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Two New *Hyperolius* (Anura) from Tanzania

By Arne Schiøtz

Danmarks Akvarium, DK-2920 Charlottenlund, Denmark

Abstract. Two new *Hyperolius* taxa are described, *H. tanneri* n.sp. from Mazumbai Forest, western Usambaras and *H. viridiflavus reesi* n.ssp. from the Kilombero-Rufiji area.

INTRODUCTION

During a collecting tour to Tanzania, organized by the Zoological Museum, University of Copenhagen, two new taxa of *Hyperolius* were found. The present description of the two taxa follows in format the treatment given in a recent monograph of the treefrogs in Eastern Africa (Schiøtz 1975).

I am indebted to the Danish Natural Sciences Research Council and to the Zoological Museum, University of Copenhagen for financial support, to the Tanzanian National Scientific Research Council for permission to carry out the work, and to W.A. Rodgers, University of Dar es Salaam for much assistance.

DESCRIPTIONS

Hyperolius tanneri sp.n.

Material. Holotype ♂, TANZANIA; Western Usambaras, Forest swamp at 1410 m above sea level in Mazumbai Forest Reserve. December 1978. (Schiøtz) (ZMUC-R77372).

Paratypes. 4 ♀, 12 ♂♂ (ZMUC-R77356 – R77371). Date and locality as holotype.

Diagnosis. A forest *Hyperolius*, males small (20-23 mm), females medium

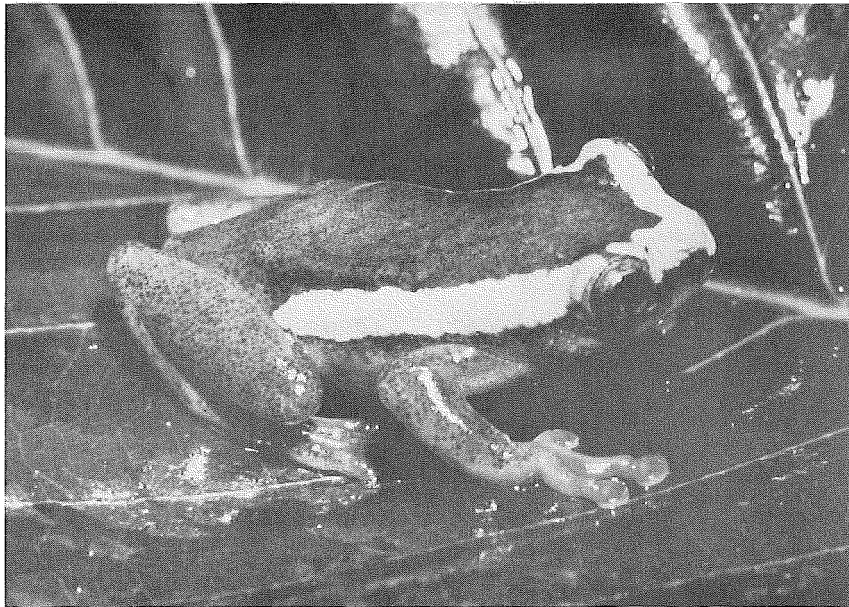


Fig. 1. *Hyperolius tanneri* n.sp., ♀ (Mazumbai).

sized (29-34 mm). Vocal sac in males with a rather large, flat, smooth protective flap without asperities. No asperities on ventrum or limbs. Dorsum green with a light canthal and dorsolateral stripe.

Description. The type material is very uniform in morphology and colour pattern. See further in table I and under Systematic remarks. Webbing rather extensive, formula: 1 (1), 2i (1-1 1/2), 2e (0-1/2), 3i (1-2), 3e (0-1), 4i (2), 4e (1-2), 5 (0-1).

Colour in life. Dorsum green with a broad, light yellowish green canthal and dorsolateral stripe. Legs green. Toes, fingers and discs yellow. Ventrum blue-green. Throat dark blue-green. See colour photo in Swara (East African Wildlife Society) 2 (1): 21 (1979) as "*Hyperolius* from the Usambaras".

Both sexes are similar in colour pattern, and the pattern is constant in the available material apart from the length of the dorsolateral stripe, which varies somewhat.

Colour after preservation. Brownish ground colour with pattern clearly visible in whitish.

Secondary sex characters. The males are smaller than the females and have a vocal sac with a flat, smooth protective flap (Fig. 2). The dorsum of males has fine warts, that of females is smooth.

