Cryptandra exilis

slender pearlflower

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Greg Jordan

Scientific name: ***Cryptandra exilis*** D.I.Morris, *Aspects of Tasmanian Botany*: 57 (1991)
Common name: slender pearlflower
Group: vascular plant, dicotyledon, family **Rhamnaceae**

Status: *Threatened Species Protection Act 1995*: **endangered**
Environment Protection and Biodiversity Conservation Act 1999: **not listed**

Distribution: Biogeographic origin: **endemic to Tasmania**
Tasmanian Natural Resource Management regions: **North, South**
Tasmanian IBRA Bioregions (V6): **Flinders, South East**

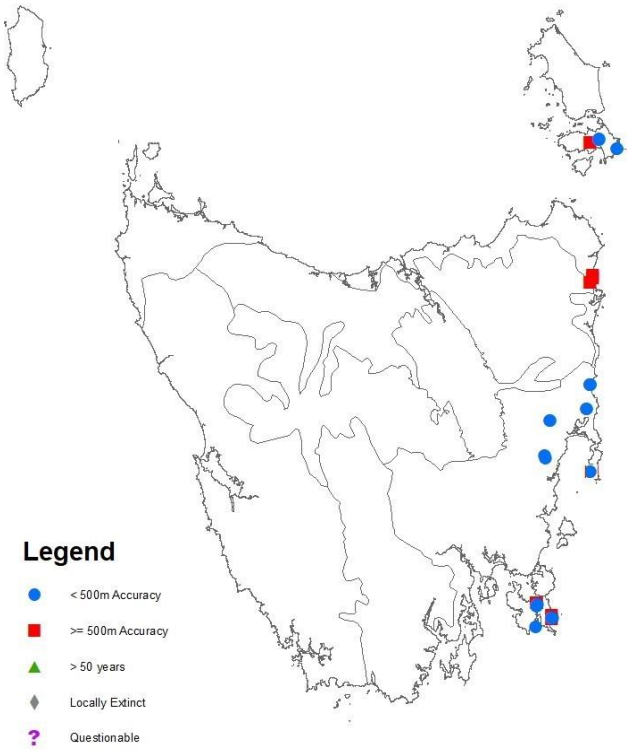

Figure 1. Distribution of *Cryptandra exilis* showing IBRA bioregions (V6)

Plate 1. *Cryptandra exilis* (image by Greg Jordan)

SUMMARY: *Cryptandra exilis* (slender pearlflower) is a small low-growing shrub that occurs in open coastal and near coastal heath and heathy or shrubby forest from the Tasman Peninsula to Cape Barren Island in eastern Tasmania. The restricted area of occupancy and low abundance puts the species at risk from losses from chance events. The risk is exacerbated by climatic changes that may impact persistence and recruitment such as increasing frequency and intensity of fire and drought. Weeds are a threat at some sites.

IDENTIFICATION AND ECOLOGY

Cryptandra exilis is a small, wiry, low-growing shrub. It is identifiable by its clusters of small white tubular flowers at the tips of its branches but is relatively inconspicuous when not in flower. It favours areas kept open due to rockiness or disturbance from fire or slashing, including roadside verges. The typically small size of subpopulations may be the result of poor seed-dispersal mechanisms and physical dormancy preventing the species from colonising nearby undisturbed vegetation, as with other members of the Rhamnaceae family (Coates 1991).

The seed ecology of *Cryptandra* is currently unclear with limited testing by the Tasmanian Seed Conservation Centre. As a member of the Rhamnaceae, *Cryptandra* seed possess physical dormancy (seed coat impermeable to water). Dormancy is overcome through compromising the seed coat and this is typically achieved through either wide fluctuations in soil temperature experienced on bare soils or sudden rapid heating due to fire. Temperature preferences from testing suggests most Tasmanian Rhamnaceae germinate in autumn and winter. However, combinational dormancy (physical plus physiological dormancy) has been confirmed in *Discaria pubescens, Pomaderris racemosa* and *Pomaderris phylicifolia,* which pushes germination into the spring (James Wood pers. comm.). It is likely that the species resprouts following fire as does the allied lowland species, *Cryptandra amara.*

There are currently 29 taxa in the Rhamnaceae family native to Tasmania, with *Cryptandra exilis* one of three native *Cryptandra* taxa in Tasmania (de Salas & Baker 2020), one of which is listed on schedules of the Tasmanian *Threatened Species Protection Act 1995*.

Survey techniques

Cryptandra exilis is most readily detected and identifiable when in flower. The species has been recorded from late September to late May with most records from November to April.

Description

Cryptandra exilis is a subshrub up to 400 mm high with slender, procumbent or straggling stems (Plates 1 & 2). The young branches have simple hairs that are appressed and bent or curved forward or upward. The 2 to 7 mm long leaves occur in small bundles on short lateral branches. They are tightly infolded-terete with a short sharp apex. The flowers occur at the tips of the main branches, generally in clusters of 2 to 6 but solitary on occasion. The dark brown bracts are dry and membranous with hairy margins and extend to about the middle of the floral tube. The white or cream floral tube is about 2 mm long and densely stellate-hairy. The calyx lobes are about 1.5 mm long, with stellate hairs at the base and simple erect hairs at the apex. The style is about 2 mm long. The mature capsule is about 2.5 mm long and the expanded base of the ovary is glabrous or sub-glabrous. The seed is about 1.5 mm long and buff, with darker mottling.

