

Prasophyllum apoxychilum

tapered leek-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Image by Mark Wapstra

Scientific name: *Prasophyllum apoxychilum* D.L.Jones, *Australian Orchid Research* 3: 100 (1998)

Common Name: tapered 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**
Tasmanian NRM Region: **North, South**

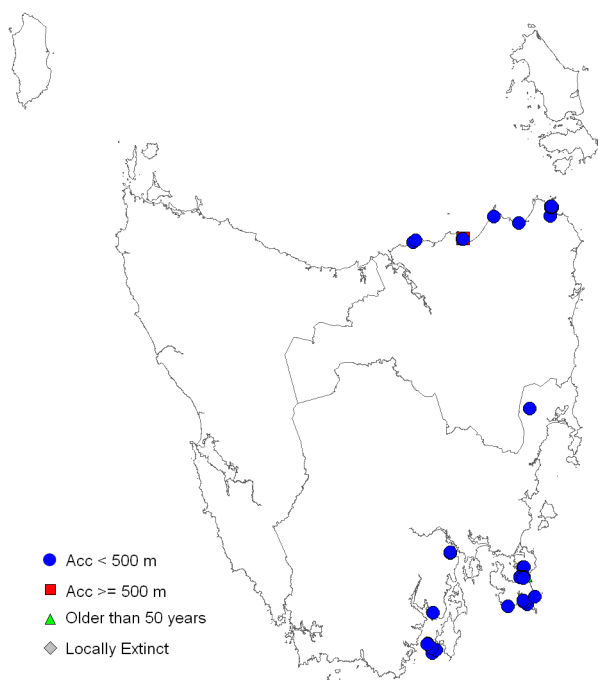


Figure 1. Distribution of *Prasophyllum apoxychilum*, showing Natural Resource Management regions



Plate 1. *Prasophyllum apoxychilum* (image by Richard Schahinger)

SUMMARY: *Prasophyllum apoxychilum* (tapered leek orchid) is a terrestrial orchid, endemic to Tasmania. It is known from 20 scattered occurrences in the eastern part of the State, being found mainly in near-coastal heathland and heathy woodland. The total population is thought to consist of about 250 known plants occupying less than 10 ha, putting the species at risk from chance events, particularly for the smaller subpopulations. Loss of habitat through historical clearing and possibly its sporadic flowering habit may explain the fragmented distribution of the species. The most important needs of the species are to prevent the destruction and degradation of known and potential habitat, and to promote recruitment through management of the habitat e.g. by fire and slashing to promote flowering. The taxonomy of the species requires clarification.

IDENTIFICATION AND ECOLOGY

Species of *Prasophyllum* are 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. 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*). 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.

The flowering of many 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 in subsequent years. Some species may be prominent in disturbed sites such as slashed areas, or along track verges and road embankments (Jones et al. 1999). Many subpopulations of *Prasophyllum apoxychilum* have been detected in the spring-summer after fire

events but the species has also been found in sites that have been relatively long unburnt though some form of canopy gap disturbance is probably important. The species has been noted to respond to slashing.

The flowering time of *Prasophyllum apoxychilum* is variable, perhaps indicating the presence of additional taxa in the species-complex (see under **Confusing species**). There appears to be a flowering peak in late October to mid November on the Tasman Peninsula and in the north, but subpopulations from South Bruny and Knocklofty (near Hobart) seem to peak in late December to early January, and late January, respectively (Wapstra et al. 2012).

Survey techniques

Surveys should be conducted during the species' peak flowering period. However, given the variable flowering period in different parts of the State, local records should be checked prior to undertaking a survey to maximise the opportunity of detection. Any survey effort should focus in the first instance on disturbed sites, the apparent preferred micro-habitat for the species (e.g. edges of 4WD tracks, burnt patches of suitable habitat). Collection of representative specimens and comparison to herbarium material or identification by a specialist is recommended. 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 1 to 2 weeks, depending on seasonal and local conditions.

Description

Prasophyllum apoxychilum is a deciduous terrestrial orchid, 20 to 35 cm tall, with small, fleshy round or oval tubers. The leaf is erect, terete and dark green, with a purple base. The leaf is 10 to 25 cm long and 3 to 4 mm wide. The free part of the leaf blade is erect to suberect, about 2 to 12 cm long and not usually withered at flowering. The inflorescence is a narrow moderately crowded spike, 6 to 10 cm long, comprising 8 to 20 flowers. The flowers are 10 to 13 mm long and 9 to 11 mm wide. The sepals are light green, often suffused with a purplish tinge. The petals are whitish, usually with a dark central band. The labellum is white

