

Thelymitra malvina

mauветuft sun-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Image by Mark Wapstra

Scientific name: *Thelymitra malvina* M.A.Clem., D.L.Jones & Molloy, *Aust. Orch. Res.* 1: 141 (1989)

Common name: mauvetuft sun-orchid (Wapstra *et al.* 2005)

Group: vascular plant, monocotyledon, family **Orchidaceae**

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

Distribution: Endemic status: **Not endemic to Tasmania**
Tasmanian NRM Regions: **Cradle Coast, North, South**

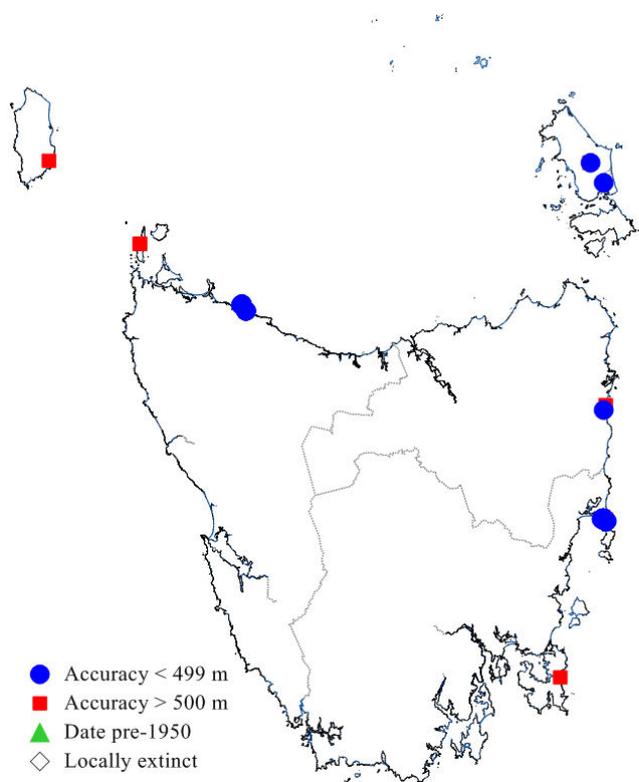


Figure 1. The distribution of *Thelymitra malvina* within Tasmania



Plate 1. *Thelymitra malvina* showing the distinctive flowers with mauve hair tufts on the column arms (Image by Hans & Annie Wapstra)

IDENTIFICATION AND ECOLOGY

Species of *Thelymitra* are commonly called sun-orchids because the flowers of most species open only in warm to hot weather, particularly on bright, sunny days. *Thelymitra* species are terrestrial orchids that die back after flowering to fleshy subterranean tubers. They are all spring or summer flowering. Most species have a single narrow basal leaf. Unlike most orchids, the labellum (lip) of the flower is generally similar in shape and size to the petals. Features of the column in the centre of the flower are important in the identification of most species. In all species the column has two arm-like projections that flank the anther (pollen holding structure).

Flowers of many species of *Thelymitra* open widely in warm weather, and are thought to mimic native irises and lilies (especially the blue-flowered species, which includes *Thelymitra malvina*), thus attracting a similar suite of pollinating insects, such as small native bees, that attempt to collect pollen and often bring about pollination (Jones *et al.* 1999). *Thelymitra malvina* is thought to be insect-pollinated as it has large fragrant flowers that open freely on warm days, often closing by midday after opening very early in the day (Jones 2006). Small-flowered species may be facultatively autogamous (Jones & Clements 1998).

The flowering of many sun-orchids is enhanced by disturbance, and *Thelymitra malvina* is likely to respond positively to fires (Jones *et al.* 1999). For similar reasons, some *Thelymitra* species may be prominent in disturbed sites such as slashed areas, or along track verges and road embankments. This is the case for *Thelymitra malvina* in Tasmania, which is usually found in disturbed areas such as burnt heathlands.

In Tasmania, most collections of the species are from late October to mid November, making this the recommended timing for surveys (Wapstra *et al.* 2008).

