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## Pygmy chameleons of the *Rhampholeon platyceps* complex (Squamata: Chamaeleonidae): Description of four new species from isolated ‘sky islands’ of northern Mozambique

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### Abstract

The taxonomic status of recently discovered populations of pygmy chameleons (*Rhampholeon*) from the northern Mozambique montane isolates of Mt. Chiperone, Mt. Mabu, Mt. Inago and Mt. Namuli are assessed, and compared with the closest geographical congeners, including *Rhampholeon platyceps* Günther 1893 from Mt. Mulanje, and *Rh. chapmanorum* Tilbury 1992 from the Malawi Hills, both in southern Malawi. Relationships were examined using morphological features and a phylogenetic analysis incorporating two mitochondrial and one nuclear marker. The phylogeny showed that each montane isolate contained a distinct, well-supported clade of chameleons. Chameleons from the Mozambican montane isolates are within a monophyletic clade inclusive of species from southern Malawi (*Rh. platyceps* and *Rh. chapmanorum*). Although some relationships are unresolved, the southern Malawi and Mozambican isolates appear to share their most recent common ancestor with species from the Eastern Arc Mountains and Southern Highlands of Tanzania and Malawi (*Rh. moyeri*, *Rh. uluguruesis*, *Rh. nchisiensis*). Along with *Rh. beraduccii* and *Rh. acuminatus*, all are included in the subgenus *Rhinodigitum*. Sister to this larger clade are species from west/central Africa (*Rh. temporalis*, *Rh. spectrum*) and the *Rh. marshalli-gorongosae* complex from southwest Mozambique and adjacent Zimbabwe. Morphological and molecular results confirm that *Brookesia platyceps carri* Loveridge 1953 is a junior subjective synonym of *Rhampholeon platyceps* Günther 1892. Historical records of *Rh. platyceps* from the Shire Highlands (Chiromo) and the Zomba Plateau, are incorrect and the species is now considered endemic to the Mulanje massif. All of the four newly discovered, isolated populations are genetically and morphologically distinct, and we take the opportunity to describe each as a new species. *Rhampholeon (Rhinodigitum) maspictus* **sp. nov.** is restricted to Mt. Mabu and distinguished by its large size, well-developed dorsal crenulations, and bright male breeding coloration; *Rhampholeon (Rhinodigitum) nebulauctor* **sp. nov.** is restricted to Mt. Chiperone and distinguished by its small size, weakly-developed dorsal crenulations, and a large rostral process in males; *Rhampholeon (Rhinodigitum) tilburyi* **sp. nov.** is restricted to Mt. Namuli and distinguished by its small size, weakly-developed dorsal crenulations, and prominent flexure of the snout in males; and *Rhampholeon (Rhinodigitum) bruessoworum* **sp. nov.** is restricted to Mt. Inago and distinguished by its small size, weakly-developed dorsal crenulations, large rostral process in males, and relatively long tail in both sexes.

**Keywords:** Afromontane, Biodiversity, Chamaeleonidae, *Rhampholeon*, East Africa, new species, reptiles, Southern Africa

### Introduction

The Afromontane Archipelago is a series of mountain chains and inselbergs stretching from Ethiopia to South Africa, characterised by isolated montane forests often with high altitude grassland or heathland habitats. The

Tilbury. *Rhampholeon (Rhinodigitum) nchisiensis*: PEM R16241-42, Nchisi Mountain, Malawi (1334AC), C. Tilbury; R16247-48, Juniper Forest, Nyika Plateau, Malawi (1033DB), C. Tilbury; R16249, Chowo forest, Nyika Plateau, Zambia (1033DB), C. Tilbury. *Rhampholeon (Rhinodigitum) platyceps*: PEM R12202, Hydro Station, Ruo Gorge, Mt. Mulanje, Malawi (15°58'19"S, 35°39'18"E), W. R. Branch, J. Marais & M. Cunningham; R16250-51, Madzeka River Basin, Mt. Mlanje, Malawi (15°45'S, 35°38'E ; 1535DC), C. Tilbury; R16290-92, Chambe Hut region, Mt. Mulanje, Malawi (15°54'20"S, 35°32'40"E, 1828 m asl.), W.R. Branch, J. Marais, M. Cunningham; R16304-05, 16363-65, Cedar forest, NE facing 1.5km East of Sombani Hut, Mt. Mulanje, Malawi (15°53'30"S, 35°42'30"E), W.R. Branch, J. Marais, M. Cunningham; R16309-11, Lichenya plateau, CCAP Hut, Mt. Mulanje, Malawi (15°58'11"S, 35°32'03"E, 2005 m asl.), W.R. Branch, J. Marais, M. Cunningham; R16312, Chambe Hut, Mt. Mulanje, Malawi (15°54'20"S, 35°32'40"E, 1828 m asl), W. R. Branch, J. Marais, M. Cunningham; R16327, 200m West of Sombani Hut, north slopes of Mt. Mulanje, Malawi (15°52'59"S, 35°42'05"E), W.R. Branch, J. Marais, M. Cunningham; R16359-62, Chisengoli Forest, S. slopes Mt. Mulanje, Mulanje, Malawi (15°53'30"S, 35°42'30"E, 2094 m asl.), W.R. Branch, J. Marais & M. Cunningham; R17136-40, Ruo Gorge, Mt. Mulanje (15 15' 36"S, 35 39' 15.3"E), K. Tolley & S. van Noort. *Rhampholeon (Rhinodigitum) uluguruensis*: PEM R16519, Nguru Mountains, Tanzania, J. Beraducci. *Rieppeleon brachyurus*: PEM R9161, Tanzania, Harvey; R16263-64, grasslands between Tomato & Koradiga, Tanzania (0537DA), J. Beraducci; R16256-57, Teak forest below Amani, E. Usambara, Tanzania (0538BA), C. Tilbury; R16258, Kjhansi Gorge, Udzungwa Mt.s., Tanzania (0736DB), C. Tilbury. *Rieppeleon kerstenii*: PEM R14997, Mavamba School, Kinondo Location, Msabweni Division, Kwale, Kenya (0439AD), W.R. Branch; R16268, Just S. of Handeni, Tanzania (0538AC), J. Beraducci.

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