

**Advice to the Minister for the Environment, Heritage and the Arts
from the Threatened Species Scientific Committee (the Committee)
on Amendment to the list of Threatened Species under the
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)**

1. Scientific name (common name)

Epacris graniticola (Mt Cameron Heath)

2. Reason for Conservation Assessment by the Committee

This advice follows assessment of information gathered through the Commonwealth's Species Information Partnership with Tasmania, which is aimed at systematically reviewing species that are inconsistently listed under the EPBC Act and relevant state legislation/lists.

The Mt Cameron Heath is listed as vulnerable, as *Epacris* aff. *virgata* 'graniticola', under the Tasmanian *Threatened Species Protection Act 1995*.

The Mt Cameron Heath was originally listed as endangered under the EPBC Act's predecessor, the *Endangered Species Protection Act 1992*, as part of the species *Epacris exserta* (South Esk Heath). It was listed as endangered under the EPBC Act as *Epacris* sp. *Graniticola* (A.Moscal 4210) R.Crowden, due to its restricted geographic distribution, fragmented population, and also due to its likely decline from the potential threats of infrequent fire events, dieback (caused by *Phytophthora cinnamomi*) and mineral exploration (caused by both direct impact and transfer of disease).

The Committee provides the following assessment of the appropriateness of the species' inclusion in the EPBC Act list of threatened species.

This is the Committee's second consideration of the species under the EPBC Act.

3. Summary of Conclusion

The Committee judges that the species has been demonstrated to have met sufficient elements of Criterion 1 to make it **eligible** for listing as **vulnerable**.

The Committee judges that the species has been demonstrated to have met sufficient elements of Criterion 2 to make it **eligible** for listing as **critically endangered**.

The highest category for which the species is eligible to be listed is **critically endangered**.

4. Taxonomy

The species is conventionally accepted as *Epacris graniticola* (Mt Cameron Heath).

Plants attributable to this taxon were included in the species *Epacris exserta* (South Esk Heath), until recognised as a separate species in 1998, being referred to as *Epacris* sp. aff. *exserta* (Mt Cameron). The taxon was subsequently known as *Epacris* sp. aff. *virgata graniticola*. The unpublished name was modified to *Epacris* sp. *Graniticola* (A.Moscal 4210) R.Crowden to conform with Council of Heads of Australasian Herbaria (CHAH) requirements (CHAH, 2005). This taxon was published as *Epacris graniticola* in 2007 by Ronald Crowden and is the accepted name for this species (CHAH, 2008). It has also been referred to as *Epacris* aff. *virgata*.

5. Description

The Mt Cameron Heath is an upright or semi-prostrate shrub to 1.5 m high, with distinctive wide-spreading branches and small lance-shaped leaves 4 mm long and 3 mm wide. In spring, white tubular flowers, approximately 8 mm long, appear at the base of leaves arranged in clusters at the ends of branches (Keith, 1998).

6. National Context

The Mt Cameron Heath occurs in north-eastern Tasmania at eight locations on the Mt Cameron Range (Cameron Regional Reserve), Mt Stronach (Mt Stronach Forest Reserve) and south of Rossarden (Dalrymple Hill in the Castle Cary Regional Reserve), with an extent of occurrence of 1200 km² and an area of occupancy of approximately 0.06 km² (TSS unpubl. data).

There has been a high level of botanical survey activity in areas of potential habitat in north-eastern Tasmania since the early 1990s (e.g. North et al., 1998). Targeted surveys for threatened epacrids were undertaken in the mid-1990s during the development of the *Tasmanian Forest Epacrids Recovery Plan 1999–2004* (Keith, 1997, 1998) with six populations recorded. Additional surveys were undertaken from 1999 to 2004 during the recovery plan's implementation phase, with two additional populations recorded in 2000 and 2001. Given the past survey efforts and the species' habitat requirements, the likelihood of the Mt Cameron Heath being found outside its current extent of occurrence is low, however, with further targeted survey effort, further plants may be found near the southernmost population at Dalrymple Hill.

