Little Desert National Park Bush Blitz

Reptiles and amphibians

Survey dates: 20-26 October, 2019

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Nomenclature and taxonomy used in this report is consistent with:
The Australian Faunal Directory (AFD)

Heath Monitor, *Varanus rosenbergi*, Little Desert NP

Photographer: Ricky-Lee Erickson| Source: Museums Victoria

Contents

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List of contributors to this report.			
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Abstract

The western desert region of Victoria is a unique environment, with a number of herpetofauna found nowhere else in the state, and extremely high reptile diversity for Victoria. We conducted an extensive survey from 20-26th October, 2019, focussing on the central portion of the Little Desert National Park and surrounds. We aimed to document reptile and amphibian species present in the area and assess the effect of recent fire history on the species diversity. Using active searches and pit fall trap lines we caught 2 species of frogs and 18 species of reptiles.

1. Introduction

This project aims to provide a baseline record of reptile and amphibian species in the Little Desert National Park region at the present time, by catching and photographing animals and taking tissue samples for Museums Victoria's collections. This survey will enable studies on species biodiversity, genetics and populations, pathogens and disease and have important implications for conservation management.

Museums Victoria has a good collection of voucher specimens from the Little Desert National Park, comprising 469 reptile voucher specimens of 24 species, the majority of which were collected between 2002 and 2004. There are 147 frog voucher specimens across 8 species, but all were collected between 1958 and 1986, the majority in the 1970s. Museums Victoria has very few tissue samples and recent voucher specimens from the Little Desert National Park and surrounding areas. Specifically, Museums Victoria holds 44 tissues samples from 7 species (34 of these samples are from *Ctenophorus pictus*) and only 21 vouchers collected since 1999 from 9 species. Museums Victoria doesn't have any frog tissues from the Little Desert and the most recent voucher specimens were collected in 1986. This lack of recent collecting for reptile and amphibian species is a huge gap as the Little Desert is a unique ecosystem in Victoria, with numerous reptile species only found in this area in Victoria. In addition, there has been a change in fire management policy with the implementation of a per-hectare burn quota following the 2009 Black Saturday Bushfires. It is unknown what impact this has had on the reptile and amphibian fauna in the Little Desert. Surveys to monitor species presence and to collect tissue samples will provide an important baseline for biodiversity assessments and genomic research.

2. Methods

2.1 Site selection

Sites were selected to provide a cross-sample of the range of habitats occurring in the Little Desert National Park and surrounds. In particular, we focussed efforts on areas across a range of fire histories. We used the location of pit-trapping sites that had been established over the previous 15 years by Parks Victoria as a starting point and chose 7 of the 21 available sites that covered both recently burned and long unburned areas of the park. We chose sites that were all in the central block of the National Park to enable us to check all sites within a few hours, ensuring animals were not in traps for too long. The samples and voucher specimens are particularly important to provide a baseline for currently biodiversity in this region and will provide an invaluable resource to research both now and in the future.

Sites Surveyed in Little Desert National Park: Red Gum Track, site RC 1 (36 32 53 S - 36 32 53 S, 141 37 35 E - 141 37 35 E); Stans Camp Track, site RC 2 (36 31 07 S - 36 31 06 S, 141 31 27 E - 144 31 48 E); Brooks Track, site RC 3 (36 34 38 S - 36 34 38 S, 141 31 42 E - 141 31 42 E); Fenceline Track, site RC 4 (36 34 27 S - 36 34 28 S, 141 28 02 E - 141 28 01 E); Plains Track, site RC 7 (36 33 20 N, 141 20 27 E); Standard Site 1 River Track, south of Ackle Bend (36 30 13 S, 142 01 14 E); Standard Site 2, Broughtons Waterhole (36 34 02 S, 141 20 13 E).

Sites Surveyed in Urimbirra Cooperative Land: site RU 1 (36 29 57 S, 141 23 24 E); site RU 2 (36 31 38 S, 141 24 02 E); site RU 3 (36 31 46 S, 141 24 08 E); site RU 4 (36 31 37 S - 36 31 36 S, 141 23 45 E - 141 23 44 E) site RU 5 (36 32 10 S, 141 23 52 E).

2.2 Survey techniques

Reptiles

Three different capture techniques were used for reptiles: pitfall trap lines, hand capture and noosing with dental floss. Lizards and snakes were actively searched for at sites and hand-caught. Dragon lizards and some skinks were captured using a dental floss slip-noose on the end of an extendable fishing pole. Drift fences with pitfall and yabby traps were used in the desert regions. These trap lines were set up with the assistance and permission of local management authorities and cooperative members for Urimbirra Cooperative sites. Pit fall bucket lines were between 10 and 15 m long with 10 buckets and 4 yabby traps along the length and drift fencing running between the buckets that was approximately 10 m in length, and 30cm high. Yabby traps were placed in two pairs on either side of the drift fence and covered with shade cloth to give protection against heat during the day. Due to the likelihood of small mammals being caught in the pit fall buckets, each bucket had a 15 cm section of PVC piping in the base filled with dacron for warmth and 5-10 sunflower seeds for energy. All reptiles and mammals caught via these methods were measured, photographed in-hand, weighed, sexed, and a tissue sample collected at sampling site. Tissue sampling for reptiles was a tail tip or, in larger species, a scale clip and mammals were ear clipped. Animals were then released at point of capture within 10 minutes. Once an animal was caught all other activity ceased and the field team focussed on processing the single animal, minimising handling time of the animal.

