

# *Thelymitra holmesii*

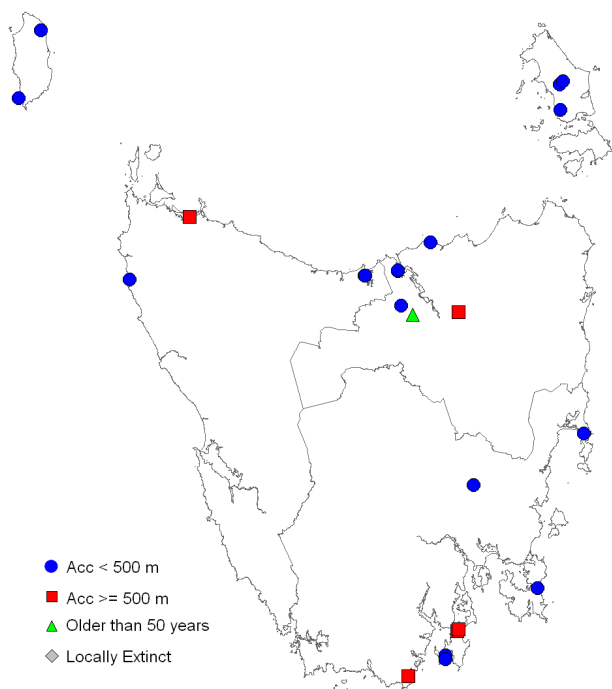
bluestar sun-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Image by Phil Collier

- Scientific name:** *Thelymitra holmesii* Nicholls, *Vict. Nat.* 49: 263 (1933)
- Common name:** bluestar sun-orchid (Wapstra et al. 2005)
- Group:** vascular plant, monocotyledon, family **Orchidaceae**
- Name history:** *Thelymitra pauciflora* var. *holmesii*
- Status:** *Threatened Species Protection Act 1995:* **rare**  
*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 holmesii* within Tasmania



**Plate 1.** *Thelymitra holmesii* flower (image by Phil Collier)

## 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 holmesii* reproduces from seed in association with mycorrhizal fungi. 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 including *Thelymitra holmesii*. 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). The flowers of *Thelymitra holmesii* open freely suggesting insect-pollination though they are reported to be capable of self-pollination (Jones & Clements 1998), occasionally without the flowers opening (Jeanes 2004). The flowering of many sun-orchids is enhanced by disturbance, and *Thelymitra holmesii* 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 holmesii*, which is often found in disturbed areas such as forest clearings, slashed swamp margins and tracks.

## Survey techniques

The flowering period of *Thelymitra holmesii* on mainland Australia is November to December, rarely as early as October (Jeanes 2004, Jones 2006). In Tasmania, most collections of the species are from November, so November through to mid December is the recommended timing for surveys (Wapstra et al. 2008). The species is most readily detected 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 holmesii* has a leaf that is 7 to 35 cm long and 3 to 10 mm wide. The leaf is linear to linear-lanceolate, channelled, ribbed, and fleshy, green with a reddish base. The flower stems are 20 to 65 cm tall, and are slender to stout. The inflorescence usually comprises 2 to 10 flowers, which are 12 to 20 mm across, and deep violet to dark blue with darker veins. The sepals (which are sometimes tinged green) and petals are acutely pointed, and 7 to 10 mm long and 3 to 4 mm wide. The column is blue to reddish, and about 5 mm long. The post anther lobe is prominent, large, inflated and hood-like with a dark blue-black band below the bright yellow notched apex. The column arms are erect and short, ending in a dense mop-like tuft of cream or yellow, rarely white, hairs.

[description based on Nicholls 1933, Jeanes 2004, Jones & Clements 1998, Jones et al. 1999, Jones 2006]

## Confusing species

*Thelymitra holmesii* 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 holmesii* remains poorly known because of its superficial resemblance to several other taxa in the species-complex. It can be recognised by a combination of characters including its habitat and habit, flowering time, its small, dark blue flowers that open freely on hot days, and the deeply cleft, bright yellow, inflated post-anther lobe with a dark collar and irregular dense mop-like cream or yellow hair (rarely white) tufts.