or pinkish. The flowers open widely and are noted as being fragrant. The ovary is projecting, obovoid, 5 to 7 mm long and 3 mm wide, and green. The dorsal sepal is narrowly ovate-lanceolate, and 8 to 9.5 mm long and 3 to 3.5 mm wide. The lateral sepals are linear-lanceolate, free from the base, slightly falcate and obliquely erect, widely divergent, and 8 to 10 mm long and 2 to 2.5 mm wide. The petals spread outwards, are narrowly ovate-lanceolate, 7 to 9 mm long and 1.5 to 2 mm wide, with a dark central band. The labellum is narrowly ovate-lanceolate, 8.5 to 10 mm long and 3.5 to 4 mm wide, erect in the distal half, the apex often projecting through the lateral sepals at more than right angles near the middle. The margins of the labellum are wavy or crisped, and the apex pointed. The callus is shiny green, with the distal margins papillate and the apex notched. The column is about 4.5 mm long and 3 mm wide, with the appendages longer than the anther.

[description based on Jones 1998, Jones 2006, Jones et al. 1999]

Confusing species

Prasophyllum apoxychilum is part of the *Prasophyllum truncatum* species complex (Jones 1998), with recent field observations proving this complex to be difficult for field (and even microscopic) identification. The most confusing species within the range of *Prasophyllum apoxychilum* is *Prasophyllum truncatum* (Jones et al. 1999). Recent collections of specimens of *Prasophyllum* from South Bruny Island and the Tasman Peninsula have been difficult to place with certainty. These specimens key out to *Prasophyllum apoxychilum*, often on the basis of the perhaps dubious character of relative length of anther appendages to the anther, but appear much closer to *Prasophyllum truncatum*. That species is poorly defined and the species-complex is in need of review.

Jones (1998) noted that *Prasophyllum apoxychilum* can be distinguished by the following combination of features: narrow petals (1.6 to 2 mm wide); long, proportionately narrow labellum (to 10 by 4 mm) erect in the distal half with a pointed apex; an ovate labellum callus (to 5.3 by 3 mm) with an emarginate papillate

apex; and proportionately long column (about 4.5 by 3 mm). Jones (1998) notes that no other members of the species-complex have an obtuse apex, but this character is proving variable within the complex (M. Wapstra, pers. obs.).

DISTRIBUTION AND HABITAT

Prasophyllum apoxychilum is endemic to Tasmania, where it has a disjunct distribution in coastal and near-coastal areas of the State's southeast, east and north (Figure 1). The species occurs in a variety of habitats, including open eucalypt forest with an understorey ranging from grassy to densely shrubby coastal heathland, sedgey heathland and woodland, and sedgey *Allocasuarina paludosa* heathland. The species often occurs in gaps in heathy to shrubby forest and woodland in well-insolated sites. Soils include sandy loams, clay loams and gravelly loams. The species is most prevalent on substrates derived from Jurassic dolerite, but also occurs on coastal windblown sands and granite-derived substrates. Elevation varies from near sea level to 370 m above sea level (Jones 1998).

POPULATION PARAMETERS

Prasophyllum apoxychilum is represented in Tasmania by 20 subpopulations, though there is little information available on most of these, and many have not been observed since the 1990s (Table 1). The species' linear range is 307 km and extent of occurrence about 22,000 km². Three subpopulations are reported to support more than 40 individuals, but most have been found to support fewer than 10 individuals in any particular year. Based on the current evidence, it is likely that the total population exceeds 250 mature individuals but numbers fewer than 1,000. Reliable area of occupancy data exists for only a few of the subpopulations, indicating an area of occupancy less than 5 ha for these subpopulations. It is unlikely other subpopulations occupy substantially larger areas than these so that the total area of occupancy is estimated to be in the order of 6 to 10 ha.

