

Rungulla Bush Blitz

Amphibians and Reptiles

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Nomenclature and taxonomy used in this report is consistent with:

The Australian Faunal Directory (AFD)

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List of contributors

List of contributors to this report.			
Name	Institution/affiliation	Qualifications/area of expertise	Level/form of contribution
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Abstract

A good diversity of reptiles was observed on Rungulla National Park, despite limited sampling at an unfavourable time of year. Notably, the Leaden-bellied Fine-lined Slider, *Lerista vanderduysi*, a burrowing skink described in 2016 and listed by the IUCN as Near Threatened, was found, and probably occurs in good numbers within the park. Low numbers and low diversity of frogs was found, attributable to the time of year, but high numbers of Cane Toads were observed.

1. Introduction

Reptiles are the dominant vertebrate fauna of Australia, currently numbering at least 1,075 described species, and are a commonly observed feature of every natural environment on the continent. Similarly, Australian frogs currently number about 247 described species and are considered an important indicator of environmental health. Both groups are currently subject to very active taxonomic research with new species added every year.

Rungulla National Park is a large, recently gazetted (2015) reserve protecting 118,500 hectares of wilderness in central north Queensland and straddling two important bioregions, the Gulf Plains and the Einasleigh Uplands. The diversity of habitats, from sandstone landforms, woodlands with perennial grasses to wetlands make it a significant estate (see Figures 1–5).

Prior to the current study, the area has been very poorly surveyed for amphibians and reptiles. There were no museum vouchers from the park. Wildnet records of unvouchered sightings listed just three frog species and 19 reptiles. Given the diversity of habitats and its positioning over two bioregions, there was every expectation of improving these statistics.



Figure 1. Gilbert River bed from base camp, Rungulla NP. Photo by A. Amey.



Figure 2. Sandstone outcrop, habitat of the Tree-base Litter Skink, *Lygisaurus foliorum*, Rungulla NP. Photo by A. Amey.



Figure 3. Rungulla Bungles, habitat of the Leaden-bellied Fine-lined Slider, *Lerista vanderduysi*, Rungulla NP. Photo by A. Amey.



Figure 4. Dutchmans Ck, Rungulla NP. Photo by A. Amey.



Figure 5. Open woodland habitat, Rungulla NP. Photo by A. Amey.

2. Methods

2.1 Site selection

Sites were selected to cover a range of habitats in the short time available. It was found that a variety of habitats were present very close to the base camp (woodland, rocky ridges, stony ground, spinifex, riparian) so these were surveyed intensively. Sites exemplifying additional habitat types (swamp, caves, waterholes), were accessed by car and helicopter.

2.2 Survey techniques

All survey methods conformed to the Queensland Museum Animal Ethics Committee Standard Operating Procedures (QMAEC Approval AE21-02).

The principal technique used was hand collecting. Habitats were searched, rocks and logs turned, leaf litter and loose soil raked through. Any reptiles or amphibians discovered were captured and placed into bags, cloth for reptiles and plastic for amphibians. At night, survey was by head torch illuminating eyeshine. Roads within the park were driven slowly to detect animals on the road and adjacent bush.

No more than three individuals of the same species were taken from any one site. Surplus animals were recorded and immediately released.

2.2.1 Methods used at standard survey sites

Both standard survey sites were surveyed in the same manner. Hand collecting was performed for one hour between the hours of 9 am and midday. Each site was also surveyed at night by spotlighting for one hour. All specimens observed in this time were identified and recorded, whether vouchered or not.

Traps were installed at each site. Four buckets were dug into the ground in a T-shape formation and drift fence installed to connect them. Funnel traps were placed on either side of the fence on each of the three arms of the T. Traps were checked twice daily, at daybreak and shortly before sunset (Figure 6).

The traps were kept open for 6 days in total, with intervals when they were closed because we were unable to check them twice daily, either because of rain, or because we were camped elsewhere.

2.3 Identifying the collections

Patrick Couper, Curator of Herpetology at the Queensland Museum, assisted in identifying the vouchered specimens in the lab. Wilson (2015) was used in the field and this was complemented with Cogger (2014) in the lab. To confirm some recently described or revised species, we used the original publications, namely Bourke *et al.* (2017); Hoskin *et al.* (2018); and Melville *et al.* (2019).



Figure 6. Louise Edwards and Andrew Amey checking funnel traps, Rungulla NP.

3. Results and Discussion

Collections made during this Bush Blitz resulted in 95 specimens being added to public collections and 115 records (vouchers and un-vouchered observations) added to publicly accessible databases (Figures 7–13). Fourteen species had not previously been recorded from the park (Appendix 1).