In 1998, the Mt Cameron Heath was estimated to have a total population of between 3000 and 40 000, with a mean estimate of 20 000 mature individuals based on sub-sample counts (Keith, 1998). The largest population, on Mt Stronach, contains approximately 10 500 mature individuals, whilst the two smallest populations, at Cube Rock and Dalrymple Hill, each contain approximately 150 plants (TSS unpubl. data). The majority of the known populations occur within regional and forest reserves (Cameron Regional Reserve, Castle Cary Regional Reserve and Mt Stronach Forest Reserve) with the exception that part of the second largest population of approximately 7000 plants occurs on the Blue Lake track on unallocated Crown Land adjacent to the Cameron Regional Reserve (PWS, FT & DPIWE, 2003). The eight populations are each separated by at least 1 km (Keith, 2000).

The Mt Cameron Heath is listed as a priority species requiring consideration under the *Tasmanian Regional Forest Agreement* between the Commonwealth of Australia and the State of Tasmania (RFA, 1997; DPIWE, 1998).

7. Relevant Biology/Ecology

The Mt Cameron Heath is thought to have a maximum life expectancy of 30–40 years. Established plants are likely to have a low background rate of mortality of less than one per cent per annum, although where populations have remained unburnt for 25–30 years, mortality rates of greater than 10 per cent per annum have been recorded (Keith, 1998).

The species grows on skeletal soils on rocky outcrops of Devonian granites, usually on summits, in heaths and dry scrub-forests between 90 and 720 m above sea level (Keith, 1998).

The Mt Cameron Heath flowers in spring, and is pollinated by adult carrion flies. Fruit production depends on plant size, fire history and shading by other plants. Each plant can produce up to several thousand seeds each year. Seed dispersal is passive, with very few seeds likely to be dispersed more than a few metres from the parent plant. The species accumulates

a persistent seed bank, with seeds probably surviving for at least two years after release. Germination occurs in response to heat and smoke from fire (Keith, 1998).

The population on the Blue Lake track (Mt Cameron Regional Reserve), which was burnt in March 2006, had not shown any signs of life at the end of 2007, indicating that it probably does not resprout after fire. Recruitment from soil-stored seed might be expected, but the emergence and survival of germinants may be dependent upon suitable climatic conditions (DPIW, unpubl. data, 2008).

8. Description of Threats

The main potential threats to the Mt Cameron Heath include inappropriate fire regimes, disease and stochastic risk.

The species is potentially threatened by long fire-free intervals, where mortality rates of 10–20 per cent per annum occurred in populations that had not been burnt for 25–30 years, compared to less than one per cent per annum where fires were more frequent (Keith 1998).

However, observations in burnt and unburnt habitat suggest germination conditions are not necessarily consistent.

- Observations in October 2006, of the (unburnt) Mt Cameron population, containing approximately 850 plants, found a significant number of flowering plants and some seedlings. However, there are no quantitative data available to indicate actual numbers of plants (DPIW, unpubl. data, 2008) nor of the conditions leading to germination.
- The boundary of the Mt Cameron fire of March 2006 encompassed six of the eight known populations (all except Mt Stronach, the largest population, and Dalrymple Hill, with approximately 280 plants) but the buffering nature of the species' 'bouldery' granite habitat meant that five of those six populations were relatively unaffected.
- The population on the Blue Lake track, which contained approximately 7000 plants, has not been located since the fire, indicating that there has been no resprouting of individuals or recruitment from the soil seedbank (DPIW, unpubl. data, 2008).

The Mt Cameron Heath is suspected to be susceptible to dieback caused by the exotic pathogen *Phytophthora cinnamomi* (Keith, 1998) although symptoms have not been observed in the field. The disease is known to occur in close proximity to one of the smaller populations within the Cameron Regional Reserve, with the potential for future spread by bushwalking and native animals. The reserve status of all populations permits activities such as mineral exploration, which is another potential source of disease spread (Keith, 1998). Although observations in October 2006 of the Mt Cameron population showed no signs of infestation, there are no recent data for the seven other subpopulations (DPIW, unpubl. data, 2008).

