUSTRALIA

Black Chanterelle
Craterellus australis

Found north of
Walpole, WA



"It wasn't until we were almost back at the car that I spotted a very dark, almost black fungus. When I looked more closely, I knew it was something I'd never seen before. Under the black, shaggy almost bifurcated cap, were wide, rounded, grey folds with a grooved dark stem below."

Katrina Syme
August 2021



FUNGI SPECIES FOUND IN THE PEATLANDS DURING THE WWBB

Yellow Earth Buttons
*Phaeohelotium
baileyianum*



Waxcaps
Hygrocybe species

FAUNA SPECIES

Knowledge and information of fauna within the Walpole Wilderness area is still very limited, particularly information on the distribution, ecology and conservation status of reptiles, amphibians and invertebrates (DBCA, 2008).

Endemic Fauna

In total, there are 43 species of vertebrate fauna that occur in the Walpole Wilderness and adjacent reserves that are endemic to the south-west of WA (DEC, 2008).

Threatened, Priority & other Specially Protected Fauna

The Commonwealth's Environmental Protection and Biodiversity Conservation (EPBC) Act 1999 provides a listing of nationally threatened fauna species. There are numerous vertebrate species listed under the EPBC Act that are known to occur in the Walpole Wilderness area. All of these species are also listed as threatened under the State's Biodiversity Conservation Act 2016 (DEC, 2008).

There are a number of vertebrate fauna species documented within the Walpole Wilderness area and adjacent reserves that are listed as rare or likely to become extinct. These are: the 'critically endangered' Western Ringtail Possum (*Pseudocheirus occidentalis*); Woylie (*Bettongia penicillata ogilbyi*); the 'endangered' Australasian Bittern (*Botaurus poiciloptilus*); Baudin's Cockatoo (*Zanda baudinii*); Carnaby's Cockatoo (*Zanda latirostris*); Western Bristlebird* (*Dasyornis longirostris*); the 'vulnerable' Quokka (*Setonix brachyurus*); Chuditch (*Dasyurus geoffroyi*); sub-Antarctic Fur Seal (*Arctocephalus tropicalis*); Australian Sealion (*Neophoca cinerea*); Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso*); Malleefowl* (*Leipoa ocellata*); and Sunset Frog (*Spicospina flammocaerulea*).

*It should be noted that some of these threatened species listed as occurring within the area have not been observed or documented for some time.

There are also several threatened and priority invertebrate species known to occur within the Walpole Wilderness area including two state and nationally listed 'endangered' species, the Walpole Burrowing Crayfish (*Engaewa walpolea*) and the Tingle Pygmy Trapdoor Spider (*Bertmainius tingle*). Please note, this is not an exhaustive list of threatened invertebrate species within the area.

Species occurring within the Walpole Wilderness area listed as 'conservation dependent' are the Southern Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) and Muir's corella (*Cacatua pastinator pastinator*); and two fauna species are included in 'other specially protected fauna', being the New Zealand fur-seal (*Arctocephalus forsteri*) and Peregrine Falcon (*Falco peregrinus*).

See Appendices 4 through to 11 for fauna species observations lists divided by major group.

BIRDS

There are at least 144 species of native birds within the Walpole Wilderness area and adjacent reserves. This diversity is considered relatively high, particularly within open forests, open woodlands and low open woodlands, as it represents about 79% of the birds recorded within forest areas of the south-west (DEC, 2008).

There are no endemic bird species exclusive to the Walpole Wilderness area although Baudin's Cockatoo (*Zanda baudinii*), Carnaby's Cockatoo (*Zanda latirostris*), Red-capped Parrot (*Platycercus spurius*), Western Rosella (*Platycercus icterotis*), Western Ground Parrot (*Pezoporus flaviventris*), White-breasted Robin (*Quoyornis georgianus*), Red-winged Fairy Wren (*Malurus elegans*), Western Thornbill (*Acanthiza inornata*) and the Red-eared Firetail (*Stagonopleura oculata*) are endemic to the south-west (DEC, 2008). All of these species occur within the Walpole Wilderness area (with the exception of the Western Ground Parrot that occurred historically) and were all observed

during the WWBB, apart from Carnaby's Cockatoo which is also known to occur in the area. See Appendix 5: Bird species observations lists. Threatened & priority bird species within the Walpole Wilderness

Currently, there are three known threatened bird species occurring within the Walpole Wilderness area being: the state and nationally 'endangered' Baudin's Cockatoo (*Zanda baudinii*) and Carnaby's Cockatoo (*Zanda latirostris*); and state and nationally listed 'vulnerable' Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso*). The Peregrine Falcon (*Falco peregrinus*) is also known to occur in the area and is listed as an 'other specially protected' species.

Although other threatened bird species such as the Western Ground Parrot (*Pezoporus flaviventris*), Western Bristle Bird (*Dasyornis longirostris*) and Malleefowl (*Leipoa ocellata*) are also listed as occurring within the area, the records of their occurrences are not recent.

Species listed as 'conservation dependent' occurring within the Walpole Wilderness area are the Southern Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) and Muir's corella (*Cacatua pastinator pastinator*).

The three black-cockatoo species are declining in numbers due to ongoing threats to their habitat. There is limited information about their

population numbers, dynamics or critical habitats within the Walpole Wilderness area. Baudin's Cockatoo are considered more common in the area than Forest Red-tailed Black-cockatoo and Carnaby's Cockatoo. Nest trees and night roosts are challenging to locate due to the vastness of the area and difficulty in navigating the terrain.

"Little is known of the black cockatoo's use of forest resources in the Walpole Wilderness region. Both the Baudin's and the Red-tailed Black Cockatoos were recorded during the WWBB surveys. It would be of significant interest to develop a better understanding of their foraging, roosting and nesting within this area. Identifying roost trees to include in BirdLife's Great Cocky Count would provide some information about their regional resource use and behaviour." (Reid, 2021).



iNaturalist BIRDS Species Observations

- ✦ 10 bird species have been identified to species level
- ✦ 11 observations have been made
- ✦ 2 observers uploaded their observations
- ✦ 8 identifiers joined the project to assist
- ✦ most bird observations were directly entered into birddata.birdlife.org.au

Total number of bird species OBSERVED during the WWBB

A total of 40 bird species were observed and identified during the WWBB. Birdlife WA undertook several targeted surveys during the course of the WWBB and prepared a separate report and species list to document their findings (Appendix 5).

A full bird species list can also be found at:
<https://birddata.birdlife.org.au/survey?id=5546731&h=8c0cea5b>

The total Birdlife WA count relevant to the survey area during the period of the WWBB was 35 species. A search of Birddata records from the North Walpole area considered relevant to the WWBB location indicated a total number of 97 species recorded. This shows that approximately a third of the potential species in the area were detected in the two-day WWBB period (Reid, 2021).

In addition, 11 bird species were observed and identified during the WWBB project and uploaded

to iNaturalist from community survey observations, some of which were the same species as identified by Birdlife WA during the WWBB, thus bringing the total number of bird species observed to 40.

Threatened & Priority bird species OBSERVED during the WWBB

Two threatened bird species were identified during the WWBB being the state and nationally listed 'endangered' Baudin's cockatoo (*Zanda baudinii*) and state and nationally listed 'vulnerable' Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso*). No priority bird species were known to be observed or identified during the WWBB.

Rare or unusual bird species or behaviour OBSERVED during the WWBB

Inland Thornbill

"Of interest was that Inland Thornbills were accurately mimicking Silveryeyes and Fan-tailed Cuckoos in the area."

Viv Reid
Birdlife WA
October 2021



ENDANGERED

Baudin's Cockatoo
Zanda baudinii



Top:
Female Baudin's
Cockatoo feeding on
marri fruit.



Bottom:
Male Baudin's
Cockatoo at nest.

Photo not taken in the
Walpole Wilderness Area

VULNERABLE

**Forest Red-tailed
Black-cockatoo**
*Calyptorhynchus
banksii naso*



Photo not taken in the
Walpole Wilderness Area

"DID YOU KNOW...?"

Research has shown that hollows suitable for Black-cockatoos did not begin to appear in eucalypts until they were at least 209 years old. A number of nest trees used by Black-cockatoos have been estimated to be between 300–500 years of age (Johnstone *et al*, 2013).

MAMMALS

There are at least 27 species of native mammals within the Walpole Wilderness area and adjacent reserves (including marine mammals). The area has a relatively high diversity of mammals although many species populations have declined and now exist only as small, isolated populations (DEC, 2008). The major causes for these population declines are considered to be extensive land clearing and logging since European settlement destroying vital habitat, altered fire regimes and predation by introduced predators, mainly foxes and cats.

Of the mammal species occurring within the Walpole Wilderness area, 33% (9 out of 27 species) are endemic to the south-west, including the Western Brush Wallaby (*Macropus irma*), Quokka (*Setonix brachyurus*), Western Ringtail Possum (*Pseudocheirus occidentalis*), Honey Possum (*Tarsipes rostratus*), Mardo (*Antechinus flavipes*), common dunnart (*Sminthopsis gilberti*), Grey-bellied Dunnart (*Sminthopsis griseoventer*), Gould's Long Eared Bat (*Nyctophilus gouldi*) and the Western False Pipistrelle (*Falsistrellis mackenziei*).

Total number of Mammal species OBSERVED during the WWBB

In total 10 mammal species were observed or identified from their scats, tracks or other traces such as diggings during the WWBB, including several mammal species that were identified from fauna motion cameras set up within the area in September 2021 and included in the WWBB and iNaturalist observations.

Out of the 10 mammal species identified, 7 were native mammal

species and 3 introduced mammal species were identified including cat, red fox and wild pig. See Appendix 6: Mammal species observations list.

"The highly distinctive and mostly endemic Australian land mammal fauna has suffered an extraordinary rate of extinction (>10% of the 273 endemic terrestrial species) over the last 200 years. A further 21% of Australian endemic land mammal species are now assessed to be threatened, indicating that the rate of loss (of one to two extinctions per decade) is likely to continue."

(Woinarskia et al., 2015).



SHORT-BEAKED ECHIDNA
Tachyglossus aculeatus



iNaturalist MAMMALS Species Observations

- ✦ 10 mammal species have been identified to species level
- ✦ 20 observations have been made
- ✦ 5 observers uploaded their observations
- ✦ 15 identifiers joined the project to assist

VULNERABLE

QUOKKA *Setonix brachyurus*



PRIORITY 4: Rare, near threatened or other species in need of monitoring



SOUTHWESTERN BROWN BANDICOOT/QUENDA
Isoodon obesulus ssp. fusciventer

Description: Their habitat is forest, woodland, shrub and heath vegetation which usually have a combination of sandy soils with dense heathy vegetation in the lower stratum. A nocturnal species, approximately 280-360 mm in length (head and body) with a tail between 90-145 mm long.

They prefer to stay close to cover when searching for food. Digs shallow (sometimes deeper) conical holes that it digs with its foreclaws. Its diet consists of earthworms and other invertebrates, but mainly insects, both adult and larval. It also eats fungi and other plant material from underground.

