

BushBlitz

SPECIES DISCOVERY PROGRAM



BUSH BLITZ SPECIES DISCOVERY PROGRAM



Neds Corner Station Victoria

22 November–2 December 2011



Australian Government



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resourcing the future



EARTHWATCH
INSTITUTE



Australian
Biological
Resources
Study

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



The Neds Corner Station Bush Blitz team © Copyright, Museum Victoria

An 11 day Bush Blitz was conducted at Neds Corner Station in Victoria during November and December of 2011. In total 884 species were identified, of which 720 had not been previously recorded in the reserve. Of the species recorded, 21 are putative species new to science: 3 moths, 4 true bugs, 13 spiders and 1 fungus.

Six animal species listed as threatened under the *Flora and Fauna Guarantee Act 1988* (FFG Act) of Victoria were recorded: Yellow-bellied Sheath-tail-Bat (*Saccolaimus flaviventris*), Eastern Great Egret (*Ardea modesta*), Diamond Dove (*Geopelia cuneata*), Apostlebird (*Struthidea cinerea*), Regent Parrot (*Polytelis anthopeplus*) and River Snail (*Notopala sublineata*). The eastern subspecies of the Regent Parrot is also listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Seventy-seven threatened plant species were recorded on Neds Corner Station, with the highest number found on sandy rises and in broad depressions that are flooded seasonally. Range extensions were documented for several moths, two species of true bug, and a number of vascular plants and fungi.

Fifty-five exotic or pest plants were documented. The Iceplant (*Mesembryanthemum guerichianum*), an introduced species found for the first time in Australia, was observed outside the reserve on the Sturt Highway between Merbein South and

Lake Cullulleraine (about 40 km from Neds Corner) while travelling *en route* to the survey. This species is not expected to become a significant threat and appeared to be localised along the roadside and in disturbed areas. The pest animals recorded were the House Mouse (*Mus musculus*), Red Fox (*Vulpes vulpes*), and Rabbit (*Oryctolagus cuniculus*) which were all abundant; a Cat (*Felis catus*); and a Brown Hare (*Lepus capensis*). Pest invertebrates included the Cabbage White Butterfly (*Pieris rapae*), 19 moth species and the Citrus Snail (*Microxeromagna lowei*).

Abbreviations

ANIC

Australian National Insect Collection

DEPI

Department of Environment and Primary Industries (Victoria)

EPBC Act

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

FFG Act

Flora and Fauna Guarantee Act 1988 (Victoria)

NRS

National Reserve System



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:

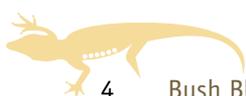
- + to promote, publicise and demonstrate the importance of taxonomy through species discovery;
- + to undertake a national species discovery program targeted at recently acquired properties of the National Reserve System of Australia;
- + to support the science of taxonomy in Australia through training students and early career researchers, the provision of grants for species description and resolution of taxonomically problematic, nationally important groups;
- + to promote partnerships between science, 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.

The Bush Blitz survey of Neds Corner Station was conducted from 22 November to 2 December 2011. The survey coincided with a period of ideal breeding conditions after nearly a decade of drought and severe flooding in 2010 and 2011.

Scientists from Museum Victoria, University of New South Wales, Queensland Museum, Monash University and Biodiversity Assessment and Management Pty Ltd surveyed the terrestrial vertebrate and invertebrate fauna of Neds Corner Station. Scientists from the National Herbarium of Victoria, La Trobe University and the Royal Botanic Gardens Melbourne surveyed the vascular plants, mosses, lichens and fungi.

The Australian Biological Resources Study provided overall leadership, planning and logistical coordination for this survey. BHP Billiton participants, coordinated by Earthwatch Australia, assisted scientists in the field. Station staff and the property managers, Peter and Colleen Barnes, provided invaluable local knowledge that greatly assisted the survey team. The naming of a new species of truffle found during the Bush Blitz after Peter and Colleen is a tribute to their passionate interest in the biodiversity at Neds Corner Station.

¹ The NRS is Australia's network of protected areas, covering 16.52% of the country—over 12.7 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 27 May 2014.



Reserve Overview²



Neds Corner Station

Trust for Nature

Date of purchase

2002

Area

30,000 ha

Description

Neds Corner Station is located in the north-western corner of Victoria, within the semi-arid Murray Darling Depression bioregion. The 30,000 ha reserve stretches 35 km along the Murray River and has been used largely for cattle and sheep grazing since the 1850s. In 2002, Neds Corner Station was purchased by Trust for Nature and became part of the National Reserve System. It is the largest privately-owned conservation reserve in Victoria.

Since the land was destocked in 2002, Trust for Nature has been restoring the native habitats of Neds Corner Station through revegetation and eradication of invasive mammals. Many of the fences have been removed to allow native animals to move across the landscape. Photographic evidence shows the remarkable increase in vegetation cover since the removal of stock, and particularly efforts to control rabbits and minimise the damage they cause.³

National Reserve System conservation values

Neds Corner Station includes six major vegetation communities (Red Gum Floodplain Forest, Black Box Floodplain Woodland, Semi-arid Woodlands, Chenopod Shrublands, Lignum Shrublands and Wetlands, and Mallee Woodlands).

The reserve is part of a chain of protected areas linking the Murray Sunset National Park to the west and Lake Cullulleraine State Forest to the east, with the Wangumma State Forest on the opposite side of the Murray River extending to Lake Victoria in New South Wales. Neds Corner Station lies where the arid and semi-arid climatic zones meet. The reserve provides refugia for threatened fauna and especially flora, including the Tall Sneezewood (*Centipeda pleiocephala*) which was listed as extinct in Victoria until rediscovered on Neds Corner Station in 2003.

² Information from the NRS applications and assessments.

³ Neds Corner Station: Conserving the Mighty Murray <<http://www.environment.gov.au/topics/land/nrs/case-studies/vic/neds-corner-station>>, accessed 28 April 2014.



River Redgum (*Eucalyptus camaldulensis*) line the banks of the Murray River at Neds Corner, M. Norman
© Copyright, Museum Victoria



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 constraints. Site locations were recorded using global positioning systems.

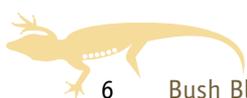
A number of taxonomic groups were identified as targets for study. Table 1 lists the groups surveyed and the specialists who undertook the fieldwork.



Pitfall traps with mesh netting to guide small reptiles and mammals into the traps. Peter Lillywhite checks for any captures, M. Norman © Copyright, Museum Victoria

Table 1: Taxonomic groups surveyed and personnel

Group	Common names	Expert	Affiliation
Vertebrates	Mammals, Birds, Reptiles and Frogs	Karen Roberts, Karen Rowe, Wayne Longmore, Jane Melville	Museum Victoria
		Andrew O'Grady	Museum Victoria Associate
Lepidoptera	Butterflies and Moths	Marilyn Hewish, Dean Hewish, Kennedy Harris, Grace Lewis	Entomological Society of Victoria/ Museum Victoria Associate
Terrestrial Invertebrates	Terrestrial Invertebrates	Peter Lillywhite, Simon Hinkley, Patrick Honan, Chloe Miller	Museum Victoria
		Joshua Grubb	Monash University
Coleoptera (Carabidae)	Ground Beetles	Martin Baehr (identification)	Zoologische Staatssammlung München
Heteroptera	True Bugs	Marina Cheng	University of New South Wales
Araneae	Spiders	Barbara Baehr	Queensland Museum
Terrestrial Gastropods	Snails and Slugs	Chris Rowley, Adnan Moussalli	Museum Victoria
		John Stanisic	Biodiversity Assessment and Management Pty Ltd
Vascular Plants	Vascular Plants	Val Stajsic	National Herbarium of Victoria
		Andre Messina	La Trobe University/ National Herbarium Victoria
		David Albrecht	Royal Botanic Gardens Melbourne
Bryophytes	Mosses and Liverworts	Val Stajsic	National Herbarium of Victoria
Lichenised Fungi	Lichens	Val Stajsic	National Herbarium of Victoria
Fungi	Fungi	Teresa Lebel	National Herbarium of Victoria





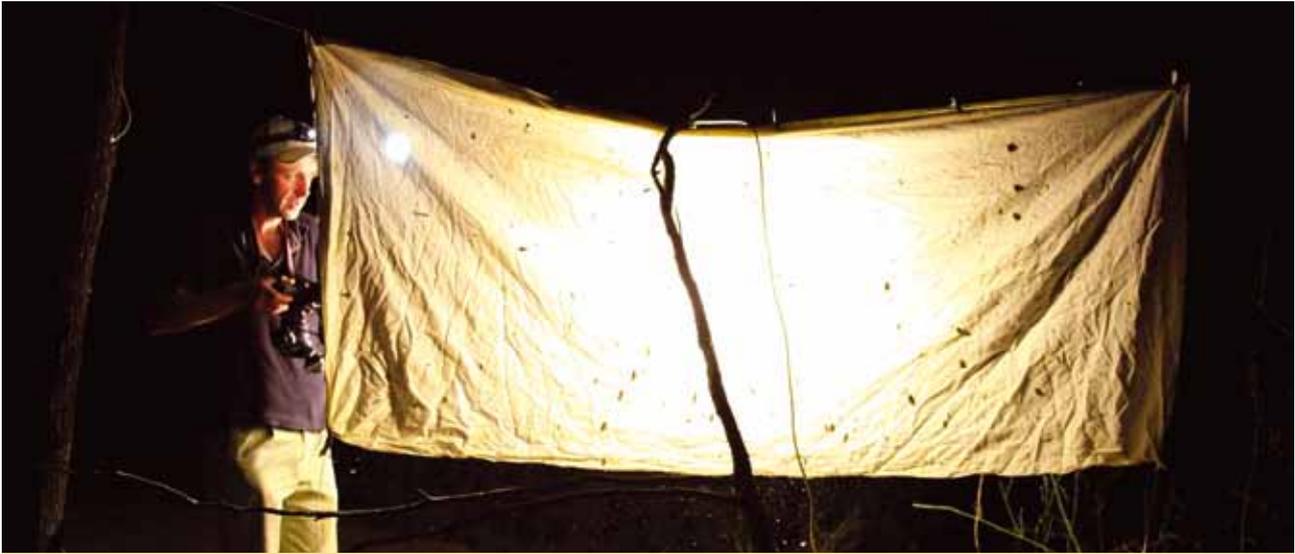
A small mammal trap, M. Norman © Copyright, Museum Victoria

Table 2: Other team functions and personnel

Role	Personnel	Affiliation
Museum Victoria Team Leader	Mark Norman	Museum Victoria
Photography	David Paul	Museum Victoria
Field Assistants	Colin Burns, Luke Durber, Martina Ripcke, Paul Simper, Ceidwen Pengelly	BHP Billiton

A standard suite of survey techniques was used:

- + Mammals were surveyed using live trapping, observation (including spotlight surveys), acoustic recording (for bats), and other evidence-based detections, such as scats, tracks and opportunistic sightings. Live trapping was done with Sherman metal traps and wire cage traps. Twenty litre pitfall traps along fibreglass mesh drift fences were also employed.
- + Auditory surveys for the ultrasonic calls of bats were conducted using an Anabat recorder with an external microphone. Data were then imported into AnaScheme software, an automated bat-call identification program. Calls were compared to a regionally-specific key developed by Lindy Lumsden at the Arthur Rylah Institute, Department of Environment and Primary Industries (DEPI), Victoria.
- + Birds were surveyed by a series of walks through selected sites, noting species seen or heard. Additional information on breeding and behaviour was also recorded.
- + Reptiles and amphibians were surveyed using direct searches during the day and capture in pitfall traps. Direct searches were undertaken at each site for a minimum of four person hours and entailed turning over rocks and other cover, raking leaf litter and searching under loose bark, followed by hand capture or noosing. Opportunistic observations made by all team members were also recorded.
- + Terrestrial invertebrates were surveyed using coffee cup pitfall traps, 20 L bucket pitfall traps, light traps and malaise traps. Invertebrates were also collected opportunistically from pitfall traps that were set up for small mammals and reptiles. Malaise traps were placed across likely invertebrate flight paths to attract and collect flying invertebrates. Light trapping was used to attract nocturnal insects. Incidental records were obtained for ground beetles and other terrestrial invertebrates that were captured in the pitfall traps and found opportunistically during searches for target groups.
- + Butterflies and moths were surveyed using light traps (a mercury vapour light shining on a vertical white sheet), which were checked through the night and early morning. By day, butterflies and a few resting moths were photographed or collected opportunistically.

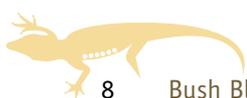


Collecting moths at the light trap, M. Norman © Copyright, Museum Victoria

- + True bugs were surveyed using beat sampling and leaf litter sorting. Beat sampling involved holding a net or beating tray under vegetation and beating the vegetation with a stick. Leaf litter sorting involved collecting and bagging litter samples from under trees and shrubs, and sorting the samples in the evenings at base camp. A few representative specimens of true bug species were preserved in 100% ethanol to be used in DNA analysis.
- + Spiders were surveyed using 10 pitfall traps at each of 12 sites. The traps were filled with salt water as the alcohol initially used evaporated too quickly.
- + Snails and slugs were surveyed by direct searches that involved collection by hand from under woody debris and bark on trees, and turning over dead and rotting logs. Non-targeted collecting included 'by-catch' from pitfall traps and opportunistic collections by non-mollusc teams. Both live and dead shells were taken. The great majority of land snails can be identified from shells alone and their presence usually indicates the presence of living individuals. Consequently, leaf litter collection and sorting for shells was employed to recover dead shells.

- + Vascular flora and cryptogam specimens were collected at each site during a 'walk through' and pressed and dried. Truffle-like fungi were collected by raking leaf litter and soil to a depth of 2-4 cm, from small areas across a variety of microhabitats. Mushroom-like fungi were collected from surfaces including soil, bark and woody debris. Colour, size and shape of fruiting bodies were described while fresh. The fruit bodies were then air-dried in a forced-air dehydrator and stored for further examination.

Animal specimens were lodged with Museum Victoria and the Queensland Museum, and plant specimens were lodged with the National Herbarium of Victoria. Final species lists were compiled using the results of this Bush Blitz and data provided by the Australian Natural Heritage Assessment Tool.

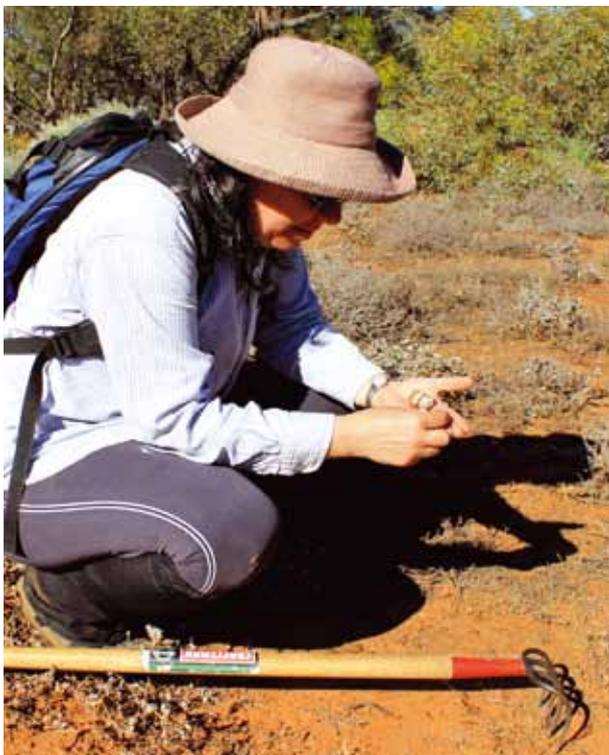




Results

The locational data of collected and observed specimens are available to reserve managers. A total of 720 species were added to those known across the reserves and 21 putative species new to science were discovered—these await assessment. Sixteen threatened animal species were identified, eight of which are new records for the reserve, and 77 threatened flowering plants were identified, 61 of which are new records for the reserve. Twenty-eight exotic or pest animals and 54 weed species were also identified.

