



BushBlitz

SPECIES DISCOVERY PROGRAM



BUSH BLITZ SPECIES DISCOVERY PROGRAM



Cane River Conservation Park WA

20 June–1 July 2011



Australian Government



What is Bush Blitz?

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

This innovative partnership harnesses the expertise of many of Australia's top scientists from museums, herbaria, universities, and other institutions and organisations across the country.

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Summary

A two-week Bush Blitz was conducted in Cane River Conservation Park in the Pilbara region of Western Australia in June 2011. A total of 645 species were identified, 346 of which had not been recorded previously in the park. Added to earlier records, 840 fauna and flora species have now been identified in the park.

In this study, 61 putative species new to science were found. These were all invertebrates and consisted of 32 stygofauna (animals that live entirely aquatic lives within groundwater systems), 28 terrestrial invertebrates and 1 water beetle. Some insect species, notably bees and moths, were under-represented in the specimen collection, probably due to the season of collection. However, the putative new species included 16 true bugs, 2 water mites, 2 pseudoscorpions, 1 scorpion, 1 water beetle and 1 geometrid moth.

Abbreviations

EPBC Act

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

NRS

National Reserve System

The park also has a rich vertebrate fauna. Reptiles are particularly abundant: 45 species were identified in the survey, and a total of 80 species have been recorded for the park. The Pygmy Desert Monitor (*Varanus eremius*) was especially abundant, with 22 specimens found. No threatened fauna species were found despite targeted trapping for the Northern Quoll (*Dasyurus hallucatus*), which was recorded previously in the park.



Bush Blitz team at Cane River Conservation Park, Mark Cowan © Copyright, Department of Parks and Wildlife



The species diversity of vascular plants is surprisingly rich for an arid region: 331 species were found in this survey, 87 of which were new records for the park. The flora is dominated by *Acacia* shrubs and *Triodia spinifex* grasses. Two plants that are priority listed in Western Australia were collected—*Eremophila forrestii* subsp. *viridis* and *Ptilotus mollis*—records for both representing range extensions. The survey also detected species that had not been seen in the park for more than 100 years: *Keraudrenia nephrosperma*, *Petalostylis labicheoides*, *Gossypium robinsonii*, *Goodenia lamprosperma*, *Pluchea ferdinandi-muelleri* and *Maireana georgei*. A flowering plant, recently described in 2013 (*Solanum pycnotrichum*), was also found.

A number of exotic and pest species were noted within the park. Feral cats (*Felis catus*) were common, and domestic cattle (*Bos taurus*) gain access to the park through downed fences. Four pest insects—two true bugs and two thrips—were also found, all of which are new records for the park. Thirteen pest plant species were found within the park; however, in general, the native vegetation is extensive and relatively intact. Of particular concern is Buffel Grass (*Cenchrus ciliaris*), which is the most widespread and invasive weed in the park.



A putative new species of true bug, *Lasiacantha caneriverensis* n. sp. BBPILB11/TING/Msp007, Marina Cheng © Copyright, University of New South Wales





Introduction

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

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

The Cane River Conservation Park survey was undertaken in June 2011, in the Pilbara region of north-west Western Australia. There had been good rainfall and vegetation growth in the months preceding the survey. Fires are common in the area, and significant proportions of the survey area had been burnt in the previous 2–5 years. The timing of the survey meant that insect activity was relatively low, since most species are more abundant and more

active in warmer weather. During the survey, the mean maximum temperature was 28.5°C (± 1.5), and the mean minimum temperature was 13.5°C (± 2.4)—comparatively cool conditions for the Pilbara.

The Australian Biological Resources Study provided logistical coordination and overall leadership for the survey. Experts from the following organisations conducted the field and laboratory work:

- + Australian Government Department of Sustainability, Environment, Water, Population and Communities (now Department of the Environment)
- + Queensland Department of Employment, Economic Development and Innovation (now Department of Agriculture, Fisheries and Forestry)
- + South Australian Department of Environment and Natural Resources
- + South Australian Museum
- + Tasmanian Museum and Art Gallery
- + University of New South Wales
- + Keiran McNamara Conservation Science Centre, Western Australian Herbarium
- + Western Australian Department of Environment and Conservation (now Department of Parks and Wildlife)
- + Western Australian Museum
- + Australian National Insect Collection (Commonwealth Scientific and Industrial Research Organisation)
- + Phoenix Environmental Science.

The Australian Biological Resources Study wishes to thank the Western Australian Museum and Western Australian Herbarium for hosting this Bush Blitz. The Western Australian Department of Environment and Conservation facilitated access to the reserve and provided helpful advice on survey locations.

¹ The NRS is Australia's network of protected areas, covering 17.88% of the country—over 137 million hectares, comprising Commonwealth, state and territory reserves, Indigenous lands and protected areas run by non-profit conservation organisations, through to ecosystems protected by farmers on their private working properties <<http://www.environment.gov.au/topics/land/national-reserve-system>>, accessed 25 November 2014.



Reserve Overview²



Cane River Conservation Park

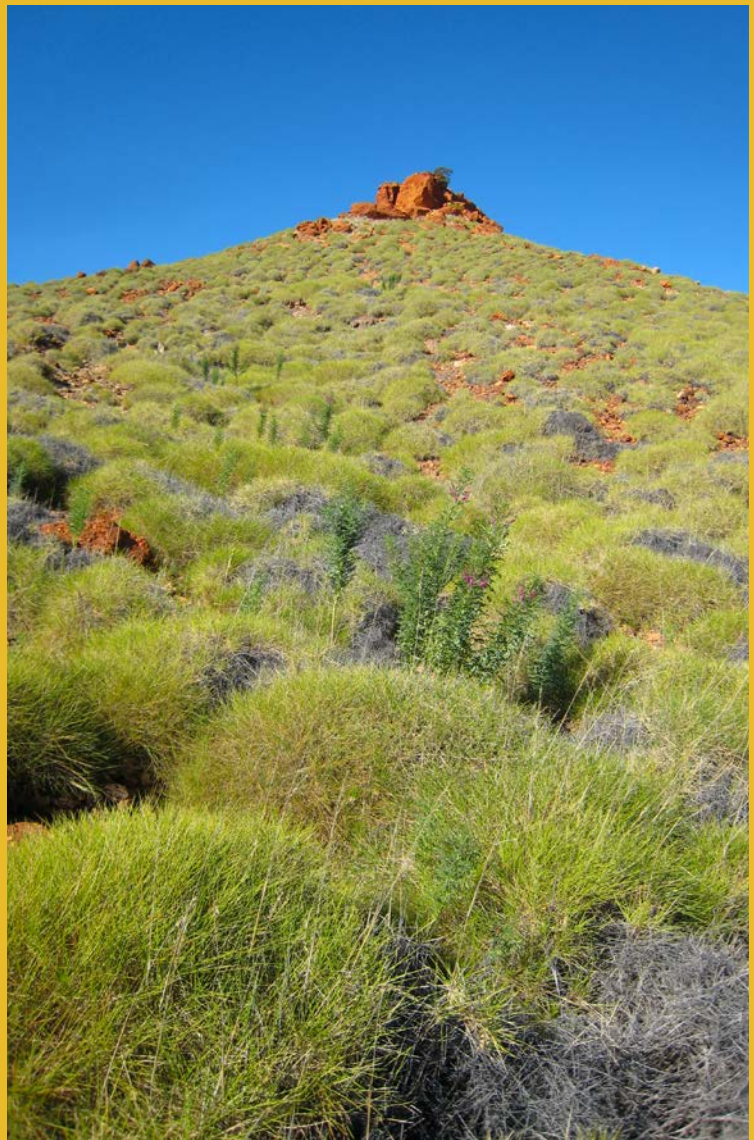
Western Australian Department of Parks and Wildlife (previously the Department of Environment and Conservation)

Date of purchase

2000

Area

120,000 ha



A mesa, or flat-topped hill, Adrienne Markey © Copyright, Western Australian Herbarium

² Information from NRS applications and assessments; Mckenzie, L. N., van Leeuwen, S. & Pinder, A. M., 'Introduction to the Pilbara Biodiversity Survey 2002–2007', in: George, A. S., McKenzie, N. L. & Doughty, P. eds 2010, 'A biodiversity survey of the Pilbara region of Western Australia', *Records of the Western Australian Museum* **78**(1):1–311.





Description

The Pilbara region in the north-west of Western Australia is an arid area of ancient landforms, supporting a diverse range of fauna and flora with a high proportion of endemic species. Cane River Conservation Park covers 120,000 ha in the Pilbara region and lies 75 km south-east of the town of Onslow, in the Western Australian shire of Ashburton. The park was formed by combining three adjoining blocks: the Cane River Station pastoral lease in the central and eastern section, Mount Minnie Station in the north-western corner, and part of Nanutarra Station at the southern end.

The climate in this area is semi-arid to arid, with mild winters and hot summers, and most rain falling between January and June. The area is relatively undisturbed by mining and pastoral activities.

National Reserve System conservation values

The Pilbara region in Western Australia has some of the world's most ancient natural landscapes, dating back 2 billion years and stretching over 400,000 km². A wide variety of landforms occur in the survey area, including ranges, hills, mesas, creeks and rivers, granite outcrops and domes, gibber plains and sandplains. The Cane River, which flows in a north-westerly direction, bisects the park.

The Pilbara is home to a wide variety of endemic species that are adapted to this harsh environment.

Previous surveys in the area have recorded just over 100 mammal, reptile and frog species. The additions from this survey demonstrate that the park has a remarkably rich vertebrate fauna. Rare and threatened species include the Pebble-mound Mouse (*Pseudomys chapmani*), Ghost Bat (*Macroderma gigas*) and Northern Quoll (*Dasyurus hallucatus*). Five threatened species of birds have also been recorded in the park.

The invertebrate fauna of the Pilbara, including Cane River Conservation Park, is poorly known but includes a large number of short-range endemic species that have distributions of less than 10,000 km². Such species include trapdoor spiders, millipedes, land snails, pseudoscorpions, slaters and velvet worms; the first four of these groups were targeted in this survey.

The Pilbara region supports one of the world's most diverse assemblages of stygofauna (animals that live entirely within groundwater systems), with species collected from caves, wells and bore holes connected to groundwater systems. Since 1998, more than 80 stygofauna species from 200 Pilbara sites have been recorded. Many of these invertebrates are endemic to the region, with short-range distributions often limited to single aquifers.

The wide range of habitats and geological features within Cane River Conservation Park support a relatively high number of plant species for an arid region. The flora is dominated by *Acacia* shrubs and drought-resistant *Triodia* (spinifex) grasses.



A butterfly species newly recorded in the park, Two-spotted Line-blue (*Mazodoba bioceleara*), Cathy Byrne
© Copyright, Tasmanian Museum and Art Gallery



Methods

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

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

A standard suite of survey techniques was used:

- + Mammals and reptiles were collected using a drift fence, together with pit, funnel and baited Elliot traps. A camera trap was also used at each trapping site for at least four consecutive nights; an area within the field of view of each camera was baited with universal bait. Some locations were searched by hand; this involved raking spoil piles on road edges, and turning

rocks and leaf litter. Information was also collated from all researchers of opportunistic sightings, provided that identifications could be confirmed. A few specimens of frogs were collected opportunistically. A targeted survey was undertaken for the Northern Quoll (*Dasyurus hallucatus*) using large Elliot traps, and cage and camera traps.

- + Native bees were mostly collected using a hand net, and occasionally by sweep netting.
- + Geometrid moths were collected using light traps deployed almost every night. Bucket traps were also used in a range of plant communities.
- + Butterflies and dragonflies were collected using hand nets.
- + True bugs were collected by beating vegetation, sweeping temporary ponds and puddles, hand collecting, and use of a light trap.
- + Thrips were collected by beating vegetation over a collecting tray.





Table 1: Taxonomic groups surveyed and personnel

Group	Common names	Expert	Affiliation
Mammalia and Reptilia	Mammals and Reptiles	Mark Cowan	Western Australian Department of Parks and Wildlife
		David Armstrong	South Australian Department of Environment and Natural Resources
Apidae	Native Bees	Remko Leijs	South Australian Museum
Lepidoptera: Geometridae and Papilionidae	Geometrid Moths and Butterflies	Catherine Byrne, Ross Jongejans (fieldwork assistant)	Tasmanian Museum and Art Gallery
Heteroptera	True Bugs	Marina Cheng, Michael Elias, Gerry Cassis	University of New South Wales
Thysanoptera	Thrips	Desley Tree	Queensland Department of Employment, Economic Development and Innovation
		Laurence Mound (assisted with identifications)	Australian National Insect Collection (Commonwealth Scientific and Industrial Research Organisation)
Odonata	Dragonflies	Catherine Byrne	Tasmanian Museum and Art Gallery
Myriapoda	Centipedes and Millipedes	Cathy Car, Julianne Waldock	Western Australian Museum
Arachnida	Spiders and Scorpions	Cathy Car, Julianne Waldock, Mark Harvey (pseudoscorpion identification)	Western Australian Museum
		Volker Framenau (orb-weaving and trapdoor spider identification), Erich Volschenk (scorpion identification)	Phoenix Environmental Science
Crustacea	Crustaceans– Terrestrial	Rachael King	South Australian Museum
Stygofauna	Groundwater Fauna	Rachael King, Remko Leijs	South Australian Museum
Gastropoda	Snails	Corey Whisson	Western Australian Museum
Vascular Flora	Flowering Plants and Ferns	Adrienne Markey, Neil Gibson	Keiran McNamara Conservation Science Centre
		Steven Dillon	Western Australian Herbarium
		Kate Brown	Western Australian Department of Parks and Wildlife



- + Centipedes, millipedes, spiders, scorpions and other terrestrial invertebrates were collected by searching under rocks, logs and bark, and by sifting through leaf litter. Some specimens were collected in traps set to capture reptiles and mammals, and from samples collected while beating and sweeping vegetation for insects. A few specimens were collected at night using head torches.
- + Aquatic groundwater invertebrates were collected by sampling bores and wells using a small net, and by digging holes in alluvial sediments at the side of riverbeds and sieving the water that filled the hole.
- + For snails, leaf litter was sampled at various microhabitats within a site.
- + The plant survey involved two phases: rescoreing Pilbara Biological Survey plots followed by searching for taxa. Plant specimens were photographed, and material was collected for vouchering, identification and molecular studies. Specimens were either pressed and dried or preserved in 70% ethanol.



