

# NSW SCIENTIFIC COMMITTEE

## *Genoplesium plumosum* (Rupp) D.L.Jones & M.A.Clem. (Orchidaceae)

### Review of Current Information

February 2008

#### **Current status:**

*Genoplesium plumosum* (Tallong Midge Orchid) is currently listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The NSW Scientific Committee recently determined that *Genoplesium plumosum* meets criteria for listing as Critically Endangered in NSW under the *Threatened Species Conservation Act 1995* (TSC Act), based on information contained in this report and other information available for the species.

#### **Species description:**

The following description of *Genoplesium plumosum* (as the nomenclatural synonym *Corunastylis plumosa*) is given by Jones (2006, p. 181): “Leaf 100-200 mm long; free part 15-30 mm long, ending below flowers. Spike 10-30 mm tall, 1-8 flowered. Flowers moderately crowded, semi-nodding, 8 x 5 mm, greenish with purple stripes and reddish purple labellum. Dorsal sepal 7 x 3 mm; margins hairless; apex sharply pointed. Lateral sepals divergent, 9 x 1 mm; apex pointed. Petals 6.5 x 1.5 mm; margins hairless; apex sharply pointed. Labellum stiffly hinged, oblong, 5.5 x 2 mm, moderately thick and fleshy; margins sparsely hairy; apex pointed, recurved. Callus extending nearly to labellum apex.”

#### **Taxonomy:**

*Genoplesium plumosum* was first described by Herman Rupp in 1942 (as *Prasophyllum plumosum*) from specimens collected some 14 years earlier at Kurnell, southern Sydney. The name was changed to *Genoplesium plumosum* by Jones & Clements (1989), and again by Jones *et al.* (2002) to *Corunastylis plumosa* when transferring most species of *Genoplesium* into *Corunastylis*. This recent taxonomic change has not been widely accepted, however. Given that the Tallong Midge Orchid was listed on the TSC Act under the name *Genoplesium plumosum*, and that this name is still accepted by the National Herbarium of NSW in preference to *Corunastylis plumosa*, the name *Genoplesium plumosum* will be used throughout the remainder of this report.

#### **Distribution and number of populations:**

Although the type specimen is from Kurnell the species has not been collected there since 1928 despite extensive searches of the area in suitable habitat (Bishop 2000; NSW NPWS 2002). Since then, the species has only been recorded from two locations on the Central Tablelands of NSW. A recently discovered population is reserved in Morton National Park (NP), while the other extant plants are all known to occur around Tallong (NSW NPWS 2002). These Tallong “colonies” are collectively treated as a single, fragmented population for the purposes of this assessment. The species is therefore known to occur in just two populations, both of which are distinct ‘locations’

# NSW SCIENTIFIC COMMITTEE

using the definitions and guidelines of the IUCN (2008). Note that some other localities previously cited for *G. plumosum* (e.g. Asquith and Stanthorpe in the NSW Scientific Committee Final Determination) are now considered to be misidentifications of other, very similar taxa.

## **Ecology:**

### Key habitat requirements

*Genoplesium plumosum* grows in skeletal soils on flat to gently sloping sheets of sandstone (NSW NPWS 2002). The vegetation is usually a low heath dominated by *Kunzea parvifolia*, *Calytrix tetragona* and a number of smaller herbaceous species.

### Life history

Like all midge orchids, the above-ground parts of *G. plumosum* die back after fruiting and the species exists as an underground tuber for most of the year. The flowering period varies from year to year but is usually four to six weeks after good summer/autumn rains. Not all mature plants flower each year and the exact conditions required for flowering remain a mystery for many species of *Genoplesium* including *G. plumosum*.

The response to fire of *G. plumosum* is unknown but it is likely that some plants may be killed if the fire is intense, particularly if it occurs during the flowering/fruiting period.

## **Number of mature individuals:**

Rupp (1969, p. 34) stated that there were “about a dozen plants found” in the original type population in Kurnell which is now considered to be extinct. Extensive surveys of *G. plumosum* in March 2001 yielded 293 individuals from two broad locations across all known subpopulations (NSW NPWS 2002). NSW NPWS (2002) stated that several further populations counts would be conducted after 2002 although this did not occur due to the poor flowering seasons associated with the severe drought (expert advice). Since the count of 293 was made in 2001, an additional population of approximately 20 plants was discovered on private property near Tallong (expert advice). One of the existing colonies of 20 plants has been recently eliminated, however, due to the approval of a housing development and the subsequent clearing of the block (expert advice). The best estimate of the number of individuals therefore remains at 293 although this figure should be treated as an approximation only. The vast majority of known individuals of *G. plumosum* appear to be mature adults (expert advice) so a plausible estimate of the total number of mature individuals would be 250-280.

## **Threats:**

Grazing by various herbivores (e.g. rabbits and wallabies) is considered to be a major threat to *G. plumosum* (NSW NPWS 2002; expert advice). In 2002, 26% of all known plants were found to have been grazed and this grazing usually removed all the flowers and/or fruits of the plant for that year (NSW NPWS 2002). It is possible that this disturbance would also have long-term effects on plant health (e.g. moderate disturbance to the tubers and a reduction in photosynthetic efficiency). In

# NSW SCIENTIFIC COMMITTEE

the following years an even higher proportion of plants appeared to suffer from grazing (expert advice). ‘Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus*’ is listed as a Key Threatening Process under the TSC Act in NSW.

