

**Advice to the Minister for Sustainability, Environment, Water, Population & Communities  
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. Reason for Conservation Assessment by the Committee**

This advice follows assessment of information gathered through the Commonwealth's partnership agreement with Tasmania, which is aimed at systematically reviewing species that are inconsistently listed under the EPBC Act and relevant Tasmanian legislation.

The Committee provides the following assessment of the appropriateness of this species' inclusion in the EPBC Act list of threatened species:

***Corybas sulcatus* (grooved helmet-orchid)**

**2. Summary of Species Details**

<b>Taxonomy</b>	Conventionally accepted as <i>Corybas sulcatus</i> (M.A.Clem. & D.L.Jones) G.N.Backh.  Formerly <i>Nematoceras sulcatum</i> M.A.Clem. & D.L.Jones.
<b>State/Territory Listing Status</b>	This species is listed as endangered (as <i>Nematoceras sulcatum</i> ) under the Tasmanian <i>Threatened Species Protection Act 1995</i> .
<b>Description</b>	A small, deciduous, tuberous terrestrial orchid that forms small clonal colonies. Leaves are solitary, circular (12–20 mm diameter) and flat to shallowly concave. They are light green above and silvery green beneath, with a thick-textured blade and fleshy leaf stalk 12–16 mm long. Flowers are 25–30 mm long and 10–14 mm wide, mostly dark red and held erect on a fleshy, green stalk that is 5–7 mm long (Clements and Jones, 2007).
<b>Distribution</b>	The grooved helmet-orchid is endemic to Macquarie Island (Tasmania). It is known from four sites on the plateau uplands at 80–150 m in elevation (Skotnicki et al., 2009). The species grows in wet grassy seepage areas (Clements and Jones, 2007) along the eastern side of the Sawyer Creek valley, beside drainage lines in the Green Gorge North basin, and in the Red River basin near drainage lines leading into a small lake and Red River (Skotnicki et al., 2009). At all four sites the water table is close to the surface (Skotnicki et al., 2009).  The species mainly occurs in short herb vegetation dominated by <i>Festuca contracta</i> , <i>Agrostis magellanica</i> and <i>Luzula crinita</i> (Skotnicki et al., 2009) with mosses and liverworts (Clements and Jones, 2007).
<b>Relevant Biology/Ecology</b>	This species forms sparse to dense vegetative colonies. Reproduction is likely to be vegetative, through production of daughter root-tubers on lateral, underground and elongate stems. The species is capable of growing from stolon, stem and root-tuber fragments (Clements et al., 2007). No evidence of pollination and no seed capsules have been observed on grooved helmet-orchid plants (Clements et al., 2007). It is possible that the endemic black fungus gnat <i>Bradysia watsoni</i>



#### 4. How judged by the Committee in relation to the EPBC Act criteria and Regulations

**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

**Not eligible**

Criterion element	Evidence																		
Reduction in numbers	<p>Insufficient data – Significant survey effort for this species on Macquarie Island has been carried out at known sites and in potential habitat in recent years (Skotnicki et al., 2009). Current population data for the grooved helmet-orchid from Skotnicki et al. (2009) for surveys undertaken 2004–2009 are presented in Table 1 with four locations found.</p> <p><b>Table 1:</b> Population estimates for the grooved helmet-orchid on Macquarie Island (adapted from Skotnicki et al., 2009)</p> <table border="1" data-bbox="564 775 1390 1077"> <thead> <tr> <th data-bbox="564 775 943 842">Site</th> <th data-bbox="943 775 1227 842">Number of plants*</th> <th data-bbox="1227 775 1390 842">Area (m<sup>2</sup>)</th> </tr> </thead> <tbody> <tr> <td data-bbox="564 842 943 887">Red River</td> <td data-bbox="943 842 1227 887">300</td> <td data-bbox="1227 842 1390 887">100</td> </tr> <tr> <td data-bbox="564 887 943 931">Green George North Basin</td> <td data-bbox="943 887 1227 931">1300+</td> <td data-bbox="1227 887 1390 931">2000</td> </tr> <tr> <td data-bbox="564 931 943 976">Sawyer Creek</td> <td data-bbox="943 931 1227 976">1000</td> <td data-bbox="1227 931 1390 976">40</td> </tr> <tr> <td data-bbox="564 976 943 1021">Pyramid Peak</td> <td data-bbox="943 976 1227 1021">10 000+</td> <td data-bbox="1227 976 1390 1021">250</td> </tr> <tr> <td data-bbox="564 1021 943 1077"><b>TOTAL</b></td> <td data-bbox="943 1021 1227 1077"><b>12 600+</b></td> <td data-bbox="1227 1021 1390 1077"><b>2390</b></td> </tr> </tbody> </table> <p>* the number of plants refers to distinct emergent leaves, since each plant has only one solitary leaf above ground (Clements and Jones, 2007). Note that due to the ability of this species to propagate clonally, the leaf numbers do not necessarily represent genetically distinct individuals (DPIPWE, 2011).</p> <p>Bryant and Shaw (2007) report two grooved helmet-orchid sites on Macquarie Island (named the upper Sawyer Creek and mid Sawyer Creek sites, with 40 plants and 25 plants respectively). However, this 2007 expedition did not represent a comprehensive ground search due to time constraints (Shaw pers. comm., 2011). These records are respectively within the vicinity (&lt; 70 m) of the Pyramid Peak and Sawyer Creek sites reported by Skotnicki et al. (2009; see Table 1). However, a direct comparison of the estimated number of plants between surveys cannot be made as the locations are not identical and the surveys were conducted at different times of year (Shaw pers. comm., 2011).</p> <p>The species can grow vegetatively from tubers, so clumps (colonies) of plants may be entirely clonal. Accordingly, the number of genetically distinct individuals in a population is likely to be considerably less than the number of leaves (Skotnicki et al., 2009).</p> <p>Given the difficulty in estimating the total population of the grooved helmet-orchid and the lack of comparable survey data over time, it cannot be determined whether the grooved helmet-orchid has undergone a reduction in numbers.</p>	Site	Number of plants*	Area (m <sup>2</sup> )	Red River	300	100	Green George North Basin	1300+	2000	Sawyer Creek	1000	40	Pyramid Peak	10 000+	250	<b>TOTAL</b>	<b>12 600+</b>	<b>2390</b>
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**Criterion 2:** Its geographic distribution is precarious for the survival of the species **and** is very restricted, restricted or limited