Camera trap, Mark Cowan © Copyright, Department of Parks and Wildlife

Collections were identified using available literature and the holdings of museums and herbaria. Vouchers of 40 vertebrate specimens were lodged with the Western Australian Museum; 286 plant collections have been lodged with the Western Australian Herbarium, with duplicates of 10 of these collections lodged at Melbourne University, Te Papa Museum (New Zealand), and the Queensland Herbarium.

Final species lists were compiled by combining the results of this Bush Blitz with data provided by the Australian Natural Heritage Assessment Tool.



Michael Elias searching for true bugs © Copyright, Department of the Environment





Results

The locational data of survey sites and collected and observed specimens are available to reserve managers. In total 646 species were found, 345 of which were new records for the park. Sixty-one putative species new to science were discovered; these await assessment. One recently described and two rare plants were recorded, all of which are new records for the park. Six exotic or pest animal species and 13 weed species were also recorded.

Species Lists

Appendix A provides full, updated species lists for the reserve. Names in **bold brown text** are putative new species. Species marked with an asterisk (*) have not been previously recorded in the park. Those without an asterisk have been recorded previously and were identified again during this survey. Species shown in **blue text** were not recorded during this survey, but are

known from previous studies. Table 2 provides a summary of the number of species, new records and putative new taxa identified in the park.

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

Nomenclature and taxonomic concepts used in this report are consistent with the Australian Faunal Directory, the Australian Plant Name Index and the Australian Plant Census.



Pygmy Spiny-tailed Skink (*Egernia depressa*), Mark Cowan © Copyright, Department of Parks and Wildlife



A putative new species of true bug, *Drymini* n. gen. n. sp. BBPILB11/RHYP/Msp041, Marina Cheng © Copyright, University of New South Wales

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

Group	Common name	Number of species identified	Species new to reserve	Species new to science
Mammalia	Mammals	13	3	–
Reptilia	Reptiles	45	4	–
Amphibia	Frogs and Toads	2	–	–
Apidae	Native Bees	35	35	–
Lepidoptera: Geometridae	Geometrid Moths	8	8	1
Lepidoptera: Papilionidae	Butterflies	6	6	–
Coleoptera	Water Beetles	1	1	1
Heteroptera	True Bugs	58	57	16
Thysanoptera	Thrips	22	22	–
Odonata	Dragonflies	6	6	–
Diplopoda	Millipedes	1	1	–
Chilopoda	Centipedes	6	6	–
Acari	Mites	4	4	–
Hydracarina	Water Mites	2	2	2
Scorpiones	Scorpions	2	2	1
Pseudoscorpiones	Pseudoscorpions	9	9	2
Araneae	Spiders	44	44	–
Crustacea	Crustaceans — Terrestrial	8	8	8
Crustacea	Crustaceans — Groundwater	27	27	26
Polychaeta	Bristle Worms	1	1	1
Gastropoda	Snails and Slugs	11	10	–
Platyhelminthes	Flatworms	3	3	3
Magnoliophyta	Flowering Plants	326	86	0
Pteridophyta	Ferns	5	1	–
Totals		646	345	61





Threatened Species

Appendix B itemises the species known from the park that are listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Western Australian *Wildlife Conservation Act 1950*. A summary of threatened species identified during the study is provided in Table 3.

Table 3: Summary of threatened species identified

Group	Total number of species	Species new to reserve
Fauna	–	–
Flora	2	2

Exotic and Pest Species

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

An exotic species is one that occurs outside of its normal range. A pest is a species that has the potential to have a negative environmental, social or economic impact. Native species that are at times pests or are exotic to this region of Australia are included in the numbers in Table 4.

Table 4: Summary of exotic and pest species identified

Group	Total number of species	Species new to reserve
Fauna	6	4
Flora	13	7



Hannafordia quadrivalvis subsp. *recurva*, Adrienne Markey © Copyright, Western Australian Herbarium



A moth species newly recorded in the park, *Nearcha ophla*, Cathy Byrne © Copyright, Tasmanian Museum and Art Gallery



Discussion

Putative New Species

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

The study found 61 putative new species, all of them invertebrates.

Geometrid moths are normally abundant in most vegetation types in Australia. Although the winter conditions during the survey meant that the biodiversity and abundance of moths was reduced, the survey found three new or undescribed species



A putative new species of geometrid moth, *Nearcha* n. sp. 01, Cathy Byrne © Copyright, Tasmanian Museum and Art Gallery

of geometrid moths, including one that is most likely to be new to science (*Nearcha* n. sp. 01).

Australia has an extremely rich fauna of true bugs, which currently comprises around 2,500 species. This survey found 16 putative new true bug species. Fourteen of these belong to the family Miridae, including two new species of the genus *Witchelinamiris*, which was described following the 2010 Witchelina Reserve SA Bush Blitz survey. A new water beetle in the family Gyrinidae was also found.

Table 5: Putative new species by group

Group	Common name	Putative new species
Geometridae	Geometrid Moths	1
Coleoptera	Water Beetles	1
Heteroptera	True Bugs	16
Hydracarina	Water Mites	2
Scorpiones	Scorpions	1
Pseudoscorpiones	Pseudoscorpions	2
Crustacea	Crustaceans–Terrestrial	8
Crustacea	Crustaceans–Groundwater	26
Polychaeta	Bristle Worms	1
Platyhelminthes	Flatworms	3





A relatively small number of non-insect terrestrial arthropods were collected at Cane River Conservation Park. Of particular interest are a new species of scorpion (genus *Lychas*) and two new species of pseudoscorpion (genus *Synsphyronus*). The latter genus is found throughout Australia, New Zealand and New Caledonia, with approximately 30 described and 50 undescribed species. There may be new species among the spider specimens, but these have not been identified to date.

Almost all the terrestrial crustaceans and stygofauna collected are new species; 8 new terrestrial crustaceans and 26 stygofauna species were found. Recent regional molecular work indicates that each aquifer contains a discrete set of stygofaunal species. It is therefore possible that each site sampled may have been connected to a different groundwater system, each of which contained new species. In addition, the survey found two new water mites, one new bristle worm and three new flatworms.

One plant specimen collected was determined to be a recently described species, *Solanum pycnotrichum*. The specimen was initially identified as *S. sturtianum* but proved to differ from it in several key ways.³ In addition, a specimen of *Corchorus* was collected that does not match taxa known from the Pilbara, and two non-flowering collections of *Abutilon* could not be identified. Further examination of herbarium specimens is required to determine if these are new species, but *Corchorus* and *Abutilon* are taxonomically problematic genera that require revision.



A recently described flowering plant, *Solanum pycnotrichum*, Adrienna Markey © Copyright, Western Australian Herbarium



The Wandering Percher (*Diplacodes bipunctata*), a dragonfly species newly recorded in the park, Cathy Byrne © Copyright, Tasmanian Museum and Art Gallery

³ Bean, A. R. 2013, 'A taxonomic review of the *Solanum sturtianum* subgroup of subgenus *Leptostemonum* (Solanaceae)', *Nuytsia* **23**: 129–161.



Central Military Dragon (*Ctenophorus isolepis*),
Mark Cowan © Copyright, Department of Parks and Wildlife



Narrow-banded Sand-swimmer (*Eremiascincus fasciolatus*),
Mark Cowan © Copyright, Department of Parks and Wildlife



Fat-tailed Gecko (*Diplodactylus conspicillatus*),
Mark Cowan © Copyright, Department of Parks and Wildlife



Smooth Knob-tailed Gecko (*Nephrurus levis*),
Mark Cowan © Copyright, Department of Parks and Wildlife

Threatened Species

Australia is home to around 570,000 species, most of which are yet to be formally described. Approximately 92% of Australian plants, 87% of mammals, 93% of reptiles and 45% of birds are endemic. Changes to the landscape and native habitat resulting from human activity have put many of these unique species at risk. Over the past 200 years, many species have become extinct; many others are threatened.⁴

No vulnerable, threatened or endangered fauna species were recorded during this survey. Previous work has identified the presence of the Pebble-mound Mouse (*Pseudomys chapmani*) and the Ghost Bat (*Macroderma gigas*), which are priority-listed species in Western Australia. The Northern Quoll (*Dasyurus hallucatus*), which is listed under the EPBC Act, was recorded in the park on four occasions in 1999 and once in 2002. Despite targeted trapping at a location it was previously recorded, the Northern Quoll was not detected during this survey. Although this was disappointing, the park has extensive areas of suitable habitat along the Parry Range, and it is likely that there are numerous locations for this species to occur.

Two plant species of conservation significance were found in the study, both of which were new records for the park and priority-listed species in Western Australia. *Eremophila forrestii* subsp. *viridis* is currently known from two widely disjunct locations in Western Australia and four more populations in Central Australia around the Northern Territory–South Australia–Western Australia borders. The nearest known location is 64 km north-west of this new population. There were few plants and all were growing in dry gullies on the scree slopes

⁴ Chapman, A. D. 2009, *Numbers of Living Species in Australia and the World*, 2nd edn. Australian Biological Resources Study, Canberra, 80 pp.





Cane River Conservation Park, Steve Dillon © Copyright, Western Australian Herbarium

of a weathered lateritic mesa. Some specimens appear to be intergrades with *Eremophila forrestii* subsp. *forrestii*: the two subspecies co-occur in the park. Other collections in Western Australia previously identified as *E. forrestii* subsp. *viridis* have been re-identified as *E. forrestii* subsp. *forrestii*. There may be some issues distinguishing *E. forrestii* subsp. *viridis* from the more common subspecies: the status of the subspecies may be worth investigating further. *Ptilotus mollis* is currently known from nine locations widely placed across the Pilbara, and this new record is more than 200 km west of the nearest population. Less than 50 plants were found on stony scree slopes of a weathered lateritic mesa in the far north-east of the park; it possibly occurs in similar habitats on other mesas along the park's eastern margins.

Exotic and Pest Species

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

Vertebrate Fauna

Feral cats (*Felis catus*) appear to be common across the park—tracks were observed regularly, numerous individuals were seen by the Bush Blitz



team, and remote cameras recorded four cats at two locations. Although no individuals of Wild Dogs or Dingoes (*Canis familiaris* or *C. dingo*) were seen, tracks were regularly observed. Cattle (*Bos taurus*) were observed at various locations in the park, particularly along the northern, eastern and southern boundaries, and along the highway near the Onslow Road turn-off. Fences were found pushed down along the north-eastern and eastern boundaries, allowing the animals access to the park.

Invertebrate Fauna

Two true bug pests were identified: Rutherglen Bug (*Nysius vinitor*) and Crusader Bug (*Mictis profana*), both of which are new records for the park. The Rutherglen Bug is a widespread native species that can migrate into crops in very large numbers during favourable seasons. The Crusader Bug is considered a minor pest of citrus and wattles, although it can be a helpful biological control agent of the pest plant *Mimosa pigra*.



Remko Leijs and Rachael King preparing to take water samples for stygofauna © Copyright, Department of the Environment





Work in the lab continues late into the night © Copyright, Department of the Environment

Two common species of pest thrips were collected during the survey. Plague Thrips (*Thrips imaginis*) is endemic to Australia and found in large numbers in flowers of native and introduced plants. It causes damage to plants by feeding in flowers, particularly of apples, grapes, strawberries and stone fruit. It was collected widely from various hosts within the park. Tomato Thrips (*Frankliniella schultzei*) is believed to have originated from South America or Africa and is a pest on cultivated plants, feeding particularly on the flowers and leaves of cotton, lettuce, beans, cucurbits and onions. It is also known to be a vector of tospoviruses, which cause spotting and wilting in a large number of plant families, including food crops such as peanuts, watermelons and tomatoes, and ornamental species such as calla lily, chrysanthemums and iris.

Flowering Plants

Overall, Cane River Conservation Park has few introduced plant species and extensive cover of relatively intact native vegetation. Thirteen non-native species, most of which are considered environmental weeds, were recorded in the park—see Table 6. However, this was not an exhaustive weed survey, and the locality records probably underestimate their distribution.

