



BushBlitz
SPECIES DISCOVERY PROGRAM



BUSH BLITZ SPECIES DISCOVERY PROGRAM



Credo Station Reserve WA

29 August–9 September 2011



Australian Government



What is Bush Blitz?

Bush Blitz is a multi-million dollar partnership between the Australian Government, BHP Billiton and Earthwatch Australia to document plants and animals in selected properties across Australia's National Reserve System.

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.

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Summary

Bush Blitz fieldwork was conducted at Credo Station Reserve in the Western Australian Goldfields region from 29 August to 9 September 2011.

In total, the survey identified 951 species, of which 803 are new species for the reserve. Added to earlier records, 1,242 species have now been identified in the reserve. Of these, 140 are putative new species: 5 bees, 4 wasps, 4 moths, 11 beetles, 92 true bugs, 18 jumping plantlice, 1 millipede, 1 scorpion, 2 pseudoscorpions and 2 spiders.

One threatened vertebrate species was recorded during the survey: the Malleefowl (*Leipoa ocellata*). It is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and as rare or likely to become extinct under the *Wildlife Conservation Act 1950* of Western Australia (WC Act). Two species of

Abbreviations

DPaW

Department of Parks and Wildlife (Western Australia) (formerly the Department of Environment and Conservation)

EPBC Act

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

NRS

National Reserve System

WC Act

Wildlife Conservation Act 1950 (Western Australia)



Some of the Credo Station Reserve Bush Blitz team © Copyright, Department of the Environment

Front row: Thomas Parkin, Karl Newport, Conrad Lavey, Kate Gillespie.

Behind the sign: Nadine Guthrie, Marina Cheng, Ingrid England, Katie Syme, Cassandra Nichols, Laura Kingshott, Alan Brown.

Back row: Rod Collins, Margaret Langle, Steve Perkins, Gary Taylor, Corey Whisson, Chris Gillies, Remko Leijts, Neil Gibson, Mark Harvey, Mark Cowen, Dan Carmody, Rebecca Kittel.



jewel beetle (Buprestidae), protected in Western Australia under a Wildlife Conservation (Protected Invertebrate Fauna) Notice, were also identified.

No plant species listed as threatened were found, although five species are listed on Western Australia's Department of Parks and Wildlife's Priority Flora List and are under consideration for listing as threatened flora (*Gnephosis intonsa*, *Lepidium fasciculatum*, *Wurmbea murchisoniana*, *Goodenia berringbinensis* and *Grevillea georgeana*).

The seven exotic vertebrate pest fauna identified in the reserve are Goats (*Capra hircus*), One-humped

Camels (*Camelus dromedarius*), Domestic Dogs (*Canis familiaris*), Foxes (*Vulpes vulpes*), Cats (*Felis catus*), Rabbits (*Oryctolagus cuniculus*) and House Mice (*Mus musculus*). Three invertebrate pest species were found: the native Rutherglen Bug (*Nysius vinitor*) and Green Mirid (*Creontiades dilutus*), and the exotic Tomato Mirid (*Nesidiocoris tenuis*).

Eleven new weed species were identified, including the declared weed Spiny Emex (*Emex australis*) and the serious environmental weed Ward's Weed (*Carrichtera annua*). This brings the total number of weeds identified in the reserve to 21.



Sandplain dominated by mallee and scattered hummocks of *Triodia* grassland © Copyright, Katrina Syme





Introduction

This is a report for the Bush Blitz program, which aims to survey recent additions to the National Reserve System (NRS).¹ Bush Blitz is an initiative of the Australian Government, through the Australian Biological Resources Study, in partnership with BHP Billiton and Earthwatch Australia. The Bush Blitz objectives are:

- + to promote, publicise and demonstrate the importance of taxonomy through species discovery;
- + to undertake a national species discovery program targeted at recently acquired properties of the National Reserve System of Australia;
- + to support the science of taxonomy in Australia through training students and early career researchers and providing grants for species description and resolution of taxonomically problematic, nationally important groups;
- + to promote partnerships between scientific institutions, government, industry and non-government organisations; and
- + to inform the National Reserve System, Reserve Managers and other stakeholders of the results of the Bush Blitz Project.

¹ The NRS is Australia's network of protected areas, covering 17.88% of the country — over 137 million hectares, comprising Commonwealth, state and territory reserves, Indigenous lands and protected areas run by non-profit conservation organisations, through to ecosystems protected by farmers on their private working properties <<http://www.environment.gov.au/topics/land/national-reserve-system>>, accessed 6 January 2015.

The survey at Credo Station Reserve was undertaken in early spring, after a winter season of relatively good rainfall that resulted in abundant plant growth. At the time of the survey the mean maximum temperature was 21.0°C (± 4.1) and the mean minimum was 7.0°C (± 1.9). Conditions were relatively cold and windy at night and cool during the day. This contributed to the low capture rate of some taxa.

The Australian Biological Resources Study provided the logistical coordination and overall leadership of the survey. Experts from the following organisations conducted the field and laboratory work: Department of Parks and Wildlife WA (DPaW), Western Australian Museum, University of Adelaide, University of New South Wales (UNSW), Western Australian Herbarium, Earthwatch Australia, Australian Government Department of the Environment, Phoenix Environmental Sciences, South Australian Museum and Tasmanian Museum and Art Gallery.

BHP Billiton staff, coordinated by Earthwatch Australia, and Indigenous trainees from DPaW assisted scientists with the fieldwork.

The Australian Biological Resources Study wishes to thank the Western Australian Museum and Western Australian Herbarium for hosting this Bush Blitz. The Western Australian Department of Parks and Wildlife facilitated access to the reserve and provided helpful advice on survey locations. In particular, we thank Credo Station caretaker, Alan Brown.

Reserve Overview²



Credo Station Reserve

Conservation Commission of Western Australia

Date of purchase

2007

Area

202,161 ha



Rainclouds building over the reserve © Copyright, Department of the Environment

Description

Credo Station Reserve is located approximately 70 km north-west of Coolgardie. The original pastoral lease was established in 1906 and used primarily for stock grazing. It was acquired by DPaW and incorporated into the National Reserve System in 2007. The property contains two older reserves: Clear and Muddy Lakes Nature Reserve (1,926 ha) and Rowles Lagoon Conservation Park (405 ha). These provide important habitat for waterbirds.

Credo Station includes the catchment of the Rowles Lagoon wetland system, which is the largest natural freshwater wetland (approximately 85,000 ha) in the Coolgardie biogeographic region and is home to 41 species of waterbirds, including eight protected by international treaty. The terrestrial vertebrate fauna are representative of semi-arid woodland/shrubland. They include a variety of reptiles but only a few recorded native mammal species, such as Red Kangaroo (*Macropus rufus*). Mammal populations are assumed to have been negatively influenced by past sheep and cattle grazing as well as high numbers of feral animals such as cats and rabbits. Before the survey, the invertebrate fauna in the reserve was largely unknown.

From south to north, the climate of the reserve varies from semi-arid to arid. Annual rainfall generally ranges from 200 mm to 300 mm, the rain usually falling in winter.

The reserve is a mosaic of acacia and eucalypt woodland, chenopod scrubland, granite outcrops and sandplain. A major biogeographic boundary runs through the northern part of the property, where temperate eucalypt woodland gives way to more arid acacia scrubland. Mallee, shrub heath and *Triodia spinifex* species grow on the sandplains in the north. Wetlands are formed in the south by a series of lakes.

² Information from the NRS applications and assessments.





Most of Credo Station lies within the Great Western Woodlands, the largest intact area of temperate woodland left on the planet. Its eucalypt woodlands were heavily cut in the 19th century to supply wood for fuel and construction in the mining centres of Kalgoorlie and Coolgardie. Credo has both cut-over and undisturbed eucalypt woodland.

The reserve is currently managed by DPaW. Activities include feral animal control and weed control; upgrading and maintenance of access tracks; signs for education and interpretation; and liaison with mining tenement holders over exploration, tenements and mining proposals. The property is being managed for nature conservation and sustainable recreation and tourism (e.g. bushwalking, nature study), with possible commercial concessions (e.g. for sustainable harvesting of sandalwood).

National Reserve System conservation values

Credo Station Reserve consists of Interim Biogeographic Regionalisation (IBRA) regions and subregions that are underrepresented in the NRS: the Coolgardie IBRA region (14% protected) and the associated subregions Eastern Goldfields (5% protected) and Southern Cross (21% protected), and the Murchison IBRA region (1% protected) and the associated Eastern Murchison subregion (1% protected). The reserve

contains 20 vegetation types. Of these, 15 are inadequately represented in the conservation reserve system, three are unrepresented and one is virtually unrepresented (0.09%). Eight of the vegetation types on Credo Station are restricted or have limited range across biogeographic regions.

Rowles Lagoon (a Nationally Significant Wetland listed in the Directory of Important Wetlands in Australia) has a pasture type (alluvial plains with saline soils and weakly groved eucalypt woodland and halophytic understorey) that has been identified as grossly under-represented on land managed for conservation in the north-eastern Goldfields. This catchment has more recorded species than any other arid zone wetland south of the Kimberley.

Credo Station provides a highly valued strategic link between existing and proposed reserves to the east and west, including the former Goongarrie Pastoral Lease, Goongarrie National Park, Mt Manning Range Nature Reserve and the former Jaurdi Pastoral Lease.

Before the Bush Blitz, relatively little had been done to record species living in the reserve. Only 159 vascular plant taxa found on the property had been lodged with the Western Australian Herbarium (137 of which were collected by D. J. Endinger in June 2008), and records of invertebrate fauna were especially few.



Methods

Collection and observation sites were selected based on land classes, supplemented by identification of suitable microhabitat during the field visit. Site selection also depended on access, suitability for trapping and time restrictions. Site locations were recorded using global positioning systems.

A number of taxonomic groups were identified as targets for study. Table 1 lists the groups surveyed and the specialists who undertook the fieldwork.

A standard suite of survey techniques was used to collect specimens, as set out below.

- + Vertebrate sampling was carried out using eight trapping grids within a 25 km radius of the homestead, which is located at the southern end of the station. All sites but one were trapped continuously for seven or eight nights. Standardised sampling was carried out using pitfall traps, funnel traps and Elliott traps. Hand searches were also undertaken and opportunistic sightings were recorded. Remote camera traps were deployed for at least six consecutive nights. Attempts were made to sample bats on three evenings using a mist net set across a dam; however, conditions were too windy for effective mist netting. Tissue samples were taken and preserved in 100% ethanol for future molecular analysis. Voucher specimens were fixed in 10% formalin. Representative voucher specimens of most species (41 specimens, including tissue samples) were taken for lodgement in the WA Museum.
- + Collection sites for native bees were selected from as many vegetation types as possible. Most specimens were collected using a hand



Drosera morei found in herblands on granite outwash areas © Copyright, Department of Parks and Wildlife

net. Malaise traps and yellow and blue pan traps were also used, and occasional sweep netting was carried out.

- + Wasps were sampled in all different habitats of the property, especially those with rich vegetation. General collecting was carried out using pan traps, malaise traps, sweep netting and light traps.
- + Collection sites for butterflies and moths were selected so that different vegetation communities and land systems could be sampled. Sites that had not been burnt in the last six years were prioritised. Adult moths were collected at light traps and portable bucket traps. Bucket traps were also distributed over as many different plant communities as possible. Larvae were collected by beating vegetation and reared through to the adult stage when possible. Butterflies were collected opportunistically at some sites using butterfly nets. Adult specimens were killed using ethyl acetate killing jars and most were then mounted.
- + Beetles were sampled from a range of habitats and geological areas. Collecting methods included sifting of leaf and bark litter, hand searching, sweep netting and opportunistic capture. Specimens were preserved in 95–100% ethanol during the survey and later pinned and mounted.





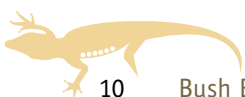
Table 1: Taxonomic groups surveyed and personnel

Group	Common names	Expert	Affiliation
Vertebrates	Mammals, Reptiles and Amphibians	Tom Parkin	Western Australian Museum
		Mark Cowan	DPaW
Hymenoptera	Bees	Remko Leijs	South Australian Museum
	Wasps	Rebecca Kittel	University of Adelaide
Lepidoptera	Butterflies and Moths	Catherine Byrne	Tasmanian Museum and Art Gallery
Coleoptera	Beetles	Nadine Guthrie	DPaW
		Brian Hanich, Shelley Barker	Western Australian Museum
Heteroptera	True Bugs	Marina Cheng, Celia Symonds, Gerry Cassis	UNSW
Psylloidea	Jumping Plantlice	Gary Taylor	University of Adelaide
Odonata	Damselflies and Dragonflies	Rebecca Kittel	University of Adelaide
Scorpiones and Pseudoscorpiones	Scorpions and Pseudoscorpions	Mark Harvey	Western Australian Museum
		Erich Volschenk	Phoenix Environmental Sciences
Araneae, Acari, Chilopoda, Myriapoda	Spiders, Mites, Centipedes, Millipedes	Cathy Car, Julianne Waldock	Western Australian Museum
Lycosidae, Mygalomorphae	Spiders	Julianne Waldock, Mark Castalanelli	Western Australian Museum
Gastropoda	Snails and Slugs	Corey Whisson	Western Australian Museum
Stygofauna	Groundwater Fauna	Remko Leijs	South Australian Museum
Vascular Plants	Flowering Plants and Ferns	Neil Gibson, Margaret Langley	DPaW
Cryptogams	Hornworts, Liverworts, Mosses, Lichens, Slime Moulds, Algae and Fungi	Katrina Syme	Consultant



Malaise trap set in a flight path among flowering shrubs to intercept flying insects, G. Taylor © Copyright, University of Adelaide

- + True bug sampling was undertaken in diverse habitat and vegetation types. Collection methods included beat sampling and litter sorting.
- + Jumping plantlice were sampled on different habitats on the property, concentrating on areas of diverse vegetation. Plant species were also sampled to determine host plant specificity. General collecting was carried out using pan traps, malaise traps, and sweep netting.
- + Damselfly and dragonfly sampling was conducted near dams, where they are most frequent in arid environments. General collecting was carried out using pan traps, malaise traps and sweep netting.
- + Scorpions, pseudoscorpions, spiders, mites, millipedes, centipedes, snails and slugs were collected in as many different habitats and geological areas as possible. Litter was sifted for tiny invertebrates, and hand searching under logs, bark and stones was carried out. Scorpions were collected at night using 'black' or ultraviolet light, which causes scorpions to fluoresce with a greenish glow. Incidental collections were also made. Vouchers were taken from many specimens. Most specimens were preserved whole in 95–100% ethanol to allow for molecular research. Others were preserved in 75% ethanol, with two appendages stored separately in 100% ethanol.
- + Sites for stygofauna sampling were selected primarily on potential access to groundwater. Bores and wells were sampled using weighted plankton nets.
- + Vascular plant collection sites were selected in order to sample all major habitat types. Most effort was directed at making herbarium quality collections of specimens not previously encountered. Collecting followed standard methods. Flowering and fruiting material was allocated collection numbers and pressed after each day's collecting. At the completion of the survey specimens were dried and frozen before processing.
- + Collecting sites for cryptogams were the same as those for vascular plants. Soil, rocks, and vegetation were examined for the presence of bryophytes, lichens and fungi. The soil of suitable sites was raked for truffle-like





fungi. Ularring Rock wetland was searched for Charophyta (green algae). Desiccated macropod dung was collected from four locations for culturing in a separate moist chamber and vouchers were made of the fungi that developed. Specimens were packaged in paper bags and labelled. Comprehensive collecting notes on locality, substrate, and habit were also made. Collections were then photographed, dried using a fan-forced dryer at low temperature, repackaged in zip-lock bags and stored for transport.

Collections were identified using available literature and the holdings of museums and herbaria. Fauna specimens were deposited with the WA Museum and flora specimens with the WA Herbarium. Final species lists were compiled by combining the results of this Bush Blitz with data provided by the Australian Natural Heritage Assessment Tool.



Sampling for invertebrates at Emu Rock, G. Taylor © Copyright, University of Adelaide



Results

The locational data of collected and observed specimens are available to reserve managers.

A total of 803 species were added to those known across the reserve and 140 (possibly more) putative species new to science were discovered; these await assessment. One threatened animal species was observed — the Malleefowl (*Leipoa ocellata*) (sighted on the outskirts only), which is a new record for the reserve. No threatened plants were recorded. Ten exotic or pest fauna species (three new) and 20 (11 new) weed species were recorded on the reserve.

Species Lists

Appendix A provides full, updated species lists for the reserve. Names in **bold brown text** are putative new species. Species marked with an asterisk (*) have not been recorded previously in the reserve. Those without an asterisk have been recorded previously and identified again during this survey. Species shown in **blue text** were not recorded on this survey, but are known from previous studies. Table 2 provides a summary of the number of species, new records and new taxa on the reserve.

Some specimens collected during this Bush Blitz have been identified only to family or genus level. This is because a great deal of time is required to examine and identify the many collections generated. In the majority of cases, microscopic examination is necessary. Additional limitations include the lack of experts working on particular groups, and that the taxonomic literature for some groups is not current. These collections will be subject to further study.

