Image by Peter Fehre

Prasophyllum amoenum

dainty leek-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Prasophyllum amoenum*** D.L.Jones, *Austral. Orchid Res.* 3: 99 (1998)

Common name: dainty leek-orchid (Wapstra et al. 2005)

Group: vascular plant, monocotyledon, family **Orchidaceae**

Status: *Threatened Species Protection Act 1995*: **vulnerable**
Environment Protection and Biodiversity Conservation Act 1999: **Endangered**

Distribution: Endemic status: **endemic to Tasmania**
Tasmanian NRM Region: **South**

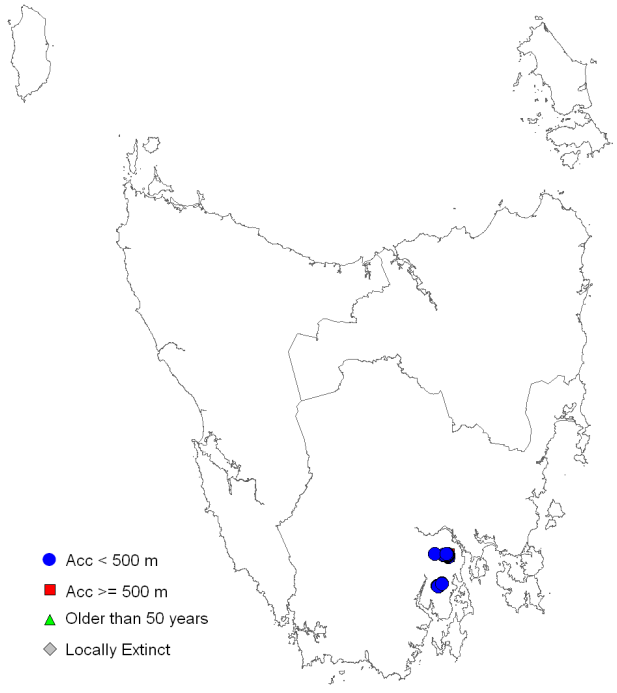

Figure 1. Distribution of *Prasophyllum amoenum,* showing Natural Resource Management regions

Plate 1. *Prasophyllum amoenum*: flower detail (image by David Tng)

SUMMARY: *Prasophyllum amoenum* (dainty leek-orchid) is a terrestrial orchid endemic to Tasmania. It is known from the State's south at Snug Tiers and the Wellington Range, where it grows in sedgey moorland, subalpine sedgeland and bolster heath. The total population is thought to consist of fewer than 1000 plants, putting the species at risk from chance events, particularly for the smaller subpopulations. The main threats to the species are associated with climate change, including increased severity and frequency of drought, a possible reduction in snow and ice cover, and a possible increase in both fire frequency and intensity, the long-term consequence being a decline in the number of plants and reduction of suitable habitat.

IDENTIFICATION AND ECOLOGY

Prasophyllum amoenum belongs to a group of orchids commonly known as leek-orchids because the erect hollow leaf has some resemblance to that of a leek. *Prasophyllum* species are deciduous terrestrials with small, fleshy, round or oval tubers and a few fleshy, irregular roots. The single leaf is purplish at the base, as opposed to green in onion orchids. 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, often with prominent wavy or frilly margins, produces quantities of nectar on which a wide range of insects feed. Some of these, particularly native bees, wasps and beetles, are effective pollinators.

Prasophyllum amoenum is known to flower freely in the absence of fire on Mt Wellington, though at Snug Tiers appears to respond favourably to fire in its moorland habitat and also to trackside disturbance (Jones et al. 1999).

Survey techniques

Surveys for *Prasophyllum amoenum* should be undertaken during its peak flowering period, late December to late January at Snug Tiers, and late January to early March at Mt Wellington.