Table 1. Population summary for *Prasophyllum apoxychilum*

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1	Garden Island Creek	Private land	South	Lymington	2011	0.001	3
2	Lighthouse Road	South Bruny National Park	South	Cloudy	1995	unknown	unknown
3	North of lighthouse	South Bruny National Park	South	Cloudy	1995	unknown	unknown
4	Pineapple Rocks Track	South Bruny National Park	South	Cloudy	2011 (2010)	0.50	15 or 16
5	Mount Bleak	South Bruny National Park	South	Partridge	2011 (2000)	3 sites in 300 m	2 15
6	Ship Stern Bluff track	Tasman National Park	South	Raoul	2010	0.001	2
7	Ellarwey Valley	Tasman National Park	South	Tasman	2010	0.001	1
8	Cape Hauy track	Tasman National Park	South	Hippolyte	2014 2012 (2011)	0.01 0.01 0.01	2 8 2
9	Mason Point	Eaglehawk Bay State Reserve & private land	South	Taranna	2002 (1997)	1.5	50 to 60
10	Pirates Road	Future Potential Production Forest (Crown land)	South	Taranna	2013 (2001)	1.0 0.01	14 3
11a *	Eaglehawk Neck	private	South	Taranna	1996 (1993)	0.2	20
11b *	Tasman Peninsula (Eaglehawk Neck)	unknown	South	Taranna	1933	unknown	unknown
12	South of Murdunna	Permanent Timber Production Zone Land	South	Murdunna	2014 2013 (1996)	0.70 0.015	5 70 10
13	Knocklofty	Hobart City Council Reserve	South	Hobart	1996 (1993)	0.002 (2 sites)	3
14	Block & Stable Creek	Wye River State Reserve	South	Leake	1984	unknown	unknown
15	Bridport	Granite Point Conservation Area	North	Bridport	2012 (1998)	1.2	5 5 to 6
16	Little Musselroe River	Private land	North	Lyme Regis	2008 2007 (2005)	2 to 4 0.3	c. 40 17
17	Croppies Point	Waterhouse Conservation Area	North	Waterhouse	1983	unknown	unknown
18	Stony Head	Commonwealth land	North	Low Head	2013 (2001)		1
19	Murdochs Beach	Boobyalla Conservation Area	North	Tomahawk	2012 (2000)	0.05	16
20	Arthurs Peak to Surveyors Cove	Tasman National Park	South	Tasman	2014 (2013)	4 sites over 1.3 km	16

* These observations are from sites about 2km apart and may represent different subpopulations

The widespread and disjunct distribution of *Prasophyllum apoxychilum* in Tasmania combined with the continued discovery of new sites (seventeen since the species was listed on the TSP Act in 2002), suggests that further sites are probably present. However, their discovery is likely to be serendipitous rather than as a result of targeted surveys because of the species' often highly localised occurrences.

RESERVATION STATUS

Prasophyllum apoxychilum has been recorded from Boobyalla Conservation Area, Eaglehawk Bay State Reserve, Granite Point Conservation Area, South Bruny National Park, Tasman National Park, Waterhouse Conservation Area and Wye River State Reserve. The subpopulation at Knocklofty is within a Hobart City Council bushland reserve.

CONSERVATION ASSESSMENT

Prasophyllum apoxychilum was listed as endangered on the Tasmanian *Threatened Species Protect Act 1995* in 2001, satisfying criterion D1: total population estimated to number fewer than 250 mature individuals. With the discovery of additional subpopulations, the species was downlisted to vulnerable in October 2016, meeting criterion D1: total population estimated to number fewer than 1000 mature individuals.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Due to the limited amount of information on some subpopulations of *Prasophyllum apoxychilum*, it is difficult to assess specific threats and develop appropriate management strategies. However, the threats to the species are similar to those faced by many threatened orchids with widespread and fragmented distributions and usually low population numbers. The risk to the species is exacerbated by the dependence on mycorrhizal fungi, which may make the species susceptible to additional factors.

Land clearing: Extensive historical land clearing, especially in near-coastal areas in the State's northeast (Kirkpatrick 1977), is considered likely to have impacted on the

habitat of *Prasophyllum apoxychilum*, though the extent of the impact on the species is unknown. The housing ribbon beyond Eaglehawk Neck towards Doo Town and towards Taranna may well have been a stronghold for this species prior to the clearing of private blocks for housing. Land clearing is not identified as a specific threat to any subpopulations with precise location information at present though other subpopulations remain at risk from clearance and benign neglect.



Plate 2. *Prasophyllum apoxychilum* habitat on the Pineapple Rocks Track, January 2011, with plants flowering eight months after fire (image by Richard Schahinger)

Inappropriate disturbance: The flowering of *Prasophyllum apoxychilum* appears to be stimulated by disturbance such as fire and slashing (Jones et al. 1999; Plate 2). 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 fresh seed production, the less likely must be the long-term persistence of the species in an area (Jones et al. 1999). The longevity of tubers is not known but it is assumed to be comparable with the natural fire frequency of the species' habitat (perhaps up to 15 to 20 years). The degree of impact of some forms of disturbance is difficult to ascertain. Some sites are associated with disturbed ground (e.g. well-established and maintained walking and vehicular tracks) but whether the species requires regular disturbance or the sites simply represent an artefact of easier detectability is not known.

Forestry activities: *Prasophyllum apoxychilum* is only a partially forest-dependent species but commercial wood production activities are unlikely to affect the species as its distribution is mostly restricted to non-commercial near-coastal habitats.

