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A new phasmid gecko (Squamata: Diplodactylidae: *Strophurus*) from the Arnhem Plateau: more new diversity in rare vertebrates from northern Australia

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Abstract

The Arnhem Plateau is a rugged expanse of sandstone escarpment in the Australian Monsoonal Tropics with a highly endemic biota. Here we describe a new species of small spinifex dwelling *Strophurus* (phasmid gecko) that also appears to be endemic to this region. *Strophurus horneri* **sp. nov.** can be diagnosed from all congeners by aspects of size, coloration and scalation. Even with the description of this new species, however, levels of morphological and genetic diversity within *Strophurus* from the stone country of the Northern Territory suggest additional divergent lineages are present. A number of recent studies have now provided preliminary evidence of evolutionary diversity within the Arnhem Plateau, but data remains scant and almost nothing is known about how topography and historical processes have shaped the endemic biota of this region.

Key words: Australian Monsoonal Tropics, endemism, lizard, Kakadu National Park, sandstone, spinifex

Introduction

The Arnhem Plateau is a rugged, spectacular and iconic block of deeply dissected sandstone escarpment that extends over an area of approximately 32,000 km^2 in the 'Top End' region of the Australian Monsoonal Tropics (AMT). The plateau is composed of geologically stable sandstones of varying height (100–400 m a.s.l.) and is environmentally and geologically distinct from surrounding landscapes (Nott 1995, Fig. 1). This unique geology and its associated microclimates has shaped a distinctive biota including numerous endemic taxa (e.g. 2 amphibians, 11 reptiles, 4 birds, 2 mammals and nearly 170 plants) (Woinarski *et al.* 2009). However, the region still remains very poorly documented by scientists—little is known about the history and origin of endemic lineages, and almost nothing is known about intraregional patterns of phylogeographic diversity.

Strophurus Fitzinger is an Australian endemic genus of climbing geckos characterised by unique caudal glands with the ability to exude a viscous distasteful substance (Greer 1989; Melville *et al*. 2004; Wilson & Swan 2013). Five species of *Strophurus* (*S. elderi* (Stirling & Zeitz), *S. jeanae* (Storr), *S. mcmillani* (Storr), *S. robinsoni* (Smith), and *S. taeniatus* (Lönnberg & Anderson)) appear to exclusively occupy spinifex (*Triodia* spp.) hummock grass clumps in arid, semi-arid, and monsoon tropical landscapes spanning the northern half of Australia (Storr 1978; How *et al.* 1986; Wilson & Swan 2013). The last four of these form a natural group (S. Nielsen, unpub. data) that is colloquially referred to as 'phasmid geckos' owing to their resemblance to stick insects (Phasmatidae) in their elongate and gracile proportions, camouflage and movement.

Phasmid geckos have also been known from the Arnhem Plateau for over a decade (I. Morris, pers. comm.), but have not been considered in recent popular guides (e.g., Wilson & Swan 2013). Given their apparent disjunction from other phasmid geckos, and the high endemism on the Plateau, it has been suspected that these

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and intraregional genetic variation (such as that shown by the phasmid geckos) suggests that an improved understanding of intraregional biogeography may provide an important context for efforts to conserve the evolutionary diversity of this increasingly threatened region.

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APPENDIX 1. Specimens included in morphological comparative analyses.

Strophurus mcmillani (n = 10): WAM R28186; WAM R43039–41; WAM R43076; WAM R43078; WAM R43226; WAM R43229; WAM R56188; WAM R57323 (all paratypes).

Strophurus robinsoni (n = 4): WAM R67960; WAM R108645; WAM R108647; WAM R156743 (all paratypes).

Strophurus taeniatus (n = 30): AMS R17642; AMS R28435; AMS R48640; AMS R48652; AMS R53390; AMS R53392; AMS R53397; AMS R53439; AMS R53761; AMS R56895–9; AMS R72477; AMS R73059; AMS R125953; NTM R36343; NTMR36750–1; QM J39029; QM J39032; QM J47580; QM J47581; QMJ64459; QM J64483; QM J81097; QM J87493; QM J88151.

Strophurus cf. *horneri* (n=2): MAGNT R29670; MAGNT R26152.