Thelymitra bracteata

leafy sun-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Hans and Annie Wapstra

Scientific name: ***Thelymitra bracteata*** J.Z.Weber ex Jeanes, *Muelleria* 19: 43 (2004)
Common name: leafy 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: **North, South**

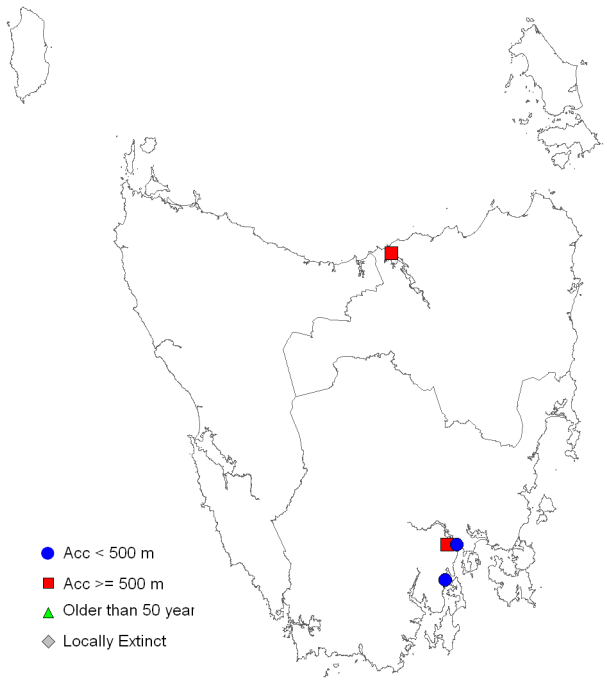

Figure 1. The distribution of *Thelymitra bracteata* within Tasmania

Plate 1. *Thelymitra bracteata* inflorescence (image by Hans and 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).

Thelymitra bracteata. reproduces from seed in association with mycorrhizal fungi. Flowers of many *Thelymitra* species open widely in warm weather, and are thought to mimic native irises and lilies, especially the blue-flowered species including *Thelymitra bracteata*. They attract a similar suite of insects, such as small native bees, that pollinate flowers when they attempt to collect pollen (Jones et al. 1999). However, *Thelymitra bracteata* is likely to be self-pollinating because its flowers open very tardily only on hot days (Jones 2006). The flowering of many sun-orchids is enhanced by disturbance, and *Thelymitra bracteata* is likely to respond positively to summer fires. 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 bracteata*, which is often found in disturbed areas such as forest clearings and tracks (Jeanes 2004).

Survey techniques

The flowering period of *Thelymitra bracteata* on mainland Australia is September to December (Jones 2006). In Tasmania, where the species is only known from a few subpopulations, flowering seems to occur in the first week of November so early October to late December is the recommended timing for surveys (Wapstra et al. 2008). The species is most readily spotted on hot sunny days when flowers are more likely to be open though the species may not emerge or flower in dry years.

Description

Thelymitra bracteata has a leaf that is 20 to 45 cm long and 8 to 15 mm wide. The leaf is flat, erect, leathery, ribbed on its outer surface, dark green with a purplish sheathing base, and has an apex that is somewhat lax. The flower stems are 30 to 80 cm tall and 2 to 7 mm wide, and are rather stout, straight and straw-coloured to purplish. There are usually 2 sterile bracts, which are green to purplish, 3 to 15 cm long and 3 to 15 mm wide, the lower bract closely sheathing throughout, the upper bract mostly free with the base only half encircling the scape. The fertile bracts are green to purplish, 4 to 35 mm long and 3 to 8 mm wide, and sheathe the pedicels. The pedicels are slender and those of the lower flowers are usually partially decurrent in arrangement. The inflorescence usually comprises 5 to 20 (but up to 30) flowers, which are 16 to 30 mm across, and pale blue internally and greenish to deep yellow externally (giving the buds a distinctive green appearance). The sepals and petals are 6 to 14 mm long and 3 to 7 mm wide. The column is white or greenish, and 5 to 6.5 mm long and 2.5 to 3.5 mm wide. The post anther lobe (hood) is 2.5 to 3.5 mm long and 1.3 to 2 mm wide, reddish brown to brown with a yellow apex, curved through 90 degrees, tubular and notched. The column arms are 1.2 to 1.7 mm long and are bent sharply upwards with white toothbrush-like hair tufts on their ends.

