

# **ACT Bush Blitz**

## ***Cryptogams and vascular plants***

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Nomenclature and taxonomy used in this report is consistent with:

The Australian Plant Name Index (APNI)

<http://www.anbg.gov.au/databases/apni-about/index.html>

The Australian Plant Census (APC)

<http://www.anbg.gov.au/chah/apc/about-APC.html>

AusMoss

<http://data.rbg.vic.gov.au/cat/mosscatalogue>

The Catalogue of Australian Liverworts and Hornworts

[http://www.anbg.gov.au/abrs/liverwortlist/liverworts\\_intro.html](http://www.anbg.gov.au/abrs/liverwortlist/liverworts_intro.html)

The Checklist of the Lichens of Australia and its Island Territories

<https://www.anbg.gov.au/abrs/lichenlist/introduction.html>

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Appendix 1. Lists of vascular plants, bryophytes and lichens recorded in Namadgi National Park and Tidbinbilla Nature Reserve during the ACT Bush Blitz.

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List of contributors to this report.			
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## Abstract

*The vascular and cryptogam floras have been relatively well studied in most parts of ACT, including the Namadgi National Park and the Tidbinbilla Natura Reserve. However, current records from the Australian Virtual Herbarium (AVH) highlighted several areas with no or very few collections or observations. Brief visits to two of these under-explored remote sites (Orroral Hill and Ginnini Falls) revealed high-quality habitats with interesting species and a potential for new records and species discovery. AVH records also highlighted knowledge gaps for several vascular plant species, which had not been collected nor observed in 30 years. Localisation and abundance information for 18 of these data-deficient vascular plants were provided here, filling in some of the current knowledge gaps. The ranges of six bryophytes and four vascular plants were also extended and, for all of these taxa, these extensions corresponded to new records for the ACT. Location and abundance of non-indigenous species are also discussed here in relation to land management strategies.*

## 1. Introduction

*The target groups from the Botany team were vascular plants and cryptogams, more specifically bryophytes (mosses, liverworts and hornworts) and lichens. These groups of organisms have been relatively well studied in ACT, mostly thanks to the work of past and present botanists from local research and collection institutions (Australian National Herbarium, Australian National Botanic Gardens, Australian National University, etc...). The principal survey areas, Namadgi National Park and Tidbinbilla Nature Reserve, have been generally well surveyed for vascular plants and cryptogams. However, some remote and poorly accessible parts of Namadgi have not been surveyed or have been inadequately surveyed, and herbarium records show gaps in collections for these areas: either no recent collections have been made from there, or no collections have been made at all. By gaining access to some of these remote areas of Namadgi, the botany team was expecting to confirm the presence of species either found there in the past or assumed to be there. For cryptogams, and to a lesser extent for vascular plants, the team also hoped to find interesting species overlooked in this area (new records or new species). For vascular plants, the occurrence of non-indigenous plants within and on the margins of Namadgi National Park and Tidbinbilla Nature Reserve was also a focus, as new data would assist weed management programs. In remote areas without access tracks there was an expectation that these areas would be relatively free of invasive plants.*

## 2. Methods

### 2.1 Site selection

*To investigate poorly-collected areas within Namadgi NP and Tidbinbilla NR the Australian Virtual Herbarium (AVH) website was queried to generate distribution maps for cryptogams and vascular plants. Areas with no or very few collections were examined in more detail with the aid of a satellite image overlay to identify sites that may harbour new or otherwise significant species. Areas with interesting vegetation cover (e.g. bogs, grasslands) or physical features (e.g. rock outcrops, waterfalls) were the main targets. For vascular plants, the ACT plant census was also used to generate a list of plants that had not been collected from the ACT for more than 30 years. The localities where these plants were previously collected were added to the list of sites to explore. For cryptogams, other sites (wet forests, river banks, roadsides) were added in order to maximise the different types of habitats visited. A final list of potential survey sites with coordinates, access type (helicopter, 4-WD, boat or foot) and associated hard copy imagery was produced prior to the survey commencing. Each evening*

sites were selected for the following day from the list of potential sites based on factors such as helicopter availability, weather and track conditions, vegetation density and distance to site.

## 2.2 Survey techniques

For vascular plants, specimens were predominantly collected at, or on route to, sites chosen to maximise the chance of locating new, under-collected or otherwise interesting species. Sites were located with the aid of a handheld GPS. Specimens were collected only from plants that were fertile (i.e. with flowers and/or fruits). Collecting was biased towards under-collected species, significant distribution records, species not collected for 30 years or more, taxonomically difficult genera, morphologically variable species and introduced species. Standard herbarium data was recorded for each specimen collected, including location, GPS coordinates, altitude, collector and collection number, date, habitat features, associated species, abundance and selected morphological observations. Where required, specimens were collected with the aid of secateurs or a knife. Specimens were tagged and placed in plastic bags for a short period or pressed immediately in a day press taken into the field. Each evening specimens were transferred to a standard herbarium press at base camp. In a few instances, sterile specimens of uncertain identity were collected as non-flowering live material and taken back to the Australian National Botanic Gardens nursery to grow on to flowering.

For Cryptogams, various substrates (soil, rocks, trees) were inspected at each site and specimens of interesting species were collected for identification and accession into the CANB and MEL herbaria. Bryophytes and foliose lichens were detached from the substrates with a knife and transferred to paper bags or envelopes. Crustose lichens and small bryophytes on rocks were detached using a chisel and a hammer. Hand lenses were used to observe minute features and, when possible, field identification was made. Locality information, including GPS coordinates, were added to a field book or directly on each paper bag/envelope.

### 2.2.1 Methods used at standard survey sites

For vascular plants, only the Birrigai standard site was surveyed, as floristic data already existed for the Australian National Botanic Gardens standard site. The standard site at Birrigai was chosen as a representative example of intact lower slope vegetation in the area within a short walk of the main buildings. The Birrigai standard site was systematically searched and all species encountered within the boundaries of the site were recorded. Due to the timing of the survey it is possible that some geophytic species may have been overlooked as above ground parts may have been absent. Similarly, due to the significant macropod population in the vicinity of the standard site some palatable plant species may have been overlooked because of heavy grazing. Each species recorded was assigned a cover/abundance score for the site according to the following:

- + – <5% projected foliage cover, few individuals (5 or fewer)
- 1 – <5% projected foliage cover, > 5 individuals
- 2 – 5-25% projected foliage cover, any number of individuals
- 3 – 26-50% projected foliage cover, any number of individuals
- 4 – 51-75% projected foliage cover, any number of individuals
- 5 – >75% projected foliage cover, any number of individuals

Michelle Allen, a teacher from Birrigai Outdoor School was involved in the survey of the Birrigai standard site and photographed each species as a reference for future monitoring of the site.

