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## Results of the Archbold Expeditions. No. 84 New Microhylid Frogs (*Baragenys* and *Cophixalus*) from the Louisiade Archipelago, New Guinea

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The personnel of the Fifth Archbold Expedition led by Leonard Brass made extensive collections of frogs on several islands off the eastern tip of New Guinea (Brass, 1959). Among the specimens are frogs of the genera *Baragenys* and *Cophixalus* from Rossel and Sudest Islands (fig. 1) that represent undescribed species. Mr. Russell F. Peterson, zoologist of the expedition, has my thanks for his careful attention to the collection and preservation of herpetological specimens. The illustrations of the new species are by Mrs. Frances W. Zweifel, whose contribution is much appreciated. Dr. Konrad Klemmer kindly furnished information on a type specimen in the Senckenberg Museum.

The measurements of specimens, made with vernier calipers or with an ocular micrometer in a binocular dissecting microscope, include the length from snout to vent (abbreviated as S-V); the length of the tibia (taken from the heel to the fold of skin at the knee, TL); the head width, taken at the widest part; the horizontal diameter of the orbit; the inter-narial distance (IN); the distance from the eye to the naris (E-N); and the width of the finger and toe discs. Measurements involving the nares are taken from the center of the naris.

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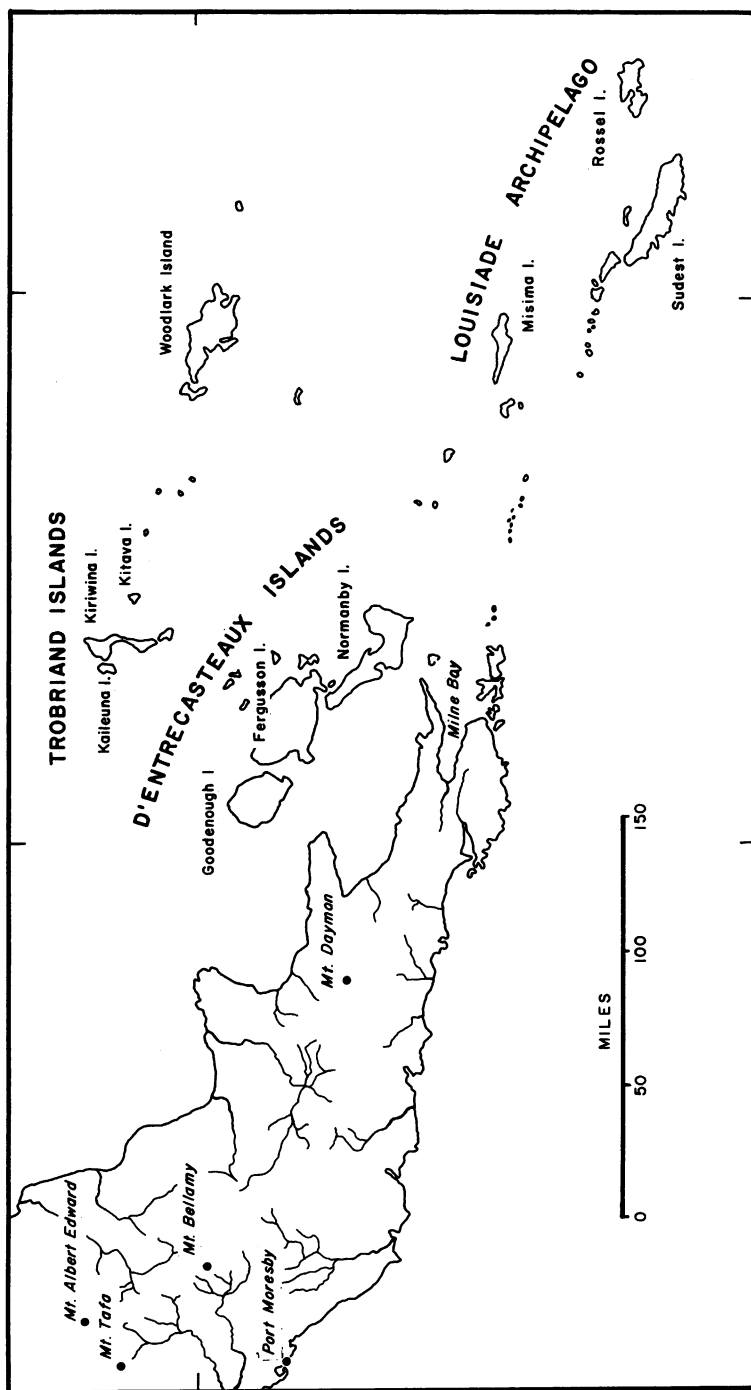


