

**Recovery Plan for Slater's Skink, *Egernia slateri*,  
2005-2010**



**Natural Heritage Trust**

*Helping Communities Helping Australia*

An Australian Government Initiative



**Northern Territory Government**

Department of Infrastructure, Planning and Environment

**Title: Recovery plan for Slater's Skink, *Egernia slateri*, 2005-2010.**

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## Abbreviations

ASDP	Alice Springs Desert Park, a Northern Territory government run park that displays plants and animals in typical central Australian settings
CLC	Central Land Council
CR	Conservation Reserve
DEHSA	Department for Environment and Heritage, South Australia
DIPE	Department of Infrastructure, Planning and Environment, Northern Territory
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999, Commonwealth Government Legislation
MoV	Museum of Victoria
NP	National Park
NT	Northern Territory
SA	South Australia
SAM	South Australian Museum
TSN	Threatened Species Network, a national network administered by the World Wide Fund for Nature
WA	Western Australia
WAM	Western Australian Museum

## Summary

### Current Species Status

The NT subspecies of Slater's Skink is listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and Endangered in the NT (section 29, *Territory Parks and Wildlife Act 2000*). The South Australian subspecies is listed as Endangered under legislation in that state (schedule 7, *National Parks and Wildlife Act 1972*). Slater's Skink appears to be extinct or in greatly reduced densities in locations in the Finke and MacDonnell Ranges bioregions of the NT, where it was formerly abundant, and in northern SA. All recent records of the species are from the Finke and MacDonnell Ranges bioregions in the NT. This subspecies is also recorded from the plateau of the Bungle Bungle massif in WA, although the specific identity of the specimens from this location has recently been questioned. Population size appears to be low, although its exact size is unknown. The area of occupancy is less than 500 km<sup>2</sup> and the distribution appears to be severely fragmented. No conservation actions have been implemented for the species to date and no management programs or recovery plans are in existence.

### Habitat Requirements and Threats

In the NT, Slater's Skink occurs on plains and adjacent foot-slopes of major drainages (Todd and Finke Rivers). Habitat consists of Eucalypt and Mulga woodland, open woodland, and shrubland on alluvial soils. The species burrows in soil at the base of trees and shrubs, particularly Corkwood, *Hakea divaricata*, and Turpentine, *Eremophila sturtii*. At Finke Gorge NP, Slater's Skink has been located in a range of environments including an isolated dune supporting shrubland, low rolling calcareous rises with 60% spinifex cover, and on an elevated, narrow, rocky creek-line. WA specimens were located in low open Eucalypt and Acacia woodland with spinifex (*Triodia spicata*) understory on shallow sandy soils. No detailed information is available on the habitat of the South Australian subspecies.

Degradation of its alluvial habitat as a result of invasion by the introduced Buffel Grass (*Cenchrus ciliaris*) and associated changes in fire regimes appears the most likely cause of the species' decline. In particular, the decline and disappearance of Slater's Skink from the type locality 5 km south of Alice Springs is correlated with the introduction and establishment of Buffel Grass in central Australia in the late 1960s. This weed has radically altered the vegetation structure and species composition of drainage systems in central Australia. Buffel Grass is now the dominant ground cover at the type locality and surrounding alluvial areas. However, the role of weed invasion and other potential threatening processes in the decline of Slater's Skink is yet to be conclusively established.

## Recovery Plan Objectives

### **Overall objectives**

- To achieve an accurate assessment of distribution, abundance, and systematics of Slater's Skink within five years.
- To maintain or improve the conservation status of Slater's Skink (currently endangered).

### **Specific recovery objectives**

- Assess the current distribution and population size.
- Define critical habitat.
- Clarify taxonomic status.
- Maintain a captive population as a buffer against extinction and develop methods for successful reintroduction.
- Inform and involve the community and all stakeholders in the recovery process.

### **Recovery criteria**

- Location and size of populations in northern SA, southern NT and northern WA is established.
- Critical habitat has been defined.
- Specific status and species boundaries are resolved.
- Captive population successfully maintained.
- Protocols for potential reintroduction into the wild are developed.
- Community based networks are developed and maintained.

