

Silver Peppermint Reserve

Background Report 2016



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Front Image: Detail: Silver peppermint forest 2009 © Sally Bryant TLC

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Acknowledgements

Silver Peppermint Reserve was created in 2005 after a generous gift from Dr Damian Hope, whose aim was to have this area protected for its conservation values in perpetuity. We sincerely thank Damian and his family for creating this lasting conservation legacy in Tasmania and their ongoing connection with the organisation.

The TLC would also like to acknowledge the generous support given by the Tasmanian Parks and Wildlife Service who manage the adjacent Mt Bethune Conservation Area with their assistance with fire suppression and reducing the threat of illegal wood removal, and to the DPIPWE Save The Tasmanian Devil Team for regular monitoring of Tasmanian devil and other species on this reserve.

The TLC acknowledges the data provided by Land Information System Tasmania (theList) and DPIPWE Natural Values Atlas which has been used to prepare boundary maps and maps of special values.

The TLC greatly appreciates the assistance of its many supporters and volunteers who continue to contribute time and labour towards management of this special area including fencing after fire and regular clean up, weeding and surveillance events.

Acronyms and abbreviations

DPIPWE	Tasmanian Government Department of Primary Industries, Parks, Water and Environment
EPBC Act	Australian <i>Environment Protection and Biodiversity Conservation Act 1999</i>
IUCN	International Union for Conservation of Nature
NC Act	Tasmanian <i>Nature Conservation Act 2002</i>
NVA	Natural Values Atlas database (DPIPWE)
PWS	Tasmania Parks and Wildlife Service
STTDP	Save The Tasmanian Devil Program, DPIPWE
TASVEG	Tasmanian Vegetation Monitoring and Mapping Program (TASVEG 3.0)
TFS	Tasmania Fire Service
TLC	Tasmanian Land Conservancy
TSP Act	Tasmanian <i>Threatened Species Protection Act 1995</i>
UTAS	University of Tasmania

BACKGROUND

The Tasmanian Land Conservancy

The Tasmanian Land Conservancy (TLC) is a non-profit, non-political, private organisation that works towards achieving sustainability and biodiversity conservation in Tasmania.

TLC 2050 Mission

In partnership with others the TLC will:

1. Take a leadership role in building a landscape-scale approach to conservation including a world-class system of reserves.
2. Demonstrate excellence in management for nature conservation.
3. Contribute to Tasmania becoming a centre for knowledge for nature conservation and planning.
4. Develop and implement innovative mechanisms for achieving nature conservation.
5. Provide opportunities and mechanisms for communities and individuals to achieve nature conservation.
6. Demonstrate organisational leadership through exceptional governance, a positive working environment and financial sustainability.

This background document and associated management plan and the implementation of the strategies and actions within it, including monitoring and reporting, contribute to the TLC achieving its mission.

INTRODUCTION

Silver Peppermint Reserve (the Reserve) was gifted to the TLC by Dr Damian Hope in 2005, making it the very first reserve for the organisation. Dr Hope's aim in gifting the property was to have it protected for its conservation values in perpetuity and he remains a committed supporter of the organisation.

The Reserve is 43ha of moderately undulating land rising from an altitudinal low of approximately 265m above sea level in the north-east corner of the Reserve to a high point of 380m above sea level on a sandstone ridge in the south-east corner.

Vegetation on the Reserve is comprised predominantly of dry heathy forest, including areas of Silver Peppermint *Eucalyptus tenuiramis* forest on sediments (DTO), and Black Gum *Eucalyptus ovata* forest (DOV), which are listed as threatened vegetation types in Tasmania.

Location and context

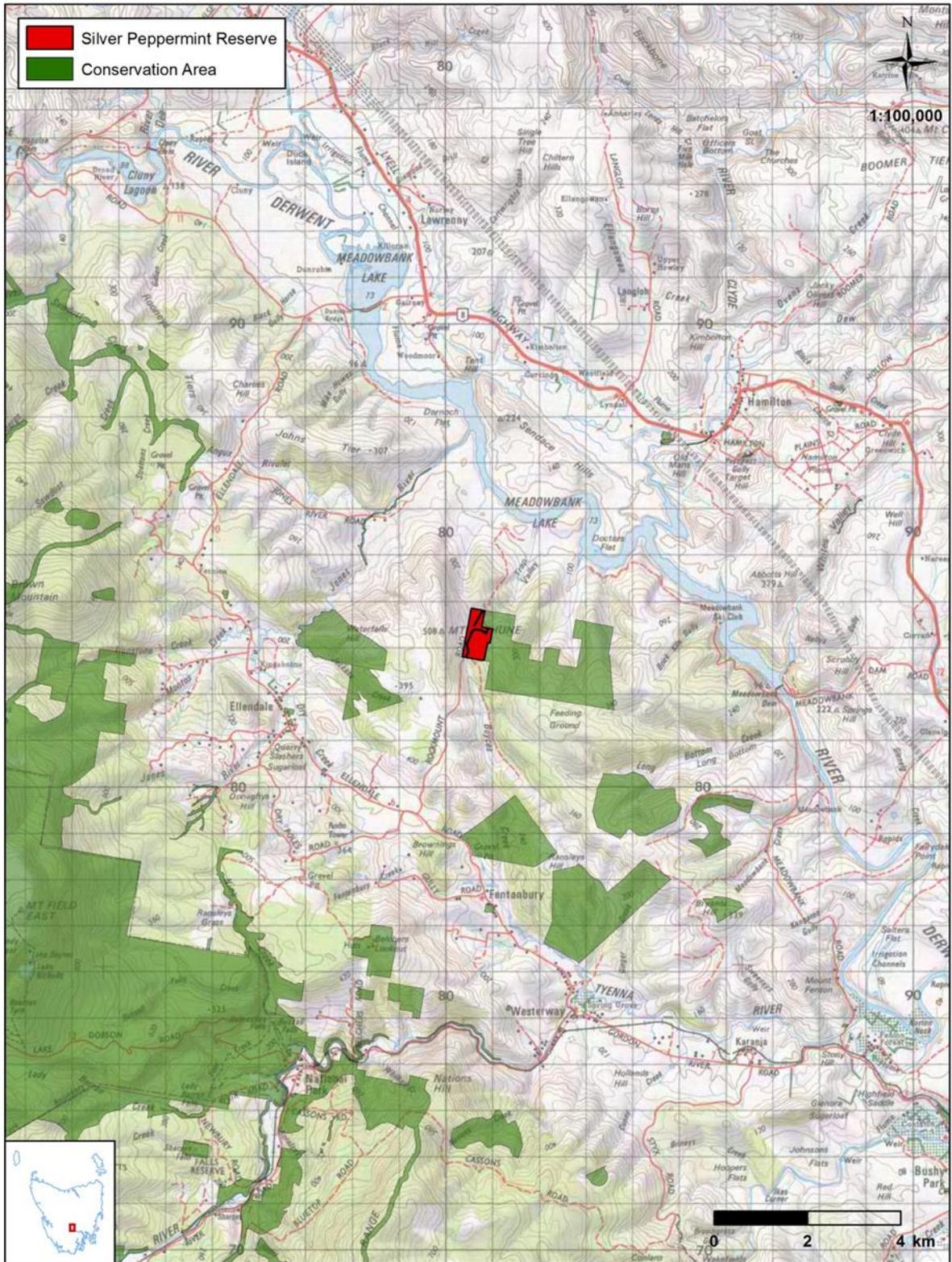
The Reserve is located in the Derwent Valley in southern Tasmania, approximately 5km north-west of Westerway and 4 km north-east of Ellendale. The midpoint of the reserve is at GDA grid reference **55G 486700 N 5283600 E**.

