# <u>Little Desert Bush Blitz</u> *Terrestrial Invertebrates*

27–31 October 2019 Submitted: 27 February 2020 Claire Keely and Simon Hinkley



Green Carabid Beetle, *Calosoma schayeri* Photographer: Claire Keely | Source: Museums Victoria

Nomenclature and taxonomy used in this report is consistent with: The Australian Faunal Directory (AFD)

http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home

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List of contributors to this report.			
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# Abstract

Terrestrial invertebrate surveys were conducted in and around the Little Desert National Park, Victoria, 27–31 October 2019. Nine survey sites were selected based on their floral abundance, proximity to water, unburnt status and/or orientation within the National Park. Two of these survey sites were Standard Study Sites, which all participants were required to survey. Additionally, specimens were collected opportunistically at the Nhillbilly Farm basecamp. A number of different survey techniques were employed including direct searching, using a beating sheet and aspirator, leaf litter collection and light traps.

A total of 823 individuals from 24 orders and at least 66 families were collected. An additional 188 Araneae (spider) specimens were collected and assessed in a separate Bush Blitz report. One putative new species of Lepidoptera was discovered. It is difficult to ascertain with accuracy if any range extensions or significant infill in distribution records were detected. This is due to the large number of species collected and the fact that many specimens have not yet been identified to species level.

None of the species found were listed as critically endangered, endangered, vulnerable or conservation dependent under the Australian Environment Protection and Biodiversity Conservation Act 1999 or the Victorian Flora and Fauna Guarantee Act 1988. Four exotic species were collected during the survey period: The European Honey Bee, *Apis (Apis) mellifera,* The Portuguese Millipede, *Ommatoiulus moreletii,* The European earwig, *Forficula auricularia* and a Woodlouse (or Slater), *Porcellionides pruinosus.* 

# 1. Introduction

We surveyed terrestrial invertebrates, excluding Odonata (dragonflies and damselflies), and largely excluding Lepidoptera (moths) and Gastropoda (land snails), as these groups were specifically targeted by other research teams during the Little Desert Bush Blitz. Additionally, we collected Araneae (spiders), however these were identified and assessed in a separate Bush Blitz Report.

A number of small-scale surveys in the Little Desert National Park, conducted by Museums Victoria staff and affiliated researchers, have focussed on terrestrial invertebrates over the years. The oldest known terrestrial invertebrate from Little Desert National Park in the collections at Museums Victoria is a lepidopteran (moth) collected over 100 years ago, in 1916. Past large-scale survey efforts have concentrated on the Mallee region north of Little Desert National Park during the 1970s, and the Grampians region to the south-east in a 2012 Bioscan, rather than the Little Desert itself.

Pre-survey expectations were that terrestrial invertebrates would be abundant and diverse throughout Little Desert National Park. As 70% of the Australian mainland is classified as semi-arid, arid or desert, its fauna are well-adapted to environments such as the Little Desert. Australia has an estimated 250,000 species of insects and only approximately one third of these have been described (Jackson *et al.* 2016), therefore there was also high potential for undescribed species to be collected during the Little Desert Bush Blitz.

# 2. Methods

### 2.1

### Site selection

All participants were required to survey two Standard Study Sites (SSS1 and SSS2). Specimens collected at Nhillbilly Farm were largely opportunistic, as this was the base-camp location for the duration of the Little Desert Bush Blitz. Horseshoe Bend was chosen due to its proximity to the Wimmera River. The unnamed track in Urimbirra was chosen with help from owners of the land and Parks Victoria Indigenous Rangers, as the site remains unburnt and was abundant with flowers, which provide pollen and nectar for many terrestrial invertebrates to feed on. Three sites were chosen in the western section of Little Desert National Park (one site along the Lillimur Track (Fig. 1), one parallel to it and one along Laidlaws Dam Track). They were selected with help from Parks Victoria Indigenous Rangers and chosen due to their floral abundance. One site was chosen along Bluff Lookout Rd, Mt Arapiles, for its floral abundance. Site co-ordinates (GDA94) are listed in Table A.

