BushBlitz
SPECIES DISCOVERY PROGRAM

BUSH BLITZ SPECIES DISCOVERY PROGRAM

Skullbone Plains Tasmania

26 February–2 March 2012

Australian Government

bhpbilliton
resourcing the future

EARTHWATCH INSTITUTE

Australian Biological Resources Study

What is Bush Blitz?

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

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

Contents

Summary

A six-day Bush Blitz survey was conducted on Skullbone Plains reserve, Tasmania, during February and March of 2012. In total 635 species were identified, of which 520 had not been previously recorded on the reserve. Of the species recorded, 19 are putative species new to science, comprising one moth, seven spiders, one true bug and 10 lichens.

The Tasmanian Devil (*Sarcophilus harrisii*) and Tasmanian Wedge-tailed Eagle (*Aquila audax fleayi*) were recorded. Both are listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Tasmanian *Threatened Species Protection Act 1995* (TSP Act). Four vascular plant species listed under the TSP Act were also recorded, namely Mountain Purplepea (*Hovea montana*), Drooping Pine (*Pherosphaera hookeriana*), Small Star Plantain (*Plantago glacialis*) and Handsome Hooksedge (*Uncinia elegans*).

The four exotic pest animals recorded were Fallow Deer (*Dama dama*), Cat (*Felis catus*), Rabbit (*Oryctolagus cuniculus*) and Cabbage White Butterfly (*Pieris rapae*). Thirteen weed species were identified, among which Bulbous Rush (*Juncus bulbosus*) should be considered a priority for control.

A significant range extension of 50 km was recorded for the land snail *Thryasona* cf. *diemenensis*. Finding the rarely collected Nacophorini moth *Hypsitropha euschema* and the Giant Water Spider (*Megadolomedes australianus*) were highlights of the survey.

Abbreviations

ANBG
Australian National Botanic Gardens

DPIPWE
Tasmanian Department of Primary Industries, Parks, Water and Environment

EPBC Act
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

NRS
National Reserve System

TLC
Tasmanian Land Conservancy

TMAG
Tasmanian Museum and Art Gallery

TSP Act
Threatened Species Protection Act 1995 (Tasmania)

Some of the Skullbone Plains Bush Blitz team

Back row: Abbey Throssell, Kevin Bonham, Leanne Wilks, Marina Cheng, Lyn Cave
Middle row: Matthew Baker, Ruth Mollison, Gintaras Kantvilas, Nick Mooney, Mim Jambrecina, Philip Hurle
Front row: Miguel De Salas, Kate Gillespie, Alexander Schmidt-Lebuhn

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 the provision of grants for species description and resolution of taxonomically problematic, nationally important groups;
+ to promote partnerships between science, government, industry and non-government organisations; and
+ to inform the National Reserve System, reserve managers and other stakeholders of the results of the Bush Blitz Project.

This survey took place between 26 February and 2 March 2012. Scientists from both local and interstate institutions undertook the field and laboratory work. These included the Tasmanian Museum and Art Gallery (TMAG), Tasmanian Herbarium, Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE), Tasmanian Land Conservancy (TLC), Australian National Botanic Gardens (ANBG), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Queensland Museum and the University of New South Wales.

Bog Candle Heath (*Richea gunnii*) in flower, Miguel De Salas © Copyright, Tasmanian Herbarium

1 The NRS is Australia's network of protected areas, covering 16.52% of the country—over 12.7 million hectares, comprising Commonwealth, State and Territory reserves, Indigenous lands and protected areas run by non-profit conservation organisations, through to ecosystems protected by farmers on their private working properties.

Reserve Overview[2]

Skullbone Plains

Tasmanian Land Conservancy

Date of purchase

2011

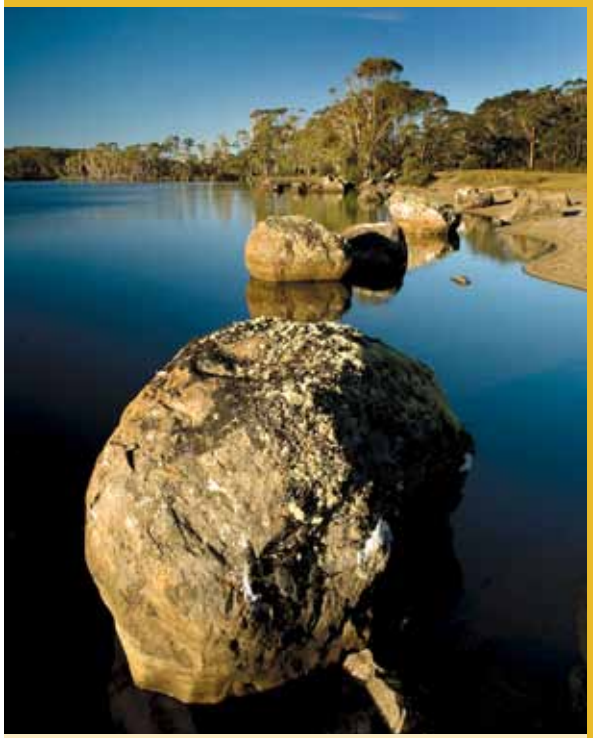
Area

1,647 ha

Description

Skullbone Plains is located in Tasmania's Central Highlands near the township of Bronte. It was formerly a forestry property, but only 16% of Skullbone Plains was selectively logged in the decade from 2000 to 2010. The remainder of the reserve is in pristine condition. The reserve is 1,647 ha in size and ranges from 940 m to 1000 m elevation. It receives over 2,500 mm of rainfall per year, and experiences prolonged frost and heavy snowfalls in winter. Skullbone Plains contains the headwaters of the Nive River catchment and drainage channels from Lake Ina and Kenneth Lagoon.

As part of its management program, the TLC plans to carry out extensive surveys to acquire a detailed picture of the animals and plants living on Skullbone Plains. This information will represent an important baseline to ensure Skullbone Plains is managed as an excellent nature reserve.



Skullbone Plains, Matthew Newton © Copyright, TLC

National Reserve System conservation values

Skullbone Plains was included in the NRS due to its outstanding biodiversity attributes. The reserve is a remarkable mix of open valleys, old-growth forests, woodlands, wetlands, bogs, moorlands, heathfields and grasslands. It provides high ecological connectivity between neighbouring properties. It shares a 16 km northern boundary with the Central Plateau Reserve (World Heritage Area) and to the south adjoins state forest and two private titles, one of which is largely a pastoral estate. Skullbone Plains contains a number of outstanding vegetation complexes, especially alpine ecosystems, including the state's richest sphagnum moss beds. It includes almost 100 ha of threatened alpine fens and sphagnum bogs, and has suitable habitat for eight nationally listed threatened species including the Tasmanian Devil (*Sarcophilus harrisii*), Clarence Galaxias (*Galaxias johnstoni*) and the Tasmanian Wedge-tailed Eagle (*Aquila audax fleayi*).

2 Information sourced from the Department of the Environment <http://www.environment.gov.au/topics/land/nrs/case-studies/tas/skullbone-plains>, accessed 15 April 2013, and the TLC <http://www.tasland.org.au/permanent/skullboneplains>, accessed 15 April 2013.

Methods

Collection and 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 lists the groups surveyed and the specialists who undertook the fieldwork.

Table 1: Groups surveyed and personnel

Group	Common names	Expert	Affiliation
Vertebrates	Mammals, Birds, Reptiles and Frogs	Sally Bryant	TLC
		Nick Mooney	TMAG
		Matt Pauza	DPIPWE
Lepidoptera (Papilionoidea)	Butterflies	Abbey Throssell	TMAG
Lepidoptera (Geometridae)	Geometrid Moths	Catherine Byrne	TMAG
Trichoptera	Caddisflies	Ruth Mollison	TMAG
Coleoptera (Chrysomelidae)	Leaf Beetles	David de Little	TMAG
Heteroptera	True Bugs	Marina Cheng	University of New South Wales
Odonata	Damselflies and Dragonflies	Abbey Throssell	TMAG
Araneae	Spiders	Robert Raven	Queensland Museum
Gastropoda	Snails and Slugs	Kevin Bonham	TMAG
Vascular Plants	Vascular Plants	Philip Hurle	ANBG
Vascular Plants (Tasmanian natives)	Vascular Plants (Tasmanian natives)	Miguel De Salas	Tasmanian Herbarium
Vascular Plants (particularly Asteraceae)	Vascular Plants (particularly Asteraceae)	Alexander Schmidt-Lebuhn	CSIRO
Vascular Plants (Exotic)	Vascular Plants (Exotic)	Matthew Baker	Tasmanian Herbarium
Bryophytes	Liverworts and Mosses	Lynette Cave	Tasmanian Herbarium
Lichenised Fungi	Lichens	Gintaras Kantvilas	Tasmanian Herbarium
Conservation Scientist		Matthew Taylor	TLC

A standard suite of survey techniques was used:

+ Mammals, reptiles and amphibians were surveyed using camera traps with mutton-bird and walnut oil lures, and hair funnels and hair tubes with peanut butter and rolled oats lures. Incidental observations including sightings, calls and signs such as tracks and scats were also recorded. Several areas with sandy soil were raked and baited with mutton-bird oil, dried liver and oats to maximise the chance of animals visiting these sites. Evening listening sessions for nocturnal birds and mammals and spotlighting from a vehicle were also conducted.
+ Birds were surveyed using the 2 ha search methodology recommended by Birds Australia for the *Atlas of Australian Birds* project.[3] This involves recording all bird species by sight (with 8 x 32 binoculars) and calls (contact or breeding call) within a 2 ha search zone over a 20-minute survey period. Birds are only recorded from within the search zone but this can include birds flying over.
+ Light traps were used for the collection of adult geometrid moths and consisted of 160 W mercury vapour lamp and sheet with portable generator, and portable bucket traps. Bucket traps were distributed over as many different plant communities as possible. Butterflies, damselflies and dragonflies were collected opportunistically at each site using hand-held butterfly nets.
+ True bugs were surveyed by sorting leaf litter, light trapping and beat sampling (where vegetation is beaten and specimens dislodged into an insect net and collected by aspirator). Leaf litter was sampled from under a variety

Nick Mooney setting out hair tube and camera traps, Sally Bryant © Copyright, TLC

3 Birdlife Australia Atlas & Birdata <http://www.birdsaustralia.com.au/projects/atlas-and-birdata>, accessed 29 May 2013.

