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NOTES ON THE HERPETOFAUNA OF SURINAM II.— ON THE OCCURRENCE OF ALLOPHRYNE RUTHVENI GAIGE (AMPHIBIA, SALIENTIA, HYLIDAE) IN SURINAM

by

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With one text-figure and three plates.

Introduction

In a recent paper, Lynch & Freeman (1966) discussed the systematic position of a small hylid frog, *Allophryne ruthveni*, described in 1926 by Gaige from British Guiana. They tentatively placed it in the family Hylidae, because it shows a better agreement with that family than with any other. The material available to them consisted of six specimens, all from "the foothills of the northeastern face of the Guiana Massif" in Guyana (formerly British Guiana). Since a few years the present author has been engaged in an investigation of the herpetofauna of Surinam (Dutch Guiana). During these studies, a fair number of *A. ruthveni* specimens was examined. In addition to the locality, of most of these the collecting date and some scanty notes on the habitat are available. During a collecting trip in Surinam from April-November 1968, financed by grant W 956-2 from WOTRO (Netherlands Foundation for the Advancement of Tropical Research), I was able to collect *A. ruthveni* in several localities and to assemble some more extensive information on the habitat. It seems useful to present measurements of the Surinam material in order to afford a better understanding of the variation in this little known species.

Figures of Surinam representatives of *A. ruthveni* are given on plates 1 (figs. 1, 2) and 3 (fig. 3).

Distribution

Apart from the Surinam localities, it is possible to add one from Brazil of which Lynch & Freeman (1966) seem to have been unaware. In 1958 Bokermann described a new species, *Sphenohyla seabrai*, from the Serra do Navio,

