Image by Mark Wapstra

Epacris glabella

smooth heath

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Epacris glabella*** Jarman, *Aspects of Tasmanian Botany*: 100 (1991)
Common Name: smooth heath (Wapstra et al. 2005)
Group: vascular plant, dicotyledon, family **Epacridaceae** (now Ericaceae)

Status: *Threatened Species Protection Act 1995*: **endangered**
Environment Protection and Biodiversity Conservation Act 1999: **Endangered**

Distribution: Endemic status: **endemic to Tasmania**
Tasmanian NRM Region: **Cradle Coast, South**

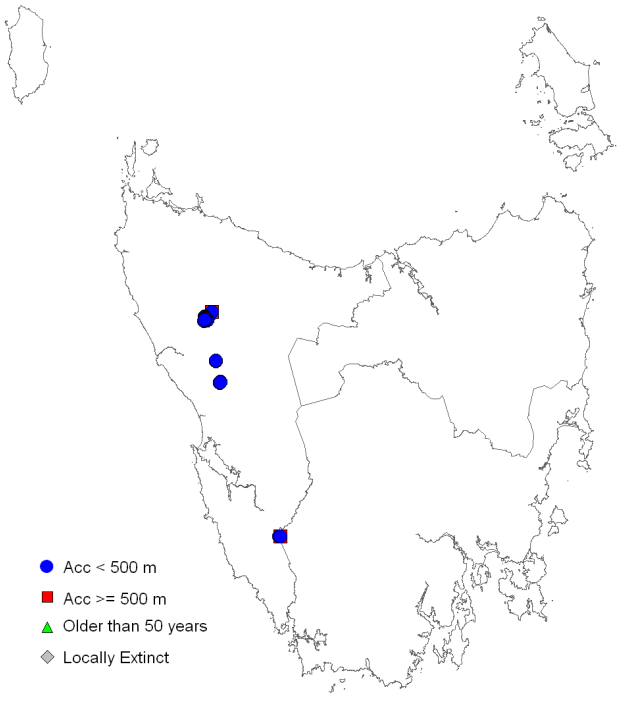

Figure 1. Distribution of *Epacris glabella,* showing Natural Resource Management regions

Plate 1. Flowers of *Epacris glabella* (image by Greg Jordan)

SUMMARY: *Epacris glabella* (smooth heath) is a slender shrub restricted to shrubby heathland, scrubland and woodland on ultramafic (serpentinite) substrates in Tasmania's northwest, with an outlying location on non-ultramafic rocks along the Gordon River in the southwest. Its ultramafic habitat is restricted. Threats to the species include targeting of its ultramafic habitat for mineral exploration and extraction, inappropriate fire regimes, infection by the exotic soil-borne plant pathogen *Phytophthora cinnamomi*, and regulated river flows.

IDENTIFICATION AND ECOLOGY

Epacris glabella flowers in mid spring. Known pollinators of *Epacris* species include a variety of adult carrion flies from the families Tabanidae, Muscidae and Calliphoridae (Keith 1998). Fruit production for *Epacris* species 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). Fruit production is substantially reduced in shaded plants, with high rates of abortion among developing fruits. Other fruit losses may result from predation, browsing herbivores and mechanical damage.

Dispersal of *Epacris* seeds is passive, and very few seeds are likely to be dispersed more than a few metres from their parent plant (aside from those close to creeklines). The longevity of *Epacris* seeds is unknown, though Keith (1998) indicates that appreciable numbers of seeds survive for two years after release into the seed bank. Seeds remain dormant until released by heat shock and smoke-related cues associated with the passage of fire (Keith 2004). Keith (1998) noted that although the first seed crop is likely to be produced in the fourth fruiting season after fire, it may be 6 to 8 years before a seed bank of sufficient size has accumulated to ensure sufficient seedling recruitment after a subsequent fire. The ability of *Epacris glabella* to resprout following fire is unknown, although it is known to resprout after physical damage.

Keith (1998) estimated mortality at 10 to 23% for *Epacris glabella* at sites that had remained unburnt for 25 to 30 years, and conjectured that the maximum life span of individual plants was probably in the order of 30 to 40 years.

Survey techniques

Surveys for *Epacris glabella* can be conducted at any time of the year, though the species is more detectable when flowers are present in mid-spring. Care should be taken when conducting surveys to avoid spreading *Phytophthora cinnamomi* by surveying in dry conditions and ensuring that field equipment, including footwear, is disinfected.

Description

Epacris glabella is a 1 to 2 m tall shrub, with erect slender branches. Its branches are glabrous or have a few short scattered hairs, and bear thick ovate-elliptical flat leaves, 3.5 to 7 mm long and 2 to 3.5 mm wide, with stalks less than 1 mm long, an obtuse apex and inconspicuous venation. Flowers are white, solitary in the leaf axils, subsessile and scattered along the upper parts of branches. The style is 2.5 to 4.5 mm long, and the stigma and anthers are prominently exserted from the campanulate corolla tube which is 2.5 to 3.5 mm long and has five ovate lobes 3 to 5 mm long.

