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A New Microhylid Frog from the Adelbert Mountains of New Guinea

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During February, March, and April, 1959, E. Thomas Gilliard led an expedition with the primary purpose of studying the avifauna of the Adelbert Mountains of Northeast New Guinea. This range is located northwest of Madang and is isolated from other highland areas by relatively low-lying river valleys and swampy lowlands. In the vicinity of Maratambu, about 20 miles west and 10 miles north of Madang, the Gilliards collected a number of amphibians and reptiles, including a striking new microhylid frog for which I propose the name that follows.

Xenobatrachus obesus, new species

TYPE: A.M.N.H. No. 64247, obtained at Maratambu, Adelbert Mountains, Northeast New Guinea, elevation 2300 feet, taken on March 29, 1959, by Margaret and E. Thomas Gilliard.

PARATYPES: A.M.N.H. No. 64248, from the type locality, March 19, 1959, and A.M.N.H. No. 64251, from Dawa, Adelbert Mountains, elevation 2300 feet, April 13, 1959; both collected by the Gilliards.

DIAGNOSIS: *Xenobatrachus obesus* differs from the six other species of *Xenobatrachus* in possessing the following unique combination of characters: a single tooth-like spike on each vomer; eye small, snout about twice the length of the eye; size large, up to 72 mm. snout to vent length; ventral surfaces pale and immaculate.

DESCRIPTION OF TYPE SPECIMEN: Adult female, with the following measurements (in millimeters): snout to vent length, 72.3; tibia length,



FIG. 1. Dorsal aspect of type specimen of *Xenobatrachus obesus*, A.M.N.H. No. 64247, natural size.

37.0; head width, 26.0; length of orbit, 4.3; horizontal diameter of tympanum, 3.4; length of snout (anterior corner of eye to tip of snout), 8.3; internarial distance, 5.4; distance from eye to naris, 5.0.

The head is relatively narrow and tapers sharply to the rounded snout. The nostrils are closer to the tip of the snout than to the eye. The tympanum is indistinct and is larger in area than the eye, though slightly shorter in length. There is a serrated palatal ridge preceded by three low protuberances. There are no teeth. The tongue is oval, with a median furrow, and is little freer behind than at the sides. The fingers, in order of decreasing length, are $3 > 4 > 2 > 1$. The tip of each finger is flattened into a disc very slightly wider than the penultimate

segment. A narrow dermal fringe is present on each finger, best developed on the third. There is a low, rounded tubercle at the base of the first finger, and very low elevations in the place of subarticular tubercles. The toes are free of any trace of webbing; their relative lengths are $4 > 3 > 5 > 2 > 1$. The discs of the toes are larger than those of the fingers; the disc of the fourth toe is slightly less than twice as broad as the penultimate phalanx. Very low, rounded, subarticular tubercles, the strongest being the one of the first toe, and a low, rounded, inner, metatarsal tubercle are present. The skin of both dorsal and ventral surfaces is quite smooth.

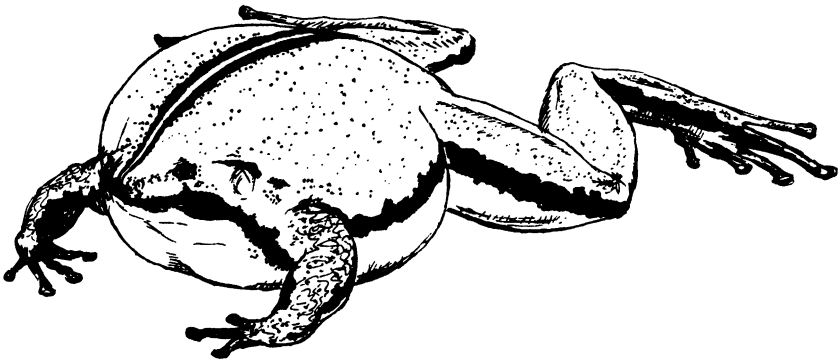


FIG. 2. Type specimen of *Xenobatrachus obesus*. Field sketch by Margaret Gilliard.

The type specimen possesses the typical skeletal features of the genus *Xenobatrachus*: symphagnathine upper jaw and pectoral girdle lacking clavicle and precoracoid.