Lyn Cave looks closely, through a hand lens, at the specimen she has collected, Miguel De Salas © Copyright, Tasmanian Herbarium

of trees and shrubs. Specimens were collected at a light trap from dusk until late evening. A few representative specimens of each species were preserved in 100% ethanol, to be used in DNA sequencing. Host plant samples were also collected.

+ Mygalomorph (tarantula and funnel-web) and Lycosid (wolf) spiders were surveyed using 25 pitfall traps set along an 80 m line on the first day and cleared on the second last day. Hand collecting was done at night, usually near a vibration source, along with searching leaf litter, rolling rocks, examining embankments, excavating burrows and peeling bark. Collections were made on the Nive River outside the reserve in order to find adults of juvenile Giant Water Spiders (*Megadolomedes australianus*) taken within the reserve.
+ Snails and slugs were collected by hand in wet forest sites. Search methods were flexible and involved collecting around points of interest (often chosen to reflect vegetative or geological differences). Sites that appeared to be less suitable for snails were surveyed using free-range collecting.
+ Caddisflies (adult and larval) were sampled by a mixture of 'kick-net sampling', using a 250 micron mesh dip net, and by hand picking from rocks, cobbles, litter and aquatic macrophytes. The material was then tipped into a shallow tray and picked through for specimens. Adults were also collected at the light traps used for capturing moths.
+ Leaf beetles were surveyed by beating the foliage of shrubs and small trees into a standard beating tray.
+ Vascular plants, bryophytes and lichens were collected by hand using standard equipment. Representative fertile material from each taxon was collected at each site where possible. Bryophytes were placed directly into packets as they were collected, with some additional sorting later using a microscope. Lichens were collected as mixed samples and later sorted with the aid of a dissecting microscope due to their small size and intermingled growth pattern.

Incidental records were obtained for Orthoptera (crickets, grasshoppers, katydids) and non-mygalomorph and non-lycosid spiders. Seeds and live plant specimens were also collected for cultivation and planting in the Tasmanian section of the ANBG.

The work does not stop with the setting of the sun. Matthew Baker and Miguel De Salas sort and prepare plant specimens, Alexander Schmidt-Lebuhn © Copyright, CSIRO

Collections were identified in the field by experts, and by using the available literature and the holdings of museums and herbaria. New species were photographed or scanned. Fauna specimens were deposited with TMAG and plant specimens with the Tasmanian Herbarium. Final species lists were compiled using the results of this Bush Blitz and data provided by the Australian Natural Heritage Assessment Tool (ANHAT).

Results

The locational data of collected and observed specimens are available to reserve managers. Five-hundred and twenty species were added to those known across the reserve and 19 putative species new to science were discovered; these await assessment. Two threatened animal species were observed, both of which have been recorded previously on the reserve. Four threatened plants were recorded, two of which are new records for the reserve. Four exotic or pest fauna 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 reserve. Those without an asterisk have been recorded previously and identified again during this survey. Species shown in blue text were not recorded on this survey, but are known from previous studies. Table 2 provides a summary of the numbers of species, new records and putative new species found on the reserve.

Potting cuttings from live specimens collected at Skullbone Plains, Mim Jambrecina © Copyright, Department of the Environment

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 fully 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 the fact that the taxonomic literature for some groups is not current. These collections will be subject to further study.

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

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

Group	Common name	Total number of species	Species new to reserve	Species new to science
Mammalia	Mammals	16	3	0
Aves	Birds	44	0	0
Reptilia	Reptiles	7	1	0
Amphibia	Frogs	3	0	0
Pisces	Fishes	1	0	0
Lepidoptera (Papilionoidea)	Butterflies	5	5	0
Lepidoptera (Geometridae)	Geometrid Moths	47	47	1
Trichoptera	Caddisflies	10	10	0
Coleoptera (Chrysomelidae)	Leaf Beetles	28	28	0
Heteroptera	True Bugs	16	16	1
Orthoptera	Grasshoppers	1	1	0
Odonata	Damselflies and Dragonflies	13	13	0
Araneae	Spiders	62	62	7
Gastropoda	Snails and Slugs	17	17	0
Flowering Plants	Flowering Plants	180	105	0
Conifers	Conifers	1	0	0
Ferns	Ferns	5	5	0
Fern Allies	Fern Allies	1	1	0
Bryophytes	Liverworts	20	20	0
Bryophytes	Mosses	43	43	0
Lichenised Fungi	Lichens	143	143	10
Totals		**663**	**520**	**19**

Threatened Species

Appendix B gives the species listed as threatened under the TSP Act and the EPBC Act known from the reserve. 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	2	0
Flora	4	2

Exotic and Pest Species

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

Table 4: Summary of exotic and pest species identified

Group	Total number of species	Species new to reserve
Fauna	4	1
Flora	13	11

A Wolf Spider (*Tasmanicosa* sp. 2) is surprised while out hunting, Cathy Byrne © Copyright, TMAG

Discussion

Putative New Species

Nineteen putative species new to science were discovered during this Bush Blitz. 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 published. In addition to species that are considered new to science, specimens collected during this survey include taxa that are already known from museum and herbarium collections, but have not yet been formally described and named. A breakdown of the groups in which putative new species have been recorded is provided in Table 5.

Table 5: Putative new species by group

Group	Common name	Putative new species
Lepidoptera (Geometridae)	Geometrid Moths	1
Heteroptera	True Bugs	1
Araneae	Spiders	7
Lichenised Fungi	Lichens	10

Threatened Species

Australia is home to around 570,000 species, most of which are invertebrates and yet to be formally described. Approximately 92% of vascular plants, 87% of mammals, and 93% of reptiles are endemic. Changes to the landscape and native habitat because of human activity have put at risk many of these unique species. Over the last 200 years, many species of plants and animals have become extinct; the survival of others is threatened.[4]

The only threatened mammal recorded during this survey was the Tasmanian Devil (*Sarcophilus harrisii*). One adult male appeared to have a small, raised, open lesion on its chin. Tasmanian Devils are widespread on the reserve, despite a dramatic statewide decline from Devil Facial Tumour Disease. The disease has long been confirmed from the area,[5] and as a result Tasmanian Devil numbers are thought to have decreased by about 80% in the last 10 years.[6] Despite this, they still appear to be 'covering' the landscape, including places on and well away from tracks.

Nine of the birds recorded for Skullbone Plains are endemic and three are listed under State or Commonwealth threatened species legislation, namely the Tasmanian Wedge-tailed Eagle (*Aquila audax fleayi*), Grey Goshawk (*Accipiter*

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

5 Hawkins C., Baars C., Hestyerman H., Hocking G., Jones M., Lazenby B., Mann D., Mooney N., Pemberton D., Pyecroft S., Restani M. & Wiersma J. 2006, 'Emerging disease and population decline of an island endemic, the Tasmanian devil *Sarcophilus harrisii*', *Biological Conservation* **131**(2): 307–324.

6 Personal observation of Nick Mooney.

novaehollandiae) and Masked Owl (*Tyto novaehollandiae castanops*). Only the Tasmanian Wedge-tailed Eagle was identified during this survey, while the other two raptors are known from *Natural Values Atlas*[7] records. Two Wedge-tailed Eagle nests are located immediately adjacent to Skullbone Plains and although neither nest was active in the 2011 breeding season, a breeding pair maintains a territory over the reserve. The high diversity of raptors (six species) is correlated to the abundance of small mammals found on Skullbone Plains, especially rabbit and pademelon, as well as the large expanse of forest and grassland mosaics suitable for foraging and nesting.

No invertebrates listed at State or Commonwealth level were recorded. Four vascular plants listed under the TSP Act were recorded in the reserve, namely Mountain Purplepea (*Hovea montana*), Drooping Pine (*Pherosphaera hookeriana*), Small Star Plantain (*Plantago glacialis*) and Handsome Hooksedge (*Uncinia elegans*). No plants listed under the EPBC Act were identified.