The Reserve adjoins the Mt Bethune Conservation Area, which is managed by the Tasmanian Parks and Wildlife Service (see context map Figure 1). Other adjoining land is privately owned and is used for pastoral purposes and plantation forestry. About 2km to the north of the Reserve on the Derwent River is the extensive Meadowbank Dam, which is an important hydroelectric storage and popular recreational fishing and boating area.

Access

The Reserve can be accessed from Westerway via Ellendale Rd and then Rockmount Road, which passes through the property and continues on to the southern shoreline of Meadowbank Dam. Rockmount Road is a gravel road that is suitable for all-weather access by two-wheel-drive vehicles.

Within the Reserve there are several vehicle tracks created by past land managers and more recently through illegal wood hooking (wood cutting for firewood). These tracks have been rationalised, with only two tracks being maintained for essential management activities and use by emergency services. These tracks allow management vehicles to access the majority of the Reserve.



Silver Peppermint - Landscape Context



Map produced by the Tasmanian Land Conservancy - 31/05/2012

Figure 1 Location of Silver Peppermint Reserve, Fentonbury in the Derwent Valley.

Legal Status

Silver Peppermint Reserve is private freehold land in three titles (PID 5473464; Certificate of title Volume 110356, Folios 1, 2 and 3). The Reserve is bisected by two sections of road reserve, which are owned by the Crown and managed by Crown Land Services within DPIPWE. It is also subject to a legal licence over a narrow strip of land in the far south-west corner to the benefit of the Crown. This licence provides right of access for users of the *Tasmanian Trail* in transit between Mt Bethune to the west and Rockmount Road. The licence is for ten years, ending on 30 November 2025.

The Reserve meets the objectives of the International Union for Conservation of Nature (IUCN) Category IV – Habitat/species management area, whose primary and other objectives are to:

Primary objective: to maintain, conserve and restore species and habitats.

Other objectives:

- To protect vegetation patterns or other biological features through traditional management approaches;
- To protect fragments of habitats as components of landscape or seascape-scale conservation strategies;
- To develop public education and appreciation of the species and/or habitats concerned;
- To provide a means by which the urban residents may obtain regular contact with nature.

A conservation covenant under the *Nature Conservation Act 2002* is registered over most of the three titles comprising Silver Peppermint Reserve. The covenant requires the TLC to manage the land for conservation and to prevent degradation of its natural values. An area comprised predominantly of regenerating cleared land in the north west of the Reserve and an area comprised predominantly of stringy-bark forest in the south of the Reserve have been excluded from the covenant to provide for future building options on the site (see CPR plan at Figure 2).

Central Highlands Regional Council Planning Scheme 2016 is the local government planning instrument. Any developments planned for the land may need to be approved by the Central Highlands Council.

Several species and vegetation communities listed as threatened under Australian and Tasmanian legislation are present on the Reserve. Constraints may apply to activities which could adversely affect these species and communities. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's key piece of legislation to protect threatened species and ecological communities. In Tasmania the *Threatened Species Protection Act 1995*, *Nature Conservation Act 2002*, and *Forest Practices Act 1985* provide protective mechanisms for threatened species and ecological communities.