Description

Thelymitra malvina has a leaf that is 10 to 35 cm long and 5 to 20 mm wide. The leaf is lanceolate, erect, thin-textured, channelled, and

dark green with a reddish base. The flower stems are 25 to 75 cm tall, 1.5 to 5 mm diameter, slender and straight.

The inflorescence comprises 3 to 25 flowers, which are 18 to 32 mm across, internally slaty blue to mauve, externally greenish blue. There are usually 3 sterile bracts. The sepals and petals are 8 to 16 mm long and 3 to 7 mm wide. The column is white, blue or mauve, and 6 to 7.5 mm long and 2.5 to 3.7 mm wide. The post-anther lobe, which is 2 to 4 mm long and 1.5 to 2.5 mm wide, is dark reddish brown with a yellow apex, and is tubular, inflated, hooded, and shallowly notched. The column arms are converging, 1 to 1.5 mm long, curved upwards and end in mop-like pink to mauve hair tufts that are about 1 to 1.5 mm long (Plate 2).

[description from Backhouse & Jeanes 1995, Jones *et al.* 1999, Jones 2006]



Plate 2. Column of *Thelymitra malvina*, petals and sepals removed (Images by Mark Wapstra)

Confusing species

Thelymitra malvina is most likely to be confused with *Thelymitra atronitida*, which it closely resembles and because the two species can occasionally grow sympatrically (Jeanes 2000). *Thelymitra malvina* can be distinguished by a number of features including the presence of 3 sterile bracts (rather than usually 2 in *Thelymitra atronitida*), more, generally larger flowers that are entomophilous (autogamous in *Thelymitra atronitida*), a column post-anther lobe that is dark reddish brown with a yellow apex (mostly glossy black *Thelymitra atronitida*) and pink or mauve hair tufts on the lateral lobes (white or tinged pink in *Thelymitra atronitida*).

DISTRIBUTION AND HABITAT

Thelymitra malvina is widespread but localised, occurring in Queensland, New South Wales, Victoria and Tasmania (Jones 2006).

Thelymitra malvina is widespread in Tasmania, although known with certainty from only a few scattered localities in coastal lowland, including the major Bass Strait islands, and sites on the north and east coasts (Jones *et al.* 1999; Figure 1, Table 1). The species has a linear range of 466 km, extent of occurrence of about 62,000 km² (which includes large areas of sea and unsuitable habitat) and an estimated area of occupancy of less than 1 ha.

Within Tasmania, *Thelymitra malvina* has been recorded from coastal heath (Plate 3) and sedgeland on sandy loams or clay loams at low elevations (Jones *et al.* 1999).



Plate 3. Habitat of *Thelymitra malvina* in Rocky Cape National Park (Image by Mark Wapstra)

Although the broad habitat type occupied by *Thelymitra malvina* is widespread within Tasmania, because orchids show highly specific obligate relationships with mycorrhizal fungi necessary for germination and growth, identifying potentially suitable habitat can be complicated, as it is likely that *Thelymitra malvina* has more specific requirements that cannot be identified under this broad habitat classification.

POPULATION ESTIMATE

Within Tasmania, the total population size is estimated to be less than 50 individuals (Table 1), with the recent status of many of the subpopulations unknown. No subpopulation

has ever supported more than about 20 mature individuals, with most subpopulations supporting less than 5 mature individuals.

The broad potential habitat of *Thelymitra malvina* (near-coastal heathlands and heathy woodlands) has been widely studied and surveyed as a result of its floristic richness (e.g. Kirkpatrick & Harris 1999). The type of habitat that supports *Thelymitra malvina* often shows high orchid diversity, with 120 orchid species known to occur in coastal heath communities (Jones *et al.* 1999), and as a result is visited regularly by orchid enthusiasts.

While *Thelymitra malvina* was only formally described in 1998, the entity would probably have been widely recognised by orchid enthusiasts as the member of the *Thelymitra nuda* species-complex with pink to mauve hair tufts on the column arms, and hence recorded as such. While the species has a widespread distribution (Figure 1), the distinctiveness of the species and the fact that it has been formally recognised for over a decade, suggests that it is unlikely that the species is substantially more widespread or common than currently indicated.