*For Cryptogams, all substrates present in the survey site were inspected and all species found were listed. Specimens for which further observations were required were collected. Specimens on soil and trees were detached from the substrates with a knife and transferred to paper bags or envelopes. Specimens on rocks were detached using a chisel and a hammer.*

## **2.3 Identifying the collections**

*For vascular plants, those specimens that could not be identified confidently in the field were examined in more detail at the Australian National Herbarium (CANB) using a stereomicroscope. The primary references consulted were the New South Wales flora online (PlantNET) and the Flora of Victoria online (VICFLORA). On a few occasions it was necessary to consult revisions of genera to obtain more detailed descriptions and information on distinguishing features. Where required, specimens were compared against specimens in CANB that had been identified by a specialist of that taxonomic group. Specimens collected were deposited with the Australian National Herbarium.*

*For bryophytes, specimens were identified to species and/or genus level using A Field Guide to the Mosses and Allied Plants of Southern Australia (Meagher & Fuhrer, 2003); Southern Australian Liverworts (Scott, 1985); The Mosses of Southern Australia (Scott et al., 1976), Flora of Australia (Vol 51), treatments uploaded onto Mosses Online ([http://www.anbg.gov.au/abrs/Mosses\\_online/](http://www.anbg.gov.au/abrs/Mosses_online/)) and other taxonomic treatments (Greven, 2000; Meagher, 2017). Identifications required morphological and anatomical observations, which were done using both dissecting and compound microscopes. Judith Curnow at the Australian National Herbarium (cryptogam collections support) was engaged to identify the bryophytes collected at the standard survey sites at Birragai Education Centre.*

*For lichens, specimens were identified to the genus level using the Keys to Australian Lichen Genera (Rogers 1992). All volumes of the Flora of Australia (volumes 54, 55, 56A, 57 and 58A) were then used to identify specimens to the species level. For genera for which no species keys were available in the Flora of Australia, the literature sections of the checklist of the lichens of Australia and its island territories was used to find relevant publications. The Recent Literature on Lichens website was also used to find species keys for genera not covered by the Flora of Australia. Additionally, several books on Australian lichens were consulted during the identification process (Kantvilas et al 2002, Kantvilas & Jarman 1999, Eldridge & Tozer 1997). Identifications included morphological observations done using a stereomicroscope, anatomical observations done using a compound microscope and chemical observations done using spot tests or thin layer chromatography.*

## **3. Results and Discussion**

Appendix 1 lists all cryptogams and vascular plants recorded during the Bush Blitz.

### 3.1 Un-named or not formalised taxa

Table 1. Putatively un-named or not formalised taxa	
Taxon	Comment

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

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

Table 2. Putative new species (new to science)	
Species	Comment

### 3.3 Exotic and pest species

Table 3. Exotic and pest species recorded			
Exotic/pest species	Location sighted/observed	Indication of abundance	Comments
<i>Sambucus nigra</i>	Namadgi NP (Boboyan homestead ruins)	<i>Rare, several localised plants</i>	Only seen in disturbed area. Population apparently not expanding.
<i>Amaranthus albus</i>	Birrigai (N of main buildings)	<i>Occasional</i>	Only seen in highly disturbed areas. Ruderal species. Generally considered a species of low concern with respect to potential impact on native vegetation.
<i>Vinca major</i>	Namadgi NP (Boboyan homestead ruins) & Birrigai (N of main buildings)	<i>Localised patches c. 100 m<sup>2</sup> at both sites</i>	Only seen in disturbed areas. Can be highly competitive and form dense patches in native vegetation. Prohibited species according to ACT weeds legislation. Destruction of both patches advisable.

<i>Carduus pycnocephalus</i>	Birrigai (W of main buildings)	<i>Rare</i>	Only seen in disturbed areas but can occur in native vegetation. Must be contained according to ACT weeds legislation. Advise control action due to potential for seed to be dispersed into Namadgi NP.
<i>Carduus tenuiflorus</i>	Birrigai (N of main buildings)	<i>Occasional</i>	Only seen in disturbed areas but can occur in native vegetation. Must be contained according to ACT weeds legislation. Advise control action due to potential for seed to be dispersed into Namadgi NP and Tidbinbilla NR.
<i>Centaurea melitensis</i>	Birrigai (N of main buildings)	<i>Occasional</i>	Last collected in the ACT in 1956 and was no longer considered part of the ACT flora, although several contemporary records on Canberra Nature Map. Only seen in disturbed areas. Destruction recommended.
<i>Crepis capillaris</i>	Namadgi NP (1.9 km SW of Corin Dam)	<i>Occasional</i>	Only seen on disturbed margin of reservoir. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Gamochaeta calviceps</i>	Birrigai (immediately around buildings)	<i>Frequent</i>	Only seen in highly disturbed areas. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Leontodon saxatilis</i>	Birrigai (300 m SE of office)	<i>Dominant</i>	Seen in derived grassland and highly disturbed areas. Unlikely to be a



			priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Sonchus asper</i>	Namadgi NP (1.9 km SW of Corin Dam)	<i>Occasional</i>	Only seen in highly disturbed areas. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Tragopogon dubius</i>	Namadgi NP (Mt Gingera)	<i>Occasional</i>	Seen in Snow Gum woodland. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Xanthium spinosum</i>	Birrigai (N of main buildings)	<i>Occasional</i>	Only seen in highly disturbed areas but can occur in native vegetation. Must be suppressed according to ACT weeds legislation. Control advisable give close proximity to Namadgi NP & Tidbinbilla NR.
<i>Myosotis discolor</i>	Namadgi NP (Smokers Flat)	<i>Occasional</i>	See in montane grassland and wet heathland. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Myosotis laxa ssp. caespitosa</i>	Namadgi NP (Naas River)	<i>Occasional</i>	Seen in a rocky riparian habitat. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Cardamine hirsuta</i>	Birrigai (immediately around buildings)	<i>Occasional</i>	Only seen in highly disturbed areas. Ruderal species. Generally considered a species of low

			concern with respect to potential impact on native vegetation.
<i>Cerastium vulgare</i>	Namadgi NP (Rotten Swamp)	<i>Occasional</i>	Last collected in the ACT in 1984 although several contemporary records on Canberra Nature Map. See in wet montane grassland in remote area. Likely to be more common than records indicate. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Polycarpon tetraphyllum</i>	Birrigai (immediately around buildings)	<i>Occasional</i>	Only seen in highly disturbed areas. Ruderal species. Generally considered a species of low concern with respect to potential impact on native vegetation.
<i>Carex disticha</i>	Namadgi NP (Upper Naas Creek)	<i>Locally abundant</i>	Seen in sedgeland where it was forming dense patches. Few records for the ACT. Further investigation required to determine whether a control program is warranted.
<i>Carex buxbaumii</i>	Namadgi NP (Rotten Swamp)	<i>Rare</i>	Its current introduced status is uncertain.
<i>Cyperus eragrostis</i>	Birrigai (immediately around buildings)	<i>Occasional</i>	Only seen in highly disturbed areas. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Euphorbia peplus</i>	Birrigai (immediately around buildings)	<i>Abundant</i>	Only seen in highly disturbed areas. Ruderal species. Generally considered a species of low concern with respect to potential impact on native vegetation.

<i>Trifolium glomeratum</i>	Birrigai (300 m SE of office)	<i>Occasional</i>	Seen in derived grassland and high disturbed areas. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Malva parviflora</i>	Birrigai (W of main buildings)	<i>Occasional</i>	Seen in derived grassland and high disturbed areas. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Epilobium ciliatum</i>	Namadgi NP (1.9 km SW of Corin Dam)	<i>Frequent</i>	Only seen on disturbed margin of reservoir. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Oxalis articulata</i>	Namadgi NP (Boboyan homestead ruins)	<i>Rare and localised</i>	Only seen in highly disturbed area. Although possibly not a great threat to native vegetation, treatment should be considered due to the location within Namadgi NP and small size of patch.
<i>Argemone ochroleuca</i> ssp. <i>ochroleuca</i>	Birrigai (immediately around buildings)	<i>Rare, 4 plants seen all removed</i>	Only seen in highly disturbed areas. Ruderal species. Due to its prickly nature this species is a nuisance more than anything. When they appear plants should be removed before seeding.
<i>Papaver somniferum</i>	Birrigai (immediately around buildings)	<i>Occasional</i>	Only seen in highly disturbed areas. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors

			such as current abundance, ecological impact and difficulty of control.
<i>Pinus sylvestris</i>	Namadgi NP (Snowy Flats)	<i>Occasional small saplings</i>	First collection for the ACT. Seen in wet heathland and on margins of plantation near Pryor's Hut. Control program should be instigated.
<i>Veronica anagallis-aquatica</i>	Namadgi NP (Kangaroo Creek)	<i>Occasional</i>	Seen in a riparian habitat. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Aira caryophyllea</i>	Namadgi NP (2.88 km WSW of Orroral Valley tracking station)	<i>Occasional</i>	Seen in rocky Snow Gum woodland. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Anthoxanthum odoratum</i>	Namadgi NP (Mt Gingera)	<i>Occasional</i>	Seen in Snow Gum woodland to an elevation of 1732 m. This species is of concern due to its invasiveness and ability to outcompete native species. Treatment of plants on Mt Gingera is warranted but may not be feasible.
<i>Bromus diandrus</i>	Namadgi NP (Naas River)	<i>Occasional</i>	Seen in rocky riparian habitat. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Cynodon dactylon</i>	Birrigai (W of main buildings)	<i>Frequent</i>	Seen in derived grassland. This species has potential to cause issues in Namadgi NP wetlands, however the species is too well established at Birrigai

			to contemplate treatment.
<i>Eragrostis curvula</i>	Birrigai (W of main buildings)	<i>Rare</i>	Seen in highly disturbed areas. A highly invasive and competitive species that must be contained according to ACT weeds legislation. Proximity to Namadgi NP & Tidbinbilla NR of concern. Eradicate if feasible to do so.
<i>Holcus lanatus</i>	Namadgi NP (c. 5.62 km due ENE of Corin Dam wall)	<i>Occasional</i>	Seen in montane grassland-heathland mosaic. A highly competitive species in moist sites. Unlikely to be a priority for control due to extent of current abundance and difficulty of control.
<i>Reseda luteola</i>	Birrigai (c. 100 m inside the entrance gate)	<i>Occasional</i>	Only seen in highly disturbed areas. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Sanguisorba minor</i>	Namadgi NP (c. 2.8 km due E of Corin Dam wall)	<i>Frequent</i>	See along a roadside through open forest. Unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Galium divaricatum</i>	Birrigai (immediately around buildings)	<i>Frequent</i>	Seen in highly disturbed areas and derived grassland. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.

<i>Sherardia arvensis</i>	Birrigai (NE of main buildings)	<i>Occasional</i>	Seen in disturbed riparian habitat. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Verbascum thapsus</i>	Birrigai (c. 100 m inside the entrance gate)	<i>Abundant</i>	Seen in weedy derived grassland. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Verbascum virgatum</i>	Birrigai (c. 100 m inside the entrance gate)	<i>Frequent</i>	Seen in weedy derived grassland. Although it can occur in native vegetation it is unlikely to be a priority for control due to multiple factors such as current abundance, ecological impact and difficulty of control.
<i>Solanum triflorum</i>	Birrigai (immediately around buildings)	<i>Frequent</i>	Only seen in highly disturbed areas. Ruderal species. Generally considered a species of low concern with respect to potential impact on native vegetation.

### 3.4 Threatened species

Table 4. Threatened species			
Species	Listing status and level (EBPC, State/Territory)	Location sighted/observed	Indication of abundance

### 3.5 Range extensions and new ACT records

Table 5. Range extensions or significant infill in distribution records for species			
Species	Location sighted/observed	Distance from nearest known record (km)	Comments
<i>Clasmatocolea inflexispina</i>	Ginnini Falls, Namadgi NP	164 km	On rock or banks of creek, growing partially submerged or under wet conditions. Only known in NSW from one collection. More common in Eastern Victoria and Tasmania. New record for ACT.
<i>Pallavicinia xiphoides</i>	Ginnini Falls, Namadgi NP	171 km	On soil of bank of creek intermixed with other bryophytes, at top of Falls. Only known in NSW from 5 other locations. Common in Tasmania. New record for ACT.
<i>Andreaea subulata</i>	Ginnini Falls, Namadgi National Park.	105 km	On wet vertical rock face at top of falls at 1540 m. New record for ACT. Nearest records from NSW are in the Kosciuszko area at Charlottes Pass and Thredbo.
<i>Diplophyllum domesticum</i>	Ginnini Falls, Namadgi National Park.	110 km	Bank of creek in sheltered area on damp soil. New record for ACT. The genus is under-collected and poorly represented in most Australian herbaria. Nearest occurrences in NSW are in the Kosciuszko area.
<i>Ptychomitrium mittenii</i>	Cascade Track, Tidbinbilla Nature Reserve.	80	On boulder beside walking track in eucalypt forest at 920 m. New record for ACT. Endemic to SE Australia. Nearest records from NSW are at

			Majors Creek S of Braidwood.
<i>Schistidium flexifolium</i>	Ginnini Falls, Namadgi National Park.	180	Growing on wet rock in a stream at top of falls, 1540 m. Formerly known in Australia as <i>S. rivulare</i> . New record for ACT. Nearest record from NSW is at Currumbene Creek, all other Australian records are from southern Victoria.
<i>Carex buxbaumii</i>	Namadgi NP (Rotten Swamp)	c. 12 km (in adjacent NSW)	New record for the ACT and only the 7 <sup>th</sup> record for Australia. Found in a single fen, however area not searched extensively.
<i>Eucalyptus moorei</i> subsp. <i>moorei</i>	Namadgi NP (3 km SW of Orroral Valley tracking station)	c. 32 km (NSW, Tinderry Ranges; possibly also occurs in Scabby Range, NSW c. 11 km away)	New record for the ACT. Localised patch on south-facing upper rocky granitic slope. Snow gum regrowth with occasional sapling Alpine Ash.
<i>Senecio lageniformis</i>	Namadgi NP (Upper Naas Creek, 3.9 km due NW of the intersection of Sams River Fire Trail and Grassy Creek firetrail)	c. 27 km (NSW, N end of Tantangara Reservoir)	New record for the ACT. Occasional in Black Sallee-Snow Gum open woodland with grassy understorey on lower valley slope.
<i>Stellaria angustifolia</i> subsp. <i>tenella</i>	Namadgi NP (Corin Reservoir, c. 1.9 km due SSW of dam wall)	c. 25 km (NSW, N of Tantangara Reservoir)	New record for the ACT. Occasional on disturbed edge of reservoir at creek inlet. Silty substrate. Area dominated by ruderal species.

### 3.6 Genetic information

*No genetic sampling was undertaken.*



## 4. Information on species lists

Species lists are provided for lichens, bryophytes and vascular plants in Appendix 1. For vascular plants, this list closely represents what was collected during the ACT BushBlitz 2018. For Cryptogams, and in particular lichens, only a portion of the specimens were identified to the species level. Cryptogam identification is a long process that involves morpho-anatomical observations, compound microscopy, chemical analyses (thin layer chromatography) and molecular analyses. It was therefore not possible to identify all collected material before the report deadline. Additional species names, potentially including new records and new species, will be added to this list in the future.

## 5. Information for land managers

### Namadgi National park

In Namadgi National Park, remote localities (Orroral Hill and Ginnini Falls) were thought to have a more interesting and unique flora in comparison to other visited sites, in particular for Cryptogams (two new moss and three new liverwort records for ACT at Ginnini Falls). This might not be evident from our data (number of specimens collected and number and nature of species listed in these localities) due to the limited time available for collecting in these sites (an hour and a half for Orroral Hill and three hours for Ginnini Falls). However, preliminary collections and observations in these remote localities suggest that they are high-quality habitats with a diverse and interesting flora.

For vascular plants, current ACT status was reviewed and commented for 17 taxa (see table below). Four taxa currently recorded as rare in ACT were found in their respective localities, three in low abundance and one more frequently (*Sagina namadgi*). For eleven data-deficient taxa, updated records and abundance estimates are provided in the table below.