Clearing of suitable habitat for residential blocks is a continuing threat which has recently resulted in the local extinction of one of the colonies at Tallong (expert advice). A housing development was approved despite a prior knowledge of the existence of *G. plumosum* on the site. Goulburn-Mulwaree Council is aware of the significance of *G. plumosum* and have indicated that the species will receive a higher priority when assessing future developments at Tallong. Despite this, further development and clearing in the vicinity of Tallong should still be considered a major threat, particularly given that many of the plants are located on private property. ‘Clearing of native vegetation’ is listed as a Key Threatening Process under the TSC Act in NSW.

## **Extreme fluctuations:**

The flowering frequency of most species of *Genoplesium* is highly variable and makes it difficult to determine the number of mature adults in a population. Given that not all individuals of *G. plumosum* would necessarily flower in a particular season, and that non-flowering plants are relatively difficult to detect, it is possible that the population is reasonably stable. Variation in counts over the years may simply reflect variability in flowering frequency in combination with sampling error, and the observations currently available therefore provide no evidence of extreme fluctuations within the species.

## **Population reduction and continuing declines:**

NSW NPWS (2002, p. 6) state that “most of the known sites were only discovered in 1999 and it is difficult to determine how many sites around Tallong were lost to farming, road construction and urban development prior to the surveys”. From this, it can be inferred that at least some plants would have been lost to clearing but the figure is impossible to quantify. Notes by Rupp (1969, p. 34) suggest that the species was not common at Kurnell with the type specimen thought to be collected from a population of “about a dozen plants.”

One of the colonies of *G. plumosum* at Tallong documented in NSW NPWS (2002) has recently been cleared for residential development (expert advice; see discussion in ‘Threats’ section above). This colony consisted of at least 20 mature individuals and is now believed to have been totally eliminated (expert advice). Due to the ongoing development pressures around Tallong, and the unreserved tenure of the majority of the colonies, it is reasonable to project a future decline in the total numbers of *G. plumosum*. In addition to development pressures, the high rate of herbivory is also likely to result in a population decline.

## **Extent of Occurrence (EOO) & Area of Occupancy (AOO):**

As the original population of this species at Kurnell is now considered to be extinct (Bishop 2000; NSW NPWS 2002), or at least not a site of “present occurrence”, only the known two locations can

# NSW SCIENTIFIC COMMITTEE

be included when calculating the EOO (IUCN 2008). The EOO covers approximately 20 km<sup>2</sup>. The AOO is also estimated to be approximately 20 km<sup>2</sup> and was calculated by adding the area of the two distinct localities. The Morton NP population covers an area of no more than 4 km<sup>2</sup>, based on a 2 x 2 km grid, the spatial scale of assessment recommended by the IUCN (2008) for calculating AOO. All plants in the Tallong district are located within a 3 x 3 km area which equates to four 2 x 2 km blocks (i.e. 16 km<sup>2</sup>) using the scale of assessment recommended by the IUCN (2008).

## Severe fragmentation:

Most of the remaining colonies of *Genoplesium plumosum* are now found in small, isolated remnants of vegetation surrounded by cleared land and so the species would be considered to be severely fragmented. These fragments have resulted from clearing of the once continuous landscape for roads, housing and agriculture (expert advice).

## References:

- Bishop T (2000) 'Field Guide to the Orchids of New South Wales and Victoria. 2<sup>nd</sup> edition.' (University of New South Wales Press: Sydney)
- IUCN (2008) 'Guidelines for using the IUCN Red List Categories and Criteria. Version 7.0.' (Standards and Petitions Working Group of the IUCN Species Survival Commission Biodiversity Assessments Subcommittee: Switzerland). (<http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedListGuidelines.pdf>).
- Jones DL (2006) 'A Complete Guide to Native Orchids of Australia including the Island Territories.' (Reed New Holland: Sydney)
- Jones DL, Clements MA (1989) Reinterpretation of the Genus *Genoplesium* R.Br. (Orchidaceae: Prasophyllinae). *Lindleyana* **4**, 139-145.
- Jones DL, Clements MA, Sharma IK, Mackenzie AM, Molloy PJ (2002) Nomenclatural notes arising from studies into the Tribe Diurideae (Orchidaceae). *The Orchadian* **13**, 437-468.
- NSW NPWS (2002) 'Approved Recovery Plan for the Tallong Midge Orchid (*Genoplesium plumosum*).' NSW NPWS, Hurstville, NSW.
- Rupp HMR (1969) 'The Orchids of New South Wales.' (National Herbarium: Sydney)

### Explanatory note

Between 2007 and 2009 the NSW Scientific Committee undertook a systematic review of the conservation status of a selection of plant and animal species listed under the Threatened Species Conservation Act. This species summary report provides a review of the information gathered on this species at the time the Review was undertaken.

The Scientific Committee's report on the Review of Schedules project and final determinations relating to species that were either delisted or had a change in conservation status can be found on the following website: [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au).

The Committee gratefully acknowledges the past and present Committee members and project officers who ably assisted the Committee in undertaking the Review of Schedules Project. Information on the people involved in the project can be found in the Acknowledgement section of the project report entitled "Review of the Schedules of the Threatened Species Conservation Act 1995. A summary report on the review of selected species" which is available on the abovementioned website.

This species summary report may be cited as:

NSW Scientific Committee (2008) *Genoplesium plumosum* Review of current information in NSW. February 2008. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.