Weed invasion: Several subpopulations occur in sites subject to increasing threat from weed invasion. The Granite Point Conservation Area at Bridport supports boneseed (*Chrysanthemoides monilifera*), which if unchecked poses a significant risk of altering the supporting vegetation. The sites near Eaglehawk Neck are close to or on private land. The roadside verge in this area is becoming increasingly infested with invasive weeds such as banana passionfruit (*Passiflora tarminiana*), butterfly bush (*Psoralea pinnata*), exotic wattles (mainly *Acacia provincialis*), gorse (*Ulex europaeus*) and broom (*Cytisus scoparius* and *Genista monspessulana*).

Phytophthora cinnamomi: *Prasophyllum apoxychilum* is not directly susceptible to the exotic soil-borne *Phytophthora cinnamomi*, but its coastal heathland and heathy woodland habitat is considered to be highly susceptible. There is no direct evidence to date of the pathogen affecting vegetation supporting subpopulations of *Prasophyllum apoxychilum*, though if the pathogen should become established then it is possible that changes to the vegetation's structure will have a deleterious indirect impact on the species.

Stochastic events: The species' widespread and disjunct distribution provides a degree of security to the species as a whole. However, the small size of subpopulations exposes them to a risk of extinction due to chance events.

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 apoxychilum*, especially if supporting vegetation is affected.

MANAGEMENT STRATEGY

Management objectives

The main objectives for the management of *Prasophyllum apoxychilum* are to increase the number of known subpopulations through survey, prevent the inadvertent destruction of

known subpopulations, promote conditions for successful recruitment and clarify the taxonomy of the species.

What has been done?

Management planning: *Prasophyllum apoxychilum* was included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (Threatened Species Unit 2006). The Recovery Plan is in the process of being revised.

Forestry management: The Pirates Road subpopulation has been included in a flora Special Management Zone by Forestry Tasmania (Iliopoulos 2002). The area is still coded as potentially available for wood production, though formal advice from specialists in other agencies will be required prior to any activities being undertaken.

Weed control: Management of broom infestations at the Masons Point site has been undertaken by the Tasmanian Department of Infrastructure Energy & Resources (DIER 2005), and gorse infestations close to the Knocklofty site have been treated by a local Bushcare group in conjunction with Hobart City Council.

Survey: The majority of subpopulations are known from detection by orchid enthusiasts. Some subpopulations have been detected as part of surveys of development proposals. Volunteers with the Wildcare group Threatened Plants Tasmania have undertaken targeted surveys of several areas since 2010, including the Pineapple Rocks Track (Bruny Island), Bridport, Murdunna and Pirates Road.

What is needed?

Agencies, groups or individuals may assist with some or all of the following recovery actions. Coordinated efforts will achieve the best and most efficient results.

- 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;

- develop management agreements with private landowners and public land managers;
- implement the *Threatened Tasmanian Orchids Recovery Plan* and incorporate the management requirements of the species into relevant reserve management plans and fire management plans;
- attempt to relocate 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;
- undertake regular demographic monitoring at a selection of subpopulations to better understand management requirements to promote recruitment and to determine the possible impacts of climate change;
- undertake genetic and morphometric studies of the taxon throughout its range in Tasmania to improve our understanding of the taxonomic position of the species within the *Prasophyllum truncatum* species-complex;
- collect seed and associated mycorrhizal fungi for long-term storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens, Hobart.

BIBLIOGRAPHY

- DIER (2005). *Conservation Sites Management Plan: High Priority Botanical Sites*. Tasmanian Department of Infrastructure, Energy & Resources, Hobart.
- Iliopoulos, A. (2002). Special Management Zone (Orchid). *Forest Practices News* 4(3): 3–4.
- 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.

Kirkpatrick, J. B. (1977). *The Disappearing Heath*. Tasmanian Conservation Trust Inc., Hobart.

Threatened Species Unit (2006). *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010*. Department of Primary Industries and Water, Hobart.

Wapstra, M., Roberts, N., Wapstra, H. & Wapstra, A. (2012). *Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists*. Self-published by the authors.

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

This revision prepared in 2014 under the provisions of the Tasmanian *Threatened Species Protection Act 1995* (originally published in 2000). Status updated in October 2016.

Cite as: Threatened Species Section (2016). *Listing Statement for Prasophyllum apoxychilum (tapered leek-orchid)*. Department of Primary Industries, Parks, Water and Environment, Tasmania.

View:

www.dpipwe.tas.gov.au/threatenedspecieslists
www.threatenedspecieslink.tas.gov.au/

Contact details: Threatened Species Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44 Hobart Tasmania Australia 7001. Ph. (03) 61654340. threatenedspecies.enquiries@dpipwe.tas.gov.au

Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.