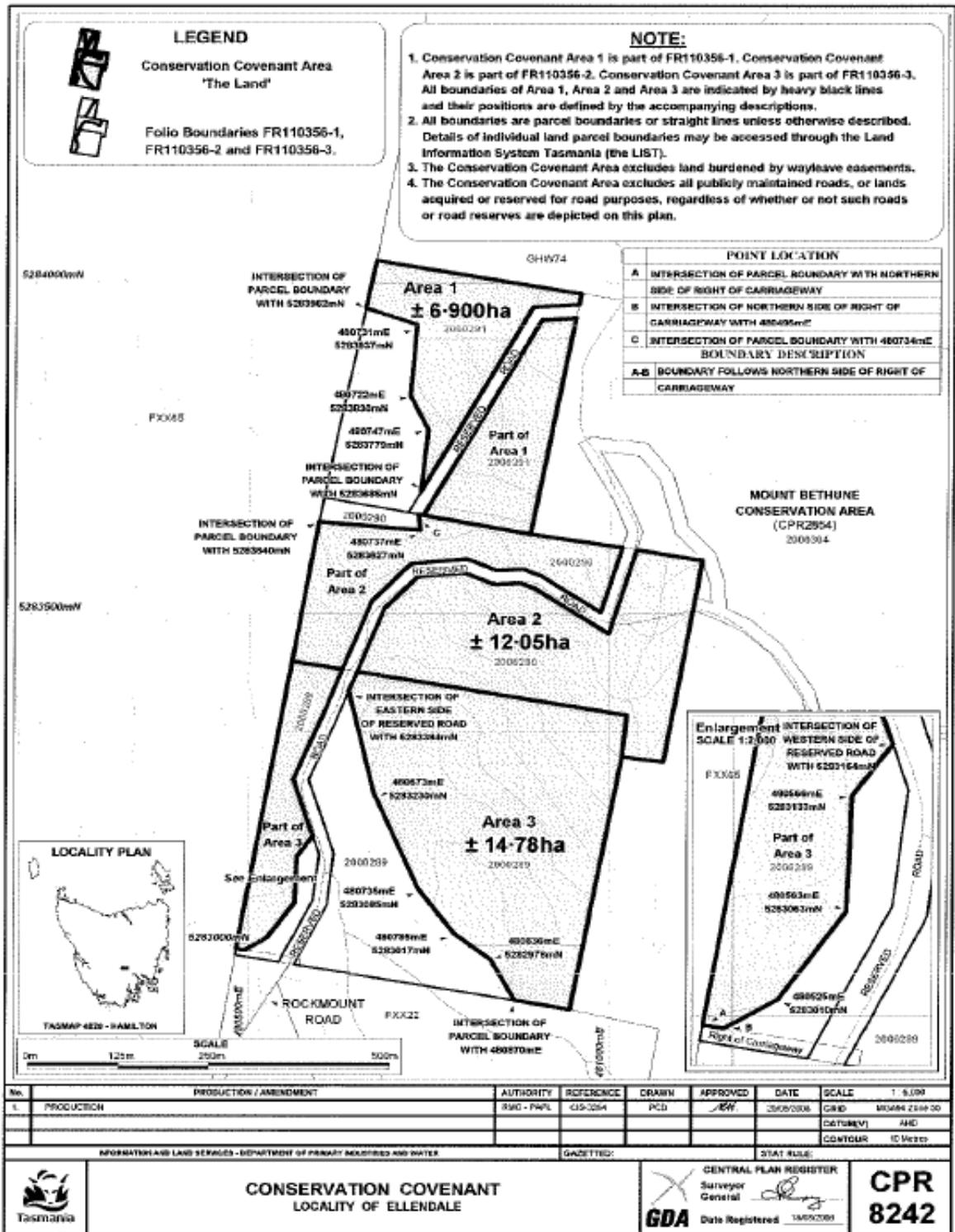
Stakeholders

Key stakeholders include:

- The Parks and Wildlife Service, which manages the adjoining Mt Bethune Conservation Area;
- the Private Land Conservation Program (DPIPWE), which administers conservation covenants in Tasmania;
- Crown Land Services (DPIPWE), which is responsible for the road reserves passing through the property and the licence establishing right of access for users of the Tasmanian Trail;
- Save The Tasmanian Devil Program, DPIPWE who undertake regular devil monitoring;
- Neighbouring landowners;
- Visitors to Meadowbank Dam who use Rockmount Road to access the Dam;
- TLC supporters; and
- The managers and users of the Tasmanian Trail.

The TLC seeks to engage with all interested parties when managing this reserve. Stakeholders have access to this and other relevant documents via the TLC's web site and can make comments at any time.

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Note: The attached plan is a reduced copy of the Central Plan Register plan at the Land Titles Office

Figure 2 Conservation covenant area on Silver Peppermint Reserve.

ENVIRONMENTAL PARAMETERS

Climate

Silver Peppermint Reserve experiences a temperate maritime climate with prevailing westerly winds, causing the area to be within a rain shadow for much of the year. Rainfall is spread evenly across the year, with slight peaks in autumn and spring. The east-west rainfall gradient is illustrated by the difference in average annual rainfall figures for the two closest Bureau of Meteorology observation stations, with an average of 1200mm per annum at Maydena to the west and an average of 600mm per annum at Bushy Park to the east (<http://www.bom.gov.au/tas/>).

Geology, Geomorphology and Soils

The bedrock geology of the Silver Peppermint Reserve is Triassic sandstone and siltstone of the Upper Permian Group. These sediments were intruded by dolerite during the Jurassic period. Although they occur nearby, dolerite rocks do not outcrop on the Reserve.

The Reserve is situated on the upper slopes and ridge-top of a line of hills running south from Mt Bethune and parallel to the Derwent River. Slopes are in the range of 5-10 degrees. Soils on the Reserve are duplex sandy clay loams over medium clays. These soils are of moderate depth and permeability. Soil depth and therefore moisture availability tend to increase down slope or where slope angle is lower.

Hydrology

Silver Peppermint Reserve sits within the upper Derwent Valley catchment. The southern portion of the Reserve flows to the south, joining the Tyenna River via Boyces Creek, before entering the Derwent River below Meadowbank Dam. The northern portion of the Reserve flows to the north, entering the Jones River before flowing to the Meadowbank Dam section of the Derwent River.

NATURAL VALUES

Flora

The heathy understorey of the dry eucalypt forest on the Reserve has the potential to support a relatively high diversity of plant species, but vegetation condition indicators suggest that the species diversity at the Reserve may have been reduced by the intensity and/or frequency of wild-fires, particularly the intense summer fire which burnt the whole Reserve in 2013 (see section on fire).

A list of plants recorded on the Reserve has been attached at Appendix A, derived mainly from a detailed flora survey conducted by Matthew Appleby and Louise Gilfedder in the early 2000's (i.e. before the more recent fires). No flora species listed as threatened under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) or the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBCA) have been recorded on the Reserve to date, but several threatened plants have been recorded nearby in similar habitat (see *Threatened Species* section below).

Fauna

A wide variety of native animals occur on Silver Peppermint Reserve, including the endangered Tasmanian devil (*Sarcophilus harrisii*), spotted-tailed quoll (*Dasyurus maculatus*) and a number of native mammals and birds. A list of species recorded on the Reserve and in the adjoining Mt Bethune Conservation Area is provided in Appendix B. Given the proximity and similarities in vegetation and topography between the two sites, it is likely that most if not all of the species found in the Mt Bethune Conservation Area also occur on Silver Peppermint Reserve.

