# 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.

# 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 distractable participants) and specialists that assisted with species identification and provided identification resources and equipment. Special thanks to the caterers for providing an amazing dinner.


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Granite Peak looking east.
Photo: D Edmonds




## 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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# EXCECUTIVE 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

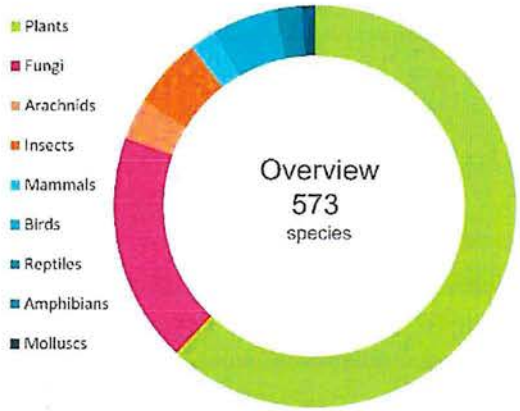
**165** Participants

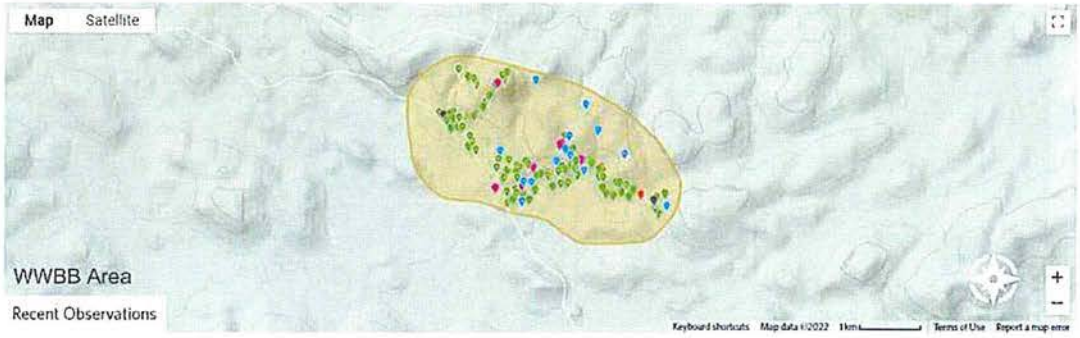
**1,912** Observations

**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



# 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.

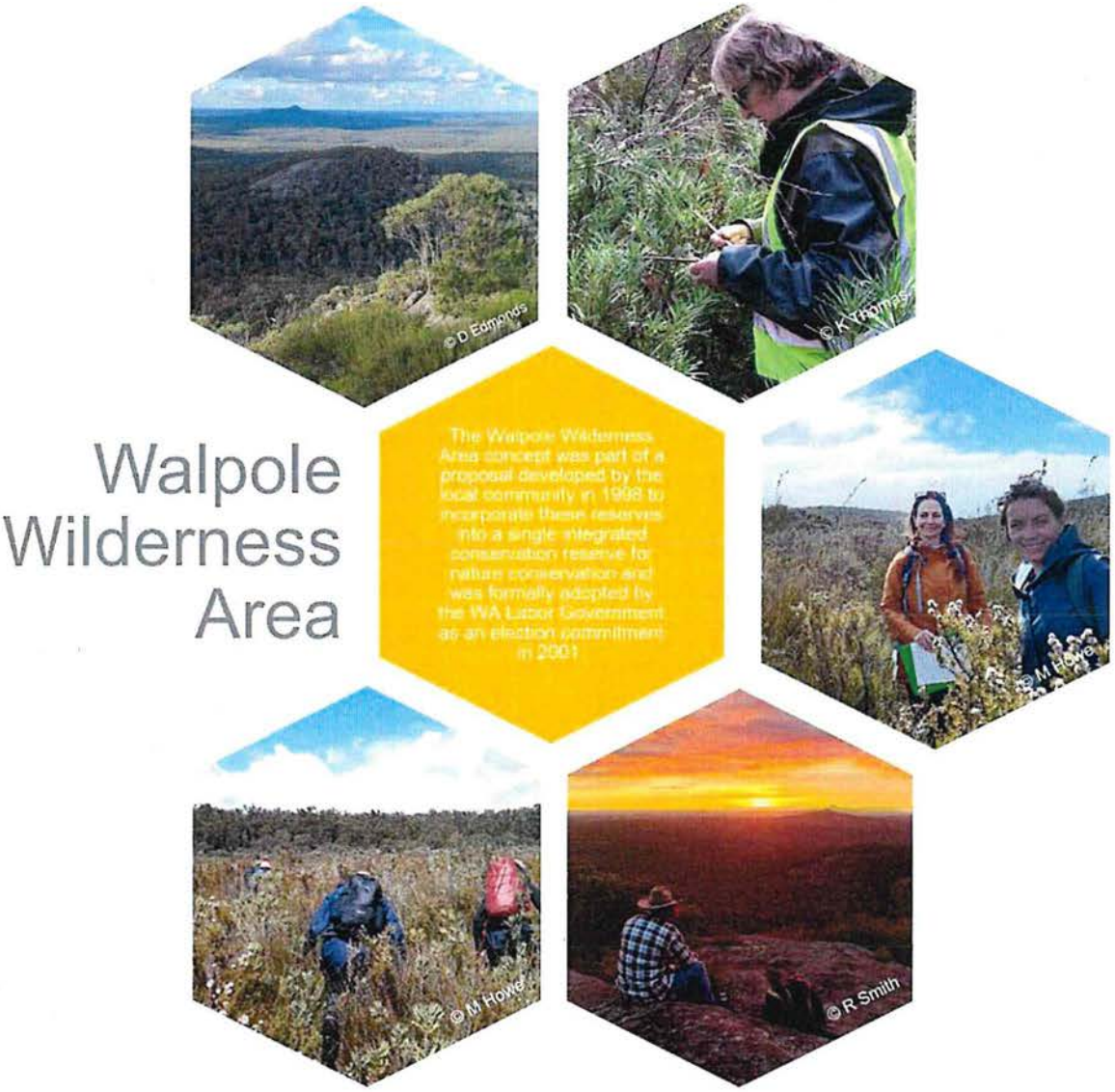
*"The Walpole Wilderness BioBlitz was a chance to discover more about this unique and special area, but also to connect with other likeminded people from all walks of life in a positive way. In a time when the work of conservation volunteers can often revolve around endless lobbying, submissions and 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