### Tidbinbilla Nature Reserve

For Cryptogams, the diversity of habitats in terms of substrates, sun exposure, and humidity positively influences the diversity in species. As such, the wetter part of the Tidbinbilla Nature Reserve (e.g., Cascades trail, Sanctuary loop), although highly frequented by the public, harboured an interesting assemblage of Cryptogam species, including the moss *Ptychomitrium mittenii* (new record for ACT) and the hornwort *Megaceros gracilis*.

### Birrigai Outdoor School

For cryptogams, Birrigai stood out by the presence of five species of *Riccia*, a small rosette-forming genus of liverworts found mostly on soils. For vascular plants, the data-deficient species *Gratiola pumilio* was found around the dam in Birrigai.

Species	Location sighted/observed	Current ACT status	Comments
<i>Brachyscome obovata</i>	Namadgi NP (Smokers Flat and Rotten Swamp)	Data deficient	Previously known from Smokers Flat. Occasional at both sites.
<i>Senecio campylocarpus</i>	Namadgi NP (Corin Reservoir, c. 1.9 km due SSW of dam wall)	-	Occasional at site. Status requires assessment.

<i>Sagina namadgi</i>	Namadgi NP (Upper Naas Creek)	Rare	Frequent at site.
<i>Stellaria multiflora ssp. multiflora</i>	Namadgi NP (Snowy Flats)	Data deficient	Previously known from site. Only four plants located.
<i>Carex rara ssp. capillacea</i>	Namadgi NP (Smokers Flat)	Data deficient	Previously known from site. Occasional at site.
<i>Gahnia subaequiglumis</i>	Namadgi NP (Mt. Burbidge)	Data deficient	Rare. Several plants also seen at S end of Rotten Swamp.
<i>Epacris celata</i>	Namadgi NP (Smokers Flat and Rotten Swamp)	-	Frequent at both sites. Status requires assessment.
<i>Acacia alpina</i>	Namadgi NP (Mt. Burbidge)	Data deficient	Frequent at site.
<i>Almaleea capitata</i>	Namadgi NP (3.17 km WSW of the Orroral Valley tracking station)	Data deficient	Occasional at site.
<i>Swainsona behriana</i>	Namadgi NP (Sams River Fire trail)	Rare	Occasional at site.
<i>Gratiola pumilio</i>	Birrigai	Data deficient	Localised around dam.
<i>Deyeuxia breviglumis</i>	Namadgi NP (Rotten Swamp)	Data deficient	Occasional at site.
<i>Deyeuxia crassiuscula</i>	Namadgi NP (Mt. Burbidge)	Data deficient	Occasional at site.
<i>Koeleria macrantha</i>	Namadgi NP (near Pryor's Hut)	Data deficient	Previously known from near site. Possibly rare at site.
<i>Polygonum plebeium</i>	Namadgi NP (Corin Reservoir, c. 1.87 km due SSW of dam wall)	Rare	Rare at site – only 2 plants seen.
<i>Ranunculus millanii</i>	Namadgi NP (Smokers Flat and Rotten Swamp)	Data deficient	Previously known from Smokers Flat. Frequent at Rotten Swamp. Rare at Smokers Flat, < 20 plants seen in one small area.
<i>Asterolasia trymalioides ssp. villosa</i>	Namadgi NP (2.79 km WSW of the Orroral Valley tracking station)	Rare	Rare and localised at site.
<i>Pimelea ligustrina ssp. ciliata</i>	Namadgi NP (Kangaroo Creek)	Data deficient	Occasional at site.

## **6. Other significant findings**

*Many sites that we visited had been burnt between 10-20 years ago. The impact on the Cryptogam flora was barely noticeable, as many species had time to grow back. One consequence of these bush fires was the large number of dead trees and logs available for colonisation by Cryptogams. As a result, lignicolous (wood colonising) species, including from the lichen genera Cyphelium and Chaenotheca, were particularly abundant at several sites, including the Tidbinbilla Nature Reserve.*

## **7. Conclusions**

*Although vascular plants and cryptogams have been relatively well studied in most parts of ACT, the results of this BushBlitz survey suggest that the less accessible parts of Namadgi National Park are likely to retain high-quality habitats with high species diversity and, for cryptogams in particular, a potential for new records and species discovery. In addition to range expansion and new records of vascular plants and cryptogams, the BushBlitz survey contributed valuable location and abundance information for vascular plant species that had not been collected nor observed in 30 years. Additionally, a survey of non-indigenous species indicates that most are only observed in degraded areas, away from high-quality habitats found in the remote parts of Namadgi National Park.*

## **Acknowledgements**

*The participants to the ACT BushBlitz 2018 would like to thank the organisers for this unique opportunity to collect in Namadgi National Park and the Tidbinbilla Nature Reserve. Thanks also to the rangers and staff of the Namadgi National Park and Tidbinbilla Nature Reserve, who helped us in selecting and reaching outstanding collecting sites, and to the Staff of the Birrigai Outdoor School for their hospitality.*

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Appendix 1. List of lichens recorded in Namadgi, Tidbinbilla and Birrigai, ACT.

Family	Species	Putative new	Threatened (	Threatened (S	Exotic/pest	Namadgi	Tidbinbilla	Birrigai
Parmeliaceae	<i>Austroparmelina pseudorelicina</i>	no	no	no	no	Yes		
Candelariaceae	<i>Candelariella xanthostigmoides</i>	no	no	no	no	Yes		
Coniocybaceae	<i>Chaenotheca cf chrysocephala</i>	no	no	no	no	Yes		
Chrysotricaceae	<i>Chrysothrix candelaris</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladia aggregata</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia cervicornis</i> var. <i>verticillata</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia corniculata</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia cf enantia</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia fimbriata</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia furcata</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia merochlorophaea</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia ochrochlora</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia cf. paeminosa</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia pyxidata</i>	no	no	no	no	Yes		Yes
Cladoniaceae	<i>Cladonia rigida</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Cladonia scabriuscula</i>	no	no	no	no	Yes		
Collemaaceae	<i>Collema laeve</i>	no	no	no	no	Yes		
Caliciaceae	<i>Cyphelium trachylioides</i>	no	no	no	no	Yes		
Thelotremaaceae	<i>Diploschistes scruposus</i>	no	no	no	no	Yes		
Thelotremaaceae	<i>Diploschistes thunbergianus</i>	no	no	no	no			Yes
Verrucariaceae	<i>Endocarpon pusillum</i>	no	no	no	no	Yes		Yes
Parmeliaceae	<i>Flavoparmelia haysomii</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Flavoparmelia rutidota</i>	no	no	no	no	Yes		
Cladoniaceae	<i>Heterodea muelleri</i>	no	no	no	no			Yes
Parmeliaceae	<i>Hypogymnia billardieri</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypogymnia enteromorphoides</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypogymnia lugubris</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypogymnia mundata</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypogymnia pulverata</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypogymnia subphysodes</i> subsp. <i>subphysodes</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypogymnia tubularis</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypogymnia turgidula</i>	no	no	no	no	Yes		
Parmeliaceae	<i>Hypotrachyna revoluta</i>	no	no	no	no	Yes		
Lecanoraceae	<i>Lecanora cf marginata</i>	no	no	no	no	Yes		

