

BushBlitz
SPECIES DISCOVERY PROGRAM



BUSH BLITZ SPECIES DISCOVERY PROGRAM



Darkwood Reserve NSW

12–16 February 2010

REPORT



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What is Bush Blitz?

Bush Blitz is a three-year, multi-million dollar partnership between the Australian Government, BHP Billiton, Earthwatch Australia, and AusPlots-Rangelands 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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Executive summary

A short (six day) Bush Blitz was conducted on Darkwood Reserve in New South Wales during February 2010 in conjunction with the Bush Blitz Media Launch. In total, 363 species were identified on the reserve. With previous records for the Reserve, the total number of species known from Darkwood is now 392. Of these, 308 represented new records for the reserve and six are species new to science, including five species of plant bugs and one species of spider. A population of a frog species, the Giant Barred Frog (*Mixophyes iteratus*), listed as endangered under the Federal *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) was found on the reserve. Seventeen species of weedy plants as well as two species of feral animals, cats and cattle, were also identified.

Introduction

The Bush Blitz program aims to survey the flora and fauna of recent additions to the National Reserve System (NRS). Bush Blitz is an initiative of the Australian Government, through the Australian Biological Resources Study (ABRS) in partnership with BHP Billiton, Earthwatch Australia and AusPlots-Rangelands. The Bush Blitz objectives are:

- + to promote, publicise and demonstrate the importance of taxonomy through the vehicle of 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 of students and early career researchers, providing grants for species description and resolution of taxonomically problematic, nationally important groups;
- + to promote partnerships between science, governments, industry and non-government organisations; and
- + to inform the National Reserve System, Reserve Managers and other stakeholders of the results of the Bush Blitz program.

The Darkwood Bush Blitz was undertaken in February 2010 as part of a Ministerial launch of the Bush Blitz program by the then Minister for Environment, Heritage and the Arts, the Hon. Peter Garrett AM, MP.



Reserve Overview¹



Darkwood Reserve

(NSW Department of Environment, Climate Change and Water)

Date of purchase

6 May 2008

Area

1,359.55 ha

Description

Darkwood is located in the NSW North Coast bioregion and Coffs Coast and Escarpment subregion. It adjoins the New England National Park and Gondwana Rainforests of Australia World Heritage Area. The property provides a critical linkage of landscapes across the Bellinger River from the Gondwana Rainforest World Heritage Area (WHA) and Upper Escarpment, south to the Macleay River valley floor.

National Reserve System conservation values

Darkwood protects 1,015 ha of under-represented ecosystems including coastal, escarpment and valley floor communities, rainforest and old-growth successional stage forest communities. It supports a high diversity of ecosystems including one NSW Endangered Ecological Community (EEC) that occurs on the valley floor: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

The property conserves key habitat for several nationally threatened species (EPBC Act) including the Booroolong Frog (*Litoria booroolongensis*), Giant Barred Frog (*Mixophyes iteratus*), Stuttering Frog (*Mixophyes balbus*), Spotted-tailed Quoll (*Dasyurus maculatus*) and Brisbane River Emydura (*Emydura macquarii signata*). The reserve also protects 15km of Bellinger River frontage which is key aquatic habitat for George's Turtle (*Elseya georgesii*); a species restricted in distribution to the Bellinger and Kalang rivers only. Almost 55% of the Reserve is a regionally significant wildlife corridor, particularly for the Yellow-bellied Glider (*Petaurus australis*) and the Golden-tipped Bat (*Kerivoula papuensis*).



J Palmer

¹ Information from the National Reserve System applications and assessments





Methods

Collection/observation sites were selected based on land classes, supplemented by identification of suitable microhabitat during the field visit.

A number of taxonomic groups were identified as targets for study. Table 1 shows the groups and the relevant experts who undertook the field work.



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Table 1: Taxon groups surveyed and personnel

Taxon	Expert	Affiliation
Vascular plants	Jo Palmer	Australian National Herbarium (CANBR)
Vascular plants	Maggie Nightingale	Australian National Herbarium (CANBR)
Terrestrial vertebrates	Frank Lemckert	NSW Department of Industry and Investment
Arachnids	Robert Raven	Queensland Museum
Mollusca	Dave Britton	Australian Museum
Odonata	Dave Britton	Australian Museum
Papilionoidea	Dave Britton	Australian Museum
Fish	Dave Britton	Australian Museum
Heteroptera	Gerry Cassis	University of New South Wales

A standard suite of survey techniques was applied to the reserve. For vascular plants, hand collection of specimens was used. For arachnids, hand searching under rocks and logs, in leaf litter and under bark of trees was used. For molluscs, the method used was hand searches and for moths, butterflies and dragonflies, the methods were light traps and opportunistic collection using hand-held butterfly nets. Heteroptera were collected by beat- and sweep-sampling vegetation, with a few hand collected and some light trapping. Fish records were observational only. Reptiles were collected using active foraging as well as pitfall trap lines with a drift fence and funnel traps at each end.

