

Cape Range Bush Blitz
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Abstract

A winter survey of the North West Cape for reptiles and frogs procured many species and specimens during the BushBlitz. Owing to the cool rainy weather, two frog species were active during the survey. Geckos, skinks, dragons, snakes and goannas were also encountered through active searching (spotlighting at night, road cruising, raking during the day) or captured in pitfall or funnel traps along several trapping areas that were dug in. Overall, the specimens encountered reflected the known diversity of herptiles from the area, although the cool weather was not optimal for reptiles at this time of year.

1. Introduction

The Cape Range in north western Australia is a partly isolated region within the larger Pilbara-Gascoyne region. Biogeographically, the Cape Range has links to both the Pilbara and the western coast. Recently, several endemic species of lizards have been described from the Cape Range (e.g. Maryan et al. 2007; Doughty et al. 2007, 2016; Kealley et al. 2018), and for other species there are isolated populations that occur hundreds of kilometres away from populations to the east (e.g. gecko – *Strophurus elderi*; dragon – *Ctenophorus clayi*).

There have been several previous opportunistic surveys in the region, most targeting the rocky limestone range. Owing to the cooler conditions in June during the time of the survey, we installed pitfall trap lines in dunes to the north and west of the range to better sample species that might occur in these sandy habitats.

As expected, the cooler temperatures curtailed large numbers of reptiles and frogs encountered, but active foraging and the trap lines were moderately successful and burrowing frogs emerged during two days of fortuitous rain.

2. Methods

2.1 Site selection

Owing to the difficulty of digging in to the hard surfaces of the limestone range, we targeted the northern dune fields and a coastal dune site for trap installation. In addition, widespread exploration of the range in vehicles was carried out to reach good habitat for reptiles, including night searches on Charles Knife Rd and Yardie Ck, and day searches in the Defense land to the south.

2.2 Survey techniques

The two main survey techniques were: 1) active searching, and 2) traplines with buckets, pitfall traps and funnel traps. Active searching was usually carried out on foot at night with a head torch, or in the daytime with hand cultivators for raking through leaf litter and debris as well as lifting cover (sheets of tin, logs and rocks). Extensive road cruising was also done most nights, whereby a 4WD would drive approximately 30–50 km/h with high beams on while the front passenger and driver scan the road ahead for any sign of frogs, lizards or snakes.

The second method used was two long lines of buckets and funnel traps. Each line consisted of 6 buckets (20 litres) and 6 PVC pitfall traps (20 cm mouth x 60 cm deep) connected by a steel fly-wire fence. In addition, funnel traps were interspersed between the buckets and pitfall

traps to either side of the fence (except the terminal ends). Trap lines were checked twice per day: near sunrise and in the late afternoon.

2.2.1 Methods used at standard survey sites

The first standard survey site was the red dune site to the north of the North West Cape. We therefore include all captures (day and night) from the trap line, as well as any active foraging conducted within the vicinity of the traps.

The second standard survey site was near the Charles Knife Rd lookout that was chosen by the invertebrate team. This site yielded only a single gecko that was sheltering under a rock during the day search.

2.3 Identifying the collections

Paul Doughty and Ryan J. Ellis identified nearly all the species by familiarity with the animals. For difficult IDs, we used keys in field guides and the WA Museum collections to compare specimens.

Skinks and frogs provided the most difficulty, so we consulted:

- Tyler, M.J. & Doughty, P. 2009. Frogs of Western Australia, fourth edition. WA Museum Press.
- Storr, G.M., Smith, L.A. & Johnstone, R.E. 1999. Skinks of Western Australia, second edition. WA Museum Press.

3. Results and Discussion

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

3.1 Un-named or not formalised taxa

No un-named or non-formalised vertebrate taxa were recorded during the survey.