Family	Species	Putative new	Threatened	Threatened (S	Exotic/pest	Namadgi	Tidbinbilla	Birrigai
Lecideaceae	Lecidea ochroleuca	no	no	no	no	Yes		Yes
Megalariaceae	Megalaria grossa	no	no	no	no	Yes		
Megalariaceae	Megalaria melaloma	no	no	no	no	Yes		
Parmeliaceae	Menegazzia confusa	no	no	no	no	yes		
Parmeliaceae	Menegazzia platytrema	no	no	no	no	Yes		
Parmeliaceae	Neofuscelia pulla	no	no	no	no	Yes		
Parmeliaceae	Neofuscelia verrucella	no	no	no	no	Yes		
Parmeliaceae	Notoparmelia signifera	no	no	no	no	Yes		
Parmeliaceae	Notoparmelia tenuirima	no	no	no	no	Yes		
Ochrolechiaceae	Ochrolechia pallescens	no	no	no	no	Yes		
Lecideaceae	Paraporpidia leprocarpa	no	no	no	no	Yes		
Parmeliaceae	Parmelinopsis afrorevoluta	no	no	no	no	Yes		
Parmeliaceae	Parmotrema perlatum	no	no	no	no	Yes		
Peltigeraceae	Peltigera didactyla	no	no	no	no	Yes		
Peltigeraceae	Peltigera dolichorhiza	no	no	no	no	Yes		
Peltigeraceae	Peltigera polydactylon	no	no	no	no	Yes		
Pertusariaceae	Pertusaria pertractata	no	no	no	no	Yes		
Pertusariaceae	Pertusaria xanthoplaca	no	no	no	no	Yes		
Parmeliaceae	Pseudephebe pubescens	no	no	no	no	Yes		
Lobariaceae	Pseudocyphellaria crocata	no	no	no	no	Yes		
Lobariaceae	Pseudocyphellaria neglecta	no	no	no	no	Yes		
Parmeliaceae	Punctelia pseudocoralloidea	no	no	no	no	Yes		
Parmeliaceae	Punctelia subrudecta	no	no	no	no	Yes		
Lecanoraceae	Ramboldia cf plicatula	no	no	no	no	Yes		
Lecanoraceae	Ramboldia laeta	no	no	no	no	Yes	Yes	
Lecanoraceae	Ramboldia stuartii	no	no	no	no	Yes		
Rhizocarpaceae	Rhizocarpon badioatrum	no	no	no	no	Yes		
Rhizocarpaceae	Rhizocarpon cf adarense	no	no	no	no	Yes		
Rhizocarpaceae	Rhizocarpon geographicum	no	no	no	no	Yes		
Rhizocarpaceae	Rhizocarpon reductum	no	no	no	no	Yes		
Rhizocarpaceae	Rhizocarpon vigilans	no	no	no	no	Yes		
Stereocaulaceae	Stereocaulon corticatum	no	no	no	no	Yes		
Stereocaulaceae	Stereocaulon ramulosum	no	no	no	no	Yes		
Teloschistaceae	Teloschistes sieberianus	no	no	no	no	Yes		
Teloschistaceae	Teloschistes velifer	no	no	no	no	Yes		
Cladoniaceae	Thysanothecium scutellatum	no	no	no	no	Yes		

Family	Species	Putative new	Threatened	Threatened (S	Exotic/pest	Namadgi	Tidbinbilla	Birrigai
Agyriaceae	Trapelia crystallifera	no	no	no	no	Yes		
Umbilicariaceae	Umbilicaria cylindrica	no	no	no	no	Yes		
Umbilicariaceae	Umbilicaria decussata	no	no	no	no	Yes		
Umbilicariaceae	Umbilicaria nylanderiana	no	no	no	no	Yes		
Umbilicariaceae	Umbilicaria polyphylla	no	no	no	no	Yes		
Umbilicariaceae	Umbilicaria subglabra	no	no	no	no	Yes		
Umbilicariaceae	Umbilicaria umbilicarioides	no	no	no	no	Yes		
Parmeliaceae	Usnea inermis	no	no	no	no	Yes		
Parmeliaceae	Usnea molliuscula	no	no	no	no	Yes		
Parmeliaceae	Usnea scabrida	no	no	no	no	Yes		
Parmeliaceae	Usnea torulosa var. torulosa	no	no	no	no	Yes		
Parmeliaceae	Usnea torulosa var. aurescens	no	no	no	no	Yes		
Verrucariaceae	Verrucaria hydrela	no	no	no	no	Yes		
Verrucariaceae	Verrucaria nigrescens	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia amplexula	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia congensis	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia elixii	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia flavescensireagens	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia furcata	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia glabrans	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia hypoprotocetrarica	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia cf. loxodella	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia mougeotina	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia notata	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia cf. rubrireagens	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia cf. segregata	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia stygoides	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia subnuda	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia substrigosa	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia tasmanica	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia tegeta	no	no	no	no	Yes		
Parmeliaceae	Xanthoparmelia xanthomelaena	no	no	no	no	Yes		

**Appendix 1. List of bryophytes recorded in Namadgi, Tidbinbilla and Birrigai, ACT.**

Family	Species	Putative new	Threatened	Threatened	Exotic/pest	Namadgi	Tidbinbilla	Birrigai
Daltoniaceae	Achrophyllum dentatum	no	no	no	no	Yes	Yes	
Andreaeaceae	Andreaea australis	no	no	no	no	Yes		
Andreaeaceae	Andreaea subulata	no	no	no	no	Yes		
Aneuraceae	Aneura alterniloba	no	no	no	no	Yes		
Bryaceae	Anomobryum subrotundifolium	no	no	no	no	Yes		
Bartramiaceae	Bartramia robusta	no	no	no	no	Yes		
Brachytheciaceae	Brachythecium rivulare	no	no	no	no	Yes		
Bartramiaceae	Breutelia affinis	no	no	no	no	Yes	Yes	
Bartramiaceae	Breutelia pendula	no	no	no	no	Yes		
Bartramiaceae	Breutelia pseudophilonotis	no	no	no	no	Yes		
Leucobryaceae	Campylopus introflexus	no	no	no	no	Yes	Yes	Yes
Cephaloziellaceae	Cephaloziella exiliflora	no	no	no	no		Yes	
Ditrichaceae	Ceratodon purpureus	no	no	no	no	Yes		Yes
Lophocoleaceae	Chiloscyphus latifolius	no	no	no	no	Yes		
Lophocoleaceae	Chiloscyphus semiteres	no	no	no	no	Yes	Yes	
Lophocoleaceae	Clasmatocolea inflexispina	no	no	no	no	Yes		
Bartramiaceae	Conostomum curvirostre	no	no	no	no	Yes		
Bartramiaceae	Conostomum pusillum var. pusillum	no	no	no	no	Yes		
Scapaniaceae	Diplophyllum domesticum	no	no	no	no	Yes		
Hookeriaceae	Distichophyllum pulchellum	no	no	no	no	Yes		
Ditrichaceae	Ditrichum difficile	no	no	no	no		Yes	
Ditrichaceae	Ditrichum punctulatum	no	no	no	no	Yes		
Fabroniaceae	Fabronia australis	no	no	no	no			Yes
Lembophyllaceae	Fallaciella gracilis	no	no	no	no		Yes	
Fissidentaceae	Fissidens asplenioides	no	no	no	no		Yes	
Fissidentaceae	Fissidens megalotis	no	no	no	no			Yes
Fossombroniaceae	Fossombronia wattsii	yes	no	no	no	Yes		
Frullaniaceae	Frullania pentapleura	no	no	no	no	Yes		
Frullaniaceae	Frullania probosciphora	no	no	no	no	Yes	Yes	
Frullaniaceae	Frullania rostrata	no	no	no	no	Yes		
Bryaceae	Gemmabryum sp.	no	no	no	no			Yes
Gigaspermaceae	Gigaspermum repens	no	no	no	no			Yes
Grimmiaceae	Grimmia laevigata	no	no	no	no	Yes		Yes
Grimmiaceae	Grimmia macroperichaetialis	no	no	no	no	Yes		
Grimmiaceae	Grimmia pulvinata var. africana	no	no	no	no	Yes		Yes
Grimmiaceae	Grimmia trichophylla	no	no	no	no	Yes		



