

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. Scientific name (common name)**

7 *Prasophyllum atratum* (Three Hummock Leek-orchid)
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9 **2. Reason for Conservation Assessment by the Committee**

10 This advice follows assessment of information provided by a public nomination to list the
11 Three Hummock Leek-orchid. The nominator suggested listing in the endangered category of
12 the list.

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

15 This is the Committee's first consideration of the species under the EPBC Act.
16

17 **3. Summary of Conclusion**

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

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

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

24 The highest category for which the species is eligible to be listed is **critically endangered**.
25

26 **4. Taxonomy**

27 The species is conventionally accepted as *Prasophyllum atratum* (Three Hummock Leek-
28 orchid) (Jones, 2006). It was previously considered to belong to *Prasophyllum pyriforme*
29 (Graceful Leek-orchid) which is no longer recognised as occurring in Tasmania (Jones, 2006).
30

31 **5. Description**

32 The Three Hummock Leek-orchid is a small, fleshy, terrestrial orchid with a solitary erect leaf
33 that is 12–40 cm long and 3–5 mm wide. Flowers are widely spaced to moderately dense
34 along a flower spike 15–30 cm tall. Flowers are brownish-green to purplish-green in colour
35 with a dark purple labellum (modified middle petal) 4.5–5.5 mm long that is broad at its base,
36 constricted and sharply recurved near the middle and has a tapered point. The other petals and
37 the sepals are 5–7 mm long (Jones, 2006; Jones and Rouse, 2006).
38
39

40 **6. National Context**

41 The Three Hummock Leek-orchid is endemic to Tasmania. It has been recorded only at the
42 'Telecom' airstrip on Three Hummock Island, 20 km northwest of Tasmania. It is located
43 within the North West Natural Resource Management Region. This species is listed as
44 endangered (the highest risk category for extant species) under the Tasmanian *Threatened*
45 *Species Protection Act 1995*.

46

47 **7. Relevant Biology/Ecology**

48 The Three Hummock Leek-orchid grows in sedgy heathland on grey sandy loam. The
49 flowering period for this species is from October to November (Jones and Rouse, 2006). The
50 species may require disturbance to stimulate emergence and flowering and is currently only
51 found in areas that are slashed or burned regularly. Studies on the related *Prasophyllum*
52 *correctum* (Gaping Leek-orchid) indicate that plants may not appear every year, and may
53 survive below ground in a dormant state for up to five years (Coates et al., 1999). Orchids,
54 including the Three Hummock Leek-orchid, have a complex and poorly understood
55 interrelationship with species-specific mycorrhizal fungi and insect pollinators (Jones et al.,
56 1999). Native bees, wasps and beetles are known to be effective pollinators for other
57 *Prasophyllum* species, while some species can also be self-pollinating (Jones et al., 1999).
58 Leek-orchids are not known to reproduce vegetatively and recruitment is from seed.

59

60 **8. Description of Threats**

61 The main current threats to the Three Hummock Leek-orchid are inappropriate airstrip
62 maintenance activities and inappropriate disturbance.

63 Regular slashing and associated burning on the airstrip may have been beneficial to this
64 species to date by allowing regular emergence and setting of seed. However, activities to
65 upgrade and maintain the airstrip could adversely affect the species should the requirements
66 of the species not be taken into consideration.

67 Long periods without disturbance may lead to prolonged dormancy with increased risk of
68 mortality through depletion of stores in underground tubers. Conversely, burning too
69 frequently (e.g. annually) may adversely affect mycorrhizal fungi communities, rendering the
70 site unsuitable for fungal-dependent orchid species (Brundrett, 2007), including the Three
71 Hummock Leek-orchid. Slashing or burning at the wrong time of year can damage plants and
72 prevent seed from being produced and while the population may be able to sustain limited
73 damage from this threat, it may not be able to do so if the damage is regular or in combination
74 with other threats, such as prolonged drought.

75 Potential threats include the loss of pollinators and associated mycorrhizal fungi. The Three
76 Hummock Leek-orchid has a very small population which may lead to inbreeding problems
77 and increase the species' susceptibility to stochastic events. The small size of the population
78 may also be insufficient to sustain pollinators and associated mycorrhizal fungi.

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

81

82 **9. Public Consultation**

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

85

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

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

90

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

94 There are insufficient data to determine historic or current population trends for the Three
95 Hummock Leek-orchid. The Three Hummock Leek-orchid is known from one population.
96 Some decline may have occurred in this population as approximately 70 individuals were
97 recorded in 1999 (DPIWE, 2000) and 43 were recorded in 2006 (DPIW, 2006a). However,
98 studies on the related Gaping Leek-orchid indicate that plants may not appear every year, and
99 may survive below ground in a dormant state for up to five years (Coates et al., 1999),
100 therefore the fewer number of individuals counted in 2006 may be a result of dormancy rather
101 than decline.

102 The Three Hummock Leek-orchid may have experienced a decline and this decline may
103 continue due to current and potential threats, including inappropriate airstrip maintenance
104 activities, inappropriate disturbance, loss of pollinators and climate change. However, there
105 are no quantitative data to confirm this.

106 There are insufficient quantitative data available to judge whether the species has undergone,
107 or is likely to undergo in the immediate future a very severe, severe, or substantial reduction
108 in numbers. Therefore, the species has not been demonstrated to have met each of the required
109 elements of Criterion 1, and is **not eligible** for listing in any category under this criterion.

