



Australian Government
Department of the Environment

The Minister approved this conservation advice on 18/06/2015 and included this species in the critically endangered category, effective from 26/06/2015

Conservation Advice

Lepidorrhachis mooreana

Little Mountain Palm

Taxonomy

Conventionally accepted as *Lepidorrhachis mooreana* (F. Muell.) O.F. Cook (family Arecaceae, subfamily Arecoideae)

Summary of assessment

Conservation status

Critically Endangered: Criterion 2B2(a)

Species can be listed as threatened under state and territory legislation. For information on the listing status of this species under relevant state or territory legislation, see <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

Reason for conservation assessment by the Threatened Species Scientific Committee

This advice follows assessment of information provided by New South Wales as part of the process to systematically reviewing species that are inconsistently listed under the EPBC Act and relevant New South Wales legislation.

Public Consultation

Notice of the proposed amendment and a consultation document was made available for public comment for 35 business days between 27 November 2014 and 15 January 2015. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

Species/Sub-species Information

Description

Small palm to 3 m. As is typical for Arecoideae, individuals are monoecious, but are unusual within the subfamily in that inflorescences contain flowers of one sex only, rather than both sexes, with both male and female inflorescences occurring on a single plant (Baker & Hutton, 2006).

Distribution

Known only from a single population on the Mt Gower summit of Lord Howe Island. Reported from Mt Lidgbird, but not seen in recent survey. Both extent of occurrence and area of occupancy are estimated at <4 km² using a 2 x 2 km grid (as per IUCN guidelines).

Relevant Biology/Ecology

Plants with approximately 20 leaf scars flower and set seed. Auld et al. (2010) estimate that trunked plants produce 2–3 leaf scars per year, so a plant would have a trunk for 6–10 years before being mature. The time to trunk formation is unknown but likely to be decades in the cool

cloud forest habitat. A plausible estimate is sexual maturity in 30–60 years, with life expectancy >100 years. Generation time is likely to be greater than 40 years.

Flowers are produced between August and December on densely-branched inflorescences. Numerous marble sized fruit are produced from the previous year's flowering (Baker & Hutton, 2006). It is likely to be insect pollinated but pollinators are unknown. Fruits have been observed to be dispersed by Lord Howe currawongs.

No vegetative reproduction occurs.

No long lived soil seed bank. It takes some 2 years for seed germination from fruits deposited on the soil surface. The seedling and juvenile plants then form a juvenile bank that may take advantage of small scale canopy disturbances such as tree fall/death.

Auld et al. (2010) estimated densities of plants in plots on Mt Gower summit. They estimate that in favourable habitat (this palm occurs on the ridges of the summit but not in the gullies) there were on average around 2485 mature plants per Ha. This would equate to some 33,500 mature plants across the summit of 27 Ha, assuming half of the habitat is suitable.

Threats

Exotic animals (actual) *Rattus rattus* has been on the island for some 90 years. It is having an impact on *Lepidorrhachis* (Baker & Hutton, 2006, Auld et al., 2010). All recruitment is currently eliminated in the presence of rats due to predation (Auld et al., 2010). Some 7% of the summit plateau of Mt Gower is baited to reduce rat impacts and there is a plan to try and eradicate rats for the whole island.

Weed invasion (actual) A small number of minor weeds have been recorded on the summit. Most are disturbance lovers and take advantage of edges or areas of tree fall, lightning strike, tree death. These may compete with native vegetation for recruitment in canopy gaps and cliff edges. Ongoing issue, especially if more aggressive weeds invade. Weeds identified so far are: *Agrostis avenaceus*, *Arenaria serpyllifolia*, *Avena barbata*, *Bromus carthartius*, *Lolium perenne*, *Ehrharta erecta*, *Luzula longiflora*, *Paspalum* sp., *Poa annua*, *Polycarpon tetraphyllum*, *Potentilla indica*, *Pseudognaphalium luteo-album*, *Rumex* sp., *Solanum nigrum*, *Sonchus oleraceus*, *Sporobolus africanus*, *Stellaria media*, *Vulpia bromoides*

Climate change impacts (potential) Species confined to mountain summits. There is no bioclimatic zone for species to move to. Climate change may also affect cloud formation and frequency and hence precipitation and species survival in forest. Other natives from lower elevations may also find conditions more suitable in the near future and invade this community.