During the day it sleeps in a ground nest it constructs from grass and other plant material, sometimes mixed with earth.

Breeding begins in winter and usually lasts six to eight months. This species can have a high reproduction rate in favourable conditions and their young develop rapidly (Strahan, 1995; Van Dyck et al., 2013).



WESTERN BRUSH WALLABY/BLACK-GLOVED WALLABY
Macropus irma

Description: Uncommon throughout its former range, although it can be a common species in forest or woodland, particularly open, seasonally wet flats with low grasses and open scrubby thickets. Also occurs in larger areas of mallee and heathland. Tends to thrive in large-sized areas of vegetation where fox control is implemented.

Pale grey with distinct white facial stripe, black and white ears and black hands and feet. It is approximately 1200 mm in size (head and body) and has a long tail (540-970 mm) with a dorsal crest of black hair, particularly towards the tip. Can be distinguished from smaller Western Grey Kangaroos by its position and movement when it jumps, holding its head low, arched back and tail extended horizontally.

Activity is greatest in the early morning and late afternoon and it rests during the hotter part of the day in the shade of a bush or in small thickets, solitary or in pairs.

A distinct breeding season has not been established, but young appear to be born in April or May, emerging from the pouch in October or November (Strahan, 1995; Van Dyck et al., 2013).

Threatened & Priority Mammal species OBSERVED during the WWBB

One threatened and two priority mammal species were detected from fauna motion cameras within the WWBB area in September 2021, including the state and nationally listed 'vulnerable' Quokka (*Setonix brachyurus*) and 'Priority 4' mammal species, Southwestern Brown Bandicoot/Quenda (*Isoodon obesulus fusciventer*) and Western Brush Wallaby/Black-gloved Wallaby (*Macropus irma*). Quokka (*Setonix brachyurus*) scats and suspected runnels (tunnels through the undergrowth) were also observed during the WWBB.

Introduced Mammal species OBSERVED during the WWBB

Several introduced animals occur within the Walpole Wilderness area and are known to cause significant damage and degradation to the environmental values of the area through predation on native animals, destruction or modification of habitats or competition for valuable food resources.

Three introduced (non-native) animals were observed during the WWBB including feral pig (*Sus scrofa*), feral cat (*Felis catus*) and red fox (*Vulpes vulpes*). These species are all declared pests under the Biosecurity and Agriculture Management (BAM) Act 2007 due to their significant adverse impacts on agricultural and environmental values. They are categorised as species that should have some form of management applied that will alleviate their harmful impacts, reduce their numbers or distribution or prevent or contain their spread (DPIRD, 2020).

There is strong evidence that foxes and cats have caused the decline of many small to medium-sized species of Australian native mammals, often referred to as 'critical weight range' species, falling within an intermediate body weight range of 35 grams to 5.5 kilograms. Critical weight range species are considered to be most at-risk of being

predated on by foxes and cats (Woinarskia et al., 2015).

These introduced species and the processes by which they impact on biodiversity, are listed as key threatening processes under the Commonwealth's EPBC Act 1999. Threat abatement plans provide national coordination to manage the impacts on biodiversity and their management has been identified as a high priority within the Walpole Wilderness and Adjacent Parks and Reserves Management Plan (DEC, 2008).

Feral pig (*Sus scrofa*)

Feral pigs are the descendants of domestic pigs (*Sus scrofa*), which were first brought to Australia by early European colonists and were released or escaped from domestic stock back in the late 1800s. Some populations became established in the wild, predominantly in medium to high rainfall areas. Intentional introductions and relocations by recreational hunters of pigs still occurs, as well as accidental introductions (DPIRD, 2020).

Feral pigs occur in a wide range of habitats and may forage over an area of several square kilometres as individuals or in a group. They prefer dense vegetation cover and need daily access to water, especially in hot conditions (DPIRD, 2020).

Feral pigs are omnivores, but they generally rely on plant material for much of their diet. They also eat fungi, earthworms, insects and other invertebrates, amphibians, crustaceans, reptiles, birds and eggs, small mammals and carrion (DPIRD, 2020).

Feral pigs cause damage to natural ecosystems by predation of animals and consumption of plants and soil organisms; habitat change and degradation due to rooting and trampling of plants and wallowing, reduced plant regeneration, soil erosion and changes in soil structure, impacts on water quality through nutrient enrichment and pollution from their bodily wastes which can

DECLARED PEST

FERAL PIG/WILD BOAR *Sus scrofa*



Feral pig exclusion fencing around Priority 1 Ecological Community in Walpole Wilderness Area

FERAL CAT *Felis catus*



RED FOX *Vulpes vulpes*



encourage invasion by weeds (Department of the Environment and Energy (DoEaE), 2017).

Feral pig impacts are particularly associated with wetlands and riparian ecosystems, such as peat swamps and areas with moist organic soils, which are their preferred habitats (DoEaE, 2017). Threatened species including frogs, fish, orchids, mosses and lichen that occur in sensitive ecosystems are at risk of being eaten by feral pigs. The 'vulnerable' sunset frog (*Spicospina flammocaerulea*) found in peat and riparian habitats are also eaten or negatively affected by feral pig activities (Burbidge and Roberts, 2002; DPaW, 2014 cited by DoEaE, 2017).

Feral pigs can also harbour and spread disease and parasites and they are implicated in the spread of the plant pathogen *Phytophthora cinnamomi* (Dieback), which causes severe and widespread damage to native ecosystems.

An accurate estimate of their numbers within the region is difficult to establish although it is believed their numbers and impacts are expanding rapidly (Tauss, pers. comm., 2007 cited by Department of Environment Water and Heritage, 2008). With a drying climate, shrinking water resources, and increasing feral pig populations, the impact of feral pigs in the region are intensifying to a degree that now threatens a very broad range of ecosystems and species (DoEaE, 2017).

Cat (*Felis catus*)

Feral cats and domestic cats are the same species, *Felis catus*, but only feral cats are declared pests in Western Australia. Feral cats live and reproduce in the wild and survive by hunting or scavenging. They

are found all over Western Australia inhabiting all types of habitats, including forests, woodlands, grasslands, wetlands and arid areas (DPIRD, 2019).

Feral cats are predominantly solitary and nocturnal, spending most of the day in the safety of a shelter such as burrows of rabbit and ground-nesting birds, hollow logs or rock piles. They are carnivores, generally eating small mammals, birds, reptiles, amphibians, fish and insects, depending on their availability (DPIRD, 2019).

Australia wide, feral cats have played a major role in the extinction of at least 27 native mammal species, and at present, endanger 147 native mammals, birds, reptiles and frogs (Department of Environment, 2015 cited by DPIRD, 2019).

Red Fox (*Vulpes vulpes*)

The Red Fox (*Vulpes vulpes*) is native to the northern hemisphere where it occurs throughout most of Europe, Asia, North America and the northern coast of Africa. It was first introduced from Britain into Victoria, for hunting with foxhounds, possibly around 1845. It became established in Victoria by about 1870 and has since colonised most of mainland Australia, apart from some areas of northern Australia (DPIRD, 2018).

Foxes have a varied diet which changes with the seasonal availability of their preferred foods. Their diet includes invertebrates (such as earthworms, centipedes, insects), fish, amphibians, reptiles, birds, small mammals (including rabbits), carrion, fruit and other plant material. Foxes are known to have a habit of burying excess food for later use (DPIRD, 2018). Fox scats may contain remnants of fur and beetle shells.

REPTILES

Reptiles can be found in a variety of habitats within the Walpole Wilderness area including coastal dunes, flats, swamps, areas of more open vegetation and granite outcrops. Within the Walpole Wilderness area, 32 species of native reptiles have been identified and recorded (Appendix 7). Of these, 20 species are skinks, and 6 species are snakes (elapids or front-fanged venomous snakes). There are only low numbers of goannas, geckos and tortoises (DBCA, 2008).

Threatened & Priority Reptile species within the Walpole Wilderness

The skinks within the Walpole Wilderness area have a high level of endemism and 13 out of the 20 skinks recorded (65%) are only found in the south-west of WA. The Short-nosed snake (*Elapognathus minor*), listed as a Priority 4 species, and Muller's Snake/Square-nosed snake (*Rhinoplocephalus bicolor*), are also endemic to the south-west and both are known occur within the Walpole Wilderness area (DEC, 2008). Muller's snake was observed during the WWBB.

Total number of Reptile species OBSERVED during the WWBB

See Appendix 7: Reptile species observations list.



iNaturalist REPTILE Species Observations

- ✦ 7 reptile species have been identified to species level
- ✦ 16 observations have been made
- ✦ 5 observers uploaded their observations
- ✦ 8 identifiers joined the project

FAMILY: GECKONIDAE



Southern Marbled Gecko
Christinus marmoratus



Southern Marbled Gecko
Christinus marmoratus

FAMILY: SCINCIDAE



Common South-west Ctenotus
Ctenotus labillardieri



South-western
Crevice Skink
Egernia napoleonis



Lowlands Earless
Skink
Hemiergis peronii

FAMILY: ELAPIDAE



Dugite
Pseudonaja affinis



Tiger Snake
Notechis scutatus

Rare or Unusual Reptile species OBSERVED during the WWBB

THE UNUSUAL

Muller's Snake/Square-nosed Snake
Rhinoplocephalus bicolor

Description: It is the only species in this genus and confined to the lower southwest from south of Dunsborough, across to Ongerup, Kunidup and east to Cape Arid. A nocturnal snake growing up to 45cm with shiny appearance and small, dark eyes. Males tend to be slightly larger than females.

It feeds on lizards. It produces live young, approximately one to five, in late summer and autumn.

It is venomous but very reluctant to bite, although should be considered harmful.

Most often found in abandoned stick-ant nests and may also occur under loose sand under dead vegetation, logs and spoil heaps.

It prefers low-lying sandplains with dense vegetation or eucalypt woodlands.

(Bush et al., 2007).

AMPHIBIANS

There are at least 19 frog species within the Walpole Wilderness area. Substantial areas of swamps, sedgeland, shrubland and forest, such as the Mt Soho and Owingup swamps, support one of the richest areas for frogs in Western Australia (DEC, 2008).

Threatened & priority frog species within the Walpole Wilderness

Species such as the sunset frog (*Spicospina flammocaerulea*), the Nornalup frog (*Geocrinia lutea*), and the roseate frog (*Geocrinia rosea*) are very restricted in their occurrence throughout the Walpole Wilderness area.

The sunset frog is only found in the isolated relictual peat swamps on the Frankland, Bow and Kent River catchments, north and east of Walpole. Due to its small distribution and the imposing

threats to it and its habitat, it is currently listed as 'vulnerable' under state and national environmental legislation (DPAW, 2015 assessed by TSSC, 2019). The Sunset Frog was originally recognised as an 'endangered' species but in 2019, the conservation status of the sunset frog was downgraded by the Australian Government to the lesser status of 'vulnerable', mainly because of lack of evidence of population declines (DPAW, 2015 assessed by TSSC, 2019).