Two species listed as threatened under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBCA) were recorded on the Reserve in 2016, the Tasmanian Devil and Spotted-tail quoll and the Tasmanian bettong which is of conservation significance, have been captured on camera (Fig 3). Several other species considered a high priority for conservation potentially also occur there (see *Threatened Species* section below).



Figure 3 Tasmanian devil (left) and Tasmanian bettong (right) on Silver Peppermint Reserve 2013.

Threatened and priority species

Wedge-tailed eagles have been recorded on the Reserve, but there is no suitable nesting habitat on site. A number of other species which are of conservation significance have been recorded within 5km of Silver Peppermint Reserve and suitable habitat occurs on the Reserve (see table 2). Given the mobility of the mammal species listed, it is quite likely that they would utilise the Reserve if they are present in the broader landscape.

Table 2 Threatened and high priority species recorded on or nearby the Reserve

Species	Common name	Conservation Status (TSPA/EPBC)	Comment
FLORA			
<i>Austrostipa nodosa</i>	knotty speargrass	rare/-	
<i>Agrostis australiensis</i>	flatleaf southern bent	rare/-	
FAUNA			
<i>Sarcophilus harrisii</i>	Tasmanian devil	e/E	Confirmed by trapping
<i>Dasyurus maculatus</i>	Spotted-tailed quoll	r/V	Confirmed by trapping
<i>Bettongia gaimardi</i>	Tasmanian bettong	Priority under RFA	Confirmed on camera
<i>Dasyurus viverrinus</i>	eastern quoll	-/VU	
<i>Perameles gunnii</i>	eastern barred bandicoot	-/VU	
<i>Pseudomoia pagenstecheri</i>	Tussock skink	v/-	Probably unlikely to occur

listed on Tasmania's *Threatened Species Protection Act 1995* (TSPA) and/or the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBCA).

Silver Peppermint Reserve comprises part of the Fentonbury study site in the state-wide trapping program of the *Save the Tasmanian Devil Program* STTDP. Monitoring commenced in December 2005 and trapping frequency has ranged between two to four times per year for a duration of ten trapping nights. Early results revealed that the area had a large population of breeding devils, but many animals had the lethal and infectious Devil Facial Tumour Disease. The change in disease prevalence at this study site increased from 5% in January 2005 to 35% by October 2007, reflecting the steady increase in diseased animals state-wide. More recent information provided by B. Lazenby (STTDP) in May 2016 stated:

“Thirty six individual devils were captured and microchipped. Twenty two percent of those captured had signs consistent with DFTD, and most females (11/18 = 61%) had pouch young. Two devils were euthanized on animal welfare grounds. DNA samples were taken from all captured individuals, and other measures recorded such as weight, head width, estimated age based on tooth wear and eruption, and number of wounds.

In addition, two individual spotted-tailed quolls (both male), and one Eastern quoll (also a male) were trapped and released. It is the first time that I have encountered a spotted-tailed quoll in a trap at this study site since commencing monitoring in 2004, and Eastern quolls have been notably absent over the last five or so years.”

Vegetation

Five vegetation communities (TASVEG 3.0) occur on the Reserve (see table 3 and figure 4). Two of these communities are listed as threatened under the *Nature Conservation Act 2002*: the *black gum* (*E. ovata*) forest (DOV) and the silver peppermint (*E. tenuiramis*) forest on sediments (DTO). The canopy of the dry forest is dominated by eucalypts, with a sparse mid-understorey of silver wattle, native cherry and banksia. Ground cover is generally dominated by bracken and sedges, but includes a range of small shrubs such as pea flowers and heaths.

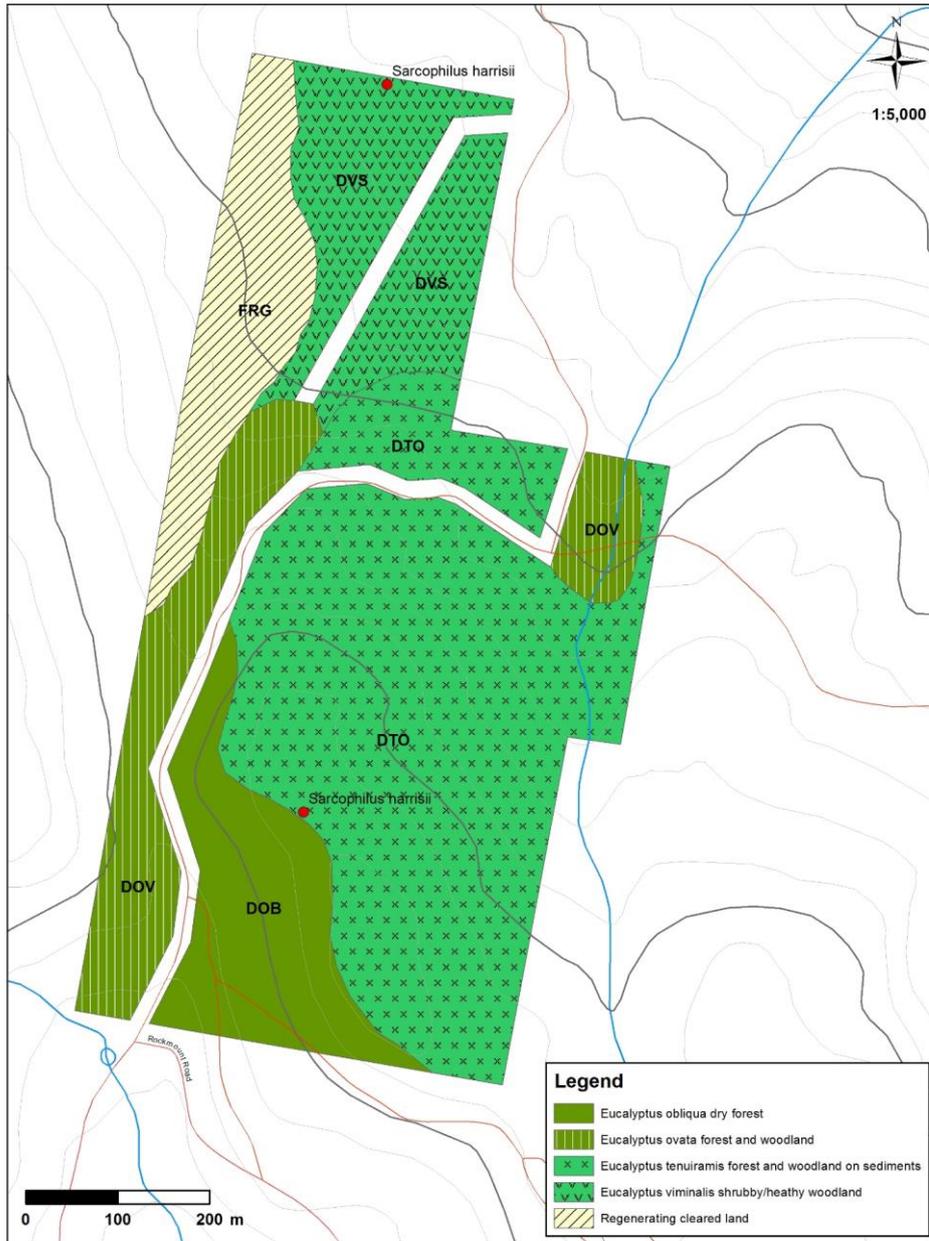
Table 3. Vegetation communities mapped at Silver Peppermint Reserve (TASVEG 3.0)