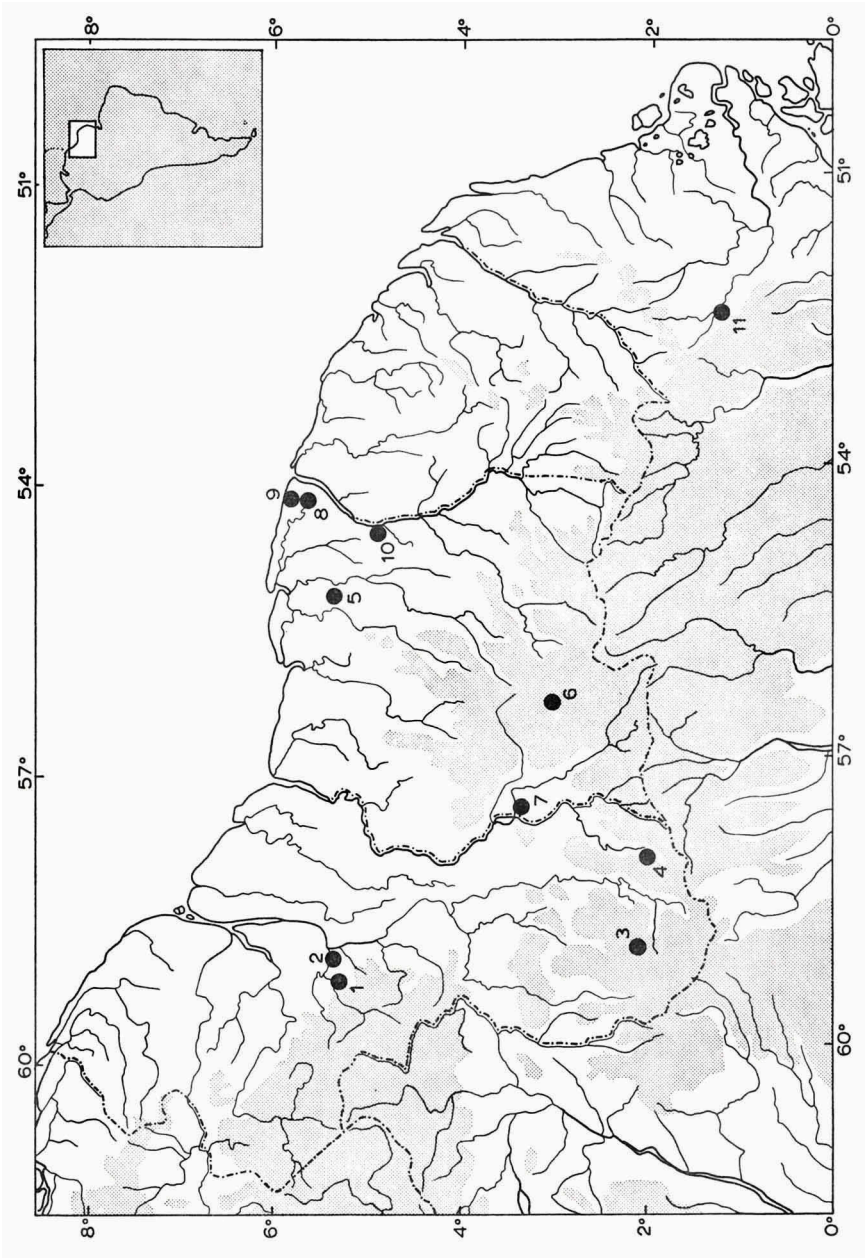

Fig. 1. Distribution of *Allophryne ruthveni* Gaige. Localities compiled from Gaige (1926), Bokermann (1958), Freeman & Lynch (1966), and from new material from Surinam in the FMNH and RMNH collections. Guyana: 1. Tukeit Hill, below Kaieteur Falls; 2. Tumatumari; 3. Marudi Creek; 4. Wai Wai Country, 2°N 58°W; Surinam: 5. Berlijn; 6. Airstrip Kayser Mountains; 7. Coeroeni River, 3°23'N 57°31'W; 8. Encampment Wane Creek N., 5°37'N 54°14'W; 9. Third Encampment, 5°41'N 54°14'W; 10. Base Encampment Nassau Mountains, 4°48'N 54°27'W; Brazil: 11. Serra do Navio. — The grey area has an elevation of more than 200 m above sealevel.

Territorio Federal de Amapá in northern Brasil. This presumed species agrees with *A. ruthveni* in all characters mentioned by Bokermann, who actually had some doubts about the assigment of his specimens to a new species. Consequently, in 1966 he referred it to the synonymy of *A. ruthveni*. The excellent photographs and drawings of the holotype of *S. seabrai* confirm this conclusion.

In Surinam *A. ruthveni* is widespread, occuring both near the coast and far in the interior. There is no preference for hilly or mountainous country although the Guyanese and Brasilian localities seem to indicate this.

Considering our present knowledge, it seems that *A. ruthveni* is restricted to the mid-northern part of South-America (fig. 1). The species has not yet been recorded from French Guiana, but undoubtedly this is due to the scant herpetological exploration of that country.

Habitat

Allophryne ruthveni seems to prefer the neighbourhood of water. All specimens I collected were taken within 100 m of a creek or river. In total four specimens were captured, one at Berlijn (altitude ± 10 m), one on the Coeroeni River (3°23'N, 57°31'W) (± 100 m) and two near the airstrip Kayser Mountains (± 200 m), of which one unfortunately escaped. A short description of each locality follows.

Berlijn. — The specimen was collected on June 4, 1968 at 7.30 p.m. It was moving upwards the stem of a young tree, about 1.5 m above the forest-floor. The collecting site is situated in a forest along a creek at the time flooding the area with 30 cm of dark-brown water, the colour of the water being caused by dissolved humic acid. The full-grown trees are about 15-20 m high, intermingled with a number of saplings and smaller species reaching a height of 5-10 m, and also a number of palms; a few dead trunks still stood upright. The forest floor was covered by an about 3-5 cm layer of dead leaves and by a considerable number of putrefying logs. These logs were covered with several species of epiphytes, as were the upright dead trunks. Only few epiphytes were present on the living trees.

Coeroeni River (pl. 3 fig. 1). — Here *A. ruthveni* was collected on June 26, 1968 at 11.00 a.m. on the hat of one of my labourers. It must have attained this position by jumping from the bushes or low trees that were abundant in the area. Probably its previous abode had been at 1.5-2 m above the forest floor. Whether it was active at the time or disturbed by our crossing the forest could not be ascertained. The situation here was very much the same as in Berlijn, the forest being partly submerged by the high waters of the Coeroeni River, but here the water was clear. However, the specimen was

collected on one of the more elevated parts (about 5 m above the surroundings). A difference from the Berlijn situation is the presence of more foliage at a level between one and two meters.