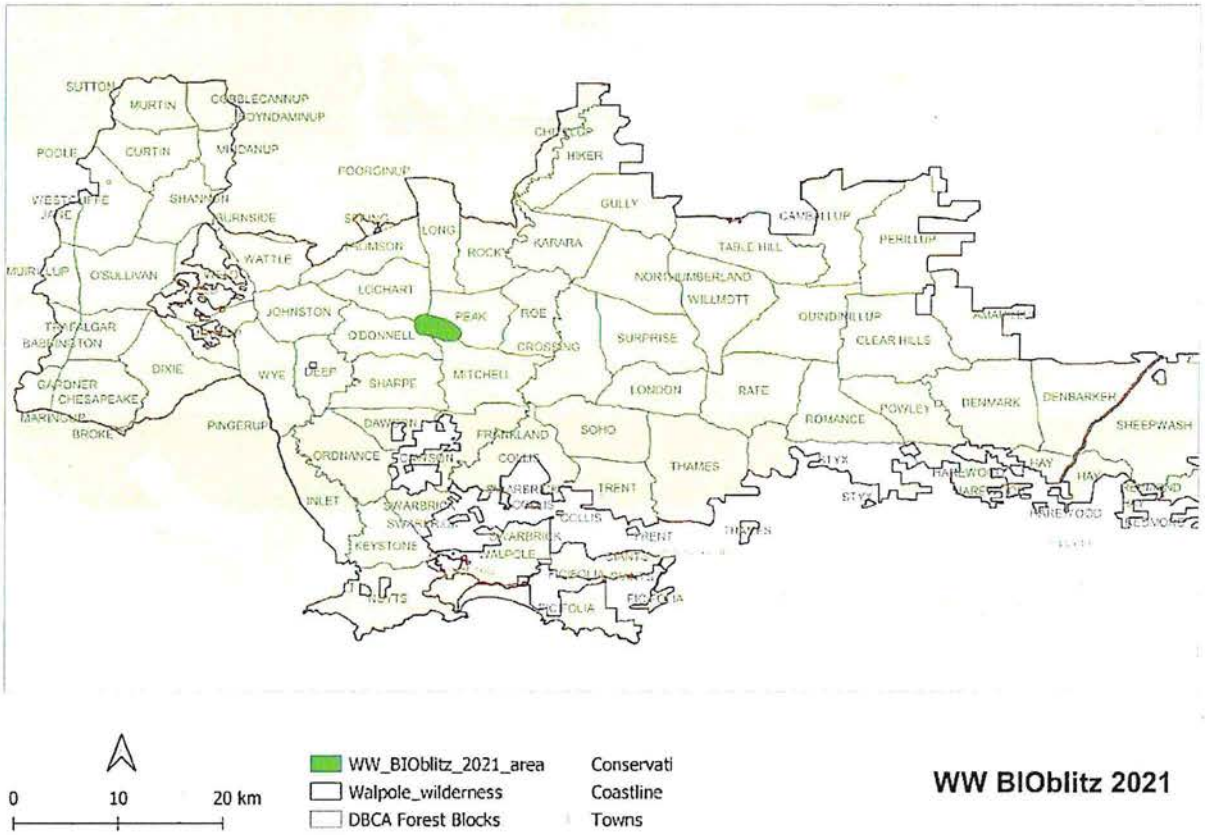
The Walpole Wilderness Area is the only gazetted wilderness in Western Australia. It consists of a group of conservation reserves totaling 377,714 hectares of some of the most ecologically rich and unique areas on Earth.

