Image by Micah Visoiu

Epacris graniticola

granite heath

TASMANIAN THREATENED FLORA LISTING STATEMENT

Scientific name: ***Epacris graniticola*** Crowden, *Muelleria* 25: 126 (2007)

Common name: granite heath (Wapstra et al. 2005)

Group: vascular plant, dicotyledon, family **Epacridaceae** (now Ericaceae**)**

Status: *Threatened Species Protection Act 1995*: **vulnerable**

Environment Protection and Biodiversity Conservation Act 1999: **Critically Endangered**

Distribution: Endemic status: **Endemic to Tasmania**

Tasmanian NRM Region: **North**

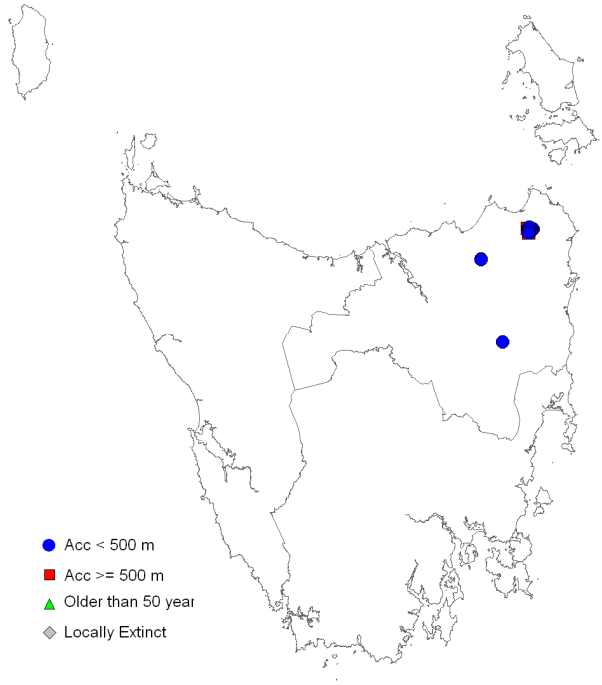

Figure 1. Distribution of *Epacris graniticola*

Plate 1. *Epacris graniticola* habit
(Image by Micah Visoiu)

IDENTIFICATION AND ECOLOGY

Epacris graniticola is a woody shrub that grows to 1.5 m tall. It is associated with granite substrates in Tasmania's northeast. Recruitment is from seed and anecdotal reports suggest that the species may resprout following fire. The maximum life span of individual plants is probably in the order of 30 to 40 years (Keith 1998), with a generation length in the range 8 to 20 years.

Known pollinators of taxa of *Epacris* include a variety of adult carrion flies from the Tabanidae, Muscidae and Calliphoridae families (Keith 1998). Fruit production for taxa of *Epacris* depends on plant size, fire history and shading by the canopies of neighbouring plants, with up to several thousand seeds produced each year (Keith 1998). Decreased fruit production may result from predation, browsing herbivores, mechanical damage and high rates of abortion of developing fruits on shaded plants.

Seed release is likely to peak in late summer and be completed by early autumn (Keith 1998). Dispersal is passive, with very few seeds dispersed more than a few metres from their parent plant. The longevity of seed is unknown, although Keith (1998) indicated that appreciable numbers may survive for two years after release into the soil seed bank. The species is likely to produce a fraction of dormant and non-dormant seed each year, thereby accumulating a persistent seed bank. Germination response to heat shock and smoke derivatives results in seedling emergence being cued to the occurrence of fire.

Survey techniques

Epacris graniticola is best identified during its flowering period, September to late October.

Description

Epacris graniticola is a generally erect multi-stemmed shrub, growing up to 1.5 m tall (Plate 1). Its branches are divaricate and minutely hairy, bearing thick ovate-lanceolate to ovate convex leaves, which are 2.0 to 5.5 mm long and 1.3 to 2.9 mm wide with short stalks (<1 mm long), an acute apex, a prominent midrib, and 3 to 5 veins evident on the lower surface. The flowers are white, solitary in the leaf axils, subsessile and clustered at the ends of branches. The style is 2.3 to 5.8 mm long and the stigma and anthers are exserted from the corolla tube, which is 3 to 4 mm long and has five lobes 3.5 to 4.0 mm long. Fruits are capsules up to 2 mm long and enclosed within imbricate whorls of sepals and bracts until dehiscence.

[description from Keith 1998, Crowden 2007]

Confusing species and taxonomic issues

Epacris graniticola is distinguished from other species in the "*Epacris tasmanica* complex" (*Epacris exserta, Epacris moscaliana* and *Epacris virgata*) by its divaricate habit, and its relatively small and broad recurved leaves (Crowden 2007).

