

1 **Advice to the Minister for the Environment, Heritage and the Arts**
2 **from the Threatened Species Scientific Committee (the Committee)**
3 **on Amendment to the list of Threatened Species**
4 **under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)**
5

6 **1. Name**

7 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269)

8 The species is a leek orchid and has no common names.

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10 **2. Reason for Conservation Assessment by the Committee**

11 This advice follows assessment of information provided by a public nomination to list
12 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269). The nominator suggested listing in the
13 endangered category of the list. This is the Committee's first consideration of the species
14 under the EPBC Act.

15
16 **3. Summary of Conclusion**

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

19 The Committee judges that the species has been demonstrated to have met sufficient elements
20 of Criterion 3 to make it **eligible** for listing as **endangered**.

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

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

24
25 **4. Taxonomy**

26 The species is conventionally accepted as *Prasophyllum* sp. Wybong (C. Phelps ORG 5269)
27 (a leek orchid) (CHAH, 2007).

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29 **5. Description**

30 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is a terrestrial orchid that grows to
31 approximately 30 cm high. It has a single, tubular, fleshy, dull-green leaf and a single flower
32 spike with numerous fragrant flowers (Holzinger, pers. comm., 2006).

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34 **6. National Context**

35 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is endemic to New South Wales. It is
36 known from seven populations in eastern NSW near Ilford, Premer, Muswellbrook, Wybong,
37 Yeoval, Inverell and Tenterfield (Holzinger, pers. comm., 2006; Copeland, pers. comm.,
38 2009).

39 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) occurs within the Border Rivers–Gwydir,
40 Namoi, Hunter–Central Rivers and Central West Natural Resource Management Regions. The
41 species occurs within the Sydney Basin, New England Tablelands, Brigalow Belt South and
42 NSW South Western Slopes IBRA Bioregions.

43 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is not currently listed under any Australian
44 or State Government legislation.

45

46 **7. Relevant Biology/Ecology**

47 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is a perennial orchid, appearing as a single
48 leaf over winter and spring. The species flowers in spring and dies back to a tuber over
49 summer and autumn (Holzinger, pers. comm., 2006).

50 Leek orchids are generally found in shrubby and grassy habitats in dry to wet soil (Jones,
51 2006). *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is known to occur in open eucalypt
52 woodland and grassland (Holzinger, pers. comm., 2006; Copeland, pers. comm., 2009).

53 The Committee notes that orchids have complex and generally poorly understood
54 interrelationships with species-specific mycorrhizal fungi and insect pollinators. Native bees,
55 wasps and beetles are known to be effective pollinators of other *Prasophyllum* species, while
56 some species can also be self-pollinating (Jones et al., 1999). Leek orchids are not known to
57 reproduce vegetatively and recruitment is from seed.

58

59 **8. Description of Threats**

60 The main threats to *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) are habitat clearance,
61 weed invasion, vehicle traffic, inappropriate disturbance regimes, chemical drift from
62 agricultural properties, illegal collection, trampling by people and climate change. Climate
63 change is also likely to impact on the habitats where the species occurs.

64 Habitat clearance from mining activities and changes in land use are threats to the species,
65 with one population occurring in a proposed open-cut coal mine site.

66 Weed invasion, in particular by exotic grasses, is a current threat to all populations. Rhodes
67 grass (*Chloris gayana*) is present in one population near Muswellbrook and Coolatai grass
68 (*Hyparrhenia hirta*) is common in the area.

69 Physical damage from vehicles is a threat, both off road and adjacent to sealed roads
70 (Holzinger, pers. comm., 2006; Copeland, pers. comm., 2009).

71 Inappropriate disturbance, such as a change in the frequency or intensity of mowing and
72 slashing regimes is a current threat to this species. *Prasophyllum* species generally favour
73 some disturbance through their dormant period as it reduces competition from other species.
74 However, slashing at the wrong time of year can damage plants and prevent seed from being
75 produced. The plants near Yeoval were damaged as a result of slashing during the species'
76 flowering period (Copeland, pers. comm., 2009).

77 Populations in areas surrounded by agricultural land are potentially at risk from the indirect
78 impacts of chemical fertilisers, herbicides, pesticides and fungicides. These chemicals can be
79 carried by the wind or water and damage non-target species. Herbicides used for weed control
80 also present a threat to the species.