Fig. 1. Map of the eastern part of the Territory of Papua, showing localities mentioned in the text.

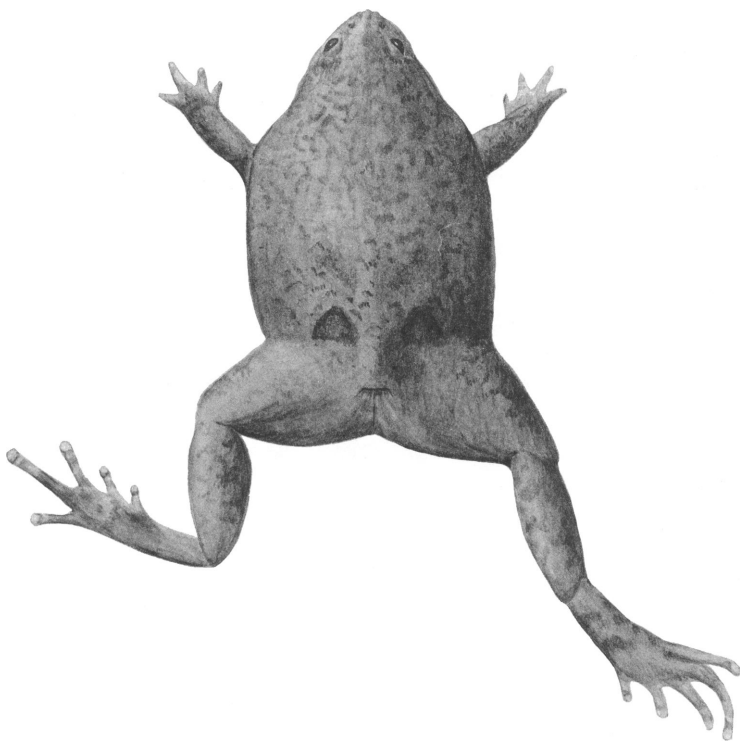


Fig. 2. Type specimen of *Baragenys exsul*, A.M.N.H. No. 60103, in dorsal aspect.  $\times 1.5$ .

***Baragenys exsul*, new species**

TYPE: A.M.N.H. No. 60103, obtained by Russell F. Peterson at Abaleti, Rossel Island, Louisiade Archipelago, Territory of Papua, New Guinea, at an elevation between sea level and 50 meters between September 26 and October 10, 1956.

PARATYPE: A single paratype, A.M.N.H. No. 60059, was obtained by Russell F. Peterson on the west slope of Mt. Riu, Sudest Island, Louisiade Archipelago, Territory of Papua, New Guinea, at an elevation between 250 and 350 meters between August 27 and September 15, 1956.

DIAGNOSIS: Parker (1936) assigns two species, *B. atra* (Günther) and *B. cheesmanae* Parker, to the genus *Baragenys*. From the first of these, *exsul* differs in having three vertical ridges on the snout (present also in *cheesmanae*), in color pattern, and in leg length. *Baragenys atra* shows a sharp line of demarcation between brown dorsal color and darker flanks

(Parker, 1934, p. 70; Günther, 1896, pl. 8), whereas in *exsul* there is no abrupt change from dorsal to lateral pattern. The relative length of the tibia evidently is greater in *atra*, for Parker (1936, p. 76) states that the length of the tibia of *atra* "is contained less than two and a half times in the distance from snout to vent." In the two specimens of *exsul*, the tibia length is contained 3.2 and 2.8 times in the length from snout to vent.

