

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

Approved Conservation Advice for
***Caladenia dorrienii* (Cossack Spider-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

Caladenia dorrienii, Family Orchidaceae, also known as Cossack Spider-orchid, is a small orchid which has 1–3 distinctive flowers with narrow linear greenish-white sepals, and petals with longitudinal red veins and dark glandular hairy tips. The labellum has a few irregular marginal teeth, and two rows of closely set glands (7–8 in each row) along the middle. The flowers are produced on a slender, erect, hairy stem, up to 20 cm high. A narrow, linear leaf clasps this stem near its base and there is a short bract midway along its length. Flowering occurs from September to November. Cossack Spider-orchid can be distinguished from members of the red spider orchid group by its crossed lateral sepals and labellum splashed with pale red blotches (Brown et al., 1998).

This species has also been called *Caladenia filamentosa* var. *dorrienii*, *Calonema dorrienii*, *Calonemorchis dorrienii* and *Jonesiopsis dorrienii*, however *Caladenia dorrienii* is the current name used in the Australian Plant Census (see CHAH, 2005).

Conservation Status

Cossack Spider-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 declared rare flora under the *Wildlife Conservation Act 1950* (Western Australia).

Distribution and Habitat

Cossack Spider-orchid is endemic to Western Australia, where it occurs in isolated localities in the Frankland, Kojonup and Boyup Brook areas, with an outlier also between Perth and Brookton. The species is known from 11 populations, two on private property (one is a subpopulation), seven in State forest, one in a nature reserve, one in a Shire reserve and one subpopulation on unallocated Crown land. The number of mature, flowering plants that constitutes these populations is estimated to be 3000. The most recent count of plant numbers showed that out of 11 populations, six have declined in number since initial surveys were undertaken and five have increased in number. For some populations, plant numbers are estimates rather than exact counts, and the numbers of plants also seem to vary greatly each year depending on the time the survey was undertaken. The extent of occurrence is approximately 4000 km², with the area of occupancy likely to be less than 1 km². Insufficient data are available to determine any trends, as not all populations have area of occupancy recorded. The species is considered to be fragmented as the known populations are scattered with considerable distances between them (DEC, 2008).

Cossack Spider-orchid grows in clumps on sandy clays, usually in moist valley sites in open wandoos (*Eucalyptus wandoo*), jarrah (*E. marginata*) woodland, over low scattered shrubs (Brown et al., 1998). This species occurs within the South Coast, South West and Avon (Western Australia) Natural Resource Management Regions.

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

Threats

The main identified threats to Cossack Spider-orchid are wildfire, grazing, insect damage and weeds. It is known that the species is sensitive to fire and will die if burnt when the above-ground parts are present (between July and November). However, hot summer fires appear to stimulate flowering. It is unknown which species of insect has caused damage to the Cossack Spider-orchid at one population, but any grazing may suppress growth, preventing flowers from maturing. Weeds are a minor threat to the species as they compete for resources and reduce population health and reproductive output. Annual weed species also increase fuel loads and may result in fires earlier in the year and increase fire intensity and frequency (Kelly et al., 1990; Brown et al., 1998; DEC, 2008).

The main potential threats to Cossack Spider-orchid include grazing and disturbance by kangaroos and feral pigs (*Sus scrofa*), and recreational activities. Although not observed directly grazing the plants, kangaroos have caused damage in the past by grazing the associated habitat at one population. Feral pigs have also caused significant disturbance in the past through diggings and trampling to the habitat at one population, but not directly grazing the orchids. Recreational activities from illegal firewood collection, motorbikes and horse riding could potentially develop into a greater problem near two populations (Kelly et al., 1990; Brown et al., 1998; DEC, 2008).

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 to locate any additional populations/occurrences/remnants.
- Undertake seed germination trials to determine the requirements for successful establishment, including mycorrhizal association trials.
- Determine the impact of insect damage on growth and recruitment.
- Determine the pollinating agent.

Regional and Local Priority Actions

The following regional and local priority recovery and threat abatement actions can be done to support the recovery of Cossack Spider-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.
- Control access routes to suitably constrain public access to known sites on public land.
- Suitably control and manage access on private land.
- Minimise adverse impacts from land use at known sites.
- Investigate formal conservation arrangements, management agreements and/or covenants on private land, and for crown and private land investigate inclusion in reserve tenure if possible.

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Invasive Weeds

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

Trampling, Browsing or Grazing

- Implement the Threat Abatement Plan for the control and eradication of feral pigs in the region.
- Manage total grazing pressure at important sites through exclusion fencing or other barriers.

Fire

- Develop and implement a suitable fire management strategy for Cossack Spider-orchid.
- Identify appropriate intensity and interval of fire to promote seed germination.
- 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 Cossack Spider-orchid within the local community. Distributing fact sheets to local property owners and organising field days in conjunction with known industry or community interest groups would be beneficial, potentially leading to further sightings of the species.

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 Cossack Spider-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

- Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs (EA, 2005), and
- Declared Rare Flora and Other Plants in need of Special Protection in the Northern Forest Region (Kelly et al., 1990). Actions include inform operations staff of population location; install rare flora marker pegs; do not burn during flowering/vegetative phase (August–November); and inspect population annually.

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, Thomson-Dans, C & Marchant, N (eds) 1998, *Western Australia's Threatened Flora*, Department of Conservation and Land Management, Western Australia.

Council of Heads of Australasian Herbaria (CHAH) 2005, *Australian Plant Census, IBIS database*, Centre for Plant Biodiversity Research, viewed 25 October 2008, <http://www.anbg.gov.au/cgi-bin/apni?taxon_id=37187>.

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Department of Environment and Conservation (DEC) 2008, Records held in DEC's Declared Rare Flora Database and rare flora files. Department of Environment and Conservation, Western Australia.

Environment Australia (EA) 2005, *Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs*, Biodiversity Group, viewed 30 May 2008,
<<http://www.environment.gov.au/biodiversity/threatened/publications/tap/pig/index.html>>.

Kelly, A, Coates, D, Herford, I, Hopper, S, O'Donoghue, M & Robson, L 1990, *Declared Rare Flora and Other Plants in need of Special Protection in the Northern Forest Region*, Western Australia Wildlife Management Program No. 5, Department of Conservation and Land Management, Western Australia.

Vallee, L, Hogbin, T, Monks, L, Makinson, B, Matthes, M & Rossetto, M 2004, *Guidelines for the Translocation of Threatened Plants in Australia* (2nd ed.), Australian Network for Plant Conservation, Canberra.