Voice. Although the specimens were collected at what must be assumed to be

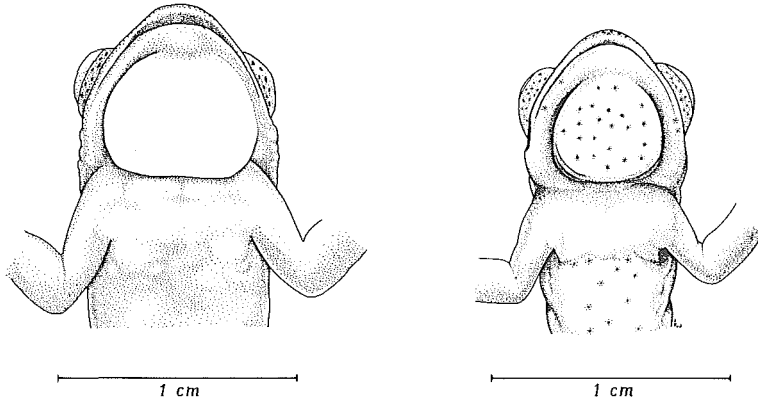


Fig. 2. Throat of *H. tanneri* (R77360) (left) and of *H. spinigularis* (R076857, Amani).

the breeding locality, and showed breeding activities, no breeding call was heard from the males of *H. tanneri*. However, some weak clicks (Fig. 3) were heard from a plastic bag where several males were kept together. In the genus *Hyperolius* the apparent absence of a breeding call has only been reported for *H. spinigularis* and for *H. zonatus*, both from similar habitats.

Eggs. Eggs were laid in captivity. They are unpigmented and with a faintly milky egg slime.

Systematic remarks. The present taxon is very similar to *H. spinigularis* Stevens, collected in the nearby Eastern Usambaras. The differences seem, however, sufficient to separate them. A summary of the differences between *H.*

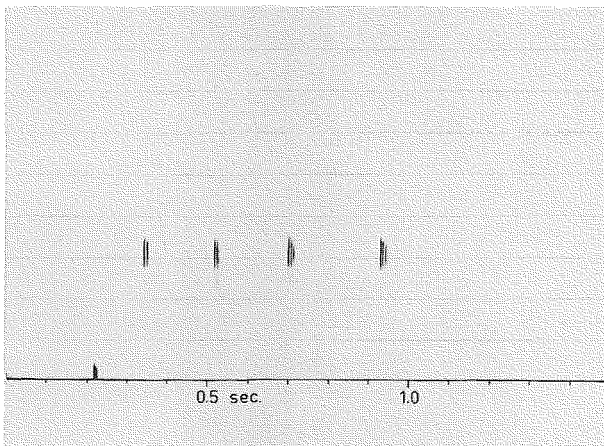


Fig. 3. Voice of *H. tanneri*, recorded in a plastic bag. The horizontal lines are 1 KHz apart.

tanneri and the two known populations of *H. spinigularis*, from Eastern Usambaras and from Mulanje, Malawi is given below and in table 1. As the available material of *H. spinigularis* from Usambaras (collected by E. Wederkinch and myself) is now much larger than that available for my 1975 paper, dimensions of Tanzanian specimens of *H. spinigularis* are also shown in Table 1.

The major differences between *H. spinigularis* and *H. tanneri* are the absence in *H. tanneri* of black asperities on throat and ventrum, and the apparent absence of the so-called colour pattern type B. Stevens (1971) mentions that *H. spinigularis* from Malawi lose the black asperities and the gular sac outside the breeding season. The present material of *H. tanneri* is collected in the breeding season, and the males have a well developed gular sac, so the absence of asperities seem not to be a seasonal character.

<i>H. tanneri</i>	<i>H. spinigularis</i> , Amani	<i>H. spinigularis</i> , Mulanje
♂♂ 20-23 mm	♂♂ 16-22 mm	♂♂ 18-24 mm
♀♀ 29-34 mm	♀♀ 19-23 mm	♀♀ 24-31 mm
No asperities on throat or ventrum of ♂♂	Asperities on throat and ventrum of ♂♂	Asperities on throat and ventrum of ♂♂
One pattern	Pattern type A and B	Pattern A and B

Biological remarks. The sample was collected in a small swamp surrounding a brook in dense, undisturbed montane rain forest. *Leptopelis parkeri*, *L. vermiculatus* and *Afrixalus uluguruensis* were taken at the same locality.

Etymology. The species is named after Mr. and Mrs. J. Tanner in grateful acknowledgement of their work in creating and protecting the Mazumbai Forest Reserve.

***Hyperolius viridiflavus reesi* ssp.n.**

Hyperolius sp. — Poynton 1977, p. 39.

