

Approved Conservation Advice for *Prasophyllum bagoense* (Bago leek-orchid)

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

Description

Prasophyllum bagoense (Bago leek-orchid), Family Orchidaceae, is a slender, tuberous, terrestrial herb growing singly or in loose groups, with an erect leaf 20–35 cm long, and 15–30 pale tawny-green, sometimes pink, scented flowers in a moderately dense spike. The species is easily identified by its strongly twisted and recurved dorsal sepal, upswept petals and S-shaped labellum (Jones, 2000, 2006).

Conservation Status

The Bago leek-orchid is listed as critically endangered. This species is eligible for listing as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as it has a very restricted geographic distribution with both the estimated extent of occurrence and area of occupancy being less than 1 km². The species' geographic distribution is precarious for its survival due to a variety of current threats. The total number of plants is very low and is likely to continue to decline (TSSC, 2011).

The species is also listed as endangered under the New South Wales *Threatened Species Conservation Act 1995*.

Distribution and Habitat

The Bago leek-orchid is known from a single population at McPhersons Plain, east of Tumbarumba in the Southern Tablelands of New South Wales. Both its extent of occurrence and area of occupancy are less than 1 km² (J.Kelton, pers. comm., 2004, 2009). Annual surveys have been conducted since 1999 (P.Branwhite, pers. comm., 2009). During the flowering seasons of 2000 and 2003 between 20–80 mature individuals were found (NSW SC, 2004). In 2008, only six mature plants were found (P.Branwhite, pers. comm., 2009), whilst in 2010, after good seasonal rains, 30–40 plants were found (P.Branwhite, pers. comm., 2011). These surveys have shown a decline in the overall number of mature individuals, mainly due to drought and changes in hydrology caused by construction of farm dams and grazing. Potential threats of logging and land clearing may also cause changes in hydrology (P.Branwhite, pers. comm., 2009).

The species' habitat is a sub-alpine treeless plain at an elevation of approximately 1200 m that comprises at least four plant communities: Fen I; Aquatic sedgeland – alpine bog community; Tall wet heathland (which has been severely depleted in New South Wales and Victoria by historic disturbances such as cattle grazing); and McPhersons Plain open heathland which is considered a distinct community currently only recorded at McPhersons Plain (McDougall, unpublished report, 2004). The species also extends into adjacent eucalypt woodland (P.Branwhite, pers. comm., 2009) and grows in moist to wet shallow clay loam (Jones, 2000, 2006).

The Bago leek-orchid flowers from December to January and fruits from December to March (season dependent). Plants are insect-pollinated, probably by a wasp species. They are not known to reproduce vegetatively, but are reliant on seed-set and germination for recruitment of new plants. There are no data on the effects of fire on this species, although it does flower freely without fire stimulation (P.Branwhite, pers. comm., 2009).

This species occurs within the Australian Alps Bioregion and the Murrumbidgee Natural Resource Management Region.

The distribution of this species is associated with the *Alpine Bog Communities* EPBC Act-listed threatened ecological community.

Threats

The main identified threats to the Bago leek-orchid are changes to local hydrology, grazing by domestic stock, soil disturbance by feral pigs and horses (NSW SC, 2004; P.Branwhite, pers. comm., 2009), four-wheel-drive, trail bike and horse trail riding activities, plant removal and trampling, weed invasion by Yorkshire fog (*Holcus lanatus*) and inappropriate land management (P.Branwhite, pers. comm., 2009).

The main potential threats to the Bago leek-orchid include plant collection, and further weed invasion (P.Branwhite, pers. comm., 2009).

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Design and implement a monitoring program.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful establishment, including mycorrhizal association trials.
- Investigate the potential and efficacy of DNA-based or other approaches for the identification of individual plants to provide a means for detecting and prosecuting illegal collection from the wild (Palsboll et al., 2006).
- Identify optimal fire regimes for regeneration (vegetative regrowth and/or seed germination), and response to other prevailing fire regimes.

Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of the Bago leek-orchid.

