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A New Species of Microhylid Frog (Genus *Sphenophryne*) from New Guinea

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In 1966, while engaged principally in botanical studies in the middle Sepik region of the Territory of New Guinea, Dr. R. D. Hoogland of the Commonwealth Scientific and Industrial Research Organization (Canberra, Australia) assembled collections of reptiles and amphibians at Ambunti and on Mt. Hunstein. Hoogland's excellently prepared and well-documented material adds significantly to our meager knowledge of the herpetofauna of this little-known region. The collections from Mt. Hunstein are of particular interest because, so far as I have been able to determine, no herpetological collections had been made before on this relatively low, northern outlier of the Central Range. Among the specimens Hoogland captured on Mt. Hunstein are six frogs that evidently belong to an undescribed species. The purpose of the present paper is to describe the species.

Measurements of specimens were made with vernier calipers or with an ocular micrometer in a binocular dissecting microscope: length from snout to vent (S-V); length of tibia (from heel to fold of skin at knee, TL); head width (taken at widest part, HW); eye length (from corner to corner, EYE); internarial distance (IN); distance from eye to naris (E-N); snout length, anterior corner of eye to tip of snout (SN); width

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of finger and toe discs; and width of penultimate phalanges. Measurements involving the nares were taken from the center of the naris.

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Sphenophryne hooglandi, new species

HOLOTYPE: A.M.N.H. No. 77597, obtained by R. D. Hoogland on Mt. Hunstein, Sepik District, Territory of New Guinea, at an elevation of 4000 feet on August 13, 1966.

PARATYPES: A.M.N.H. Nos. 77592-77596, collected by Hoogland at the type locality on August 12-14, 1966.

DIAGNOSIS: The following combination of characters is unique to this species and thus serves to differentiate it from all other species of *Sphenophryne*: body size moderate, up to at least 42 mm. snout to vent length; fingers and toes with terminal discs; toes without webs or lateral fringes; upper eyelids without cutaneous projections; legs of moderate length, TL/S-V ranges from 0.36 to 0.43; skin of dorsal surface of body and legs smooth, lacking folds except for a weak supratympanic fold. Comparisons with individual species are in a following section.

DESCRIPTION OF TYPE SPECIMEN (FIG. 1): The type is an adult male with the following measurements (given in millimeters): S-V, 40.7; TL, 15.2; HW, 14.7; EYE, 3.7; E-N, 3.0; IN, 4.0; SN, 5.5; disc of third finger, 1.1; penultimate phalanx of third finger, 0.7; disc of fourth toe, 1.5; penultimate phalanx of fourth toe, 0.9.

The maxillary bones are eleutherognathine, with their anterior ends falling far short of contact. There are no teeth. The pectoral girdle includes long, nearly straight clavicles that reach from the scapula to near the midline in the manner typical of *Sphenophryne* (Parker, 1934, fig. 54).

The snout is acute but blunt and projects well beyond the anterior margin of the lip (fig. 2). The head is narrower than the body, and its width is slightly more than one-third of the body length ($HW/S-V=0.36$). The eyes are relatively small ($EYE/S-V=0.09$), and the interorbital distance is almost twice the width of an eyelid. The snout is one and one-half times the length of the eye ($SN/EYE=1.5$). The loreal region is nearly vertical and shallowly concave, the canthal angle rounded but not obscure. The nostrils are directed laterally, and the distance from eye to naris is less than the internarial distance ($E-N/IN=0.75$). The tympanum is scarcely visible externally and has a diameter of approximately 2.2 mm.

