

A statement for the purposes of approved Conservation Advice
(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

Approved Conservation Advice for
***Macadamia integrifolia* (Macadamia Nut)**

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

Description

Macadamia integrifolia, Family Proteaceae, also known as the Macadamia Nut, is a medium sized tree that grows to 20 m in height with a 20 m wide crown. This species produces cream or creamy-white flowers that have been recorded in January, March and June to November. Flowers occur on the end of 30 cm long racemes. Fruit is a hard brown spherical nut encased in a green leathery outer shell with a diameter of 2–3 cm (Stanley & Ross, 1986; Forster et al., 1991; Barry & Thomas, 1994; Gross, 1995).

Conservation Status

Macadamia Nut is listed as **vulnerable**. This species is eligible for listing vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as, prior to the commencement of the EPBC Act, it was listed as vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth). The Macadamia Nut is also listed as vulnerable under the *Nature Conservation Act 1992* (Queensland).

Distribution and Habitat

Macadamia Nut occurs from Mt Bauple, near Gympie, to Currumbin Valley in the Gold Coast hinterland, south-east Queensland. The species was known to occur in north-east New South Wales; was described from 1850-60 specimens collected from Camden Haven, and there are specimens also from Lismore. It occurs as a scattered rare to occasional tree, and population sizes are difficult to estimate (Barry & Thomas, 1994). Populations in the south-east Queensland Regional Forest Agreement region (area of 10,000 km²) are estimated at 2 500 mature individuals in 20 populations. These populations were formerly declining but are presently stable (Queensland CRA/RFA Steering Committee, 1997).

Macadamia Nut is conserved in at least four reserves in south-east Queensland (Nicholls Scrub National Park, Triunia National Park, Mt Cooroy Conservation Park and Mt Bauple National Park) but these are all small (Barry & Thomas, 1994). This species grows in remnant rainforest, including complex mixed notophyll forest, and prefers partially open areas such as rainforest edges (Ryan, 2006). This species occurs within the Northern Rivers (NSW) and South East Queensland Natural Resource Management Regions.

The distribution of this species overlaps with the following EPBC Act-listed threatened ecological communities:

Threats

Macadamia Nut is threatened by urban clearing, agricultural clearing, weed invasion and inappropriate fire regimes (Queensland CRA/RFA Steering Committee, 1997). Land clearing threatens this species through habitat fragmentation and reduced pollination success. Weeds such as Lantana (*Lantana camara*) and Camphor Laurel (*Cinnamomum camphora*) dominate habitat and change fire regimes. Macadamia Nut is highly susceptible to fire damage.

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A potential threat to the species is genetic homogenisation of wild stock by mixing with widespread orchard strains. Widely-cultivated varieties of threatened species, are often represented by only one or two genotypes selected for a certain trait. Introgression of these genes into wild populations could cause genetic homogenisation and/or disruption of local genetic adaptations (see for example Whelan et al. 2006) .

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Design and implement a monitoring program or, if appropriate, support and enhance existing programs.
- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations.
- Establish baseline genetic structure among populations to allow detection of homogenisation through hybridisation with cultivated strains.

Regional and Local Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of Macadamia Nut.

Habitat Loss, Disturbance and Modification

- Monitor known populations to identify key threats.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Identify populations of high conservation priority.
- Ensure road widening and maintenance activities (or other infrastructure or development activities) involving substrate or vegetation disturbance in areas where Macadamia Nut occurs do not adversely impact on known populations.
- Control access routes to suitably constrain public access to known sites on public land.
- Suitably control and manage access on private land.
- Minimise adverse impacts from land use at known sites.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate inclusion in reserve tenure if possible.

Invasive Weeds

- Develop and implement a management plan for the control of Lantana and Camphor Laurel in the region.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on Macadamia Nut.
- Identify and remove weeds in the local area, which could become a threat to Macadamia Nut, using appropriate methods.
- Manage sites to prevent introduction of invasive weeds, which could become a threat to Macadamia Nut, using appropriate methods

Fire

- Develop and implement a suitable fire management strategy for Macadamia Nut.
- Where appropriate, provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plan(s), risk register and/or operation maps.

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Conservation Information

- Raise awareness of natural populations of Macadamia Nut within the local community.
- Maintain liaisons with private landholders and land managers of land on which populations occur.

Enable Recovery of Additional Sites and/or Populations

- Undertake appropriate seed collection and storage.
- Investigate options for linking, enhancing or establishing additional populations.
- Implement national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.

This list does not necessarily encompass all actions that may be of benefit to Macadamia Nut, but highlights those that are considered to be of highest priority at the time of preparing the Conservation Advice.

Existing Plans/Management Prescriptions that are Relevant to the Species

- Weeds of National Significance: Lantana (*Lantana camara*) (ARMCANZ, 2001).
- *Southern Macadamia Species Recovery Plan 2008-2012* (Costello et al., 2008).

This prescription was current at the time of publishing; please refer to the relevant agency's website for any updated versions. A Recovery Plan is under development for this species.

Information Sources:

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