Epacris graniticola corresponds to the taxon referred to as *Epacris* sp. aff. *exserta* (Mt Cameron) in the *Recovery Plan – Tasmanian Forest Epacrids 1999–2004* (Keith 1998), *Epacris* aff. *virgata* (Mt Cameron) and *Epacris* aff. *virgata* 'graniticola'.

Plate 2. *Epacris graniticola* habitat at Mt Cameron (Image by Richard Schahinger)

DISTRIBUTION AND HABITAT

Epacris graniticola is endemic to northeastern Tasmania (Figure 1), occurring at Mt Stronach, Rossarden and Mt Cameron. The linear range of the species is 81 km, extent of occurrence 1200 km^2, and area of occupancy about 15 ha (Table 1).

Table 1. Population summary for *Epacris graniticola*

	Subpopulation	Tenure	NRM Region	1:25000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
1	Blue Lake track	Cameron Regional Reserve	North	Pioneer	2010 (1985?)	1.26 0.12 *	15,000+ 6,988 *
2	Wedgetail Creek	Cameron Regional Reserve	North	Monarch	1996 (1996)	0.06 *	436 *
3	Cube Rock	Cameron Regional Reserve	North	Gladstone	1996 (1996)	0.04 *	162*
4	Mt Cameron	Cameron Regional Reserve	North	Monarch	2007 (1996)	0.59 *	884*
5	Mt Stronach	Mt Stronach Forest Reserve	North	Scottsdale	2009 (1990)	c. 10 3.46 *	30,000+ 10,559 *
6	Dalrymple Hill (Rossarden)	Castle Cary Regional Reserve	North	Rossarden	2009 (1996)	0.40 0.02 *	5,000+ 282 *
7	Billy Bend	Cameron Regional Reserve	North	Gladstone	1999 (1999)	< 1	302
8	First Sugarloaf	Cameron Regional Reserve	North	Gladstone	2000 (2000)	c. 0.1	100–200
9	Mt Cameron (south)	Cameron Regional Reserve	North	Monarch	2010 (1983)	0.30	1000–1500
10	Mt Cameron (southwest)	Cameron Regional Reserve	North	Monarch	2010 (2010)	0.12	200–300

* = mean estimates based on sub-sample counts (Keith 1997 & 1998);
NRM region = Natural Resource Management region

Epacris graniticola is restricted to granite outcrops. It is usually found '… growing amongst clumps of moss and lichen in moist depressions and fissures on exposed rock platforms' (Crowden 2007; Plate 2), but may also grow in seepage areas associated with granite slabs in dry scrub-forest. The elevation range of known sites is 80 to 730 m above sea level. Associated species include *Kunzea ambigua* (white kunzea), *Leptospermum scoparium* (common teatree) and *Eucalyptus amygdalina* (black peppermint).

POPULATION ESTIMATE

Epacris graniticola is known from ten subpopulations (defined as occurrences separated by distances of more than 1 km), with a total population size of about 55,000 mature plants (Table 1).

Keith (1997) recorded six subpopulations (1 to 6 in Table 1), with a mean estimate of 19,310 plants and area of occupancy of 4.3 ha. Four subpopulations have been discovered in the interim, all within Cameron Regional Reserve. Surveys in 2009 and 2010 by Threatened Species Section personnel showed the Blue Lake, Mt Stronach and Dalrymple Hill subpopulations to be much larger than estimated previously, the difference likely due to survey technique, with earlier estimates extrapolated from population dynamics studies. The results of the 2009–2010 surveys indicate that there is a reasonable likelihood of more colonies being discovered in the remoter parts of the Cameron and Castle Cary Regional Reserves.

RESERVATION STATUS

All known occurrences of *Epacris graniticola* are within formal reserves: Cameron Regional Reserve, Castle Cary Regional Reserve and Mt Stronach Forest Reserve.

CONSERVATION ASSESSMENT

Epacris graniticola was listed as vulnerable on schedules of the Tasmanian *Threatened Species Protection Act 1995* in 2003 under the name *Epacris* aff. *virgata* 'graniticola'. The species qualifies under criterion B: Extent of occurrence estimated to be less than 2,000 km^2, area of occupancy estimated to be less than 50 hectares, and (1) severely fragmented or known to exist at no more than 10 locations and (2) continuing decline, inferred, observed or projected, in (a) extent of occurrence and (c) area, extent and/or quality of habitat.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Cited threats to *Epacris graniticola* include inappropriate fire regimes, infection by the exotic soil-borne disease *Phytophthora cinnamomi* (root rot), and activities associated with mineral exploration and extraction (Keith 1998). All subpopulations are in relatively remote regions, and in mostly undisturbed condition, although disease infestations and/or symptoms are known from areas close to each of the known sites. One subpopulation is close to past mineral extraction activities (Blue Lake), one is traversed by a popular walking track (Mt Cameron) and one by a 4WD track (Mt Stronach).

