

Threatened Species of the Northern Territory

PLAINS DEATH ADDER

Acanthopsis hawkei

Conservation status

Australia: Vulnerable

Northern Territory: Vulnerable



Photo: G. Brown

Description

The systematics of the genus *Acanthopsis* is poorly resolved. Recent molecular work by Wuster *et al.* (2005) shows that what was considered the northern species *A. praelongus* is at least three species.

The plains death adder *A. hawkei* is the species associated with cracking black soil plains habitat. As for all death adders, the body is short, stout and banded, the head triangular and distinct from the neck, and the tail is slender and tipped with a spine (used to lure prey within striking distance). They grow up to 600 mm in total length.

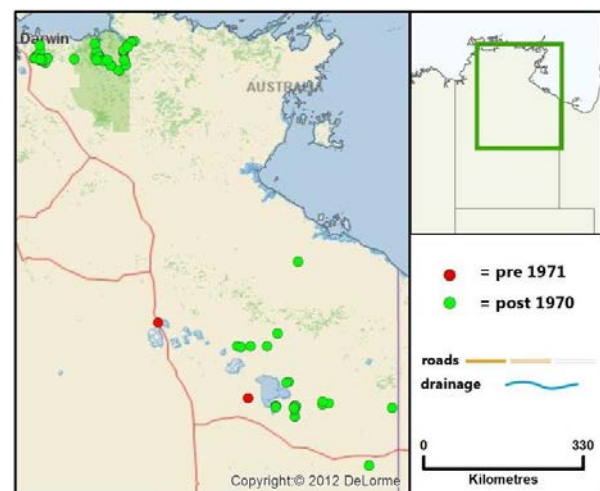
Distribution

The plains death adder has a disjointed distribution. It is known to occur on the cracking soils on floodplains of the Adelaide, Mary and Alligator Rivers as well as the cracking black soils of the Barkly Tableland on the Northern Territory (NT)/Queensland (QLD) border and the Mitchell Grass Downs of western QLD. It likely occurs on floodplains and cracking soil plains across mainland northern Australia.

The other two species in this group are *A. praelongus*, now considered confined to northern QLD, and *A. rugosus*, which occurs throughout woodlands across other parts of northern Australia. The latter species is also found in New Guinea.

Conservation reserves where reported:

Kakadu National Park, Mary River National Park, Djukbinj National Park and Fogg Dam Conservation Reserve.



Known locations of *Acanthopsis hawkei*

Ecology

The plains death adder occurs on the flat, treeless cracking-soil plains of northern Australia, where it is a major predator on frogs, reptiles and rats. They consume frogs

and lizards when young (95 per cent of their diet), but switch to mammals (typically rodents) when they reach a large size (often only attained by females, Webb et al. 2005).

Like all death adders, they are highly venomous ambush foragers (i.e. they wait in hiding until prey comes near). To attract prey to within striking distance, this species undulates its specially modified tail-tip to imitate a defenseless insect. Unfortunately, cane toads respond more strongly to this lure than do native prey species.

During the Wet season individuals move every three to ten days, in apparently random directions, distances ranging from a few metres to a kilometre (Phillips and Webb, unpub. data). Between moves, plains death adders assume an ambush position and wait for prey. When it floods they simply float in debris or rest on emergent vegetation. During the Dry season movement is less frequent and they often retreat into deep soil cracks. Radiotracking suggests that they are nomadic and do not have definable home ranges.

Male adders mature in 12 months, whereas females typically take longer (18-24 months). Adders in the wild (without toads) are unlikely to live for much more than ten years, so the generation time is likely to be between three and five years.

Conservation assessment

Plains death adders have declined sharply in numbers since the arrival of cane toads in the coastal floodplains of the NT. Monitoring at one long-term study site over five years following toad arrival suggests an 89 per cent reduction in adder numbers over this time period (Phillips *et al.* 2009). This magnitude of decline has likely happened whenever toads have invaded naïve adder populations across northern Australia. There are currently no data on the status of other populations (e.g.,

on the Barkly Tableland). It is possible that toads will not completely overlap the range of *A. hawkei* in the south of its range, as drier conditions potentially restrict the toads' spread in these areas.

Across the species' disjoint distribution in the NT, the densest populations are on the coastal floodplains of major rivers west of the Arnhem escarpment (Extent of Occurrence (EOO) c. 13 300 km²). Lower densities (less than half that found in coastal floodplain areas) are found on the blacksoil plains of the Barkly Tablelands (EOO c. 52 000 km² within the NT). Based on area and relative population densities in these two areas, the coastal floodplain population (pre-cane toads) represented approximately 40 per cent of the NT population. If the whole coastal floodplain population has crashed, or will crash, to the extent documented by Phillips et al (2010; 2008 encounter rates eleven per cent of 2004 pre-toad rates), the population decline for the total NT population is in the order of 36 per cent (assuming no decline in the Barkly population). Note that cane toads have been recorded sporadically in the northern Barkly region but their extent and numbers (and therefore their likely impact on plains death adder populations) are unknown.

This species qualifies as **Vulnerable** in the NT (under criteria A4e), based on:

- An observed population reduction (over ten years or three generations) where the time period includes both the past and the future, and where the causes of reduction have not ceased, due to the effects of an introduced taxon (cane toad).

Threatening processes

The advance of cane toads NT presents the most acute threat facing this snake species. Death adders are naïve to toads and their toxins, but because of their specialised

ambush foraging tactics are spectacularly good at attracting and catching toads, which they mistake for palatable prey (Hagman *et al.* 2009). As a consequence of their poor ability to discriminate between toads and native frogs, and because toads are extremely toxic, death adders die in large numbers when toads arrive in an area (Phillips *et al.* 2010).

There is no evidence that death adder populations recover following the arrival of toads. Toads do exert strong selection on adders to evolve avoidance behaviours and change morphology (Phillips *et al.* 2010), but whether adder populations can evolve toad avoidance behaviours before going extinct is unknown.

Conservation objectives and management

The likelihood of stopping the spread of cane toads across the NT is very small. Given our inability to prevent localised population crashes once cane toads arrive, conservation and management effort is best aimed at:

- i. monitoring depleted populations to examine for evidence of recovery; and
- ii. preventing cane toads from spreading to offshore islands with populations of death adders. However, it is possible that plains death adders do not occur on any NT islands (the species there being *A. rugosus*).

Compiled by

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References

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- Phillips, B. L., M. J. Greenlees, G. P. Brown, and R. Shine (2010). Predator behaviour and morphology mediates the impact of an invasive species: cane toads and death adders in Australia. *Animal Conservation* 13, 53-59.
- Webb, J. K., R. Shine, and K. A. Christian (2005). Does intraspecific niche partitioning in a native predator influence its response to an invasion.