Southern Lagoon, Simon Grove © Copyright, TMAG

7 DPIPWE, Natural Values Atlas, <http://www.dpiw.tas.gov.au/inter/nsf/WebPages/LJEM-6TV6TV?open>, accessed 2 May 2013.

Exotic and Pest Species

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

Three introduced pest mammals were recorded on the reserve, namely Fallow Deer (*Dama dama*), Cat (*Felis catus*) and Rabbit (*Oryctolagus cuniculus*), all of which have been recorded previously. Cats appeared to be present in very low numbers, with just one possible record of a scat. The sparse evidence of feral cats is likely a true representation of their abundance, since they are easily recorded on cameras and their distinctive footprints are usually obvious at even moderate abundance.[8] The Black Rat (*Rattus rattus*) was not found. The only invertebrate pest species recorded was the Cabbage White Butterfly (*Pieris rapae*), a very common and widespread pest of brassica crops.

Only 13 weed species were identified on Skullbone Plains. These were mostly confined to disturbed areas such as timber loading sites and alongside vehicle tracks. The most widespread and common weed was Spear Thistle (*Cirsium vulgare*), which was encountered in the drier forests, especially in areas disturbed by previous logging. Ragwort (*Senecio jacobaea*) is the only species recorded that is listed under the *Tasmanian Weed Management Act 1999*. A single plant was found at two trackside locations. The only weed species collected from undisturbed native vegetation were Yorkshire Fog (*Holcus lanatus*) and Common Mouse-ear Chickweed (*Cerastium vulgare*). Both of these were limited to single sites and to less than 100 plants. A single, large population (10 m x 50 m) of Bulbous Rush (*Juncus bulbosus*) was recorded on a seasonally inundated section of the Lake Ina track. Bulbous Rush can spread rapidly, forming dense mats that replace native species. Of the weeds encountered, Bulbous Rush should be considered a priority for control.

8 B. Lazenby pers. comm.

Bulbous Rush (*Juncus bulbosus*) was recorded on a section of the Lake Ina track. It should be considered a priority for control. Image courtesy of USDA-NRCS PLANTS Database/Britton, N.L., and Brown, A., 1913. *An illustrated flora of the northern United States, Canada and the British Possessions. 3 vols*. Charles Scribner's Sons, New York. Vol. 1: 477

Other Points of Interest

Vertebrate Fauna

Seven vertebrate sampling sites were established during the survey. These were selected by the TLC based on their potential as long-term monitoring sites. These sites capture the general diversity of bird species on the reserve, and are located to enable monitoring of a range of values, such as

threatened species habitats; disturbances related to infrastructure, such as new roads; and habitat change due to factors like climate change. The sites were also chosen to complement other monitoring sites in Tasmania, for example, the Warra Long-Term Ecological Research Site managed by Forestry Tasmania.[9] [10]

Mammals

The diversity and relative abundance of mammals (excluding bats) was typical of what might be expected from such an area and diversity of habitat. Of the 15 mammal species recorded on this survey, three were new records—the endemic Long-tailed Mouse (*Pseudomys higginsi*), Swamp Rat (*Rattus lutreolus*), and Platypus (*Ornithorhynchus anatinus*). Sixteen mammal species are now known to occur in Skullbone Plains. Some large species were very widespread, notably Short-beaked Echidna (*Tachyglossus aculeatus setosus*), Tasmanian Devil (*Sarcophilus harrisii*), Eastern Quoll (*Dasyurus viverrinus*), Bare-nosed Wombat (*Vombatus ursinus*) and Common Brushtail Possum (*Trichosurus vulpecula fuliginosus*). This general area has long been known to harbour a large population of Eastern Quolls (based on DPIPWE trapping records). Other species were more restricted in range but appeared locally abundant, such as the Long-tailed Mouse, Swamp Rat and Rabbit (*Oryctolagus cuniculus*). Species such as Common Ringtail Possum (*Pseudocheirus peregrinus convolutor*), Sugar Glider (*Petaurus breviceps*) and Fallow Deer (*Dama dama*) appeared uncommon. The Sugar Glider's mobility means a greater survey effort would be required to record their communal roost trees and true relative abundance on Skullbone Plains. During this survey, Tasmanian Bettong (*Bettongia gaimardi*) were not found, although several possible digs were seen.

A more extensive survey would likely increase the fauna list to include species such as pygmy possums, additional rodents and perhaps small macropods and bandicoots. The sphagnum peatland contains habitat suitable for Broad-toothed Rat (*Mastacomys fuscus*) and Swamp Antechinus (*Antechinus minimus*). Similarly, the stringy bark forests are likely to hold either or both species of pygmy possums found in Tasmania ((Eastern Pygmy-possum (*Cercartetus nanus*) and Little Pygmy-possum (*Cercartetus lepidus*)).

Maintaining the combination of apparently robust populations of indigenous rodents and a dearth of exotic predators would be a positive management objective. A dedicated bat survey of Skullbone Plains would also be useful in determining which species are present.

Birds

Nine of the 44 bird species known to occur on Skullbone Plains are endemic to Tasmania. Such diversity is typical of Tasmania's wet forests, grassy woodlands and grasslands surviving in large patches free from disturbance. The few exotic bird species and absence of key aggressors like the Noisy Miner (*Manorina melanocephala*) mean Skullbone Plains retains an ecologically intact avifauna community, which can capitalise on structural elements such as old growth forest and riparian

9 MacDonald M. 2001, 'Altitudinal distribution of birds at the Warra LTER Site, southern Tasmania: a preliminary study', *Tasforests* **13**(1): 87–100.

10 Hingston A. B. & Grove S. 2010, 'From clearfell coupe to old-growth forest: Succession of bird assemblages in Tasmanian lowland wet eucalypt forests', *Forest Ecology and Management* **259**(3): 459–468.

edges where flowering and groves of woodland trees are abundant. Access to water and abundant fallen timber provide habitat richness and niche availability for birds and many other native fauna.

The number of birds recorded for Skullbone Plains is likely to increase as more surveys are undertaken during spring when many migrants have returned to the reserve to breed. Due to the late timing of this work, many species had already left Skullbone Plains and commenced their descent to the lowlands or departed the State entirely. Some, for example honeyeaters, undertake annual seasonal altitudinal migration, travelling down from the high country in late summer and autumn to spend the cooler winter months in coastal lowlands where food is more plentiful.[11] [12] During winter, Skullbone Plains experiences heavy frosts and long periods of snow, which severely limit the available resources, foraging niches and survival for many bird species.

Since the cessation of logging on Skullbone Plains in 2005, its eucalypt forests and woodlands are likely to have increased in ecological value for a range of hollow-nesting species, such as Masked Owl (*Tyto novaehollandiae castanops*), Southern Boobook (*Ninox novaeseelandiae leucopsis*), Green Rosella (*Platycercus caledonicus*), Blue-winged Parrot (*Neophema chrysostoma)*, Yellow-tailed Black-cockatoo (*Calyptorhynchus funereus*), Australian Owlet-nightjar (*Aegotheles cristatus*), Striated Pardalote (*Pardalotus striatus*) and Tree Martin (*Petrochelidon nigricans*). In addition, species such as the Strong-billed Honeyeater

11 Thomas D. G. 1986, 'The birds of Mt Wellington—comparison of two 10 ha plots of dry and wet sclerophyll', *Tasmanian Bird Report* **15**: 11–16.

12 Thomas D. G. 1987, 'The effect of hard weather on bird abundance', *Tasmanian Bird Report* **16**: 17–20.

Skullbone Plains, Matthew Newton © Copyright, TLC

(*Melithreptus validirostris*) and Black-headed Honeyeater (*Melithreptus affinis*) are attracted to mature eucalypt stems for foraging. The abundance of Cider Gum (*Eucalyptus gunnii*) along forest edges is attracting nectar-feeding species such as Yellow Wattlebird (*Anthochaera paradoxa*), which feed on its sap and the insects that it attracts.

Reptiles and Amphibians

Surveying for reptiles and amphibians was opportunistic; thus, the species list and information on distribution are preliminary. However, based on observation, skink populations seem robust and diverse with locally high abundance, and breeding success was evident from the number of newborns observed basking in the sun.

Invertebrate Fauna

Butterflies, Moths, Damselflies and Dragonflies

A reasonable diversity of butterfly, damselfly and dragonfly species was found on Skullbone Plains, including two Tasmanian endemic dragonflies ((Tasmanian Swamp Tigertail (*Synthemis tasmanica*)

and Tasmanian Darner (*Austroaeschna tasmanica*)). The diversity of geometrid moths was high, particularly considering the limited time spent collecting in the reserve. An interesting find was one specimen of *Paralaea porphyrinaria*. This is normally a late autumn-winter-flying moth, and so its occurrence in February was very unusual. Like others in its tribe, this species is a eucalypt feeder. Another highlight was the taking of the moth *Hypsitropha euschema*, which is rarely collected.

Beetles

Many different species of shrubs in the families Myrtaceae, Proteaceae, Rubiaceae, Fabaceae and Asteraceae were sampled, but virtually no leaf beetles (Chrysomelidae) were collected from them. Leaf beetles were overwhelmingly collected from *Eucalyptus* species. This may have been because the foliage of most of the understorey shrubs had hardened and become unpalatable by late February while the eucalypts still retained some soft new growth.

