

**Approved Conservation Advice for**  
***Nematoceras dienenum* (Windswept Helmet-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**

*Nematoceras dienenum*, Family Orchidaceae, also known as the Windswept Helmet-orchid, is a small (3–5 cm tall), tuberous terrestrial orchid, which forms small clonal groups. Its leaves are flattish, fleshy, solitary and orbicular with dark green colouring above and silvery-green below. The flowers are erect and green with purplish-red markings (Clements and Jones, 2007).

**Conservation Status**

The Windswept Helmet-orchid is listed as **critically endangered**. This species is eligible for listing as **critically endangered** under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act) as it has a very restricted geographic distribution which is precarious for its survival due to its isolated location and a range of current and potential threats, such as rabbits, climate change and seal wallows (TSSC, 2009).

The species has also been nominated for listing as endangered under the Tasmanian *Threatened Species Protection Act 1995*.

**Distribution and Habitat**

The Windswept Helmet-orchid occurs at ten locations on the northern half of Macquarie Island, 1500 km south-east of Hobart, Tasmania.

The Windswept Helmet-orchid is found on the lower coastal terraces (less than 30 m above sea level) of the island and peat wetland where the vegetation is dominated by mosses which float on a waterlogged underlayer. The soil substrate is waterlogged peat where the water table is very close to the soil surface (Clements and Jones, 2007).

The mire vegetation is dominated by sedges, *Isolepis aucklandica* (New Zealand Club-sedge) and *Juncus scheuchzeroides*; small herbs, *Epilobium pedunculare* (Rockery Willowherb) and *Hydrocotyle novae-zeelandiae*; cushion plants, *Colobanthus muscoides* and *Colobanthus affinis* (Alpine Colobanth); and bryophytes (Clements et al., 2007). The species can also occur on the boundary of mire and herbfield where it grows beneath the megaherb *Stilbocarpa polaris* (Macquarie Island Cabbage) (Copson, 1984). This ecotone is common on the north-west coast raised beach platform on Macquarie Island.

The species' extent of occurrence is approximately 45 km<sup>2</sup> and its area of occupancy is about 1.5 km<sup>2</sup>. The total population size of the species is approximately 7500 individuals. From 1997 to 2007 there was a 50% reduction in the area covered by the species at one location at Bauer Bay, where a seal wallow had developed and rabbits had damaged the species' habitat. It is estimated that up to 500 orchids were killed during this period. The species has been observed to recolonise the edges of this seal wallow and is showing some tolerance to this disturbance. Identified threats to the species may have caused a decline in population size at other locations apart from Bauer Bay; however, there are no data available regarding declines at other locations on the island. The species numbers may actually increase in the future if the implementation of the Macquarie Island Pest Eradication Plan is successful in eradicating rabbits from Macquarie Island.

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

## **Threats**

The main identified threats to the Windswept Helmet-orchid are rabbits and seal wallows. Rabbits are widespread across Macquarie Island and have a detrimental effect on the Windswept Helmet-orchid as they graze on vegetation that shades the species, directly dig the orchid up, deposit large piles of scats on individual orchids, and cause erosion and destruction of the Windswept Helmet-orchid's habitat. Seals are known to utilise low lying areas, such as where the Windswept Helmet-orchid is found, to wallow in the water or mud causing the trampling or destruction of this species.

The main potential threat to the Windswept Helmet-orchid is climate change. Climate change is having a significant effect on Macquarie Island with an increase in temperatures of over half a degree in the past 50 years (DEW, 2007). As the Windswept Helmet-orchid only occurs in moist areas, any drying out of these areas is likely to negatively impact on the species. Any sea level rise or increase in storm surges would also have a detrimental effect on this species in the short term. However, in the longer term it would be expected that the species would move above the tidal zone.

## **Research Priorities**

Research priorities that would inform future priority actions include:

- design and implement a monitoring program specifically for this species which assesses population size, distribution and the impact of various threats such as rabbits
- undertake survey work in suitable habitat and potential habitat to locate any additional occurrences of the species
- undertake seed germination and vegetative propagation trials to determine the requirements for successful establishment, including mycorrhizal association trials
- investigate the general biology and pollination biology of the species.

## **Priority Actions**

The following priority recovery and threat abatement actions can be done to support the recovery of the Windswept Helmet-orchid.

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

- Monitor the progress of recovery, including the effectiveness of management actions such as the rabbit eradication program and the need to adapt them if necessary.
- Maintain rabbit proof wire cages around occurrences of the species at various locations and monitor their effectiveness. Adapt fencing as necessary and ensure this is an ongoing activity.

### **Invasive Weeds**

- Identify and remove weeds in the local area, which could become a threat to the Windswept Helmet-orchid, using appropriate methods.
- Manage sites to prevent introduction of invasive weeds, which could become a threat to the Windswept Helmet-orchid, using appropriate methods.
- Monitor weed numbers and distribution in view of the potential increase in weeds that may occur following the successful elimination of rabbits from the island.

### Trampling, Browsing or Grazing

- Implement the Macquarie Island Pest Eradication Plan for the control and eradication of the European Rabbit (*Oryctolagus cuniculus*) in the region.
- Where appropriate, manage rabbit and seal disturbance at significant sites through exclusion fencing or other barriers.
- Monitor the impact of grazing of rabbits and seal wallows on 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 the Windswept Helmet-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

- Macquarie Island Pest Eradication Plan (PWS, 2007a) — the objective of this plan is to eradicate vertebrate pest species from the island (rabbits, ship rats and house mice) to restore ecological diversity to Macquarie Island.
- Plan for the eradication of rabbits and rodents on subantarctic Macquarie Island (PWS, 2007b) — the objective of this plan is to target rabbits, black rats and house mice in a single eradication operation to restore Macquarie Island's biodiversity and natural systems.
- Macquarie Island Nature Reserve and World Heritage Area Management Plan (PWS, 2006).

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

### Information Sources:

Clements MA, McKenzie A, Copson GR, Molloy B, Carmichael N, Skotnicki M and Selkirk P (2007). Biology and molecular phylogenetics of *Nematoceras sulcatum*, a second endemic orchid from subantarctic Macquarie Island. *Polar Biology* 30: 859–869.

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the Translocation of Threatened Plants in Australia. Second Edition. Australian Network for  
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