Family	Species	Putative new	Threatened	Threatened	Exotic/pest	Namadgi	Tidbinbilla	Birrigai
Hedwigiaceae	Hedwigia ciliata	no	no	no	no	Yes		
Hedwigiaceae	Hedwigidium integrifolium	no	no	no	no	Yes		
Lophocoleaceae	Heteroscyphus coalitus	no	no	no	no	Yes		
Lophocoleaceae	Heteroscyphus fissistipus	no	no	no	no	Yes		
Hypnaceae	Hypnum cupressiforme	no	no	no	no	Yes		
Hypopterygiaceae	Hypopterygium tamarisci	no	no	no	no		Yes	
Lepidoziaceae	Kurzia compacta	no	no	no	no		Yes	
Lejeuneaceae	Lejeunea drummondii	no	no	no	no		Yes	
Lembophyllaceae	Lembophyllum divulgum	no	no	no	no	Yes		
Leptostomataceae	Leptostomum erectum	no	no	no	no	Yes		
Lunulariaceae	Lunularia cruciata	no	no	no	no		Yes	
Marchantiaceae	Marchantia berteroana	no	no	no	no	Yes		
Meesiaceae	Meesia triquetra	no	no	no	no	Yes		
Dendrocerotaceae	Megaceros gracilis	no	no	no	no	Yes	Yes	
Bryaceae	Ochiobryum blandum	no	no	no	no	Yes		
Orthotrichaceae	Orthotrichum rupestre var. rupestre	no	no	no	no	Yes		
Pallaviciniaceae	Pallavicinia xiphoides	no	no	no	no	Yes		
Bartramiaceae	Philonotis scabrifolia	no	no	no	no	Yes		
Bartramiaceae	Philonotis tenuis	no	no	no	no	Yes		
Mniaceae	Pohlia nutans	no	no	no	no	Yes		
Mniaceae	Pohlia wahlenbergii	no	no	no	no	Yes		
Polytrichaceae	Polytrichastrum alpinum	no	no	no	no	Yes		Yes
Polytrichaceae	Polytrichum commune	no	no	no	no	Yes		
Polytrichaceae	Polytrichum juniperinum	no	no	no	no	Yes		
Ptychomitriaceae	Ptychomitrium mittenii	no	no	no	no		Yes	
Rhizogoniaceae	Pyrrhobryum mnioides	no	no	no	no		Yes	
Grimmiaceae	Racomitrium crispulum	no	no	no	no	Yes		
Racopilaceae	Racopilum cuspidigerum	no	no	no	no		Yes	
Aytoniaceae	Reboulia queenslandica	no	no	no	no			Yes
Sematophyllaceae	Rhaphidorrhynchium amoenum var. amoenum	no	no	no	no	Yes	Yes	
Brachytheciaceae	Rhynchostegium tenuifolium	no	no	no	no		Yes	
Ricciaceae	Riccia cartilaginosa	no	no	no	no			Yes
Ricciaceae	Riccia crinita	no	no	no	no			Yes
Ricciaceae	Riccia lamellosa	no	no	no	no		Yes	
Ricciaceae	Riccia nigrella	no	no	no	no	Yes		
Ricciaceae	Riccia sorocarpa	no	no	no	no			Yes
Ricciaceae	Riccia spongiosula	no	no	no	no	Yes		Yes
Amblystegiaceae	Sanionia uncinata	no	no	no	no	Yes		

Family	Species	Putative new	Threatened	Threatened	Exotic/pest	Namadgi	Tidbinbilla	Birrigai
Grimmiaceae	Schistidium flexifolium	no	no	no	no	Yes		
Solenostomataceae	Solenostoma orbiculatum	no	no	no	no	Yes		
Sphagnaceae	Sphagnum cristatum	no	no	no	no	Yes		
Pallaviciniaceae	Symphyogyna podophylla	no	no	no	no	Yes	Yes	
Thuidiaceae	Thuidiopsis furfurosa	no	no	no	no	Yes		
Thuidiaceae	Thuidiopsis sparsa	no	no	no	no	Yes	Yes	
Pottiaceae	Triquetrella papillata	no	no	no	no			Yes
Pottiaceae	Weissia controversa	no	no	no	no	Yes	Yes	Yes

**Appendix 1. List of Vascular plants recorded in Namadgi and Birrigai, ACT.**

Family	Species	Common name	Putative new sp	Threatened	Threatened (	Exotic/pest	Namadgi	Birrigai
Adoxaceae	<i>Sambucus nigra</i>	White Elder	no	no	no	yes	yes	
Amaranthaceae	<i>Amaranthus albus</i>	Tumbleweed	no	no	no	yes		yes
Apiaceae	<i>Gingidia harveyana</i>	Slender Aniseed	no	no	no	no	yes	
Apocynaceae	<i>Vinca major</i>	Blue Periwinkle	no	no	no	yes	yes	yes
Araliaceae	<i>Hydrocotyle rivularis</i>	Pennywort	no	no	no	no	yes	
Aspleniaceae	<i>Asplenium flabellifolium</i>	Necklace Fern	no	no	no	no	yes	
Asteraceae	<i>Brachyscome obovata</i>	Baw Baw Daisy	no	no	no	no	yes	
Asteraceae	<i>Brachyscome scapigera</i>	Tufted Daisy	no	no	no	no	yes	
Asteraceae	<i>Calotis scabiosifolia</i> var. <i>integrifolia</i>	Rough Burr Daisy	no	no	no	no	yes	
Asteraceae	<i>Carduus pycnocephalus</i>	Slender Thistle	no	no	no	yes		yes
Asteraceae	<i>Carduus tenuiflorus</i>	Slender Thistle	no	no	no	yes		yes
Asteraceae	<i>Cassinia aculeata</i> subsp. <i>aculeata</i>	Dollybush	no	no	no	no	yes	
Asteraceae	<i>Centaurea melitensis</i>	Maltese Cockspur	no	no	no	yes		yes
Asteraceae	<i>Centipeda cunninghamii</i>	Common Sneezeweed	no	no	no	no		yes
Asteraceae	<i>Centipeda elatinoides</i>	Spreading Sneezeweed	no	no	no	no		yes
Asteraceae	<i>Cotula australis</i>	Common Cotula	no	no	no	no		yes
Asteraceae	<i>Craspedia variabilis</i>	Variable Billy Buttons	no	no	no	no	yes	
Asteraceae	<i>Crepis capillaris</i>	Smooth Hawksbeard	no	no	no	yes	yes	
Asteraceae	<i>Euchiton involucratus</i>	Star Cudweed	no	no	no	no	yes	
Asteraceae	<i>Euchiton japonicus</i>	Creeping Cudweed	no	no	no	no	yes	
Asteraceae	<i>Gamochaeta calviceps</i>	Grey Cudweed	no	no	no	yes		yes
Asteraceae	<i>Lachnagrostis filiformis</i>	Blowngrass	no	no	no	no	yes	
Asteraceae	<i>Leontodon saxatilis</i>	Lesser Hawkbit	no	no	no	yes		yes
Asteraceae	<i>Olearia algida</i>	Alpine Daisybush	no	no	no	no	yes	
Asteraceae	<i>Olearia erubescens</i>	Silky Daisybush	no	no	no	no	yes	
Asteraceae	<i>Olearia floribunda</i>	Heath Daisybush	no	no	no	no	yes	
Asteraceae	<i>Olearia megalophylla</i>	Large-leaved Daisybush	no	no	no	no	yes	
Asteraceae	<i>Olearis phlogopappa</i> ssp. <i>continentalis</i>	A daisybush	no	no	no	no	yes	
Asteraceae	<i>Ozothamnus secundiflorus</i>	Cascade Everlastingbush	no	no	no	no	yes	
Asteraceae	<i>Ozothamnus thyrsoideus</i>	Hairy Mountain Daisy	no	no	no	no	yes	
Asteraceae	<i>Podolepis decipiens</i>	Bright Podolepis	no	no	no	no	yes	
Asteraceae	<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	no	no	no	no		yes
Asteraceae	<i>Senecio campylocarpus</i>	Bulging Fireweed	no	no	no	no	yes	
Asteraceae	<i>Senecio hispidulus</i>	Hispid Fireweed	no	no	no	no	yes	
Asteraceae	<i>Senecio lageniformis</i>	n/a	no	no	no	no	yes	
Asteraceae	<i>Senecio</i> sp.	n/a	no	no	no	no	yes	
Asteraceae	<i>Sonchus asper</i>	Rough Sowthistle	no	no	no	yes	yes	
Asteraceae	<i>Tragopogon dubius</i>	Goat's Beard	no	no	no	yes	yes	