[description based on Morris 1991]

Confusing species

Cryptandra exilis has taxonomic affinities with *Cryptandra alpina* which occurs in alpine or subalpine habitats, usually has solitary flowers and stellate hairs on the young branches and on the ovary base on mature capsules, as well as red brown seed (Morris 1991). *Cryptandra amara* can be distinguished from *Cryptandra exilis* by its solitary flowers in the leaf axils.

Cryptandra exilis may be superficially mistaken with species from the genera *Leucopogon* and *Epacris* with similar white tubular flowers.

DISTRIBUTION AND HABITAT

Cryptandra exilis is endemic to Tasmania, found from the Tasman Peninsula to Cape Barren Island in eastern Tasmania (Figure 1, Table 1).

It occurs in coastal and near coastal heaths (Morris 1991) and damp, heathy or shrubby forest in open, often rocky, areas up to an elevation of 340 m above sea level. It tends to persist in sites kept open by disturbance such as that associated with track or roadsides.

Table 1. Population summary for *Cryptandra exilis* in Tasmania

Location	Subpopulation	Tenure	NRM region	1:25000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of plants
1. Tasman Peninsula*	1. Mount Brown	Tasman National Park	South	Raoul	1995 (1954)	unknown	unknown
	2. Cape Hauy track	Tasman National Park		Hippolyte	2011 (1983)	unknown	17
	3. McManus Hill	Crown land (forestry***)		Port Arthur	1985	unknown	0 in 2020
	4. Balts Road	Crown land (forestry**) and/or private land		Taranna	1983 (1982)	unknown	0 in 2020
2. Greater Freycinet area	5. Schouten Island	Freycinet National Park		Schouten	2011 2002 (1986)	5 sites	100-300
	6. Kafoozalum Creek	Buxton River Conservation Area		Tooms	1996	<0.1	'several'
	7. near Block and Stable Creek	Wye River State Reserve		Leake	1993	Unknown	0 in 2023
	8. Apsley River	private land		Lodi	2023 2010 (1980)	3.5	200-250
	9. near Harmans Creek	road reserve** /private land	North	Seymour	2023 2020 2009 2007 (1992)	0.04	30-40
3. The Gardens area	10. Sloop Lagoon	Bay of Fires Conservation Area or Mount Pearson State Reserve		Binalong	1982	unknown	0 in 2023
	11. Big Lagoon	Bay of Fires Conservation Area		Binalong or The Gardens	1981	unknown	0 in 2023
4. Cape Barren Island	12. Lee River	Aboriginal land		Kerford	1978	unknown	unknown
	13. Rices River	Aboriginal land		Kerford	2009	2 sites	unknown
	14. Jamiesons Bay	Aboriginal land		Thirsty	2005	unknown	1

*A herbarium specimen (MEL0237194A) from 'Port Arthur' is dated 1893
** managed by the Department of State Growth (Roadside Conservation Site)
***Permanent Timber Production Zone

POPULATION PARAMETERS

Number of subpopulations: 14
Number of locations: 4 (4 disjunct regions)
Extent of occurrence: 7,270 km^2
Linear extent: 315 km
Area of occupancy: < 10 ha
Area of occupancy (as per IUCN criteria) = 68 km^2
Number of mature individuals: < 1,000
Largest subpopulation: 100-300

Cryptandra exilis has been described by several observers to be very uncommon, typically with only a small number of plants (<20) where found, though as for the allied lowland species,

Cryptandra amara, the species may proliferate following fire.

The largest occurrence appears to be on the western side of Bear Hill on Schouten Island where the species has been recorded from about five sites along a stretch of about 1.5 km. While abundance information is deficient, the current best estimate of the number of mature individuals is fewer than 1,000, occupying less than 10 ha.

The species has not been seen in recent years at most of the sites where it had previously been recorded, and it is possible that it may have become locally extinct at some sites. The current distribution and size of occurrences are suggestive of a continuing decline with some remnant occurrences persisting in areas which are kept open by disturbance such as that associated with track or road verges or maintenance of vegetation under powerlines. It is likely that the presumed once wider distribution at locations has been fragmented with changed land use and firing regimes since European settlement. For example, it may be that the Balts Road and McManus Hill subpopulations are roadside remnants of rockier core areas further upslope (possibly Signal Hill) where the species may not have persisted due to changed fire regimes over time.

It is possible that more sub-populations will be found with targeted survey given that the species is relatively inconspicuous. However, there has been considerable survey effort in areas of suitable habitat on the east coast of Tasmania, which makes the likelihood of discovering new subpopulations reasonably low.