*Baragenys cheesmanae* differs from *exsul* in color pattern and in proportions. The dorsal color pattern of *cheesmanae* consists of irregular black spots on a brownish yellow to deep reddish brown background (Parker, 1936, p. 75; Zweifel, 1956, fig. 4), whereas *exsul* is grayish brown, with fine darker vermiculations (fig. 2). The hind limbs of *cheesmanae* are extremely short; TL/S-V of the single specimen in the American Museum of Natural History (No. 58008) is 0.234, compared to 0.358 and 0.316 in the two specimens of *exsul*.

**DESCRIPTION OF TYPE SPECIMEN:** The type is an adult female with the following measurements, given in millimeters (measurements of the only other specimen of *exsul* are given in parentheses): length from snout to vent, 38.9 (35.7); tibia length, 12.3 (12.8); head width, 12.7 (12.0); horizontal diameter of orbit, 2.2 (2.1); internarial distance, 3.0 (3.1); distance from eye to naris, 1.7 (1.5); width of disc of fourth toe, 1.3 (1.8); width of penultimate phalanx of fourth toe, 0.9 (1.2).

The maxillary bones are eleutherognathine; they do not form a suture in front of the premaxillae nor do they overlap these bones. There are no teeth. The dentaries meet at the front of the jaw. The pectoral girdle lacks clavicles, procoracoids, and omosternum.

The snout bears three vertical ridges. The middle ridge terminates at a level between the nares, but the lateral ridges are slightly shorter. The nares are widely spaced, giving a low EN/IN, 0.583 (0.484 in the paratype). There is only the faintest trace of a fold in the skin behind the eye and over the tympanic region. The outline of the tympanum can only faintly be seen (invisible in the paratype). Its diameter is about 2.3 mm. The head is broader than long and is considerably narrower than the body. The skin of both dorsal and ventral surfaces of the body is smooth, but some pustules are present on the lower hind limbs.

The order of length in the fingers is  $3 > 4 = 2 > 1$ . The fingertips are bluntly pointed and are without discs. The length of the toes is  $4 > 3 > 5 > 2 > 1$ . The toes are unwebbed and possess poorly developed terminal discs slightly wider than the penultimate phalanges. Distinct subarticular, palmar, plantar, and metatarsal tubercles are lacking, though the position of the inner metatarsal tubercle is indicated by a slight elevation further distinguished by a lack of dark pigment.

The dorsal ground color (in preservative) is gray-brown. There is slightly darker vermiculation on the head and body, and indistinct, irregular dark bands cross the tibia. The chin, chest, abdomen, and lower surfaces of the limbs have a fine network of melanophores broken infrequently by light spots. These light spots are more numerous on the anterior part of the chin. The dorsal and ventral patterns grade smoothly into each other without a sharp line of demarcation. A dark spot in the groin probably represents the ocellus seen in so many genera and species of Papuan microhylids.

The type specimen contains large, pale eggs up to 2.4 mm. in diameter. Probably this species has direct development, as do all other Papuan microhylids for which information is available.

**DESCRIPTION OF PARATYPE:** The measurements and some other features of the paratype are given in the foregoing description of the type specimen. The paratype closely resembles the type specimen in most respects, differing mainly in that the dorsal color is dark lead gray, with little trace of pattern distinguishable. The pattern of the ventral surfaces is like that of the type, differing only in being darker. There are no obvious lines of demarcation between lateral and ventral or lateral and dorsal patterns.

**REMARKS:** The genus *Baragenys* was proposed by Parker (1936) to include his new species *cheesmanae* and the species formerly known as *Metopostira atra*. Characteristics of *B. exsul* that ally it with *cheesmanae* and *atra* include the absence of clavicles, procoracoids, and omosternum, the eleutherognathine upper jaw, fusion of the mento-Meckelian bones with the mandibles, and meeting of the dentaries along a median, anterior suture. Externally, the three species are similar in being squat and short-legged, with tiny eyes and little or no development of digital discs.

