

# NSW Threatened Species Scientific Committee

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## Notice of Preliminary Determination

The NSW Threatened Species Scientific Committee, established under the *Biodiversity Conservation Act 2016* (the Act), has made a Preliminary Determination to support a proposal to list the orchid *Prasophyllum canaliculatum* D.L.Jones (Orchidaceae) as an ENDANGERED SPECIES in Part 2 of Schedule 1 of the Act and, as a consequence, to omit reference to *Prasophyllum canaliculatum* D.L.Jones from Part 1 of Schedule 1 (Critically Endangered species) of the Act. Listing of Endangered species is provided for by Part 4 of the Act.

### How to make a submission

The NSW TSSC welcomes public involvement in the assessment process and places preliminary determinations on public exhibition on the NSW TSSC pages on the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) website. This public exhibition provides an opportunity for the public to comment on this preliminary determination as well as provide any additional information that is relevant to the assessment.

Postal submissions regarding this Preliminary Determination may be sent to:

Secretariat  
NSW Threatened Species Scientific Committee  
Locked Bag 5022  
Parramatta NSW 2124.

Email submissions in Microsoft Word or PDF formats to:  
[scientific.committee@environment.nsw.gov.au](mailto:scientific.committee@environment.nsw.gov.au)

Submissions close 23 May 2025

### What happens next?

After considering any submissions received during the public exhibition period the NSW TSSC will make a Final Determination and a notice will be placed on the NSW DCCEEW website to announce the outcome of the assessment. If the Final Determination is to support a listing, then it will be added to the Schedules of the Act when the Final Determination is published on the legislation website. [www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au).

### Privacy information

The information you provide in your submission may be used by the NSW TSSC in the assessment to determine the conservation status and listing or delisting of threatened or extinct species, threatened populations and threatened or collapsed ecological communities or to assess key threatening processes.

The NSW TSSC may be asked to share information on assessments with NSW Government agencies, the Commonwealth Government and other State and Territory governments to collaborate on national threatened species assessments using a common assessment method and to assist in the management of species and ecological communities.

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If your submission contains information relevant to the assessment it may be provided to state and territory government agencies and scientific committees as part of this collaboration.

**If you wish your identity and personal information in your submission to be treated as confidential you must:**

- *request your name be treated as confidential, and*
- *not include any of your personal information in the main text of the submission or attachments so that it can be easily removed.*

Professor Caroline Gross  
Chairperson  
NSW Threatened Species Scientific Committee

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Public Exhibition period: 28/02/2025 – 23/05/2025

## Preliminary Determination

The NSW Threatened Species Scientific Committee, established under the *Biodiversity Conservation Act 2016* (the Act), has made a Preliminary Determination to support a proposal to list the orchid *Prasophyllum canaliculatum* D.L.Jones (Orchidaceae) as an ENDANGERED SPECIES in Part 2 of Schedule 1 of the Act and, as a consequence, to omit reference to *Prasophyllum canaliculatum* D.L.Jones from Part 1 of Schedule 1 (Critically Endangered species) of the Act. Listing of Endangered species is provided for by Part 4 of the Act.

## Summary of Conservation Assessment

*Prasophyllum canaliculatum* D.L.Jones was found to be Endangered in accordance with the following provisions in the *Biodiversity Conservation Regulation 2017*: Clause 4.3(b)(d)(e i,iii) because it has: 1) a highly restricted geographic range with an estimated area of occupancy of 28–32 km<sup>2</sup>, an estimated extent of occurrence of 2,754–3,503 km<sup>2</sup>, and 3–6 threat-defined locations; 2) an inferred continuing decline in habitat quality attributed to the activities of feral animals, competition with exotic plants, and vegetation clearing; and 3) an inferred continuing decline in the number of mature individuals, primarily attributed to soil turnover by feral pigs (*Sus scrofa*).

