

**Advice to the Minister for the Environment, Heritage and the Arts
from the Threatened Species Scientific Committee (the Committee)
on Amendment to the list of Threatened Species
under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)**

1. Name

Caladenia barbarella

The species is commonly known as the Small Dragon Orchid.

2. Reason for Conservation Assessment by the Committee

This advice follows assessment of information gathered through the Commonwealth's Species Information Partnership with Western Australia, which is aimed at systematically reviewing species inconsistently listed under the EPBC Act and relevant Western Australian legislation.

The Small Dragon Orchid (*Caladenia barbarella*) is 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. It was originally listed as vulnerable under the EPBC Act's predecessor, the *Endangered Species Protection Act 1992* under the name *Drakonorchis barbarella*. Its vulnerable status was retained when the EPBC Act came into force. The Committee provides the following assessment of the appropriateness of the species' inclusion in the endangered category in the EPBC Act list of threatened species.

This is the Committee's first consideration of the species under the EPBC Act.

3. Summary of Conclusion

The Committee judges that the species has been demonstrated to have met sufficient elements of Criteria 2 and 4 to make it **eligible** for listing as **endangered**.

4. Taxonomy

The species is conventionally accepted as *Caladenia barbarella* (Small Dragon Orchid) (Hopper and Brown, 2001). The species was previously considered to belong to the genus *Drakonorchis*. However, molecular studies have identified that this species belongs in the genus *Caladenia*, in subgenus *Drakonorchis* (CHAH, 2005)

5. Description

The Small Dragon Orchid is a tuberous, terrestrial orchid (WA Herbarium, 2006) 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. Flowering occurs from late August to September (Hoffman and Brown, 1992; Brown et al., 1998). There is one flower, approximately 2 cm long and 2 cm broad, on each flowering stalk. 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 (Brown et al., 1998).

6. National Context

The Small Dragon Orchid is endemic to Western Australia. It 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 Region. Eleven populations occur on pastoral leases, one occurs in Cooloomia Nature Reserve, one in Kalbarri National Park, and one population occurs across both Kalbarri National Park and unallocated crown land (DEC, 2008; WA Herbarium, 2006). The species is listed under the Western Australian *Wildlife Conservation Act 1950* as declared rare flora.

7. Relevant Biology/Ecology

The Small Dragon Orchid grows singularly or in small, dense clumps consisting of two or three plants, in lateritic sandy clay loam or clay 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* (DEC, 2008). The age of sexual maturity and life expectancy are unknown. The species flowers from August to September, with poor flowering occurring in dry years (WA Herbarium, 2006).

8. Description of Threats

Grazing by rabbits is a threat to the Small Dragon Orchid. Grazing by feral goats is considered to be a potential threat to the populations occurring on Eurardy Station (DEC, 2008). However, efforts are being made to bait and shoot rabbits and to fence off known populations to limit grazing by feral goats and rabbits at this site (CALM, 2006). As this threat is being actively managed, it is not clear whether it is still having a substantial impact on the species as some populations are increasing in numbers and some are decreasing in numbers (DEC, 2008).

The population within Kalbarri National Park shows evidence of damage caused by vehicles and camping activity (CALM, 2006). Weed infestation also poses a threat to this population (DEC, 2008).

The species is fragmented due to its specific habitat requirements and each isolated population is vulnerable to stochastic events such as wildfire. Frequent fire events during the species' active growing period have the potential to kill plants and reduce the size of populations. However, fire is considered to be an uncommon event in the area in which the species occurs and is not considered to be a major threat (CALM, 2006).

Climate change is also a potential threat to the Small Dragon Orchid. Climate change and associated processes are expected to affect biodiversity in WA in the next several decades (CALM, 2004). As the Small Dragon Orchid occurs in small fragmented populations and has specific habitat requirements, changes in climatic conditions that alter particular parameters of the habitat may threaten the species. However, the specific effects climate change may have on this species and the degree of severity, are unknown (CALM, 2006).

9. Public Consultation

The information used in this assessment was made available for public exhibition and comment for 30 business days. No comments were received.

