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# Taxonomic revision of the Australian arid zone lizards *Gehyra variegata* and *G. montium* (Squamata, Gekkonidae) with description of three new species

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## Abstract

The taxonomy of central Australian populations of geckos of the genus *Gehyra* has been uncertain since chromosomal studies carried out in the 1970s and 1980s revealed considerable heterogeneity and apparently independent patterns of morphological and karyotypic diversity. Following detailed molecular genetic studies, species boundaries in this complex have become clearer and we here re-set the boundaries of the three named species involved, *G. variegata* (Duméril & Bibron, 1836), *G. montium* Storr, 1982, and *G. nana* King, 1982, and describe three new species. Two of the new species, *G. moritzi* and *G. pulingka*, include populations formerly assigned to either *G. montium* or *G. nana* Storr, 1982, while the third, *G. versicolor*, includes all of the eastern Australian populations formerly assigned to *G. variegata.*

**Key words:** Reptilia, Gekkota, systematics, karyotype, cryptic species

## Introduction

Species boundaries among the gekkotan lizards of Australia have been subject to considerable scrutiny in recent years as molecular genetic tools have come into wider use and allowed workers to re-open investigations that had stalled decades before. In particular, several studies have revealed relictual patterns of differentiation in rainforest and upland refugia among the carphodactylid leaf-tailed geckos of tropical Queensland (Couper *et al.* 1993, 1997; Hoskin *et al.* 2003), while other studies have revealed exceptional amounts of cryptic diversity in the primarily arid-zone diplodactylids (Oliver *et al.* 2007a, 2007b, 2009; Pepper *et al.* 2008, 2011).

In the case of the arid zone diplodactylids the presence of cryptic diversity in at least some taxa was not unexpected as the studies of these animals were initiated specifically to address chromosomal studies begun by King (e.g., King 1977) that had revealed that several widespread species within *Diplodactylus* comprised two or sometimes more karyotypically different populations In similar studies, King (1979, 1982) found that the gekkonid genus *Gehyra* was another gekkotan lineage in which single morphospecies harboured multiple karyotypic 'races', of uncertain significance in terms of speciation. King's work was continued and expanded by Moritz (1986)

The present work follows directly from our recent work on these lizards (Sistrom *et al.* 2013). We provided a variety of data sets that pointed to the existence and genetic independence of all three of the nominal species that represent the *G. variegata* complex in central Australia, *G. variegata* (Duméril & Bibron, 1836), *G. minuta* King, 1982 and *G. montium* Storr, 1982. In addition we found as many as five clades that could be new species. Three of these latter clades (Clades 1, 2 and 5 of Sistrom *et al*. 2013) have been well-enough sampled to be described below as new. Their description requires re-definition of both *G. variegata* and *G. montium*, which is also formalized here.

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