

A NEW SPECIES OF *RANA* (FAMILY RANIDAE) FROM WESTERN GHATS, S. INDIA.

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ABSTRACT

A new species of frog belonging to the genus *Rana* is being described from Naduvattom, Gudallur (Western Ghats) on the basis of four males, two females and four juveniles. It bears resemblance to *Rana limnocharis*, *Rana brevipalmata* and more so to the Ceylonese species, *Rana greeni* from which it differs in many respects and in the presence, in males, of two patches bearing papillae on the breast. It has also been compared with other species of *Rana* wherein spinose patches are present on the breast in males.

INTRODUCTION

While examining the Amphibia material collected from the Western Ghats, South India, the author came across a hitherto undescribed species of *Rana* (Family Ranidae) which is being described here as *Rana murthii* sp. nov.

MATERIAL

The material consists of four males, two females and four juveniles and were all collected from a forest at Naduvattom, Gudallur, Tamil Nadu by Shri T. S. N. Murthy on 23 March 1978.

Family RANIDAE

Genus *Rana* 1766

*Rana murthii* sp. nov.

(Pl. IV, Fig. A & B)

**Diagnosis** : Medium-sized frogs with tympanum fairly distinct ; forelimbs short and robust, digits without discs ; feet half-webbed, a small inner metatarsal tubercle and a tiny nodule-like outer tubercle present. Skin of dorsum beset with interrupted folds and

tubercles, head smooth. Males with external vocal sacs, anterior part of lower jaw and two triangular patches on breast beset with small pearl-like papillae.

DESCRIPTION

**Head** : Slightly depressed, a little longer than broad. Snout pointed, longer than eye. Canthus rostralis indistinct, loreal region slightly concave. Nostrils a little nearer to tip of snout than to eye. Eyes not much protruding, upper eyelids being almost flat. Interorbital space convex, narrower than upper eyelid and two-third times the inter-narial distance. Tympanum fairly distinct, its diameter half to two-thirds that of eye and about as broad as upper eyelid. Pupil rounded. Vomerines cushion-like and close together. Tongue small, free and bicornuate behind, without median papilla.

**Forelimbs** : Short, robust, its length about half distance from tip of snout to vent. Fingers free, tips blunt, rounded ; terminal phalanges simple. First and second fingers

about equal or first extending a little beyond second which in turn is equal to fourth. Subarticular tubercles fairly prominent.

*Hindlimbs* : Relatively short, being  $1\frac{1}{2}$  times the total length from tip of snout to vent, heels just meeting when limbs are folded at right angles to body. Tibio-tarsal articulation of adpressed limb reaching eye ; tibia about half body length, equal to fore-limb and about 3 times as long as broad. Tip of toes as in fingers, half-webbed, web not reaching any of toe-tips. Three digits of fourth toe free or narrowly fringed. Mid-part of web separating third and fourth toes terminating at the level of the distal tubercle on third toe and that between fourth and fifth at the level of the distal tubercle of fifth toe. Subarticular tubercles not very prominent, inner metatarsal tubercle present as a tiny whitish nodule at the base of the dermal fringe of the outer toe. Outer metatarsal separated almost to base. An indistinct serrated tarsal fold. External fringes along outer edge of first and fifth toes present but not well developed.

*Skin* : Dorsal surface rough, beset with fairly large irregular glandular tubercles and wrinkles barring the snout and interorbital part which are smooth, these two regions being separated by a distinct groove running across the hind part of the two upper eyelids. Some of the tubercles coalesce to form longitudinal dorsal folds, some others though not confluent form linear rows. Flanks with larger glandules. A weak supra-tympanic fold present. Hind part of dorsum, tibia and tarsus with smaller conical tubercles interspersed with minute whitish pustules. Ventrally smooth except in males (See secondary sex characters).

*Colour* : Dorsum dark brownish with irregular markings. A transverse dark band across the hind margin of eye. An inverted

V-mark on dorsum at shoulder level. A median yellowish or pale line present in three examples from tip of snout to vent. Hind aspects of thigh variegated. Limbs with incomplete transverse markings. Venter immaculate with a few scattered chromatophores on throat and breast which in males are dense rendering the area sepia brown in colour. Upper jaw uniformly dark while lower jaw has whitish bars along its margin.