The low plant numbers in some populations (five populations contain less than 500 mature individuals) exposes the species to the risk of local extinctions due to unforeseen human activity or stochastic events.

9. Public Consultation

The information used in this assessment was made available for public exhibition and comment for 40 business days. No comments were received.

10. How judged by the Committee in relation to the criteria of the EPBC Act and Regulations

The Committee judges that the species is **eligible** for listing in the **critically endangered** category under the EPBC Act. The assessment against the criteria is as follows:

Criterion 1: It has undergone, is suspected to have undergone or is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers

The Mt Cameron Heath is dependent on fire for significant seedling recruitment and in the absence of fire over the past 25–30 years the population of Mt Cameron Heath may decline. Normally the mortality rate for established heath plants is approximately 1% per year, but for the Mt Cameron Heath it is reported to be approximately 10% per year (Keith, 1998). In this context it is noteworthy that recent observations of an older population on unburnt areas at Mt Cameron have shown that flowering and some recruitment is still occurring (DPIW, unpubl. data, 2008). However, the Blue Lake site, which contained approximately 7000 mature individuals, was burnt in 2006 and all individuals are suspected to have died. This population has not been able to be located since March 2006. Recovery of the population to pre-fire numbers would depend on a range of variables, including favourable climatic conditions (DPIW, unpubl. data, 2008).

In this context it is noteworthy that recent observations of an older population on unburnt areas at Mt Cameron have shown that flowering and some recruitment is still occurring (DPIW, unpubl. data, 2008). However, the Blue Lake site, which contained approximately 7000 mature individuals, was burnt in 2006 and all individuals are suspected to have died. This population has not been able to be located since March 2006. Recovery of the population to pre-fire numbers would depend on a range of variables, including favourable climatic conditions (DPIW, unpubl. data, 2008).

The loss of 7000 individuals is considered to be a substantial decline for this species. In addition, it is likely that the Mt Cameron Heath will undergo a reduction in numbers in future.

Like other epacrid species, this species is thought to be susceptible to dieback caused by *Phytophthora cinnamomi*. The disease and the possible sources of spread i.e. mineral exploration and walking tracks, occur in close proximity to one of the smaller populations of the Mt Cameron Heath, and whilst observations in 2006 showed no symptoms of the disease in any plants of this population, there are no recent data available to indicate if the disease is currently impacting on this and other populations.

The Committee considers that the species has recently undergone a substantial reduction in numbers following the Blue Lake population being burnt, and that the potential threats of inappropriate fire regimes, possible spread of *Phytophthora cinnamomi* through mineral exploration and bushwalking, and unforeseen human impacts and stochastic events may cause a decline in numbers of this species. Therefore, the species is **eligible** for listing in the **vulnerable** category under this criterion.

Criterion 2: Its geographic distribution is precarious for the survival of the species and is very restricted, restricted or limited

Recent surveys of the Mt Cameron Heath, between 1996 and 2001, show its current extent of occurrence is 1200 km² and its area of occupancy is 0.05–0.06 km² (Keith, 1998; TSP, unpubl. data). The eight populations are separated by at least 1 km between each location. Targeted surveys of similar epacrid species undertaken since the mid-1990s suggest that there may be fluctuations in numbers in response to fire events (Keith, 1998). The Committee considers that the geographic distribution is very restricted.

Although recruitment has been observed in older populations where fire has not impacted for some years, and the numbers of plants do not appear to be declining, the potential threat of infrequent fire events is still likely to impact on the ability of the species to survive.

The species does not appear to resprout after fire, and although it accumulates a persistent seed bank and germination is known to occur in response to fire, survival of seedlings appears to be dependent on favourable climatic conditions.