Description

Prasophyllum amoenum has a dark green leaf with a purplish base, the free part 4 to 6 cm long. Plants are 15 to 35 cm tall when in flower, with 5 to 12 flowers in a sparse grouping 3 to 5 cm long. The ovary is green and purplish. The flowers are 8 to 10 mm long and 7 to 9 mm wide and are greenish, with dark brown lateral sepals, white petals with reddish median bands, and a white labellum. The lateral sepals are generally united throughout, but occasionally break free to become widely divergent. The two petals are 5 to 6 mm long and 1 to 1.5 mm wide, and are widely divergent. The labellum has wavy margins and its surface, margins and callus are covered with minute papillae. The fleshy, yellowish green callus on the labellum ends just beyond the bend and has a notched apex

[description based on Jones 1998, Jones et al. 1999]

Confusing species

Prasophyllum amoenum can be distinguished from the closely-allied *Prasophyllum mimulum* by its daintier appearance, having a relatively narrow flower spike and flowers that are further apart than *Prasophyllum mimulum*, and the flowers of *Prasophyllum amoenum* tend to be slightly less bright with a pinkish or fawnish hue (H. Wapstra, pers. comm.).

DISTRIBUTION AND HABITAT

Prasophyllum amoenum is endemic to southern Tasmania (Figure 1), being known only from the Wellington Range where its preferred habitat includes bolster heath (cushionplants), alpine sedgeland and alpine heath (*sensu* Kirkpatrick 1999), and Snug Tiers where it occurs in sedgey moorland and sedgey heath (Plates 2 to 5). At the type locality at Snug Tiers, the species occurs in a grassy open spot beside a track in an area of damp dense scrub and sedgeland on dolerite (Jones et al. 1999), habitat now considered atypical for the species. The species has been recorded on the Wellington Range in the altitude range 970 to 1240 m above sea level, and at Snug Tiers 550 to 660 m. The latter site, despite the lower

altitude, has a cold, subalpine climate. The mean annual rainfall in the two areas is in the range 1000 to 1500 mm. Soil at the Snug Tiers moorland sites consists of a black peat over a silty clay loam, whereas at Mt Wellington, a fibrous peat surface overlays a black muck peat at depth, at least in the more poorly-drained areas, the underlying substrate being Jurassic dolerite (Davies 1988).

Associated species at the Wellington Range sites include the cushion plant *Abrotanella forsteroides, Astelia alpina, Gleichenia alpina, Baeckea gunniana, Baloskion australe, Epacris serpyllifolia, Orites acicularis, Sphagnum* species and *Prasophyllum alpinum*. Additional species at the Snug Tiers moorland site include *Gymnoschoenus sphaerocephalus* (buttongrass), *Melaleuca virens, Pultenaea dentata, Epacris gunnii* and *Eucalyptus gunnii* subsp. *gunnii,* while *Abrotanella forsteroides* and *Epacris serpyllifolia* are absent.

POPULATION PARAMETERS

Prasophyllum amoenum is known in Tasmania from five subpopulations (Table 1), where subpopulations are considered to be occurrences separated by at least one kilometre, with a total population size of perhaps 500 to 600 plants. The linear range of the species is 23 km, the extent of occurrence about 120 km^2, and area of occupancy 70 to 80 ha.

The presence of *Prasophyllum amoenum* on the Wellington Range was only confirmed in 2009 having previously been ascribed to *Prasophyllum suttonii* (Ratkowsky & Ratkowsky 1976, Curtis 1979), *Prasophyllum alpestre* (Jones et al. 1999) and *Prasophyllum mimulum* (Jones 2004).

Surveys during the 2013 flowering season revealed the species to be an occasional presence over much of the poorly-drained subalpine sedgelands and sedgey heaths in the upper catchment of the North West Bay River, with the greatest densities occurring in bolster heath. While 204 flowering plants were observed in the catchment in 2013, a conservative estimate for the total number of plants is 400 to 500. No plants were recorded at Snug Tiers in 2013. The only sightings of flowering plants at or near the type subpopulation on the Tiers have been from 1994 and 2007. A few plants were seen in three of the four years following 2007 but these failed to flower due to browsing or drought stress (M. Wells, pers. comm.).