Airstrip Kayser Mountains. — The first specimen was collected on August 7, 1968 at 10.45 a.m. The animal was sitting on a palmleaf, about 30 cm above the forest-floor. The frog was active at that time, not sitting in a resting position, but with the head elevated. This could not have been caused by a tactile disturbance from our side, because the animal was spotted in this position 2 m from the trail. The forest here was composed of big trees with a height of 20-25 m with various smaller trees below them. There were relatively few shrubs and low trees in the area, so crossing was fairly easy. Widely spaced palms with short stems and feathered leaves occurred. The leaf litter here formed a thin layer of 1-2 cm. This specimen unfortunately escaped before it could be preserved.

The second specimen was collected on August 12, 1968, also on a palmleaf 30 cm above the ground, at 9.10 p.m. The air temperature was 23° C. This specimen was observed at the edge of a clearing (pl. 3 fig. 2). The surrounding forest agrees with that in which the first specimen was collected. This frog also was active and probably calling, but it was impossible to establish this beyond doubt.

The preserved material available in the Rijksmuseum van Natuurlijke Historie [1]) does not provide much information on the habitat, but from the notes that are present it is evident that the specimens were collected near water. Two of the specimens (RMNH 13834, 13835) were assembled during a combined zoological, botanical and geological expedition in 1948-1949 (zoologists Dr. D. C. Geijskes and Mr. P. H. Creutzberg) in ridge-forest near the coast ("Wia Wia trail"). In that area the various sand ridges are separated by swamps, so this locality also suggests the neighbourhood of water. The third specimen (RMNH 13833) collected by this expedition was found in one of its camps on the banks of the Wane Creek. The same expedition captured a specimen of *Leimadophis reginae* (L.) (RMNH 13658), a colubrid snake, on the banks of the Marowijne River near the Nassau Mountains. Its stomach turned out to contain a pregnant female *Allophryne ruthveni* (RMNH 13836). The stomach of the frog was full of ants. No ecological data on Field Museum of Natural History [2]) specimens are available (see Material).

A. ruthveni thus seems to be a frog preferring not too dense forest near creeks and rivers, not venturing very far from the ground. This applies

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1) Subsequently abbreviated RMNH.
2) Subsequently abbreviated FMNH.

also to the holotype of *Sphenohyla seabrai* which was collected in a terrestrial bromelia. Breeding time extends at least from February (RMNH 13836) till May (holotype of *A. ruthveni*). This frog is preyed upon by terrestrial snakes.

Material

♀, RMNH 13830, Berlijn, Surinam, 4 May 1968, leg. M. S. Hoogmoed; ♂, RMNH 13831, Gonini Encampment, Coeroeni River, 3°23'N 57°31'W, Surinam, 26 June 1968, leg. M. S. Hoogmoed; ♂, RMNH 13832, Airstrip Kayser Mountains, Surinam, 12 August 1968, leg. M. S. Hoogmoed; ♀, RMNH 13833, Encampment Wane Creek N., 5°37'N 54°14'W, Surinam, 29 September 1948, leg. Surinam Expedition 1948-49; ♂, RMNH 13834, Third Encampment, km 14.9, 5°41'N 54°14'W, Surinam, 14 October 1948, leg. Surinam Expedition 1948-49; ♂, RMNH 13835, Third Encampment, km 14.9, 5°41'N 54°14'W, Surinam, 16 October 1948, leg. Surinam Expedition 1948-49; ♀, RMNH 13836, Base Encampment Nassau Mountains, bank of Marowijne River 4°48'N 54°27'W, Surinam, 16 February 1949 (from stomach of *Leimadophis reginae* (L.), RMNH 13658), leg. Surinam Expedition 1948-49; FMNH 128862-128869, Airstrip Kayser Mountains, Surinam, 1 February 1961, leg. H. A. Beatty (♂♂ 128864 and 128866; 128865 may be a juv. ♂; 5 ♀♀).