Amphibians were collected/observed using nocturnal aural and visual searches of waterbodies and dip-netting of tadpoles. Birds were observed via opportunistic aural and visual searches and mammals were recorded using targeted Elliot-trapping of suitable habitats with pitfall and drift-fence systems and nocturnal road transects and call playback.

The final species list was compiled using data supplied by NSW Department of Environment and Climate Change, the Australian Natural Heritage Assessment Tool (ANHAT), State and CSIRO databases and the results of this Bush Blitz.



Results

The locational data is available to reserve managers.



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Species Lists

Appendix A provides full, updated species lists for each reserve subsequent to the survey. Species marked with * had not been recorded previously. Species shown in *orange* were not recorded on this survey, but are known from previous records for Darkwood Reserve. Species in *reddish brown* are putative new species. Table 2 gives a summary of the number of new records and the number of new species discoveries for the reserve.

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

Table 2: Summary of results

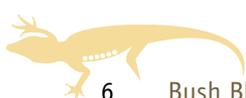
Group	Number of Species	New to the Reserve	New to Science
Vascular Plants	133	95	0
Vertebrata	70	24	0
Heteroptera	30	30	5
Lepidoptera	126	126	0
Arachnida	7	7	1
Mollusca	19	19	0
Odonata	2	2	0
Aquatic Hemiptera	5	5	0
Totals	392	308	6

Endangered Species

Appendix B lists the listed species known from Darkwood Reserve. Species marked with * had not been recorded previously.

Exotic Pest Species

Appendix C lists the exotic pest and weed species encountered during the study.





Discussion

A total of 308 new species occurrence records were added to those previously known from Darkwood Reserve and six putative new species were discovered — these await formal description and publication.

Rare and Threatened Species

A frog species listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) was recorded by this study on the reserve. *Mixophyes iteratus*, or the Giant Barred Frog is listed as endangered under the EPBC Act and is also listed under the *New South Wales Threatened Species Conservation Act* (TSC Act) as endangered. The population was found in several places throughout the reserve and contained a mix of adults and juveniles. The provision of habitat for this frog was one of the values considered by the National Reserve System in the purchase of Darkwood Reserve. It seems that the reserve does provide the required habitat for a potentially robust population of this endangered species.

Two other EPBC listed endangered frog species are thought likely to occur on the reserve but were not sighted, possibly because suitable habitat for these species (the Booroolong Frog, *Litoria booroolongensis*, and the Stuttering Frog, *Mixophyes balbus*) was not accessible during the study. The only other EPBC listed species to be recorded officially on the reserve is the Spotted-Tailed Quoll, *Dasyurus maculatus*. This species is listed as endangered under the EPBC Act and as vulnerable under the TSC Act. It was not located on the reserve during this study. Nor were several other TSC listed vulnerable species which have been recorded previously on the reserve. This is probably a reflection of the small amount of survey effort

expended, rather than the absence of these species from the reserve. Although they could not be firmly identified to species level, flying foxes were heard on several nights and are likely to be the EPBC and TSC vulnerable listed Grey-headed Flying Fox.

No rare or threatened plant species were observed by this study or have been listed as occurring on Darkwood Reserve by previous studies. Future botanical exploration effort, however, may reveal many more vascular plant species than those documented in this study.

Exotic Pest Flora and Fauna Species

European cattle (*Bos taurus*) and cats (*Felis catus*) were recorded for the first time on the reserve. Seventeen weedy plant species were observed on the reserve as well as one planted exotic species (the Japanese Raisin Tree, *Hovenia dulcis*). Most of the weeds located were on disturbed areas of former pasture on alluvial soils along the river flats. Two exotic land snails, *Bradybaena similaris* and *Zonitoides arboreus*, were collected from agriculturally disturbed areas. Both species are widespread and abundant throughout most of the warm temperate and tropical world and their presence at Darkwood is likely to be the result of recent farming activity in the area.



