

NSW SCIENTIFIC COMMITTEE

Acacia macnuttiana Maiden & Blakely (Fabaceae)

Review of Current Information in NSW

April 2008

Current status:

Acacia macnuttiana is currently listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The NSW Scientific Committee recently determined that *Acacia macnuttiana* meets criteria for listing as Vulnerable 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:

Kodala & Harden (2002) describe *A. macnuttiana* as follows: “Erect or spreading shrub or tree 1–3 m high; bark greyish; branchlets angled at extremities, glabrous. Phyllodes straight to slightly curved, more or less linear, 7–14 cm long, 2–3 mm wide, glabrous, midvein not prominent, lateral veins few, obscure, apex subacute with a mucro; 1–3 small glands along margin; pulvinus <2mm long. Heads globose, 10–15-flowered, bright yellow, 5–9 in an axillary raceme; axis 1–5 cm long; peduncles 2–5 mm long, appressed hairy. Pods more or less straight and flat, 6–10 cm long, 10–13 mm wide, glabrous; seeds longitudinal; funicle filiform.”

Taxonomy:

Acacia macnuttiana was originally described in 1927 from near Torrington in northern NSW. It is one of several closely related species in a complex of taxa ranging from central NSW to southern Queensland. One of these closely related species, *A. acrionastes*, has also been recorded as occurring sympatrically with *A. macnuttiana* near Ashford (Kodala & Harden 2002; NSW National Parks & Wildlife Service 2003). This has led to some previous confusion in the identification of specimens from this area although all specimens held in the N.C.W. Beadle Herbarium from Pindari Dam are a good match for *A. macnuttiana*. These specimens can be distinguished from *A. acrionastes* by their golden flower heads in groups of less than 10 per raceme (*A. acrionastes* typically has more than 10 creamy yellow heads per raceme).

Distribution and number of populations:

Acacia macnuttiana is endemic to north-eastern NSW where it is known from several localities: Bald Rock National Park (NP), Boonoo Boonoo NP, “Eagle Creek” (private property south-west of Tenterfield), Torrington State Conservation Area (SCA) and adjacent private property, and Pindari Dam. A further locality has been reported in the literature from Washpool NP (e.g. Copeland & Hunter 1999; Hunter 2000a) although expert advice suggests that these plants were misidentified and are in fact an undescribed species closer to *A.*

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ingramii. Herbarium, Atlas and Yeti database records by J.T. Hunter for Severn River NR are all erroneous and all these records should only refer to the single, continuous population at Pindari Dam which is just outside the reserve (expert advice).

From the five confirmed localities mentioned above, there are at least 11 distinct populations in the Torrington district, three populations in Bald Rock NP and a single population in each of the remaining three localities. This brings the total number of confirmed populations to 17 although it is likely that some further populations may be present in the more remote areas of Torrington SCA.

The number of 'locations' (IUCN 2008) is probably in the range of 5-10. Two of the Bald Rock NP populations are reasonably close but are well separated from the third in terms of geography and by a large area of cleared land. The Boonoo Boonoo NP population is also well separated from the above two locations. "Eagle Creek" and Pindari Dam are also discrete locations but there is some uncertainty as to how many locations should be recognised across the Torrington populations. If one was to recognise all of the 11 populations as comprising a single location (not unrealistic given the continuous vegetation linking all the sites) then a total of six 'locations' for *A. macnuttiana* should be recognised.

Ecology:

Key habitat requirements

Acacia macnuttiana usually grows in shallow, rocky soils derived from granite. The vegetation ranges from heath on rocky outcrops to dry sclerophyll forest on slightly deeper soils. Altitudes range from approximately 500–1100 m above sea level.

Life history

Flowering is mostly from August–September with occasional late flushes in October. The fire response of *A. macnuttiana* is uncertain but it is most likely to be an obligate seeder (Clarke & Fullon 2000; expert advice). *Acacia adunca* and *A. floydii*, two closely related species in the same complex, have both been observed to germinate on mass following wildfires (expert advice).

Number of mature individuals:

Of the 17 populations, some limited population estimates are available for eight of them. Observations of the plants in Boonoo Boonoo NP in 2007 suggest that the population may be as low as 20-30 plants (expert advice). "Relatively few" plants were present in each of the three Bald Rock NP populations in 1999 (Atlas records; expert advice). If one assumes that "relatively few" falls within the range of 5–30, then a bounded estimate for the number of plants in Bald Rock NP would be 15–90. At "Eagle Creek", it was estimated that approximately 300 plants were observed in 1995 (expert advice). The largest population in Torrington SCA in 2000 contained at least 300 plants (expert advice). While there are no data available for most of the other populations in Torrington, a plausible estimate for the total

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number of plants in the Torrington district would be between 500–1 000 (expert advice). The Pindari Dam population appeared to contain at least 200 plants in the last survey in 2005 (expert advice).