### **Actions Needed**

- Carry out targeted surveys at previous collection sites and other areas of suitable habitat.
- Assess size of each population.
- Assess habitat at current and former sites of occurrence to define habitat critical.
- Conduct a taxonomic and phylogenetic assessment of the species using morphological and molecular characters.
- Husbandry of captive population and development of reintroduction protocols.
- Community education and information.

### **Estimated costs of recovery (in \$1000s)**

<b>Actions</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>	<b>Total</b>
1	25.0	10.0	5.0	20.0	30.0	90.0
2		15.0	15.0	15.0	15.0	60.0
3			25.0			25.0
4		27.5	27.5			55.0
5		35.0	35.0	35.0	35.0	140.0
6	1.0	1.0	1.0	1.0	5.0	9.0
<b>Total</b>	<b>26.0</b>	<b>88.5</b>	<b>108.5</b>	<b>71.0</b>	<b>85.0</b>	<b>379.00</b>

**Biodiversity Benefits**

Slater's Skink is a species typical of floodplains dominated by Eucalypt and Mulga woodland, open woodland and shrubland on alluvial soils in central Australia. This environment has been degraded by a combination of cattle grazing, invasion by the introduced Buffel Grass, and changed fire regimes. The management, protection, and restoration of this environment will have benefits for the ecological integrity of plant and animal species especially those in Ironwood (*Acacia estrophiolata*) low open woodland and River Red Gum (*Eucalyptus camaldulensis*) woodland. The latter vegetation association supports a high richness of vertebrates including a suite of hollow-dependent birds, mammals and reptiles (Neave, Nano, Pavey *et al.* 2004). Conservation of Slater's Skink habitat has benefits for other threatened and near threatened species including the Desert Sand Skipper (*Croitana aestiva*), a butterfly endemic to the MacDonnell Ranges bioregion.

## Introduction and General Requirements

### Species Description

Slater's Skink (*Egernia slateri*: Scincidae), also known as Floodplain Skink, is a medium-sized, smooth bodied lizard with an average snout-vent length of 85 mm (Horner 1992). Some large individuals grow up to 97 mm. It has a short snout and large head. The upperbody is light to medium brown with each dorsal scale having a black edge. In combination these scales form a series of conspicuous black longitudinal striations on the back and onto the base of the tail. The flanks may be salmon-pink and the underbody is cream to greyish-blue. The tail is over 50% longer than the snout-vent length.

### Conservation Status

The NT subspecies of Slater's Skink, *Egernia slateri slateri*, is listed as Endangered under the EPBC Act. The status of Endangered is also assigned to it under section 29 of the *Territory Parks and Wildlife Act 2000*. Although this subspecies is recorded from the Bungle Bungle massif, WA (Woinarski 1992), it is not listed under any schedules of the *Wildlife Conservation (Specially Protected Fauna) Notice 1999* of the *WA Wildlife Conservation Act 1950*. Further, the taxonomic status of specimens from WA identified as this species has recently been questioned (Aplin and Smith 2001).

The South Australian subspecies, *Egernia slateri virgata*, is not listed under the EPBC Act. However, it is considered Endangered under schedule 7 of the *South Australian National Parks and Wildlife Act 1972*.

### International Obligations

Slater's Skink is not listed in any of the Appendices of the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) or other international treaties. As a consequence, implementation of Australia's responsibilities under various international treaties is not affected by this plan.

### Affected Interests

Slater's Skink is at present known from three conservation reserves managed by the NT government, two Aboriginal-owned pastoral leases (Tempe Downs Station, Loves Creek Station) managed by the CLC, and Aboriginal land managed by the Tjuwampa Outstation Resource Centre. Previous sites of occurrence include Territory and Commonwealth land. Work described in this plan will be carried out mostly on conservation reserves, and Aboriginal land.

All affected interests will be involved in the implementation of this plan to some degree. State/Territory government agencies, particularly DIPE, will be involved



in many recovery actions and will play a key role in the plan's implementation. Monitoring and management actions undertaken on Aboriginal land will be carried out in consultation with the CLC and other relevant Aboriginal organisations and communities. Aboriginal people will be employed in fieldwork where possible. Pastoralists will be encouraged to play an increased role in Slater's Skink recovery if the opportunity arises.