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).

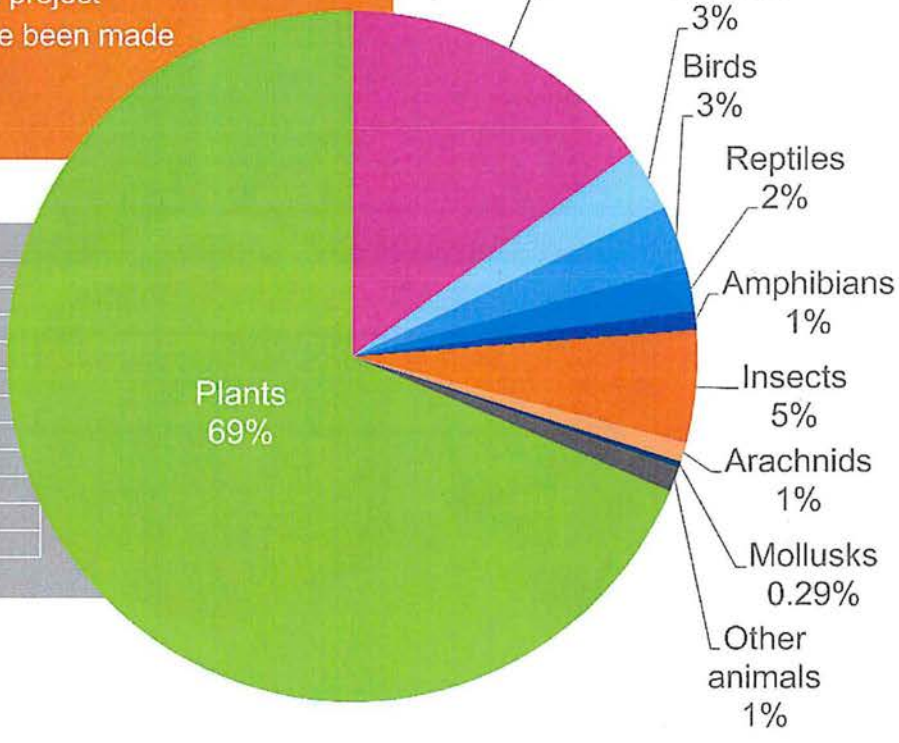
There were 23 casual observations making up 1.43% of total species observed which were predominantly erroneous and/or had no photo or other evidence provided to verify the observations.

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.




*"The continued work in identifying specimens, compiling all the data and preparing a report of the findings, which will be publicly available, makes the weekend even more valuable. Congratulations to everyone involved, what a success!"*

Kelly Lamp, Ecologist
WWBB participant

# 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).

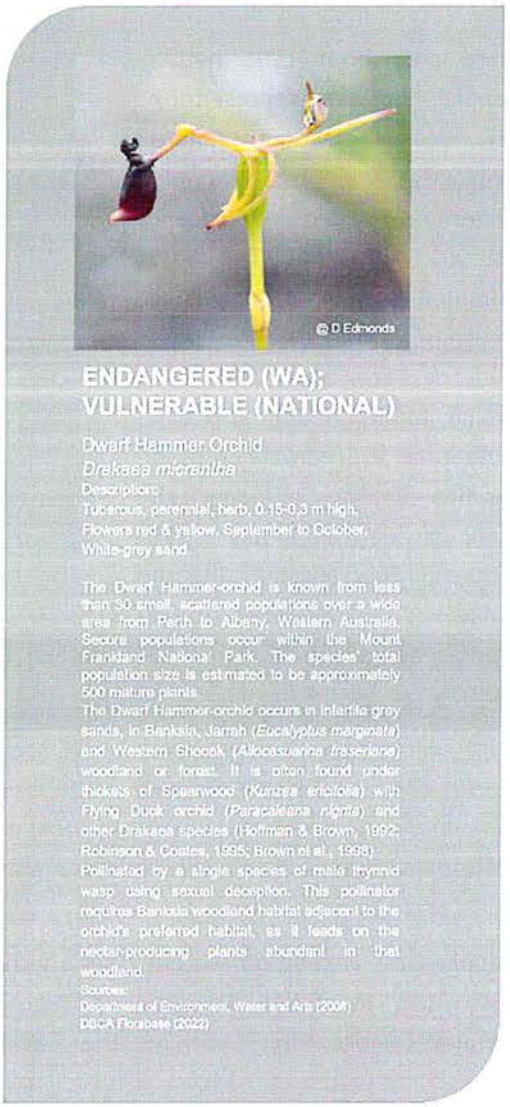
To date, there are 19 threatened species (also known as Declared Rare Flora (DRF), 145 priority species, 93 locally endemic species, 58 relictual species and 39 species with disjunct populations within the Walpole Wilderness and adjacent reserves (DEC, 2008).