Site Name	Latitude (°S)	Longitude (°E)
SSS1	-36.51698	142.02103
SSS2	-36.56969	141.33701
Nhillbilly Farm (base-camp)	-36.280516	141.699396
Horseshoe Bend	-36.49695	142.01813
Urimbirra Unnamed Track	-36.531383	141.397500
Lillimur Track	-36.555861	141.096861
Parallel to Lillimur Track	-36.50053	141.11400
Laidlaws Dam Track	-36.641000	141.043111
Bluff Lookout Rd, Mt Arapiles	-36.755972	141.840889

Table A. Survey site locations



**Figure 1.** Little Desert National Park West, Lillimur Track Photographer: Claire Keely | Source: Museums Victoria

### 2.2 Survey techniques

A number of different survey techniques were used in the field, these were:

1. Direct searching (Fig. 2), which involved collecting invertebrates with forceps and placing them directly into a container of 70% ethanol.



**Figure 2.** Direct searching Photographer: Heath Warwick | Source: Museums Victoria

2. Beating sheet and aspirator (Fig. 3). A sheet was laid out under a branch and the branch was beaten with a stick, dislodging invertebrates onto the sheet. These invertebrates were then collected with an aspirator, a container with two tubes through a rubber stopper, one of which was long and flexible and covered in fine mesh at one end. The collector placed the other, smaller tube, over the invertebrate, sucked on the tube with mesh and the in-draught of air sucked the invertebrate into the container.



**Figure 3.** Beating Sheet and aspirator Photographer: Heath Warwick | Source: Museums Victoria

3. Leaf litter collection (Fig. 4a) and Tullgren funnel sorting (Fig. 4b). Leaf litter was collected by hand and bagged then taken back to the Entomology Lab at Melbourne Museum, where it was placed in the Tullgren funnels. The Tullgren funnels consist of a container with a mesh/gauze base. A light bulb was suspended above each to heat and dry the sample, causing any invertebrates to move downwards, away from the light and increasingly dry upper layers, through a funnel and into a jar of 70% ethanol

(e.g. See Fig. 4b). The Tullgren funnels were left on for three weeks, to allow enough time for invertebrates to move from the leaf litter into the funnel and jar below, as leaf litter collected from extreme environments can require longer extraction periods (Barbarena-Arias et al. 2012).



**Figure 4. a.** Leaf litter collection; **b.**Tullgren funnel sorting Photographers: Heath Warwick (4a) and Claire Keely (4b) | Source: Museums Victoria

 Light sheet (Fig. 5). A white sheet was hung between two trees and a small, lightweight UV lamp (LepiLED) was used to attract nocturnal flying insects, which were then caught in a container.



**Figure 5.** Example of a light sheet set-up Photographer: Nishath Nizar | Source: Museums Victoria

### 2.2.1 Methods used at standard survey sites

Leaf litter collection and direct searching were used at SSS1. Leaf litter collection, direct searching and beating sheet and aspirator were used at SSS2. Conditions were favourable for a range of terrestrial invertebrates during the survey period. Surveys were conducted in spring (27–31 October), while plants were in flower, and the weather was hot, with no rain and

minimal wind. Maximum temperatures in Nhill ranged from 20.4–34.9°C and minimum temperatures ranged from 2.3–18.2°C during the survey period. The number and diversity of species found were however, constrained by the short duration of the survey. Additionally, many terrestrial invertebrates are found only at particular times of the year and in or after specific weather conditions.

### 2.3 Identifying the collections



**Figure 6.** Rainbow Mite, *Rainbowia sp.* Photographer: Claire Keely | Source: Museums Victoria

A large number of taxa were collected and thus many specimens are yet to be identified to species level. A range of experts have provided initial classifications using guide books and web-based sources, which are listed in the references, these include: Smith and Kershaw 1979, Common 1990, Zimmerman 1992, Zimmerman 1994, Matthews 1997, Shattuck 2000, Hadlington and Staunton 2008, Hangay and Zborowski 2010, PaDIL, Minor et al. 2016.

Joseph Schubert (Registration Officer, Entomology and Arachnology, Museums Victoria) identified Collembola (springtail) specimens. Additionally, he identified the 188 Araneae (spider) specimens we collected in a separate Bush Blitz report. Dr Ken Walker (Senior Curator, Entomology, Museums Victoria) identified Apoidea (bee) specimens. Dr Adnan Moussalli (Senior Curator, Terrestrial Invertebrates, Museums Victoria) identified Mollusca (land snail) specimens. Dr Genefor Walker-Smith (Senior Collection Manager, Invertebrates, Museums Victoria) identified Isopoda (woodlouse) specimens. Peter Marriott (Honorary Associate of Entomology, Museums Victoria) identified Lepidoptera (moth) specimens. Dr Ros StClair (Research Associate, Museums Victoria) identified Trichoptera (caddisfly) specimens. Dr Laurie Cookson (Volunteer, Museums Victoria) identified Coleoptera (beetle) and Hemiptera (true bug) specimens. Ethan Beaver (Volunteer, South Australian Museum) identified Mantodea (mantid) specimens.

