Image by Tim Rudman

Epacris apsleyensis

apsley heath

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Epacris apsleyensis*** Crowden, *Pap. & Proc. Roy. Soc. Tasmania* 120: 17 (1986)

Common Name: apsley 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: **North, South**

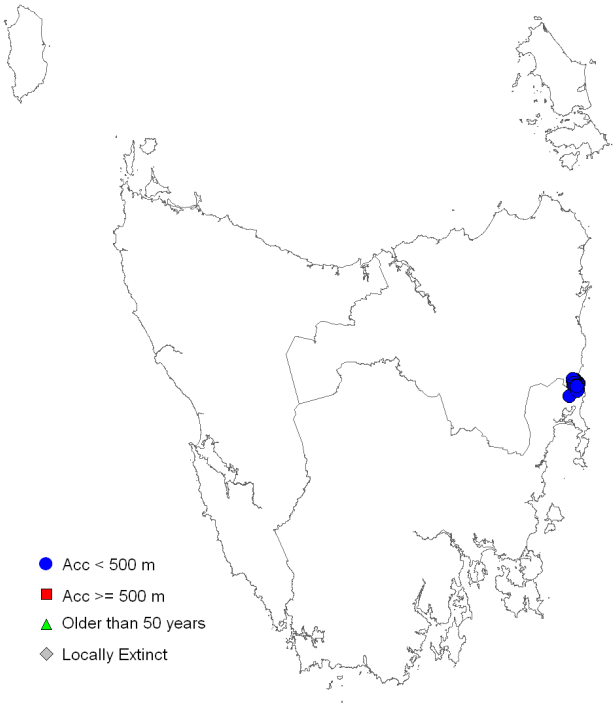

Figure 1. Distribution of *Epacris apsleyensis*, showing Natural Resource Management regions

Plate 1. Flowering upper branches of *Epacris apsleyensis* (image by Tim Rudman)

SUMMARY: *Epacris apsleyensis* (apsley heath) is a shrub in Tasmania, occurring in dry sclerophyll forest on Jurassic dolerite on Tasmania's central east coast. The total number of mature individuals is estimated at more than 500,000, though the species has a restricted distribution, with linear range of only about 11 km, putting it at risk from localised events. Threats include infection by the exotic soil-borne plant pathogen *Phytophthora cinnamomi*, inappropriate fire regimes, land clearance, habitat fragmentation and modification, and weed invasion.

IDENTIFICATION AND ECOLOGY

Epacris apsleyensis begins flowering in January, peaks in autumn and continues sporadically until late spring (Keith 1997). Known pollinators of *Epacris* taxa include a variety of adult carrion flies from the families Tabanidae, Muscidae and Calliphoridae (Keith 1998). It seems likely that other species of large flies would also function as pollinators (Keith 1997). Fruit production 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.

Release of seed of *Epacris apsleyensis* peaks in late autumn to early winter and may continue through until late spring (Keith 1998). Dispersal of *Epacris* seed is passive, and very few seed are likely to be dispersed more than a few metres from their parent plant (aside from those close to rivers and creeklines). The longevity of *Epacris* seed is unknown, though Keith (1998) indicates that appreciable numbers of seed may survive for two years after release into the seed bank. Seed remains 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. Individuals of *Epacris apsleyensis* are capable of resprouting post-fire.

The generation length for *Epacris apsleyensis* is likely to be in the range 8 to 30 years, based on studies of the life history attributes of the closely allied *Epacris barbata* (Keith 2004). The longevity of individual shrubs is probably in the order of 30 to 40 years (Keith 1997).

Survey techniques

Surveys can be conducted at any time of the year, though the species is more easily detected when in flower and especially in autumn during peak flowering. Care should be taken when conducting surveys to avoid spreading *Phytophthora cinnamomi*, by surveying in dry conditions when possible, and ensuring that footwear and all field equipment is disinfected.

Description

Epacris apsleyensis is an erect sparsely branched shrub growing up to 1.5 m tall. Its branches are slender, bearing thin recurved lanceolate-elliptic leaves. The leaves are 5 to 9 mm long and 2 to 3 mm wide with short stalks less than 1 mm long, and with a conspicuous mid-vein on the lower surface. The leaf apex is acute with a short, barely pungent mucro. The flowers are white, solitary in the leaf axils, subsessile and are mostly clustered at the ends of branches but occasionally spread down short lengths of new season's growth. The style and anthers are enclosed within the throat of the campanulate corolla tube, which is 2 to 3 mm long and has five 3 to 4 mm long lobes.

[description based on Crowden 1986]

Confusing species

Epacris apsleyensis may be distinguished from other *Epacris* species in Tasmania by its floral morphology, having anthers enclosed within the corolla tube, a short style and relatively small flowers (Crowden 1986).

DISTRIBUTION AND HABITAT

Epacris apsleyensis is endemic to Tasmania, being restricted to a small area near Bicheno, on the

Table 1. Population summary for *Epacris apsleyensis*

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1.1	Denison Rivulet	Douglas-Apsley National Park & private land *	North, South	Bicheno	2002 (1996)	1	c. 1,200
1.2	Blindburn Creek	Douglas-Apsley National Park	North	Bicheno	2010 (1999)	3	20,000+
1.3	Rosedale Road	Apsley Conservation Area & private land *	South	Bicheno	2013 (1983)	100	350,000+
1.4	Bicheno Golf Club	private land Public Reserve	South	Bicheno	2013 (1995)	1	500–1000
1.5	Lilla Villa Bridge	private land	South	Bicheno	1999 (1983)	0.1	c. 1000
1.6	Ferndale Road	private land	North, South	Bicheno	2002	10	150,000+
2	Stingles Creek	private land *	South	Apslawn	2006	unknown	20

NRM Region = Natural Resource Management Region;
* covered by a conservation covenant under the Tasmanian *Nature Conservation Act 2002*

State's east coast (Figure 1). It grows on Jurassic dolerite within dry sclerophyll forest on moderately sheltered flats, lower slopes and midslopes associated with the Apsley River and Denison Rivulet. The species has an elevation range of 20 to 270 m above sea level, and the mean annual rainfall is about 700 mm.