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Other Points of Interest

In addition to the endangered Giant Barred Frog, this survey uncovered several other species of particular interest. Two undescribed '*Gyrocochlea*' (Charopidae: terrestrial) land snails were collected (Charopidae morphospecies NN16 and NN17). NN16, despite being widespread throughout the Bellinger and upper Nymboida River areas, is typically found in association with other sympatric '*Gyrocochlea*' species. However, where NN16 occurred at Darkwood, it was found to be the only '*Gyrocochlea*' species present. NN17 was also found to be the only '*Gyrocochlea*' species at the sites where it was located. NN17 appears to be confined to the Bellinger River drainage basin. It is an impressive, large, deeply bi-concave species which has not been well studied and is therefore poorly known. Hence, the Darkwood record has added important ecological information about this potentially rare and apparently solitary species.

A number of moth species of interest were collected. These included a small nondescript species of lichen moth that could not be placed in an existing genus and *Trichophysetis fulvifusalis*, a crambid moth, previously known from just a

few specimens. Those collected at Darkwood represent a large southern range extension for this species. A single specimen of an undescribed pyralid moth of the *Titanoceros* genus was also collected. This species is known from just a few previously collected specimens and the genus is characterised by bizarre anterior outgrowths at the base of the antennae, giving the moth the appearance of having two pairs of antennae. Lastly, both male and female specimens of the rare and primitive *Azaleodes* moth genus were collected. This genus of moth represents a Gondwanan family found only in Australia and South America.

Of the five new species of true bugs found at Darkwood, the austromirine species (Miridae sp. 20) is a particularly important new species as it is unlike any others encountered across continental Australia. Additionally, the dipsocorid species of the genus *Cryptostemma* (Miridae sp. 22) collected here is quite significant as it was found amongst wet pebbles next to a large stream. This semi-aquatic habitat was previously unknown for this true bug.





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 April 2011



Fauna Taxa

Vertebrates

Birds	
Family	Species
Apodidae	<i>Hirundapus caudacutus</i>
Atrichornithidae	<i>Atrichornis rufescens</i> ~
Cacatuidae	<i>Cacatua galerita</i> *
	<i>Calyptorhynchus funereus</i> *
	<i>Calyptorhynchus lathami</i> ~
Campephagidae	<i>Coracina novaehollandiae</i>
	<i>Coracina tenuirostris</i>
Columbidae	<i>Columba leucomela</i> *
	<i>Ptilinopus magnificus</i> ~
Falconidae	<i>Falco peregrinus</i>
Hirundinidae	<i>Hirundo neoxena</i>

Fish	
Family	Species
Anguillidae	<i>Anguilla reinhardtii</i> *
Clupeidae	<i>Potamalosa richmondia</i> *
Eleotridae	<i>Gobiomorphus coxii</i>
	<i>Philypnodon macrostomus</i> *
Percichthyidae	<i>Macquaria novemaculeata</i> *
Plotosidae	<i>Tandanus tandanus</i> *
Retropinnidae	<i>Retropinna semoni</i> *

Birds	
Family	Species
Maluridae	<i>Malurus cyaneus</i> *
Meliphagidae	<i>Meliphaga lewinii</i> *
Pachycephalidae	<i>Falcunculus frontatus</i>
	<i>Pachycephala olivacea</i> ~
Paradisaeidae	<i>Ptiloris paradiseus</i>
Podargidae	<i>Podargus strigoides</i> *
Rhipiduridae	<i>Rhipidura albiscapa</i> *
	<i>Rhipidura rufifrons</i>
Strigidae	<i>Ninox novaeseelandiae</i> *
	<i>Ninox strenua</i>



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Key

Putative New species

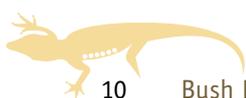
Previously recorded

* = New record

^ = Pest/Weed

= EPBC listed

~ = TSC listed





Frogs	
Family	Species
Hylidae	<i>Litoria booroolongensis</i>
	<i>Litoria caerulea</i>
	<i>Litoria chloris</i>
	<i>Litoria dentata</i>
	<i>Litoria latopalmata</i> *
	<i>Litoria lesueuri</i>
	<i>Litoria pearsoniana</i> *
	<i>Litoria phyllochroa</i>

Frogs	
Family	Species
Myobatrachidae	<i>Adelotus brevis</i>
	<i>Limnodynastes peronii</i>
	<i>Mixophyes balbus</i>
	<i>Mixophyes fasciolatus</i> *
	<i>Mixophyes iteratus</i> # ~

Mammals	
Family	Species
Bovidae	<i>Bos taurus</i> * ^
Dasyuridae	<i>Antechinus stuartii</i>
	<i>Dasyurus maculatus</i> # ~
Felidae	<i>Felis catus</i> * ^
Muridae	<i>Rattus fuscipes</i>
Pteropodidae	<i>Pteropus</i> sp. *