An undescribed species of Leaf Beetle (*Paropsisterna* sp.) found at Skullbone Plains, David de Little © Copyright, TMAG

All the species collected on Skullbone Plains have been collected elsewhere in Tasmania, with the possible exception of the *Chalcolampra* species. A major highlight was the collection of an undescribed and apparently rare species of *Paropsisterna* that had previously been collected only on the "Surrey Hills" property in north-western Tasmania. Although the specimen was initially thought to be *Paropsisterna simsoni*, *P. simsoni* is likely to be a synonym of *P. aurea* and the specimen collected at Skullbone Plains is likely to be new to science.[13]

True Bugs

The survey of Skullbone Plains found a small but diverse assemblage of true bugs, with 16 species collected. Sampling was undertaken at 16 localities on nine host plant species in habitats including open valleys, old-growth forests, native grasslands, and along lakes and streams. Six taxa have been identified to species level. Apart from one Tasmanian endemic—*Tingis impensa* from the lacebug family Tingidae—most of the taxa identified are common to other areas along the south-eastern coast of Australia. A range extension was recorded for the mirid plant bug *Phyllofulvius australianus*, which was previously only known from Victoria.[14] The true bugs collected during this survey provide a reference dataset to the heteropteran fauna of the Central Highlands region of Tasmania. Additional sampling at other times of the year is likely to increase the known species diversity.

13 Pers. comm. David De Little.

14 Cassis, G. and Gross, G. F. 2002, *Zoological Catalogue of Australia*. 27.3A. *Hemiptera: Heteroptera (Coleorrhyncha to Cimicomorpha)*, Australian Biological Resources Study, CSIRO Publishing, Melbourne, 521 pp.

The Giant Water Spider (*Megadolomedes australianus*), an exciting find under the log bridges into Skullbone Plains, Robert Raven

Spiders

Although spiders have never been sampled at Skullbone Plains before, substantial surveys have been conducted in nearby Cradle Mountain–Lake St Clair National Park. Of the 62 species recorded at Skullbone Plains, seven are putatively new to science, 22 could be confidently identified, and 33 remain either un-named or not formalised. In many cases, the absence of an adult male or of any adult precludes identification.

An exciting find was the Giant Water Spider (*Megadolomedes australianus*), one of the largest Australian spiders, with the leg span of the female exceeding that of a human hand (the male is tiny). These very placid spiders live near streams on rocks and fallen trees, and hunt in the quieter eddies. They are found throughout Tasmania and may well represent a new species.[15] The body pattern of the Tasmanian specimens differs from that of mainland specimens and, anecdotally, the Tasmanian males are much larger than those on mainland Australia.[16] Unfortunately, all of the spiders found on the survey were sub-adult females and a male is required to complete the description.

Snails

Diversity per site was low, as is often the case at high altitudes, with no more than six species of snail recorded at any one site. However, the total diversity was fairly high and slightly exceeded pre-survey expectations. Eighteen sites were surveyed, covering much of the reserve and all major habitat types. Dry weather meant that live specimens were difficult to find, but the number of species recorded was almost optimal for this area.

The snail fauna of Skullbone Plains is generally typical of the Tasmanian Central Plateau, with only a minor western Tasmanian influence. Only one western species, *Cystopelta bicolor*, was recorded; however, at nearby Lake St Clair National Park, many western Tasmanian species are found. Land snail habitats were in good condition with no evidence of adverse impacts from logging observed, and no exotic species recorded.

A significant range extension of 50 km was recorded for the land snail *Thryasona* cf. *diemenensis*. This species (possibly two species) has an unusual, apparently disjunct distribution in the central north and south-east of the state. The Skullbone Plains record represents a southward extension for the northern part of that range.

Two seldom-taken undescribed species of snails, *Pasmaditta* sp. "Lake Ada" and *Paralaoma* sp. "Pine Lake", were also collected. Both species are Central Plateau endemics, but it is not clear whether they are rare.

15 Pers. comm. Dr Robert Raven, Queensland Museum.

16 Davies, V. T., & Raven, R. J. 1980, 'Megadolomedes nov. gen. (Araneae: Pisauridae) with a description of the male of the type-species, *Dolomedes australianus* Koch', *Memoirs of the Queensland Museum* **20**(1): 135–141.

Stenacapha hamiltoni was by far the most common land snail recorded; *Pernagera kingstonensis* was also common. *Thryasona diemenensis*, *Pedicamista* sp. "Bull Hill" and *Planilaoma luckmanii* were locally present in large numbers. The remaining species were represented by fewer than 10 specimens each.

Flora

Vascular Plants

The number of vascular plant taxa collected (179) was higher than expected, which probably reflects the location of the reserve along the boundary between the wetter western part of the Central Plateau, and its drier eastern portion. Thirty-nine vascular plants endemic to Tasmania were recorded. The most biodiverse areas, as expected, were those of subalpine grassland and sedgeland. Wooded areas were mostly heavily disturbed by previous logging and were found to have fewer species. Surveys at other times of the year would likely record further species (particularly annuals) and extend the list of known vascular plants on Skullbone Plains.

Liverworts and Mosses

The number of bryophyte species on the reserve is likely to be higher than found during this survey (63), as it was not possible to examine all the microhabitats in the time available. All bryophyte records were first records for Skullbone Plains. The most biodiverse areas for bryophytes were boulderfields, particularly those sheltered by trees. Sphagnum peatland provided the greatest bryophyte biomass, but with comparatively few taxa. Some bryophyte species could not be identified. These belong to groups in need of taxonomic revision, or are not well-represented in the Tasmanian Herbarium, so comparisons with reliably identified specimens could not be made. It is unlikely that they represent species new to science.

Lichens

All lichens were first records for Skullbone Plains. The inventory is preliminary, based on just two intense days of collecting at only two sites. Despite this, a high number of species (143) and potential new species (10) were recorded. The lichen survey also discovered three new records for Tasmania, one of which is a first record for the Southern Hemisphere of an otherwise Arctic genus (*Placynthiella oligotropha*). This result was not surprising and illustrates the importance of this group to plant biodiversity. Lichens yield new species and/or new records in almost any survey. To fully describe the vegetation of an area, lichen-orientated alpha-taxonomy and taxonomists are essential.

Lichens are ideal environmental indicators. Environmental changes produce varying responses in lichen symbionts, including variations in diversity, morphology, physiology and genetics. Lichens tend to be long-lived and highly habitat-specific organisms. They tolerate extremes of heat and cold and grow on all types of substrate and habitats. These attributes mean they can be used to estimate species diversity and habitat potential at all times of the year.

Appendix A: Species Lists

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

Current at September 2013

Fauna

Surveying for fauna can be as much about looking for signs such as scats and footprints as actually sighting the animals. These possum scratches show this tree is well used, Sally Bryant © Copyright, TLC

Vertebrates

Mammals		
Family	Species	Common name
Cervidae	*Dama dama* ^	Fallow Deer
Dasyuridae	*Dasyurus viverrinus*	Eastern Quoll
	Sarcophilus harrisii # ~	Tasmanian Devil
Felidae	*Felis catus* ^	Cat
Leporidae	*Oryctolagus cuniculus* ^	Rabbit
Macropodidae	*Macropus rufogriseus*	Red-necked Wallaby
	Thylogale billardierii	Tasmanian Pademelon
Muridae	*Pseudomys higginsi* *	Long-tailed Mouse
	Rattus lutreolus *	Swamp Rat
Ornithorhynchidae	*Ornithorhynchus anatinus* *	Platypus
Petauridae	*Petaurus breviceps*	Sugar Glider
Phalangeridae	*Trichosurus vulpecula fuliginosus*	Common Brushtail Possum (Tasmania)
Potoroidae	*Bettongia gaimardi*	Tasmanian Bettong
Pseudocheiridae	*Pseudocheirus peregrinus convolutor*	Common Ringtail Possum (Tasmania)
Tachyglossidae	*Tachyglossus aculeatus setosus*	Short-beaked Echidna (Tasmania)
Vombatidae	*Vombatus ursinus*	Bare-nosed Wombat

Key

* = New record for this reserve

^ = Exotic/Pest

\# = EPBC listed

~ = TSP listed

Colour coding for entries:

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

Brown = **Putative new species**

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

Birds		
Family	Species	Common name
Acanthizidae	*Acanthiza ewingii*	Tasmanian Thornbill
	Acanthiza pusilla	Brown Thornbill
	Calamanthus fuliginosus	Striated Fieldwren
	Sericornis humilis	Tasmanian Scrubwren
Accipitridae	*Accipiter novaehollandiae* ~	Grey Goshawk
	Aquila audax fleayi # ~	Tasmanian Wedge-tailed Eagle
	Circus approximans	Swamp Harrier
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar
Alcedinidae	*Dacelo novaeguineae*	Laughing Kookaburra
Artamidae	*Strepera fuliginosa*	Black Currawong
Cacatuidae	*Calyptorhynchus funereus*	Yellow-tailed Black-cockatoo
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike
Charadriidae	*Vanellus miles*	Masked Lapwing
Columbidae	*Phaps chalcoptera*	Common Bronzewing
Corvidae	*Corvus tasmanicus*	Forest Raven
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo
	Cacomantis pallidus	Pallid Cuckoo
Falconidae	*Falco berigora tasmanica*	Tasmanian Brown Falcon
Hirundinidae	*Hirundo neoxena*	Welcome Swallow
	Petrochelidon nigricans	Tree Martin
Maluridae	*Malurus cyaneus*	Superb Fairy-wren

