

NSW SCIENTIFIC COMMITTEE

Eucalyptus imlayensis Crisp & Brooker (Myrtaceae)

Review of Current Information in NSW

October 2008

Current status:

Eucalyptus imlayensis (Imlay Mallee) is currently listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The NSW Scientific Committee recently determined that the *Eucalyptus imlayensis* 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:

Eucalyptus imlayensis is described in Hill (2002) as follows: “Mallee to 7 m high; bark smooth, grey, salmon, orange or green, shedding in long ribbons. Juvenile leaves opposite, elliptic to ovate, glossy dark green. Adult leaves disjunct, lanceolate, 10–15 cm long, 1.5–2 cm wide, green, glossy to semi-glossy, concolorous. Umbellasters 3-flowered; peduncle narrowly flattened or angular, 3–5 mm long. Buds ovoid to shortly fusiform, 6–7 mm long, 3–4 mm diam., scar present; calyptra conical to rostrate, shorter than to as long as and as wide as hypanthium. Fruit cylindrical, hemispherical or campanulate, 5–7 mm long, 6–8 mm diam.; disc raised; valves exerted.”

Taxonomy:

This species was first discovered in 1977 and described by Crisp & Brooker (1980). It was recognised as a unique taxon that had close affinity with *E. subcrenulata*, but can be distinguished from this and other related species by its unique combination of elliptic to ovate, obtuse leaves with crenulate margins, green (not dull) colour and winged axis (Crisp & Brooker 1980).

Distribution and number of populations:

This species has only been recorded from one location on Mount Imlay.

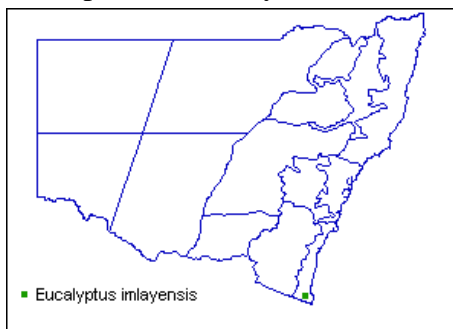


Figure 1. Location of *Eucalyptus imlayensis* in NSW.

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Surveys conducted:

All areas of the occupancy and immediate surrounds have been searched and the general area has been well surveyed for flora (expert advice 2008).

Ecology:

Key habitat requirements

The known population grows in sclerophyll woodland on skeletal soil on a steep granite east facing slope (Hill 2002). The vegetation is dominated by *Leptospermum scoparium* and other common species include *Boronia imlayensis*, *Cassytha pubescens*, *Derwentia perfoliata*, *Dianella tasmanica*, *Doodia media*, *Lomandra longifolia*, *Melaleuca squarrosa*, *Oxylobium ellipticum* and *Prostanthera walteri*. The ground layer is dominated by mosses (James & McDougall 2007).

Life history

Plants of this species resprout from large lignotubers and establishment from seed is likely to be a rare event. James & McDougall (2007) observed that plants produced flowers and buds annually, mostly in mid-summer during 1998-2003, but in the past four years no fruit has resulted from flowering. Generation length (IUCN 2008) of this species is estimated to be 80-120 years (expert advice).

Number of mature individuals:

The population was last surveyed in 2007 and the number of mature individuals was estimated to be about 80. The difficult terrain and the close proximity of some individuals (which may have been one or several plants) meant that a more accurate count could not be made (expert advice). James & McDougall (2007) recorded no seedlings or immature plants in the population during their studies between December 1998 and May 2003.

Threats:

Threats are currently under investigation. Recent declines in the population may be attributable to *Phytophthora cinnamomi*, insect attack or more frequent drought (possibly associated with climate changes) (expert advice 2008).

The soil-borne pathogen *P. cinnamomi* has been identified at the site from the roots of a dying *Banksia spinulosa* subsp. *cunninghamii* plant adjoining the *E. imlayensis* population (James & McDougall 2007). However, the difficult rocky terrain has prevented the collection of *E. imlayensis* root samples and no lesions were identified on sick plants and so the susceptibility of this species to the pathogen is unknown. Seed was obtained recently and is being propagated at ANBG for testing for susceptibility to *P. cinnamomi* (expert advice). 'Infection of native plants by *Phytophthora cinnamomi*' is listed as a Key Threatening Process in NSW under the TSC Act.

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James & McDougall (2007) twice observed leaf galls from an unknown psyllid present on most plants during autumn. Other adjacent eucalypt species did not appear to be affected.

This species is also at risk from catastrophic events because of its single extant population and low number of plants. Fire response is unknown, although the large lignotubers suggest that it would resprout when burnt. The lack of burn marks on trees in the area, indicate that the population of *E. imlayensis* is unlikely to have been burnt in recent times (James & McDougall 2007).

Extreme fluctuations:

There is no information/evidence of this species experiencing extreme fluctuations.

Population reduction and continuing declines:

Since the discovery of the species in 1977, when Crisp & Brooker (1980) recorded that the population comprised 70 plants, no further information on the population size and structure of *E. imlayensis* was available until James & McDougall (2007) began their research in 1998.

In 1998, James & McDougall (2007) discovered the total population size was small and some stems were apparently dead. In March 2001, they found that almost 10% of the total *E. imlayensis* stems had no foliage and four plants had died recently. More than 50% crown death was recorded in one-third of plants. In April 2002, two more plants were found to have died and the mean proportion of dead branchlets on stems had increased significantly from 38-52% (in 2001) to 50-62%. However, regeneration from the base was observed from one stem that had lost crown foliage. James & McDougall (2007) found that almost 10% of the population that was observed in 2002 had died recently.

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

James & McDougall (2007) report that the population of *E. imlayensis* occurs within an area of about 1 000 m². The entire distribution of the species falls within a single 2 x 2 km grid cell, the spatial scale recommended for estimation of AOO by IUCN (2008). Both the EOO and AOO are estimated to be less than 4 km².

Severe fragmentation:

All individuals have only ever been found in one small subpopulation and there is no evidence that this species once had a larger distribution, as the species has never been recorded from other granite mountain tops in the region. Hence this species is not considered to be severely fragmented.

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References:

- Brooker MIH (2000) A new classification of the genus *Eucalyptus* L'Her. (Myrtaceae). *Australian Systematic Botany* **13**, 114.
- Crisp M D, Brooker MIH (1980) *Eucalyptus imlayensis*, a new species from a mountain of south coastal New South Wales. *Telopea* **2**, 41-47.
- Hill KD (2002) *Eucalyptus*. In 'Flora of New South Wales, Volume 2'. (Ed. GJ Harden) pp. 96-164 (New South Wales University Press: Kensington)
- 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 Sub-committee: Switzerland)
(<http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedListGuidelines.pdf>).
- James EA, McDougall KL (2007) Extent of clonality, genetic diversity and decline in the endangered mallee *Eucalyptus imlayensis*. *Australian Journal of Botany* **55**, 548–553.

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 .

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) *Eucalyptus imlayensis* Review of current information in NSW. October 2008. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.