

# *Calandrinia granulifera*

pygmy purslane

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Image by Tim Rudman

**Scientific name:** *Calandrinia granulifera* Benth., *Fl. Austral.* 1: 176 (1863)

**Common name:** pygmy purslane

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

**Name history:** *Calandrinia neesiana*

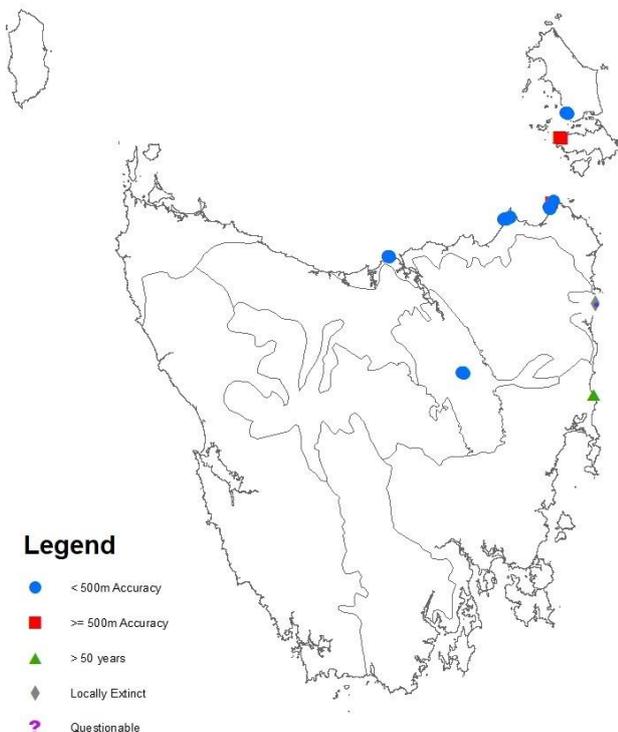
**Status:** *Threatened Species Protection Act 1995:* **rare**

*Environment Protection and Biodiversity Conservation Act 1999:* **Not listed**

**Distribution:** Biogeographic origin: **not endemic to Tasmania**

Tasmanian Natural Resource Management regions: **North, (South)**

Tasmanian IBRA bioregions (V6): **Flinders, Northern Midlands, (South East)**



**Figure 1.** Distribution of *Calandrinia granulifera* in Tasmania, showing IBRA bioregions (V6)



**Plate 1.** *Calandrinia granulifera* habit (image by Richard Schahinger)

**SUMMARY:** *Calandrinia granulifera* (pygmy purslane) is a small succulent annual herb that occurs on a variety of substrates in Tasmania, mostly in near-coastal areas in the northeast, with an outlying occurrence in the Northern Midlands. Available information suggests that subpopulations are small and relatively localised. The total population is estimated to be in the low thousands, though numbers are likely to vary greatly from year to year depending upon rainfall and disturbance events. The species' geographically restricted distribution in Tasmania puts it at some risk from chance events. Monitoring of known sites can inform management, and survey for other subpopulations is advised.

#### IDENTIFICATION AND ECOLOGY

*Calandrinia granulifera* is an annual species, whose persistence at a particular site is dependent upon an open habitat and the presence of soil-stored seed. Germination of seed, growth and flowering is likely to be reliant on the timing and intensity of autumn and winter rains, and the availability of bare ground, with the flowering dependent upon sufficient rainfall.

The species' flowering and fruiting periods are cited as September to November, and October to November, respectively (Morris & Duretto 2009), though fruiting is considered likely to continue into at least December.

There are currently six taxa in the family Portulacaceae native to Tasmania, with *Calandrinia granulifera* being one of the three native *Calandrinia* taxa (de Salas & Baker 2019) and the only member listed on Schedules of the *Threatened Species Protection Act 1995*.

#### Survey techniques

*Calandrinia granulifera* is easiest to detect and identify when flowers or fruit are present (September to early December). However, time of emergence and plant numbers may vary from year to year depending on climatic conditions.

#### Description

*Calandrinia granulifera* is a small annual herb, branching from the base. Its branches are decumbent, ascending or erect and 1 to 5 cm long. The basal leaves and those on flowering stems are narrowly obovoid to almost globular, the largest up to 10 mm long and 5 mm wide. There are up to 10 flowers per branch. The pedicels are 1 to 2 mm long, stout, and erect in fruit. The 2 sepals are broad-ovate to orbicular, very thick, usually 1.5 to 3 mm long and not persistent in fruit. The 5 to 7 petals are free, pink fading to white, 2.5 to 4 mm long and broad-oblong to oblanceolate (to lanceolate or elliptic). The flowers have 5 to 11 stamens and a style which is trifid to the base. The capsule is blackish, shining, broad-ovoid to sub-globose and 1.5 to 3 mm long, opening by 3 short valves in the upper third and with 20 to 35 seeds that are red-brown, shining and about 0.5 mm long, their surfaces with low rounded protuberances in several dorsal lines (Plate 2, Plate 3).

