Image by Richard Schahinger

Thelymitra atronitida

blackhood sun-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Thelymitra atronitida*** Jeanes, *Muelleria* 14: 91 (2000)
Common name: blackhood 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**

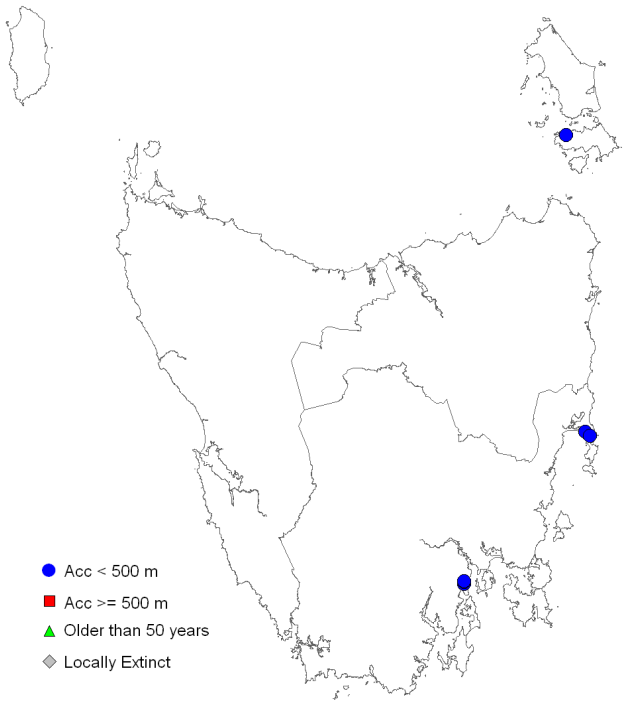

Figure 1. Distribution of *Thelymitra atronitida* within Tasmania

Plate 1. *Thelymitra atronitida* (image by Malcolm Wells)

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 identification. In all species the column has two arm-like projections that flank the anther (pollen holding structure).

Flowers of *Thelymitra* species are thought to mimic native irises and lilies, 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). However, *Thelymitra atronitida* has self-pollinating (autogamous) flowers (Jeanes 2000, Jones 2006).

The flowering of many sun-orchids is enhanced by disturbance, and *Thelymitra atronitida* is likely to respond positively to fire. The species may also be prominent in disturbed sites such as slashed areas or along track verges.

Survey Techniques

Surveys for *Thelymitra atronitida* should be undertaken during its peak flowering period, early to late November (Wapstra et al. 2012). To maximise the chances of detection surveys should be undertaken during the morning, as flowers are known to close around midday.

Description

Thelymitra atronitida has a leaf that is 15 to 35 cm long and 5 to 12 mm wide. The leaf is linear to linear-lanceolate with an acute apex, erect, leathery, channelled, dark green with a purplish base, ribbed on the underside, and sheathing at the base. The flower stems are 30 to 50 cm tall, 1.5 to 3.5 mm in diameter, straight, and straw-coloured to purplish.

The inflorescence usually consists of 2 to 8 flowers, which are 20 to 26 mm across, and moderately dark blue with darker veins. There are usually 2 sterile bracts (occasionally 3), that are linear-lanceolate, 1.5 to 7 cm long and 3 to 10 mm wide, green or purplish, and acute to acuminate. The sepals and petals are 10 to 13 mm long and 3 to 8 mm wide. The column is mostly pale blue, and 5.5 to 7 mm long and 2.5 to 3.5 mm wide. The post-anther lobe, which is 3 to 4 mm long and 1.5 to 2.5 mm wide, is glossy black (to dark claret) with a yellow (cream or white) apex, curved through 90 degrees, tubular, inflated, hooded, dorsally compressed and notched. The column arms are parallel at first then converging, about 1.5 mm long, bent up near the middle and end in toothbrush-like white (occasionally with a pinkish tinge) hair tufts that are about 1.2 to 1.5 mm long (Plate 1).