### **Role and interests of indigenous people**

The recent shift towards the joint management of conservation lands in the NT opens up opportunities for the involvement of Aboriginal people in many aspects of conservation management. DIPE is currently working towards the inclusion of traditional owners, other indigenous people with detailed traditional knowledge, and young indigenous apprentices to guide and assist with the development and implementation of joint management procedure. In particular, a traditional ecologist will be consulted to facilitate the incorporation of indigenous knowledge on biology, threatening processes and cultural and economic significance (if any) of Slater's Skink in the recovery process.

The successful recovery of Slater's Skink will involve some actions on Aboriginal land. Work undertaken on Aboriginal land will involve traditional owners and other Aboriginal people as much as possible, particularly to assist in:

- survey and monitoring projects, and
- carrying out management actions.

### **Social and economic impacts**

The implementation of the recovery plan is unlikely to result in any significant adverse social and economic impacts.

## **Distribution and Habitat**

### **Distribution**

#### *Historical distribution*

Two subspecies are described; *E. s. slateri* from the southern NT and *E. s. virgata* from northern SA. The SA subspecies is known from only six specimens; two held in the MoV and four in the SAM. The exact location is not known for any of these specimens. The MoV specimens were collected on the Horn Expedition in 1896. The Expedition used the rail terminus at Oodnadatta as a starting place and then traveled north through Macumba and Dalhousie Springs into the NT. The SAM specimens probably were collected during Captain S. A. White's 1914 expedition that began at Oodnadatta following the course of the Neales River north-west toward the Everard Range and then turned north to the eastern Musgrave Range (M. Hutchinson personal communication).

The NT subspecies has been collected from locations in the Finke and MacDonnell Ranges bioregions. In the 1960s the subspecies appears to have been abundant around Alice Springs. Fifty-eight specimens were collected at the type locality 5 km south of Alice Springs in the Finke bioregion in 1964 and 1965. Another 32 specimens were collected at the junction of Ellery Creek and Jerimah Creek, adjacent tributaries of the Finke River near Hermannsburg (MacDonnell Ranges bioregion) in 1964. Ken Slater and David Lindner collected these specimens. A single specimen was taken on the Palmer River on Tempe Downs Station (Finke bioregion) in 1965 by Slater and Harold Cogger. Prior to this, E. G. Cowle took two specimens in 1897 at what is now Illamurta Springs CR (MacDonnell Ranges bioregion).

#### *Current distribution*

Since the 1960s numbers have declined dramatically. Surveys of the Alice Springs and Ellery Creek-Jerimah Creek localities, plus nearby sites, failed to locate any individuals during 1995 and 1999-2000. An *Egernia* specimen obtained during a survey of Loves Creek Station, East MacDonnell Ranges (MacDonnell Ranges bioregion), in 1989 is likely to be this species (Gibson, Thomson, Coleman *et al.* 1992, S. McAlpin personal communication). In the same year three specimens were taken and other individuals captured well out of range in Purnululu (Bungle Bungle) National Park in the Ord-Victoria Plains bioregion, WA (Woinarski 1992). Aplin and Smith (2001) suggest that this population may not actually be *E. s. slateri*, rather it may represent an undescribed species or the closely related Striated Egernia, *E. striata*. However, given that the taxonomic status of the population has not been resolved, it is considered as *E. s. slateri* for the purposes of this recovery plan.

The only records of Slater's Skink between 1995 and 2000 were seven specimens captured in Finke Gorge NP (MacDonnell Ranges bioregion). A survey carried out by Greg Fyfe (ASDP) in May 2004 located individuals at one new location (near the Hugh River on Owen Springs Reserve, MacDonnell Ranges bioregion), and three previously known locations: Illamurta Springs CR, Tempe Downs Station, and Ellery Creek.

#### **Habitat**

In the NT, Slater's Skink occurs on plains in the valleys of major drainages (Todd and Finke River). Habitat on these floodplains consists of Eucalypt and Mulga woodland, open woodland and shrubland on alluvial soils. The species burrows in soil at the base of trees and shrubs, particularly Corkwood (*Hakea divaricata*) and Turpentine (*Eremophila sturtii*), but also *Eremophila maculata*. Individuals located during surveys of sites in the MacDonnell and Finke bioregions during 2004 occurred in loamy (not sandy) soils, mostly at the edge of floodplains i.e. at the base of stony rises (G. Fyfe unpublished data).