Nomenclature and taxonomic concepts used in this report are consistent with the Australian Faunal Directory, Australian Plant Name Index, Australian Plant Census, Interactive Catalogue of Australian Fungi, Checklist of the Lichens of Australia and its Island Territories, Australian Mosses Online and Checklist of Australian Liverworts and Hornworts.



Some of the 92 putative new true bug species from Credo Station Reserve
© Copyright, University of New South Wales





Table 2: Summary of flora and fauna records and putative new species

Group	Common name	Total number of species	Species new to reserve	Putative new species
Mammalia	Mammals	23	14	0
Aves	Birds	124	0	0
Reptilia	Reptiles	48	19	0
Amphibia	Frogs and Toads	2	0	0
Hymenoptera	Bees	87	77	5
	Wasps	4	4	4
Lepidoptera	Butterflies	5	5	0
	Moths	36	36	4
Coleoptera	Beetles	66	39	11 ³
Heteroptera	True Bugs	132	132	92
Psylloidea	Jumping Plantlice	41	41	18
Odonata	Damselflies and Dragonflies	8	8	0
Myriapoda	Millipedes	3	3	1
	Centipedes	5	5	0
Acari	Mites	2	2	0
Scorpiones	Scorpions	3	3	1
Pseudoscorpiones	Pseudoscorpions	9	9	2
Araneae	Spiders	56	55	2
Gastropoda	Snails and Slugs	14	13	0
Flowering Plants	Flowering Plants	462	229	0
Conifers	Conifers	3	2	0
Ferns	Ferns	4	3	0
Fern Allies	Fern Allies	1	1	0
Liverworts	Liverworts	13	13	0
Hornworts	Hornworts	1	1	0
Mosses	Mosses	12	12	0
Lichens	Lichens	44	44	0
Fungi	Fungi	31	31	0
Slime Moulds	Slime Moulds	1	1	0
Chlorophyta	Green Algae	1	1	0
Totals		1,242	803	140

3 A number of beetle taxa from Credo Station could not be assigned to any known species using current keys and diagnostic descriptions or comparisons with previously determined specimens. Many beetle genera require revisions incorporating the large amounts of undetermined material currently residing in collections around the country. Until these revisions are completed, these specimens are tentatively considered morphospecies and potentially represent new taxa.



Threatened Species

Appendix B itemises the species listed under Western Australia’s WC Act and the Commonwealth EPBC Act. A summary of threatened species identified during the study is provided in Table 3.

Table 3: Summary of threatened species identified

Group	Total number of species	Species new to reserve
Fauna	1 ⁴	0
Flora	0 ⁵	0

- Two species of jewel beetles found on this survey are protected in Western Australia under a Wildlife Conservation (Protected Invertebrate Fauna) Notice.
- Two taxa on the WA Department of Parks and Wildlife’s Priority Flora List had previously been recorded for the reserve and a further four were added by the current survey. The Priority Flora List is a state-based list of taxa under consideration for listing as threatened flora.



A putative new species of ground spider, *Notsodipus n. sp.* © Copyright, C. Car

Exotic and Pest Species

Appendix C lists the exotic pest species known from the reserve. A summary of exotic and pest species identified during the study is provided in Table 4.

Table 4: Summary of exotic and pest species identified

Group	Total number of species	Species new to reserve
Fauna	10	3
Flora	20	11



Many insects not targeted for collection were encountered, such as this trilobite cockroach, possibly from the genus *Laxta*, K. Gillespie © Copyright, Department of the Environment





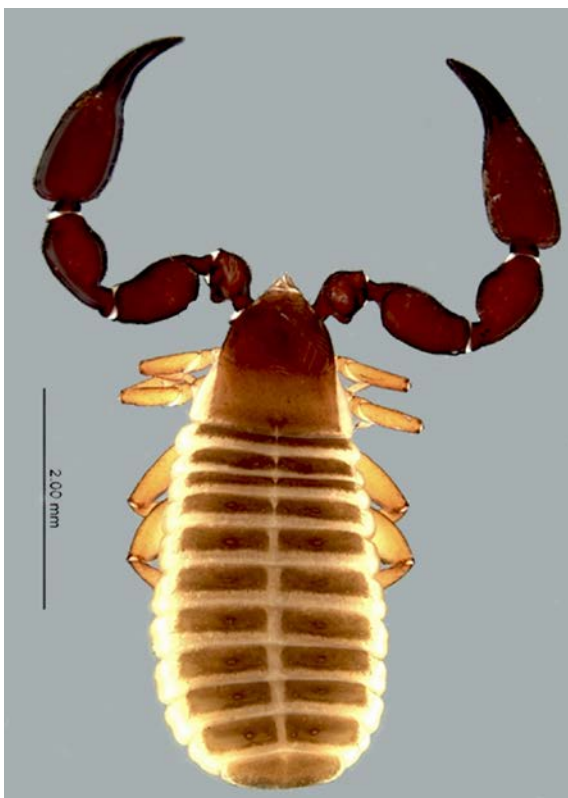
Discussion

Putative New Species

A putative species new to science is one that has been recognised by an expert as never having been named or described in the scientific literature. It is confirmed as a new species once it is named and its description is published. In addition to species that are considered new to science, specimens collected during this Bush Blitz include taxa that are already known from museum and herbarium collections but have not yet been formally described and named. A breakdown of the groups in which putative new species have been recorded is provided in Table 5.

Table 5: Putative new species by group

Common name	Putative new species
Bees	5
Wasps	4
Moths	4
Beetles	11
True Bugs	92
Jumping Plantlice	18
Millipedes	1
Scorpions	1
Pseudoscorpions	2
Spiders	2



Conicochernes n. sp. PSE024 © Copyright, C. Car



Synsphyronus n. sp. PSE025 © Copyright, C. Car



A key and revision of the bee genus *Trichocolletes*⁶ was used to identify the large number of specimens of this genus collected in the reserve. This revision recognised 40 Australian species, 23 of which are newly described. Identified specimens were also compared to the SA Museum bee collection and the PaDIL website at Museum Victoria; however only a small number of species could be conclusively identified. Tissue samples were sent to the Canadian DNA-barcoding facility to help with identification.

At present five Credo bee species have been identified as new, three of which were described in the previously mentioned work. It is possible that there are more new species among the *Trichocolletes* specimens. The *Leioproctus* (*Baeocolletes*) specimens are certainly undescribed, as descriptions of the three reported species do not match the collected specimens. The genus *Pharohylaeus* is known from only two species in northern Australia and New Guinea. Although the generic description matches the specimen collected on Credo Station, the species descriptions do not match.

During the survey only six specimens of chelonine wasp, assigned to four species, were found. Current descriptions of these wasps are inadequate, which makes it difficult to identify species. This survey and the research that follows will help to revise the Australian chelonine species.

A total of 196 geometrid moth specimens were collected. Of the 21 species of geometrids that are new or undescribed, four are new to science (*Dichromodes* n. sp. 1 and n. sp. 4, *Lipogya* n. sp. 4 and *Taxeotis* n. sp.). New and undescribed species collected in this survey all belong to large genera with many undescribed taxa.

The 11 putatively new species of beetle collected on Credo Station include two Anthicidae (ant-like beetles), four Scarabaeidae (scarab beetles) and five Tenebrionidae (darkling beetles). These specimens could not be assigned to known species. However, many genera of beetles in Australia require revision, incorporating the large amounts of undetermined material currently residing in collections around the country. Pending these revisions, the specimens are tentatively considered morphospecies and potentially represent new taxa.

Sampling of true bugs yielded 132 species, more than 70% being plant bugs from the family Miridae. A remarkable 84 of these were putative new species. As in previous Bush Blitz surveys in Western Australia, most Miridae species represented the tribe Orthotylini. As well as the 45 new species of Orthotylini found on Credo Station, 16 new species of Phylini were discovered, many from the genus *Wallabicoris*. Six have been identified positively as new species following a recent publication describing this genus and a number of species.

Eighteen putative new jumping plantlice species were collected at Credo Station: three in the superfamily Psylloidea, one *Pseudophacopteron* sp., nine *Acizzia* spp. and five *Trioza* spp.

6 Batley, M. & Houston, T. F. (2012), 'Revision of the Australian bee genus *Trichocolletes* Cockerell (Hymenoptera: Colletidae: Paracolletini)', *Records of the Australian Museum*, **64**(1): 1–50.





Malleefowl (*Leipoa ocellata*), which is listed as vulnerable under the EPBC Act and as rare or likely to become extinct under the WC Act © Copyright shared, Department of the Environment and Brian Furby Collection

Of particular interest among the arthropods were two new species of pseudoscorpion from the genera *Conicochernes* and *Synsphyronus*; a new species of one of the target groups, mygalomorph spiders, belonging to the genus *Aganippe*; and a new species of the scorpion genus *Isometroides*. A new paradoxosomatid millipede species of the widespread genus *Antichiropus* was also discovered. It has since been described as *Antichiropus nadineae*.⁷ One spider species of the Lamponidae genus *Notsodipus* represents a new, undescribed species. More new spider species may be among the many specimens collected.

7 Car, C. A. & Harvey, M. S. (2014), 'The millipede genus *Antichiropus* (Diplopoda: Polydesmida: Paradoxosomatidae), part 2: species of the Great Western Woodlands region of Western Australia', *Records of the Western Australian Museum*, **29**(1): 20–77.

Threatened Species

Australia is home to around 570,000 species, most of which are yet to be described formally. Approximately 92% of Australian plants, 87% of mammals, 93% of reptiles and 45% of birds are endemic. Changes to the landscape and native habitat resulting from human activity have put many of these unique species at risk. Over the last 200 years many species have become extinct; many others are threatened.⁸

8 Chapman, A. D. (2009), *Numbers of Living Species in Australia and the World*, 2nd edn. Australian Biological Resources Study, Canberra, 80 pp.



Vertebrate Fauna

One vertebrate species listed under the EPBC Act and the WC Act was recorded on the outskirts of Credo Station during the survey. This was the Malleefowl (*Leipoa ocellata*), which is listed as vulnerable under the EPBC Act and as rare or likely to become extinct under the WC Act.

Invertebrate Fauna

No beetle species are currently listed under the EPBC Act. However, throughout Western Australia all jewel beetles (Buprestidae) are protected under a Wildlife Conservation (Protected Invertebrate Fauna) Notice (WA GG0045, 1994) because their striking metallic colours make them attractive to collectors. The two species of jewel beetle recorded on this survey, and 12 others previously surveyed, are therefore protected species in Western Australia.

Vascular Flora

No vascular plant species currently listed as threatened under the EPBC Act or the WC Act were identified during this Bush Blitz. However, five species on DPaW's Priority Flora List (a state-based list of taxa under consideration for listing as threatened) were identified.

Exotic and Pest Species

The NRS is designed to conserve and 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 records of exotic and pest species as part of this report is designed to provide land managers with baseline information to assist with further pest management programs.

Vertebrate Fauna

The Bush Blitz survey found evidence of seven pest species of vertebrate animals: Goats (*Capra hircus*), One-humped Camels (*Camelus dromedarius*), Domestic Dogs (*Canis familiaris*), Foxes (*Vulpes vulpes*), Cats (*Felis catus*), Rabbits (*Oryctolagus cuniculus*) and House Mice (*Mus musculus*).

Cats, dogs and foxes are generally found in reasonable numbers throughout most of semi-arid Australia. Signs of all three species were present at Credo Station. Goats are also widespread in many parts of the Goldfields region. Small groups were seen on two occasions and cats were observed at several locations, but they do not appear to be present in large numbers. Camel scats were found; however, these were likely to be from a group of camels that were released from captivity and subsequently removed. There is evidence of rabbit activity at a number of sites. Table 6 lists the vertebrate pest species recorded at Credo Station.

Invertebrate Fauna

Three pest true bug species were found: Rutherglen Bug (*Nysius vinitor*), Green Mirid (*Creontiades dilutus*) and Tomato Mirid (*Nesidiocoris tenuis*). All were new records for the reserve. Although none of the beetles recorded in the survey are considered pests, *Pterohelaeus* spp. (darkling beetles) at high densities can become root pests of dryland crops in agricultural areas.





Table 6: State or national vertebrate pest species recorded at Credo Station

Pest	Location sighted/observed	Indication of abundance
Cats (<i>Felis catus</i>)	Cat tracks and/or scats were present near sites 6 and 8.	Likely to be relatively common.
Rabbits (<i>Oryctolagus cuniculus</i>)	Signs at site 6, Ularring Rock and at Rowles Lagoon Conservation Park.	Common.
Goats (<i>Capra hircus</i>)	Small groups seen on two occasions in rocky shrubland north of the homestead. Scats seen at numerous locations but not recent.	Present in low numbers.
Camels (<i>Camelus dromedarius</i>)	Old scats seen at site 6.	Unlikely to still be present.
Foxes (<i>Vulpes vulpes</i>)	Sighting of individual in Rowles Lagoon Conservation Park.	Present.
Domestic Dogs (<i>Canis familiaris</i>)	Tracks and scats seen at Ularring Rock and at site 8. Recorded near homestead.	Present.
House Mouse (<i>Mus musculus</i>)	Captured in pitfall traps at site 2, and in Elliott traps at sites 3 and 6.	Common. The most abundant mammal species recorded through trapping.



Rabbits (*Oryctolagus cuniculus*), which damage agricultural and horticultural industries, cause soil erosion and degradation of native vegetation, and compete with native fauna for food and habitat, were common at Credo Station Reserve © Copyright, Graeme Chapman



Vascular Flora

Twenty weed species were identified during this survey, including 11 species not previously recorded. This brings the total number of weed species identified in the reserve to 21.

The species identified in this survey included one declared weed: Spiny Emex (*Emex australis*). Spiny Emex is a declared weed in most wheatbelt shires of WA. A single plant was recorded near a dam in uncut Salmon Gum woodland. The survey also suggested that Ward's Weed (*Carrichtera annua*), a serious environmental weed, could become widespread across much of the Great Western Woodlands, as two collections were made in dissimilar habitats: one in a creekline and the other near a saline wetland.

Other Points of Interest

Vertebrate Fauna

Remote cameras have proved useful in detecting a number of species. However, given the low resolution of images, identifying smaller species such as *Sminthopsis* spp. and *Pseudomys* spp. was problematic. Individuals in both of these genera were detected, but it was not possible to identify them to species level. In some instances it was not possible to differentiate between the two genera. White light images at night are likely to provide improved resolution but have the disadvantage of disturbing the target with a flash.



Ularring © Copyright, Department of the Environment





Many of the species identified in this survey were found towards either their northern distributional ranges for the more mesic adapted species or their southern ranges for more arid-adapted species. This is not surprising considering Credo Station occupies a transitional climatic and associated vegetative gradient ranging from semi-arid woodland over much of the area to more arid *Acacia*-dominated shrubland in the north.

Several significant new records for the station and the region included:

- + Woolley's Pseudantechinus (*Pseudantechinus woolleyae*), a small carnivorous marsupial, was caught on a camera trap at Ularring Rock. Its presence at this location probably constitutes a southerly extension of its known distribution. Its distribution on the station is likely to be confined by habitat availability—it is generally seen in rocky habitats, including ranges, breakaways and extensive exposed granites.
- + From the same location a Perentie (*Varanus giganteus*), a large goanna, was observed on two separate occasions and was also recorded by a remote camera. The Perentie is also at the southern limit of its known distribution and it is unlikely to be widespread in other habitats.
- + A single specimen of what is thought to be an Ooldea Dunnart (*Sminthopsis ooldea*) was found much further south than previously recorded. However, the Little Long-tailed Dunnart (*S. dolichura*) has been recorded at Credo Station in previous surveys and there have been difficulties distinguishing *S. dolichura* from *S. ooldea*. Molecular analysis may be needed to identify the specimen found on this survey as *S. ooldea*.

Other interesting finds included:

- + Two records of the elapid Orange-naped Snake (*Furina ornata*), also towards the southern limit of its known distribution. Although it has not been detected in previous surveys, its occurrence is not unusual in the general area.
- + Wide-striped Ctenotus (*Ctenotus xenopleura*), which is generally confined to the Coolgardie and very southern Murchison bioregions. The extent of its range is not well understood, so these records are useful additions.
- + Ornate Dragon (*Ctenophorus ornatus*), confined to exfoliating granite areas and commonly using sheets of exfoliating rock for cover. It was recorded at two sites on the survey.
- + Western Toadlet (*Pseudophryne occidentalis*) was recorded at one site. The breeding cycle of this species is often associated with ephemeral granite rock pools.

The vertebrates most readily encountered during the survey were three species of gecko: Bynoe's Gecko (*Heteronotia binoei*), Thick-tailed Gecko (*Underwoodisaurus milii*) and Tree Dtella (*Gehyra variegata*). These were all recorded through foraging.

Also common were two types of skink, Woodland Morethia Skink (*Morethia butleri*) and Timid Slider (*Lerista timida*), and a frog, the Western Toadlet (*Pseudophryne occidentalis*). These were also mostly recorded through foraging and observation.