Vegetation community	TASVEG code	Approx. Area (ha)	Conservation status (NCA 2002)
<i>Eucalyptus obliqua</i> dry forest	DOB	5.4	Not threatened
<i>Eucalyptus ovata</i> forest	DOV	5.6	Endangered
<i>Eucalyptus tenuiramis</i> forest on sediments	DTO	21.1	Vulnerable
<i>Eucalyptus viminalis</i> shrubby forest	DVS	6.2	Not threatened
Regenerating cleared land	FRG	4.5	Not threatened

The Reserve’s namesake is the silver peppermint (*Eucalyptus tenuiramis*), an endemic eucalypt species of south-east Tasmania. On the rocky upper slopes of the reserve it occurs as pure stands of silver peppermint forest on sandstone (DTO). Black gum (*Eucalyptus ovata*) forest (DOV) occurs in narrow bands of deeper, moister soil along two seasonal streambeds that drain via Trap Valley into Meadowbank Lake. Black gum forest is one of Tasmania’s most threatened native vegetation communities. It was once widespread in the Derwent Valley but has been almost entirely cleared for agriculture.

Shrubby white gum (*Eucalyptus viminalis*) forest (DVS) occurs on lower northern slopes of the reserve where there is relatively deep, sandy soil. A small area of brown-topped stringybark (*Eucalyptus obliqua*) forest (DOB) occurs on a steep, rocky, south-facing slope at the southern end of the Reserve.

In the north-east of the Reserve there is an area of regenerating cleared land (FRG) that was cleared for pasture by a previous owner, but is now being invaded by silver wattle (*Acacia dealbata*) and other early successional species, including weeds.



Silver Peppermint - Natural Values



Map produced by the Tasmanian Land Conservancy - 31/05/2012

Figure 4 Vegetation communities on Silver Peppermint Reserve.

Parts of the dry forest on the Reserve have been burnt twice in six years by unplanned wildfires. Approximately 13ha of silver peppermint forest in the centre of the land was affected by a moderate intensity fire in November 2007 and the vegetation was recovering well when a high intensity wildfire swept through the whole Reserve in January 2013. Vegetation condition indicators suggest that the dry forest has been burnt too frequently and/or too intensely, resulting in reduced structural complexity and species diversity, a dense layer of bracken and a substantial weed burden over parts of the Reserve.

The rationale for identification of a dry forest conservation target is:

- The vegetation across the entire Reserve is structurally similar and there is little variation in the composition of understorey vegetation;
- The vegetation is expected to show a similar response to ecological events such as fire and drought;
- Areas of *black gum forest (DOV)* are ecologically distinct but are small in extent and managing these areas separately is neither realistic nor warranted;
- Native fauna are unlikely to show a preference to any specific vegetation communities;
- The geology, soils and climate are relatively uniform across the Reserve; and
- The major threats to the Reserve apply equally to all areas.

Pests, Invasive Weeds and Disease

Native ecosystems in many areas are under threat from weeds and pathogens, including *Phytophthora cinnamomi* (PC). Weeds and pathogens are spread to new areas when contaminated water, mud, gravel, soil and plant material or infected animals are moved between sites. Contaminated materials are commonly transported on boots, equipment and vehicles. The infection status of an area is never fully known and distribution will change over time, so it is crucial that strict hygiene practices are implemented at all sites. Once a weed or pathogen is present in an area it is usually impossible to eradicate. Left uncontrolled, environmental weeds have the potential to displace native species, modify habitat and disrupt 'natural' ecological interactions.

Phytophthora

Phytophthora cinnamomi (PC) is a soil borne pathogen that affects native vegetation, particularly heaths. The heathy understorey vegetation at Silver Peppermint Reserve is highly susceptible to PC, particularly species in the families *Epacridaceae*, *Fabaceae* and *Proteaceae*, but the Reserve has been assessed as a low risk for establishment of PC due to its location, topography and hydrology.

Soil tests carried out on samples from the Reserve have returned negative, thus it is likely the Reserve is presently phytophthora free. To minimise the chance that this pathogen is introduced to the Reserve, all visitors will be required to comply with the TLC *Weed and Pathogen Policy 2012*.

Weeds

The combination of proximity to agricultural land and regular disturbance from past management practices, illegal access and un-planned fire has left a legacy of weeds throughout the Reserve. Weeds present in the Reserve include blackberry (*Rubus fruticosus*), significant annual and perennial infestations of thistle species and widespread occurrence of other, less problematic pasture weeds such as mignonette, mulleins, exotic grasses and flat-weeds. A small number of plants suspected to be African boxthorn (*Lycium ferocissimum*) were found near the western boundary of the Reserve during the reserve assessment on 5/01/2016 but identification is yet to be confirmed (Tim Devereaux pers. comm.).