10. How judged by the Committee in relation to the criteria of the EPBC Act and Regulations

The Committee judges that the species is **eligible** for listing as **endangered** under the EPBC Act. The assessment against the criteria is as follows:

Criterion 1: It has undergone, is suspected to have undergone or is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers

There are currently 14 known populations of the Small Dragon Orchid (DEC, 2008).

The six populations of the Small Dragon Orchid that have been surveyed over a period of more than 10 years have demonstrated a general decline in the number of individual plants. Two populations have shown a marked increase in population size, although these populations have been surveyed over a period of less than 10 years. The remaining six populations have only been surveyed once and therefore trends in these populations cannot be assessed (DEC, 2008).

The Committee considers that, although surveys conducted over the last 25 years suggest there has been a general reduction in the number of individual plants across the species' entire distribution, most populations have not been surveyed over a sufficient period of time to determine trends in total population size. There is a lack of quantitative data to judge whether the species, as a whole, has undergone a very severe, severe or substantial reduction in numbers.

There are a number of threats that could cause a reduction in the species' population size in the future. Grazing by rabbits and goats is a threat to the Small Dragon Orchid; however, as efforts are being made to limit grazing pressures through eradication of rabbits and fencing populations, it is unclear if grazing will continue to have an impact on the species. Climate change and fire are reported to be potential threats to the species although the specific effects these threats could have, and the degree of severity, is unknown (CALM, 2006). Therefore, the Committee considers that there is insufficient information to determine whether the species is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers.

Given the threats to the species, and the trends observed in the survey results, the species as a whole is likely to have undergone a reduction in numbers in the past. However, the Committee considers that there are insufficient data available to judge the magnitude of past or future declines. Therefore, the species has not been demonstrated to have met each of the required elements of Criterion 1, and is **not eligible** for listing in any category under this criterion.

Criterion 2: Its geographic distribution is precarious for the survival of the species and is very restricted, restricted or limited

The extent of occurrence of the Small Dragon Orchid is estimated to be between 1300 km² and 2000 km² (DEC 2008). The exact extent of occurrence and area of occupancy of the species is currently unknown as survey reports for populations discovered in August 2008 have not yet been received by the Western Australian Government (DEC, 2008). The Committee considers the species' geographic distribution to be restricted. Recent examination of aerial photographs indicates there may be additional areas of suitable habitat that may support this species. However, due to the remoteness of these areas they have not yet been surveyed (DEC, 2008).

Two populations of the Small Dragon Orchid occur on active pastoral stations and one small population occurs across both Kalbarri National Park and unallocated crown land (DEC, 2008). Two populations occur within conservation estate (Kalbarri National Park and Cooloomia Nature Reserve) managed by the WA Government, and 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 (DEC, 2008). Therefore, the majority of individual plants occur on land managed for conservation.

As the species is fragmented, each isolated population, particularly the smaller populations, are vulnerable to stochastic events such as wildfire (DEC 2008; CALM 2006). Frequent fire events during the active growing period could potentially kill plants and reduce populations. However, fire is considered to be an unusual event in the area and is not considered to be a major threat (CALM 2006). The Small Dragon Orchid occurs in fragmented populations, with specific habitat requirements, and alterations to the species' habitat as a result of climate change may threaten the species. However, the specific effects that climate change could have on the species, and the degree of severity, is unknown.

Grazing by rabbits is known to be a direct threat to the Small Dragon Orchid and grazing by feral goats is a potential threat to the species. While efforts are being made to limit grazing pressures through baiting and shooting rabbits and fencing Small Dragon Orchid populations (CALM, 2006), it is unclear if grazing will continue to have an impact on the species in the future.

The Committee considers the species' geographic distribution to be restricted. Given the threats to the species, the Committee considers the species' geographic distribution to be precarious for its survival. Therefore, as the species has been demonstrated to have met the required elements of Criterion 2, it is **eligible** for listing in the **endangered** category under this criterion.

Criterion 3: The estimated total number of mature individuals is limited to a particular degree; and either

- (a) evidence suggests that the number will continue to decline at a particular rate; or**
- (b) the number is likely to continue to decline and its geographic distribution is precarious for its survival**

Based on surveys undertaken between 1983 and 2008, the total population size of the Small Dragon Orchid is estimated to be approximately 490 mature plants (DEC, 2008). The Committee considers that the total number of individual plants is low.