Plate 2. Bolster heath habitat (Mt Wellington) (image by Richard Schahinger)

Plate 3. Alpine sedgeland habitat (Mt Wellington) (image by Richard Schahinger)

Plate 4. Alpine heath habitat west of Thark Ridge, Mt Wellington (image by Richard Schahinger)

Table 1. Population summary for *Prasophyllum amoenum*

	Subpopulation	Tenure	NRM Region	1:25000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of flowering plants
1	Snug Tiers (Slippery Creek moor)	Nature Recreation Area	South	Cygnet	2013 2011 2009 (1999)	0 1 2 3–4	0 12 c. 50 30–40
2	Snug Tiers (ridge track)*	Nature Recreation Area	South	Huonville	2013 2007 (1997)	0 0.001 0.001	0 3 10–15
3	Wellington Range (North West Bay River)	Wellington Park	South	Longley, Collinsvale	2013 2012 (1913)	60–65 2 unknown	204 20 unknown
4	Wellington Range (West of Thark Ridge)	Wellington Park	South	Collinsvale	2013	5–10	5
5	Wellington Range (Pond Plain)	Wellington Park	South	Collinsvale	2013	0.0001	1

NRM Region = Natural Region Management region
* type locality

Habitat similar to the known sites on Mt Wellington, though without a cushion plant element, occurs in the central and western sections of the Wellington Range, including the upper catchment of Mountain River between Mt Connection and Thark Ridge, Pond Plain between Trestle Mountain and Mt Patrick, and to the west and northwest of White Timber Plain. Surveys of the Mountain River catchment in late February 2013 failed to locate the species, but a single flowering plant and several plants in the early stages of fruiting were found at Pond Plain further to the west, and it is considered highly likely that additional plants will be located given a well-timed and focused survey effort. Potential habitat at Snug Tiers has been subject to an intensive survey effort over the past five years, and the likelihood of new sites being located there is considered to be very low.

RESERVATION STATUS

Prasophyllum amoenum occurs in Snug Tiers Nature Recreation Area and Wellington Park.

CONSERVATION ASSESSMENT

Prasophyllum amoenum was listed as endangered on the schedules of the Tasmanian *Threatened Species Protection Act 1995* in 2001, satisfying criterion D:

- total population estimated to number fewer than 250 mature individuals.

The species was downlisted to vulnerable in April 2016 meeting criterion D:

- total population estimated to number fewer than 1,000 mature individuals

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

The main threats to *Prasophyllum amoenum* are considered to be climate change and inappropriate disturbance regimes (fire), potentially resulting in the loss of smaller subpopulations, the risk exacerbated by the dependence on mycorrhizal fungi, which may make the species susceptible to additional factors. Minor threats include indiscriminate 4WD activity at the Snug Tiers site.

Climate change: It is possible that even minor shifts in average seasonal conditions may have an adverse impact on locally restricted species such as *Prasophyllum amoenum*. An increase in fire frequency or intensity, a decrease in snow and ice cover (Mt Wellington occurrences) and possibly the raising of the climatic tree-line, may all contribute to a loss of habitat for the species (Kirkpatrick et al. 2002). Associated

increases in the severity and frequency of drought may lead to population declines and local extinctions.

Plate 5. 4WD damage at the Snug Tiers moorland site in January 2009 (image by Richard Schahinger)

Inappropriate disturbance: Leek orchid species may be out-competed as their habitat becomes dense over time in the absence of disturbance, and while the tubers might be expected to persist in a dormant state during unfavourable conditions, the longer the period without flowering and seed production, the less likely must be the long-term persistence of a species in an area (Jones et al. 1999). The response of *Prasophyllum amoenum* to fire (allied with drought) would appear to be different at the Mt Wellington and Snug Tier sites. The former site was last burnt in 1967. However, the hydrology of the area, exposure and altitude means that suitable habitat in the form of bolster heath and sedgeland are likely to persist into the medium-term (Plates 2 & 3), and plants are also known to persist in quite dense heath at the site (Plate 4). At the Snug Tiers moorland sites, the ability of the species to flower more than a few seasons after fire is less certain, with no plants recorded in the 2012/2013 season after fire in 2007, partly due to competition from other vegetation or, more likely, due to an extremely dry summer. The moorland site at Snug Tiers is known to have been burnt in 1983 (cause unknown), spring 1997 (an ecological burn) and autumn 2007 (arson), demonstrating a capacity for the species to persist in the face of fire intervals in the order of 10 to 15 years (Table 1).