At Finke Gorge NP, Slater's Skink has been located in a range of environments including an isolated dune supporting shrubland, low rolling calcareous rises with 60% spinifex cover, and on an elevated, narrow, rocky creek-line. The Loves Creek specimen was caught in low shrubland on the stony foot-slopes of a quartzite range (Gibson et al. 1992).

In WA the species is known from low open Eucalypt and Acacia woodland with spinifex (*Triodia spicata*) understory on shallow sandy soils. Burrows were located at the base of clumps of spinifex (Woinarski 1992). All records are from the sandstone plateau of the Bungle Bungle massif.

No detailed information is available on the habitat of the South Australian subspecies as a consequence of the exact collection locations being unclear.

## Known and Potential Threats

### Biology and ecology

In general, very little is known about the ecology of this lizard. Slater's Skink is a restricted range, arid representative of a species group that is more typical of semi arid and temperate regions of Australia (Henzell 1972, 1982). It is viviparous (females give birth to live young). The diet includes insects (Henzell 1972) and probably other ground-dwelling arthropods.

Slater's Skink digs 20-30 cm deep multi-entrance burrows into the low pedestal of soil that builds up beneath corkwoods and eremophilas. The burrows come into close contact with the plants' tap roots. The mounds into which the burrows are built form to a depth of 10-15 cm and are likely to result from the deposition of wind-carried alluvium. The burrowing behaviour of Slater's Skink may have energetic advantages because the humidity in the air spaces around the plant's roots is likely to be high which would reduce the rate of evaporative water loss experienced by the lizards (Henzell 1972).

Individuals bask during the day at the entrance to their burrows and dart out to capture prey. The species appears to have a continuous diurnal exposure pattern i.e. it remains above ground throughout the day (Henzell 1982). Whether activity is diurnal or nocturnal is unclear.

### Reasons for Listing

The decline in the population of Slater's Skink appears to have occurred earlier than is relevant to IUCN status assignment (i.e. <10 years or 3 generations). The species still qualifies as **Endangered** under IUCN criteria as detailed below.

1. *B1* extent of occurrence <5,000 km<sup>2</sup> and *a* (severely fragmented) and *b* (continuing decline, observed, inferred or projected in: ii) extent of occurrence, and iii) area, extent and/or quality of habitat).

2. *B2* area of occupancy <500 km<sup>2</sup> and *a* (severely fragmented) and *b* (continuing decline, observed, inferred or projected in: ii) area of occupancy, and iii) area, extent and/or quality of habitat).
3. *C* population size estimated to number fewer than 2,500 mature individuals and 2 *a* continuing decline, observed, inferred or projected, in numbers of mature individuals and *a* (*i*) no subpopulation estimated to contain more than 250 mature individuals.

#### *Continuing decline and local extinction*

Slater's Skink appears to have disappeared from one site and declined at another site between 1975-1995. At both sites it was formerly abundant. Specifically, at the type locality south of Alice Springs, 31 specimens were obtained during two days of collecting in the spring of 1964. The last specimen at the site was collected in 1975. No animals were seen during surveys in November-December 1995 (100 pit trap nights, 78 Elliot trap nights), April 2000 (260 pit trap nights), September 2000 (480 pit trap nights) and November 2000 (24 pit trap nights). In addition, survey effort involved 50 hours of active searching, and the digging up of 20 burrow systems that potentially belong to this species (McAlpin 2000). A further survey in April 2003 involving 150 Elliot trap nights and 15 pit trap nights did not locate the species. The type locality is being developed as part of the Desert Peoples Centre, a 16 ha development within the larger (130 ha) Desert Knowledge Precinct, located within the Alice Springs Municipality between Heavitree Gap and the Alice Springs airport.

Although individuals have recently been seen at Ellery Creek, these are the first records from the location for over 30 years despite considerable search effort including 18 hours of active searching and excavation of potential burrows (McAlpin 2000). This pattern indicates that the population of Slater's Skink at Ellery Creek has either declined in abundance or experienced large fluctuations in population size.

The South Australian subspecies has not been located for almost one hundred years and possibly may be extinct. However, targeted searches are needed to verify its status. Similar surveys are needed to assess the status of the WA population of *E. s. slateri*.