Threats to the sunset frog include predation and destruction of habitat by native and non-native species, particularly feral pigs, impacts of a drying climate and fire impacts on peat swamps. Due to these ongoing impacts, it is inferred that there will be a continuing decline in the area, extent and/or quality of habitat (DPAW, 2015 assessed by TSSC, 2019).

The Nornalup frog is listed by DBCA as a Priority 4 species (rare, near threatened or in need of monitoring) due to its limited distribution. It is only found within a radius of 12 km from Walpole (DEC, 2008). It occurs in very dense swamp vegetation (to 4 m high) on peaty sand, bordering streams and seeps and is often on the edge of forests (WA Museum, 2013).

The roseate frog is found in the high rainfall zones of the lower south-west in the karri and jarrah forests from Margaret River east to Walpole and is not currently listed as a threatened or priority species (DEC, 2008; WA Museum, 2013).

Total number of Amphibian species observed during the WWBB

All amphibian species identified during the WWBB were frogs. Several frog species were observed, although only 3 species have been identified to species level being Quacking Frog (*Crinia georgiana*), Glauert's Frog (*Crinia glauerti*) and False Western Froglet/Bleating froglet (*Crinia pseudinsignifera*). See Appendix 8: Amphibian species observations list.



iNaturalist AMPHIBIANS Species Observations

- ✦ 3 amphibian species have been identified to species level
- ✦ 14 observations have been made
- ✦ 7 observers uploaded their observations
- ✦ 10 identifiers joined the project to assist

FROGS

GLAUERT'S FROG *Crinia glauerti*



AUSTRALIAN GROUND FROGS *Crinia*



ONE OF THE OLDEST FROGS IN WA ONLY RECENTLY DISCOVERED

The sunset frog (*Spicospina flammocaerulea*) is one of the oldest WA frogs, estimated to have diverged from its closest relatives (*Uperoleia spp.*) at least 30 million years old. It is quite distinct from other Australian frogs and was only discovered by Dr Pierre Horwitz of Edith Cowan University in 1994 and described in 1997 (Roberts et al. 1997).

INVERTEBRATES

Total number of Invertebrate species OBSERVED during the WWBB

See Appendix 9-11: Invertebrate species observations list.



iNaturalist INVERTEBRATES Species Observations

- ✦ **Arachnids:** 3 species, 11 observations, 7 observers, 7 identifiers
- ✦ **Insects:** 18 species, 36 observations, 19 observers, 29 identifiers
- ✦ **Crustaceans:** 1 species, 1 observation, 1 identifier
- ✦ **Molluscs:** 1 species, 1 observation, 1 observer, 4 identifiers

ARACHNIDS



Unidentified spider
Order: Araneae



Velvet Mites
Superfamily:
Trombidioidea



Species:
Pinkfloydia harveyi

INSECTS



Toad Bugs
Genus: *Nerthra*
Family: Gelastocoridae



Bush Cockroach
Species: *Polyzosteria cuprea*
Family: Blattidae



Leaf Beetles
Species: *Paropsisterna galatea*
Family: Chrysomelidae



June Beetles
Genus: *Diphucephala*
Subfamily: Melolonthinae



Stick Insect
Genus: *Arphax*
Order: Phasmida



Stick Insect
Genus: *Arphax*
Order: Phasmida

CRUSTACEANS



Koonac
Cherax ?preissii

MOLLUSCS



Land Snail
Bothriembryon
species



Rare or unusual Invertebrate species observed during the WWBB

In 2002, a new genus, *Kumbadjena*, was created for a southern species-complex in Western Australia under the Onychophora phylum in the Peripatopsidae family. *Kumbadjena shannonensis* is commonly referred to as the velvet worm and was observed and identified during the WWBB which is an eastern range extension of about 30 km (which is a long way for a velvet worm)

The species within the genera *Kumbadjena* occupy a region of relatively high rainfall in the southernmost portion of the state, its distribution reflecting that of karri (*Eucalyptus diversicolor*) (WA Museum, 2018).



INDIGENOUS HERITAGE

There was no formal indigenous heritage survey undertaken during the WWBB however, some observations were made. Quartz stone flakes from tool knapping were observed, recorded and replaced (Dortch pers. comm., 2021). One granite outcrop had significant Noongar cultural heritage in the form of a capped gnamma, standing stones, lizard traps and extensive petroglyphs (Hopper pers. comm., 2021).

PARTICIPANT SURVEY

The post event survey results showed a 9.6/10 enjoyment level for the event with more than 90% of respondents willing to recommend the event to their friends, 75% of respondent would like to participate in an annual bioblitz and 60% of respondents stayed in paid accommodation in Walpole, on average they stayed 2.8 nights in town.

The comments were overwhelmingly positive. For example:

What did you enjoy?

"The variety of activities, meeting the experts and participants. Seeing part of the wilderness that I wouldn't explore on my own" A. Sobczyk

"Participating in the walks (granite peak and sedgeland) and meeting passionate people who love and care for the natural environment/ Walpole Wilderness. And the Saturday night curry -yum!!"

A. Lapinski

What motivated you to join?

"Interest in the natural history of the area and passionate about contributing to its protection" D. Horn

Most "negative" comments were offered as constructive criticism and reflected the level of organization and communication (not unexpected for a first-time event). For example:

"...organising groups... probably could have been done more effectively – perhaps by providing clear scientific aims/sampling plan for each group prior to registration..."

"Not enough information about what to bring, specific to the tasks (and what would be provided already)..."

MEDIA

The WWBB received fantastic coverage from ABC TV and radio. The television piece was aired nationally to an estimated 2 million viewers and the radio piece reaching an estimated 1.3 million listeners.

Special thanks to Mark Bennett from the ABC for his coverage of the WWBB.

In addition, the Lotterywest funding allowed us to create a short promotional video of the Walpole Wilderness and the WWBB.

CONCLUSION

The first WWBB has been widely regarded as a great success. The feedback from participants (formally and informally) has been that it was very enjoyable and a positive activity for conservation.

ABC TV LINK

Conservationists Build Botanical Picture

<https://www.abc.net.au/news/2021-10-04/conservationists-build-botanical-picture/13569330>

ABC RADIO LINK

*A Big Country
(start @ 13min)*

<https://www.abc.net.au/radionational/programs/abigcountry/related-episode-keywords-for-the-episode/13574468>



The WWBB has captured a lot of new scientific data that has greatly increased our understanding of the local environment. This information will be made available for future research and management online through:

- iNaturalist (<https://inaturalist.ala.org.au/projects/walpole-wilderness-bioblitz-2021>) ,
- Atlas of Living Australia (<https://www.ala.org.au/>) and the
- WWBB website (www.walpolewilderness.org).

Some of the data has already been used to contribute to the assessment of the peatlands as a Threatened Ecological Community (June 2022).

As our inaugural event, we have learned a lot about how to run an event of this magnitude. We have identified the strengths and weaknesses of the event and have some goals to work towards, to

make the event even better each year. Given the level of enthusiasm in joining in with the WWBB, we saw just how important events like these are for the community. There is a strong desire from the broader community to learn more about the wilderness, to engage with the environment and to take positive actions to protect and conserve it.

There are a lot of people to thank for the enormous amount of work that went into the WWBB. To all of the organisers, WNNPA members, sponsors, volunteers, participants, identifiers, cooks, baby sitters and more – the WNNPA committee extend our heartfelt thanks for helping to make this event such a success. Please feel proud of the contribution you have given back to the environment.

“Never doubt that a small group of thoughtful, committed, citizens can change the world. Indeed, it is the only thing that ever has.” Margaret Mead

Walpole Wilderness BioBlitz 2021



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APPENDICES

APPENDIX 1

Conservation codes for Western Australian flora, fungi, lichen & ecological communities

Threatened flora, fungi and lichen species codes

Schedule 1 - Critically Endangered flora

Schedule 2 - Endangered flora

Schedule 3 - Vulnerable flora

Schedule 4 – Presumed Extinct flora

Priority flora, fungi and lichen species codes

Priority 1: Poorly-known species known from one or a few locations (on threatened lands)

Priority 2: Poorly-known species known from one or a few locations (some on conservation lands)

Priority 3: Poorly-known species known from several locations (some on conservation lands)

Priority 4: Rare, near threatened and other species in need of monitoring

SOURCE: *Wildlife Conservation (Rare Flora) Notice 2018*

WEBSITE: Department of Biodiversity, Conservation and Attractions (DBCA), Parks and Wildlife Service, Western Australia

<https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants?view=categories&id=108>

Flora may also be listed as threatened under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*, the Australian Government's central piece of environmental legislation.

Threatened ecological communities

Ecological Community

A naturally occurring biological assemblage that occurs in a particular type of habitat.

A threatened ecological community (TEC) is one which is found to fit into one of the following categories; “presumed totally destroyed”, “critically endangered”, “endangered” or “vulnerable”. Possible threatened ecological communities that do not meet survey criteria are added to DBCA's Priority Ecological Community Lists under Priorities 1, 2 and 3. Ecological Communities that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

WEBSITE: Department of Biodiversity, Conservation and Attractions (DBCA), Parks and Wildlife Service, Western Australia

<https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>

APPENDIX 2

Flora species observations list

FLORA Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Acacia ?crassiuscula</i>	Wattles	Fabaceae
<i>Acacia browniana</i>	Brown's Wattle	Fabaceae
<i>Acacia divergens</i>	Sail-Boat Wattle	Fabaceae
<i>Acacia extensa</i>	Wiry Wattle	Fabaceae
<i>Acacia hastulata</i>	Prickly Swamp Wattle	Fabaceae
<i>Acacia pentadenia</i>	Karri Wattle	Fabaceae
<i>Acacia pentadenia syntoma</i>		Fabaceae
<i>Acacia pulchella</i>	Prickly Moses	Fabaceae
<i>Acacia triptycha</i>		Fabaceae
<i>Acidonia microcarpa</i>		Proteaceae
<i>Actinotus glomeratus</i>		Apiaceae
<i>Actinotus omnifertilis</i>		Apiaceae
<i>Adenanthos cuneatus</i>		Proteaceae
<i>Adenanthos obovatus</i>	Jugflower	Proteaceae
<i>Agonis theiformis</i>		Myrtaceae
<i>Allocasuarina decussata</i>	Karri Sheoak	Casuarinaceae
<i>Allocasuarina fraseriana</i>	Western Sheoak	Casuarinaceae
<i>Amperea simulans</i>		Euphorbiaceae
<i>Anarthria prolifera</i>		Anarthriaceae
<i>Anarthria scabra</i>		Anarthriaceae
<i>Andersonia ?auriculata</i> Priority 3		Ericaceae
<i>Andersonia caerulea</i>	Foxtails	Ericaceae
<i>Andersonia ?hammersleyana</i> Priority 2		Ericaceae
<i>Andersonia redolens</i> Priority 2		Ericaceae
<i>Andersonia sp.</i>		Ericaceae
<i>Andersonia sprengelioides</i>		Ericaceae
<i>Anigozanthos flavidus</i>	Tall Kangaroo Paw	Haemodoraceae
<i>Aotus ?franklandii</i> Priority 2		Fabaceae
<i>Aotus ?intermedia</i>		Fabaceae
<i>Asplenium aethiopicum</i>	Ethiopian Spleenwort	Aspleniaceae
<i>Asplenium flabellifolium</i>	Necklace Fern	Aspleniaceae
<i>Astartea sp.</i>		Myrtaceae

