

Approved Conservation Advice
(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

Approved Conservation Advice for
Macrozamia occidua

This Conservation Advice has been developed based on the best available information at the time this conservation advice was approved.

Description

Macrozamia occidua, Family Zamiaceae, is a small cycad with a non-branching underground trunk. One to five frond-like leaves arise from the crown at ground level and grow to a height of 40–75 cm. They are strongly spiralled, twisted up to four times. Leaflets are linear, 6–20 cm long, dark green above and grey-green beneath, with 80–120 per frond. Male and female cones occur on separate plants (Jones & Forster, 1994; Hill & Osborne, 2001; Jones, 2002).

Conservation Status

Macrozamia occidua is listed as **vulnerable**. This species is eligible for listing as 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). *Macrozamia occidua* is also listed as vulnerable under Schedule 3 of the *Nature Conservation Act 1992* (Queensland), and is listed under Appendix II of CITES.

Distribution and Habitat

Macrozamia occidua occurs in open forests dominated by *Eucalyptus prava* and Red Ironbark (*E. sideroxylon*), on skeletal sandy soils derived from acid volcanic mudstones and greywacke between the altitudes of 800–1000 m (Jones & Forster, 1994; Hill & Osborne, 2001). There are fewer than 1000 plants (PI Forster, 2008, pers. comm.) occurring as widely spaced scattered individuals in three locations within Sundown National Park, south-west of Stanthorpe (Jones, 2002; Queensland Herbarium, 2008). At one site, the species grows on coarse sandy soil derived from granite in woodland dominated by Blue-leaf Ironbark (*Eucalyptus caleyi* subsp. *caleyi*), White Mahogany (*E. acmenoides*) and Stringybark She-oak (*Allocasuarina inophloia*) (Queensland Herbarium, 2008). The species occurs within the Border Rivers Maranoa–Balonne (Queensland) Natural Resource Management region.

The distribution of this species overlaps with the “White Box-Yellow Box-Blakely’s Red Gum Grassy Woodland and Derived Native Grassland” EPBC Act-listed threatened ecological community.

Threats

The main potential threats to *M. occidua* include inappropriate fire regimes which kills surface seed and young seedlings; failure of the insect pollination mutualism; and vulnerability to illegal collecting (Jones & Forster, 1994). Regeneration of *M. occidua* is limited, as they are slow-growing, set seed intermittently, produce low amounts of seed and have limited dispersal (Hill & Osborne, 2001; Jones, 2002; Forster, 2007). Both seed and whole plants are sought after by specialist collectors and illegal collecting is expected (Jones & Forster, 1994). *Macrozamia occidua* is also vulnerable to genetic inbreeding with possible impact on long-term population viability (Forster, 2004 & 2007).

Research Priorities

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

- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Undertake research to determine reproductive needs by identifying pollinators and their life cycle, and study mechanisms and vectors of seed dispersal.
- Undertake research to determine the effects of fire frequency, intensity and time of year of year on the reproductive ecology and survival of populations.
- Develop a genetic tagging system to establish a means of identifying illegal collections from the wild, and providing evidence required for prosecution (see for example Palsboll et al. 2006).
- Design and implement a monitoring program.

Regional and Local Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of *Macrozamia occidua*.

Habitat Loss, Disturbance and Modification

- Develop and implement a suitable management strategy to prevent illegal collection of seed and plants.
- 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.

Fire

- Develop and implement a suitable fire management strategy for *M. occidua*.
- Provide confidential information of known occurrences to local and state rural fire services and seek inclusion of mitigative measures in bush fire risk management plans, risk register and/or operation maps.

Conservation Information

- Raise awareness of *Macrozamia occidua* within the local community, particularly among landholders.

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 *Macrozamia occidua*, but highlights those that are considered to be of highest priority at the time of preparing the conservation advice.

Information Sources:

- Forster, PI 2007, 'Recovery Plans for Endangered Cycads: A Model Set of Objectives and Actions Using the Example of *Cycas megacarpa* from Queensland Australia', *Memoirs of the New York Botanic Garden*, vol. 97.
- Forster, PI 2004, 'The Cycads of Queensland: diversity and conservation', *Palms and Cycads*, no. 82, pp. 4–28.
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- Jones, DL & Forster, PI 1994, 'Seven new species of *Macrozamia* from Queensland', *Austrobaileya*, vol. 4, no. 2, pp. 269–288.

This Conservation Advice was approved by the Minister / Delegate of the Minister on:
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Palsboll, PJ, Berube, M, Skaug, HJ & Raymakers, C 2006, 'DNA registers of legally obtained wildlife and derived products as means to identify illegal takes', *Conservation Biology*, vol. 20, pp. 1284-1293.

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Vallee, L, Hogbin, T, Monks, L, Makinson, B, Matthes, M & Rossetto, M 2004, *Guidelines for the Translocation of Threatened Plants in Australia - Second Edition*, Australian Network for Plant Conservation, Canberra.