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Reptiles	
Family	Species
Agamidae	<i>Hypsilurus spinipes</i>
	<i>Physignathus lesueurii</i>
Boidae	<i>Morelia spilota</i>
Colubridae	<i>Boiga irregularis</i> *
Elapidae	<i>Acanthophis antarcticus</i>
	<i>Cacophis squamulosum</i>
	<i>Cacophis kewfftii</i>
	<i>Cryptophis nigrescens</i>
	<i>Demansia psammophis</i>
	<i>Hemiaspis signata</i>
	<i>Pseudechis porphyriacus</i>
Gekkonidae	<i>Phyllurus platurus</i>
	<i>Saltuarius swaini</i>

Reptiles	
Family	Species
Scincidae	<i>Calyptotis ruficauda</i>
	<i>Cyclodomorphus gerrardii</i> *
	<i>Eulamprus martini</i> *
	<i>Eulamprus murrayi</i>
	<i>Lampropholis delicata</i>
	<i>Lampropholis guichenoti</i>
	<i>Ophioscincus truncatus</i>
<i>Saproscincus rosei</i>	
Tylophidae	<i>Ramphotyphlops nigrescens</i>
Varanidae	<i>Varanus varia</i> *



Invertebrates

Aquatic Bugs	
Family	Species
Belostomatidae	<i>Lethocerus distinctifemur</i> *
Corixidae	<i>Micronecta</i> sp. *
	<i>Sigara</i> sp. *
Notonectidae	<i>Anisops hyperion</i> *
	<i>Anisops tahitiensis</i> *

Dragonflies	
Family	Species
Libellulidae	<i>Diplacodes haematodes</i> *
Megapodagrionidae	<i>Austroargiolestes icteromelas</i> *

Molluscs (Snails and Bivalves)	
Family	Species
Bradybaenidae	<i>Bradybaena similaris</i> * ^
Camaenidae	<i>Austrochloritis brevipila</i> *
	<i>Thersites novaehollandiae</i> *
Caryodidae	<i>Hedleyella falconeri</i> *
Charopidae	<i>Coenocharopa multiradiata</i> *
	<i>Macrophallikoropa belli</i> *
	morphospecies NN 16 *
	morphospecies NN 17 (21 in QM) *
	morphovariant 29
	morphovariant 35

Molluscs (Snails and Bivalves)	
Family	Species
Gastrodontidae	<i>Zonitoides arboreus</i> * ^
Helicarionidae	<i>Nitor medioximus</i> *
	<i>Sigaloeista orara</i> *
Hyriidae	<i>Hyridella depressa</i> *
Punctidae	<i>Lotula microcosmos</i> *
	<i>Pseudiotula euryisiana</i> *
Pupillidae	<i>Pupisoma microturbinata</i> *
Rhytididae	<i>Microdelos pallida</i> *
	<i>Montidelos macquariensis</i> *



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Key

Putative New species

Previously recorded

* = New record

^ = Pest/Weed

= EPBC listed

~ = TSC listed





Moths and Butterflies	
Family	Species
Aganidae	<i>Asota iodamia</i> *
Anthelidae	<i>Anthela excellens</i> *
	<i>Nataxa flavescens</i> *
Arctiidae	unidentified species *
	<i>Amata</i> sp. *
	<i>Asura zebrina</i> *
	<i>Chiriphe dichotoma</i> *
	<i>Chiriphe dictyota</i> *
	<i>Cyme structa</i> *
	<i>Goniosema angulifera</i> *
	<i>Halone pteridaula</i> *
	<i>Halone sejuncta</i> *
	<i>Halone servilis</i> *
	<i>Lambula transcripta</i> *
	<i>Macaduma toxophora</i> *
	<i>Notata modicus</i> *
	<i>Nyctemera secundiana</i> *
	<i>Philenora aspectalella</i> *
	<i>Scaphidriotis</i> sp.
	<i>Spilosoma canescens</i> *
	<i>Spilosoma curvata</i> *
<i>Termessa conographa</i> *	
<i>Thallarcha epileuca</i> *	
Crambidae	<i>Agrioglypta excelsalis</i> *
	<i>Araeomorpha diplopa</i> *
	<i>Archernis callixantha</i> *
Crambidae	<i>Crociodolomia suffusalis</i> *
	<i>Culladia cuneiferellus</i> *
	<i>Diathrausta ochreipennis</i> *
	<i>Glyphodes flavizonalis</i> *
	<i>Herpetogramma cynaralis</i> *
	<i>Hygraula nitens</i> *
	<i>Margarosticha sphenotis</i> *
	<i>Metasia capnochroa</i> *
	<i>Notarcha aurolinealis</i> *
	<i>Ostrinia furnacalis</i> *
	<i>Parotis atlitalis</i> *
	<i>Sceliodes cordalis</i> *
	<i>Scoparia spelaea</i> *