RESERVATION STATUS

Thelymitra malvina occurs in the Hunter Island Conservation Area, Rocky Cape National Park, Coles Bay Conservation Area (in this area it also occurs within a Public Reserve) and Tasman National Park. It has also been detected in what is now known as the Winifred Curtis Scamander Reserve (private sanctuary).

CONSERVATION STATUS

Thelymitra atronitida was listed in 1995 as rare on the Tasmanian *Threatened Species Protection Act 1995*, and uplisted to endangered in 2002, meeting criterion D, specifically D1 (total population estimated to number fewer than 250 mature individuals) and D2 (total population with an area of occupancy less than 0.01 km² (1 hectare), and typically in five or fewer locations that provide an uncertain future due to the effects of human activities or stochastic events, and thus capable of becoming extinct within a very short time period).

Table 1. Population summary for *Thelymitra malvina* in Tasmania.

	Subpopulation	Tenure	NRM region *	1:25 000 mapsheet	Years seen	Area of occupancy (ha)	Number of plants
1	King Island – Yarra Creek	Private property	Cradle Coast	Grassy	1993		
2	Hunter Island	Hunter Island Conservation Area	Cradle Coast	Cuvier	1979		
3a	Rocky Cape – Burgess Cove	Rocky Cape National Park	Cradle Coast	Rocky Cape	1998	0.0001	2
3b	Rocky Cape – Cathedral Hill	Rocky Cape National Park	Cradle Coast	Rocky Cape	2002		
3c	Rocky Cape – Leearcher Cave area	Rocky Cape National Park	Cradle Coast	Rocky Cape	2002 2004 2005 2008	0.0001 0.0001	3
4	Sisters Beach	Council land ³	Cradle Coast	Mawbanna	2009	0.0001	1
5	Flinders Island – “Echo Hills”	Private property	North	Leventhorpe	1990		
6	Flinders Island – Reedy Lagoon Road	Private property	North	Logan	1992		
7	Gladstone ¹	Private property?	North	Gladstone?	1987		
8	Scamander	Private property?	North	Beaumaris	1976		
9	Henderson Lagoon	Winifred Curtis Scamander Reserve	North	Falmouth	1990		
10a	Coles Bay (west)	Coles Bay Conservation Area, private property	South	Coles Bay	1990, 1992 ² 2003-2005 2008		8
10b	Coles Bay (north of township)	Public Reserve	South	Coles Bay	1985 2003 2004	5 0.3	16
11	Tasmans Arch	Tasman National Park	South	Taranna	1974		

* NRM region = Natural Resource Management region; ¹ Jeanes (2004); ² Jones & Clements (1998)

³ land slashed by the Parks & Wildlife Service

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

Within Tasmania, *Thelymitra malvina* occurs in very small subpopulations with a fragmented disjunct distribution, making the species particularly vulnerable to stochastic events and accidental destruction. The precise location of some of the subpopulations is also not formally

documented so disturbance from nearby activities has the potential to impact the sites supporting the species.

Land clearing: Any clearing activities in the vicinity of subpopulations of *Thelymitra malvina* have the potential to deleteriously affect the populations. Poor planning, combined with the low precision of some of the database records,

may result in inadvertent disturbance (and even local elimination) of subpopulations. Historically, significant areas of potential habitat (i.e. lowland open heathy forest and woodland, heathland) have been cleared and this may in part explain the disjunct contemporary distribution of the species. Clearing of potential habitat has the potential to disturb and/or eliminate as yet undetected subpopulations.

Parts of the subpopulation on the Freycinet Peninsula occur in an area proposed for a caravan park development. This development has been stalled for some time partly because of threatened species issues identified at the site. However, the future of the project is still unknown.

Inappropriate disturbance: *Thelymitra malvina* requires light and some space to allow annual emergence, growth and seed-set. Orchid species such as *Thelymitra malvina* may be out-competed as their heathland habitat becomes dense over time in the absence of disturbance. While sun-orchids do possess tubers, and might therefore be expected to persist in a dormant state during unfavourable conditions, the longer the period without flowering and fresh seed production, the less likely must be the long-term persistence of a species in an area (Jones *et al.* 1999).