110

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

113 The Three Hummock Leek-orchid has been recorded at one location beside the 'Telecom'
114 airstrip on Three Hummock Island, 20 km northwest of Tasmania. The area of occupancy for
115 the Three Hummock Leek-orchid has been estimated to be less than 1 km² (DPIWE, 2000).
116 The species has specific habitat requirements, occurring in sedgy heathland on grey sandy
117 loam, which has not been recorded anywhere else in Tasmania (Harris and Kitchener, 2005),
118 resulting in the species occurring in a unique island habitat. Given its narrow habitat
119 requirements it has a limited capacity for dispersal.

120 The species' geographic distribution is considered to be very restricted, given that the known
121 population exists in a single location within a unique island habitat. This habitat is potentially
122 subject to decline in quality if an appropriate disturbance regime is not maintained.

123 As discussed under Criterion 1, the Three Hummock Leek-orchid may have experienced a
124 decline and this decline may continue due to current and potential threats, including
125 inappropriate airstrip maintenance activities, inappropriate disturbance, loss of pollinators and
126 climate change.

127 The Committee considers that the species has a very restricted geographic distribution, which
128 is precarious for the survival of the species due to its limited location and likely continuing
129 decline in numbers due to current and potential threats. Therefore, the species has been
130 demonstrated to have met the relevant elements of Criterion 2 to make it eligible for listing as
131 **critically endangered**.

132

133 **Criterion 3: The estimated total number of mature individuals is limited to a**
134 **particular degree; and either**
135 **(a) evidence suggests that the number will continue to decline at a**
136 **particular rate; or**
137 **(b) the number is likely to continue to decline and its geographic**
138 **distribution is precarious for its survival**

139 Population monitoring surveys undertaken in 1999 and 2006 estimated that the total number
140 of mature individuals of the Three Hummock Leek-orchid was approximately 70 individuals
141 in 1999 (DPIWE, 2000) and 43 in 2006 (DPIW, 2006a) which the Committee considers for
142 the purposes of this criterion to be very low. Ongoing threats such as inappropriate
143 disturbance and potential threats of inappropriate airstrip maintenance activities and potential
144 threat from climate change may cause this number to decline. The geographic distribution is
145 considered precarious for the species' survival, given its limited location due to restrictive
146 habitat requirements.

147 The Committee considers that the estimated total number of mature individuals of the species
148 is very low and that the number is likely to decline in the future. The Committee also
149 considers that the species' geographic distribution is precarious for its survival. Therefore, the
150 species has been demonstrated to have met the relevant elements of Criterion 3 to make it
151 **eligible** for listing as **critically endangered**.

152

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

155 Population monitoring surveys undertaken in 1999 and 2006 estimated that the total number
156 of mature individuals of the Three Hummock Leek-orchid was approximately 70 individuals
157 in 1999 (DPIWE, 2000) and 43 in 2006 (DPIW, 2006a).

158 The Committee considers this number to be very low for the purposes of this Criterion.
159 Therefore, the species has been demonstrated to have met sufficient elements of Criterion 4 to
160 make it **eligible** for listing as **endangered**.

161

162 **Criterion 5: Probability of extinction in the wild that is at least:**
163 **a) 50% in the immediate future; or**
164 **b) 20% in the near future; or**
165 **c) 10% in the medium-term future.**

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

170

171 **11. CONCLUSION**

172 **Conservation Status**

173 The Committee accepts that there may have been a decline in the number of mature
174 individuals but notes that there are insufficient data to judge the extent of any decline. The
175 Committee further accepts that the area of occupancy is less than 1 km², which represents a
176 very restricted geographic distribution. This geographic distribution is considered precarious
177 for the survival of the species given the ongoing threats, the species' very restricted
178 distribution and its limited capacity for dispersal given it is restricted by narrow habitat
179 requirements. Therefore, the species has been demonstrated to have met sufficient elements of
180 Criterion 2 to make it **eligible** for listing as **critically endangered**.

181 The Committee accepts two surveys undertaken since 1999 have found between 43 and 70
182 mature individuals. For a species with likely ongoing decline in numbers and a very restricted
183 distribution, this is judged by the Committee to be very low for the purpose of Criterion 3.
184 Given that its geographic distribution is also precarious for its survival, the species has been
185 demonstrated to have met sufficient elements of Criterion 3 to make it **eligible** for listing as
186 **critically endangered**.

187 The total number of mature individuals is judged by the Committee to be very low for the
188 purposes of Criterion 4. The species has been demonstrated to have met sufficient elements of
189 Criterion 4 to make it **eligible** for listing as **endangered**.

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

191

192 **Recovery Plan**

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

194 The Tasmanian Government is implementing a Flora Recovery Plan: Threatened Tasmanian
195 Orchids 2006-10 (DPIW, 2006b) which addresses the Three Hummock Leek-orchid under its
196 former name (*Prasophyllum pyriforme*). A recovery plan has not been recommended because
197 the existing plan does not need review until 2011. A decision to have a recovery plan should
198 be revisited at this time. The actions covered by the conservation advice are considered to be
199 sufficient at this time.

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201 **12. Recommendations**

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

204 ***Prasophyllum atratum* (Three Hummock Leek-orchid)**

205 (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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211 **13. References cited in the advice**

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