



Taxonomic revision of the stone geckos (Squamata: Diplodactylidae: *Diplodactylus*) of southern Australia

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Abstract

The stone geckos of the *Diplodactylus vittatus* species-group are robust terrestrial geckos, mainly distributed through the southern half of Australia. Recent molecular analyses indicate that the current taxonomy significantly under-represents the true diversity in this group. Here we assess the morphological variation in the currently recognized species *D. vittatus* and *D. granariensis*, including the subspecies *D. g. rex*. We redescribe *D. vittatus* and *D. granariensis*, resurrect *D. furcosus* from the synonymy of *D. vittatus* and describe *D. calcicolus* **sp. nov.** and *D. wiru* **sp. nov.** from semiarid habitats in western and southern Australia. Other than *D. g. rex*, most taxa are very similar for such characters as scalation, body and tail shape and size, but colour patterns show species-specific modal conditions, and the largely allopatric distributions mean that most areas support only one or two species which can be distinguished through a combination of characters. Further genetic data is required to resolve the systematic status and geographic distribution of additional deeply divergent genetic lineages in eastern Australia.

Key words: cryptic species, lizards, morphology, Squamata, systematics

Introduction

The Australian gecko fauna includes representatives of four families and over 160 recognised species (Han *et al.* 2004, Wilson & Swan 2008). However a spate of relatively recent molecular studies have demonstrated that cryptic speciation is widespread across many genera, and a significant number of species remain unrecognised (Pepper *et al.* 2006, Oliver *et al.* 2007, Oliver *et al.* 2009). Members of the gecko genus *Diplodactylus* Gray, 1832, are a striking case in point. In a recent genetic study Oliver *et al.* 2009, demonstrated that actual diversity within this genus was likely to be more than double the current recognized total of 14. A significant proportion of this cryptic species diversity was concentrated within what appeared to be a basal grade of plesiomorphic species that were until the 1970s all referred to as *Diplodactylus vittatus*.

A karyotypic study by King (1977) initiated the breakup of what had been regarded as a single widely-distributed species, *D. vittatus* Gray, 1832 (Kluge 1967). This work revealed the existence of several regionally consistent groups based on either karyotype, colour pattern or both. King made no formal taxonomic changes, but Storr (1979) resurrected *D. ornatus* Gray, 1845, and *D. polyophthalmus* Günther, 1867, for two taxa along the west coast and southwestern forests of Western Australia. Storr (1979) also described the Western Australian populations remaining in *D. vittatus* as a new species, *D. granariensis* Storr, 1979, although this taxon included two chromosome races. Later, Storr (1988) described an additional subspecies, *D. g. rex* Storr, 1988, with large body size and distinctive colour pattern that occurred to the north of *D. g. granariensis*. The characters distinguishing the eastern *D. vittatus* and western *D. granariensis* were