The species occurs typically in forests dominated by *Eucalyptus amygdalina*, associated species including *Allocasuarina littoralis, Banksia marginata, Hibbertia riparia, Leptospermum scoparium, Ozothamnus costatifructus Acacia genistifolia, Baeckea ramosissima, Correa reflexa, Astroloma humifusum, Gahnia radula, Lepidosperma inops, Poa rodwayi* and *Austrostipa aphylla*.

POPULATION PARAMETERS

Keith (1997 & 1998) listed five subpopulations for *Epacris apsleyensis* (1.1 to 1.5 in Table 1), where individual subpopulations were defined as occurrences separated by distances of more than one kilometre. Records in the interim indicate that these subpopulations and the one at Ferndale Road may be better thought of as a single meta-population, with the number of locations, as represented by the number of catchments (three) or tenure (three) a better guide to the species' risk of extinction. The species has a linear range of 11 km, an extent of occurrence of 36.5 km^2, and an area of occupancy in the order of 100 ha.

The total population size is estimated to be in excess of 500,000 mature individuals (Table 1). Given the level of past survey efforts, the likelihood of *Epacris apsleyensis* being discovered outside its known extent of occurrence is considered to be low, though a degree of infilling might be expected.

RESERVATION STATUS

Epacris apsleyensis occurs in Douglas-Apsley National Park and Apsley Conservation Area. A very small proportion of the total population is on private land subject to conservation covenants under the Tasmanian *Nature Conservation Act 2002* (Table 1).

CONSERVATION ASSESSMENT

Epacris apsleyensis 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

The primary threats to *Epacris apsleyensis* include infection by the exotic soil-borne plant pathogen *Phytophthora cinnamomi*, inappropriate fire regimes, land clearance, habitat fragmentation and modification, and weed invasion.

***Phytophthora cinnamomi*:** *Epacris apsleyensis* is known to be highly susceptible to *Phytophthora cinnamomi* in laboratory conditions (Barker 1994). Scattered infestations of the pathogen are known to occur either within or close to sites 1.1 to 1.4 (Table 1), and are considered a threat to the species' long-term future (Keith 1997, Schahinger et al. 2003).

Inappropriate fire regimes: A fire frequency of around 15 to 25 years is considered likely to favour the species (Keith 1998, Parks & Wildlife Service 1998). Subpopulations may experience a slow attrition as a result of frequent cool fires, while senescence may be expected where fire frequencies are greater than 25 years (Keith 1998). The long and continued absence of fire at known subpopulations is considered a threat to the species' long-term viability. The situation is unlikely to be remedied in the near future given the lack of an active ecological burning program.

Land clearing and/or habitat modification: Previous land clearing for subdivision and primary production has likely contributed to a decrease in numbers, extent and area occupied by the species. Almost half of the mapped occurrences are on private land not subject to conservation covenants and future activities, including subdivision, may impact on the species through fragmentation of habitat rendering it more susceptible to weeds and disease.

Weed invasion and management: Several parts of the population along the Apsley River are associated with infestations of gorse (*Ulex europaeus*). Gorse is likely to be highly competitive with *Epacris apsleyensis*, and in the absence of active control will continue to have a negative impact on the species.

Climate change: A warmer climate and longer periods of drought may impact deleteriously on *Epacris apsleyensis* 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. The risk to the species is exacerbated by its restricted distribution.

MANAGEMENT STRATEGY

Management objectives

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

What has been done?

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

***Phytophthora cinnamomi* research:** *Epacris apsleyensis* was included in an assessment of the susceptibility to *Phytophthora cinnamomi* in (Barker 1994). *Phytophthora* management zones are in place for some subpopulations (Barker 1994, Schahinger et al. 2003).

Fire management: The Douglas-Apsley National Park is subject to a fire management plan that aims to maintain levels of biodiversity and foster the long-term survival of threatened species (Parks & Wildlife Service 1998).

Survey and monitoring: There has been considerable botanical activity over the past 25 years through the species' main area of concentration (Kirkpatrick et al. 1980, North et al. 1998). Surveys for private land conservation programs were conducted over the period 1998 to 2006, with the discovery of the Stingles Creek subpopulation. Targeted surveys for *Epacris apsleyensis* were undertaken during the development of the *Tasmanian Forest Epacrids Recovery Plan* (Keith 1997 & 1998), as well as during the Recovery Plan's implementation phase from 1999 to 2002.

***Ex situ* conservation:** Seed has been collected for long-term conservation storage at the Tasmanian Seed Conservation Centre which is based at the Royal Tasmanian Botanical

Gardens in Hobart. Further collections are being undertaken in 2013 (J. Wood, pers. comm.).

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.

- plan and implement ecological burns to stimulate recruitment for long-unburnt sites if needed;
- undertake surveys to determine the disease status of all subpopulations and review the efficacy of existing *Phytophthora* management zones;
- update and implement relevant reserve management plans;
- monitor the species' response to disturbance regimes and disease to guide future recovery work;
- improve the species' reservation status and/or develop management agreements with private landowners and public land managers;
- 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 and potential habitat;
- supplement the seed collection held at the Tasmanian Seed Conservation Centre.

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