#### *Small population size and limited geographic range*

Based on surveys carried out between 1995 and 2004, the species occurs in a minimum of five small, highly fragmented populations in the southern NT. Populations are located in Finke Gorge NP, Illamurta Springs CR, Owen Springs Reserve, Tempe Downs Station, and at Ellery Creek. Only seven specimens were captured from five locations within Finke Gorge NP. The total population of Slater's Skink appears to be very low, although at this stage no reliable estimate can be given. The size of the WA population is unknown.

## **Current threats**

No threatening processes have been positively demonstrated, although McAlpin (2000) has identified a number of likely threatening processes in the southern NT. Degradation of its alluvial habitat as a result of invasion by the introduced Buffel Grass (*Cenchrus ciliaris*) and associated changes in fire regimes, appears the most likely cause of the species' decline. In particular, the decline and disappearance of Slater's Skink is correlated with the introduction and establishment of Buffel Grass into central Australia in the late 1960s. This weed has radically altered the vegetation structure and species composition of drainage systems in central Australia. Buffel Grass is now the dominant ground cover at the type locality and surrounding alluvial areas. At the type locality, the species occurred at high densities in the 1960s and 1970s despite it being heavily grazed by cattle (G. Fyfe personal communication).

At present, no empirical evidence is available that identifies weed invasion and associated changes in fire regimes as the cause of declines and local extinctions of Slater's Skink. However, there is an urgent need to examine this possibility and, if the threat is verified, to develop management actions that will reduce its impact.

## **Areas and populations under threat**

The spread of Buffel Grass and its impact on fire regimes is widespread in central Australia, particularly on floodplains. Given that Slater's Skink is probably extinct at the type locality, habitat restoration will be necessary before individuals could be reintroduced. Locations in Finke Gorge NP are generally well protected and under active weed, fire and feral animal management. The WA population of Slater's Skink occurs on the plateau of the Bungle Bungle massif, an isolated area that is difficult to access (Woinarski 1992). As a consequence, no threatening processes appear to be acting on this population at present

## **Existing Conservation Measures**

No management programs or recovery plans for the species are in existence. Slater's Skink is identified as a priority for conservation in the southern NT by Pavey (2002). Field surveys for the species have already commenced and are ongoing. Management priorities for the species in the NT are to:

- clarify and map its distribution;
- determine the impact of Buffel Grass invasion on its abundance, distribution and ecology;
- clarify its taxonomic status; and
- establish a captive population at the ASDP.

## **Strategy for Recovery**

The recovery program for Slater's Skink covers the time period 2005-2010 and aims to carry out the following tasks:

- conduct targeted surveys for the species in suitable habitat;
- clarify and map the current distribution;
- clarify its taxonomic status;
- establish and maintain a viable captive breeding population
- develop reintroduction protocols; and
- assess its abundance.

## **Recovery Objectives and Criteria**

### **Overall Objectives**

- To achieve an accurate assessment of distribution, abundance, and systematics of Slater's Skink within five years.
- To maintain or improve the conservation status of Slater's Skink (currently endangered).

### **Specific Recovery Objectives**

- Assess the current distribution and population size.
- Define suitable habitat.
- Clarify the taxonomic status especially with reference to the population in the Bungle Bungle Range, WA.
- Maintain a captive population as a buffer against extinction and develop methods for successful reintroduction
- Inform and involve the community and all stakeholders in the recovery process.

**Table 1. Relationships between specific objectives, recovery criteria and actions.**

Objectives		Recovery Criteria		Actions
<ul style="list-style-type: none"> <li>Assess the current distribution and population size of the species</li> </ul>	↔	<ul style="list-style-type: none"> <li>Location and size of main populations is established</li> </ul>	↔	<ol style="list-style-type: none"> <li>1. Carry out targeted surveys at previous collection sites and other areas of suitable habitat</li> <li>2. Assess size of each population</li> </ol>
<ul style="list-style-type: none"> <li>Define critical habitat</li> </ul>	↔	<ul style="list-style-type: none"> <li>Critical habitat has been defined</li> </ul>	↔	<ol style="list-style-type: none"> <li>3. Assess habitat at current and former sites of occurrence to define suitable habitat</li> </ol>
<ul style="list-style-type: none"> <li>Clarify the taxonomic status of the species</li> </ul>		<ul style="list-style-type: none"> <li>Specific status and species boundaries are resolved</li> </ul>		<ol style="list-style-type: none"> <li>4. Conduct a taxonomic and phylogenetic assessment of the species using morphological and molecular characters</li> </ol>
<ul style="list-style-type: none"> <li>Maintain a captive population as a buffer against extinction and develop methods for successful reintroduction</li> </ul>	↔	<ul style="list-style-type: none"> <li>Captive population successfully maintained</li> <li>Protocols for potential reintroduction into the wild are developed</li> </ul>	↔	<ol style="list-style-type: none"> <li>5. Husbandry of captive population and development of reintroduction protocols</li> </ol>
<ul style="list-style-type: none"> <li>To inform and involve the community and all stakeholders in the recovery process</li> </ul>	↔	<ul style="list-style-type: none"> <li>Community based networks are established and maintained</li> </ul>	↔	<ol style="list-style-type: none"> <li>6. Community education and information</li> </ol>