Description

Lynch & Freemann (1966: 496) gave an excellent description of this frog, so it seems superfluous presenting a new one here. Only some characters of special interest are discussed below.

Colour

In life the colour of *Allophryne ruthveni* is variable, as is evident from my fieldnotes and from information found on a label (RMNH 13833):

♀, RMNH 13830, Berlijn: grey-green above with black and white spots. Throat brown with some round white spots. Belly dark greyish blue, immaculate.

♂, RMNH 13831, Coeroeni River: middle of back bronze-coloured, two yellow-brown dorso-lateral stripes. Black and white spots dorsally. Belly and throat pink.

♂, RMNH 13832, Kayser Mountains: middle of the back greyish-brown, two yellow-brown dorso-lateral stripes. Throat black with white spots, belly greyish blue, immaculate.

♀, RMNH 13833, Wane Creek: "gold and transparent + black" (note on label).

There is much variation in the extent of spotting on the throat; also there is sexual dimorphism regarding this character (pl. 2 figs. 3-6). In males the dark vocal sac is without spots in all specimens. The rest of the throat is either without spots (RMNH 13834), with indistinct spots or with distinct

but small spots. In two males from the Kayser Mountains (FMNH 128864, 128866) the spots are indistinct, restricted to the lateral parts of the throat. Another male from the Kayser Mountains (RMNH 13832) shows a row of three distinct, round white spots in front of the vocal sac and two slightly bigger spots on the lips, latero-posterior of the afore-mentioned row. The male from the Coeroeni River bank (RMNH 13831) has a semicircle of five irregularly shaped, white spots in front of the vocal sac. The male from Third Encampment (RMNH 13835) has two distinct small spots on the lateral part of the throat.

In females, however, the spotting of the throat is much more extensive. The white spots, surrounded by a narrow brown line, are very variable in size and shape. A common pattern shows one large spot on each side of the throat, only in one specimen (FMNH 128865, possibly a juvenile male) there is just a single small spot on the left side of the throat and in another (FMNH 128867) no spots at all are present. In all other specimens there are more or even many more spots on the throat. The most heavily spotted throat occurs in RMNH 13833, in which only the center is free of spots.

In most females there is a white spot on the chest near the base of the forelimbs, which is absent in all males. The dorsal pattern does not show any sexual dimorphism, it consists of irregular black spots and bars on a grey (in preservative) background.

In preservative the colour of the specimens may change considerably. For instance, RMNH 13830, which had a greyish-blue belly in life, now has the belly dirty white and in that respect is indistinguishable from RMNH 13831 which in life had a pink belly.

From the observations on living frogs it is evident that the spots that are white in preservative had the same colour in life. So the species is less brilliantly coloured in life than Lynch & Freeman (1966: 498) assumed.

Skin

In the texture of the skin too, there is sexual dimorphism. The skin is smooth above, with a variable number of horny pustules on top and side of the head, on the back and on the dorsal surfaces of tibia and forearm. In males these pustules are large and very numerous, with a heavy concentration on the top and sides of the head (pl. 2 fig. 2). Also on the back they are numerous, less so on tibia and forearm. Nearly all pustules on the head and the back have a dark-brown spine on top, only a few on tibia and forearm have these spines.

In females the pustules are small and widely separated (pl. 2 fig. 1). They are less numerous on the head and back than in males, although there still is

a concentration on top of the head. In FMNH 128867 the back even is devoid of pustules. Only few pustules do have the dark-brown spine on top.

Measurements

The measurements taken from the Surinam material are the same as those taken by Lynch & Freeman (1966, p. 498). From the data (table 1) it is evident that in these characters there are no considerable differences between males and females.