Buffel Grass (*Cenchrus ciliaris*) is the most widespread and abundant invasive weed in the park. It was most evident along permanent and ephemeral creeklines, in sand dunes, along roadsides and in other disturbed areas. Infested sites included many of the creekbeds in the southern Parry Range, along sections of the Cane River and sand dunes in the north west of the park.



Adrienne Markey overlooking Cane River Station, Steve Dillon © Copyright, Western Australian Herbarium

Introduced for grazing and erosion control and sown widely in northern Australia, it has a high ecological impact, invades rapidly and displaces native species, and is increasing in abundance and range. It can create a fire hazard and alter fire regimes, and is a serious environmental weed with low feasibility for eradication.

Mimosa Bush (*Vachellia farnesiana*) is also widespread in Cane River Conservation Park in shrublands on alluvial plains and in riparian vegetation. This species has a high ecological impact, invades rapidly and has low feasibility for eradication. However, its distribution and abundance appear to be stable.

Kapok Bush (*Aerva javanica*) is widespread in northern Western Australia, particularly in disturbed areas and calcareous soils. It is

established in the Pilbara, forms large and dense infestations, has a high ecological impact, rapidly invades and is increasing. In the park it was observed around the Mount Minnie homestead and along the North West Coastal Highway. Prolific seed production means that it has the potential to expand its impact in the park. However, control and eradication are moderately feasible.

Coral Cactus (*Cylindropuntia fulgida*) was thought to have been found (pending species confirmation) at the old Cane River homestead and one plant was removed. A second plant was seen by another team at the Cane River homestead and will require removal. Species of *Cylindropuntia*, including *C. fulgida*, have the potential to become serious weeds because they can spread both vegetatively and by seed. This genus was previously on the alert list for the Pilbara region—that is, it is not currently





in the region but could potentially occur there. The Cane River homestead plants confirm the presence of the genus in the Pilbara region.

Ulcardo Melon (*Cucumis melo* subsp. *agrestis*) was collected for the first time in the park from one location, which is a considerable range extension of over 300 kms. It is possible that it was overlooked by previous collectors and may occur in more locations closer to the park.

Spiked Malvastrum (*Malvastrum americanum*) and Whorled Pigeon Grass (*Setaria verticillata*) were identified in two sites. Spiked Malvastrum was located on granite and dolomite outcrops and in the surrounding drainage lines. This species is widespread in northern and central Western Australia in riparian and disturbed vegetation. Whorled Pigeon Grass has the potential to become a major weed on alluvial plains and riparian vegetation in the park. Both species have a high ecological impact, rapid invasiveness, a low feasibility for eradication and are increasing in the region.

Isolated plants of Purpletop Chloris (*Chloris barbata*—high impact), Awnless Barnyard Grass (*Echinochloa colona*—high impact), Common Sowthistle (*Sonchus oleraceus*—low impact) and Black Berry Nightshade (*Solanum nigrum*—low impact) were found.

Purslane (*Portulaca oleracea*) and Speedy Weed (*Flaveria trinervia*) occur widely in the state and are established in the Pilbara. Both species appear to invade disturbed areas and do not appear to displace native vegetation in Cane River Conservation Park, and are considered as native species by some.

Mesquite (*Prosopis* spp.) and Parkinsonia (*Parkinsonia aculeata*) are weeds of national significance that occur in the wider Pilbara and Carnarvon regions but were not found during this survey. Vigilance is needed to ensure that these two species do not become established within the park.

High impact weeds restricted in their distribution within the park are a priority for management, being the most feasible to control.



A relic of Mount Minnie Station, Adrienne Markey
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Table 6: State listed weeds and Weeds of National Significance⁵ recorded in the park

Species	Location observed	Indication of abundance
Buffel Grass (<i>Cenchrus ciliaris</i>)	Roadside on Mt Stuart Road -22.15723028°S 115.54643548°E	Very abundant where present, widespread throughout the park
	Claypan, 27.7 km S of Onslow -21.885212°S 115.142228°E	Heavy infestation around claypan margins
	Base of red sand dunes, 20 km S of Onslow -21.875188°S 115.172216°E	Widespread with heavy infestation on troughs and crests of red sand dunes S of Onslow
	Base and tops of granite outcrop -22.4328105°S 115.28904207°E	Heavy infestation amongst eucalypts in drainage lines and pockets of vegetation on the granite outcrop
	Southern Parry Range -22.434719°S 115.583133°E	Widespread with extensive, dense infestation in creeklines
	Cane River Homestead -22.09274679°S 115.61978392°E	In holding yards and around buildings
	Cane River at eastern boundary of reserve -22.188167°S 115.859523°E	Heavy infestation in grazed riparian vegetation
	Paddy's Pool -22.14504065°S 115.78796312°E	Heavy infestation in grazed riparian vegetation
	North West Coastal Highway -22.180227°S 115.530307°E	Roadside growth following disturbance
Kapok Bush (<i>Aerva javanica</i>)	Mt Minnie homestead -21.971422°S 115.432214°E	Locally abundant in patches
	North West Coastal Highway roadsides	
Ulcardo Melon (<i>Cucumis melo</i> subsp. <i>agrestis</i>)	Granite outcrop in southwest edge of park -22.4328105°S 115.28904207°E	Isolated plants

⁵ Weeds of National Significance <<http://www.weeds.org.au/WoNS/>>, accessed 12 August 2014.





Species	Location observed	Indication of abundance
Mimosa Bush (<i>Vachellia farnesiana</i>)	Pilbara Biological Survey plot WYW13 -21.99867°S 115.59119°E	Locally abundant in patches, usually near watercourses, and in disturbed and/or grazed areas. Common under <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i>
	Cane River Homestead -22.09274679°S 115.61978392°E	
	Cane River at eastern boundary of park -22.188167°S 115.859523°E	
Boxing Glove Cactus (<i>Cylindropuntia</i> sp. (?fulgida))	Cane River Homestead -22.09274679°S 115.61978392°E	Isolated plants around buildings
Spiked Malvastrum (<i>Malvastrum americanum</i>)	Base and tops of granite outcrop -22.4328105°S 115.28904207° E	Isolated plants under eucalypts in drainage line and pockets of vegetation on rocky outcrops
	Southern Parry Range on low rocky hill slope -22.431028°S 115.575686°E	Isolated plants in mesic soil pockets on rock crevices. Located at several spots on southern Parry Range
Whorled Pigeon Grass (<i>Setaria verticillata</i>)	Pilbara Biological Survey plot WYW13 -21.99867°S 115.59119°E	Isolated plants on alluvial plain
	Cane River -22.09274679°S 115.61978392°E	Isolated plants on river banks
Common Sowthistle (<i>Sonchus oleraceus</i>)	Mt Minnie Homestead -21.971422°S 115.432214°E	Isolated plants in watered lawn
Purpletop Chloris (<i>Chloris barbata</i>)	Mt Minnie Homestead -21.971422°S 115.432214°E	Isolated plants in watered lawn
Awnless Barnyard Grass (<i>Echinochloa colona</i>)	Cane River at eastern boundary of park -22.188167°S 115.859523°E	Isolated plants
Black Berry Nightshade (<i>Solanum nigrum</i>)	Pilbara Biological Survey plot WYW13 -21.99867°S 115.59119°E	Isolated plants



Other Points of Interest

Vertebrate Fauna

Mt Minnie and Cane River Blocks have been the focus of a considerable level of vertebrate survey work including systematic sampling at more than 29 locations over a two year period from 1999-2001 by staff from the Department of Environment and Conservation Pilbara Regional Office. The Pilbara Biodiversity Survey from 2002 to 2007 sampled a further seven locations.⁶ While this has resulted in the

vertebrate fauna being comparatively well known in the northern and central areas of the Park, almost no work has been undertaken in the southern areas of the Nanutarra Block and this is where this survey concentrated.

More than 276 captures and observations were made, representing 10 species of native mammals, 2 frog species and 45 reptile species. Although the level of previous surveys limited the likelihood that new records would be found during this survey,



Paddy's Pool, Adrienne Markey © Copyright, Western Australian Herbarium





seven were still identified. The larger species such as Perentie (*Varanus giganteus*), Echidna (*Tachyglossus aculeatus*), Euro (*Macropus robustus*) and Red Kangaroo (*Macropus rufus*) have probably been seen in the past but not recorded. Perentie were only detected by a camera trap and a single observation. Woolley's Pseudantechinus (*Pseudantechinus woolleyae*) is readily captured in rocky habitats with the use of Elliot traps and is quite common through much of the arid zone. Its omission from earlier species lists probably reflects the limited use of Elliot traps in past surveys. The Long-nosed Dragon (*Lophognathus longirostris*) is also widespread and quite common throughout the arid region of WA; however, it is often not captured in pit traps and in this survey was only observed.

Mammals were not particularly abundant, apart from one site where eight Little Red Antechinus (*Dasykaluta rosamondae*) were caught. The Common Rock Rat (*Zygomys argurus*) was caught on only three occasions, and the first capture was not until the traps had been out for three nights. Similarly, Woolley's Pseudantechinus (*Pseudantechinus woolleyae*) was not detected until after four nights of trapping. This demonstrates the need for a fairly large number of continuous trapping nights to maximise the likelihood of detecting these mammals. Two other rodents were caught—the Spinifex Hopping Mouse (*Notomys alexis*) and the Sandy Inland Mouse (*Pseudomys hermannsburgensis*)—but there were no captures of *Planigale* or *Ningui* species. All of these mammals show considerable variability in both local abundance and activity patterns, so this is not surprising.

6 McKenzie, N. L., Van Leeuwen, S. & Pinder, A. M. 2009, 'Introduction to the Pilbara Biodiversity survey, 2002–2007', *Records of the Western Australian Museum*, Supplement **78**: 3–89.



The complex internal structure of a termite mound, Adrienne Markey © Copyright, Western Australian Herbarium

Of the 45 reptile species identified, four were new records for the park, suggesting that further species could be found in the park. The Pygmy Desert Monitor (*Varanus eremius*) was especially abundant, with 22 individuals caught; it was recorded from all sites comprising sand and spinifex. This number of specimens was only exceeded by the Desert Spadefoot Frog (*Notaden nichollsi*, 35 specimens) and the North-western Sandslider (*Lerista bipes*, 28 specimens). The Desert Spadefoot Frog was only found at sand dune sites over a couple of nights and after heavy condensation. The small fossorial North-western Sandslider was captured almost exclusively in the dunes at the edge of the granite at one site, although its tracks and that of other sand-swimming skinks were observed at other sand dunes.



Invertebrate Fauna

Bees

Thirty-five species of native bees from four families were collected, at least half of which are expected to be undescribed. Particularly well represented, with 12 species, were the Megachilidae—the leafcutter and resin bees. Flowering plants that were particularly attractive to native bees were species of *Indigofera*, *Tephrosia* and *Grevillea*. The majority of the bee species were found at single sites, suggesting that the 35 species recorded is an underestimate of the true number of native bee species occurring in the park.

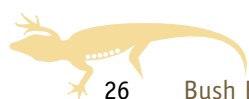
Named species newly recorded for the park include *Amegilla murrayensis* and *Hylaeus maiellus*. *Amegilla chlorocyanea*, a blue-banded bee species that is common in the southern half of Australia, was found foraging on *Solanum* and *Stemodia* throughout the park.

Moths, Butterflies and Dragonflies

A total of 23 butterfly, 30 dragonfly and 34 geometrid moth specimens were collected during the survey. These represented 20 species, six each of butterflies and dragonflies, and eight of geometrid moths. Although the number of species collected was low, collections of these groups are usually sparse in the arid Pilbara region.



Landscape, Steve Dillon © Copyright, Western Australian Herbarium





Because there have been no previous surveys of invertebrates in this area, these are all new records and will therefore be useful for comparison with further surveys.

Three new or undescribed species of geometrid moths were collected, including one that is most likely new to science. All butterfly and dragonfly species collected are common and widely distributed.

True Bugs

This survey found 58 species of true bugs belonging to 16 families. Of these species, 16 are considered putative new species, nine were identified as described species, and 33 were identified to family level or lower. All of the species found, except for the Water Strider (*Limnogonus fossarum*), are new records for the park.

Thrips

Thrips are better known as pollen feeders and leaf feeders; however, nearly half the 6,000 species feed on fungi and belong to the family Phlaeothripidae. As the generic and tribal classification within this family remains poorly known, Phlaeothripidae were targeted for collection during this survey.

Thrips have not been collected from this area previously. Seventy-seven specimens, representing 22 species, were collected. Nearly all species are known to be pollen feeders or leaf feeders, with only one fungal-feeding species collected from dead branches. The lack of fungal-feeding thrips collected was presumably a result of the lack of their food source. Very few dead branches or leaves in a suitable state of decay were found in the park.

One undescribed genus, near *Odontothripiella*, was collected from the flowers of *Cleome viscosa* as well as unidentified flowers. Four undescribed species were also collected: *Teuchothrips* sp. and *Jacotia* sp. from *Eremophila cuneifolia* flowers, *Scirtothrips* sp. from *Senna glutinosa* flowers and *Gynaikothrips* sp. from leaf galls of *Ficus brachypoda*.

Generally the abundance and diversity of thrips collected in the survey was low, presumably a result of the cool overnight temperatures and dry conditions. Thrips are known to pupate over winter or during unfavourable conditions and larger numbers are normally observed during spring and summer.