## Recovery Actions

### Action 1. Carry out targeted surveys.

#### Aim

To identify all extant populations of Slater's Skink.

#### Justification

Surveys in winter 2003 (G. Fyfe unpublished data) identified suitable habitat and burrow entrances of suitable size at a number of sites in the MacDonnell Ranges and Finke bioregions. A follow-up survey in May 2004 located animals at four sites. Further surveys are needed to determine whether Slater's Skink is (i) present in other areas of the NT; (ii) extant in northern SA; and (iii) the extent of its occurrence in northern WA. A survey trip to Purnululu (Bungle Bungle) NP, WA is scheduled for year 1 to collect material for a taxonomic assessment of Slater's Skink (action 4). Further WA surveys will only be undertaken in years 4 and 5, which is after the taxonomic assessment is completed, and then only if the WA population is shown to be *E. slateri*.

#### Methods

An experienced herpetologist will visit sites in summer to attempt to locate specimens of Slater's Skink.

Sites for *E. s. slateri* in the NT will be:

- previous collection sites in the MacDonnell Ranges (Finke Gorge NP, Loves Creek Station) bioregion; and
- potential sites (i.e. presence of suitable sized *Egernia* burrows and suitable habitat) elsewhere in the southern NT.

Surveys for *E. s. slateri* in WA will be centred on Purnululu (Bungle Bungle) NP.

Surveys for *E. s. virgata* will take place in the Oodnadatta region especially along the Neales River and into the Everard Range.

The methodology will involve searching for suitable burrow systems and then attempting to observe animals basking during the day. If animals are observed, a number of methods of capture will be attempted including placing Elliot traps at the entrance of burrows, pitfall trapping in the vicinity of burrows or by digging out burrows.

#### Stakeholders

DIPE, ASDP, CLC, DEHSA, WAM

Costs (\$1000s)

Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
25.0	10.0	5.0	20.0	30.0	90.0



## **Action 2. Assess size of each population.**

### **Aim**

To estimate the size of each population of Slater's Skink.

### **Justification**

Information on the size of each population of Slater's Skink is essential as a basis for future conservation and management decisions.

### **Methods**

An experienced herpetologist will visit all populations and estimate the number of individuals present in each. A number of methods will be trailed to assess population size. Information needed to estimate population size includes the number of burrow systems present, the proportion occupied and the number of animals estimated to be present in each. Mark-recapture may be an important component of this action, in which case animals will be captured and marked with PIT tags.

### **Stakeholders**

DIPE, ASDP, CLC, DEHSA

Costs (\$1000s)

Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
	15.0	15.0	15.0	15.0	60.0

## **Action 3. Assess habitat at current and former sites of occurrence to define critical habitat.**

### **Aim**

To understand the components of suitable habitat for the species.

### **Justification**

Slater's Skink is endangered and in decline; however, sizeable areas of seemingly suitable habitat remain in the MacDonnell Ranges and Finke bioregions of central Australia. Understanding the habitat requirements of the species is an important step in defining habitat critical, identifying areas for future survey, and assessing the impacts of threatening processes.

### **Methods**

A scientific officer will carry out vegetation and soil assessments at all sites where the species is located. Data will be collected on a range of parameters including:

- soil type and depth,

- ground surface slope and altitude,
- vegetation type,
- plant size distribution, and
- plant species composition.

In addition, information on fire history and past land use practices will be collated from available databases and interviews with residents and land use managers. These data will be used to develop an outline of suitable habitat for Slater's Skink.