The species is not continuously distributed throughout its range but is naturally fragmented into 14 populations due to the species' specific habitat requirements (DEC 2008). As discussed under Criterion 1, the populations of Small Dragon Orchid have not been surveyed over a sufficient period of time to establish whether the species as a whole is declining, or whether the species is likely to continue to decline in the future.

Most populations of the Small Dragon Orchid are currently being actively managed for conservation, and many threats to the species are being actively abated. For example, grazing by rabbits has been identified as a threat to some populations of the Small Dragon Orchid and efforts are being made to mitigate this threat by baiting and shooting rabbits. As efforts are being made to limit grazing pressures, it is unclear if grazing will continue to have an impact on the species.

Each isolated population is vulnerable to stochastic events such as wildfire (CALM 2006). However, fire is considered to be an unusual event in the area and is therefore not considered to be a major threat (CALM 2006). As the Small Dragon Orchid occurs in small fragmented populations and has specific habitat requirements, changes to the species' habitat due to climate change may pose a threat to the species, but, it is unknown how it will affect this species in the future. Overall, the future effect of these potential threats is unclear.

The Committee considers that the estimated total number of mature individuals is low. However, given that the species primarily occurs on land managed for conservation, known threats such as overgrazing are being actively managed for some populations, and the effects of potential threats such as climate change are uncertain, the Committee does not consider the species' geographic distribution to be precarious for the survival of the species. There is insufficient evidence to suggest the species is likely to continue to decline or to indicate a particular rate of decline. Therefore, as the species has not been demonstrated to have met each of the required elements of Criterion 3, it is **not eligible** for listing in any category under this criterion.

Criterion 4: The estimated total number of mature individuals is extremely low, very low or low

Across the 14 known populations of the Small Dragon Orchid the total number of mature individuals is estimated to be around 490 (DEC, 2008).

Recent examination of aerial photographs indicates there may be additional areas of suitable habitat that may support this species. However, due to the remoteness of these areas they have not yet been surveyed (DEC, 2008).

The Committee considers that the estimated total number of mature individuals of the species is low. Therefore, the species has been demonstrated to have met sufficient elements of Criterion 4 to make it **eligible** for listing as **vulnerable**.

Criterion 5: Probability of extinction in the wild that is at least:

- a) **50% in the immediate future; or**
- b) **20% in the near future; or**
- c) **10% in the medium-term future.**

There are insufficient data available to estimate a probability of extinction of the species in the wild over a relevant timeframe. Therefore, as the species has not been demonstrated to have met the required elements of Criterion 5, it is **not eligible** for listing in any category under this criterion.

11. CONCLUSION

Conservation Status

This advice follows assessment of information gathered through the Commonwealth's Species Information Partnership with Western Australia, which is aimed at systematically reviewing species that are inconsistently listed under the EPBC Act and the Western Australian *Wildlife Conservation Act 1950*.

The Committee considers that the estimated number of mature individuals of the Small Dragon Orchid is low. Therefore, the species has been demonstrated to have met sufficient elements of Criteria 4 to make it eligible for listing as **vulnerable**.

The Committee considers that the species' geographic distribution is restricted and, given the threats to the species, the species' geographic distribution is considered to be precarious for its survival. Therefore, the species has been demonstrated to have met sufficient elements of Criteria 2 to make it eligible for listing as **endangered**.

The highest category for which the species is eligible for listing is **endangered**.

Recovery Plan

The Committee considers that there should not be a recovery plan for this species.

Most populations of the Small Dragon Orchid occur on land that is protected for conservation, and some threat abatement actions are currently being implemented. The approved conservation advice for the species provides sufficient direction to implement priority actions and mitigate against key threats. A recovery plan is not considered to be necessary at this time.

12. Recommendations

- (i) The Committee **recommends** that the list referred to in section 178 of the EPBC Act be amended by changing the name *Drakonorchis barbarella* to *Caladenia barbarella* to reflect updated taxonomy.
- (ii) The Committee **recommends** that *Caladenia barbarella* be included in the **endangered** category in the list referred to in section 178 of the EPBC Act.
- (ii) The Committee **recommends** that there should not be a recovery plan for this species.

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Chair

Threatened Species Scientific Committee

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Viewed 3 March 2009
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