The bat identification from echo-location calls awaits verification and should be considered preliminary at this stage.



Teresa Lebel has just raked up a new species of underground fungi (truffle) (*Agaricus colpeteii* n. sp.), B. Baehr © Copyright, Queensland Museum

Species Lists

Appendix A provides full, updated species lists for the reserve. Names in **brown bold text** are putative new species. Species marked with an asterisk (*) have not been previously recorded in the reserve. Those without an asterisk have been recorded previously and were identified again during this survey. Species shown in **blue text** were not recorded on this survey, but are known from previous studies. Table 3 provides a summary of the number of new flora and fauna records and putative new species for the reserve.

Thousands of invertebrate specimens were collected during this survey. The species lists in this report include only the core taxa collected for the Bush Blitz program, as well as other specimens that have been identified to at least family level. Some specimens have been identified only to order. This is because a great deal of time is required to examine and identify to species level the many collections that have been generated. In the majority of cases, microscopic examination of the material is necessary. Additional limitations are 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 taxonomy used in this report are consistent with the Australian Faunal Directory, Australian Plant Name Index, Australian Plant Census, Checklist of the Lichens of Australia and its Island Territories, AusMoss, and Checklist of Australian Liverworts and Hornworts.



Table 3: 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	32	12	0
Aves	Birds	137	19	0
Reptilia	Reptiles	26	3	0
Amphibia	Frogs	7	2	0
Hymenoptera	Bees and Wasps	12	12	0
Hymenoptera	Ants	9	8	0
Lepidoptera	Butterflies	5	5	0
Lepidoptera	Moths	166	164	3
Diptera	Flies	17	17	0
Coleoptera	Beetles	59	59	0
Neuroptera	Antlions and Lacewings	3	3	0
Heteroptera	True Bugs	48	47	4
Hemiptera	Planthoppers	1	1	0
Hemiptera	Horned Treehoppers	1	1	0
Hemiptera	Cicadas	1	1	0
Blattodea	Cockroaches	3	3	0
Mantodea	Praying Mantises	1	1	0
Orthoptera	Crickets, Mole Crickets, Grasshoppers and Katydid	8	8	0
Odonata	Dragonflies	2	0	0
Araneae	Spiders	31	31	13
Gastropoda	Snails and Slugs	12	9	0
Bivalvia	Bivalves	1	0	0
Flowering Plants	Flowering Plants	315	252	0
Conifers	Conifers	1	1	0
Ferns	Ferns	2	2	0
Bryophytes	Liverworts	2	2	0
Bryophytes	Mosses	2	2	0
Lichenised Fungi	Lichens	16	16	0
Fungi	Fungi	38	38	1
Slime Moulds	Slime Moulds	1	1	0
TOTALS		959	720	21





Threatened Species

Appendix B gives the threatened species listed under the EPBC and FFG Acts recorded from the reserve. A summary of threatened species identified during the survey is provided in Table 4.

Table 4: Summary of threatened species identified

Group	Total number of species	Species new to reserve
Fauna	16	7
Flora	77	59

Exotic and Pest Species

Appendix C lists the exotic and pest species known from the reserve. A summary of exotic and pest species identified during the study is provided in Table 5.

Table 5: Summary of exotic and pest species identified

Group	Total number of species	Species new to reserve
Fauna	28	23
Flora	54	54



The grey-green saltbush and bright orange-red soils make a beautiful contrast, M. Norman © Copyright, Museum Victoria



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 many undescribed species 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 discovered is provided in Table 6.

Table 6: Putative new species by group

Group	Common name	Putative new species
Lepidoptera	Moths	3
Heteroptera	True Bugs	4
Araneae	Spiders	13
Fungi	Fungi	1



This handsome female Grey Wolf Spider, a new undescribed genus of Lycosidae (n. gen. n. sp. 19), looks curiously at the camera, P. Honan © Copyright, Museum Victoria



The beautifully constructed burrow "front door" of a new species of Grey Wolf Spider (Lycosidae n. gen. n. sp. 19), M. Norman © Copyright, Museum Victoria

Spiders

Thirteen of the 31 spider species identified are putatively new to science and two were previously only known from male holotypes. The discovery of three new genera and 13 new species of spider from Neds Corner Station is not surprising, as comprehensive revisions of ground dwelling spiders over recent years have uncovered a considerable diversity of new taxa in many families.^{4 5}

The new *Aname* n. sp. 02 is an ancient mygalomorph wishbone spider⁶ (Nemesiidae). *Aname* is endemic to Australia; species in this genus prefer dry open country and occur throughout much of Australia, mostly inland.

Seven new swift spiders (Corinnidae) in four genera were identified. One of the genera is thought to be new to science. Five of the species are ant-mimics, while the other two (belonging to the genus *Supunna*) are thought to mimic wasps. All are fast, diurnal hunters.

- 4 Baehr, B. C., Harvey, M. S., & Smith, H. M. 2010, 'The Goblin Spiders of the New Endemic Australian Genus *Cavisternum* (Araneae: Oonopidae)', *American Museum Novitates* **3684**: 1–40.
- 5 Baehr, B. C. & Smith H. M. 2008, 'Three new species of the Australian orsolobid spider genus *Hickmanolobus* (Araneae: Orsolobidae)', *Records of the Western Australian Museum* **24**(4): 325–336.
- 6 So called for their Y-shaped open silk-lined burrow, with one section shorter than the other. Only the longer part reaches the surface, the shorter part is assumed to provide an air pocket to allow the spider to survive flooding.





Fungi

A new species of truffle-like fungi, *Agaricus* n. sp., was discovered during the survey. It has been named *A. colpeteii* in honour of the reserve managers, Colleen and Peter Barnes.⁷

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 and 93% of reptiles 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

The Yellow-bellied Sheath-tail-Bat (*Saccolaimus flaviventris*) was detected at multiple sites during this survey. It is listed as threatened under the FFG Act and data deficient under the DEPI advisory list. The Paucident Planigale (*Planigale gilesi*) was found in 2004 during an intensive rapid assessment by La Trobe University,⁹ but it was not found during the current survey. Possibly the recent heavy rain and flooding across Neds Corner Station had a negative impact on this species, which commonly

retreats to fissures and cracks in the clay soil. It is listed as threatened under the FFG Act and near threatened under the DEPI advisory list.

Although it was not encountered during this survey, remains of the Bridled Nailtail Wallaby (*Onychogalea fraenata*), thought to be extinct in Victoria for well over 100 years, were identified in fox scat during the 2004 rapid assessment. It is classified as endangered under the EPBC Act and DEPI advisory list, and threatened under the FFG Act. This once common and widespread species is now confined to just two small populations in the wild. Neds Corner Station may be a third, but further evidence is required for confirmation.

Nine birds listed in the FFG Act or the DEPI advisory list as threatened or near threatened were identified during the survey: Eastern Great Egret (*Ardea modesta*), Hardhead (*Aythya australis*), Diamond Dove (*Geopelia cuneata*), Apostlebird (*Struthidea cinerea*), Regent Parrot (*Polytelis anthopeplus*), Spotted Harrier (*Circus assimilis*), Emu (*Dromaius novaehollandiae*), Pied Cormorant (*Phalacrocorax varius*) and Little Button-quail (*Turnix velox*). The eastern subspecies of the Regent Parrot is also listed as vulnerable under the EPBC Act. A reported sighting of the Plains-wanderer (*Pedionomus torquatus*) in the central herbfield/chenopod area¹⁰ requires verification. This species is listed as vulnerable under the EPBC Act and threatened under the FFG Act. Neds Corner Station appears to have suitable habitat for this species, as the vegetation is similar if not identical to that associated with the Plains-wanderer elsewhere in its range. Neds Corner Station might contain habitat important to the continued survival of this species.

7 Lebel, T. 2013, 'Two new species of sequestrate *Agaricus* (section *Minores*) from Australia', *Mycological Progress* **12**(4): 699–707.

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

9 Clarke, M. F. ed. 2004, A survey of the fauna of Neds Corner Station. Results of an expedition by ecologists from La Trobe University and Trust for Nature 25th September to 2nd October 2004, La Trobe University, Department of Zoology, 44 pp.

10 pers. comm. Peter Barnes.



The Lace Monitor (*Varanus varius*) recorded during the survey is listed as endangered on the DEPI advisory list. The River Snail (*Notopala sublineata*), listed as threatened under the FFG Act and the DEPI advisory list, was also identified.

Seventy-seven threatened flora species were recorded, with the highest number found on sandy rises and in seasonally flooded broad depressions.



Murray Lily (*Crinum flaccidum*), M. Fagg © Copyright, Australian National Botanic Gardens (Australian Plant Image Index www.anbg.gov.au/photo)

Healthy populations were found of the threatened Desert Lantern (*Abutilon otocarpum*), Murray Lily (*Crinum flaccidum*), Bundled Peppercross (*Lepidium fasciculatum*), Peppercross (*Lepidium pseudoxyssopifolium*), Lagoon Spurge (*Phyllanthus lacunarius*), Squat Picris (*Picris squarrosa*), Shiny Dock (*Rumex crystallinus*), Green Copperburr (*Sclerolaena decurrens*), Sand Sida (*Sida ammophila*), Twiggy Sida (*Sida intricata*), Lagoon Nightshade (*Solanum lacunarium*), Darling Pea (*Swainsona greynana*) and Annual Spinach (*Tetragonia moorei*).

Exotic and Pest Species

The NRS is designed to conserve and protect Australia's rare and threatened ecosystems and provide a 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 exotic and pest species records as part of this report is designed to provide land managers with baseline information to assist with pest management programs.

Fauna

The House Mouse (*Mus musculus*) was trapped in abundance at all sites where live traps were set, spanning a wide range of habitats. It was the dominant small mammal on Neds Corner Station during this survey. The Red Fox (*Vulpes vulpes*) was also observed throughout the reserve, with more than 30 individuals seen in a single night.¹¹ A single feral Cat (*Felis catus*) was seen at the homestead. Rabbits (*Oryctolagus cuniculus*) were observed and scats were found throughout the reserve. A single Brown Hare (*Lepus capensis*) was seen along Neds Corner Station Road. The dominance of non-native mammals at Neds Corner Station suggests they are probably having a significant impact on the native biodiversity. Active management of invasive species is ongoing on Neds Corner Station, which may help to mitigate their future impact.

The moth families found during the survey that can cause agricultural damage during their larval stage are the Noctuidae, Pyralidae and Crambidae,

¹¹ pers. comm. Trust For Nature staff.





although not all members of these families are of economic significance. Both native and introduced species can be of concern. Moth pests of state significance (listed by the DEPI¹²) documented include Australian Bollworm (*Helicoverpa punctigera*), Inland Armyworm (*Persectania dyscrita*) and the introduced Diamondback Moth (*Plutella xylostella*). Other pest species listed in Common¹³ include *Achyra affinalis*, *Agrotis* spp., *Agrius convolvuli*, *Chrysodeixis argentifera*, *Etiella behrii*, *Hellula hydralis*, *Phrissogonus laticostata*, *Sceliodes cordalis*, *Spodoptera exigua*, *Xanthodes congenita* and *Zermizinga sinuata*.

The Citrus Snail (*Microxeromagna lowei*) was the only introduced snail species recorded during the survey. It was found in the vicinity of the homestead under timber and other debris. This species is an agricultural pest introduced from the Mediterranean and is responsible for contamination of citrus fruit exports and cereal crops.¹⁴ It is found throughout north-west Victoria and elsewhere in southern Australia, and is a pest in vine-growing areas.

Flora

Fifty-four weed species were collected on Neds Corner Station during this Bush Blitz, none of which had previously been identified on the reserve. Water Couch (*Paspalum distichum*) had been previously identified, but was not seen during this survey. The record of Lesser Jack (*Emex spinosa*) was the second for Victoria, the first being in 1978. This weed originated from the Mediterranean region and can become a serious pest of crops and pastures. Only three plants were found, in a degraded, previously cropped paddock dominated by Wild Turnip (*Brassica tournefortii*).

Although not found on the reserve, Hairyflower Lovegrass (*Eragrostis trichophora*) and Ice Plant (*Mesembryanthemum guerichianum*) were detected near the station on the Sturt Highway between Merbein South and Lake Cullulleraine. The Hairyflower Lovegrass record was a first for Victoria and the Ice Plant record was a first for Australia. Both species are native to South Africa. The detection of these weeds demonstrates one of the benefits of conducting scientific surveys, as experts are available to identify new species including weeds.

12 Pest insects and mites, accessed 18 June 2014 <<http://www.depi.vic.gov.au/agriculture-and-food/pests-diseases-and-weeds/pest-insects-and-mites>>.

13 Common, I. F. B. 1990, *Moths of Australia*. E. J. Brill: Leiden, The Netherlands, 535 pp.

14 Zhao, Z. Q., Riley, I. T. & Lush, A. L. 2004, 'Effect of temperature and antibiotics on the hatching of *Microxeromagna armillata* (Mollusca: Hygromiidae) eggs: developing an *in vitro* bioassay for fungal egg parasites', *Molluscan Research* **24**(1): 1–5.



Other Points of Interest

Vertebrate Fauna

The fauna results of this survey are comparable to those recorded during the La Trobe University intensive rapid assessment in 2004, with similar levels of diversity across all groups. Both surveys were conducted in spring. Conduct of future surveys at other times of the year is recommended.

Mammals

Bats were the most diverse group of small mammals on Neds Corner Station, with at least 15 species detected. Eleven of these represent new records for the reserve, and one or more may represent new records for Victoria, though the echo-location data is yet to be verified. The Little Pied Bat (*Chalinolobus picatus*) is sparsely distributed throughout east-central Australia, west of the Great Dividing Range. Although there were previously no records of this species south of the Murray River, during this survey they were recorded at a site approximately 19 km south of the Murray River. Confirmation of this record indicates a significant range extension and a new species record for the state.



The sharp-eyed (and sharp-toothed) hunter of Neds Corner Station — the Fat-tailed Dunnart (*Sminthopsis crassicaudata*), D. Paul © Copyright, Museum Victoria

The only other native small mammal recorded was the Fat-tailed Dunnart (*Sminthopsis crassicaudata*), caught in pitfall traps. In 2010 and 2011, Neds Corner Station experienced severe flooding after nearly a decade of drought. Flooding in January 2011 inundated the riparian areas along the Murray River and may have resulted in a long term reduction in small mammal numbers in those areas. Larger native mammals recorded were the Short-beaked Echidna (*Tachyglossus aculeatus*), Western Grey Kangaroo (*Macropus fuliginosus*) and Red Kangaroo (*Macropus rufus*).

