Advice to the Minister for Sustainability, Environment, Water, Population and Communities from the Threatened Species Scientific Committee (the Committee) on Amendment to the list of Threatened Species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

1. Name

Prasophyllum bagoense

The species is commonly known as the Bago leek-orchid. It is in the Family Orchidaceae.

2. Reason for Conservation Assessment by the Committee

This advice follows assessment of information provided by a public nomination to list the Bago leek-orchid. The nominator suggested listing in the critically endangered category of the list.

The Committee provides the following assessment of the appropriateness of the species' inclusion in the EPBC Act list of threatened species.

This is the Committee's first consideration of the species under the EPBC Act.

3. Summary of Conclusion

The Committee judges that the species has been demonstrated to have met sufficient elements of Criteria 2 and 3 to make it eligible for listing as **critically endangered**.

The Committee judges that the species has been demonstrated to have met sufficient elements of Criterion 4 to make it eligible for listing as **endangered**.

The highest category for which the species is eligible to be listed is **critically endangered**.

4. Taxonomy

The species is conventionally accepted as *Prasophyllum bagoense* D.L.Jones (CHAH 2011).

5. Description

The Bago leek-orchid 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, p. 204).

6. National Context

The Bago leek-orchid is endemic to New South Wales, and is currently known from a single population at McPhersons Plain, east of Tumbarumba in the Southern Tablelands. It was recorded in the 1970s at a site approximately 5 km away (A.Logan, pers. comm., 2005), but no plants were found during surveys in 2003, 2004 and 2005 and this subpopulation is now thought be to extinct (P.Branwhite, pers. comm., 2009). Despite intensive broader targeted surveys of similar habitat within a 100 km radius it has not been located at any other site. The majority of plants occur on the Brandy Marys Bago State Forest Crown Leases with a few plants on adjoining private property and the adjacent Bago State Forest (P.Branwhite, pers. comm., 2009).

The Bago leek-orchid is listed as endangered under the New South Wales *Threatened Species Conservation Act 1995*.

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

7. Relevant Biology/Ecology

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, p. 204).

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. They 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).

8. Description of Threats

Current identified threats to the Bago leek-orchid include 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).

Potential threats include plant collection, and further weed invasion (P.Branwhite, pers. comm., 2009).

Changes in hydrology due to the construction of large farm dams on private properties since 1999 have reduced the flow of water into the wetland habitat, drying out the wetland and grasslands. Changes in local hydrology are also due to grazing by domestic stock and feral horses, turning creeks into deeper channels, allowing creeks to run faster and drain quickly which in turn dries out the associated wetlands. Logging of the adjacent Bago State Forest and additional clearing on adjacent private properties could further adversely affect the hydrology of the site. Because of the changed hydrology the species' habitat has been observed to dry out before the plants have completed their flowering and seed production period, causing seed capsules to wilt, and a decline in flowering plants as a result of drier than usual conditions (P.Branwhite, pers.comm., 2009).

Damage to the species' habitat has been caused by grazing, trampling, and pugging by cattle and horses. The local extinction of the species at the site from where it was historically recorded is considered to be from the effects of grazing by cattle and feral horses (P.Branwhite, pers.comm., 2009).

The species' habitat is also subject to damage caused by the rooting of feral pigs, compaction of the soil by off-road four-wheel-drive, trail bike and horse trail riding activities, and plant removal and trampling of the orchid's habitat by orchid enthusiasts (P.Branwhite, pers.comm., 2009).

The inappropriate management of habitat for this species on private property abutting Brandy Marys Crown Leases has resulted in increased trail bike riding activities and grazing by domestic stock including horses in the species' area of occupancy, and heavy vehicle

damage from firebreak slashing and the slashing of plants during the species' flowering period, despite a Voluntary Conservation Agreement on the property. Clearing of a fence line on this property has further damaged the species' habitat. The small section of the adjoining Bago State Forest containing the species has also been subject to grazing over recent years (P.Branwhite, pers.comm. 2009).

Illegal collection of plants could become a major threat due to the species' rarity and small population size (P.Branwhite, pers.comm. 2009).

Invasive weeds such as Yorkshire fog (*Holcus lanatus*) are impacting on the species by over-crowding, displacement and competition for water and nutrients. Without any control, invasion by other weeds is a potential threat (P.Branwhite, pers.comm., 2009).

9. Public Consultation

The nomination used in this assessment was made available for public exhibition and comment for 30 business days. No comments were received.