*Baragenys atra* and *B. cheesmanae* are known only from a restricted area in the mountains of eastern Papua. The type locality of *atra* is given by Günther (1896, p. 185) as "on the Clyde River, within a few miles of the frontier between British and German New Guinea." According to the "Gazetteer (no. 2) New Guinea and Nearby Islands" (United States Navy Department, 1944), the Clyde River is one that appears on current maps as the Mambare River. It drains the northeastern flank of the Wharton Range from Mt. Albert Edward to Mt. Bellamy and empties into the southern edge of Huon Gulf. Parker (1934, p. 70) lists the type locality of *atra* simply as British New Guinea, and also records specimens from the Albert Edward Ranges, 6000 feet.

*Baragenys cheesmanae* is known only from Mt. Tafa, Territory of Papua, at elevations of 6900 and 8500 feet (Parker, 1936, p. 74; Zweifel, 1956,

p. 9). This locality is about 24 miles southwest of Mt. Albert Edward.

The localities for *Baragenys exsul* on Sudest and Rossel Islands are, respectively, approximately 470 and 510 miles east-southeast of the only previously known stations for the genus. Furthermore, the insular specimens were found between sea level and about 1000 feet, in contrast to a minimum elevation of 6000 feet for the mainland species.

The differences that distinguish *Baragenys exsul* from its congeners are relatively slight, and the status of *exsul* as a possible subspecies must be considered. *Baragenys atra* and *B. cheesmanae* exist in close proximity and are more different from each other than either is from *exsul*. If *exsul* were to be regarded as a subspecies, it would be most difficult to justify its assignment to one rather than the other mainland form. The obvious alternative of referring all three forms to a single polytypic species is untenable in view of the marked differences between the geographically closest populations. The insular form, hence, is here described as a species.

### ***Cophixalus tagulensis*, new species**

TYPE: A.M.N.H. No. 60066, obtained by Russell F. Peterson on the west slope of Mt. Riu, Sudest (Tagula) Island, Louisiade Archipelago, Territory of Papua, New Guinea, at an elevation between 250 and 350 meters between August 23 and September 5, 1956.

PARATYPES: A.M.N.H. Nos. 60067 and 60068, bearing the same collection data as the type specimen.

DIAGNOSIS: *Cophixalus tagulensis* differs from all other known species of *Cophixalus* in the following combination of characters: toes webbed; third toe longer than fifth; discs of fingers smaller than those of toes. *Cophixalus oxyrhinus* has finger discs smaller than toe discs, but the toes are free. *Cophixalus geislerorum* has webbed toes, but the finger discs are broader than those of the toes and the fifth toe is longer than the third.

DESCRIPTION OF TYPE SPECIMEN: The type is an adult male with the following measurements (in millimeters): length from snout to vent, 17.7; tibia length, 7.7; head width, 7.4; horizontal diameter of orbit, 2.6; inter-narial distance, 1.4; distance from eye to naris, 1.5.

The upper jaw is eleutherognathine, with the maxillae not overlapping the premaxillae. There are no teeth or vomerine odontoids. The clavicles, procoracoids, and omosternum are absent. The tongue is smooth, without a median furrow, and is half-free behind.

The snout is blunt, with rounded canthus and vertical loreal region. The nostrils are much nearer the tip of the snout than to the eye. The snout is shorter than the diameter of the orbit. The interorbital space is

slightly wider than an eyelid. There is no external indication of a tympanum. The relative lengths of the fingers are  $3 > 4 > 2 > 1$ . The first finger is well developed, being more than one-half of the length of the second. The fingers have lateral fringes and small but distinct discs, the disc of the first finger being scarcely wider than the penultimate phalanx. Low, rounded, inner and outer metacarpal tubercles and subarticular tubercles are present. The relative lengths of the toes are  $4 > 3 > 5 > 2 > 1$ . All toes have relatively small discs which, however, are slightly broader than those of the fingers. The disc of the fourth toe is 1.1 mm. wide, whereas that of the third finger measures 0.9 mm. The toes are approximately one-half webbed and are fringed (fig. 3). A rounded, inner, metatarsal tubercle and small, rounded, subarticular tubercles are present.