Millipedes, Centipedes, Mites, Scorpions, Pseudoscorpions and Spiders

A relatively small number of non-insect terrestrial arthropods were collected in the park. Many of the arachnids, particularly the spiders, were unidentifiable, either because specimens were juveniles (adults are needed for positive species identification) or because little is known about their taxonomy. The survey did, however, provide the first records of the families Linyphiidae and Uloboridae from the Pilbara region. Few trapdoor spiders (Mygalomorphae) or wolf spiders (Lycosidae) were collected, and centipedes and millipedes were poorly represented in this survey.

Stygofauna and Terrestrial Crustaceans

At least 33 subterranean aquatic species, all of which represent undescribed species, were collected at 17 sites within and around Cane River Conservation Park. Amphipod crustaceans dominated the stygofauna; other taxa collected included copepods, ostracods, parabathynellids,



flatworms and isopods. Terrestrial isopods were collected at several localities around the Parry Range and may include up to eight new species.

Snails

The 11 species of non-marine molluscs collected during this survey belong to the families Camaenidae, Pupillidae and Succineidae. Ten species were new records for the park. An undescribed camaenid (*Quistrachia* n. sp. 'Parry Range'), was previously recorded by the Naturalists Club in 1999.

Vascular Flora

This survey provided an opportunity to confirm and clarify previous records and to cover a part of Cane River Conservation Park not previously surveyed for flora (Mount Minnie Station). A total of 331 taxa from 52 families were recorded; 87 of these were new records for the park, which is a moderate increase in the number of recorded taxa. Access to the north-west sandplains and granite outcrops, and surveying after recent fires may have contributed to this increase.



Marsh Stemodia (*Stemodia grossa*), Adrienne Markey © Copyright, Western Australian Herbarium



Abutilon lepidum, Adrienne Markey © Copyright, Western Australian Herbarium

The most common families were the Fabaceae (59 taxa), Malvaceae (38 taxa), Poaceae (37 taxa), Amaranthaceae (25 taxa) and Chenopodiaceae (15 taxa). The most species-rich genera were *Acacia* (21 taxa), *Ptilotus* (17 taxa), *Solanum* (7 taxa), *Sida* (8 taxa), *Tephrosia* (9 taxa), *Senna* (7 taxa), *Eremophila* (8 taxa), *Heliotropium* (6 taxa), *Euphorbia* (6 taxa) and *Abutilon* (6 taxa).

This representation of families and genera is characteristic of the wider Pilbara region, although the number of taxa in the Asteraceae is relatively low. No taxa recorded were endemic to the survey area or could be considered regional endemics with a restricted range.

Of the 87 new records for the park, 17 are notable range extensions (more than 100 km)—see Table 7. Two of these—a heliotrope (*Heliotropium diversifolium*) and Native Milkwort (*Polygala linariifolia*)—are significant range extensions (more





Remko Leijts examining specimens © Copyright, Department of the Environment

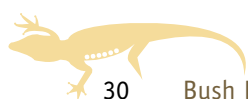
than 350 km). Nineteen of the new records fill gaps in species distribution, most of which (13) were more than 100 km from their nearest previously known populations. Two species (*Dipteracanthus australasicus* subsp. *australasicus* and *Polygala isingii*) were more than 200 km from their nearest previously known populations. Six species were identified that have not been collected in the survey area for more than 100 years (*Goodenia lamprosperma*, *Gossypium robinsonii*, *Keraudrenia nephrosperma*, *Maireana georgei*, *Petalostylis labicheoides* and *Pluchea ferdinandi-muelleri*).

It would be beneficial to describe and assess the vegetation communities in the park systematically and in greater detail. This would identify unusual and restricted communities, their habitats and threats (e.g. weeds, feral animals, fire regimes, climate change and development).



Table 7: Named vascular flora newly recorded from Cane River Conservation Park that represent significant range extensions or infill gaps in distribution of more than 100 km

Taxon	Nearest Previous Record	Native/ Introduced
<i>Abutilon fraseri</i>	Fill gap in distribution, nearest population c. 100 km S	Native
<i>Abutilon otocarpum</i>	Fill gap in distribution, nearest population c. 140 km E	Native
<i>Acacia acradenia</i>	Range extension c. 150 km NNW	Native
<i>Acacia wiseana</i>	Range extension c. 120 km SW	Native
<i>Alyogyne pinoniana</i> var. <i>pinoniana</i>	Range extension c. 100 km SW	Native
<i>Ammannia multiflora</i>	Range extension c. 120 km SW	Native
<i>Bergia pedicellaris</i>	Range extension c. 250 km ENE	Native
<i>Cassytha capillaris</i>	Fill gap in distribution c. 200 km W	Native
<i>Cheilanthes brownii</i>	Range extension c. 150 km SE	Native
<i>Chloris barbata</i>	Range extension, nearest population c. 150 km NW	Introduced
<i>Commelina ensifolia</i>	Fill gap in distribution, nearest population c. 110 km	Native
<i>Cucumis melo</i> subsp. <i>agrestis</i>	Range extension, nearest population c. 200 km NE	Introduced
<i>Cylindropuntia</i> sp. (? <i>fulgida</i>)	Fill gap in distribution, nearest population c. 150 km	Introduced
<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	Fill gap in distribution, nearest population c. 200 km	Native
<i>Echinochloa colona</i>	Fill gap in distribution, nearest population c. 100 km W	Introduced
<i>Enteropogon ramosus</i>	Nearest population c. 100 km SW	Native
<i>Heliotropium diversifolium</i>	Range extension, nearest population c. 450 km SW. New record for western Pilbara	Native
<i>Heliotropium glanduliferum</i>	Fill gap in distribution, nearest population c. 90 km SW	Native





Taxon	Nearest Previous Record	Native/ Introduced
<i>Ipomoea coptica</i>	Range extension, nearest population c. 150 km NE	Native
<i>Jasminum didymum</i> subsp. <i>lineare</i>	Fill gap in distribution, nearest population c. 100 km S	Native
<i>Keraudrenia</i> sp. North West (J.Z.Weber 6475) C.F.Wilkins	Fill gap in distribution, nearest population c. 140 km SW	Native
<i>Lawrenzia densiflora</i>	Range extension, nearest population c. 105 km S	Native
<i>Leptochloa fusca</i> subsp. <i>muelleri</i>	Range extension, nearest population c. 100 km SW	Native
<i>Polygala isingii</i>	Fill gap in distribution, nearest population c. 210 km W	Native
<i>Polygala linariifolia</i>	Range extension, nearest population c. 340 km E	Native
<i>Polygala glaucifolia</i>	Fill gap in distribution, nearest population c. 105 km W	Native
<i>Portulaca cyclophylla</i>	Fill gap in distribution, nearest population c. 140 km SW	Native
<i>Ptilotus gomphrenoides</i>	Nearest population c. 105 km SE	Native
<i>Ptilotus mollis</i>	Range extension, nearest population c. 250 km E	Native
<i>Santalum lanceolatum</i>	Fill gap in distribution, nearest population c. 150 km SE	Native
<i>Solanum ashbyae</i>	Range extension, nearest population c. 120 km N	Native
<i>Solanum nigrum</i>	Range extension, nearest population c. 180 km W	Introduced
<i>Stackhousia muricata</i>	Fill gap in distribution, nearest population c. 160 km S	Native
<i>Streptoglossa bubakii</i>	Fill gap in distribution, nearest population c. 140 km NE	Native
<i>Vittadinia obovata</i>	Range extension, nearest population c. 130 km N	Native
<i>Zornia albiflora</i>	Range extension, nearest population c. 240 km NE	Native



Notes



Ptilotus mollis, a priority-listed species in Western Australia. A range extension of 250 km was recorded during this survey, Adrienne Markey © Copyright, Western Australian Herbarium





Appendix A: Species Lists

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

Current at May 2014



Fauna

Vertebrates

Mammals		
Family	Species	Common name
Bovidae	<i>Bos taurus</i>	European Cattle
Canidae	<i>Canis familiaris/dingo</i>	Wild Dog or Dingo
Dasyuridae	<i>Dasykaluta rosamondae</i>	Little Red Antechinus, Little Red Kaluta
	<i>Dasyurus hallucatus</i> # ~	Northern Quoll, Digul
	<i>Ningui timealeyi</i>	Pilbara Ningui
	<i>Planigale "k"</i>	–
	<i>Planigale "t"</i>	–
	<i>Pseudantechinus woolleyae</i> *	Woolley's Pseudantechinus
	<i>Sminthopsis macroura</i>	Stripe-faced Dunnart
	<i>Sminthopsis youngsoni</i>	Lesser Hairy-footed Dunnart
Emballonuridae	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat
Felidae	<i>Felis catus</i> ^	Cat
Macropodidae	<i>Macropus robustus</i>	Common Wallaroo
	<i>Macropus rufus</i>	Red Kangaroo
Megadermatidae	<i>Macroderma gigas</i> ~	Ghost Bat



Red Kangaroo (*Macropus rufus*), Mark Cowan © Copyright, Department of Parks and Wildlife

Key

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

Colour coding for entries:

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





Mammals		
Family	Species	Common name
Molossidae	<i>Chaerephon jobensis</i>	Northern Freetail-bat, Northern Mastiff Bat
	<i>Mormopterus beccarii</i>	Beccari's Freetail-bat, Beccari's Mastiff Bat
	<i>Tadarida australis</i> *	White-striped Freetail-bat
Muridae	<i>Mus musculus</i> ^	House Mouse
	<i>Notomys alexis</i>	Spinifex Hopping-mouse
	<i>Pseudomys chapmani</i> ~	Pebble-mound Mouse
	<i>Pseudomys delicatulus</i>	Delicate Mouse
	<i>Pseudomys hermannsburgensis</i>	Sandy Inland Mouse
	<i>Zygomys argurus</i>	Common Rock-rat
Tachyglossidae	<i>Tachyglossus aculeatus</i> *	Short-beaked Echidna
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat
	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat
	<i>Scotorepens greyii</i>	Little Broad-nosed Bat
	<i>Vespadelus finlaysoni</i>	Finlayson's Cave Bat

Birds		
Family	Species	Common name
Acanthizidae	<i>Smicronis brevirostris</i>	Weebill
Accipitridae	<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk
	<i>Aquila audax</i>	Wedge-tailed Eagle
	<i>Circus assimilis</i>	Spotted Harrier
	<i>Haliaeetus leucogaster</i> ~	White-bellied Sea-Eagle
	<i>Haliastur sphenurus</i>	Whistling Kite
	<i>Hieraetus morphnoides</i>	Little Eagle
	<i>Milvus migrans</i>	Black Kite
Aegothelidae	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar
Alcedinidae	<i>Dacelo leachii</i>	Blue-winged Kookaburra
	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher
	<i>Todiramphus sanctus</i>	Sacred Kingfisher
Anatidae	<i>Anas superciliosa</i>	Pacific Black Duck
Ardeidae	<i>Ardea modesta</i> ~	Eastern Great Egret
	<i>Ardea pacifica</i>	White-necked Heron
	<i>Egretta novaehollandiae</i>	White-faced Heron
	<i>Egretta sacra</i> ~	Eastern Reef Egret
Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow
	<i>Cracticus nigrogularis</i>	Pied Butcherbird
	<i>Cracticus tibicen</i>	Australian Magpie
	<i>Cracticus torquatus</i>	Grey Butcherbird



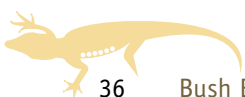
Birds		
Family	Species	Common name
Burhinidae	<i>Burhinus grallarius</i>	Bush Stone-curlew
Cacatuidae	<i>Cacatua sanguinea</i>	Little Corella
	<i>Eolophus roseicapillus</i>	Galah
	<i>Nymphicus hollandicus</i>	Cockatiel
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike
	<i>Lalage sueurii</i>	White-winged Triller
Caprimulgidae	<i>Eurostopus argus</i>	Spotted Nightjar
Casuariidae	<i>Dromaius novaehollandiae</i>	Emu
Centropodidae	<i>Centropus phasianinus</i>	Pheasant Coucal
Charadriidae	<i>Euseyornis melanops</i>	Black-fronted Dotterel
Climacteridae	<i>Climacteris melanura</i>	Black-tailed Treecreeper
Columbidae	<i>Geopelia cuneata</i>	Diamond Dove
	<i>Geopelia striata</i>	Peaceful Dove
	<i>Geophaps plumifera</i>	Spinifex Pigeon
	<i>Ocyphaps lophotes</i>	Crested Pigeon
	<i>Phaps chalcoptera</i>	Common Bronzewing
Corvidae	<i>Corvus bennetti</i>	Little Crow
	<i>Corvus orru</i>	Torresian Crow
Cuculidae	<i>Cacomantis pallidus</i>	Pallid Cuckoo
	<i>Chalcites basalus</i>	Horsfield's Bronze-Cuckoo
Estrildidae	<i>Emblema pictum</i>	Painted Finch
	<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
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow
	<i>Petrochelidon ariel</i>	Fairy Martin
	<i>Petrochelidon nigricans</i>	Tree Martin
Laridae	<i>Chroicocephalus novaehollandiae</i> <i>novaehollandiae</i>	Silver Gull
Maluridae	<i>Malurus lamberti</i>	Variegated Fairy-wren
	<i>Malurus leucopterus</i>	White-winged Fairy-wren
Megaluridae	<i>Cincloramphus cruralis</i>	Brown Songlark
	<i>Eremiornis carteri</i>	Spinifexbird