Habitat Loss, Disturbance and Modification

- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Ensure there is no disturbance in areas where the Bago leek-orchid occurs, excluding necessary actions to manage the conservation of the species.
- Control access routes to suitably constrain public access to known sites on public land, including four-wheel-drive, horse trail riding, trail bike riding activities.
- Suitably control and manage access on private land and other land tenure.
- Minimise adverse impacts from land use at known sites.
- Manage any changes to hydrology that may result in changes to water table levels and/or increased run-off, sedimentation or pollution.
- Manage any disruptions to water flows.
- Protect populations through the development and effective implementation of conservation agreements and/or covenants.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate and/or secure inclusion in reserve tenure if possible.
- Manage any other known, potential or emerging threats such as grazing, soil disturbance, illegal collecting, weed invasion and fire.

Invasive Weeds

- Develop and implement a management plan for the control of Yorkshire fog (*Holcus lanatus*) in the region.
- Identify and remove weeds in the local area that could become a threat to the Bago leek-orchid, using appropriate methods.
- Manage the site to prevent introduction of invasive weeds that could become a threat to the Bago leek-orchid, using appropriate methods.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on the Bago leek-orchid.

Trampling, Browsing or Grazing

- Develop and implement a management plan for the control and eradication of feral horses and pigs in the region.
- If livestock grazing occurs in the area, ensure land owners/managers use an appropriate management regime and density that does not detrimentally affect this species to allow regeneration from seedlings.
- Where appropriate, manage total grazing pressure at the site through exclusion fencing or other barriers on private land, leased crown land and state forest.

Fire

- Develop and implement an appropriate fire management regime for the population and for the habitat of the Bago leek-orchid.
- Where appropriate provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plan/s, risk register and/or operation maps.
- Ensure no firebreak slashing occurs in the habitat during wet conditions or while the species is flowering or in fruit.

Conservation Information

- Raise awareness of the Bago leek-orchid within the local community. Provide fact sheets/information brochures in conjunction with known industry or community interest groups such as:
 - Forests NSW
 - Conservation groups within the Australasian Native Orchid Society
- Engage with private landholders and land managers responsible for the land on which populations occur and encourage these key stakeholders to contribute to the implementation of conservation management actions.

Enable recovery of additional sites and/or populations

- Continue implementing a cryogenic seed and mycorrhizal fungi collection and storage program.
- Investigate options for linking, enhancing or establishing additional populations.
- Implement national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.

This list does not necessarily encompass all actions that may be of benefit to the Bago leek-orchid, but highlights those that are considered to be of highest priority at the time of preparing the Approved Conservation Advice.

Existing Plans/Management Prescriptions that are Relevant to the Species

There are no existing plans/management prescriptions for the Bago leek-orchid.

References cited in the Conservation Advice

- Branwhite P (2009). Personal communication, in litt. Private individual.
- Branwhite P (2011). Personal communication, via telephone. Private individual.
- Jones D (2000). Ten new species of *Prasophyllum* R.Br (Orchidaceae) from south-eastern Australia. *The Orchadian* 13: 149–173.
- Jones D (2006). A complete guide to native orchids of Australia: including the island territories. Reed New Holland, Australia.
- Kelton J (2004). Personal communication, in litt. Private individual.
- Kelton J (2009). Personal communication, in litt. Private individual.
- McDougall K (2004). Botanical significance of McPhersons Plain (unpublished report). New South Wales Department of Environment and Conservation.
- New South Wales Scientific Committee (NSW SC) (2004). *Prasophyllum bagoensis* (an orchid) – endangered species listing – NSW Scientific Committee – final determination. <http://www.environment.nsw.gov.au/determinations/PrasophyllumBagoensisEndSpListing.htm>
- Palsboll PJ, Berube M, Skaug HJ and Raymakers C (2006). DNA registers of legally obtained wildlife and derived products as means to identify illegal takes. *Conservation Biology*, vol. 20: 1284–1293.
- Threatened Species Scientific Committee (TSSC) 2011. Listing advice for *Prasophyllum bagoense* (Bago leek-orchid).
- Vallee L, Hogbin T, Monks L, Makinson B, Matthes M and Rossetto M (2004). Guidelines for the translocation of threatened plants in Australia – second edition, Australian Network for Plant Conservation, Canberra.