

Approved Conservation Advice for
Caladenia barbarella (Small Dragon Orchid)

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

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

Caladenia barbarella (Hopper and Brown, 2001), Family Orchidaceae, commonly known as the Small Dragon Orchid is a tuberous, terrestrial orchid growing from 8 to 25 cm high. It has a single leaf 3–6 mm wide and 3–8 cm long, which lies fairly close to the ground. The single flower is approximately 2 cm long and 2 cm broad. The green labellum has shining purple calli (glands) at its base and is covered in long purple hairs that attract the pollinators, male Thynnid wasps. Flowering occurs from late August to September (Hoffman and Brown, 1992; Brown et al., 1998).

Conservation Status

The Small Dragon 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 the species' geographic distribution is restricted and is precarious for its survival. The Small Dragon Orchid is also listed as declared rare flora under the Western Australian *Wildlife Conservation Act 1950* and is managed as endangered (according to IUCN criteria) by the Western Australian Government.

Distribution and Habitat

The Small Dragon Orchid is endemic to Western Australia. The species is known from 14 populations, east and north-east of Kalbarri in the Geraldton Sandplains Interim Biogeographic Regionalisation of Australia (IBRA) bioregion and the Northern Agricultural and Rangelands Natural Resource Management Regions (DEC, 2008).

Two populations occur within conservation estate (National Park and Nature Reserve) managed by the WA Government. Nine populations, including the three largest populations which contain 73% of the total number of individual plants, occur on a pastoral lease which is managed for conservation by Bush Heritage Australia. Two populations occur on active pastoral stations and one population occurs across both a nature park and unallocated crown land. Based on surveys undertaken between 1983 and 2008, the estimated total number of mature individuals is approximately 490. The species' extent of occurrence is estimated to be between 1300 km² and 2000 km² (DEC, 2008).

The Small Dragon Orchid usually grows in small, dense clumps, consisting of two or three plants, in sandy loam or clay loam soil. The species generally occurs along seasonal creek lines and swamps, or more rarely on rocky ledges. The Small Dragon Orchid typically inhabits areas of dense heath or tall scrub of *Melaleuca uncinata* or *Acacia* spp., and grows alongside *Brachysema aphylla* and *Hakea preissii* (WA Herbarium, 2006).

The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological community.

Threats

Grazing by rabbits is a threat to all populations of the Small Dragon Orchid and grazing by feral goats is a potential threat to the species. Fencing and eradication programs have been implemented and need to be maintained. The population in Kalbarri National Park has evidence of human disturbance through damage by vehicles and camping activity. Weed infestation also represents a threat to this population of the Small Dragon Orchid (DEC, 2008).

As the species occurs in small, fragmented populations, stochastic events such as wildfire and slight changes to the species' habitat caused by climate change also pose potential risks to the species' survival. Too-frequent fire during the species' active growing period may lead to localised extinction. As the species primarily occurs in wet depressions and along creek lines, potential droughts due to climate change may be detrimental to the species' survival (CALM, 2006).

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 survey work in suitable habitat and potential habitat during the flowering period (late August – September) to locate any additional populations/occurrences/remnants and more precisely assess population size.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful establishment, including mycorrhizal association trials.
- Undertake further research into the species' pollination system.

Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of the Small Dragon Orchid.

Habitat Loss, Disturbance and Modification

- Regularly 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.
- Manage any changes to hydrology that may result in changes to water table levels and/or increased run-off, salinity, sedimentation or pollution.
- Manage any disruptions to water flows.
- Suitably control and manage access on private land and other land tenure.
- Control access routes to suitably constrain public access to known sites on public land.
- Ensure development or other activities involving substrate or vegetation disturbance in areas where the Small Dragon Orchid occurs do not adversely impact on known populations.
- Minimise adverse impacts from land use at known sites.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate inclusion in reserve tenure if possible.

Trampling, Browsing or Grazing

- Implement the Threat Abatement Plans for the control and eradication of feral goats and rabbits.
- Monitor known sites to ensure appropriate grazing regimes occur.
- Where appropriate, manage total grazing pressure at important/significant sites through exclusion fencing or other barriers.

Invasive Weeds

- Identify and remove weeds in the local area, which could become a threat to the Small Dragon Orchid, using appropriate methods.
- Manage sites to prevent introduction of invasive weeds, which could become a threat to the Small Dragon Orchid, using appropriate methods.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on the Small Dragon Orchid.

Fire

- Develop and implement a suitable fire management strategy for the Small Dragon Orchid.
- Where appropriate, 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.

Conservation Information

- Raise awareness of the Small Dragon Orchid within the local community, through fact sheets, the organisation of field days and through liaison with community interest groups such as the Wildflower Society.
- Maintain liaison with private landholders and land managers of land on which populations occur.

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.

This list does not necessarily encompass all actions that may be of benefit to the Small Dragon 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

- Declared rare and poorly known flora in the Geraldton District (Patrick, 2001).
- Threat Abatement Plan for Competition and Land Degradation by Feral Goats (DEWHA, 2008a), and
- Threat Abatement Plan for Competition and Land Degradation by Feral Rabbits (DEWHA, 2008b).

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

Information Sources:

- Brown A, Marchant N and Thomson-Dans C (1998). Western Australia's Threatened Flora. Western Australian Department of Conservation and Land Management. Western Australia.
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- Vallee L, Hogbin T, Monks L, Makinson B, Matthes M and Rossetto M (2004). Guidelines for the Translocation of Threatened Plants in Australia - Second Edition. Australian Network for Plant Conservation. Canberra.