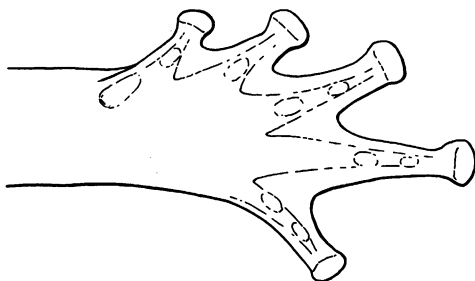


FIG. 3. Left hind foot of type specimen of *Cophixalus tagulensis*, A.M.N.H. No. 60066, plantar view.

The skin is smooth both dorsally and ventrally. The dorsal ground color is brown. A pair of indistinct gray bands converge from the eyes to the shoulder region, where they assume parallel courses, terminating just posterior to the sacral region (fig. 4). The ground color is slightly darker immediately lateral to the gray bands than on the head or back, and gives way to gray and brown mottling on the flanks. The front legs are indistinctly banded, and the hind legs mottled without definite pattern. The ventral surfaces are covered with a stippling of melanophores, slightly denser on the chin and hind legs than in the abdominal region.

**VARIATION:** The two paratypes are closely similar to the type specimen in all pertinent respects. The following measurements (in millimeters) apply respectively to A.M.N.H. Nos. 60067 and 60068: length from snout to vent, 18.5, 13.5; tibia length, 8.1, 6.4; head width, 7.8, 5.8; diameter of orbit, 2.8, 2.1; internarial distance, 1.7, 1.4; distance from eye to naris, 1.7, 1.3. The mean TL/S-V in the three specimens is 0.447, range 0.43–0.47; E-N/IN averages 1.00, range 0.93–1.07.

The tympanum is not visible in any of the three specimens. The webbing of the toes is perhaps slightly less extensive in the larger of the two paratypes, but the smaller paratype closely resembles the type. The disc of the fourth toe is slightly broader than that of the third finger in all specimens.

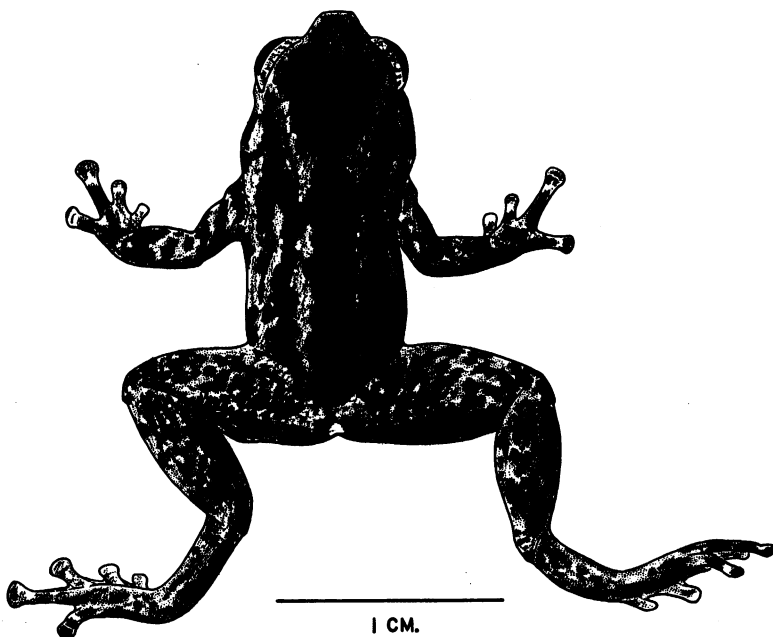


FIG. 4. Type specimen of *Cophixalus tagulensis*, A.M.N.H. No. 60066, in dorsal aspect.  $\times 3$ .

The dorsal color pattern of A.M.N.H. No. 60067 is similar to that of the type specimen, but the light bands are less distinct and the hind legs are more nearly uniform brown. The smaller paratype has the light bands more distinct, but they are broken at midbody.