### Stakeholders

DIPE, CLC, DEHSA

Costs (\$1000s)

Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
		25.0			25.0

### Action 4. Conduct a taxonomic and phylogenetic assessment of the species using morphological and molecular characters.

#### Aim

To understand the evolutionary history of Slater's Skink and population level variation within the species.

#### Justification

The species boundaries of Slater's Skink and its relationship with other members of the *Egernia whitei* species-group are poorly understood. The *Egernia whitei* species-group was last revised by Storr (1968). This lack of clarity is of significance when assessing the conservation status of Slater's Skink. Specifically, it is now uncertain if specimens collected in Purnululu (Bungle Bungle) NP, WA and identified as *E. s. slateri* (Woinarski 1992), are actually Slater's Skink or the closely-related Striated Egernia, *E. striata*, or an undescribed taxon (Aplin and Smith 2001). If these specimens are indeed Slater's Skink, future assessments of the species' distribution and status may alter and suitable sites between this location and central Australia may need to be surveyed. A re-assessment of species boundaries within this group is needed and should include molecular characters.

#### Methods

A study combining morphological and molecular characters will reassess the species boundaries of Slater's Skink and examine its phylogenetic status. To facilitate this task, it will be necessary to collect tissue samples from specimens captured during Recovery Actions 1 and 2.

#### Stakeholders

Evolutionary Biology Unit, SAM.

Costs (\$1000s)

Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
	27.5	27.5			55.0

### **Action 5. Husbandry of captive population and development of reintroduction protocols.**

#### **Aim**

To establish and maintain a captive population of Slater's Skink and to develop methods for the successful reintroduction of captive animals into the wild.

#### **Justification**

The causes of the decline of Slater's Skink in the wild are currently unknown and the potential threatening processes identified in this recovery plan, the spread of introduced Buffel Grass and its impact on fire regimes, are not effectively managed. Therefore, the continued persistence of Slater's Skink in the wild is uncertain. The establishment and management of an *ex-situ* population are important steps in the species' conservation until its status in the wild is better understood. A captive population may also be used in experimental re-introductions to determine the causes of the species' decline. However, a number of risks are associated with the release of captive animals into the wild including parasite transmission and movement of animals away from the release site because of inappropriate habitat or social context. Therefore, it is important that suitable reintroduction protocols are developed. The complex social structure of *Egernia* species means that social context is an important issue for reintroduction biology.

#### **Methods**

A captive breeding population will be established at the ASDP. A final decision on whether or not to do this will be made after the first field season and it will depend on the number of new populations located. Captive management will be based on a captive management strategy that will incorporate housing requirements, inbreeding control (pedigrees), optimum population size, and research needs. Research will be undertaken on the captive colony to assess the risk of parasite transmission if animals are reintroduced into the wild and to understand the appropriate social context in which reintroductions should be attempted. A set of reintroduction protocols will be developed based on the results of this research on captive animals.

#### **Stakeholders**

ASDP, SAM, Flinders University (Adelaide), DIPE

Costs (\$1000s)

Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
	35.0	35.0	35.0	35.0	140.0

## **Action 6. Community education and information.**

### **Aim**

To improve the profile of Slater's Skink and educate the community about its status and potential extinction.

### **Justification**

Slater's Skink is arguably the most threatened vertebrate in central Australia and it is the only threatened vertebrate that has its range centred on Alice Springs. However, it is not widely known in the general community (including central Australia) and also has a poor scientific profile. This situation should be addressed because the plight of Slater's Skink may be an important indication of the damaging consequences for biodiversity in arid Australia of inappropriate management of floodplain environments.

### **Methods**

Information on Slater's Skink will be provided to the community via media releases and by preparing material for various newsletters and newsgroups. The species may be put on display at the ASDP. Interpretive material should be produced to highlight the importance of conservation reserves and effective management of floodplain habitat to the continued survival of Slater's Skink.

