# Wudjari Country, Western Australia 2023: Bush Blitz expedition report

Aboriginal and Torres Strait Islander peoples are advised that this document may contain names and images of deceased persons. Users are warned that some words and descriptions may be culturally sensitive and might not normally be used in certain public or community contexts.

Australian Government
Department of Climate Change, Energy, the Environment and Water

BHP

earthwatch AUSTRALIA

Australian Government
Parks Australia

**Cataloguing data**

This publication (and any material sourced from it) should be attributed as: Bush Blitz 2025, *Wudjari Country, Western Australia 2023: Bush Blitz expedition report*, Department of Climate Change, Energy, the Environment and Water, Canberra. CC BY 4.0.

This publication is available at bushblitz.org.au/reports.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090 Canberra ACT 2601
Telephone 1800 900 090
Web dcceew.gov.au



**Contributors**

Bush Blitz is coordinated by Parks Australia, which is part of the Australian Government Department of Climate Change, Energy, the Environment and Water. The program is a partnership between the Australian Government, BHP and Earthwatch Australia.

Research agencies involved in this Bush Blitz were the Australian Museum, Griffith University, the Museum and Art Gallery of the Northern Territory, the University of New South Wales, the University of Western Australia, the Western Australian Herbarium, the Western Australian Museum.

**Photo credits**

Photographs are reproduced in this publication with permission. Effort has been made to credit the photographers correctly; however, please contact BushBlitz@dcceew.gov.au if a photo is incorrectly credited.

Front cover images: (from top left, clockwise) Thistle Cove © Copyright, Nicole Middleton, Coastal Hakea (*Hakea clavata*) © Copyright, Bush Blitz, putative new species of stink bug © Nik Tatarnic, Copyright, WA Museum, weed whiting © Copyright, MAGNT, scientists collecting true bugs with Doc Reynolds (centre) © Copyright, Bush Blitz.

**Acknowledgements**

Bush Blitz acknowledges the Traditional Owners of Country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures, and to their Elders both past and present.

Bush Blitz would like to thank the Department of Biodiversity, Conservation and Attractions (WA) and the Tjaltiraak Native Title Aboriginal Corporation for their advice and support before and during the expedition, the expedition team, and the Minderoo Foundation and expert crew of the MV Immortalis for assistance with marine surveys. Special thanks go to the Tjaltjraak Rangers and Traditional Owners of Wudjari Country, particularly Doc Reynolds and his family, for their hospitality and for sharing valuable knowledge about their Country.

# Contents



# Tables

# Figures



# Maps

# Summary

From 27 March to 5 April 2023, Bush Blitz led an expedition to Wudjari Country on the south coast of Western Australia.

Surveys and collections filled knowledge gaps, provided important material for future genetic and taxonomic studies, and extended the known ranges of species. There were many new records for Western Australia and one new record for Australia.

At least 683 species were recorded during the Bush Blitz, 18 of which are unnamed species that, as far as can be ascertained, were identified as new to science as a direct result of this expedition (putative new species). Many additional unnamed or informal invertebrate taxa were collected. These may assist scientists to revise, compare and describe species in the future.

Although none of the species recorded are listed as threatened, several of the mollusc species recorded have conservation significance and 5 of the plant species recorded are conservation-listed in Western Australia.

Fifteen introduced and pest animal species were recorded, along with 7 introduced plant species.

Highlights of the expedition include:

- collecting 7 putative new crustacean species (2 barnacles, 3 beach hoppers and 2 slaters), including a beach hopper genus that is a new record for Australian waters
- collecting 4 putative new spider species and a putative new pseudoscorpion species
- collecting 4 putative new mollusc species and many undescribed species of land snail
- collecting 2 putative new true bug species that belong to the stink bug tribe Deroploini, which is under review by Gerry Cassis
- obtaining marine mollusc data from islands that have not been visited by scientific divers before, adding important infill to predicted distributions of 23 macromolluscs
- collecting many plant specimens that fill a collection gap for the region and for the time of year
- collecting frog and reptile tissue that can be used for future research and a specimen of Southwestern Crevice Skink (*Egernia napoleonis*) that has been prepared as the first full skeleton of this species for the Western Australian Museum
- finding good numbers of large mature Western Blue Groper (*Achoerodus gouldii*) in the easternmost islands of the Recherche Archipelago
- finding a population of South-western Pouched Snail (*Glyptophysa georgiana*) within the perched freshwater dune lake in Cape Le Grand National Park, which appears to be unique to the region and an important indicator species.

# Introduction

## About Bush Blitz

The Bush Blitz program documents plants and animals in selected properties across Australia to support the discovery of species new to science, complement and complete existing collections, and provide information to support land management and conservation.

Bush Blitz is an initiative of the Australian Government, through Parks Australia, in partnership with BHP and Earthwatch Australia. This innovative partnership harnesses the expertise of many of Australia's top scientists from museums, herbaria, universities, and other institutions and organisations across the country.

An estimated 580,000 to 680,000 species are found in Australia (Chapman 2009), but three-quarters of this biodiversity is yet to be identified. Around 45% of continental Australia and over 90% of our marine area have never been comprehensively surveyed by scientists. Increasing our understanding of Australia's biodiversity is critical for conservation, biosecurity, agriculture, human and animal health and many other activities.

Since the Bush Blitz program began in 2010, more than 2,000 species have been discovered during Bush Blitz expeditions across Australia.

In addition to species discovery, Bush Blitz objectives include raising public awareness of biodiversity, and improving environmental, social and educational outcomes for local and Indigenous communities. While some of these objectives are met during expeditions – through Bush Blitz TeachLive, teacher workshops and community days – they are out of scope for this report.

## About this report

This report summarises the initial scientific findings of an expedition held on Wudjari Country, near the town of Esperance on the south coast of Western Australia. Information in this report has been extracted from the scientific reports provided by expedition members. Locational data for all flora, fauna and funga records have been provided to land managers. Unless these data are considered sensitive, they will be publicly available through the Atlas of Living Australia (ALA).

## Wudjari Country Bush Blitz

Bush Blitz led an expedition to Wudjari Country from 27 March to 5 April 2023, to collect and record plants and animals living in terrestrial, freshwater and marine environments.

There were two bases used during the expedition. Teams focused on terrestrial, freshwater and coastal environments were based at Kepa Kurl Enterprises' property, 25 minutes' drive east of Esperance, near Cape Le Grand National Park. Teams conducting off-shore marine surveys were based on the *Immortalis* research vessel in the Recherche Archipelago, working in partnership with the Minderoo Foundation's OceanOmics program.

Southwestern Western Australia is recognised as one of the world's major biodiversity hotspots. This means it has a high concentration of endemic species – species that are found in a specific location and nowhere else.

We worked in partnership with the Esperance Tjaltjraak Native Title Aboriginal Corporation (ETNTAC) and Tjaltjraak Rangers. The Tjaltjraak Rangers and Traditional Owners have a deep connection to their environment and working with them was an important aspect of this Bush Blitz.

ETNTAC is the lead body for Kepa Kurl Wudjari People. Tjaltjraak (pronounced Dul-u-rak) comes from the Wudjari name for Blue Mallee (*Eucalyptus pleurocarpa*), a culturally significant species, which Wudjari People believe marks the extent of their Country. Kepa Kurl is the Wudjari name for 'Esperance'. The Wudjari People are one of 14 different groups in the Nyungar Nation, which is the south-west corner of Western Australia.

The Tjaltjraak Rangers protect and manage sites of cultural and historical significance, share knowledge and influence environmentally sustainable practices through community education.

We also worked closely with the Department of Biodiversity, Conservation and Attractions (DBCA). Cape Le Grand and Cape Arid national parks are managed by the Parks and Wildlife Service, which is part of DBCA. Cape Le Grand National Park is 40 km east of Esperance and covers an area of 31,801 hectares. Cape Arid National Park is 120 km east of Esperance and covers an area of 279,448 hectares (Department of Parks and Wildlife 2016). DBCA also manages the Recherche Archipelago Nature Reserve, which is made up of more than 100 islands and 1,200 reefs, islets and rocks that stretch 230 km from east to west and up to 50 km offshore. These islands provide important breeding grounds for seabirds and habitat for terrestrial fauna, including some mammals that were once widespread on the mainland.

The expedition took place in late summer–early autumn and the dry conditions impacted collecting for some groups. For example, most land snails were buried, many plants were lacking good reproductive material and there were few fungi to collect.

## Previous surveys and pre-trip expectations

Few frog and reptile specimens had been collected from this region before. Although cool temperatures were expected during the expedition, it was hoped there would be opportunity to capture various frog species that would be active due to early rains, with autumn being the beginning of south-western frog breeding season.

While there is generally good broad knowledge of the fish fauna in this part of Australia, several groups and some regions are poorly known and fresh tissues are needed for ongoing genetic investigations. Shore-based fish surveys targeted inland waters, such as lakes and streams, estuaries and near-shore coastal marine habitats. The aim was to make a baseline assessment of varied habitats and poorly known species groups, including gobies that are cryptobenthic (that is, small, hidden fish that live on or near the sea floor). Offshore fish sampling targeted the most remote and isolated islands of the Recherche Archipelago, which have had the least survey effort in the past. The marine habitats here are varied – including offshore islands, rocky shorelines, dense kelp stands, extensive seagrass meadows and exposed sandy beaches – and the fish communities living in each habitat are often different.

This was the first major scientific expedition focused on biodiversity sampling and taxonomy across marine groups in the far eastern Recherche Archipelago. Given the high endemism of the region's marine fauna, mollusc species that have short ranges and are potentially new to science were expected to be found and, given limited records, significant infill was expected for known

species. Similarly, the primary aim for other marine invertebrates, such as crustaceans, was to collect from the eastern-most islands where little, if any, sampling had been undertaken previously. Historical collections have largely been limited to the coast and nearshore islands closest to Esperance.

There are more than 2,500 species of true bugs (Heteroptera) in Australia and nearly 500 new species have been described in the past 20 years. There are likely to be many more undescribed true bugs, particularly plant bugs (Miridae) and lace bugs (Tingidae), which feed on a broad range of host plants. The expedition took place well after peak flowering season, so conditions were expected to be poor for collecting true bugs. However, this expedition still provided an opportunity to collect true bugs in an area which has had limited sampling.

The Esperance region provides various habitats and microhabitats for diverse and unique arachnid fauna. Extensive surveys by the Western Australian Museum (WA Museum) and others have led to good sampling of the araneomorph spider fauna as well as other arthropod groups like scorpions, pseudoscorpions and myriapods. However, fresh tissue is needed, especially for several undescribed species known to live in the area.

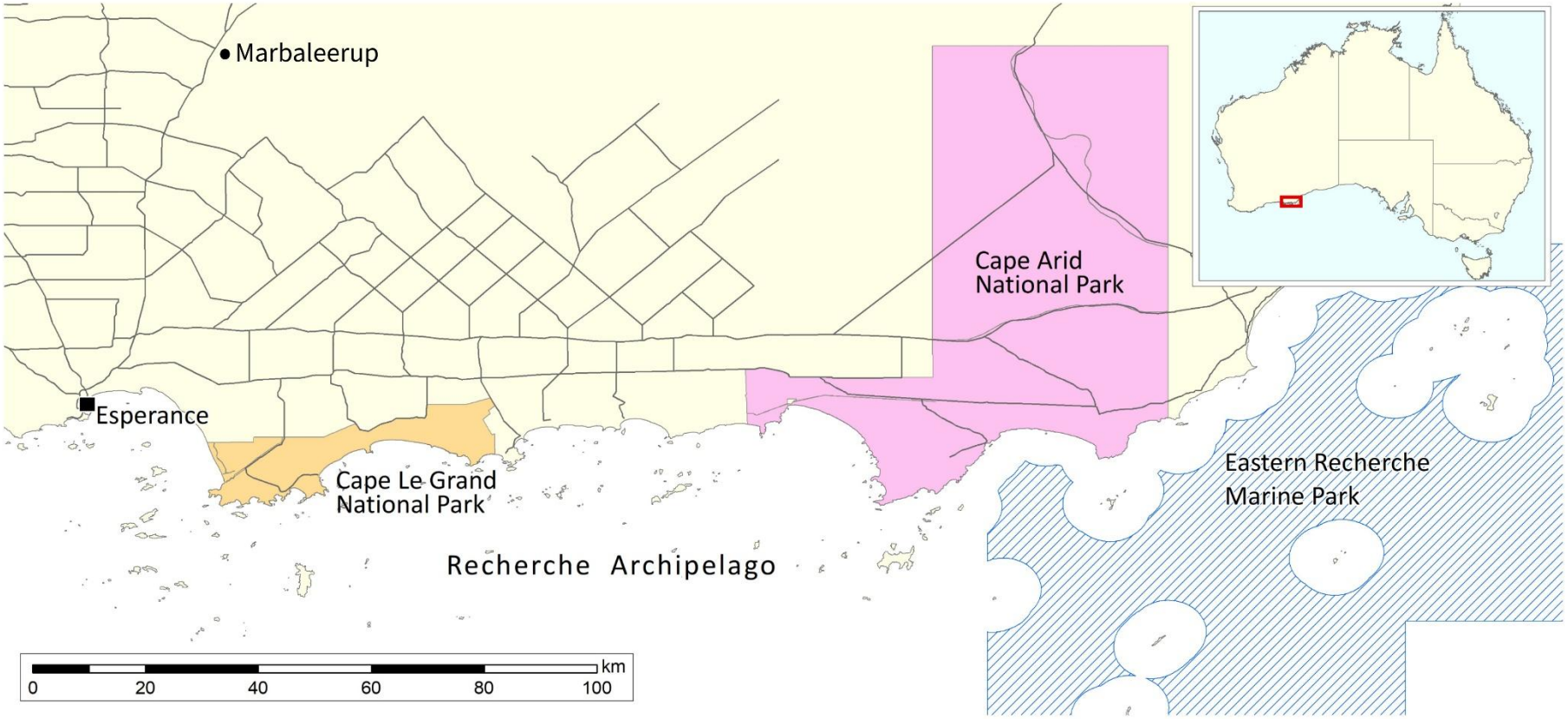
Clearing of native vegetation for agricultural cropping, combined with other factors, has led to salinisation of former freshwater habitats. Salinisation is a significant threat to freshwater animals such as the threatened Carter's Freshwater Mussel (*Westralunio carteri*). However, there are pockets of relatively fresh water remaining which could potentially support freshwater molluscs and other invertebrates. Another focus for this expedition was inland salt lake snails, given that Southwestern Australia is a hotspot for these and there may be undescribed species. Previous surveys of freshwater crustaceans in the region have concentrated on just a few groups and it is likely the region has a high number of undescribed species of other crustaceans, including micro-crustaceans. Pre-survey expectations were modest for freshwater groups, given the timing of the expedition.

Although the study area has been reasonably well surveyed for plants, collections have predominantly been made during the months of September to November. Vouchered collections during the months of March and April form less than 7% of all collections for the region, and only 50 collections have been lodged in Australian herbaria from this time of year in the past 10 years.

# Study area

The study area included parts of Cape Le Grand National Park, Cape Arid National Park and the surrounding region plus eastern parts of the Recherche Archipelago, including Eastern Recherche Marine Park. Map 1 shows these protected areas, the town of Esperance and Marbaleerup, which is a significant cultural site.

**Map 1 Locations visited, 27 March to 5 April 2023**




Note: For a map of collection sites see Appendix B.