Moths and Butterflies	
Family	Species
Crambidae	<i>Strepsinoma foveata</i> *
	<i>Trichophysetis fulvifusalis</i>
Depressariidae	<i>Barantola pulcherrima</i> *
	<i>Peritormenta</i> sp. *
Ethmiidae	<i>Ethmia sphaerosticha</i> *
Eupterotidae	<i>Panacela nyctopa</i> *
Geometridae	<i>Agathia prasinaspis</i> *
	<i>Anisozyga insperata</i> *
	<i>Chlorocoma carenaria</i> *
	<i>Comostola laedaria</i> *
	<i>Epidesmia chilonaria</i> *
	<i>Epidesmia tryxaria</i> *
	<i>Mixocera latilineata</i> *
	<i>Oenochlora imperialis</i> *
<i>Prasinocyma rhodocosma</i> *	
Glyphipterygidae	unidentified species *
Hepialidae	<i>Abantiades labyrinthicus</i> *
	<i>Elhamma australasiae</i> *
Hesperiidae	<i>Ocybadistes walkeri sothis</i> *
	<i>Toxidia rietmanni rietmanni</i> *
Lasiocampidae	unidentified species *
	<i>Pernattia chlorophragma</i> *
	<i>Pernattia pusilla</i> *
Lecithoceridae	<i>Crocantes glycina</i> *
	<i>Crocantes prasinopis</i> *
	<i>Crocantes</i> sp. *
Limacodidae	<i>Anaxidia lozogramma</i> *
	<i>Chalcocelis albiguttatus</i> *
Lycaenidae	<i>Catopyrops florinda halys</i> *
	<i>Zizina labradus labradus</i> *
Lymantriidae	<i>Acyphas</i> sp. *
	<i>Calliteara farenoides</i> *
	<i>Laelia obsoleta</i> *
	<i>Lymantria nephrographa</i> *
Noctuidae	<i>Alophosoma emmelopis</i> *
	<i>Burgena varia</i> *
	<i>Calathusa</i> sp. *
	<i>Data ochroneura</i> *
	<i>Elusa oenolopha</i> *



Moths and Butterflies		Moths and Butterflies	
Family	Species	Family	Species
Noctuidae	<i>Epicyrtica metallica</i> *	Oecophoridae	<i>Agriophara</i> sp. *
	<i>Ericeia</i> sp. *		<i>Philarista porphyrinella</i> *
	<i>Fodina ostorius</i> *	Opostegidae	<i>Opostega</i> sp. *
	<i>Holocryptis phasianura</i> *	Palaephatidae	<i>Azaleodes</i> sp. *
	<i>Hypena gonospilalis</i> *	Papilionidae	<i>Papilio aegeus aegeus</i> *
	<i>Hypena subvittalis</i> *		<i>Belenois java teutonia</i> *
	<i>Leucania uda</i> *		<i>Eurema brigitta australis</i> *
	<i>Lophotoma diagrapta</i> *		<i>Eurema hecabe hecabe</i> *
	<i>Lophotoma metabula</i> *	Psychidae	unidentified species *
	<i>Maliattha amorpha</i> *		<i>Hyalarcta huebneri</i> *
	<i>Meranda susialis</i> *	Pyrilidae	<i>Endotricha puncticostalis</i> *
	<i>Negreta signata</i> *		<i>Orthaga seminivea</i> *
	<i>Ophisma gravata</i> *		<i>Salma nephelodes</i> *
	<i>Pachythrix hampsoni</i> *		<i>Salma pyrastis</i> *
	<i>Pantydia sparsa</i> *		<i>Stericta concisella</i> *
	<i>Rhodina falculalis</i> *		<i>Titanoceros</i> sp. *
<i>Targalla plumbea</i> *	Saturniidae	<i>Opodiphthera astrophela</i> *	
Nolidae		<i>Nola euraphes</i> *	<i>Opodiphthera rhythmica</i> *
		<i>Nola phaeogramma</i> *	<i>Syntherata janetta</i> *
	<i>Nola tetralopa</i> *	Sphingidae	<i>Acosmeryx miskini</i>
	<i>Nola</i> sp. *		Tineidae
Notodontidae	<i>Hylaeora capucina</i> *	<i>Edosa xystidophora</i> *	
	<i>Omichlis hadromeres</i> *	<i>Harmaclona entripta</i> *	
Nymphalidae	<i>Hypocysta metirius</i> *	Zygaenidae	<i>Pollanisus trimacula</i> *