Table. 1. Variation in *Allophryne ruthveni* Gaige. All measurements in mm. Means in parentheses. ♀ RMNH 13836 and FMNH 128865 not included.

	males (6)		females (7)	
Snout-vent length	19-22	(20.4)	17-22	(19.3)
Tibia length	7.6-10	(8.6)	7.3-9.9	(8.0)
Tympanum (horizontal diameter)	0.7-1.0	(0.87)	0.55-1.0	(0.77)
Head width (at tympanum level)	5.3-6.6	(5.9)	4.9-6.4	(5.6)
Eyelid, width	1.35-1.6	(1.48)	1.35-1.5	(1.45)
Interorbital space	2.8-3.7	(3.1)	2.4-3.3	(2.76)
Eye length	1.8-2.4	(2.13)	1.5-2.1	(1.85)
Snout length	2.4-3.0	(2.74)	2.2-3.1	(2.55)
Tibia length/snout-vent length	0.40-0.48	(0.42)	0.38-0.45	(0.41)
Tympanum diameter/head width	0.13-0.16	(0.15)	0.11-0.16	(0.14)
Eyelid width/interorbital space	0.36-0.53	(0.48)	0.44-0.60	(0.51)
Tympanum (horizontal diameter)/ eyelength	0.35-0.46	(0.41)	0.34-0.48	(0.42)