Setting out for the morning's survey work: Sally Bryant, Robert Raven, Gintaras Kantvilas, Nick Mooney and Lyn Cave, Mim Jambrecina © Copyright, Department of the Environment

Birds		
Family	Species	Common name
Meliphagidae	*Acanthorhynchus tenuirostris*	Eastern Spinebill
	Anthochaera paradoxa	Yellow Wattlebird
	Epthianura albifrons	White-fronted Chat
	Melithreptus affinis	Black-headed Honeyeater
	Melithreptus validirostris	Strong-billed Honeyeater
	Nesoptilotis flavicollis	Yellow-throated Honeyeater
	Phylidonyris novaehollandiae canescens	New Holland Honeyeater (Tasmania)
	Phylidonyris pyrrhoptera	Crescent Honeyeater
Monarchidae	*Myiagra cyanoleuca*	Satin Flycatcher
Motacillidae	*Anthus novaeseelandiae*	Australasian Pipit, Australian Pipit
Pachycephalidae	*Colluricincla harmonica strigata*	Grey Shrike-thrush
Pardalotidae	*Pardalotus punctatus*	Spotted Pardalote
	Pardalotus striatus	Striated Pardalote
Petroicidae	*Melanodryas vittata*	Dusky Robin
	Petroica boodang	Scarlet Robin
	Petroica phoenicea	Flame Robin
Phalacrocoracidae	*Phalacrocorax carbo*	Great Cormorant
Psittacidae	*Neophema chrysostoma*	Blue-winged Parrot
	Platycercus caledonicus	Green Rosella
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail
Strigidae	*Ninox novaeseelandiae leucopsis*	Southern Boobook (Tasmania)
Timaliidae	*Zosterops lateralis lateralis*	Silvereye (Tasmania)
Tytonidae	*Tyto novaehollandiae castanops* # ~	Masked Owl (Tasmania)

The beautiful Metallic Cool-skink (*Niveoscincus metallicus*), Miguel De Salas © Copyright, Tasmanian Herbarium

Key

* = New record for this reserve

^ = Exotic/Pest

\# = EPBC listed

~ = TSP 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

Matt Taylor checking the head shields on a skink, Sally Bryant © Copyright, TLC

Tasmanian Froglet (*Crinia tasmaniensis*), Simon Grove © Copyright, TMAG

Reptiles		
Family	Species	Common name
Elapidae	*Drysdalia coronoides*	White-lipped Snake
	Notechis scutatus	Tiger Snake
Scincidae	*Cyclodomorphus casuarinae*	Tasmanian She-oak Skink
	Liopholis whitii	White's Skink
	Niveoscincus metallicus	Metallic Cool-skink
	Niveoscincus ocellatus *	Ocellated Skink
	Tiliqua nigrolutea	Blotched Blue-tongue, Southern Blue-tongue

Frogs		
Family	Species	Common name
Hylidae	*Litoria ewingii*	Brown Tree Frog, Ewing's Tree Frog
Myobatrachidae	*Crinia signifera*	Common Eastern Froglet, Common Froglet
	Crinia tasmaniensis	Tasmanian Froglet

Fishes		
Family	Species	Common name
Galaxiidae	*Galaxias johnstoni* # ~	Clarence Galaxias

Invertebrates

Australian Painted Lady (*Vanessa kershawi*), R. Mollison © Copyright, TMAG

Butterflies	
Family	Species
Lycaenidae	*Neolucia hobartensis* *
Nymphalidae	*Heteronympha penelope* *
	Oreixenica lathoniella *
	Vanessa kershawi *
Pieridae	*Pieris rapae* ^ *

Moths	
Family	Species
Geometridae	*Amelora arotraea* *
	Amelora oritropha *
	Androchela newmannaria *
	Androchela smithi *
	Aponotoreas epicrossa *
	Archephanes zalosema *
	Authaemon stenonipha *
	Bradyctena trychnoptila *
	Chlorocoma rhodothrix *
	Chlorocoma sp. *
	Chrysolarentia hedylepta *
	Chrysolarentia heliacaria *
	Chrysolarentia interruptata *
	Chrysolarentia perornata *
	Dichromodes stilbiata *
	Didymoctenia exsuperata *
	Ectropis fractaria *

Moths	
Family	Species
	Epicyme rubropunctaria *
	Epyaxa epia *
	Epyaxa subidaria *
	Euphronarcha epiphloea *
	"Euphyia" severata *
	Fisera eribola *
	Fisera perplexata *
	Furcatrox australis *
	Hypobapta percomptaria *
	Hypsitropha euschema *
	***Hypycnopa* n. sp.** *
	Microdes villosata *
	Mictodoca toxeuta *
	Mixochroa gratiosata *
	Mnesampela heliochrysa *
	Mnesampela privata *
	Monoctenia falernaria *

Key

* = New record for this reserve

^ = Exotic/Pest

= EPBC listed

~ = TSP 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

Moths	
Family	Species
Geometridae	*Paralaea chionopasta* *
	Paralaea porphyrinaria *
	Paralaea tasmanica *
	Plesanemma altafucata *
	Poecilasthena euphylla *
	Poecilasthena fragilis *
	Poecilasthena pulchraria *
	Poecilasthena urarcha *
	Psilosticha attacta *
	Psilosticha mactaria *
	Smyriodes aplectaria *
	Stibaroma melanotoxa *
	Thalaina inscripta *

Caddisflies	
Family	Species
Conoesucidae	*Costora rotosca* *
Hydrobiosidae	*Apsilochorema obliquum* *
	Ipsebiosis spicula *
	Ptychobiosis iconica *
	Taschorema apobamum *
	Taschorema evansi *
	Taschorema ferulum *
Leptoceridae	*Hudsonema paludosus* *
	Notalina sp. *
Limnephilidae	*Archaeophylax ochreus* *

Beetles	
Family	Species
Chrysomelidae	*Aporocera* sp. *
	Aporocera subfasciata *
	Aporocera viridipennis *
	Cadmus australis *
	Cadmus crucicollis *
	Cadmus pacificus *
	Cadmus sp. *
	Chalcolampra sp.? *
	Geloptera jugularis *
	Paropsis aegrota elliotti *
	Paropsis deboeri *
	Paropsis rubidipes *
	Paropsisterna agricola *
	Paropsisterna aurea *
	Paropsisterna bimaculata *
	Paropsisterna decolorata *
	Paropsisterna lignea *
	Paropsisterna nobilitata *
	Paropsisterna cf. *simsoni* *
	Paropsisterna sp. 1 *
	Paropsisterna subcostata *
	Paropsisterna variicollis *
	Peltoschema hamadryas *
	Trachymela comma *
	Trachymela papulosa *
	Trachymela rugosa *
	Trachymela serpiginosa *
	Trachymela sp. 1 *

Just three of the many colourful Leaf Beetles (Chrysomelidae) found during the survey, left–right: *Paropsisterna aurea*, *P. decolorata*, *P. nobilitata*, David de Little © Copyright, TMAG

True Bugs	
Family	Species
Acanthosomatidae	*Acanthosomatidae* sp. *
Coreidae	*Gelonus tasmanicus* *
Cymidae	*Ontiscus* sp. *
Miridae	*Ausejanus albisignatus* or *Ausejanus tasmaniae* *
	Austrocapsus sp. *
	Orthotylinae n. gen. n. sp. *
	Phylinae sp. 1 *
	Phyllofulvius australianus *
	Porphyrodema pictulifer ^ *
	Pseudopantilius australis *
Nabidae	*Nabis biformis* *
Pentatomidae	nr *Cuspicona* sp. *
	Platycoris sp. *
Reduviidae	*Reduviidae* sp. *
Rhyparochromidae	*Udeocoris* sp. *
Tingidae	*Tingis impensa* *

Grasshoppers	
Family	Species
Pyrgomorphidae	*Monistria concinna* *

A colourful Southern Pyrgomorph (*Monistria concinna*), R. Mollison © Copyright, TMAG

The Swamp Darner (*Austroaeschna parvistigma*), S. Grove © Copyright, TMAG

Damselflies and Dragonflies	
Family	Species
Coenagrionidae	*Ischnura aurora* *
	Ischnura sp. *
	Xanthagrion erythroneurum *
Corduliidae	*Procordulia jacksoniensis* *
Lestidae	*Austrolestes analis* *
	Austrolestes cingulatus *
	Austrolestes io *
	Austrolestes psyche *
Synthemistidae	*Synthemis tasmanica* *
Telephlebiidae	*Austroaeschna parvistigma* *
	Austroaeschna sp. *
	Austroaeschna tasmanica *
	Austroaeschna unicornis *

Spiders	
Family	Species
Agelenidae	***Agelentas* n. gen. n. sp.** *
Amaurobiidae	*Midgee* n. sp. *
Amphinectidae	*Amphinecta*? n. sp.? *
	Tanganoides n. sp. *
	***Tasmarubrius* n. sp.** *