[description based on Jeanes 2004, Jones 2006]

Confusing species

Thelymitra bracteata belongs to the *Thelymitra pauciflora* species-complex (Jeanes 2004), which is recognised as being difficult for most workers to readily classify collections, except perhaps of fresh material. *Thelymitra bracteata* is one of the most robust species of the complex. It can be recognised by a combination of characters including its robust habit, flat leaf, the large prominent bracts and characters of the flowers (Jones 2006).

Table 1. Population summary for *Thelymitra bracteata* within Tasmania

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Years seen	Area occupied (ha)	Number of mature plants
1	Lenah Valley[1]		South	Hobart	1970		
2	Rosny Hill	Rosny Hill Nature Recreation Area[3]	South	Hobart	2003 2007 2008 2009	0.25 (c. 30 m radius)	c. 60 0 0 75 (3 patches)
3	Old Station Road, Coningham	Private property	South	Barnes Bay	2004	0.0001	1
4	George Town[2]		North	Unknown	1987		

NRM region = Natural Resource Management region
[1]Known only from a single specimen held at the Tasmanian Herbarium with no further details
[2] Cited in Jeanes (2004) and Bates (1999) as "Georgetown, 31.x.1987, R.J. Bates" without further details
[3] Clarence City Council was declared to be the managing authority in 2009

Thelymitra bracteata is most easily confused with *Thelymitra arenaria* but the latter is generally less robust, has a smaller, more channelled leaf, smaller bracts, fewer flowers and the pedicels are never arranged decurrently (Jeanes 2004). It is recommended that specialist opinion be sought on any collections suspected to be *Thelymitra bracteata*.

DISTRIBUTION AND HABITAT

Thelymitra bracteata occurs in Victoria, South Australia and Tasmania. Within Tasmania it is only known from 4 locations, 3 in southeastern Tasmania (Table 1, Figure 1).

On the mainland, *Thelymitra bracteata* is highly localised, occurring in open forest and grassland in areas of reliable rainfall in well-drained loam (Jones 2006). In Tasmania, *Thelymitra bracteata* occurs in open grassy and heathy forest/woodland on sedimentary substrates such as mudstone and sandstone. At the Rosny Hill site, *Thelymitra bracteata* is most abundant on the top of the hill on open ground with dense exotic grasses such as *Holcus lanatus* and sparse in a remnant patch of native grass with *Bulbine glauca* close to *Allocasuarina verticillata* woodland. Note that the species could not be located on the wooded slopes below the hill top. The Coningham subpopulation occurs in a canopy gap created by a rough track amongst heathy *Eucalyptus amygdalina* forest on Triassic sandstone.

POPULATION ESTIMATE

In Tasmania, *Thelymitra bracteata* is known from 4 subpopulations, totalling fewer than 100 individuals. There is no estimate for the subpopulation from Lenah Valley, which known only from a herbarium specimen, or the subpopulation from George Town. Only 1 mature individual was recorded from near Coningham but this specimen was detected by chance and no formal survey of the extent of the species at this site has been made. The Rosny Hill site supports about 60 mature individuals (occurring as clumps of 2 to 5 plants), based on observations in 2001, 2002 2003 and 2009. The species was not found in 2007 and 2008, despite searching during the flowering period.

While *Thelymitra*, and especially the *Thelymitra pauciflora* species-complex, has posed identification difficulties for orchid specialists and enthusiasts, *Thelymitra bracteata* is one of the more distinctive taxa and is relatively readily recognised by field workers. As such, the paucity of collections is probably a good reflection of the actual distribution of the species in Tasmania. This is supported by field studies (Jeanes 2004) that included large areas of the State yet only the Rosny Hill subpopulation was recorded. Even when field workers become more familiar with the revised taxonomy of the *Thelymitra pauciflora* species-complex (Jeanes 2004), it is unlikely that *Thelymitra bracteata* will prove to be widespread

or abundant. The discovery of new subpopulations is likely to be a chance event and is unlikely to alter the conservation status of the species.

RESERVATION STATUS

Thelymitra bracteata is poorly reserved with only one subpopulation occurring in a gazetted reserve, although it is noted that this is the largest known subpopulation.

CONSERVATION ASSESSMENT

Thelymitra bracteata was listed in 2005 as endangered on schedules of the Tasmanian *Threatened Species Protection Act 1995*, meeting criterion B (extent of occurrence estimated to be less than 5,000 km^2 or area of occupancy estimated to be less than 500 km^2) and B1 (severely fragmented or known to exist at no more than 5 locations) and B2 (continuing decline inferred, observed or projected in (b) area of occupancy, (c) area, extent and/or quality of habitat and (d) number of locations or subpopulations) and criterion C (population estimated to number less than 2,500 mature individuals) and C2 (a continuing decline observed, projected or inferred in numbers of mature individuals and population structure in the form of C2(a) (severely fragmented i.e. no subpopulation estimated to contain more than 250 mature individuals).