Inappropriate fire regimes: *Epacris graniticola* is potentially at risk from high frequency fires that interrupt maturation or the development of fire-resistant basal stems in juvenile plants. The effects of adverse fire regimes may be compounded by the failure of seedling recruitment if follow-up rains are not forthcoming, with an increase in browsing by native animals further compounding the species' chances of survival. The fire history of areas supporting the species, as well as the refugial nature of its rocky habitat, suggest that there is a low likelihood of frequent fire having a significant impact. However, the threat of frequent fire may be greater in the future due to increasingly dry conditions associated with climate change.

The absence of fire for extended periods has also been proposed as a threat to the species. Keith (1998) cited mortality rates of 10 to 23% per year for subpopulations that had not been burnt for 25 to 30 years, the inference being that the species was at risk of local extinction in the continued absence of fire. Such a scenario is unlikely to be realised, however, as evidenced by observations in 2009 to 2010 of active recruitment in the absence of fire.

A wildfire in March 2006 burnt about 4400 ha in the Mt Cameron area, the mapped fire boundary encompassing eight of the ten known subpopulations. Anecdotal reports from early 2008 suggested that the Blue Lake site (the second largest in terms of plant numbers and area occupied) had been burnt, with no signs of recruitment, raising concerns as to the species' future (TSSC 2009). Surveys in 2009 to 2010 revealed that the Blue Lake site had escaped the fire, as had others in the Cameron Range, with only a few plants burnt. It has emerged that the 2008 report referred to a small patch of plants some 2 km east of the Blue Lake site (N. Tapson pers. comm. 2010).

There are no fire management plans in place for any of the known subpopulations.

Disease: *Epacris graniticola* is suspected of being susceptible to *Phytophthora cinnamomi* (Keith 1998). The pathogen has been isolated from the mining area close to Blue Lake, with symptoms observed close to the remote First Sugarloaf site. Future spread of the pathogen by bushwalkers or native animals to other sites in the Cameron Range is likely. To date there has been no evidence of the species itself being impacted in the field. As in all such cases, the precautionary principle should be invoked until the species' resistance is demonstrated, and any activities proposed for areas supporting the species should include appropriate disease hygiene measures (DPIWE 2004).

The experience with the highly susceptible *Epacris barbata* (bearded heath), an allied species also associated with bouldery granite habitats, suggests that a cataclysmic decline in the *Epacris graniticola* population as a result of disease is unlikely.

Mineral exploration and extraction: All known subpopulations occur within formal reserves, although their reserve status, Regional Reserve and Forest Reserve, does not preclude mineral exploration and extraction. The Blue Lake area has been the subject of intensive alluvial tin mining in the past, with the

suspected loss of some plants. The extant core subpopulation occurs upslope of past activity and is unlikely to be impacted by a resumption of operations (as was proposed prior to the recent global financial crisis). The other subpopulations in the Cameron Range are on remote rocky outcrops (Plate 2), well removed from any potential mining activity. A similar situation applies to the Mt Stronach and Dalrymple Hill subpopulations.

Stochastic risk: Five of the ten subpopulations support fewer than 500 mature plants (Table 1), and are at risk from local extinctions due to unforeseen human activities or events such as prolonged drought, especially if combined with heavy browsing by native herbivores.

MANAGEMENT STRATEGY

What has been done?

- extension surveys for the species (Keith 1997) were undertaken during the lead up to the Regional Forest Agreement and by Threatened Species Section personnel in 2009 and 2010;
- seed has been collected from the Mt Stronach subpopulation for long-term storage at the Tasmanian Seed Conservation Centre;
- *Epacris graniticola* is included in the *Draft Flora Recovery Plan: Threatened Tasmanian Forest Epacrids* (Threatened Species Section 2010).

Management objectives

The main objectives for the recovery of *Epacris graniticola* are to prevent the inadvertent destruction of subpopulations, maintain the viability of existing subpopulations, and promote conditions for its successful recruitment.

What is needed?

- undertake extension surveys to determine the species' full extent in the Cameron and Castle Cary Regional Reserves, and identify management issues;
- prepare and implement fire management plans for the reserves supporting the species;
- implement disease hygiene measures for any activities proposed for areas supporting the species;
- monitor key subpopulations at two-yearly intervals to determine the level of recruitment and/or plant loss to better inform management prescriptions;
- provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, development proponents and the local community on the location, significance and management of known subpopulations and areas of potential habitat.

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View:
www.dpipwe.tas.gov.au/threatenedspecieslists

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Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.