



## Correspondence

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### The tadpole of *Allobates sumtuosus* (Morales, ‘2000’ 2002) (Anura: Aromobatidae) from its type locality at Reserva Biológica do Rio Trombetas, Pará, Brazil

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*Allobates sumtuosus* was described by Morales (“2000” [2002]), partially based on individuals collected by R.I. Crombie and R.C. Lynn at Reserva Biológica do Rio Trombetas (REBio Trombetas - Estado do Pará, Brazil). The holotype proceeded from the same locality.

From 25<sup>th</sup> to 28<sup>th</sup> of February, 2011, while conducting field work in the western section of REBio Trombetas, we found a population of *A. sumtuosus* along a system of trails in an area of *terra-firme* forest, identifiable on the basis of their morphology (Fig. 1). Trails were located near the Tabuleiro research facility (01°22'12" S, 56°51'08" W). Senior employees confirmed those trails as the same visited by Crombie & Lynn in their original excursion, and from where they have collected specimens that later integrated the species' type series. In this area, *Anomaloglossus stepheni* was the only aromobatid frog found to be syntopic to *A. sumtuosus*, its endotrophic tadpoles being easily distinguished from those of the latter.

Tadpoles described here proceeded from a jelly nest found on a green *Heliconia* leaf lying on the forest floor, still attached to the stem. The nest contained two egg clutches, with embryos at different stages, and was attended by a calling male of *A. sumtuosus* at the time of collection. Fourteen collected tadpoles were raised in laboratory until developmental stages 29–34 (Gosner, 1960), anesthetized and killed in benzocaine solution, preserved in 10% formalin, and deposited at the Herpetology Collection at INPA, Manaus, Brazil (INPA-H 30441). We chose one tadpole at stage 34 for a detailed description (Fig. 1A–B). Morphological variation and color were described based on the 14 tadpoles, which were measured under a stereoscopic microscope with graduated lenses (precision 0.1 mm). Terminology followed Altig & McDiarmid (1999).

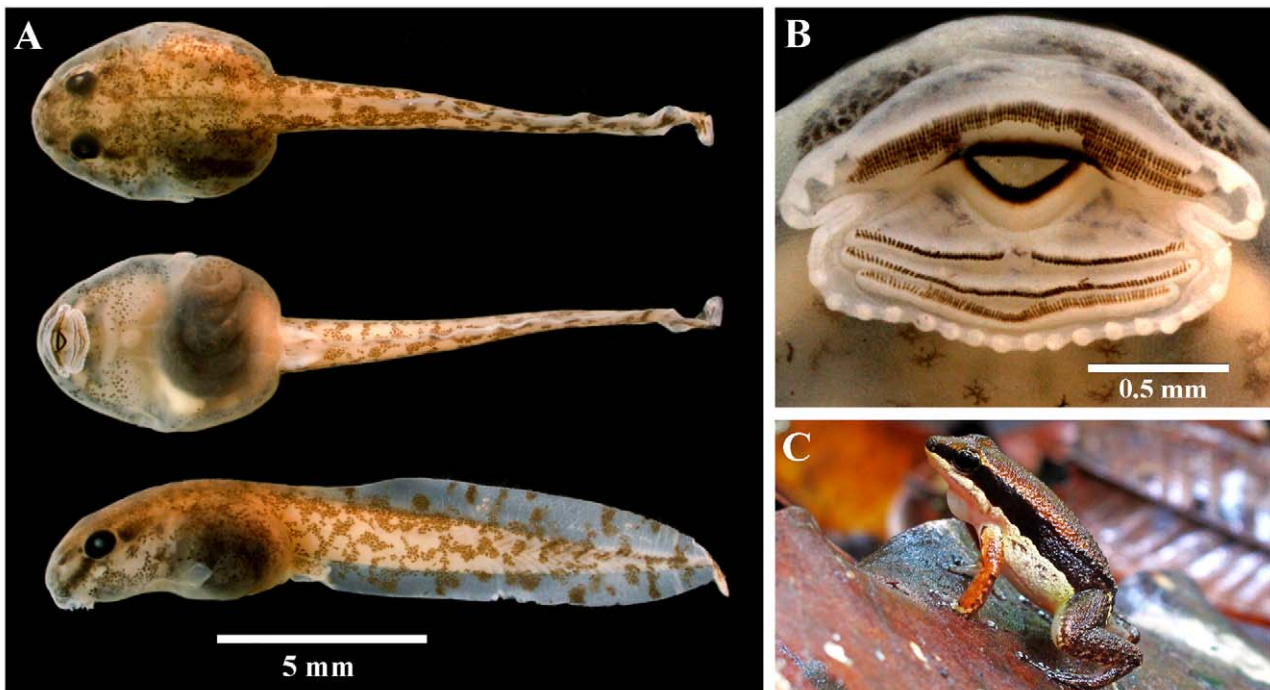
**Description.** Body is depressed, body width (4.0 mm) larger than body depth (2.7 mm), 5.5 mm in length. Snout is round in dorsal view and slightly depressed anteroventrally in lateral view, from the level of nostrils to anterior labium. Nares are small, directed anterolaterally, 0.4 mm anterior to the eye, and 0.3 mm posterior to tip of snout. Distance between nostrils (1.0 mm) longer than distance between orbits (0.8 mm). Eyes are dorsal, directed dorsolaterally, 0.7 mm in maximum length, and located 0.7 mm posterior to tip of snout. Spiracle sinistral, forming a free short (0.7 mm) tube opening posterodorsally, below level of body axis in lateral view, 3.6 mm posterior to tip of snout. Vent tube medial, 0.7 mm in length, opening dextrally.

