

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

**1. Scientific name (common name)**

*Prasophyllum taphanyx* (Graveside Leek-orchid)

**2. Description**

The Graveside Leek-orchid is a small fleshy terrestrial orchid with a single green onion-like leaf up to 30 cm long. It is distinguished from other Tasmanian Leek-orchids by its tiny flowers that are light-green with pinkish-purple markings (Jones, 2004). The flowers are strongly scented (Tasmanian Department of Primary Industries and Water (DPIW), unpublished data, 2005).

**3. National Context**

The Graveside Leek-orchid is endemic to Tasmania where it occurs as a single population in the Northern Midlands region. The species grows in native grassland dominated by Kangaroo Grass (*Themeda triandra*) and Spear Grasses (*Austrostipa* spp.) on well-drained basaltic loams (Jones, 2004; DPIW, unpubl. data, 2005).

The species is currently listed as endangered under the Tasmanian *Threatened Species Protection Act 1995*, which is the highest category of threat under the Tasmanian legislation.

**4. How judged by the Committee in relation to the EPBC Act criteria**

The Committee judges the species to be **eligible** for listing as **critically endangered** under the EPBC Act. The justification 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**

The Graveside Leek-orchid is known from a single subpopulation in Tasmania's Northern Midlands. A survey in 2001 identified only three flowering individuals though these were located amongst numerous leaves from undetermined species of *Prasophyllum*. It could not be determined which leaves specifically belong to the Graveside Leek-orchid or to other species of *Prasophyllum* that occur in the same region. Despite intensive survey efforts for orchids over the past 20 years, no additional subpopulations of the Graveside Leek-orchid have yet been found. Furthermore, the Graveside Leek-orchid has not been seen since its discovery in 2001 (Jones *et al.*, 1999; Nicholson, 2000; DPIW, unpubl. data, 2005; Gilfedder, pers. comm., 2006).

Native grasslands on basalt in Tasmania's Midlands have been extensively cleared and/or converted to exotic pasture since European settlement. Remnants are largely confined to small pockets on private property, roadsides, rail reserves and rural cemeteries (Kirkpatrick *et al.*, 1988; McDougall & Kirkpatrick, 1994). It is likely that the single Graveside Leek-orchid subpopulation represents the last remnant of a formerly widespread population. However, as the Graveside Leek-orchid was only discovered in 2001, there is no historical information to indicate past trends in the population size of the species.

The Graveside Leek-orchid is potentially subject to several threats, such as changes to fire frequency, application of fertilisers, weed invasion, off-target herbicide impact, changes to the slashing/mowing regime and damage by machinery (DPIW, unpubl. data, 2005). However, there is no information available to quantify the rate of a reduction in the number of individuals due to these potential threats.

However, a lack of historical survey information means there are no quantitative data available to indicate past trends in the population size of the species, nor any current information on the likelihood or rate of future decline. Therefore the species is **not eligible** 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 Graveside Leek-orchid is known only from a single subpopulation that occupies a 20 m by 5 m area (Jones, 2004; DPIW, unpubl. data, 2005). As a result, the area of occupancy and extent of occurrence are very restricted. The site does not occur within a conservation reserve. Based on studies of other *Prasophyllum* species, it is reasonable to expect year to year fluctuations in the number of flowering plants of the Graveside Leek-orchid in response to uncertain environmental triggers and particular life cycle characteristics (Jones *et al.*, 1999).

Potential threats to the species include weed invasion, off-target herbicide impact, changes to the slashing/mowing regime and damage by machinery. Changes in the fire frequency can also have an adverse impact on orchid persistence as orchids may be shaded out by overgrown tussock grasslands which are left undisturbed. While Leek-orchids do possess tubers, and might, therefore, be expected to persist in a dormant state during unfavourable conditions, the longer the period without flowering and fresh seed production, the less likely must be the long-term persistence of a species in an area (Jones *et al.*, 1999). The precise response of the Graveside Leek-orchid to fire or slashing/mowing is unknown.

