Cassinia rugata

wrinkled dollybush

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Phil Collier

Scientific name: ***Cassinia rugata*** N.G.Walsh, *Muelleria* 7: 141 (1990)

Common name: wrinkled dollybush

Group: vascular plant, dicotyledon, family **Asteraceae**

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

Environment Protection and Biodiversity Conservation Act 1999: **Vulnerable**

Distribution: Endemic status: **Not endemic to Tasmania**

Tasmanian NRM Regions: **Cradle Coast, North**

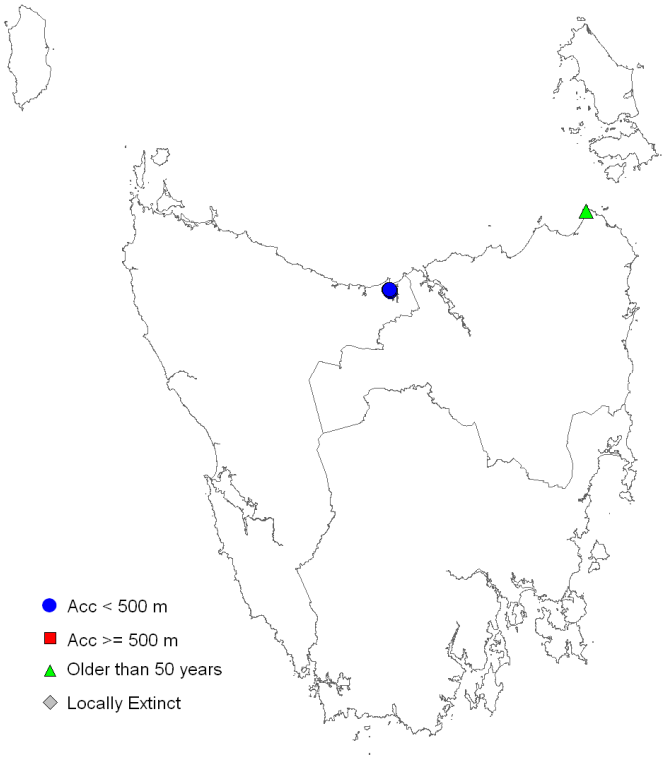

Figure 1. The distribution of *Cassinia rugata* within Tasmania

Plate 1. Specimen of *Cassinia rugata* from Port Sorell (image by Phil Collier)

SUMMARY: *Cassinia rugata* (wrinkled dollybush) is a low shrub, found in open sedgy and/or shrubby wetlands, rarely with over-topping shrubs or trees. It is so far known in Tasmania from a fragmented population of several hundred plants near Port Sorell, and an historical collection from Cape Portland. The available information suggests that the total population in Tasmania is small and likely to occupy less than 10 hectares. Loss of habitat through subdivision and agricultural activities may explain the fragmented distribution of the species in Tasmania. The most important needs of the species are to prevent destruction and degradation of known and potential habitat by clearing, roadside maintenance, weed invasion and altered hydrology, and to promote recruitment through management of the habitat. The largest known occurrence of nearly 300 plants is on covenanted land managed for its natural values.

IDENTIFICATION AND ECOLOGY

Cassinia rugata has only recently been recognised as occurring in Tasmania. It is likely to have been overlooked earlier because of its superficial resemblance to a number of shrubby daisy bushes that are not always easy to distinguish (Collier 2010). A hybrid origin has been proposed for *Cassinia rugata* (Walsh 1990, Orchard 2004), perhaps explaining the large degree of variation displayed between plants, particularly those from Tasmania (see Collier 2010).

This shrub has been observed to recover well from rootstock after burning though no seedlings were noted following a 2007 fire (Collier 2010). Despite production of viable seed (Walsh 1990), limited recruitment is cited as a problem for several of the six known sites in Victoria (Carter & Walsh 2006).