Key

Putative New species
Previously recorded

* = New record

^ = Pest/Weed

= EPBC listed

~ = TSC listed





Plant Bugs	
Family	Species
Artheneidae	<i>Dilompus robustus</i> *
Coreidae	<i>Cletus</i> sp. 1 *
Cydnidae	Cydnidae gen. K sp. 1
Cymidae	<i>Ontiscus</i> sp. 1 *
Dipsocoridae	<i>Cryptostemma</i> sp. 1 *
Gerridae	Gerridae gen. H sp. 1 *
Lygaeidae	<i>Nysius vinitor</i> *
	Orsillinae gen. C sp. 1 *
Miridae	Austromirini gen. G sp. 1 *
	Dicyphini gen. F sp. 1 *
	Mirinae gen. B sp. 1 *
	Phylini gen. I sp. 1 *
	<i>Sejanus albisignatus</i> *
	Surinamellini gen. D sp. 1 *
	nr <i>Zanchius</i> sp. 1 *

Plant Bugs	
Family	Species
Nabidae	<i>Alloeorhynchus</i> sp. 1 *
Oxycarenidae	<i>Oxycarenus luctuosus</i> *
Pentatomidae	<i>Biprorulus</i> sp. 1 *
	<i>Oncocoris</i> sp. 1 *
	<i>Oncocoris</i> sp. 2 *
	<i>Glaucias</i> sp. 1 *
Reduviidae	Peiratinae gen. M sp. 1 *
	Stenopodainae gen. J sp. 1
Rhyparochromidae	<i>Botocudo</i> sp. 1 *
	Mydochini gen. A sp. 1 *
	Drymini gen. E sp. 1 *
	Lethaeini gen. L sp. 1 *
Tingidae	<i>Parada</i> sp. 1 *
	<i>Stephanitis</i> sp. 1 *
Veliidae	<i>Microvelia</i> sp. 1 *



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Spiders	
Family	Species
Dipluridae	<i>Australothele</i> sp. *
Hexathelidae	<i>Hadronyche macquariensis</i> *
Idiopidae	<i>Misgolas</i> sp. nov. *

Spiders	
Family	Species
Lycosidae	<i>Lycosa godeffroyi</i> *
	<i>Venonia micarioides</i> *
Pisauridae	<i>Megadolomedes australianus</i> *
Sparassidae	<i>Heteropoda jugulans</i> *



Flora Taxa

Cycads	
Family	Species
Zamiaceae	<i>Lepidozamia peroffskyana</i>

Ferns	
Family	Species
Aspleniaceae	<i>Asplenium australasicum</i> *
Blechnaceae	<i>Blechnum patersonii</i> subsp. <i>queenslandicum</i> *
Cyatheaceae	<i>Cyathea australis</i> *
Dennstaedtiaceae	<i>Pteridium esculentum</i> *
Gleicheniaceae	<i>Gleichenia dicarpa</i> *
Lindsaeaceae	<i>Lindsaea microphylla</i> *
Polypodiaceae	<i>Platynerium bifurcatum</i> *
	<i>Platynerium superbum</i> *
	<i>Pyrrosia confluens</i> var. <i>confluens</i> *
Pteridaceae	<i>Adiantum formosum</i> *
	<i>Adiantum hispidulum</i> *
	<i>Pteris umbrosa</i> *
Tectariaceae	<i>Arthropteris tenella</i> *