The most abundant species recorded through the use of trapping were the House Mouse (*Mus musculus*), Spotted Ctenotus (*Ctenotus uber*) and Common Dwarf Skink (*Menetia greyii*).



Ornate Dragon (*Ctenophorus ornatus*), R. Kittel © Copyright, University of Adelaide

Species such as the Southern Ningai (*Ningai yvonneae*), Pebble Dragon (*Tympanocryptis cephalus*), Fine-faced Gecko (*Diplodactylus pulcher*) and Kunapalari Frog (*Neobatrachus kunapalari*) were also recorded more abundantly in traps than through observation.

Only one or two records were made of most other species, including all the mammals (except the rodents), snakes and varanids.

While four bat species were identified during this survey, collections from nearby locations suggest that other species should be present, including Chocolate Wattled Bat (*Chalinolobus morio*), Inland Broad-nosed Bat (*Scotorepens balstoni*), Southern Forest Bat (*Vespadelus regulus*) and Inland Forest Bat (*Vespadelus baverstocki*).

A number of the larger mobile species that were listed in this survey as new records are relatively common in the area, for example, the Western Grey Kangaroo (*Macropus fuliginosus*) and the Common Wallaroo (*Macropus robustus*), but they are often not recorded during surveys.

Other species such as the Short-beaked Echidna (*Tachyglossus aculeatus*) are often not seen but may be detected by tracks, scats and diggings.

A number of changes have been made to the list of species previously recorded at Credo Station:

- + Wood Mulch-slider (*Lerista muelleri*) was listed in the database, but this is now known to be a complex of at least nine species. The records of the WA Museum do not include *L. muelleri* but rather identify, through vouchered specimens only, *L. timida* for this area.
- + The species originally identified as Péron's Snake-eyed Skink (*Cryptoblepharus plagiocephalus*) has been revised as Buchanan's Snake-eyed Skink (*C. buchananii*) since redescription of this group.
- + There was an aberrant record in the data provided of the legless lizard Patternless Delma (*Delma inornata*). This species does not occur in Western Australia, being confined to the southeast of Australia.





Invertebrate Fauna

Bees

Native bee biodiversity was higher than expected and compares well with the Mt Gibson Sanctuary, in the neighbouring Avon Wheatbelt bioregion, when surveyed in spring 2001. However, most bee species were found in relatively low numbers, probably because it was reasonably early in the season for native bees, and because the area had been in a drought for a number of years.



Ctenocolletes rufescens are robust, hairy, short-tongued bees endemic to Western Australia. R. Leijts © Copyright, South Australian Museum

The recent winter rains resulted in abundant flowering of a large number of trees and shrubs, particularly *Acacia* sp., *Homalocalyx thryptomenoides* and *Keraudrenia integrifolia*. This made collecting more difficult as the few bees were widely dispersed. Vegetation around granite outcrops had higher bee densities, presumably because rainwater runoff provided enough moisture for plants to flower and local bee populations to maintain higher numbers in dry years.

Most of the native bee species collected in the survey were found in single localities. This implies that the number of species recorded in the survey is an underestimate of the total number occurring in the reserve.

Particularly well represented, with 14 species, was the genus *Trichocolletes*, which was almost exclusively collected on Fabaceae species such as *Mirbelia microphylla*, *Swainsona beasleyana* and *Senna* spp.

Butterflies and Moths

All five butterfly species collected on the survey are very widespread and common Australian taxa. No Hesperidae were found, but this family is known to be extremely under-represented in this area. The diversity and abundance of butterflies was low, but this is typical of the butterfly fauna of the region.

Many geometrid moths were collected, which was somewhat surprising given the cold weather and relatively short collecting period. The specimens showed great diversity and abundance, which is probably typical of similar habitats in Western

A male specimen of an extremely rare species, *Taxeotis lechrioschema*, which had not been collected since 1938. C. Young © Copyright, Tasmanian Museum and Art Gallery





A ground beetle, *Carenum* sp. 01, eating a Tenebrionidae beetle larvae © Copyright, Shawn Fox

Australia. All of the collected species are new records for the reserve and four species are new to science. The percentage of undescribed or new species was a high 58% in this group, demonstrating the need for greater collecting effort and taxonomic work on the Western Australian Lepidoptera.

The greatest number of geometrid moth species collected belonged to the genus *Dichromodes*, which normally feed on plant genera widespread in the reserve (Myrtaceae such as *Baeckea*, *Leptospermum* and *Melaleuca*). This probably explains their apparent diversity and abundance. The adults in this group are very variable and are cryptically coloured for camouflage against the substrate found in the environment. This genus requires urgent modern taxonomic treatment as species have been separated on superficial characters, which most likely vary with habitat and within species.

The survey found one male specimen of an extremely rare species of the subfamily Oenochrominae, *Taxeotis lechrioschema*, which had not been collected since 1938, when it was first found in Merredin, Western Australia.

Beetles

Very little is known about the beetle fauna of the arid zone, as only sporadic, opportunistic or taxon- or habitat-specific surveys have been carried out in the past. Some survey work has been done in the Goldfield regions surrounding Credo Station. As a result, previous records for the area are limited to the few groups currently processed. These groups do not necessarily reflect the complete collection of specimens from the region. Nearly half the known records were collected close to 40 years ago from around Menzies, Coolgardie and Comet Vale Siding. More recent collections were taken from Goongarrie Station using pitfall traps.

A relatively small number of beetles were collected, possibly due to cool spring weather during the survey. Very little insect activity was observed in the leaf and bark litter. In many instances, the beetles appeared to be congregating under bark, waiting for warmer weather to arrive before becoming active. Surveying during warmer times of the year when beetles are more active and using a variety of collection methods will most likely reveal a much richer beetle fauna.





The beetle fauna collected comprised mainly semi-arid and arid adapted species typical of early spring. Many of them are known to have very widespread distributions across Western Australia.

A number of taxa could not be assigned to known species using available keys and diagnostic descriptions or comparisons with previously determined specimens. There is a large amount of undetermined material in collections around the country and revisions to genera are required. Until these revisions are completed, these specimens are tentatively considered morphospecies and potentially represent new taxa.

True Bugs

Although some true bugs had been collected near Credo Station, no concentrated survey has been undertaken in the Coolgardie bioregion. All species found on this survey are new records for Credo Station Reserve, and the collections provide a good reference to the heteropteran fauna of the wider Coolgardie region.

Recent collections made during Bush Blitz surveys in the Avon Wheatbelt region at roughly the same time of year made it possible to compare the true bugs of adjacent bioregions. The Credo survey found a distinctive and diverse assemblage of true bugs—in particular from the tribe Orthotylini—with only partial overlap with collections made in the neighbouring Avon Wheatbelt bioregion.

The majority of species found belonged to the family Miridae. A small number of taxa collected are described species and positively identified. This includes a few rather localised species (*Metopocoris scutata* and *Wallabicornis cassisi*), but for the most part these taxa are common and widespread. A number of species have not yet been positively identified but are, or possibly are, described taxa.



More of the 92 putative new true bug species from Credo Station Reserve © Copyright, University of New South Wales



Interesting findings include:

- + a new host plant genus (*Eremophila*) and family (Scrophulariaceae) record for *Wallabicoris*;
- + a suite of new species of Orthotylini and Phylini from *Phebalium* and *Keraudrenia* host plants thought to be new to science;
- + a range extension for a lacebug (Tingidae) species *Ischnotingis fasciata*, which has not previously been recorded in WA.

Jumping Plantlice

While there are more than 360 described species of jumping plantlice in Australia, many more undescribed species are undoubtedly present in museum collections. Very few species are recorded from Western Australia as most of the taxonomic work has been carried out on the eastern Australian fauna. Of the 41 species collected at Credo Station, only four species could be confidently identified. Most of the remaining morphospecies are likely to be new species.

Notable discoveries include:

- + *Acizzia solanicola* was discovered on native *Solanum lasiophyllum*. This species was described in 2010 from damaged eggplant in the Sydney region. At the time of the Credo Station Reserve Bush Blitz it had not been established whether it was an introduced species of economic concern or a native species that had transferred host preferences from native *Solanum* to commercial crops. *A. solanicola* was identified during a subsequent Bush Blitz survey at Hiltaba Station in South Australia, and its status as a native species has been confirmed. The species represents



Marina Cheng beating foliage for plant bugs, G. Taylor © Copyright, University of Adelaide

a potential biosecurity issue in that it could be a vector for the plant bacterial disease 'psyllid yellows', which represents a threat to all commercial solanaceous crops, particularly the bush tomato.

- + The new species *Acizzia credoensis*, named after Credo Station, was recently described and published.⁹ It was found on native *Solanum lasiophyllum*.
- + Some psyllids were discovered on previously unrecorded hosts, such as *Grevillea* spp.
- + A new species was found representing a psyllid family for which there are still no described species in Australia (Phacopteronidae).

9 Taylor, G. S. & Kent, D. S. (2013), 'Potential economic pests of solanaceous crops: a new species of *Solanum*-feeding psyllid from Australia and first record from New Zealand of *Acizzia solanicola* (Hemiptera: Psyllidae)', *Zootaxa*, **3613**(3): 257–273.





Spiders, Scorpions, Pseudoscorpions and Mites

Many of the arachnids, particularly the spiders, were unidentifiable either because the specimens collected were juveniles (adults are needed for positive species identification) or because little is currently known about their taxonomy.



The burrow of the mygalomorph spider *Anidiops* sp. The lid is approximately 4 cm in diameter, J. Waldock © Copyright, Western Australian Museum

Snails and Slugs

Although most snail specimens were dead when collected, live specimens of five species were collected. A pupillid, *Pupilla* cf. *ficulnea*, was collected live and may represent a new species or a large range extension for *Pupilla ficulnea*. *Bothriembryon* land snails are found mostly in southern Western Australia, where they are highly

diverse and possess ecological characteristics typical of short-range endemic species. Camaenid land snails, whilst dominant in northern Australia, are represented by genera in southern Australia that are short-range endemics.

Stygofauna

Several mineral exploration bores were located and prepared for stygofauna sampling. Although the majority of the bores were more than 80 m deep, none appeared to have water in them and they were therefore unsuitable for stygofauna sampling.

Two wells or springs near granites were sampled. Both localities were shallow, covered wells at the base of granite outcrops that receive water from runoff. These wells did not contain stygofauna.

No stygofauna samples were found on the station as the groundwater at Credo is deep underground and too saline.

Vascular Plants

Previous collections in the area were made in winter, resulting in an undersampling of spring-flowering annuals, grasses and shrubs. Spring 2011, in which this survey took place, followed good winter rains and was an excellent season for plants. As a result, the survey of Credo Station Reserve almost trebled the known vascular flora from 158 to 462 taxa, including 11 new weed species.

Asteraceae, Fabaceae, Myrtaceae and Poaceae contributed most of the new records. The Asteraceae added to the list were mostly annuals and reflected the limited spring collecting that had previously been undertaken. The excellent spring



season of 2011 allowed many more shrubs and trees in the Fabaceae and Myrtaceae to be identified as well as a considerable number of grasses.

The reserve is geologically complex and thus contains many different habitats and high species composition. This was particularly noticeable on the different sandplains.

Collections in the Ularring Rock area added significantly to the species list, particularly the large ephemeral wetland on the north-west side of the rock. This area is currently a water reserve and should be managed primarily for its conservation values.

The northern section of the reserve remains undersampled due to logistical constraints. An area of yellow sandplain east of Davyhurst in particular appears to be quite different from the other sandplains sampled and warrants further investigation.

Nine taxa newly recorded for the reserve could not be identified to species level. Five of these taxa have recognised phrase names and are likely to represent unnamed taxa. Of the other four taxa, a *Lepidosperma* sp. was collected but the taxonomy of this group is in a state of flux and it will be some years before names can be accurately assigned. Two *Hibbertia* collections appear to belong to distinct taxa within the 'exasperata' group. This group is taxonomically complex and its resolution would require considerable work. The *Marsilea* fern species was not collected in fruit, so identification to species is difficult.

Major range extensions were recorded for three taxa, one of which was an unusual *Goodenia* that possessed an aquatic stage and requires further study. No threatened taxa were found on the reserve, and only a few were taxa showing narrow distributions (e.g. *Baeckea* sp. Comet Vale (A.S.George 8078)).



Wurmba murchisoniana © Copyright, Department of Parks and Wildlife

More than 60 of the taxa encountered in the survey were at their range limits (41 at their inland limit and 19 at their southern limit). This is consistent with a major biogeographic boundary in the north of the station, representing the change from mosaics of eucalypt woodland in the south to the more arid acacia shrublands of the interior.





In addition to species at their range limits, major range extensions were observed for three taxa:

- + *Calandrinia hortiorum* was previously known from the area inland of Geraldton (Midwest region) and represents a range extension of some 350 km. On Credo it was found on a lateritised Banded Iron Formation ridge south of the old Callion mine.
- + *Goodenia ?berringbinensis* is an unusual *Goodenia* in that it possesses an aquatic stage. It was found in the ephemeral wetland at the base of Ularring Rock, where material had been collected the previous year but not identified. This may represent a 380 km range extension from the Midwest region, but good flowering and fruiting material is needed to confirm its identity. This needs to be collected in early summer as the wetland dries.
- + *Sida phaeotricha* is widespread but poorly collected in the arid zone of the Yilgarn. The Credo collection represents a range extension of the southern boundary of this taxon by some 250 km. It was also collected at Ularring Rock.

Credo also includes some significant areas of undisturbed Salmon Gum (*Eucalyptus salmonophloia*) woodland. Much of this type of woodland was removed in the 1800s to supply timber to Kalgoorlie and Coolgardie and little is believed to remain, but detailed mapping has not been undertaken. Cut Salmon Gum is generally obvious because of multiple stem regeneration, while uncut stands show large-diameter single stems.



Boletus sp. © Copyright, Katrina Syme

Cryptogams

The records made during this survey are believed to be the first of this group for the reserve. A total of 147 herbarium collections were made. Many of the collections contained a mix of lichens and bryophytes, while samples collected on stones, rocks and tree bark often bore a number of different species of lichen.

It was not possible to gauge a true picture of the fungal diversity of Credo Station from this Bush Blitz. Surveys are often held when the weather is mild, but fungal fruiting is at its most productive after periods of rain. In order to gain a truer picture of biological diversity, allowances need to be made for recording fungi. This can only be done if opportunistic fungal surveys are conducted following adequate rainfall.

Although few fruiting bodies of macrofungi were found, in most places the presence of fungal mycelia in the soil and litter provided evidence of fungal activity. With a few exceptions (notably a truffle-like fungus), identifiable fungal fruit bodies were included in the species list but were not considered useful as herbarium vouchers.



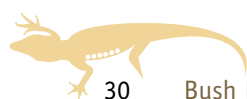
On this survey 31 fungi, 44 lichens, 1 myxomycete, 13 liverworts, 1 hornwort, 12 mosses, 1 slime mould and 1 alga were collected. Some of the collections made are of new species, while other records extend the geographic range of many species.

The following collections were of interest:

- + Three species of truffle-like fungi were discovered. These fungi provide food for native animals. Two species of 'birds nest' fungi were found and, surprisingly, a group of tiny fruiting bodies of *Micromphale* were found growing on the fallen litter under an *Acacia* after rehydration following rain the previous day.
- + The sandplain proved to be the only area where the mycorrhizal fungus *Boletus* was found, fruiting under various species of *Acacia*.
- + One species of myxomycete (slime mould) was cultured from desiccated macropod dung collected in an overhang in the laterite breakaway.
- + Specimens of the elusive mosses *Stonea* and *Phascopsis* were collected. *Stonea* is especially hard to collect, as it is the size of sand grains. The *Stonea* had asexual propagules present. This species has not yet been located with sporophytes. Also, only 23 specimens of *Stonea oleaginosa* and 18 of *Phascopsis rubicunda* have been deposited in Australian state and territory herbaria.



Micromphale sp. aff. *australiense* © Copyright, Katrina Syme





Appendix A: Species Lists

Nomenclature and taxonomy used in this appendix are consistent with that from the Australian Faunal Directory (AFD), the Australian Plant Name Index (APNI) and the Australian Plant Census (APC).