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.*



## 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

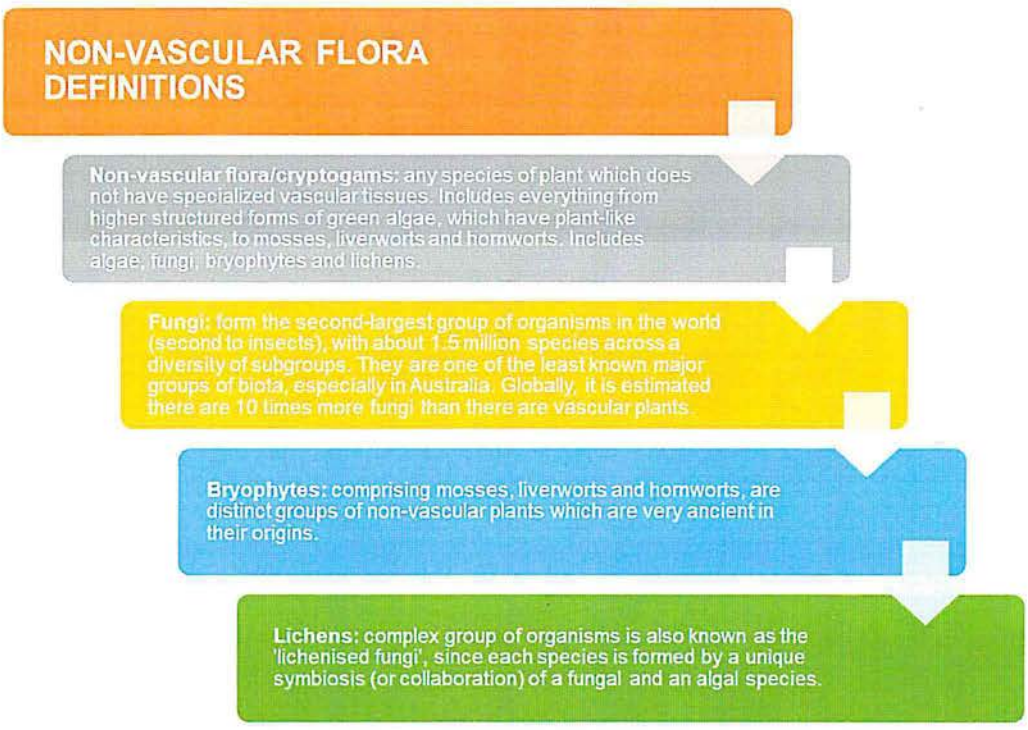
In WA, about 500 species of larger fungi have been recorded, mostly from the south-west (DEC, 2008). 206 named fungi species have been recorded in the Frankland/Kent area, and another 434 unnamed species and 61 unnamed genera have been recorded from the Walpole Wilderness area (Syme, 2004 cited by DEC, 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).



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.

## 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 geoffroii*); 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).

## 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://birdata.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 Birdata 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).

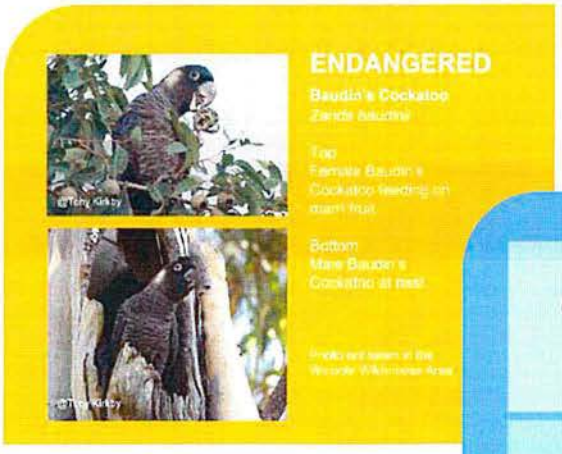
In addition, 11 bird species were observed and identified during the WWBB project and uploaded to iNaturalist from community survey observations, some of which were the same species as identified by Birdlife WA during the WWBB, thus bringing the total number of bird species observed to 40.

## 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 Silvereyes and Fan-tailed Cuckoos in the area."*
Viv Reid
Birdlife WA
October 2021




## 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."*

(Woinarski 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 gray 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.

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).