For example, within the Rocky Cape National Park, *Thelymitra malvina* can no longer be detected near Burgess Cove, which has not been burnt for a long period and has become densely overgrown, but it is still present in the Leearcher Cave area, which has been subject to more frequent fires. The most recent fire event (October 2008) included the 2005-reported site for *Thelymitra malvina*, where the species could not be detected in 2008 due to the recent fire, but the species was detected about 150 m further west in an unburnt patch of dense coastal heath (but on a track verge) suggesting that a mosaic of fire events is appropriate for the maintenance of populations of *Thelymitra malvina*.

Regular slashing of the Sisters Beach subpopulation as a fire protection measure is likely to have impeded seed set and the

subpopulation may now be too small to be viable. Managing agencies have now been requested not to slash between mid September to mid December.

The subpopulation on Flinders Island (Reedy Lagoon Road) occurs on grazing land and is at risk from inappropriate grazing pressure (and other primary production activities such as ploughing and drain development).

The highly localised distribution and very low population sizes at each site also complicates designing and implementing an appropriate disturbance regime (e.g. fire and/or slashing) because any one event might result in local extinction but refraining from active management might equally result in extinction, albeit over a longer period.

Stochastic events: All known sites occur in close proximity to urban areas and are therefore at risk from human activities. One of the Coles Bay sites is near an area used for quad-bike riding and the tuberous nature of the plants make them susceptible to the type of ground disturbance that is often associated with this activity. Although the population has not been impacted to date, one rider venturing off the formed tracks could result in the accidental loss of this population. Similar risks are present at the other known sites.

Climate change: The potential impact of climate change on *Thelymitra malvina* is difficult to quantify but it is possible that even minor shifts in average seasonal conditions may have an adverse impact on locally restricted species, especially if other ecological factors are absent (e.g. an appropriate fire/disturbance regimes).

MANAGEMENT STRATEGY

What has been done?

Thelymitra malvina was formally included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006), although the plan only identified the Denison Street subpopulation of *Thelymitra malvina* (now considered to be *Thelymitra atronitida*) to be in urgent need of management planning. The plan identified a

moderate priority for the requirement for baseline surveys of subpopulations.

Surveys were undertaken in the Coles Bay area in 2008, resulting in 8 plants being detected, close to previously reported sites. Extension surveys were undertaken for *Thelymitra malvina* within the Rocky Cape National Park in 2008, which resulted in 3 plants being detected close to a previously reported site (ECOtas 2009).

Sites supporting *Thelymitra atronitida* near Coles Bay have been included in controlled ecological burns, followed by presence/absence monitoring.

Management objectives

- prevent the loss or degradation of known subpopulations;
- undertake active management, including monitoring, of subpopulations to ensure their long-term viability;
- identify new subpopulations of the species.

What is needed?

- establish a demographic monitoring program for a subset of the known subpopulations (e.g. Rocky Cape National Park – Leearcher Cave, and Coles Bay), designed to report on health and recruitment, and gauge the response of the species to disturbance events and seasonal/annual conditions;
- continue negotiation with the relevant land managers for sites supporting the species on the Freycinet Peninsula to ensure their long-term viability. Management plans that include active management (e.g. fire/slashing) and exclusion (e.g. fencing to prevent inadvertent disturbance from recreational use) may be warranted;
- undertake extension surveys of potential habitat within the vicinity of known subpopulations (e.g. greater Freycinet area, Rocky Cape National Park) during the predicted flowering season, especially if sites supporting superficially suitable habitat have been burnt in previous seasons;

- undertake surveys of previously reported sites where the species has not been observed for several years (especially outlying sites such as Tasmans Arch, Flinders Island, King Island and the Scamander area) and abate perceived threats;
- ensure that the Sisters Beach site is not slashed between mid September and mid December;
- support the Private Land Conservation Program (Department of Primary Industries, Parks, Water and Environment) with the establishment of conservation covenants for private land supporting *Thelymitra malvina*, 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 and the local community on the locality, significance and management of known *Thelymitra malvina* subpopulations and potential habitat;
- implement the threatened orchid recovery plan (TSU 2006) and include the species in any revision of the plan.

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