81 Orchids in the wild are potentially threatened by trampling and illegal collection by people,
82 including orchid enthusiasts.

83 Climate change is a potential threat as changes in the rainfall pattern may lead to the habitat
84 becoming unsuitable for the species and associated pollinators and mycorrhizal fungi.

85

86 **9. Public Consultation**

87 The nomination was made available for public exhibition and comment for 30 business days.
88 The Committee has had regard to all public comment that was relevant to the survival of the
89 species.

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

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

95

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

99 There are insufficient data to determine historic or current population trends for *Prasophyllum*
100 sp. Wybong (C. Phelps ORG 5269). The species is known from seven populations, with an
101 estimated total population size based on surveys in 2006 of 460 mature individuals
102 (Holzinger, pers. comm., 2006; Copeland, pers. comm., 2009). The total population size could
103 be larger as suitable habitat surrounding the population near Wybong has not been surveyed
104 (Holzinger, pers. comm., 2006, 2009).

105 During monitoring of the population near Muswellbrook from 1999 to 2005, fluctuations in
106 the number of individuals visible (ranging from zero to 10 plants) were observed. However,
107 during years when no individuals are visible above ground, some individuals are presumed to
108 exist as dormant tubers underground (Holzinger, pers. comm., 2006). Therefore, the smaller
109 number of individuals counted in some years may be a result of dormancy rather than
110 population decline.

111 The main threats to the species include weed invasion, vehicle traffic, inappropriate
112 disturbance regimes and habitat clearance. Chemical drift from agricultural properties, illegal
113 collection, trampling by people and climate change are considered potential threats.

114 Some individuals have sustained damage from vehicles and slashing while plants were in
115 flower. There are insufficient data, however, to determine whether this damage has resulted in
116 mortality and an associated reduction in numbers.

117 It is likely that habitat clearance will result in a reduction in numbers in the immediate future.
118 The population near Wybong occurs on the site of a proposed open-cut coal mine. This
119 population consists of at least 100 mature plants, but given the limited survey effort in this
120 area and the availability of suitable habitat, this population could be larger (Holzinger, pers.
121 comm., 2006, 2009). Planned construction on this site is likely to destroy this population. If
122 the current estimate of 100 individuals in the population is accurate, this will result in a 20 %
123 decline in the total population size of the species. The Committee judges that this does not
124 represent a substantial reduction in numbers for the purposes of Criterion 1. However, if the
125 Wybong population is substantially larger, then its loss will mean both a greater loss of
126 individuals and a proportionally larger loss in the number of individuals for the species. As
127 the population size is unknown, the Committee is unable to determine this figure.

128 Additional threats of weed invasion, damage from vehicle traffic and inappropriate
129 disturbance regimes are also likely to contribute to future decline in the species' numbers but
130 the rates are not known.

131 There are insufficient data available to judge whether the species has undergone or is
132 suspected to have undergone a reduction in numbers. Future reductions in numbers are likely
133 due to ongoing threats, however, based on current data, the Committee judges that the species
134 is not likely to undergo at least a substantial reduction in numbers in the future. Therefore, the
135 species has not been demonstrated to have met each of the required elements of Criterion 1,
136 and is **not eligible** for listing in any category under this criterion.

137

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

140 The extent of occurrence of *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is estimated to
141 be 48 000 km² (ERIN, 2009) and its area of occupancy is estimated to be 1.5 km² (Holzinger,
142 pers. comm., 2006, 2009; Copeland, pers. comm., 2009). The Committee considers this
143 geographic distribution to be very restricted. The species occurs in seven relatively small and
144 isolated populations surrounded by large areas of cleared land. The Committee considers this
145 distribution to be severely fragmented.

146 As discussed under Criterion 1, *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is likely to
147 undergo a reduction in numbers in the immediate future due to ongoing threats, particularly
148 habitat clearance.

149 The Committee considers that the species has a very restricted geographic distribution, which
150 is precarious for the survival of the species due to severe fragmentation and ongoing threats
151 which are likely to cause a future decline in numbers. Therefore, the species has been
152 demonstrated to have met the relevant elements of Criterion 2 to make it eligible for listing as
153 **critically endangered**.