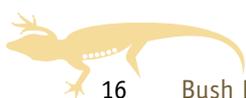
Birds

The results of the bird survey of Neds Corner Station indicate healthy populations for most of the 111 species recorded. Many of these, while not attending nests, showed signs of a successful breeding season through the presence of young, behavioural displays, nest construction or recently occupied nests.

While the reserve had no official list of bird species, there were at least three of varying species presence. Combining these lists into one, with all anomalies checked and dubious records removed, has been completed as part of this Bush Blitz. This updated species list will assist future monitoring and management of birds at the reserve.

Reptiles

The herpetofauna on Neds Corner Station appears to be composed of both arid and mesic species. The highest diversity of lizards was found in the skink family Scincidae with at least eight species detected across the reserve. Further survey work on snakes is warranted, possibly conducting active searches on warm nights, as they appear to be under-recorded in all surveys done at the reserve.





A Marbled Gecko (*Christinus marmoratus*) with a regrowing tail, M. Norman © Copyright, Museum Victoria

Amphibians

Two families of frogs were recorded, Myobatrachidae (ground-dwelling frogs) and Hylidae (tree frogs). Only two of the six frog species identified constitute new records for Neds Corner Station, probably because this survey was conducted in spring. Conduct of future surveys at other times of the year is recommended.



Amazingly well camouflaged, this Peron's Tree Frog (*Litoria peronii*) can be hard to locate, P. Honan © Copyright, Museum Victoria

Invertebrate Fauna

Butterflies and Moths

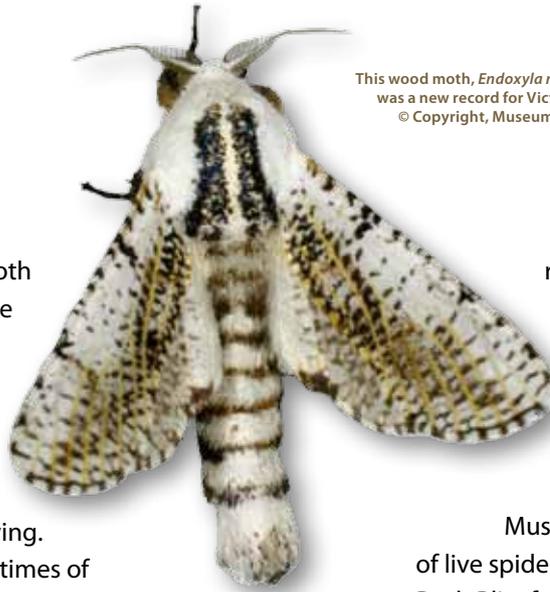
The butterfly species recorded were within their known ranges.¹⁵

The moth species list was the first for the reserve and greatly expanded the knowledge of moths in far north-western Victoria. Several species typical of the arid inland were found, for example *Thallarcha fusa*, *Earias paralella* and the Tented Carpet Moth (*Anomocentris trissodesma*). Several findings were significant at the state and regional level. The survey revealed three putatively new species and a first record for Victoria of the cossid moth *Endoxyla neuroxantha*. This species was previously known only from inland New South Wales and South Australia. Species which have rarely been recorded include an undescribed *Endoxyla* sp., *Pseudozarba orthopetes*, *Iphiherga macarista*, *Euproctis niphobola*, *Scopula* sp., *Thallarcha fusa*, *Nola paromoea*, *Euproctis edwardsii* and *Anomocentris trissodesma*.

Range extensions were observed for *Anestia semiochrea* (previously known from around Port Phillip Bay, Gisborne, Beaconsfield, Brisbane Ranges, Bacchus Marsh and from the Banksia Peninsula in the east),¹⁶ *Cryphaea xyliana* and *Idaea inversata* (both previously known from southern Victoria), and *Isturgia penthearia* and *Idaea pseliota* (both known from central Victoria). Other important additions to knowledge included large numbers of *Euproctis niphobola* and *Euproctis edwardsii*, an unusual colour form of *Euproctis edwardsii*, and an *Anomocentris trissodesma* with an atypical wing pattern.

¹⁵ Braby, M. 2004, *The Complete Field Guide to the Butterflies of Australia*, CSIRO Publishing, Collingwood, Victoria, 339 pp.

¹⁶ pers. comm. M. Hewish.



This wood moth, *Endoxyla neuroxantha*, was a new record for Victoria, M. Hewish © Copyright, Museum Victoria

The Neds Corner Station moth list would undoubtedly have been longer if wet, windy and cold weather in the first four days had not restricted surveys to the homestead area and discouraged moths from flying. Additional surveys at other times of year would greatly expand the species list.

Ground Beetles

Most of the species of ground beetle recorded are relatively common or common in semi-arid southern Australia, and they are more or less typical of semi-arid grassland, Mallee and Mulga areas. The specimens collected may well include new species because the genera to which they belong are not well studied.

True Bugs

Two species of true bug were found beyond their previously known ranges. The stinkbug *Kalkadoona cooperi* has previously been found only in north-western and southern South Australia, and the plant bug *Chimsunchartella schwartzi* which was previously recorded during the Bush Blitz held in 2010 on Witchelina Reserve in South Australia.

Spiders

The Bush Blitz survey at Neds Corner Station yielded 31 species of spider from 10 families. Five species of ant spiders (Zodariidae) from four genera were collected. Ant spiders mimic ant behaviour and live with ants while preying on them. Their mimicry extends in some cases to their ability to produce ant pheromones.¹⁷ *Pentasteron sordidum* and *P. storosoides* are newly

recorded for Victoria. A paper has been published providing the first description of the females of these species, previously known only from male holotypes collected in western New South Wales.^{18 19}

Museum Victoria staff collected a number of live spider specimens during the Neds Corner Bush Blitz for public display, including the Murray Banded Huntsman (*Holconia murrayensis*), one of Australia's largest huntsman spiders.

Snails and Slugs

The native land snails that were collected comprised mainly minute, dry-adapted species, some with widespread distributions. Nearly all, with the exception of the Southern Ambersnail (*Succinea australis*), were found in the Mallee Woodlands. Six species of pupasnails (Pupillidae) and one pinhead snail (Punctidae) were collected. The only large snail found during the survey, the native Murray River Shrubland Snail (*Cupedora cassandra*), was collected under timber debris adjacent to the homestead. It is normally associated with woodlands and probably occurs in more natural surroundings in the Black Box and River Red Gum communities on the reserve. While

- 17 Allan, R. A., Elgar, M. A. & Capon, R. J. 1996, 'Exploitation of an ant chemical alarm signal by the zodariid spider *Habronestes bradleyi* Walckenaer', *Proceedings of the Royal Society*, London **263**(1366): 69–73.
- 18 Baehr, B. C. & Whyte, R. 2012, 'Biodiversity discovery program *Bush Blitz* supplies missing ant spider females (Araneae: Zodariidae) from Victoria', *Australian Entomologist* **39**(3): 97–104.
- 19 Baehr, B. C. & Jocqué, R. 2001, 'Revisions of genera in the *Asteron*-complex (Araneae, Zodariidae): New genera *Pentasteron*, *Phenasteron*, *Leptasteron* and *Subasteron*', *Memoirs of the Queensland Museum* **46**(2): 359–385.





An adult antlion from the Ascalaphidae family, M. Norman © Copyright, Museum Victoria

all terrestrial snails collected were new records for Neds Corner Station, all fell within their expected distribution range, with the exception of Murray River Shrubland Snail, which occurred just outside of its eastern extremity.²⁰

Other Terrestrial Invertebrates

A wide variety of other insects and invertebrate groups were collected in this survey. Ants represented 96% of the more than 34,000 invertebrates collected in the coffee cup pitfall traps. Ants also dominated the invertebrates collected from the buckets, comprising about 77% of the individuals captured. This high percentage is not unusual, and it is generally recognised that ants play an important role in the Australian landscape.²¹

A relatively small number of scorpions (Scorpiones) and centipedes (Chilopoda) were collected. This may reflect a relative paucity of potential habitat (fallen timber and leaf litter) in much of the chenopod shrubland. The lack of targeted direct searching also meant that burrowing scorpion species are likely to be overlooked. The weather was also quite cool for much of the first week, and there was significant rain during the survey, which may have reduced invertebrate activity.



At the bottom of its sand pit trap an antlion larva awaits the arrival of its next meal, M. Norman © Copyright, Museum Victoria

Apart from the Murray River itself, water sources on the reserve are rare and only one unidentified species of dragonfly was collected.

Future surveys at Neds Corner Station could look at the impacts of fire regimes on invertebrate faunas. La Trobe University has undertaken some work in this area, looking at the effect of fire mosaics on selected groups of invertebrates in eucalypt-dominated mallee habitats. The results of this work may show that changes are required to current prescriptions for planned burning to ensure biodiversity is not lost.²²

20 Solem, A. 1992, 'Camaenid land snails from southern and eastern South Australia, excluding Kangaroo Island. Parts 1 & 2', *Records of the South Australian Museum Monograph Series No. 2*: 1–425.

21 Andersen, A. N. 1983, 'Species diversity and temporal distribution of ants in the semi-arid mallee region of northwestern Victoria', *Australian Journal of Ecology* **8**(2): 127–137.

22 New T. R., Yen A. L., Sands D. P. A., Greenslade P., Neville P. J., York A. & Collett N. G. 2010, 'Planned fires and invertebrate conservation in south east Australia', *Journal of Insect Conservation* **14**(5): 567–574.



Flora

Vascular Plants

This Bush Blitz survey resulted in two new plant records for Victoria, Black-seeded Daisy (*Brachyscome melanocarpa*) and Lesser Sand-spurrey (*Spergularia diandroides*). The former was discovered at two sites on the chenopod plain. While there are no previous records of this daisy in Victoria, the plant is common in Queensland and New South Wales, and also occurs in South Australia. A small herbaceous plant, it grows to about 45 centimetres in height. Its flowers are either white or lilac in colour with a yellow centre. The distinctive black seeds give this species its common name. Lesser Sand-spurrey was previously only known from the Northern Territory, New South Wales and South Australia.

Cup Grass (*Eriochloa crebra*) and Native Madder (*Synaptantha tillaeacea* var. *tillaeacea*) were recorded for the second time in Victoria (based on specimen holdings at the National Herbarium of Victoria). Significant range extensions were established for several species including Fluffy-fruit Wood-sorrel (*Oxalis thompsoniae*).

Fungi and Slime Moulds

Thirty-eight species of macrofungi were collected during the Bush Blitz, including mushrooms, brackets, cups, puffballs and truffles. Prior to this survey there were fewer than 20 collections of macrofungi from the Murray-Sunset area and, in Australian herbaria, only four records of

fungi from Neds Corner Station.²³ All of the taxa collected were new records for Neds Corner Station, and 18 of these were new records for the Murray-Sunset region.

A significant range extension was recorded for the slime mould *Lycogala epidendrum*, and for the fungi *Hexagonia vesparia*, *Poronia erici* and *Laetiporus portentosus*. The collections of *Disciseda hyalothrix* and *D. kiata* were both first records for Victoria: both were described from nearby in South Australia and were expected to occur in western Victoria. Several taxa were collected for which less than five records are known for Victoria, including *Mycenastrum corium*, *Phellorinia herculeana*, *Podaxis pistillaris*, *Montagnea arenaria*, *Austropaxillus* sp. aff. *muelleri* and *Daedalea* sp.

As with the vascular plants, the highest diversity of species was found on sandy rises and in seasonally flooded broad depressions. The majority of fungi species recorded were puffballs, which is expected in arid country. More surprising was the production of fruiting bodies of a number of fleshy mushrooms, jelly fungi, and a slime mould, fruiting stages that are not often found in arid regions. These particular groups appeared, matured and disappeared within 2–8 hours. No doubt the rainfall that occurred during the survey promoted the development of fruiting structures, which then facilitated detection of species that would have otherwise remained hidden.

²³ Australian Virtual Herbarium <<http://avh.chah.org.au/>>, accessed 28 April 2013.





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 September 2013



Fauna

Vertebrates

Mammals		
Family	Species	Common name
Acrobatidae	<i>Acrobates pygmaeus</i>	Feathertail Glider
Bovidae	<i>Ovis aries</i> ^	Sheep
Canidae	<i>Vulpes vulpes</i> ^	Fox, Red Fox
Dasyuridae	<i>Planigale gilesi</i> ~ +	Paucident Planigale
	<i>Sminthopsis crassicaudata</i> +	Fat-tailed Dunnart
Emballonuridae	<i>Saccolaimus flaviventris</i> ~ + *	Yellow-bellied Sheathtail-bat
Felidae	<i>Felis catus</i> ^ *	Cat
Leporidae	<i>Lepus capensis</i> ^	Brown Hare
	<i>Oryctolagus cuniculus</i> ^	Rabbit
Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo
	<i>Macropus rufogriseus</i>	Red-necked Wallaby
	<i>Macropus rufus</i>	Red Kangaroo
	<i>Onychogalea fraenata</i> # ~ +	Bridled Nailtail Wallaby



These kangaroo tracks are so clear the patterns of the animal's skin can be seen imprinted in the fine red mud, M. Norman © Copyright, Museum Victoria

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 - + = DEPI 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





Mammals		
Family	Species	Common name
Molossidae	<i>Mormopterus planiceps</i> (long penis form)	Little Mastiff-bat, Southern Freetail-bat
	<i>Mormopterus planiceps</i> (sp. II) *	Inland Freetail Bat
	<i>Mormopterus planiceps</i> (sp. 3) *	Inland Freetail Bat
	<i>Tadarida australis</i> *	White-striped Freetail-bat
Muridae	<i>Hydromys chrysogaster</i>	Water-rat
	<i>Mus musculus</i> ^	House Mouse
	<i>Notomys mitchellii</i> +	Mitchell's Hopping-mouse
Phalangeridae	<i>Trichosurus vulpecula</i>	Common Brushtail Possum
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat
	<i>Chalinolobus morio</i> *	Chocolate Wattled Bat
	<i>Chalinolobus picatus</i> *	Little Pied Bat
	<i>Myotis macropus</i> + *	Large-footed Myotis, Southern Myotis
	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat
	<i>Scotorepens balstoni</i> *	Inland Broad-nosed Bat
	<i>Scotorepens greyii</i> + *	Little Broad-nosed Bat
	<i>Vespadelus baverstocki</i> *	Inland Forest Bat
	<i>Vespadelus regulus</i> (HF) *	Southern Forest Bat
	<i>Vespadelus vulturinus</i>	Little Forest Bat



A Western Grey Kangaroo (*Macropus fuliginosus*) in full flight over the saltbush, M. Norman © Copyright, Museum Victoria



A Tawny Frogmouth (*Podargus strigoides*) and its chick keep up their daytime illusion of being part of a broken branch, W. Longmore © Copyright, Museum Victoria