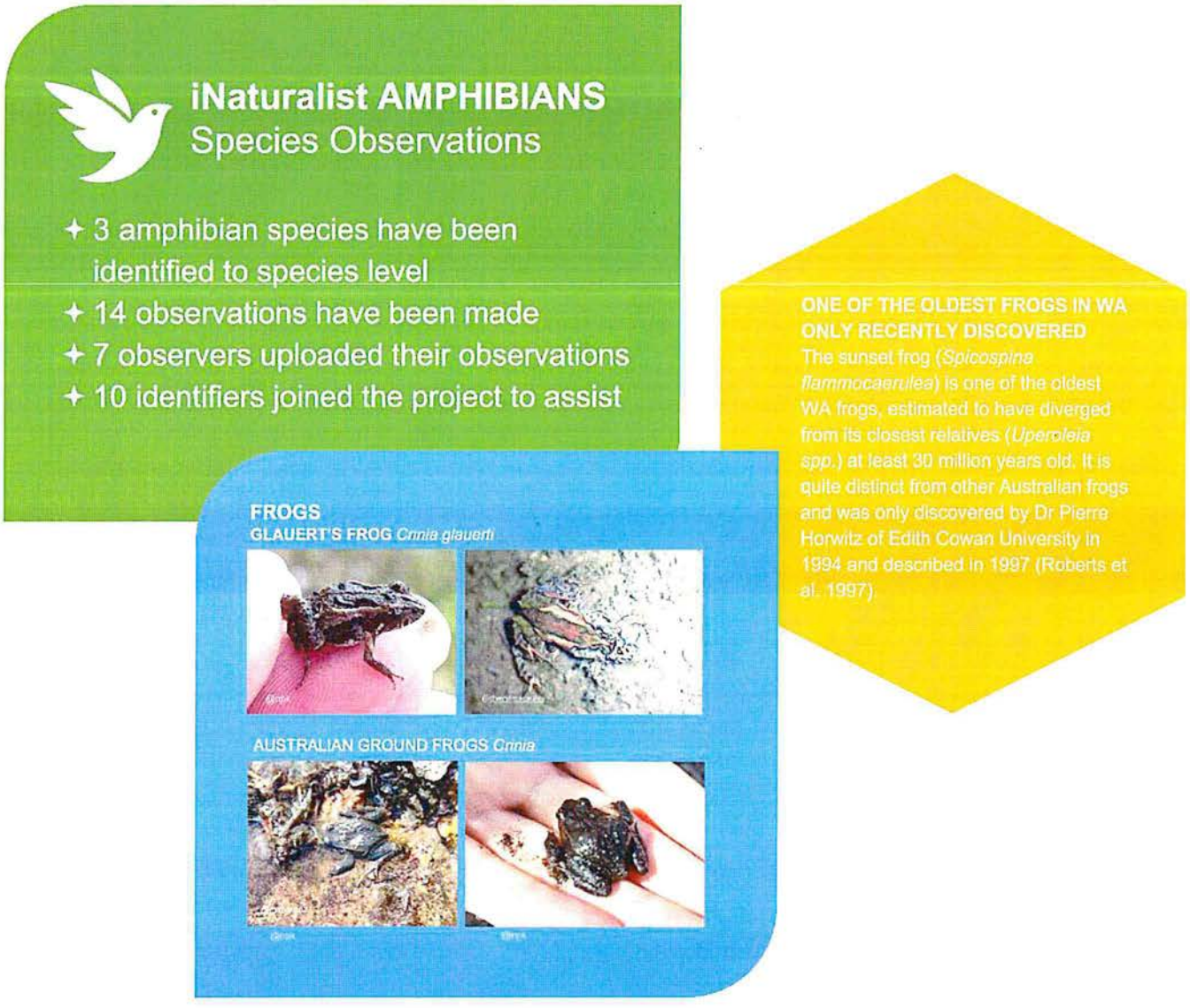
Threats to the sunset frog include predation and destruction of habitat by native and non-native species, particularly feral pigs, impacts of a drying climate and fire impacts on peat swamps. Due to these ongoing impacts, it is inferred that there will be a continuing decline in the area, extent and/or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