Key

* = New record for this reserve

^ = Exotic/Pest

\# = EPBC listed

~ = TSP 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

Spiders	
Family	Species
Araneidae	*Araneus* n. sp.? *
	Araneus sp. *
	Dolophones sp. *
	Eriophora pustulosa? *
	Neoscona sp. *
Clubionidae	*Cheiracanthium* sp. *
	***Clubiona* n. sp. 1** *
	***Clubiona* n. sp. 2** *
Desidae	*Badumna* n. sp. *
	Tuakana n. sp. *
Dictynidae	*Arangina* n. sp. *
Gnaphosidae	*Anzacia* n. sp. *
	Anzacia sarrita *
	Encoptarthria n. sp. *
	Hemicloea n. sp.? *
	SilverGnaph, n. gen. n. sp. 1 *
	SilverGnaph, n. gen. n. sp. 2 *
Lamponidae	*Lampona* n. sp.? *
Linyphiidae	*Laperousea quindecimpunctata* *
Lycosidae	*Artoria albopilata* *
	Artoria sp. *
	Diahogna martensii *
	Tasmanicosa subrufa *
	Venatrix n. sp.? *
	Venatrix pseudospeciosa *
Miturgidae	*Mituliodon tarantulinus* *
	Miturga agelenina *
Mysmenidae	*Mysmena* n. sp. *
Nicodamidae	*Ambicodamus crinitus* *
Orsolobidae	**Orsolobidae n. gen. n. sp.?** *
	Tasmanoonops sp. *
Pisauridae	*Megadolomedes australianus*? *
Salticidae	*Bianor*? n. sp.? *
	Lycidas sp. *
	Opisthoncus necator? *
Segestriidae	*Ariadna segmentata*? *
Sparassidae	*Delena cancerides* *
	Neosparassus diana *
Stiphidiidae	*Stiphidion facetum* *

Spiders	
Family	Species
Tetragnathidae	*Leucauge granulata* *
	Tetragnatha sp. *
Theridiidae	*Crustulina* n. sp.? *
	Cryptachaea veruculata? *
	Euryopis n. sp.? *
	Hadrotarsus n. sp.? *
	Phoroncidia n. sp.? *
	Steatoda sp. *
	Theridion sp. *
Thomisidae	*Diaea rosea* *
	Diaea sp. *
	Sidymella n. sp.? *
Trochanteriidae	*Trachycosmus sculptilis* *
Zodariidae	*Habronestes bradleyi*? *
	Habronestes tasmaniensis *
Zoridae	***Argoctenus* n. sp.** *
	***Elassoctenus* n. sp. 1 "skullbones"** *
	Hestimodema n. sp. *

Snails and Slugs	
Family	Species
Caryodidae	*Caryodes dufresnii* *
Charopidae	*Allocharopa* sp. "Bronte" *
	Pernagera cf. *architectonica* *
	Pernagera kingstonensis *
	Planilaoma luckmanii *
	Roblinella gadensis *
	Stenacapha hamiltoni *
	Thryasona cf. *diemenensis* *
	Thryasona diemenensis *
Cystopeltidae	*Cystopelta bicolor* *
Helicarionidae	*Helicarion cuvieri* *
Punctidae	*Paralaoma* cf. *caputspinulae* *
	Paralaoma sp. "Pine Lake" *
	Pasmaditta sp. "Lake Ada" *
	Pedicamista sp. "Bull Hill" *
	Punctidae sp. "Micro Cripps" *
Rhytididae	*Prolesophanta nelsonensis* *

Flora

Flowering Plants	
Family	Species
Apiaceae	*Oreomyrrhis eriopoda* *
Araliaceae	*Hydrocotyle hirta* *
	Hydrocotyle sibthorpioides *
Asteliaceae	*Astelia alpina* *
Asteraceae	*Argyrotegium mackayi*
	Bedfordia linearis subsp. *linearis*
	Brachyscome radicans *
	Brachyscome spathulata subsp. *glabra*
	Cassinia aculeata
	Celmisia asteliifolia
	Cirsium vulgare ^ *
	Coronidium scorpioides
	Cotula alpina
	Craspedia coolaminica *
	Craspedia glabrata *
	Craspedia glauca
	Erigeron pappocromus *
	Euchiton collinus *
	Euchiton involucratus *
	Euchiton japonicus
	Hypochaeris radicata ^ *
	Lagenophora stipitata
	Leontodon saxatilis ^ *
	Leptinella reptans *
	Leptorhynchos squamatus
	Leptorhynchos squamatus subsp. *alpinus*
	Microseris lanceolata

Flowering Plants	
Family	Species
Asteraceae	*Olearia algida*
	Olearia erubescens
	Olearia persoonioides *
	Olearia phlogopappa
	Olearia tasmanica *
	Olearia viscosa
	Ozothamnus hookeri *
	Ozothamnus ledifolius *
	Ozothamnus thyrsoideus *
	Senecio gunnii
	Senecio jacobaea ^ *
	Senecio minimus
	Senecio pectinatus *
	Senecio prenanthoides
	Taraxacum officinale ^ *
	Xerochrysum subundulatum *
Campanulaceae	*Isotoma fluviatilis* subsp. *australis* *
	Wahlenbergia ceracea *
	Wahlenbergia saxicola *
Caryophyllaceae	*Cerastium vulgare* ^ *
	Scleranthus biflorus
	Spergularia marina ^ *
Centrolepidaceae	*Centrolepis muscoides* *
Cunoniaceae	*Bauera rubioides*
Cyperaceae	*Baumea arthrophylla* *
	Carex flaviformis
	Carex gaudichaudiana *
	Carpha alpina *
	Eleocharis acuta *

Key

* = New record for this reserve

^ = Exotic/Pest

\# = EPBC listed

~ = TSP 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

Flowering Plants	
Family	Species
Cyperaceae	*Eleocharis gracilis* *
	Eleocharis sphacelata *
	Gymnoschoenus sphaerocephalus
	Isolepis crassiuscula *
	Lepidosperma filiforme
	Schoenus tesquorum *
	Uncinia elegans ~ *
Dilleniaceae	*Hibbertia prostrata*
Droseraceae	*Drosera arcturi* *
	Drosera binata *
	Drosera gracilis *
	Drosera pygmaea *

Flowering Plants	
Family	Species
Ericaceae	*Acrothamnus hookeri*
	Acrothamnus montanus
	Cyathodes glauca
	Epacris gunnii
	Epacris lanuginosa *
	Gaultheria tasmanica
	Leptecophylla juniperina subsp. *parvifolia* *
	Leucopogon collinus
	Leucopogon pilifer
	Pentachondra pumila
	Richea acerosa
	Richea gunnii
	Richea procera
	Richea scoparia *
	Richea sprengelioides
	Sprengelia incarnata

Button Grass (*Gymnoschoenus sphaerocephalus*), Alexander Schmidt-Lebuhn © Copyright, CSIRO

Flowering Plants	
Family	Species
Fabaceae	*Bossiaea riparia*
	Hovea montana ~
	Oxylobium ellipticum
	Pultenaea juniperina
	Trifolium dubium ^ *
Gentianaceae	*Gentianella diemensis* subsp. *diemensis* *
	Gentianella eichleri *
Geraniaceae	*Geranium potentilloides* *
Goodeniaceae	*Velleia montana* *
Haloragaceae	*Gonocarpus serpyllifolius*
Hemerocallidaceae	*Herpolirion novae-zelandiae* *
Hypericaceae	*Hypericum japonicum* *
Iridaceae	*Diplarrena moraea*
Isoetaceae	*Isoetes gunnii* *
Juncaceae	*Juncus articulatus* ^
	Juncus australis *
	Juncus bulbosus ^ *
	Juncus sp. *
	Luzula modesta *
Juncaginaceae	*Triglochin procera* *
Lamiaceae	*Prunella vulgaris* ^ *
Lentibulariaceae	*Utricularia dichotoma* *
Linaceae	*Linum marginale* *
Loganiaceae	*Schizacme montana* *
Menyanthaceae	*Liparophyllum gunnii* *
	Ornduffia reniformis *
Myrtaceae	*Baeckea gunniana* *
	Eucalyptus coccifera
	Eucalyptus delegatensis
	Eucalyptus gunnii
	Eucalyptus pauciflora
	Leptospermum lanigerum
	Melaleuca virens

Purple Fairy Aprons (*Utricularia dichotoma*) brighten up the wetlands, Miguel De Salas

Flowering Plants	
Family	Species
Onagraceae	*Epilobium billardiereanum* subsp. *cinereum* *
	Epilobium curtisiae *
	Epilobium sarmentaceum *
Orchidaceae	*Eriochilus cucullatus* *
Oxalidaceae	*Oxalis exilis* *
	Oxalis magellanica *
Phyllanthaceae	*Poranthera microphylla*
Pittosporaceae	*Billardiera longiflora* *