FLORA		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
?Asteraceae (family)	Daisy	Asteraceae
<i>Banksia attenuata</i>	Candlestick Banksia	Proteaceae
<i>Banksia grandis</i>	Giant Banksia	Proteaceae
<i>Banksia formosa</i>	Showy Dryandra	Proteaceae
<i>Banksia quercifolia</i>	Oak-Leaved Banksia	Proteaceae
<i>Billardiera sp.</i>	Apple-Berries	Pittosporaceae
<i>Boronia gracilipes</i>	Karri Boronia	Rutaceae
<i>Boronia megastigma</i>	Scented Boronia	Rutaceae
<i>Boronia molloyae</i>	Tall Boronia	Rutaceae
<i>Boronia nematophylla</i>		Rutaceae
<i>Boronia stricta</i>		Rutaceae
<i>Boronia virgata</i> Priority 4		Rutaceae
<i>Bossiaea eriocarpa</i>	Common Brown Pea	Fabaceae
<i>Bossiaea linophylla</i>	Yellow Bossiaea	Fabaceae
<i>Bossiaea ornata</i>	Broad Leaved Brown Pea	Fabaceae
<i>Burchardia monantha</i>		Colchicaceae
<i>Caesia occidentalis</i>	Pale Grass Lily	Hemerocallidaceae
<i>Caladenia ensata</i>	Stumpy Spider Orchid	Orchidaceae
<i>Caladenia flava</i>	Cowslip Orchid	Orchidaceae
<i>Caladenia flava ssp. sylvestris</i>		Orchidaceae
<i>Caladenia longiclavata</i>	Clubbed Spider Orchid	Orchidaceae
<i>Caladenia magniclavata</i>	Big Clubbed Spider Orchid	Orchidaceae
<i>Caladenia nana nana</i>		Orchidaceae
<i>Caladenia plicata</i>	Crab-Lipped Spider Orchid	Orchidaceae
<i>Calandrinia sp.</i>		Montiaceae
<i>Cassytha sp.</i>	Dodder Laurels	Lauraceae
<i>Cephalotus follicularis</i>	Albany Pitcher Plant	
<i>Chamaescilla corymbosa</i>	Blue Stars	Hemerocallidaceae
<i>Chamaescilla sp.</i>		Hemerocallidaceae
<i>Chamelaucium forestii</i> Priority 2	Waxflowers	Myrtaceae
<i>Chamelaucium sp.</i>	Waxflowers	Myrtaceae
<i>Cheilanthes austrotenuifolia</i>	Rock Fern	Pteridaceae
<i>Chorizema pilicifolium</i>	Holly Flame Pea	Fabaceae
<i>Chorizema rhombeum</i>	Scarlet Flame Pea	Fabaceae
<i>Chorizema ?retrorsum</i>		Fabaceae

FLORA		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Comesperma ?confertum</i>	Milkwort	Polygaceae
<i>Comesperma ?virgatum</i>		Polygaceae
<i>Commersonia ?corniculata</i>		Malvaceae
<i>Conospermum flexuosum</i>		Proteaceae
<i>Conostylis setigera</i>	Bristly Cottonhead	Haemodoraceae
<i>Conostylis aculeata</i>	Prickly Conostylis	Haemodoraceae
<i>Corybas abditus</i> Priority 3	Swamp Helmet Orchid	Orchidaceae
<i>Corybas recurvus</i>	Western Helmet Orchid	Orchidaceae
<i>Corymbia calophylla</i>	Marri	Myrtaceae
<i>Cosmelia rubra</i>	Spindle Heath	Ericaceae
<i>Craspedia variabilis</i>	Common Billy Buttons	Asteraceae
<i>Crassula exserta</i>		Crassulaceae
<i>Crassula sp.</i>	Small Stonecrops	Crassulaceae
<i>Crowea angustifolia</i>	Waxflower	Rutaceae
<i>Crowea angustifolia angustifolia</i>	Waxflower	Rutaceae
<i>Crowea angustifolia platyphylla</i>	Waxflower	Rutaceae
<i>Cryptandra arbutiflora</i>	Waxy Cryptandra	Rhamnaceae
<i>Cryptandra sp.</i>		Rhamnaceae
<i>Cryptostylis ovata</i>	Slipper Orchid	Orchidaceae
<i>Cyanicula sericea</i>	Silky Blue Orchid	Orchidaceae
<i>Cyathochaeta avenacea</i>		
<i>Cyrtostylis sp.</i>	Gnat Orchids	Orchidaceae
<i>Dampiera alata</i>	Winged-Stem Dampiera	Goodeniaceae
<i>Dampiera hederacea</i>	Karri Dampiera	Goodeniaceae
<i>Dampiera linearis</i>	Common Dampiera	Goodeniaceae
<i>Dampiera sp.</i>		Goodeniaceae
<i>Darwinia oederoides</i>		Myrtaceae
<i>Dasypogon bromeliifolius</i>	Drumsticks	Dasypogonaceae
<i>Daviesia flexuosa</i>		Fabaceae
<i>Desmocladius sp.</i>		Restionaceae
<i>Desmocladius fasciculatus</i>		Restionaceae
Diurideae (tribe)		Orchidaceae
<i>Dodonaea ceratocarpa</i>		Sapindaceae
<i>Drakaea glyptodon</i>	King-In-His-Carriage	Orchidaceae
<i>Drakaea sp.</i>	Hammer Orchids	Orchidaceae

FLORA		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Drakaea thynniphila</i>	Narrow-Lipped Hammer Orchid	Orchidaceae
<i>Drosera drummondii</i>		Droseraceae
<i>Drosera erythrogynae</i>		Droseraceae
<i>Drosera glanduligera</i>	Pimpernel Sundew	Droseraceae
<i>Drosera modesta</i>	Modest Rainbow	Droseraceae
<i>Drosera pallida</i>	Pale Rainbow	Droseraceae
<i>Drosera platypoda</i>	Fan-Leaved Sundew	Droseraceae
<i>Drosera pulchella</i>	Pretty Sundew	Droseraceae
<i>Drosera roseana</i>	Rose-Flowered Sundew	Droseraceae
<i>Elythranthera brunonis</i>	Purple Enamel Orchid	Orchidaceae
<i>Eriochilus pulchellus</i>		Orchidaceae
<i>Eriochilus</i> sp.	Bunny Orchids	Orchidaceae
<i>Eucalyptus diversicolor</i>	Karri	Myrtaceae
<i>Eucalyptus marginata</i>	Jarra	Myrtaceae
<i>Eucalyptus megacarpa</i>	Bullich	Myrtaceae
<i>Eucalyptus patens</i>	Common Blackbutt	
Euphorbiaceae	Spurge Family	Euphorbiaceae
<i>Eutaxia myrtifolia</i>	Egg And Bacon Plant	Fabaceae
<i>Eutaxia</i> sp.		Fabaceae
<i>Evandra aristata</i>		Cyperaceae
<i>Gahnia decomposita</i>	Saw Sedge	Cyperaceae
<i>Gompholobium ovatum</i>	Wedge Pea Family	Fabaceae
<i>Gompholobium scabrum</i>	Painted Lady Legume	Fabaceae
<i>Goodenia trinervis</i>	Common Velleia	Goodeniaceae
<i>Grevillea occidentalis</i>		Proteaceae
<i>Grevillea pulchella</i>	Beautiful Grevillea	Proteaceae
<i>Grevillea trifida</i>		Proteaceae
<i>Haemodorum ?sparsiflorum</i>	Bloodroot/Mardja	Haemodoraceae
<i>Haemodorum spicatum</i>	Bloodroot/Born/Mean	Haemodoraceae
<i>Hakea amplexicaulis</i>	Prickly Hakea	Proteaceae
<i>Hakea falcata</i>		Proteaceae
<i>Hakea ?lasianthoides</i>		Proteaceae
<i>Hakea linearis</i>		Proteaceae
<i>Hakea ruscifolia</i>	Candle Hakea	Proteaceae
<i>Hemigenia podalyrina</i>		Lamiaceae

FLORA		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Hibbertia commutata</i>	Guinea-Flower	Dilleniaceae
<i>Hibbertia cunninghamii</i>	Guinea-Flower	Dilleniaceae
<i>Hibbertia inconspicua</i>	Guinea-Flower	Dilleniaceae
<i>Hibbertia sp.</i>	Guinea-Flower	Dilleniaceae
<i>Homalospermum firmum</i>	A Tea Tree	Myrtaceae
<i>Hovea chorizemifolia</i>	Holly-Leaved Hovea	Fabaceae
<i>Hovea elliptica</i>	Tree Hovea	Fabaceae
<i>Hydrocotyle alata</i>		Araliaceae
<i>Hypocalymma cordifolium</i>		Myrtaceae
<i>Hypolaena exsulca</i>		Restionaceae
<i>Isolepis marginata</i>	Common Annual Clubrush	Cyperaceae
<i>Isopogon sp.</i>		Proteaceae
<i>Isopogon sphaerocephalus</i>	Drumstick Isopogon	Proteaceae
<i>Isotropis cuneifolia</i>	Granny Bonnets	Fabaceae
<i>Johnsonia lupulina</i>	Hooded Lily	Hemerocallidaceae
<i>Kennedia coccinea</i>	Coral Vine	Fabaceae
<i>Kingia australis</i>	Bullanock	Dasypogonaceae
<i>Kunzea sulphurea</i>		Myrtaceae
<i>Lasiopetalum sp.</i>		Malvaceae
<i>Lepidosperma effusum</i>	Riverside Sword-Sedge	Cyperaceae
<i>Lepidosperma hopperi</i>		Cyperaceae
<i>Lepidosperma</i> <i>?pubisquameum/squamatum</i>		Cyperaceae
<i>Lepidosperma tetraquetrum</i>		Cyperaceae
<i>Leptocarpus sp.</i>		Restionaceae
<i>Leptomeria scrobiculata</i>		Santalaceae
<i>Leptomeria squarrulosa</i>		Santalaceae
<i>Leucopogon australis</i>	Spiked Beard-Heath	Ericaceae
<i>Leucopogon glabellus</i>		Ericaceae
<i>Leucopogon gracilis</i>		Ericaceae
<i>Leucopogon obovatus ssp. revolutus</i>		Ericaceae
<i>Leucopogon sp.</i> Southern Forests		Ericaceae
<i>Leucopogon verticillatus</i>	Tassel Flower	Ericaceae
<i>Levenhookia pusilla</i>	Tiny Stylewort	Stylidiaceae
<i>Lindsaea linearis</i>	Screw Fern	Lindsaeaceae