## 3. Results and Discussion

Appendix 1 lists terrestrial invertebrates recorded during the Bush Blitz. Collections made during this Bush Blitz will result in 823 specimens being added to Museums Victoria's collections and a significant number of records added to publicly accessible databases. The 823 specimens represent 24 orders of terrestrial invertebrates and at least 66 families. Coleoptera (beetles) were the largest of these, with 218 specimens, followed by 203 Hymenoptera (ants, bees and wasps) and 177 Hemiptera (true bugs). An additional 188 Araneae (spider) specimens were collected, however these are assessed in a separate report by Joseph Schubert.

### 3.1 Un-named or not formalised taxa

These taxa were often common, but due to the volume of material collected and lack of taxonomic resources were identified to the order, family or genus level only.

#### Table 1. Putatively un-named or not formalised taxa

#### Orthoptera not identified to species

Order	Family	Genus
Orthoptera	Acrididae	Goniaea
Orthoptera	Acrididae	

#### Coleoptera not identified to species

Order	Family	Subfamily/Tribe/Genus
Coleoptera	Carabidae	Anomotarus
Coleoptera	Carabidae	Epelyx
Coleoptera	Carabidae	Hypharpax
Coleoptera	Carabidae	Promecoderus
Coleoptera	Carabidae	Haplaner?
Coleoptera	Carabidae	Harpalinae
Coleoptera	Carabidae	Philophlaeus
Coleoptera	Carabidae	
Coleoptera	Cleridae	
Coleoptera	Buprestidae	Stanwatkinus
Coleoptera	Buprestidae	Melobasis
Coleoptera	Elateridae	Agypnus
Coleoptera	Elateridae	Conoderus
Coleoptera	Elateridae	Melanoxanthus
Coleoptera	Elateridae	
Coleoptera	Hydrophilidae	Pseudohydrobius?
Coleoptera	Tenebrionidae	Isopteron
Coleoptera	Tenebrionidae	Pterohelaeus
Coleoptera	Tenebrionidae	Adelium
Coleoptera	Curculionidae	Castasarcus
Coleoptera	Curculionidae	Melanterius
Coleoptera	Curculionidae	Storeini
Coleoptera	Curculionidae	Cryptoplini
Coleoptera	Curculionidae	Entiminae
Coleoptera	Curculionidae	Aterpini
Coleoptera	Curculionidae	
Coleoptera	Scarabaeidae	Phyllotocus
Coleoptera	Scarabaeidae	
Coleoptera	Trogidae	Omorgus
Coleoptera	Chrysomelidae	
Coleoptera	Staphylinidae	
Coleoptera	Oedemeridae/Lepturidae	
Coleoptera	Coccinellidae	

Coleoptera	Anthicidae	
Coleoptera	Belidae	
Coleoptera	Latridiidae	
Coleoptera	Dermestidae	
Coleoptera	Mordellidae	
Coleoptera	Scirtidae	
Coleoptera	Cantharidae	

#### Dermaptera not identified to species

Order	Family	Genus
Dermaptera		

#### Hemiptera not recorded to species

Order	Family	Genus
Hemiptera	Pentatomidae	Cuspicona
Hemiptera	Pentatomidae	Poecilometis
Hemiptera	Pentatomidae	
Hemiptera	Miridae	
Hemiptera	Acanthosomatidae	Eupolemus
Hemiptera	Lygaeidae	Crompus
Hemiptera	Lygaeidae	Nysius
Hemiptera	Lygaeidae	
Hemiptera	Reduviidae	
Hemiptera	Rhyparochromidae	
Hemiptera	Tingidae	Malandiola
Hemiptera	Pyrrhocoridae	Australodindymus
Hemiptera	Issidae	
Hemiptera	Cixiidae	
Hemiptera		