Current at May 2014



Fauna



Fat-tailed Dunnart (*Sminthopsis crassicaudata*) © Copyright shared, Department of the Environment and Cameron Slatyer

Vertebrates

Mammals		
Family	Species	Common name
Bovidae	<i>Capra hircus</i> ^	Goat
Burramyidae	<i>Cercartetus concinnus</i> *	Western Pygmy-possum
Camelidae	<i>Camelus dromedarius</i> ^	Dromedary, One-humped Camel
Canidae	<i>Canis familiaris</i> ^	Domestic Dog
	<i>Vulpes vulpes</i> ^	Fox, Red Fox
Dasyuridae	<i>Ningui yvonneae</i> *	Southern Ningai
	<i>Pseudantechinus woolleyae</i> *	Woolley's Pseudantechinus
	<i>Sminthopsis crassicaudata</i> *	Fat-tailed Dunnart
	<i>Sminthopsis dolichura</i> *	Little Long-tailed Dunnart
	<i>Sminthopsis ooldea</i> *	Ooldea Dunnart
Felidae	<i>Felis catus</i> ^	Cat
Leporidae	<i>Oryctolagus cuniculus</i> ^	Rabbit
Macropodidae	<i>Macropus fuliginosus</i> *	Western Grey Kangaroo
	<i>Macropus robustus</i> *	Common Wallaroo
	<i>Macropus rufus</i>	Red Kangaroo
Molossidae	<i>Mormopterus planiceps</i> *	Little Mastiff-bat, Southern Freetail-bat
	<i>Tadarida australis</i> *	White-striped Freetail-bat
Muridae	<i>Mus musculus</i> ^	House Mouse
	<i>Notomys mitchellii</i> *	Mitchell's Hopping-mouse
	<i>Pseudomys bolami</i>	Bolam's Mouse
Tachyglossidae	<i>Tachyglossus aculeatus</i> *	Short-beaked Echidna
Vespertilionidae	<i>Chalinolobus gouldii</i> *	Gould's Wattled Bat
	<i>Nyctophilus geoffroyi</i> *	Lesser Long-eared Bat

Key

- * = New record for this reserve
- ^ = Exotic/Pest
- # = EPBC listed
- ~ = WC listed

Colour coding for entries:

- Black = Previously recorded on the reserve and found on this survey
- Brown** = Putative new species
- Blue = Previously recorded on the reserve but not found on this survey





Birds		
Family	Species	Common name
Acanthizidae	<i>Acanthiza apicalis</i>	Inland Thornbill
	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill
	<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill
	<i>Aphelocephala leucopsis</i>	Southern Whiteface
	<i>Gerygone fusca</i>	Western Gerygone
	<i>Pyrrholaemus brunneus</i>	Redthroat
	<i>Smicronis brevirostris</i>	Weebill
Accipitridae	<i>Accipiter fasciatus</i>	Brown Goshawk
	<i>Aquila audax</i>	Wedge-tailed Eagle
	<i>Circus assimilis</i>	Spotted Harrier
	<i>Haliastur sphenurus</i>	Whistling Kite
	<i>Hieraaetus morphnoides</i>	Little Eagle
	<i>Lophoictinia isura</i>	Square-tailed Kite
Alcedinidae	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher
	<i>Todiramphus sanctus</i>	Sacred Kingfisher
Anatidae	<i>Anas gracilis</i>	Grey Teal
	<i>Anas rhynchotis</i>	Australasian Shoveler
	<i>Anas superciliosa</i>	Pacific Black Duck
	<i>Aythya australis</i>	Hardhead
	<i>Biziura lobata</i>	Musk Duck
	<i>Chenonetta jubata</i>	Australian Wood Duck
	<i>Cygnus atratus</i>	Black Swan
	<i>Malacorhynchus membranaceus</i>	Pink-eared Duck
	<i>Oxyura australis</i>	Blue-billed Duck
	<i>Stictonetta naevosa</i>	Freckled Duck
	<i>Tadorna tadornoides</i>	Australian Shelduck
Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift
Ardeidae	<i>Ardea pacifica</i>	White-necked Heron
	<i>Egretta novaehollandiae</i>	White-faced Heron
Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow
	<i>Artamus cyanopterus</i>	Dusky Woodswallow
	<i>Artamus personatus</i>	Masked Woodswallow
	<i>Cracticus nigrogularis</i>	Pied Butcherbird
	<i>Cracticus tibicen</i>	Australian Magpie
	<i>Cracticus torquatus</i>	Grey Butcherbird
	<i>Strepera versicolor</i>	Grey Currawong
Cacatuidae	<i>Eolophus roseicapillus</i>	Galah
	<i>Nymphicus hollandicus</i>	Cockatiel
Campephagidae	<i>Coracina maxima</i>	Ground Cuckoo-shrike
	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike
	<i>Lalage sueurii</i>	White-winged Triller



Flowering after rain, K. Gillespie © Copyright, Department of the Environment

Birds

Family	Species	Common name
Casuariidae	<i>Dromaius novaehollandiae</i>	Emu
Charadriidae	<i>Charadrius ruficapillus</i>	Red-capped Plover
	<i>Elsyornis melanops</i>	Black-fronted Dotterel
	<i>Erythrogonys cinctus</i>	Red-kneed Dotterel
	<i>Vanellus tricolor</i>	Banded Lapwing
Climacteridae	<i>Climacteris affinis</i>	White-browed Treecreeper
	<i>Climacteris rufa</i>	Rufous Treecreeper
Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon
	<i>Phaps chalcoptera</i>	Common Bronzewing
Corvidae	<i>Corvus bennetti</i>	Little Crow
	<i>Corvus coronoides</i>	Australian Raven

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Colour coding for entries:

- Black** = Previously recorded on the reserve and found on this survey
- Brown** = Putative new species
- Blue** = Previously recorded on the reserve but not found on this survey





Birds		
Family	Species	Common name
Cuculidae	<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo
	<i>Cacomantis pallidus</i>	Pallid Cuckoo
	<i>Chalcites basalis</i>	Horsfield's Bronze-Cuckoo
	<i>Chalcites osculans</i>	Black-eared Cuckoo
Estrildidae	<i>Taeniopygia guttata</i>	Zebra Finch
Falconidae	<i>Falco berigora</i>	Brown Falcon
	<i>Falco cenchroides</i>	Nankeen Kestrel
	<i>Falco longipennis</i>	Australian Hobby
	<i>Falco peregrinus</i>	Peregrine Falcon
Hirundinidae	<i>Cheramoeca leucosterna</i>	White-backed Swallow
	<i>Hirundo neoxena</i>	Welcome Swallow
	<i>Petrochelidon nigricans</i>	Tree Martin
Maluridae	<i>Malurus leucopterus</i>	White-winged Fairy-wren
	<i>Malurus splendens</i>	Splendid Fairy-wren
Megaluridae	<i>Cincloramphus cruralis</i>	Brown Songlark
	<i>Cincloramphus mathewsi</i>	Rufous Songlark
Megapodiidae	<i>Leipoa ocellata</i> ~ #	Malleefowl
Meliphagidae	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater
	<i>Anthochaera carunculata</i>	Red Wattlebird
	<i>Epthianura albifrons</i>	White-fronted Chat
	<i>Epthianura tricolor</i>	Crimson Chat
	<i>Gavicalis virescens</i>	Singing Honeyeater
	<i>Lichmera indistincta</i>	Brown Honeyeater
	<i>Manorina flavigula</i>	Yellow-throated Miner
	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater
	<i>Nesoptilotis leucotis</i>	White-eared Honeyeater
	<i>Ptilotula ornatus</i>	Yellow-plumed Honeyeater
	<i>Purnella albifrons</i>	White-fronted Honeyeater
	<i>Sugomel niger</i>	Black Honeyeater
	Meropidae	<i>Merops ornatus</i>
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark
Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian Pipit, Australian Pipit
Nectariniidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella
Otididae	<i>Ardeotis australis</i>	Australian Bustard
Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush
	<i>Oreoica gutturalis</i>	Crested Bellbird
	<i>Pachycephala inornata</i>	Gilbert's Whistler
	<i>Pachycephala rufiventris</i>	Rufous Whistler



Birds

Family	Species	Common name
Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote
Petroicidae	<i>Drymodes brunneopygia</i>	Southern Scrub-robin
	<i>Melanodryas cucullata</i>	Hooded Robin
	<i>Microeca fascinans</i>	Jacky Winter
	<i>Petroica goodenovii</i>	Red-capped Robin
Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	Little Pied Cormorant
Podargidae	<i>Podargus strigoides</i>	Tawny Frogmouth
Podicipedidae	<i>Podiceps cristatus</i>	Great Crested Grebe
	<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe
	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe
Pomatostomidae	<i>Pomatostomus superciliosus</i>	White-browed Babbler
Psittacidae	<i>Barnardius zonarius</i>	Australian Ringneck
	<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet
	<i>Melopsittacus undulatus</i>	Budgerigar
	<i>Polytelis anthopeplus</i>	Regent Parrot
	<i>Psephotus varius</i>	Mulga Parrot
Psophodidae	<i>Cinclosoma castanotum</i>	Chestnut Quail-thrush
Rallidae	<i>Fulica atra</i>	Eurasian Coot
	<i>Porzana fluminea</i>	Australian Spotted Crake
	<i>Tribonyx ventralis</i>	Black-tailed Native-hen
Recurvirostridae	<i>Cladorhynchus leucocephalus</i>	Banded Stilt
	<i>Himantopus himantopus</i>	Black-winged Stilt
	<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet
Rhipiduridae	<i>Rhipidura fuliginosa</i>	New Zealand Fantail
	<i>Rhipidura leucophrys</i>	Willie Wagtail
Scolopacidae	<i>Calidris ruficollis</i>	Red-necked Stint
Strigidae	<i>Ninox novaeseelandiae</i>	Southern Boobook
Threskiornithidae	<i>Platalea flavipes</i>	Yellow-billed Spoonbill
	<i>Plegadis falcinellus</i>	Glossy Ibis
	<i>Threskiornis molucca</i>	Australian White Ibis
	<i>Threskiornis spinicollis</i>	Straw-necked Ibis
Turnicidae	<i>Turnix velox</i>	Little Button-quail
Tytonidae	<i>Tyto javanica</i>	Eastern Barn Owl

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Reptiles		
Family	Species	Common name
Agamidae	<i>Ctenophorus cristatus</i> *	Bicycle Lizard, Crested Dragon
	<i>Ctenophorus isolepis</i> *	Central Military Dragon
	<i>Ctenophorus ornatus</i>	Ornate Dragon
	<i>Ctenophorus reticulatus</i>	Western Netted Dragon
	<i>Ctenophorus salinarum</i>	Claypan Dragon
	<i>Ctenophorus scutulatus</i> *	Lozenge-marked Dragon
	<i>Diporiphora amphiboluroides</i> *	Mulga Dragon
	<i>Moloch horridus</i> *	Thorny Devil
	<i>Pogona minor</i>	Dwarf Bearded Dragon
	<i>Tympanocryptis cephalus</i> *	Pebble Dragon
Carphodactylidae	<i>Underwoodisaurus milii</i>	Barking Gecko, Thick-tailed Gecko
Diplodactylidae	<i>Diplodactylus granariensis</i> *	Wheat-belt Stone Gecko
	<i>Diplodactylus pulcher</i>	Fine-faced Gecko
	<i>Hesperoedura reticulata</i>	Reticulated Velvet Gecko
	<i>Rhynchoedura ornata</i>	Western Beaked Gecko
	<i>Strophurus wellingtonae</i>	Western Shield Spiny-tailed Gecko
Elapidae	<i>Furina ornata</i> *	Moon Snake, Orange-naped Snake
	<i>Parasuta monachus</i> *	Monk Snake
	<i>Pseudechis australis</i>	King Brown Snake, Mulga Snake
	<i>Pseudonaja nuchalis</i> *	Northern Brown Snake
	<i>Simoselaps bertholdi</i> *	Jan's Banded Snake



Jan's Banded Snake (*Simoselaps bertholdi*) R. Kittel © Copyright, University of Adelaide



Reptiles

Family	Species	Common name
Gekkonidae	<i>Gehyra purpurascens</i>	Purplish Dtella
	<i>Gehyra variegata</i>	Tree Dtella
	<i>Heteronotia binoei</i>	Bynoe's Gecko
Pygopodidae	<i>Delma australis</i>	Marble-faced Delma
	<i>Lialis burtonis</i>	Burton's Snake-lizard
Scincidae	<i>Cryptoblepharus buchananii</i>	Buchanan's Snake-eyed Skink
	<i>Ctenotus leonhardii</i>	Leonhardi's Ctenotus
	<i>Ctenotus schomburgkii</i> *	Barred Wedgesnout Ctenotus, Schomburgk's Ctenotus
	<i>Ctenotus uber</i> *	Spotted Ctenotus
	<i>Ctenotus xenopleura</i> *	Wide-striped Ctenotus
	<i>Egernia depressa</i> *	Pygmy Spiny-tailed Skink
	<i>Egernia formosa</i>	Goldfields Crevice-skink
	<i>Eremiascincus richardsonii</i>	Broad-banded Sand-swimmer



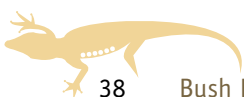
Three of the four recognised subspecies of *Tiliqua rugosa* are found only in Western Australia, where they are commonly called Bobtails. Other common names include Boggi, Pinecone Lizard, Shingle-back, Sleepy Lizard and Stumpy-tail © Copyright, Department of the Environment

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Reptiles		
Family	Species	Common name
Scincidae	<i>Lerista macropisthopus</i> *	Unpatterned Robust Slider
	<i>Lerista picturata</i>	Southern Robust Slider
	<i>Lerista timida</i>	Timid Slider
	<i>Liopholis inornata</i>	Desert Skink
	<i>Menetia greyii</i>	Common Dwarf Skink, Grey's Menetia
	<i>Morethia adalaidensis</i>	Saltbush Morethia Skink
	<i>Morethia butleri</i>	Woodland Morethia Skink
	<i>Tiliqua occipitalis</i> *	Western Blue-tongue
	<i>Tiliqua rugosa</i>	Bobtail, Boggi, Pinecone Lizard, Shingle-back, Sleepy Lizard, Stumpy-tail
Typhlopidae	<i>Ramphotyphlops australis</i> *	Southern Blind Snake
	<i>Ramphotyphlops bituberculatus</i>	Prong-snouted Blind Snake
Varanidae	<i>Varanus caudolineatus</i>	Stripe-tailed Monitor
	<i>Varanus giganteus</i> *	Perentie
	<i>Varanus gouldii</i>	Gould's Goanna

Frogs and Toads		
Family	Species	Common name
Myobatrachidae	<i>Neobatrachus kunapalari</i>	Kunapalari Frog, Wheatbelt Frog
	<i>Pseudophryne occidentalis</i>	Orange-crowned Toadlet, Western Toadlet



Invertebrates

Bees	
Family	Species
Colletidae	Colletidae sp. red *
	<i>Euhesma</i> sp. 01 *
	<i>Euryglossa</i> sp. 01 *
	<i>Euryglossa</i> sp. 02 *
	<i>Euryglossa</i> sp. 03 *
	<i>Hylaeus (Prosopisteron)</i> sp.
	<i>Hylaeus (Pseudhylaeus)</i> sp.
	<i>Hylaeus</i> sp. 01 *
	<i>Hylaeus</i> sp. 02 *
	<i>Hylaeus</i> sp. 03 *
	<i>Hylaeus</i> sp. 04 *
	<i>Hylaeus</i> sp. 05 *
	<i>Hylaeus</i> sp. 06 *
	<i>Hylaeus</i> sp. 07 *
	<i>Hylaeus</i> sp. 08 *
	<i>Hylaeus</i> sp. 09 *
	<i>Leioproctus (Baeocolletes)</i> n. sp. *
	<i>Leioproctus (Euryglossidia)</i> sp. 01 *
	<i>Leioproctus (Euryglossidia)</i> sp. 01 black *
	<i>Leioproctus (Euryglossidia)</i> sp. 02 red *
<i>Leioproctus (Euryglossidia)</i> sp. 03 black *	
<i>Leioproctus (Euryglossidia)</i> sp. 05 black *	
<i>Leioproctus (Euryglossidia)</i> sp. 06 black *	



Trichocolletes rufbasis, R. Leijs © Copyright, South Australian Museum

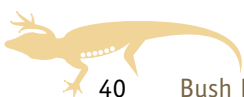
Bees	
Family	Species
Colletidae	<i>Leioproctus (Lamprocolletes)</i> cf. <i>chalybeatus</i> *
	<i>Leioproctus (Leioproctus)</i> sp. 01 black *
	<i>Leioproctus (Leioproctus)</i> sp. 02 black *
	<i>Leioproctus (Leioproctus)</i> sp. 03 red *
	<i>Leioproctus (Leioproctus)</i> sp. 04 orange legs *
	<i>Leioproctus (Leioproctus)</i> sp. 05 banded, orange legs *
	<i>Leioproctus (Leioproctus)</i> sp. 06 black *
	<i>Leioproctus (Leioproctus)</i> sp. 07 black *
	<i>Leioproctus (Leioproctus)</i> sp. 08 red *
	<i>Leioproctus (Leioproctus)</i> sp. 09 red *
	<i>Leioproctus (Leioproctus)</i> sp. 10 banded *
	<i>Leioproctus (Leioproctus)</i> sp. 11 long labial palps *
	<i>Leioproctus (Leioproctus)</i> sp. 12 *
	<i>Leioproctus (Leioproctus)</i> sp. 13 *
	<i>Leioproctus (Leioproctus)</i> sp. 14 *
	<i>Leioproctus (Unplaced)</i> sp. 01 *
	<i>Leioproctus nasutus</i>
	<i>Neopasiphae mirabilis</i> ? *
	<i>Paracolletes (Anthoglossa)</i> sp. large *
	<i>Pharohylaeus?</i> n. sp. *
	<i>Trichocolletes aureotinctus</i> *
	<i>Trichocolletes eremophilae</i>
	<i>Trichocolletes multipectinatus</i>
	<i>Trichocolletes</i> n. sp. 01 *
	<i>Trichocolletes</i> n. sp. 02 *
	<i>Trichocolletes</i> n. sp. 03 *
	<i>Trichocolletes</i> NOT <i>eremophilae</i> *
	<i>Trichocolletes</i> NOT <i>maximus</i> *
	<i>Trichocolletes</i> NOT <i>multipectinatus</i> *
<i>Trichocolletes rufbasis</i> *	
<i>Trichocolletes</i> sp. 01 *	