FLORA		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Lomandra caespitosa</i>	Tufted Mat Rush	Asparagaceae
<i>Lomandra nigricans</i>		Asparagaceae
<i>Lomandra pauciflora</i>		Asparagaceae
<i>Lyperanthus serratus</i>	Rattle Beaks	Orchidaceae
<i>Macrozamia riedlei</i>	Zamia Palm	Zamiaceae
<i>Melaleuca glauca</i>	Albany Bottlebrush	Myrtaceae
<i>Melaleuca preissiana</i>	Stout Paperbark/Moonah	Myrtaceae
<i>Melaleuca sparsa</i>	Swamp Bottlebrush	Myrtaceae
<i>Melaleuca thymoides</i>	Sand Wattle Myrtle	Myrtaceae
<i>Melaleuca transversa</i>	Gravel Bottlebrush	Myrtaceae
<i>Mesomelaena tetragona</i>	Semaphore Sedge	Cyperaceae
<i>Monotaxis occidentalis</i>		Euphorbiaceae
<i>Neurachne sp.</i>		Poaceae
<i>Nuytsia floribunda</i>	Western Australian Christmas Tree/Moodjar	Loranthaceae
<i>Opercularia hispidula</i>	Hispid Stinkweed	Rubiaceae
<i>Orianthera serpyllifolia</i>		Loganiaceae
<i>Paracaleana nigrita</i>	Flying Duck Orchid	Orchidaceae
<i>Patersonia occidentalis</i>	Purple Flag	Iridaceae
<i>Patersonia umbrosa</i>	Yellow Flags	Iridaceae
<i>Patersonia umbrosa umbrosa</i>	Purple Flags	Iridaceae
<i>Patersonia umbrosa xanthina</i>	Yellow Flags	Iridaceae
<i>Pelargonium littorale</i>	Kopata Storksbill	Geraniaceae
<i>Pentapeltis silvatica</i>	Southern Pentapeltis	Apiaceae
<i>Persoonia longifolia</i>	Snottygobble	Proteaceae
<i>Petrophile diversifolia</i>		Proteaceae
<i>?Pimelea sp.</i>		Thymelaeaceae
<i>Pimelea sp.</i>	Riceflowers	Thymelaeaceae
<i>Pimelea spectabilis</i>		Thymelaeaceae
<i>Pimelea suaveolens</i>	Scented Banjine	Thymelaeaceae
<i>Podocarpus drouynianus</i>	Emu Berry	Podocarpaceae
<i>Prasophyllum cucullatum</i>	Hooded Leek Orchid	Orchidaceae
<i>Pteridium esculentum</i>	Austral Bracken	Dennstaedtiaceae
<i>Pterostylis barbata</i>	Bird Orchid	Orchidaceae
<i>Pterostylis crispula</i>	Slender Snail Orchid	Orchidaceae
<i>Pterostylis karri</i>	Karri Snail Orchid	Orchidaceae

FLORA		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Pterostylis recurva</i>	Jug Orchid	Orchidaceae
<i>Pterostylis sp.</i>	Greenhoods	Orchidaceae
<i>Pterostylis turfosa</i>	Bearded Bird Orchid	Orchidaceae
<i>Pterostylis vittata</i>	Banded Greenhood	Orchidaceae
<i>Pultenaea reticulata</i>		Fabaceae
<i>Pyrorchis forrestii</i>		Orchidaceae
<i>Quinetia urvillei</i>		Asteraceae
<i>Ricinocarpos glaucus</i>	Wedding Bush	Euphorbiaceae
<i>Rytidosperma setaceum</i>	Small-Flowered Wallaby Grass	Poaceae
<i>Rytidosperma sp.</i>	Wallaby Grasses	Poaceae
<i>Scaevola calliptera</i>	Royal Robe	Goodeniaceae
<i>Schoenus sp.</i>	Bogrushes	Cyperaceae
<i>Sphaerolobium alatum</i>	Globe Pea - winged stems	Fabaceae
<i>Sphaerolobium fornicatum</i>	A Globe Pea	Fabaceae
<i>Sphaerolobium rostratum</i>	A Globe Pea	Fabaceae
? <i>Sphaerolobium sp.</i>	A Globe Pea	Fabaceae
<i>Sphaerolobium sp.</i>	A Globe Pea	Fabaceae
<i>Sphenotoma gracilis</i>	Swamp Paper-Heath	Ericaceae
<i>Sphenotoma sp.</i>	A Paper-Heath	Ericaceae
<i>Stylidium piliferum</i>	Common Butterfly Triggerplant	Stylidiaceae
<i>Stylidium scandens</i>	Climbing Triggerplant	Stylidiaceae
<i>Stylidium sp.</i>	Triggerplants	Stylidiaceae
<i>Styphelia pendula</i>		Ericaceae
<i>Styphelia propinqua</i>		Ericaceae
<i>Synaphea petiolaris</i>	Synaphea	Proteaceae
<i>Taxandria fragrans</i>		Myrtaceae
<i>Taxandria juniperina</i>	Warren River Cedar/Wattie	
<i>Taxandria parviceps</i>	Fine Tea Tree	Myrtaceae
<i>Tetradlea ?setigera</i>		Elaeocarpaceae
<i>Tetradlea affinis</i>		Elaeocarpaceae
<i>Tetradlea hispidissima</i>		Elaeocarpaceae
<i>Thelymitra antennifera</i>	Lemon-Scented Sun Orchid	Orchidaceae

FLORA		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Thelymitra sp.</i>	Sun Orchids	Orchidaceae
<i>Thelymitra uliginosa</i>	Southern Curly Locks	Orchidaceae
<i>Thomasia paniculata</i>		Malvaceae
<i>Thomasia sp.</i>	Thomasias	Malvaceae
<i>Thysanotus sp.</i>	Fringe-Lilies	Orchidaceae
<i>Tremandra diffusa</i>		Elaeocarpaceae
<i>Tremandra stelligera</i>		Elaeocarpaceae
<i>Tripterococcus brunonis</i>	Winged Stackhousia	Celastraceae
<i>Trymalium odoratissimum</i>	Karri Hazel	Rhamnaceae
<i>Utricularia multifida</i>	Pink Petticoats	Lentibulariaceae
<i>Verticordia plumosa</i>	Plumed Featherflower	Myrtaceae
<i>Xanthorrhoea gracilis</i>	Mimidi	Xanthorrhoeaceae
<i>Xanthorrhoea preissii</i>	Balga	Xanthorrhoeaceae
<i>Xanthorrhoea semiplana</i>	Tufted Grass-Tree	Xanthorrhoeaceae
<i>Xanthosia candida</i>		Apiaceae
<i>Xanthosia rotundifolia</i>	Southern Cross	Apiaceae
<i>Xanthosia tasmanica</i>		Apiaceae
<i>Xyris sp.</i>	Yellow-Eyed Grasses	Xyridaceae

APPENDIX 3

Fungi & bryophytes species observations lists

BRYOPHYTES		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Asterella drummondii</i>	Liverworts	Aytoniaceae
<i>Campylopus bicolor</i>	Haplolepideous mosses	Leucobryaceae
<i>Campylopus introflexus</i>	Heath Star-moss	Leucobryaceae
<i>Campylopus sp.</i>	Haplolepideous mosses	Leucobryaceae
<i>Ceramanus centipes</i>	Liverworts	Lepidoziaceae
<i>Ceratodon purpureus</i>	Redshank	Ditrichaceae
<i>Chaetophyllopsis whiteleggei</i>	Liverworts	Cephaloziellaceae
<i>Funaria hygrometrica</i>	Bonfire moss	Funariaceae
<i>Marchantia berteroana</i>	Liverworts	Marchantiaceae
<i>Phylloglossum drummondii</i>	Pygmy Clubmoss	Lycopodiaceae
Pottiaceae	Moss	Pottiaceae
<i>Rhacocarpus purpurascens</i>	Royal Rock Moss	Hedwigiaceae
<i>Rosulabryum billardieri</i>	Moss	Bryaceae
<i>Sematophyllum homomallum</i>	Moss	Sematophyllaceae
<i>Symphyogyna podophylla</i>	Liverworts	Pallaviciniaceae

FUNGI		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
Agaricomycetes (class)	Agaricomycetes (class)	
Agaricomycotina (subdivision)	Higher Basidiomycetes	
<i>Aleurina ?ferruginea</i>	Fleshy Cup Fungus	Pyronemataceae
<i>Amanita ?hiltonii</i>		Amanitaceae
<i>Anthracoophyllum archeri</i>	Orange Fan	Marasmiaceae
Ascomycota (phylum)	Ascomycete Fungi	
<i>Banksiamyces</i>		Heliotaceae
<i>Calostoma fuscum</i>		Sclerodermataceae
<i>Ceriporia purpurea</i>		Irpicaceae
<i>Cheilymenia sp.</i>		Pyronemataceae
<i>Cladia aggregata</i>		Cladoniaceae
<i>Cladia sp.</i>		Cladoniaceae
<i>Cladonia sp.</i>	Pixie Cup Lichens	Cladoniaceae

FUNGI		
Documented on iNaturalist		
Cladoniaceae (family)	spindles and structured lichens	Cladoniaceae
<i>Coltricia sp.</i>	Tiger's Eye Fungus	Hymenochaetaceae
<i>Cortinarius sanguineus</i>	Bloodred Webcap	Cortinariaceae
<i>Deconica coprophila</i>	Dung-loving Deconica	Strophariaceae
Fungi	Skin fungi	
<i>Hygrocybe sp.</i>	Waxcaps	Hygrophoraceae
<i>Inocybe sp.</i>	Fiber Caps	Inocybaceae
<i>Laccaria sp.</i>	The Deceiver	Hydnangiaceae
<i>Lactarius eucalypti</i>	Milk-cap Fungus	Russulaceae
Lecideaceae (family)		Lecideaceae
<i>Lichenomphalia chromacea</i>	Yellow Navel	Hygrophoraceae
<i>Marasmius sp.</i>	Pinwheels and parachute mushrooms	Marasmiaceae
<i>Mycena kurramulla</i>		Mycenaceae
Parmeliaceae (family)	Shield lichens and allies	Parmeliaceae
<i>Peziza sp.</i>	Pezizas, Desert Truffles, and Allies	Pezizaceae
Pezizaceae (family)	Pezizas, Desert Truffles, and Allies	Pezizaceae
Pezizales (order)	Black cup Ascomycetes	
<i>Phaeophyscia sp.</i>	Wreath lichens	Physciaceae
<i>Pholiota species</i>	Scalycaps	Strophariaceae
<i>Pluteus ?lutescens</i>	Shields	Pluteaceae
Polyporaceae (family)	Bracket fungi/Brown shelf fungus	Polyporaceae
<i>Protostropharia semiglobata</i>	Dung Roundhead	Strophariaceae
<i>Pulchrocladia retipora</i>	Coral lichen	Cladoniaceae
<i>Russula sp.</i>	Brittlegills (Russulaceae family)	Russulaceae
Sarcoscyphaceae (family)	Elf Cups and Allies	Sarcoscyphaceae
<i>Stereum hirsutum</i>	Hairy Curtain Crust	Stereaceae
<i>Stereum sp.</i>	Higher Basidiomycetes	Stereaceae
<i>Thelophora sp.</i>	Thelophora	Thelephoraceae
<i>Trametes coccinea</i>	Southern Cinnabar Polypore	Polyporaceae
<i>Trametes versicolor</i>	Turkey-tail	Polyporaceae