[description based on Jarman & Mihaich 1991]

Confusing species

Epacris glabella has close affinities with species in the *Epacris tasmanica–Epacris virgata–Epacris exserta* complex, sharing with these species floral characters such as exserted anthers, a funnel-shaped corolla tube, and a comparatively long style that reaches to the anthers or beyond. *Epacris glabella* is distinguished by its flat, rounded, non-pungent leaves, essentially glabrous branchlets, and its preference for serpentine soils (Jarman & Mihaich 1991). Plants in the Gordon River subpopulation have leaves that are relatively narrow, being at the lower end of the cited range (Schahinger 2006).

DISTRIBUTION AND HABITAT

Epacris glabella is endemic to Tasmania, being known from a few localities in the State's northwest and an outlying occurrence in the

southwest along the Gordon River (Figure 1). All but one of the occurrences is associated with Cambrian ultramafic substrates, with the Gordon River site occurring on Precambrian quartzite. The elevation range of the known *Epacris glabella* sites is 270 to 490 m above sea level.

Habitat in northwestern Tasmania includes heathland/scrub or *Eucalyptus nitida* dry sclerophyll woodland in hilly terrain (Jarman & Mihaich 1991, Keith 1998). The Wilson River site includes open sediment pans and scrubby/sedgy *Eucalyptus nebulosa* woodland (Plate 2). Part of the Serpentine Hill site is associated with a long-used highway-side quarry, where the species has colonised the disturbed old working faces (Plate 3).

The Gordon River (The Splits) subpopulation occurs in the exposed zone between the river channel and dense riparian scrub/rainforest, with plants growing in pockets of soil on the lee side of a series of sparsely-vegetated rocky ridges aligned more-or-less perpendicular to the river. Occasional plants also occur in the flood-scoured bedrock adjacent to the river (Plate 4).

Plate 2. Habitat of *Epacris glabella* near the Wilson River (image by Mark Wapstra)

Plate 3. *Epacris glabella* growing *in situ* near the type location on Serpentine Hill (image by Mark Wapstra)

Plate 4. Habitat of *Epacris glabella* along the Gordon River (image by Richard Schahinger)

POPULATION PARAMETERS

Epacris glabella has been recorded from eight subpopulations, where individual sub-populations have been presumed to be discrete patches separated by discontinuities of at least 1 km (Keith 2000). The subpopulations are from four disjunct locations (Table 1; Figure 1), the northern three occurring in disjunct ultramafic areas. The species has a linear range of 154 km, an extent of occurrence of 850 km^2, and area of occupancy of about 20 ha.

The total population size is estimated to be in the order of 200,000 mature individuals. Estimates from the larger subpopulations in Table 1 are based on surveys in the mid-1990s (Keith 1997) and are considered to be conservative estimates of the number of mature individuals. Some recent additions to the distribution of the species (e.g. Gordon River, Wilson River) suggest that further surveys may detect additional sites. The species' preferred

Table 1. Population summary for *Epacris glabella*

	Location	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
1.1	Bronzite Hill	Savage River Regional Reserve	Cradle Coast	Waratah	1996 (1988)	0.01	14
1.2	Burgess Hill	State forest*	Cradle Coast	Waratah	1990	unknown	few
1.3	Brassey Hill	State forest*	Cradle Coast	Savage River	2001 (1990)	7–8	51,318
1.4	Gabbro Hill & Nineteen Mile Creek	Savage River Regional Reserve	Cradle Coast	Donaldson, Savage River	2001 (1987)	6–7	137,087
1.5	Waratah Road	Savage River Regional Reserve	Cradle Coast	Savage River	2001 (1996?)	unknown	395
2	Wilson River	Meredith Range Regional Reserve	Cradle Coast	Parsons	2011	0.5	100+
3	Serpentine Hill	State forest	Cradle Coast	Dundas	2011 (1972)	c. 2	2,368
4	The Splits, Gordon River	Tasmanian Wilderness World Heritage Area (Franklin-Gordon Wild Rivers National Park)	South	Serpentine	2007 (1977)	0.2	c. 500

NRM Region = Natural Resource Management Region
* proposed for reservation under the *Tasmanian Forests Agreement 2013*

ultramafic substrate has been a focus for botanical surveys, and the likelihood of *Epacris glabella* being discovered outside its known extent of occurrence on this substrate is considered to be low. Note that the Gordon River plants were only recognised as *Epacris glabella* in 2006 raising the possibility that more sites will be found on Precambian quartzite, though this appears unlikely given examination of *Epacris* specimens from the region.

RESERVATION STATUS

Epacris glabella is known from Franklin-Gordon Wild Rivers National Park, Meredith Range Regional Reserve and Savage River Regional Reserve (Table 1).

