

## *Prasophyllum parviflorum* Slender Leek-orchid

### Taxonomy

*Prasophyllum parviflorum* (R.S. Rogers) Nicholls

### Current conservation status

Categorised as Vulnerable in the 2014 Advisory list of rare or threatened flora (DEPI 2014).

### Proposed conservation status

Endangered in Australia

Criteria A2ac+3ce+4ace; B2ab(iii,v)

### Species Information

#### Description and Life History

The taxon has a flowering stem slender, 25-40 cm tall. Leaf-blade to 25 cm long, 2-3 mm diam. at base, apex erect. Flowers 10-30, small, greenish brown to purplish, faintly perfumed, in a narrow spike 6-10 cm long; ovary obovoid, to 3 mm long; sepals 4-5 mm long, dorsal sepal ovate-acuminate, lateral sepals joined near base, lanceolate, falcate, recurved, not divergent; petals linear, 4-5 mm long. Labellum sessile, erect, 4-4.5 mm long, recurved and constricted near middle, lamina variously coloured, margins entire; callus plate prominently raised, broad at base then tapered, extending almost to the labellum apex, glossy. Column appendages oblong, oblique, c. 1.5 mm long. The taxon flowers from Oct.-Nov. (VicFlora 2015).

The taxon is likely to respond well to fire. Flowering is very sporadic, with some subpopulations not flowering at all in some years.

#### Generation Length

The generation length of *Prasophyllum parviflorum* is estimated to be 30 to 50 years. The generation time for non-colonial terrestrial orchids is estimated based on the annual replacement of the mother tuber by daughter tubers. Whilst somatically immortal, each individual is susceptible to endogenous exhaustion or environmental causes of mortality at rates that are likely to result in replacement at intervals of several decades only. Such orchids are classed as obligate seed regenerators (OSRs), meaning they are reliant on seed-based recruitment for population maintenance.

#### Distribution

The taxon is scattered across southern Victoria, east from French Island, and it is apparently rare (VicFlora 2015). It has a wide distribution across coastal areas of Victoria and about half of the places where it occurs are in reserves (e.g., Croajingalong National Park, Lower Glenelg State Park) (SAC 1999).

#### Habitat

The taxon grows in wet heathlands, heathy woodlands, and grass-tree plains, often near the coast. Substrates are usually sandy loams or peaty soils that may be moist for much of the year (VicFlora 2015).

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The lower slopes of the Pinnacles are typically *Leptospermum myrsinoides* heathland dominated by an orchid community of 32 species. The slopes have a greater than 5 degree incline and a northwesterly aspect with an altitude of 20-30 metres.

### Threats

There has been a historic decline in distribution and abundance, with the loss of several subpopulations in South Gippsland, in a region that has been heavily cleared for agriculture and some industrial and rural urban development. The taxon has also possibly suffered from habitat alteration caused by the draining of wetlands.

According to the Flora and Fauna Guarantee Scientific Advisory Committee (SAC), there were no identifiable threats, and the SAC opined was of the opinion that it may not become extinct in response to existing threats (SAC 1990). At that time, the only known threat is to the French Island population, and the SAC did not consider this to be serious enough to threaten the entire taxon with extinction. The fence around most of the area at the Pinnacles, which was originally erected to stop cars driving across the site, has been effective in restricting cars to a smaller area, however increased usage of a single set of car tracks caused erosion problem and sandwashing. Several types of introduced grasses were established, as well as flatweeds (*Hypochoeris* sp.).

More recently, the major threatening process facing the taxon is probably habitat change through increasingly dry conditions from declining rainfall. Although most remaining subpopulations and habitat occur in protected areas, reduced rainfall could lead to drying out the damp heathy locations that are seemingly preferred by the taxon, as well as increase the intensity and severity of bushfires. Weed invasion, altered fire regimes and disturbance caused by motorised vehicles also pose threats even within the park system. In addition, very small subpopulations are highly susceptible to stochastic events causing major decline or local extinction within a very short time frame.

### IUCN Criteria

| Criterion A. Population size reduction.<br>Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4 |                       |            |            |
|--|-----------------------|------------|------------|
|  | Critically Endangered | Endangered | Vulnerable |
| A1   | ≥ 90%                 | ≥ 70%      | ≥ 50%      |
| A2, A3, A4   | ≥ 80%                 | ≥ 50%      | ≥ 30%      |

  

|  |                                       |   |
|--|---------------------------------------|---|
| <p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p>A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]</p> <p>A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p> | <p>based on any of the following:</p> | <p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p> |
|--|---------------------------------------|---|

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## Evidence:

### Eligible under Criterion A2 as Endangered

The population reduction over the past 90 to 150 years is inferred to be 10 to 70%, based on (a) and (c) above.

