



## The tadpole of the Lake Oku clawed frog *Xenopus longipes* (Anura; Pipidae)

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*Xenopus longipes* Loumont and Kobel, 1991 is an aquatic polyploid frog endemic to the high altitude crater lake, Lake Oku in North West region, Cameroon (Loumont & Kobel 1991). The tadpole of *X. longipes* is currently undescribed. So far, only dead tadpoles have been found at Lake Oku during regular monitoring since 2008 (Doherty-Bone *et al.* 2013), with specimens too decomposed to make adequate descriptions. Captive breeding provides one opportunity to obtain fresh specimens for description.

A colony of *X. longipes* is maintained at the Zoological Society of London's (ZSL) London Zoo, as part of a conservation research programme that was developed to document the life history of this Critically Endangered species (IUCN 2004). Herein we describe the tadpole and compare it with other *Xenopus* tadpoles for which descriptions are available.

Frogs were bred naturally in captivity and ethical approval was granted to euthanise a sub set of the developing tadpoles to facilitate larval descriptions. Tadpoles were euthanised in Tricaine Methanesulfonate (MS-222) and fixed in 10% formalin. Sample size was kept to a minimum so as not to undermine attempts at establishing the species in captivity. The description is based on five specimens Nieuwkoop-Faber stage 43–57 (Nieuwkoop & Faber 1994) which corresponds to Gosner stage 25–39 (Gosner 1960). The studied specimens were deposited at the Natural History Museum, London (NHM UK 2013.351–5) (former acronym of this collection: BMNH). Measurements of morphology follows nomenclature of Altig & McDiarmid (1999) and are reported as mean  $\pm$  SD, min–max. Due to the small size and fragility of the specimens measurements were taken by photographing each specimen with a millimetre scale, morphometric measurements were recorded in ImageJ (available at <http://rsb.info.nih.gov/ij>). Data from these captive bred tadpoles were supplemented with observations from a further 8 field-collected tadpoles found dead at Lake Oku in 2008. These were fixed in 10% formalin and morphometric measurements were recorded using digital callipers accurate to 0.1 mm. Due to the degraded nature of some of the specimens collected in the field it was not possible to document a full suite of morphometric measurements for every specimen.

Captive reared tadpoles: Nieuwkoop-Faber stage 43–47 (Gosner stage 25–27), all measurements in mm (NHM UK 2013.351, 2013.352, 2013.353, 2013.354): Total length ( $23.9 \pm 2.8$ ; 20.4–27.5), body length ( $5.5 \pm 1.0$ ; 4.4–6.3), tail length ( $18.4 \pm 2.8$ ; 15.9–21.1), maximum tail muscle height ( $1.8 \pm 0.1$ ; 1.7–1.9), maximum tail height ( $3.0 \pm 0.6$ ; 2.3–3.7), maximum tail muscle width ( $1.2 \pm 0.3$ ; 1.0–1.4), interorbital distance ( $3.6 \pm 0.5$  mm; 2.9–3.9), internarial distance ( $0.1 \pm 0.2$ ; 0.6–1.1), maximum dorsal fin height ( $0.6 \pm 0.3$ ; 0.2–1.0), maximum ventral fin height ( $1.2 \pm 0.4$ ; 0.8–1.8), eye diameter ( $0.8 \pm 0.1$ ; 0.8–0.9), narial diameter ( $0.2 \pm 0.0$ ; 0.2–0.3), snout–eye distance ( $1.7 \pm 0.2$ ; 1.5–1.9), snout–nostril distance ( $0.3 \pm 0.1$ ; 0.2–0.4), body width ( $3.8 \pm 0.1$ ; 3.0–4.5), barbel length ( $0.1 \pm 0.1$ ; 0.0–2.5).

Nieuwkoop-Faber stage 57 (Gosner stage 39), all measurements in mm: (NHM UK 2013.3515) Total length, 65.8; body length, 15.8; tail length, 49.96; maximum tail muscle height, 6.0; maximum tail height, 13.7; maximum tail muscle width, 5.2; interorbital distance, 10.5; internarial distance, 1.9; maximum dorsal fin height 3.5; maximum ventral fin height, 7.6; eye diameter, 1.7; narial diameter, 0.6; snout–eye distance, 5.2; snout–nostril distance, 0.9; body width 11.5; barbel length 1.1.

Tadpoles found dead in field: Dead larvae were observed and collected at Lake Oku during or toward the end of Cameroonian wet season (late April–early October): 07.10.2008 ( $n = 1$ ); 26.07.2010 ( $n=42$ , but not collected); 27.07.2010 ( $n=3$ ); 14.08.2012 ( $n=17$ , a further four not collected); 18.08.2012 ( $n=2$ ); 04.09.2012 ( $n=1$ ). Tissue from the base of the tail of one specimen (BMNH 2008.441; a preserved specimen accessioned before the change of acronym)