#### Lepidoptera not identified to species

Order	Family	Genus
Lepidoptera	Zygaenidae	
Lepidoptera		

#### Hymenoptera not identified to species

Order	Family	Genus
Hymenoptera	Formicidae	Podomyrma sp. 1

Hymenoptera	Formicidae	Podomyrma sp. 2
Hymenoptera	Formicidae	Podomyrma sp. 3
Hymenoptera	Formicidae	Iridomyrmex sp. 1
Hymenoptera	Formicidae	Monomorium sp. 1
Hymenoptera	Formicidae	Monomorium sp. 2
Hymenoptera	Formicidae	Meranoplus sp. 1
Hymenoptera	Formicidae	Meranoplus sp. 2
Hymenoptera	Formicidae	Tapinoma
Hymenoptera	Formicidae	Dolichoderus sp. 1
Hymenoptera	Formicidae	Dolichoderus sp. 2
Hymenoptera	Formicidae	Ochetellus
Hymenoptera	Formicidae	Pheidole
Hymenoptera	Formicidae	Papyrius
Hymenoptera	Formicidae	Anonychomyrma
Hymenoptera	Formicidae	Froggattella
Hymenoptera	Formicidae	Myremcia sp. 1
Hymenoptera	Formicidae	Myremcia sp. 2
Hymenoptera	Formicidae	Myremcia sp. 3
Hymenoptera	Formicidae	Camponotus sp. 1
Hymenoptera	Formicidae	Camponotus sp. 2
Hymenoptera	Formicidae	Camponotus sp. 3
Hymenoptera	Formicidae	Notoncus
Hymenoptera	Formicidae	Polyrhachis
Hymenoptera	Formicidae	Paratrechina
Hymenoptera	Formicidae	Ponera
Hymenoptera	Formicidae	Hypoponera
Hymenoptera	Formicidae	Crematogaster sp. 1
Hymenoptera	Formicidae	Crematogaster sp. 2
Hymenoptera	Colletidae	Hylaeus
Hymenoptera	Pteromelidae	
Hymenoptera	Mutillidae	
Hymenoptera		

#### Blattodea not identified to species

	-	
Order	Family	Genus
Blattodea	Termitidae	Nasutitermes
Blattodea	Kalotermitidae	Kalotermes
Blattodea	Rhinotermitidae	Coptotermes
Blattodea		

#### Neuroptera not identified to species

Order	Family	Genus
Neuroptera	Myrmeleontidae	
Neuroptera		

#### Trichoptera not identified to species

Order	Family	Genus
Trichoptera	Ecnomidae	Ecnomus
Trichoptera	Leptoceridae	Oecetis

#### Scolopendromorpha not identified to species

Order	Family	Genus
Scolopendromorpha	Scolopendridae	

#### Collembola not identified to species

Order	Family	Genus
Entomobryomorpha	Entomobryidae	
Entomobryomorpha	Isotomidae	

#### Geophilomorpha not identified to species

Order	Family	Genus
Geophilomorpha	Geophilidae	

#### Trombidiformes not identified to species

Order	Family	Genus
Trombidiformes	Erythraeidae	Rainbowia

### Orders not identified to species

Order
Diptera
Pseudoscorpionida
Psocoptera
Zygentoma
Thysanoptera
Polydesmida

### 3.2 Putative new species (new to science)

In this report, 'putative new species' means an unnamed species that, as far as can be ascertained, was identified as a new species as a direct result of this Bush Blitz.

Table 2. Putative new species (new to science)					
Species	Comment				
Lepidoptera	At SSS2, 1 adult moth was collected via direct searching. The specimen collected had a wingspan of ~4 mm. Experts are currently being consulted and it is possibly a new species.				