Acknowledgements

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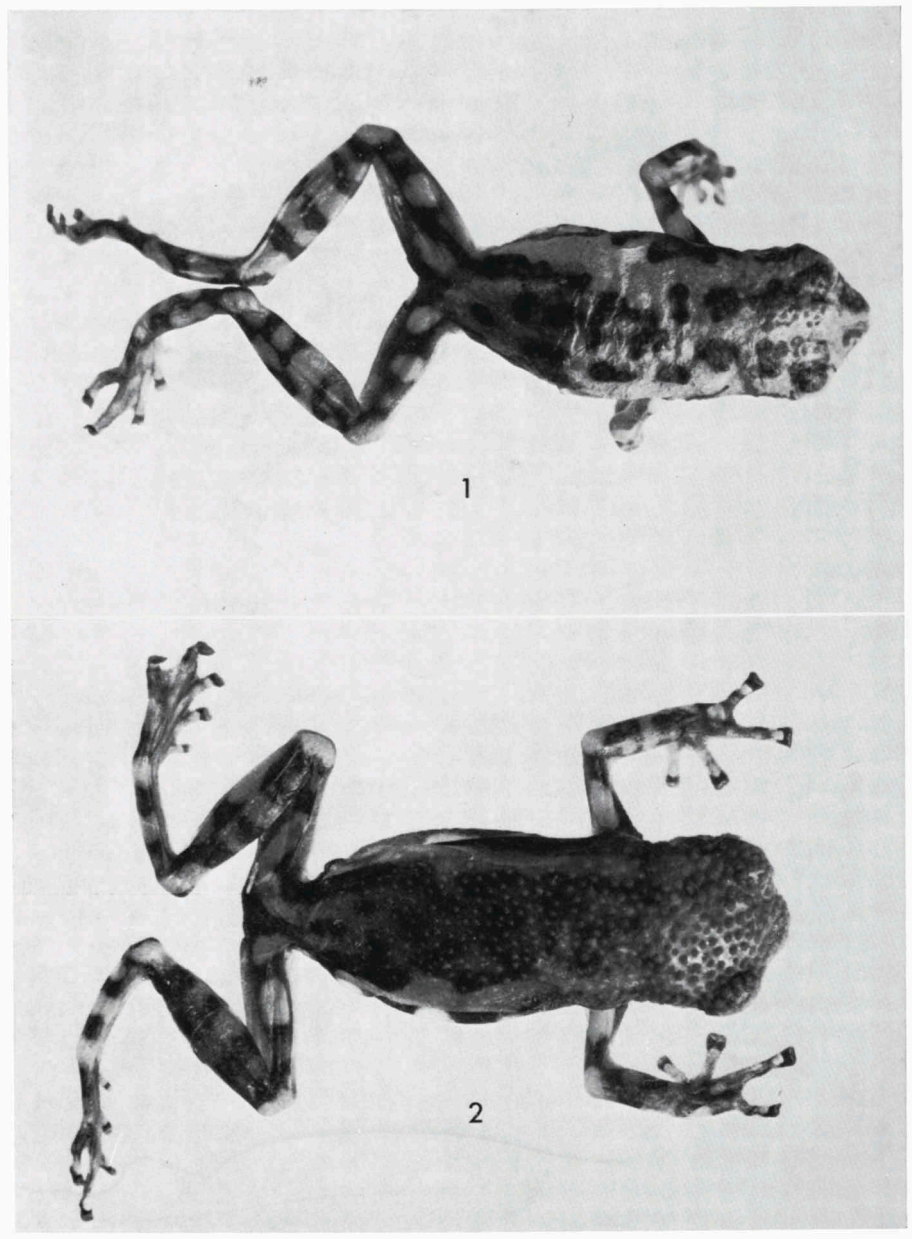
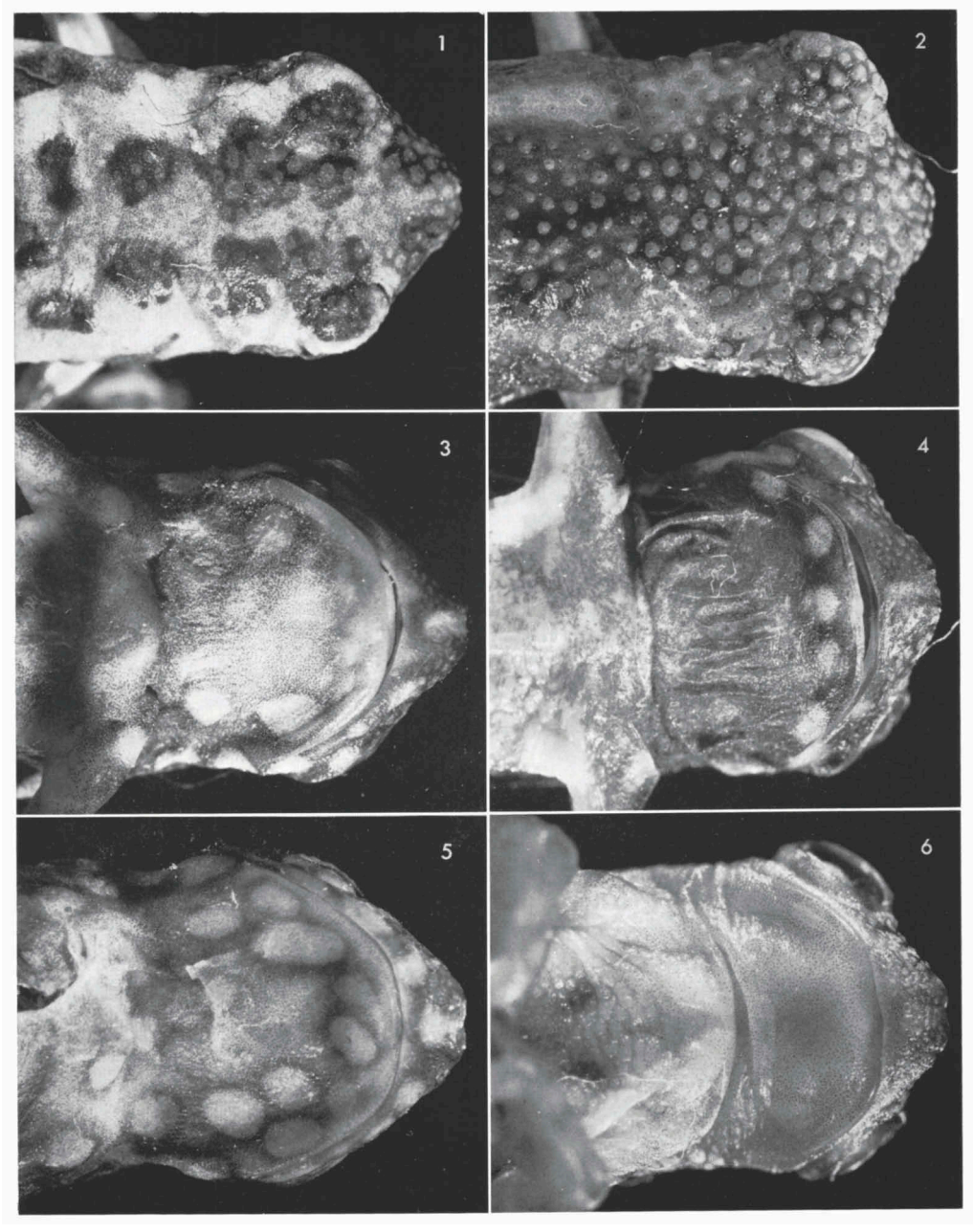


Fig. 1. ♀, *Allophryne ruthveni* Gaige (RMNH 13830), dorsal view; fig. 2. ♂, *A. ruthveni* Gaige (RMNH 13832), dorsal view.



