Lepidorrhachis mooreana
(H. Wendl. & Drude) O. F. Cook

Status: **Not Evaluated in IUCN Red List. Vulnerable according to Dowe in Johnson (1996). Preliminary evaluation based on IUCN 2001 criteria: Endangered (EN B1a,bv)**

Common name

Little Mountain Palm.

Natural range

Lepidorrhachis mooreana is restricted to the summits of Mt. Gower (875 m) and Mt. Lidgbird (777 m) on the remote Lord Howe Island. It occurs only above 750 m in dwarf mossy forest that dominates the summit plateau of Mt. Gower and the narrow summit ridge of Mt. Lidgbird. This forest is home to numerous remarkable endemic species including the pumpkin tree (*Negria rhabdothamnoides*), an arborescent member of the Gesneriaceae, and *Dracophyllum fitzgeraldii* (Ericaceae). It is also the primary nesting locality of the providence petrel (*Pterodroma solandri*) and is a stronghold for the woodhen (*Tricholimnas sylvestris*), an endemic member of the rail family that was recently rescued from the brink of extinction. However, less that 0.5 km^2 of Lord Howe's total surface area of 12 km^2 is found above 750 m. The total area of suitable habitat available to *Lepidorrhachis* is thus extremely limited.

Recognition characteristics

Lepidorrhachis is very easily distinguished from the two other endemic palm genera on Lord Howe Island, *Howea* and *Hedyscepe*. It is a short solitary palm with a stem that rarely exceeds 2 m in height. It has stiff, arching leaves with short, deeply split leaf sheaths that do not form a distinct crownshaft. The sheaths are also covered with buff indumentum. Its bushy inflorescences are born below the leaves and are unisexual, both male and female inflorescences occurring on the same plant.

Natural history

Little is known of the natural history of this palm. Despite the existence of intact vegetation below 750 m, *Lepidorrhachis* remains restricted to high elevation mossy forest, suggesting that it is unable to survive in forest types at lower elevations.

Threats to survival

Introduced rats (*Rattus rattus*) are common throughout the island and eat the fruits to such an extent that regeneration is prevented. This has led to apparently uneven age structure within the populations. Only in areas recently baited to control rats has there been any significant initiation of seedling recruitment.

The small area of the summit forest leaves the populations of *Lepidorrhachis* vulnerable to stochastic events such as fire or landslips. Population regeneration is likely linked to small scale storm disturbance and tree death, but larger scale disturbances could be catastrophic. The fragile soil and vegetation are also vulnerable to damage by human visitors to the plateau. One potential threat linked

to humans is the introduction of the pathogen *Phythophthora cinnamomi* that could impact on a number of structural dominants in the cloud forest.

Invasive, introduced weed species pose a severe threat to the vegetation of Lord Howe Island. The intact, dense canopy cover on the summit of Mount Gower discourages invasion by weeds, most of which establish from seed when a canopy break occurs. At present, weeds are not a problem for Mount Gower summit, however Mount Lidgbird has a more open forest structure and weeds could pose a threat.

The most insidious threat is posed by climate change, which could effect the semi-permanent cloud cover which creates the climate necessary for the survival of the mossy forest. A small increase in the height of the cloud base would very likely have a catastrophic effect on this vegetation and the organisms that depend upon it.

Current Conservation Measures

The entire distribution of *Lepidorrhachis* falls within a permanent park preserve, which is also part of the Lord Howe Island UNESCO World Heritage Site. Tourists are permitted to visit the plateau only when accompanied by an approved guide.

The Lord Howe Island Board actively applies rat control measures in some parts of the Mt. Gower summit plateau. In these areas, *Lepidorrhachis* fruits and regenerates well. However, rat control extends only to a small part of the palm's limited distribution.

Over the past four years the LHI Board have developed a comprehensive weed strategy and plans are being made to extend this strategy to the mountains in the south of the island.

Lepidorrhachis has become the focus of several related conservation research projects. Demographic studies are currently taking place (Hutton & Auld) to evaluate the impacts of rats on regeneration. A detailed population census, demographic mapping and phenological survey will be undertaken in 2007 (Shapcott, Hutton & Auld) to determine the effective population size and assess population viability. The potential effects of climate on reproductive timing will be initially investigated by assessing the synchrony of phenological activity within and among populations especially in relation to altitude (Shapcott, Hutton & Auld). A survey of the genetic diversity within the species will investigate the differentiation between the two mountain top populations and will evaluate whether species is genetically depauperate or diverse enough to enable potential long term viability.

Additional Necessary Conservation Actions

A complete rat eradication program is currently under consideration by the Lord Howe Island Board. Though complex to implement, this ambitious plan would be very beneficial for *Lepidorrhachis*.

References

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Lepidorrachis mooreana, growing on exposed cliffs on Lord Howe Island. Photo: Bill Baker.

Ripe fruits of *Lepidorrachis mooreana*. Photo: Bill Baker