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Asteraceae	Xanthium spinosum	Bathurst Burr	no	no	no	yes		yes
Asteraceae	Xerochrysum ?bracteatum	Golden Everlasting	no	no	no	no	yes	
Blechnaceae	Blechnum minus	Soft Water Fern	no	no	no	no	yes	
Blechnaceae	Blechnum nudum	Fishbone Water Fern	no	no	no	no	yes	
Blechnaceae	Blechnum pennamarina ssp. alpina	Alpine Water Fern	no	no	no	no	yes	
Boraginaceae	Myosotis australis	Australian Forget-me-not	no	no	no	no	yes	
Boraginaceae	Myosotis discolor	Yellow and Blue Forget-me-not	no	no	no	yes	yes	
Boraginaceae	Myosotis laxa ssp. caespitosa	Water Forget-me-not	no	no	no	yes	yes	
Brassicaceae	Cardamine hirsuta	Common Bittercress	no	no	no	yes		yes
Brassicaceae	Cardamine lilacina	Lilac Bittercress	no	no	no	no	yes	
Brassicaceae	Cardamine papillata	Warty Bittercress	no	no	no	no	yes	
Campanulaceae	Isotoma fluviatilis ssp. australis	Swamp Isotome	no	no	no	no	yes	
Campanulaceae	Lobelia pedunculata	Matted Pratia	no	no	no	no	yes	
Campanulaceae	Lobelia surrepens	Mud Pratia	no	no	no	no	yes	
Caryophyllaceae	Cerastium vulgare	Common Mouse-eared Chickweed	no	no	no	yes	yes	
Caryophyllaceae	Polycarpon tetraphyllum	Four-leaved Allseed	no	no	no	yes		yes
Caryophyllaceae	Sagina namadgi	Mountain Pearlwort	no	no	no	no	yes	
Caryophyllaceae	Stellaria angustifolia ssp. tenella	Swamp Starwort	no	no	no	no	yes	
Caryophyllaceae	Stellaria multiflora ssp. multiflora	Rayless Starwort	no	no	no	no	yes	
Caryophyllaceae	Stellaria pungens	Prickly Starwort	no	no	no	no	yes	
Celastraceae	Stackhousia monogyna	Creamy Candles	no	no	no	no	yes	
Cyperaceae	Carex breviculmis	Short-stemmed Sedge	no	no	no	no	yes	
Cyperaceae	Carex buxbaumii	n/a	no	no	no	no	yes	
Cyperaceae	Carex disticha	Brown Sedge	no	no	no	yes	yes	
Cyperaceae	Carex fascicularis	Tassel Sedge	no	no	no	no	yes	
Cyperaceae	Carex gaudichaudiana	A sedge	no	no	no	no	yes	
Cyperaceae	Carex incomitata	A sedge	no	no	no	no	yes	
Cyperaceae	Carex rara ssp. capillacea	Yellow-leaved Sedge	no	no	no	no	yes	
Cyperaceae	Cyperus eragrostis	Umbrella Sedge	no	no	no	yes		yes
Cyperaceae	Gahnia subaequiglumis	Bog Sawsedge	no	no	no	no	yes	
Cyperaceae	Isolepis subtilissima	Dwarf Clubsedge	no	no	no	no	yes	
Cyperaceae	Schoenus apogon	Fluke Bogsedge	no	no	no	no	yes	
Dennstaedtiaceae	Hypolepis rugosula	Ruddy Ground Fern	no	no	no	no	yes	
Dicksoniaceae	Dicksonia antarctica	Soft Treefern	no	no	no	no	yes	
Dryopteridaceae	Polystichum proliferum	Mother Shield Fern	no	no	no	no	yes	
Ericaceae	Acrothamnus hookeri	Mountain Beardheath	no	no	no	no	yes	
Ericaceae	Epacris breviflora	Drumstick Heath	no	no	no	no	yes	
Ericaceae	Epacris celata	n/a	no	no	no	no	yes	
Ericaceae	Epacris gunnii	n/a	no	no	no	no	yes	
Ericaceae	Epacris robusta	Round-leaved Heath	no	no	no	no	yes	

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Ericaceae	Leucopogon gelidus	Drooping Beardheath	no	no	no	no	yes	
Euphorbiaceae	Euphorbia dallachyana	A spurge	no	no	no	no		yes
Euphorbiaceae	Euphorbia peplus	Petty Spurge	no	no	no	yes		yes
Fabaceae	Acacia alpina	Alpine Wattle	no	no	no	no	yes	
Fabaceae	Acacia boormanii	Snowy River Wattle	no	no	no	uncertain		yes
Fabaceae	Acacia pravissima	Oven's Wattle	no	no	no	no	yes	
Fabaceae	Acacia siculiformis	Dagger Wattle	no	no	no	no	yes	
Fabaceae	Almaleea capitata	Slender Parrotpea	no	no	no	no	yes	
Fabaceae	Bossiaea sericea	Silky Bossiaea	no	no	no	no	yes	
Fabaceae	Daviesia mimosoides	Bitterpea	no	no	no	no	yes	
Fabaceae	Daviesia ulicifolia ssp. ?ruscifolia	Gorse Bitterpea	no	no	no	no	yes	
Fabaceae	Glycine clandestina	Twining Glycine	no	no	no	no	yes	
Fabaceae	Hovea asperifolia ssp. asperifolia	Hovea	no	no	no	no	yes	
Fabaceae	Pultenaea polifolia	Dusky Bushpea	no	no	no	no	yes	
Fabaceae	Pultenaea procumbens	Heathy Bushpea	no	no	no	no	yes	
Fabaceae	Swainsona behriana	Behr's Swainson-pea	no	no	no	no	yes	
Fabaceae	Trifolium glomeratum	Clustered Clover	no	no	no	yes		yes
Geraniaceae	Geranium antrorsum	Rosetted Cranesbill	no	no	no	no	yes	
Geraniaceae	Geranium potentilloides var. potentilloides	Cinquefoil Cranesbill	no	no	no	no	yes	
Goodeniaceae	Goodenia hederacea ssp. alpestris	Ivy Goodenia	no	no	no	no	yes	
Haloragaceae	Myriophyllum lophatum	Water Milfoil	no	no	no	no	yes	
Hemerocallidaceae	Dianella tasmanica	Blue Flax Lily	no	no	no	no	yes	
Juncaceae	Juncus brevibracteus	A rush	no	no	no	no	yes	
Juncaceae	Juncus falcatus	Sickle-leaved Rush	no	no	no	no	yes	
Juncaceae	Juncus sarophorus	Broom Rush	no	no	no	no	yes	
Juncaceae	Luzula flaccida	Pale Woodrush	no	no	no	no	yes	
Juncaceae	Luzula modesta	Bog Woodrush	no	no	no	no	yes	
Juncaceae	Luzula novae-cambriae	Coarse Woodrush	no	no	no	no	yes	
Lamiaceae	Ajuga australis	Austral Bugle	no	no	no	no	yes	
Lamiaceae	Prostanthera lasianthos	Christmas Mintbush	no	no	no	no	yes	
Malvaceae	Malva parviflora	Small-flowered Mallow	no	no	no	yes		yes
Myrtaceae	Eucalyptus moorei	Narrow-leaved Sally	no	no	no	no	yes	
Myrtaceae	Eucalyptus pauciflora ssp. debeuzevillei	Snow Gum	no	no	no	no	yes	
Myrtaceae	Eucalyptus pauciflora ssp. pauciflora	Snow Gum	no	no	no	no	yes	
Myrtaceae	Kunzea muelleri	Mueller's Kunzea	no	no	no	no	yes	
Myrtaceae	Leptospermum grandifolium	Mountain Teatree	no	no	no	no	yes	
Myrtaceae	Leptospermum micromyrtus	Alpine Teatree	no	no	no	no	yes	
Myrtaceae	Melaleuca ptyoides	Alpine Bottlebrush	no	no	no	no	yes	
Onagraceae	Epilobium billardierianum ssp. cinereum	Variable Willowherb	no	no	no	no	yes	
Onagraceae	Epilobium ciliatum	Glandular Willowherb	no	no	no	yes	yes	