Key

- * = New record for this reserve
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- # = EPBC listed
- ~ = WC listed

Colour coding for entries:

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





Birds		
Family	Species	Common name
Meliphagidae	<i>Certhionyx variegatus</i>	Pied Honeyeater
	<i>Epthianura tricolor</i>	Crimson Chat
	<i>Gavicalis virescens</i>	Singing Honeyeater
	<i>Lichmera indistincta</i>	Brown Honeyeater
	<i>Manorina flavigula</i>	Yellow-throated Miner
	<i>Ptilotula keartlandi</i>	Grey-headed Honeyeater
	<i>Ptilotula penicillatus</i>	White-plumed Honeyeater
	<i>Sugomel niger</i>	Black Honeyeater
Meropidae	<i>Merops ornatus</i> ~	Rainbow Bee-eater
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark
Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian Pipit, Australian Pipit
Otididae	<i>Ardeotis australis</i>	Australian Bustard
Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush
	<i>Oreoica gutturalis</i>	Crested Bellbird
	<i>Pachycephala rufiventris</i>	Rufous Whistler
Pardalotidae	<i>Pardalotus rubricatus</i>	Red-browed Pardalote
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian Pelican
Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	Little Pied Cormorant
	<i>Phalacrocorax carbo</i>	Great Cormorant
Phasianidae	<i>Coturnix ypsilophora</i>	Brown Quail
Pomatostomidae	<i>Pomatostomus temporalis</i>	Grey-crowned Babbler
Psittacidae	<i>Barnardius zonarius</i>	Australian Ringneck
	<i>Melopsittacus undulatus</i>	Budgerigar



Australian Bustard (*Ardeotis australis*), Steve Dillon © Copyright, Western Australian Herbarium



Birds

Family	Species	Common name
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail
Strigidae	<i>Ninox novaeseelandiae</i>	Southern Boobook
Turnicidae	<i>Turnix velox</i>	Little Button-quail



Black-headed Python (*Aspidites melanocephalus*), Steve Dillon © Copyright, Western Australian Herbarium



Orange-naped Snake (*Furina ornata*), Mark Cowan © Copyright, Department of Parks and Wildlife

Reptiles

Family	Species	Common name
Agamidae	<i>Ctenophorus caudicinctus</i>	Ring-tailed Dragon
	<i>Ctenophorus femoralis</i>	Long-tailed Sand-dragon
	<i>Ctenophorus isolepis</i>	Central Military Dragon
	<i>Ctenophorus nuchalis</i>	Central Netted Dragon
	<i>Ctenophorus reticulatus</i>	Western Netted Dragon
	<i>Ctenophorus rubens</i>	Reddening Sand-dragon
	<i>Diporiphora winneckeii</i>	Blue-lined Dragon, Canegrass Dragon
	<i>Lophognathus longirostris</i> *	Long-nosed Dragon
	<i>Pogona minor</i>	Dwarf Bearded Dragon
Boidae	<i>Antaresia perthensis</i>	Pygmy Python
	<i>Antaresia stimsoni</i>	Stimson's Python
	<i>Aspidites melanocephalus</i>	Black-headed Python

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Desert Banded Snake (*Simoselaps anomalus*), Mark Cowan © Copyright, Department of Parks and Wildlife



Leopard Ctenotus (*Ctenotus pantherinus*), Mark Cowan © Copyright, Department of Parks and Wildlife

Reptiles

Family	Species	Common name
Carphodactylidae	<i>Nephrurus levis</i>	Smooth Knob-tailed Gecko, Three-lined Knob-tail
	<i>Nephrurus wheeleri</i>	Banded Knob-tail
Diplodactylidae	<i>Diplodactylus conspicillatus</i>	Fat-tailed Diplodactylus, Fat-tailed Gecko
	<i>Lucasium stenodactylum</i>	Crowned Gecko, Sand-plain Gecko
	<i>Lucasium wombeyi</i>	Pilbara Ground Gecko
	<i>Rhynchoedura ornata</i>	Western Beaked Gecko
	<i>Strophurus elderi</i>	Jewelled Gecko
	<i>Strophurus strophurus</i>	Western Spiny-tailed Gecko
Elapidae	<i>Acanthophis pyrrhus</i>	Desert Death Adder
	<i>Acanthophis wellsei</i>	Pilbara Death Adder
	<i>Brachyuropis fasciolatus</i>	Narrow-banded Shovel-nosed Snake, Narrow-banded Snake
	<i>Brachyuropis semifasciatus</i>	Southern Shovel-nosed Snake
	<i>Demansia psammophis</i>	Yellow-faced Whip Snake
	<i>Demansia rufescens</i>	Rufous Whipsnake
	<i>Furina ornata</i>	Moon Snake, Orange-naped Snake
	<i>Pseudechis australis</i>	King Brown Snake, Mulga Snake
	<i>Pseudonaja modesta</i>	Ringed Brown Snake
	<i>Pseudonaja nuchalis</i>	Northern Brown Snake
	<i>Simoselaps anomalus</i> *	Desert Banded Snake
	<i>Suta fasciata</i>	Rosen's Snake
<i>Suta punctata</i>	Little Spotted Snake	
Gekkonidae	<i>Gehyra pilbara</i>	Pilbara Dtella
	<i>Gehyra punctata</i>	Spotted Dtella
	<i>Gehyra variegata</i>	Tree Dtella
	<i>Heteronotia binoei</i>	Bynoe's Gecko



Reptiles		
Family	Species	Common name
Pygopodidae	<i>Delma nasuta</i>	Sharp-snouted Delma
	<i>Delma pax</i>	Peace Delma
	<i>Delma tincta</i>	Excitable Delma
	<i>Lialis burtonis</i>	Burton's Snake-lizard
Scincidae	<i>Carlia munda</i>	Shaded-litter Rainbow-skink
	<i>Ctenotus calurus</i> *	Blue-tailed Ctenotus, Blue-tailed Finesnout Ctenotus
	<i>Ctenotus duricola</i>	Pilbara Ctenotus
	<i>Ctenotus grandis</i>	Grand Ctenotus
	<i>Ctenotus hanloni</i>	Nimble Ctenotus
	<i>Ctenotus helenae</i>	Clay-soil Ctenotus, Helen's Ctenotus
	<i>Ctenotus iapetus</i>	North West Cape Ctenotus
	<i>Ctenotus maryani</i>	Maryan's Ctenotus
	<i>Ctenotus pantherinus</i>	Leopard Ctenotus
	<i>Ctenotus rufescens</i>	Rufous Finesnout Ctenotus
	<i>Ctenotus saxatilis</i>	Rock Ctenotus, Stony-soil Ctenotus
	<i>Ctenotus schomburgkii</i>	Barred Wedgesnout Ctenotus, Schomburgk's Ctenotus
	<i>Ctenotus serventyi</i>	North-western Sandy-loam Ctenotus
	<i>Cyclodomorphus melanops</i>	Spinifex Slender Blue-tongue
	<i>Egernia depressa</i>	Pygmy Spiny-tailed Skink
	<i>Eremiascincus fasciolatus</i>	Narrow-banded Sand-swimmer
	<i>Eremiascincus richardsonii</i>	Broad-banded Sand-swimmer
	<i>Lerista bipes</i>	North-western Sandslider, Two-toed Lerista
	<i>Lerista clara</i>	Sharp-blazed Three-toed Slider
	<i>Lerista muelleri</i>	Wood Mulch-slider
	<i>Lerista onslowiana</i>	Onslow Broad-blazed Slider
	<i>Lerista rolfei</i>	Rolfe's Slider
	<i>Lerista verhmens</i>	Powerful Lerista
	<i>Menetia greyii</i>	Common Dwarf Skink, Grey's Menetia
	<i>Morethia ruficauda</i>	Lined Firetail Skink
	<i>Notoscincus ornatus</i>	Ornate Soil-crevice Skink
<i>Proablepharus reginae</i>	Spinifex Snake-eyed Skink, Western Soil-crevice Skink	
<i>Tiliqua multifasciata</i>	Centralian Blue-tongue	

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Reptiles		
Family	Species	Common name
Typhlopidae	<i>Ramphotyphlops ammodytes</i>	Sand-diving Blind Snake
	<i>Ramphotyphlops diversus</i>	Northern Blind Snake
	<i>Ramphotyphlops grypus</i>	Beaked Blind Snake, Long-beaked Blind Snake
	<i>Ramphotyphlops leptosoma</i>	Murchison Blind Snake
Varanidae	<i>Varanus acanthurus</i>	Ridge-tailed Monitor, Spiny-tailed Monitor
	<i>Varanus brevicauda</i>	Short-tailed Pygmy Monitor
	<i>Varanus caudolineatus</i>	Stripe-tailed Monitor
	<i>Varanus eremius</i>	Pygmy Desert Monitor
	<i>Varanus giganteus</i> *	Perentie
	<i>Varanus gouldii</i>	Gould's Goanna
	<i>Varanus panoptes</i>	Yellow-spotted Monitor

Frogs and Toads		
Family	Species	Common name
Hylidae	<i>Cyclorana maini</i>	Main's Frog
	<i>Litoria rubella</i>	Desert Tree Frog, Red Tree Frog
Myobatrachidae	<i>Neobatrachus aquilonius</i>	Northern Burrowing Frog
	<i>Notaden nichollsi</i>	Desert Spadefoot Toad
	<i>Platyplectrum spenceri</i>	Spencer's Burrowing Frog, Spencer's Frog



Invertebrates

Bees	
Family	Species
Apidae	<i>Amegilla chlorocyanea</i> *
	<i>Amegilla murrayensis</i> *
	<i>Thyreus</i> sp. 01 *
Colletidae	<i>Euhesma</i> sp. 01 *
	<i>Euhesma</i> sp. 02 *
	<i>Euhesma</i> sp. 03 *
	<i>Hylaeus maiellus</i> *
	<i>Leioproctus</i> sp. 01 blue *
	<i>Leioproctus</i> sp. 02 *
	<i>Leioproctus</i> sp. 03 *
	<i>Leioproctus</i> sp. 04 bighead *
	<i>Leioproctus</i> sp. 05 *
	<i>Leioproctus</i> sp. 06 *
	<i>Trichocolletes</i> sp. 01 *
Halictidae	<i>Homalictus</i> sp. 01 *
	<i>Homalictus</i> sp. 02 *
	<i>Homalictus</i> sp. 03 *
	<i>Lasioglossum (Chilalictus)</i> sp. 01 *
	<i>Lasioglossum (Chilalictus)</i> sp. 02 *
	<i>Lasioglossum (Chilalictus)</i> sp. 03 *
	<i>Lasioglossum (Chilalictus)</i> sp. 04 *
	<i>Lasioglossum erythrurum</i>
	<i>Lasioglossum immaculatum</i>
	<i>Nomia</i> sp. 01 *
<i>Nomia</i> sp. 02 *	

Bees	
Family	Species
Megachilidae	<i>Megachile</i> sp. 01 *
	<i>Megachile</i> sp. 02 *
	<i>Megachile</i> sp. 03 *
	<i>Megachile</i> sp. 04 *
	<i>Megachile</i> sp. 05 *
	<i>Megachile</i> sp. 06 *
	<i>Megachile</i> sp. 07 *
	<i>Megachile</i> sp. 08 *
	<i>Megachile</i> sp. 09 *
	<i>Megachile</i> sp. 10 *
	<i>Megachile</i> sp. 11 *
	<i>Megachile</i> sp. 12 *



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Moths	
Family	Species
Geometridae	<i>Cleora displicata</i> *
	<i>Lissomma minuta</i> *
	<i>Nearcha caronia</i> *
	<i>Nearcha n. sp. 01</i> *
	<i>Nearcha n. sp. 02</i> *
	<i>Nearcha ophla</i> *
	<i>Oenochroma n. sp.</i> *
<i>"Prasinocyma" ocyptera</i> *	

Butterflies	
Family	Species
Lycaenidae	<i>Nacaduba biocellata</i> *
	<i>Theclinesthes miskini</i> *
Nymphalidae	<i>Acraea andromacha</i> *
	<i>Vanessa kershawi</i> *
Pieridae	<i>Catopsilia pomona</i> *
	<i>Eurema smilax</i> *



Lissomma minuta, a geometrid moth, Cathy Byrne © Copyright, Tasmanian Museum and Art Gallery



Australian Painted Lady (*Vanessa kershawi*), Cathy Byrne © Copyright, Tasmanian Museum and Art Gallery

Water Beetles	
Family	Species
Dytiscidae	<i>Copelatus nigrolineatus</i>
	<i>Eretes australis</i>
	<i>Hydroglyphus basalis</i>
	<i>Hydroglyphus grammopterus</i>
	<i>Hyphyrus lyratus</i>
	<i>Laccophilus sharpi</i>
	<i>Rhantaticus congestus</i>
	<i>Tiporus tambreyi</i>
Gyrinidae	<i>Gyrinidae n. sp.</i> *

