

A New Species of *Barbourula*:
First Record of a Discoglossid Anuran in Borneo

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Barbourula kalimantanensis n. sp. is described based on an unique frog from Pinoh River, a small tributary of the Kapuas in West Kalimantan, Indonesia. It is the first record of the anuran family Discoglossidae in Borneo, south of the equator.

UNTIL the discovery of the monotypic genus *Barbourula* in the Philippines, in 1923 (Taylor and Noble, 1924), the Discoglossidae was known only from the Palearctic Region. The Philippine discoglossid, *Barbourula busuagensis* has been collected on only four occasions (Myers, 1943; Inger, 1954; Brown and Alcala, 1970), so far as known, from streams on Palawan Island and Busuanga Island, north of Palawan. In 1976 the Smithsonian Expedition to the Kapuas River, Kalimantan, Indonesia, collected a single individual of an aquatic frog of the

genus *Barbourula*. This capture represents the first record of the family from Borneo and may be used as evidence that *Barbourula* reached the Philippine Islands via Borneo, as proposed for many other anurans (Inger, 1954).

On dissection and radiographic examination, it was found that the frog has three pairs of ribs, expanded sacral diapophyses, short transverse processes at the anterior end of the coccyx, broadly overlapping epicoracoids and long cartilaginous projections from the sternum, all characteristic of discoglossids. It also has webbed

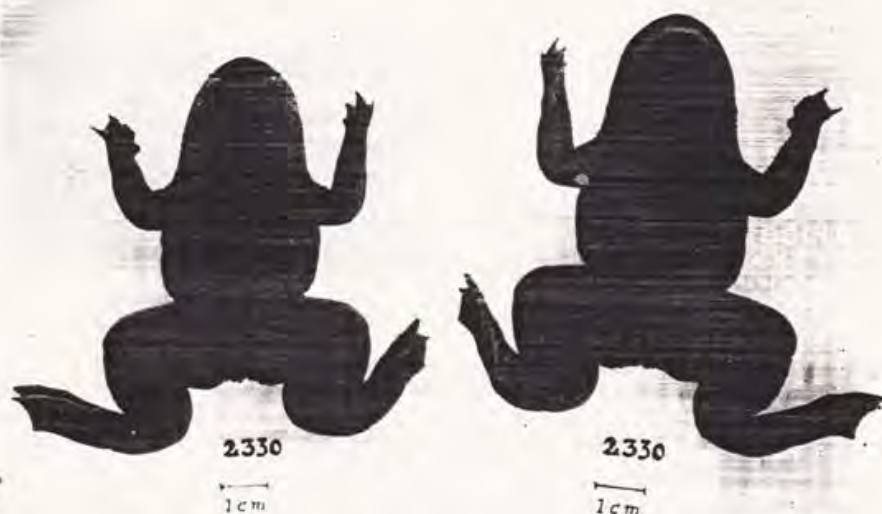


Fig. 1. *Barbourula kalimantanensis*, holotype. Left, dorsal view. Right, ventral view.

fingers and toes, depressed body, dorsally-situated eyes, a conspicuous nasolacrimal papillae and the pterygoid with a large ventrolateral flange, characters typical of *Barbourula*. The Bornean frog differs conspicuously from the Philippine *Barbourula*, hence supporting the conclusion that it is a distinct species.

Barbourula kalimantanensis n. sp.

Fig. 1

Holotype.—Museum Zoologicum Bogoriense Amph. 2330. A male, collected at Nanga Sayan ($0^{\circ}44'S$; $111^{\circ}40'E$), 33 km south of Nanga Pinoh, West Kalimantan, Indonesia, 26 July 1976, by Soetikno Wirjoatmodjo and T. R. Roberts.

Diagnosis.—*Barbourula kalimantanensis* differs from *B. busuangensis* in the following ways. The fingers of *B. kalimantanensis* are fully webbed so that when the fingers are spread the margin of the web is essentially straight, whereas in *B. busuangensis* the margin is distinctly concave. The shape of the head of *B. kalimantanensis* is extremely flattened anteriorly (Fig. 2, left), the snout being scarcely deeper than the upper jaw; in contrast the head of *B. busuangensis* (Fig. 2,

right) is deep enough to have recognizable lores. In *B. busuangensis* the nares are situated in small dorsal prominences, those of *B. kalimantanensis* are not. The eyes of the latter are pointed forward (about 45° off the transverse axis of the body) to a greater extent than of *B. busuangensis* (less than 30°). The lower jaw of *B. busuangensis* has a distinct median cusp corresponding to a median notch in the upper jaw, whereas in *B. kalimantanensis* the jaw margins are smooth. The choanae of *B. busuangensis* are oval with the transverse axis about



Fig. 2. Lateral views of heads of (left) *Barbourula kalimantanensis*, holotype (MZB Amph. 2330) and (right) *B. busuangensis* (FMNH. 51019).



Fig. 3. Collecting site of *Barbourula kalimantanensis*. Photograph courtesy of T. R. Roberts.

three times the antero-posterior one, contrasting with the split-like choanal aperture of the Bornean species. Finally the two species differ in the texture of the skin, which is more rugose in *B. kalimantanensis*.

Description.—Habitus stocky (Fig. 1), depressed; skin extremely rugose dorsally, indistinct small projections from skin ridges; skin smooth ventrally. Head wider than long, extremely depressed (Fig. 2, left); forehead concave; no canthus rostralis; snout broadly rounded; nostrils dorsal, not elevated; eyes superior, oriented anterolaterally; interorbital width twice eye-nostril distance; a free nasolacrimal papilla below anterior half of lower eyelid; mandible without median cusp; margin of upper jaw without notch; maxilla and premaxilla toothed; vomerine teeth in two, small separated series behind choanae; choanae slit-like, opening inconspicuous; no vocal sacs; tongue circular, with a few scattered small papillae, adherent around margin; no tympanic annulus. Limbs stout; fingers fully webbed; three low metacarpal tubercles; toes fully webbed; without sub-articular tubercles; third and fourth toes subequal; a thick, low inner metatarsal tubercle; no outer metatarsal tubercle; a thick ridge of skin on median edge of first toe; fleshy fold of skin along rear of thigh, a similar fold along tibia.

Snout-vent length 68.0 mm, head width 25.0, interorbital 5.5, eye opening 4.5, internarial 3.0, naso-orbital 2.8.

Color in alcohol black without markings, below dark with obscure lighter marbling.

Etymology.—*kalimantanensis* refers to the type locality of this species, Kalimantan, Indonesian part of Borneo.

Remarks.—The single specimen of the new form was caught under a large rock in the Pinoh River, a small tributary of the Kapuas in an area of primary rain forest. At this point (Fig. 3), the stream is clear, about 50 m wide and varies from 0.5 to 5 m in depth. The current is moderate.

The extreme flattening of the head and full webbing of the fingers suggest that *B. kalimantanensis* is more extremely specialized for aquatic life in streams than *busuangensis*, which is also highly aquatic (Myers, 1943; Inger, 1954).

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