In previous years a small number of individual blackberry (*Rubus fruticosus*) plants have been found at damp, low-lying sites near the western boundary of the Reserve. These plants have been treated and no blackberry was recorded during the reserve assessment in 2016. The removal of the understorey and tree canopy by wildfire has allowed the rapid invasion of thistles being blown in from neighbouring pastoral properties. It is likely that this impact will decrease with increasing cover of native vegetation as the area recovers from fire.

Ground cover in the north –west corner of the Reserve is seasonally dominated by spear thistle and Californian thistle (*Cirsium arvense*), with Californian thistle preferring relatively damp, low-lying sites. Californian thistle poses a more persistent threat than other thistle species and is more difficult to control because it is perennial, it reproduces vegetatively from the roots as well as from wind-borne seeds and its roots often survive herbicide treatment of the leaves and stems. All thistles are currently subject to an annual spraying regime, with particular emphasis on Californian thistles.

Ecological monitoring

In January 2013 Silver Peppermint Reserve was burnt by a large bushfire that began at Lake Repulse in the Derwent Valley. The entire property was affected, with the canopy scorched and the understorey vegetation completely incinerated by the fire. Ten fixed photo points (Fig 5) were established four days after the bushfire. At each photo point a series of identical photographs were taken of the understorey vegetation at weekly intervals for the next eight weeks. Monitoring then continued monthly until 12 months and thereafter annually. The series of photos will provide a visual record of the regeneration process and also allow quantitative ecological data on vegetation structure to be recorded.

Sound recorders were used to document the bird species that return to Silver Peppermint after fire. The recorders are placed at three of the photo points and record 20 minutes of bird song, with the species on the sound bursts then identified by S. Bryant. By documenting the vegetation structure and bird species present at the reserve each week the project aims to better understand the ecological relationship between bird diversity and vegetation structure in the period immediately following fire.



Fig 5 Location of ecological monitoring sites on Silver Peppermint Reserve.

Scientific research summary

Silver Peppermint Reserve has been subject to a number of scientific assessments since it was offered as a gift to the TLC in 2004.

- Vegetation monitoring was installed in 2013 by TLC in addition to 20 min bird surveys to monitor species recovery post fire.
- Assessment of forest communities for relevance to the Commonwealth *Forest Conservation Fund*, which included preparation of the Conservation Covenant and associated Nature Conservation Plan.
- Ongoing monitoring of Tasmanian Devils and the Devil Facial Tumour Disease in the area by the *Save the Tasmanian Devil Program* from Dec 2005 to the present time.
- Ongoing use of remote cameras to monitor fauna on the Reserve since 2015.
- Ongoing monitoring of vegetation condition in support of the Conservation Covenant by the Private Land conservation Program within DPIPWE (PLCP). In 2009 PLCP monitoring and stewardship officers established two Vegetation Condition Assessment plots at Silver Peppermint Reserve. One plot was established at 55G 480862 5283387 (GDA94) in an area of forest that had been burnt in November 2007. The second plot was established in unburnt forest at 55G 480871 5283605 (GDA94). A report was prepared based on this assessment.
- Analysis of post-fire recovery of vegetation on the Reserve. In 2013 the TLC Science and Planning Team supervised a 2 month project undertaken by Conemara Burke, who was hosted by TLC as part of the US National Science Foundation PIRE Intern Program. The project focused on the recovery of the Reserve following the bushfire of January 2013. A report was prepared as part of this project and can be found on the TLC's web site.

Cultural history

No specific indigenous heritage values have been identified on the Reserve. The Derwent Valley forms part of the territory occupied by Aboriginal people of the Big River nation. The grasslands and open woodlands of the lower Derwent Valley provided rich hunting grounds for kangaroo and other marsupials, as well as a range of plants used for food and fibre.

The settlement of the Derwent Valley by European people began with the establishment of New Norfolk by Norfolk Islanders in 1807. Early settlers established hops and berry farms and grazed sheep. Historic buildings and ruins are scattered throughout the valley. The remains of an old stone chimney are located on the Reserve at grid 480668, 5283777 but its origins are unknown (Fig 6).

Westerway was first known as Russell or Russelldale after the Surgeon J.J Russell. The Derwent Railway Line reached the town in 1909 and a post office was opened in 1910. Due to confusion between 'Russell' and the nearby 'Russell Falls', the towns name was changed to Westerway in 1920, after a local resident responsible for many developments in the area.

Westerway School opened in 1920 with thirty six students, and at various stages the township has seen developments such as a bakery, police station, a temporary hospital during bushfires and in 1939 a recruitment office for enlistees to the Second World War. Westerway railway station was the starting point for the pack horse journey to the now abandoned Adamsfield osmiridium mine. As the

timber industry became more important to the area, a number of timber mills were built and the train line was used to transport logs to Boyer and Hobart. The Derwent Valley Railway was, until recently, used by tourists to visit the area.



Fig 6. Remains of an old stone chimney on the Reserve taken in 2015 (pic S Bryant).

Management history

Wood hooking (wood cutting for firewood)

Silver Peppermint Reserve was subject to illegal wood hooking for many years prior to the acquisition of the property by the TLC and the problem has persisted until installation of roadside fencing in 2015. Wood hooking has contributed to a reduction in the structural complexity of the forest in many areas of the Reserve. The associated off-road vehicle use also has the potential to act as a vector for other threatening processes such as introduction of weeds/disease, arson, vandalism and the dumping of rubbish/green-waste.

The TLC has taken action to prevent illegal access and wood-hooking by: erecting signs at access points which indicate that the Reserve is private property and that wood hooking is not permitted (2012); and fencing either side of Rockmount Road where it passes through the Reserve (in Spring 2015). Signs by themselves were not effective in preventing wood hooking, but early indications

suggest that fencing has been a deterrent. A management assessment in 2016 found no breaches of the fence and only one tree felled along the road verge.

Other actions that may be undertaken in the future to discourage and prevent illegal access (particularly if people start cutting or otherwise breaching fences) include: deepening roadside gutters to deter access by vehicles; and use of automatic surveillance cameras to capture and record registration plates of vehicles (with information passed on to the police for follow-up).