REMARKS: The general body form of this species, especially the short, webbed toes, recalls the genus *Oreophryne*.<sup>1</sup> However, careful dissection of the type and larger paratype reveals no trace of procoracoids or clavicles. In the absence of these structures, the frogs must be referred to the genus *Cophixalus*. Also, some *Oreophryne* have the discs of the fourth toe and third

<sup>1</sup> Hence the mention by Brass (1959, p. 53) of *Oreophryne* sp. on Mt. Riu, based on my erroneous tentative identification.



finger similar in size, but there is no known species in which the toe disc is regularly larger, as it is in *C. tagulensis*.

The only known species of *Cophixalus* with which *C. tagulensis* could readily be confused is *C. geislerorum* Boettger, 1892, the only other member of the genus with webbed toes. This species was described on the basis of a specimen from "Kaiserwilhelmsland, Neuguinea," and remains known only from the type specimen. Specimens identified as this species by Loveridge (1948, p. 423) were later referred to a new species, *Oreophryne parkeri* (Loveridge, 1955).

There are several points of resemblance between *geislerorum* and *tagulensis* that are suggestive of close relationship: snout shorter than eye; tympanum hidden (see Loveridge, 1955, p. 5); toes webbed; a curved white streak from eye to shoulder: under sides finely dusted with brown. The body proportions are probably more significant than color pattern.

The differences between *geislerorum* and *tagulensis* are, I feel, more weighty than the similarities and lead me to propose specific status for the insular form. The finger discs of *geislerorum* are slightly larger than those of the toes, whereas the opposite is true in *tagulensis*. The lower surfaces of *geislerorum* are granular, but those of *tagulensis* are smooth. The hind leg is longer in *tagulensis*. The heel of the adpressed hind limb reaches only to the anterior edge of the forelimb in *geislerorum* (Boettger, 1892, p. 24), but reaches the eye in *tagulensis*. Boettger (p. 25) gives measurements of *geislerorum* from which  $TL/S-V = 0.40$  can be calculated. The mean for the same ratio in *tagulensis* is 0.447, range 0.43–0.47. The only specimen of *geislerorum* has a snout to vent length of 26 mm., whereas the largest of three *tagulensis* is only 18.5 mm. in length. Dr. Konrad Klemmer, who examined the type specimen of *geislerorum* (Senckenberg Museum No. 4197) at my request, reports that the fifth toe is slightly but distinctly longer than the third, whereas in *tagulensis* the third is the longer of the two.

*Cophixalus oxyrhinus* superficially resembles *C. tagulensis* in having the discs of the fingers smaller than those of the toes. In other respects, however, the two are quite different. The absence of toe webbing immediately distinguishes *oxyrhinus*, which is sympatric with *tagulensis*.

## BIBLIOGRAPHY

BOETTGER, O.

1892. Katalog der Batrachier-Sammlung im Museum der Senckenbergischen Naturforschenden Gesellschaft in Frankfurt am Main. Frankfurt a. M., Gebrüder Knauer, x+73 pp.

BRASS, L. J.

1959. Results of the Archbold Expeditions. No. 79. Summary of the Fifth

Archbold Expedition to New Guinea (1956–1957). Bull. Amer. Mus. Nat. Hist., vol. 118, pp. 1–70, fig. 1, pls. 1–8, table 1.

GUNTHER, A.

1896. Description of a new toad (*Xenorhina*) from New Guinea. Novitates Zool., vol. 3, pp. 184–185.

LOVERIDGE, ARTHUR

1948. New Guinean reptiles and amphibians in the Museum of Comparative Zoölogy and United States National Museum. Bull. Mus. Comp. Zoöl., vol. 101, pp. 305–430.
1955. New frogs of the genera *Asterophrys* and *Oreophryne* from New Guinea. Breviora, no. 50, pp. 1–5.

PARKER, H. W.

1934. A monograph of the frogs of the family Microhylidae. London, British Museum, viii+208 pp., 67 figs., 2 maps.
1936. A collection of reptiles and amphibians from the mountains of British New Guinea. Ann. Mag. Nat. Hist., ser. 10, vol. 17, pp. 66–93, figs. 1–6.

UNITED STATES NAVY DEPARTMENT

1944. Gazetteer (No. 2). New Guinea and nearby islands. Second edition. Washington, D. C., Hydrographic Office Publ., no. 882, iv+254 pp., 1 map.

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.