Key

* = New record for this reserve

^ = Exotic/Pest

\# = EPBC listed

~ = TSP 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

Flowering Plants	
Family	Species
Plantaginaceae	*Plantago glabrata* *
	Plantago glacialis ~ *
	Plantago paradoxa *
	Plantago tasmanica var. *archeri* *
	Veronica calycina
Poaceae	*Agrostis parviflora* *
	Amphibromus recurvatus *
	Deschampsia cespitosa *
	Deyeuxia carinata *
	Deyeuxia innominata *
	Deyeuxia monticola
	Deyeuxia quadriseta
	Dichelachne inaequiglumis *
	Dichelachne rara
	Festuca plebeia
	Hierochloe redolens *
	Holcus lanatus ^ *
	Lachnagrostis aemula *
	Lachnagrostis lacunarum *
	Microlaena stipoides
	Poa gunnii *
	Poa labillardierei
	Poa sieberiana *
	Rytidosperma diemenicum *
	Rytidosperma laeve *
	Rytidosperma nitens *
	Rytidosperma penicillatum
Polygalaceae	*Comesperma retusum* *
Primulaceae	*Lysimachia arvensis* ^
Proteaceae	*Banksia marginata*
	Bellendena montana *
	Grevillea australis
	Hakea epiglottis
	Hakea lissosperma
	Hakea microcarpa
	Lomatia polymorpha
	Lomatia tinctoria
	Orites revolutus
	Persoonia muelleri *
	Telopea truncata

Phil Hurle from the ANBG collects live specimens for propagation, Alexander Schmidt-Lebuhn

Shining Coprosma (*Coprosma nitida*) with ripe berries which are edible and very sweet, Alexander Schmidt-Lebuhn © Copyright, CSIRO

Flowering Plants	
Family	Species
Ranunculaceae	*Ranunculus scapiger* *
	Ranunculus sp. *
Restionaceae	*Baloskion australe*
	Empodisma minus
	Eurychorda complanata *
Rosaceae	*Acaena novae-zelandiae* *
Rubiaceae	*Coprosma hirtella* *
	Coprosma moorei *
	Coprosma nitida
	Galium ciliare subsp. *terminale* *
Stylidiaceae	*Stylidium graminifolium*
Violaceae	*Viola betonicifolia* *
	Viola fuscoviolacea *
Winteraceae	*Tasmannia lanceolata* *
Xyridaceae	*Xyris muelleri* *

The seed head of *Acaena novae-zelandiae*, clearly showing the little arrow-headed hooks that catch onto animal fur (and people's socks), thus distributing the seeds far from the parent plant, Alexander Schmidt-Lebuhn © Copyright, CSIRO

Key

* = New record for this reserve

^ = Exotic/Pest

= EPBC listed

~ = TSP 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

Conifers	
Family	Species
Podocarpaceae	*Pherosphaera hookeriana* ~

Ferns	
Family	Species
Aspleniaceae	*Asplenium flabellifolium* *
Blechnaceae	*Blechnum pennamarina* *
Dennstaedtiaceae	*Hypolepis rugosula* *
Dryopteridaceae	*Polystichum proliferum* *
Gleicheniaceae	*Gleichenia alpina* *

Fern Allies	
Family	Species
Lycopodiaceae	*Lycopodium fastigiatum* *

Liverworts	
Family	Species
Aneuraceae	*Riccardia crassa* *
	Riccardia sp. *
Gymnomitriaceae	*Herzogobryum teres* *
Jungermanniaceae	*Jamesoniella colorata* *
	Jungermanniaceae unnamed sp. *
Lepicoleaceae	*Lepicolea scolopendra* *
Lepidoziaceae	*Lepidozia concinna*? *
	Lepidozia procera *
	Lepidozia ulothrix *
	Telaranea sp. *
Lophocoleaceae	*Chiloscyphus* LC1446 *
	Chiloscyphus perpusillus? *
	Chiloscyphus semiteres *
	Chiloscyphus subporosus *
	Leptoscyphus? sp. *

Alpine Coral Fern (*Gleichenia alpina*), Alexander Schmidt-Lebuhn © Copyright, CSIRO

***Sphagnum* with a *Richea* species growing through it, Alexander Schmidt-Lebuhn © Copyright, CSIRO**

Liverworts	
Family	Species
Marchantiaceae	*Marchantia berteroana* *
Metzgeriaceae	*Metzgeria* sp. 1 *
	Metzgeria sp. 2 *
Pallaviciniaceae	*Symphyogyna podophylla* *
Radulaceae	*Radula tasmanica* *

Mosses	
Family	Species
Andreaeaceae	*Andreaea amblyophylla* *
	Andreaea mutabilis *
Bartramiaceae	*Bartramia mossmaniana* *
	Bartramia robusta *
	Breutelia affinis *
	Breutelia pendula *
	Conostomum pusillum *
Brachytheciaceae	*Brachythecium paradoxum* *
	Brachythecium rutabulum *
Bryaceae	*Bryum argenteum* *
	Bryum sp. *
	Rosulabryum billardierei *

Key

* = New record for this reserve

^ = Exotic/Pest

\# = EPBC listed

~ = TSP 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

Mosses	
Family	Species
Dicranaceae	*Dicranoloma billardierei* *
	Dicranoloma robustum *
Ditrichaceae	*Ceratodon purpureus* *
Funariaceae	*Funaria hygrometrica* *
Grimmiaceae	*Bucklandiella* sp. *
	Grimmia trichophylla *
	Racomitrium pruinosum *
Hypnaceae	*Hypnum chrysogaster* *
	Hypnum cupressiforme *
Hypnodendraceae	*Hypnodendron vitiense* subsp. *australe* *
	Hypopterygium didictyon *
Lembophyllaceae	*Lembophyllum clandestinum* *
	Lembophyllum divulsum *
Leucobryaceae	*Campylopus bicolor* *
	Campylopus clavatus *
	Campylopus introflexus *
Orthotrichaceae	*Zygodon intermedius* *
Plagiotheciaceae	*Acrocladium chlamydophyllum* *
	Catagonium nitens subsp. *nitens* *
Polytrichaceae	*Polytrichum commune* *
	Polytrichum juniperinum *
Pottiaceae	*Barbula calycina* *
Ptychomniaceae	*Ptychomnion aciculare* *
Rhacocarpaceae	*Rhacocarpus purpurascens* *
Rhizogoniaceae	*Leptotheca gaudichaudii* *
Sphagnaceae	*Sphagnum cristatum* *
	Sphagnum fuscovinosum *
	Sphagnum novozelandicum *
Splachnaceae	*Tayloria octoblepharum* *
Thuidiaceae	*Thuidiopsis furfurosa* *
	Thuidiopsis sparsa *

Lichens	
Family	Species
Arthopyreniaceae	*Arthopyrenia* sp. (174/12) *
Baeomycetaceae	*Baeomyces heteromorphus* *
Caliciaceae	*Calicium abietinum* *
	Calicium adspersum subsp. *australe* *
	Calicium salicinum *
	Cyphelium inquinans *
	Trachylia emergens *
Catillariaceae	*Catillaria contristans* *
	Solenopsora tasmanica *
Cladoniaceae	*Cladia aggregata* *
	Cladia fuliginosa *
	Cladia retipora *
	Cladia schizopora *
	Cladia sullivanii *
	Cladonia capitellata var. *capitellata* *
	Cladonia chlorophaea *
	Cladonia confusa *
	Cladonia corniculata *
	Cladonia cryptochlorophaea *
	Cladonia pleurota *
	Cladonia ramulosa *
	Cladonia rigida var. *rigida* *
	Cladonia sarmentosa *
	Cladonia subsubulata *
	Cladonia tenerrima *
	Cladonia ustulata *
	Cladonia weymouthii *
Collemataceae	*Collema laeve* var. *senecionis* *
	***Leptogium* n. sp. (164/12)** *
Coniocybaceae	*Chaenotheca chrysocephala* *
Elixiaceae	*Meridianelia maccarthyana* *
Fuscideaceae	*Fuscidea australis* var. *australis* *
Graphidaceae	*Diploschistes muscorum* subsp. *bartlettii* *
Haematommataceae	*Haematomma nothofagi* *
Hymeneliaceae	*Ionaspis* cf. *obtecta* *
Icmadophilaceae	*Siphula fastigiata* *

Lichens	
Family	Species
Lecanoraceae	*Lecanora bicincta* *
	Lecanora caesiorubella *
	Lecanora epibryon *
	Lecanora farinacea *
	Lecanora lugubris *
	Lecanora polytropa *
	Lecanora sp. *
	Lecidella sublapicida *
	Lecidella xylogena *
	Ramboldia laeta *
	Ramboldia petraeoides *
	Ramboldia plicatula *
	Ramboldia stuartii *

Lichens	
Family	Species
Lecideaceae	*Immersaria athroocarpa* *
	Lecidea atromorio *
	Lecidea cf. *fuscoatrula* *
	Mycobilimbia australis *
	Paraporpidia leptocarpa *
	Poeltiaria coromandelica *
	Porpidia cf. *umbonifera* *
	Porpidia macrocarpa *
Lichinaceae	*Ephebe tasmanica* *
Lobariaceae	*Pseudocyphellaria crocata* *
	Pseudocyphellaria glabra *