*Thelymitra holmesii* has been confused with the recently described *Thelymitra peniculata* but the two species are distinct as *Thelymitra holmesii* usually grows in wetter habitats, flowers somewhat later, the post-anther lobe is usually more deeply bifid at the apex and the hairs of the column arms are usually longer, cream or yellow (seldom white as in *Thelymitra peniculata*)

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

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last seen	Area occupied (ha)	Number of mature plants
1	Nook Swamps	Lavinia State Reserve	Cradle Coast	Egg Lagoon	2009	0.2	20
2	Seal Rocks	Seal Rocks State Reserve	Cradle Coast	Stokes	2009	0.0001	1
3	Rebecca Creek	Arthur-Pieman Conservation Area	Cradle Coast	Temma	2001	unknown	few
4	Anthony Beach	private property	Cradle Coast	Smithton	1992	unknown	unknown
5	Razor Beach near Sisters Beach	private property	Cradle Coast	Rocky Cape	2001	unknown	unknown
6	Port Sorell (Rubicon Sanctuary)	private property (under covenant)	Cradle Coast	Port Sorell	2010 2008	0.01	c. 500 5
7	Beauty Point	private property	North	Bell Bay	2002	0.01	c. 10 (0 in 2010)
8	Black Rock Point near Stony Head	Commonwealth land	North	Tam O'Shanter	1983	unknown	rare
9	Four Springs Creek	State forest	North	Exeter	1987	unknown	unknown
10	Rosevale	private property	North	Bridgenorth	1948	unknown	unknown
11	Nunamara	public reserve (quarry reserve)	North	Nunamara	1961	unknown	unknown
12	Strzelecki Peaks	Strzelecki National Park	North	Loccota	1997	unknown	unknown
13	North Darling Range	Darling Range Conservation Area	North	Leventhorpe	1992	unknown	unknown
14	West Darling Range	Darling Range Conservation Area	North	Leventhorpe	1992	unknown	unknown
15	Coles Bay	public reserve	North	Coles Bay	2003	unknown	50–100
16	Hill 1 km SSE Clear Hill near Coal River	private property	South	Stonor	2005	0.0001	1
17	Arthur Highway near Murdunna	State forest informal reserve	South	Murdunna	2001	unknown	unknown
18	Penzance near Eaglehawk Neck	private property	South	Taranna	2003	unknown	unknown
19	Airstrip, North Bruny Island* <sup>1</sup>	private property	South	Great Bay	2001	c. 100 m strip	c. 40
20	Lighthouse Road, entrance to South Bruny National Park* <sup>1</sup>	South Bruny National Park	South	Cloudy	2001	0.001	20–30
21	Stinking Beach, South Bruny Island* <sup>1</sup>	private property	South	Partridge	2003	unknown	unknown
22	Esperance Coast Road* <sup>2</sup>	Crown land	South	Waterloo	2001	unknown	unknown
23	Leprena Track	State forest	South	Leprena	2006	0.2 (c. 25 m radius)	15–20
24	Cockle Creek	Recherche Bay Nature Recreation Area	South	Recherche	1992	unknown	unknown

NRM region = Natural Resource Management region;

\*<sup>1</sup> Collections from somewhere on Bruny Island were also made in 1969 and 1971;

\*<sup>2</sup> Jeanes (2004) cites this site as 'Police Point Road';

and are generally arranged in a more elongate, open, untidy tuft (Jeanes 2004). *Thelymitra pauciflora* grows in drier habitats, flowers earlier, generally has fewer and paler flowers with a less inflated, entire or emarginate post-anther lobe and column arms with more or less terminal tufts of white hairs.