The NSW Threatened Species Scientific Committee has found that:

1. *Prasophyllum canaliculatum* D.L.Jones (family Orchidaceae), commonly known as the summer leek orchid or channelled leek orchid, is described in Jones (2021) as: “Plants 300–500 mm tall. Free part of leaf to 200 x 3–5 mm. Spike 50–110 mm long, 5–25 flowered. Ovary sessile, bright green. Flowers moderately crowded, scented, 14–16 x 7–9 mm, red, greenish-red or brownish-red, labellum reddish or brownish, callus green or reddish. Dorsal sepal 7.5–9 x 4–5 mm, decurved or recurved. Lateral sepals free, 7.5–9 x 2 mm, parallel, recurved. Petals 6.5–7.5 x 2 mm, incurved to spreading. Labellum sessile, ovate-elliptical, 6–7.5 x 5–6 mm, broadest at base, sharply recurved near apex and contracted to short tail, margins mostly entire. Callus oblong, deeply grooved, ending in short tail just beyond labellum bend.”
2. *Prasophyllum canaliculatum* occurs in disjunct habitats in the Australian Alps of the Australian Capital Territory (ACT), and the South Eastern Highlands of New South Wales (NSW) (IBRA Regions, Commonwealth DCCEEW 2024). It is distributed across 4–5 known subpopulations: ACT, Kybeyan, Bemboka, Nimmitabel, and Rockton. The traditional custodians of these lands are the Bidwell, Ngambri, Ngarigo, Ngunnawal, and Yuin peoples (Horton 1996; Native Land Digital 2024). The minimum number of subpopulations excludes the Kybeyan subpopulation, which may no longer be extant given that it had only two emergent individuals in February 2021 (NSW Government 2024a), and there was extensive damage from feral pigs at this site observed in December 2023 (R. Armstrong *in litt.* July 2024).
3. *Prasophyllum canaliculatum* has an estimated total population size of approximately 800–2,000 mature individuals. This range captures uncertainty

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resulting from the suspected extirpation of the Kybeyan subpopulation (R. Armstrong *in litt.* July 2024), and the ability of individuals to lie dormant underground for several years if conditions are not right for them to emerge (NSW NPWS 2022).

4. *Prasophyllum canaliculatum* has an estimated area of occupancy (AOO) of 28–32 km<sup>2</sup>, and an estimated extent of occurrence (EOO) of 2,754–3,503 km<sup>2</sup>. As recommended by IUCN (2024), AOO is based on 2 x 2 km grid cells, while EOO is based on a minimum convex polygon enclosing mapped records for the species. The minimum estimates exclude the Kybeyan subpopulation.
5. *Prasophyllum canaliculatum* is currently known to occur at elevations of ~745–1,220 m in grasslands and open woodlands near drainage lines, swamps, and bogs (Jones 2021; CANB 2024; NSW Government 2024a). It is associated with sphagnum hummocks, *Eucalyptus pauciflora*, *Eucalyptus viminalis*, *Baeckea utilis*, *Epacris breviflora*, *Epacris microphylla*, *Hakea microcarpa*, *Leptospermum myrtifolium*, *Cyperus* sp., *Juncus* sp., *Luzula* sp., *Poa clivicola*, *Poa sieberiana*, *Poa labillardierei*, *Themeda triandra*, *Acaena* sp., *Craspedia paludicola*, *Geranium* sp., *Leucochrysum albicans*, *Microtis* sp., *Spiranthes australis*, *Stylidium graminifolium*, and *Wahlenbergia* sp. (Jones 1997, 2021; CANB 2024; Miles 2024; NSW Government 2024a; RBGDT 2024).
6. *Prasophyllum canaliculatum* typically flowers in mid-late December to January (Jones 1997; Miles 2024). However, flowering has been observed from late November through to early March when suitable environmental conditions are present (Miles 2024; R. Armstrong *in litt.* December 2024). Small weevils (Curculionidae) are a known pollinator of this species (Jones 1997). Outside the flowering season, all *Prasophyllum canaliculatum* individuals persist only as underground root tubers and are not visible aboveground. It is suspected that a greater proportion of *P. canaliculatum* individuals will remain dormant during the flowering season in years with dry or wet extremes in environmental conditions (e.g., waterlogging, drought), or when there is a high level of competition from dense growth of grasses and sedges (Miles 2017, 2019, 2024).
7. Because *Prasophyllum canaliculatum* seeds are only released at a maximum of 0.5 m high, many of them are expected to settle close to the parent plant (Murren and Ellison 1998; Arditti and Ghani 2000). However, given the large numbers produced, it is reasonable to assume that some seeds are dispersed over larger distances by wind, water, and animals (Arditti and Ghani 2000). Based on the life history of other orchid species (Coates *et al.* 2006; Shefferson *et al.* 2020), and the small population size of *P. canaliculatum*, it is inferred that relatively few seeds become mature adults. Assuming a seed is deposited in an area of suitable vegetation, soil, and climate, like other orchids, *Prasophyllum* species also require the presence of specific types of mycorrhizal fungi for germination and growth (Grant and Koch 2003; Freestone *et al.* 2023).
8. The lifespan of *Prasophyllum* species is considered to be indefinite because death occurs due to outside factors (e.g., unsuitable environment, herbivory) rather than inherent growth (Benson and McDougall 2005). *Prasophyllum canaliculatum* lacks the stolonoid roots that produce colonies of daughter tubers (Pridgeon and Chase