Fire

Silver peppermint forest on sediments (DTO) is typically subject to a relatively high fire frequency, but burning too frequently and/or intensely results in reduced species diversity and structural complexity. The fire history of the site prior to TLC acquiring the property in 2005 is not well known, but some vegetation condition indicators suggest that the Reserve may have been subject to an inappropriate fire regime for many years prior to acquisition by the TLC.

Since the TLC has owned the property the Reserve has been subject to two wildfires in six years: arson was the likely source of a fire in November 2007 which burnt approximately 13ha of Silver Peppermint forest in the centre of the Reserve; and an escaped campfire at Lake Repulse 12km to the north-west caused a very large, intense fire which burnt the entire Reserve in January 2013.

Vegetation condition indicators suggest that the frequency and/or intensity of recent bushfires has reduced the species diversity and structural complexity of the vegetation, while the extent and persistence of bare ground following the most recent fire has facilitated the establishment and spread of weeds).

Working in cooperation with neighbouring private landowners and the Parks and Wildlife Service the TLC will seek to reduce the frequency of fires at the Reserve. Lighting of fires will not be permitted at the Reserve and the general TLC fire management policies and procedures will apply.

Domestic stock grazing

It is highly likely that the Reserve has been subject to grazing by stock in the past, both as a deliberate management strategy and as a result of stock straying from adjoining properties. The presence of pastoral land adjoining the Reserve means that there is an ongoing risk of stock straying, particularly if boundary fences are not well maintained. Stock grazing introduces weeds and reduces regeneration of many native species.

MANAGEMENT PLAN OVERVIEW

A separate management plan has been developed for the Silver Peppermint Reserve based on the vision, targets and strategies shown below (Tasmanian Land Conservancy 2015). The management plan is available via the TLC web site (www.tasland.org). A working version of this document is maintained in-house and used to guide staff works plans and annual budgets. Reserve Reports are produced annually documenting what has been achieved. The management strategy is summarised below.

VISION	Silver Peppermint Reserve is managed for its dry forest values.
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CONSERVATION TARGET	GOAL
Dry forest ecosystem	Improve the 2014 condition of the forest
SOCIAL TARGET	GOAL
Community connection to the landscape	Community are engaged with the Reserve and region
STRATEGIES	OBJECTIVES
Access control	Wood hooking absent by 2017 Domestic stock from neighbouring farms do not trespass on the Reserve
Fire Management	No fires on reserve prior to 2045
Weeds and Phytophthora	The extent and abundance of thistle and blackberry are reduced over time <i>Phytophthora</i> , domestic rubbish and no new weeds are introduced to the Reserve
Reserve Activities	Reserve visitation over 10 people per year

APPENDIX 1: FLORA SPECIES LIST

Family	Species Name	Common Name	Comment
VASCULAR PLANTS			
ASPHODELACEAE	<i>Bulbine glauca</i>	rock lily	
ASPLENIACEAE	<i>Asplenium flabellifolium</i>	necklace fern	
ASTERACEAE	<i>Brachyscome spathulata</i>	spoonleaf daisy	
	<i>Euchiton collinus</i>	common cottonleaf	
	<i>Helichrysum pumilum</i> var. <i>spathulatum</i>	spoonleaf everlasting	endemic
	<i>Helichrysum scorpioides</i>	curling everlasting	
	<i>Hypochoeris radicata</i>	rough cats ear	introduced
	<i>Senecio</i> sp.	fireweed	
	<i>Taraxacum officinale</i>	common dandelion	introduced
CAMPANULACEAE	<i>Wahlenbergia</i> sp.	bluebell	
CASUARINACEAE	<i>Allocasuarina littoralis</i>	black sheoak	
CRASSULACEAE	<i>Crassula decumbens</i> var. <i>decumbens</i>	spreading stonecrop	
	<i>Crassula sieberiana</i> subsp. <i>sieberiana</i>	rock stonecrop	
CYPERACEAE	<i>Lepidosperma</i> sp.	swordsedge	
DENNSTAEDTIACEAE	<i>Pteridium esculentum</i>	bracken	
DILLENIACEAE	<i>Hibbertia prostrata</i>	prostrate guineaflower	
EPACRIDACEAE	<i>Astroloma humifusum</i>	native cranberry	
	<i>Epacris impressa</i>	common heath	
	<i>Leucopogon ericoides</i>	pink beardheath	
	<i>Leucopogon virgatus</i> var. <i>virgatus</i>	twiggy beardheath	
EUPHORBIACEAE	<i>Amperea xiphioclada</i> var. <i>xiphioclada</i>	broom spurge	
FABACEAE	<i>Aotus ericoides</i>	golden pea	
	<i>Bossiaea cinerea</i>	showy bossia	
	<i>Bossiaea prostrata</i>	creeping bossia	
	<i>Daviesia latifolia</i>	hop bitterpea	
	<i>Daviesia ulicifolia</i> subsp. <i>ulicifolia</i>	gorse bitterpea	
HALORAGACEAE	<i>Gonocarpus tetragynus</i>	common raspwort	
JUNCACEAE	<i>Luzula</i> sp.	woodrush	
LILIACEAE	<i>Arthropodium</i> sp.	vanilla-lily	
	<i>Dianella revoluta</i>	spreading flaxlily	
MIMOSACEAE	<i>Acacia dealbata</i> subsp. <i>dealbata</i>	silver wattle	
	<i>Acacia melanoxylon</i>	blackwood	