Amphibians

Frogs captured in pit traps were placed in an individually labelled container with damp sand and placed in a cooler in the air conditioned car before being transported back to base camp for processing. Frogs were retained as voucher specimens that were lodged at Museum Victoria.

2.2.1 Methods used at standard survey sites

Two person hours of active searching for herpetofauna occurred at each of the standard survey sites. Animals were hand caught or noosed, then measured, photographed in-hand, weighed, sexed, and a tissue sample collected at sampling site. Animals were then released at point of capture.

2.3 Identifying the collections

All reptiles and frogs were identified on capture with the additional use of field guides when needed (Robertson & Coventry 2019; Wilson & Swan 2003; Cogger 2014). Peter Robertson, an expert in the field and author of Reptiles of Victoria (Robertson & Coventry 2019) was present on the trip and confirmed all identifications.

3. Results and Discussion

Collections made during this Bush Blitz resulted in 33 voucher specimens and 174 tissue samples being added to public collections and an equivalent number of voucher specimen records added to publicly accessible databases. Images of the various fauna collected will also be added to publicly accessible databases. We collected and sampled a total of 20 species of herpetofauna, including 4 species of dragons, 7 skink species, 2 species of gecko, 2 species of pygopods, 2 elapid snakes, 1 goanna species and 2 myobatrachid frog species. The skink *Morethia obscura* was by far the most common species caught, with 56 individuals caught and tissue sampled. A single individual only was caught for 5 of the skink species (*Lampropholis delicata, Morethia obscura, Ctenotus orientalis, Cryptoblepharus pannosus, and Lerista bougainvillii)* and one agamid (*Amphibolurus muricatus).*

Neobatrachus sudellae, Sudell's Frog, Painted Burrowing Frog
Photographer: Heath Warwick | Source: Museums Victoria

Diplodactylus vittatus, Eastern Stone Gecko
Photographer: Heath Warwick | Source: Museums Victoria

Pygopus lepidopodus, Common Scaley-foot, Nhill-Harrow Rd
Photographer: Heath Warwick | Source: Museums Victoria

Ctenophorus pictus, Painted Dragon, Little Desert NP
Photographer: Ricky-Lee Erickson | Source: Museums Victoria

In addition to the herpetofauna that we were targeting in our pit traps, we caught three species of mammals: the Silky mouse *Pseudomys apodemoides* (DSE Advisory list Near Threatened), the fat tailed dunnart, *Sminthopsis crassicaudata* (DSE Advisory list Near Threatened), and the western pygmy possum, *Cercartetus concinnus.*

Appendix 1 lists all reptiles and amphibians recorded during the Bush Blitz.

3.1 Un-named or not formalised taxa

NA

3.2 Putative new species (new to science)

In this report, 'putative new species' means an unnamed species that, as far as can be ascertained, was identified as a new species as a direct result of this Bush Blitz.

NA

3.3 Exotic and pest species

NA

3.4 Threatened species

We captured 5 individual striped worm-lizards, *Aprasia striolata*, in the pit trapping lines. These slender burrowing lizards are found in a variety of dry and sandy soils, and the

Victorian western desert region is at the eastern extent of their distribution. Much of its habitat has been cleared for farming or tree plantation.

Table 4. Threatened species

Species	Listing status and level (EBPC, State/Territory)	Location sighted/observed	Indication of abundance
Aprasia striolata, Striped Worm-lizard	Near Threatened, Advisory List of Threatened Vertebrate Fauna in Victoria, 2013	Little Desert National Park, Red Gum Track, site RC 1 Urimbirra Cooperative Land, site RU 1 Urimbirra Cooperative Land, site RU 4	Five individuals were caught in total, 1 in the LDNP, and 2 each in 2 sites in the Urimburra Cooperative private land, directly to the north of LDNP

3.5 Range extensions

No range extensions observed.

3.6 Genetic information

Genetic sampling was undertaken for all reptiles and amphibians sampled. A tail tip was taken as a genetic sample for reptiles, before release. Amphibians were collected and vouchered and a tissue sample (liver tissue) was taken from each specimen immediately following humane killing. These tissue samples have been lodged in the Ian Potter Australian Wildlife Biobank, Museums Victoria (NMV Z records).

4. Information on species lists

Reptiles and amphibians were identified using the most up-to-date field guides, including the recently published *Reptiles of Victoria, A Guide to Identification and Ecology* by Peter Robertson and John Coventry.

Cogger, H. 2014. *Reptiles and amphibians of Australia*. CSIRO PUBLISHING.

Robertson, P.A. & Coventry, J. 2019. *Reptiles of Victoria, A Guide to Identification and Ecology*. CSIRO Publishing.