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1995; Clements and Jones 2019). For *P. canaliculatum* it is inferred that a single dropper is produced each year to form a replacement tuber (Pridgeon and Chase 1995), which is considered the same individual. The generation length for *P. canaliculatum* is uncertain. Generation lengths estimated for other *Prasophyllum* species range between 10–50 years (Commonwealth TSSC 2014; DELWP 2021; DELWP 2022; Commonwealth of Australia 2023).

9. Emergent *Prasophyllum canaliculatum* stems are likely to be consumed by fire. It is evident from the long (>50 years) absence of fire from several subpopulations of *P. canaliculatum* that this species does not flower exclusively within the first five years after fire, as occurs in some other *Prasophyllum* species (Ferrer-Paris and Keith 2022). However, like other *Prasophyllum* species it is expected that *P. canaliculatum* will respond with an increased proportion of individuals flowering in the year/s immediately following a fire provided appropriate environmental conditions are present (Orchid Society of Canberra *in litt.* June 2024).
10. *Prasophyllum canaliculatum* occurs in 3–6 threat-defined locations. The most serious plausible threat (depending on site and point in time) that could rapidly affect all individuals in a location is feral animal activity (e.g., herbivory, wallowing), vegetation clearing, or rapid invasion by exotic plants. The maximum for the range of locations includes the Kybeyan subpopulation, while the minimum captures the scenario where that subpopulation is extirpated, and one of the threats occurs in multiple sites at the same time (e.g., a season of widespread adverse effects from feral animal activities due to the attractiveness of moisture in the orchids' swamp habitat; McPherson 2004).
11. There is an inferred continuing decline in the habitat quality and number of mature individuals of *Prasophyllum canaliculatum* attributed to herbivory, digging and/or trampling by feral pigs, deer (*Cervus elaphus*, *Dama dama*, *Rusa unicolor*; Invasive Species Council 2011), and rabbits (*Oryctolagus cuniculus*) (Miles 2018; FOG 2023; G. Phillips *in litt.* May 2024; Miles 2024; Orchid Society of Canberra *in litt.* June 2024; R. Armstrong *in litt.* July 2024). Consecutive years of limited seed production caused by damage to flowering stems, together with mortality caused by exposure or consumption when tubers are unearthed, places subpopulations at increased risk of extinction (McPherson 2004). In addition, bare patches created by feral animals may facilitate the encroachment of exotic plants that compete with *P. canaliculatum* (McPherson 2004). 'Predation, habitat degradation, competition and disease transmission by feral pigs, *Sus scrofa* Linnaeus 1758', 'Herbivory and environmental degradation caused by feral deer', and 'Competition and grazing by the feral European rabbit, *Oryctolagus cuniculus* (L.)' are listed as Key Threatening Processes under the NSW *Biodiversity Conservation Act 2016*.
12. The spread of exotic plants is inferred to contribute to continuing decline in the habitat quality of *Prasophyllum canaliculatum* through competition for space and resources, which is likely to impair the species' emergence and recruitment (NSW NPWS 2022). The Kybeyan subpopulation was invaded by the exotic grass *Holcus lanatus* (Yorkshire fog) (Jones 1997), and the spread of *Rubus* spp. (blackberry) has been a cause of concern for the Nimmitabel subpopulation (NSW Government 2019). 'Invasion of native plant communities by exotic perennial grasses', and 'Loss and degradation of native plant and animal habitat by invasion