Overall, the total estimate of the population of *A. macnuttiana* would be in the range of 1035–1 620 plants. The proportion of mature plants in the total population of *A. macnuttiana* is largely unknown but is probably in the range of 50–80% of the plants. This estimate is based on observations of the Boonoo Boonoo NP, Torrington SCA and Pindari Dam populations (expert advice). A bounded estimate of the total number of mature individuals is therefore 517–1296.

Threats:

One of the greatest threats to *A. macnuttiana* is an inappropriate fire regime (Clarke & Fulloon 2000), with the populations in Bald Rock NP being particularly prone to frequent fires (expert advice). The significant population in “Eagle Creek” is relatively safe with few threats apparent other than occasional grazing by goats (expert advice). Some plants occur close to walking tracks in the Torrington SCA and Boonoo Boonoo NP populations and these may be affected by trampling/picking by people (NSW National Parks & Wildlife Service 2003). The large population near Pindari Dam was partially inundated by increasing water levels (Hunter 2000b) which is thought to have impacted on the population size. Observations in 2005, however, suggest that there has since been mass recruitment around the edge of the dam, usually just above the upper water level mark (expert advice). ‘High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition’, ‘Competition and habitat degradation by Feral Goats, *Capra hircus*’ and ‘Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands’ are listed as a Key Threatening Processes under the TSC Act in NSW.

Extreme fluctuations:

There is little evidence of fluctuations in any of the 17 populations, with the possible exception of the large population around Pindari Dam. A number of plants were believed to have been inundated when the dam was enlarged (Hunter 2000b) although many young plants have since been observed growing just above the upper water level mark. The fluctuation resulting from this one-off stochastic event is difficult to quantify but it is unlikely to qualify as an ‘extreme fluctuation’ (IUCN 2008). It is believed that *A. macnuttiana* is an obligate seeder with a persistent soil seedbank although this is yet to be tested (Clarke & Fulloon 2000). If this is the case then the seedbank of *A. macnuttiana* is likely to act as a buffer against extreme fluctuations in standing plant populations following fire.

Population reduction and continuing declines:

Other than the inundation of plants by the enlargement of Pindari Dam, there is no evidence of any population reduction. The populations on private property at “Eagle Creek” and

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“Highland Home” (near Torrington) do not appear to be under any immediate threat and there is no evidence to infer a continuing decline.

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

The EOO, calculated by mapping all 17 known populations in Arcview, is estimated to be approximately 1 220 km². Of the 17 known populations, most occupy an area of 4 km² or less, based a 2 x 2 km grid, the spatial scale of assessment recommended by the IUCN (2008). An exception is the large population on “Eagle Creek” which occupies three distinct 4 km² blocks. A number of the populations at Torrington occur within reasonably close proximity and the 11 populations collectively cover seven 4 km² blocks. The best estimate for the AOO is therefore 60 km² (*i.e.* 15 x 4 km²).

Severe fragmentation:

There is no evidence for any populations of *A. macnuttiana* having been eliminated or drastically reduced in size, and all populations occur in reasonably large, intact remnants of vegetation. There is therefore no evidence that the population or habitat of *A. macnuttiana* has undergone severe fragmentation.

References:

- Clarke PJ, Fulloon L (2000) ‘Fire and Rare plants: Torrington State Recreation Area.’ Unpublished report, University of New England, Armidale.
- Copeland LM, Hunter JT (1999) Range extensions and conservation status of 18 restricted plant species in north-eastern New South Wales. *Cunninghamia* **6**, 395-400.
- Hunter JT (2000a) ‘Vegetation and Floristics of the Capoompeta & further additions to western Washpool National Park.’ Unpublished report prepared to the New South Wales National Parks & Wildlife Service.
- Hunter JT (2000b) ‘Vegetation and floristics of Severn River Nature Reserve.’ Unpublished report prepared to the New South Wales National Parks & Wildlife Service.
- 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>).
- Kodala PG, Harden GJ (2002) *Acacia*. In ‘Flora of New South Wales. Vol. 2; Revised Edition’. (Ed. GJ Harden) pp. 381-476. (University of New South Wales Press: Sydney)
- NSW National Parks & Wildlife Service (2003) ‘Threatened Species of the New England Tablelands and North West Slopes of New South Wales.’ NSW National Parks & Wildlife Service, Coffs Harbour.

Explanatory note

ESTABLISHED UNDER THE THREATENED SPECIES CONSERVATION ACT 1995

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