

Approved Conservation Advice for *Acanthophis hawkei* (plains death adder)

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

Description

Acanthophis hawkei, Family Elapidae, also known as the plains death adder, is a short, stout-bodied terrestrial snake, similar in appearance to American and African vipers. Adults grow to a maximum length of approximately 1.2 m (Wells and Wellington, 1985) with females generally growing slightly larger than males. The species' dorsal side ranges in colour from shades of grey to a brownish-red, usually with wide, lighter bands across the body. The species' ventral side varies in colour from shades of grey to cream. The species has a somewhat flattened, triangular-shaped head (Webb et al., 2002). The end of its tail tapers rapidly, becoming thin and worm-like, and is used to lure prey within striking distance (Hagman et al., 2008).

Conservation Status

The plains death adder is listed as vulnerable. This species is eligible for listing as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as it is likely to undergo a substantial reduction in numbers due to the impact of the introduced cane toad (*Rhinella marina*) (TSSC, 2011).

Distribution and Habitat

The exact distribution of the species is unclear. Suitable habitat for the plains death adder consists of flat, treeless, cracking-soil riverine floodplains (Cogger, 2000). Based on the presence of suitable habitat, the potential geographic range of the plains death adder extends from Western Queensland, across the north of the Northern Territory to north-east Western Australia. Fragmented populations of the plains death adder are known to occur in the Mitchell Grass Downs of western Queensland, the Barkly Tableland on the Northern Territory / Queensland border and east of Darwin in the Northern Territory. The species' extent of occurrence is estimated to be approximately 720,000 km² and its area of occupancy is estimated to be approximately 233,480 km² (Phillips, pers. comm., 2009).

The species occurs within a variety of tenures including national parks, Indigenous land, military land and pastoral leases. A population exists in Kakadu National Park and in Mary River and Djukbinj National Parks in the Northern Territory. The major contiguous part of its range is the Barkly Tableland and Mitchell Grass Downs, where the predominant tenure is pastoral leases (Phillips, pers. comm., 2009).

The species occurs within the Northern Territory Southern Gulf and the Desert Channels Natural Resource Management regions. It occurs within the Darwin Coastal, Pine Creek, Daly Basin, Mitchell Grass Downs, Gulf Fall and Upland, Mount Isa Inlier and Davenport Murchison Ranges IBRA bioregions.

The distribution of this species overlaps with the EPBC Act-listed threatened ecological community 'The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin'.

Threats

The main identified threat to the plains death adder is the introduced cane toad. The plains death adder is an ambush forager and has a specialised foraging tactic of luring prey by waving the tip of its tail. Native frogs make up a large proportion of the species' diet (Webb et al., 2005). The cane toad responds more strongly to this lure than native prey species and cane toads are more likely to elicit luring from plains death adders than native prey (Hagman et al., 2008). The species does not appear to have the ability to discriminate between cane toads and native frogs (Hagman et al., 2008, 2009). The toxins in cane toads' skin typically cause death in the plains death adder and individuals have been known to die in large numbers when cane toads arrive in an area (Hagman et al., 2008, 2009; Phillips et al., 2010). Cane toads are spreading across northern Australia at a rate of approximately 40–100 km per year (Phillips et al., 2007, Urban et al., 2008) and are slowly encompassing the geographic distribution of the plains death adder. It has been predicted that by 2030 cane toads will have encompassed almost all of the species' range (Phillips et al., 2003).

Habitat modification due to over-grazing by cattle and inappropriate fire regimes are potential threats to the plains death adder. Both over-grazing and fire regimes that result in large-scale wildfires reduce ground cover and prey availability for the species. Large, unseasonal flood events may impact the plains death adders' food supply of native rats and frogs, but such events are rare and usually relatively localised (Webb et al., 2002).

The widespread practice in northern Australia of spreading waterpoints is used to help reduce grazing pressure on some country by encouraging cattle to use all the country more evenly. In practice, the number of cattle grazed usually increases, resulting in greater total grazing pressure. This practice is a potential threat to the plains death adder as it reduces groundcover, and areas that could act as refugia, for the plains death adder. The practice also has a detrimental impact on the plains death adder as it favours the survival and spread of cane toads (Johnson, pers. comm., 2010).

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Further investigate the impact of the cane toad on the plains death adder through surveys and monitoring, both prior to and following the arrival of cane toads in an area.
- Undertake further studies to determine the exact distribution of the species.
- Use DNA marker analysis to identify the species to allow differentiation between the plains death adder and its close relative *Acanthophis praelongus* (northern death adder) in order to determine the species' distribution more precisely.
- Identify optimal fire regime for the species.
- Investigate the possibility of setting up a captive breeding project.
- Investigate the risk of overgrazing to the species as a result of the practice of the proliferation of artificial watering points on land in which the species is known to occur and establish appropriate management responses as necessary.

Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of the plains death adder:

Animal Predation or Competition

- Implement the national cane toad action plan under the EPBC Act to control the adverse impacts of the introduced cane toad (in preparation).

Habitat Loss, Disturbance and Modification

- Design and implement a monitoring program for the species

- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Monitor known populations to identify any additional threats to the species.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations / occurrences / remnants.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Identify populations of high conservation priority in areas where the plains death adder occurs.
- Suitably control and manage access on private land and other land tenure.
- Minimise adverse impacts from land use at known sites.

Grazing

- Develop and implement a stock management plan for areas where the species is known to occur. Minimise overgrazing that can result from the placement of artificial watering points.
- Where appropriate, manage total over-grazing at important sites.

Fire

- Develop and implement a suitable fire management strategy for the habitat of the plains death adder.
- Where appropriate provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plans, risk register and operation maps.

Conservation Information

- Raise awareness of the plains death adder within local communities near where the species occurs.
- Engage with private landholders and land managers responsible for the land on which populations occur and encourage them to contribute to the implementation of conservation management actions.
- Investigate options for linking, enhancing or establishing additional populations.

This list does not necessarily encompass all actions that may be of benefit to the plains death adder, but highlights those that are considered to be of highest priority at the time of preparing the Approved Conservation Advice.

Existing Plans/Management Prescriptions that are Relevant to the Species

'The biological effects, including lethal toxic ingestion, caused by Cane Toads (*Rhinella marina*)' is listed as a key threatening process under the EPBC Act. The Australian Government is currently preparing a national cane toad plan under the EPBC Act (DEWHA, 2010). A national cane toad plan will provide for the research, management and other actions necessary to reduce the impact of cane toads on native species and ecological communities. In addition, community ground-control work and research projects on cane toads have been funded under the Australian Government's Caring for our Country initiative.

Various research projects have been carried out by CSIRO, state governments and universities to examine the impacts of toads on native species. A cane toad advisory group, comprised of government representatives and the Invasive Animals Cooperative Research Centre, has been established. This group provides a means for monitoring the spread of cane toads and provides access to expert advice.

State and Territory governments' have funded research on monitoring the impact of cane toads on native species and have coordinated public awareness campaigns as well as community action, such as trapping and manual removal of cane toads.

These prescriptions were current at the time of publishing; please refer to the relevant agency's website for any updated information.

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