**Eligible for listing as critically endangered**

Criterion element	Evidence
Geographic distribution AND	Very restricted – The grooved helmet-orchid is endemic to Macquarie Island. Based on survey data (Skotnicki et al., 2009) (see Criterion 1), the total area of occupancy of the grooved helmet-orchid is less than 1 km <sup>2</sup> . Recent data and maps (Skotnicki et al., 2009) indicate that the extent of occurrence of the grooved helmet-orchid is less than 10 km <sup>2</sup> .
Geographic distribution precarious	<p>Yes – The grooved helmet-orchid is known to exist at a limited number of locations, having been recorded at four sites on the plateau uplands of Macquarie Island (Skotnicki et al., 2009).</p> <p>The grooved helmet-orchid grows in wet, grassy seepage areas at an elevation between 80–150 m (Clements and Jones, 2007; Clements et al., 2007). While this habitat and individual plants are known to have been affected by rabbits, the baiting phase of the Macquarie Island Pest Eradication Project has been largely successful with few rabbits reported to remain on the island (PWS, 2011). Some grooved helmet-orchid populations are also fenced off to exclude rabbits (Shaw, pers. comm., 2011).</p> <p>The grooved helmet-orchid remains threatened by any rabbits that have not yet been eradicated, other introduced species such as slugs, and potentially by the drying effects of climate change. Given these threats, combined with the species' limited number of populations and presumed low genetic diversity, it is likely that the species' very restricted geographic distribution is precarious for its survival.</p>

**Criterion 3:** The estimated total number of mature individuals is very low, low or limited; **and either**  
 (a) evidence suggests that the number will continue to decline at a very high, high or substantial rate; **or**  
 (b) the number is likely to continue to decline **and** its geographic distribution is precarious for its survival

**Not eligible**

Criterion element	Evidence
Total no. of mature individuals AND	Insufficient data – The total number of grooved helmet-orchid individuals is estimated to be greater than 12 600 (see Criterion 1). However, as the species propagates vegetatively, clumps of plants will be clonal and it is not possible to determine how many genetically distinct individuals there are in a population. It is likely that the number of genetically distinct individuals is considerably less than the number of leaves counted (Skotnicki et al., 2009).
Continued rate of decline	No data – Given the difficulty in estimating the total number of grooved helmet-orchid individuals and the lack of comparable survey data over time, it cannot be determined whether the species' numbers have declined.

<b>OR</b>	
Total no. of mature individuals AND	Insufficient data – The total number of grooved helmet-orchid individuals is estimated to be greater than 12 600 (see Criterion 1). This is calculated by counting the number of leaves above ground in summer, as each plant has only one solitary leaf above ground (Skotnicki et al., 2009).  However, as the species propagates vegetatively, clumps of plants will be clonal and it is not possible to determine how many genetically distinct individuals there are in a population. It is likely that the number of genetically distinct individuals is considerably less than the number of leaves counted (Skotnicki et al., 2009).
Continued decline likely AND	Insufficient data – The grooved helmet-orchid is known from a limited area on Macquarie Island and has a number of known and potential threats. However, given the difficulty in estimating the total number of grooved helmet-orchid individuals and the lack of comparable survey data over time, it cannot be determined whether the species' is declining.
Geographic distribution precarious	Yes – See Criterion 2

**Criterion 4:** The estimated total number of mature individuals is extremely low, very low or low  
**Not eligible**

<b>Criterion element</b>	<b>Evidence</b>
Total no. of mature individuals	Insufficient data – See Criterion 3

**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

**Not eligible**

<b>Criterion element</b>	<b>Evidence</b>
Probability of extinction in the wild	No data

## 5. Recovery Plan

There should not be a recovery plan for the grooved helmet-orchid as the approved conservation advice for the species provides sufficient direction to implement priority actions and mitigate against key threats.

## 6. Recommendations

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the **critically endangered** category:  
***Corybas sulcatus***
- (ii) The Committee recommends that there should not be a recovery plan for this species.

Threatened Species Scientific Committee  
6 March 2011

## 7. References cited in the advice

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