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Molecular and morphological assessment of *Varanus pilbarensis* (Squamata: Varanidae), with a description of a new species from the southern Pilbara, Western Australia

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Abstract

Varanus pilbarensis Storr, 1980 is a specialised saxicolous varanid endemic to the Pilbara region of Western Australia. We present genetic and morphological evidence confirming the existence of a divergent southern lineage, here described as *V. hamersleyensis* **sp. nov.**. The new species differs noticeably in having a darker colouration and a reduced pattern of small whitish ocelli on the dorsal surface of the limbs only with a largely unbanded tail. By contrast, *V. pilbarensis* which is redescribed and restricted to the northern lineage, is paler and more boldly patterned with large greyish ocelli on the dorsal and lateral surfaces of the body and a strongly banded tail. The two species have discrete distributions centred on the Chichester and Hamersley Ranges to the north and south of the Fortescue River Basin. This pattern of intraregional genetic structuring is similar to that found in a number of other saxicolous lizard lineages from the Pilbara.

Key words: goanna, Chichester Range, Hamersley Range, Fortescue River Basin, mtDNA divergence

Introduction

Varanids are one of the more high profile, well studied and widely recognised groups of lizards in the world (e.g. King & Green 1993; Vincent & Wilson 1999; Eidenmüller 2007). Australia is a global centre of varanid lizard diversity (Pianka *et al.* 2004); however taxonomic activity over the last decade has focused on varanid taxa distributed across the islands of Indonesia and the Philippines (e.g. Ziegler *et al.* 2007; Welton *et al.* 2010; Koch *et al.* 2010a; Koch *et al.* 2013). Thus, while the total number of recognised varanid species has increased to over 70 in recent years (Koch *et al.* 2010b), the total number of Australian species has remained relatively stable at around 27 or 28 (Wilson & Swan 2013). The last major alpha-taxonomic work on Australian Varanidae was published over thirty years ago (Storr 1980). This focused on Western Australian species and included descriptions of five new taxa: *V. kingorum*, *V. panoptes panoptes*, *V. panoptes rubidus*, *V. pilbarensis* and *V. storri ocreatus*. Since this revision, two additional species of Australian varanid have been described: *V. keithhornei* Wells & Wellington, 1985 and *V. bushi* Aplin, Fitch & King, 2006. Other significant contributions to the Australian varanid diversity include confirmation that *V. doreanus* occurs on Cape York (Ziegler *et al.* 2001; S. Wilson pers. comm.), and *V. prasinus* on the Torres Strait islands (Wilson 1996; Clarke 2004). There however remain unresolved taxonomic issues amongst Australian varanids, mostly involving widespread taxa that show extensive morphological and/or phylogenetic divergence across their distributions (Fuller *et al.* 1998; Ast 2001; Fitch *et al.* 2006). The Pilbara region in Western Australia is one of Australia's herpetological 'hotspots' with many endemic lizards and snakes (How & Cowan 2006; Powney *et al.* 2010; Bush & Maryan 2011; Doughty *et al.* 2011a). The varanid fauna of this region is no exception and includes 10 species (over one-third of the total Australian species diversity). While most *Varanus* species found in the Pilbara are widespread across much of arid and semiarid Australia, there are two

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