3.1 Un-named or not formalised taxa

The state of herpetological taxonomy is such that all amphibians and reptiles observed could be identified with confidence as currently described species. However, the specimens collected are invaluable as they may, in the future, allow identification of currently unrecognised taxa, particularly those representing the western edge of the species' distribution (see below).

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. No putative new species were observed but see comment in Section 3.1.

3.3 Exotic and pest species

Exotic/pest species	Location sighted/observed	Indication of abundance	Comments
<i>Rhinella marina</i>	Ubiquitous	Extremely common	Cane Toads were by far the most commonly encountered vertebrate in the park (Figures 14–15). While a survey of this nature cannot provide information on the impact of such a high abundance, studies in other areas have shown dramatic impacts on predators such as quolls, goannas and even Freshwater Crocodiles (Covacevich & Archer 1975; Covacevich & Couper 1992; Doody <i>et al.</i> 2009).

3.4 Threatened species

Table 4. Threatened species			
Species	Listing status and level (EBPC, State/Territory)	Location sighted/observed	Indication of abundance
<i>Lerista vanderduysi</i>	Near Threatened, IUCN Red List	Rungulla Bungaloes and Dutchmans Ck	5 individuals in total were found at 2 sites by searching for less than half an hour at each site. The habitat of each site is widespread throughout the park, suggesting the species is present in good numbers.

3.5 Range extensions

Table 5. Range extensions or significant infill in distribution records for species			
Species	Location sighted/observed	Distance from nearest known record (km)	Comments
<i>Bellatorias frerei</i>	Rungulla Bungles, J97521	100	Primarily occurs coastally, this record is slightly further west than any other museum records
<i>Carlia schmeltzii</i>	Ranger base, J97522	70	Primarily occurs coastally, this record is slightly further west than any other museum records
<i>Lerista vanderduysi</i>	Dutchmans Ck, J97530–32	40	Slightly further northwest than previous records, but for a species with a previously known range of no more than 100 km ² , a significant extension.
<i>Oedura argentea</i>	Ranger base, J97553	30	Slightly further south than previous records of this recently described species (2018), which is currently known only from the Gregory Range and Bulleringa NP.

3.6 Genetic information

All specimens vouchered were tissue sampled. These samples have been lodged into the Queensland Museum's tissue collection. The *Lerista* tissues collected (five *L. vanderduysi*, one *L. zonulata* and a single unidentified tail tip with no voucher) are being sequenced as part of ongoing Queensland Museum research into the genus *Lerista*. The *L. vanderduysi* tissues are particularly interesting as they are located further west from the previously known western population collected at Gilberton. This population was identified as being somewhat divergent from the toptotypical population at Blackbraes NP during the analysis which led to the description of *L. vanderduysi* (Couper *et al.*, 2016). At the time, the divergence was judged to be not sufficient to be recognised taxonomically. The additional tissues collected at Rungulla may support this conclusion, or they may suggest it should be revisited.



Figure 7. *Litoria inermis*, Peters' Frog, Rungulla NP. Photo by C. Burwell.



Figure 8. Andrew Amey and Chris Burwell with a Saw-shelled Turtle, *Wollumbinia latisternum*, Rungulla NP. Photo by C. Lambkin.



Figure 9. Dubious Dtella, *Gehyra dubia*, Rungulla NP. Photo by W. Goulding.



Figure 10. Male Lined Rainbow Skink, *Carlia jarnoldae*, Rungulla NP. Photo by C. Burwell.



Figure 11. Spalding's Ctenotus, *Ctenotus spaldingi*, Rungulla NP. Photo by H. Cross.



Figure 12. Eyrean Earless Dragon, *Tympanocryptis tetraporophora*, Rungulla NP. Photo by H. Cross.



Figure 13. Brown Tree Snake, *Boiga irregularis*, Rungulla NP. Photo by A. Amey.



Figure 14. Cane Toad, *Rhinella marina*, Rungulla NP. Photo by C. Lambkin.



Figure 15. Cane Toad tadpoles, *Rhinella marina*, in waterhole, Rungulla NP. Photo by A. Amey.

4. Information on species lists

One frog and 13 reptile species were added to the species list for Rungulla NP as a result of this Bush Blitz (Appendix 1). As previously mentioned, no difficulties were experienced assigning the observed specimens to currently described species.

5. Information for land managers

The sites visited within Rungulla NP generally appeared to be high quality examples of significant habitat types, with low levels of weeds or disturbance by feral pests, apart from Cane Toads. It is notable that the sandstone outcrops in particular harboured three of the four western range extensions observed (Table 5), including the Near Threatened Leaden-bellied Fine-lined Slider. Given the relative ease with which the latter species was observed, Rungulla may well prove to be a stronghold for this species. Although it would be useful to survey more widely for this species within the park, this should be undertaken judiciously as the survey method (raking through leaf litter and soil) does damage habitat.