Musculature of tail is deeper (1.3 mm) along the first third of tail length and wider at body-tail insertion (1.3 mm). Ventral tail fin originates at body-tail insertion. Dorsal tail fin originates slightly posterior (0.5 mm) to body-tail insertion, and reaches maximum high 8.5 mm from tip of snout, approximately at the middle of first third of tail length. At maximum depth of tail, depth of musculature is 1.2 mm, dorsal fin 0.8 mm and ventral fin 0.6 mm.

**Oral disc.** Positioned ventrally, emarginate laterally, transversely elliptical, with 1.6 mm in transverse width. Anterior labium 1.6 mm in length, continuous with snout, but delimited by a transverse fold. A single row of round to pyramidal papillae is present laterally on the outer folds of labium, but absent dorsally (gap 1.1 mm, 69% of labium length). Posterior labium free from body wall, 1.4 mm in length, with a single row of round marginal papillae, all similar in size.

Labial tooth row formula is 2(2)/3(1). Rows A-1 and A-2 with same length (1.3 mm), A-2 with a large medial gap (0.4 mm, 30% of tooth row length). Rows P-1, and P-2 with same length (1.2 mm), P-1 with a narrow medial gap (< 0.1 mm), evidenced by a break between tooth ridges. Row P-3 slightly shorter (about five labial teeth, or 0.1 mm shorter on each side) than P-1 and P-2. Upper jaw sheath flat medially, with lateral flexures, 0.5 mm in length (31 % of oral disc

width), < 0.1 mm in width. Cutting edge serrate, with serrations not extending to lateral process of the upper jaw. Lower jaw sheath deeper than upper jaw, arch-shaped, 0.4 mm in length, with serrate cutting edge.



**FIGURE 1.** (A) From top to bottom: dorsal, ventral and lateral views of preserved *Allobates sumtuosus* tadpole in developmental stage 34 collected at Reserva Biológica do Rio Trombetas, State of Pará, Brazil; (B) Oral disc of same tadpole; (C) Adult male in calling activity, photographed at Reserva Biológica do Rio Trombetas, under natural light conditions. The absence of a transversal stripes on dorsal surface of thighs, the light color of throat, the absence of a light oblique lateral stripe and dilated third finger in males are characteristic of *A. sumtuosus*.

**Morphometric variation.** Mean values (in mm)  $\pm$  one standard deviation, followed by minimum and maximum values, obtained from measurements on 14 tadpoles: total length:  $14.7 \pm 1.3$  (12.8–17.0); body length:  $5.2 \pm 0.3$  (4.8–6.0); body height:  $2.3 \pm 0.2$  (2.0–2.7); body width at spiracle level:  $3.6 \pm 0.4$  (2.7–4.2); body width at eye level:  $2.7 \pm 0.2$  (2.3–3.0); eye diameter:  $0.6 \pm 0.05$  (0.6–0.7); internarial distance:  $0.9 \pm 0.1$  (0.7–1.0); inter orbital distance:  $0.7 \pm 0.1$  (0.6–0.9); nairo-pupilar distance:  $0.3 \pm 0.05$  (0.3–0.4); rostro-narial distance:  $0.3 \pm 0.1$  (0.2–0.5); tail length:  $9.5 \pm 1.0$  (8.0–11.0); maximum height of tail:  $2.5 \pm 0.1$  (2.3–2.7); maximum height of tail musculature:  $1.2 \pm 0.1$  (1.1–1.3); maximum width of tail musculature:  $1.1 \pm 0.1$  (1.0–1.5).

**Color.** Color in formalin is light brown, body same tone as tail. Body tegument is translucent. Brown melanophores uniformly scattered on dorsum, sparse to absent on ventral surface (absent on tegument over intestinal coils). Tail musculature is cream-colored. Tail fins are translucent, with scattered brown melanophores forming irregular blotches.

Although *A. sumtuosus* can be distinguished from some congeneric species by a set of morphological characters (Morales “2000” [2002], Fig. 1C), their adult and tadpole morphology resemble those of *A. spumaponens* and *A. granti* (Kok & Ernst 2007, Kok *et al.* 2006). Comparisons between morphometric characters of tadpoles are precluded by differences between developmental stages of tadpoles described for these species, although overall proportions between measurements generally overlap. Other sources of data (calls, reproductive behavior, DNA sequences) may be necessary in order to understand the systematic relationships among this group of species.

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