*Secondary sex characters* : Males with external vocal sacs forming longitudinal folds on the dark throat. Anterior part of lower jaw and throat beset with evenly-spaced tiny pearl-like papillae. Two triangular patches of similar papillae on either side of the breast. A swollen nuptial pad devoid of spinules present on the dorso-median aspect of the first finger extending from the level of articular tubercle to wrist.

The largest male specimen measures 34 mm. from tip of snout to vent while the largest female measures 35 mm.

*Measurements* : See Table 1.

*Type-specimens* :

*Holotype* : An adult ♂ frog, loc. Naduvattom, 18 km. from Gudallur, S. India, Alt. 1829 metres. 23 March 1978, coll. T. S. N. Murthy.

*Paratypes* : 2 adult ♂♂ and 2 adult ♀♀ frogs with other data same as above.

All type specimens are deposited with the Southern Regional Station, Zoological Survey of India, Madras.

*Field Notes* : The specimens were collected from a small stream following over a sandy bottom in a dense forest. The water was very shallow and all the frogs were taken from under stones. They were fairly active and agile.

TABLE 1. Body measurements in mm. of *Rana murthii* Pillai.

	1	2	3	4	5	6	7
	(M)	(M)	(F)	(M)	(M)	(F)	(?)
1. Total length (from tip of snout to vent).	34	32.5	35	27	29.5	28.5	20
2. Length of head (from tip of snout to angle of jaw) ..	10	9	10	8.5	8.5	9	6.5
3. Width of head (at angle of jaw) ..	11	11	12	10	9.5	10	7
4. Max. length of eye ..	5	5	5	4	4	4	3
5. Width of upper eyelid ..	3	3	3.5	3	3.5	3	2
6. Minimum inter-orbital distance ..	2	1.5	2	1.5	2	1.5	1.5
7. Diameter of tympanum ..	3	2.5	2.5	2.5	2.5	2	2
8. Length of forelimb ..	14	14	16	13	14	15	11
9. Length of hindlimb ..	50	49	57	44	44	45	30
10. Length of tibia ..	15	15	17	13	13.5	14	10

## REMARKS

Teethed upper jaw, bifid tongue, roundish pupil, vomerines, absence of intercalary ossicle, simple terminal phalanges and the free outer metatarsals are all characters which go to show that *Rana murthii* is a member of the subgenus *Rana* s. str. under genus *Rana*. It bears good resemblance to *Rana limnocharis* Wiegmann, *R. brevipalmata* Peters and more so to the Ceylonese species, *R. greenii* Boul. from which it differs in many respects and in the presence in males, of two patches bearing papillae on the breast. Similar spinose patches on breast are present in the males of most of the species which Boulenger (1920) has, on phyletic grounds, grouped under "Ranae liebighianae" such as *R. fae* Boul., *R. tibetana* Boul., *R. sternosignata* Murray, *R. spinosa* David, *R. phrynooides* Boul., *R. gammiei* Anderson, *R. liebighii* Gunther, *R. annandalii* Boul. and *R. assamensis* Sclater. However, the fully webbed feet,

horny black spines on each side of the breast and on the first and second fingers in males and absence of external vocal sacs would easily differentiate *R. fae* (known from Burma), *R. tibetana* (Tibet), *R. sternosignata* (Sind, Baluchistan, Kashmir), *R. phrynooides* (China), *R. spinosa* (China) and *R. liebighii* (Himalayas) from the present species. *R. gammiei* (Darjeeling) has toetips swollen into small discs, no vocal sacs in male and possess horny spinules on forelimbs and breast. *R. annandalii* (Darjeeling) has much smaller, almost hidden tympanum, no vocal sacs in male, black spines on each side of the breast, first finger and metacarpal tubercle, and smaller spines on the inner side of forelimb and second finger. *R. assamensis* (Khasi Hills and E. Himalayas) differs from *R. murthii* in the presence of entirely webbed feet, smooth skin, absence of nuptial pads on inner finger and "Presence of a cutaneous flap of almost circular outline covered with small papillae, each of which bears a short retroverted spine" (Boulenger, 1920). It is thus clear

that the present example is not conspecific with any of the above Ranids and the erection of a new taxon to accommodate it is fully warranted.

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#### REFERENCE

BOULENGER, G. A. 1920. A monograph of the South Asian, Papuan, Melanesian and Australian Frogs of the Genus *Rana*. *Rec. Indian Mus.*, 20 : 1-223.

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