Wilson, S. & Swan, G. 2003. *Reptiles of Australia* (pp. 76-82). Princeton, New Jersey: Princeton University Press

5. Information for land managers

The majority of common species were found in both the recently burned and the long unburned sites sampled within the Little Desert National Park and the Urimbirra Cooperative land, including both frog species. This bodes well for the reestablishment of species following fires, however, more detailed sampling and analysis of the genetic diversity of species following fires will better detail the responses of the herptofauna to fires in this region.

6. Other significant findings

The delicate skink, *Lamprophois delicata,* is a common widespread species down the eastern seaboard of Australia and usually found in warm temperature areas. However, the individual that we collected during the Little Desert BushBlitz is part of a discrete, genetically distinct population found in western Victoria and South Australia.

7. Conclusions

As the park is large and supports a high diversity of vertebrates, particularly reptiles, it is hard to survey the area comprehensively. In particular, the western sections of the park are significantly less well surveyed due to limited access. The western sections of the park, especially, may have reptiles and frogs present that have not yet been recorded in Victoria, or species that have not been recorded in Victoria for decades, as it abuts the South Australian border and there may be central Australian species distributed through that area. Tissue samples and specimens of frog and reptile species collected on this trip will contribute to continuing efforts to identify unique genetic diversity within species and help clarify taxonomic diversity in species complexes. The high diversity of species that we caught in a short time frame indicates the extraordinary diversity of this region, however, we found only a single individual of a number of species, suggesting that we cannot be complacent when managing the biodiversity of the region.

Our survey has added substantial reptile tissue samples to the collection for future research programs and voucher and tissues samples of two species of Myobatrachid frogs were added to the collection for this region.

Acknowledgements

The herpetology team would like to thank Peter Robertson for volunteering his time and expertise to come on this trip with Museums Victoria staff and the BushBlitz team.

We would like to thank Brandon Galpin, Damien Skurrie, Abigail Watkins, Matthew White, Laurie Norman and Gavin Read from the Parks Victoria office for advice and assistance with fieldwork. We especially thank them for support in locating the pit traps and helping to replace cracked buckets, digging in and setting up the drift fences for the pit traps.

Thank you to the Urimbirra Cooperative members for providing access to their land and digging in the pit traps.

Thank you to Ben Holmes from the Wimmera CMA for taking time to train and advise us in the processing and tissue sampling of the mammals.

References

Cogger, H. 2014. *Reptiles and amphibians of Australia*. CSIRO PUBLISHING.

Robertson, P.A. & Coventry, J. 2019. *Reptiles of Victoria, A Guide to Identification and Ecology*. CSIRO Publishing.

Wilson, S. & Swan, G. 2003. *Reptiles of Australia* (pp. 76-82). Princeton, New Jersey: Princeton University Press.

Appendix 1. List of herpetofauna recorded during the Little Desert National Park Bush Blitz						
Family	**Species**	**Common name**	**Putative new species**	**Threatened (EPBC Act)**	**Threatened (State / Territory Act)**	**Exotic / pest**
AMPHIBIANS						
MYOBATRACHIDAE	*Limnodynastes dumerilii*	Eastern Banjo Frog				
MYOBATRACHIDAE	*Neobatrachus sudellae*	Sudell's Frog				
REPTILES						
ELAPIDAE	*Pseudonaja textilis*	Eastern brown snake				
ELAPIDAE	*Suta nigriceps*	Mitchell's Short-Tailed Snake				
AGAMIDAE	*Pogona barbata*	Bearded dragon				
AGAMIDAE	*Ctenophorus pictus*	Painted dragon				
AGAMIDAE	*Amphibolurus muricatus*	Jacky Lizard				
AGAMIDAE	*Amphibolurus norrisi*	Mallee tree dragon				
DIPLODACTYLIDAE	*Diplodactylus vittatus*	Eastern stone gecko				
GEKKONIDAE	*Christinus marmoratus*	Marbled Gecko				
PYGOPODIDAE	*Aprasia striolata*	Lined worm-lizard			Y	
PYGOPODIDAE	*Pygopus lepidopodus*	Common scaley-foot				
SCINCIDAE	*Cryptoblepharus pannosus*	Ragged Snake-Eyed Skink				
SCINCIDAE	*Ctenotus orientalis*	Eastern Ctenotus				
SCINCIDAE	*Ctenotus spaldingi*	Spalding's Ctenotus				
SCINCIDAE	*Lampropholis delicata*	Delicate skink				
SCINCIDAE	*Lerista bougainvillii*	South-Eastern Slider				
SCINCIDAE	*Morethia obscura*	Shrubland Morethia Skink				
SCINCIDAE	*Tiliqua rugosa*	Shingleback				
VARANIDAE	*Varanus rosenbergi*	Heath Monitor			Y	
MAMMALS						
BURRAMYIDAE	*Cercartetus concinnus*	Western Pygmy Possum				
DASYURIDAE	*Sminthopsis crassicaudata*	Fat-tailed Dunnart			Y	
MURIDAE	*Pseudomys apodemoides*	Silky Mouse			Y	