

TWO NEW SPECIES OF TOADS FROM THE PHILIPPINES.

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Among the batrachians collected by Dr. E. A. Mearns in the Philippines there are two small engystomid toads which apparently belong to the genera *Kalophrynus* and *Phrynixalus*, the latter hitherto not known from the archipelago.

The type species of *Phrynixalus* is said to have a sharp, doubly-arched ridge across the palate formed by the palatine bones, but I do not feel justified in forming a new genus on the absence of this character in the Philippine species, as it may be due to the age of the specimen. The shape of the pupil is almost round, but in one eye it is more nearly elliptic in shape with the longer axis horizontal. In all other respects it agrees with the original diagnosis of the genus. Even the "*Ixalus*-like habitus" is very pronounced and before I had examined the interior of the mouth and the underside of the digits I suspected that I had an undescribed species of *Cornufer* before me.

The genus *Kalophrynus* has been diagnosed as possessing "a denticulated dermal ridge across the palate between the choanæ, and another in front of the œsophagus." This characteristic was evidently drawn up from specimens of *Kalophrynus pleurostigma* only, and the fact that the dermal ridges are somewhat differently arranged in the species to be described below does not seem to necessitate the establishment of a new genus for its reception. As it has a perfect, though slender, precoracoid parallel with the broad coracoid, and in other respects also conforms to the characters assigned to *Kalophrynus*, its reference to that genus seems warranted.

PHRYNIXALUS ANULATUS, new species.

Diagnosis.—Toes entirely free; first finger very much shorter than second, only slightly dilated at tip; interorbital space nearly twice as wide as upper eyelid; tympanum about half the diameter of eye.

Habitat.—Mindanao, Philippine Islands.

Type.—Cat. No. 35399, U.S.N.M.; Davao, Mindanao; Dr. E. A. Mearns, collector.

Description of type-specimen.—No vomerine teeth; no ridge between or behind the choanæ which are large, but nearly concealed by the overhanging lip; an indistinct, smooth dermal ridge between the eustachian tubes, and a well-marked denticulated one behind them; tongue large, rounded behind, extensively free (about one-half) behind and on sides; snout somewhat acuminate, projecting; nostrils much nearer tip of snout than eyes; distance from tip of snout to eye greater than diameter of latter; interorbital space nearly twice as wide as upper eyelid; canthus rostralis rounded; lores concave; tympanum rather distinct, its diameter about one-half that of the eye; fingers free, club-shaped, first very much shorter than second, much less widened at the tip than the others, the tips of which are nearly truncate; toes entirely free, the tips dilated, but not quite so much as the fingers; no subarticular tubercles and no metatarsal tubercles; outer metatarsals united; skin smooth above; upper eyelid granular with a larger and more prominent tubercle near the middle of the palpebral edge; underside smooth, except belly, which is faintly areolated, and the preanal region, which is granular. Color (in alcohol) dark brown above, with an indistinct pale band between the anterior half of the upper eyelids followed by a dusky cross-bar; on the shoulders a large, indistinct, W-shaped, dusky mark, the outer arms of which anteriorly reach to the posterior corner of the eyes; an indistinct, large, pale spot on each side of the sacrum; an oblique, pale, dusky-edged line from eye to fore leg; underside paler brown, minutely dotted with whitish; limbs like the body, faintly mottled with dusky, but without distinct cross bars; fingers and toes with a very distinct dusky ring behind the expanded tip or disk, followed by an equally distinct ring of whitish color.

Dimensions.

	<i>mm.</i>
Total length, tip of snout to vent.....	14.5
Tip of snout to tympanum.....	4.5
Width of head.....	5.0
Length of fore leg.....	8.5
Length of hind leg from vent to tip of longest toe.....	20.0
Length of tibia.....	6.0

Remarks.—Another specimen, very much smaller, and apparently just through its transformation was collected by Doctor Mearns at Todaya, Mount Apo, Mindanao, about 4,000 feet altitude, during the early part of July, 1904. As far as can be made out it agrees in all essential features with the type.

The color pattern of *Phrynixalus anulatus*, although somewhat obscure on account of the dark ground color, is essentially that of *Oreophryne celebensis*. The toes of the latter are described by Bou-

lenger as being free, and if so the only external distinction between the genera *Phrynixalus* and *Oreophryne* would seem to vanish. An examination of the skull of the type is impracticable, so that the reference of this species to the genera of this group as based by Méhely on the osteological characters must be delayed till further material becomes available.

KALOPHRYNUS STELLATUS, new species.

Diagnosis.—Tympanum distinct; tongue elliptic; subarticular tubercles strong; fingers well developed, fourth much shorter than second; toes less than one-third webbed; a smooth ridge behind the choanæ, and two ridges between the eustachian tubes, the posterior one strongly denticulated; a round black spot on each side of the sacral region.

Habitat.—Basilan, Philippine Islands.

Type.—Cat. No. 37375, U.S.N.M.; Basilan; February, 1906; Dr. E. A. Mearns, collector.

Description of type-specimen.—No vomerine teeth; an almost continuous, nearly straight, smooth, dermal ridge across the palate behind the choanæ, which are large, very lateral, almost concealed under the overhanging maxilla; a very distinct and strongly denticulated, straight ridge in front of the œsophagus between the very lateral eustachian tubes, and a less elevated, smooth, arched ridge, with the convexity forward, in front of the denticulated ridge; tongue elliptic, entire and extensively free behind; interorbital space nearly twice as wide as upper eyelid; canthus rostralis rounded; lores vertical; tympanum very distinct, exceedingly close to the eye and about two-thirds the diameter of the latter; fingers free, first slightly shorter than second, which is much longer than the very short fourth finger; toes webbed at base, less than one-third; tips of digits not swollen, or dilated; subarticular tubercles very strongly developed; the inner metatarsal tubercle weak, elliptic; tibio-tarsal articulation of adpressed hind leg reaches eye; skin above and below granular, more coarsely on lower abdomen and under the thighs; no dorsal, dorso-lateral, or supratympanic glandular ridges. Color (in alcohol) above pale raw umber, darker on the flanks, densely sprinkled with small star-shaped pale or whitish dots; a dark brown line from lores, through eye, above tympanum, and along the sides to the groin; along its upper edge the whitish dots are more numerous, so as to almost form a continuous line; a round black spot as large as tympanum and surrounded by a line of similarly crowded light dots on each side of the sacral region; underside pale brown, with obscure marblings of darker, formed by innumerable minute, dust-like specks of dark brown; no definite cross bands observable on the legs; underside of foot and metatarsus dark brown.

Dimensions.

	<i>mm.</i>
Total length, tip of snout to vent.....	24
Width of head.....	9
Length of fore leg.....	13
Length of hind leg from vent to tip of longest toe.....	31
Length of tibia.....	10

Remarks.—The differences in the arrangement of the palatal ridges as pointed out above as well as the much smaller amount of web between the toes easily distinguish this species from *Kalophrynus pleurostigma*. *K. acutirostris* differs in the subcircular tongue, the pointed snout, the shorter hind legs, and the absence of the sacral spots. The other two species are still further removed by the different proportions of their digits, besides other important characteristics.



Stejneger, Leonhard. 1908. "Two new species of toads from the Philippines." *Proceedings of the United States National Museum* 33(1578), 573–576.
<https://doi.org/10.5479/si.00963801.1578.573>.

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DOI: <https://doi.org/10.5479/si.00963801.1578.573>

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