[description from Jeanes 2000 and Jones 2006]

Confusing species

Thelymitra atronitida may have been confused in the past with a species with which it occasionally co-occurs, viz., *Thelymitra malvina* (Jeanes 2000). *Thelymitra atronitida* can be distinguished from *Thelymitra malvina* by the presence of two sterile bracts (rather than usually three in *Thelymitra malvina*), fewer, generally smaller flowers that are autogamous (entomophilous in *Thelymitra malvina*), a post-anther lobe that is mostly glossy black (mostly brownish in *Thelymitra malvina*), and white (occasionally with a pinkish tinge) hair tufts on the lateral lobes (mauve or pink in *Thelymitra malvina*).

DISTRIBUTION AND HABITAT

Thelymitra atronitida occurs in New South Wales (central), Victoria (East Gippsland, Strzelecki Ranges) and Tasmania (Jeanes 2000, Jones 2006).

Within Tasmania the species is known from three disjunct locations: Kingston in the southeast, Freycinet Peninsula on the central east coast, and Cape Barren Island in the far northeast (Figure 1). The species has a linear range of 300 km, extent of occurrence of 8,880 km^2 (which is largely sea and unsuitable habitat) and an area of occupancy of about 1 ha.

In Tasmania *Thelymitra atronitida* has been recorded from near-coastal heathland, sedgeland and open heathy/sedgey eucalypt woodland on relatively poorly-drained sandy loams (Plate 2). The altitude range of known sites is 10 to 120 m above sea level.

Plate 2. *Thelymitra atronitida* habitat near Kingston (image by Richard Schahinger)

POPULATION ESTIMATE

Thelymitra atronitida is known in Tasmania from eight subpopulations, where subpopulations have been defined as occurrences separated by at least 1 km; given the tenure of the sites these correspond to five locations. The total population consists of at least 300 mature individuals (Table 1).

The broad potential habitat of *Thelymitra atronitida* in Tasmania – near-coastal heathlands and heathy woodlands – has been widely surveyed (e.g. Kirkpatrick & Harris 1999). Moreover, the type of habitat that supports the species often shows high orchid diversity, with about 120 orchid species known to occur in coastal heath communities (Jones et al. 1999), and as a result is visited regularly by orchid enthusiasts. In consequence, the likelihood of additional subpopulations being found has been considered in the past to be very low. The discovery of three new sites in 2012 belies this notion, and indicates that targeted and well-timed surveys of potential habitat in the vicinity of known sites may prove fruitful.

RESERVATION STATUS

Thelymitra atronitida occurs within Coles Bay Conservation Area, Peter Murrell Conservation Area and Peter Murrell State Reserve.

CONSERVATION STATUS

Thelymitra atronitida was listed as endangered on the Tasmanian *Threatened Species Protection Act 1995* in 2009, meeting criterion D:

- total population estimated to number fewer than 250 mature individuals); and
- total population with an area of occupancy less than 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.

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

Within Tasmania *Thelymitra atronitida* occurs in several relatively small disjunct subpopulations, making the species vulnerable to stochastic events and accidental destruction.

Land clearing: Any clearing activities in the vicinity of subpopulations of *Thelymitra atronitida* have the potential to deleteriously affect the populations. Poor planning may result in inadvertent disturbance (and even local elimination) of subpopulations. Historically, significant areas of potential habitat (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 capacity to disturb and/or eliminate as yet undetected subpopulations.

The site at Hawthorn Drive (Kingston) is subject to a subdivision development proposal that would see at least a portion of the subpopulation cleared for housing, while one of the sites near Coles Bay occurs in an area of Crown land proposed previously for a caravan park development (2005) — the future of the project is unknown.