Survey techniques

The recommended time for survey of *Cassinia rugata* is during the main flowering period, February to April (Carter & Walsh 2006), to maximise the opportunity for florets to be present to assist with identification. The species is easier to detect in flower with low sun from behind the line of sight (Phil Collier, pers. comm.).

Description

Cassinia rugata is an erect, slender, shrub growing to 3 m tall. It is often densely multi-branched from the base. The young twigs are weakly sticky and have a mix of dense cottony and bristly hairs. The sessile leaves are oblong to narrowly elliptic and are 6 to 25 mm long and 2 to 4 mm wide, sometimes narrower due to the rolling back of the margins (Plate 1). The upper surface has a dark glossy green surface with blister like swellings, sparse hairs and a sunken midrib, and the lower surface has dense cottony hairs and a prominent midrib. The leaf margins curl back to the midrib but the undersurface of the leaf is not usually obscured. The hemispherical inflorescence is 3 to 12 cm in diameter with 2 or more main branches, each supporting 20 to 200 or 300 obconical to cylindrical capitula (flowerheads), which are 4.2 to 5 mm long and have slightly rounded bases. The involucre is a ring of bracts called phyllaries that surround the group of 4 to 6 florets in each capitulum. The 16 to 18 phyllaries are papery and initially arranged spirally, and as fruits mature, they are persistent and tend to spread out and become more or less ranked in 4 or 5 vertical rows. The inner phyllaries have erect, firm white and wrinkled tips. The lower outer phyllaries are cream to brown, smooth to slightly wrinkled and have denser cobwebby hairs. Each floret is surrounded by 1 to 3 scales (bracts between the florets) which resemble the inner phyllaries, though are less hairy. The fruiting receptacle is small and flat. The pale green to whitish achenes are cylindrical to ovoid, longitudinally wrinkled and are 1.2 to 1.3 mm long. They can have clubbed or bent bristles at the apex.

[description based on Walsh 1990, Puttock 1999, Orchard 2004, Collier 2010]

Confusing species

In Tasmania, *Cassinia rugata* is most likely to be confused with *Cassinia aculeata* or *Ozothamnus rosmarinifolius* (Collier 2010). However, *Cassinia aculeata* is rarely associated with wetland habitats and has an earlier flowering time than *Cassinia*

Table 1. Population summary for *Cassinia rugata* within Tasmania

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1.1	Rubicon Sanctuary, Port Sorell	private property with conservation covenant	Cradle Coast	Port Sorell	2011 (2010)	5	~300
1.2	Port Sorell	roadside remnants*, private property	Cradle Coast	Port Sorell, Harford	2010	unknown	>16
2	Cape Portland	unknown	North	Lyme Regis	late 1800s/ early 1900s**	unknown	unknown

NRM region = Natural Resource Management region
* managed by Latrobe Council
** time period during which the collector, Leonard Rodway, collected specimens

rugata. Though somewhat variable, most plants of *Cassinia rugata* have less linear leaves with margins that are not so strongly curled to the midrib, and have more spreading and wrinkled involucral bracts than for *Cassinia aculeata*. While *Ozothamnus rosmarinifolius* is known from wetland habitats, plants have distinctive leaves, the flower bracts spread open to form mini paper daisy flowers, and plants of *Ozothamnus* can be distinguished from those of *Cassinia* as they lack bracts (scales) between the individual florets (this usually requires microscopic or hand lens examination).

Plate 1. Habitat of *Cassinia rugata*, Port Sorell (image by Phil Collier)

DISTRIBUTION AND HABITAT

On mainland Australia, *Cassinia rugata* is known from the Portland area in southwestern Victoria and a single 1987 collection about 100 km further west in South Australia. The species was identified as occurring at Port Sorell in 2010 in Tasmania (Collier 2010), with an historical Tasmanian collection from Cape Portland, about 130 km away, subsequently coming to light (Figure 1, Table 1).