J Palmer



MA Nightingale



P Taylor

Key

Putative New species

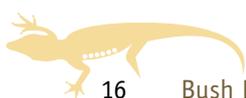
Previously recorded

* = New record

^ = Pest/Weed

= EPBC listed

~ = TSC listed





Flowering Plants	
Family	Species
Acanthaceae	<i>Pseuderanthemum variabile</i> *
Akaniaceae	<i>Akania bidwillii</i> *
Amaranthaceae	<i>Alternanthera denticulata</i> *
Anacardiaceae	<i>Euroschinus falcatus</i>
Apiaceae	<i>Hydrocotyle pedicellosa</i> *
	<i>Hydrocotyle peduncularis</i> *
Apocynaceae	<i>Gomphocarpus fruticosus</i> ^ *
	<i>Parsonsia straminea</i> *
	<i>Tabernaemontana pandacaqui</i> *
Araceae	<i>Alocasia brisbanensis</i> *
	<i>Gymnostachys anceps</i> *
	<i>Pothos longipes</i>
Araliaceae	<i>Cephalalaria cephalobotrys</i> *
	<i>Polyscias murrayi</i> *
Arecaceae	<i>Archontophoenix cunninghamiana</i>
Asparagaceae	<i>Cordyline stricta</i>
	<i>Eustrephus latifolius</i>
Asteraceae	<i>Bidens pilosa</i> var. <i>pilosa</i> ^ *
	<i>Cirsium vulgare</i> ^ *
	<i>Conyza albida</i> ^ *
Atherospermataceae	<i>Daphnandra melasmena</i> *
Boraginaceae	<i>Ehretia acuminata</i> var. <i>acuminata</i> *
Campanulaceae	<i>Lobelia purpurascens</i> *
	<i>Wahlenbergia gracilis</i> *
Casuarinaceae	<i>Allocasuarina torulosa</i> *
	<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> *
Colchicaceae	<i>Tripladenia cunninghamii</i> *
Commelinaceae	<i>Aneilema acuminatum</i> *
	<i>Aneilema biflorum</i> *
	<i>Commelina cyanea</i> *
Cucurbitaceae	<i>Neoachmandra cunninghamii</i> *
Cunoniaceae	<i>Caldcluvia paniculosa</i>
	<i>Callicoma serratifolia</i>
	<i>Geissois benthamiana</i>
	<i>Schizomeria ovata</i>
Cyperaceae	<i>Cyperus brevifolius</i> ^ *
	<i>Cyperus eragrostis</i> ^ *

Flowering Plants	
Family	Species
Dilleniaceae	<i>Hibbertia scandens</i>
Dioscoreaceae	<i>Dioscorea transversa</i>
Epacridaceae	<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i> *
	<i>Trochocarpa laurina</i>
Euphorbiaceae	<i>Claoxylon australe</i>
	<i>Homalanthus populifolius</i>
Fabaceae	<i>Acacia melanoxylon</i>
	<i>Desmodium rhytidophyllum</i> *
	<i>Glycine microphylla</i> *
	<i>Podolobium aciculiferum</i> *
Geraniaceae	<i>Geranium homeanum</i> *
Hemerocallidaceae	<i>Dianella caerulea</i>
	<i>Geitonoplesium cymosum</i>
Juncaceae	<i>Juncus subsecundus</i> *
Lamiaceae	<i>Prunella vulgaris</i> ^ *
Lauraceae	<i>Cryptocarya glaucescens</i>
	<i>Cryptocarya microneura</i>
	<i>Cryptocarya rigida</i>
	<i>Endiandra crassiflora</i>
	<i>Endiandra muelleri</i>
	<i>Endiandra sieberi</i>
	<i>Neolitsea dealbata</i> *
Loranthaceae	<i>Amylotheca dictyophleba</i> *
Luzuriagaceae	<i>Drymophila moorei</i> *
Malvaceae	<i>Sida rhombifolia</i> ^ *
Meliaceae	<i>Melia azedarach</i> *
	<i>Synoum glandulosum</i> subsp. <i>glandulosum</i> *
Menispermaceae	<i>Legnephora moorei</i> *
	<i>Stephania japonica</i> var. <i>discolor</i> *
Monimiaceae	<i>Palmeria scandens</i>
	<i>Wilkiea hugeliana</i>
Moraceae	<i>Ficus coronata</i> *
Myrtaceae	<i>Archirhodomyrtus beckleri</i>
	<i>Corymbia gummifera</i> *
	<i>Eucalyptus saligna</i>
	<i>Leptospermum polygalifolium</i> subsp. <i>montanum</i> *
	<i>Lophostemon confertus</i>



Flowering Plants	
Family	Species
Myrtaceae	<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i> *
	<i>Syzygium crebrinerve</i>
	<i>Tristaniopsis collina</i>
Orchidaceae	<i>Adelopetalum exiguum</i>
	<i>Dockrillia linguiformis</i> *
	<i>Dockrillia schoenina</i> *
	<i>Thelychiton gracilicaulis</i> *
Petermanniaceae	<i>Petermannia cirrosa</i>
Phyllanthaceae	<i>Breynia oblongifolia</i>
Phytolaccaceae	<i>Phytolacca americana</i> ^ *
Piperaceae	<i>Piper hederaceum</i> *
Poaceae	<i>Axonopus fissifolius</i> ^
	<i>Cymbopogon refractus</i> *
	<i>Eleusine indica</i> ^ *
	<i>Oplismenus hirtellus</i> *
	<i>Panicum lachnophyllum</i> *
	<i>Paspalum dilatatum</i> ^ *
	<i>Setaria pumila</i> ^ *
	<i>Sporobolus fertilis</i> ^ *
Polygonaceae	<i>Persicaria decipiens</i> *
	<i>Persicaria lapathifolia</i> *
Proteaceae	<i>Lomatia fraseri</i>
	<i>Persoonia media</i>

