

Threatened Species of the Northern Territory

MACDONNELL RANGES CYCAD

Macrozamia macdonnellii

Conservation status

Australia: Vulnerable

Northern Territory: Near Threatened



Macrozamia macdonnellii (whole plant).



Macrozamia macdonnellii (female cone).



Macrozamia macdonnellii (male cone).

Description

Macrozamia macdonnellii is a distinctive dioecious cycad, often to 2 m but sometimes much taller.

Fruiting: Recorded all months except Feb

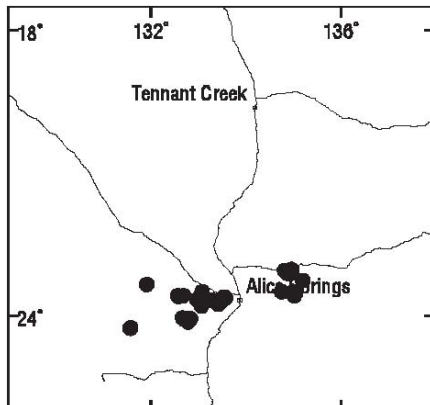
Distribution

Macrozamia macdonnellii is endemic to the Northern Territory. This species is scattered across the MacDonnell Ranges bioregion, to which it is almost endemic; there is one confirmed population 10 km north on Mount Hay in the Burt Plain Bioregion (White *et al.*

2000) and anecdotal reports indicate a highly disjunct population further north, on Mount Leichhardt (D. Wurst and C. Lines *pers. comm.*). Cycads were not found in a day of searching likely habitats on Mt Leichhardt in 2005 (D. Albrecht and P. Latz *pers. comm.*), so if present, the population may be very localised.

The species is much more common in the western part of the MacDonnell Ranges Bioregion than in the east, where the distribution is relatively disjunct. The confirmed latitudinal range is 140 km and the longitudinal range is 370 km.

Conservation reserves where reported: Alice Springs Telegraph Station Historic Reserve, Arltunga Historic Reserve, Finke Gorge National Park, Ruby Gap Nature Park, Watarrka National Park, West MacDonnell National Park.



Known locations of *Macrozamia macdonnellii*.

Ecology

It occurs on rocky sites, predominantly in gorges and on steep sheltered slopes but occasionally on exposed hills or mountain tops.

A research project in 2005 used field survey and geographic information system data to model factors controlling the distribution. The study confirmed that the species mostly occurs in relatively shady locations with relatively high soil moisture (Preece 2005). The study also provided good information on abundance at some sites. Some gorges and valleys had habitats within them with densities greater than 100 plants per hectare and with a relatively large total population. Other locations had much smaller and sparser populations. Less than 5% of individuals recorded in the study were seedlings.

The species is thought to be very long lived and Preece (2005) measured trunk lengths of greater than 4 m.

The pollination ecology is being studied by Mound and Terry (2001, and other

publications in prep.). Pollination is by a single host-specific species of thrip.



Habitat of *Macrozamia macdonnellii*.

Informal germination trials, at the Alice Springs Desert Park nursery, indicate the seeds have relatively short-lasting viability, being prone to desiccation.

Observations by David Albrecht (*pers. comm.*) indicate that recruitment is rare and probably only occurs during periods of exceptional rainfall, when soil moisture is elevated for sustained periods and when viable seed is also present or produced. The presence of the species in some 'exposed and elevated' sites (little shade or rainfall run-on) may be due to very exceptional wet periods of a magnitude or duration not seen during the historical record. Recruitment seems to be more frequent in areas where discharging ground water sustains prevailing high soil moisture, such as around springs.

It was previously thought that unfavourable fire regimes could be limiting the distribution of this species. However, a strong ability to resprout has been observed by various rangers and scientists following extensive and often very intense wildfires in 2002. The study by Preece (2005) included some testing of the influence of fire. Fire was not found to be a significant factor in the distribution of the species, but further work on this was recommended.

Conservation assessment

This species was reassessed against IUCN criteria in 2006 and its NT **status changed from Vulnerable to Near Threatened**. This was due to the reasonably large and extensive population and lack of evidence or a mechanism of decline.

Threatening processes

The illegal collection of seed for the horticultural trade is a potential threat to accessible populations. Seed poaching is known to have occurred in the past. Recruitment of new generations could be jeopardised in accessible areas because seed production is so irregular and the seeds have relatively short-lasting viability.

It is possible that increasing aridity could threaten the species in the future, although it is thought to have survived more arid climates in the past.

Conservation objectives and management

Commercial propagation using tissue culture could reduce pressure on wild populations.

A monitoring program should be established for at least representative populations. Fire management programs within conservation reserves aim to reduce fire frequency in many habitats where the species occurs.

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[June 2006]

References

- Mound, L. A., and Terry, I. (2001). Thrips pollination of the central Australian cycad, *Macrozamia macdonnellii* (Cycadales). *International Journal of Plant Sciences* 162, 147-154.
- Preece, L. D. (2005). *Distribution of the relict species Macrozamia macdonnellii in central Australia*. Honours Thesis, (University of Melbourne, Melbourne.)
- White, M., Albrecht, D., Duguid, A., Latz, P., and Hamilton, M. (2000). *Plant species and sites of botanical significance in the southern bioregions of the Northern Territory. Volume 1: significant vascular plants*. A report to the Australian Heritage Commission. (Arid Lands Environment Centre, Alice Springs.)