A new species of chameleon (Squamata: Chamaeleonidae) from the Aberdare Mountains in the central highlands of Kenya

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Abstract

We describe a new species of chameleon, Trioceros kinangopensis sp. nov., from Kinangop Peak in the Aberdare mountains, central highlands of Kenya. The proposed new species is morphologically and genetically distinct from other member of the bitaeniatus-group. It is morphologically most similar to T. schubotzi but differs in the lack of sexual size dimorphism, smaller-sized females, smoother, less angular canthus rostrales, smaller scales on the temporal region and a bright orange gular crest in males. Mitochondrial DNA indicates that the proposed new taxon is a distinct lineage that is closely related to T. nyirit and T. schubotzi. The distribution of T. kinangopensis sp. nov. appears to be restricted to the afroalpine zone in vicinity of Kinangop Peak and fires may pose a serious threat to the long-term survival of this species.

Key words: endemism, East Africa, phylogenetics, rift valley, species diversity, systematics

Introduction

The highlands of East Africa represent a regional hotspot for chameleon species diversity in mainland Africa. Five genera and over fifty species are present in the region, the majority of which are restricted to montane biotopes (Spawls et al. 2002, Tilbury 2010). Surveys of some of the more remote and biologically understudied mountain ranges in the region continue to reveal hitherto undiscovered species diversity (Menegon et al. 2002, Necas et al. 2003, Necas et al. 2005, Mariaux & Tilbury 2006, Menegon et al. 2009, Necas 2009, Necas et al. 2009, Krause & Böhme 2010, Lutzmann et al. 2010, Stipala et al. 2011). Molecular techniques have also been used to investigate several groups of East African chameleons that have a complex taxonomic history, providing valuable insights into their the phylogenetic relationships and the historical geological and climatic processes that have driven their diversification (Matthee et al. 2004, Measey & Tolley 2011, Tolley et al. 2011). Molecular studies have also revealed that many geographically widespread species with fragmented distributions contain deep phylogenetic splits, indicating prolonged periods of isolation among populations and the presence of cryptic species (Matthee et al. 2004, Mariaux & Tilbury 2006, Mariaux et al. 2008, Menegon et al. 2009, Barej et al. 2010, Stipala et al. 2011).

Among the East African chameleons the genus Trioceros is a species diverse lineage that has been included in several phylogenies (Townsend & Larson 2002, Raxworthy et al. 2002, Tilbury & Tolley 2009, Krause & Böhme 2010, Stipala et al. 2011) but is in need of further detailed investigation. Within the genus is a sub-clade known as the bitaeniatus-group (Rand 1963) that consists of small bodied, live-bearing species with montane distributions. They are a morphologically distinctive group that display the following characteristics: prominent tubercular cranial crests including a raised parietal crest, which forms a triangular casque at the back of the head; prominent dorsal and gular crests; and heterogeneous body scalation. A few species possess a single, short rostral process and one species, T. jacksonii, possesses three long annular horns. The taxonomic history of the bitaeniatus-group is complex and has been subject to several major revisions with conflicting views on species and sub-species groupings (Werner 1911, Mertens 1966, Rand 1963). A detailed study of the external morphology of the bitaeniatus-group by Rand (1963)