Flowering Plants	
Family	Species
Ranunculaceae	<i>Ranunculus lappaceus</i> *
Rhamnaceae	<i>Hovenia dulcis</i> *
Rosaceae	<i>Rubus rosifolius</i> *
Ripogonaceae	<i>Ripogonum discolor</i> *
Rubiaceae	<i>Morinda jasminoides</i> *
	<i>Psychotria loniceroides</i> *
	<i>Richardia brasiliensis</i> ^ *
Rutaceae	<i>Melicope micrococca</i> *
Sapindaceae	<i>Sarcopteryx stipata</i>
Smilacaceae	<i>Smilax australis</i>
Solanaceae	<i>Solanum mauritianum</i> ^ *
	<i>Argyrodendron actinophyllum</i> *
Sterculiaceae	<i>Commersonia fraseri</i> *
	<i>Pimelea linifolia</i> subsp. <i>linifolia</i> *
Thymelaeaceae	<i>Dendrocnide excelsa</i> *
	<i>Elatostema stipitatum</i> *
	<i>Urtica incisa</i> *
Urticaceae	<i>Urtica incisa</i> *
Verbenaceae	<i>Verbena incompta</i> ^ *
Violaceae	<i>Hybanthus stellarioides</i> *
Vitaceae	<i>Cayratia clematidea</i> *
	<i>Cissus antarctica</i> *
	<i>Cissus hypoglauca</i> *



J Palmer



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Key

Putative New species
Previously recorded

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= EPBC listed

~ = TSC listed





Appendix B: Listed Species

Nomenclature and taxonomy
used in this appendix is
consistent with that from the
Australian Faunal Directory (AFD).

Current at April 2011



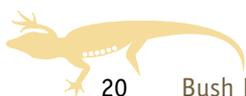
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Fauna Taxa

Species	Common Name	Status
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	EPBC — Endangered, TSC — Vulnerable
<i>Mixophyes iteratus</i>	Giant Barred Frog	EPBC — Endangered, TSC — Vulnerable
<i>Atrichornis rufescens</i>	Rufous Scrub-bird	TSC — Vulnerable
<i>Calyptorhynchus lathami</i>	Glossy Black Cockatoo	TSC — Vulnerable
<i>Ninox strenua</i>	Powerful Owl	TSC — Vulnerable
<i>Pachycephala olivacea</i>	Olive Whistler	TSC — Vulnerable
<i>Ptilinopus magnificus</i>	Wompoo Fruit Dove	TSC — Vulnerable

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

TSC = refers to the *Threatened Species Conservation Act* (New South Wales)





Appendix C: Exotic 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 April 2011



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Flora Taxa

Species	Common Name
<i>Gomphocarpus fruticosus</i> *	Narrow-Leaf Cotton Bush
<i>Bidens pilosa</i> var. <i>pilosa</i> *	Cobbler's Pegs
<i>Cirsium vulgare</i> *	Spear Thistle
<i>Conyza albida</i> *	Fleabane
<i>Cyperus brevifolius</i> *	Kyllinga
<i>Cyperus eragrostis</i> *	Umbrella Sedge
<i>Prunella vulgaris</i> *	Self Heal
<i>Sida rhombifolia</i> *	Paddy's Lucerne
<i>Phytolacca americana</i> *	Inkweed
<i>Axonopus fissifolius</i>	Narrow-Leafed Carpet Grass
<i>Eleusine indica</i>	Crowsfoot Grass
<i>Paspalum dilatatum</i>	Paspalum
<i>Setaria pumila</i>	Pale Pigeon Grass
<i>Sporobolus fertilis</i>	Giant Parramatta Grass
<i>Richardia brasiliensis</i> *	White Eye, Mexican Clover
<i>Solanum mauritianum</i> *	Wild Tobacco Bush
<i>Verbena incompta</i> *	Purpletop
<i>Hovenia dulcis</i> * ¹	Japanese Raisin Tree

¹ This is an intentionally planted species, not necessarily considered a weed.

* indicates new record for reserve

Fauna Taxa

Species	Common Name
<i>Bos taurus</i> *	European Cow
<i>Felis catus</i> *	Cat
<i>Bradybaena similis</i>	White Bradybaena Snail
<i>Zonitoides arboreus</i>	–

* indicates new record for reserve



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FRONT COVER P Taylor





Bush Blitz survey report

Darkwood Reserve NSW + 12-16 February 2010



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