The disease, *Phytophthora cinnamomi*, may be spread by mineral exploration activities and bushwalking, and although this disease has not been observed to impact on the population near where the disease has been found to occur, there are no recent data available to indicate if the disease is currently impacting on this and other populations.

The Committee considers that the species has a very restricted geographic distribution, and that the geographic distribution is precarious for the survival of the species due to the potential threats of infrequent fire events, the disease *Phytophthora cinnamomi* being in close proximity to the species, and the threat of inappropriate fire regimes. Therefore the species is **eligible** for listing in the **critically endangered** category under this criterion.

Criterion 3: The estimated total number of mature individuals is limited to a particular degree; and either

(a) evidence suggests that the number will continue to decline at a particular rate; or

(b) the number is likely to continue to decline and its geographic distribution is precarious for its survival

The total number of mature individuals of the Mt Cameron Heath is not limited to a particular degree. In 1998, it was estimated to be between approximately 3000 and 40 000 mature individuals, with the mean being approximately 20 000.

It is likely that the Mt Cameron Heath will undergo a reduction in numbers in future, however it is not clear at what rate. The geographic distribution of the species is considered to be precarious for its survival.

Therefore the species has been demonstrated to have not met the required elements of Criterion 3, and it is **not eligible** for listing in any category under this criterion.

Criterion 4: The estimated total number of mature individuals is extremely low, very low or low

The total number of mature individuals of the Mt Cameron Heath is not low. In 1998, it was estimated to be between approximately 3000 and 40 000 mature individuals, with the mean being approximately 20 000. This is not considered to be extremely low, very low or low for this species.

Therefore the species has been demonstrated to have not met the required elements of Criterion 4, and it is **not eligible** for listing in any category under this criterion.

Criterion 5: Probability of extinction in the wild that is at least

(a) 50% in the immediate future; or

(b) 20% in the near future; or

(c) 10% in the medium-term future

There are insufficient data available to estimate a probability of extinction of the species in the wild over a relevant timeframe. Therefore the species has not been demonstrated to have met the required elements of Criterion 5, and it is **not eligible** for listing in any category under this criterion.

11. CONCLUSION

Conservation Status

The Committee accepts that the Mt Cameron Heath has undergone a substantial reduction in numbers. This reduction of mature individuals was due to fire, and although seeds germinate in response to fire, the seedlings also appear to require favourable climatic conditions to survive, which has not occurred. Also it appears that the species does not resprout after fire. Where fire events are too infrequent older populations generally appear to decline in numbers. Therefore, the species has been demonstrated to have met sufficient elements of **Criterion 1** to be **eligible** for listing as **vulnerable**.

The Committee accepts that the species has a very restricted geographic distribution, and that the geographic distribution is precarious for the survival of the species due to the potential threats of inappropriate fire regimes, and the disease *Phytophthora cinnamomi* being in close proximity to the species. Therefore, the species has been demonstrated to have met sufficient elements of **Criterion 2** to be **eligible** for listing as **critically endangered**.

The highest category for which the species is eligible to be listed is **critically endangered**.

Recovery Plan

This species was included in the multi-species recovery plan, *Recovery Plan — Tasmanian Forest Epacrids 1999–2004*. This is being updated as the draft *Flora Recovery Plan: Tasmanian Forest Epacrids*, which is in preparation.

12. Recommendations

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **updating** the name of *Epacris* sp. Graniticola (A.Moscal 4210) R.Crowden in the **endangered** category to:

Epacris graniticola (Mt Cameron Heath)

- (ii) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by transferring from the **endangered** category to the **critically endangered** category:

Epacris graniticola (Mt Cameron Heath)

- (iii) The Committee recommends that there be no change to the initial recovery plan decision to have a recovery plan for the species, and that the recovery plan be a multi-species recovery plan.

Associate Professor Robert J.S. Beeton

Chair

Threatened Species Scientific Committee

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