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Ophioglossaceae	Ophioglossum lusitanicum	Austral Adder's Tongue	no	no	no	no	yes	
Orchidaceae	Caladenia alpina	Mountain Caps	no	no	no	no	yes	
Orchidaceae	Chiloglottis valida	Large Bird Orchid	no	no	no	no	yes	
Oxalidaceae	Oxalis articulata	Shamrock Oxalis	no	no	no	yes	yes	
Papaveraceae	Argemone ochroleuca ssp. ochroleuca	Mexican Poppy	no	no	no	yes		yes
Papaveraceae	Papaver somniferum	Opium Poppy	no	no	no	yes		yes
Phyllanthaceae	Poranthera microphylla	Small Poranthera	no	no	no	no	yes	
Pinaceae	Pinus sylvestris	Scots Pine	no	no	no	yes	yes	
Pittosporaceae	Billardiera macrantha	Purple Appleberry	no	no	no	no	yes	
Plantaginaceae	Gratiola nana	Matted Brooklime	no	no	no	no	yes	
Plantaginaceae	Gratiola pumilio	Dwarf Brooklime	no	no	no	no		yes
Plantaginaceae	Veronica anagallis-aquatica	Blue Water Speedwell	no	no	no	yes	yes	
Plantaginaceae	Veronica calycina	Forest Speedwell	no	no	no	no	yes	
Plantaginaceae	Veronica derwentiana ssp. maideniana	Derwent Speedwell	no	no	no	no	yes	
Poaceae	Aira caryophyllea	Silvery Hairgrass	no	no	no	yes	yes	
Poaceae	Anthoxanthum odoratum	Sweet Vernal Grass	no	no	no	yes	yes	
Poaceae	Bromus diandrus	Great Brome	no	no	no	yes	yes	
Poaceae	Cynodon dactylon var.dactylon	Couch	no	no	no	yes		yes
Poaceae	Deyeuxia breviglumis	A bentgrass	no	no	no	no	yes	
Poaceae	Deyeuxia crassiuscula	Thick Bentgrass	no	no	no	no	yes	
Poaceae	Deyeuxia gunniana	Bog Bentgrass	no	no	no	no	yes	
Poaceae	Deyeuxia monticola	Mountain Bentgrass	no	no	no	no	yes	
Poaceae	Eragrostis curvula	African Lovegrass	no	no	no	yes		yes
Poaceae	Hemarthria uncinata var. uncinata	Matgrass	no	no	no	no	yes	
Poaceae	Holcus lanatus	Yorkshire Fog	no	no	no	yes	yes	
Poaceae	Koeleria macrantha	Crested Hairgrass	no	no	no	uncertain	yes	
Poaceae	Poa costiniana	Prickly Snowgrass	no	no	no	no	yes	
Poaceae	Poa helmsii	Broad-leaved Snowgrass	no	no	no	no	yes	
Poaceae	Poa phillipsiana	Blue Snowgrass	no	no	no	no	yes	
Poaceae	Poa sieberiana var. cyanophylla	Blue-leaved Snowgrass	no	no	no	no	yes	
Poaceae	Poa sieberiana var. sieberiana	Snowgrass	no	no	no	no	yes	
Polygonaceae	Persicaria lapathifolia	Pale Knotweed	no	no	no	no	yes	
Polygonaceae	Polygonum plebeium	Small Knotweed	no	no	no	no	yes	
Portulacaceae	Montia australasica	White Purslane	no	no	no	no	yes	
Proteaceae	Grevillea lanigera	Woolly Grevillea	no	no	no	no	yes	
Proteaceae	Hakea microcarpa	Small-fruited Hakea	no	no	no	no	yes	
Ranunculaceae	Clematis aristata	Old Man's Beard	no	no	no	no	yes	
Ranunculaceae	Ranunculus inundatus	River Buttercup	no	no	no	no	yes	
Ranunculaceae	Ranunculus lappaceus	Australian Buttercup	no	no	no	no	yes	
Ranunculaceae	Ranunculus millanii	Dwarf Buttercup	no	no	no	no	yes	

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Ranunculaceae	Ranunculus pimpinellifolius	Bog Buttercup	no	no	no	no	yes	
Ranunculaceae	Ranunculus scapiger	Mountain Buttercup	no	no	no	no	yes	
Resedaceae	Reseda luteola	Cut-leaved Mignonette	no	no	no	yes		yes
Rhamnaceae	Discaria pubescens	Australian Anchor Plant	no	no	no	no	yes	
Rosaceae	Sanguisorba minor	Sheep's Burnet	no	no	no	yes	yes	
Rubiaceae	Asperula gunnii	Mountain Woodruff	no	no	no	no	yes	
Rubiaceae	Asperula scoparia ssp. scoparia	Prickly Woodruff	no	no	no	no	yes	
Rubiaceae	Galium divaricatum	Slender Bedstraw	no	no	no	yes		yes
Rubiaceae	Galium polyanthum	A bedstraw	no	no	no	no	yes	
Rubiaceae	Sherardia arvensis	Field Madder	no	no	no	yes		yes
Rutaceae	Asterolasia trymalioides ssp. villosa	Alpine Starbush	no	no	no	no	yes	
Rutaceae	Phebalium squamulosum ssp. ozothamnoides	Phebalium	no	no	no	no	yes	
Santalaceae	Choretrum pauciflorum	Dwarf Sourbush	no	no	no	no	yes	
Scrophulariaceae	Verbascum thapsus ssp. thapsus	Great Mullein	no	no	no	yes		yes
Scrophulariaceae	Verbascum virgatum	Twiggy Mullein	no	no	no	yes		yes
Solanaceae	Solanum triflorum	Three-flowered Nightshade	no	no	no	yes		yes
Stylidiaceae	Stylidium armeria ssp. armeria	Thrift-leaved Triggerplant	no	no	no	no	yes	
Thymelaeaceae	Pimelea biflora	Riceflower	no	no	no	no	yes	
Thymelaeaceae	Pimelea ligustrina ssp. ciliata	Kosciuszko Rose	no	no	no	no	yes	
Thymelaeaceae	Pimelea treyvaudii	Grey Riceflower	no	no	no	no	yes	
Urticaceae	Australina pusilla ssp. muelleri	Smooth Nettle	no	no	no	no	yes	
Violaceae	Melicytus angustifolius ssp. divaricatus	Treeviolet	no	no	no	no	yes	
Violaceae	Viola betonicifolia	Showy Violet	no	no	no	no	yes	
Violaceae	Viola hederacea	Ivy-leaved Violet	no	no	no	no	yes	
Winteraceae	Tasmania xerophila ssp. xerophila	Alpine Pepper	no	no	no	no	yes	