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Fossil bee brood cells, probably from *Stenotritus* bees. They are widespread in central WA and are from a range of geological ages. It has also been suggested that they are from weevils © Copyright, Department of the Environment

Bees	
Family	Species
Colletidae	<i>Trichocolletes</i> sp. 02 *
	<i>Trichocolletes</i> sp. 03 *
	<i>Trichocolletes</i> sp. 04 *
	<i>Trichocolletes</i> sp. 05 *
	<i>Trichocolletes</i> sp. 06 *
Halictidae	<i>Homalictus (Homalictus)</i> sp. 01 *
	<i>Homalictus (Homalictus)</i> sp. 02 *
	<i>Homalictus (Homalictus)</i> sp. 03 *
	<i>Lasioglossum (Chilalictus)</i> sp. 01 *
	<i>Lasioglossum (Chilalictus)</i> sp. 02 *
	<i>Lasioglossum (Chilalictus)</i> sp. 03 *
	<i>Lasioglossum (Chilalictus)</i> sp. 04 *
	<i>Lasioglossum (Chilalictus)</i> sp. 05 red *
	<i>Lasioglossum (Chilalictus)</i> sp. 06 red *
	<i>Lasioglossum (Chilalictus)</i> sp. 07 *
	<i>Lasioglossum (Chilalictus)</i> sp. 08 *
<i>Lasioglossum (Chilalictus)</i> sp. 09 *	

Bees	
Family	Species
Halictidae	<i>Lasioglossum (Chilalictus)</i> sp. 10 *
	<i>Lasioglossum florale</i>
	<i>Lasioglossum immaculatum</i>
	<i>Lipotriches (Austronomia)</i> sp. 01 blue *
	<i>Lipotriches (Austronomia)</i> sp. 02 green *
	<i>Lipotriches gracilipes</i>
Megachilidae	<i>Megachile (Hackeriapis)</i> sp.
	<i>Megachile remeata</i>
	<i>Megachile</i> sp. 01 *
	<i>Megachile</i> sp. 02 *
	<i>Megachile</i> sp. 03 *
Stenotritidae	<i>Megachile</i> sp. 04 *
	<i>Megachile</i> sp. 05 *
	<i>Ctenocolletes albomarginatus</i> **
	<i>Ctenocolletes ordensis</i> *
	<i>Ctenocolletes rufescens</i> *



Wasps	
Family	Species
Braconidae	<i>Ascogaster n. sp. 01</i> *
	<i>Ascogaster n. sp. 02</i> *
	<i>Chelonus (Microchelonus) n. sp.</i> *
	<i>Phanerotoma n. sp.</i> *

Butterflies	
Family	Species
Lycaenidae	<i>Nacaduba biocellata</i> *
	<i>Ogyris amaryllis meridionalis</i> *
Nymphalidae	<i>Danaus petilia</i> *
Pieridae	<i>Delias aganippe</i> *
	<i>Eurema smilax</i> *

Moths	
Family	Species
Geometridae	<i>Apotheta</i> sp. nr <i>tanymita</i> *
	Boarmiini sp. 01 *
	Boarmiini sp. 02 *
	<i>Chlenomorpha sciogramma</i> *
	<i>Cleora displicata</i> *
	<i>Crypsiphona ocularia</i> *
	<i>Dichromodes anelictis</i> *
	<i>Dichromodes haematopa</i> *
	<i>Dichromodes leptozona</i> *
	<i>Dichromodes n. sp. 01</i> *
	<i>Dichromodes n. sp. 04</i> *
	<i>Dichromodes</i> sp. 02 *
	<i>Dichromodes</i> sp. 03 *
	<i>Dichromodes</i> sp. 05 (ANIC sp. 08) *
	<i>Dichromodes</i> sp. 06 *
	<i>Dichromodes</i> sp. 07 (ANIC sp. 03) *
<i>Dichromodes</i> sp. 08 *	
<i>Euloxia pyropa</i> *	



Geometrid caterpillar on *Grevillea* sp., C. Young © Copyright, Tasmanian Museum and Art Gallery

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Moths	
Family	Species
Geometridae	<i>Idaea inversata</i> *
	<i>Lipogya exprimataria</i> *
	<i>Lipogya n. sp. 04</i> *
	<i>Lipogya sp. 01</i> *
	<i>Nearcha dasyzona</i> *
	<i>Nearcha sp.</i> *
	<i>Paramelora sp. 01</i> *
	<i>Paramelora sp. 02 (nr ANIC sp. 02)</i> *
	<i>Phrissogonus laticostata</i> *
	<i>Scioglyptis sp.</i> *
	<i>Scopula sp. nr episcia</i> *
	<i>Scopula sp. nr rubraria</i> *
	<i>Syneora sp.</i> *
	<i>Taxeotis didymosticha</i> *
	<i>Taxeotis lechrioschema</i> *
	<i>Taxeotis n. sp.</i> *
	<i>Taxeotis xanthogramma</i> *
Unplaced <i>plectroneura</i> *	

Beetles	
Family	Species
Anthicidae	Unknown genus 01 bush blitz credo n. sp. 01 *
	Unknown genus 02 bush blitz credo n. sp. 01 *
Bolboceratidae	<i>Blackburnium reichei</i> *
	<i>Bolboleaus trifoveicollis</i>
	<i>Bolboleaus truncatus</i>
	<i>Bolborhachium aneae</i>
	<i>Bolborhachium deceptum</i>
	<i>Bolborhachium pastinum</i>
<i>Bolborhachium recticorne</i> *	
Buprestidae	<i>Castiarina acuticeps</i> +
	<i>Castiarina aeraticollis</i> +
	<i>Castiarina bakeri</i> +
	<i>Castiarina pallidiventris</i> +
	<i>Castiarina recta</i> +
	<i>Castiarina rufolimbata</i> + *

Beetles	
Family	Species
Buprestidae	<i>Castiarina sp.</i> + *
	<i>Castiarina subacuticeps</i> +
	<i>Chalcophorotaenia martinii</i> +
	<i>Diadoxus regius</i> +
	<i>Melobasis sp.</i> +
	<i>Merimna sp.</i> +
	<i>Pseudotaenia gigas</i> +
	<i>Temognatha pascoei</i> +
Carabidae	<i>Adotela sp.</i> *
	<i>Anomotarus sp.</i> *
	<i>Carenum sp. 01</i> *
	<i>Carenum sp. 02</i> *
	<i>Euryscaphus obesus</i> *
	<i>Gigadema bostocki</i> *
	<i>Loxandrus sp.</i>
	<i>Philoscaphus costalis</i> *
<i>Sarothrocrepis sp.</i> *	
Cerambycidae	<i>Uracanthus sp.</i>
Chrysomelidae	<i>Paropsis bush blitz credo sp. 01</i> *
	<i>Paropsis bush blitz credo sp. 02</i> *
Cleridae	<i>Lemidia suturalis</i> *
Curculionidae	<i>Hypera sp.</i> *
	<i>Melanterius sp.</i> *
	<i>Rhinaria sp.</i> *
	<i>Titinia sp.</i> *
Dytiscidae	<i>Cybister tripunctatus</i>
	<i>Eretes australis</i>
Hydrophilidae	<i>Berosus macumbensis</i>
Melyridae	<i>Helcogaster sp.</i> *
Scarabaeidae	<i>Colpochila sp.</i> *
	<i>Liparetrus bush blitz credo n. sp. nr nudus</i> *
	<i>Liparetrus jenkinsi</i> *
	<i>Maechidius bush blitz credo n. sp. 01</i> *
	<i>Maechidius bush blitz credo n. sp. 02</i> *
	<i>Maechidius bush blitz credo n. sp. nr geminus</i> *
<i>Sphaeroscelis pectoralis</i> *	



Beetles	
Family	Species
Tenebrionidae	<i>Aethysius</i> sp. *
	<i>Chalcopteroides</i> sp. *
	<i>Helea bush blitz credo</i> n. sp. 01 *
	<i>Helea bush blitz credo</i> n. sp. 02 *
	<i>Helea elliptica</i>
	<i>Helea mastersi</i>
	<i>Helea opacicollis</i>
	<i>Helea subseriata</i>
	<i>Hypaulax ampliata</i> *
	<i>Metistete dentipes</i>
	<i>Nyctozoilus major</i> *
Trogidae	<i>Pterohelaeus bush blitz credo</i> n. sp. 01 *
	<i>Pterohelaeus bush blitz credo</i> n. sp. 02 *
	<i>Pterohelaeus bush blitz credo</i> n. sp. 03 *
Trogidae	<i>Omorgus gigas</i> *



Omorgus gigas © Copyright, Shawn Fox

True Bugs	
Family	Species
Acanthosomatidae	<i>Eupolemus</i> sp. BBCRE11/ACAN/Msp122 *
Coreidae	Coreidae sp. BBCRE11/CORE/Msp136 *
Cydidae	Cydidae sp. BBCRE11/CYDN/Msp123 *
Cymidae	<i>Ontiscus</i> sp. BBCRE11/CYMI/Msp113 *
Geocoridae	<i>Germalus</i> sp. BBCRE11/GEOC/Msp114 *
Lygaeidae	<i>Crompus</i> sp. BBCRE11/ISCH/Msp116 *
	<i>Nysius vinitor</i> ^ *

True Bugs	
Family	Species
Miridae	<i>Ausejanus</i> sp. BBCRE11/PHYL/Msp075 *
	<i>Ausejanus</i> sp. BBCRE11/PHYL/Msp076 *
	<i>Austromirini</i> n. gen. n. sp. (<i>Lattinova</i> complex) BBCRE11/AUST/Msp018 *
	<i>Austromirini</i> n. sp. BBCRE11/AUST/Msp019 *
	<i>Austromirini</i> n. sp. <i>credo</i> ms. BBCRE11/AUST/Msp024 *
	<i>Austromirini</i> n. sp. <i>graniticolaphila</i> ms. BBCRE11/AUST/Msp025 *
	<i>Austromirini</i> n. sp. <i>marinae</i> ms. BBCRE11/AUST/Msp023 *
	<i>Austromiris</i> n. sp. 01 BBCRE11/AUST/Msp022 *
	<i>Austromiris</i> n. sp. 01 <i>celiae</i> ms. BBCRE11/AUST/Msp021 *
	<i>Austromiris</i> n. sp. 01 <i>taylori</i> ms. BBCRE11/AUST/Msp015 *
	<i>Austromiris</i> n. sp. 02 <i>elongata</i> ms. BBCRE11/AUST/Msp017 *
	<i>Campylomma</i> sp. BBCRE11/PHYL/Msp085 *
	<i>Coridromius chenopoderis</i> *
	<i>Creontiades dilutus</i> ^ *

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Old growth Salmon Gum (*Eucalyptus salmonophloia*), © Copyright, Katrina Syme



True Bugs	
Family	Species
Miridae	Cysteorrhacha n. sp. 01 BBCRE11/AUST/Msp028 *
	Engytatus n. sp. BBCRE11/DICY/Msp102 *
	<i>Jiwarli solanum</i> *
	Melaleuroides n. sp. BBCRE11/PHYL/Msp087 *
	<i>Metopocoris scutata</i> *
	Mirini n. gen. 01 n. sp. 01 BBCRE11/MIRI/Msp105 *
	Mirini n. gen. 02 n. sp. 01 BBCRE11/MIRI/Msp106 *
	Mirini n. gen. 03 n. sp. 01 BBCRE11/MIRI/Msp109 *
	Mirini n. sp. 01 BBCRE11/MIRI/Msp107 *
	Mirini n. sp. 02 BBCRE11/MIRI/Msp108 *
	Mirini n. sp. 03 BBCRE11/MIRI/Msp110 *
	Mirini n. sp. 04 BBCRE11/MIRI/Msp111 *
	Myrtlemiris n. sp. 01 BBCRE11/ORTH/Msp069 *
	Myrtlemiris n. sp. 02 BBCRE11/ORTH/Msp070 *
	<i>Nesidiocoris tenuis</i> ^ *
	Ommatodema n. sp. BBCRE11/MIRI/Msp103 *
	Orthotylini n. sp. 01 BBCRE11/ORTH/Msp030 *
	Orthotylini n. sp. 02 BBCRE11/ORTH/Msp031 *
	Orthotylini n. sp. 03 BBCRE11/ORTH/Msp032 *
	Orthotylini n. sp. 04 BBCRE11/ORTH/Msp033 *
	Orthotylini n. sp. 05 BBCRE11/ORTH/Msp034 *
	Orthotylini n. sp. 06 BBCRE11/ORTH/Msp035 *

True Bugs	
Family	Species
Miridae	Orthotylini n. sp. 07 BBCRE11/ORTH/Msp036 *
	Orthotylini n. sp. 08 BBCRE11/ORTH/Msp037 *
	Orthotylini n. sp. 09 BBCRE11/ORTH/Msp038 *
	Orthotylini n. sp. 10 BBCRE11/ORTH/Msp039 *
	Orthotylini n. sp. 11 BBCRE11/ORTH/Msp040 *
	Orthotylini n. sp. 12 BBCRE11/ORTH/Msp041 *
	Orthotylini n. sp. 13 BBCRE11/ORTH/Msp042 *
	Orthotylini n. sp. 14 BBCRE11/ORTH/Msp043 *
	Orthotylini n. sp. 15 BBCRE11/ORTH/Msp044 *
	Orthotylini n. sp. 16 BBCRE11/ORTH/Msp045 *
	Orthotylini n. sp. 17 BBCRE11/ORTH/Msp046 *
	Orthotylini n. sp. 18 B BBCRE11/ORTH/Msp047 *
	Orthotylini n. sp. 19 BBCRE11/ORTH/Msp048 *
	Orthotylini n. sp. 20 BBCRE11/ORTH/Msp049 *
	Orthotylini n. sp. 21 BBCRE11/ORTH/Msp050 *
	Orthotylini n. sp. 22 BBCRE11/ORTH/Msp051 *
	Orthotylini n. sp. 23 BBCRE11/ORTH/Msp052 *
	Orthotylini n. sp. 24 BBCRE11/ORTH/Msp053 *
	Orthotylini n. sp. 25 BBCRE11/ORTH/Msp054 *
	Orthotylini n. sp. 26 BBCRE11/ORTH/Msp055 *

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True Bugs	
Family	Species
Miridae	Orthotylini n. sp. 27 BBCRE11/ORTH/Msp056 *
	Orthotylini n. sp. 28 BBCRE11/ORTH/Msp057 *
	Orthotylini n. sp. 29 BBCRE11/ORTH/Msp058 *
	Orthotylini n. sp. 30 BBCRE11/ORTH/Msp059 *
	Orthotylini n. sp. 31 BBCRE11/ORTH/Msp060 *
	Orthotylini n. sp. 32 BBCRE11/ORTH/Msp061 *
	Orthotylini n. sp. 33 BBCRE11/ORTH/Msp062 *
	Orthotylini n. sp. 34 BBCRE11/ORTH/Msp063 *
	Orthotylini n. sp. 35 BBCRE11/ORTH/Msp064 *
	Orthotylini n. sp. 36 BBCRE11/ORTH/Msp065 *
	Orthotylini n. sp. 37 BBCRE11/ORTH/Msp066 *
	Orthotylini n. sp. 38 BBCRE11/ORTH/Msp067 *
	Orthotylini n. sp. 39 BBCRE11/ORTH/Msp068 *
	Orthotylini n. sp. 40 BBCRE11/ORTH/Msp093 *
	Orthotylini n. sp. 41 BBCRE11/ORTH/Msp0100 *
	Orthotylini n. sp. 42 BBCRE11/ORTH/Msp099 *
	Phylini n. gen. n. sp. BBCRE11/CORI/Msp092 *
	Phylini n. sp. 01 BBCRE11/PHYL/Msp077 *
	Phylini n. sp. 02 BBCRE11/PHYL/Msp078 *
	Phylini n. sp. 03 BBCRE11/PHYL/Msp079 *
Phylini n. sp. 04 BBCRE11/PHYL/Msp080 *	
Phylini n. sp. 05 BBCRE11/PHYL/Msp081 *	
Phylini n. sp. 06 BBCRE11/PHYL/Msp082 *	

