

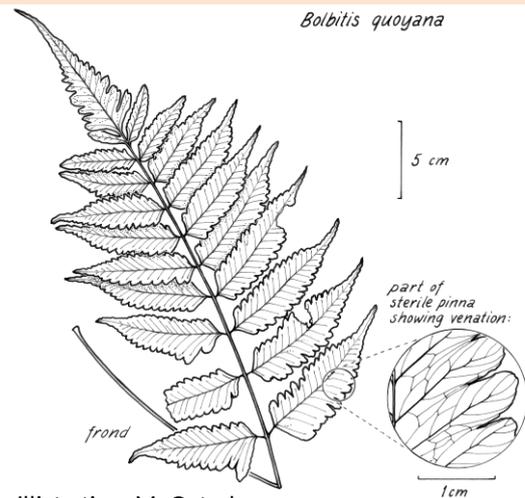
Threatened Species of the Northern Territory

Bolbitis quoyana

Conservation status

Australia: Not listed

Northern Territory: Vulnerable



Description

Bolbitis quoyana is a perennial fern to 60 cm tall. The rhizome is short and creeping. Fronds are dimorphic, with the blade pinnately divided.

Fertile period: Not recorded.

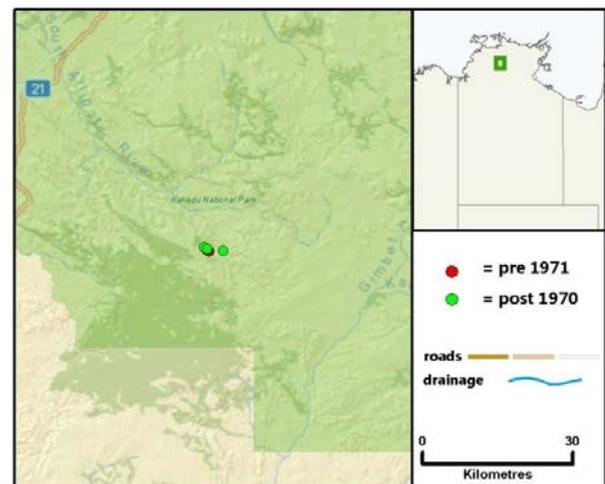
Distribution

In the Northern Territory (NT), known only from Dinner Creek, Kakadu National Park. The species is also known from several localities on Cape York Peninsula, Queensland where it is recorded as common in lowland rainforest (Jones, 1998). It also occurs in Malesia and east to Samoa.

In the NT, many fern species in wet rainforest or gorge habitats including *Bolbitis* exhibit a pattern of highly disjunct distributions with small subpopulations and short geographic ranges. Long distance dispersal events are considered disproportionately important in determining the distribution pattern of ferns. A single fern plant can produce millions of dust like spores with dispersal of some spores over thousands of kilometres being possible but rare (Keesler, 2010). It is also possible that current highly disjunct distributions are a

product of vicariance, by which an original contiguous population has been fragmented by long term climate change or geological processes.

Conservation reserves where reported:
Kakadu National Park.



Known locations of *Bolbitis quoyana*

Ecology

Grows in a protected, wet gorge where rooted onto sandstone rocks.

Conservation assessment

The NT population was estimated at approximately 200 plants in August 2003 and

plants in the lower population had been destroyed by scouring of floodwaters since the previous visit (K. Brennan pers. comm.).

It is plausible that additional subpopulations exist although none have been located during other general surveys in the Top End. There are substantial areas of potentially suitable habitat in Western Arnhem Land that are poorly surveyed at the scale and intensity necessary to exclude the possibility that more subpopulations exist. Apart from revisits to the known population there has been no systematic survey of potentially suitable habitat. However, even if several additional small populations were located, this species would still qualify for Vulnerable under criterion D1.

Experience with a number of other highly disjunct fern species indicates that NT populations are typically very limited in geographic extent and with small subpopulations limited to equally small pockets of suitable, mesic habitat. This has led to the conclusion that the probability of finding additional subpopulations is lower than had been previously inferred.

This species qualifies as **Vulnerable** in the NT (under criterion D1+2), based on:

- number of mature individuals <1 000;
- number of locations is <5; and
- an observed threat from stochastic, albeit natural, events (extreme flood damage) that could drive the taxon to Critically Endangered or Extinct in a very short time period.

While immigration and long distance dispersal can be inferred for ferns, events may be rare and too infrequent to downgrade the category when the IUCN regional algorithm is applied (IUCN 2003; Kessler 2010).

Threatening processes

Scouring by floodwaters appears to be the only known threat. This appears to be a natural phenomenon to some extent, but an increased frequency of these events may also be driven by climate change.

Conservation objectives and management

Translocation and establishment of exsitu populations would provide improved security for the species.

Establishment of a monitoring program would improve ability to detect change in the population. Location of additional subpopulations would provide additional certainty against loss of the known population through stochastic events.

Compiled by

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References

- Jones, D.L. (1998). Lomariopsidaceae. *Flora of Australia* **48**, 429–434.
- IUCN. (2003). *Guidelines for application of IUCN Red List Criteria at Regional Levels; Version 3.0.* (IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.) 26 pp.
- Kessler, M. (2010). Biogeography of Ferns. pp 22–60. In Mehlreter, K., L.R. Walker & J. Sharpe (eds) *Fern Ecology*. (Cambridge University Press, Cambridge.)