### 3.3 Exotic and pest species

Table 3. Exotic and pest species recorded					
Exotic/pest species Location Indication of abundance		Indication of abundance	Comments		
European Honey Bee	Apis (Apis) mellifera	Seen at every site			
Portuguese Millipede	Ommatoiulus moreletii	Seen at most sites			
European Earwig	Forficula auricularia	1 specimen collected			
Woodlouse	Porcellionides pruinosus	Collected from 2 sites	A terrestrial crustacean		

The European Honey Bee, *Apis (Apis) mellifera* (Fig. 7), was introduced to Australia deliberately for honey production by early European settlers in about 1822. Managed hives are kept commercially for honey production, but feral bees have become an increasing threat and are now found throughout Australia. They are generally aggressive, have a tendency to swarm and pose a future health risk to managed hives. Feral European Honey Bees may out compete native fauna for floral resources or tree hollows for nesting and may disrupt natural pollination processes (Oldroyd 2007). However, there is insufficient research on interactions between European Honey Bees and Australian biota to fully describe their impacts (Paini 2004; Heard 2016). Eradication is not feasible on a broad scale, but swarm traps or baiting could be used at localised sites frequently visited by the public (Oldroyd 2007). In New South Wales, competition from feral European Honey Bees is listed as a key threatening process. The European Honey Bee was observed at all study sites.



**Figure 7.** European Honey Bee, *Apis (Apis) mellifera* Photographer: David Paul | Source: Museums Victoria

The Portuguese Millipede, *Ommatoiulus moreletii* (Fig. 8), is native to south-western Europe and was accidentally introduced to Australia in 1953. It has become a common pest found in South Australia, Victoria, Tasmania, New South Wales and Western Australia. The millipede's distribution in Australia is increasing and the species is expected to continue to spread much further (Baker 2009). The species is generally found in grassland, woodland and suburban gardens and invades houses in large numbers in autumn and spring (Baker et al. 2013). The Portuguese Millipede is most problematic to emerging crop seedlings, however biological control agents have been trialled with limited success. The species was observed at almost all study sites throughout the survey period.



**Figure 8.** Portuguese Millipede, *Ommatoiulus moreletii* Photographer: David Paul | Source: Museums Victoria

The European Earwig, *Forficula auricularia* (Fig. 9), was probably introduced to Australia from Europe prior to the 1900s. It is now an invasive pest found widely throughout southern Australia. The species eats a variety of broadacre and horticultural crops, however there are no known natural enemies that can effectively control it in Australia. The impact of *F. auricularia* on Australia's fauna has not yet been studied, however the earwig has been implicated in the decline of several threatened and endangered invertebrate species in America, including the Valley Elderberry Longhorn Beetle and the El Segundo Blue Butterfly (Quarrell et al. 2018). Soil tillage (mechanical agitation of soil, such as digging, stirring or overturning) may help control numbers. One specimen was collected during the survey period, from Nhillbilly Farm (base-camp) via direct searching.



**Figure 9.** European Earwig, *Forficula auricularia* Photographer: David Paul | Source: Museums Victoria

*Porcellionides pruinosus* is a cosmopolitan Woodlouse (or slater) (Fig. 10), introduced from Europe and now widespread throughout warmer parts of the world. While terrestrial isopods are often mistaken for insects, it is in fact a crustacean. Two specimens were collected during the survey period, from Nhillbilly Farm (base-camp) and Horseshoe Bend via direct searching.



**Figure 10.** Woodlouse, *Porcellionides pruinosus* Photographer: Ken Walker | Source: Museums Victoria

### 3.4 Threatened species

None of the species found were listed as critically endangered, endangered, vulnerable or conservation dependent under the Australian Environment Protection and Biodiversity Conservation Act 1999 or the Victorian Flora and Fauna Guarantee Act 1988.

### 3.5 Range extensions

It is difficult to ascertain with accuracy if any range extensions or significant infill in distribution records were detected. This is due to the large number of species collected and the fact that many specimens have not yet been identified to species level.

### 3.6 Genetic information

A number of Buprestidae (Jewel Beetle) specimens were collected for use by Associate Professor Devi Stuart-Fox (The University of Melbourne) in studies on animal colour and behaviour. A tissue sample was taken from a number of Lepidoptera (moth) specimens by Dr Adnan Moussalli, a participant in the Little Desert Bush Blitz from Museums Victoria, for use in genomics analyses.

# 4. Information on species lists

Many of the taxa listed in Appendix 1 were unavoidably not identified to species level. Indeed, in some instances identification was not possible beyond order level, due to the number of different species collected and lack of taxonomic resources (including experts, literature and keys). Additionally, for terrestrial invertebrates, the potential collection of new species adds to the challenges of identifying specimens.