True Bugs		
Family	Species	
Miridae	Phylini n. sp. 07 BBCRE11/PHYL/Msp083 *	
	Phylini n. sp. 08 BBCRE11/PHYL/Msp088 *	
	Phylini nr Wallabicoris n. sp. BBCRE11/CORI/Msp090 *	
	Sinistropa n. sp. acaciaphila ms. BBCRE11/AUST/Msp020 *	
	<i>Wallabicoris cassisi</i> *	
	Wallabicoris n. sp. 01 BBCRE11/PHYL/Msp094 *	
	Wallabicoris n. sp. 02 BBCRE11/PHYL/Msp084 *	
	Wallabicoris n. sp. 03 BBCRE11/PHYL/Msp086 *	
	Wallabicoris n. sp. 04 BBCRE11/PHYL/Msp095 *	
	Wallabicoris n. sp. 05 BBCRE11/PHYL/Msp097 *	
	Wallabicoris n. sp. 06 BBCRE11/PHYL/Msp098 *	
	Zanchiini n. sp. 01 BBCRE11/ORTH/Msp071 *	
	Zanchiini n. sp. 02 BBCRE11/ORTH/Msp072 *	
	Zanchiini n. sp. 03 BBCRE11/ORTH/Msp073 *	
	Zanchiini n. sp. 04 BBCRE11/ORTH/Msp074 *	
	<i>Zanessa</i> sp. BBCRE11/AUST/Msp013 *	
	Nabidae	<i>Nabis</i> sp. BBCRE11/NABI/Msp112 *
	Pachygronthidae	<i>Stenophyella macreta</i> *
	Pentatomidae	<i>Antestiopsis</i> sp. BBCRE11/PENT/Msp126 *
<i>Aplerotus</i> sp. BBCRE11/PENT/Msp125 *		
<i>Deroploopsis</i> sp. BBCRE11/PENT/Msp127 *		
<i>Diaphyta</i> sp. BBCRE11/PENT/Msp130 *		
<i>Halyini</i> sp. BBCRE11/PENT/Msp133 *		
<i>Oechalia schellenbergii</i> *		



True Bugs	
Family	Species
Pentatomidae	Pentatomidae n. gen. n. sp. BBCRE11/PENT/Msp129 *
	<i>Poecilometis acanthopygius</i> *
	<i>Poecilometis alienus</i> *
	<i>Utheria</i> sp. BBCRE11/PENT/Msp128 *
Piesmatidae	<i>Mcateella coolgardie</i> *
	Mcateella n. sp. BBCRE11/PIES/Msp119 *
Reduviidae	Harpactorinae sp. BBCRE11/REDU/Msp011 *
	Stenopodainae sp. BBCRE11/REDU/Msp012 *
Rhyparochromidae	Meschia n. sp. BBCRE11/MESH/Msp117 *
	<i>Remaudiereana</i> sp. BBCRE11/RHYP/Msp121 *
Saldidae	<i>Saldula</i> sp. BBCRE11/SALD/Msp001 *
Scutelleridae	<i>Choerocoris paganus</i> *
	<i>Choerocoris variegatus</i> *
Thaumastocoridae	<i>Thaumastocoris petilus</i> *
Tingidae	<i>Eritingis</i> sp. BBCRE11/TING/Msp004 *
	<i>Inoma stysi</i> *
	<i>Ischnotingis fasciata</i> *
	Nethersia n. sp. BBCRE11/TING/Msp009 *
	Oncophysa n. sp. BBCRE11/TING/Msp003 *
	<i>Physatocheila objicis</i> *
	Tingidae n. sp. BBCRE11/TING/Msp005 *
	Tingidae nr <i>Inoma</i> n. sp. BBCRE11/TING/Msp008 *

Jumping Plantlice	
Family	Species
[Superfamily Psylloidea]	n. gen. 01 n. sp. 01 *
	n. gen. 01 n. sp. 02 *
	n. gen. 02 n. sp. 01 *
Phacopteronidae	Pseudophacopteron n. sp. *
Psyllidae	Acizzia credoensis n. sp. *
	Acizzia n. sp. 02 *
	Acizzia n. sp. 03 *
	Acizzia n. sp. 04 *
	Acizzia n. sp. 08 *
	Acizzia n. sp. 09 *
	Acizzia n. sp. 10 *
	Acizzia n. sp. 11 *
	Acizzia n. sp. 12 *
	<i>Acizzia solanicola</i> *
	<i>Acizzia</i> sp. 05 *
	<i>Acizzia</i> sp. 06 *
	<i>Acizzia</i> sp. 07 *
	<i>Acizzia</i> sp. 13 *
	<i>Anoeconeossa</i> sp. 01 *
	<i>Anoeconeossa</i> sp. 02 *
	<i>Creiis</i> sp. 01 *
	<i>Creiis</i> sp. 02 *
	<i>Glycaspis</i> sp. *
	<i>Hyalinaspis</i> sp. 01 *
<i>Hyalinaspis</i> sp. 02 *	
<i>Hyalinaspis</i> sp. 03 *	
<i>Lasiopsylla</i> sp. *	
<i>Platyobria</i> sp. 01 *	
<i>Platyobria</i> sp. 02 *	
Triozidae	<i>Acanthocasuarina campestris</i> *
	<i>Casuarinicola australis</i> *
	<i>Casuarinicola mucronalatus</i> *
	<i>Schedotrioza</i> sp. *
	Trioza n. sp. 01 *
Trioza n. sp. 02 *	
Trioza n. sp. 03 *	

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Jumping Plantlice	
Family	Species
Triozidae	<i>Trioza n. sp. 04</i> *
	<i>Trioza n. sp. 05</i> *
	<i>Trioza sp. 06</i> *
	<i>Trioza sp. 07</i> *
	<i>Trioza sp. 08</i> *

Millipedes	
Family	Species
Paradoxosomatidae	<i>Antichiropus n. sp. nadineae</i> *
Siphonotidae	Siphonotidae sp. *
Synxenidae	<i>Phryssonotus novaehollandiae</i> *

Damselflies and Dragonflies	
Family	Species
Aeshnidae	<i>Anax papuensis</i> *
Coenagrionidae	<i>Ischnura aurora</i> *
	<i>Xanthagrion erythroneurum</i> *
Corduliidae	<i>Hemicordulia tau</i> *
Lestidae	<i>Austrolestes annulosus</i> *
	<i>Austrolestes aridus</i> *
Libellulidae	<i>Diplacodes bipunctata</i> *
	<i>Orthetrum caledonicum</i> *

Centipedes	
Family	Species
Henicopidae	Henicopinae sp. *
	Henicopinae sp. *
Mecistocephalidae	Mecistocephalidae sp. *
Scolopendridae	<i>Ethmostigmus rubripes</i> *
	<i>Scolopendra morsitans</i> *

Mites	
Family	Species
Caeculidae	Caeculidae sp. *
Trombidiidae	Trombidiidae sp. *



A centipede from the Scolopendridae family © Copyright, Department of the Environment



Scorpions	
Family	Species
Buthidae	Isometroides n. sp. *
	<i>Lychas jonesae</i> *
	<i>Lychas</i> sp. *

Pseudoscorpions	
Family	Species
Atemnidae	<i>Oratemnus</i> sp. *
Chernetidae	Conicochernes n. sp. PSE024 *
	<i>Nesidiochernes</i> sp. *
Garypidae	<i>Synsphyronus ?mimulus</i> *
	Synsphyronus n. sp. PSE025 *
	<i>Synsphyronus</i> sp. *
	<i>Synsphyronus</i> sp. *
Olpiidae	<i>Beierolpium</i> sp. 8/4 *
	<i>Indolpium</i> sp. *



A spider burrow opening, R. Kittel© Copyright, University of Adelaide

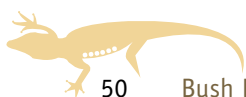
Spiders	
Family	Species
Araneidae	<i>Austracantha minax</i> *
Clubionidae	<i>Cheiracanthium</i> sp. *
Corinnidae	<i>Supunna picta</i> *
Ctenizidae	<i>Conothele</i> sp. *
Desidae	Desidae sp. *
	Desidae sp. *
Gnaphosidae	<i>Ceryerda</i> sp. *
	<i>Encoptarthria</i> sp. *
	Gnaphosidae sp. *
Hersiliidae	<i>Tamopsis</i> sp. *
Idiopidae	Aganippe n. sp. MYG244 *
	<i>Anidiops</i> sp. *
	<i>Anidiops villosus</i>
	<i>Eucyrtops</i> sp. *
	<i>Eucyrtops</i> sp. *
Lamponidae	Notsodipus n. sp. *
Linyphiidae	Linyphiidae sp. *
	Linyphiidae sp. *
Lycosidae	<i>Hoggicosa castanea</i> *
	<i>Hoggicosa forresti</i> *
	<i>Hoggicosa</i> sp. *
	<i>Hoggicosa storri</i> *
	Lycosidae sp. *
Miturgidae	Miturgidae sp. *
Nemesiidae	<i>Aname</i> spp. *
	<i>Aname tepperi</i> *
Nephilidae	<i>Nephila edulis</i> *
Oonopidae	<i>Opopaea</i> sp. *
	<i>Orchestina</i> sp. *
	<i>Pellicinus</i> sp. *
	<i>Pellicinus</i> sp. *
	<i>Pellicinus</i> sp. *
Oxyopidae	<i>Oxyopes</i> sp. *
Pholcidae	<i>Trichocyclus</i> poss. <i>balladong</i> *
	<i>Trichocyclus</i> sp. *

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Spiders	
Family	Species
Salticidae	<i>Grayenulla australensis</i> *
	<i>Lycidas</i> sp. *
	<i>Lycidas</i> sp. *
	<i>Neon</i> sp. *
	Salticidae sp. *
	<i>Zebraplatys fractivittata</i> *
Segestriidae	Segestriidae sp. *
	Segestriidae sp. *
Sparassidae	<i>Neosparassus</i> sp. *

Spiders	
Family	Species
Theridiidae	<i>Hadrotarsus</i> sp. *
	<i>Steatoda</i> sp. *
	<i>Steatoda</i> sp. *
	Theridiidae sp. *
	Theridiidae sp. *
	Theridiidae sp. *
Thomisidae	<i>Stephanopsis</i> sp. *
	<i>Tharpyna</i> sp. *
	Thomisidae sp. *
Zodariidae	<i>Cavasteron tenuicalcar</i> *
	<i>Neostorena</i> sp. *
	Zodariidae sp. *



Yellow and blue pan traps set among flowering shrubs to attract pollinators, G. Taylor © Copyright, University of Adelaide



Cassandra Nichols from Earthwatch Australia checking a pitfall trap © Copyright, Department of the Environment

Snails and Slugs	
Family	Species
Camaenidae	<i>Sinumelon cf. kalgum</i> *
	<i>Sinumelon</i> sp. *
Placostylidae	<i>Bothriembryon cf. sedgwicki</i> *
	<i>Bothriembryon dux</i>
Planorbidae	<i>Glyptophysa</i> sp. 01 *
Punctidae	<i>Westralaoma expicta</i> *

Snails and Slugs	
Family	Species
Pupillidae	<i>Gastrocopta cf. bannertonensis</i> *
	<i>Gastrocopta cf. margaretae</i> *
	<i>Pupilla cf. ficulnea</i> *
	<i>Pupilla</i> n. sp. *
	<i>Pupoides adelaidae</i> *
	<i>Pupoides cf. adelaidae</i> *
Succineidae	<i>Pupoides myoporinae</i> *
	<i>Austrosuccinea cf. aridicola</i> *

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Flora

Flowering Plants	
Family	Species
Aizoaceae	<i>Carpobrotus virescens</i>
	<i>Cleretum papulosum</i> subsp. <i>papulosum</i> ^ *
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>
	<i>Gunniopsis quadrifida</i>
	<i>Gunniopsis septifraga</i>
	<i>Tetragonia eremaea</i>
Amaranthaceae	<i>Hemichroa diandra</i>
	<i>Ptilotus ?drummondii</i> *
	<i>Ptilotus aervoides</i>
	<i>Ptilotus carlsonii</i> *
	<i>Ptilotus chamaecladus</i> *
	<i>Ptilotus gaudichaudii</i>
	<i>Ptilotus holosericeus</i>
	<i>Ptilotus nobilis</i>
	<i>Ptilotus obovatus</i>
Apiaceae	<i>Daucus glochidiatus</i> *
Apocynaceae	<i>Alyxia buxifolia</i>
	<i>Marsdenia australis</i>
	<i>Rhyncharrhena linearis</i>
Araliaceae	<i>Trachymene cyanopetala</i> *
	<i>Trachymene ornata</i> *
Asparagaceae	<i>Arthropodium curvipes</i> *
	<i>Chamaexeros macranthera</i>
	<i>Thysanotus manglesianus</i> *
	<i>Thysanotus speckii</i> *
Asteraceae	<i>Actinobole uliginosum</i> *
	<i>Angianthus tomentosus</i>
	<i>Asteridea athrixioides</i>
	<i>Brachyscome ciliaris</i>
	<i>Brachyscome iberidifolia</i> *
	<i>Brachyscome perpusilla</i> *
	<i>Calocephalus francisii</i> *
	<i>Calotis hispidula</i> *



Gunniopsis septifraga found on lateritic ridges © Copyright, Department of the Environment

Flowering Plants	
Family	Species
Asteraceae	<i>Calotis multicaulis</i>
	<i>Centipeda crateriformis</i>
	<i>Cephalopterum drummondii</i>
	<i>Ceratogyne obionoides</i> *
	<i>Chthonocephalus pseudevax</i> *
	<i>Cratystylis subspinescens</i>
	<i>Dittrichia graveolens</i> ^
	<i>Gilberta tenuifolia</i> *
	<i>Gnephosis brevifolia</i> *
	<i>Gnephosis intonsa</i> *
	<i>Gnephosis tenuissima</i> *
	<i>Helichrysum luteoalbum</i>
	<i>Hyalosperma demissum</i> *
	<i>Hyalosperma glutinosum</i> *
	<i>Hyalosperma zacchaeus</i>
	<i>Hypochaeris glabra</i> ^ *
	<i>Isoetopsis graminifolia</i> *
	<i>Kippistia suaedifolia</i>
	<i>Lawrencella davenportii</i> *
	<i>Lawrencella rosea</i> *
	<i>Leiocarpa semicalva</i> *
	<i>Lemooria burkittii</i> *
	<i>Millotia incurva</i>
	<i>Millotia myosotidifolia</i> *
	<i>Millotia tenuifolia</i> *
	<i>Myriocephalus guerinae</i> *



Flowering Plants	
Family	Species
Asteraceae	<i>Myriocephalus pygmaeus</i> *
	<i>Olearia exiguifolia</i>
	<i>Olearia humilis</i> *
	<i>Olearia muelleri</i>
	<i>Olearia muricata</i> *
	<i>Olearia pimeleoides</i>
	<i>Olearia stuartii</i>
	<i>Podolepis capillaris</i>
	<i>Podolepis lessonii</i> *
	<i>Podolepis rugata</i> *
	<i>Rhodanthe battii</i> *
	<i>Rhodanthe charsleyae</i> *
	<i>Rhodanthe chlorocephala</i>
	<i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>
	<i>Rhodanthe floribunda</i>
	<i>Rhodanthe haigii</i> *
	<i>Rhodanthe laevis</i> *
	<i>Rhodanthe maryonii</i> *
	<i>Rhodanthe oppositifolia</i> *
	<i>Rhodanthe polakii</i> *
	<i>Rhodanthe stricta</i> *
	<i>Schoenia cassiniana</i> *
	<i>Senecio glossanthus</i> *
	<i>Senecio lacustrinus</i> *
	<i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i>
	<i>Senecio quadridentatus</i> *
	<i>Siloxerus multiflorus</i> *
	<i>Sonchus oleraceus</i> ^ *
	<i>Streptoglossa cylindriceps</i> *
	<i>Streptoglossa liatroides</i>
	<i>Trichanthodium skirrophorum</i>
	<i>Triptilodiscus pygmaeus</i> *
	<i>Vittadinia dissecta</i> var. <i>hirta</i> *
<i>Vittadinia eremaea</i>	
<i>Waitzia acuminata</i>	

Flowering Plants	
Family	Species
Boraginaceae	<i>Halgania integerrima</i> *
Brassicaceae	<i>Arabidella chrysodema</i> *
	<i>Carrichtera annua</i> ^
	<i>Lepidium fasciculatum</i> *
	<i>Menkea australis</i> *
	<i>Sisymbrium irio</i> ^ *
	<i>Sisymbrium orientale</i> ^
	<i>Stenopetalum filifolium</i> *
Campanulaceae	<i>Isotoma petraea</i> *
	<i>Lobelia rarifolia</i> *
	<i>Wahlenbergia gracilentata</i> *
	<i>Wahlenbergia tumidifruca</i> *
	<i>Stellaria filiformis</i>
Casuarinaceae	<i>Allocasuarina acutivalvis</i> *
	<i>Allocasuarina campestris</i> *
	<i>Allocasuarina corniculata</i> *
	<i>Allocasuarina eriochlamys</i>
	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> *
<i>Casuarina pauper</i>	
Celastraceae	<i>Stackhousia muricata</i> *
	<i>Stackhousia</i> sp. Mt Keith (G. Cockerton & G. O'Keefe 11017) *
Centrolepidaceae	<i>Centrolepis polygyna</i>
	<i>Centrolepis strigosa</i> *
Chenopodiaceae	<i>Atriplex ?vesicaria</i>
	<i>Atriplex bunburyana</i>
	<i>Atriplex codonocarpa</i> *
	<i>Atriplex lindleyi</i> subsp. <i>conduplicata</i>
	<i>Atriplex lindleyi</i> subsp. <i>inflata</i> *
	<i>Atriplex nummularia</i> subsp. <i>spathulata</i>
	<i>Atriplex semibaccata</i>
	<i>Atriplex vesicaria</i>
	<i>Chenopodium curvispicatum</i>
	<i>Chenopodium nitrariaceum</i>
<i>Didymanthus roei</i>	