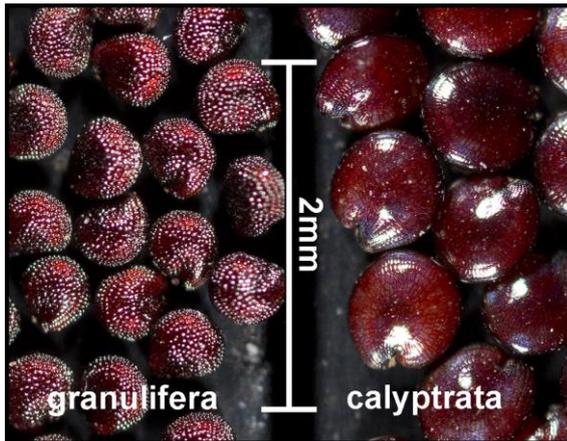
[description based on Curtis & Morris 1975, Walsh & Entwisle 1996, Morris & Duretto 2009]



**Plate 2.** *Calandrinia granulifera*: scanned image of HO 1104447 (part only) showing the species' distinctive shining black capsules (Tasmanian Herbarium)

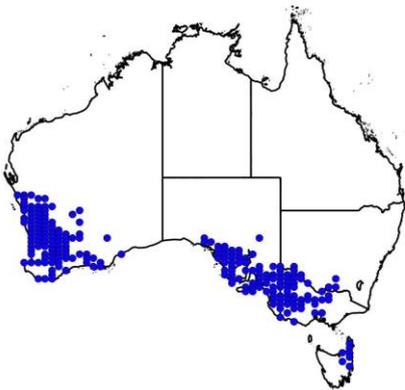
### Confusing species

In the vegetative stage *Calandrinia granulifera* might be confused with depauperate forms of *Calandrinia calyptрата*. The latter has leaves that are narrowly obovate to oblong to semi-terete (and typically reddish), sepals that persist into the fruiting stage, light brown capsules that open by valves to their base, and seed that is almost smooth (Plate 3).



**Plate 3.** Seed of *Calandrinia granulifera* and *Calandrinia calyptрата* (images by James Wood)

### DISTRIBUTION AND HABITAT



**Figure 2.** Distribution of *Calandrinia granulifera* (Atlas of Living Australia, 2021)

On mainland Australia *Calandrinia granulifera* occurs in New South Wales, Victoria, South Australia and Western Australia (Walsh & Entwisle 1996). In Tasmania it has been recorded from coastal areas in the northeast (including Flinders and Cape Barren islands), with an outlying occurrence in the Northern Midlands.

In Tasmania *Calandrinia granulifera* grows in gravelly and sandy pockets in rocky outcrops in coastal situations (typically within the spray zone), and also on shallow rock-plate soils in the Midlands (Plate 3), on substrates including Jurassic dolerite, Devonian granite and Tertiary basalt. The near-coastal sites occur up to 70 m above sea level, with the Midlands occurrences in the altitude range 200 to 210 metres.



**Plate 3.** *Calandrinia granulifera*: dolerite rock pavement habitat at Tom Gibson Nature Reserve (image by Richard Schahinger)

### POPULATION PARAMETERS

*Number of locations:* 8 (6 or 7 extant)  
*Number of subpopulations:* 11 (9 or 10 extant)  
*Linear range:* 180 m  
*Extent of occurrence:* 15,000 km<sup>2</sup> (minimum of 8,500 km<sup>2</sup> extant)  
*Area of occupancy:* < 10 ha  
*Area of occupancy (as per IUCN criteria):* 48 km<sup>2</sup>  
*No. of mature individuals:* low to mid 1,000s

*Calandrinia granulifera* is known from eleven subpopulations in eight locations in Tasmania, though its status at three of these, Georges Bay, Bicheno and Cape Barren Island, is uncertain, having not been seen since first recorded in 1892, 1942 and 1973 respectively (Table 1), suggesting a decline in the geographic range of the species. The abundance of subpopulations is poorly known, the largest recorded with approximately 1,800 individuals, though the total population is likely to number in the low to mid thousands. Plant numbers may fluctuate significantly from year to year in response to variations in rainfall. A reliable estimate for the total area of occupancy is not available, but it is considered unlikely to be more than 10 hectares.