Birds		
Family	Species	Common name
Acanthizidae	<i>Acanthiza apicalis</i>	Inland Thornbill
	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill
	<i>Acanthiza nana</i>	Yellow Thornbill
	<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill
	<i>Aphelocephala leucopsis</i>	Southern Whiteface
	<i>Gerygone fusca</i> *	Western Gerygone
	<i>Smicronis brevirostris</i>	Weebill
Accipitridae	<i>Accipiter cirrocephalus</i> *	Collared Sparrowhawk
	<i>Aquila audax</i>	Wedge-tailed Eagle
	<i>Circus approximans</i>	Swamp Harrier
	<i>Circus assimilis</i> +	Spotted Harrier
	<i>Elanus axillaris</i> *	Black-shouldered Kite
	<i>Haliastur sphenurus</i>	Whistling Kite
	<i>Hieraaetus morphnoides</i>	Little Eagle
	<i>Milvus migrans</i>	Black Kite
Aegothelidae	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar
Alcedinidae	<i>Dacelo novaeguineae</i>	Laughing Kookaburra
	<i>Todiramphus sanctus</i>	Sacred Kingfisher
Anatidae	<i>Anas gracilis</i>	Grey Teal
	<i>Anas superciliosa</i>	Pacific Black Duck
	<i>Aythya australis</i> +	Hardhead
	<i>Chenonetta jubata</i>	Australian Wood Duck, Maned Duck
	<i>Cygnus atratus</i>	Black Swan
	<i>Malacorhynchus membranaceus</i>	Pink-eared Duck
	<i>Tadorna tadornoides</i>	Australian Shelduck
Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian Darter

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Birds		
Family	Species	Common name
Ardeidae	<i>Ardea modesta</i> ~ +	Eastern Great Egret
	<i>Ardea pacifica</i>	White-necked Heron
	<i>Egretta novaehollandiae</i>	White-faced Heron
	<i>Nycticorax caledonicus</i> *	Nankeen Night Heron
Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow
	<i>Artamus cyanopterus</i>	Dusky Woodswallow
	<i>Artamus personatus</i>	Masked Woodswallow
	<i>Artamus superciliosus</i>	White-browed Woodswallow
	<i>Cracticus nigrogularis</i>	Pied Butcherbird
	<i>Cracticus tibicen</i>	Australian Magpie
	<i>Cracticus torquatus</i>	Grey Butcherbird
Cacatuidae	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo
	<i>Cacatua sanguinea</i>	Little Corella
	<i>Eolophus roseicapillus</i>	Galah
	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo
	<i>Nymphicus hollandicus</i>	Cockatiel
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike
	<i>Lalage sueurii</i>	White-winged Triller
Casuariidae	<i>Dromaius novaehollandiae</i> +	Emu
Charadriidae	<i>Charadrius australis</i> +	Inland Dotterel, Inland Plover
	<i>Charadrius veredus</i>	Oriental Plover
	<i>Elsyornis melanops</i>	Black-fronted Dotterel
	<i>Vanellus miles</i>	Masked Lapwing
	<i>Vanellus tricolor</i>	Banded Lapwing



Tawny Frogmouth (*Podargus strigoides*), M. Norman © Copyright, Museum Victoria



Crested Pigeon (*Ocyphaps lophotes*), M. Norman © Copyright, Museum Victoria



Birds		
Family	Species	Common name
Climacteridae	<i>Climacteris picumnus</i>	Brown Treecreeper
Columbidae	<i>Geopelia cuneata</i> ~ + *	Diamond Dove
	<i>Geopelia striata</i>	Peaceful Dove
	<i>Ocyphaps lophotes</i>	Crested Pigeon
	<i>Phaps chalcoptera</i>	Common Bronzewing
Corcoracidae	<i>Corcorax melanorhamphos</i>	White-winged Cough
	<i>Struthidea cinerea</i> ~	Apostlebird
Corvidae	<i>Corvus bennetti</i> *	Little Crow
	<i>Corvus coronoides</i>	Australian Raven
	<i>Corvus mellori</i>	Little Raven
Cuculidae	<i>Chalcites basalix</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 hypoleucos</i> ~ +	Grey Falcon
	<i>Falco longipennis</i>	Australian Hobby
	<i>Falco peregrinus</i>	Peregrine Falcon
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow
	<i>Petrochelidon ariel</i>	Fairy Martin
	<i>Petrochelidon nigricans</i>	Tree Martin
Laridae	<i>Hydroprogne caspia</i> *	Caspian Tern
	<i>Chroicocephalus novaehollandiae</i>	Silver Gull
Maluridae	<i>Malurus cyaneus</i>	Superb Fairy-wren
	<i>Malurus lamberti</i>	Variiegated Fairy-wren
	<i>Malurus leucopterus</i>	White-winged Fairy-wren



Yellow Rosella (*Platycercus elegans flaveolus*), M. Norman © Copyright, Museum Victoria

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Little Corellas (*Cacatua sanguinea*), M. Norman © Copyright, Museum Victoria

Birds

Family	Species	Common name
Megaluridae	<i>Cincloramphus cruralis</i>	Brown Songlark
	<i>Cincloramphus mathewsi</i>	Rufous Songlark
Meliphagidae	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater
	<i>Entomyzon cyanotis</i>	Blue-faced Honeyeater
	<i>Epthianura albifrons</i>	White-fronted Chat
	<i>Epthianura aurifrons</i>	Orange Chat
	<i>Epthianura tricolor</i>	Crimson Chat
	<i>Gavicalis virescens</i>	Singing Honeyeater
	<i>Manorina flavigula</i>	Yellow-throated Miner
	<i>Manorina melanocephala</i>	Noisy Miner
	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater
	<i>Nesoptilotis leucotis</i> *	White-eared Honeyeater
	<i>Philemon citreogularis</i>	Little Friarbird
	<i>Plectorhyncha lanceolata</i>	Striped Honeyeater
	<i>Ptilotula ornatus</i>	Yellow-plumed Honeyeater
	<i>Ptilotula penicillatus</i>	White-plumed Honeyeater
	<i>Purnella albifrons</i>	White-fronted Honeyeater
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark
	<i>Myiagra inquieta</i>	Restless Flycatcher
Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian Pipit, Australian Pipit
Nectariniidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird
Neosittidae	<i>Daphoenositta chrysoptera</i> *	Varied Sittella
Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush
	<i>Pachycephala inornata</i> *	Gilbert's Whistler
	<i>Pachycephala rufiventris</i>	Rufous Whistler



Birds		
Family	Species	Common name
Pardalotidae	<i>Pardalotus punctatus</i>	Spotted Pardalote
	<i>Pardalotus striatus</i>	Striated Pardalote
Passeridae	<i>Passer domesticus</i>	House Sparrow
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian Pelican
Petroicidae	<i>Petroica goodenovii</i>	Red-capped Robin
Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	Little Pied Cormorant
	<i>Phalacrocorax carbo</i>	Great Cormorant
	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant
	<i>Phalacrocorax varius</i> +	Pied Cormorant
Phasianidae	<i>Coturnix pectoralis</i> *	Stubble Quail
	<i>Coturnix ypsilophora</i>	Brown Quail
Podargidae	<i>Podargus strigoides</i> *	Tawny Frogmouth
Podicipedidae	<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe
	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe
Pomatostomidae	<i>Pomatostomus ruficeps</i>	Chestnut-crowned Babbler
	<i>Pomatostomus superciliosus</i>	White-browed Babbler
Psittacidae	<i>Barnardius zonarius</i>	Australian Ringneck
	<i>Melopsittacus undulatus</i>	Budgerigar
	<i>Neophema chrysostoma</i>	Blue-winged Parrot
	<i>Northiella haematogaster</i>	Blue Bonnet
	<i>Platyercus elegans</i>	Crimson Rosella
	<i>Polytelis anthopeplus</i> # ~ +	Regent Parrot
	<i>Psephotus haematonotus</i>	Red-rumped Parrot
Rallidae	<i>Gallinula tenebrosa</i> *	Dusky Moorhen
	<i>Gallirallus philippensis</i> *	Buff-banded Rail
	<i>Tribonyx ventralis</i> *	Black-tailed Native-hen
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail
	<i>Rhipidura leucophrys</i>	Willie Wagtail
Strigidae	<i>Ninox novaeseelandiae</i>	Southern Boobook
Sturnidae	<i>Sturnus vulgaris</i>	Common Starling
Threskiornithidae	<i>Platalea flavipes</i> *	Yellow-billed Spoonbill
	<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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Shingle-back (*Tiliqua rugosa*), M. Cheng © Copyright, University of New South Wales



Pale-rumped Ctenotus (*Ctenotus regius*), D. Paul © Copyright, Museum Victoria

Reptiles

Family	Species	Common name
Agamidae	<i>Pogona barbata</i> +	Bearded Dragon, Common Bearded Dragon, Eastern Bearded Dragon
	<i>Pogona vitticeps</i> *	Central Bearded Dragon
Carphodactylidae	<i>Underwoodisaurus milii</i>	Barking Gecko, Thick-tailed Gecko
Diplodactylidae	<i>Diplodactylus tessellatus</i>	Tessellated Gecko
	<i>Lucasium damaeum</i>	Beaded Gecko
	<i>Rhynchoedura ornata</i> ~ +	Western Beaked Gecko
Elapidae	<i>Notechis scutatus</i>	Tiger Snake
	<i>Parasuta spectabilis</i>	Mallee Black-headed Snake
	<i>Pseudonaja textilis</i>	Common Brown Snake, Eastern Brown Snake
	<i>Suta suta</i>	Curl Snake, Myall Snake
	<i>Vermicella annulata</i> ~ +	Bandy-bandy
Gekkonidae	<i>Christinus marmoratus</i>	Marbled Gecko
	<i>Gehyra variegata</i>	Tree Dtella
	<i>Heteronotia binoei</i>	Bynoe's Gecko
Pygopodidae	<i>Pygopus lepidopodus</i>	Common Scaly-foot
Scincidae	<i>Cryptoblepharus australis</i>	Inland Snake-eyed Skink
	<i>Ctenotus regius</i>	Pale-rumped Ctenotus, Royal Ctenotus
	<i>Egernia striolata</i>	Tree Skink
	<i>Eulamprus quoyii</i>	Eastern Water-skink
	<i>Lerista punctatovittata</i>	Eastern Robust Slider
	<i>Menetia greyii</i>	Common Dwarf Skink, Grey's Menetia
	<i>Morethia boulengeri</i>	Boulenger's Snake-eyed Skink, South-eastern Morethia Skink
	<i>Tiliqua rugosa</i>	Bobtail, Boggi, Pinecone Lizard, Shingle-back, Sleepy Lizard, Stumpy-tail



Reptiles		
Family	Species	Common name
Typhlopidae	<i>Ramphotyphlops bituberculatus</i>	Prong-snouted Blind Snake
Varanidae	<i>Varanus gouldii</i> *	Gould's Goanna
	<i>Varanus varius</i> + *	Lace Monitor



Central Bearded Dragon (*Pogona vitticeps*),
M. Norman © Copyright, Museum Victoria



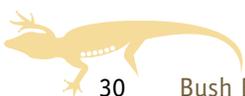
Tree Dtella (*Gehyra variegata*), M. Norman © Copyright, Museum Victoria



Shingle-back (*Tiliqua rugosa*), M. Norman © Copyright, Museum Victoria

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Frogs		
Family	Species	Common name
Hylidae	<i>Litoria peronii</i>	Peron's Tree Frog
Myobatrachidae	<i>Crinia signifera</i>	Common Eastern Froglet, Common Froglet
	<i>Limnodynastes dumerilii</i> *	Eastern Banjo Frog
	<i>Limnodynastes fletcheri</i>	Barking Frog, Long-thumbed Frog, Marsh Frog
	<i>Limnodynastes tasmaniensis</i>	Spotted Grass Frog, Spotted Marsh Frog
	<i>Neobatrachus pictus</i>	Painted Frog
	<i>Neobatrachus sudellae</i> *	Sudell's Frog



Invertebrates

Bees and Wasps	
Family	Species
Apidae	<i>Apis</i> sp. *
Braconidae	Braconidae sp. *
Chrysididae	Chrysididae sp. *
Evaniidae	Evaniidae sp. *
Gasteruptionidae	Gasteruptionidae sp. *
Ichneumonidae	Ichneumonidae sp. * <i>Lissopimpla excelsa</i> *
Mutillidae	Mutillidae sp. *
Pompilidae	Pompilidae sp. *
Sphecidae	<i>Sceliphron laetum</i> * Sphecidae sp. *
Tiphiidae	Tiphiidae sp. *



Mud Dauber Wasp (*Sceliphron laetum*), P. Honan © Copyright, Museum Victoria

Ants	
Family	Species
Formicidae	<i>Camponotus</i> sp. *
	<i>Crematogaster</i> sp. *
	<i>Iridomyrmex</i> sp. *
	<i>Monomorium</i> sp. *
	<i>Myrmecia</i> sp. *
	<i>Pheidole</i> sp. *
	<i>Polyrhachis</i> sp. *
	<i>Rhytidoponera mayri</i>
	<i>Rhytidoponera</i> sp. *

Butterflies	
Family	Species
Lycaenidae	<i>Theclinesthes serpentatus</i> *
	<i>Zizina otis labradus</i> *
Pieridae	<i>Belenois java</i> *
	<i>Delias aganippe</i> *
	<i>Pieris rapae</i> ^ *

Moths	
Family	Species
Arctiidae	<i>Amata aperta</i> *
	<i>Anestia semiochrea</i> *
	<i>Nyctemera amicus</i> *
	<i>Thallarcha fusa</i> *
	<i>Utetheisa pulchelloides</i> *
Bucculatricidae	Bucculatricidae sp. *
Choreutidae	<i>Tebenna micalis</i> *
Cossidae	<i>Endoxyla biarpiti</i> *
	Endoxyla n. sp. *
	<i>Endoxyla neuroxantha</i> *
Crambidae	<i>Achyra affinitalis</i> ^ *
	Crambinae sp. 01 *
	Crambinae sp. 02 *
	<i>Deuterarcha xanthomela</i> *
	<i>Elophila responsalis</i> *
	<i>Hednotodes callichroa</i> *
	<i>Hellula hydralis</i> ^ *
	<i>Hygraula nitens</i> *
	<i>Nacoleia rhoealis</i> *
	<i>Nomophila corticalis</i> *
	<i>Sceliodes cordalis</i> ^ *
<i>Uresiphita ornithopteralis</i> *	

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Moths	
Family	Species
Geometridae	<i>(Boarmia) phloeopa</i>
	<i>Anomocentris trissodesma</i> *
	<i>Arhodia</i> sp. 01 *
	<i>Arhodia</i> sp. 02 *
	<i>Arhodia</i> sp. 03 *
	<i>Chloroclystis insigillata</i> *
	<i>Circopetes obtusata</i> *
	<i>Cleora displicata</i> *
	<i>Cleora</i> sp. *
	<i>Cryphaea xyliana</i> *
	<i>Crypsiphona oculitaria</i> *
	<i>Dichromodes</i> sp. *
	<i>Dysbatus singularis</i> *
	<i>Epyaxa subidaria</i> *
	<i>Gastrinodes argoplaca</i> *
	<i>Gastrinopa xylistis</i> *
	<i>Hypobapta diffundens</i> *
	<i>Idaea inversata</i> *
	<i>Idaea philocosma</i> *
	<i>Idaea pseliota</i> *
	<i>Phrissogonus laticostata</i> ^ *
	<i>Prasinocyma ocyptera</i> *
	<i>Rhuma thiobapta</i>
	<i>Scopula lydia</i> *
	<i>Scopula n. sp.</i> *
	<i>Scopula optivata</i> *
	<i>Isturgia penthearia</i> *
<i>Zermizinga sinuata</i> ^ *	