How judged by the Committee in relation to the EPBC Act Criteria and Regulations

Criterion 1. Population size reduction (reduction in total numbers) Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%
A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased. A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible. A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3] A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible. based on any of the following: (a) direct observation [except A3] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites			

Evidence:

Insufficient data to determine eligibility

The Committee considers that there is insufficient information to determine the eligibility of the species for listing in any category under this criterion.

Criterion 2. Geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (number of mature individuals)			

Evidence:

Eligible under Criterion 2 B2(a)(b)(v) for listing as Critically Endangered

Both extent of occurrence and area of occupancy are estimated at <4 km² using a 2 x 2 km grid (as per IUCN guidelines) and thus the species distribution is very restricted.

The species exists at a single location and a continuing decline may be inferred based on the failure of recruitment of adults into the population due to predation by rats on fruit.

The Committee considers that the species' extent of occurrence and area of occupancy are very restricted, and the geographic distribution is precarious for the survival of the species because its occurrence is limited and decline in number of individuals may be inferred.

Criterion 3. Small population size and decline			
	Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals	< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true			
C1 An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 3 years or 1 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
C2 An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(a) (ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

Evidence:

Not eligible

There are estimated to be up to 33,500 mature plants of this species, which is not limited, low or very low. Therefore, the species has not been demonstrated to have met this required element of this criterion.

Criterion 4. Very small population			
	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
Number of mature individuals	< 50	< 250	< 1,000

Evidence:

Not eligible

There are estimated to be up to 33,500 mature plants of this species, which is not limited, low or very low. Therefore, the species has not been demonstrated to have met this required element of this criterion.

Criterion 5. Quantitative Analysis			
	Critically Endangered Immediate future	Endangered Near future	Vulnerable Medium-term future
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

Evidence:

Insufficient data to determine eligibility

Population viability analysis has not been undertaken

Conservation Actions

Recovery Plan

A recovery plan is not recommended for this species. The species requires site-based management and a plan to put this into effect has been developed by the New South Wales Office of Environment and Heritage under its Saving our Species program.

Primary Conservation Objectives

Maintain a stable population within each existing site.

1. Maintain the number and size of wild populations
2. Control rats on Lord Howe Island to enable recruitment of the species.
3. Prevent the invasion or encroachment of weeds into the species' habitat.

Conservation and Management Actions

1. Manage sites to reduce the number of feral rats
2. Manage sites to identify, control and reduce the spread of invasive species
3. Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Monitoring priorities

1. Design and implement a monitoring program or, if appropriate, support and enhance existing programs
2. More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes

Information and research priorities

1. Undertake survey work in suitable habitat and potential habitat (e.g. Mt Lidgbird) to locate any additional populations/occurrences/remnants.
2. Conduct trials of propagation to determine feasibility of establishing a glasshouse population.
3. Investigate social and other barriers to the adoption of rat control methods in the community.

Recommendations

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the Critically Endangered category:
Lepidorrhachis mooreana
- (ii) The Committee recommends that there should not be a recovery plan for this species.

Threatened Species Scientific Committee

04/03/2015

References cited in the advice

Auld, T. D., Hutton, I., Ooi, M. K. J. & Denham, A. J. (2010). Disruption of recruitment in two endemic palms on Lord Howe Island by invasive rats. *Biological Invasions* 12, 3351–3361.

Baker, W. J. & Hutton, I. (2006). *Lepidorrhachis*. *Palms* 50, 33–38.