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of escaped garden plants, including aquatic plants' are listed as Key Threatening Processes under the NSW *Biodiversity Conservation Act 2016*.

13. *Prasophyllum canaliculatum* individuals in the Kybeyan subpopulation were located on a road verge, which was disturbed for road-widening (Jones 1997). It is inferred that the road works, adjacent land clearing (for farmland) and set-stock grazing have contributed to a reduction in the number of mature individuals, habitat area, and habitat quality for *P. canaliculatum*. Moreover, there is an ongoing risk of adverse effects on this subpopulation (if still extant) from road grading (Snowy Monaro Regional Council 2024). 'Clearing of native vegetation' is listed as a Key Threatening Process under the NSW *Biodiversity Conservation Act 2016*.
14. *Prasophyllum canaliculatum* D.L.Jones is not eligible to be listed as a Critically Endangered species.
15. *Prasophyllum canaliculatum* D.L.Jones is eligible to be listed as an Endangered species as, in the opinion of the NSW Threatened Species Scientific Committee, it is facing a very high risk of extinction in Australia in the near future as determined in accordance with the following criteria as prescribed by the *Biodiversity Conservation Regulation 2017*:

## Assessment against *Biodiversity Conservation Regulation 2017* criteria

The Clauses used for assessment are listed below for reference.

**Overall Assessment Outcome:** *Prasophyllum canaliculatum* was found to be Endangered under Clause 4.3(b)(d)(e i,iii)

### Clause 4.2 – Reduction in population size of species (Equivalent to IUCN criterion A)

**Assessment Outcome: Data Deficient.**

| <b>(1) - The species has undergone or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the taxon:</b> |     |   |   |
|--|-----|---|---|
|  | (a) | for critically endangered species   | a very large reduction in population size, or |
|  | (b) | for endangered species  | a large reduction in population size, or      |
|  | (c) | for vulnerable species  | a moderate reduction in population size.      |
| <b>(2) - The determination of that criteria is to be based on any of the following:</b>  |     |   |   |
|  | (a) | direct observation,   |   |
|  | (b) | an index of abundance appropriate to the taxon,   |   |
|  | (c) | a decline in the geographic distribution or habitat quality,                                    |   |
|  | (d) | the actual or potential levels of exploitation of the species,                                  |   |
|  | (e) | the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites. |   |