All fingers and toes bear distinct discs with marginal grooves. The discs of the toes are slightly larger than those of the fingers; the ratio of the width of the disc of the third finger to that of fourth toe is 0.73. The discs of the third finger and fourth toe are slightly more than one and one-half times the width of their penultimate phalanges (1.6 and

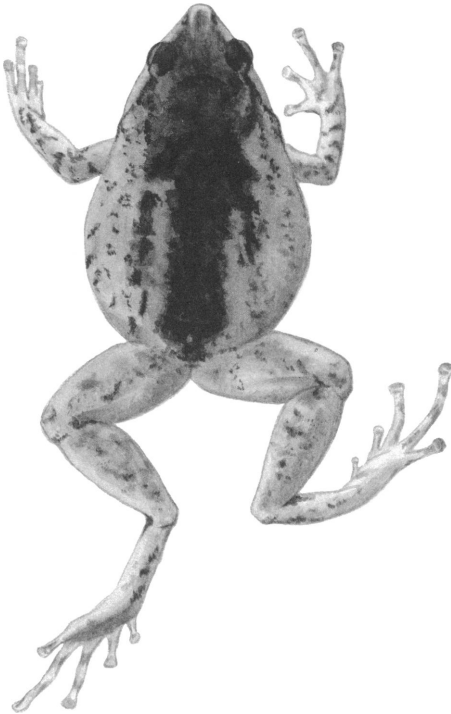


FIG. 1. Dorsal view of holotype of *Sphenophryne hooglandi* (A.M.N.H. No. 77597). $\times 1.5$.

1.7, respectively). The order of length in the fingers is $3 > 4 > 2 > 1$, and, in the toes, $4 > 3 > 5 > 2 > 1$. There are no distinct subarticular or other tubercles on the hands and feet; only low, rounded elevations are present. There is no trace of webbing on the hands or feet, and the toes are without fringes. The ratio of tibia length to length from snout to vent is 0.37.

The skin of the eyelids and of the top of the head (but not the end of the snout) is slightly roughened, but all other surfaces, both dorsal and ventral, are smooth. There is a weak fold passing from the posterior

corner of the eye above and down behind the tympanum; no other skin folds are present.

The tongue is half free behind. A single serrate palatal ridge is present. Paired vocal slits in the floor of the mouth open into a single subgular vocal sac.

The dorsal ground color of body and limbs (in preservative) is pale pinkish brown. The darker markings, flecks, and mottling (fig. 1) are dark brown. The tip of the snout is white. The groin, anterior and posterior sides of the thigh, and inside of the shank are light peach color. To judge from the intensity of the color in specimens preserved for several months, it was probably quite bright and possibly redder in life. The ventral surfaces are pale tan, almost white. The chin and hind limbs are lightly spotted and mottled with brown; the chest and abdomen are immaculate.

VARIATION IN THE TYPE SERIES: The largest of the six specimens is a gravid female with a length from snout to vent of 42.4 mm. A female 36.0 mm. in length shows no sign of sexual maturity. The means and ranges (in parentheses) for several proportions of the six specimens are as follows: TL/S-V, 0.39 (0.36-0.43); HW/S-V, 0.37 (0.33-0.41); EYE/S-V, 0.10 (0.09-0.12); EN/IN, 0.74 (0.63-0.80); SN/EYE, 1.4 (1.2-1.5); third finger disc/fourth toe disc, 0.80 (0.72-0.94).

The paratypes closely resemble the holotype in color. Some specimens have more dark pigment on the sides than the holotype, though the color is still in the form of discrete flecks, and the middorsal area may be darker or more mottled. Three specimens show traces of a narrow, light, midvertebral line.

Parker (1940, p. 259) observed that males and females of *Sphenophryne macrorhyncha* differ in the shape of the snout: ". . . in the male the snout is strongly prominent, acutely pointed, and longer (1.3) than the eye, whereas in the female and juvenile it is markedly less prominent, less pointed, and only as long as the orbital diameter." Similar dimorphism exists in *S. hooglandi*. In three males the snout is more pointed, longer, and conspicuously whitened. Two females (one subadult) and a juvenile have blunter snouts, with little or no trace of whitening.

COMPARISONS WITH OTHER SPECIES: Parker (1934) recognized 10 species of *Sphenophryne*, and subsequent revisionary work increased the total to 13 (Zweifel, 1956, 1962, 1965). The Australian species *S. fryi*, *S. pluvialis*, and *S. robusta* (the last reaches southern New Guinea, opposite Cape York) are most easily diagnosed as being much smaller than *S. hooglandi* though they differ in other ways as well; the largest of the Australian species is less than 30 mm. from snout to vent, in

contrast to 42 mm. for *S. hooglandi*. Three Papuan species that also differ in their smaller size (maximum, 30 mm.) are *S. brevicrus*, *S. breviceps*, and *S. crassa*. These three also are distinguished by a lack of finger discs.