All subpopulations are very small, with just a few plants. There has been a historic decline in distribution and abundance, with the loss of several populations in South Gippsland, a region that has been heavily cleared for agriculture and some industrial and urban development.

### Eligible under Criterion A3 as Endangered

The population reduction over the next 90 to 100 years is suspected to be 20 to 50%, based on (c) and (e) above.

Habitat change through increasingly dry conditions from declining rainfall is likely to lead to an ongoing decline.

### Eligible under Criterion A4 as Endangered

The population reduction over any 90 to 150 year period, including both past and future (up to 100 years in the future), is inferred to be 30 to 70%, based on (a), (c) and (e) above.

| Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy)   |  |                          |                          |
|---|--|--------------------------|--------------------------|
|   | Critically Endangered<br>Very restricted | Endangered<br>Restricted | Vulnerable<br>Limited    |
| B1. Extent of occurrence (EOO)  | < 100 km <sup>2</sup>                    | < 5,000 km <sup>2</sup>  | < 20,000 km <sup>2</sup> |
| B2. Area of occupancy (AOO)   | < 10 km <sup>2</sup>                     | < 500 km <sup>2</sup>    | < 2,000 km <sup>2</sup>  |
| AND at least 2 of the following 3 conditions:   |  |                          |                          |
| (a) Severely fragmented OR Number of locations  | = 1                                      | ≤ 5                      | ≤ 10                     |
| (b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals |  |                          |                          |
| (c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals  |  |                          |                          |

## Evidence:

### Eligible under Criterion B1 as Vulnerable

The Extent of Occurrence (EoO) is estimated to be 19255 km<sup>2</sup>, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

It is estimated to be severely fragmented. Individual occurrences are considered severely fragmented based on the taxon's limited dispersal ability, the barriers to dispersal and/or the lack of habitat separating them. Such fragmentation precludes the possibility of recolonisation in the event of local extinction.

It has 2 locations and has a continuing decline in (iii) and (v) above as a result of the likelihood of habitat change through increasingly dry conditions from declining rainfall. This would dry out the damp heathy locations seemingly preferred by the taxon, and also increase the intensity and severity of bushfires.

### Eligible under Criterion B2 as Endangered

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The Area of Occupancy (AoO) is estimated to be 28 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has two locations and has a continuing decline in (iii) and (v).

| Criterion C. Small Population size and decline |   | Critically Endangered                                | Endangered  | Vulnerable   |
|--|---|--|---|--|
| Number of mature individuals                   |   | < 250  | < 2,500   | < 10,000   |
| AND at least one of C1 or C2                   |   |  |   |  |
| C1   | An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):   | 25% in 3 years or 1 generation (whichever is longer) | 20% in 5 years or 2 generations (whichever is longer) | 10% in 10 years or 3 generations (whichever is longer) |
| C2   | An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions: |  |   |  |
| (a)  | (i) Number of mature individuals in each subpopulation  | ≤ 50   | ≤ 250   | ≤ 1,000  |
|  | (ii) % of mature individuals in one subpopulation =   | 90 – 100%  | 95 – 100%   | 100%   |
| (b)  | Extreme fluctuations in the number of mature individuals  |  |   |  |

## Evidence:

### Ineligible under Criterion C

It is suspected that there are 300 to 1000 mature individuals, but this qualifier is too weak.

Estimates of population size for this taxon are difficult as it effectively only flowers after fire, and occurs in remote and extensive habitat, which is rarely surveyed. There are at least several hundred known plants (post-2019/20 bushfire surveys), but the actual population size for this species is likely to be much higher.

| Criterion D. Very small or restricted populations  |  | Critically Endangered | Endangered | Vulnerable   |
|--|--|-----------------------|------------|--|
| Number of mature individuals (observed or estimated)   |  | < 50                  | < 250      | < 1,000  |
| D2. Only applies to the VU category<br>Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time. |  | -                     | -          | D2. Typically:<br>AoO < 20 km <sup>2</sup> or<br>number of locations ≤ 5 |

## Evidence:

### Ineligible under Criterion D

The taxon is suspected to have 300 to 1000 mature individuals.



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**Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.**

## References

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