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The HAA is dedicated to the study and conservation of African reptiles and amphibians. Membership is open to anyone with an interest in the African herpetofauna. Members receive the Association's journal, *African Journal of Herpetology* (which publishes review papers, research articles, and short communications – subject to peer review) and *African Herp News*, the Newsletter (which includes short communications, natural history notes, geographical distribution notes, herpetological survey reports, venom and snakebite notes, book reviews, bibliographies, husbandry hints, announcements and news items).

NEWSLETTER EDITOR'S NOTE

Articles shall be considered for publication provided that they are original and have not been published elsewhere. Articles will be submitted for peer review at the Editor's discretion. Authors are requested to submit manuscripts by e-mail in MS Word '.doc' or '.docx' format.

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COVER PHOTOGRAPH: *Nucras taeniolata* from Groendal Wilderness Area, Eastern Cape Province, South Africa. Photograph by: Werner Conradie. Canon EOS 450D (1/160, F32, ISO 100).

developing taxa is characterized by the loss of the aquatic, larval stage and usually differs considerably from taxa with the plesiomorphic, metamorphosing life-cycle. In frogs direct development is widespread, both phylogenetically and in terms of species numbers, but surprisingly little information is available on the development of direct developing species. In this study, we examined the skeletal and muscular development of the direct developing, East African squeaker frog *Arthroleptis xenodactyloides* (Arthroleptidae) using whole mount immunohistochemistry. The focus of investigation lies on characters involved in larval feeding, which have often been altered in comparison to biphasic frogs. Embryonic development in *A. xenodactyloides* is altered in comparison to taxa with a free-living aquatic larva shows similarities to other direct developing anurans, such as *Eleutherodactylus coqui* and *Philautus silus*. In *A. xenodactyloides*, the absence of nearly all larval cartilages typical for the ancestral life-history is an obvious feature of embryonic development. In metamorphosing frogs, bone formation occurs post-hatching, whereas cranial ossification in *A. xenodactyloides* has been advanced into the embryonic period. Furthermore, the plesiomorphic cranial muscle ontogeny in metamorphosing anurans differs considerably from that seen in the direct developing *A. xenodactyloides* embryos. Comparing the limited, available data on direct developing anurans, the degree to which direct development deviates from the ancestral life-history appears to vary substantially between species that evolved direct development independently.

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Morphological variation in African Bullfrogs (Pyxicephalidae: *Pyxicephalus*), assessed from CT scan data and morphometrics

African bullfrogs (*Pyxicephalus*) are large, impressive anurans which display reversed sexual dimorphism, male-male combat and male parental care. Three species are currently recognized from throughout the arid savannas of Africa. Morphometric data have traditionally underpinned the diagnoses of species within *Pyxicephalus*. However, the two most commonly encountered species (*P. adspersus* and *P. edulis*) are problematic to diagnose: none of the four traditionally used characters separate all individuals from all regions. This study aimed to examine the morphology of all previously named taxa (valid or synonymized), assess the extent of geographical variation across Africa, and identify consistent diagnostic characters for each species. The rarity of some material, and general poor results obtained through double staining and clearing large vertebrates preclude this method for *Pyxicephalus*. Computed

Tomography (CT) scanning was used to create non-destructive 3D images of the skeletons. A dataset from external morphology and osteology from discrete characters was compiled. Various notable skeletal characteristics specific to *Pyxicephalus* were discovered, some of which appear to be correlated with its fossorial lifestyle, whilst others may be the result of structural constraints caused by large body size, or even ecology. We found that many of the traditional morphometric characters are not reliable for species diagnosis, and examined the osteological basis for this. Further work on genetics and vocalizations of *Pyxicephalus* is underway, and may reveal further cryptic taxa.

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Community and population-level responses of an Afromontane chameleon assemblage to forest fragmentation

Habitat modification in the form of fragmentation and loss is a leading cause of biodiversity decline. The basic predictions from island biogeography theory that species richness and population size decrease with declining area and increased isolation have received considerable support. However much of this research has focused on birds and mammals in temperate regions or the Neotropics, limiting our ability to generalize to other taxa and regions. Reptiles in particular are understudied and have not shown a clear response. Here we examine the community and population-level responses of an Afromontane chameleon assemblage to forest fragmentation. The East Usambara Mountains of Tanzania have high rates of endemism within a highly fragmented forested landscape. Within this fragmented habitat are eight species of chameleon, many of which are of conservation concern. We used repeated distance-based sampling in a large forest block and 11 forest fragments in order to estimate species' densities and overall richness. This allowed us to quantify the population and community-level responses to habitat fragmentation while accounting for differences in detectability. Chameleon richness decreased with both decreasing fragment size and with increasing isolation. The chameleon communities of 10 of the 11 forest fragments were subsets of the community of the largest block sampled, suggesting that smaller fragments contribute little to landscape-level biodiversity. Chameleon densities are better predicted by fragment area alone than by any model including isolation, but species' responses differ. *Rhampholeon temporalis* shows a strong decrease in density with decreasing fragment area, while *Trioceros deremensis*' density decreases only slightly with decreasing fragment area. Neither species was found in the two smallest forest fragments