True Bugs	
Family	Species
Anthocoridae	Anthocoridae sp. BBPILB11/ANTH/Msp021 *
Belostomatidae	<i>Lethocerus distinctifemur</i> *
Coreidae	<i>Mictis profana</i> * ^
Cydnidae	Cydnidae sp. BBPILB11/CYDN/Msp019 *
	Cydnidae sp. BBPILB11/CYDN/Msp020 *
Geocoridae	<i>Germalus</i> sp. 01 BBPILB11/GEOC/Msp001 *
	<i>Germalus</i> sp. 02 BBPILB11/GEOC/Msp002 *
	<i>Germalus</i> sp. 03 BBPILB11/GERM/Msp040 *



A putative new species of True Bug, Dicyphini n. gen. n. sp. BBPILB11/BRYO/Msp032, Marina Cheng © Copyright, University of New South Wales

True Bugs	
Family	Species
Gerridae	<i>Limnogonus fossarum</i>
	<i>Rhagadotarsus anomalus</i> *
Heterogastridae	<i>Dinomachus</i> sp. BBPILB11/HETE/Msp039 *
Lygaeidae	<i>Ischnorhynchinae</i> sp. BBPILB11/LYGA/Msp033 *
	<i>Nysius vinitor</i> * ^
Miridae	<i>Campylomma</i> sp. BBPILB11/PHYL/Msp026 *
	<i>Creontiades</i> sp. BBPILB11/MIRI/Msp027 *
	Dicyphini n. gen. n. sp. BBPILB11/BRYO/Msp032 *
	Orthotylinae n. gen. 03 n. sp. 01 BBPILB11/ORTH/Msp044 *
	Orthotylinae n. gen. 03 n. sp. 02 BBPILB11/ORTH/Msp045 *

True Bugs	
Family	Species
Miridae	Orthotylini n. gen. 01 n. sp. 01 BBPILB11/ORTH/Msp037 *
	Orthotylini n. gen. 01 n. sp. 02 BBPILB11/ORTH/Msp036 *
	Orthotylini n. gen. 02 n. sp. 01 BBPILB11/ORTH/Msp038 *
	Orthotylus n. sp. 01 BBPILB11/ORTH/Msp028 *
	Orthotylus n. sp. 02 BBPILB11/ ORTH/Msp029 *
	Phylinae sp. 01 BBPILB11/PENT/Msp023 *
	Phylinae sp. 02 BBPILB11/PENT/Msp024 *
	Phylinae sp. 03 BBPILB11/PENT/Msp025 *
	Phylini sp. 01 BBPILB11/PHYL/Msp047 *
	Phylini sp. 02 BBPILB11/PHYL/Msp048 *
	Phylini sp. 03 BBPILB11/PHYL/Msp049 *
	Phylini sp. 04 BBPILB11/PHYL/Msp050 *
	Singhalesia n. sp. 01 BBPILB11/BRYO/Msp046 *
	<i>Singhalesia</i> sp. 01 BBPILB11/BRYO/Msp030 *
	<i>Singhalesia</i> sp. 02 BBPILB11/BRYO/Msp031 *
Witchelinamiris n. sp. 01 BBPILB11/ORTH/Msp034 *	
Witchelinamiris n. sp. 02 BBPILB11/ORTH/Msp035 *	
Zanchiini n. gen. 01 n. sp. 01 BBPILB11/ORTH/Msp043 *	
Zanchiini n. gen. 01 n. sp. 02 BBPILB11/ORTH/Msp042 *	
Zanchiini n. gen. 02 n. sp. 03 BBPILB11/ORTH/Msp054 *	

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True Bugs	
Family	Species
Nabidae	<i>Nabis</i> sp. BBPILB11/NABI/Msp022 *
Notonectidae	Anisopinae sp. BBPILB11/NOTO/Msp051 *
Pachygronthidae	<i>Stenophyella macreta</i> *
Pentatomidae	<i>Cephaloplatus bellus</i> *
	<i>Ocirrhoe</i> sp. 01 BBPILB11/PENT/Msp056 *
	<i>Ocirrhoe</i> sp. 02 BBPILB11/PENT/Msp057 *
	<i>Piezodorus</i> sp. BBPILB11/PENT/Msp058 *
	<i>Poecilometis longicornis</i> *
Reduviidae	<i>Peirates sepulchralis</i> *
	Reduviidae sp. BBPILB11/REDU/Msp012 *
	Reduviidae sp. BBPILB11/REDU/Msp013 *
	Stenopodainae sp. BBPILB11/REDU/Msp011 *
Rhyparochromidae	<i>Dieuches</i> sp. BBPILB11/RHYP/Msp017 *
	Drymini n. gen. n. sp. BBPILB11/RHYP/Msp041 *
	Myodochini sp. BBPILB11/RHYP/Msp016 *
	<i>Plinthisus</i> sp. BBPILB11/RHYP/Msp018 *
Tingidae	<i>Lasiacantha caneriverensis</i> n. sp. BBPILB11/TING/Msp007 *
	<i>Oncophysa</i> sp. BBPILB11/TING/Msp005 *
	<i>Paracopium</i> sp. BBPILB11/TING/Msp006 *
	<i>Ulonemia</i> sp. BBPILB11/TING/Msp004 *
Veliidae	<i>Microvelia herberti</i>



Silky Browntop (*Eulalia aurea*) was found to host a newly described species of grass thrips, *Aliceathrips australiensis*, Desley Tree © Copyright, Department of Employment, Economic Development and Innovation

Thrips	
Family	Species
Aeolothripidae	<i>Desmothrips mendozai</i> *
	<i>Desmothrips propinquus</i> *
Melanthripidae	<i>Cranothrips lauriei/ravidus</i> *
	<i>Cranothrips vesper</i> *
Phlaeothripidae	<i>Gynaikothrips</i> sp. *
	<i>Haplothrips froggatti</i> *
	<i>Haplothrips gomphrenae</i> *
	<i>Jacotia</i> sp. *
	<i>Katothrips nodus</i> *
	<i>Kladothrips xiphius</i> *
	<i>Pelinothrips ornatus</i> *
<i>Teuchothrips</i> sp. *	
Thripidae	<i>Warithrips aridum</i> *
	<i>Aliceathrips australiensis</i> *
	<i>Frankliniella schultzei</i> * ^
	Gen. nr <i>Odontothripiella</i> *
	<i>Neohydatothrips haydni</i> *
	<i>Neohydatothrips katherinae</i> *
	<i>Scirtothrips eremicus</i> *
	<i>Scirtothrips nr pilbara</i> *
	<i>Scirtothrips</i> sp. *
	<i>Thrips imaginis</i> * ^



Termites	
Family	Species
Termitidae	<i>Tumulitermes pastinator</i>

Dragonflies	
Family	Species
Aeshnidae	<i>Anax papuensis</i> *
Libellulidae	<i>Diplacodes bipunctata</i> *
	<i>Diplacodes haematodes</i> *
	<i>Orthetrum caledonicum</i> *
	<i>Pantala flavescens</i> *
	<i>Tramea loewii</i> *

Millipedes	
Family	Species
Paradoxosomatidae	<i>Antichiropus</i> sp. *

Centipedes	
Family	Species
Cryptopidae	<i>Cryptops</i> sp. *
Geophilidae	Geophilidae sp. *
Scolopendridae	<i>Ethmostigmus curtipes</i> *
	<i>Scolopendra laeta</i> *
	<i>Scolopendra morsitans</i> *
Scutigerae	Scutigerae sp. *

Mites	
Family	Species
[Subclass Acari]	Acari sp. *
Caeculidae	<i>Neocaeculus</i> sp. *
Ixodidae	<i>Amblyomma</i> sp. *
Trombidiidae	Trombidiidae sp. *

Water Mites	
Family	Species
[Clade Hydracarina]	<i>Hydracarina n. sp. 01</i> *
	<i>Hydracarina n. sp. 02</i> *



A scorpion from the genus *Urodacus* © Copyright, Department of the Environment

Scorpions	
Family	Species
Buthidae	<i>Lychas n. sp. CR1</i> *
Urodacidae	<i>Urodacus</i> sp. *

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Pseudoscorpions	
Family	Species
Chernetidae	<i>Haplochernes</i> sp. *
Chthoniidae	<i>Tyrannochthonius aridus</i> *
Garypidae	<i>Synsphyronus</i> n. sp. CR1 *
	<i>Synsphyronus</i> n. sp. CR2 *
	<i>Synsphyronus</i> sp. 8/1 Pilbara *
Olpiidae	<i>Austrohorus</i> sp. *
	<i>Beierolpium</i> sp. 8/4 *
	<i>Indolpium</i> sp. *
Sternophoridae	<i>Afrosterophorus</i> sp. *



A new lynx spider species recorded for the park (Oxyopidae sp.), Adrienne Markey © Copyright, Western Australian Herbarium

Spiders	
Family	Species
Araneidae	<i>Backobourkia collina</i> *
	<i>Dolophones</i> sp. *
Barychelidae	<i>Idiommata</i> MYG110 *
Clubionidae	<i>Cheiracanthium</i> sp. *
	<i>Clubiona</i> sp. *
Corinnidae	<i>Supunna funerea</i> *
Desidae	Desidae sp. *
	<i>Phryganoporus</i> poss. <i>candidus</i> *
Gnaphosidae	Gnaphosidae sp. *
Lamponidae	<i>Asadipus phaleratus</i> *
	<i>Asadipus yundamindra</i> *
	<i>Lampona ampeinna</i> *
	<i>Lamponina scutata</i> *
	<i>Notsodipus barlee</i> *
Linyphiidae	<i>Laperousea</i> prob. <i>blattifera</i> *
Lycosidae	<i>Alopecosa leonhardii</i> *
	<i>Hogna</i> sp. *
	<i>Hogna</i> sp. *
Nemesiidae	<i>Aname</i> sp. *
Nephilidae	<i>Nephila edulis</i> *
Oonopidae	<i>Opopaea</i> sp. *

Spiders	
Family	Species
Oxyopidae	Oxyopidae sp. *
	Oxyopidae sp. *
	Oxyopidae sp. *
Pholcidae	<i>Artema atlanta</i> *
	<i>Trichocyclus</i> sp. *
Prodidomidae	<i>Wyndra kennedy</i> *
Salticidae	<i>Holoplatys planissima</i> *
	<i>Holoplatys</i> poss. <i>planissima</i> *
	<i>Lycidas</i> sp. *
	<i>Menemerus 'bracteatus'</i> group *
	<i>Rhombonotus</i> sp. *
Selenopidae	<i>Karaops</i> sp. *
Tetragnathidae	<i>Tetragnatha</i> sp. *
Theridiidae	<i>Euryopsis</i> sp. *
	<i>Latrodectus hasseltii</i> *
	<i>Steatoda</i> sp. *
Thomisidae	<i>Tharpyna</i> sp. *
Uloboridae	poss. <i>Philoponella</i> sp. *
	<i>Uloborus</i> sp. *
Zodariidae	<i>Cavasteron tenuicalcar</i> *
	<i>Neostorena</i> sp. *
Zoridae	<i>Argoctenus</i> sp. *



Crustaceans—Terrestrial	
Family	Species
Armadillidae	<i>Buddelundia n. sp. 01</i> *
	<i>Buddelundia n. sp. 02</i> *
	<i>Buddelundia n. sp. 03</i> *
	<i>Buddelundia n. sp. 04</i> *
	<i>Buddelundia n. sp. 05</i> *
	<i>Buddelundia n. sp. 06</i> *
	<i>Buddelundia n. sp. 07</i> *
	<i>Buddelundia n. sp. 08</i> *

Crustaceans—Groundwater	
Family	Species
[Class Ostracoda]	<i>Ostracoda n. sp. 01</i> *
	<i>Ostracoda n. sp. 02</i> *
	<i>Ostracoda n. sp. 03</i> *
	<i>Ostracoda n. sp. 04</i> *
	<i>Ostracoda n. sp. 05</i> *
[Subclass Copepoda]	<i>Copepoda n. sp. 01</i> *
	<i>Copepoda n. sp. 02</i> *
	<i>Copepoda n. sp. 03</i> *
	<i>Copepoda n. sp. 04</i> *
	<i>Copepoda n. sp. 05</i> *
Armadillidae	<i>Armadillidae n. sp. (troglobitic blind)</i> *
Melitidae	<i>Melitidae n. gen n. sp.</i> *
	<i>Nedsia n. sp. 01</i> *
	<i>Nedsia n. sp. 02</i> *
	<i>Nedsia n. sp. 03</i> *
Parabathynellidae	<i>Billibathynella n. sp. 01</i> *
	<i>Billibathynella n. sp. 02</i> *
	<i>Billibathynella n. sp. 03</i> *
Paramelitidae	<i>Chydaekata n. sp. 01</i> *
	<i>Chydaekata n. sp. 02</i> *
	<i>Chydaekata n. sp. 03</i> *
	<i>Chydaekata n. sp. 04</i> *
	<i>Kruptus n. sp.</i> *
	<i>Molina n. sp.</i> *
	Paramelitidae sp. *
Scyphacidae	<i>Haloniscus n. sp.</i> *



A putative new species of stygofauna, *Buddelundia* sp., Rachael King © Copyright, Western Australian Museum

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Bristle Worms	
Family	Species
[Class Polychaeta]	Polychaeta n. sp. *