Material. Holotype, adult female, TANZANIA: Clearing in Magombero Forest. November 1978. (Schjötz) ZMUC-R77205.

Paratypes. Same date and locality, 13 ♀♀, 43 ♂♂. ZMUC-R77203, 77207-209, 77219-232, 77235-260, 77262-266); Ifakara, 2 ♂♂ (Flemming Frandsen) (ZMUC-R77523-524); Mbega and Boma, 5 ♀♀(Rees) (BMNH 1070-1474).

Diagnosis. A *Hyperolius viridiflavus* from the Kilombero-Rufiji area in Tanzania, Phase F with a conspicuous subdermal dark lateral streak with transverse yellow bands. Voice a series of clicks.

Colour in life. Phase J: Dorsum silvery grey to brown with a darker pattern forming spots and an irregular, varying "hourglass pattern" (Fig. 4). Sides of head and body dark. Throat yellow, ventrum whitish. Without a subdermal dark lateral streak. Phase F. Dorsum light yellow to light green. Flanks with a

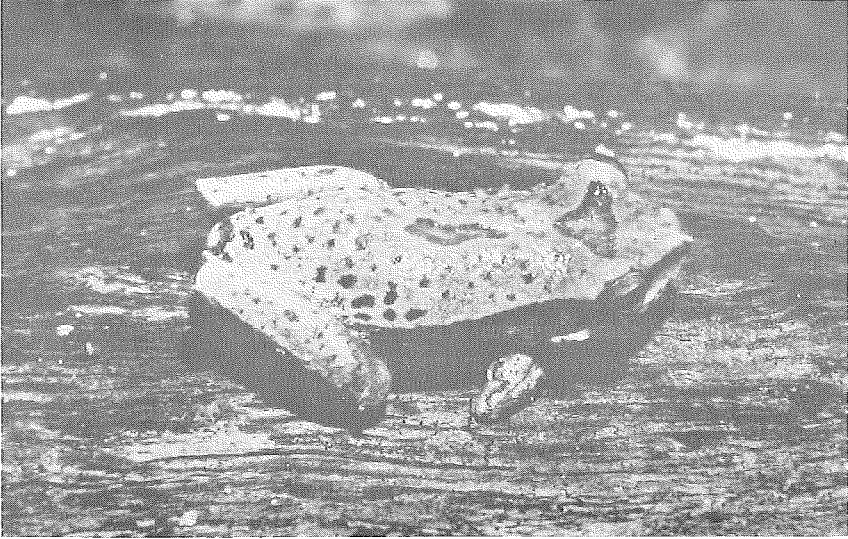


Fig. 4. *Hyperolius viridiflavus reesi* n.ssp., ♂ ph. J. (Magombero).

very conspicuous pattern (Fig. 5) in blue-black and yellow, caused by a broad subdermal lateral streak overlaid by 2-3 yellow stripes in the skin. Ventrums white, throat yellow in males, white in females. Feet and underside of limbs reddish.

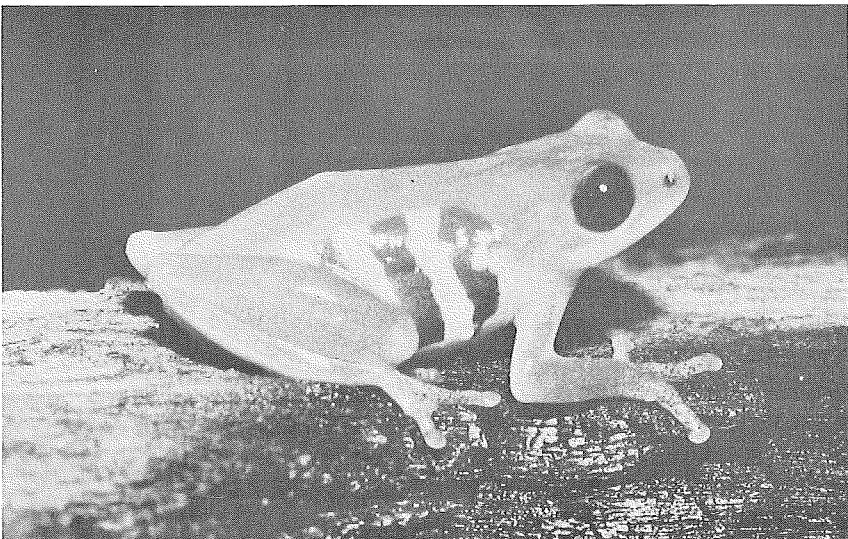


Fig. 5. *H.v. reesi* n.ssp., ♀ (Magombero).