The species is subject to other potential threats, such as the application of fertilisers to native grassland which dramatically changes the soil fertility, usually to the detriment of orchids. Orchid growth may be hampered by the increased competition created by the invigorated growth of pasture plants and weeds. In addition, orchid roots form symbiotic associations with mycorrhizal fungi that enhance the plant's uptake of phosphorus. The addition of fertiliser can upset the symbiotic association by causing the mycorrhizal fungus to concentrate phosphates to a toxic level (Jones *et al.*, 1999).

The very restricted geographic distribution of the Graveside Leek-orchid and the nature of the threats to the species and its habitat are precarious for the survival of the species. Therefore, the Graveside Leek-orchid is **eligible** for listing as **critically endangered** under this criterion.

**Criterion 3 — The estimated total number of mature individuals is limited to a particular degree and: (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**

When the Graveside Leek-orchid was first found in 2001, only three flowering plants were observed amongst numerous above-ground leaves that were visible (DPIW, unpubl. data, 2005; Gilfedder, pers. comm., 2006). The Graveside Leek-orchid was described as a separate species based on two of these plants. As a result, the total number of individuals that can be confirmed as the Graveside Leek-orchid was three. On this basis, the loss of even a single individual represents a very severe reduction in numbers.

It is not known how many of the orchids observed to be in leaf and not flowering during 2001 are of the Graveside Leek-orchid or other species of *Prasophyllum* which occur in the area. During a survey in 2005, no plants were visible, either as above-ground leaves or flowering despite the fact that 2005 was a good year for the appearance and flowering of other *Prasophyllum* species in the area (Gilfedder, pers. comm., 2006). Based on studies of other species of *Prasophyllum*, it is reasonable to expect annual fluctuations in the number of flowering plants in response to uncertain environmental triggers and particular life cycle characteristics (Jones *et al.*, 1999).

The number of flowering plants is very low and likely to continue to decline given the potential threats indicated in criteria 1 and 2. Therefore, the species is **eligible** for listing as **critically endangered** under this criterion.

#### **Criterion 4 — The estimated total number of mature individuals is extremely low, very low or low**

The estimated total number of mature, flowering individuals of the Graveside Leek-orchid was extremely low, numbering only three plants in 2001. A large number of orchids in leaf were also observed among those in flower but it is not known how many of these represent the Graveside Leek-orchid or other species of *Prasophyllum* that occur in the area (DPIW, unpubl. data, 2005; Gilfedder, pers. comm., 2006). Therefore, the species is **eligible** for listing as **critically endangered** under this criterion.

#### **Criterion 5 — Probability of extinction in the wild**

No quantitative (statistical) analyses have been carried out to estimate a probability of extinction of the species in the wild over a relevant timeframe. Therefore the species is **not eligible** for listing in any category under this criterion.

## **5. CONCLUSION**

### **Conservation Status**

The Graveside Leek-orchid is endemic to Tasmania, and has a very restricted geographic distribution of only a single known subpopulation in Tasmania's Northern Midlands. In 2001, the population comprised three mature, flowering individuals plus an unknown number of plants in leaf. Potential threats to the species include weed invasion, off-target herbicide impact, changes to the slashing/mowing regime and damage by machinery. Other potential threats are changes in fire frequency and fertilizer application. Therefore, the species' quality of habitat is likely to decline which in turn is likely to impact on the extremely low number of individuals. As a result of its very restricted geographic distribution, extremely low numbers and potential threats, it is **eligible** for listing as **critically endangered** under criteria 2, 3, and 4.

### **Recovery Plan**

The Committee recommends that there be a recovery plan for the species. The Tasmanian Government's Tasmanian Orchids Recovery Plan addresses this species and may be suitable for adoption after minor variation.

## 6. 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 taphanyx* (Graveside Leek-orchid)**

- ii) The Committee recommends that there be a recovery plan for this species

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Chair  
Threatened Species Scientific Committee

## References cited in the advice

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