

THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

The Minister's delegate approved this Conservation Advice on 01/04/2016.

Conservation Advice

Prasophyllum secutum

northern leek-orchid

Conservation Status

Prasophyllum secutum (northern leek-orchid) is listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). The species is eligible for listing 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 main factors that are the cause of the species being eligible for listing in the Endangered category are its restricted geographic distribution is precarious for its survival due to its restricted area of occupancy, fragmentation and low number of mature individuals.

Prasophyllum secutum (northern leek-orchid) is listed as Endangered under the *Threatened Species Protection Act 1995* (Tasmania).

Description

The northern leek-orchid belongs to a group of orchids commonly known as leek orchids because the erect hollow leaf resembles that of a leek. *Prasophyllum* species are herbaceous perennial terrestrials with small, fleshy, round or oval tubers and a few fleshy, irregular roots. Most species are dormant over summer and autumn and begin growth in early winter. The single leaf is reddish at the base as opposed to green as in onion-orchids (*Microtis* species). The flower spike emerges through the side of the leaf above the middle, with the portion of leaf above the point of emergence being free and often withered by the time the flowers open. The flower spike bears many flowers that are held upside-down and are often fragrant. The labellum (lower petal) often has prominent wavy or frilly margins (TSS 2015).

The northern leek-orchid is 12–25 cm tall. The leaf is pale to dark green, with a purple base, 10–25 cm long and 3–4 mm wide. The free part of the leaf blade is 4–8 cm long and not usually withered at flowering. The inflorescence is 3.5–14 cm long, with 9–30 flowers. The flowers are 7–9 mm long and 4–5 mm wide, and are light brown with a whitish labellum. The flowers do not open widely and are strongly fragrant. The ovary is green with dark ribs. The callus is fleshy, green, broadly channelled, extending beyond the bend of the labellum, and is covered in small papillae (Jones 1998; Jones 2006; Jones et al. 1999).

The northern leek-orchid is most similar to *Prasophyllum favonium* but can be distinguished from that species by its longer flowering spike, smaller strongly fragrant flowers and its whitish labellum (Jones 1998; Jones et al. 1999). The two species may co-occur in the Tiger Flat/Bottle Flat area in the Arthur-Pieman Conservation Area in north-western Tasmania (TSS 2015).

Distribution

The northern leek-orchid has a disjunct distribution in coastal and near-coastal areas of northern Tasmania, including islands in Bass Strait. The elevation range of recorded sites is from near sea level to about 30 m above sea level (TSS 2015).

It is known from 18 populations: seven populations occur in five different Conservation Areas; one in Strzelecki National Park; one on Cape Barren Island (Aboriginal Land Council of Tasmania); two on Crown Land (Lulworth and Weymouth Road); four on private land (near Long Flat, Aerodrome Road – last seen in 1971 (Jones 1998), near Mella (west of Smithton), Anthony Beach, and Robbins Island); and three on unknown land tenure (near Beaconsfield – last seen

1968) (TSS 2015), Georges Bay – last seen late 1800s/early 1900s, and ‘near Stone Cottage’ – last seen 1837 (Jones 1998) (TSS 2015).

There is very little information available on most populations, and many have not been observed for several decades. The species’ linear range is 333 km and extent of occurrence about 33 000 km² (the majority of which is unsuitable habitat). These figures do not take into account the historical sites on unknown land tenure cited in Jones (1998). The Georges Bay occurrence is likely to be extinct and would represent a significant range extension if found to be extant. Given the collector and date details, the ‘near Stone Cottage’ site is likely to be in the Circular Head region, possibly from the Anthony Beach area where the species was seen in the 1990s (TSS 2015).

Reliable data for the area of occupancy exists only for two populations (Lulworth and Anthony Beach), with 200–250 plants in an area of 3.5–5 ha for these two locations. It is unlikely other populations occupy substantially larger areas than these, and it is estimated that the total area of occupancy is in the order of 6–10 ha. There are few estimates of abundance. The species may be ‘locally common...and abundant only after fire’ (Jones 1998). The two most recent records for the species indicate locally low population densities, with three and five plants on Cape Barren Island and Robbins Island in 2007 and 2008, respectively. Most sites are believed to comprise relatively few plants (10–30), even after fire. It is unlikely that the total population would exceed 500 mature plants (TSS 2015).

The distribution of the northern leek-orchid in Tasmania suggests that it may be present at further sites. However, discovery is likely to be by chance rather than as a result of targeted surveys given the often highly localised occurrences coupled with the brief detection window following fire (TSS 2015).

Relevant Biology/Ecology

The northern leek-orchid occurs in dense coastal scrub in the swales of stabilised sand dunes and at least one site (Anthony Beach) is subject to periodic inundation in wet years. Soils are typically white to grey sands and sandy loams (TSS 2015).

The labellum produces quantities of nectar on which a wide range of insects feed. Some of these, particularly native bees, wasps and beetles, are effective pollinators (TSS 2015).

The flowering of northern leek-orchids, like other leek-orchids, is strongly dependent on hot summer fires, with large numbers of flowering plants often being produced a year later but few or none being produced in subsequent years. Some populations may be prominent in disturbed sites such as slashed areas, or along track verges and road embankments (Jones et al. 1999). The species flowers only after the dense vegetation of low-lying dune swales has been completely burnt off, making it undetectable a few years after fire as the vegetation re-establishes. The opportunity for recruitment is therefore limited to short periods following fire (TSS 2015).