A few males, possibly transitional from phase J to F have a fairly narrow dark lateral streak and no yellow transverse bands. They resemble *H.v.mariae* very much. Of the 43 males from Magombero, 8 are phase F.

Colour after preservation. The yellow colours fade to white, and the skin on the flanks is less translucent than when alive, so the subdermal streak is less conspicuous.

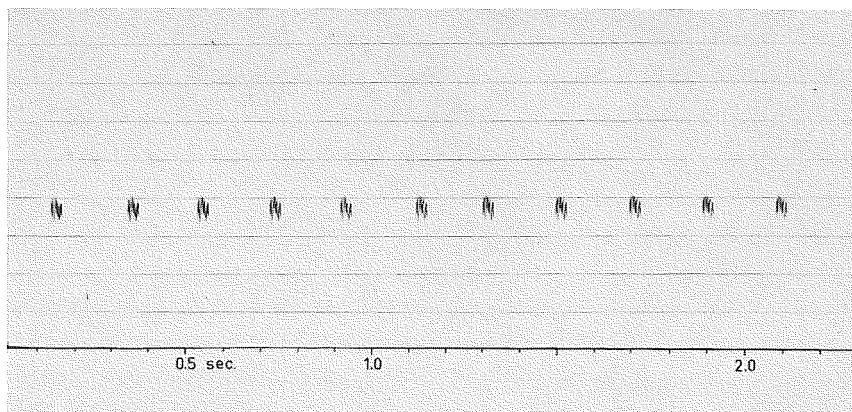


Fig. 6. Reproductive call of *H.v. reesi* (Magombero).

Voice. A fast series of clicks (Fig. 6) The structure is thus similar to the fast series emitted by *H.v.mariae*, but the individual clicks are not as brief and have a better defined frequency-intensity maximum than the clicks of *H.v.mariae*. The voice thus seems to be between the usual voice of *Hyperolius viridiflavus* and the somewhat aberrant voice of *H.v.mariae*.

Eggs. The eggs have a green and a black pole. The slime is clear.

Systematic remarks. This very characteristic subspecies of *H. viridiflavus* resembles in pattern and is probably closely related to *H.v.mariae*, the adjacent form to the north-east, and to *H.v. bitaeniatus* and *H.v. rhodoscelis*, occurring in southwestern Tanzania and adjacent parts of Zaire and Zambia (Schiotz 1971, 1975). In all these subspecies, phase F has a light, uniform dorsum and a dark subdermal lateral streak. The yellow lateral transversal bands, however, are unique in the species.

Biological remarks. In spite of the name of the type locality, *H.v.reesi* is not a forest form. All specimens were collected in clearings with a savanna fauna of frogs.

Distribution. The Kilombero-Rufiji area in Tanzania (southeast of Iringa).

Etymology. The subspecies is named after Mr. A. Rees, who collected the five specimens kept in the British Museum (N.H.).

Table 1. Body dimensions in tenths of millimeters of some *Hyperolius* from Tanzania.

Species	ZMUC No.	Sex	Locality	Snout-vent	Tibia	Eye horiz.	Eye-nare	Prot. flap
<i>H. tanneri</i> n.sp.	77372	♂	Mazumbai	212	108	33	20	65
<i>H. tanneri</i> n.sp.	77369	♂	Mazumbai	205	103	33	18	65
<i>H. tanneri</i> n.sp.	77360	♂	Mazumbai	215	104	35	23	70
<i>H. tanneri</i> n.sp.	77361	♀	Mazumbai	339	160	45	25	—
<i>H. tanneri</i> n.sp.	77367	♀	Mazumbai	295	159	45	27	—
<i>H. spinigularis</i>	77420	♂	Amani	170	85	29	18	52
<i>H. spinigularis</i>	77416	♂	Amani	202	102	27	18	58
<i>H. spinigularis</i>	77415	♀	Amani	224	114	30	22	—
<i>H. spinigularis</i>	77410	♀	Amani	229	118	35	25	—
<i>H. viridiflavus reesi</i>	77266	♂	Magombero	242	114	33	23	74
		<i>Ph.J</i>						
<i>H. viridiflavus reesi</i>	77249	♂	Magombero	226	115	30	23	65
		<i>Ph.F</i>						
<i>H. viridiflavus reesi</i>	77207	♀	Magombero	259	126	30	27	—
<i>H. viridiflavus reesi</i>	77205	♀	Magombero	266	135	35	24	—

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