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A new species of *Pseudophryne* (Anura: Myobatrachidae) from the central Australian ranges

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Abstract

The myobatrachid frog genus *Pseudophryne* is highly variable in color pattern in eastern Australia where many species are distinguished by distinctive dorsal patterns. In contrast *Pseudophryne* from the western half of the continent are morphologically conservative. Two nominal species are widespread in south-western Australia and north-western South Australia, with one, *P. occidentalis*, being found in semi-arid and arid regions. Using mitochondrial DNA and morphological characters we establish that populations in the ranges of north-western South Australia assigned to *P. occidentalis* are a separate species. The new species comprises one of four major lineages of *Pseudophryne* while *P. occidentalis* falls within another lineage confined to south-western Australia.

Keywords: mitochondrial DNA, frog, Myobatrachidae, *Pseudophryne*, phylogeny, species, systematics

Introduction

The Australopapuan myobatrachid frogs show considerable diversity in morphology and in breeding biology, with some taxa expressing remarkable forms of parental care including gastric brooding in *Rheobatrachus* (Corben *et al.* 1974) and ‘hip pocket transport’ in *Assa* (Straughan & Lee 1966). Much of this diversity is taxonomically distributed among genera so that often each genus is highly distinctive and recognizable (Littlejohn *et al.* 1993). The obvious morphological differences between genera strongly contrast with the conservative pattern of differentiation within genera. This morphological conservatism is most obvious in two speciose genera of small ‘toadlets’, *Pseudophryne* (13 species) and *Uperoleia* (27 species). These genera are geographically very widespread and morphologically conservative, although some species of *Pseudophryne* are brilliantly colored, and relatively conservative in male advertisement calls (Catullo *et al.* 2011). Diversity in *Uperoleia* is concentrated primarily in northern Australia from the Pilbara region in the west across the north of the continent and extending into the mesic south-east. The range of *Pseudophryne* overlaps with *Uperoleia* in the north-west Pilbara region and along the eastern seaboard but is exclusive of *Uperoleia* in southern Australia including some of the central desert ranges in north-western South Australia and eastern Western Australia.

An isolated population of *Pseudophryne* was discovered in the north-western ranges of South Australia in 1970 and assigned by Tyler (1972) to *P. occidentalis*, a species which is otherwise distributed in south-western Australia (Fig. 1). Accumulation of new voucher specimens with accompanying images in life, and of frozen tissues from the Everard and Musgrave Ranges has provided the opportunity to comprehensively assess relationships of the *Pseudophryne* from the central ranges with congeners utilising molecular genetic methods and more detailed morphological comparisons. The molecular genetic data demonstrate that the central ranges population is a long-isolated lineage within *Pseudophryne* and we herein describe it as a distinct species.