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.

| Table 2. Putative new species (new to science) | |
|--|--|
| Species | Comment |
| NA* | * <i>Strophurus elderi</i> comparisons needed. |
| | |

3.3 Exotic and pest species

| Exotic/pest species | Location sighted/observed | Indication of abundance | Comments |
|--|---|--|--|
| <i>Canis familiaris</i> (Dog/Dingo) | Various locations along Yardie Creek Road | Multiple pairs (~3) and individuals (~4) | Most individuals appeared to be in poor condition. |
| <i>Oryctolagus cuniculus</i> (Rabbit) | Various locations along Yardie Creek Road | Multiple individuals | |

3.4 Threatened species

One threatened species was observed during the survey, Black-flanked Rock-wallaby (*Petrogale lateralis lateralis*). It was observed on multiple occasions during spotlighting along the Yardie Creek walk trail with up to six individuals seen. Some individuals seemed to be quite fearless of humans, even following some of us, indicating they were being fed from tourists at Yardie Creek.

| Species | Listing status and level (EBPC, State/Territory) | Location sighted/observed | Indication of abundance |
|--|--|---------------------------|--|
| <i>Petrogale lateralis lateralis</i> (Black-flanked Rock-wallaby) | Vulnerable (EPBC Act & BC Act) | Yardie Creek | Up to six individuals, including two small juveniles |
| | | | |

3.5 Range extensions

| Species | Location sighted/observed | Distance from nearest known record (km) | Comments |
|---------|---------------------------|---|----------|
| NA | | | |
| | | | |

3.6 Genetic information

Tissues were taken from all animals on the survey that were vouchered. These are lodged in the WA Museum tissue collections and available for analysis in the future.

4. Information on species lists

No species not previously recorded within Cape Range were recorded during the field survey. There were, however, at least some different species were collected from most groups, with a few exceptions such as pygopods (legless geckos) and knob-tailed geckos (*Nephrurus* spp.).

Frogs were a welcome addition with the rainfall event on the second weekend. This resulted in two specimens of the relatively abundant Sheep Frog (*Cyclorana maini*) collected from the eastern side along the Learmonth-Exmouth road. Large numbers of the Tawny Trilling Frog (*Neobatrachus fulvus*) emerged on the road that led from the base camp to the lighthouse that traversed the red dune fields. We initially believed there may have been representatives of *N. fulvus*'s tetraploid relative, *N. aquilonius*, based on information from field guides. However, comparison of specimens during the survey with previously-collected specimens from the WA Museum revealed wide overlap between the two species. Therefore, we conservatively assigned all specimens to *N. fulvus* in the absence of genetic analyses.

The most intriguing specimen taxonomically was of a Jewelled Gecko, *Strophurus elderi*, with an extremely reduced pattern compared to other populations to the east. But further examination of holdings at the WA Museum revealed similar relatively patternless morphs in the Pilbara region, although this exercise did turn up very odd forms of *S. elderi* in the Pilbara that are more likely to be completely new species. Further examination of specimens supported by genetic work would likely resolve the situation, although a widespread arid zone species such as *S. elderi* is likely to be comprised of several weakly-divergent lineages that occur over wide areas.

Geckos were well represented, including the three common gekkonids (*Gehyra* and *Heteronotia*) and five diplodactylids.

Scincid lizards were the most numerous and were captured through active foraging and the traplines. Four *Ctenotus* and three *Lerista* species were collected, with scattered records for

Dragons and goannas were less plentiful. There were only two dragons seen – a bearded dragon raked from near the dune site, and a thorny devil inadvertently run over by a field vehicle. One goanna species (*V. eremius*) collected from the red dune sites, and with perenties also seen as well (but not vouchered).

5. Information for land managers

None.

6. Other significant findings

NA

7. Conclusions

For the herpetofauna of the Cape Range, a reasonable collection of reptiles and frogs was taken. Cold temperatures likely reduced the numbers of animals encountered, as most are active in the warmer months in spring, summer and autumn. The two species of frogs that emerged with showers was a welcome addition to the survey effort.

No obviously new species was recorded from the survey, and several recently described species were not captured either (e.g. the gecko *Crenadactylus tuberculatus*). However, the patternless morph of the Jewelled Gecko, *Strophurus elderi*, generated interest to investigate this widespread species further.

Additional benefits of the survey was establishing links with the local DBCA, especially Heather Barnes and Lucy Clausen, who would like to run further surveys in their region similar to the BushBlitz ones to provide 'before' and 'after' surveys to measure management outcomes.