# Expedition team

## Logistics

Bush Blitz provided the logistical coordination and overall leadership for the expedition. The Bush Blitz team consisted of Kate Grarock, Helen Cross and Jo Harding.

## Scientific

The WA Museum and the Western Australian Herbarium (WA Herbarium) were the host institutions for this Bush Blitz, providing the core group of personnel and accessioning the specimens into their collections. Experts from the Australian Museum, the Museum and Art Gallery of the Northern Territory (MAGNT), Griffith University, the University of New South Wales (UNSW) and the University of Western Australia (Uni of WA) also conducted field and laboratory work and are included in Table 1.

## Field assistants

Sabrina Trocini and Ana McCallum (Earthwatch Australia) coordinated 5 teachers and 2 BHP employees who assisted scientists in the field.

Bush Blitz TeachLive is a collaborative program between the Bush Blitz partners, with communication and recruitment support from the Australian Science Teachers Association. Teachers from 5 Western Australian schools worked alongside scientists, reinvigorated their love for science, generated new ideas and learned new skills to take back to their schools. Teachers also taught 'live' to their classrooms via the TeachLive website and videoconferencing, taking their students on a virtual expedition and inspiring the next generation. The teachers were Christopher Naunton Morgan, Rachael Howe, Rebecca Armishaw, Susanne Williams and Tanya Charsley.

BHP environmental specialists on the expedition were Michael Hughes and Cleve Etherington. They worked alongside the scientific team to share knowledge and improve linkages between botanical and zoological experts and BHP.

In addition, 14 Tjaltjraak Rangers, 5 DBCA rangers and South-west Marine Parks Network Manager Nicole Middleton assisted with fieldwork.

**Figure 1 Some members of the expedition team**

Photograph: © Copyright, Bush Blitz.

# Methods

## Taxonomic groups studied and personnel

A number of taxonomic groups were selected as targets for study. Table 1 lists the groups surveyed and the personnel who undertook the fieldwork, made identifications and reported on the findings.

**Table 1 Taxonomic groups surveyed and personnel**

| Group | Common name | Personnel and affiliation |
|---|---|---|
| Mammalia, Reptilia and Amphibia | Mammals, reptiles and frogs | Paul Doughty (WA Museum)<br>Ryan J Ellis (WA Museum)<br>Kailah M Thorn (WA Museum) |
| Actinopterygii and Chondrichthyes | Fishes | Glenn Moore (WA Museum)<br>Jenelle Ritchie (WA Museum)<br>Michael Hammer (MAGNT) |
| Heteroptera | True bugs | Gerry Cassis (UNSW)<br>Nik Tatarnic (WA Museum) |
| Mollusca | Molluscs | Lisa Kirkendale (WA Museum)<br>Corey Whisson (WA Museum)<br>Frank Koehler (Australian Museum)<br>Michael Klunzinger (Griffith University and WA Museum) |
| Arachnida | Spiders | Jeremy Wilson (Uni of WA) |
| Crustacea | Crabs, lobsters, crayfish, shrimp, prawns, slaters (isopods), beach hoppers (amphipods), barnacles, brine shrimp and seed shrimp | Andrew Hosie (WA Museum)<br>Ana Hara (WA Museum) |
| Vascular plants | Flowering plants | Shelley A. James (WA Herbarium)<br>Robert Davis (WA Herbarium)<br>Renee Gugiatti (WA Herbarium) |

Other personnel assisted with making identifications and reporting. These personnel and their roles are mentioned in the scientific reports.

Additional taxa were collected or recorded opportunistically and there was a collaborative approach to collecting. For example, myriapods were collected with spiders and later identified by Julianne Waldock and Mark Harvey (WA Museum), some crustacea and worms were collected by the fish team and terrestrial snails were collected at 2 sites on Middle Island in the Recherche Archipelago by the marine mollusc team.

## Site selection and collection methods

Most scientific teams surveyed 2 standard survey sites, selected to represent different habitat types. Standard survey sites were both terrestrial so were not sampled by aquatic or marine teams.

The use of standard survey sites provides a unique opportunity to examine broad-spectrum biodiversity. Among other benefits, it allows land managers to use these sites for ongoing

monitoring and generates a national dataset that can be used to underpin conservation and land management decisions.

Following consultation with Traditional Owners and rangers, the standard survey sites were established at Marbaleerup, a significant cultural site to the north of Esperance, and near Little Hellfire Bay in Cape Le Grand National Park. Each standard survey site was centred on a point (permanently marked), but the actual area surveyed varied between taxa. Standard methodologies were used to sample these sites.

Apart from standard survey sites, site selection and collection methods were left to the discretion of the individual scientists, with guidance from Traditional Owners and rangers. When selecting sites, they usually prioritised areas that were under-surveyed and had high potential for new or significant discoveries. Other considerations included the suitability of the site based on access, availability of fresh water, diversity of habitats/microhabitats, suitable habitat type or topography (for example, hills), pre-established sites, flowering/seeding plants, time available and areas where undescribed species have been collected in the past.

**Figure 2 Nik Tatarnic beating vegetation to collect true bugs**

Photograph: © Copyright, Bush Blitz

Considerations for marine survey sites also included conditions on the day and diveability. The expedition included a successful trial of technical shark cage diving (Figure 3). Divers descended and ascended in the cage. On the seafloor, the cage was used as a base and sampling was undertaken by swimming 15 to 20 m from the cage before returning to it, moving it and venturing out again.

**Figure 3 Shark cage being used to work safely**

Photograph: Colby James © Copyright, Minderoo

Site locations were recorded using global positioning systems. Specific details about site selection and collection methods can be found in the scientific reports.

# Identification and curation

The specimens taken were identified using the holdings of museums and herbaria and available literature (references are provided in the scientific reports).

Fauna specimens were deposited in the WA Museum, with some true bug specimens deposited in the Uni of WA collection. Vascular plants were deposited at the WA Herbarium, with duplicate specimens, where possible, lodged at the Australian National Herbarium.

# Results

## Summary of records

Preliminary results indicate that at least 683 species were recorded during the Bush Blitz, including approximately 18 putative new species – these await formal identification. Fifteen introduced and pest animal species and 7 introduced plant species were also recorded.

Table 2 provides a summary of the flora, fauna and funga records made on the expedition.

**Table 2 Summary of flora, fauna and funga records**

| Group | Common name | Total species recorded | Putative new species | Threatened species | Introduced and pest species |
|---|---|---|---|---|---|
| Mammalia | Mammals | 3 | 0 | 0 | 1 |
| Reptilia | Reptiles | 23 | 0 | 0 | 0 |
| Amphibia | Frogs | 6 | 0 | 0 | 0 |
| Actinopterygii | Ray-finned fish | 119 | 0 | 0 | 1 |
| Chondrichthyes | Sharks | 2 | 0 | 0 | 0 |
| Heteroptera | True bugs | 52 | 2 | 0 | 0 |
| Arachnida | Spiders | 56 | 4 | 0 | 1 |
| | Mites | 2 | 0 | 0 | 0 |
| | Scorpions | 3 | 0 | 0 | 0 |
| | Pseudoscorpions | 4 | 1 | 0 | 0 |
| Crustacea | Crabs, lobsters, crayfish, shrimp, prawns | 53 | 0 | 0 | 2 |
| | Slaters | 29 | 2 | 0 | 0 |
| | Beach hoppers | 24 | 3 | 0 | 0 |
| | Barnacles | 10 | 2 | 0 | 1 |
| | Brine shrimp | 1 | 0 | 0 | 1 |
| | Seed shrimp | 2 | 0 | 0 | 0 |
| Mollusca | Slugs and snails | 97 | 4 | 0 | 8 |
| | Bivalves | 12 | 0 | 0 | 0 |
| | Chitons | 8 | 0 | 0 | 0 |
| | Cephalopods | 2 | 0 | 0 | 0 |
| Annelida | Bristleworms | 7 | 0 | 0 | 0 |
| | Leeches | 1 | 0 | 0 | 0 |
| Nematoda | Round worms | 1 | 0 | 0 | 0 |
| Vascular plants | Flowering plants | 159 | 0 | 0 | 6 |
| | Conifers | 3 | 0 | 0 | 1 |
| | Ferns | 2 | 0 | 0 | 0 |
| Fungi | Fungi | 2 | 0 | 0 | 0 |
| **Total** | | **683** | **18** | **0** | **22** |

Note: Threatened species include those listed as threatened under the Commonwealth EPBC Act or an equivalent listing under the *Biodiversity Conservation Act 2016* (WA). Introduced and pest species may include species that are native to Australia.

# Species lists

Lists of all species recorded during the expedition (Appendix A) were compiled using data from participating institutions.

Some specimens were only able to be identified to family or genus level. This is partly because identification of specimens is very time-consuming, with detailed microscopic examination needed in many cases. Some groups are also 'orphans' – currently no experts are working on them or are available to work on them and the taxonomic literature is out of date. Species-level identification is therefore not possible for these groups.

Unidentified Bush Blitz specimens are held in institutional collections where they are available for future study. Collections hold many such specimens, among them species not yet described (unnamed species) as well as described species that have not yet been identified. A key component of Bush Blitz is the funding of taxonomic work on specimens collected during Bush Blitz expeditions.

Nomenclature and taxonomic concepts used in this report are consistent with the Australian Faunal Directory, Australian Plant Census, Australian Plant Name Index, Florabase, Lucid key to Australian Freshwater Molluscs, MolluscaBase, Mycobank, World Register of Marine Species and World Spider Catalog.

# Discussion

## Putative new species

Here we use the term 'putative new species' to mean an unnamed species that, as far as can be ascertained, was identified as a species new to science as a direct result of this Bush Blitz. A putative new species is confirmed as new once it is named and its description is published.

Approximately 18 putative new species were discovered during the expedition. Further research is likely to reveal additional species new to science in the material collected.

### True bugs

Two of the true bug species collected are believed to be new to science. Both *Numilia*_msp001 and *Deroploopsis*_msp001 belong to the stink bug tribe Deroploini, which is under review by Gerry Cassis. The determination of *Hakea commutata* as the host plant for *Deroploopsis*_msp001 was also significant.

Several other specimens may also be new to science but need further study to confirm this.

### Spiders

There are thought to be 4 putative new spider species among the specimens collected during the expedition.

None of the native *Steatoda* from southern Western Australia are described, so the specimen collected during this expedition is likely to be a new species.

The genus *Idiosoma* is currently being revised. *Idiosoma* sp. 1 (Mount Ridley) and *Idiosoma* sp. 2 (Mount Arid) are likely new to science and will be confirmed once revisions occur in the next few years.

Two female specimens of *Proshermacha* collected in a gully to the east of Mount Arid have been confirmed as representing a new, previously unknown species. One of the females and her burrow are shown in Figure 4.

**Figure 4 Female *Proshermacha* specimen and burrow**

Photograph: Jeremy Wilson © Copyright, WA Museum

## Pseudoscorpions

Pseudoscorpions, also known as false scorpions or book scorpions, resemble tiny scorpions. Australia has more than 170 described species, but there are likely to be many more. A new species of *Synsphyronus* 'PSE237' pseudoscorpion was found under rocks on a large, flat, granite slab at Mount Ridley.

## Crustacea – barnacles, beach hoppers and slaters

Initial examination of the crustacean specimens collected revealed 7 putative new species – 2 barnacles, 3 beach hoppers and 2 slaters. However, more are expected to be identified once the specimens are examined by specialists or molecular data can be generated. Beach hoppers and slaters are groups still rich in undescribed species.

For 2 of the putative new beach hoppers – *Chevalia* sp. and *Colomastix* sp. – there are no described species of these genera known from Western Australian waters. These species have cryptic habits, which undoubtedly helped to keep them unknown until now. The specimens of *Chevalia* were found living in a presumed harem or family group inside a silk home that was attached under a rock. This genus is poorly known in Australia, with only one described species from the Great Barrier Reef. The single specimen of *Colomastix* BBR1, shown in Figure 5, was found inhabiting a sponge, a typical habitat for the group. Only one species is known from southern Australia. The third beach hopper, *Metacyproidea* BBR1, belongs to a recently described genus that has not been identified from Australian waters before.

**Figure 5 Putative new species of beach hopper *Colomastix* BBR1**


Photograph: Andrew Hosie © Copyright, WA Museum

The 2 barnacle species are obligatory commensals on sponges, which means they depend on their sponge host to survive but there is no positive or negative effect on the sponge. *Neoacasta* BBR1 appears to belong to a group of closely related species, so DNA sequencing will probably be needed to confirm whether it is new to science. On the other hand, *Acasta* BBR1 has some significant features that distinguish it from other species in the genus.

The slater *Heteroserolis* sp. represents the first record of this genus in Western Australian waters. Unidentified *Exosphaeroma* slaters have been recorded within the survey area before and further study is needed to confirm whether they are the same species. Interestingly, *Exosphaeroma* slaters are typically marine or estuarine, while this species was found in fresh water.

## Slugs and snails

Specimens of an aquatic snail, a marine mollusc and 2 terrestrial snails are thought to represent species potentially new to science.

*Coxiella* sp. 'Boyatup Hill' (Figure 6) was collected from standing water on a granite sheet near the base of Boyatup Hill. Usually found living in salt lakes and coastal salt marshes, this is probably the first example of the genus in fresh water.

**Figure 6 Putative new *Coxiella* snail and the site where it was found**

Photographs: Michael Klunzinger (left) and Corey Whisson (right) © Copyright, WA Museum

One of the marine molluscs collected was a putative new species of sacoglossan sea slug (Figure 7), having not been observed in southern Western Australia before. Sacoglossans suck green algae from seaweed and can farm the chloroplasts in leafy extensions on their back. The chloroplasts continue to perform photosynthesis, producing sugars which allow the host to survive even when food is scarce.

**Figure 7 Putative new species of Sacoglossa**

Photograph: Lisa Kirkendale © Copyright, WA Museum

Only shells were found of the 2 putative new species of terrestrial *Bothriembryon* snails. Live specimens and genetic sequencing will be needed before they can be formally described.

# Threatened species

Approximately 92% of Australian plants, 87% of mammals, 93% of reptiles and 45% of birds are endemic (Chapman 2009). Changes to the landscape resulting from human activity have put many of these unique species at risk. Over the last 200 years, many species have gone extinct; many others are considered to be threatened – that is, at risk of extinction.

## Fauna

None of the fauna recorded during the expedition are listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or state legislation. However, some species are listed globally on the IUCN Red List – Green-lip Abalone (*Haliotis laevigata*) and Black-lip Abalone (*Haliotis rubra*) are listed as Vulnerable due to the impact of harvesting and marine heatwaves.

The absence of some threatened species may also be relevant. For example, rigorous searches suggest the endemic Carter's Freshwater Mussel (*Westralunio carteri*), which is listed as Vulnerable under both the EPBC Act and the *Biodiversity Conservation Act 2016* (WA), does not exist in the region, despite one obscure record from its collection on Esperance Town Beach in the 1970s. The previous record of the species from Esperance Town Beach may have been a mistake or the species may have died out from the region – this is quite possible, given that salinisation of formerly freshwater habitats has been an issue throughout the wheat belt of southwestern Australia. Many ecosystems in the region face significant threats, such as salinisation and a drying climate, that are likely to impact populations of inland aquatic species in particular.

### Vascular plants

Although no threatened plant species were recorded during the expedition, 5 conservation-listed taxa were reported.