Figs. 1, 3. ♀, *Allophryne ruthveni* Gaige (RMNH 13830), dorsal surface of head and view of throat; figs. 2, 4. ♂, *A. ruthveni* Gaige (RMNH 13832), dorsal surface of head and view of throat; fig. 5. ♀, *A. ruthveni* Gaige (RMNH 13833), throat; fig. 6. ♂, *A. ruthveni* Gaige (FMNH 128866), throat.

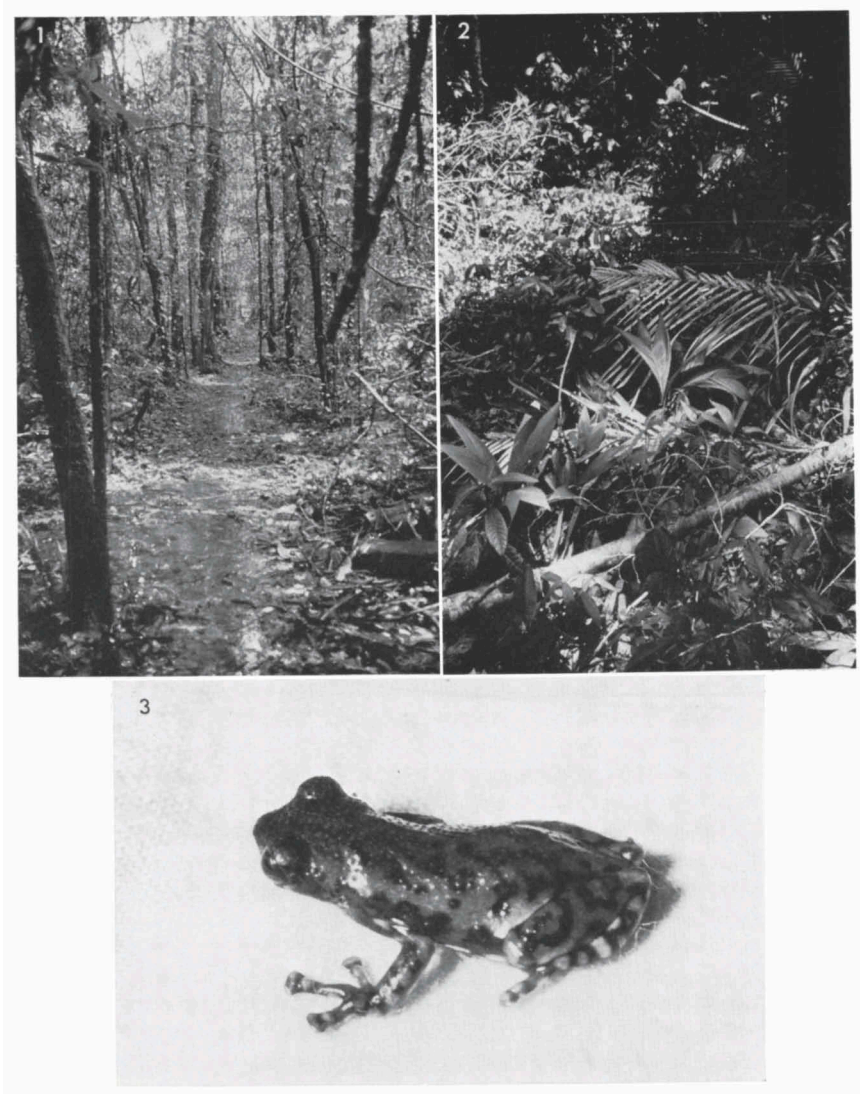


Fig. 1. Forest trail near Gonini Encampment on the Coeroeni River; fig. 2. Edge of clearing in forest near airstrip Kayser Mountains; fig. 3. ♂, *Allophryne ruthveni* Gaige (RMNH 13831).