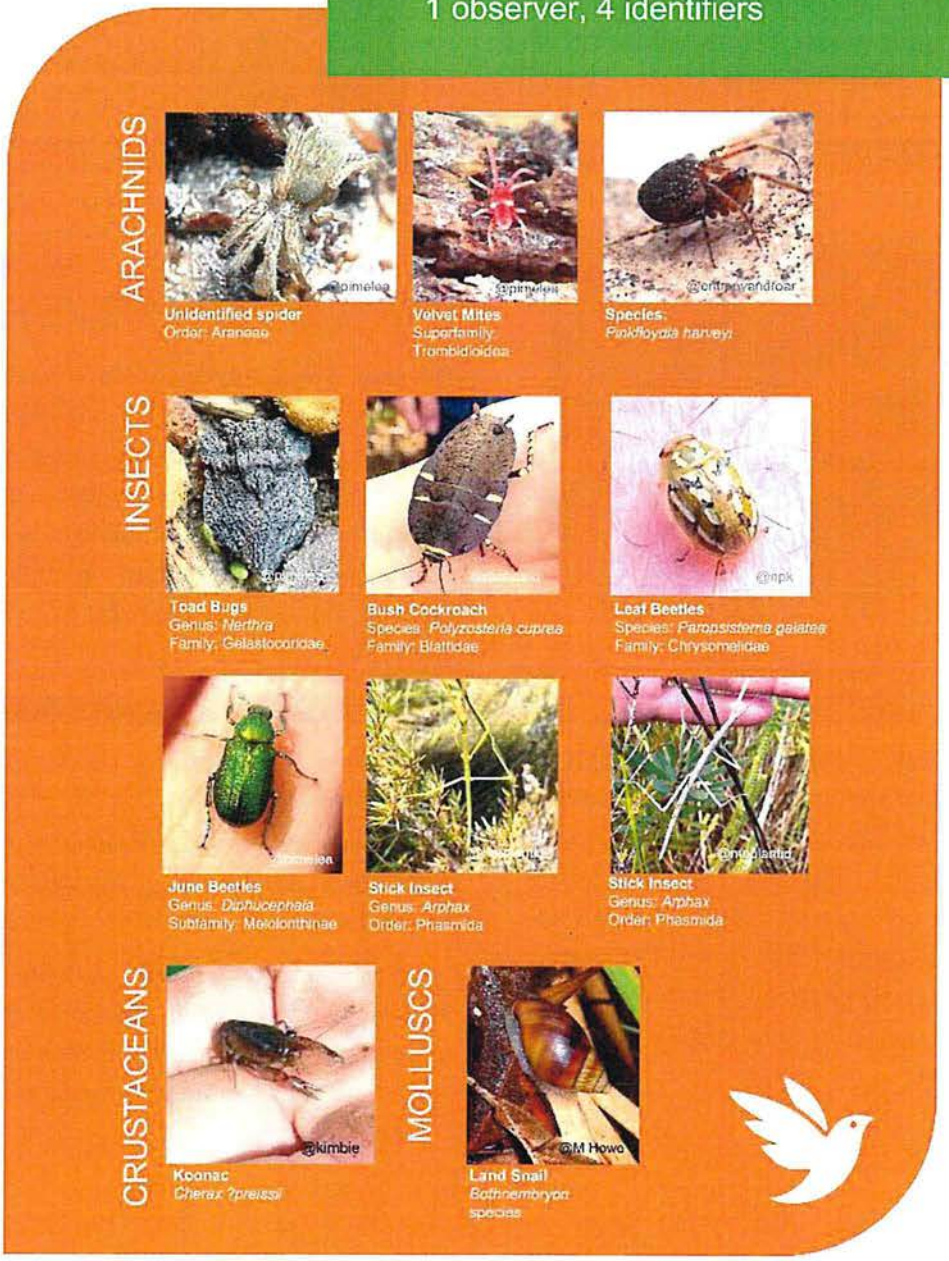
## INVERTEBRATES

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



## 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/relevant-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

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

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

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

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

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

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

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

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

APPENDIX 3

Fungi & bryophytes species observations lists

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

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

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

| FUNGI<br>Documented on iNaturalist | | |
|---|---|---|
| *Tricholoma sp.* | Cladoniaceae | Tricholomataceae |
| Umbilicariaceae (family) | Umbilicariaceae | Umbilicariaceae |
| *Usnea sp.* | Beard Lichens | Parmeliaceae |

| FUNGI, LIVERWORTS & BRYOPHYTES<br>Compiled by Katrina Syme | | | |
|---|---|---|---|
| **GROUP** | **FAMILY** | **GENUS** | **SPECIES/ EPITHET** |
| Bryophite | Bryaceae | Rosulabryum | billarderi |
| Bryophite | 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 | Dacrymycaetaceae | Heterotextus | peziziformis |
| Fungus | Dacrymycaetaceae | 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<br>Compiled by Katrina Syme | | | |
|---|---|---|---|
| **GROUP** | **FAMILY** | **GENUS** | **SPECIES/ EPITHET** |
| Fungus | Helotiaceae | Banksiamyces | 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 yoellow 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<br>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