In Western Australia, plants that may be threatened or near threatened, but are data deficient or have not yet been adequately surveyed to be listed under the Wildlife Conservation (Rare Flora) Notice, are added to the Priority Flora List under Priorities 1, 2 or 3. The 3 categories are ranked in order of priority for survey and evaluation of conservation status, so that consideration can be given to their declaration as threatened plants. The expedition recorded 4 such species – *Astartea eobalta* (a coastal shrub), *Goodenia quadrilocularis* (a member of the fanflower family) and *Lasiopetalum maxwellii* (a member of the velvet bushes genus) are Priority 2 species and *Styphelia rotundifolia* (Round-leaved Styphelia) is a Priority 3 species.

The Lucky Bay Mallee (*Eucalyptus ligulata* subsp. *ligulata*) is a Priority 4 species. Species in this category are rare but not threatened – they may be near threatened or have recently been removed from a threatened species list. These species would benefit from regular monitoring.

## Introduced and pest species

Conservation reserves help to protect Australia's rare and threatened ecosystems and provide refuge for species at risk. Invasive species can have a major impact on already vulnerable species and ecosystems, as well as economic, environmental and social impacts. The inclusion of introduced and pest species records as part of this report is designed to provide land managers with baseline information to assist with further pest management programs.

One species of introduced fish was recorded at inland sites. The Eastern Gambusia (*Gambusia holbrooki*) is a widespread pest fish in southern and eastern Australia, with a patchy distribution in the study area. Noting the importance of maintaining the pest fish free status of reserves in Wudjari Country, the land-based fish team make suggestions about proactive education messaging in their report.

Table 3 lists the introduced and pest vertebrate species recorded during the expedition.

**Table 3 Introduced and pest vertebrate species – fish and mammals**

| Family | Species | Common name | Comments |
|---|---|---|---|
| Muridae | *Mus musculus* | House Mouse | Lucky Bay trap grid; 2 specimens; not an unexpected record of this species |
| Poeciliidae | *Gambusia holbrooki* | Eastern Gambusia | Coramup Creek, Esperance; abundant; likely in other streams near Esperance, but not in some key isolated eastern habitats |

### Invertebrates

Table 4 lists the invertebrate species collected or observed but not considered native to the study area – a spider, a brine shrimp, a barnacle, 2 freshwater crayfish and 8 snails.

**Table 4 Introduced and pest invertebrate species – spiders, crustaceans and snails**

| Group | Family | Species | Common name | Comments |
|---|---|---|---|---|
| **Spiders** | Pholcidae | *Pholcus phalangioides* | Daddy-long-legs Spider | Many seen in caves at Mt Ridley; the most common species of introduced daddy- |

| Group | Family | Species | Common name | Comments |
|---|---|---|---|---|
| | | | | long-legs spider; not known to cause harm, and widespread in Australia |
| **Crustaceans** | Artemiidae | *Artemia* sp. *parthenogenetica* | na | Lake Hillier; highly abundant; first record of brine shrimp from the lake; given confusion around species identity, molecular sequencing is recommended; *Artemia* spp. may have been introduced to Australia via salt mining operations or migratory birds |
| | Balanidae | *Amphibalanus amphitrite* | na | Goose Island; single specimen; first known record in the area away from ports or artificial substrates; near cosmopolitan fouling barnacle; native to the Indo-West Pacific and spread via shipping; common in and around Australian ports but rarely seen in more pristine environments; native distribution may include northern Australia; earliest known WA records are from early 20th century near Broome; first detected on marine infrastructure in Esperance in 2002 |
| | Parastacidae | *Cherax cainii* | Smooth Marron | Coramup Creek (Esperance) and Hidden Creek, Cape Le Grand; common; native to the southwestern corner of WA; widely introduced into farm dams and streams in the Esperance region |
| | Parastacidae | *Cherax destructor albidus* | Yabby | Tjaltjaraak Boodja Park, Dunn Rocks Creek, Coramup Creek, Esperance to Cape Le Grand NP; abundant; native to eastern Australia; introduced to WA where it has become an invasive pest |
| **Snails** | Geomitridae | *Cochlicella acuta* | Pointed Snail | Cape Arid NP in the Belinup Rock area; Cape Arid NP, Thomas River at Merivale Rd; locally abundant; native to the Mediterranean region but has successfully invaded Australia where it is common from southern WA east to western Vic, particularly in coastal limestone areas |
| | Geomitridae | *Cochlicella barbara* | Small Pointed Snail | Cape Arid NP, Thomas River at Merivale Rd; locally abundant; originated from the Mediterranean region but has successfully invaded Australia where it is now fairly common in southern areas; in WA it occurs in the SW parts where it seems to prefer the slightly more inland areas |
| | Helicidae | *Cornu aspersum* | European Garden Snail | Cape Le Grand NP, near Cape Le Grand beach campground carpark; uncommon; introduced to Australia where it is now common throughout most of southern and eastern Australia; common garden and agricultural pest |
| | Helicidae | *Theba pisana* | White Italian Snail | Cape Arid NP in the Belinup Rock area; Cape Le Grand NP, near Cape Le Grand beach campground carpark ; locally abundant; native to the Mediterranean region; now common across the drier coastal areas of southern Australia, from WA east to NSW |

| Group | Family | Species | Common name | Comments |
|---|---|---|---|---|
| | Limacidae | *Ambigolimax* sp. | Striped Field Slug | Mt Howick; Coolingup NR; Cape Arid NP in the Belinup Rock area; locally abundant; introduced from Europe; the species could be *A. waterstoni*, *A. valentiana* or even *A. parvipenis* |
| | Lymnaeidae | *Pseudosuccinea columella* | Striated Pond Snail | Ornamental pond near Esperance town Municipal Museum; locally abundant; introduced from North America to southern WA, NSW, Tas and Vic; found primarily in coastal freshwater drainages associated with agricultural and urban areas; a host for Liver Fluke (*Fasciola hepatica*), a parasite which infects livestock and occasionally humans |
| | Physidae | *Physa acuta* | Acute Bladder Snail, Fountain Snail | Ornamental pond near Esperance town Municipal Museum; locally abundant; native to north-eastern USA and Canada but has been spread throughout the world and is a very successful invader; found throughout Australia and tends to favour disturbed freshwater habitats, particularly in agricultural and urban areas; where found, it usually occurs in large numbers |
| | Punctidae | *Paralaoma servilis* | Bronze Pinhead Snail | Cape Le Grand NP at S end of Rossiter Bay; Recherche Archipelago, Middle Island near Pink Lake; locally abundant; widespread in Australia |

**na** Not available.

There was also an unconfirmed sighting of a third species of freshwater crayfish, possibly *Cherax preissii* (Koonac) or *Cherax glaber* (Glossy Koonac), at Dunn Rocks Creek. This sighting may represent another translocated species in the region. Figure 8 shows 2 of the invasive freshwater snails recorded during the expedition.

**Figure 8 Acute Bladder Snail (left) and Striated Pond Snail (middle), invasive species collected from an ornamental pond near Esperance town municipal museum (right)**

Photograph: Michael Klunzinger © Copyright, WA Museum

## Vascular plants

Except for areas heavily impacted by humans, such as roadsides, sites surveyed were generally free from introduced plants.

The only gazetted weed recorded is shown in Table 5. Bridal Creeper (*Asparagus asparagoides*) is a declared pest in Western Australia under the *Biosecurity and Agriculture Management Act* 2007 and is a Weed of National Significance.

### Table 5 Gazetted weeds

| Family | Species | Common name | Comments |
|---|---|---|---|
| Asparagaceae | *Asparagus asparagoides* | Bridal Creeper | Cape Arid NP, NW boundary; one seen in area |

A further 6 exotic species were recorded and are listed in Table 6.

### Table 6 Non-gazetted weeds

| Family | Species | Common name | Comments |
|---|---|---|---|
| Asteraceae | *Erigeron bonariensis* | na | Cape Le Grand NP, W boundary; common; widespread annual, noted mostly along road verges |
| Asteraceae | *Symphyotrichum squamatum* | Bushy Starwort | Eastern edge of Cape Le Grand NP; locally frequent; road verge |
| Euphorbiaceae | *Euphorbia paralias* | Sea Spurge | Cape Le Grand NP and Duke of Orleans Bay; common; observed on coastal dunes; DBCA advise it is distributed widely on south coast beaches and dunes, including some Recherche islands; originally from southern Europe, north Africa and western Asia |
| Gentianaceae | *Centaurium tenuiflorum* | na | Cape Le Grand NP, near Dunn Rocks; several individuals noted in area; widespread annual, noted mostly along road verges |
| Pinaceae | *Pinus* sp. | na | Cape Le Grand NP, W boundary; commonly cultivated; encroaching on park |
| Solanaceae | *Solanum americanum* | Glossy Nightshade | Nature Reserve, Merivale Rd–Cape Le Grand Rd; several individuals seen in area; adjacent to agricultural property |

**na** Not available.

The flora team provide management recommendations in their report and highlight concerns about the:

- rapid increase in the amount of Sea Spurge (*Euphorbia paralias*) along the coastline of the national parks and surrounding areas
- incursion of cultivated pines (*Pinus* sp.) along the eastern boundary of Cape Le Grand National Park
- observation and documentation of *Erigeron* along roadways, as shown in Figure 9.

**Figure 9 *Erigeron bonariensis* growing along roadways in Cape Le Grand National Park**

Photograph: Shelley James © Copyright, WA Herbarium

# Range extensions

The known ranges of many species were extended, including many new records for Western Australia. The most notable range extensions are listed in Table 7. In addition, as the easternmost islands of the Recherche Archipelago had been poorly surveyed, many fish species were added to the known fauna lists for islands or provided short range extensions.

**Table 7 Range extensions**

| Group | Family | Species | Comments |
|---|---|---|---|
| **Marine fishes** | Clinidae | Earspot Snake Blenny (*Ophiclinops hutchinsi*) | Esperance foreshore; new site and minor western range extension for this narrow range endemic species, known only from a small section of coastline between Israelite Bay and Lucky Bay |
| | Syngnathidae | Tiger Pipefish (*Filicampus tigris*) | Esperance foreshore; approx. 800 km E and 1400 km W of the other 3 known populations; a single small individual, genetic studies needed to determine if this represents a different breeding population; first south coast WA record |
| **Spiders** | Selenopidae | *Karaops toolbrunup* | Found under rocks on granite slab at standard survey site 2 (Little Hellfire Bay); 450 km; previously only known from Stirling Range NP |
| | Zodariidae | *Storena fungina* | In a roadside burrow, on the E side of Mt Arid; nearest specimen on ALA is at Peak Charles NP, approx. 230 km away; endemic to WA, known from Fitzgerald River NP and inland sites such as Jerdacuttup and Jerramungup; extends the range E |

| Group | Family | Species | Comments |
|---|---|---|---|
| **Slugs and snails** | Campanilidae | Giant Creeper (*Campanile symbolicum*) | New Year Island; Esperance, 208 km to New Year |
| | Chilodontidae | Imbricated False Ear Shell (*Granata imbricata*) | Pointer Island, Daw Island; Esperance to Daw 208 km, 210 km to Pointer |
| | Fionidae | *Fiona pinnata* | Daw Island; Esperance to Daw 208 km |
| | Fissurellidae | Oblong Keyhole Limpet (*Amblychilepas oblonga*) | Pointer Island, Daw Island, Pasley Island; Esperance, 153 km to Pasley, 208 km to Daw, 210 km to Pointer |
| | Fissurellidae | Elongated Keyhole Limpet (*Macroschisma productum*) | Daw Island; Esperance to Daw 208 km |
| | Gastrocoptidae | Bannerton Pupasnail (*Gastrocopta bannertonensis*) | N of Mt Ridley; nearest museum record is 96 km westward |
| | Gastrocoptidae | Margaret's Pupasnail (*Gastrocopta margaretae*) | Recherche Archipelago, Middle Island, near Pink Lake; nearest museum record is 98 km north; first record for Recherche Archipelago |
| | Geomitridae | Pointed Snail (*Cochlicella acuta*) | Cape Arid NP (2 locations); 82 km; significant infill; first record for Cape Arid NP |
| | Geomitridae | Small Pointed Snail (*Cochlicella barbara*) | Cape Arid NP; 212 km; significant infill; first record for Cape Arid NP |
| | Helicidae | European Garden Snail (*Cornu aspersum*) | Cape Le Grand NP; 363 km; significant infill; first record for Cape Le Grand NP |
| | Helicidae | White Italian Snail (*Theba pisana*) | First record for Cape Arid NP; 82 km; significant infill |
| | Littorinidae | Banded Periwinkle (*Austrolittorina unifasciata*) | Daw Island; Esperance to Daw 208 km |
| | Lottiidae | *Lottia septiformis* | Daw Island; Esperance to Daw 208 km |
| | Muricidae | Smooth Emozamia (*Bedeva flindersi*) | Daw Island; Esperance to Daw 208 km |
| | Neritidae | Black Crow (*Nerita atramentosa*) | Daw Island; Esperance to Daw 208 km |
| | Patellidae | Chapman's Limpet (*Scutellastra chapmani*) | Daw Island, Pasley Island; Esperance 153 km to Pasley, 208 km to Daw |
| | Pisaniidae | *Pollia bednalli* | Pointer Island; Esperance 210 km to Pointer |
| | Planorbidae | South-western Pouched Snail (*Glyptophysa georgiana*) | Cape Le Grand NP; nearest museum record is 33 km to the NW; appears to be a new record of species occurrence |
| | Succineidae | Southern Ambersnail (*Succinea* cf. *australis*) | Recherche Archipelago, Middle Island, Lake Hillier, Cape Arid NP; 285 km range extension; first record for Cape Arid NP and Recherche Archipelago |
| | Tateidae | *Ascorhis occidua* | Bandy Creek; nearest record is Mullet Lake, 7.5 km to the SW; new record for the species |
| | Tateidae | *Tatea rufilabris* | Duke Creek; nearest museum record is from Esperance Bay, 65 km to the W; appears to be a new record of species occurrence |
| | Tomichiidae | *Coxiella striatula* | Lake Boolenup; nearest museum record is Mullet Lake, 96 km to the W; appears to be a new record of species occurrence |
| | Trochidae | Rough Periwinkle (*Austrocochlea rudis*) | Daw Island; Esperance to Daw 208 km |