The dorsal surface of head, body, and limbs is pale brown faintly speckled with darker brown. A light vertebral line, bordered by dark brown, passes from the tip of the snout to the rear of the body, where it bifurcates and passes along the top of the thigh to terminate behind the knee. There is a short dark bar that commences behind the eye and passes over the tympanum. A broad, dark stripe begins at the tip of the chin and, involving also the upper lip, passes along the anterior side of the forearm onto the third finger. The stripe is broken opposite the elbow, but reappears on the back of the wrist and, except for a slight break at the axilla, is continuous along the side of the body and anterior side of the hind limb to the fourth toe. There is a conspicuous dorsal extension of the stripe in the groin. The sole of the foot is dark

brown, and this color merges with a dark stripe running on the back of the leg to the cloacal opening. This stripe is continuous on the foot and tibia but is interrupted on the rear of the thigh. With the exception of the dark border of the lower jaw, the ventral surfaces are unmarked. Mrs. E. Thomas Gilliard, who saw the specimen while it was alive, recalls (personal communication) that the dorsal surfaces were tan, the lateral stripes and borders of the dorsal stripe rich chocolate brown, and the dorsal stripe and ventral surfaces yellow.

VARIATION IN TYPE SERIES: The type and paratypes are remarkably similar in proportions and color pattern. The ratio of length of tibia to length from snout to vent (TL/S-V) is 0.51 in the type specimen, 0.51 and 0.52 in the paratypes. The snout is 1.9 times the length of the eye in the type, 1.9 and 2.1 times in the paratypes. The type specimen contains pale yellow ova approximately 3 mm. in diameter and thus may be presumed to be adult. One of the paratypes (A.M.N.H. No. 64248) is a female 57 mm. in snout to vent length, with the largest ova only 1 mm. in diameter. The other paratype (A.M.N.H. No. 64251) is a male 60 mm. in length. There appear to be no vocal sac openings.

The type and paratypes are almost identical in color pattern. The only obvious difference is that the dark lateral stripe, continuous from axilla to foot in the type specimen, is broken at the groin on one side of the male paratype and is broken into a series of spots on one side of the body of the female paratype.

COMPARISON WITH OTHER SPECIES: Van Kampen (1923) recognized six species of *Xenobatrachus*, four of them named by him, and the same six species are admitted to the genus by Parker (1934) in his monograph of the Microhylidae. *Xenobatrachus obesus* is compared to each of the six in successive paragraphs below. The comparisons are based largely on the descriptions given by van Kampen and Parker, as I have available for direct comparison only two of the six species.

Xenobatrachus rostratus resembles *obesus* in having the snout about twice the length of the eye and in having a single spike on each vomer. Evidently *rostratus* is a smaller species, as the largest individual in the series examined by Parker (*op. cit.*, p. 56) measures only 47 mm., and the series includes adult females. A single specimen of *rostratus* is present in the collection of the American Museum (A.M.N.H. No. 23584). This specimen was received in an exchange with the Berlin Museum and bears no data other than "German New Guinea, coll. Schultze." Possibly this is the specimen, without specific data but collected by Schultze, that was described by Vogt (1911). Significant differences between this specimen and *obesus* include shorter legs (TL/S-V = 0.37,

compared to 0.51–0.52) and belly heavily spotted with brown (immaculate in *obesus*). Parker (*loc. cit.*) states that the belly of *rostratus* is “more or less profusely marbled and spotted with brown.” There also apparently is a difference in the ratio of distance from eye to naris to internarial distance. In *obesus*, the internarial distance is slightly greater than the distance from eye to naris ($E-N/Int. = 0.92-0.98$). The internarial distance in the single specimen of *rostratus* is markedly less than the distance from eye to naris ($E-N/Int. = 1.33$). The type locality of *rostratus*, Erima, Astrolabe Bay, is south of Madang but in the same general vicinity as the localities for *obesus*. The other species of *Xenobatrachus* are known only far to the west in Netherlands New Guinea.

Xenobatrachus ocellatus has, as does *obesus*, only a single vomerine spike on each side, but the snout is only a little longer than the eye. It also appears to be smaller than *obesus*, with a maximum recorded length of 42 mm. for adult females. The color pattern, brown above and beneath, with a large ocellus in the groin, is distinct from that of *obesus*.

Xenobatrachus macrops resembles *obesus* in the single vomerine spike but has a relatively larger eye, with the snout 1.1 to 1.3 times the length of the orbit (Zweifel, 1956, p. 3). The maximum size given by Parker is 53 mm., and females are adult at this size. *Xenobatrachus macrops* is brown above and beneath, sometimes mottled ventrally, with or without a light vertebral hairline and with a dark temporal blotch. This pattern is quite different from that of *obesus*.