CONSERVATION ASSESSMENT

Epacris glabella was listed as endangered on the Tasmanian *Threatened Species Protection Act 1995* when the Act came into being, meeting criterion B: extent of occurrence estimated to be less than 500 km^2, and

- known to exist at no more than five locations;
- a continuing decline, inferred, observed or projected in area, extent and/or quality of habitat, and number of mature individuals.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Mineral exploration and/or extraction: *Epacris glabella* is associated with ultramafic geology, which is targeted for mineral exploration and extraction on the State's west coast. Some sites have already been affected by such activities, and others remain at risk directly (e.g. exploration roads, tailings dams, open cut mines) or indirectly (e.g. introduction of weeds and disease, changes in hydrology). Regional Reserves are available for mineral exploration and extraction, and do not therefore provide full protection from the threats associated with these activities.

Inappropriate fire regimes: The continued absence of fire at known subpopulations is considered a threat to the species' long-term

viability. Fire at intervals of less than 6 to 8 years may reduce recruitment potential.

***Phytophthora cinnamomi*:** *Epacris glabella* is known to be highly susceptible to *Phytophthora cinnamomi* in laboratory conditions (Barker 1994), with symptoms of the pathogen noted at some sites Keith (1997). Only sporadic symptoms of infection of *Epacris glabella* by *Phytophthora* have been noted in the field, and these have been relatively muted, consistent with the experience of other epacrids on serpentinite at Beaconsfield (Schahinger et al. 2003).

Land clearing and/or habitat modification: Some major public roads (e.g. Murchison Highway) and mining/forestry roads either pass through or go close to known subpopulations, and there may have been a loss of an unknown number of individuals when this occurred. Such roads are probably also the conduit for the introduction of *Phytophthora cinnamomi*.

Regulation of river flows: Plants from the Gordon River site were only recognised as *Epacris glabella* in 2006, though plants have persisted at the site despite heavily regulation since the late 1970s with the construction of the lower Gordon Dam. However, the apparent lack of juvenile plants noted by Schahinger (2006) may indicate that the current flow regime is less than ideal for the species' recruitment and ultimately, its long-term survival.

Climate change: A warmer climate and longer periods of drought may impact deleteriously on *Epacris glabella* and its habitat, possibly through reducing recruitment following fire. An increased fire frequency due to climate change may also prove to be detrimental to the species.

MANAGEMENT STRATEGY

Management objectives

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

What has been done?

Recovery planning: *Epacris glabella* is included in the *Flora Recovery Plan: Threatened Tasmanian Forest Epacrids* (Threatened Species Section 2011).

***Phytophthora cinnamomi* research and management:** *Epacris glabella* was included in an assessment of the susceptibility to *Phytophthora cinnamomi* in laboratory conditions (Barker 1994), resulting in the inclusion of the Brassey Hill and Nineteen Mile Creek subpopulations in *Phytophthora cinnamomi* management areas (Barker 1994, Schahinger et al. 2003).

Survey and monitoring: There have been considerable surveys of the vegetation and flora of ultramafic substrates in Tasmania (e.g. Gibson et al. 1992, North et al. 1998). Targeted surveys for *Epacris glabella* were undertaken during the development of the *Tasmanian Forest Epacrids Recovery Plan* (Keith 1997, 1998), while extension surveys and monitoring were undertaken during the Recovery Plan's implementation phase from 1999 to 2002. Surveys of limited sections of the Gordon River were undertaken in October 2006 (Schahinger 2006) and again in 2007.

Forest management: That part of the Serpentine Hill occurrence to the east of the Murchison Highway is on State forest covered by a flora Special Management Zone (Orr & Gerrand 1998), requiring the needs of the species to be considered.

***Ex situ* conservation:** Seed has been collected from the Serpentine Hill subpopulation for long-term conservation storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens in Hobart.

What is needed?

Agencies, groups or individuals may assist with some or all of the following recovery actions. Coordinated efforts may achieve the best and most efficient results.

- ensure that existing and proposed mining activities do not significantly impact on the species, taking cumulative and indirect

impacts, as well as the potential impacts of fragmentation into consideration;

- update and implement relevant reserve management plans;
- undertake extension surveys along the Gordon River to determine the species' full extent;
- establish and monitor plots at The Splits site to inform the response of the species to the Gordon River's regulated flow regime;
- monitor the response of the species to disturbance and disease regimes to guide future recovery work;
- provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of known subpopulations;
- supplement the seed collection held at the Tasmanian Seed Conservation Centre.

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Prepared in January 2013 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Approved by the Secretary and published in February 2014.

Cite as: Threatened Species and Marine Section (2014). *Listing Statement for* Epacris glabella *(smooth heath)*. Department of Primary Industries, Parks, Water and Environment, Tasmania.

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