In Victoria, *Cassinia rugata* is found in damp, low open forest or dense heathy scrub (Carter & Walsh 2006) and the species appears to be restricted to coastal areas. The main Port Sorell site is described as wetland associated with *Themeda triandra* (kangaroo grass). Plants rarely have over-topping shrubs or trees. Sites supporting *Ozothamnus rosmarinifolius* (swamp everlasting bush) would also appear to be suitable for *Cassinia rugata* (Collier 2010). The main remnant patch at Port Sorell contains a diverse range of orchids and is the only known location for *Prasophyllum limnetes* (marsh leek-orchid), a number of threatened flora species (mostly orchids) and the threatened Central North Burrowing Crayfish (*Engaeus granulatus*).

POPULATION PARAMETERS

Cassinia rugata was discovered in Tasmania in 2010 on a 19 hectare remnant wetland that was purchased in 2003 to conserve its natural values (Table 1). While about nearly 300 plants were found on the property, the native vegetation in the wider area has been severely fragmented by development and often only persists along roadsides. Informal searches along roadsides radiating out from the Port Sorell remnant, where the species was first found, identified six new patches of the species, though each supported few plants, and plants and potential

habitat were only obvious much beyond the roadside verge at one of these sites. Plant counts are approximate as they tend to be strongly clustered, but with occasional plants quite separate (Phil Collier, pers. comm.). The linear extent of the fragmented Port Sorell subpopulation is approximately 1.3 km and the extent of occurrence 0.0035 km^2. The area of occupancy is estimated to be less than 10 ha in total.

Prior to the discovery of the subpopulation at Port Sorell, *Cassinia rugata* was thought to be restricted to the Portland area in Victoria where only 42 plants had been seen in recent years, with the population obviously struggling, unreserved and threatened (Carter & Walsh 2006). This now makes Tasmania the stronghold for the species. Until recently, an historical collection held at the Tasmanian Herbarium had been attributed to Portland, Victoria, despite the location being written by the collector (Leonard Rodway) in his own hand as 'Cape Portland, N.E. Coast'. The species may still be extant in the Cape Portland area given that some suitable habitat remains in the area.

As the two known locations in Tasmania are widely spaced, the possibility exists that the species will be found in suitable habitat along the north coast of the State, though the species was not found during targeted surveys in suitable *Themeda triandra* wetlands in the Bridport area (Phil Collier, pers. comm.). However, it is considered unlikely that sufficient plants or subpopulations will be found to alter the conservation assessment of the species. This is supported by the fact that the botanical community was promptly made aware of the discovery of the species in Tasmania, yet no new locations have come to light, and re-examination of all Tasmanian Herbarium specimens of species with which the species could be confused (*Cassinia aculeata* and *Ozothamnus rosmarinifolius*) did not reveal any specimens that could be attributed to *Cassinia rugata* (Phil Collier, pers. comm.). Specimens of *Cassinia aculeata* had been previously examined as part of a recent revision of the genus (Orchard 2004), lending further support to there being no additional specimens from Tasmania.

RESERVATION STATUS

The largest known patch of *Cassinia rugata* occurs on private land covered by a conservation covenant under the Tasmanian *Nature Conservation Act 2002* (Table 1).

CONSERVATION ASSESSMENT

Cassinia rugata meets the criteria for the endangered category under the *Threatened Species Protection Act 1995*, meeting criterion B for endangered as the extent of occurrence is less than 500 km^2, area of occupancy is estimated to be less than 10 ha, and

1. the species has a severely fragmented distribution and is known from fewer than five locations;

2c. a continuing decline is observed in area, extent and/or quality of habitat.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Limited recruitment of *Cassinia rugata* has been reported as a problem in several Victorian stands (Carter & Walsh 2006). Combined with other factors, this may help to explain the low abundance of the species in Tasmania.