It is recommended that specialist opinion be sought on any collections suspected to be *Thelymitra holmesii*.

#### DISTRIBUTION AND HABITAT

*Thelymitra holmesii* occurs in Victoria, South Australia, New South Wales and Tasmania. Within Tasmania, it is known from scattered coastal and near-coastal locations, mainly in the northwest, north, east and southeast (Table 1, Figure 1).

*Thelymitra holmesii* occurs in moist areas of grassland, heathy open forest and heathland in water-retentive soils such as clay loam and peaty loam, in soaks, beside streams and around swamp margins, usually below about 200 m elevation (Jones & Clements 1998, Jones et al. 1999, Jones 2006).

#### POPULATION ESTIMATE

Virtually all herbarium collections and database records for *Thelymitra holmesii* are unaccompanied by demographic information, making estimating the total population and area occupied by the species within Tasmania difficult. Most subpopulations are small, usually in the order of less than 20 mature individuals, though the species was described as common on the 19 ha property supporting the Port Sorell subpopulation, with numbers estimated to be in the order of 500. As the number of Tasmanian subpopulations has increased from about 6 at the time of listing in 1995 to 24 despite the lack of formal targeted surveys, it is likely that further subpopulations will be detected with further survey.

#### RESERVATION STATUS

*Thelymitra holmesii* is reserved within Arthur-Pieman Conservation Area, Darling Range Conservation Area, Lavinia State Reserve, Recherche Bay Nature Recreation Area, Seal

Rocks State Reserve, South Bruny National Park and Strzelecki National Park. One subpopulation occurs on private property subject to a conservation covenant.

#### CONSERVATION ASSESSMENT

*Thelymitra holmesii* was listed as rare in 1995 on schedules of the Tasmanian *Threatened Species Protection Act 1995*, having been determined to occur in 20 or less 10 x 10 km Australian Map Grid squares in Tasmania (FAC 2004). At the time of listing the species was poorly understood and known from only 6 or fewer locations.

#### THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

As the precise extent of each of the subpopulations of *Thelymitra holmesii* is not formally documented, disturbance from nearby activities has the potential to impact sites supporting the species.

**Stochastic risk:** The highly localised distribution of subpopulations of *Thelymitra holmesii*, combined with the usually relatively low abundance, makes the species subject to chance events at most 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.

**Land clearing:** Any clearing activities in the vicinity of *Thelymitra holmesii* 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 heathy forest and woodland, heathland and open poorly drained sites) 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.

**Inappropriate disturbance regime:** The flowering of *Thelymitra holmesii* is likely to be enhanced by summer fires, as is the case for

many species of *Thelymitra*. However, for safety reasons, fire management at known sites and in potential habitat for *Thelymitra holmesii* 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. Other forms of disturbance (e.g. localised canopy opening in forest from firewood cutting, slashing of heathland, etc.) are likely to be beneficial to the species, particularly if undertaken outside the period of flowering and seed set.

## MANAGEMENT STRATEGY

### **What has been done?**

*Thelymitra holmesii* is included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006). The Port Sorell subpopulation occurs on private property subject to a conservation covenant and is actively managed to promote the flowering of threatened orchids as recommended in the Recovery Plan.

### **Management objectives**

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

### **What is needed?**

- determine the precise extent and condition of recorded subpopulations, and develop appropriate management strategies for each of the sites;
- support the Private Land Conservation Program (DPIPWE) with the establishment of conservation covenants for private land supporting *Thelymitra holmesii*, 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;

- review the conservation status of *Thelymitra holmesii* in the next 5 years to determine if the species qualifies for removal from the schedules of the Tasmanian *Threatened Species Protection Act 1995*;
- implement the threatened orchid Recovery Plan (TSU 2006) and, if still listed, include the species in any revision of the plan.

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**Contact details:** Threatened Species Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44, Hobart, Tasmania, Australia, 7001. Ph (03) 6233 6556; fax (03) 6233 3477.

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