Off-road vehicles: Indiscriminate use of 4WD vehicles at the Snug Tiers moorland site is known to have destroyed at least a few *Prasophyllum amoenum*. The disturbance occurred several months after the area had been opened up by wildfire in 2007, with repeated subsequent incursions (Plate 5). The threat to the population as a whole is considered to be minimal, and measures to mitigate the issue have been taken by the managing authority.

MANAGEMENT STRATEGY

Management objectives

The main objectives for the recovery of *Prasophyllum amoenum* are to prevent the inadvertent destruction of the known subpopulations and promote conditions for its successful recruitment.

What has been done?

Recovery planning: *Prasophyllum amoenum* is included in the Draft *Flora Recovery Plan: Threatened Tasmanian Orchids* (Threatened Species Section 2013).

Surveys: Extension surveys of Snug Tiers (Tng 2009) and Wellington Range have been undertaken over the past five years. The known extent of the species at Mt Wellington was increased following surveys in February 2013 to more than 3 km, and the number of plants from about 20 to well in excess of 250.

Off-road vehicle management: To prevent access, large boulders have been placed across the entrance to the moorland area known to support the species on Snug Tiers.

Fire management: An ecological burn of the Snug Tiers moorland site was undertaken in the spring of 1997, and of nearby moorland in the autumn of 2009, followed by targeted post-fire surveys.

***Ex situ* conservation measures:** Seed were collected from the Snug Tiers subpopulation in February 2009 for long-term storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens.

What is needed?

Agencies, groups or individuals may assist with some or all of the following recovery actions.

Coordinated efforts may achieve the best and most efficient results.

- monitor subpopulations bi-annually to determine the level of recruitment and/or plant loss to better inform management prescriptions;
- liaise with the Tasmanian Parks and Wildlife Service to ensure that the burning regime of the Snug Tiers moorland site is compatible with the species' requirements;
- undertake extension surveys of potential habitat in the central and western parts of Wellington Range;
- collect seed and associated mycorrhizal fungi from the Mt Wellington subpopulation for storage at the Tasmanian Seed Conservation Centre at the Royal Tasmanian Botanical Gardens;
- provide information and extension support to relevant Natural Resource Management committees, local councils, Government agencies, the local community and development proponents on the location, significance and management of known subpopulations and areas of potential habitat.

BIBLIOGRAPHY

Curtis, W.M. (1979). *The Student's Flora of Tasmania: Part 4a. Angiospermae: Orchidaceae*. Government Printer, Hobart.

Davies, J.B. (1988). *Land Systems of Tasmania. Region 6: South, East and Midlands – A Resource Classification Survey*. Department of Agriculture, Tasmania,

Jones, D.L. (1998). Contributions to Tasmanian orchidology 6: a taxonomic review of *Prasophyllum* R. Br. in Tasmania, *Australian Orchid Research* 3: 94–134.

Jones, D.L. (2004). Two new species of *Prasophyllum* R.Br. (Orchidaceae) from Tasmania. *The Orchadian* 14(8): 372–377.

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

Kirkpatrick, J.B. (1999). *Alpine Tasmania: An Illustrated Guide to the Flora and Vegetation*. Oxford University Press, South Melbourne.

Kirkpatrick, J.B., Bridle, K.L. & Wild, A.S. (2002). Succession after fire in alpine vegetation on Mount Wellington, Tasmania. *Australian Journal of Botany* 50: 145–154.

Ratkowsky, D.A. & Ratkowsky, A.V. (1976). Changes in the abundance of the vascular plants of the Mount Wellington Range, Tasmania, following a severe fire. *Papers and Proceedings of the Royal Society of Tasmania* 110: 63–90.

Threatened Species Section (2013). Draft *Flora Recovery Plan: Threatened Tasmanian Orchids* Department of Primary Industries, Parks, Water and Environment, Hobart.

Tng, D. (2009). Prasophyllum amoenum *(dainty leek-orchid) at Snug Tiers, 7 January 2009*. Internal Report, Threatened Species Section, Department of Primary Industries, Water and Environment, Hobart.

Wapstra, H., Wapstra, A., Wapstra, M., & Gilfedder, L. (2005). *The Little Book of Common Names for Tasmanian Plants*. Department of Primary Industries, Water and Environment, Hobart.

Prepared in 2001 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. This review published in February 2014. Status updated May 2016.

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