

NSW SCIENTIFIC COMMITTEE

Final Determination

The Scientific Committee, established by the *Threatened Species Conservation Act 1995* (the Act), has made a Final Determination to list the terrestrial orchid *Pterostylis foliata* Hook.f. as a VULNERABLE SPECIES in Part 1 of Schedule 2 of the Act. Listing of Vulnerable species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Pterostylis foliata* Hook.f. (family Orchidaceae) is described as: “Terrestrial herb. Leaves 3–6, scattered on the basal part of the stem, oblong to ovate or elliptic, 2–5 cm long, 8–16 mm wide, margins crisped or wavy; sessile. Scape to 30 cm high; stem smooth. Flower c. 2 cm long, dark green and white with brown in the galea, erect. Apex of galea obliquely erect, flat or slightly decurved. Lateral sepals tightly embracing the galea; sinus broadly to deeply V-shaped when viewed from the front, protruding in a shallow curve when viewed from the side; free points linear-tapered, c. 15 mm long, erect, divergent. Petals narrow, subacute. Labellum oblong, 9–12 mm long, c. 3 mm wide, brown, obtuse, distal third protruding from the sinus in the set position.” (PlantNET 2015).
2. There is the possibility that more than one species are included under the name *Pterostylis foliata* as several forms are easily recognised (Bishop 2000). Populations attributed to this species do not form a monophyletic group in the molecular phylogeny presented by Clements *et al.* (2011). However, this study was based on a limited number of samples, none of which was from New South Wales (NSW).
3. *Pterostylis foliata* is found in NSW, Australian Capital Territory (ACT), Victoria, South Australia, Tasmania and New Zealand (type location). In NSW the species occurs mainly in the Southern Tablelands south from Batlow.
4. In NSW, *Pterostylis foliata* grows in eucalypt forest amongst an understorey of shrubs, ferns and grasses. It grows on loam or clay loam soils found on sheltered sloping to steep ground and populations may be found in localised open seepage areas. Flowering occurs from August to January (PlantNET 2015; Jones 2006).
5. The number of individuals of *Pterostylis foliata* in NSW is estimated to be low. It is known from 14 populations in the Southern Tablelands plus a single record from the South Western Slopes. Herbarium records describe *P. foliata* variously as “locally frequent”, “uncommon” and “rare”. Populations of this species differ in size with numbers of individuals ranging from a single plant to 20–30 plants (P. Branwhite *in litt.* August 2005, July 2007; D. Binns *in litt.* November 2005). The populations found in Kosciuszko National Park are estimated to total less than 200 plants (P. Branwhite *in litt.* August 2005). Taken together, the total population of *P. foliata* in NSW is estimated to be fewer than 300–350 extant plants. Estimates of total population size can be difficult for ephemeral orchids because they are only observable at certain times of the year and often only flower under the right environmental conditions. In addition, the maturity of an individual plant can only be assessed when it is flowering.
6. The extent of occurrence for *Pterostylis foliata* is approximately 7,660 km² based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2014). The polygon was created by using all records of occurrence in NSW, the ACT and extending it to the border of Victoria. The area of occupancy (AOO), based on the 15 confirmed populations of *P. foliata*, is estimated to be 88 km² based on 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2014).

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7. Based on herbarium records, *Pterostylis foliata* has been found in Kosciuszko National Park and Tidbinbilla Nature Reserve in the ACT. It has also been recorded in Maragle (D. Binns *in litt.* December 2005), Carabost and Bago State Forests and Brandy Mary's State Forest Lease (P. Branwhite *in litt.* August 2005, July 2007). The population found in the Carabost State Forest was reportedly destroyed (P. Branwhite *in litt.* August 2005). Other threats are feral animals, notably horses and pigs causing damage in open understorey areas and human recreational activities (P. Branwhite *in litt.* August 2005). One population of *P. foliata* in Brandy Mary's State Forest Lease has reportedly been destroyed by feral pig activity (P. Branwhite *in litt.* April 2015). Post-disturbance invasion of weeds such as Blackberries and exotic grasses pose an on-going threat as do wildfires and changed fire regimes which can have a considerable impact on fire-sensitive species such as *P. foliata*. Given the high elevation of localities of a number of populations of *P. foliata*, it is possible that climate change may also have an adverse effect on this species. 'Anthropogenic climate change', 'Clearing of native vegetation', 'Invasion of native plant communities by exotic perennial grasses' and 'Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa* Linnaeus 1758' are listed as Key Threatening Processes under the Act.
8. *Pterostylis foliata* Hook.f. is not eligible to be listed as an Endangered or Critically Endangered species.
9. *Pterostylis foliata* Hook.f. is eligible to be listed as a Vulnerable species as, in the opinion of the Scientific Committee, it is facing a high risk of extinction in New South Wales in the medium-term future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation 2010*:

Clause 9 Low numbers of mature individuals of species

The total number of mature individuals of the species is observed, estimated or inferred to be:
(c) low.

Dr Mark Eldridge
Chairperson
Scientific Committee

Exhibition period: 16/12/16 – 10/02/17

Proposed Gazettal date: 16/12/16

References:

Bishop T (2000) 'Field guide to orchids on New South Wales and Victoria (2nd edn).' (UNSW Press: Sydney)

Clements MA, Otero JT, Miller JT (2011) Phylogenetic relationships in Pterostylidinae (Cranichideae: Orchidaceae): combined evidence from nuclear ribosomal and plastid DNA sequences. *Australian Journal of Botany* **59**, 99–117.

IUCN Standards and Petitions Subcommittee (2014) Guidelines for Using the IUCN Red List Categories and Criteria. Version 11. Prepared by the Standards and Petitions Subcommittee.
<http://www.iucnredlist.org/documents/RedListGuidelines.pdf>

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Jones DL (2006) 'A complete guide to native orchids of Australia including the island territories.' (Reed New Holland: Sydney)

PlantNET (The NSW Plant Information Network System) (2015) Royal Botanic Gardens and Domain Trust, Sydney

<http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Pterostylis~foliata>

(accessed 9 February 2015)