

THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

The Minister's delegate approved this Conservation Advice on 01/04/2016.

Conservation Advice

Liopholis slateri slateri

Slater's skink

Conservation Status

Liopholis slateri slateri (Slater's skink) is listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act).

The main factors that are the cause of the species being eligible for listing in the Endangered category are: an area of occupancy of less than 500 km², with a severely fragmented distribution and inferred decline in area of occupancy, quality of habitat, and number of mature individuals.

Description

Slater's skink, also known as floodplain skink, is a medium-sized, smooth-scaled lizard with a deep blunt head and grey to greyish brown colouration (Pavey 2004; Wilson & Swan 2010). It has an average snout-vent length of 85 mm (Wilson & Swan 2010). Some large individuals grow up to 97 mm (Pavey 2004). The upper body is light to medium brown with each dorsal scale having a black edge, and in combination these scales form a series of conspicuous black longitudinal striations on the back and onto the base of the tail (Pavey 2004). The flanks may be salmon-pink and the underbody is cream to greyish-blue. The tail is over 50 percent longer than the snout-vent length (Pavey 2004).

Distribution

Slater's skink is endemic to the southern part of the Northern Territory (Wilson & Swan 2010; Cogger 2014), where it is known from locations in the Finke and MacDonnell Ranges bioregions: (1) 5 km south of Alice Springs; (2) at the junction of Ellery Creek and Jerimah Creek, adjacent tributaries of the Finke River near Hermannsburg; (3) along the Palmer River on Tempe Downs Station; (4) Illamurta Springs Conservation Reserve; (5) Owen Springs Reserve; and (6) Henbury Station (McDonald 2012; Pavey 2004). These localities include other land managed for conservation, such as Finke Gorge National Park and West MacDonnell National Park (McDonald 2012).

Slater's skink occupies eucalypt and *Acacia aneura* (mulga) woodland, open woodland, shrubland and open shrubland areas with heavy loamy soils on alluvial plains close to drainage lines (Wilson & Swan 2010; Pavey 2004). At Finke Gorge National Park, Slater's skink has been located in a range of environments including an isolated dune supporting shrubland, low rolling calcareous rises with 60 percent spinifex cover, and on an elevated, narrow, rocky creek-line (Pavey 2004).

Based on surveys carried out between 1995 and 2004, the species occurred at a minimum of five small, highly fragmented populations. The total population of Slater's skink is apparently very low, although there is no reliable estimate (Pavey 2004).

Relevant Biology/Ecology

Generally, little is known of the biology and ecology of this lizard. It digs 20-30 cm deep multi-entrance burrows in the low pedestal of soil that builds up beneath the base of trees and shrubs, particularly *Hakea divaricata* (corkwood) and *Eremophila sturtii* (turpentine) (Pavey 2004). The burrows come into close contact with the plants' tap roots. Burrows are also occasionally dug

under tussock or hummock grasses and fallen timber (McDonald 2012). The mounds into which the burrows are built form to a depth of 10–15 cm (Pavey 2004).

Individuals bask during the day at the entrance to their burrows and dart out to capture prey (Pavey 2004), although Wilson and Swan (2010) reported that Slater's skink is crepuscular—active before sunrise or at twilight—to nocturnal. It feeds on primarily arthropods. Females give birth to live young (McDonald 2012).

Threats

Based on survey records, Slater's skink was apparently abundant around Alice Springs during the 1960s, but has declined dramatically at several sites since that time (McDonald 2012). Much of the concern for the conservation of Slater's skink has been based on the disappearance of the subspecies during the 1970s from a site just south of Alice Springs, where it was formerly abundant (McDonald 2012; Pavey 2004). Trampling by feral herbivores and cattle may also cause decline.

Degradation of alluvial habitat as a result of invasion by the introduced pasture plant buffel grass (*Cenchrus ciliaris*) and the associated changes in fire regimes are potential threats, and are the most likely causes of the species' decline (McDonald 2012; Pavey 2004). This plant has radically altered the vegetation structure and species composition of drainage systems in central Australia, and is now the dominant ground cover in many alluvial systems in this region, including at the type locality (Pavey 2004). In central Australia, the pre-European fire regime of frequent small fires has been replaced by infrequent, widespread and intense summer fires (Latz 1995), partly due to the increases in fuel load correlated with buffel grass invasion (Miller et al., 2010).

