



<http://dx.doi.org/10.11646/zootaxa.3599.3.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:C5975855-F625-42B8-9FC3-EE91D0428DE7>

Revalidation of *Pyxicephalus angusticeps* Parry, 1982 (Anura: Natatanura: Pyxicephalidae), a bullfrog endemic to the lowlands of eastern Africa

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Abstract

Pyxicephalus currently contains three recognized species, viz. *P. adspersus*, *P. edulis* and *P. obbianus*, the former two of which have a long history of confusion. Parry (1982) described *P. adspersus angusticeps* from Beira, Mozambique, which was synonymized with *P. edulis*. We re-examine the taxonomic status of *Pyxicephalus* taxa from Mozambique, examining the types and contrasting them to congeners throughout Africa. Morphological characters previously used to delimit species in *Pyxicephalus* are examined, and problems with some identified. Additional diagnostic characters and their variation in *Pyxicephalus* are discussed, and a revised key is provided. Confusion among species in the genus, type localities, literature and folklore led to *P. adspersus angusticeps* being incorrectly synonymized with *P. edulis*. We formally revalidate *P. angusticeps*, and designate a lectotype for *P. edulis*. The identity of voucher specimens from previous work suggests that the breeding ecology of *P. angusticeps* is distinct from that of *P. adspersus* and *P. edulis*, and that the advertisement call of *P. angusticeps* was used as part of the evidence for elevating *P. edulis* out of synonymy with *P. adspersus*. The previous confusion of *P. adspersus* and *P. edulis* does not affect the recognition of *P. angusticeps*. The wider implication of the previous misidentification of *P. angusticeps* as *P. edulis* is that most of the museum material labeled as *P. adspersus* from East Africa is *P. edulis*, and most of the museum material labeled as *P. edulis* from East Africa is *P. angusticeps*. This conclusion has been confirmed from East African museum material thus far examined.

Key words: *Pyxicephalus obbianus*, *Pyxicephalus edulis*, *Pyxicephalus adspersus*, *Pyxicephalus angusticeps*, allopatry, vocalizations, Mozambique, Kenya, Tanzania, niche separation

Introduction

The African bullfrog genus *Pyxicephalus* is among the most charismatic of African Anura. In southern Africa, two species are currently recognized, viz. the giant African bullfrog, *P. adspersus* Tschudi, 1838 and the edible African bullfrog, *P. edulis* Peters, 1854. A third poorly known species, *P. obbianus* Calabrezi, 1927 occurs in Somalia. Species boundaries in *Pyxicephalus* are poorly understood, particularly those between *P. adspersus* and *P. edulis*. Despite their obvious morphological differences, *P. edulis* was twice synonymized with *P. adspersus* and twice removed from synonymy with *P. adspersus* (Boulenger 1882; Loveridge 1936, 1950; Poynton 1964; Channing *et al.* 1994). Parry (1982) revised the genus in southern Africa, examining most of the holdings of southern African museums, and described the subspecies *Pyxicephalus adspersus angusticeps* Parry, 1982 from Mozambique. In a review of the status of *Pyxicephalus* in southern Africa, Channing *et al.* (1994) provided detailed accounts of the breeding biology and vocalizations of *P. adspersus* from Bloemfontein, and a species of *Pyxicephalus* from Beira, Mozambique, concluding that they were not conspecific and that two species of bullfrogs occurred in southern Africa. Channing *et al.* (1994) elevated *P. adspersus edulis* to species rank, at the same time synonymizing the