Xenobatrachus giganteus is the only species that exceeds, or even approaches, *obesus* in size, so far as is known. Both the presence of paired vomerine spikes in *giganteus*, and its color pattern, “Brownish purple above; yellow, marbled and dusted with brown beneath” (Parker, *op. cit.*, p. 57), render it distinct from *obesus*. Parker (*loc. cit.*) notes that the male possesses a vocal sac, a structure that appears to be absent in *obesus*. Also, *giganteus* differs from *obesus* in that the snout is only “a little longer than the diameter of the eye” (Parker, 1934, p. 57).

Xenobatrachus bidens is adult at a length of 29 mm., so is almost certainly a smaller species than *obesus*. Paired vomerine spikes of *bidens* are another distinguishing feature, and the color pattern as described by Parker shows no similarity to that of *obesus*. The eye of *bidens* is probably larger, as the snout is said to be one and one-half times the length of the eye.

Xenobatrachus ophiodon has paired vomerine spikes, the throat and

chest reticulated with brown, is adult at a length of 30 mm., and the snout is very little longer than the eye. Thus in all pertinent respects *ophiodon* is distinct from *obesus*.

Apparently only one synonym has been created for species currently referred to *Xenobatrachus*. This is *Choanacantha méhelyi* Boulenger, 1898, which van Kampen (1923, p. 127) and Parker (1934, p. 55) place in the synonymy of *Xenobatrachus rostratus*. It is evident from Boulenger's description that his species is not *obesus*. I do not question the disposition of *méhelyi* made by Parker and van Kampen.

The advisability of maintaining *Xenobatrachus* and *Asterophrys* as distinct genera has been questioned (Zweifel, 1956, p. 8), as the two seem to differ only in the presence or absence of vomerine spikes. Because of the inadequacy of material of *Xenobatrachus* available to me, I do not wish to comment further at present on this matter, but the possibility that *X. obesus* has already been described in the genus *Asterophrys* should be investigated. If *X. obesus* is identified in Parker's (1934, pp. 60–61) synopsis of the species of *Asterophrys* (ignoring the presence of vomerine spikes), it keys out to *A. oxycephala*. The two species can be shown not to be identical, as the Gilliards fortunately collected two typical specimens of *A. oxycephala* at the type locality of *X. obesus*. The species differ in size, pigmentation, and proportions, in addition to the generic character of the vomerine spikes. Three species of *Asterophrys* have been described since the appearance of Parker's monograph, *A. similis* Zweifel, *A. slateri* Loveridge, and *A. wilhelmana* Loveridge, but none of these could be confused with *X. obesus*.

REMARKS: At the type locality of *Xenobatrachus obesus*, the Gilliards also collected two specimens of *Asterophrys oxycephala*, one specimen of *Asterophrys rufescens*, and two individuals of *Rana* of the *papua* group. The specimens of *A. oxycephala* are the first to be recorded from Northeast New Guinea and extend the known range some 350 miles east-southeast of the nearest previously known localities in the vicinity of Humboldt Bay, Netherlands New Guinea.

Microhylid frogs are commonly thought of as feeding mostly on termites and ants, so it is worth reporting that one of the *oxycephala* individuals, which measures 45 mm. in snout to vent length, had gorged itself on an earthworm that in the contracted, preserved state measures about 7 mm. in diameter by 150 mm. long. The type specimen of *obesus* also had eaten an earthworm (11 by 130 mm.), a noteworthy duplication of food habits in two similar, sympatric species.

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BIBLIOGRAPHY

KAMPEN, P. N. VAN

1923. The Amphibia of the Indo-Australian Archipelago. Leiden, E. J. Brill, Ltd., xii+304 pp., figs. 1-29.

PARKER, H. W.

1934. A monograph of the frogs of the family Microhylidae. London, British Museum (Natural History), viii+208 pp., figs. 1-67, 2 maps.

VOGT, THEODOR

1911. Reptilien und Amphibien aus Neu-Guinea. Sitzber. Gesell. Naturf. Fr. Berlin, pp. 410-420.

ZWEIFEL, RICHARD G.

1956. Results of the Archbold Expeditions. No. 72. Microhylid frogs from New Guinea, with descriptions of new species. Amer. Mus. Novitates, no. 1766, pp. 1-49, figs. 1-9, tables 1-4.