| Group | Family | Species | Comments |
|---|---|---|---|
| | Trochidae | Raphael's Clanculus (*Clanculus philippii*) | Daw Island; Esperance to Daw 208 km |
| | Trochidae | Elegant Kelp Shell (*Phasianotrochus bellulus*) | Anvil Island, Pasley Island; 210 km to Pointer |
| | Trochidae | Lehmann's Top Shell (*Prothalotia lehmanni*) | Anvil Island; 210 km to Pointer |
| | Turbinidae | Golden Small Star (*Bellastraea aurea*) | Goose Island; Esperance, 123 km to Goose |
| **Bivalves** | Chamidae | *Chama ruderalis* | Daw Island; Esperance to Daw 208 km |
| | Galeommatidae | *Ephippodonta lunata* | Daw Island; Esperance to Daw 208 km |
| | Galeommatidae | *Ephippodontoana mcdougalli* | Daw Island; Esperance to Daw 208 km |
| | Lasaeidae | *Arthritica semen* | New records at Bandy Creek and Duke Creek; nearest museum record is Oldfield River (118 km and 175 km to the W respectively) |
| | Malleidae | *Malleus meridianus* | Daw Island; Esperance to Daw 208 km |
| | Trapezidae | *Fluviolanatus subtortus* | Woody Lake Nature Reserve; nearest record is from an inland salt lake off Mason Bay Rd, 138 km to the west; this appears to be a new record of species occurrence |
| **Chitons** | Cryptoplacidae | *Cryptoplax striata* | Daw Island; Esperance to Daw 208 km |
| | Ischnochitonidae | *Ischnochiton cariosus* | Daw Island; Esperance to Daw 208 km |
| **Cephalopods** | Octopodidae | *Octopus* cf. *djinda* | New Year Island; Esperance, 208 km to New Year |
| **Beach hoppers** | Caprellidae | *Paraproto spinosa* | Pointer and Anvil islands; 2,000 km; first record for WA, previously known from Vic, Tas and NSW |
| | Ochlesidae | *Ochlesis eridunda* | Goose Island; 400 km; previously from Albany, SA and NSW |
| **Barnacles** | Balanidae | *Euacasta acutaflava* | Daw and Pointer Islands; 2,500 km; range extension S from Montebello Islands; WA endemic |
| | Lepadidae | *Lepas testudinata* | Recherche Archipelago, attached to drifting buoy; 400 km; previously from Albany, Vic and NSW |
| | Pyrgomatidae | *Trevathana synthesysae* | Middle Island; 1,000 km; only known Australian record is Cockburn Sound, WA |
| **Brine shrimp** | Artemiidae | *Artemia* sp. *parthenogenetica* | Lake Hillier; 60 km; known from salt lakes near Esperance |
| **Crabs, lobsters, crayfish, shrimp, prawns** | Alpheidae | *Synalpheus fossor* | Middle Island; 400 km; previously known from Albany and SA |
| | Crangonidae | *Philocheras intermedius* | Anvil and Middle Islands; 1,000 km; previously known from Cockburn Sound and SA |
| | Dromiidae | *Stimdromia* cf. *lamellata* | Middle and Goose Islands; 1,000 km; SA, Vic, Tas and 1 record from Point Peron WA |
| | Epialtidae | *Huenia* cf. *bifurcata* | Middle Island; 2,200 km; new record for WA, previously known from Vic and NSW |
| | Hippolytidae | Slender Sargassum Shrimp, Green Prawn *(Latreutes compressus)* | Goose Island; 400 km; previously known from Albany, SA, Vic, Tas, NSW and QLD |
| | Hippolytidae | Arrow shrimp *(Tozeuma pavoninum)* | Middle Island; 1,000 km; previously known from Cockburn Sound and SA |

| Group | Family | Species | Comments |
|---|---|---|---|
| | Leucosiidae | *Phlyxia crassipes* | Middle and Mart islands; 900 km; infill between Bunbury and SA |
| | Majidae | *Microhalimus deflexifrons* | Daw, Middle and Pointer islands; 400 km; infill between Albany and Vic |
| | Majidae | *Pippacirama tuberculosa* | Middle Island; 400 km; infill between Albany and SA |
| | Palaemonidae | Aesop Prawn *(Ancylomenes aesopius)* | Anvil Island; 400 km; previously known from Albany and SA |
| | Palaemonidae | Striped Shrimp *(Palaemon intermedius)* | Daw Island and Duke of Orleans Bay; 400 km; previously known from Albany and SA |
| | Pilumnidae | *Ceratoplax glaberrima* | Mart Islands; 400 km; infill between Albany and SA |
| | Pilumnidae | *Heteropilumnus* cf. *fimbriatus* | Mart Islands; 1,200 km; new record for WA; previously known from SA |
| | Processidae | Odd-footed Shrimp *(Processa australiensis)* | Daw, Pasley and Pointer islands; 1,000 km; previously known from Cockburn Sound, SA, Vic, NSW and Qld |
| | Varunidae | *Cyclograpsus audouinii* | Daw Island; 400 km; infill between Albany and SA |
| | Xanthidae | *Actaea peronii* | Daw and Middle islands; 400 km; infill between Albany and SA |
| **Slaters** | Idoteidae | *Crabyzos longicaudatus* | Anvil Island; 1,000 km; previously known from Cockburn Sound, SA, Vic and Tas |
| | Idoteidae | *Euidotea bakeri* | Daw, Mondrain and Pointer islands; 400 km; previously known from Albany, SA, Tas, Vic and NSW |
| | Idoteidae | *Euidotea caeruleotincta* | Anvil Island; 400 km; previously known from Albany, SA and Tas |
| | Idoteidae | Metallic Isopod *(Idotea metallica)* | Recherche Archipelago; 3,000 km; attached to drifting buoy; new record for WA (previous records from NSW and Qld) |
| | Sphaeromatidae | *Amphoroidella elliptica* | Daw and Marts islands; 1,200 km; previously known from Jurien Bay (WA) and SA |
| | Sphaeromatidae | *Cercosphaera coloura* | Daw Island; 1,000 km; first WA record, known from SA and Vic |
| | Sphaeromatidae | *Cercosphaera dilkera* | Middle Island; 1,200 km; previously known from Dongara (WA) and Flinders Island (SA) |
| | Sphaeromatidae | *Diclidocella yackatoon* | Daw Island; 1,200 km; previously known from Dongara and SA |
| | Sphaeromatidae | *Exosphaeroma* cf. *bicolor* | Bandy Creek; 1,200 km; new record for WA; previously known from SA |
| | Sphaeromatidae | *Haswellia cilicioides* | Daw and Middle islands; 800 km; previously known from Cape Naturaliste (WA) and SA |
| | Sphaeromatidae | *Haswellia emarginata* | Daw and Mondrain islands; 1,200 km; previously known from Jurien Bay, SA, Vic and NSW |
| | Sphaeromatidae | *Cymodoce hamata* | Daw and Middle islands; 1,200 km; previously known from Jurian Bay and SA |
| | Sphaeromatidae | *Platycerceis hyalina* | Anvil; 1,000 km; previously known from Garden Island (WA) and SA |

| Group | Family | Species | Comments |
|---|---|---|---|
| **Bristle worms** | Amphinomidae | *Hipponoe gaudichaudi* | Recherche Archipelago, attached to drifting buoy; 3,000 km; new record from WA, previous records from NSW |
| | Pectinariidae | *Pectinaria antipoda* | Middle and Pasley Islands; 700 km; previously known from off Cape Leeuwin (WA), SA, Vic, NSW and Qld |
| | Polynoidae | *Lepidonotus oculatus* | Middle Island; 700 km; previously known from off Cape Leeuwin, SA, Vic, NSW and Qld |
| | Serpulidae | *Ficopomatus enigmaticus* | Duke Creek; 400 km; previously known from Albany, SA, Vic, NSW and Qld |
| **Vascular plants** | Asparagaceae | Branching Lily (*Laxmannia ramosa* subsp. *deflexa*) | Nature reserve N and adjacent to Cape Le Grand NP; new record for area |
| | Asteraceae | *Erigeron bonariensis* | First record for Cape Le Grand NP, north western-most corner; common along roadsides |
| | Chenopodiaceae | Glaucous Goosefoot (*Chenopodium glaucum*) | First record for Cape Le Grand NP; Rossiter Bay |
| | Chenopodiaceae | Berry Saltbush (*Rhagodia baccata* subsp. *baccata*) | Duke of Orleans Bay; 10 km E; new record for area, first collection for E end of park |
| | Dilleniaceae | Stalked Guinea Flower (*Hibbertia racemosa*) | Mt Ridley; new record for area |
| | Ericaceae | Round-leaved Styphelia (*Styphelia rotundifolia*) | Mt Ridley; 20 km range extension N; Priority 3 listed taxon in WA |
| | Euphorbiaceae | Sea Spurge (*Euphorbia paralias*) | Duke of Orleans Bay, adjacent to Cape Le Grand NP; 40 km east; new record for area |
| | Fabaceae | *Daviesia lancifolia* | Second record for Cape Le Grand NP; Dunn Rocks area; 10 km E |
| | Gentianaceae | *Centaurium tenuiflorum* | Cape Le Grand NP; Dunn Rocks area; 10 km E; new record for eastern end of park |
| | Goodeniaceae | Viscid Goodenia (*Goodenia viscida*) | Cape Arid NP; maintenance track parallel with Merivale Rd; photographic record, insufficient material for vouchering; 80 km range extension E |
| | Haloragaceae | *Haloragis digyna* | First record for Cape Le Grand NP; Dunn Rocks area |
| | Lamiaceae | *Microcorys glabra* var. *glabra* | Cape Arid NP; maintenance track parallel with Merivale Rd; 10 km range extension E |
| | Lauraceae | *Cassytha micrantha* | Second record for Cape Le Grand NP; Lucky Bay Rd; approx. 7.5 km NE |
| | Malvaceae | Narrow Leaved Thomasia (*Thomasia angustifolia*) | Mt Ridley; new record for area |
| | Myrtaceae | Flat-topped Yate (*Eucalyptus occidentalis*) | Mt Ridley; new record for area |
| | Proteaceae | *Grevillea anethifolia* | Mt Ridley; new record for area |
| | Proteaceae | Pincushion Hakea (*Hakea laurina*) | Mt Ridley; new record for area |
| | Solanaceae | Glossy Nightshade (*Solanum americanum*) | Merivale, Nature Reserve, Merivale Rd–Cape Le Grand Rd; 135 km NE, 180 km W; new record for area |
| | Pteridaceae | *Cheilanthes sieberi* subsp. *sieberi* | Mt Ridley; new record for area |

| Group | Family | Species | Comments |
|---|---|---|---|
| Fungi | Irpicaceae | *Meruliopsis* cf. *miniata* (*Byssomerulius* cf. *miniatus*) | Firebreak, 3 km ESE of entrance to Cape Le Grand NP; new genus and species record for WA |

# Other significant findings

This expedition provided an opportunity for scientists to collect other data and samples important for future research. For most of the species collected, this included samples preserved for future DNA or other tissue analysis.

## Vertebrates

Capture rates were predictably low in this area and at this time of year, but a reasonable amount of diversity was encountered. The most abundant mammal recorded was the nectivorous Honey Possum (*Tarsipes rostratus*), shown in Figure 10. Any site with *Banksia* plants, most of which were in flower at the time of the survey, resulted in Honey Possum captures in pit traps.

**Figure 10 Honey possums removed from a trap, and after release on a flowering *Banksia* cone**

Photograph: Kailah Thorn © Copyright, WA Museum

The expedition helped fill sampling gaps from the region, including from Mount Ridley, which has had very little previous survey work. Records of Bardick Snake (*Echiopsis curta*) and Southern Blind Snake (*Anilios australis*) were particularly valuable. Tissue from the Southern Blind Snake (Figure 11) will be sequenced.

**Figure 11 Southern Blind Snake from Mount Ridley**

Photograph: Ryan Ellis © Copyright, WA Museum

Other highlights include:

- recording the Jewelled Sandplain Ctenotus (*Ctenotus gemmula*), which has only been recorded once before in Cape Le Grand National Park, in 1972
- collecting a tissue sample of Chain-striped Southwest Ctenotus (*Ctenotus catenifer*) that has been sequenced and will contribute to a future revision of this species
- collecting a specimen of Southwestern Crevice Skink (*Egernia napoleonis*) that has been prepared as a skeleton specimen – the first full skeleton of the species for the WA Museum.

## Fishes

The fish surveys have contributed to our knowledge of species distributions in Wudjari Country across different habitat types – inland, estuarine, near-shore and the remote eastern islands of the Recherche Archipelago. Fish diversity is high in the region and fish faunas in these different major habitat types were distinctive.

In inland habitats, the native Common Galaxias (*Galaxias maculatus*) and Swan River Goby (*Pseudogobius olorum*) were widespread. In estuarine habitats, 8 species were recorded, including juveniles of culturally and recreationally important Black Bream (*Acanthopagrus butcheri*) and Yelloweye Mullet (*Aldrichetta forsteri*). Near-shore habitats revealed 36 species from diverse families, including wrasse, pipefish, leatherjackets and soles. The remote eastern islands of the Recherche Archipelago supported largely healthy and diverse fish populations, with the fauna typical of southern Australia. Despite many new fish records for the islands, the species list is far from complete. In particular, sampling for small inconspicuous species is challenging due to habitat, safety and weather.

Good numbers of large mature Western Blue Groper (*Achoerodus gouldii*) were recorded in the easternmost islands visited (Figure 12). This is a very popular angling and spearfishing target and both the abundance and sizes of Western Blue Groper on reefs around Esperance is known

to be reduced. This species takes 30 to 35 years to reach sexual maturity, which makes them especially vulnerable to overfishing.

**Figure 12 A large male Western Blue Groper cruising over a reef at Middle Island**

Photograph: Glenn Moore © Copyright, WA Museum

Important information was gathered for a narrow range endemic species, the Earspot Snakeblenny (*Ophiclinops hutchinsi*), which was recorded at Esperance foreshore and Lucky Bay. Other notable records included an isolated population of Tiger Pipefish (*Filicampus tigris*) and an important population of Common Galaxias at the easternmost limit of their distribution in Western Australia.

One previously unnamed species – Gobiesocidae Genus C sp. 3 – was described as the Slender Grass Clingfish (*Melanophorichthys penicillus*) in 2024 using material from this expedition (Conway, Moore and Summers 2024).

Another interesting find was a freshwater fish leech (*Pterobdella* sp.) on a Swan River Goby at an inland site on the Thomas River.

## True bugs

Although it was not the best time of year to collect true bugs, several significant specimens were collected that represent new or rarely seen species. In addition to the 2 putative new species already been mentioned, 40 species require more work to either identify them or recognise them as new to science. Specimens of known but undescribed species will be useful when those species are described.

## Spiders

The arachnid fauna proved to be rich in various taxa, although adult spiders of many species were rare. Surveys targeted short-range endemic groups that would feed into current and future projects – namely mygalomorph spiders (trapdoor spiders and their relatives) and pseudoscorpions. Mygalomorph spiders are potentially vulnerable due to their naturally small ranges. Of particular interest were the mygalomorph spiders collected in a wet gully on the south-eastern side of Mount Arid, including a new *Stanwellia* species, and the putative new

*Proshermacha* species. Both species probably rely on the unburnt gully for survival, and both are relatively large, charismatic burrowing spiders.

## Inland aquatic molluscs

A relatively diverse collection of inland aquatic molluscs was found. The unexpected finding of species previously not recorded in the region, and locating molluscs that could not be formally identified, shows that information gaps still exist for this region. Museum records and previous studies suggest that additional species may occur in areas that could not be accessed during this expedition.

The presence of exotic, and absence of native, freshwater snails in disturbed habitats highlights the importance of conservation reserves for the region. Undisturbed strictly freshwater habitats have become increasingly rare in the region. A population of the native freshwater snail South-western Pouched Snail (*Glyptophysa georgiana*) within the perched freshwater dune lake in Cape Le Grand National Park appears to be unique to the region and an important indicator species. With climate change trending towards reductions in annual rainfall and increasing temperatures, regionally significant fauna inhabiting salt lakes, including native *Coxiella* snails may face growing conservation pressure. Two of these snails are shown in Figure 13.