# 5. Information for land managers

This survey has provided us with one small snapshot in time and there still remains much to learn about the terrestrial invertebrate fauna of the Little Desert National Park. There are undoubtedly many new species yet to be discovered in the park. We therefore do not know the effects specific land management practices (including fire management regimes) will have on the different terrestrial invertebrate groups in the region, particularly ground dwelling species in leaf litter. Additionally, pitfall traps were not used during this survey due to ethical considerations, however they are the best method of collection for many groups of terrestrial invertebrates.

Four exotic species were collected during our surveys. Each of these species is already common and widespread in Australia, including Victoria, and land managers would therefore be aware of their presence within the Little Desert National Park. Unfortunately eradication is not feasible and each of these species has been managed with limited success. Swarm traps or baiting could possibly be used for European Honey Bees at localised sites frequently visited by the public (Oldroyd 2007).

# 6. Other significant findings

There were no other notable or unexpected findings.

# 7. Conclusions

A total of 823 terrestrial invertebrate specimens from 24 orders, including 66 families, were collected over five days during the Little Desert Bush Blitz. These specimens are invaluable additions to Museums Victoria's Collections. A range of experts have provided initial classifications, however due to the large number of different species collected and lack of taxonomic resources (including taxonomic experts, literature and keys), many of the taxa have unavoidably not yet been identified to species level. Taxonomic work on the specimens collected in this study will continue for many years subsequent to this report, including the potential for further new species to be uncovered and range expansions recognised.

# Acknowledgements

We would like to thank the traditional owners of the land, the Wotjobaluk Peoples, for allowing access to sites and facilitating the survey. Thank you to all the amazing Little Desert Bush Blitz survey participants, especially Arlee McMah, the third member of our team, who was a great source of hemipteran knowledge and lovely to work with. Thank you to the Bush Blitz coordinating team for their enthusiasm and organisation, and to Parks Victoria land managers, Laurie Norman and Gavin Read, for their guidance in site selection and assistance collecting specimens. Thanks to the teachers: Todd Rogers, Jeff Scott, Lynne Nadebaum, Michael Duffy and Catarina Murphy, for their assistance collecting specimens for us while in the field surveying other taxonomic groups.

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Appendix 1. L	ist of terrestrial inv	vertebrates recorded during the Lit	tle Desert Bush Blitz				
Order	Family	Genus/Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic / pest
Orthoptera	Acrididae	Ziziphus mauritiana	Bark-mimicking Grasshopper	No	No	No	No
Orthoptera	Acrididae	Goniaea		No	No	No	No
Orthoptera	Acrididae			No	No	No	No
Scorpiones	Urodacidae	Urodacus manicatus	Black Rock Scorpion	No	No	No	No
Scorpiones	Bothriuridae	Cercophonius kershawi	Wood or Forest Scorpion	No	No	No	No
Scorpiones	Bothriuridae	Lychas variatus	Marbled Scorpion	No	No	No	No
Coleoptera	Carabidae	Calasoma schayeri	Green Carabid Beetle	No	No	No	No
Coleoptera	Carabidae	Anomotarus crudelis		No	No	No	No
Coleoptera	Carabidae	Anomotarus (Anomotarus) unimaculatus		No	No	No	No
Coleoptera	Carabidae	Anomotarus		No	No	No	No
Coleoptera	Carabidae	Microlestodes (Microlestodes) macleayi		No	No	No	No
Coleoptera	Carabidae	Adelotopus dytiscides		No	No	No	No
Coleoptera	Carabidae	Epelyx		No	No	No	No
Coleoptera	Carabidae	Hypharpax		No	No	No	No
Coleoptera	Carabidae	Promecoderus		No	No	No	No
Coleoptera	Carabidae	Haplaner?		No	No	No	No
Coleoptera	Carabidae	Harpalinae		No	No	No	No
Coleoptera	Carabidae	Philophlaeus		No	No	No	No
Coleoptera	Carabidae			No	No	No	No
Coleoptera	Lycidae	Porrostoma (Porrostoma) rhipidium		No	No	No	No
Coleoptera	Laemophloeidae	Cryptamorpha delicatula		No	No	No	No
Coleoptera	Laemophloeidae	Cryptamorpha lata		No	No	No	No
Coleoptera	Cleridae	Eleale cribrata		No	No	No	No
Coleoptera	Cleridae	Phlogistus grandjeani		No	No	No	No
Coleoptera	Cleridae			No	No	No	No