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Stochastic risk: The highly localised distribution of subpopulations of *Thelymitra bracteata*, combined with the usually relatively low abundance, makes the species susceptible to chance events at all of its known sites. This is exacerbated by non-emergence in times of low rainfall and the relationship with mycorrhizal fungi which may make the species susceptible to additional factors. The precise extent of all but the Rosny Hill 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 bracteata* have the potential to deleteriously affect the subpopulations. 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 forest and grassy woodland) have been cleared perhaps explaining the disjunct contemporary distribution of the species. Any clearing of potential habitat has the potential to disturb and/or eliminate as yet undetected subpopulations. Suburban sprawl may explain the lack of records for the species from the Lenah Valley area since the only collection from this area in 1970.

Inappropriate fire regime: The flowering of *Thelymitra bracteata* is likely to be enhanced by summer fires. However, for safety reasons, fire management at the known sites and in potential habitat for *Thelymitra bracteata* is usually directed towards preventing the type of fires considered ideal to stimulate flowering. A more frequent lower intensity fuel reduction fire regime is unlikely to benefit the species and in the long term may reduce habitat quality.

Inappropriate disturbance regime: Some forms of disturbance (e.g. localised canopy opening in forest from firewood cutting, slashing of open grassy woodland, etc.) are likely to be beneficial to the species, provided that such activities are undertaken outside the period of flowering and seed set. The Rosny Hill site is periodically slashed but this has not been undertaken to take specific account of *Thelymitra bracteata*. Any slashing between late July/early August when the leaf emerges and December when the capsules would release seed would be detrimental. However, slashing during the late spring to early summer period is most likely for fire management reasons.

Activities on public land: The Rosny Hill site in Hobart is a public site, popular because of its view of the city and the River Derwent. The needs of *Thelymitra bracteata* need to be considered in any proposals to further develop the site or to manage assets such as the nearby trig station. The site suffers from dumping of rubbish and garden waste. This may result in relatively rapid habitat modification deleterious to the species through soil enrichment and increased competition from weeds. Evidence of

"hooning" with burnouts on grassy areas close to the orchid site is frequently present posing a significant risk to the subpopulation through disturbance of the soil structure and destruction of individuals, especially during the flowering period.

Weeds: Woody weeds (broom and tree lucerne) are present in the vicinity of the Rosny Hill site requiring control measures to prevent them from proliferating as they have the potential to outcompete *Thelymitra bracteata*. In favourable years, exotic grasses form a dense cover requiring slashing, preferably in autumn.

Climate change: While *Thelymitra bracteata* occurs in parts of Tasmania with naturally low rainfall, climatic warming is a potential threat, particularly if rainfall patterns change to make conditions unsuitable for recruitment and emergence (to regenerate tubers) over an increasing number of years, resulting in decline due to weakening and eventual death of tubers.

MANAGEMENT STRATEGY

What has been done?

There have been no targeted surveys for *Thelymitra bracteata* in Tasmania. The Rosny Hill site has been monitored for emergence by orchid enthusiasts. Management control for the Rosny Hill Nature Recreation Area was passed to the Clarence City Council in 2009. A management plan is in preparation and weed control measures have been initiated.

While *Thelymitra bracteata* was not formally included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006), the Recovery Plan is of relevance to this species.

Management objectives

The main objective for the management of *Thelymitra bracteata* is to ensure that there is no decline in the known subpopulations.

What is needed?

- finalise and implement a management plan for the Rosny Hill Nature Recreation Area to address the needs of *Thelymitra bracteata* including monitoring, controlling woody weeds and potentially detrimental use of the site, and slashing or firing as necessary;
- determine the full extent and condition of other recorded subpopulations, and develop appropriate management strategies for each of the sites;
- monitor sites to determine population trend;
- undertake targeted surveys of recently burnt parts of Rosny Hill to determine the effect of the fire on *Thelymitra bracteata*;
- pursue a more formal land management agreement with the owners of the site near Coningham supporting *Thelymitra bracteata* that incorporates longer term habitat maintenance objectives and actions. Note that this site also supports a threatened vegetation type (*Eucalyptus amygdalina* forest and woodland on sandstone) and threatened fauna including the chaostola skipper (*Antipoda chaostola*);
- 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;
- implement the threatened orchid recovery plan (TSU 2006) and formally include the species in any revision of the plan.

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View:
www.dpipwe.tas.gov.au/threatenedspecieslists

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