Moths	
Family	Species
Hypertrophidae	<i>Eupselia beltera</i> *
	<i>Hypertropha chlaenota</i> *
	Hypertrophidae sp. *
Lasiocampidae	<i>Symphyta psaropsis</i> *
Limacodidae	<i>Doratifera vulnerans</i> ^ *
	Limacodidae sp. *
	<i>Pseudanapaea transvestita</i> *
Lymantriidae	<i>Euproctis edwardsii</i> *
	<i>Euproctis niphobola</i> *
Noctuidae	<i>Acontia clerana</i> *
	<i>Acontia nivipicta</i> *
	<i>Agrotis infusa</i> ^ *
	<i>Agrotis munda</i> ^ *
	<i>Agrotis radians</i> ^ *
	<i>Agrotis</i> sp. ^ *
	<i>Athetis tenuis</i> *
	<i>Australothis rubrescens</i> *
	<i>Chrysodeixis argentifera</i> ^ *
	<i>Donuca spectabilis</i> + *
	<i>Ectopatria mniodes</i> *
	<i>Ectopatria</i> sp. *
	<i>Eublemma rivula</i> *
	<i>Eudesmeola lawsoni</i> *
	<i>Grammodes ocellata</i> *
	<i>Helicoverpa</i> or <i>Australothis</i> sp. *
	<i>Helicoverpa punctigera</i> ^ *
<i>Heliocheilus aberrans</i> *	
<i>Heliothis punctifera</i> ^ *	



This Hepialid (ghost moth) larva or Bardi Grub (possibly *Abantiades marcidus*) feeds underground on the roots of the River Red Gum (*Eucalyptus camaldulensis*), P. Lang
 © Copyright, Department of Environment, Water and Natural Resources



Moths	
Family	Species
Noctuidae	<i>Hypoperigea tonsa</i> *
	<i>Leucania loreyi</i> *
	<i>Neumichtis nigerrima</i> *
	Noctuidae sp. 01 *
	Noctuidae sp. 02 *
	Noctuidae sp. 03 *
	<i>Persectania dyscrita</i> ^ *
	<i>Praxis marmarinopa</i> *
	<i>Prorocopis</i> sp. *
	<i>Pseudozarba orthopetes</i> *
	<i>Spodoptera exigua</i> ^ *
	<i>Tathorhynchus fallax</i> *
	Unplaced <i>eurynipha</i> *
<i>Xanthodes congenita</i> ^ *	
Nolidae	<i>Armatica conchidia</i> *
	<i>Earias chlorodes</i> *
	<i>Earias paralella</i> *
	<i>Nola paromoea</i> *

Moths	
Family	Species
Notodontidae	<i>Destolmia lineata</i> *
	<i>Epicoma melanosticta</i> *
	<i>Ochrogaster lunifer</i> *
Oecophoridae	<i>Agriophara</i> sp. *
	<i>Barea</i> sp. *
	<i>Barea zygophora</i> *
	<i>Brachybelistis</i> sp. *
	<i>Cryptophasa</i> sp. *
	<i>Hemibela hemicalypta</i> *
	<i>Heteroteucha dichroella</i> *
	Oecophoridae sp. 02 *
	Oecophorinae sp. *
	<i>Philobota chionoptera</i> *
<i>Philobota</i> group sp. *	
<i>Stathmopoda crocophanes</i> *	
Plutellidae	<i>Plutella xylostella</i> ^ *
Psychidae	<i>Iphierga macarista</i> *
Pterophoridae	Pterophorinae n. sp. *
	<i>Stenoptilia zophodactylus</i> *



The beautiful Granny or Old Lady Moth (*Dasypodia selenophora*), M. Norman © Copyright, Museum Victoria

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Pale Spotted Tiger Moth (*Amata aperta*), M. Hewish © Copyright, Museum Victoria

Moths	
Family	Species
Pyrалidae	<i>Ephestiopsis oenobarella</i> *
	Epipaschiinae sp. *
	<i>Etiella behrii</i> ^ *
	<i>Etiella chrysoporella</i> *
	<i>Heteromicta pachytera</i> *
	Phycitinae sp. 01 *
	Phycitinae sp. 02 *
	Phycitinae sp. 03 *
	Phycitinae sp. 04 *
	Phycitinae sp. 05 *
	Phycitinae sp. 06 *
	Phycitinae sp. 07 *
	Phycitinae sp. 08 *
	Pyrалidae sp. *
<i>Spectrotrota fimbrialis</i> *	
Sphingidae	<i>Agrius convolvuli</i> ^ *
	<i>Hippotion scrofa</i> *
Superfamily Gelechioidea	Gelechioidea sp. 01 *
	Gelechioidea sp. 03 *
	Gelechioidea sp. 04 *
	Gelechioidea sp. 05 *
	Gelechioidea sp. 06 *
	Gelechioidea sp. 07 *

Moths	
Family	Species
Superfamily Pyraloidea	Pyraloidea sp. 01 *
	Pyraloidea sp. 02 *
	Pyraloidea sp. 03 *
	Pyraloidea sp. 04 *
Thyrididae	<i>Aglaopus</i> sp. *
Tineidae	<i>Edosa xystidophora</i> *
	Tineidae sp. *
Tortricidae	<i>Thrincochora lignigerana</i> *
	Tortricidae sp. 01 *
	Tortricidae sp. 02 *
	Tortricidae sp. 03 *
	Tortricidae sp. 04 *
	Tortricidae sp. 05 *
	Tortricidae sp. 06 *
	Tortricidae sp. 07 *
	Tortricidae sp. 08 *
	Tortricidae sp. 09 *
	Tortricidae sp. 10 *
Tortricinae sp. *	



Moths	
Family	Species
Unknown	Unknown sp. 01 *
	Unknown sp. 02 *
	Unknown sp. 03 *
	Unknown sp. 04 *
	Unknown sp. 05 *
	Unknown sp. 06 *
	Unknown sp. 07 *
	Unknown sp. 08 *
	Unknown sp. 10 *

Flies	
Family	Species
Asilidae	Asilidae sp. *
Calliphoridae	Calliphoridae sp. *
Cecidomyiidae	Cecidomyiidae sp. *
Ceratopogonidae	Ceratopogonidae sp. *
Chironomidae	Chironomidae sp. *
Culicidae	Culicidae sp. *
Dolichopodidae	Dolichopodidae sp. *
Empididae	Empididae sp. *
Lauxaniidae	Lauxaniidae sp. *
Neurochaetidae	Neurochaetidae sp. *
Phoridae	Phoridae sp. *
Psychodidae	Psychodidae sp. *
Sarcophagidae	Sarcophagidae sp. *
Sciaridae	Sciaridae sp. *
Syrphidae	Syrphidae sp. *
Tachinidae	Tachinidae sp. *
Tipulidae	Tipulidae sp. *

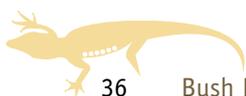
Beetles	
Family	Species
Belidae	Belidae sp. *
Bostrichidae	Bostrichidae sp. *
Carabidae	<i>Adelotopus paroensis</i> *
	<i>Amblystomus palustris</i> *
	<i>Anomotarus crudelis</i> *
	<i>Arthropterus macleayi</i> *
	<i>Bembidion jacksoniense</i> *
	<i>Carenum</i> sp. (<i>smaragdulum</i> group?) *
	<i>Carenum tinctilatum</i> *
	<i>Cenogmus castelnaui</i> *
	<i>Chlaenius australis</i> *
	<i>Cicindela semicincta</i> *



A cicada emerging from its nymph exoskeleton, P. Honan © Copyright, Museum Victoria

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Beetles	
Family	Species
Carabidae	<i>Cicindelinae</i> sp. *
	<i>Clivina</i> nr <i>lepida</i> *
	<i>Clivina simulans</i> *
	<i>Egadroma piceus</i> *
	<i>Euthenarus bicolor</i> *
	<i>Euthenarus morganensis</i> *
	<i>Gigadema sulcatum</i> *
	<i>Gnathaphanus melbournensis</i> *
	<i>Hypharpax kreftii</i> *
	<i>Hypharpax vilis</i> *
	<i>Lecanomerus</i> sp. 01 *
	<i>Lecanomerus</i> sp. 02 *
	<i>Lecanomerus</i> sp. 03 *
	<i>Lecanomerus</i> sp. 04 *
	<i>Loxandrus</i> nr <i>australicus</i> *
	<i>Microlestodes macleayi</i> *
	<i>Notagonum marginellum</i> *
	<i>Notagonum submetallicum</i> *
	<i>Philophloeus angulatus</i> *
	<i>Philophloeus eucalypti</i> *
<i>Philophloeus</i> sp. *	
<i>Philoscaphus tuberculatus</i> *	
<i>Phorticosomus felix</i> *	
<i>Platycoelus melliei</i> *	

Beetles	
Family	Species
Carabidae	<i>Rhytisternus cyathoderus</i> *
	<i>Sarothrocrepis</i> n. sp. 02 *
	<i>Sphallomorpha suturalis</i> *
	<i>Trigonothops</i> nr <i>flavofasciata</i> *
Cerambycidae	Cerambycidae sp. *
Chrysomelidae	Chrysomelidae sp. *
Cleridae	<i>Opilo</i> sp. *
	<i>Orthrius cylindricus</i> *
	<i>Orthrius sepulcralis</i> *
	Cleridae sp. *
Coccinellidae	Coccinellidae sp. *
Curculionidae	Scolytinae sp. *
Dytiscidae	Dytiscidae sp. *
Elateridae	Elateridae sp. *
Lycidae	Lycidae sp. *
Meloidae	Meloidae sp. *
Melyridae	Melyridae sp. *
Nitidulidae	Nitidulidae sp. *
Passalidae	Passalinae sp. *
Scarabaeidae	Rutelinae sp. *
Staphylinidae	Staphylinidae sp. *
Tenebrionidae	<i>Amarygmus</i> sp. *
Trogidae	Trogidae sp. *

Antlions and Lacewings	
Family	Species
Chrysopidae	Chrysopidae sp. *
Mantispidae	Mantispidae sp. *
Myrmeleontidae	Myrmeleontidae sp. *

True Bugs	
Family	Species
Anthocoridae	<i>Orius</i> sp. *
Coriedae	<i>Amorbus alternatus</i> *
Cydnidae	Cydnidae sp. *
Geocoridae	<i>Germalus</i> sp. *
Lygaeidae	<i>Nysius vinitor</i> ^



True Bugs	
Family	Species
Miridae	Austromiris n. sp. 01 *
	<i>Austromiris</i> sp. *
	<i>Campylomma</i> sp. *
	<i>Chimsunchartella schwartzi</i> *
	<i>Coridromius chenopoderis</i> *
	<i>Creontiades</i> sp. *
	<i>Engytatus</i> sp. 1 *
	Mirini n. gen. n. sp. 01 *
	Mirini n. gen. n. sp. 02 *
	<i>Nesidiocoris tenuis</i> ^ *
	Orthotylus n. sp. 01 *
	Phylini sp. 01 *
	Phylini sp. 02 *
	Phylini sp. 03 *
	Phylini sp. 04 *
	Phylini sp. 05 *
Phylini sp. 06 *	
Phylini sp. 07 *	
Nabidae	<i>Nabis</i> sp. *
	<i>Phorticus</i> sp. *
Pachygronthidae	<i>Stenophyella macreta</i> *
Pentatomidae	<i>Aglaophon variegatus</i> *
	<i>Alcaeus</i> sp. *
	<i>Amphidexius suspensus</i> *
	<i>Kalkadoona cooperi</i> *
	<i>Poecilometis patruelis patruelis</i> *
	<i>Poecilometis</i> sp. *
	<i>Roebournea</i> sp. *

True Bugs	
Family	Species
Reduviidae	<i>Oncocephalus</i> sp. *
	<i>Peirates</i> sp. *
	Reduviidae sp. *
	Reduviidae sp. 01 *
	Reduviidae sp. 02 *
Rhopalidae	<i>Leptocoris</i> sp. 01 *
Rhyparochromidae	<i>Brentiscerus australis</i> *
	Myodochini sp. 01 *
	nr <i>Botocudo</i> sp. *
	<i>Paraecosmetus</i> sp. *
	Rhyparochromidae sp. 01 *
	Rhyparochromidae sp. 02 *
Rhyparochromidae sp. 03 *	
	<i>Udeocoris</i> sp. *
Scutelleridae	<i>Coleotichus costatus</i> *

Planthoppers

Family	Species
Flatidae	Flatidae sp. *

Horned Treehoppers

Family	Species
Membracidae	Membracidae sp. *

Cicadas

Family	Species
Cicadidae	Cicadidae sp. *

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Cockroaches	
Family	Species
Blaberidae	Blaberidae sp. *
Blattidae	Blattidae sp. *
Ectobiidae	Ectobiidae sp. *

Praying Mantises	
Family	Species
Mantidae	Mantidae sp. *

Crickets, Mole Crickets, Grasshoppers and Katydid	
Family	Species
Acrididae	Acrididae sp. *
	<i>Coryphistes ruricola</i> *
	<i>Goniaea australasiae</i> *
Gryllacrididae	<i>Ametrus tibialis</i> *
	Gryllacrididae sp. *
Gryllidae	Gryllidae sp. *
Gryllotalpidae	Gryllotalpidae sp. *
Tettigoniidae	Tettigoniidae sp. *

Dragonflies	
Family	Species
Gomphidae	<i>Austrogomphus angelorum</i> +
	<i>Austrogomphus australis</i>



Thick Legged Raspy Cricket (*Ametrus tibialis*), D. Paul © Copyright Museum Victoria



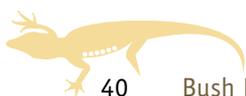
Spiders		Spiders	
Family	Species	Family	Species
Corinnidae	Castianiera n. sp. 01 *	Lycosidae	Lycosidae n. gen. n. sp. 21 *
	Castianiera n. sp. 23 *		Tasmanicosa bushblitz n. sp. 5 *
	Corinnidae n. gen. n. sp. 16 *		<i>Tasmanicosa godeffroyi</i> *
	<i>Leichhardteus conopalpis</i> n. gen. n. sp. 17 *		<i>Tasmanicosa leuckartii</i> *
	Poecilipta n. sp. 04 *		<i>Tasmanicosa stirlingae</i> *
	Poecilipta n. sp. 08 *		<i>Venatrix konei</i> *
	<i>Supunna funerea</i> *		Miturgidae
	Supunna n. sp. 07 *	Nemesiidae	Aname n. sp. 02 *
	Supunna n. sp. 15 *	Sparassidae	<i>Holconia murrayensis</i> *
	<i>Supunna picta</i> *	Theridiidae	<i>Latrodectus hasseltii</i> *
Gallieniellidae	<i>Oreo muncoonie</i> *	Zodariidae	<i>Habronestes raveni</i> *
Lamponidae	<i>Lampona danggali</i> *		<i>Holasteron spinosum</i> *
			<i>Pentasteron sordidum</i> *
Lycosidae	<i>Artoriopsis whitehouseae</i> *		<i>Pentasteron storosoides</i> *
	<i>Hogna crispipes</i> *		<i>Zillimata scintillans</i> *
	<i>Lycosa yalkara</i> *		
	Lycosidae n. gen. n. sp. 19 *	Zoridae	Argoctenus neds n. sp. 12 *