Order	Family	Genus/Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory	Exotic / pest
Calaantana	Cananah usida a			NI -	N -	ACT)	N -
Coleoptera	Cerambycidae	Phoracantha recurva	Lesser Eucalyptus Longhorn	NO	NO	NO	NO
Coleoptera	Buprestidae	Castiarina indistincta		No	No	No	No
Coleoptera	Buprestidae	Stanwatkinus		No	No	No	No
Coleoptera	Buprestidae	Melobasis		No	No	No	No
Coleoptera	Elateridae	Agypnus		No	No	No	No
Coleoptera	Elateridae	Conoderus		No	No	No	No
Coleoptera	Elateridae	Melanoxanthus		No	No	No	No
Coleoptera	Elateridae						
Coleoptera	Hydrophilidae	Pseudohydrobius?		No	No	No	No
Coleoptera	Tenebrionidae	Isopteron		No	No	No	No
Coleoptera	Tenebrionidae	Pterohelaeus		No	No	No	No
Coleoptera	Tenebrionidae	Adelium		No	No	No	No
Coleoptera	Curculionidae	Castasarcus		No	No	No	No
Coleoptera	Curculionidae	Melanterius		No	No	No	No
Coleoptera	Curculionidae	Storeini		No	No	No	No
Coleoptera	Curculionidae	Cryptoplini		No	No	No	No
Coleoptera	Curculionidae	Entiminae		No	No	No	No
Coleoptera	Curculionidae	Aterpini		No	No	No	No
Coleoptera	Curculionidae						
Coleoptera	Scarabaeidae	Phyllotocus		No	No	No	No
Coleoptera	Scarabaeidae			No	No	No	No
Coleoptera	Trogidae	Omorgus		No	No	No	No
Coleoptera	Chrysomelidae			No	No	No	No
Coleoptera	Staphylinidae			No	No	No	No
Coleoptera	Oedemeridae/Lept	:uridae		No	No	No	No
Coleoptera	Coccinellidae			No	No	No	No
Coleoptera	Anthicidae			No	No	No	No
Coleoptera	Belidae			No	No	No	No
Coleoptera	Latridiidae			No	No	No	No
Coleoptera	Dermestidae			No	No	No	No

Order	Family	Genus/Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic / pest
Coleoptera	Mordellidae			No	No	No	No
Coleoptera	Scirtidae			No	No	No	No
Coleoptera	Cantharidae			No	No	No	No
				No	No	No	No
Dermaptera	Forficulidae	Forficula auricularia	European Earwig	No	No	No	Yes
Dermaptera				No	No	No	No
Hemiptera	Ceropidae	Bathyllus albicinctus	Froghopper	No	No	No	No
Hemiptera	Pentatomidae	Cuspicona		No	No	No	No
Hemiptera	Pentatomidae	Poecilometis		No	No	No	No
Hemiptera	Pentatomidae			No	No	No	No
Hemiptera	Miridae			No	No	No	No
Hemiptera	Acanthosomatidae	Eupolemus		No	No	No	No
Hemiptera	Lygaeidae	Crompus		No	No	No	No
Hemiptera	Lygaeidae	Nysius		No	No	No	No
Hemiptera	Lygaeidae			No	No	No	No
Hemiptera	Reduviidae			No	No	No	No
Hemiptera	Rhyparochromidae			No	No	No	No
Hemiptera	Tingidae	Malandiola		No	No	No	No
Hemiptera	Pyrrhocoridae	Australodindymus		No	No	No	No
Hemiptera	Issidae			No	No	No	No
Hemiptera	Cixiidae			No	No	No	No
Hemiptera				No	No	No	No
Lepidoptera	Cossidae	Endoxyla edwardsorum		No	No	No	No
Lepidoptera	Zygaenidae			No	No	No	No
Lepidoptera				No	No	No	No
Mantodea	Mantidae	Trachymantis dentifrons	Praying Mantis	No	No	No	No