Threats

Table 1 – Threats

Threat factor	Threat type	Threat status	Evidence base
Habitat loss, disturbance and modifications			
Land clearing	known	current	Much of the favoured coastal heath habitat of the northern leek-orchid on the north coast of mainland Tasmania has been destroyed or degraded by agriculture and coastal development. Many of the non-reserved occurrences are now in remnant vegetation.

			Clearing and pasture development is an ongoing threat. The potential for the inadvertent loss of habitat is high for undetected occurrences or occurrences with imprecise location details given that the species may only be detectable for up to a few years following high intensity fire which stimulates flowering, allowing the species to be detected (TSS 2015).
Habitat disturbance	potential	current	The population at Lulworth is at risk, being immediately adjacent to an old, now abandoned and very weedy rubbish tip, in an area of sandy coastal heath subject to use by 4WD vehicles, digging for sand, and rubbish dumping (TSS 2015).
Stochastic events	potential	future	The widespread and disjunct distribution of the species provides a degree of security to the population as a whole. However, the small size of populations exposes them to a risk of extinction due to chance events (such as fire, accidental damage from clearing, by 4WD vehicles, rubbish dumping etc (TSS 2015).
Fire			
Fire frequency	potential	future	Infrequent fire events are a potential threat to the northern leek-orchid. The flowering of the northern leek-orchid is closely linked to high intensity summer fires, which denudes the low-lying stabilised dune swales of competing vegetation for a period of a few years, allowing the species to emerge, flower and set seed. While the species possesses tubers, and might therefore be expected to persist in a dormant state during unfavourable conditions, the longer the period without flowering and production of fresh seed, the less likely will be the long-term persistence of the species (Jones et al. 1999). The longevity of tubers is not known but it is assumed to be comparable with the natural fire frequency of near-coastal vegetation (perhaps 6–15 years). The relatively high abundance of plants at Anthony Beach when seen in the 1990s had been attributed to burning in a mosaic fashion at irregular intervals allowing recruitment from seed (TSS 2015).
Impacts of domestic species			
Grazing by cattle	potential	future	Grazing by cattle is likely to present a risk to some populations on non-reserved land (TSS 2015).

Conservation Actions

Conservation and Management priorities

Habitat loss, disturbance and modifications

- Prevent habitat disturbance. Control access routes by installing gates to suitably constrain stock, vehicle and public access to known sites on public land and manage access on private land, to prevent damage to plants and habitat.
- Ensure land managers are aware of the species' occurrence and provide protection measures against key and potential threats.
- Clear weeds and rubbish from the population at Lulworth.

Fire

- Implement an appropriate fire management regime for protecting key habitat to ensure buffers to prevent wildfire or managed fire from impacting the habitat, unless prescribed fire is being used following sound scientific evidence of the critical need for such a fire.
- Critically, any use of prescribed or experimental fires must be very well justified, and is typically an action of last resort. There must be a carefully planned weed management strategy and demonstrated funding to ensure post-fire monitoring and control actions occur (eg weed control based on sound scientific evidence).
- Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigation measures in bush fire risk management plan/s, risk register and/or operation maps.

Impacts of domestic species

- If livestock grazing (cattle) occurs in the area, ensure land owners/managers use an appropriate management regime and density that does not detrimentally affect this species to allow regeneration from seedlings and manage total grazing pressure at important sites through exclusion fencing or other barriers.

Breeding, propagation and other exsitu recovery action

- Collect seed and associated mycorrhizal fungi for long-term storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens, Hobart.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful translocation.

Stakeholder Engagement

- Provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of known subpopulations and potential habitat.
- If necessary, develop management agreements with private landowners and public land managers.

Survey and Monitoring priorities

- Attempt to re-locate sites with imprecise location details or that have not been seen since the 1990s.

- Undertake extension surveys based on known sites, radiating out into potential habitat, especially after major fire events in near-coastal sites. Given the strong dependence on fire to stimulate flowering, any survey effort should focus on sites burnt in the previous few years. Detecting this species is likely to be most successful when flowers are fully open but older flowers may still be identifiable, allowing the survey window to be extended for one to two weeks, depending on seasonal and local conditions.
- Undertake regular demographic monitoring at a selection of populations to better understand management requirements to promote recruitment and to determine the possible impacts of climate change.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Investigate options for linking, enhancing or establishing additional populations.
- Fire trials should only be undertaken as a last resort when all other means of regeneration of the species has been investigated and, in addition, all weed management and fire impacts including the timing of fire impacts are fully understood.
- Research the effects of public access where this is likely and the effects are unknown.
- Implement an annual census to monitor emergence and resprouting success.

References cited in the advice

Jones, D.L. (1998). A taxonomic review of *Prasophyllum* in Tasmania. *Australian Orchid Research* 3: 94–134.

Jones, D. (2006). A Complete guide to native orchids of Australia including the Island Territories. New Holland Publishers (Australia), Sydney.

Jones, D., Wapstra, H., Tonelli, P. & Harris, S. (1999). The Orchids of Tasmania. Melbourne University Press, Carlton South, Victoria.

Other sources cited in the advice

TSS (Threatened Species Section) (2015). *Listing statement for Prasophyllum secutum (northern leek-orchid)*. Department of Primary Industries, Parks, Water and Environment, Tasmania.

Viewed: 14 December 2015.

Available on the internet at:

<http://www.threatenedspecieslink.tas.gov.au/results?text=prasophyllum%20secutum>