Acknowledgements

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References

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Kealley, L., Doughty, P., Pepper, P., Keogh, J.S., Hillyer, M. and Huey, J. (2018). Conspicuously concealed: Revision of the arid clade of the *Gehyra variegata* (Gekkonidae) species group in Western Australia using an integrative molecular and morphological approach, with the description of five cryptic species. *PeerJ*: e5334 (33 pages). <https://doi.org/10.7717/peerj.5334>

Maryan, B., Aplin, K.P. & Adams, M. (2007) Two new species of the *Delma tinctoria* group (Squamata: Pygopodidae) from northwestern Australia. *Records of the Western Australian Museum*, 23, 273–305.

Appendix 1. List of herpetofauna recorded during the Cape Range Bush Blitz

| Family | Species | Common name | Putative new species | Threatened (EPBC Act) | Threatened (State Act) | Exotic/pest |
|-----------------|--|------------------------------|----------------------|-----------------------|------------------------|-------------|
| Myobatrachidae | <i>Neobatrachus fulvus</i> | Tawny Trilling Frog | No | No | No | No |
| Pelodyadidae | <i>Cyclorana maini</i> | Sheep Frog | No | No | No | No |
| Agamidae | <i>Moloch horridus</i> | Thorny Devil | No | No | No | No |
| Agamidae | <i>Pogona minor minor</i> | Western Bearded Dragon | No | No | No | No |
| Diplodactylidae | <i>Diplodactylus bilybara</i> | Western Fat-tailed Gecko | No | No | No | No |
| Diplodactylidae | <i>Diplodactylus capensis</i> | Cape Range Stone Gecko | No | No | No | No |
| Diplodactylidae | <i>Lucasium stenodactylum</i> | Sand Plain Gecko | No | No | No | No |
| Diplodactylidae | <i>Strophurus ciliaris aberrans</i> | Northern Spiny-tailed Gecko | No | No | No | No |
| Diplodactylidae | <i>Strophurus elderi</i> | Jewelled Gecko | Possible | No | No | No |
| Elapidae | <i>Acanthophis wellsi</i> | Pilbara Death Adder | No | No | No | No |
| Elapidae | <i>Demansia rufescens</i> | Rufous Whipsnake | No | No | No | No |
| Elapidae | <i>Furina ornata</i> | Moon Snake | No | No | No | No |
| Gekkonidae | <i>Gehyra capensis</i> | North West Cape Gehyra | No | No | No | No |
| Gekkonidae | <i>Gehyra variegata</i> | Variegated Gehyra | No | No | No | No |
| Gekkonidae | <i>Heteronotia binoei</i> | Bynoe's Gecko | No | No | No | No |
| Pythonidae | <i>Antaresia melanocephalus</i> | Black-headed Python | No | No | No | No |
| Pythonidae | <i>Antaresia stimsoni</i> | Stimson's Python | No | No | No | No |
| Scincidae | <i>Ctenotus grandis titan</i> | Grand Desert Ctenotus | No | No | No | No |
| Scincidae | <i>Ctenotus iapetus</i> | North West Cape Ctenotus | No | No | No | No |
| Scincidae | <i>Ctenotus inornatus</i> | Bar-shouldered Ctenotus | No | No | No | No |
| Scincidae | <i>Ctenotus pantherinus ocellifer</i> | Leopard Skink | No | No | No | No |
| Scincidae | <i>Cyclodomorphus melanops melanops</i> | Slender Blue-tongue | No | No | No | No |
| Scincidae | <i>Lerista elegans</i> | West Coast Four-toed Lerista | No | No | No | No |
| Scincidae | <i>Lerista onsloviana</i> | Onslow Broad-blazed Lerista | No | No | No | No |
| Scincidae | <i>Lerista planiventralis planiventralis</i> | Keeled Lerista | No | No | No | No |
| Scincidae | <i>Menetia greyii</i> | Common Dwarf Skink | No | No | No | No |
| Scincidae | <i>Morethia ruficauda exquisita</i> | Exquisite Fire-tail Skink | No | No | No | No |
| Varanidae | <i>Varanus eremius</i> | Pygmy Desert Goanna | No | No | No | No |
| Varanidae | <i>Varanus giganteus</i> | Perentie | No | No | No | No |