A female Redback Spider (*Latrodectus hasseltii*) with an egg sac, D. Paul © Copyright, Museum Victoria

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Murray River Shrubland Snail (*Cupedora cassandra*), P. Honan © Copyright, Museum Victoria

Snails and Slugs

Family	Species
Camaenidae	<i>Cupedora cassandra</i> *
Hygromiidae	<i>Microxeromagna lowei</i> ^ *
Punctidae	<i>Paralaoma caputspinulae</i> *
Pupillidae	<i>Gastrocopta margaretae</i> *
	<i>Omegapilla australis</i>
	<i>Pupoides adelaidae</i> *
	<i>Pupoides myoporinae</i> *
	<i>Pupoides pacificus</i> *
	unid. sp. *
Succineidae	<i>Succinea australis</i> *
Viviparidae	<i>Notopala sublineata</i> ~ +
	<i>Notopala sublineata hanleyi</i> ~ +



A tiny juvenile Southern Amber Snail (*Austrosuccinea australis*), M. Norman © Copyright, Museum Victoria

Bivalves

Family	Species
Hyriidae	<i>Velesunio ambiguus</i>



Flora

Flowering Plants	
Family	Species
Aizoaceae	<i>Mesembryanthemum nodiflorum</i> ^ *
	<i>Psilocalon granulicaule</i> ^ *
Amaranthaceae	<i>Alternanthera denticulata</i> *
	<i>Alternanthera nodiflora</i> + *
	<i>Alternanthera</i> sp. (M.Gray 5187) *
	<i>Amaranthus grandiflorus</i> + *
	<i>Ptilotus nobilis</i> *
Amaryllidaceae	<i>Crinum flaccidum</i> ~ + *
Apiaceae	<i>Daucus glochidiatus</i> *
Apocynaceae	<i>Marsdenia australis</i> + *
Asparagaceae	<i>Asparagus officinalis</i> ^ *



Saltbush mallee, M. Norman © Copyright, Museum Victoria

Flowering Plants	
Family	Species
Asphodelaceae	<i>Bulbine alata</i>
	<i>Bulbine semibarbata</i> *
Asteraceae	<i>Angianthus brachypappus</i> +
	<i>Brachyscome basaltica</i> *
	<i>Brachyscome basaltica</i> var. <i>gracilis</i> *
	<i>Brachyscome ciliaris</i> var. <i>ciliaris</i> *
	<i>Brachyscome ciliaris</i> var. <i>lanuginosa</i> *
	<i>Brachyscome dentata</i> *
	<i>Brachyscome melanocarpa</i> *
	<i>Calocephalus sonderi</i> *
	<i>Calotis cuneifolia</i> + *
	<i>Calotis hispidula</i> *
	<i>Calotis scabiosifolia</i> var. <i>scabiosifolia</i> *
	<i>Calotis scapigera</i> *
	<i>Carthamus lanatus</i> ^ *
	<i>Centaurea melitensis</i> ^ *
	<i>Centipeda crateriformis</i>
	<i>Centipeda crateriformis</i> subsp. <i>compacta</i> + *
	<i>Centipeda cunninghamii</i>
	<i>Centipeda minima</i> *
	<i>Centipeda minima</i> subsp. <i>minima</i> *
	<i>Centipeda nidiformis</i> + *
	<i>Centipeda pleiocephala</i> +
	<i>Centipeda thespidioides</i> +
	<i>Chrysocephalum apiculatum</i> *
	<i>Cirsium vulgare</i> ^ *
	<i>Craspedia haplorrhiza</i> +
	<i>Elachanthus glaber</i> + *
	<i>Elachanthus pusillus</i> +
<i>Epaltes australis</i> *	

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Flowering Plants	
Family	Species
Asteraceae	<i>Epaltes cunninghamii</i> +
	<i>Eriochlamys behrii</i> +
	<i>Euchiton sphaericus</i> *
	<i>Gnaphalium polycaulon</i> ^ *
	<i>Hedypnois rhagadioloides</i> subsp. <i>rhagadioloides</i> ^ *
	<i>Helichrysum luteoalbum</i> *
	<i>Hypochaeris glabra</i> ^ *
	<i>Lactuca serriola</i> ^ *
	<i>Leptorhynchos tetrachaetus</i>
	<i>Minuria cunninghamii</i> +
	<i>Minuria denticulata</i> + *
	<i>Minuria integerrima</i> +
	<i>Olearia pimeleoides</i> *
	<i>Onopordum acaulon</i> ^ *
	<i>Picnomon acarna</i> ^ *
	<i>Picris squarrosa</i> + *
	<i>Polycalymma stuartii</i> *
	<i>Pycnosorus pleiocephalus</i>
	<i>Reichardia tingitana</i> ^ *
	<i>Rhodanthe moschata</i>
	<i>Rhodanthe polygalifolia</i> +
	<i>Rhodanthe stricta</i> ~ +
	<i>Rhodanthe stuartiana</i>
	<i>Senecio cunninghamii</i> *
	<i>Senecio glossanthus</i>
	<i>Senecio pinnatifolius</i> *
	<i>Senecio platylepis</i> +
	<i>Senecio productus</i>
	<i>Senecio runcinifolius</i>
	<i>Senecio spanomerus</i> *
	<i>Sonchus hydrophilus</i> *
	<i>Vittadinia cervicalis</i> *
	<i>Vittadinia condyloides</i> + *
	<i>Vittadinia cuneata</i> *
<i>Vittadinia dissecta</i> var. <i>dissecta</i> + *	
<i>Vittadinia dissecta</i> var. <i>hirta</i> *	
<i>Vittadinia gracilis</i> *	
<i>Xanthium strumarium</i> ^ *	
<i>Xerochrysum bracteatum</i> *	

Flowering Plants	
Family	Species
Boraginaceae	<i>Echium plantagineum</i> ^ *
	<i>Heliotropium curassavicum</i> ^ *
	<i>Heliotropium europaeum</i> ^ *
	<i>Heliotropium supinum</i> ^ *
	<i>Neatostema apulum</i> ^ *
Brassicaceae	<i>Brassica tournefortii</i> ^ *
	<i>Carrichtera annua</i> ^ *
	<i>Lepidium fasciculatum</i> + *
	<i>Lepidium pseudohyssopifolium</i> ~ + *
	<i>Rorippa eustylis</i> + *
<i>Rorippa palustris</i> ^ *	
Campanulaceae	<i>Lobelia concolor</i> *
	<i>Wahlenbergia communis</i> *
	<i>Wahlenbergia fluminalis</i> *
	<i>Wahlenbergia gracilis</i> *
<i>Wahlenbergia</i> sp. *	
Caryophyllaceae	<i>Herniaria cinerea</i> ^ *
	<i>Silene apetala</i> ^ *
	<i>Spergularia brevifolia</i> *
	<i>Spergularia diandra</i> ^ *
	<i>Spergularia diandroides</i> *
<i>Stellaria multiflora</i>	
Casuarinaceae	<i>Casuarina pauper</i>
Chenopodiaceae	<i>Atriplex eardleyae</i>
	<i>Atriplex holocarpa</i> ~ +
	<i>Atriplex leptocarpa</i>
	<i>Atriplex limbata</i> ~ +
	<i>Atriplex lindleyi</i> subsp. <i>conduplicata</i> +
	<i>Atriplex lindleyi</i> subsp. <i>inflata</i> *
	<i>Atriplex nummularia</i> subsp. <i>omissa</i> + *
	<i>Atriplex pseudocampanulata</i> + *
	<i>Atriplex rhagodioides</i> ~ +
	<i>Atriplex semibaccata</i> *
	<i>Atriplex suberecta</i> *
	<i>Atriplex vesicaria</i> *
	<i>Chenopodium desertorum</i> subsp. <i>desertorum</i> + *
	<i>Chenopodium murale</i> ^ *
	<i>Chenopodium nitrariaceum</i>



Flowering Plants	
Family	Species
Chenopodiaceae	<i>Dissocarpus biflorus</i> var. <i>biflorus</i> +
	<i>Dissocarpus paradoxus</i> *
	<i>Dysphania cristata</i> *
	<i>Dysphania pumilio</i> *
	<i>Einadia nutans</i> *
	<i>Enchylaena tomentosa</i> *
	<i>Maireana aphylla</i> + *
	<i>Maireana appressa</i> *
	<i>Maireana brevifolia</i> *
	<i>Maireana decalvans</i> *
	<i>Maireana erioclada</i> *
	<i>Maireana georgei</i> + *
	<i>Maireana pentagona</i> *
	<i>Maireana pyramidata</i> *
	<i>Maireana sedifolia</i> + *
	<i>Maireana turbinata</i> *
	<i>Malacocera tricornis</i> + *
	<i>Osteocarpum acropterum</i> var. <i>deminutum</i> ^ *
	<i>Osteocarpum salsuginosum</i> ^ *
	<i>Rhagodia spinescens</i> *
	<i>Salsola australis</i> ^ *
	<i>Sclerolaena brachyptera</i>
	<i>Sclerolaena decurrens</i> + *
	<i>Sclerolaena diacantha</i> *
	<i>Sclerolaena divaricata</i> +
	<i>Sclerolaena intricata</i> +
	<i>Sclerolaena muricata</i> var. <i>muricata</i> + *
	<i>Sclerolaena muricata</i> var. <i>villosa</i> *
	<i>Sclerolaena obliquicuspis</i> *
	<i>Sclerolaena patenticuspis</i> + *
<i>Sclerolaena stelligera</i> *	
<i>Sclerolaena tricuspis</i> *	
<i>Tecticornia pergranulata</i> *	
<i>Tecticornia pruinosa</i> *	
<i>Tecticornia pterygosperma</i> subsp. <i>pterygosperma</i> *	



Close up detail of the unusual flowers of a saltbush (*Atriplex* sp.), C. Barnes
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Flowering Plants	
Family	Species
Chenopodiaceae	<i>Tecticornia tenuis</i> *
	<i>Tecticornia triandra</i>
	<i>Tetragonia eremaea</i> + *
	<i>Tetragonia moorei</i> + *
Convolvulaceae	<i>Convolvulus clementii</i> +
	<i>Convolvulus remotus</i>
	<i>Cressa australis</i> *
	<i>Cuscuta campestris</i> ^ *
	<i>Cuscuta tasmanica</i> *
Crassulaceae	<i>Crassula colorata</i> var. <i>acuminata</i> *
Cucurbitaceae	<i>Citrullus colocynthis</i> ^ *
	<i>Citrullus lanatus</i> ^ *
	<i>Cucumis myriocarpus</i> ^ *
Cyperaceae	<i>Bolboschoenus medianus</i> *
	<i>Cyperus pygmaeus</i> + *
Elatinaceae	<i>Bergia trimeria</i> + *
	<i>Elatine gratioloides</i> *
Euphorbiaceae	<i>Euphorbia drummondii</i> *

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Flowering Plants	
Family	Species
Fabaceae	<i>Acacia ligulata</i>
	<i>Acacia nyssophylla</i>
	<i>Acacia oswaldii</i> + *
	<i>Acacia salicina</i> *
	<i>Acacia stenophylla</i>
	<i>Glycyrrhiza acanthocarpa</i> *
	<i>Lotus cruentus</i> *
	<i>Medicago minima</i> ^ *
	<i>Medicago truncatula</i> ^ *
	<i>Melilotus indicus</i> ^ *
	<i>Senna artemisioides</i> subsp. x <i>petiolaris</i>
	<i>Swainsona greyana</i> ~ +
	<i>Swainsona microphylla</i> + *
	<i>Swainsona reticulata</i> ~ + *
	<i>Swainsona sericea</i> ~ + *
<i>Trifolium arvense</i> ^ *	
<i>Trigonella suavissima</i> + *	

Flowering Plants	
Family	Species
Gentianaceae	<i>Schenkia australis</i> *
Geraniaceae	<i>Erodium crinitum</i> *
Goodeniaceae	<i>Goodenia fascicularis</i> *
	<i>Goodenia glauca</i> *
	<i>Goodenia heteromera</i> *
	<i>Goodenia pinnatifida</i> *
Haloragaceae	<i>Haloragis</i> sp. *
Juncaceae	<i>Juncus aridicola</i> *
	<i>Juncus bufonius</i>
Juncaginaceae	<i>Triglochin</i> sp. A (G.J.Keighery 2477)
Lamiaceae	<i>Marrubium vulgare</i> ^ *
	<i>Mentha australis</i> *
	<i>Salvia verbenaca</i> var. <i>vernalis</i> ^ *
	<i>Teucrium racemosum</i> *
Loranthaceae	<i>Amyema linophylla</i> subsp. <i>orientalis</i> + *
	<i>Amyema miquelii</i> *
	<i>Lysiana exocarpi</i> *
Lythraceae	<i>Ammannia multiflora</i> + *



Black Box (*Eucalyptus largiflorens*) on the river bank, M. Norman © Copyright, Museum Victoria



Flowering Plants	
Family	Species
Malvaceae	<i>Abutilon otocarpum</i> + *
	<i>Lawrencia glomerata</i> *
	<i>Malva preissiana</i> *
	<i>Sida ammophila</i> + *
	<i>Sida intricata</i> + *
	<i>Sida trichopoda</i> *
Molluginaceae	<i>Glinus lotoides</i> *
	<i>Glinus oppositifolius</i> *
Myrtaceae	<i>Eucalyptus camaldulensis</i>
	<i>Eucalyptus dumosa</i>
	<i>Eucalyptus gracilis</i> *
	<i>Eucalyptus largiflorens</i>
	<i>Eucalyptus oleosa</i>
	<i>Eucalyptus socialis</i>
	<i>Melaleuca lanceolata</i> *
Nitrariaceae	<i>Nitraria billardieri</i> *
Nyctaginaceae	<i>Boerhavia coccinea</i> *
	<i>Boerhavia dominii</i> *
Onagraceae	<i>Ludwigia peploides</i> subsp. <i>montevidensis</i> ^ *
Oxalidaceae	<i>Oxalis perennans</i> *
	<i>Oxalis</i> sp. ^ *
	<i>Oxalis thompsoniae</i> + *
Phrymaceae	<i>Limosella curdieana</i>
	<i>Mimulus prostratus</i> + *
Phyllanthaceae	<i>Phyllanthus lacunarius</i> + *
	<i>Phyllanthus lacunellus</i> + *
Pittosporaceae	<i>Pittosporum angustifolium</i> *
Plantaginaceae	<i>Callitriche sonderi</i> *
	<i>Gratiola pumilo</i> + *
	<i>Stemodia florulenta</i> *
	<i>Stemodia glabella</i> +
Plumbaginaceae	<i>Limonium lobatum</i> ^ *
Poaceae	<i>Aristida contorta</i> *
	<i>Arundo donax</i> ^ *
	<i>Austrostipa drummondii</i> *

Flowering Plants	
Family	Species
Poaceae	<i>Austrostipa nitida</i> *
	<i>Austrostipa scabra</i> *
	<i>Austrostipa scabra</i> subsp. <i>scabra</i> *
	<i>Bromus arenarius</i> +
	<i>Bromus rubens</i> ^ *
	<i>Cynodon dactylon</i> var. <i>pulchellus</i> + *
	<i>Elymus multiflorus</i> +
	<i>Enneapogon avenaceus</i> *
	<i>Eragrostis australasica</i> +
	<i>Eragrostis cilianensis</i> ^ *
	<i>Eragrostis dielsii</i> *
	<i>Eragrostis falcata</i> + *
	<i>Eragrostis setifolia</i> + *
	<i>Eragrostis</i> sp. *
	<i>Eriochloa crebra</i> + *
	<i>Lachnagrostis filiformis</i>
<i>Paspalidium jubiflorum</i> *	
<i>Paspalum distichum</i> ^	
<i>Poa fordeana</i>	