**Figure 13 South-western Pouched Snail (left), from the perched freshwater dune lake in Cape Le Grand National Park and *Coxiella striatula* from the saline Lake Boolanup (right)**

Photograph: Michael Klunzinger © Copyright, WA Museum

## Marine molluscs

This was the first scientific survey for marine molluscs in the far eastern Recherche Archipelago and included 27 sites around 9 islands, covering habitats focusing on subtidal reefs. Chitons were well represented, as were key-hole limpets – both inhabiting the underside of rocks. Commercially important species including abalone and octopus were observed while no pest species were encountered. These data from islands including Daw, Pointer, Anvil and Pasley represent occurrences from islands that have not been visited by scientific divers before and add important infill to predicted distributions of 23 macromolluscs.

Additionally, 31 sediment samples and over 200 lots of small and micro molluscs were collected to facilitate future research on this understudied faunal component.

Many southern endemics were observed or collected. This includes the Giant Cuttlefish (*Ascarosepion apama*) at one site as well as live observations of commensal bivalves *Ephippodontoana mcdougalli* and *Ephippodonta lunata* living together under same rock. These bivalves are rarely observed and are evolutionarily significant bivalves that represent a transition to a 'gastropod' mode of life. The sea snail Giant Creeper (*Campanile symbolicum*) was common – this is an iconic species for the southwest.

## Land snails

Given the unfavourable conditions for collecting land snails, it was significant to find 11 undescribed species. This suggests the region contains a significant number of unnamed species. The undescribed snails include many *Bothriembryon* species as well as species from the micro-mollusc families Charopidae and Punctidae. Material collected will help to confirm if they are new to science and aid their formal description. Figure 14 shows one of the undescribed snails collected during the expedition – known as *Bothriembryon* 'Cape Le Grand' n. sp. at the time of the expedition, now described as *Bothriembryon simoneae*.

**Figure 14 The snail now described as *Bothriembryon simoneae***

Photograph: Frank Koehler © Copyright, Australian Museum

In Western Australia, some *Bothriembryon* are known to be short-range endemic species. These species have naturally small distributions (less than 10,000 km$^2$) because they are poor dispersers, have relatively low reproductive rates and have particular ecological requirements. There are already several species of *Bothriembryon* listed as threatened at state and international level. Having a restricted range, they face even greater pressure from climate change than other species. The presence of exotic terrestrial snails may also add pressures to native snails through competition and predation. Habitat disturbance is another factor that could negatively impact on native land snails, given exotic weeds and past bushfire activity was noted at several sites where native snails were found. Further taxonomic work is required on the undescribed taxa so that conservation management can be applied as required.

## Crustacea

Findings show the terrestrial and aquatic crustacea east of Esperance are still poorly known. Many of the species identified represent typical temperate species, however, the impact of the

warm water Leeuwin current can be seen by the presence of several typically warm water species. For example, the coral-inhabiting barnacle *Trevathana synthesysae* likely represents the southernmost record of its family. In addition to species that may be new to western science, there are other specimens of particular taxonomic interest. A sponge-inhabiting barnacle, *Neoacasta glans*, is significant as a type species for the genus *Neoacasta* and is vital for a revision of the genus.

Beach hoppers (amphipods) and slaters (isopods) are small and easily confused. Given the limitations of microscopes in the 19th and early 20th century, many species need to be recollected and redescribed to modern standards. The freshly collected specimens of *Cymodoce hamata*, *Exosphaeroma* cf. *bicolor*, *Haswellia cilicioides* and *H. emarginata* will hopefully be used to better understand their phylogenetic relationships and the biogeography of the Australian coast.

## Vascular plants

Most plant specimens, while not new records for the areas surveyed, filled a collection geographical gap for the region and for the time of year.

Several taxa showed atypical flowering for the time of year, which may be indicative of phenological changes due to environmental conditions of the area.

Phytophthora dieback is well documented in the region and, while already managed through road closures and education, is noticeable and clearly affecting biodiversity within the parks.