At present, there is no empirical evidence demonstrating that weed invasion and associated changes in fire regimes are the cause of declines and local extinctions of Slater's skink. However, Pavey (2004) highlighted the urgent need to examine this possibility and, if the threat is verified, to develop management actions that will reduce its impact.

Conservation Actions

Conservation and Management priorities

Habitat loss disturbance and modifications

- Manage any other likely, potential or emerging threats to habitat quality, such as grazing, or invasion by other weeds.
- Ensure land managers are aware of the subspecies' occurrence and provide protection measures against key and potential threats.

Invasive species (including threats from grazing, trampling, predation)

- Develop and implement a management plan for the control of buffel grass in the central Australia region.
- If found to be a threat, eliminate buffel grass from in and around sites where Slater's skink occurs. Ensure chemicals or other methods used to eradicate buffel grass or other weeds do not have a significant adverse impact on Slater's skink, its invertebrate food source, or the covering native vegetation.
- Identify and control any new weeds that could threaten the subspecies using appropriate methods, such as herbicides or digging and removal. Consider the possible disturbance/overspray threats associated with these control methods.

Impacts of domestic species

- If livestock grazing occurs in the area and is found to be a threat, ensure land owners/managers use an appropriate management regime and density that does not detrimentally affect this species by removal of vegetation cover. Where possible,

manage total grazing pressure at important sites through exclusion fencing or other barriers.

Fire

- Develop and implement a suitable fire management strategy for the habitat of Slater's skink, preventing widespread, intense, hot fires. Consider small-scale, 'patch' burning of smaller areas in cooler seasons.
- Ensure that there is a carefully planned weed management strategy to ensure post-fire monitoring of Slater's skink and control actions for weeds are implemented.
- Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigation measures in bush fire risk management plan/s, risk register and/or operation maps.
- Mark localities where Slater's skink occurs onto maps used for planning hazard reduction work.

Stakeholder Engagement

- Raise awareness of Slater's skink within the local community (McDonald 2012). Engage with any Indigenous and private landholders and land managers responsible for the land on which populations occur, and encourage these key stakeholders to contribute to the implementation of conservation management actions.
- Continue collaboration with the Alice Springs Desert Park in conservation management activities. Establish and maintain a captive population at the Desert Park (Pavey 2004).
- Engage interested nature conservation, land management and land holder groups in conservation management activities, such as survey and monitoring, and weed management. Use workshops to aid stakeholders in developing the skills and knowledge required to manage this subspecies.

Survey and Monitoring priorities

- Conduct targeted surveys throughout the range of Slater's skink to better define its distribution and abundance. Accurately identify potentially suitable habitat and undertake survey work to locate and map any additional populations.
- Establish a research and monitoring programme at priority sites to determine trends in population size, abundance and distribution.
- Develop and implement a monitoring programme to assess and then determine trends in population size and distribution, mortality and timing of life history stages, as well as threats and the impacts, if any, of threat abatement activities.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Acquire baseline information on all populations: population size, distribution, threats and their impacts at all known sites. Initial focus should be on the impacts of weed invasion and fire frequency and intensity.
- Determine the extent of impact, if any, of buffel grass invasion on the distribution, abundance and ecology of Slater's skink (Pavey 2004).
- Investigate the association with weed invasion with the decline of the species.
- Investigate the potential impact that feral herbivores and cattle are having on the species.
- Address deficiencies in basic biological knowledge regarding the Slater skink ecology and life history, especially the environmental and other likely factors influencing breeding, such as optimal amount of ground cover vegetation and density of invertebrates.

- Develop predictive models for the species geographical distributions based on the environmental conditions of sites of known occurrences. Requires a reasonably sized data-set of species presence information plus the range of environmental variables that are known to influence the species distribution. If this data is not available then a research priority should be to collect and assimilate this information. (Phillips et al., 2006).
- Continue survey work in suitable potential habitat to locate any additional populations/occurrences.
- Develop habitat suitability models (e.g. Guisan & Zimmermann 2000) to determine the ecological/environmental indices responsible for a species distribution, and how it may change due to the impending threats. Requires a reasonable high number of presence records, plus the environmental variables located at this site and other sites chosen at random.

References cited in the advice

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McDonald, P. (2012). Threatened species of the Northern Territory: Slater's skink, *Liopholis slateri*.

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Available on the Internet at:

http://www.lrm.nt.gov.au/data/assets/pdf_file/0019/143128/Slaters_skink_VU_FINAL.pdf