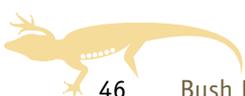
Sunset at Neds Corner Station homestead, B. Baehr © Copyright, Queensland Museum

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Flowering Plants	
Family	Species
Poaceae	<i>Polypogon monspeliensis</i> ^ *
	<i>Rytidosperma setaceum</i> *
	<i>Schismus barbatus</i> ^ *
	<i>Sporobolus mitchellii</i> *
	<i>Tragus australianus</i> + *
	<i>Tripogon loliiformis</i> + *
	<i>Triraphis mollis</i> + *
Polygonaceae	<i>Emex spinosa</i> ^ *
	<i>Muehlenbeckia florulenta</i> *
	<i>Muehlenbeckia horrida</i> subsp. <i>horrida</i> + *
	<i>Persicaria lapathifolia</i> *
	<i>Persicaria prostrata</i> *
	<i>Polygonum aviculare</i> ^ *
	<i>Polygonum plebeium</i> *
	<i>Rumex brownii</i> *
	<i>Rumex crystallinus</i> + *
<i>Rumex tenax</i> *	
Portulacaceae	<i>Portulaca oleracea</i> *
Primulaceae	<i>Lysimachia arvensis</i> ^ *
Proteaceae	<i>Grevillea huegelii</i>
Rubiaceae	<i>Asperula gemella</i> + *
	<i>Synaptantha tillaeacea</i> var. <i>tillaeacea</i> + *



Pigface survive dry times by storing water in their fleshy leaves, M. Norman
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Flowering Plants	
Family	Species
Santalaceae	<i>Exocarpos aphyllus</i> *
	<i>Exocarpos strictus</i> *
Sapindaceae	<i>Alectryon oleifolius</i> subsp. <i>canescens</i> *
	<i>Dodonaea viscosa</i> *
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i> *
Scrophulariaceae	<i>Eremophila bignoniiflora</i> ~ + *
	<i>Eremophila divaricata</i> subsp. <i>divaricata</i> + *
	<i>Eremophila longifolia</i> *
	<i>Eremophila maculata</i> *
	<i>Eremophila polyclada</i> + *
	<i>Myoporum parvifolium</i> *
	<i>Myoporum platycarpum</i>
Solanaceae	<i>Nicotiana glauca</i> ^ *
	<i>Nicotiana goodspeedii</i> + *
	<i>Nicotiana velutina</i> *
	<i>Solanum esuriale</i> *
	<i>Solanum lacunarium</i> +
	<i>Solanum nigrum</i> ^ *



Neds Corner Station rewards the observant visitor with some stunning wildflower displays (Poached-eggs Daisy *Polycalymma stuartii*), M. Norman
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Flowering Plants	
Family	Species
Thymelaeaceae	<i>Pimelea microcephala</i> *
	<i>Pimelea trichostachya</i> *
Verbenaceae	<i>Phyla canescens</i> ^ *
	<i>Verbena gaudichaudii</i> *
	<i>Verbena officinalis</i> *
	<i>Verbena officinalis</i> var. <i>africana</i> + *
	<i>Verbena officinalis</i> var. <i>halei</i> *
	<i>Verbena supina</i> var. <i>supina</i> ^ *
Zygophyllaceae	<i>Zygophyllum ammophilum</i> *
	<i>Zygophyllum angustifolium</i> + *
	<i>Zygophyllum apiculatum</i>
	<i>Zygophyllum crenatum</i>
	<i>Zygophyllum ermaeum</i> *
	<i>Zygophyllum glaucum</i> *
	<i>Zygophyllum iodocarpum</i> *

Conifers	
Family	Species
Cupressaceae	<i>Callitris gracilis</i> *

Ferns	
Family	Species
Marsileaceae	<i>Marsilea costulifera</i> *
	<i>Marsilea drummondii</i> *



The stems of this moss's fruiting bodies capture the early morning dew, C. Barnes
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Liverworts	
Family	Species
Ricciaceae	<i>Riccia</i> sp. 01 *
	<i>Riccia</i> sp. 02 *

Mosses	
Family	Species
Funariaceae	<i>Physcomitrella readeri</i> *
Pottiaceae	<i>Syntrichia pagorum</i> *

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Lichens	
Family	Species
Acarosporaceae	<i>Acarospora glaucocarpa</i> *
Lecanoraceae	<i>Lecanora</i> sp. *
	<i>Lecidea</i> sp. *
Parmeliaceae	<i>Austroparmelia norpruinata</i> *
	<i>Flavoparmelia ferax</i> *
	<i>Xanthoparmelia bellatula</i> *
Pertusariaceae	<i>Pertusaria</i> sp. *
Physciaceae	<i>Amandinea lignicola</i> var. <i>australis</i> *
	<i>Amandinea</i> sp. *
	<i>Diplotomma venustum</i> *
	<i>Physcia</i> sp. *
Teloschistaceae	<i>Caloplaca</i> sp. 01 *
	<i>Caloplaca</i> sp. 02 *
	<i>Caloplaca</i> sp. 03 *
	<i>Caloplaca</i> sp. 04 *
	<i>Xanthoria</i> sp. *



This yellow lichen (*Xanthoria* sp.) adds brilliant colour to an old tree stump, C. Barnes © Copyright, Trust for Nature

Fungi	
Family	Species
Agaricaceae	<i>Agaricus colpeteii</i> n. sp. *
	<i>Agaricus</i> sp. *
	<i>Battarrea stevenii</i> *
	<i>Bovista</i> sp. aff. <i>brunnea</i> *
	<i>Disciseda hyalothrix</i> *
	<i>Disciseda kiata</i> *
	<i>Lycoperdon</i> sp. *
	<i>Montagnea arenaria</i> *
	<i>Mycenastrum corium</i> *
	<i>Podaxis pistillaris</i> *
	<i>Tulostoma australianum</i> *
	<i>Tulostoma berteroanum</i> *
	<i>Tulostoma chudaei</i> *
	<i>Tulostoma</i> sp. *
	<i>Tulostoma</i> sp. aff. <i>berteroanum</i> *
<i>Tulostoma striatum</i> *	
Amanitaceae	<i>Amanita clelandii</i> *
	<i>Amanita</i> sp. *
Botryosphaeriaceae	<i>Botryosphaeria dothidea</i> *
Fomitopsidaceae	<i>Daedalea</i> sp. *
	<i>Laetiporus portentosus</i> *
Geastraceae	<i>Geastrum clelandii</i> *
Meruliaceae	<i>Gloeoporus</i> sp. *



Rainfall at Neds Corner Station resulted in the rapid appearance of fungi like this earthstar fungus (*Geastrum clelandii*), M. Norman © Copyright, Museum Victoria



Fungi	
Family	Species
Phelloriniaceae	<i>Phellorinia herculeana</i> *
Polyporaceae	<i>Fomes</i> sp. *
	<i>Hexagonia vesparia</i> *
	<i>Polyporus</i> sp. *
	<i>Polyporus</i> sp. 'pale grey upper' *
	<i>Pycnoporus coccineus</i> *
Psathyrellaceae	<i>Coprinus</i> sp. *
	<i>Coprinus</i> sp. aff. <i>disseminatus</i> *
	<i>Coprinus</i> sp. 'white shaggy' *
	<i>Panaeolus</i> sp. *
Sclerodermataceae	<i>Scleroderma</i> sp. aff. <i>cepa</i> *
Serpulaceae	<i>Austropaxillus</i> sp. aff. <i>muelleri</i> *
Strophariaceae	<i>Galerina</i> sp. *
Tremellaceae	<i>Tremella mesenterica</i> *
Xylariaceae	<i>Poronia erici</i> *

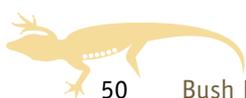
Slime Moulds	
Family	Species
Reticulariaceae	<i>Lycogala epidendrum</i> *



The Tinder Punk fungus (*Laetiporus portentosus*), used by Aboriginal people as a fire starter, M. Norman © Copyright, Museum Victoria

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





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 September 2013



Fauna

Vertebrates

Mammals			
Family	Species	Common name	Status
Dasyuridae	<i>Planigale gilesi</i>	Paucident Planigale	FFG — Threatened DEPI — Near Threatened
	<i>Sminthopsis crassicaudata</i> *	Fat-tailed Dunnart	DEPI — Near Threatened
Emballonuridae	<i>Saccolaimus flaviventris</i> *	Yellow-bellied Sheath-tail-bat	FFG — Threatened DEPI — Data Deficient
Macropodidae	<i>Onychogalea fraenata</i>	Bridled Nailtail Wallaby	EPBC — Endangered FFG — Threatened DEPI — Endangered
Muridae	<i>Notomys mitchellii</i>	Mitchell's Hopping-mouse	DEPI — Near Threatened
Vespertilionidae	<i>Myotis macropus</i> *	Large-footed Myotis, Southern Myotis	DEPI — Near Threatened
	<i>Scotorepens greyii</i> *	Little Broad-nosed Bat	DEPI — Near Threatened

Birds			
Family	Species	Common name	Status
Accipitridae	<i>Circus assimilis</i>	Spotted Harrier	DEPI — Near Threatened
Anatidae	<i>Aythya australis</i>	Hardhead	DEPI — Vulnerable
Ardeidae	<i>Ardea modesta</i>	Eastern Great Egret	FFG — Threatened
			DEPI — Vulnerable
Casuariidae	<i>Dromaius novaehollandiae</i>	Emu	DEPI — Near Threatened
Charadriidae	<i>Charadrius australis</i>	Inland Dotterel, Inland Plover	DEPI — Vulnerable
Columbidae	<i>Geopelia cuneata</i> *	Diamond Dove	FFG — Threatened
			DEPI — Near Threatened
Corcoracidae	<i>Struthidea cinerea</i>	Apostlebird	FFG — Threatened

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





Birds			
Family	Species	Common name	Status
Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	FFG — Threatened DEPI — Endangered
Phalacrocoracidae	<i>Phalacrocorax varius</i>	Pied Cormorant	DEPI — Near Threatened
Psittacidae	<i>Polytelis anthopeplus</i>	Regent Parrot	EPBC — Vulnerable FFG — Threatened DEPI — Vulnerable
Turnicidae	<i>Turnix velox</i> *	Little Button-quail	DEPI — Near Threatened



Emus (*Dromaius novaehollandiae*) on the alert, D. Paul © Copyright, Museum Victoria



Eastern Great Egret (*Ardea modesta*), M. Norman © Copyright, Museum Victoria

Reptiles			
Family	Species	Common name	Status
Agamidae	<i>Pogona barbata</i>	Bearded Dragon, Common Bearded Dragon, Eastern Bearded Dragon	DEPI — Vulnerable
Diplodactylidae	<i>Rhynchoedura ornata</i>	Western Beaked Gecko	FFG — Threatened DEPI — Critically Endangered
Elapidae	<i>Vermicella annulata</i>	Bandy-bandy	FFG — Threatened DEPI — Vulnerable
Varanidae	<i>Varanus varius</i> *	Lace Monitor	DEPI — Endangered



Invertebrates

Moths			
Family	Species	Common name	Status
Noctuidae	<i>Donuca spectabilis</i> *	White-spotted Owl Moth	DEPI — Data Deficient

Dragonflies			
Family	Species	Common name	Status
Gomphidae	<i>Austrogomphus angelorum</i>	Murray River Hunter	DEPI — Data Deficient

Snails and Slugs			
Family	Species	Common name	Status
Viviparidae	<i>Notopala sublineata</i>	River Snail	FFG — Threatened; DEPI — Threatened
	<i>Notopala sublineata hanleyi</i>	River Snail	FFG — Threatened; DEPI — Threatened

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Flora

Flowering plants			
Family	Species	Common name	Status
Amaranthaceae	<i>Alternanthera nodiflora</i> *	Common Joyweed	DEPI — Poorly Known
	<i>Amaranthus grandiflorus</i> *	Large-flowered Amaranth	DEPI — Vulnerable
Amaryllidaceae	<i>Crinum flaccidum</i> *	Darling Lily, Murray Lily	FFG — Threatened DEPI — Vulnerable
Apocynaceae	<i>Marsdenia australis</i> *	Doubah	DEPI — Vulnerable
Asteraceae	<i>Angianthus brachypappus</i>	Spreading Angianthus	DEPI — Vulnerable
	<i>Calotis cuneifolia</i> *	Blue Burr-daisy	DEPI — Rare
	<i>Centipeda crateriformis</i> subsp. <i>compacta</i> *	Compact Sneezeweed	DEPI — Rare
	<i>Centipeda nidiformis</i> *	Cotton Sneezeweed	DEPI — Rare
	<i>Centipeda pleiocephala</i>	Tall Sneezeweed	DEPI — Presumed Extinct
	<i>Centipeda thespidioides</i>	Desert Sneezeweed	DEPI — Rare
	<i>Craspedia haplorrhiza</i>	Plains Billy-buttons	DEPI — Poorly Known
	<i>Elachanthus glaber</i> *	Smooth Elachanth	DEPI — Rare
	<i>Elachanthus pusillus</i>	Small Elachanth	DEPI — Rare
	<i>Epaltis cunninghamii</i>	Tall Nut-heads	DEPI — Vulnerable
	<i>Eriochlamys behrii</i>	Woolly Mantle	DEPI — Rare
	<i>Minuria cunninghamii</i>	Bush Minuria	DEPI — Rare
	<i>Minuria denticulata</i> *	Woolly Minuria	DEPI — Rare
	<i>Minuria integerrima</i>	Smooth Minuria	DEPI — Rare
	<i>Picris squarrosa</i> *	Squat Picris	DEPI — Rare
	<i>Rhodanthe polygalifolia</i>	Brilliant Sunray	DEPI — Rare
	<i>Rhodanthe stricta</i>	Slender Sunray	FFG — Threatened DEPI — Endangered
	<i>Senecio platylepis</i>	Toothed Grounel	DEPI — Rare
	<i>Vittadinia condyloides</i> *	Club-hair New Holland Daisy	DEPI — Rare
	<i>Vittadinia dissecta</i> var. <i>dissecta</i> *	Dissected New Holland Daisy	DEPI — Poorly Known
Brassicaceae	<i>Lepidium fasciculatum</i> *	Bundled Peppercross	DEPI — Poorly Known
	<i>Lepidium pseudohyssopifolium</i> *	Peppercross	FFG — Threatened DEPI — Poorly Known
	<i>Rorippa eustylis</i> *	Dwarf Bitter-cress	DEPI — Rare