# Appendix A: Species lists

### Table A1 List of fauna species recorded

| Group | Family | Species | Common name |
|---|---|---|---|
| **Mammals** | Dasyuridae | *Sminthopsis* sp. | Dunnart |
| | Muridae | *Mus musculus* [a] | House Mouse |
| | Tarsipedidae | *Tarsipes rostratus* | Honey Possum |
| **Reptiles** | Agamidae | *Ctenophorus chapmani* | Southern Heath Dragon |
| | Agamidae | *Ctenophorus ornatus* | Ornate Crevice Dragon |
| | Agamidae | *Pogona minor minor* | Dwarf Bearded Dragon |
| | Carphodactylidae | *Underwoodisaurus milii* | Barking Gecko |
| | Diplodactylidae | *Strophurus spinigerus* | Southwestern Spiny-tailed Gecko |
| | Elapidae | *Echiopsis curta* | Bardick Snake |
| | Elapidae | *Elapognathus coronatus* | Crown Snake |
| | Elapidae | *Notechis scutatus* | Tiger Snake |
| | Gekkonidae | *Christinus marmoratus* | Marbled Gecko |
| | Pygopodidae | *Aprasia repens* | Sand Plain Worm-lizard |
| | Pygopodidae | *Delma fraseri* | Fraser's Delma |
| | Scincidae | *Acritoscincus trilineatus* | Western Three-lined Skink |
| | Scincidae | *Cryptoblepharus buchananii* | Buchanan's Snake-eyed Skink |
| | Scincidae | *Ctenotus catenifer* | Chain-striped Southwest Ctenotus |
| | Scincidae | *Ctenotus gemmula* | Jewelled Sandplain Ctenotus |
| | Scincidae | *Ctenotus labillardieri* | Common Southwest Ctenotus |
| | Scincidae | *Egernia napoleonis* | Southwestern Crevice Skink |
| | Scincidae | *Hemiergis initialis initialis* | Southwestern Earless Skink |
| | Scincidae | *Hemiergis peronii peronii* | Four-toed Earless Skink |
| | Scincidae | *Lerista distinguenda* | Southwestern Orange-tailed Slider |
| | Scincidae | *Menetia greyii* | Common Dwarf Skink |
| | Scincidae | *Morethia obscura* | Shrubland Morethia Skink |
| | Typhlopidae | *Anilios australis* | Southern Blind Snake |
| **Frogs** | Limnodynastidae | *Heleioporus eyrei* | Moaning Frog |
| | Limnodynastidae | *Limnodynastes dorsalis* | Western Banjo Frog |
| | Myobatrachidae | *Crinia georgiana* | Quacking Frog |
| | Myobatrachidae | *Crinia pseudinsignifera* | False Western Froglet |
| | Pelodryadidae | *Litoria adelaidensis* | Slender Tree Frog |
| | Pelodryadidae | *Litoria cyclorhyncha* | Spotted Thigh Tree Frog |
| **Fish** | Aplodactylidae | *Aplodactylus westralis* | Western Seacarp |
| | Apogonidae | *Siphamia cephalotes* | Wood’s Siphonfish |
| | Apogonidae | *Vincentia punctata* | Orange Cardinalfish |
| | Aracanidae | *Anoplocapros lenticularis* | Whitebarred Boxfish |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Arripidae | *Arripis georgianus* | Australian Herring |
| | Arripidae | *Arripis truttaceus* | Western Australian Salmon |
| | Atherinidae | *Atherinosoma elongatum* | Elongate Hardyhead |
| | Atherinidae | *Leptatherina presbyteroides* | Silver Fish |
| | Aulopidae | *Latropiscis purpurissatus* | Sergeant Baker |
| | Berycidae | *Centroberyx gerrardi* | Bight Redfish |
| | Berycidae | *Centroberyx lineatus* | Swallowtail |
| | Blenniidae | *Parablennius postoculomaculatus* | False Tasmanian Blenny |
| | Carangidae | *Pseudocaranx georgianus* | Silver Trevally |
| | Carangidae | *Seriola hippos* | Samsonfish |
| | Chaetodontidae | *Chelmonops curiosus* | Western Talma |
| | Chironemidae | *Chironemus georgianus* | Western Kelpfish |
| | Clinidae | *Cristiceps australis* | Southern Crested Weedfish |
| | Clinidae | *Cristiceps aurantiacus* | Yellow Crested Weedfish |
| | Clinidae | *Heteroclinus adelaidae* | Adelaide Weedfish |
| | Clinidae | *Heteroclinus kuiteri* | Kuiter's Weedfish |
| | Clinidae | *Heteroclinus roseus* | Rosy Weedfish |
| | Clinidae | *Heteroclinus* sp. 5 | Fewray Weedfish |
| | Clinidae | *Heteroclinus* sp. 6 | Milward's Weedfish |
| | Clinidae | *Heteroclinus whitleyi* | Whitley's Weedfish |
| | Clinidae | *Ophiclinops hutchinsi* | Earspot Snake Blenny |
| | Clinidae | *Ophiclinus antarcticus* | Dusky Snake Blenny |
| | Clinidae | *Sticharium dorsale* | Slender Snake Blenny |
| | Clupeidae | *Spratelloides robustus* | Blue Sprat |
| | Creediidae | *Limnichthys fasciatus* | Tommyfish |
| | Cynoglossidae | *Paraplagusia bilineata* | Lemon Tongue Sole |
| | Dinolestidae | *Dinolestes lewini* | Longfin Pike |
| | Diodontidae | *Diodon nicthemerus* | Globefish |
| | Enoplosidae | *Enoplosus armatus* | Old Wife |
| | Galaxiidae | *Galaxias maculatus* | Common Galaxias |
| | Gerreidae | *Parequula melbournensis* | Silverbelly |
| | Girellidae | *Girella tephraeops* | Western Rock Blackfish |
| | Girellidae | *Girella zebra* | Zebra Fish |
| | Gobiesocidae | *Alabes occidentalis* | Western Shore Eel |
| | Gobiesocidae | *Cochleoceps bicolor* | Western Cleaner Clingfish |
| | Gobiesocidae | *Cochleoceps spatula* | Spadenose Clingfish |
| | Gobiesocidae | *Melanophorichthys penicillus* | Slender Grass Clingfish |
| | Gobiesocidae | *Parvicrepis* sp. | na |
| | Gobiesocidae | *Posidonichthys hutchinsi* | Posidonia Clingfish |
| | Gobiidae | *Callogobius depressus* | Flathead Goby |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Gobiidae | *Eviota bimaculata* | Twospot Eviota |
| | Gobiidae | *Favonigobius lateralis* | Southern Longfin Goby |
| | Gobiidae | *Nesogobius pulchellus* | Sailfin Goby |
| | Gobiidae | *Nesogobius* sp.4 | Groovecheek Sandgoby |
| | Gobiidae | *Pseudogobius olorum* | Bluespot Goby |
| | Kyphosidae | *Kyphosus sydneyanus* | Silver Drummer |
| | Labridae | *Achoerodus gouldii* | Western Blue Groper |
| | Labridae | *Austrolabrus maculatus* | Blackspotted Wrasse |
| | Labridae | *Bodianus frenchii* | Western Foxfish |
| | Labridae | *Coris auricularis* | Western King Wrasse |
| | Labridae | *Dotalabrus alleni* | Little Rainbow Wrasse |
| | Labridae | *Dotalabrus aurantiacus* | Castelnau's Wrasse |
| | Labridae | *Eupetrichthys angustipes* | Snakeskin Wrasee |
| | Labridae | *Haletta semifasciata* | Blue Weed-whiting |
| | Labridae | *Halichoeres brownfieldi* | Brownfield's Wrasse |
| | Labridae | *Heteroscarus acroptilus* | Rainbow Cale |
| | Labridae | *Notolabrus parilus* | Brownspotted Wrasse |
| | Labridae | *Olisthops cyanomelas* | Herring Cale |
| | Labridae | *Ophthalmolepis lineolata* | Southern Maori Wrasse |
| | Labridae | *Pictilabrus laticlavius* | Senator Wrasse |
| | Labridae | *Pseudolabrus biserialis* | Redband Wrasse |
| | Labridae | *Siphonognathus argyrophanes* | Tubemouth |
| | Labridae | *Siphonognathus beddomei* | Pencil Weed Whiting |
| | Labridae | *Siphonognathus caninis* | Sharpnose Weed Whiting |
| | Labridae | *Siphonognathus radiatus* | Longray Weed Whiting |
| | Labridae | *Siphonognathus radiatus* | Longray Weed Whiting |
| | Latridae | *Dactylophora nigricans* | Dusky Morwong |
| | Latridae | *Nemadactylus valenciennesi* | Blue Morwong |
| | Latridae | *Pseudogoniistius nigripes* | Magpie Perch |
| | Leptoscopidae | *Lesueurina platycephala* | Flathead Sandfish |
| | Microcanthidae | *Neatypus obliquus* | Footballer Sweep |
| | Microcanthidae | *Tilodon sexfasciatus* | Moonlighter |
| | Monacanthidae | *Acanthaluteres spilomelanurus* | Bridled Leatherjacket |
| | Monacanthidae | *Cantheschenia longipinnis* | Smoothspine Leatherjacket |
| | Monacanthidae | *Meuschenia flavolineata* | Yellowstriped Leatherjacket |
| | Monacanthidae | *Meuschenia galii* | Bluelined Leatherjacket |
| | Monacanthidae | *Meuschenia hippocrepis* | Horseshoe Leatherjacket |
| | Monacanthidae | *Meuschenia scaber* | Velvet Leatherjacket |
| | Monacanthidae | *Scobinichthys granulatus* | Rough Leatherjacket |
| | Moridae | *Pseudophycis breviuscula* | Bastard Red Cod |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Mugilidae | *Aldrichetta forsteri* | Yelloweye Mullet |
| | Mullidae | *Upeneichthys vlamingii* | Bluespotted Goatfish |
| | Paralichthyidae | *Pseudorhombus jenynsii* | Smalltooth Flounder |
| | Pempheridae | *Parapriacanthus elongatus* | Elongate Bullseye |
| | Pempheridae | *Pempheris klunzingeri* | Rough Bullseye |
| | Pempheridae | *Pempheris multiradiata* | Bigscale Bullseye |
| | Pempheridae | *Pempheris ornata* | Orangelined Bullseye |
| | Pentacerotidae | *Pentaceropsis recurvirostris* | Longsnout Boarfish |
| | Platycephalidae | *Leviprora inops* | Longhead Flathead |
| | Platycephalidae | *Platycephalus speculator* | Southern Bluespotted Flathead |
| | Plesiopidae | *Paraplesiops meleagris* | Southern Blue Devil |
| | Plesiopidae | *Trachinops noarlungae* | Yellowhead Hulafish |
| | Plotosidae | *Cnidoglanis macrocephalus* | Estuary Cobbler |
| | Poeciliidae | *Gambusia holbrooki* [a] | Eastern Gambusia |
| | Pomacentridae | *Chromis klunzingeri* | Blackhead Puller |
| | Pomacentridae | *Parma mccullochi* | McCulloch's Scalyfin |
| | Pomacentridae | *Parma victoriae* | Scalyfin |
| | Rhombosoleidae | *Ammotretis elongatus* | Elongate Flounder |
| | Scorpididae | *Scorpis aequipinnis* | Sea Sweep |
| | Scorpididae | *Scorpis georgiana* | Banded Sweep |
| | Serranidae | *Caesioperca rasor* | Barber Perch |
| | Serranidae | *Epinephelides armatus* | Breaksea Cod |
| | Serranidae | *Hypoplectrodes nigroruber* | Banded Seaperch |
| | Serranidae | *Hypoplectrodes wilsoni* | Spotty Seaperch |
| | Serranidae | *Othos dentex* | Harlequin Fish |
| | Sparidae | *Rhabdosargus sarba* | Tarwhine |
| | Spariidae | *Acanthopagrus butcheri* | Black Bream |
| | Syngnathidae | *Filicampus tigris* | Tiger Pipefish |
| | Syngnathidae | *Lissocampus caudalis* | Smooth Pipefish |
| | Syngnathidae | *Pugnaso curtirostris* | Pugnose Pipefish |
| | Syngnathidae | *Stigmatopora argus* | Spotted Pipefish |
| | Tetraodontidae | *Omegophora cyanopunctata* | Bluespotted Toadfish |
| | Trachichthyidae | *Trachichthys australis* | Southern Roughy |
| | Tripterygiidae | *Helcogramma decurrens* | Blackthroat Threefin |
| | Tripterygiidae | *Lepidoblennius marmoratus* | Western Jumping Blenny |
| **Sharks** | Carcharhinidae | *Carcharhinus brachyurus* | Bronze Whaler |
| | Heterodontidae | *Heterodontus portusjacksoni* | Port Jackson Shark |
| **True bugs** | Acanthosomatidae | Acanthosomatidae_sp001 | na |
| | Acanthosomatidae | Acanthosomatidae_sp002 | na |
| | Acanthosomatidae | *Eupolemus*_msp001 | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Acanthosomatidae | *Eupolemus*_msp002 | na |
| | Alydidae | *Melanacanthus*_msp001 | na |
| | Artheneidae | *Dilompus*_msp001 | na |
| | Coreidae | *Amorbus*_msp001 | na |
| | Cymidae | *Ontiscus*_msp001 | na |
| | Gelastocoridae | *Nerthra*_msp001 | na |
| | Geocoridae | *Germalus*_msp001 | na |
| | Geocoridae | *Stylogeocoris*_msp001 | na |
| | Hyocephalidae | *Maevius*_msp001 | na |
| | Lygaeidae | *Lepionysius grossi* | na |
| | Lygaeidae | *Nysius*_msp001 | na |
| | Miridae | Austromirine_mimic_msp001 | na |
| | Miridae | *Coridromius chenopoderis* | na |
| | Miridae | Cremnorrhinini_msp001 | na |
| | Miridae | *Diomocoris*_msp001 | na |
| | Miridae | *Exocarpocoris*_msp001 | na |
| | Miridae | Fulviini_msp001 | na |
| | Miridae | Mirini_msp001 | na |
| | Miridae | Mirini_msp002 | na |
| | Miridae | *Naranjakotta*_msp001 | na |
| | Miridae | Orthotylini_msp001 | na |
| | Miridae | Orthotylini_msp002 | na |
| | Miridae | Phylini_msp001 | na |
| | Miridae | *Tinginotum*_msp001 | na |
| | Miridae | *Wallabicoris*_msp001 | na |
| | Miridae | Zanchiini_msp001 | na |
| | Notonectidae | *Anisops*_msp001 | na |
| | Ochteridae | *Ochterus*_msp001 | na |
| | Pentatomidae | *Cuspicona thoracica* | na |
| | Pentatomidae | *Cuspicona*_msp001 | na |
| | Pentatomidae | *Deroploopsis*_msp001 [b] | na |
| | Pentatomidae | *Numilia*_msp001 [b] | na |
| | Pentatomidae | *Ocirrhoe*_msp001 | na |
| | Pentatomidae | *Oechalia schellenbergii* | na |
| | Pentatomidae | *Platycoris*_msp001 | na |
| | Pentatomidae | *Poecilometis callosus* | na |
| | Pentatomidae | *Poecilotoma*_msp001 | na |
| | Pentatomidae | *Tholosanus proximus* | na |
| | Reduviidae | *Trachylestes*_msp001 | na |
| | Rhyparochromidae | *Laryngodus cervantes* | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Rhyparochromidae | *Porander scudderi* | na |
| | Rhyparochromidae | Rhyparochromidae_msp001 | na |
| | Rhyparochromidae | Rhyparochromidae_msp002 | na |
| | Rhyparochromidae | Rhyparochromidae_msp003 | na |
| | Scutelleridae | *Austrotichus rugosus* | na |
| | Scutelleridae | *Choerocoris paganus* | na |
| | Tingidae | *Epimixia*_msp001 | na |
| | Tingidae | *Nethersia*_msp001 | na |
| | Tingidae | *Oncophysa*_msp001 | na |
| **Spiders** | Anamidae | *Proshermacha* sp. (Mount Arid) [b] | na |
| | Anamidae | *Teyl* sp. | na |
| | Araneidae | Araneidae sp. | na |
| | Araneidae | *Araneus* cf. *eburneiventris* | na |
| | Araneidae | *Argiope trifasciata* | Banded Orbweaver |
| | Araneidae | *Austracantha minax* | Spiny Orbweaver |
| | Araneidae | *Backobourkia* sp. | na |
| | Araneidae | *Cyclosa trilobata?* | na |
| | Araneidae | *Hortophora biapicata* | Common Garden Orbweaver |
| | Araneidae | *Phonognatha graeffei* | Leaf-curling Spider |
| | Araneidae | *Plebs cyphoxis* | Enamelled Orbweaver |
| | Arkyidae | *Arkys alticephala* | na |
| | Arkyidae | *Arkys walckenaeri* | Triangular Spider |
| | Barychelidae | *Synothele rastelloides* spp. grp | na |
| | Clubionidae | *Clubiona* sp. | na |
| | Desidae | *Badumna insignis* | Black House Spider |
| | Desidae | *Baiami?* sp. | na |
| | Gnaphosidae | *Encoptarthria* sp. | na |
| | Idiopidae | *Eucanippe bifida?* | na |
| | Idiopidae | *Idiosoma* sp. 1 (Mount Ridley) [b] | na |
| | Idiopidae | *Idiosoma* sp. 2 (Mount Arid) [b] | na |
| | Linyphiidae | *Laperousea* sp. | na |
| | Linyphiidae | Linyphiidae sp. | na |
| | Lycosidae | *Dingosa serrata* | Serrated Palisade Wolf Spider |
| | Lycosidae | *Venatrix* sp. | na |
| | Mimetidae | *Australomimetus aurioculatus* | Pirate Spider |
| | Miturgidae | Miturgidae sp. | na |
| | Oecobiidae | *Oecobius navus* | Wall Spider |
| | Pholcidae | *Pholcus phalangioides* [a] | Daddy-long-legs Spider |
| | Pisauridae | Pisauridae sp. | na |
| | Pycnothelidae | *Stanwellia* 'MYG359' | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Salticidae | *Adoxotoma chinopogon* | na |
| | Salticidae | *Apricia jovialis* | Basking Jumping Spider |
| | Salticidae | *Holoplatys planissima* | Flat Jumping Spider |
| | Salticidae | *Maratus* spp. grp | na |
| | Salticidae | *Opisthoncus* sp. | na |
| | Salticidae | *Pungalina* sp. | na |
| | Salticidae | *Sondra* sp. | na |
| | Selenopidae | *Karaops francesae* | na |