**Table 1.** Population summary for *Calandrinia granulifera* in Tasmania

*	Subpopulation	Tenure	NRM region	1:25000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1	1 Cape Barren Island	private land	North	unknown	1973**	unknown	unknown
2	2. Lanoma Point	Musselroe Bay Conservation Area	North	Lyme Regis	1983	unknown	unknown
	3. Cape Portland	Private sanctuary ^			1983	unknown	unknown
	4a. Petal Point (north)	Cape Portland Conservation Area /Boobyalla Conservation Area			2011 (2008)	0.1+	100 to 1,000
	4b. Petal Point (south)	Boobyalla Conservation Area			2011	3 sites in 200 m	'localised'
3	5. Blizzards Landing	Waterhouse Conservation Area	North	Waterhouse	2001 (1992)	unknown	unknown
	6a. Road to Croppies Point				1983	unknown	'occasional'
	6b. 1km NE of Croppies Point				1983	unknown	'occasional'
	6c. Croppies Point				2011 (2007)	0.1	100 to 200
4	7. West Head	Narawntapu National Park	North	Greens Beach	2017 (2013)	0.25	280 25
5	8. Georges Bay	unknown possibly Humbug Point Nature Recreation Area	North	unknown possibly Binalong	1892 ***	presumed extinct	
6	9a. Epping Forest (north)	Tom Gibson Nature Reserve	North	Cleveland	2017 (2012)	0.35 0.1	1,800 100s
	9b. Epping Forest (south)				2017 2010 (2009)	0.015 0.05	'common' 10s
7	10. Bicheno	unknown possibly Public Reserve	South	Bicheno	1942	unknown	unknown
8	11a. Trousers Point, Flinders Island	Strzelecki National Park	North	Loccota	2019	unknown	<30
	11b. Trousers Point, (north)				2019	unknown	<20

\* location; \*\*Collections held at Melbourne Herbarium. Presence only recognised after the species was listed on the TSP Act in 1995; \*\*\* Location recorded as 'Pleasant Boat Harbour, near Georges Bay'; ^ Private Sanctuary under the Tasmanian Nature Conservation Act 2002.

*Calandrinia granulifera* has been recorded at four 'new' locations in Tasmania since being listed as rare on the *Threatened Species Protection Act 1995* in 1995, which extended its known range to the north, west and southwest, with some infilling of potential habitat in the Waterhouse and Cape Portland areas (Table 1).

The species' collection history, along with formal and informal surveys of rock pavements in Tasmania over recent decades (Gilfedder et al. 1997 and Threatened Species Section surveys from 2008) suggest that there is a low to medium likelihood of additional subpopulations being found given a well-resourced and targeted survey effort.

## RESERVATION STATUS

*Calandrinia granulifera* is known from Strzelecki National Park, Cape Portland Conservation Area, Narawntapu National Park, Tom Gibson Nature Reserve, Waterhouse Conservation Area, and possibly Humbug Point Nature Recreation Area near St Helens (Table 1). It has also been recorded from near Cape Portland on private land classed as a Private Sanctuary under the Tasmanian *Nature Conservation Act 2002*.

## CONSERVATION ASSESSMENT

*Calandrinia granulifera* was listed as rare in the original Schedules of the *Threatened Species Protection Act 1995* as it was known to occur in no more than ten 10x10 km grid squares in Tasmania. It continues to meet the criteria for the rare category under B1 and B2:

B: Total population small or restricted and at risk in the form of either of the following:

1. the total population consists of fewer than 10,000 mature individuals, and no more than 2,500 mature individuals occur on land that is in an area free from sudden processes capable of causing largely irreversible loss of individuals or habitat;
2. 90% of mature individuals occur in 15 or fewer subpopulations or locations and no more than 5 of these occur in an area that is free from sudden processes capable of causing largely irreversible loss of individuals or habitat.

## THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

The Tasmanian distribution of *Calandrinia granulifera* is an edge-of-range occurrence, being the southernmost in Australia. The main threats to the species in Tasmania are due to the localised and ephemeral nature of its occurrences, with stock grazing a possible risk at one site at least.

**Stochastic risk:** The localised distribution of *Calandrinia granulifera*, combined with low abundance, exposes the species to local extinctions via chance events.

The species' ephemeral nature means that plants may not emerge in unfavourable years, or only emerge in low numbers, hampering detection during impact assessment surveys of known or potential habitat.

**Stock grazing:** Stock were noted as being present at the more inland Cape Portland site in 1983, though their impact upon the species is unknown. The area has since been developed as a wind farm and it is unclear if grazing continues in the area or if the species is still present.

## MANAGEMENT STRATEGY

### Management objectives

The main objectives for the recovery of *Calandrinia granulifera* are to prevent the loss or degradation of known subpopulations, and to increase the number of known subpopulations through survey.

### What has been done?

Seed from the Waterhouse and Petal Point (north) subpopulations was collected in 2007 and 2008 for long-term conservation storage at the Tasmanian Seed Conservation Centre, based at the Royal Tasmanian Botanical Gardens, Hobart (Wood 2014).

### 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 whether the species still exists at previously recorded sites in northeastern mainland Tasmania and on Cape Barren Island;
- conduct surveys for the species in suitable habitat near known sites from September to early December in years of 'good' rainfall;

- determine the abundance and geographic extent of all known subpopulations;
- determine the impact of stock grazing or other threats to the species, at known sites, and take actions to mitigate impact;
- undertake demographic monitoring of one or two of the known subpopulations to understand annual fluxes in abundance and better inform management.

#### BIBLIOGRAPHY

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**Prepared** in 2017 and updated in 2020 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*.

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**Permit:** A permit is required under Tasmanian legislation for any activity that disturbs a threatened species listed under the *Threatened Species Protection Act 1995*, on private, public and reserved land.