Auriculariaceae
*Exidia glandulosa*


Hygrophoraceae
*Hygrocybe sp.*


Cortinariaceae
*Cortinarius sp.*


KS 3093
Cantharellaceae
*Craterellus australis*


KS 3099
Cordycipitaceae
*Cordyceps ?tenuipes*


KS 3149
*Corticioid sp.*


Cortinariaceae
*Cortinarius sp.*


KS 3143
Helotiaceae
*Banksiamyces sp. Photo a*


Helotiaceae
*Banksiamyces sp. Photo b*


KS 3095
Hysteriniaceae
*Hysterangium sp.*


KS 3098
Hysteriniaceae
*Hysterangium sp.*


Mycenaceae
*Mycena kurramulla*


KS 3097
Peniophoraceae
*Peniophora sp.*


KS 3146
Pezizaceae
*Peziza? sp. black cups*


KS 3150
Pezizaceae
*Peziza? sp. dull yellow ochre cups*


KS 3096
Schizoporaceae
*Schizopora sp.*


Tricholomataceae
*Tricholoma sp.*


KS 3142
*Unknown sp.*


KS 3144
*Unknown sp.*


KS 3152
*Unknown sp.*


KS 3147
Bryaceae
*Rosulabryum billardieri*


KS 3151
*Leptophyllopsis sp.?*


*Unknown sp.*


Marchantiaceae
*Marchantia berteroana*

WALPOLE WILDERNESS BIOBLITZ

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

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

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

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

## APPENDIX 6

Mammal species observations list

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

| INTRODUCED MAMMALS<br>Documented on iNaturalist | | |
|---|---|---|
| **SCIENTIFIC NAME** | **COMMON NAME** | **FAMILY** |
| *Felis catus* **Declared** | Cat | Felidae |
| *Sus scrofa* **Declared** | Wild pig/Wild Boar | Suidae |
| *Vulpes vulpes* **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<br>Documented on iNaturalist | | |
|---|---|---|
| **SCIENTIFIC NAME** | **COMMON NAME** | **FAMILY** |
| *Christinus marmoratus* | Southern Marbled Gecko | Gekkonidae |
| *Ctenotus labillardieri* | Common South-west Ctenotus | Scincidae |
| *Egernia kingii* | King's Skink | Scincidae |
| *Egernia napoleonis* | South-western Crevice Skink | Scincidae |
| *Hemiergis sp.* | | Scincidae |
| *Hemiergis peronii* | Lowlands Earless Skink | Scincidae |
| *Notechis scutatus occidentalis* | Western Tiger Snake | Elapidae |
| *Pseudonaja affinis* | Dugite | Elapidae |
| *Rhinoplocephalus bicolor* | Muller's Snake | Elapidae |
| *Varanus rosenbergi* | 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<br>Documented on iNaturalist | | |
|---|---|---|
| **SCIENTIFIC NAME** | **COMMON NAME** | **FAMILY** |
| Anura (order) | Frogs and Toads | |
| *Crinia georgiana* | Quacking Frog | Myobatrachidae |
| *Crinia glauerti* | Glauert's Froglet | Myobatrachidae |
| *Crinia pseudinsignifera* | False Western Froglet | Myobatrachidae |
| *Crinia sp.* | | Myobatrachidae |

APPENDIX 9

Invertebrate species observations lists

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

| INSECTS<br>Documented on iNaturalist | | |
|---|---|---|
| **SCIENTIFIC NAME** | **COMMON NAME** | **FAMILY** |
| Acrididae | Grasshopper | Acrididae |
| *Antichiropus sp.* | Millipede | Paradoxosomatidae |
| *Arphax species* | Stick Insects | Phasmatidae |
| Campomyrma sp. (subgenus) | Spiny Ants (Polyrhachis genus) | Formicidae |
| Coleoptera (order) | Beetles | |
| *Cormocephalus sp.* | Common Centipedes | Scolopendridae |
| *Diphucephala sp.* | Scarab Beetle | Melolonthidae |
| Diptera (order) | Flies | |
| Ectobiidae (family) | Wood Cockroaches | Ectobiidae |
| *Fletchamia 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) |
| *Iridomyrmex sp.* | Rainbow Ants | Formicidae |
| *Laxta sp.* | Giant Cockroaches | Blaberidae |
| Lepidoptera (order) | Butterflies and Moths | |
| Malachiinae (subfamily) | Malachite Beetles | Cleroidea (superfamily) |
| *Myrmecia imaii* | Bull and Dinosaur Ants | Formicidae (superfamily); Myrmeciinae (subfamily) |
| *Myrmecia regularis* | Bull and Dinosaur Ants (Myrmeciinae subfamily) | Formicidae (superfamily); Myrmeciinae (subfamily) |
| *Nerthra sp.* | Toad Bugs | Gelastocoridae |
| *Paraoxypilus tasmaniensis* | Southern Boxer Bark Mantis | Amorphoscelidae |
| *Paropsisterna galatea* | Leaf Beetle | Chrysomelidae |
| *Polyzosteria cuprea* | Native Cockroach | Blattidae |

| INSECTS<br>Documented on iNaturalist | | |
|---|---|---|
| **SCIENTIFIC NAME** | **COMMON NAME** | **FAMILY** |
| *Pterolocera sp.* | Moths | Anthelidae |
| Pterygota (subclass) | Winged and Once-winged Insects | |
| Termitoidae (family) | Termites | Termitoidae |

| MOLLUSCS<br>Documented on iNaturalist | | |
|---|---|---|
| **SCIENTIFIC NAME** | **COMMON NAME** | **FAMILY** |
| *Bothriembryon sp.* | Helicinan Snails and Slugs (Helicina suborder) | Orthalicoidea (superfamily); Bothriembryontidae (subfamily) |

| CRUSTACEAN<br>Documented on iNaturalist | | |
|---|---|---|
| **SCIENTIFIC NAME** | **COMMON NAME** | **FAMILY** |
| *Cherax preissii* | Koonac | Parastacidae |