Order	Family	Genus/Species	Common name	Putative new	Threatened (EPBC Act)	Threatened (State / Territory	Exotic /
				species		Act)	poor
Mantodea	Mantidae	Coenomantis kraussiana	Praying Mantis	No	No	No	No
Hymenoptera	Formicidae	Rhytidoponera metallica	Green-head Ant	No	No	No	No
Hymenoptera	Formicidae	Podomyrma adelaidae		No	No	No	No
Hymenoptera	Formicidae	Podomyrma BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Podomyrma BBLD sp. 2		No	No	No	No
Hymenoptera	Formicidae	Podomyrma BBLD sp. 3		No	No	No	No
Hymenoptera	Formicidae	Iridomyrmex purpureus	Meat Ant	No	No	No	No
Hymenoptera	Formicidae	Iridomyrmex BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Rhytidoponera mayri		No	No	No	No
Hymenoptera	Formicidae	Monomorium BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Monomorium BBLD sp. 2		No	No	No	No
Hymenoptera	Formicidae	Meranoplus BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Meranoplus BBLD sp. 2		No	No	No	No
Hymenoptera	Formicidae	Tapinoma		No	No	No	No
Hymenoptera	Formicidae	Dolichoderus BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Dolichoderus BBLD sp. 2		No	No	No	No
Hymenoptera	Formicidae	Ochetellus		No	No	No	No
Hymenoptera	Formicidae	Pheidole		No	No	No	No
Hymenoptera	Formicidae	Papyrius		No	No	No	No
Hymenoptera	Formicidae	Anonychomyrma		No	No	No	No
Hymenoptera	Formicidae	Frogatella		No	No	No	No
Hymenoptera	Formicidae	Myrmecia BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Myrmecia BBLD sp. 2		No	No	No	No
Hymenoptera	Formicidae	Myrmecia BBLD sp. 3		No	No	No	No
Hymenoptera	Formicidae	Camponotus BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Camponotus BBLD sp. 2		No	No	No	No
Hymenoptera	Formicidae	Camponotus BBLD sp. 3		No	No	No	No
Hymenoptera	Formicidae	Notoncus		No	No	No	No

Order	Family	Genus/Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic / pest
Hymenoptera	Formicidae	Polyrhachis		No	No	No	No
Hymenoptera	Formicidae	Paratrechina		No	No	No	No
Hymenoptera	Formicidae	Ponera		No	No	No	No
Hymenoptera	Formicidae	Hypoponera		No	No	No	No
Hymenoptera	Formicidae	Crematogaster BBLD sp. 1		No	No	No	No
Hymenoptera	Formicidae	Crematogaster BBLD sp. 2		No	No	No	No
Hymenoptera	Colletidae	Hylaeus (Gnathoprosopis) amiculus		No	No	No	No
Hymenoptera	Colletidae	Hylaeus		No	No	No	No
Hymenoptera	Pteromelidae			No	No	No	No
Hymenoptera	Mutillidae			No	No	No	No
Hymenoptera	Apidae	Apis (Apis) mellifera	European Honeybee	No	No	No	Yes
Hymenoptera							
Stylommatophora	Punctidae	Paralaoma mucoides	Prickle Pinhead Snail	No	No	No	No
Stylommatophora	Punctidae	Magilaoma penolensis	Penola Pinhead Snail	No	No	No	No
Julida	Julidae	Ommatoiulus moreletii	Portuguese Millipede	No	No	No	Yes
Blattodea	Termitidae	Nasutitermes		No	No	No	No
Blattodea	Kalotermitidae	Kalotermes		No	No	No	No
Blattodea	Rhinotermitidae	Coptotermes		No	No	No	No
Blattodea				No	No	No	No
Neuroptera	Myrmeleontidae			No	No	No	No
Neuroptera				NO	NO	NO	No
	e						
Tricnoptera	Echomidae	Ecnomus		NO	NO	INO NI	NO
iricnoptera	Leptoceridae	Uecetis		NO	INO	NO	INO

Order	Family	Genus/Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic / pest
Scolopendromorpha	Scolopendridae			No	No	No	No
Entomobryomorpha	Entomobryidae			No	No	No	No
Entomobryomorpha	Isotomidae			No	No	No	No
Geophilomorpha	Geophilidae			No	No	No	No
Isopoda	Philosciidae	Porcellionides pruinosus		No	No	No	Yes
Trombidiformes	Erythraeidae	Rainbowia		No	No	No	Yes
Order							
Diptera			Flies	No	No	No	No
Pseudoscorpionida			Pseudoscorpions	No	No	No	No
Psocoptera			Booklice	No	No	No	No
Zygentoma			Silverfish	No	No	No	No
Thysanoptera			Thrips	No	No	No	No
Polydesmida				No	No	No	No