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The distribution of *Mertensophryne anotis* with a new record in Northern Mozambique

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Northern Mozambique (Nampula, Niassa and Cabo Degabo provinces) is biologically one of the most poorly known areas in Africa. In recent years several biodiversity surveys have been conducted in northern Mozambique (e.g. Branch et al., 2005; Timberlake et al., 2007; Timberlake et al., 2009; Bayliss et al., 2014; Pascal, 2011; Portik et al., 2013a) but large areas still remain completely unknown. The expeditions thus far have resulted in the discovery of several new species of reptiles and mammals (e.g. Branch and Bayliss, 2009; Daniels and Bayliss, 2012; Taylor et al., 2012; Portik et al., 2013b), but no amphibians. Amphibians have not received much attention with the only substantial review of the area dating from Poynton and Broadley's opus Amphibia Zambesiaca (1985a; 1985b; 1987; 1991). The number and distribution of species is likely to be greatly underestimated given the lack of taxonomic study and basic field surveys across the region (Portik et al., 2013a).

One species known from Mozambique is *Mertensophryne anotis* (Boulenger 1907), which is known from Dombe Forest (see Figure 1) and in the adjacent Chirinda Forest in eastern Zimbabwe (Poynton and Broadley, 1988). The species is a bufonid, distinguished by a combination of characters including: absence of a tarsal fold, a pointed snout, absent tympanum, large parotid glands, granular throat, and short webbed toes (Boulenger, 1907; Poynton and Broadley, 1988; Channing, 2001). In the Chirinda Forest it occurs at approximately 900-1,300 m asl. The species lives in the leaf-litter of evergreen forests, mainly hiding inside or beneath rotten logs. The Dombe forest specimen was collected by T.W. Coffin-Grey on 5 March 1970 (Broadley pers. comm.). Dombe forest is a small patch of coastal forest in the eastern foothills of the Chimanimani escarpment at an altitude of ca. 640 m

Figure 1. IUCN redlist expert distribution range of *Mertensophryne anotis* (red) in Zimbabwe and Mozambique, triangles are previously known records from GBIF.org and the star is the new record from Taratibu.

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Figure 2. Picture in life of *Mertensophryne anotis* from Taratibu.

(35 km north of Dombe town; Broadley pers. comm.; see Figure 1).

The breeding biology of the species has been described by Channing (1978), which included the description of the remarkable tadpole, which was used as part of the evidence to elevate it to its own genus (*Stephopaedes*) from *Bufo*. Frost's recent taxonomic changes now place it in the Southern and East African genus *Mertensophryne* (Frost et al., 2006), several species of which share a similar, characteristic tadpole morphology (Müller et al., 2005). Channing (1978) documented that eggs are laid in pockets of water between the buttress roots of *Chrysophyllum gorungosanum* trees, or in water-filled grooves on the trunks of fallen trees. The species has never been found outside forests (Poynton and Broadley, 1988). According to the IUCN Red List (Poynton and Channing, 2004), it is an endangered species due to its Extent of Occurrence being less than 5,000 km^2, only being known from fewer than five locations, and because the quality and extent of its forest habitat in Zimbabwe and Mozambique is declining.

During a three day survey of the inselbergs of Taratibu, Quirimbas National Park (-12.816 S, 39.695 E, alt. 331 m; see Figure 1), a female (snout vent length of 44 mm) specimen of *Mertensophryne* cf. *anotis* (Boulenger 1907) were collected on 21 December 2014. This is more than 1,000 km from its known distribution of eastern Zimbabwe and adjacent Mozambique. The heavy rains had not yet started in the area, although light rainfall at nightfall was registered. The specimen was collected at around 8 pm in grass around the Taratibu's Lodge huts, which is at the base of a mountain surrounded by Southern Zanzibar-Inhambane coastal forest mosaic. The specimen can be readily identified as this species on the basis of morphological (see Figure 2: and according to diagnosis in Poynton and Broadley, 1988, p.483) and genetic similarity.

The Taratibu specimen was barcoded using the 16S mtDNA (Genbank Accession Number to be release upon completion) and compared with other bufonids and showed nearest genetic similarity (p distance of 1.6%) to *Mertensophryne anotis* (Genbank Accession number: AF220910) from Zimbabwe. Other *Mertensophryne* species barcodes were compared ruling out the possibility of the sample being another species apart from: *M. mocquardi* (Angel 1924), *M. nairobiensis* (Loveridge 1932), *M. schmidti* (Grandison 1972), *M. lonnbergi* (Andersson 1911), and *M. melanopleura* (Schmidt and Inger 1959), for which no data were available. However these species are morphologically different from the specimen collected in Taratibu.

The genetic difference between the new Taratibu population and *M. anotis* from the type locality raises the question of whether this sample represents a new species or not. Because we only have a single sample to compare we are unable to determine morphological variation in the Taratibu population. Given the large geographic distance, and likely long term isolated nature of the habitats both in Taratibu and the previous records in Dombe (Mozambique) and Chirinda (Zimbabwe; Figure 1), it might be possible these are two distinct, non-interbreeding populations. If *M. anotis* represents two species there are important conservation implications, as both populations with restricted distributions are threatened by continued deforestation (e.g. Magalhães, 2014). Rapid surveying of these habitats is urgently required to assess the diversity of the amphibian fauna of the isolated inselbergs in Mozambique to facilitate their protection.

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