The two little-known species *Sphenophryne mehelyi* and *S. polysticta* possibly differ from *S. hooglandi* in size (20 mm. S-V in *mehelyi*, 16.5 mm. in *polysticta*), but Parker (1934), on whom I depend for information on these species, examined only two specimens of the first and one of the second. Parker (1934, pp. 153, 156, 157) indicated that in *mehelyi* and *polysticta* the snout is as long as or shorter than the eye, whereas it is clearly longer in *hooglandi*.

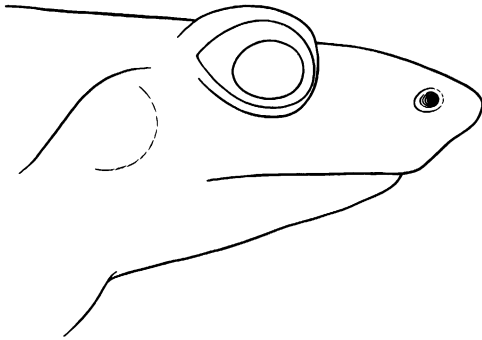


FIG. 2. Lateral view of head of holotype of *Sphenophryne hooglandi* (A.M.N.H. No. 77597), to show projecting snout. $\times 5$.

Sphenophryne cornuta resembles *S. hooglandi* in size but is distinctive in, among other differences, usually possessing a spinelike tubercle on each upper eyelid. *Sphenophryne palmipes* also is approximately the same size as *S. hooglandi* but has webbed toes and a prominent spike on each vomerine bone. *Sphenophryne macrorhyncha* usually has at least a trace of webbing on the toes, and, if the webbing is greatly reduced, a fringe persists. This species is sympatric with *S. hooglandi*.

The species remaining to be discussed are *Sphenophryne rhododactyla* and *S. schlaginhaufeni*. The latter is sympatric with *S. hooglandi* and differs in many respects. Perhaps most useful as a key character is the presence of convergent skin folds in the scapular region, where *hooglandi* is smooth. This feature is well shown in Boulenger's (1914, pl. 28, fig. 3) illustration of the type of *Sphenophryne klossi* (a synonym of *S. schlaginhaufeni*). *Sphenophryne rhododactyla* evidently is a much larger frog than *S. hooglandi*, for it reaches at least 60 mm. from snout-to-vent length (Parker, 1934,

p. 156). The lengths of the eye and snout are the same (snout longer in *hooglandi*), and there are differences in coloration that may be consistent enough to be diagnostic. The ventral surfaces of *rhododactyla* are dark brown, with light spots, in contrast to the pale and largely unmarked venter of *hooglandi*.

REMARKS: Hoogland collected frogs of 10 species in addition to *Sphenophryne hooglandi* at the type locality. The fauna is for the most part composed of species that are found in foothill and low mountain regions on both sides of the central mountainous spine of New Guinea. Included in this category are *Rana grisea* and *Metopostira ocellata*, both of very wide distribution, *Cophixalus oxyrhinus*, *Sphenophryne macrorhyncha*, *Sphenophryne schlaginhaufeni*, and *Asterophrys valvifera*. Two species of *Oreophryne* were collected, but I have not established their identity. The only *Hyla* are two species, one of small and one of moderate size, possibly related to the confusing *Hyla becki* complex.

The *Hyla* are the only frogs in the collection at all indicative of a zoogeographic relationship with the higher mountains of New Guinea, unless one species or both of the *Oreophryne* should prove to fall into this category. The lack of a strong montane element is not astonishing, for the Hunstein Range is somewhat isolated and the maximum elevation is only 5000 feet (as mapped on the Fly River Sheet of the Australian Geographical Series).

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