FUNGI

Documented on iNaturalist

<i>Tricholoma sp.</i>	Cladoniaceae	Tricholomataceae
Umbilicariaceae (family)	Umbilicariaceae	Umbilicariaceae
<i>Usnea sp.</i>	Beard Lichens	Parmeliaceae

FUNGI, LIVERWORTS & BRYOPHYTES

Compiled by Katrina Syme

GROUP	FAMILY	GENUS	SPECIES/ EPITHET
Bryophyte	Bryaceae	Rosulabryum	billarderi
Bryophyte	Bryaceae	Rosulabryum	sp.
Fungus		Unknown	sp. tiny brown, gilled
Fungus		Unknown	sp. purple corticioid
Fungus		Unknown	white thin bracket
Fungus		Unknown	sp. tiny white bracket mazelike
Fungus		Unknown	sp. Coltricia mould
Fungus		Unknown	chunky brown bracket
Fungus		Unknown	sp. white corticioid
Fungus		Unknown	sp. thin pale yellow corticioid
Fungus		Unknown	sp. corticioid
Fungus	Amanitaceae	Amanita	flaviphylla
Fungus	Amanitaceae	Amanita	flaviphylla
Fungus	Auriculariaceae	Exidia	glandulosa
Fungus	Cantharellaceae	Craterellus	australis
Fungus	Cordycipitaceae	Cordyceps	?tenuipes
Fungus	Cortinariaceae	Galerina?	sp.
Fungus	Cortinariaceae	Cortinarius	basirubescens group
Fungus	Cortinariaceae	Cortinarius	sp. violet
Fungus	Cortinariaceae	Cortinarius	sp. small brown, hollow stem
Fungus	Cortinariaceae	Cortinarius	sp. rusty cap & stem
Fungus	Dacrymycetaceae	Heterotextus	peziziformis
Fungus	Dacrymycetaceae	Heterotextus	peziziformis
Fungus	Dacrymycetaceae	Heterotextus	peziziformis
Fungus	Entolomataceae	Entoloma	sp. brown with pointed cap
Fungus	Entolomataceae	Entoloma	sp. brown
Fungus	Helotiaceae	Phaeohelotium	baileyanum
Fungus	Helotiaceae	Phaeohelotium	baileyanum
Fungus	Helotiaceae	Phaeohelotium	baileyanum

FUNGI, LIVERWORTS & BRYOPHYTES

Compiled by Katrina Syme

GROUP	FAMILY	GENUS	SPECIES/ EPITHET
Fungus	Helotiaceae	Banksiomyces	sp.
Fungus	Hydnaceae	Hydnum	sp. crocidens group
Fungus	Hydnaceae	Hydnum	crocidens group
Fungus	Hygrophoraceae	Lichenomphalia	chromacea
Fungus	Hygrophoraceae	Lichenomphalia	chromacea
Fungus	Hygrophoraceae	Hygrocybe	polychroma
Fungus	Hygrophoraceae	Lichenomphalia	chromacea
Fungus	Hygrophoraceae	Hygrocybe	sp. red, small
Fungus	Hygrophoraceae	Hygrocybe	sp. tiny red
Fungus	Hymenochaetaceae	Coltricia	sp.
Fungus	Hypocreaceae	Hypocrea	sp.
Fungus	Hysterangiaceae	Hysterangium	sp.
Fungus	Hysterangiaceae	Hysterangium	sp.
Fungus	Hysterangiaceae	Hysterangium	sp.
Fungus	Marasmiaceae	Marasmiellus	sp. garlic odour
Fungus	Marasmiaceae	Marasmiellus	sp. garlic
Fungus	Mycenaceae	Mycena	kurramulla
Fungus	Peniophoraceae	Peniophora	sp.
Fungus	Pezizaceae	Plicaria?	sp. black
Fungus	Pezizaceae	Peziza?	sp. black cups
Fungus	Pezizaceae	?Peziza	sp. dull yellow ochre cups
Fungus	Phanerochaetaceae	Ceriporia?	purpurea
Fungus	Sarcosomataceae	Pseudoplectania?	sp. black stalked cup
Fungus	Schizoporaceae	Schizopora	sp.
Fungus	Stereaceae	Stereum	sp.
Fungus	Stereaceae	Stereum	hirsutum
Fungus	Stereaceae	Stereum	hirsutum
Fungus	Strophariaceae	Galerina	sp.
Fungus	Thelephoraceae	Thelephora	sp. white
Fungus	Thelephoraceae	Thelephora	sp. brown
Fungus	Tremellaceae	Tremella	aurantia
Fungus	Tricholomataceae	Tricholoma	sp.
Fungus	Unknown	Unknown	bracket
Liverwort	Acrobolbaceae	Goebelobryum	sp.
Liverwort	Acrobolbaceae	Lethocolea	sp.

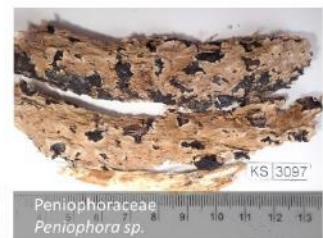
FUNGI, LIVERWORTS & BRYOPHYTES

Compiled by Katrina Syme

GROUP	FAMILY	GENUS	SPECIES/ EPITHET
Liverwort	Lepidoziaceae	?Telaranea	sp.
Liverwort	Marchantiaceae	Marchantia	berteroana
Liverwort	Pallaviciniaceae	Podomitrium	phyllanthus

Fungi, Liverworts & Mosses

Collected by Katrina Symes for the WWBB 2 + 3 October 2021



APPENDIX 4

Conservation codes for Western Australian fauna

Threatened fauna species codes

Schedule 1 - Critically Endangered fauna

Schedule 2 - Endangered fauna

Schedule 3 - Vulnerable fauna

Schedule 4 - Presumed Extinct fauna

Schedule 5 - Migratory birds protected under an international agreement

Schedule 6 – Conservation Dependent fauna

Schedule 7 - Other Specially Protected fauna

Priority fauna species codes

Priority 1: Poorly-known species known from one or a few locations (on threatened lands)

Priority 2: Poorly-known species known from one or a few locations (some on conservation lands)

Priority 3: Poorly-known species known from several locations (some on conservation lands)

Priority 4: Rare, near threatened and other species in need of monitoring

SOURCE: *Wildlife Conservation (Specially Protected Fauna) Notice 2018*

WEBSITE: Department of Biodiversity, Conservation and Attractions (DBCA), Parks And Wildlife Service, Western Australia

<https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals?view=categories&id=109>

Fauna may also be listed as threatened under the Commonwealth [*Environment Protection and Biodiversity Conservation Act 1999*](#), the Australian Government's central piece of environmental legislation.

APPENDIX 5

Bird species observations lists

BIRDS	
Documented on iNaturalist & community survey observations	
COMMON NAME	SCIENTIFIC NAME
Australian Owlet Nightjar	<i>Aegotheles cristatus</i>
Australian Painted Buttonquail	<i>Turnix varius ssp. varius</i>
Australian Ringneck	<i>Barnardius zonarius</i>
Forest Red-tailed Black-cockatoo Vulnerable	<i>Calyptorhynchus banksii naso</i>
Red-winged Fairywren	<i>Malurus elegans</i>
Scarlet Robin	<i>Petroica boodang</i>
South-western Grey Currawong	<i>Strepera versicolor ssp. plumbea</i>
Swamp Harrier	<i>Circus approximans</i>
Western Thornbill	<i>Acanthiza inornata</i>
Western Yellow Robin	<i>Eopsaltria griseogularis</i>
White-browed Scrubwren	<i>Sericornis frontalis</i>

BIRDS	
Compiled by Birdlife Australia	
COMMON NAME	SCIENTIFIC NAME
Australian Raven	<i>Corvus coronoides</i>
Australian Ringneck	<i>Barnardius zonarius</i>
Baudin's Cockatoo Endangered	<i>Zanda baudinii</i>
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>
Brown Goshawk	<i>Accipiter fasciatus</i>
Brown Honeyeater	<i>Lichmera indistincta</i>
Dusky Woodswallow	<i>Artamus cyanopterus</i>
Forest Red-tailed Black-Cockatoo Vulnerable	<i>Calyptorhynchus banksii naso</i>
Grey Butcherbird	<i>Cracticus torquatus</i>
Grey Fantail	<i>Rhipidura fuliginosa</i>
Grey Shrike-thrush	<i>Colluricincla harmonica</i>
Inland Thornbill	<i>Acanthiza apicalis</i>
Laughing Kookaburra Introduced	<i>Dacelo novaeguineae</i>
New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>
Purple-crowned Lorikeet	<i>Glossopsitta porphyrocephala</i>
Red-capped Parrot	<i>Purpureicephalus spurius</i>
Red-winged Fairy-wren	<i>Malurus elegans</i>
Rufous Whistler	<i>Pachycephala rufiventris</i>
Scarlet Robin	<i>Petroica boodang</i>
Shining Bronze-Cuckoo	<i>Chalcites lucidus</i>
Silvereye	<i>Zosterops lateralis</i>
South-western Grey Currawong	<i>Strepera versicolor ssp. plumbea</i>
Splendid Fairy-wren	<i>Malurus splendens</i>

BIRDS

Compiled by Birdlife Australia

COMMON NAME	SCIENTIFIC NAME
Spotted Pardalote	<i>Pardalotus punctatus</i>
Square-tailed Kite	<i>Lophoictinia isura</i>
Striated Pardalote	<i>Pardalotus striatus</i>
Tree Martin	<i>Petrochelidon nigricans</i>
Varied Sittella	<i>Daphoenositta chrysoptera</i>
Welcome Swallow	<i>Hirundo neoxena</i>
Western Gerygone	<i>Gerygone fusca</i>
Western Spinebill	<i>Acanthorhynchus superciliosus</i>
Golden Whistler/Western Whistler	<i>Pachycephala pectoralis</i>
White-breasted Robin	<i>Quoyornis georgianus</i>
White-browed Scrubwren	<i>Sericornis frontalis</i>
White-naped Honeyeater	<i>Melithreptus lunatus</i>

Source: <https://birddata.birdlife.org.au/survey?id=5546731&h=8c0cea5b>
Birdlife Australia, 2022