APPENDIX 10

Terrestrial invertebrate species list

| TERRESTRIAL ARTHROPOD SPECIES LIST<br>Compiled by WA Museum | | | | | | |
|---|---|---|---|---|---|---|
| **SUBPHYLUM** | **CLASS** | **ORDER** | **INFRAORDER** | **FAMILY** | **GENUS** | **SPECIES** |
| **Chelicerata** | Arachnida | Acari | | Ixodidae | Ixodes | australiensis |
| **Chelicerata** | Arachnida | Acari | | Trombidiidae | | |
| **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 | Cheiracanthiidae | 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 | Australomimetus | 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 | Opisthoncus | `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 | Euryopis | |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Theridiidae | Phoroncidia | `sp. indet. (juvenlie)` |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Thomisidae | Bomis | hippoponoi |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Thomisidae | Sidymella | |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Thomisidae | Sidymella | `sp. WW2` |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Thomisidae | Stephanopis | `sp. WW1` |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Thomisidae | Stephanopis | `sp. WW2` |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Thomisidae | Stephanopis | `sp. WW3` |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Thomisidae | Tharpyna | |
| **Chelicerata** | Arachnida | Araneae | Araneomorphae | Trochanteriidae | 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 | Allothereura | |
| **Myriapoda** | Diplopoda | Spirostreptida | | Iulomorphidae | Atelomastix | francesae |
| **Myriapoda** | Diplopoda | Spirostreptida | | Iulomorphidae | Samichus | `sp.` |

**[1]All 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<br>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 | *Cherax preisii* |
| **Peak Peat** | ARTHROPODA | Insecta | Lepidoptera | | |
| **Peak Peat** | ANNELIDA | Oligochaeta | | | Oligochaeta sp. |
| **Peak Peat** | CHORDATA | Amphibia | Anura | Myobatrachidae | *Crinia georgiana* |
| **Peak Peat** | CHORDATA | Amphibia | Anura | Myobatrachidae | *Crinia glauerti* |
| **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 | *Dasyhelea* 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 | *Nesidovelia* sp. |
| **Creek** | ARTHROPODA | Insecta | Trichoptera | Philopotamidae | *Hydrobiosella* sp. AV16 |
| **Creek** | ARTHROPODA | Insecta | Trichoptera | Hydroptilidae | *Maydenoptila* sp. |
| **Creek** | ARTHROPODA | Malacostraca | Amphipoda | | Amphipoda sp. |
| **Creek** | ARTHROPODA | Ostracoda | | | Ostracoda sp. |
| **Creek** | ARTHROPODA | Maxillopoda | Cyclopoida | | Cyclopoida sp. |
| **Creek** | ARTHROPODA | Malacostraca | Decapoda | Parastacidae | *Cherax quinquecarinatus* |
| **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 | *Anopheles* sp. |
| **Peat 3B** | ARTHROPODA | Insecta | Hemiptera | Mesoveliidae | Mesoveliidae sp. |
| **Peat 3B** | ARTHROPODA | Insecta | Trichoptera | Leptoceridae | *Triplectides* 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
Compiled by Biologic Environmental Survey

| SITE | PHYLUM | CLASS | ORDER | FAMILY | LOWEST_ID |
|---|---|---|---|---|---|
| Peat 3B | ARTHROPODA | Maxillopoda | Harpacticoida | | Harpacticoida sp. |
| Peat 3B | ARTHROPODA | Malacostraca | Decapoda | Parastacidae | *Cherax preisii* |
| Peat 3B | ARTHROPODA | Entognatha | Entomobryomorpha | | Entomobryoidea sp. |
| Peat 3B | NEMATODA | | | | Nematoda sp. |
| Peat 3B | ARTHROPODA | Entognatha | Symphypleona | | Symphypleona 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 | *Crinia georgiana* |
| 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 | *Aedes* 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 | *Triplectides* 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
Compiled by Biologic Environmental Survey

| 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 | *Crinia pseudinsignifera* |
| **Peat 3A** | CHORDATA | Amphibia | Anura | Myobatrachidae | *Crinia glauerti* |
| **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 | *Dasyhelea* 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 | Symphypleona | | Symphypleona sp. |

## MACRO-AQUATIC FAUNA SPECIES LIST
Compiled by Biologic Environmental Survey

| 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. |