Flatworms (Platyhelminthes)	
Family	Species
[Class Turbellaria]	Turbellaria n. sp. *
[Order Macrostomida]	Macrostomida n. sp. *
Rhynchodemidae	Rhynchodeminae n. sp. *

Slugs and Snails	
Family	Species
[Class Gastropoda]	Gastropoda sp. *
Camaenidae	<i>Quistrachia</i> n. sp. 'Parry Range' *
	<i>Rhagada convicta</i>
Planorbidae	<i>Gyraulus</i> sp. *
	Planorbidae sp. 01 *
Pupillidae	<i>Gastrocopta larapinta</i> *
	<i>Gastrocopta mussoni</i> *
	<i>Pupoides beltianus</i> *
	<i>Pupoides</i> cf. <i>beltianus</i> *
	<i>Pupoides</i> cf. <i>ischnus</i> *
Succineidae	<i>Succinea</i> sp. *



The land snail *Rhagada convicta* © Copyright, Department of the Environment



Flora

Flowering Plants	
Family	Species
Acanthaceae	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i> *
Aizoaceae	<i>Trianthema oxycalyptra</i> var. <i>oxycalyptra</i>
	<i>Trianthema pilosa</i>
	<i>Trianthema triquetra</i>
	<i>Trianthema turgidifolia</i> *
Amaranthaceae	<i>Achyranthes aspera</i>
	<i>Aerva javanica</i> ^
	<i>Alternanthera nana</i>
	<i>Alternanthera nodiflora</i> *
	<i>Amaranthus cuspidifolius</i>
	<i>Amaranthus undulatus</i> *
	<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i> *
	<i>Gomphrena cunninghamii</i>
	<i>Ptilotus aervoides</i>
	<i>Ptilotus appendiculatus</i> var. <i>appendiculatus</i> *
	<i>Ptilotus arthrolasius</i>
	<i>Ptilotus astrolasius</i>
	<i>Ptilotus auriculifolius</i>
	<i>Ptilotus axillaris</i>
	<i>Ptilotus calostachyus</i>
	<i>Ptilotus clementii</i>
	<i>Ptilotus fusiformis</i>
	<i>Ptilotus gomphrenoides</i> *
	<i>Ptilotus helipteroides</i>
	<i>Ptilotus incanus</i>
<i>Ptilotus latifolius</i>	
<i>Ptilotus mollis</i> * ~	
<i>Ptilotus nobilis</i> subsp. <i>nobilis</i>	

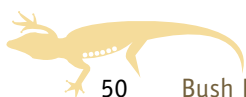
Flowering Plants	
Family	Species
Amaranthaceae	<i>Ptilotus obovatus</i>
	<i>Ptilotus polystachyus</i>
	<i>Ptilotus villosiflorus</i>
Apocynaceae	<i>Sarcostemma viminale</i> subsp. <i>australe</i>
Araliaceae	<i>Trachymene oleracea</i> subsp. <i>oleracea</i>
	<i>Trachymene pilbarensis</i>
Asteraceae	<i>Calocephalus francisii</i>
	<i>Calocephalus knappii</i>
	<i>Calotis plumulifera</i>
	<i>Centipeda minima</i>
	<i>Centipeda minima</i> subsp. <i>macrocephala</i>
	<i>Decazesia hecatocephala</i>
	<i>Flaveria trinervia</i> * ^
	<i>Helichrysum oligochaetum</i>
	<i>Olearia fluvialis</i>
	<i>Pluchea dentex</i>
	<i>Pluchea dunlopii</i>
	<i>Pluchea ferdinandi-muelleri</i> *
	<i>Pluchea rubelliflora</i>
	<i>Pterocaulon</i> sp. indet.
	<i>Pterocaulon sphacelatum</i>
	<i>Rhodanthe margarethae</i>
	<i>Rhodanthe psammophila</i>
	<i>Sonchus oleraceus</i> ^
	<i>Streptoglossa bubakii</i> *
	<i>Streptoglossa cylindriceps</i>
<i>Streptoglossa decurrens</i>	
<i>Streptoglossa liatroides</i>	

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Flowering Plants	
Family	Species
Asteraceae	<i>Streptoglossa macrocephala</i>
	<i>Streptoglossa odora</i>
	<i>Vittadinia obovata</i> *
	<i>Vittadinia virgata</i>
Boraginaceae	<i>Heliotropium chrysocarpum</i> *
	<i>Heliotropium crispatum</i>
	<i>Heliotropium diversifolium</i> *
	<i>Heliotropium glanduliferum</i> *
	<i>Heliotropium heteranthum</i>
	<i>Heliotropium pachyphyllum</i>
	<i>Lepidium pholidogynum</i>
	<i>Lepidium platypetalum</i>
<i>Trichodesma zeylanicum</i>	
Cactaceae	<i>Cylindropuntia</i> sp. (?fulgida) * ^
Campanulaceae	<i>Lobelia heterophylla</i> subsp. <i>pilbarensis</i>
	<i>Wahlenbergia tumidifructa</i>
Capparaceae	<i>Capparis spinosa</i> var. <i>nummularia</i> *



Pussy Bluebush (*Maireana melanocoma*),
Adrienne Markey © Copyright, Western Australian Herbarium

Flowering Plants	
Family	Species
Caryophyllaceae	<i>Polycarpha corymbosa</i>
	<i>Polycarpha holtzei</i>
	<i>Polycarpha longiflora</i> *
Celastraceae	<i>Stackhousia muricata</i> *
Chenopodiaceae	<i>Atriplex codonocarpa</i>
	<i>Dissocarpus paradoxus</i> *
	<i>Dysphania kalpari</i>
	<i>Dysphania melanocarpa</i> *
	<i>Dysphania rhadinostachya</i>
	<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>
	<i>Dysphania sphaerosperma</i>
	<i>Enchylaena tomentosa</i>
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>
	<i>Maireana georgei</i>
	<i>Maireana melanocoma</i>
	<i>Maireana planifolia</i>
	<i>Rhagodia eremaea</i> *
	<i>Salsola australis</i>
	<i>Sclerolaena costata</i>
	<i>Sclerolaena densiflora</i>
	<i>Sclerolaena eriacantha</i>
<i>Tecticornia indica</i> subsp. <i>leiostachya</i> *	
Cleomaceae	<i>Cleome uncifera</i> subsp. <i>uncifera</i>
	<i>Cleome viscosa</i>
Commelinaceae	<i>Commelina ensifolia</i> *
Convolvulaceae	<i>Bonamia alatisemina</i>
	<i>Bonamia linearis</i>
	<i>Bonamia media</i> var. <i>villosa</i>
	<i>Bonamia rosea</i>
	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>
	<i>Ipomoea coptica</i> *
	<i>Ipomoea muelleri</i>
	<i>Polymeria ambigua</i>
<i>Polymeria calycina</i> *	
<i>Polymeria lanata</i>	
Cucurbitaceae	<i>Cucumis melo</i> subsp. <i>agrestis</i> * ^
	<i>Cucumis variabilis</i>



Flowering Plants	
Family	Species
Cyperaceae	<i>Bulbostylis barbata</i>
	<i>Cyperus cunninghamii</i>
	<i>Cyperus cunninghamii</i> subsp. <i>cunninghamii</i>
	<i>Cyperus dactylotes</i>
	<i>Cyperus rigidellus</i>
	<i>Cyperus vaginatus</i> *
Elatinaceae	<i>Bergia pedicellaris</i> *
	<i>Bergia perennis</i> *
Euphorbiaceae	<i>Adriana tomentosa</i> var. <i>tomentosa</i>
	<i>Euphorbia australis</i>
	<i>Euphorbia boophthona</i>
	<i>Euphorbia drummondii</i>
	<i>Euphorbia mitchelliana</i>
	<i>Euphorbia myrtoides</i>
	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>
	<i>Euphorbia trigonosperma</i>
	<i>Euphorbia vaccaria</i>
	<i>Notoleptopus decaisnei</i>
Fabaceae	<i>Acacia acradenia</i> *
	<i>Acacia ancistrocarpa</i>
	<i>Acacia aneura</i>
	<i>Acacia arida</i>
	<i>Acacia atkinsiana</i>
	<i>Acacia bivenosa</i>
	<i>Acacia citrinoviridis</i>
	<i>Acacia coriacea</i> subsp. <i>coriacea</i>
	<i>Acacia coriacea</i> subsp. <i>pendens</i>
	<i>Acacia inaequilatera</i>
	<i>Acacia murrayana</i> *
	<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>
	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> *
	<i>Acacia sericophylla</i>

Flowering Plants	
Family	Species
Fabaceae	<i>Acacia sphaerostachya</i>
	<i>Acacia stellaticeps</i>
	<i>Acacia synchronicia</i>
	<i>Acacia tetragonophylla</i>
	<i>Acacia trachycarpa</i>
	<i>Acacia tumida</i>
	<i>Acacia tumida</i> var. <i>pilbarensis</i>
	<i>Acacia wanyu</i>
	<i>Acacia wiseana</i> *
	<i>Acacia</i> x <i>bivenosa</i> hybrid?
	<i>Acacia xiphophylla</i>
	<i>Aenictophyton reconditum</i>
	<i>Cajanus cinereus</i>
	<i>Crotalaria cunninghamii</i> subsp. <i>sturtii</i> *
	<i>Crotalaria medicaginea</i>
	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>
	<i>Crotalaria ramosissima</i>
	<i>Cullen</i> ? <i>leucanthum</i> seedling
	<i>Cullen leucanthum</i>
	<i>Cullen leucochaites</i>
	<i>Cullen martinii</i>
	<i>Glycine canescens</i>
	<i>Indigofera bovipерda</i>
	<i>Indigofera colutea</i> *
	<i>Indigofera georgei</i>
	<i>Indigofera linifolia</i> *
	<i>Indigofera monophylla</i>
	<i>Indigofera petraea</i> *
	<i>Isotropis atropurpurea</i>
	<i>Petalostylis cassioides</i>
<i>Petalostylis labicheoides</i>	
<i>Rhynchosia australis</i>	
<i>Rhynchosia minima</i>	
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	

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Flowering Plants	
Family	Species
Fabaceae	<i>Senna ferraria</i>
	<i>Senna glutinosa</i>
	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>
	<i>Senna glutinosa</i> subsp. <i>pruinosa</i>
	<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>
	<i>Senna notabilis</i>
	<i>Senna venusta</i>
	<i>Sesbania cannabina</i> *
	<i>Swainsona complanata</i>
	<i>Swainsona formosa</i>
	<i>Swainsona forrestii</i>
	<i>Tephrosia clementii</i>
	<i>Tephrosia rosea</i>
	<i>Tephrosia rosea</i> var. ?
	<i>Tephrosia rosea</i> var. <i>clementii</i>
	<i>Tephrosia</i> sp. B Kimberley Flora (C.A.Gardner 7300)
	<i>Tephrosia</i> sp. Fortescue (A.A.Mitchell 606)
	<i>Tephrosia</i> sp. NW Eremaean
	<i>Tephrosia</i> sp. Onslow (K.R.Newbey 10571)
	<i>Tephrosia supina</i> *
<i>Tephrosia uniovulata</i>	
<i>Vachellia farnesiana</i> ^	
<i>Vigna lanceolata</i> var. <i>lanceolata</i> *	
<i>Zornia albiflora</i> *	
Goodeniaceae	<i>Dampiera candicans</i>
	<i>Goodenia forrestii</i>
	<i>Goodenia lamprosperma</i>
	<i>Goodenia microptera</i>
	<i>Goodenia stobbsiana</i> *
	<i>Goodenia tenuiloba</i>
	<i>Scaevola parvifolia</i>
	<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>
	<i>Scaevola pulchella</i>
	<i>Scaevola sericophylla</i>
	<i>Scaevola spinescens</i>
	Gyrostemonaceae
<i>Gyrostemon ramulosus</i>	



Tephrosia supina, Adrienne Markey © Copyright, Western Australian Herbarium

Flowering Plants	
Family	Species
Haloragaceae	<i>Haloragis gossei</i>
Hemerocallidaceae	<i>Corynotheca pungens</i>
Lamiaceae	<i>Clerodendrum floribundum</i> var. <i>angustifolium</i>
	<i>Dicrastylis cordifolia</i> *
	<i>Pityrodia loxocarpa</i>
	<i>Pityrodia paniculata</i>
Lauraceae	<i>Cassytha capillaris</i> *
Lythraceae	<i>Ammannia multiflora</i> *
Malvaceae	<i>Abutilon</i> sp. aff. <i>Pritzelianum</i> (S. van Leeuwen 5095)
	<i>Abutilon fraseri</i> *
	<i>Abutilon lepidum</i>
	<i>Abutilon otocarpum</i> *
	<i>Abutilon</i> sp. <i>Dioicum</i> (A.A.Mitchell PRP 1618) *
	<i>Abutilon</i> sp. <i>Pritzelianum</i> (S. van Leeuwen 5095)
	<i>Alyogyne pinoniana</i> var. <i>pinoniana</i> *
	<i>Corchorus crozophorifolius</i>



Clerodendrum floribundum var. *angustifolium*, Adrienne Markey © Copyright, Western Australian Herbarium