| | Selenopidae | *Karaops toolbrunup* | na |
| | Sparassidae | *Delena lapidicola* | Social Huntsman Spider |
| | Sparassidae | *Isopeda leishmanni* | Common Huntsman Spider |
| | Sparassidae | *Neosparassus* sp. | na |
| | Tetragnathidae | *Tetragnatha* sp. | na |
| | Theridiidae | *Steatoda* sp. [b] | na |
| | Theridiidae | Theridiidae sp. | na |
| | Thomisidae | *Australomisidia pilula* spp. grp | na |
| | Thomisidae | *Sidymella* sp. 1 | na |
| | Thomisidae | *Sidymella* sp. 2 | na |
| | Thomisidae | *Stephanopis* sp. | na |
| | Thomisidae | *Tharpyna* sp. | na |
| | Trachycosmidae | *Longrita insidiosa* | na |
| | Trochanteriidae | *Hemicloea* sp. | na |
| | Zodariidae | *Habronestes?* sp. | na |
| | Zodariidae | *Neostorena* sp. | na |
| | Zodariidae | *Storena fungina* | na |
| **Mites** | Hydrodromidae | *Hydrodroma* sp. | na |
| | [SUBCLASS] Acari | Acari sp. | na |
| **Scorpions** | Bothriuridae | *Cercophonius sulcatus* | Shiny Scorpion |
| | Buthidae | *Lychas* sp. | na |
| | Urodacidae | *Urodacus novaehollandiae* | Coastal Scorpion |
| **Pseudoscorpions** | Garypidae | *Synsphyronus francesae* | na |
| | Garypidae | *Synsphyronus mimulus* | na |
| | Garypidae | *Synsphyronus* 'PSE237' [b] | na |
| | Garypinidae | *Aldabrinus* 'PSE187' | na |
| **Crabs, crayfish, shrimps** | Alpheidae | *Alpheus parasocialis* | na |
| | Alpheidae | *Synalpheus fossor* | na |
| | Crangonidae | *Philocheras intermedius* | na |
| | Diogenidae | *Calcinus dapsiles* | na |
| | Diogenidae | cf. *Areopaguristes* sp. | na |
| | Diogenidae | Diogenidae sp. | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Diogenidae | *Paguristes frontalis* | Common Hermit Crab |
| | Diogenidae | *Paguristes sulcatus* | Hairy-legged Hermit Crab |
| | Dromiidae | cf. *Austrodromidia* sp. | na |
| | Dromiidae | *Fultodromia* cf. *nodipes* | na |
| | Dromiidae | *Stimdromia* cf. *lamellata* | na |
| | Epialtidae | *Huenia australis* | na |
| | Epialtidae | *Huenia* cf. *bifurcata* | na |
| | Epialtidae | *Huenia* cf. *halei* | na |
| | Galatheidae | *Galathea australiensis* | Squat Lobster, Striated Craylet |
| | Grapsidae | *Planes minutus* | Sargassum Crab |
| | Hippolytidae | *Hippolyte australiensis* | Southern Weed Shrimp |
| | Hippolytidae | *Latreutes compressus* | Slender Sargassum Shrimp, Green Prawn |
| | Hippolytidae | *Tozeuma pavoninum* | Arrow shrimp |
| | Hymenosomatidae | *Halicarcinus ovatus* | Three-pronged Sea Spider |
| | Inachidae | *Dumea latipes* | Velvet Crab |
| | Leptograpsodidae | *Leptograpsodes octodentatus* | Burrowing Shore Crab |
| | Leptograpsodidae | Leptograpsodidae sp. | na |
| | Leucosiidae | *Ebalia* cf. *tubercuosa* | na |
| | Leucosiidae | *Phlyxia crassipes* | na |
| | Lomisidae | *Lomis hirta* | Hairy Stone Crab |
| | Majidae | *Leptomithrax sternocostulatus* | Ribbed Spider-crab |
| | Majidae | *Microhalimus deflexifrons* | na |
| | Majidae | *Naxia spinosa* | Spiny Seaweed-crab |
| | Majidae | *Pippacirama tuberculosa* | na |
| | Majidae | *Schizophrys rufescens* | na |
| | Paguridae | *Pagurixus amsa* | na |
| | Paguridae | *Pagurus sinuatus* | na |
| | Palaemonidae | *Ancylomenes aesopius* | Aesop Prawn |
| | Palaemonidae | *Palaemon intermedius* | Striped Shrimp |
| | Palaemonidae | *Palaemon litoreus* | Shore Prawn |
| | Parastacidae | *Cherax cainii* [a] | Smooth Marron |
| | Parastacidae | *Cherax destructor* [a] | Yabby |
| | Parastacidae | *Cherax preisii* | Koonac |
| | Parastacidae | *Cherax* sp. | na |
| | Penaeidae | *Penaeus* sp. | na |
| | Pilumnidae | *Ceratoplax glaberrima* | na |
| | Pilumnidae | *Heteropilumnus* cf. *fimbriatus* | na |
| | Pilumnidae | *Pilumnus* cf. *acer* | na |
| | Pilumnidae | *Pilumnus rufopunctatus* | Red-spotted Hairy Crab |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Porcellanidae | *Ancylocheles gravelei* | na |
| | Porcellanidae | *Pisidia dispar* | Little Porcelain Crab |
| | Porcellanidae | Porcellanidae sp. | na |
| | Processidae | *Processa australiensis* | Odd-footed Shrimp |
| | Varunidae | *Cyclograpsus audouinii* | na |
| | Varunidae | Varunidae sp. | na |
| | Xanthidae | *Actaea calculosa* | Facetted Crab |
| | Xanthidae | *Actaea peronii* | na |
| **Slaters (isopods)** | [SUPERFAMILY] Anthuroidea | Anthuroidea sp. | na |
| | Cirolanidae | *Cirolana hesperia* | na |
| | Cirolanidae | *Natatolana* sp. BBR1 | na |
| | Cymothoidae | *Ourozeuktes bopyroides* | na |
| | Idoteidae | cf. *Paridotea* sp. | na |
| | Idoteidae | *Crabyzos longicaudatus* | na |
| | Idoteidae | *Euidotea bakeri* | na |
| | Idoteidae | *Euidotea caeruleotincta* | na |
| | Idoteidae | *Idotea metallica* | Metallic Isopod |
| | Serolidae | *Heteroserolis* sp. BBR1 [b] | na |
| | Sphaeromatidae | *Amphoroidella elliptica* | na |
| | Sphaeromatidae | *Cerceis* cf. sp. BBR1 | na |
| | Sphaeromatidae | *Cerceis* sp. BBR1 | na |
| | Sphaeromatidae | *Cerceis* sp. BBR2 | na |
| | Sphaeromatidae | *Cercosphaera coloura* | na |
| | Sphaeromatidae | *Cercosphaera dilkera* | na |
| | Sphaeromatidae | cf. *Pseudocerceis* sp. BBR1 | na |
| | Sphaeromatidae | *Cymodoce* cf. *pelsarti* | na |
| | Sphaeromatidae | *Diclidocella yackatoon* | na |
| | Sphaeromatidae | *Exosphaeroma* cf. *bicolor* | na |
| | Sphaeromatidae | *Exosphaeroma* sp. BBR1 [b] | na |
| | Sphaeromatidae | *Haswellia cilicioides* | na |
| | Sphaeromatidae | *Haswellia emarginata* | na |
| | Sphaeromatidae | *Cymodoce hamata* | na |
| | Sphaeromatidae | *Platycerceis hyalina* | na |
| | Sphaeromatidae | Sphaeromatidae sp. | na |
| | Sphaeromatidae | Sphaeromatidae sp. BBR1 | na |
| | Sphaeromatidae | Sphaeromatidae sp. BBR2 | na |
| | Sphaeromatidae | Sphaeromatidaesp. BBR3 | na |
| **Beach hoppers (amphipods)** | [ORDER] Amphipoda | Amphipoda sp. | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Ampithoidae | Ampithoidae sp. | na |
| | Ampithoidae | *Synamphitoe* sp. BBR1 | na |
| | Aoridae | Aoridae sp. | na |
| | Caprellidae | *Metaprotella haswelliana* | na |
| | Caprellidae | *Paraproto spinosa* | na |
| | Chevaliidae | *Chevalia* sp. BBR1 [b] | na |
| | Chiltoniidae | *Austrochiltonia* sp. BBR1 | na |
| | Colomastigidae | *Colomastix* sp. BBR1 [b] | na |
| | Cyproideidae | *Cyproidea* sp. | na |
| | Cyproideidae | *Metacyproidea* sp. BBR1 [b] | na |
| | Dexaminidae | *Paradexamine* sp. BBR1 | na |
| | Dogielinotidae | *Allorchestes* sp. BBR1 | na |
| | Ischyroceridae | cf. *Kapalana* sp. | na |
| | Ischyroceridae | *Ericthonius* sp. BBR1 | na |
| | Leucothoidae | *Leucothoe* sp. | na |
| | Maeridae | *Hoho carteta* | na |
| | Maeridae | Maeridae sp. | na |
| | Maeridae | *Mallacoota* sp. BBR1 | na |
| | Melitidae | Melitidae sp. | na |
| | Melitidae? | Melitidae? sp. BBR1 | na |
| | Ochlesidae | *Ochlesis eridunda* | na |
| | Podoceridae | *Podocerus* sp. BBR1 | na |
| | Tryphosidae | *Tryphosella* sp. BBR1 | na |
| **Barnacles** | Balanidae | *Acasta* sp. BBR1 [b] | na |
| | Balanidae | *Amphibalanus amphitrite* [a] | na |
| | Balanidae | *Euacasta acutaflava* | na |
| | Balanidae | *Neoacasta glans* | na |
| | Balanidae | *Neoacasta* sp. BBR1 [b] | na |
| | Lepadidae | *Lepas anatifera* | na |
| | Lepadidae | *Lepas testudinata* | na |
| | Pyrgomatidae | *Trevathana synthesysae* | na |
| | Tetraclitidae | *Epopella simplex* | na |
| | Tetraclitidae | *Tetraclitella purpurascens* | na |
| **Brine shrimp** | Artemiidae | *Artemia* sp. *parthenogenetica* [a] | na |
| **Seed shrimp** | [CLASS] Ostracoda | Ostracoda sp. BBE1 | na |
| | [CLASS] Ostracoda | Ostracoda sp. BBE2 | na |
| **Slugs and snails** | [SUPERORDER] Sacoglossa | Sacoglossa sp. [b] | na |
| | Aplysiidae | *Aplysia* sp. | na |
| | Aplysiidae | *Bursatella* sp. | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Bothriembryontidae | *Bothriembryon* 'Cape Arid Coastal' n.sp [b] | na |
| | Bothriembryontidae | *Bothriembryon* cf. *balteolus* | Salmon Gums Tapered Snail |
| | Bothriembryontidae | *Bothriembryon* cf. *rhodostomus* | Recherche Islands Tapered Snail |
| | Bothriembryontidae | *Bothriembryon dux* | Balladonia Tapered Snail |
| | Bothriembryontidae | *Bothriembryon esperantia* | Esperance Tapered Snail |
| | Bothriembryontidae | *Bothriembryon* 'Inland esperantia' n.sp | na |
| | Bothriembryontidae | *Bothriembryon* 'Lake Boolenup' n.sp [b] | na |
| | Bothriembryontidae | *Bothriembryon* 'Mount Arid' n.sp | na |
| | Bothriembryontidae | *Bothriembryon* 'Mount Diamond' n.sp | na |
| | Bothriembryontidae | *Bothriembryon* 'Mount Howick' n.sp | na |
| | Bothriembryontidae | *Bothriembryon simoneae* | na |
| | Bullidae | *Bulla quoyii* | na |
| | Camaenidae | *Basedowena elfina* | Elfin Sculptured Snail |
| | Campanilidae | *Campanile symbolicum* | Giant Creeper |
| | Cancellariidae | *Nevia spirata* | Spirate Cross-barred Shell |
| | Cerithiidae | *Cacozeliana* cf. *granarium* | na |
| | Charopidae | Charopidae sp. 1 | na |
| | Charopidae | *Luinodiscus* sp. | na |
| | Chilodontidae | *Granata imbricata* | Imbricated False Ear Shell |
| | Columbellidae | *Mitrella* cf. *menkeana* | na |
| | Columbellidae | *Mitrella lincolnensis* | Port Lincoln Dove Shell |
| | Columbellidae | *Mitrella menkeana* | Menke's Dove Shell |
| | Columbellidae | *Mitrella* sp. 1 | na |
| | Columbellidae | *Mitrella* sp. 2 | na |
| | Cominellidae | *Cominella tasmanica* | Tasmanian Buccinum Whelk |
| | Conidae | *Conus anenome* | New Holland Cone |
| | Costellariidae | *Turriplicifer australis* | na |
| | Cymatiidae | *Monoplex exaratus* | Ploughed Triton |
| | Cypraeidae | *Zoila friendii* | na |
| | Eulimidae | *Pelseneeria brunnea* | na |
| | Fionidae | *Fiona pinnata* | na |
| | Fissurellidae | *Amblychilepas* cf. *oblonga* | na |
| | Fissurellidae | *Amblychilepas nigrita* | Black Keyhole Limpet |
| | Fissurellidae | *Amblychilepas oblonga* | Oblong Keyhole Limpet |
| | Fissurellidae | *Macroschisma productum* | Elongated Keyhole Limpet |
| | Fissurellidae | *Montfortula* cf. *rugosa* | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Gastrocoptidae | *Gastrocopta bannertonensis* | Bannerton Pupasnail |
| | Gastrocoptidae | *Gastrocopta margaretae* | Margaret's Pupasnail |
| | Geomitridae | *Cochlicella acuta* [a] | Pointed Snail |
| | Geomitridae | *Cochlicella barbara* [a] | Small Pointed Snail |
| | Haliotidae | *Haliotis* cf. *conicopora* | na |
| | Haliotidae | *Haliotis laevigata* | Green-lip Abalone |
| | Haliotidae | *Haliotis roei* | Roe's Abalone |
| | Haliotidae | *Haliotis rubra conicopora* | na |
| | Haliotidae | *Haliotis scalaris* | Ridged Ear Shell |
| | Helicidae | *Cornu aspersum* [a] | European Garden Snail |
| | Helicidae | *Theba pisana* [a] | White Italian Snail |
| | Hipponicidae | *Sabia australis* | na |
| | Limacidae | *Ambigolimax* sp. [a] | Striped Field Slug |
| | Liotiidae | *Austroliotia australis* | Southern Wheel Shell |
| | Littorinidae | *Austrolittorina unifasciata* | Banded Periwinkle |
| | Lottiidae | *Lottia septiformis* | na |
| | Lottiidae | *Patelloida insignis* | Maltese Cross Limpet |
| | Lymnaeidae | *Pseudosuccinea columella* [a] | Striated Pond Snail |
| | Muricidae | *Bedeva* cf. *paivae* | na |
| | Muricidae | *Bedeva* cf. *vinosa* | na |
| | Muricidae | *Bedeva flindersi* | Smooth Emozamia |
| | Muricidae | *Cronia avellana* | Filbert-nut Buccinum |
| | Muricidae | *Dicathais orbita* | Cart-wheel Purple |
| | Muricidae | *Murex* sp. | na |
| | Muricidae | *Murexsul planiliratus* | Fimbriate Murex |
| | Muricidae | *Prototyphis angasi* | Angas' Murex |
| | Nassariidae | *Nassarius* sp. | na |
| | Neritidae | *Nerita atramentosa* | Black Crow |
| | Olividae | *Oliva australis australis* | Australian Olive |
| | Olividae | *Oliva* cf. *australis* | na |
| | Patellidae | *Scutellastra chapmani* | Chapman's Limpet |
| | Physidae | *Physa acuta* [a] | Acute Bladder Snail, Fountain Snail |
| | Pisaniidae | *Pollia bednalli* | na |
| | Planorbidae | *Glyptophysa georgiana* | South-western Pouched Snail |
| | Punctidae | *Paralaoma servilis* [a] | Bronze Pinhead Snail |
| | Punctidae | *Westralaoma* sp. 1 | na |
| | Punctidae | *Westralaoma* sp. 2 | na |
| | Punctidae | *Westralaoma* sp. 3 | na |
| | Ranellidae | *Ranella australasia* | Australian Triton |
| | Succineidae | *Succinea* cf. *australis* | Southern Ambersnail |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Tateidae | *Ascorhis occidua* | na |
| | Tateidae | *Tatea rufilabris* | na |
| | Tethydidae | *Melibe* cf. *australis* | na |
| | Tomichiidae | *Coxiella* sp. (Thomas River) | na |
| | Tomichiidae | *Coxiella* sp. 'Boyatup Hill' [b] | na |
| | Tomichiidae | *Coxiella minima* | na |
| | Tomichiidae | *Coxiella striatula* | na |
| | Trochidae | *Austrocochlea rudis* | Rough Periwinkle |
| | Trochidae | *Clanculus albanyensis* | Yellow Top Shell |
| | Trochidae | *Clanculus limbatus* | Keeler Clanculus |
| | Trochidae | *Clanculus philippii* | Raphael's Clanculus |
| | Trochidae | *Clanculus* sp. | na |
| | Trochidae | *Phasianotrochus bellulus* | Elegant Kelp Shell |
| | Trochidae | *Prothalotia lehmanni* | Lehmann's Top Shell |
| | Turbinidae | *Bellastraea aurea* | Golden Small Star |
| | Turbinidae | *Lunella torquata* | Heavy Turban Shell |
| | Velutinidae | *Lamellaria* sp. 1 orange ascidian | na |
| | Velutinidae | *Lamellaria* sp. 2 orange | na |
| **Bivalves** | Anomiidae | *Monia zelandica* | na |
| | Chamidae | *Chama ruderalis* | na |
| | Crassatellidae | *Eucrassatella* cf. *donacina* | na |
| | Crassatellidae | *Eucrassatella donacina* | Smooth Crassatella |
| | Galeommatidae | *Ephippodonta lunata* | na |
| | Galeommatidae | *Ephippodontoana mcdougalli* | na |
| | Lasaeidae | *Arthritica semen* | na |
| | Limidae | *Lima nimbifer* | na |
| | Malleidae | *Malleus meridianus* | na |
| | Pectinidae | Pectinidae sp. | na |
| | Pectinidae | *Semipallium aktinos* | Atkins' Fan Scallop |
| | Trapezidae | *Fluviolanatus subtortus* | na |
| **Chitons** | Acanthochitonidae | *Notoplax* sp. | na |
| | Chitonidae | *Lucilina* cf. *hulliana* | na |
| | Cryptoplacidae | *Cryptoplax striata* | na |
| | Ischnochitonidae | cf. *Ischnochiton* sp. | na |
| | Ischnochitonidae | *Ischnochiton cariosus* | na |
| | Ischnochitonidae | *Ischnochiton lineolatus* | na |
| | Ischnochitonidae | *Ischnochiton torri* | na |
| | Ischnochitonidae | *Stenochiton longicymba* | na |
| **Cephalopods** | Octopodidae | *Octopus* cf. *djinda* | na |
| | Sepiidae | *Ascarosepion apama* | Giant Cuttlefish |