APPENDIX 6

Mammal species observations list

NATIVE MAMMALS		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Antechinus flavipes</i>	Yellow-footed antechinus	Dasyuridae
<i>Dasyurus geoffroii</i> Vulnerable	Western Quoll/Chuditch	Dasyuridae
<i>Isodon obesulus subsp. fusciventer</i> Priority 4	Quenda/Southwestern Brown Bandicoot	Peramelidae
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	Macropodidae
<i>Macropus irma</i> Priority 4	Western Brush Wallaby/Black-gloved Wallaby	Macropodidae
<i>Phascogalus tapoatafa</i> Vulnerable	Brush-tailed Phascogale/Wambenger	Dasyuridae
<i>Rattus fuscipes</i>	Australian Bush Rat	Muridae
<i>Setonix brachyurus</i> Vulnerable	Quokka	Macropodidae
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	Tachyglossidae
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	Phalangeridae

INTRODUCED MAMMALS		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Felis catus</i> Declared	Cat	Felidae
<i>Sus scrofa</i> Declared	Wild pig/Wild Boar	Suidae
<i>Vulpes vulpes</i> Declared	Red Fox	Canidae

Additional camera trap images in the area

Brush-tailed Phascogale/Wambenger
Phascogalus tapoatafa



Western Quoll/Chuditch
Dasyurus geoffroii



APPENDIX 7

Reptile species observations list

REPTILES		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Christinus marmoratus</i>	Southern Marbled Gecko	Gekkonidae
<i>Ctenotus labillardieri</i>	Common South-west Ctenotus	Scincidae
<i>Egernia kingii</i>	King's Skink	Scincidae
<i>Egernia napoleonis</i>	South-western Crevice Skink	Scincidae
<i>Hemiergis sp.</i>		Scincidae
<i>Hemiergis peronii</i>	Lowlands Earless Skink	Scincidae
<i>Notechis scutatus occidentalis</i>	Western Tiger Snake	Elapidae
<i>Pseudonaja affinis</i>	Dugite	Elapidae
<i>Rhinoplocephalus bicolor</i>	Muller's Snake	Elapidae
<i>Varanus rosenbergi</i>	Southern Heath Monitor	Varanidae

Additional camera trap images in the area

King's Skink
Egernia kingiirus



Southern Heath Monitor
Varanus rosenbergi



APPENDIX 8

Amphibian species observations list

AMPHIBIANS		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
Anura (order)	Frogs and Toads	
<i>Crinia georgiana</i>	Quacking Frog	Myobatrachidae
<i>Crinia glauerti</i>	Glauert's Froglet	Myobatrachidae
<i>Crinia pseudinsignifera</i>	False Western Froglet	Myobatrachidae
<i>Crinia sp.</i>		Myobatrachidae

APPENDIX 9

Invertebrate species observations lists

ARACHNIDS		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>?Eriophora/Hortophora</i> sp.	Orbweavers	Araneidae
Araneidae (family)	Orbweavers	Araneidae
Nicodamidae (family)	Red-and-black Spiders	Nicodamidae
Trombidioidea (superfamily)	Velvet Mites	Trombidioidea (superfamily)

INSECTS		
Documented on iNaturalist		
SCIENTIFIC NAME	COMMON NAME	FAMILY
Acrididae	Grasshopper	Acrididae
<i>Antichiropus</i> sp.	Millipede	Paradoxosomatidae
<i>Arphax</i> species	Stick Insects	Phasmatidae
Campomyrma sp. (subgenus)	Spiny Ants (Polyrhachis genus)	Formicidae
Coleoptera (order)	Beetles	
<i>Cormocephalus</i> sp.	Common Centipedes	Scolopendridae
<i>Diphucephala</i> sp.	Scarab Beetle	Melolonthidae
Diptera (order)	Flies	
Ectobiidae (family)	Wood Cockroaches	Ectobiidae
<i>Fletcheria</i> sp.	Land planarian	Geoplanidae
Hemiptera (order)	True Bugs, Hoppers, Aphids, and allies	
Hymenoptera (order)	Ants, Bees, Wasps, and Sawflies	
Ichneumonidae (subfamily)	Ichneumonid Wasps	Ichneumonoidea (superfamily); Ichneumonidae (subfamily)
<i>Iridomyrmex</i> sp.	Rainbow Ants	Formicidae
<i>Laxta</i> sp.	Giant Cockroaches	Blaberidae
Lepidoptera (order)	Butterflies and Moths	
Malachiinae (subfamily)	Malachite Beetles	Cleroidea (superfamily)
<i>Myrmecia imaii</i>	Bull and Dinosaur Ants	Formicidae (superfamily); Myrmeciinae (subfamily)
<i>Myrmecia regularis</i>	Bull and Dinosaur Ants (Myrmeciinae subfamily)	Formicidae (superfamily); Myrmeciinae (subfamily)
<i>Nerthra</i> sp.	Toad Bugs	Gelastocoridae
<i>Paraoxypilus tasmaniensis</i>	Southern Boxer Bark Mantis	Amorphoscelidae
<i>Paropsisterna galatea</i>	Leaf Beetle	Chrysomelidae
<i>Polyzosteria cuprea</i>	Native Cockroach	Blattidae

INSECTS

Documented on iNaturalist

SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Pterolocera sp.</i>	Moths	Anthelidae
Pterygota (subclass)	Winged and Once-winged Insects	
Termitoidae (family)	Termites	Termitoidae

MOLLUSCS

Documented on iNaturalist

SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Bothriembryon sp.</i>	Helicinan Snails and Slugs (Helicina suborder)	Orthalicoidea (superfamily); Bothriembryontidae (subfamily)

CRUSTACEAN

Documented on iNaturalist

SCIENTIFIC NAME	COMMON NAME	FAMILY
<i>Cherax preissii</i>	Koonac	Parastacidae

APPENDIX 10

Terrestrial invertebrate species list

TERRESTRIAL ARTHROPOD SPECIES LIST

Compiled by WA Museum

SUBPHYLUM	CLASS	ORDER	INFRAORDER	FAMILY	GENUS	SPECIES
Chelicerata	Arachnida	Acari		Ixodidae	Ixodes	australiensis
Chelicerata	Arachnida	Acari		Trombididae		
Chelicerata	Arachnida	Araneae	Araneomorphae	`Gnaphosidae?`		
Chelicerata	Arachnida	Araneae	Mygalomorphae	Anamidae	Proshermacha	`sp. indet. (juvenile)`
Chelicerata	Arachnida	Araneae	Araneomorphae	Araneidae	Plebs	cyphoxis
Chelicerata	Arachnida	Araneae	Araneomorphae	Cheiracanthidae	Cheiracanthium	
Chelicerata	Arachnida	Araneae	Araneomorphae	Clubionidae	Clubiona	
Chelicerata	Arachnida	Araneae	Araneomorphae	Cycloctenidae	`genus?`	`sp.?`
Chelicerata	Arachnida	Araneae	Araneomorphae	Gnaphosidae		
Chelicerata	Arachnida	Araneae	Araneomorphae	Hahniidae	`cf 2PB genus 1`	`cf 2PB sp. 1`
Chelicerata	Arachnida	Araneae	Araneomorphae	Hahniidae	Scotospilus	`red & black`
Chelicerata	Arachnida	Araneae	Araneomorphae	Linyphiidae	`genus?`	`sp.?`
Chelicerata	Arachnida	Araneae	Araneomorphae	Linyphiidae	Laetesia	`sp.`
Chelicerata	Arachnida	Araneae	Araneomorphae	Linyphiidae	Laperousea	`sp.`
Chelicerata	Arachnida	Araneae	Araneomorphae	Lycosidae	Artoria	
Chelicerata	Arachnida	Araneae	Araneomorphae	Mimetidae	Australomimetes	diabolicus
Chelicerata	Arachnida	Araneae	Araneomorphae	Miturgidae	Argoctenus	`sp.`
Chelicerata	Arachnida	Araneae	Araneomorphae	Nicodamidae	Ambicodamus	marae
Chelicerata	Arachnida	Araneae	Araneomorphae	Oonopidae	Orchestina	
Chelicerata	Arachnida	Araneae	Araneomorphae	Oonopidae	Xestaspis	
Chelicerata	Arachnida	Araneae	Araneomorphae	Orsolobidae	Tasmanoonops	`sp. indet. (juvenile)`
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	`genus?`	`sp.?`
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	`Jotus`	michaelseni

TERRESTRIAL ARTHROPOD SPECIES LIST

Compiled by WA Museum

SUBPHYLUM	CLASS	ORDER	INFRAORDER	FAMILY	GENUS	SPECIES
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	`Lycidas`	`big embolis, yellow face`
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	`Lycidas`	`no colours/brushes`
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	`Neon grp`	`sp. indet.`
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	Damoetas	
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	Opisthonus	`sp.`
Chelicerata	Arachnida	Araneae	Araneomorphae	Salticidae	Sondra	`sp.`
Chelicerata	Arachnida	Araneae	Araneomorphae	Segestriidae	`genus?`	`sp. indet. (female?)`
Chelicerata	Arachnida	Araneae	Araneomorphae	Selenopidae	Karaops	`sp. indet. (juvenile)`
Chelicerata	Arachnida	Araneae	Araneomorphae	Selenopidae	Karaops	francesae
Chelicerata	Arachnida	Araneae	Araneomorphae	Sparassidae	Neosparassus	`sp. WW1`
Chelicerata	Arachnida	Araneae	Araneomorphae	Tetragnathidae	Pinkfloydia	harveii
Chelicerata	Arachnida	Araneae	Araneomorphae	Theridiidae		
Chelicerata	Arachnida	Araneae	Araneomorphae	Theridiidae	`genus?`	`sp.?`
Chelicerata	Arachnida	Araneae	Araneomorphae	Theridiidae	Euryopsis	
Chelicerata	Arachnida	Araneae	Araneomorphae	Theridiidae	Phoroncidia	`sp. indet. (juvenile)`
Chelicerata	Arachnida	Araneae	Araneomorphae	Thomisidae	Bomis	hippoponi
Chelicerata	Arachnida	Araneae	Araneomorphae	Thomisidae	Sidymella	
Chelicerata	Arachnida	Araneae	Araneomorphae	Thomisidae	Sidymella	`sp. WW2`
Chelicerata	Arachnida	Araneae	Araneomorphae	Thomisidae	Stephanopsis	`sp. WW1`
Chelicerata	Arachnida	Araneae	Araneomorphae	Thomisidae	Stephanopsis	`sp. WW2`
Chelicerata	Arachnida	Araneae	Araneomorphae	Thomisidae	Stephanopsis	`sp. WW3`
Chelicerata	Arachnida	Araneae	Araneomorphae	Thomisidae	Tharpyna	
Chelicerata	Arachnida	Araneae	Araneomorphae	Trochanteridae	Longrita	insidiosa

