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

Approved Conservation Advice for *Macrozamia parcifolia*

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

Description

Macrozamia parcifolia, Family Zamiaceae, is a small cycad with an underground and usually unbranched trunk. It produces one to four frond-like leaves from the crown at ground level. Leaves reach a length of 1m and are spirally twisted up to six times and often arching towards the ends. Each leaf has between 100–220 narrow and spindly leaflets which are dull, dark green above and bright green beneath. Male and female cones are produced on separate plants (Jones & Forster, 1994; Jones, 2002).

Conservation Status

Macrozamia parcifolia 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 parcifolia* is also listed as vulnerable under Schedule 3 of the *Nature Conservation Act 1992* (Queensland).

Distribution and Habitat

Macrozamia parcifolia is restricted to an area in the Maryborough-Biggenden district, Queensland. It covers a range of approximately 60 km and encompasses an area of occurrence of approximately 1500 km². The total population of *M. parcifolia* was estimated to be between 16 500 and 18 000 individuals. It grows on well-drained, hard, red-brown clay loams of basaltic origin on ridges and slopes in tall open forest dominated by Lemon-scented Gum (*Eucalyptus citriodora*) and Broad-leaved Red Ironbark (*E. fibrosa*) with a sparse to dense shrubby understorey (Queensland CRA/RFA Steering Committee, 1998).

Most of the populations occur either in State Forests (SF57, SF915, SF1294) or National Parks (Wongi, Mt Walsh). Two sites occur in areas of remnant vegetation, as defined under the *Vegetation Management Act 1999* (Queensland), and are therefore currently protected from broad scale clearing (Environmental Protection Agency, 2008). A further two sites however, occur in non-remnant vegetation in a power line corridor and roadside vegetation (Queensland Herbarium, 2008).

This species occurs within the Burnett Mary (Queensland) Natural Resource Management region.

The distribution of this species is not known to overlap with any EPBC Act-listed threatened communities.

Threats

The main identified threats to *M. parcifolia* are loss and damage through forestry operations; inappropriate fire regimes, which kill surface seed and young seedlings; failure of the insect pollination mutualism; and vulnerability to poaching (Halford, 1995; Hill & Osborne, 2001). Regeneration of the species is limited as plants are slow-growing, seed is set intermittently, plants produce low amounts of seed, and seed have limited dispersal (Jones, 2002; Forster,

2007). Both seed and whole plants are sought after by specialist collectors and illegal collecting is expected (Halford, 1995). The species has low genetic diversity (Sharma et al. 1998) and is thus may be vulnerable to genetic inbreeding with associated 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.
- Design and implement a monitoring program.
- 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 on the reproductive ecology and survival of populations.
- Carry out genetic studies to understand the breeding system and how this may impact on long-term viability.
- Genetically characterise populations and/or individuals to establish a means of identifying illegal collections from the wild, and evidence required for prosecuting perpetrators (see for example Palsboll et al., 2006).

Regional and Local Priority Actions

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

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.
- Manage threats to areas of vegetation that contain populations/occurrences of *M. parcifolia.*
- Ensure timber harvesting activities do not adversely impact on known populations.
- Ensure road widening and maintenance or activities along the power line corridor in areas where *M. parcifolia* occurs do not adversely impact on known populations.
- Control access routes to suitably constrain public access to known sites on public land.
- Minimise adverse impacts from land use at known sites, particularly on road sides and power line corridor.
- Minimise illegal collection.

Fire

- Develop and implement a suitable fire management strategy for *M. parcifolia.*
- Provide maps 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 *M. parcifolia* within the local community.

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 *M. parcifolia*, 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

- *Macrozamia parcifolia* Species Management Profile (Halford, 1995).

This prescription was current at the time of publishing; please refer to the relevant agency's website for any updated versions.

Information Sources:

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