| Group | Family | Species | Common name |
|---|---|---|---|
| **Bristle worms** | Amphinomidae | *Hipponoe gaudichaudi* | na |
| | Eunicidae | Eunicidae sp. BBR1 | na |
| | Oenonidae | Oenonidae sp. BBR1 | na |
| | Pectinariidae | *Pectinaria antipoda* | na |
| | Polynoidae | *Lepidonotus oculatus* | na |
| | Polynoidae | Polynoidae sp. BBR1 | na |
| | Serpulidae | *Ficopomatus enigmaticus* | Australian Tubeworm |
| **Roundworms** | [PHYLUM] Nematoda | Nematoda sp. | na |
| **Leeches** | Piscicolidae | *Pterobdella* sp. | na |

**a** Introduced and/or pest species. **b** Putative new species. **na** Not available.

## Table A2 List of flora and funga species recorded

| Group | Family | Species | Common name |
|---|---|---|---|
| **Flowering plants** | Apiaceae | *Platysace compressa* | Tapeworm Plant |
| | Apiaceae | *Platysace trachymenioides* | na |
| | Asparagaceae | *Asparagus asparagoides* [a] | Bridal Creeper |
| | Asparagaceae | *Laxmannia ramosa* subsp. *deflexa* | Branching Lily |
| | Asparagaceae | *Lomandra effusa* | Scented Matrush |
| | Asparagaceae | *Thysanotus dichotomus* | Branching Fringe Lily |
| | Asteraceae | *Brachyscome ciliaris* | na |
| | Asteraceae | *Erigeron bonariensis* [a] | na |
| | Asteraceae | *Olearia axillaris* | Coastal Daisybush |
| | Asteraceae | *Olearia* sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628) | na |
| | Asteraceae | *Senecio pinnatifolius* var. *maritimus* | Coastal Groundsel |
| | Asteraceae | *Symphyotrichum squamatum* [a] | Bushy Starwort |
| | Boraginaceae | *Halgania* cf. *lavandulacea* | na |
| | Campanulaceae | *Lobelia anceps* | Angled Lobelia |
| | Campanulaceae | *Lobelia heterophylla* | Wing-seeded Lobelia |
| | Casuarinaceae | *Allocasuarina huegeliana* | Rock Sheoak |
| | Casuarinaceae | *Allocasuarina trichodon* | na |
| | Chenopodiaceae | *Chenopodium glaucum* | Glaucous Goosefoot |
| | Chenopodiaceae | *Rhagodia baccata* subsp. *baccata* | Berry Saltbush |
| | Chenopodiaceae | *Rhagodia* cf. *baccata* | na |
| | Chenopodiaceae | *Suaeda australis* | Seablite |
| | Cyperaceae | *Ficinia nodosa* | Knotted Club Rush |
| | Cyperaceae | *Gahnia ancistrophylla* | Hooked-leaf Saw Sedge |
| | Cyperaceae | *Lepidosperma carphoides* | Black Rapier Sedge |
| | Cyperaceae | *Lepidosperma drummondii* | na |
| | Cyperaceae | *Lepidosperma gladiatum* | Coast Sword-sedge |
| | Dilleniaceae | *Hibbertia andrewsiana* | na |
| | Dilleniaceae | *Hibbertia psilocarpa* | na |
| | Dilleniaceae | *Hibbertia racemosa* | Stalked Guinea Flower |
| | Droseraceae | *Drosera australis* | na |
| | Droseraceae | *Drosera pulchella* | Pretty Sundew |
| | Ericaceae | *Andersonia caerulea* | Foxtails |
| | Ericaceae | *Leucopogon carinatus* | na |
| | Ericaceae | *Leucopogon oppositifolius* | na |
| | Ericaceae | *Leucopogon* sp. Coujinup (M.A. Burgman 1085) | na |
| | Ericaceae | *Lysinema ciliatum* | na |
| | Ericaceae | *Styphelia breviflora* | na |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Ericaceae | *Styphelia epacridis* | na |
| | Ericaceae | *Styphelia rotundifolia* | Round-leaved Styphelia |
| | Ericaceae | *Styphelia tecta* | na |
| | Ericaceae | *Styphelia woodsii* | na |
| | Euphorbiaceae | *Euphorbia paralias* [a] | Sea Spurge |
| | Euphorbiaceae | *Ricinocarpos megalocarpus* | na |
| | Fabaceae | *Acacia cyclops* | Coastal Wattle |
| | Fabaceae | *Acacia myrtifolia* | na |
| | Fabaceae | *Acacia nigricans* | na |
| | Fabaceae | *Acacia subcaerulea* | na |
| | Fabaceae | *Bossiaea dentata* | na |
| | Fabaceae | *Chorizema aciculare* subsp. *aciculare* | Needle-leaved Chorizema |
| | Fabaceae | *Daviesia apiculata* | na |
| | Fabaceae | *Daviesia lancifolia* | na |
| | Fabaceae | *Eutaxia myrtifolia* | na |
| | Fabaceae | *Gastrolobium bilobum* | Heart Leaf Poison |
| | Fabaceae | *Gompholobium confertum* | na |
| | Fabaceae | *Jacksonia capitata* | na |
| | Fabaceae | *Jacksonia spinosa* | na |
| | Fabaceae | *Jacksonia viscosa* | na |
| | Fabaceae | *Labichea lanceolata* subsp. *brevifolia* | Tall Labichea |
| | Gentianaceae | *Centaurium tenuiflorum* [a] | na |
| | Geraniaceae | *Pelargonium australe* | Wild Geranium |
| | Goodeniaceae | *Anthotium humile* | Dwarf Anthotium |
| | Goodeniaceae | *Dampiera parvifolia* | Many-bracted Dampiera |
| | Goodeniaceae | *Goodenia concinna* | Elegant Goodenia |
| | Goodeniaceae | *Goodenia pterigosperma* | na |
| | Goodeniaceae | *Goodenia quadrilocularis* | na |
| | Goodeniaceae | *Goodenia scapigera* | White Goodenia |
| | Goodeniaceae | *Goodenia trinervis* | na |
| | Goodeniaceae | *Goodenia viscida* | Viscid Goodenia |
| | Goodeniaceae | *Scaevola myrtifolia* | na |
| | Haloragaceae | *Glischrocaryon angustifolium* | na |
| | Haloragaceae | *Haloragis digyna* | na |
| | Lamiaceae | *Microcorys barbata* | na |
| | Lamiaceae | *Microcorys glabra* var. *glabra* | na |
| | Lamiaceae | *Microcorys subcanescens* | na |
| | Lauraceae | *Cassytha micrantha* | na |
| | Lauraceae | *Cassytha racemosa* | Dodder Laurel |
| | Lauraceae | *Cassytha racemosa* f. *pilosa* | Dodder Laurel |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Loganiaceae | *Logania micrantha* | na |
| | Loranthaceae | *Nuytsia floribunda* | Christmas Tree |
| | Malvaceae | *Lasiopetalum maxwellii* | na |
| | Malvaceae | *Thomasia angustifolia* | Narrow Leaved Thomasia |
| | Myrtaceae | *Astartea eobalta* | na |
| | Myrtaceae | *Astartea fascicularis* | Recherche Astartea |
| | Myrtaceae | *Beaufortia empetrifolia* | South Coast Beaufortia |
| | Myrtaceae | *Calothamnus gracilis* | na |
| | Myrtaceae | *Calothamnus quadrifidus* subsp. *quadrifidus* | One-sided Bottlebrush |
| | Myrtaceae | *Chamelaucium axillare* | Esperance Waxflower |
| | Myrtaceae | *Chamelaucium ciliatum* | na |
| | Myrtaceae | *Cyathostemon ambiguus* | na |
| | Myrtaceae | *Darwinia diosmoides* | na |
| | Myrtaceae | *Eucalyptus cornuta* | Yate |
| | Myrtaceae | *Eucalyptus extrica* | na |
| | Myrtaceae | *Eucalyptus ligulata* subsp. *ligulata* | Lucky Bay Mallee |
| | Myrtaceae | *Eucalyptus litorea* | Saline Mallee |
| | Myrtaceae | *Eucalyptus micranthera* | Coolibah |
| | Myrtaceae | *Eucalyptus occidentalis* | Flat-topped Yate |
| | Myrtaceae | *Eucalyptus uncinata* | Hook-leaved Mallee |
| | Myrtaceae | *Eucalyptus varia* subsp. *varia* | na |
| | Myrtaceae | *Hypocalymma asperum* | na |
| | Myrtaceae | *Kunzea baxteri* | Baxter's Kunzea |
| | Myrtaceae | *Leptospermum sericeum* | Silver Teatree |
| | Myrtaceae | *Melaleuca brevifolia* | na |
| | Myrtaceae | *Melaleuca cuticularis* | Saltwater Paperbark |
| | Myrtaceae | *Melaleuca globifera* | na |
| | Myrtaceae | *Melaleuca pulchella* | Claw Flower |
| | Myrtaceae | *Melaleuca subfalcata* | na |
| | Myrtaceae | *Melaleuca undulata* | Hidden Honey-myrtle |
| | Myrtaceae | *Micromyrtus elobata* subsp. *elobata* | na |
| | Myrtaceae | *Taxandria callistachys* | na |
| | Myrtaceae | *Verticordia minutiflora* | na |
| | Myrtaceae | *Verticordia sieberi* | na |
| | Myrtaceae | *Verticordia sieberi* var. *sieberi* | na |
| | Olacaceae | *Olax phyllanthi* | na |
| | Pittosporaceae | *Billardiera coriacea* | na |
| | Pittosporaceae | *Billardiera fusiformis* | Australian Bluebell |
| | Pittosporaceae | *Marianthus bicolor* | Painted Marianthus |

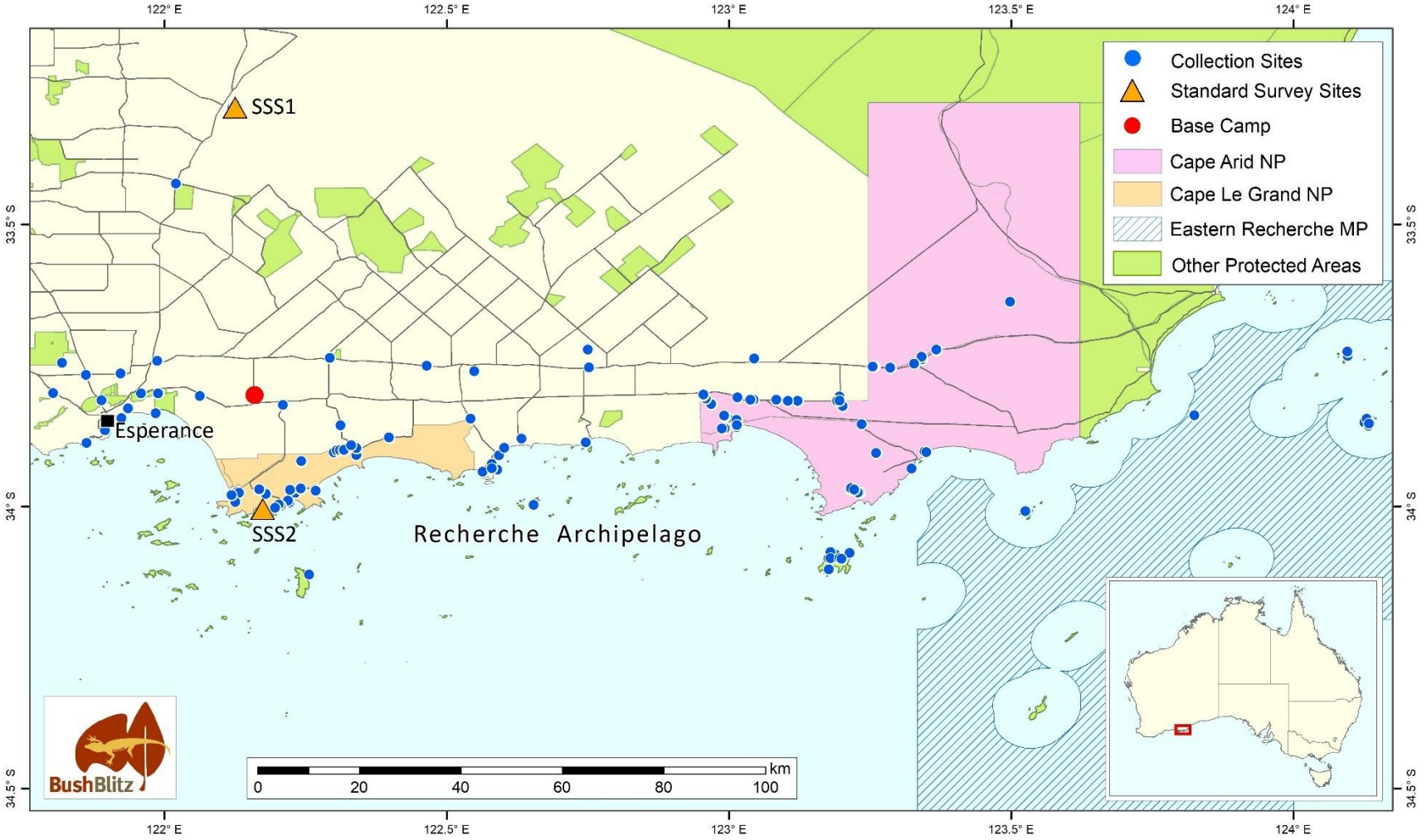
| Group | Family | Species | Common name |
|---|---|---|---|
| | Polygalaceae | *Comesperma virgatum* | Milkwort |
| | Proteaceae | *Adenanthos cuneatus* | Coastal Jugflower |
| | Proteaceae | *Adenanthos dobsonii* | na |
| | Proteaceae | *Adenanthos sericeus* subsp. *sphalma* | Woolly Bush |
| | Proteaceae | *Banksia armata* var. *armata* | Prickly Dryandra |
| | Proteaceae | *Banksia media* | Southern Plains Banksia |
| | Proteaceae | *Banksia obovata* | Wedge-leaved Dryandra |
| | Proteaceae | *Banksia occidentalis* | Red Swamp Banksia |
| | Proteaceae | *Banksia pulchella* | Teasel Banksia |
| | Proteaceae | *Banksia speciosa* | Showy Banksia |
| | Proteaceae | *Conospermum distichum* | na |
| | Proteaceae | *Conospermum teretifolium* | Spider Smokebush |
| | Proteaceae | *Franklandia fucifolia* | Lanoline Bush |
| | Proteaceae | *Grevillea anethifolia* | na |
| | Proteaceae | *Grevillea concinna* | Red Combs |
| | Proteaceae | *Grevillea concinna* subsp. *concinna* | Red Combs |
| | Proteaceae | *Grevillea nudiflora* | na |
| | Proteaceae | *Grevillea oligantha* | na |
| | Proteaceae | *Grevillea pauciflora* subsp. *psilophylla* | Few-flowered Grevillea |
| | Proteaceae | *Grevillea plurijuga* subsp. *plurijuga* | na |
| | Proteaceae | *Hakea clavata* | Coastal Hakea |
| | Proteaceae | *Hakea drupacea* | na |
| | Proteaceae | *Hakea laurina* | Pincushion Hakea |
| | Proteaceae | *Hakea pandanicarpa* subsp. *pandanicarpa* | na |
| | Proteaceae | *Hakea ruscifolia* | Candle Hakea |
| | Proteaceae | *Isopogon formosus* subsp. *formosus* | Rose Coneflower |
| | Proteaceae | *Isopogon polycephalus* | Clustered Coneflower |
| | Proteaceae | *Lambertia inermis* | Chittick |
| | Proteaceae | *Lambertia inermis* var. *inermis* | Chittick |
| | Proteaceae | *Petrophile teretifolia* | na |
| | Ranunculaceae | *Clematis pubescens* | Common Clematis |
| | Restionaceae | *Desmocladus flexuosus* | na |
| | Rhamnaceae | *Pomaderris myrtilloides* | na |
| | Rubiaceae | *Opercularia hispidula* | Hispid Stinkweed |
| | Rutaceae | *Boronia albiflora* | na |
| | Rutaceae | *Boronia denticulata* subsp. *denticulata* | na |
| | Santalaceae | *Exocarpos sparteus* | Broom Ballart |
| | Sapindaceae | *Dodonaea ceratocarpa* | na |
| | Solanaceae | *Anthocercis viscosa* subsp. *viscosa* | Sticky Tailflower |
| | Solanaceae | *Solanum americanum* [a] | Glossy Nightshade |

| Group | Family | Species | Common name |
|---|---|---|---|
| | Stylidiaceae | *Stylidium adnatum* | Common Beaked Triggerplant |
| | Stylidiaceae | *Stylidium repens* | Matted Triggerplant |
| | Thymelaeaceae | *Pimelea ferruginea* | na |
| **Conifers** | Cupressaceae | *Callitris preissii* | Rottnest Island Pine |
| | Cupressaceae | *Callitris roei* | Roe's Cypress Pine |
| | Pinaceae | *Pinus* sp. [a] | na |
| **Ferns** | Lindsaeaceae | *Lindsaea linearis* | Screw Fern |
| | Pteridaceae | *Cheilanthes sieberi* subsp. *sieberi* | na |
| **Fungi** | Irpicaceae | *Meruliopsis* cf. *miniata* (*Byssomerulius* cf. *miniatus*) | n/a |
| | Strophariaceae | *Deconica coprophila* | Dung-loving Psilocybe |

**a** Introduced and pest species. **na** Not available.

# Appendix B: Collection sites

**Map B1 Map of collection sites**



# Glossary

| Term | Definition |
|---|---|
| ALA | Atlas of Living Australia |
| Commensal | A species that benefits from a relationship with another species (the host) without causing any harm or benefit to the host. |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| Endemic | Native to or limited to a certain region. |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) |
| ETNTAC | Esperance Tjaltjraak Native Title Aboriginal Corporation |
| Genus (plural genera) | A taxonomic category that ranks between family and species, consisting of related species (e.g. *Acacia*). |
| Introduced | Not indigenous; not native to the area in which it now occurs. |
| Lineage | A sequence of species each of which is considered to have evolved from its predecessor. |
| MAGNT | Museum and Art Gallery of the Northern Territory |
| Pest species | A species that has the potential to have a negative environmental, social or economic impact. |
| Putative new species | An unnamed species that, as far as can be ascertained, was identified as a species new to science as a direct result of this Bush Blitz. |
| Range extension | Increase in the known distribution or area of occurrence of a species. |
| Symbiotic | Involving interaction between 2 different organisms living in close physical association. |
| Taxon (plural taxa) | A member of any particular taxonomic group (e.g. a species, genus, family). |
| Taxonomy | The categorisation and naming of species. The science of identifying and naming species, as well as grouping them based on their relatedness. |
| Threatened | Fauna or flora that are listed under Section 178 of the EPBC Act (or equivalent State legislation) in any one of the following categories – extinct, extinct in the wild, critically endangered, endangered, vulnerable, conservation dependent. |
| Undescribed taxon | A taxon (usually a species) that has not yet been formally described and named. |
| UNSW | University of New South Wales |
| Uni of WA | University of Western Australia |
| Vascular plants | A lineage of plants that possess well-developed veins (vascular tissue) in their stems, roots and leaves. Vascular plants include the majority of familiar land plants: flowering plants, ferns, conifers, cycads and fern allies, but not mosses, liverworts or algae. |
| Vouchers (voucher specimens) | Any specimen, usually a dead animal or preserved plant sample, that serves as a basis of study and is retained as a reference. |
| WA Herbarium | Western Australian Herbarium |
| WA Museum | Western Australian Museum |

# References

Chapman, AD 2009, Numbers of Living Species in Australia and the World 2nd edn, Australian Biological Resources Study, Canberra.

Department of Parks and Wildlife 2016, Esperance and Recherche parks and reserves management plan 84. Department of Parks and Wildlife, Perth.

Conway, KW, Moore GI, Summers, AP 2024, A new genus and four new species of seagrass-specialist clingfishes (Teleostei: Gobiesocidae) from temperate southern Australia, *Zootaxa*. Auckland, New Zealand, 5552 (1), 1–66.