Flowering Plants	
Family	Species
Malvaceae	<i>Corchorus laniflorus</i>
	<i>Corchorus parviflorus</i>
	<i>Corchorus sidoides</i> subsp. <i>vermicularis</i>
	<i>Corchorus tectus</i> *
	<i>Gossypium australe</i>
	<i>Gossypium robinsonii</i>
	<i>Hannafordia quadrivalvis</i> subsp. <i>recurva</i> *
	<i>Hibiscus brachychlaenus</i>
	<i>Hibiscus coatesii</i>
	<i>Hibiscus goldsworthii</i>
	<i>Hibiscus sturtii</i>
	<i>Keraudrenia nephrosperma</i>
	<i>Keraudrenia</i> sp. North West (J.Z.Weber 6475) C.F.Wilkins *
	<i>Lawrencia densiflora</i> *
	<i>Malvastrum americanum</i> ^
<i>Sida arsinata</i>	

Flowering Plants	
Family	Species
Malvaceae	<i>Sida cardiophylla</i> *
	<i>Sida echinocarpa</i>
	<i>Sida fibulifera</i>
	<i>Sida platycalyx</i>
	<i>Sida rohlenae</i> subsp. <i>rohlenae</i>
	<i>Sida</i> sp. Pilbara (A.A.Mitchell PRP 1543)
	<i>Sida</i> sp. verrucose glands (F.H.Mollemans 2423)
	<i>Triumfetta chaetocarpa</i>
	<i>Triumfetta clementii</i>
	<i>Triumfetta johnstonii</i>
	<i>Triumfetta maconochieana</i>
	<i>Triumfetta ramosa</i>
	<i>Waltheria indica</i>
<i>Waltheria virgata</i>	
Molluginaceae	<i>Mollugo molluginea</i>
Moraceae	<i>Ficus brachypoda</i>

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Flowering Plants	
Family	Species
Myrtaceae	<i>Corymbia aspera</i>
	<i>Corymbia candida</i>
	<i>Corymbia deserticola</i>
	<i>Corymbia hamersleyana</i>
	<i>Corymbia</i> sp. indet.
	<i>Corymbia terminalis</i>
	<i>Corymbia zygophylla</i>
	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i>
	<i>Eucalyptus victrix</i>
	<i>Eucalyptus xerothermica</i>
	<i>Melaleuca argentea</i>
	<i>Melaleuca glomerata</i> *
	<i>Verticordia forrestii</i>
Nyctaginaceae	<i>Boerhavia burbridgeana</i>
	<i>Boerhavia coccinea</i>
	<i>Boerhavia gardneri</i>
	<i>Boerhavia schomburgkiana</i>
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i> *
Orobanchaceae	<i>Striga curviflora</i>
	<i>Striga squamigera</i> *
Phrymaceae	<i>Mimulus gracilis</i> *
	<i>Peplidium aithocheilum</i>
	<i>Peplidium</i> sp. C Evol. Fl. Fauna Arid Aust. (N.T.Burbridge & A.Kanis 8158)
Phyllanthaceae	<i>Phyllanthus erwinii</i>
	<i>Phyllanthus maderaspatensis</i>
Plantaginaceae	<i>Stemodia grossa</i>
	<i>Stemodia</i> sp. Onslow (A.A.Mitchell 76/148)
Poaceae	<i>Aristida contorta</i>
	<i>Aristida holathera</i> var. <i>holathera</i>
	<i>Aristida pruinosa</i>
	<i>Brachyachne prostrata</i>
	<i>Cenchrus ciliaris</i> ^
	<i>Chloris barbata</i> * ^
	<i>Chloris pectinata</i> *
	<i>Chrysopogon fallax</i>
	<i>Cymbopogon ambiguus</i>

Flowering Plants	
Family	Species
Poaceae	<i>Cymbopogon obtectus</i>
	<i>Dactyloctenium radulans</i> *
	<i>Dichanthium sericeum</i>
	<i>Echinochloa colona</i> * ^
	<i>Enneapogon caerulescens</i>
	<i>Enteropogon ramosus</i> *
	<i>Eragrostis cumingii</i>
	<i>Eragrostis dielsii</i>
	<i>Eragrostis eriopoda</i>
	<i>Eragrostis leptocarpa</i>
	<i>Eriachne aristidea</i>
	<i>Eriachne benthamii</i>
	<i>Eriachne mucronata</i>
	<i>Eriachne pulchella</i>
	<i>Eriachne pulchella</i> subsp. <i>dominii</i>
	<i>Eulalia aurea</i> *
	<i>Iseilema dolichotrichum</i> *
	<i>Leptochloa fusca</i> subsp. <i>muelleri</i> *
	<i>Paraneurachne muelleri</i>
	<i>Paspalidium clementii</i>
	<i>Perotis rara</i> *
	<i>Setaria dielsii</i> *
	<i>Setaria verticillata</i> * ^
	<i>Sporobolus australasicus</i>
	<i>Themeda triandra</i>
	<i>Tragus australianus</i>
	<i>Triodia basedowii</i>
	<i>Triodia epactia</i>
	<i>Triodia lanigera</i>
	<i>Triodia longiceps</i>
<i>Triodia pungens</i>	
<i>Triodia schinzii</i>	
<i>Triodia wiseana</i>	
<i>Yakirra australiensis</i>	
<i>Yakirra australiensis</i> var. <i>australiensis</i>	
Polygalaceae	<i>Polygala isingii</i> *
	<i>Polygala linariifolia</i> *
	<i>Polygala glaucifolia</i> *



Flowering Plants	
Family	Species
Portulacaceae	<i>Calandrinia polyandra</i>
	<i>Portulaca cyclophylla</i> *
	<i>Portulaca oleracea</i> ^
Proteaceae	<i>Grevillea eriostachya</i>
	<i>Grevillea stenobotrya</i>
	<i>Grevillea wickhamii</i>
	<i>Grevillea wickhamii</i> subsp. <i>macrodonta</i>
	<i>Hakea lorea</i>
	<i>Hakea stenophylla</i> subsp. <i>stenophylla</i> *
Rubiaceae	<i>Oldenlandia crouchiana</i>
	<i>Psydrax latifolia</i> *
	<i>Synaptantha tillaeacea</i> var. <i>tillaeacea</i>
Santalaceae	<i>Santalum lanceolatum</i> *
Sapindaceae	<i>Dodonaea coriacea</i> *
	<i>Dodonaea petiolaris</i> *
Scrophulariaceae	<i>Eremophila cuneifolia</i>
	<i>Eremophila forrestii</i>
	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>
	<i>Eremophila forrestii</i> subsp. <i>viridis</i> * ~
	<i>Eremophila fraseri</i>
	<i>Eremophila fraseri</i> subsp. <i>fraseri</i>
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>
	<i>Eremophila longifolia</i>
Solanaceae	<i>Nicotiana benthamiana</i>
	<i>Solanum ashbyae</i> *
	<i>Solanum cleistogamum</i>
	<i>Solanum diversiflorum</i>
	<i>Solanum elatius</i> *
	<i>Solanum horridum</i>
	<i>Solanum lasiophyllum</i>
	<i>Solanum nigrum</i> * ^
<i>Solanum pycnotrichum</i> *	
Surianaceae	<i>Stylobasium spathulatum</i> *
Thymelaeaceae	<i>Pimelea ammocharis</i> *



Pimelea ammocharis, Adrienne Markey © Copyright, Western Australian Herbarium

Flowering Plants	
Family	Species
Violaceae	<i>Hybanthus aurantiacus</i>
Zygophyllaceae	<i>Tribulus astrocarpus</i>
	<i>Tribulus hirsutus</i>
	<i>Tribulus macrocarpus</i>
	<i>Tribulus occidentalis</i>
	<i>Tribulus suberosus</i>

Ferns	
Family	Species
Marsileaceae	<i>Marsilea hirsuta</i>
	<i>Marsilea</i> sp. indet.
Pteridaceae	<i>Cheilanthes brownii</i> *
	<i>Cheilanthes contigua</i>
	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>

Key

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

Colour coding for entries:

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





Appendix B: Threatened Species

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

Current at May 2014



Fauna

Vertebrates

Mammals			
Family	Species	Common name	Status
Dasyuridae	<i>Dasyurus hallucatus</i>	Northern Quoll, Digul	EPBC—Endangered; WCA—Endangered
Megadermatidae	<i>Macroderma gigas</i>	Ghost Bat	P4
Muridae	<i>Pseudomys chapmani</i>	Pebble-mound Mouse	P4



The Northern Quoll (*Dasyurus hallucatus*) was recorded in the park in 1999 and 2002, but was not found during this survey despite targeted trapping © Copyright Frank Woerle/ AUSCAPE All rights reserved





Birds			
Family	Species	Common name	Status
Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	WCA—Migratory bird protected under an international agreement
Ardeidae	<i>Ardea modesta</i>	Eastern Great Egret	WCA—Migratory bird protected under an international agreement
	<i>Egretta sacra</i>	Eastern Reef Egret	WCA—Migratory bird protected under an international agreement
Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	WCA—Rare or likely to become extinct
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	WCA—Migratory bird protected under an international agreement

P1–P4 = Are priority taxa within WA.

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

P3 = Poorly-known taxa

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

For more information see: <http://florabase.dec.wa.gov.au/conservationtaxa>

EPBC = Refers to the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

WCA = Refers to the *Wildlife Conservation Act 1950* (Western Australia)

* = New record for this reserve

Black = Previously recorded on the reserve and found on this survey

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



Flora

Flowering Plants		
Family	Species	Common name
Amaranthaceae	<i>Ptilotus mollis</i> *	P4
Scrophulariaceae	<i>Eremophila forrestii</i> subsp. <i>viridis</i> *	P3



Eremophila forrestii subsp. *viridis*, a priority-listed species in Western Australia, Adrienne Markey © Copyright, Western Australian Herbarium

P1–P4 = Are priority taxa within WA.

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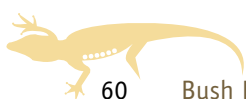
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Appendix C: Exotic and Pest Species

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 May 2014



Fauna

Vertebrates

Mammals		
Family	Species	Common name
Bovidae	<i>Bos taurus</i>	European Cattle
Felidae	<i>Felis catus</i>	Cat
Muridae	<i>Mus musculus</i>	House Mouse



Remote cameras recorded four cats (*Felis catus*) at two locations, Mark Cowan © Copyright, Department of Environment and Conservation

Key

* = New record for this reserve

Colour coding for entries:

Black = Previously recorded on the reserve and found on this survey

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





Invertebrates

True Bugs		
Family	Species	Common name
Coreidae	<i>Mictis profana</i> *	Crusader Bug
Lygaeidae	<i>Nysius vinitor</i> *	Rutherglen Bug

Thrips		
Family	Species	Common name
Thripidae	<i>Frankliniella schultzei</i> *	Tomato Thrips
	<i>Thrips imaginis</i> *	Plague Thrips



The Bush Blitz camp kitchen © Copyright, Department of the Environment



Flora

Flowering Plants		
Family	Species	Common name
Amaranthaceae	<i>Aerva javanica</i>	Kapok Bush, Pillow Weed
Asteraceae	<i>Flaveria trinervia</i> *	Speedy Weed
	<i>Sonchus oleraceus</i>	Common Sowthistle
Cactaceae	<i>Cylindropuntia</i> sp. (?fulgida) *	Boxing Glove Cactus
Cucurbitaceae	<i>Cucumis melo</i> subsp. <i>agrestis</i> *	Ulcardo Melon
Fabaceae	<i>Vachellia farnesiana</i>	Spiky Wattle, Sweet Minosa, Mimosa Bush
Malvaceae	<i>Malvastrum americanum</i>	Spiked Malvastrum
Poaceae	<i>Cenchrus ciliaris</i>	Buffel Grass
	<i>Chloris barbata</i> *	Purpletop Chloris
	<i>Echinochloa colona</i> *	Awnless Barnyard Grass
	<i>Setaria verticillata</i> *	Whorled Pigeon Grass
Portulacaceae	<i>Portulaca oleracea</i>	Pigweed, Purslane
Solanaceae	<i>Solanum nigrum</i> *	Black Berry Nightshade



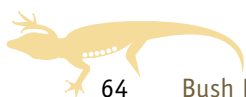
Invasive Buffel Grass (*Cenchrus ciliaris*), Adrienne Markey © Copyright, Western Australian Herbarium

Key

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Colour coding for entries:

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Glossary



G

Gibber

A desert surface covered with closely packed, interlocking rock fragments.

L

Lateritic mesa

A mesa consisting of a red soil formed by the leaching of silica and enrichment with aluminium and iron oxides (lateritic).

M

Mesa

An isolated flat-topped hill with steep sides, found in landscapes with horizontal strata.

P

Putative new species

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

R

Range extension

Increase in the known distribution or area of occurrence of a species.

S

Scree

Loose rock debris covering a slope.

Stygofauna

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

T

Taxon (plural taxa)

A member of any particular taxonomic group, e.g. a species, genus, family.

Taxonomy

The categorisation and naming of species.

The science of identifying and naming species, as well as grouping them based on their relatedness.

U

Undescribed taxon

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



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FRONT COVER Western Spiny-tailed Gecko (*Strophurus strophurus*), Mark Cowan © Copyright, Department of Parks and Wildlife



Bush Blitz survey report

Cane River Conservation Park WA + 20 June–1 July 2011



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