Snow Lichen (*Cladia retipora*), Alexander Schmidt-Lebuhn © Copyright, CSIRO

Key

* = New record for this reserve

^ = Exotic/Pest

\# = EPBC listed

~ = TSP 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

Lichens	
Family	Species
Megalariaceae	*Megalaria grossa* *
	Megalaria laureri *
	Tasmidella variabilis var. *variabilis* *
Mycoblastaceae	*Mycoblastus campbellianus* *
	Mycoblastus coniophorus *
	Tephromela atra *
	***Tephromela* n. sp. (230/12)** *
	Tephromela sorediata *
Nephromataceae	*Nephroma cellulosum* *
Ochrolechiaceae	*Ochrolechia ?africana* *
	Ochrolechia androgyna *
	Ochrolechia xanthostoma *
Ophioparmaceae	*Hypocenomyce australis* *
	Hypocenomyce foveata *
Pannariaceae	*Fuscopannaria decipiens* *
	Pannaria sp. (200/12) *
	Parmeliella nigrocincta *
	Parmeliella sp. (189/12) *
	Parmeliella thysanota *
	Psoroma caliginosum *
	Psoroma hypnorum *
	Siphulastrum mammillatum *
	Xanthopsoroma contextum *
Parmeliaceae	*Austroparmelina pseudorelicina* *
	Flavoparmelia haysomii *
	Hypogymnia enteromorphoides *
	Hypogymnia kosciuskoensis *
	Hypogymnia lugubris *
	Hypogymnia tasmanica *
	Menegazzia pertransita *
	Menegazzia platytrema *
	Menegazzia ramulicola *
	Menegazzia subtestacea *
	Pannoparmelia angustata *
	Parmelia cunninghamii *
	Parmelia signifera *

Lichens	
Family	Species
Parmeliaceae	*Protoparmelia badia* *
	Usnea inermis *
	Usnea molliuscula *
	Usnea torulosa *
	Usnea xanthopoga *
	Xanthoparmelia elixii *
	Xanthoparmelia loxodella *
	Xanthoparmelia metaclystoides *
	Xanthoparmelia mougeotina *
	Xanthoparmelia neotinctina *
	Xanthoparmelia phillipsiana *
	Xanthoparmelia scabrosa *
	Xanthoparmelia stygiodes *
	Xanthoparmelia subprolixa *
	Xanthoparmelia taractica *
	Xanthoparmelia tegeta *
Peltigeraceae	*Peltigera polydactylon* *
Pertusariaceae	*Pertusaria lophocarpa* *
	Pertusaria novae-zelandiae *
	Pertusaria sp. (163/12) *
Physciaceae	***Buellia* cf. *schaereri* n. sp.** *
	Buellia dissa *
	***Buellia* n. sp. (3-septate)** *
	***Buellia* n. sp. (gyrophoric acid)** *
	***Buellia* n. sp. (underhang, 143/12)** *
Pilocarpaceae	*Micarea* cf. *elachista* *
Ramalinaceae	*Ramalina unilateralis* *
	Schadonia sp. *
Rhizocarpaceae	*Rhizocarpon geographicum* *
Roccellaceae	*Opegrapha* sp. (183/12) *
Stereocaulaceae	*Hertelidea aspera* *
	Lepraria caesioalba *
	Stereocaulon corticatulum *
	Stereocaulon ramulosum *
Teloschistaceae	***Caloplaca* cf. *nivalis* n. sp.** *

Lichens	
Family	Species
Trapeliaceae	*Placopsis bicolor* *
	Placynthiella oligotropha *
	***Rimularia* n. sp. A (yellow unknown)** *
	***Rimularia* n. sp. B (pannarin etc)** *
	***Rimularia* n. sp. C (5-O-Meth; 223/12, 120/12)** *
	Rimularia psephota *
	Trapelia lilacea *
	Trapeliopsis flexuosa *
	Trapeliopsis granulosa *
Umbilicariaceae	*Umbilicaria cylindrica* *
	Umbilicaria umbilicarioides *
Verrucariaceae	*Verrucaria tasmanica* *

Cushion plants show up like emeralds in the landscape, Robert Raven © Copyright, Queensland Museum

Appendix B: Threatened Species

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

Current at September 2013

Fauna

Tasmanian Devil (*Sarcophilus harrisii*) © Copyright, Alexander Dudley

Vertebrates

Mammals			
Family	Species	Common name	Status
Dasyuridae	*Sarcophilus harrisii*	Tasmanian Devil	EPBC — Endangered TSP — Endangered

Birds			
Family	Species	Common name	Status
Accipitridae	*Accipiter novaehollandiae*	Grey Goshawk	TSP — Endangered
	Aquila audax fleayi	Tasmanian Wedge-tailed Eagle	EPBC — Endangered TSP — Endangered
Tytonidae	*Tyto novaehollandiae castanops*	Masked Owl	EPBC — Vulnerable TSP — Endangered

Fish			
Family	Species	Common name	Status
Galaxiidae	*Galaxias johnstoni*	Clarence Galaxias	EPBC — Endangered TSP — Endangered

Flora

Flowering Plants			
Family	Species	Common name	Status
Cyperaceae	*Uncinia elegans* *	Handsome Hooksedge	TSP — Rare
Fabaceae	*Hovea montana*	Mountain Purplepea	TSP — Rare
Plantaginaceae	*Plantago glacialis* *	Small Star Plantain	TSP — Rare

Conifers			
Family	Species	Common name	Status
Podocarpaceae	*Pherosphaera hookeriana*	Drooping Pine	TSP — Vulnerable

Drooping Pine (*Pherosphaera hookeriana*), M. Fagg © Copyright, Australian National Botanic Gardens

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

TSP = Refers to the *Threatened Species Protection Act 1995* (Tasmania)

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

* = New record for this reserve

Notes

Cushion Plants, Matthew Newton © Copyright, TLC

Appendix C: Exotic and Pest Species

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

Current at September 2013

Fauna

Vertebrates

Mammals		
Family	Species	Common name
Cervidae	*Dama dama*	Fallow Deer
Felidae	*Felis catus*	Cat
Leporidae	*Oryctolagus cuniculus*	Rabbit

Invertebrates

Butterflies		
Family	Species	Common name
Pieridae	*Pieris rapae* *	Cabbage White Butterfly

* = New record for this reserve

Cabbage White Butterfly (*Pieris rapae*) © Copyright, CSIRO

Flora

Flowering Plants		
Family	Species	Common name
Asteraceae	*Cirsium vulgare* *	Spear Thistle
	Hypochaeris radicata *	Flat-weed, Cat's-ear
	Leontodon saxatilis *	Hairy Hawkbit
	Senecio jacobaea *	Ragwort
	Taraxacum officinale *	Dandelion
Caryophyllaceae	*Cerastium vulgare* *	Common Mouse-ear Chickweed
	Spergularia marina *	Lesser Sea-spurrey
Fabaceae	*Trifolium dubium* *	Yellow Suckling Clover
Juncaceae	*Juncus articulatus*	Jointed Rush
	Juncus bulbosus *	Bulbous Rush
Lamiaceae	*Prunella vulgaris* *	Self-heal, Heal All
Poaceae	*Holcus lanatus* *	Yorkshire Fog
Primulaceae	*Lysimachia arvensis*	Pimpernel

* = New record for this reserve

The most widespread and common weed was Spear Thistle (*Cirsium vulgare*)

Notes

Abbey Throssell collecting damselflies and dragonflies, Ruth Mollison © Copyright, TMAG

Glossary

A

Alpha-taxonomy

The first step in taxonomy—finding, describing and naming species.

H

Hair funnels and hair tubes

Devices designed to capture mammalian hair on a sticky surface within a tube or funnel. The funnels and tubes are usually baited with an attractant to encourage mammals to enter them. When the animal is in the device some of its hairs will attach to the sticky surface. Subsequent analysis of the hair samples enables reliable identification of many species of small to medium mammals.

M

Macrophytes

Aquatic plants, including flowering plants, ferns and bryophytes, large enough to be clearly seen with the naked eye.

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 specimens may already be in museum or herbarium collections.

S

Symbionts

Different species that live in close and often long-term association with each other. Many lichens consist of fungal and photosynthetic symbionts that cannot live on their own.

T

Taxon (plural taxa)

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

ISBN 978 0 642 56872 4

Disclaimer

The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Australian Government or the Minister for the Environment.

While reasonable efforts have been made to ensure that the contents of this publication are factually correct, the Commonwealth does not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this publication.

PUBLISHER ABRS, Canberra
EDITOR ABRS
LAYOUT Looking Glass Press
DESIGN TEMPLATE ABRS
PRINTER Instant Colour Press

All publications are available online at:

www.bushblitz.org.au

Contributors

Bush Blitz is coordinated by the Australian Biological Resources Study (ABRS), which is part of the Australian Government Department of the Environment. The program is a partnership between the Australian Government, BHP Billiton and Earthwatch Australia.

Research agencies involved in this Bush Blitz were the Tasmanian Museum and Art Gallery, Tasmanian Herbarium, Tasmanian Department of Primary Industries, Parks, Water and Environment, Tasmanian Land Conservancy, Australian National Botanic Gardens, Commonwealth Scientific and Industrial Research Organisation, Queensland Museum and University of New South Wales.

Photo credits

Photographs have been reproduced in this publication with permission. Effort has been made to credit the photographers correctly, however, please contact us if incorrectly credited.

FRONT COVER Frosty morning on Skullbone Plains, Matthew Newton © Copyright, TLC

BIO2870713

BushBlitz
SPECIES DISCOVERY PROGRAM

Bush Blitz survey report

Skullbone Plains Tasmania + 26 February–2 March 2012

Australian Government

bhpbilliton
resourcing the future

EARTHWATCH INSTITUTE

Australian Biological Resources Study