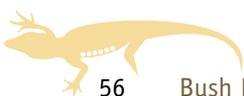


Flowering plants			
Family	Species	Common name	Status
Chenopodiaceae	<i>Atriplex holocarpa</i>	Pop Saltbush	FFG — Threatened DEPI — Vulnerable
	<i>Atriplex limbata</i>	Spreading Saltbush	FFG — Threatened DEPI — Vulnerable
	<i>Atriplex lindleyi</i> subsp. <i>conduplicata</i>	Baldoo	DEPI — Rare
	<i>Atriplex nummularia</i> subsp. <i>omissa</i> *	Dwarf Old-man Saltbush	DEPI — Rare
	<i>Atriplex pseudocampanulata</i> *	Fan Saltbush	DEPI — Rare
	<i>Atriplex rhagodioides</i>	River Saltbush	FFG — Threatened DEPI — Vulnerable
	<i>Chenopodium desertorum</i> subsp. <i>desertorum</i> *	Frosted Goosefoot	DEPI — Rare
	<i>Dissocarpus biflorus</i> var. <i>biflorus</i>	Twin-flower Saltbush	DEPI — Rare
	<i>Maireana aphylla</i> *	Cotton Bush	DEPI — Poorly Known
	<i>Maireana georgei</i> *	Satiny Bluebush	DEPI — Vulnerable
	<i>Maireana sedifolia</i> *	Pearl Bluebush	DEPI — Rare
	<i>Malacocera tricornis</i> *	Soft Horns, Goat-head	DEPI — Rare
	<i>Sclerolaena decurrens</i> *	Green Copperburr	DEPI — Vulnerable
	<i>Sclerolaena divaricata</i>	Tangled Copperburr	DEPI — Poorly Known



Bignonia Emu-bush (*Eremophila bignoniiflora*), A. Lyne © Copyright, Australian National Botanic Gardens (Australian Plant Image Index www.anbg.gov.au/photo)

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Flowering plants			
Family	Species	Common name	Status
Chenopodiaceae	<i>Sclerolaena intricata</i>	Poverty Bush	DEPI — Vulnerable
	<i>Sclerolaena muricata</i> var. <i>muricata</i> *	Black Roly-poly	DEPI — Poorly Known
	<i>Sclerolaena patenticuspis</i> *	Spear-fruit Saltbush	DEPI — Vulnerable
	<i>Tetragonia eremaea</i> *	Desert Spinach	DEPI — Poorly Known
	<i>Tetragonia moorei</i> *	Annual Spinach	DEPI — Poorly Known
Convolvulaceae	<i>Convolvulus clementii</i>	Desert Bindweed	DEPI — Vulnerable
Cyperaceae	<i>Cyperus pygmaeus</i> *	Dwarf Sedge	DEPI — Vulnerable
Elatinaceae	<i>Bergia trimera</i> *	Small Water-fire	DEPI — Vulnerable
Fabaceae	<i>Acacia oswaldii</i> *	Umbrella Wattle, Umbrella Bush	DEPI — Vulnerable
	<i>Swainsona greyana</i>	Darling Pea	FFG — Threatened DEPI — Endangered
	<i>Swainsona microphylla</i> *	Small-leaf Swainson-pea	DEPI — Rare
	<i>Swainsona reticulata</i> *	Kneed Swainson-pea	FFG — Threatened DEPI — Vulnerable
	<i>Swainsona sericea</i> *	Silky Swainson-pea	FFG — Threatened DEPI — Vulnerable
	<i>Trigonella suavissima</i> *	Sweet Fenugreek	DEPI — Rare
Loranthaceae	<i>Amyema linophylla</i> subsp. <i>orientalis</i> *	Buloke Mistletoe	DEPI — Vulnerable
Lythraceae	<i>Ammannia multiflora</i> *	Jerry-jerry	DEPI — Vulnerable
Malvaceae	<i>Abutilon otocarpum</i> *	Desert Lantern	DEPI — Vulnerable
	<i>Sida ammophila</i> *	Sand Sida	DEPI — Vulnerable
	<i>Sida intricata</i> *	Twiggy Sida	DEPI — Vulnerable
Oxalidaceae	<i>Oxalis thompsoniae</i> *	Fluffy-fruit Wood-sorrel	DEPI — Poorly Known
Phrymaceae	<i>Mimulus prostratus</i> *	Small Monkey Flower	DEPI — Rare
Phyllanthaceae	<i>Phyllanthus lacunarius</i> *	Lagoon Spurge	DEPI — Vulnerable
	<i>Phyllanthus lacunellus</i> *	Sandhill Spurge	DEPI — Rare
Plantaginaceae	<i>Gratiola pumilo</i> *	Dwarf Brooklime	DEPI — Rare
	<i>Stemodia glabella</i>	Bluerod	DEPI — Poorly Known
Poaceae	<i>Bromus arenarius</i>	Sand Broome	DEPI — Rare
	<i>Cynodon dactylon</i> var. <i>pulchellus</i> *	Native Couch	DEPI — Poorly Known
	<i>Elymus multiflorus</i>	Short-awned Wheat-grass	DEPI — Poorly Known
	<i>Eragrostis australasica</i>	Bamboo, Canegrass	DEPI — Vulnerable
	<i>Eragrostis falcata</i> *	Sickle Lovegrass	DEPI — Poorly Known
	<i>Eragrostis setifolia</i> *	Neverfail Grass	DEPI — Vulnerable
	<i>Eriochloa crebra</i> *	Cup Grass	DEPI — Poorly Known
	<i>Tragus australianus</i> *	Small Burrgrass	DEPI — Rare
	<i>Tripogon loliiformis</i> *	Five-minute Grass, Rye Beetlegrass, Eight-day Grass	DEPI — Rare
	<i>Triraphis mollis</i> *	Needle Grass, Purple Plumegrass	DEPI — Rare



Flowering plants			
Family	Species	Common name	Status
Polygonaceae	<i>Muehlenbeckia horrida</i> subsp. <i>horrida</i> *	Spiny Lignum	DEPI — Rare
	<i>Rumex crystallinus</i> *	Shiny Dock	DEPI — Vulnerable
Rubiaceae	<i>Asperula gemella</i> *	Twin-leaved Bedstraw	DEPI — Rare
	<i>Synaptantha tillaeacea</i> var. <i>tillaeacea</i> *	–	DEPI — Vulnerable
Scrophulariaceae	<i>Eremophila bignoniiflora</i> *	Bignonia Emu-bush	FFG — Threatened; DEPI — Vulnerable
	<i>Eremophila divaricata</i> subsp. <i>divaricata</i> *	Spreading Emu-bush	DEPI — Rare
	<i>Eremophila polyclada</i> *	Twiggy Emu-bush	DEPI — Vulnerable
Solanaceae	<i>Nicotiana goodspeedii</i> *	Small-flower Tobacco	DEPI — Rare
	<i>Solanum lacunarium</i>	Lagoon Nightshade	DEPI — Vulnerable
Verbenaceae	<i>Verbena africana</i> *	Inland Verbena	DEPI — Poorly Known
Zygophyllaceae	<i>Zygophyllum angustifolium</i> *	Scrambling Twinleaf	DEPI — Rare

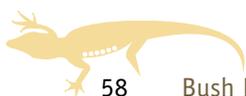


Pop Saltbush (*Atriplex holocarpa*), M. Fagg © Copyright, Australian National Botanic Gardens (Australian Plant Image Index www.anbg.gov.au/photo)



Bignonia Emu-bush (*Eremophila bignoniiflora*), M. Fagg © Copyright, Australian National Botanic Gardens (Australian Plant Image Index www.anbg.gov.au/photo)

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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 September 2013



Fauna

Vertebrates

Mammals		
Family	Species	Common name
Bovidae	<i>Ovis aries</i>	Sheep
Canidae	<i>Vulpes vulpes</i>	Fox, Red Fox
Felidae	<i>Felis catus</i> *	Cat
Leporidae	<i>Lepus capensis</i>	Brown Hare
	<i>Oryctolagus cuniculus</i>	Rabbit
Muridae	<i>Mus musculus</i>	House Mouse

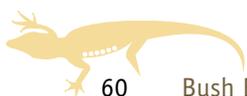


Rabbit (*Oryctolagus cuniculus*) © Copyright, Graeme Chapman

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Invertebrates

Butterflies		
Family	Species	Common name
Pieridae	<i>Pieris rapae</i> *	Cabbage White Butterfly

Moths		
Family	Species	Common name
Crambidae	<i>Achyra affnitalis</i> *	Cotton Web Spinner
	<i>Hellula hydralis</i> *	Cabbage Centre Grub
	<i>Sceliodes cordalis</i> *	Eggfruit Caterpillar
Geometridae	<i>Phrissogonus laticostata</i> *	Apple Looper
	<i>Zermizinga sinuata</i> *	Lucerne Looper
Limacodidae	<i>Doratifera vulnerans</i> *	Mottled Cup Moth
Noctuidae	<i>Agrotis infusa</i> *	Bogong Moth
	<i>Agrotis munda</i> *	Brown Cutworm, Pink Cutworm
	<i>Agrotis radians</i> *	Brown Cutworm
	<i>Agrotis sp.</i> *	Cutworm
	<i>Chrysodeixis argentifera</i> *	Tobacco Looper
	<i>Helicoverpa punctigera</i> *	Australian Bollworm
	<i>Heliothis punctifera</i> *	Lesser Budworm
	<i>Persectania dyscrita</i> *	Inland Armyworm
	<i>Spodoptera exigua</i> *	Lesser Armyworm, Beet Armyworm
<i>Xanthodes congenita</i> *	Hairy Leafeating Caterpillar	
Plutellidae	<i>Plutella xylostella</i> *	Diamondback Moth
Pyralidae	<i>Etiella behrii</i> *	Lucerne Seed Web Moth
Sphingidae	<i>Agrius convolvuli</i> *	Convolvulus Hawk Moth

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

Snails and Slugs		
Family	Species	Common name
Hygromiidae	<i>Microxeromagna lowei</i> *	Citrus Snail



Flora

Flowering Plants		
Family	Species	Common name
Aizoaceae	<i>Mesembryanthemum nodiflorum</i> *	Small Ice-plant
	<i>Psilocaulon granulicaule</i> *	Noon-flower
Asparagaceae	<i>Asparagus officinalis</i> *	Garden Asparagus
Asteraceae	<i>Carthamus lanatus</i> *	Saffron Thistle
	<i>Centaurea melitensis</i> *	Maltese Cockspur, Cockspur Thistle
	<i>Cirsium vulgare</i> *	Spear Thistle
	<i>Gnaphalium polycaulon</i> *	Indian Cudweed
	<i>Hedypnois rhagadioloides</i> subsp. <i>rhagadioloides</i> *	Cretan Weed
	<i>Hypochaeris glabra</i> *	Smooth Cats-ear
	<i>Lactuca serriola</i> *	Prickly Lettuce
	<i>Onopordum acaulon</i> *	Stemless Onopordum
	<i>Picnemon acarna</i> *	Soldier Thistle
	<i>Reichardia tingitana</i> *	Reichardia, False Sow-thistle
<i>Xanthium strumarium</i> *	Noogoora Burr	
Boraginaceae	<i>Echium plantagineum</i> *	Salvation Jane, Paterson's Curse
	<i>Heliotropium curassavicum</i> *	Smooth Heliotrope
	<i>Heliotropium europaeum</i> *	Common Heliotrope
	<i>Heliotropium supinum</i> *	Creeping Heliotrope, Prostrate Heliotrope
	<i>Neotostema apulum</i> *	Hairy Sheepweed, Blackweed
Brassicaceae	<i>Brassica tournefortii</i> *	Wild Turnip, Mediterranean Turnip
	<i>Carrichtera annua</i> *	Ward's Weed
	<i>Rorippa palustris</i> *	Marsh Watercress, Yellow Cress
Caryophyllaceae	<i>Herniaria cinerea</i> *	Dense Mat-plant, Hairy Rupture-wort
	<i>Silene apetala</i> *	Mallee Catchfly
	<i>Spergularia diandra</i> *	Lesser Sand-spurrey, Small Sand-spurrey
Chenopodiaceae	<i>Chenopodium murale</i> *	Green Fat Hen, Nettle-leaf Goosefoot
	<i>Osteocarpum acropterum</i> var. <i>deminutum</i> *	Wingless Bonefruit
	<i>Osteocarpum salsuginosum</i> *	Bonefruit
	<i>Salsola australis</i> *	Russian Tumbleweed
Convolvulaceae	<i>Cuscuta campestris</i> *	Golden Dodder, Field Dodder

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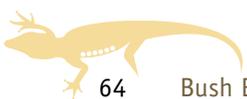
Flowering Plants		
Family	Species	Common name
Cucurbitaceae	<i>Citrullus colocynthis</i> *	Colocynth
	<i>Citrullus lanatus</i> *	Camel Melon, Bitter Melon, Wild Melon
	<i>Cucumis myriocarpus</i> *	Paddy Melon, Prickly Paddy Melon
Fabaceae	<i>Medicago minima</i> *	Little Medic, Woolly Burr Medic
	<i>Medicago truncatula</i> *	Barrel Medic
	<i>Melilotus indicus</i> *	Sweet Melilot, Hexham Scent
	<i>Trifolium arvense</i> *	Haresfoot Clover
Lamiaceae	<i>Marrubium vulgare</i> *	White Horehound, Horehound
	<i>Salvia verbenaca</i> var. <i>vernalis</i> *	Wild Sage
Onagraceae	<i>Ludwigia peploides</i> subsp. <i>montevidensis</i> *	Water Primrose, Clove-strip
Oxalidaceae	<i>Oxalis</i> sp. *	Oxalis
Plumbaginaceae	<i>Limonium lobatum</i> *	Winged Sea Lavender
Poaceae	<i>Arundo donax</i> *	Giant Reed
	<i>Bromus rubens</i> *	Red Brome
	<i>Eragrostis cilianensis</i> *	Stinkgrass
	<i>Paspalum distichum</i>	Water Couch
	<i>Polypogon monspeliensis</i> *	Annual Beardgrass
	<i>Schismus barbatus</i> *	Arabian Grass
Polygonaceae	<i>Emex spinosa</i> *	Lesser Jack
	<i>Polygonum aviculare</i> *	Wireweed, Hogweed, Knotweed
Primulaceae	<i>Lysimachia arvensis</i> *	Scarlet Pimpernel
Solanaceae	<i>Nicotiana glauca</i> *	Tree Tobacco
	<i>Solanum nigrum</i> *	Black Nightshade
Verbenaceae	<i>Phyla canescens</i> *	Fog-fruit
	<i>Verbena supina</i> var. <i>supina</i> *	Trailing Verbena



Garden Asparagus (*Asparagus officinalis*), M. Fagg © Copyright, Australian National Botanic Gardens (Australian Plant Image Index www.anbg.gov.au/photo)



Notes





Glossary



C

Cryptogam

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

D

Diurnal

Active during the day.

M

Macrofungi

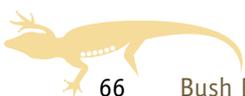
Fungi that produce large fruiting bodies, i.e. those visible to the naked eye and generally one centimetre or more in width or height.

Mesic

Species adapted to habitats with a moderate or well-balanced supply of moisture.



After the collecting comes the task of identifying all the samples — no easy task. David Albrecht and Andre Messina discuss the identity of a difficult specimen, B. Baehr © Copyright, Queensland Museum



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FRONT COVER A mantispid lacewing (family Mantispidae) on the bark of a tree at Neds Corner Station. Mantispids are so-called because they superficially resemble praying mantids, having raptorial front legs which they use to capture their prey, M. Norman © Copyright, Museum Victoria



Bush Blitz survey report



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