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Flowering Plants	
Family	Species
Chenopodiaceae	<i>Dissocarpus paradoxus</i>
	<i>Dysphania kalpari</i>
	<i>Enchylaena tomentosa</i>
	<i>Maireana amoena</i>
	<i>Maireana carnosa</i>
	<i>Maireana georgei</i>
	<i>Maireana pyramidata</i>
	<i>Maireana sedifolia</i>
	<i>Maireana thesioides</i>
	<i>Maireana tomentosa</i>
	<i>Maireana trichoptera</i>
	<i>Maireana triptera</i>
	<i>Rhagodia drummondii</i>
	<i>Rhagodia preissii</i> *
	<i>Sclerolaena cuneata</i>
	<i>Sclerolaena densiflora</i>
	<i>Sclerolaena diacantha</i>
	<i>Sclerolaena eurotioides</i>
	<i>Sclerolaena fimbriolata</i>
	<i>Sclerolaena fusiformis</i> *
<i>Tecticornia disarticulata</i> *	
<i>Tecticornia</i> sp. Dennys Crossing (K.A. Shepherd & J. English KS 552)	
Colchicaceae	<i>Wurmbea murchisoniana</i>
	<i>Wurmbea tenella</i>
Convolvulaceae	<i>Convolvulus clementii</i>
	<i>Cuscuta australis</i>
	<i>Cuscuta epithymum</i> ^
	<i>Cuscuta planiflora</i> ^ *
Crassulaceae	<i>Crassula colorata</i> var. <i>acuminata</i> *
	<i>Crassula tetramera</i> *
Cyperaceae	<i>Chrysitrix distigmatosa</i> *
	Cyperaceae sp.
	<i>Isolepis congrua</i> *
	<i>Lepidosperma</i> sp. (NG & MAL 4907) *
	<i>Schoenus nanus</i> *
Dilleniaceae	<i>Hibbertia exasperata</i> complex (NG & MAL 4966) *
	<i>Hibbertia exasperata</i> complex (NG & MAL 5206) *
	<i>Hibbertia</i> sp. (NG & MAL 5206)

Flowering Plants	
Family	Species
Droseraceae	<i>Drosera macrantha</i> subsp. <i>macrantha</i> *
	<i>Drosera moorei</i> *
Euphorbiaceae	<i>Beyeria sulcata</i> var. <i>sulcata</i> *
	<i>Euphorbia drummondii</i>
	<i>Monotaxis luteiflora</i> *
Fabaceae	<i>Acacia ancistrophylla</i> var. <i>ancistrophylla</i>
	<i>Acacia aneura</i> *
	<i>Acacia burkittii</i>
	<i>Acacia coolgardiensis</i>
	<i>Acacia effusifolia</i>
	<i>Acacia erinacea</i>
	<i>Acacia hemiteles</i>
	<i>Acacia kalgoorliensis</i>
	<i>Acacia leptopetala</i>
	<i>Acacia ligulata</i>
	<i>Acacia longispinea</i> *
	<i>Acacia murrayana</i>
	<i>Acacia prainii</i> *
	<i>Acacia quadrimarginea</i>
	<i>Acacia ramulosa</i> var. <i>linophylla</i> *
	<i>Acacia ramulosa</i> var. <i>ramulosa</i>
	<i>Acacia resinimarginea</i>
	<i>Acacia</i> sp. narrow phyllode (B.R.Maslin 7831)
	<i>Acacia steedmanii</i> subsp. <i>steedmanii</i> *
	<i>Acacia tetragonophylla</i>
	<i>Acacia uncinella</i> *
	<i>Acacia yorkkrakinensis</i> subsp. <i>acrita</i>
	<i>Bossiaea walkeri</i> *
	<i>Daviesia benthamii</i> subsp. <i>acanthoclona</i> *
	<i>Dillwynia</i> sp. Coolgardie (V.E.Sands 637.3.1) *
	<i>Glycyrrhiza acanthocarpa</i>
	<i>Jacksonia nematochlada</i> *
<i>Leptosema aculeatum</i> *	
<i>Medicago minima</i> ^	



Flowering Plants	
Family	Species
Fabaceae	<i>Mirbelia depressa</i>
	<i>Mirbelia microphylla</i>
	<i>Mirbelia ramulosa</i> *
	<i>Mirbelia seorsifolia</i> *
	<i>Mirbelia trichocalyx</i> *
	<i>Petalostylis cassioides</i> *
	<i>Phyllota luehmannii</i>
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>
	<i>Senna cardiosperma</i> *
	<i>Senna charlesiana</i>
	<i>Senna pleurocarpa</i> var. <i>angustifolia</i>
	<i>Senna pleurocarpa</i> var. <i>pleurocarpa</i> *
	<i>Swainsona affinis</i> *
	<i>Swainsona beasleyana</i> *
	<i>Swainsona canescens</i>
	<i>Swainsona kingii</i> *
<i>Templetonia sulcata</i>	
<i>Trigonella suavissima</i> *	
Frankeniaceae	<i>Frankenia irregularis</i>
	<i>Frankenia setosa</i>
Geraniaceae	<i>Erodium aureum</i> ^ *
	<i>Erodium cicutarium</i> ^ *
	<i>Erodium cygnorum</i> *
Goodeniaceae	<i>Brunonia australis</i> *
	<i>Dampiera stenostachya</i> *
	<i>Dampiera tenuicaulis</i> var. <i>tenuicaulis</i> *
	<i>Goodenia ?berringbinensis</i> *
	<i>Goodenia havilandii</i>
	<i>Goodenia mimuloides</i> *
	<i>Goodenia muckeana</i> *
	<i>Goodenia occidentalis</i> *
	<i>Scaevola spinescens</i>
<i>Velleia rosea</i> *	
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>

Flowering Plants	
Family	Species
Haloragaceae	<i>Glischrocaryon aureum</i> *
	<i>Haloragis ?maierae</i> *
	<i>Haloragis gossei/trigonocarpa</i> *
	<i>Haloragis trigonocarpa</i>
Hemerocallidaceae	<i>Dianella revoluta</i> var. <i>divaricata</i> *
Juncaceae	<i>Juncus aridicola</i>
	<i>Juncus bufonius</i>
Juncaginaceae	<i>Triglochin ?isingiana</i> *
Lamiaceae	<i>Hemigenia brachyphylla</i>
	<i>Lachnostachys coolgardiensis</i> *
	<i>Marrubium vulgare</i> ^
	<i>Physopsis viscida</i> *
	<i>Pityrodia lepidota</i> *
	<i>Prostanthera althoferi</i> subsp. <i>althoferi</i>
	<i>Prostanthera campbellii</i>
	<i>Prostanthera grylloana</i> *
	<i>Salvia verbenaca</i> ^
	<i>Westringia cephalantha</i>
<i>Westringia rigida</i>	
Lauraceae	<i>Cassytha melantha</i> *
Loganiaceae	<i>Phyllangium sulcatum</i> *
Loranthaceae	<i>Amyema benthamii</i>
	<i>Amyema gibberula</i> var. <i>gibberula</i>
	<i>Amyema nestor</i>
	<i>Amyema preissii</i>
	<i>Lysiana casuarinae</i>
Lythraceae	<i>Lythrum wilsonii</i>
Malvaceae	<i>Abutilon cryptopetalum</i>
	<i>Brachychiton gregorii</i>
	<i>Keraudrenia cacaobrunnea</i> *
	<i>Keraudrenia integrifolia</i> *
	<i>Lawrencina repens</i> *
	<i>Radyera farragei</i>
	<i>Androcalva luteiflora</i> *
	<i>Sida calyxhymenia</i> *
<i>Sida fibulifera</i>	

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Flowering Plants	
Family	Species
Malvaceae	<i>Sida phaeotricha</i> *
	<i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260) *
	<i>Sida</i> sp. Excedentifolia (J.L. Egan 1925) *
Myrtaceae	<i>Aluta aspera</i> subsp. <i>aspera</i> *
	<i>Aluta aspera</i> subsp. <i>hesperia</i>
	<i>Baeckea</i> sp. Comet Vale (A.S.George 8078)
	<i>Balaustion pulcherrimum</i> *
	<i>Calothamnus gilesii</i> *
	<i>Calytrix depressa</i> *
	<i>Chamelaucium ciliatum</i> *
	<i>Corymbia ellipsoidea</i>
	<i>Eucalyptus celastroides</i> subsp. <i>celastroides</i>

Flowering Plants	
Family	Species
Myrtaceae	<i>Eucalyptus ceratocorys</i>
	<i>Eucalyptus clelandii</i> *
	<i>Eucalyptus concinna</i>
	<i>Eucalyptus cylindrocarpa</i>
	<i>Eucalyptus dundasii</i>
	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i>
	<i>Eucalyptus eremophila</i>
	<i>Eucalyptus ewartiana</i>
	<i>Eucalyptus griffithsii</i>
	<i>Eucalyptus horistes</i> *
	<i>Eucalyptus leptopoda</i>
	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
	<i>Eucalyptus longicornis</i>
	<i>Eucalyptus longissima</i>



Native Pomegranate (*Balaustion pulcherrimum*), which is endemic to Western Australia, is common on the extensive yellow sandplains of Credo Station Reserve. *Balaustion* is a monotypic genus, K. Gillespie © Copyright, Department of the Environment



Flowering Plants	
Family	Species
Myrtaceae	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
	<i>Eucalyptus moderata</i> *
	<i>Eucalyptus oldfieldii</i>
	<i>Eucalyptus oleosa</i>
	<i>Eucalyptus orbifolia</i>
	<i>Eucalyptus ravida</i> *
	<i>Eucalyptus rigidula</i>
	<i>Eucalyptus salmonophloia</i>
	<i>Eucalyptus salubris</i>
	<i>Eucalyptus sheathiana</i> *
	<i>Eucalyptus stricklandii</i>
	<i>Eucalyptus transcontinentalis</i>
	<i>Eucalyptus yilgarnensis</i>
	<i>Eucalyptus youngiana</i>
	<i>Euryomyrtus maidenii</i>
	<i>Euryomyrtus patrickiae</i>
	<i>Homalocalyx thryptomenoides</i> *
	<i>Kunzea pulchella</i>
	<i>Malleostemon roseus</i>
	<i>Malleostemon tuberculatus</i>
	<i>Melaleuca halmaturorum</i>
	<i>Melaleuca hamata</i>
	<i>Melaleuca leiocarpa</i> *
<i>Melaleuca phoidophylla</i>	
<i>Micromyrtus monotaxis</i> *	
<i>Thryptomene urceolaris</i>	
<i>Verticordia helmsii</i>	
Ophioglossaceae	<i>Ophioglossum lusitanicum</i> *
Orchidaceae	<i>Cyanicula amplexans</i>
	<i>Prasophyllum gracile</i> *
	<i>Pterostylis nana</i>
	<i>Thelymitra petrophila</i>
Orobanchaceae	<i>Parentucellia latifolia</i> ^ *
Oxalidaceae	<i>Oxalis perennans</i>
Phrymaceae	<i>Glossostigma diandrum</i>
	<i>Glossostigma drummondii</i> *

Flowering Plants	
Family	Species
Pittosporaceae	<i>Bursaria occidentalis</i>
	<i>Pittosporum angustifolium</i>
Plantaginaceae	<i>Plantago debilis</i> *
	<i>Plantago turrifera</i> *
Poaceae	<i>Aristida contorta</i>
	<i>Rytidosperma caespitosum</i> *
	<i>Austrostipa elegantissima</i>
	<i>Austrostipa eremophila</i> *
	<i>Austrostipa nitida</i> *
	<i>Austrostipa platychaeta</i>
	<i>Austrostipa scabra</i>
	<i>Austrostipa tuckeri</i>
	<i>Chloris truncata</i>
	<i>Enneapogon avenaceus</i>
	<i>Enneapogon caerulescens</i> *
	<i>Eragrostis ?xerophila</i> *
	<i>Eragrostis dielsii</i>
	<i>Eragrostis falcata</i> *
	<i>Eragrostis lacunaria</i>
	<i>Eriachne flaccida</i> *
	<i>Eriachne ovata</i>
	<i>Eriachne pulchella</i>
	<i>Monachather paradoxus</i> *
	<i>Paspalidium ?clementii</i> *
	<i>Paspalidium constrictum</i>
	<i>Pentameris airoides</i> ^ *
	<i>Rostraria pumila</i> ^ *
<i>Schismus barbatus</i> ^ *	
<i>Themeda triandra</i> *	
<i>Triodia desertorum</i>	
<i>Triodia rigidissima</i> *	
<i>Triodia scariosa</i> *	
<i>Triodia tomentosa</i> *	
Polygalaceae	<i>Comesperma spinosum</i> *
Polygonaceae	<i>Emex australis</i> ^
	<i>Muehlenbeckia florulenta</i> *
	<i>Polygonum plebeium</i> *

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Flowering Plants	
Family	Species
Portulacaceae	<i>Calandrinia calyptрата</i> *
	<i>Calandrinia eremaea</i> *
	<i>Calandrinia granulifera</i> *
	<i>Calandrinia porifera</i> *
	<i>Calandrinia ptychosperma</i>
	<i>Calandrinia pumila</i>
	<i>Calandrinia hortiorum</i> *
Potamogetonaceae	<i>Lepilaena australis</i>
Primulaceae	<i>Lysimachia arvensis</i> ^
Proteaceae	<i>Banksia elderiana</i> *
	<i>Conospermum stoechadis</i> subsp. <i>stoechadis</i> *
	<i>Grevillea acacioides</i>
	<i>Grevillea acuaria</i>
	<i>Grevillea didymobotrya</i> subsp. <i>didymobotrya</i> *
	<i>Grevillea excelsior</i> *
	<i>Grevillea georgeana</i> *
	<i>Grevillea hookeriana</i> *
	<i>Grevillea juncifolia</i> *
	<i>Grevillea nematophylla</i> subsp. <i>nematophylla</i>
	<i>Grevillea oligomera</i>
	<i>Grevillea paradoxa</i> *
	<i>Grevillea teretifolia</i> *
	<i>Hakea francisiana</i>
	<i>Hakea lorea</i> subsp. <i>lorea</i>
	<i>Hakea minyma</i>
	<i>Hakea preissii</i> *
	<i>Hakea recurva</i>
	<i>Hakea recurva</i> subsp. <i>recurva</i>
	<i>Persoonia ?helix</i> *
<i>Persoonia coriacea</i> *	
Restionaceae	<i>Lepidobolus preissianus</i> subsp. <i>volubilis</i> *
	<i>Cryptandra aridicola</i>
	<i>Granitites intangendus</i>
	<i>Stenanthemum stipulosum</i> *



Phebalium canaliculatum, K. Gillespie © Copyright, Department of the Environment

Flowering Plants	
Family	Species
Rubiaceae	<i>Synaptantha tillaeacea</i> var. <i>tillaeacea</i> *
Rutaceae	<i>Boronia ternata</i> var. <i>ternata</i> *
	<i>Phebalium canaliculatum</i>
	<i>Phebalium filifolium</i> *
	<i>Phebalium megaphyllum</i>
	<i>Phebalium tuberosum</i> x <i>megaphyllum</i> *
	<i>Philotheca brucei</i> subsp. <i>brucei</i> *
	<i>Philotheca tomentella</i>
Santalaceae	<i>Exocarpos aphyllus</i>
	<i>Santalum acuminatum</i> *
	<i>Santalum spicatum</i>
Sapindaceae	<i>Alectryon oleifolius</i>
	<i>Dodonaea adenophora</i>
	<i>Dodonaea amblyophylla</i> *
	<i>Dodonaea lobulata</i>
	<i>Dodonaea rigida</i> *
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i> *
	Scrophulariaceae
<i>Eremophila clarkei</i> *	
<i>Eremophila clavata</i> *	
<i>Eremophila decipiens</i> subsp. <i>decipiens</i> *	
<i>Eremophila deserti</i> *	
<i>Eremophila eriocalyx</i> *	
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	



Flowering Plants	
Family	Species
Scrophulariaceae	<i>Eremophila gibbosa</i>
	<i>Eremophila glabra</i> subsp. <i>glabra</i>
	<i>Eremophila granitica</i>
	<i>Eremophila interstans</i> subsp. <i>interstans</i> *
	<i>Eremophila interstans</i> subsp. <i>virgata</i>
	<i>Eremophila ionantha</i> *
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> *
	<i>Eremophila longifolia</i>
	<i>Eremophila maculata</i> subsp. <i>brevifolia</i>
	<i>Eremophila metallicorum</i>
	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>
	<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> *
	<i>Eremophila scoparia</i> *
	<i>Eremophila serrulata</i> *
	<i>Eremophila</i> sp. Mt Jackson (G.J.Keighery 4372)