Plate 2. Habit of *Cryptandra exilis* (image by Greg Jordan)

RESERVATION STATUS

Cryptandra exilis is known from the Tasman National Park, Freycinet National Park, Wye River State Reserve, Buxton River Conservation Area and Bay of Fires Conservation Area (Table 1).

CONSERVATION ASSESSMENT

Cryptandra exilis is listed as endangered on Schedules of the Tasmanian *Threatened Species Protection Act 1995* meeting the following criteria:

B. Area of occupancy estimated to be less than 10 hectares, and

1. severely fragmented or known to exist at no more than five locations, and
2. continuing decline, inferred, observed or projected, in

   b. area of occupancy
   c. area, extent and/or quality of habitat.

Please note that this assessment was conducted under the previous version of the *Guidelines for Listing under the Threatened Species Protection Act 1995*, which has since been superseded by a newer version endorsed by the Scientific Advisory Committee (Threatened Species) in March 2023.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Stochastic events: The small size of subpopulations exposes them to a risk of local extinction due to chance events. The patchiness and typically small size of

occurrences suggest that the species is limited by poor seed dispersal mechanisms typical of some other members of the Rhamnaceae family (Coates 1991), potentially increasing the risk of local extinctions.

Inappropriate fire regimes: While larger occurrences of *Cryptandra exilis* are likely to persist through fire, the persistence of smaller occurrences of the species is less likely given their greater susceptibility to recruitment failures, be it from inadequate seed stores and localised unfavourable conditions for establishment following germination. While fire is a regular feature of the habitat of the species with recruitment likely promoted by hot fires and through increased openness, the current distribution may be the result of decline following a decrease in the frequency of fires since European settlement. However, it is also possible that increasingly frequent fires may compromise seed production if recruits are killed prior to maturity, or the plants may be killed by intense fires increasing the likelihood of decline or local extinctions, particularly of smaller occurrences.

Roads and tracks: Several occurrences are associated with roadsides or track edges, suggesting that the increased openness and disturbance from roadside maintenance (such as scraping and slashing) has promoted recruitment. However, *Cryptandra exilis* may be susceptible to inappropriate slashing (i.e. below c. 10 cm above ground level). Some potential habitat in the vicinity of the Balts Road and McManus Hill records occurs in roadside areas under powerlines that are slashed regularly. However, roadside occurrences are prone to invasion by weeds that may outcompete the species and are also at risk from losses due to weed control measures.

Weeds: Some occurrences are at risk from invasion by weeds that may outcompete the species, particularly sites along roadsides. Gorse is a clear threat to the Apsley River site. Spanish heath and other weeds are present and proliferating in potential habitat in the Balts Road and McManus Hill areas. There is a risk of damage from herbicide spray where weeds are treated that occur close to *Cryptandra exilis* plants.

Climate change: *Cryptandra exilis* is at risk from an increase in the frequency and intensity of fires and drought as a consequence of climate change, likely compromising recruitment and persistence, particularly of smaller occurrences.

MANAGEMENT STRATEGY

Management objectives

The main objectives for the recovery of *Cryptandra exilis* are to maintain the viability of existing subpopulations, promote conditions for successful recruitment, and to detect unknown subpopulations by increasing the survey effort for the species.

What has been done?

A small amount of seed has been collected from the Harmans Creek site for long-term conservation storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens. Survey of the Harmans Creek and Apsley River sub-populations were undertaken in 2023. Survey of some potential habitat in the vicinity of records at McManus Hill and Balts Road in 2020, and The Gardens and Wye River in 2023 have failed to locate the species. The Harmans Creek site was included in the Department of State Growth's Roadside Conservation program.

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):

- 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;
- determine the status of subpopulations not recorded for over 20 years;
- monitor known sites for evidence of decline;

- conduct extension surveys in potential habitat, radiating out and upslope from known sites;
- conduct surveys for the species in the Cash's Lookout area given an anecdotal account of the species there from the 1980s;
- determine the response of the species to fire and other disturbance;
- determine persistence/recruitment on Cape Barren Island following the intense 2016/2017 fires;
- collect seed from Schouten Island to supplement the collection held for long-term conservation storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens.

REFERENCES

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de Salas, M.F & Baker, M.L. (2020). *A Census of the Vascular Plants of Tasmania, including Macquarie Island*. Tasmanian Herbarium, Tasmanian Museum and Art Gallery, Hobart. https://flora.tmag.tas.gov.au/resources/census/

Morris, D.I. (1991). *Cryptandra exilis* sp. nov. (Rhamnaceae), A New Species from Eastern Tasmania. In Banks, M.R. et al. (Eds), *Aspects of Tasmanian Botany -A tribute to Winifred Curtis*. Royal Society of Tasmania, Hobart 31: 57–58.

Prepared in September 2020 and updated in June 2023 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Approved by the General Manager and published in 2023.

Cite as: Threatened Species Section (2023). Listing Statement for *Cryptandra exilis* (slender pearlflower). Department of Natural Resources and Environment Tasmania.

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