### Clause 4.3 – Restricted geographic distribution of species and other conditions (Equivalent to IUCN criterion B)

**Assessment Outcome: Endangered under Clause 4.3(b)(d)(e i,iii)**

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|  |   |   |
|--|---|---|
| <b>The geographic distribution of the species is:</b>      |   |   |
| (a)  | for critically endangered species   | very highly restricted, or  |
| (b)  | for endangered species  | highly restricted, or   |
| (c)  | for vulnerable species  | moderately restricted.  |
| <b>and at least 2 of the following 3 conditions apply:</b> |   |   |
| (d)  | the population or habitat of the species is severely fragmented or nearly all the mature individuals of the species occur within a small number of locations, |   |
| (e)  | there is a projected or continuing decline in any of the following:   |   |
|  | (i)   | an index of abundance appropriate to the taxon,                                       |
|  | (ii)  | the geographic distribution of the species,   |
|  | (iii)   | habitat area, extent or quality,  |
|  | (iv)  | the number of locations in which the species occurs or of populations of the species. |
| (f)  | extreme fluctuations occur in any of the following:   |   |
|  | (i)   | an index of abundance appropriate to the taxon,                                       |
|  | (ii)  | the geographic distribution of the species,   |
|  | (iii)   | the number of locations in which the species occur or of populations of the species.  |

### Clause 4.4 – Low numbers of mature individuals of species and other conditions

(Equivalent to IUCN criterion Clause C)

Assessment Outcome: Vulnerable under Clause 4.4(c)(e i,ii A(III))

|  |   |   |
|--|---|---|
| <b>The estimated total number of mature individuals of the species is:</b> |   |   |
| (a)  | for critically endangered species   | very low, or  |
| (b)  | for endangered species  | low, or   |
| (c)  | for vulnerable species  | moderately low.   |
| <b>and either of the following 2 conditions apply:</b>                     |   |   |
| (d)  | a continuing decline in the number of mature individuals that is (according to an index of abundance appropriate to the species): |   |
|  | (i)   | for critically endangered species very large, or  |
|  | (ii)  | for endangered species large, or  |
|  | (iii)   | for vulnerable species moderate,  |
| (e)  | both of the following apply:  |   |
|  | (i)   | a continuing decline in the number of mature individuals (according to an index of abundance appropriate to the species), and |
|  | (ii)  | at least one of the following applies:  |
|  | (A)   | the number of individuals in each population of the species is:   |
|  |   | (I) for critically endangered species extremely low, or   |
|  |   | (II) for endangered species very low, or  |
|  |   | (III) for vulnerable species low,   |
|  | (B)   | all or nearly all mature individuals of the species occur within one population,  |
|  | (C)   | extreme fluctuations occur in an index of abundance appropriate to the species.   |

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## Clause 4.5 – Low total numbers of mature individuals of species (Equivalent to IUCN criterion D)

**Assessment Outcome: Vulnerable under Clause 4.5(c)**

| The total number of mature individuals of the species is: |     |                                   |                   |
|---|-----|-----------------------------------|-------------------|
|   | (a) | for critically endangered species | extremely low, or |
|   | (b) | for endangered species            | very low, or      |
|   | (c) | for vulnerable species            | low.              |

## Clause 4.6 – Quantitative analysis of extinction probability (Equivalent to IUCN criterion E)

**Assessment Outcome: Data Deficient.**

| The probability of extinction of the species is estimated to be: |     |                                   |                    |
|--|-----|-----------------------------------|--------------------|
|  | (a) | for critically endangered species | extremely high, or |
|  | (b) | for endangered species            | very high, or      |
|  | (c) | for vulnerable species            | high.              |

## Clause 4.7 – Very highly restricted geographic distribution of species– vulnerable species

**(Equivalent to IUCN criterion D2)**

**Assessment Outcome: Not met.**

|                         |  |
|-------------------------|--|
| For vulnerable species, | the geographic distribution of the species or the number of locations of the species is very highly restricted such that the species is prone to the effects of human activities or stochastic events within a very short time period. |
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Professor Caroline Gross  
Chairperson  
NSW Threatened Species Scientific Committee

### Supporting Documentation:

Smith KJ (2024) Conservation Assessment of *Prasophyllum canaliculatum* D.L.Jones (Orchidaceae). NSW Threatened Species Scientific Committee.



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