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

	Subpopulation	Tenure	NRM region *	1:25 000 mapsheet	Year last (first) seen	Area of occupancy (ha)	Number of plants
1	Cape Barren Island	Aboriginal Land Council of Tasmania	North	Anderson	2007 (2007)	unknown	unknown
2	Freycinet Peninsula – near Swanwick	Coles Bay Conservation Area	South	Coles Bay	2012 (2004)	0.04	43 (4)
3	Freycinet Peninsula – near Coles Bay tip	Coles Bay Conservation Area	South	Coles Bay	2012 (2012)	0.08	34
4	Freycinet Peninsula – near Coles Bay	Public Reserve	South	Coles Bay	2012 (2004)	0.8	175 (5)
5	Kingston – Denison Street	Kingborough Council	South	Taroona	2010 2008 2007 (2001)	0.1	11 23 3 (12)
6	Kingston – Hawthorn Drive	Private property **	South	Blackmans Bay	2012 2011 (2001)	0.1	13 5 (1)
7	Kingston – Scarborough Av	Peter Murrell Conservation Area	South	Blackmans Bay	2012 (2012)	0.01	4
8	Kingston – Burwood Drive	Peter Murrell State Reserve	South	Blackmans Bay	2012 (2012)	0.01	3

* NRM region = Natural Resource Management region
** = Under a management agreement with Kingborough Council

Inappropriate disturbance: *Thelymitra atronitida* requires light and some space to allow annual emergence, growth and seed-set. Orchid species 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). In the case of *Thelymitra atronitida*, the species has been observed to be present in good numbers in recently burnt areas, but also in areas not burnt for at least 10 years, though its presence in the latter situation may have been in part due to drought opening up the vegetation.

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

Stochastic events: The sites in the Kingston area occur in a suburban setting and are in consequence at risk from a range of human activities, including the illegal collection of flowering plants. Two plants at the Hawthorn Drive site are known to have suffered this fate in 2012.

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

MANAGEMENT STRATEGY

What has been done?

Recovery Plans: *Thelymitra atronitida* is included in the draft *Flora Recovery Plan: Tasmanian*

Threatened Orchids (Threatened Species Section 2013).

Management: As part of a subdivision proposal the bulk of the Hawthorn Drive site is to be transferred to Kingborough Council to be managed for its conservation values, including *Thelymitra atronitida*. A Management Plan has been developed that includes consideration of fire, weed, disease, pest and recreational issues, as well as monitoring of a range of natural vales. Management is to be undertaken by the subdivision proponents for five years (from 2012) and thereafter by Council.

Informal consultation has been undertaken with Kingborough Council and the Tasmanian Parks and Wildlife Service regarding the management requirements of the Denison Street and Peter Murrell & Coles Bay sites, respectively.

Surveys: Sites supporting *Thelymitra atronitida* near Coles Bay have been included in ecological burns undertaken by the Tasmanian Parks & Wildlife Service, followed by presence/absence surveys and extension surveys of nearby potential habitat. Volunteers with the Wildcare group Threatened Plants Tasmania mapped the occurrence of the species in the Coles Bay area in November 2012, increasing the number of known sites from two to three, and the total number of flowering plants from 10 to more than 250 (Table 1).

Management objectives

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

What is needed?

- continue negotiation with the relevant land managers for sites supporting the species on Freycinet Peninsula to ensure their long-term viability;
- establish a monitoring program for all known subpopulations, designed to report on health and recruitment, and gauge the response of the species to disturbance events and seasonal/annual conditions;
- develop and implement management plans for the sites in the Kingston area. They may need to include a fire/slashing strategy to ensure that sites do not become overgrown and unsuitable for the species;
- undertake extension surveys of potential habitat within the vicinity of known subpopulations, especially if sites supporting superficially suitable habitat have been burnt recently;
- finalise the *Recovery Plan for Tasmanian Threatened Orchids* and implement actions as appropriate;
- collect seed and mycorrhizae for long-term storage at the Tasmanian Seed Conservation Centre (Royal Tasmanian Botanical Gardens, Hobart);
- 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 subpopulations and potential habitat.

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