6. Other significant findings

Amphibians were noticeably rare, with only 19 observations, excluding the Cane Toad. Of these 19, 15 were the widespread Ornate Burrowing Frog, *Platyplectrum ornatum*, the most common victim of the pit traps. The low number of native amphibians was despite the significant rain event experienced. However, at this time of year, our result is perhaps to be expected, with much greater numbers and higher diversity anticipated in the spring and summer months and is probably not a cause for concern (K. McDonald, pers. comm.).

Several species were observed which, while not range extensions due to previous records in close proximity, were at the western edge of their known range. This includes *Oedura castelnaui* (Northern Velvet Gecko), *Bellatorias frerei* (Major Skink), *Carlia jarnoldae* (Lined Rainbow Skink) and *Boiga irregularis* (Brown Tree Snake). The taking of tissue samples with these vouchers from the edges of their known ranges will make them particularly valuable for future taxonomic research.

An interesting feature common to many of the species collected is illustrated in Figure 16, the distribution of QM records of *Platyplectrum ornatum*, the Ornate Burrowing Frog. This is a common species, turning up in virtually all amphibian surveys throughout Australia. However, there is a noticeable lack of records in the area to the west of Rungulla, approximately north of Julia Creek and south of Croydon. Records appear again along the Burke Developmental Rd, approximately 300 km to the west. For another example, the record of *Wollumbinia latisternum*, the Saw-shelled Turtle, is the furthest west in Queensland until a record in the Mount Isa area. This was observed in many, if not all, species distributions and points to an important collection gap in the Gulf Plains Bioregion.

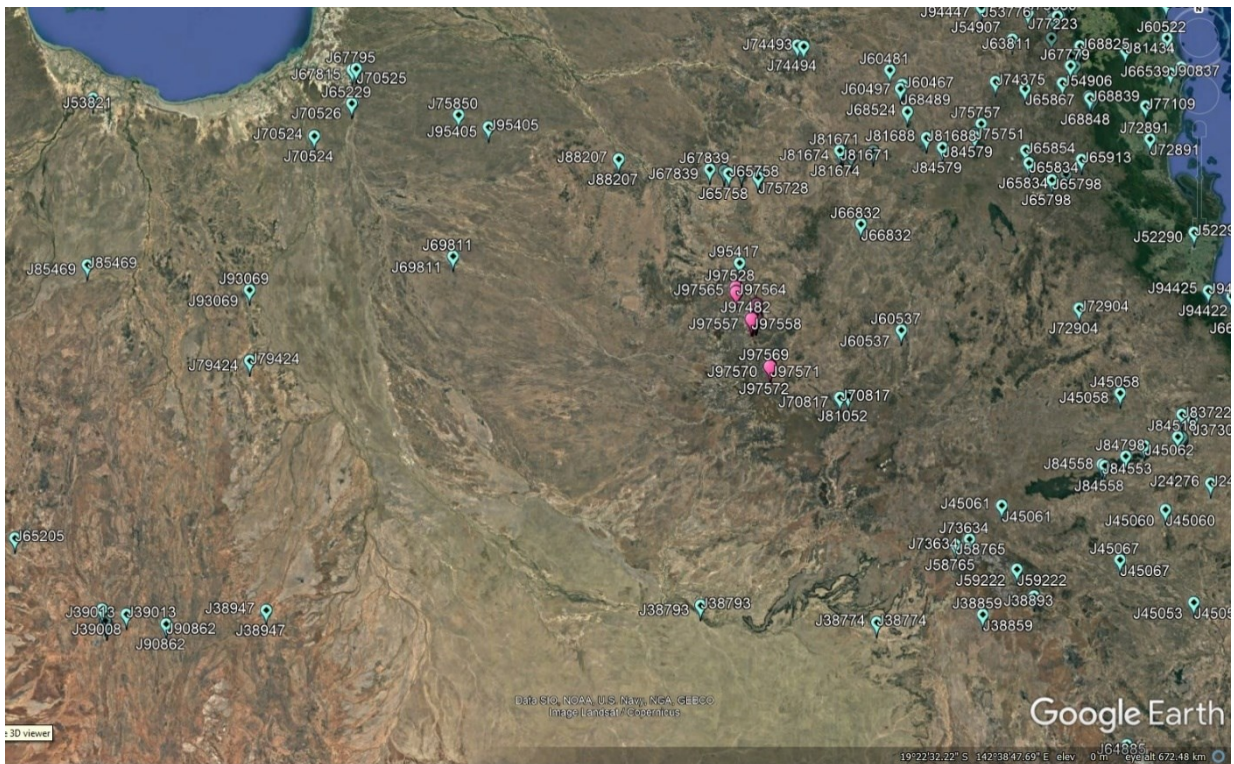


Figure 16. Distribution of Queensland Museum Ornate Burrowing Frog, *Platyplectrom ornatum*, records. Previous QM records in aqua, records from the Rungulla Bush Blitz in pink.