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155 **Criterion 3: The estimated total number of mature individuals is limited to a**
156 **particular degree; and either**
157 **(a) evidence suggests that the number will continue to decline at a**
158 **particular rate; or**
159 **(b) the number is likely to continue to decline and its geographic**
160 **distribution is precarious for its survival**

161 The estimated total number of mature individuals is 460, with the two largest populations
162 containing approximately 100 and 300 individuals. The population of 100 plants near
163 Wybong could be larger as suitable habitat surrounding this population has not been surveyed.
164 The remaining five populations contain between 2 and 40 individuals each. The Committee
165 considers the total number of mature individuals to be low.

166 The seven populations of this species are separated by large areas of cleared land, making
167 cross pollination and genetic exchange highly unlikely. The second largest population is
168 under serious threat from habitat clearance from an open-cut mining operation, and five of the
169 other six populations contain few plants. As noted under Criterion 1, the destruction of the
170 population near Wybong would lead to a decline in numbers of at least 20 % in the future.
171 Therefore, it is likely that the impact of ongoing threats on the populations would contribute
172 to a continuing decline. For the purpose of this criterion, the Committee considers this to be a
173 high rate of decline.

174 As discussed under Criterion 2, the species' geographic distribution is considered precarious
175 for its survival due to severe fragmentation and ongoing threats which are likely to cause a
176 decline in numbers.

177 The Committee considers that the estimated total number of mature individuals of the species
178 is low and that the number is likely to decline at a high rate in the future. The Committee also
179 considers that the species' geographic distribution is precarious for its survival. Therefore, the
180 species has been demonstrated to have met the relevant elements of Criterion 3 to make it
181 **eligible** for listing as **endangered**.

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

185 The total number of mature individuals of *Prasophyllum* sp. Wybong (C. Phelps ORG 5269)
186 is 460. However, as outlined under Criteria 1 and 3, this number could be larger as suitable
187 habitat surrounding the population near Wybong has not been surveyed.

188 The Committee judges this number to be low. Therefore, the species has been demonstrated to
189 have met the relevant element of Criterion 4 to make it **eligible** for listing as **vulnerable**.

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

192 a) **50% in the immediate future; or**

193 b) **20% in the near future; or**

194 c) **10% in the medium-term future.**

195 There are insufficient data available to estimate a probability of extinction of the species in
196 the wild over a relevant timeframe. Therefore, as the species has not been demonstrated to
197 have met the required elements of Criterion 5, it is **not eligible** for listing in any category
198 under this criterion.

199

200 **11. CONCLUSION**

201 **Conservation Status**

202 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) was nominated for inclusion in the list of
203 threatened species referred to in section 178 of the EPBC Act. The nominator suggested
204 listing in the endangered category of the list.

205 The species occurs across seven isolated populations and is subject to a range of threats, some
206 of which are substantial and immediate and will impact on the second largest population.

207 The Committee accepts that the species' geographic distribution is very restricted and is
208 precarious for its survival due to severe fragmentation and the threat of habitat clearance.
209 Therefore, the species has been demonstrated to have met sufficient elements of Criterion 2 to
210 make it **eligible** for listing as **critically endangered**.

211 The Committee accepts that the estimated total number of mature individuals of 460 is low
212 and that the number is likely to decline at a high rate in the future. The Committee also
213 considers that the species' geographic distribution is precarious for its survival. Therefore, the
214 species has been demonstrated to have met sufficient elements of Criterion 3 to make it
215 **eligible** for listing as **endangered**.

216 The Committee accepts that the species' estimated total number of 460 plants is low.
217 Therefore, the species has been demonstrated to have met sufficient elements of Criterion 4 to
218 make it **eligible** for listing as **vulnerable**.

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

220

221 **Recovery Plan**

222 The Committee considers that there should not be a recovery plan for this species.

223 The approved conservation advice for the species provides sufficient direction to implement
224 priority actions and mitigate against key threats. A recovery plan is not considered to be
225 necessary at this time.

226

227 **12. Recommendations**

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

230 *Prasophyllum* sp. Wybong (C. Phelps ORG 5269)

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

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Associate Professor Robert J.S. Beeton

Chair

Threatened Species Scientific Committee

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240 **13. References cited in the advice**

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