TERRESTRIAL ARTHROPOD SPECIES LIST

Compiled by WA Museum

SUBPHYLUM	CLASS	ORDER	INFRAORDER	FAMILY	GENUS	SPECIES
Chelicerata	Arachnida	Araneae	Araneomorphae	Trochanteriidae	Trachycosmus	sculptilis
Chelicerata	Arachnida	Araneae	Araneomorphae	Zodariidae	Australutica	
Myriapoda	Symphyla	Cephalostigmata				
	Udeonychophora ¹	Euonychophora ¹		Peripatopsidae ¹	Kumbadjena ¹	
Myriapoda	Chilopoda	Geophilida		Chilenophilidae	`genus?`	`sp.?`
Myriapoda	Chilopoda	Lithobiida		Henicopidae	Dichelobius	flavens
Myriapoda	Chilopoda	Lithobiida		Henicopidae	Henicops	dentatus
Chelicerata	Arachnida	Opiliones		Neopilionidae	Megalopsalis	`sp. indet. (juvenile)`
Chelicerata	Arachnida	Opiliones		Neopilionidae	Megalopsalis	`sp.`
Chelicerata	Arachnida	Opiliones		Triaenonychidae	`Genus 03`	
Chelicerata	Arachnida	Opiliones		Triaenonychidae	`Genus 08`	
Myriapoda	Diplopoda	Polydesmida		Paradoxosomatidae	`Antichiropus?`	`sp. indet. (juvenile)`
Chelicerata	Arachnida	Pseudoscorpiones		Chernetidae	Calymmachernes	angulatus
Chelicerata	Arachnida	Pseudoscorpiones		Chthoniidae	Austrochthonius	sp.
Chelicerata	Arachnida	Pseudoscorpiones		Chthoniidae	Lagynochthonius	australicus
Myriapoda	Chilopoda	Scolopendrida		Cryptopidae	Cryptops	
Myriapoda	Chilopoda	Scolopendrida		Scolopendridae	Cormocephalus	hartmeyeri
Chelicerata	Arachnida	Scorpiones		Bothriuridae	Cercophonius	sulcatus
Myriapoda	Chilopoda	Scutigerida		Scutigeridae	Allothreura	
Myriapoda	Diplopoda	Spirostreptida		Iulomorphidae	Atelomastix	francesae
Myriapoda	Diplopoda	Spirostreptida		Iulomorphidae	Samichus	`sp.`

¹All species are within the phylum Arthropoda with the exception of Kumbadjena (genus) which is from the Onychophora phylum.

APPENDIX 11

Macro-aquatic fauna species list

MACRO-AQUATIC FAUNA SPECIES LIST					
Compiled by Biologic Environmental Survey					
SITE	PHYLUM	CLASS	ORDER	FAMILY	LOWEST_ID
Peak Peat	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae sp.
Peak Peat	ARTHROPODA	Insecta	Diptera	Culicidae	Aedes sp.
Peak Peat	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanidae sp.
Peak Peat	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomidae sp. (P)
Peak Peat	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtidae sp. (L)
Peak Peat	ARTHROPODA	Malacostraca	Amphipoda		Amphipoda sp.
Peak Peat	ARTHROPODA	Malacostraca	Decapoda	Parastacidae	<i>Cherax preisii</i>
Peak Peat	ARTHROPODA	Insecta	Lepidoptera		
Peak Peat	ANNELIDA	Oligochaeta			Oligochaeta sp.
Peak Peat	CHORDATA	Amphibia	Anura	Myobatrachidae	<i>Crinia georgiana</i>
Peak Peat	CHORDATA	Amphibia	Anura	Myobatrachidae	<i>Crinia glauerti</i>
Creek	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtidae sp. (L)
Creek	ARTHROPODA	Insecta	Odonata		Anisoptera sp.
Creek	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironominae sp.
Creek	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae sp.
Creek	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae sp.
Creek	ARTHROPODA	Insecta	Diptera		Diptera sp.
Creek	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipulidae sp.
Creek	ARTHROPODA	Insecta	Diptera	Simuliidae	Simuliidae sp.
Creek	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Ceratopogoninae sp.
Creek	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	<i>Dasyhelea</i> sp.
Creek	ARTHROPODA	Insecta	Diptera	Dolichopodidae	Dolichopodidae sp.

MACRO-AQUATIC FAUNA SPECIES LIST

Compiled by Biologic Environmental Survey

SITE	PHYLUM	CLASS	ORDER	FAMILY	LOWEST_ID
Creek	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomidae sp. (P)
Creek	ARTHROPODA	Insecta	Hemiptera	Veliidae	<i>Nesidovelia</i> sp.
Creek	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	<i>Hydrobiosella</i> sp. AV16
Creek	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	<i>Maydenoptila</i> sp.
Creek	ARTHROPODA	Malacostraca	Amphipoda		Amphipoda sp.
Creek	ARTHROPODA	Ostracoda			Ostracoda sp.
Creek	ARTHROPODA	Maxillopoda	Cyclopoida		Cyclopoida sp.
Creek	ARTHROPODA	Malacostraca	Decapoda	Parastacidae	<i>Cherax quinquecarinatus</i>
Creek	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Leptophlebiidae sp.
Creek	ARTHROPODA	Entognatha	Entomobryomorpha		Entomobryoidea sp.
Creek	NEMATODA				Nematoda sp.
Creek	ARTHROPODA	Entognatha	Poduromorpha		Poduroidea sp.
Creek	ANNELIDA	Oligochaeta			Oligochaeta sp.
Peat 3B	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Dytiscidae sp. (L)
Peat 3B	ARTHROPODA	Insecta	Coleoptera		Coleoptera sp. (L)
Peat 3B	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae sp.
Peat 3B	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironominae sp.
Peat 3B	ARTHROPODA	Insecta	Diptera	Culicidae	Culicidae sp. (P)
Peat 3B	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Ceratopogoninae sp.
Peat 3B	ARTHROPODA	Insecta	Diptera	Culicidae	<i>Anopheles</i> sp.
Peat 3B	ARTHROPODA	Insecta	Hemiptera	Mesoveliidae	Mesoveliidae sp.
Peat 3B	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	<i>Triplectides</i> sp. AV1
Peat 3B	ARTHROPODA	Malacostraca	Amphipoda		Amphipoda sp.
Peat 3B	ARTHROPODA	Maxillopoda	Cyclopoida		Cyclopoida sp.
Peat 3B	ARTHROPODA	Maxillopoda	Calanoida		Calanoida sp.
Peat 3B	ARTHROPODA	Branchiopoda	Diplostraca		Cladocera sp.

MACRO-AQUATIC FAUNA SPECIES LIST

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SITE	PHYLUM	CLASS	ORDER	FAMILY	LOWEST_ID
Peat 3B	ARTHROPODA	Maxillopoda	Harpacticoida		Harpacticoida sp.
Peat 3B	ARTHROPODA	Malacostraca	Decapoda	Parastacidae	<i>Cherax preisii</i>
Peat 3B	ARTHROPODA	Entognatha	Entomobryomorpha		Entomobryoidea sp.
Peat 3B	NEMATODA				Nematoda sp.
Peat 3B	ARTHROPODA	Entognatha	Symphyleona		Symphyleona sp.
Peat 3B	ARTHROPODA	Entognatha	Poduromorpha		Poduroidea sp.
Peat 3B	ARTHROPODA	Arachnida			Acari sp.
Peat 3B	ANNELIDA	Oligochaeta			Oligochaeta sp.
Peat 3B	CHORDATA	Amphibia	Anura	Myobatrachidae	<i>Crinia georgiana</i>
Peat 3A	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Dytiscidae sp. (L)
Peat 3A	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtidae sp. (L)
Peat 3A	ARTHROPODA	Insecta	Odonata		Anisoptera sp.
Peat 3A	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae sp.
Peat 3A	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae sp.
Peat 3A	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironominae sp.
Peat 3A	ARTHROPODA	Insecta	Diptera	Culicidae	<i>Aedes</i> sp.
Peat 3A	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Ceratopogoninae sp.
Peat 3A	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomidae sp. (P)
Peat 3A	ARTHROPODA	Insecta	Diptera	Culicidae	Culicidae sp. (P)
Peat 3A	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	<i>Triplectides</i> sp. AV1
Peat 3A	ARTHROPODA	Malacostraca	Amphipoda		Amphipoda sp.
Peat 3A	ARTHROPODA	Maxillopoda	Cyclopoida		Cyclopoida sp.
Peat 3A	ARTHROPODA	Ostracoda			Ostracoda sp.
Peat 3A	ARTHROPODA	Maxillopoda	Harpacticoida		Harpacticoida sp.
Peat 3A	ARTHROPODA	Branchiopoda	Diplostraca		Cladocera sp.
Peat 3A	NEMATODA				Nematoda sp.

MACRO-AQUATIC FAUNA SPECIES LIST

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SITE	PHYLUM	CLASS	ORDER	FAMILY	LOWEST_ID
Peat 3A	ANNELIDA	Oligochaeta			Oligochaeta sp.
Peat 3A	ARTHROPODA	Arachnida			Acari sp.
Peat 3A	CHORDATA	Amphibia	Anura	Myobatrachidae	<i>Crinia pseudinsignifera</i>
Peat 3A	CHORDATA	Amphibia	Anura	Myobatrachidae	<i>Crinia glauerti</i>
Peat 4 Paperbark	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Dytiscidae sp. (L)
Peat 4 Paperbark	ARTHROPODA	Insecta	Coleoptera	Limnichidae	Limnichidae sp. B
Peat 4 Paperbark	ARTHROPODA	Insecta	Coleoptera		Coleoptera sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Coleoptera		Coleoptera sp. (L)
Peat 4 Paperbark	ARTHROPODA	Insecta	Coleoptera	Staphylinidae	Staphylinidae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Dolichopodidae	Dolichopodidae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Ceratopogoninae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Psychodidae	Psychodidae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomyidae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Cecidomyiidae	Cecidomyiidae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	<i>Dasyhelea</i> sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Athericidae	Athericidae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Empididae	Empididae sp.
Peat 4 Paperbark	ARTHROPODA	Insecta	Diptera	Pelecorhynchidae	Pelecorhynchidae sp.
Peat 4 Paperbark	ARTHROPODA	Malacostraca	Amphipoda		Amphipoda sp.
Peat 4 Paperbark	ARTHROPODA	Ostracoda			Ostracoda sp.
Peat 4 Paperbark	ARTHROPODA	Maxillopoda	Cyclopoida		Cyclopoida sp.
Peat 4 Paperbark	ARTHROPODA	Maxillopoda	Harpacticoida		Harpacticoida sp.
Peat 4 Paperbark	ARTHROPODA	Entognatha	Entomobryomorpha		Entomobryoidea sp.
Peat 4 Paperbark	ARTHROPODA	Entognatha	Symphyleona		Symphyleona sp.

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SITE	PHYLUM	CLASS	ORDER	FAMILY	LOWEST_ID
Peat 4 Paperbark	NEMATODA				Nematoda sp.
Peat 4 Paperbark	ARTHROPODA	Entognatha	Poduromorpha		Poduroidea sp.
Peat 4 Paperbark	ANNELIDA	Oligochaeta			Oligochaeta sp.
Peat 4 Paperbark	ARTHROPODA	Arachnida			Acari sp.