

Approved Conservation Advice  
(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

**Approved Conservation Advice for**  
***Thelymitra stellata* (Star Sun-orchid)**

This Conservation Advice has been developed based on the best available information at the time this conservation advice was approved; this includes existing plans, records or management prescriptions for this species.

**Description**

*Thelymitra stellata*, Family Orchidaceae, also known as Star Sun-orchid, is a terrestrial orchid growing to 25 cm high on a robust stem. It has up to six symmetrical flowers, 2.5–3 cm in diameter. The flowers are usually golden brown but may be yellow with orange stripes on the sepals and petals. Star Sun-orchid flowers form late September to November. At the base of the stem there is a single lily-like leaf, up to 9 cm long and 4 cm wide. The leaf is usually shrivelled by the time of flowering and the plant dies back below ground level after seed set. It is closely-related to *T. jacksonii* and *T. fuscolutea* but differs in having smaller, lighter coloured flowers, an earlier flowering period and a more northerly range of distribution. *Thelymitra* flowers remain closed at night or on cool, cloudy days, opening only in warm, sunny weather (FloraBase, 1994; Brown et al., 1997; Patrick & Brown, 2001).

Star Sun-orchid was reduced to a variety of *T. fuscolutea* in 1971, but is now recognised as a distinct species (CHAH, 2005).

**Conservation Status**

Star Sun-orchid is listed as **endangered**. This species is eligible for listing as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as, prior to the commencement of the EPBC Act, it was listed as endangered under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth). The species is also listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* (Western Australia).

**Distribution and Habitat**

Star Sun-orchid is endemic to Western Australia where it is uncommon but occurs over a wide area, and is known from 23 populations between Three Springs and Pinjarra, with a single disjunct occurrence near Dumbleyung. The populations are small, most numbering fewer than 10 plants. Star Sun-orchid is conserved in Mt Lesueur National Park and Coomallo Nature Reserve but some populations occur on private land or along roadsides.

The species grows in gravelly loam among low heath and scrub in *Eucalyptus marginata* and *E. wandoo* woodland, and in low heath on lateritic hill tops (Briggs & Leigh, 1996; Brown et al., 1997; Patrick & Brown, 2001). This species occurs within the Avon, Northern Agricultural, Swan and South West (Western Australia) Natural Resource Management Regions.

The distribution of this species overlaps with the following EPBC Act-listed threatened ecological communities:

- Shrubland and Woodland of the eastern Swan Coastal Plain,
- Shrubland and Woodland on Muchea Limestone of the Swan Coastal Plain,
- Shrubland and Woodland on Perth to Gingin ironstone (Perth to Gingin ironstone association) of the Swan Coastal Plain,
- *Corymbia calophylla* - *Kingia australis* woodland on heavy soils of the Swan Coastal Plain,

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- Assemblages of plants and invertebrate animals of tumulus (organic mound) springs of the Swan Coastal Plain, and
- *Corymbia calophylla* - *Xanthorrhoea preissii* woodland and shrubland of the Swan Coastal Plain.

### **Threats**

The main identified threats to Star Sun-orchid are fire during the growing season; browsing by feral rabbits (*Oryctolagus cuniculus*); broad scale vegetation clearing; and increasing fragmentation of habitat (Desmond, 2001; ANRA, 2007).

The main potential threats to the species include invasion by exotic weeds; recreational activities; road widening activities; and gravel extraction (Desmond, 2001; ANRA, 2007).

### **Research Priorities**

Research priorities that would inform future regional and local priority actions include:

- Design and implement a monitoring program or, if appropriate, support and enhance existing programs.
- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful establishment, including mycorrhizal association trials.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations/occurrences/remnants.
- Determine the pollinating agent.
- Investigate the potential and efficacy of DNA-based or other identification approaches of individual plants and/or populations to provide a means for detecting and prosecuting illegal collection from the wild (see for example Palsboll et al., 2006).

### **Regional Priority Actions**

The following regional priority recovery and threat abatement actions can be done to support the recovery of Star Sun-orchid.

#### **Habitat Loss, Disturbance and Modification**

- Monitor known populations to identify key threats.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Identify populations of high conservation priority.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on the Star Sun-orchid.
- Investigate further formal conservation arrangements, management agreements and covenants on private land, and for crown land and private land investigate inclusion in reserve tenure if possible.

#### **Fire**

- Develop and implement a suitable fire management strategy for Star Sun-orchid. This species should not be exposed to fire during the growing period (May to November), but is unaffected by fire occurring during its dormant period (December to April) (Patrick & Brown, 2001).
- Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plans, risk register and/or operation maps.

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#### Enable Recovery of Additional Sites and/or Populations

- Undertake appropriate seed and mycorrhizal fungi collection and storage.
- Investigate options for linking, enhancing or establishing additional populations.
- Implement national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.

#### Local Priority Actions

The following local priority recovery and threat abatement actions can be done to support the recovery of Star Sun-orchid.

#### Habitat Loss, Disturbance and Modification

- Control access routes to suitably constrain public access to known sites on public land.
- Suitably control and manage access on private land.
- Ensure road widening and maintenance activities (or other infrastructure or development activities) involving substrate or vegetation disturbance in areas where Star Sun-orchid occurs do not adversely impact on known populations.
- Minimise adverse impacts from land use at known sites.

#### Invasive Weeds

- Develop and implement a management plan for the control of exotic weeds in the local region.
- Identify and remove weeds in the local area, which could become a threat to Star Sun-orchid, using appropriate methods.
- Manage sites to prevent introduction of invasive weeds, which could become a threat to Star Sun-orchid, using appropriate methods.

#### Trampling, Browsing or Grazing

- Manage known sites to ensure appropriate stock grazing regimes occur outside the growing season, i.e. when plants are not fertile.
- Where possible, prevent grazing pressure at known sites through exclusion fencing or other barriers.
- Implement Threat Abatement Plan for the control of rabbits at known sites (EA, 1999).

#### Fire

- Implement appropriate fire management regime for local populations.

This list does not necessarily encompass all actions that may be of benefit to Star Sun-orchid, but highlights those that are considered to be of highest priority at the time of preparing the conservation advice.

#### Existing Plans/Management Prescriptions that are Relevant to the Species

- Lesueur National Park and Coomallo Nature Reserve Management Plan 1995–2005 (CALM, 1995),
- Threat Abatement Plan for Competition and Land Degradation by Feral Rabbits (EA, 1999), and
- Western Australian Wildlife Management Program No. 28: Declared Rare and Poorly Known Flora in the Moora District (Patrick & Brown, 2001).

These prescriptions were current at the time of publishing; please refer to the relevant agency's website for any updated versions.

#### **Information Sources:**

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