MYRTACEAE	<i>Eucalyptus obliqua</i>	stringybark	
	<i>Eucalyptus ovata</i> var. <i>ovata</i>	black gum	
	<i>Eucalyptus pauciflora</i>	cabbage gum	
	<i>Eucalyptus tenuiramis</i>	silver peppermint	endemic
	<i>Eucalyptus viminalis</i> subsp. <i>viminalis</i>	white gum	
ORCHIDACEAE	<i>Chiloglottis</i> sp.	bird-orchid	
	<i>Cryptostylis</i> sp.	tongue-orchid	
	<i>Diuris sulphurea</i>	tiger orchid	
	<i>Pterostylis</i> sp.	greenhood	
	<i>Spiranthes australis</i>	spiral orchid	
	<i>Thelymitra</i> sp.	sun-orchid	
PITTOSPORACEAE	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	prickly box	
POACEAE	<i>Agrostis</i> sp.	bent	
	<i>Aira caryophyllea</i>	silvery hairgrass	introduced
	<i>Austrostipa</i> sp.	Spear grass	
	<i>Austrodanthonia</i> sp.	Wallaby grass	
	<i>Ehrharta stipoides</i>	weeping grass	
	<i>Poa rodwayi</i>	velvet tussock grass	
	<i>Poa</i> sp.	tussock grass	
PROTEACEAE	<i>Banksia marginata</i>	silver banksia	
	<i>Persoonia juniperina</i> var. <i>juniperina</i>	prickly geebung	
RUBIACEAE	<i>Galium australe</i>	tangled bedstraw	
SANTALACEAE	<i>Exocarpos cupressiformis</i>	common native-cherry	
STYLIDIACEAE	<i>Stylidium graminifolium</i>	narrowleaf triggerplant	
THYMELAEACEAE	<i>Pimelea humilis</i>	dwarf rice flower	
	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	slender riceflower	
TREMANDRACEAE	<i>Tetradlea labillardierei</i>	glandular pinkbells	
XANTHORRHOEACEAE	<i>Lomandra longifolia</i>	sagg	

APPENDIX 2: FAUNA SPECIES LIST

Taxa	Scientific name (e = endemic)	Common name	Status ¹
NATIVE MAMMALS			
DASYURIDAE	<i>Dasyurus viverrinus</i> (e)	eastern quoll	
	<i>Dasyurus maculatus</i>	spotted-tail quoll	r/V
	<i>Sarcophilus harrisi</i> (e)	Tasmanian devil	e/EN
MACROPODIDAE	<i>Macropus rufogriseus</i>	Bennett's wallaby	
	<i>Bettongia gaimardi</i>	Tasmanian bettong	
	<i>Thylogale billardieri</i> (e)	Tasmanian pademelon	
PHALANGERIDAE	<i>Trichosurus vulpecula fuliginosus</i>	brush-tailed possum	
TACHYGLOSSUS	<i>Tachyglossus aculeatus</i>	short-beaked echidna	
VOMBATIDAE	<i>Vombatus ursinus</i>	common wombat	
BIRDS (recorded in 2014 onwards during fire monitoring by S. Bryant)			
ACANTHIZIDAE	<i>Acanthiza pusilla</i>	brown thornbill	
	<i>Acanthiza chrysorrhoa</i>	yellow-rumped thornbill	
ACCIPITRIDAE	<i>Aquila audax fleayi</i> (e)	wedge-tailed eagle	e/EN
ALCEDINIDAE	<i>Dacelo novaeguineae</i>	laughing kookaburra	
ARTAMIDAE	<i>Artamus cyanopterus</i>	dusky woodswallow	
CACATUIDAE	<i>Cacatua galerita</i>	sulphur-crested cockatoo	
CAMPEPHAGIDAE	<i>Coracina novaehollandiae</i>	black-faced cuckoo shrike	
COLUMBIDAE	<i>Phaps chalcoptera</i>	common bronzewing	
CORVIDAE	<i>Corvus tasmanicus</i>	forest raven	
CRACTICIDAE	<i>Cracticus torquatus</i>	grey butcherbird	
	<i>Gymnorhina tibicen</i>	Australian magpie	
	<i>Strepera fuliginosa</i> (e)	black currawong	
	<i>Strepera versicolor</i>	grey currawong	
CUCULIDAE	<i>Cacomantis pallidus</i>	pallid cuckoo	
	<i>Cacomantis flabelliformis</i>	fantailed cuckoo	
FALCONIDAE	<i>Falco berigora</i>	brown falcon	
MALURIDAE	<i>Malurus cyaneus</i>	superb fairy-wren	
MELIPHAGIDAE	<i>Acanthorhynchus tenuirostris</i>	eastern spinebill	
	<i>Anthochaera paradoxa</i> (e)	yellow wattlebird	

Taxa	Scientific name (e = endemic)	Common name	Status ¹
NATIVE MAMMALS			
	<i>Manorina melanocephala</i>	noisy miner	
	<i>Melithreptus affinis</i> (e)	black-headed honeyeater	
	<i>Lichenostomus flavicollis</i> (e)	yellow-throated honeyeater	
	<i>Phylidonyris pyrrhopterus</i>	crescent honeyeater	
PACHYCEPHALIDAE	<i>Colluricincla harmonica</i>	grey shrike-thrush	
	<i>Pachycephala pectoralis</i>	golden whistler	
PARDALOTIDAE	<i>Pardalotus punctatus</i>	spotted pardalote	
	<i>Pardalotus striatus</i>	striated pardalote	
PETROICIDAE	<i>Melanodryas vittata</i> (e)	dusky robin	
	<i>Petroica multicolor</i>	scarlet robin	
	<i>Petroica pheonicea</i>	flame robin	
PLATYCERCIDAE	<i>Neophema chrysostoma</i>	blue-winged parrot	
	<i>Platycercus caledonicus</i> (e)	green rosella	
	<i>Platycercus eximius</i>	eastern rosella	
RHIPIDURIDAE	<i>Rhipidura fuliginosa</i>	grey fantail	
ZOSTEROPIDAE	<i>Zosterops lateralis</i>	silveryeye	
REPTILES			
SCINCIDAE	<i>Niveoscincus metallicus</i>	metallic skink	
RANKINIA	<i>Rankinia diemensis</i>	mountain dragon	
INVERTEBRATES			
No systematic list as yet			
INTRODUCED SPECIES			
STURNIDAE	<i>Sturnus vulgaris</i>	common starling	
LEPORIDAE	<i>Oryctolagus cuniculus</i>	European rabbit	i
FELIDAE	<i>Felis catus</i>	cat	i
MURIDAE	<i>Mus musculus</i>	house mouse	i