10. How judged by the Committee in relation to the criteria of the EPBC Act and Regulations

The Committee judges that the species is **eligible** for listing as **critically endangered** under the EPBC Act. The assessment against the criteria is as follows:

Criterion 1: It has undergone, is suspected to have undergone or is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers

A single population of the Bago leek-orchid was first discovered in 1999 (P.Branwhite, pers. comm., 2009). Its extent of occurrence and area of occupancy are both less than 1 km^2 (J.Kelton, pers. comm., 2004, 2009). The number of plants fluctuates depending on seasonal conditions (NSW SC 2004; P.Branwhite, pers. comm., 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 dam construction and grazing. Potential threats of logging and land clearing may also cause changes in hydrology (P.Branwhite, pers. comm., 2009).

The Committee judges that the species is suspected to have undergone a reduction in numbers, however there are insufficient data available to judge whether the reduction is very severe, severe, substantial, or not substantial. Therefore, the species has not been demonstrated to have met each of the required elements of Criterion 1, and is **ineligible** for listing in any category under this criterion.

Criterion 2: Its geographic distribution is precarious for the survival of the species and is very restricted, restricted or limited

The Bago leek-orchid occurs at one location at McPhersons Plain, with both its estimated extent of occurrence and area of occupancy less than 1 km^2. Annual surveys since 1999 indicate that the number of plants fluctuates depending on seasonal conditions. However, these surveys have shown a decline in the overall number of mature individuals over the last five years, mainly due to drought and changes in hydrology caused by dam construction and grazing. Other threats include trampling and pugging of soil by domestic and feral animals, soil compaction by four wheel driving, trail bike riding and horse trail riding activities, and trampling and plant removal by orchid enthusiasts (P.Branwhite, pers.comm., 2009).

The Committee considers that the species has a very restricted geographic distribution, which is precarious for the survival of the species due to the threats described above. Therefore, the species has been demonstrated to have met sufficient elements of Criterion 2 to make it **eligible** for listing as **critically endangered**.

Criterion 3: The estimated total number of mature individuals is limited to a particular degree; and either

(a) evidence suggests that the number will continue to decline at a particular rate; or

(b) the number is likely to continue to decline and its geographic distribution is precarious for its survival

Annual surveys since 1999 have found an estimated maximum number of 80 mature individuals. There has been an observed decline in numbers of mature plants over the last five years mainly due to drought and changes in hydrology caused by dam construction and grazing.

There are insufficient data to indicate that the number of plants will continue to decline at a particular rate, however the number of plants is likely to continue to decline and its geographic distribution is precarious for its survival due to a variety of current threats. Therefore the species has been demonstrated to have met the relevant elements of Criterion 3 to make it **eligible** for listing as **critically endangered**.

Criterion 4: The estimated total number of mature individuals is extremely low, very low or low

The species' estimated total number of mature individuals of 80 is very low. Therefore, the species has been demonstrated to have met the relevant element of Criterion 4 to make it **eligible** for listing as **endangered**.

Criterion 5: Probability of extinction in the wild that is at least

(a) 50% in the immediate future; or

(b) 20% in the near future; or

(c) 10% in the medium-term future

There are no data available to estimate a probability of extinction of the species in the wild over a relevant timeframe. Therefore, as the species has not been demonstrated to have met the required elements of Criterion 5, it is **ineligible** for listing in any category under this criterion.

11. Conclusion

Conservation Status

The Bago leek-orchid was nominated for inclusion in the list of threatened species referred to in section 178 of the EPBC Act. The nominator suggested listing in the critically endangered category of the list.

The species has a very restricted geographic distribution, which 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. Therefore, the species has been demonstrated to have met sufficient elements of Criteria 2 and 3 to make it **eligible** for listing as **critically endangered**.

The Committee accepts that the estimated maximum total number of mature individuals is 80, which is judged by the Committee to be very low. Therefore, the species has been demonstrated to have met sufficient elements of Criterion 4 to make it **eligible** for listing as **endangered**.

The highest category for which the species is eligible to be listed is **critically endangered**.

Recovery Plan

There should not be a recovery plan for the Bago leek-orchid as the approved conservation advice for the species provides sufficient direction to implement priority actions and mitigate against key threats.

12. Recommendations

(i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the **critically endangered** category:

Prasophyllum bagoense

(ii) The Committee recommends that there should not be a recovery plan for this species.

Threatened Species Scientific Committee
21 September 2011

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