Flowering Plants	
Family	Species
Solanaceae	<i>Duboisia hopwoodii</i> *
	<i>Lycium australe</i>
	<i>Nicotiana goodspeedii</i> *
	<i>Solanum ellipticum</i> *
	<i>Solanum hoplopetalum</i>
	<i>Solanum lasiophyllum</i>
	<i>Solanum nigrum</i> ^
	<i>Solanum nummularium</i>
	<i>Solanum orbiculatum</i> subsp. <i>orbiculatum</i> *
Stylidiaceae	<i>Levenhookia dubia</i> *
	<i>Levenhookia leptantha</i> *
	<i>Stylidium arenicola</i> *
	<i>Stylidium dielsianum</i> *
Thymelaeaceae	<i>Pimelea aeruginosa</i> *
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>
Urticaceae	<i>Parietaria cardiostegia</i> *
Zygophyllaceae	<i>Zygophyllum aurantiacum</i> *
	<i>Zygophyllum billardierei</i>
	<i>Zygophyllum eremaeum</i>
	<i>Zygophyllum tetrapterum</i> *



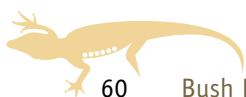
Solanaceae sp., K. Gillespie © Copyright, Department of the Environment

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The liverwort *Fossombronia intestinalis* © Copyright, Katrina Syme

Conifers	
Family	Species
Cupressaceae	<i>Callitris canescens</i> *
	<i>Callitris columellaris</i> *
	<i>Callitris preissii</i>

Ferns	
Family	Species
Marsileaceae	<i>Marsilea hirsuta</i>
	<i>Marsilea</i> sp. (NG & MAL 5080) *
Pteridaceae	<i>Cheilanthes lasiophylla</i> *
	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> *

Fern Allies	
Family	Species
Isoetaceae	<i>Isoetes muelleri</i> *

Liverworts	
Family	Species
Aytoniaceae	<i>Asterella drummondii</i> *
Fossombroniaceae	<i>Fossombronia intestinalis</i> *
	<i>Fossombronia</i> sp. (KS2730) *
	<i>Fossombronia</i> sp. (KS2731) *
	<i>Fossombronia</i> sp. (KS2736) *
Ricciaceae	<i>Riccia bifurca</i> *
	<i>Riccia</i> cf. <i>albida</i> *
	<i>Riccia</i> cf. <i>limbata</i> *
	<i>Riccia crinita</i> *
	<i>Riccia lamellosa</i> *
	<i>Riccia nigrella</i> *
	<i>Riccia</i> sp. (KS2643) *
<i>Riccia</i> sp. (KS2662) *	



The hornwort *Phaeoceros* sp. © Copyright, Katrina Syme

Hornworts	
Family	Species
Anthocerotaceae	<i>Phaeoceros</i> sp. *

Mosses	
Family	Species
Bryaceae	<i>Bryum</i> sp. (KS2641) *
Ditrichaceae	<i>Eccremidium arcuatum</i> *
Funariaceae	<i>Funaria</i> sp. (KS2680a) *
Gemmabryum	<i>Gemmabryum pachythea</i> *
Gigaspermaceae	<i>Gigaspermum repens</i> *
Grimmaceae	<i>Grimmia laevigata</i> *
Pottiaceae	<i>Didymodon</i> sp.? (KS2754) *
	<i>Goniomitrium acuminatum</i> subsp. <i>enerve</i> *
	<i>Phascopsis rubicunda</i> *
	<i>Stonea oleaginosa</i> *
	<i>Tortula atrovirens</i> *
	<i>Tortula</i> sp. (KS2693) *



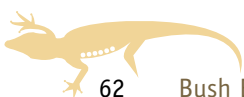
The moss *Tortula* sp. (KS2693) © Copyright, Katrina Syme

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The lichen *Xanthoparmelia reptans* © Copyright, Katrina Syme

Lichens	
Family	Species
Acarosporaceae	<i>Acarospora citrina</i> *
	<i>Acarospora smaragdula</i> *
Candelariaceae	<i>Candelariella</i> sp. *
Cladoniaceae	<i>Cladia beaugleholei</i> *
	<i>Cladia muelleri</i> *
Collemataceae	<i>Collema coccophorum</i> *
Graphidaceae	<i>Diploschistes ocellatus</i> *
	<i>Diploschistes thunbergianus</i> *
Haematommataceae	<i>Haematomma eremaeum</i> *
Icmadophilaceae	<i>Siphula coriacea</i> *
Lecanoraceae	<i>Ramboldia stuartii</i> *
Lecideaceae	<i>Lecidea</i> sp. *
Lichinaceae	<i>Ephebe lanata</i> *
Megasporeaceae	<i>Aspicilia calcarea</i> *
	<i>Aspicilia contorta</i> *
Mycoblastaceae	<i>Tephromela alectoronica</i> *
Ochrolechiaceae	<i>Ochrolechia</i> sp. aff. <i>subathallina</i> *

Lichens	
Family	Species
Parmeliaceae	<i>Austroparmelina conlabrosa</i> *
	<i>Austroparmelina subarida</i> *
	<i>Flavoparmelia rutidota</i> *
	<i>Xanthoparmelia congensis</i> *
	<i>Xanthoparmelia pustuliza</i> *
	<i>Xanthoparmelia reptans</i> *
	<i>Xanthoparmelia semiviridis</i> *
	<i>Xanthoparmelia</i> sp. *
	<i>Xanthoparmelia subbarbatica</i> *
<i>Xanthoparmelia verrucella</i> *	
Physciaceae	<i>Buellia albula</i> *
	<i>Buellia georgei</i> *
	<i>Physcia</i> sp. *
Psoraceae	<i>Psora crystallifera</i> *
	<i>Psora decipiens</i> *
Ramalinaceae	<i>Toninia</i> sp. aff. <i>australis</i> *
Stereocaulaceae	<i>Lepraria dibenzofuranica</i> *
	<i>Lepraria squamatica</i> *
Teloschistaceae	<i>Caloplaca</i> sp. *
	<i>Caloplaca</i> sp. aff. <i>scarlatina</i> *
	<i>Fulgensia</i> sp. *
Verrucariaceae	<i>Endocarpon helmsianum</i> *
	<i>Endocarpon macrosporum</i> *
	<i>Endocarpon simplicatum</i> *
	<i>Endocarpon</i> sp. aff. <i>helmsianum</i> *
	<i>Placidium lacinulatum</i> *
<i>Verrucaria</i> sp. *	



The lichen *Xanthoparmelia reptans* © Copyright, Katrina Syme



Fungi	
Family	Species
Agaricaceae	<i>Agaricus</i> sp. *
Aleurodiscaceae	<i>Aleurodiscus</i> sp. *
Ascodesmidaceae	<i>Lasiobolus</i> sp. *
Boletaceae	<i>Boletus</i> sp. *
Coprinaceae	<i>Coprinus</i> sp. *
Coriolaceae	<i>Pycnoporus coccineus</i> *
Delitschiaceae	<i>Delitschia</i> sp. *
Dermateaceae	<i>Diplocarpon</i> cf. <i>rosae</i> *
Geastraceae	<i>Geastrum</i> sp. (KS2646) *
	<i>Geastrum</i> sp. (KS2712) *
Hyphodermataceae	<i>Grandinia</i> sp. *
Hypocreaceae	<i>Hypocrea</i> sp. *
	<i>Hypomyces chrysospermus</i> *
Lycoperdaceae	<i>Lycoperdon</i> sp. (KS2633) *
	<i>Lycoperdon</i> sp. (KS2646) *
Nidulariaceae	<i>Cyathus</i> sp. *
	<i>Nidularia</i> sp. *
Pezizaceae	<i>Iodophanus carneus</i> *
	<i>Peziza</i> sp. *
	<i>Peziza</i> sp. aff. <i>tenacella</i> *
Phelloriniaceae	<i>Phellorinia herculeana</i> *
Podaxaceae	<i>Montagnea arenaria</i> *
	<i>Podaxis pistillaris</i> *



Montagnea arenaria © Copyright, Katrina Syme

- Key
- * = New record for this reserve
 - ^ = Exotic/Pest
 - # = EPBC listed
 - ~ = WC listed

Fungi	
Family	Species
Sclerodermataceae	<i>Pisolithus</i> sp. (sequestrate) *
	<i>Pisolithus</i> sp. *
	<i>Scleroderma</i> sp. (sequestrate) *
Sordariaceae	<i>Sordaria</i> sp. *
Sporormiaceae	<i>Sporormiella octomera</i> *
Strophariaceae	<i>Psilocybe musci</i> *
Tricholomataceae	<i>Micromphale</i> sp. aff. <i>australiense</i> *
Tulostomataceae	<i>Tulostoma</i> sp. *

Slime Moulds	
Family	Species
Myxomycete	Myxomycete sp. (KS2770) *



A green algae (*Oedogonium* sp.) was collected from this gnamma at Ularring Rock
© Copyright, Katrina Syme

Green Algae	
Family	Species
Characeae	<i>Chara</i> sp. (NG & EMS 4675)
Oedogoniaceae	<i>Oedogonium</i> sp. *

Colour coding for entries:

- Black = Previously recorded on the reserve and found on this survey
- Brown** = Putative new species
- Blue = Previously recorded on the reserve but not found on this survey





Appendix B: Threatened Species

Nomenclature and taxonomy used in this appendix are consistent with that from the Australian Faunal Directory (AFD), the Australian Plant Name Index (APNI) and the Australian Plant Census (APC).

Current at May 2014

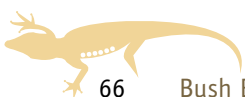


Fauna

Vertebrates

Birds			
Family	Species	Common name	Status
Megapodiidae	<i>Leipoa ocellata</i>	Malleefowl	EPBC—Vulnerable WCA—Rare or likely to become extinct

- EPBC = Refers to the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
WCA = Refers to the *Wildlife Conservation Act 1950* (Western Australia)
WC(PIF)N = Refers to the *Wildlife Conservation (Protected Invertebrate Fauna) Notice*
* = New record for this reserve
Black = Previously recorded on the reserve and found on this survey
Blue = Previously recorded on the reserve but not found on this survey





Invertebrates

Beetles		
Family	Species	Status
Buprestidae	<i>Castiarina acuticeps</i>	WC(PIF)N—Protected
	<i>Castiarina aeraticollis</i>	WC(PIF)N—Protected
	<i>Castiarina bakeri</i>	WC(PIF)N—Protected
	<i>Castiarina pallidiventris</i>	WC(PIF)N—Protected
	<i>Castiarina</i> sp. *	WC(PIF)N—Protected
	<i>Castiarina recta</i>	WC(PIF)N—Protected
	<i>Castiarina rufolimbata</i> *	WC(PIF)N—Protected
	<i>Castiarina subacuticeps</i>	WC(PIF)N—Protected
	<i>Chalcophorotaenia martinii</i>	WC(PIF)N—Protected
	<i>Diadoxus regius</i>	WC(PIF)N—Protected
	<i>Melobasis</i> sp.	WC(PIF)N—Protected
	<i>Merimna</i> sp.	WC(PIF)N—Protected
	<i>Pseudotaenia gigas</i>	WC(PIF)N—Protected
	<i>Temognatha pascoei</i>	WC(PIF)N—Protected



Castiarina rufolimbata © Copyright, Shawn Fox



Wurmbea murchisoniana dominated the vegetation of an ephemeral wetland at Ullaring Rock, K. Gillespie © Copyright, Department of the Environment



Flora

Flowering Plants			
Family	Species	Common name	Status
Asteraceae	<i>Gnephosis intonsa</i> *	–	P1—Poorly-known taxa
Brassicaceae	<i>Lepidium fasciculatum</i> *	Bundled Peppergrass	P3—Poorly-known taxa
Chenopodiaceae	<i>Atriplex lindleyi</i> subsp. <i>conduplicata</i>	Baldoo	P3—Poorly-known taxa
Colchicaceae	<i>Wurmbea murchisoniana</i>	–	P4—Rare, near threatened or in need of monitoring
Goodeniaceae	<i>Goodenia ?berringbinensis</i> *	–	P4—Rare, near threatened or in need of monitoring
Proteaceae	<i>Grevillea georgeana</i> *	–	P3—Poorly-known taxa

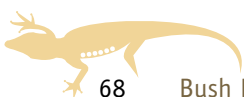
P1–P4 = Are priority taxa within WA.

P1–P3 = Are poorly known, do not meet adequacy of survey requirements for listing as threatened taxa, but appear under threat, or could be affected by known threatening processes.

P3 = Poorly-known taxa.

P4 = Rare, Near Threatened and other taxa in need of monitoring.

For more information see: http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Conservation_code_definitions.pdf





Appendix C: Exotic and Pest Species

Nomenclature and taxonomy used in this appendix are consistent with that from the Australian Faunal Directory (AFD), the Australian Plant Name Index (APNI) and the Australian Plant Census (APC).

Current at May 2014



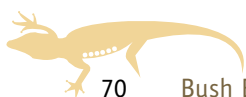
Fauna

Vertebrates

Mammals		
Family	Species	Common name
Bovidae	<i>Capra hircus</i>	Goat
Camelidae	<i>Camelus dromedarius</i>	Dromedary, One-humped Camel
Canidae	<i>Canis familiaris</i>	Domestic Dog
	<i>Vulpes vulpes</i>	Fox, Red Fox
Felidae	<i>Felis catus</i>	Cat
Leporidae	<i>Oryctolagus cuniculus</i>	Rabbit
Muridae	<i>Mus musculus</i>	House Mouse



House Mice (*Mus musculus*) were the most abundant mammal species recorded through the use of trapping © Copyright, Department of the Environment





Invertebrates

True Bugs		
Family	Species	Common name
Lygaeidae	<i>Nysius vinitor</i> *	Rutherglen Bug
Miridae	<i>Creontiades dilutus</i> *	Green Mirid
	<i>Nesidiocoris tenuis</i> *	Tomato Mirid

* = New record for this reserve



Flora



Common Sowthistle (*Sonchus oleraceus*) is a serious crop weed in some areas, but the leaves can be eaten as salad greens or cooked like spinach © Copyright shared, Department of the Environment and Colin G. Wilson

Flowering Plants

Family	Species	Common name
Aizoaceae	<i>Cleretum papulosum</i> subsp. <i>papulosum</i> *	—
Asteraceae	<i>Dittrichia graveolens</i>	Stinkwort
	<i>Hypochaeris glabra</i> *	Smooth Catsear
	<i>Sonchus oleraceus</i> *	Common Sowthistle
Brassicaceae	<i>Carrichtera annua</i>	Ward's Weed
	<i>Sisymbrium irio</i> *	London Rocket
	<i>Sisymbrium orientale</i>	Indian Hedge Mustard
Convolvulaceae	<i>Cuscuta epithymum</i>	Lesser Dodder
	<i>Cuscuta planiflora</i> *	Small-seeded Alfalfa Dodder
Fabaceae	<i>Medicago minima</i>	Woolly Burr Medic
Geraniaceae	<i>Erodium aureum</i> *	—
	<i>Erodium cicutarium</i> *	Common Storksbill, Common Crowfoot
Lamiaceae	<i>Marrubium vulgare</i>	Horehound, White Horehound
	<i>Salvia verbenaca</i>	Wild Sage
Orobanchaceae	<i>Parentucellia latifolia</i> *	Red Bartsia, Common Bartsia
Poaceae	<i>Pentameris airoides</i> *	False Hair-grass
	<i>Rostraria pumila</i> *	Tiny Bristle Tail, Roughtail
	<i>Schismus barbatus</i> *	Arabian Grass
Polygonaceae	<i>Emex australis</i>	Spiny Emex, Three-cornered Jacks, Doublegee
Primulaceae	<i>Lysimachia arvensis</i>	Scarlet Pimpernel
Solanaceae	<i>Solanum nigrum</i>	Black Berry Nightshade, Black Nightshade

* = New record for this reserve

Blue = Previously recorded on the reserve but not found on this survey





Glossary



C

Cryptogam

A plant that reproduces by spores, without flowers or seeds. Includes bryophytes (hornworts, liverworts, mosses), lichens, fungi, slime moulds and algae.

G

Gnamma

A rock hole, capable of holding water, formed by weathering (Australian Aboriginal).

M

Macrofungi

Fungi that produce large fruiting bodies, i.e. those visible to the naked eye and generally one centimetre or more in width or height.

Monotype

A taxonomic group with a single member (a single species or genus).

Morphospecies

A group of individuals considered to belong to the same species on the grounds of morphology (physical features) alone.

P

Putative new species

A species that has been recognised by an expert as never having been named or described in the scientific literature. Note that specimens may already be in museum or herbarium collections.

S

Stygofauna

Animals that live in underground water, including crustaceans, worms, snails, insects, other invertebrate groups, and in Australia a blind fish and a newt.

T

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.

U

Undescribed taxon

A taxon (usually a species) that has not yet been formally described or named.



Home base, K. Gillespie © Copyright, Department of the Environment



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Bush Blitz survey report

Credo Station Reserve WA + 29 August–9 September 2011



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