7. Conclusions

Rungulla National Park harbours a variety of significant habitats and a corresponding diversity of reptile and amphibian species. Its strategic position on the western edge of the Desert Uplands bioregion makes it a particularly important reserve as the western limit of the distribution of several species. This is exemplified by the presence of the Leaden-bellied Fine-lined Slider, *Lerista vanderduysi*, a poorly known skink considered Near-Threatened by a recent IUCN review (Vanderduys *et al.*, 2018), which was found to be in good numbers 40 kilometres from its previously known distribution of less than 100 km².

Although the abundance of Cane Toads is disappointing, it is not surprising in this region and there are limited options for effective control.

Acknowledgements

Special thanks are due to Helen Cross and her Bush Blitz team for organising a smoothly run, safe and effective Bush Blitz in a remote area of difficult terrain. Nick Smith and his rangers provided fantastic logistical support, know-how and local knowledge. The enthusiastic support, participation and knowledge-sharing of the Ewemian Traditional Owners was both vital and inspiring. I hope I am able to visit their country for more discoveries soon.

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Appendix 1. List of amphibians and reptiles recorded during the Rungulla Bush Blitz						
Family	Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State Act)	Exotic/ pest
Agamidae	<i>Diporiphora australis</i>	Tommy Roundhead	No	No	No	No
Agamidae	<i>Tympanocryptis tetraprophora</i>	Eyrean Earless Dragon	No	No	No	No
Bufo	<i>Rhinella marina</i>	Cane Toad	No	No	No	Yes
Chelidae	<i>Wollumbinia latisternum</i>	Saw-shelled Turtle	No	No	No	No
Colubridae	<i>Boiga irregularis</i>	Brown Tree Snake	No	No	No	No
Diplodactylidae	<i>Amalosia rhombifer</i>	Zigzag Velvet Gecko	No	No	No	No
Diplodactylidae	<i>Oedura argentea</i>	Silver-eyed Velvet Gecko	No	No	No	No
Diplodactylidae	<i>Oedura castelnaui</i>	Northern Velvet Gecko	No	No	No	No
Gekkonidae	<i>Gehyra dubia</i>	Dubious Dtella	No	No	No	No
Gekkonidae	<i>Gehyra einasleighensis</i>	Einasleigh Rock Dtella	No	No	No	No
Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's Gecko	No	No	No	No
Limnodynastidae	<i>Platyplectrum ornatum</i>	Ornate burrowing Frog	No	No	No	No
Pelodyadidae	<i>Litoria inermis</i>	Bumpy Rocket Frog	No	No	No	No
Pelodyadidae	<i>Litoria rubella</i>	Desert Tree Frog	No	No	No	No
Pygopodidae	<i>Lialis burtonis</i>	Burton's Snake-lizard	No	No	No	No
Scincidae	<i>Bellatorias frerei</i>	Major Skink	No	No	No	No
Scincidae	<i>Carlia jarnoldae</i>	Lined Rainbow Skink	No	No	No	No
Scincidae	<i>Carlia munda</i>	Shaded-litter Rainbow Skink	No	No	No	No
Scincidae	<i>Carlia schmeltzii</i>	Schmeltz's Rainbow Skink	No	No	No	No
Scincidae	<i>Cryptoblepharus metallicus</i>	Metallic Snake-eyed Skink	No	No	No	No
Scincidae	<i>Cryptoblepharus pannosus</i>	Ragged Snake-eyed Skink	No	No	No	No
Scincidae	<i>Ctenotus spaldingi</i>	Straight-browed Ctenotus	No	No	No	No
Scincidae	<i>Lerista vanderduysi</i>	Leaden-bellied Fine-lined Slider	No	No	No	No
Scincidae	<i>Lerista zonulata</i>	Wide-striped Four-toed Slider	No	No	No	No
Scincidae	<i>Lygisaurus foliorum</i>	Tree-base litter Skink	No	No	No	No
Scincidae	<i>Menetia greyii</i>	Common Dwarf Skink	No	No	No	No
Scincidae	<i>Morethia taeniopleura</i>	Eastern Fire-tailed Skink	No	No	No	No
Scincidae	<i>Proablepharus tenuis</i>	Slender Snake-eyed Skink	No	No	No	No
Varanidae	<i>Varanus tristis orientalis</i>	Black-headed Goanna	No	No	No	No