Land clearing: In Tasmania, historical threats to *Cassinia rugata* have probably included extensive clearing of low-lying land for pasture and crop development, and subdivision of the species' coastal habitat, resulting in substantial modifications to many areas of natural wetlands that may have supported the species. This may explain the disjunct contemporary distribution of the species. The Port Sorell subpopulation has been severely fragmented and the main stand of habitat supporting the species was unknowingly saved from subdivision through purchase in 2003 by a non-government organisation, specifically to protect the property's natural values. Loss and modification of potential habitat continues through coastal subdivision and agricultural activities including dam development and irrigation activities, which have the potential to impact or eliminate as yet undetected subpopulations. However, the

loss of the species' wetland habitat may be regulated given the listing of wetlands as vulnerable under the *Nature Conservation Act 2002*. While the needs of the species will need to be considered, a wind farm proposal for the Cape Portland area is unlikely to have an adverse impact on potential habitat of the species, as areas of wetland will be excluded from development (Ray Brereton, pers. comm).

Lack of fire: The largest known occurrence of *Cassinia rugata* occurs on a Port Sorell property that has been regularly burnt, suggesting that a lack of fire may be detrimental to the species. Plants that are over-topped by larger shrubs or trees tend to become leggy and/or die (Phil Collier, pers. comm.). Recruitment of seedlings was not noted following a 2007 fire, while existing rootstock sprouted readily in flowering plants within a season or two (Collier 2010). More systematic work is clearly desirable to establish patterns of recruitment and plant lifecycle under varying conditions.

Road works: Road works such as grading and slashing along road margins have been cited as a threat to roadside subpopulations (Carter & Walsh 2006) and are a threat to fragments of the Port Sorell subpopulation. Roadside plants are also susceptible to roadside weed control measures. Lack of fire or disturbance to overtopping vegetation may also threaten roadside plants.

Weeds: Proximity of sites to agricultural areas increases the risk of invasion by weeds that may outcompete the species, particularly for fragmented stands and small subpopulations.

Altered hydrology: Subpopulations and plants along roadsides in particular, may be affected by runoff or drying out of sites through drainage, damming or irrigation.

Climate change: A warmer climate and longer periods of drought may deleteriously impact on the habitat of *Cassinia rugata* through effects such as the drying out of low-lying areas, increased competition with weeds and an increased frequency and intensity of fire events.

Stochastic risk: The small roadside stands of *Cassinia rugata* at Port Sorell are subject to losses from chance events such as smothering through rubbish dumping or piling up of debris from cleanup following flood events.

MANAGEMENT STRATEGY

What has been done?

- The botanical community in Tasmania was promptly made aware of the species in Tasmania though no new locations have been detected to date.
- Specimens at the Tasmanian Herbarium were examined to see whether any could be attributed to *Cassinia rugata*.
- Some seed has been collected for conservation storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens.

Management objectives

The main objective for the management of *Cassinia rugata* in Tasmania is to increase the number of known subpopulations through survey and to ensure that all subpopulations do not decline by protecting and managing habitat. An improved understanding of factors needed to promote recruitment may be required.

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.

- undertake surveys in the Cape Portland area to determine whether the species is still extant at the location;
- conduct extension surveys of potential habitat focussing on suitable sites along the north coast between the two known locations;
- determine the full extent and condition of the Port Sorell subpopulation;
- undertake demographic monitoring at Port Sorell, especially before and after burns and other disturbance events, to determine management regimes that will promote recruitment of the species;

- support the Private Land Conservation Program (DPIPWE) with the establishment of conservation covenants for private land supporting *Cassinia rugata*, and ensure that current priorities for the species are incorporated into the program's reservation strategies;
- 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;
- supplement the collection of seed held at the Tasmanian Seed Conservation Centre;
- include the Tasmanian distribution in any revision of the National Recovery Plan for the species.

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Puttock, C.F. (1999). *Cassinia*. In: *Flora of Victoria*, *Volume 4, Dicotyledons: Cornaceae to Asteraceae*. Eds. N.G. Walsh & T.J. Entwisle. Inkata Press, Melbourne.

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