### **Responsibilities**

DIPE, ASDP, TSN

Costs (\$1000s)

<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>	<b>Total</b>
1.0	1.0	1.0	1.0	5.0	9.0

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## Figures

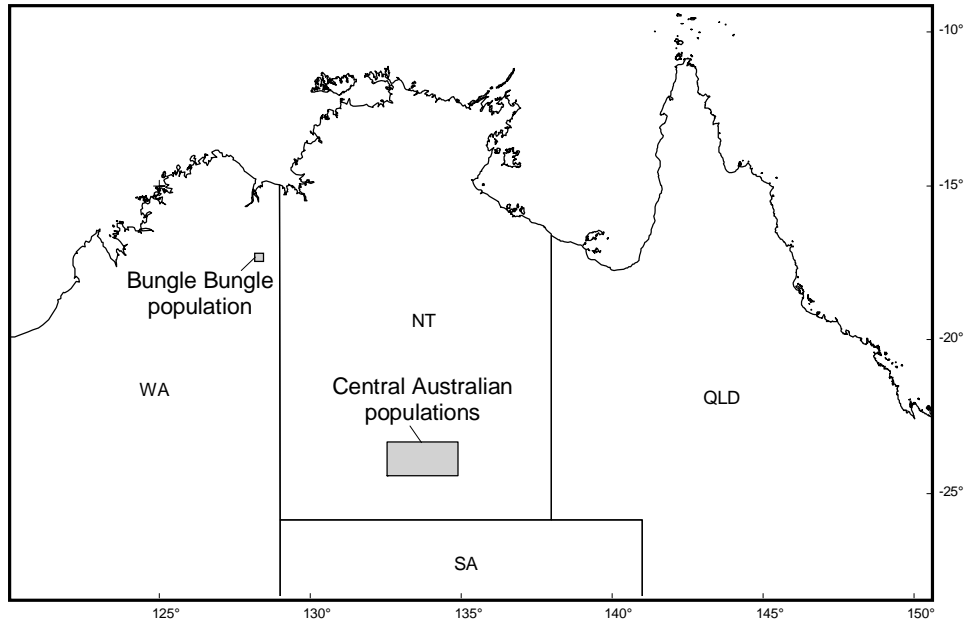


Figure 1. Location of Slater's Skink populations in WA and the NT

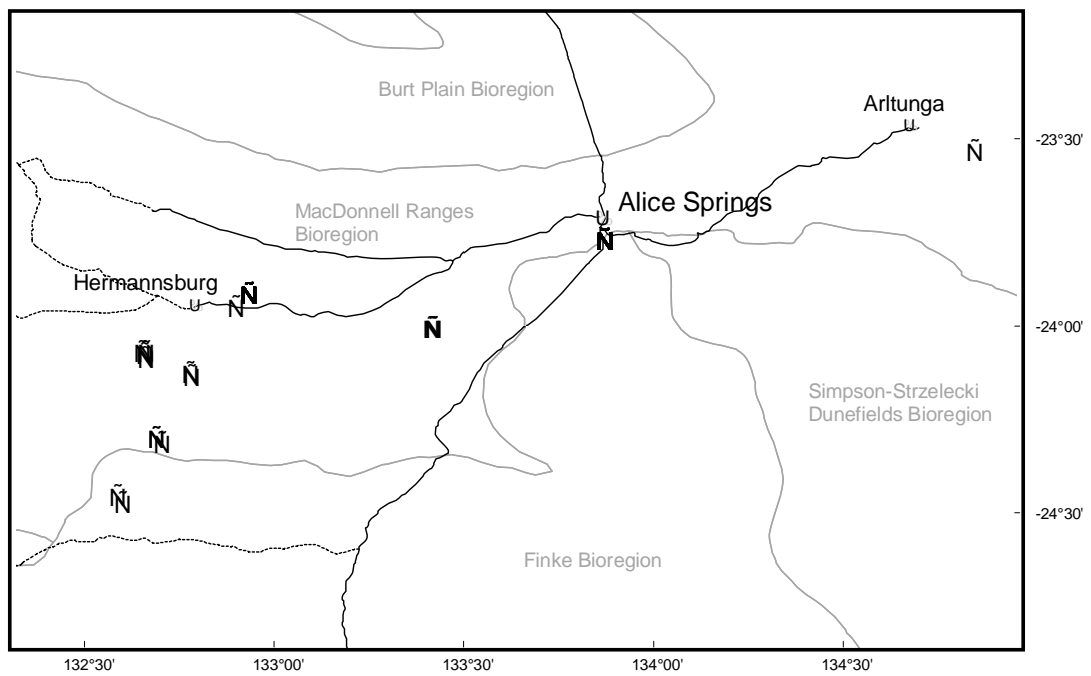


Figure 2. Location of Slater's Skink records in central Australia