# 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 *Thelymitra alpicola* Jeanes 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. *Thelymitra alpicola* Jeanes (family Orchidaceae) is described by Jeanes (2012) as "Glabrous terrestrial herb. Tubers ovoid, 1–3 cm long, 5–13 mm wide, fleshy. Leaf linear to linear-lanceolate, 6–25 cm long, 4–13 mm wide, erect, canaliculate to conduplicate, fleshy to leathery, dark green with purplish base, ribbed abaxially, sheathing at base, apex acute. Scape 15–50 cm tall, 1–3.7 mm diam., slender to somewhat stout, straw-coloured to purplish. Sterile bracts usually 2, rarely 1 or 3, linear-lanceolate, 1.5–8.5 cm long, 3–12 mm wide, closely sheathing, acute to acuminate, green and purplish. Fertile bracts ovate-acuminate to obovate-acuminate, 6.5–25 mm long, 3–10 mm wide, sheathing the pedicel, green or purplish. Pedicels 3–18 mm long, slender. Ovary narrow-obovoid, 5–13 mm long, 1.5–4 mm wide. Flowers 1–6, (15–)18–30(–34) mm across, deep purplish blue with darker longitudinal striations, opening freely in warm weather. Perianth segments (7–)8–14(–16) mm long, 3–8 mm wide, concave, shortly apiculate; dorsal sepal ovate-lanceolate, acute to obtuse; lateral sepals ovate-lanceolate, asymmetric, acute to acuminate; petals ovate to ovate-lanceolate, acute to obtuse; labellum obovate to oblanceolate, often slightly broader than petals, acute to obtuse. Column erect from the end of ovary, 4.5–6.5 mm long, 2.5–3.7 mm wide, broadly winged, purplish; post-anther lobe slightly hooding the anther, 1–2.5 mm long, 1.5–2.5 mm wide, reddish brown to almost black, often bilobed, margin irregular, sometimes with a central tooth, somewhat sinuate, dorsal surface rugulose, apex yellow or pinkish; auxiliary lobes absent; lateral lobes parallel or weakly incurved at the apices, 1–2.2 mm long, 0.3–1.1 mm wide, fleshy, obliquely erect or porrect, pink or brownish at base, faces smooth, margins often shallowly and irregularly erose, apex cream to yellow. Anther inserted towards apex of column, ovoid, 2.3–3.7 mm long, 1.5–2.5 mm wide, mostly green, connective produced into an entire or emarginate beak 0.5–1.3 mm long, rugulose; pollinarium 1.5–2.7 mm long; viscidium more or less circular, 0.3–0.5 mm diam.; pollinia white, friable, mealy. Stigma situated at base of column, ovate-quadrate, 1.5–2.5 mm long, 1.7–2.5 mm wide, concave, margins irregular. Capsules obovoid, 10–18 mm long, 4–8 mm wide, erect, ribbed."

2. *Thelymitra alpicola* is a recently described species that is distinguished from the closely related *T. erosa* by flower colour, the shape of the lateral lobes of the column and preferred habitat (Jeanes 2012). Prior to formal recognition it was variously referred to as *T. alpicola* (ined.) by Jones (2006); *Thelymitra* sp. aff. *erosa* (Eastern Highlands) by Ross and Walsh (2003); *Thelymitra* aff. *erosa*, *T. erosa* subsp. *alpicola* J.Jeanes & M.A.Clem. ms. and *T. alpicola* Jeanes ined. (B. Makinson *in litt*. May 2007).

3. *Thelymitra alpicola* is distributed in south–eastern New South Wales and north–eastern Victoria. The northernmost populations are in the upper Blue Mountains. The remainder of the New South Wales distribution is from the Snowy Mountains extending north–west to Bago State Forest and to the eastern part of the Great Dividing Range south from Braidwood.

4. *Thelymitra alpicola* grows in open sunny positions on dark sandy, clayey or peaty loam at altitudes of 300–1700 m a.s.l. in subalpine and montane heathlands in moist to wet sites around the edges of sphagnum bogs, beside streams or in soaks and swamps (Jones 2006, Jeanes 2012). All terrestrial orchids require mycorrhizal associations for germination and survival and it has been suggested that the particular fungi associated with this species favour moist habitats and are therefore likely to be responsible for the observed distribution patterns (M. Clements pers. comm. May 2014). One population has been recorded to occur in an area disturbed by roadworks that has changed drainage patterns and created a suitably damp area (M. Clements pers. comm. May 2014). Flowering occurs in October to January with earlier flowering in northern locations (Jones 2006). The species is reported to be both facultatively self-pollinating (Jeanes 2012) and insect pollinated (Jones 2006) and has the ability to form colonies through vegetative reproduction (Jeanes 2012). Little more is known of the biology of this particular species, including population structure, generation length and dispersal.

5. The number of individuals of *Thelymitra alpicola* is estimated to be low. There are 15 putative records of *T. alpicola* representing 14 potential populations in New South Wales. Populations are estimated to range in size from 20–30 (B. Makinson *in litt*. May 2007) to 60 (M. Clements pers. comm. May 2014). Using these numbers, the upper limit of the size of the total population in NSW is estimated to be 840 individuals and the lower limit is 280–420 individuals. However, of the putative records, only nine have been confirmed to be *T. alpicola* (Jeanes 2012). Confirmed records represent nine potential populations suggesting a more realistic total population size of 180–900 individuals. The species is reported to be widespread and sometimes locally common (Jeanes 2012). 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.

6. The extent of occurrence for *Thelymitra alpicola* is approximately 44,600 $km^2$ 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 and extending it to the border of Victoria. The area of occupancy (AOO), based on the nine confirmed populations of *T. alpicola*, is estimated to be 52 $km^2$ based on 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2014). The geographic distribution of *T. alpicola* is therefore considered to be highly restricted.

7. *Thelymitra alpicola* occurs in Kosciuszko National Park, Kanangra-Boyd National Park, Badja Swamps Nature Reserve and Bago State Forest. Two putative populations in the Bago State Forest may be threatened by loss of habitat due to forest harvesting and site disturbance and associated activity such as road maintenance and production of dust from unsealed roads (B. Makinson *in litt*. May 2007). Additional threats to these and four other confirmed populations found outside of conservation areas may include grazing and trampling by cattle, pigs and wild horses, weed invasion and altered hydrology (B. Makinson *in litt*. May 2007). As *T. alpicola* prefers open sunny areas it may be threatened by being overgrown by other vegetation (M. Clements pers. comm. May 2014). 'Clearing of native vegetation' 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. *Thelymitra alpicola* Jeanes is not eligible to be listed as an Endangered or Critically Endangered species.

9. *Thelymitra alpicola* Jeanes 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: 02/10/15 – 27/11/15 Proposed Gazettal date: 02/10/15

**References:**

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.

Jeanes JA (2012) Two new rare species in the *Thelymitra venosa* complex (Orchidaceae) from south-eastern mainland Australia. *Muelleria* **30**, 8–22.

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

Ross JH, Walsh NG (2003) 'A census of the vascular plants of Victoria (7th edn).' (Royal Botanic Gardens: Melbourne)