

Notes on Features of Habitat, Morphology and Morphometry of *Rana aurantiaca* (Boulenger) (Amphibia: Ranidae) from Sringeri, Western Ghats, India

S V KRISHNAMURTHY¹ and KATRE SHAKUNTALA²

¹Department of Studies in Environmental Science, Kuvempu University,
Jnana Sahyadri Shankaraghatta 577 451 Karnataka

²Department of Zoology, Bangalore University, Jnana Bharathi, Bangalore 560 056

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This paper details the habitat, morphological characters and morphometry of the frog, *Rana aurantiaca*, of the wet evergreen forests of Sringeri. The two specimens have been compared with the earlier documented records of the same species and the closely related species, *R. bhagamandlensis*.

Key Words : *Rana aurantiaca*, Habitat, Morphology, Morphometry, Western Ghats

Introduction

The biodiversity and abundance of Indian amphibians is richly expressed in the Western Ghats (Boulenger 1920, Daniel 1975, Daniel & Sekar 1989, Pillai 1986, Daniels 1992). Available literature on the taxonomy and distribution of Indian amphibians, indicates that most areas representing evergreen forests of the hilly terrains of Sringeri taluk of the Western Ghats still await documentation of its amphibian fauna. Eventhough the pretty frog, *Rana aurantiaca* (Boulenger) has been reported from Southern India (Boulenger 1904, Inger & Dutta 1986, Dutta 1989 and Daniels 1992) and also from Sringeri

(Krishnamurthy & Katre 1993, Krishnamurthy 1996), the data on its habitat, morphology and morphometry still remain incomplete. This paper attempts to provide informations on these features of *R. aurantiaca* based on the studies made on the two specimens collected in December 1990 from Sringeri.

Habitat

Only two specimens were collected from the dense forests of a valley in the hilly terrain located 8 km South-West of Sringeri town (Latitude 13° 25' 14"-Longitude 75° 15' 14" and altitude approximately 1400 M MSL). The forest where these frogs were found has vast canopy of the typical wet evergreen

forest, the floor being covered densely with ferns and sparsely with herbs and shrubs. The soil is covered with humus and water that seeps underneath gather to form the stream that flows over pebbles and granite. Specimens were found at the base of dense bushes and collected by stirring them out and by scanning the litter. Unlike *R. temporalis*, another common frog of the area, *R. aurantiaca* are sluggish and hop when disturbed.

Diagnosis

All specimens of *R. aurantiaca* are small (SVL: 32-36 mm) and slender with narrow glandular dorso-lateral folds. Tips of the digits expanded into discs; the upper and lower surfaces separated by circum-marginal

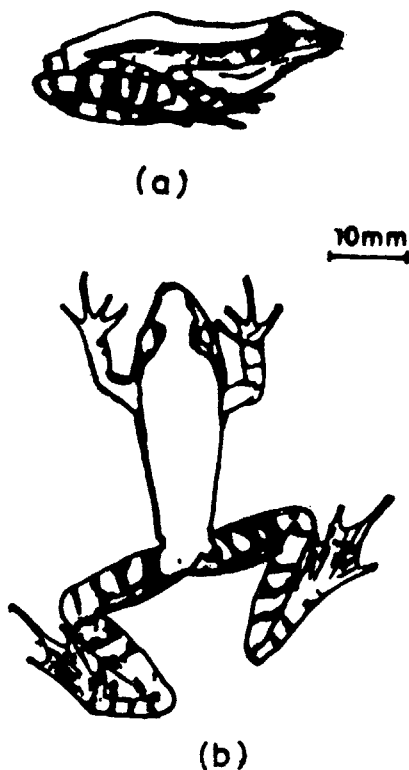


Figure 1. *Rana aurantiaca* from the forests of Sringeri; a, Lateral view; b, Dorsal view, showing the crossbars on limbs.

groove and the skin finely granuled. Colour of the specimen is orange above; a dark black lateral band on either side of the head and body; the dorso-lateral band white, terminal discs of the toes black; limbs banded (figure 1). Ventral creamy white.

Morphology

Head longer than breadth, body slender, slightly depressed, snout blunt, projecting slightly in front of the mouth; longer than eye; canthus rostralis distinct; Loreal region slightly oblique and concave; nostrils near the tip of the snout; vomerine teeth arranged in short oblique series, commencing from the anterior corner of the choanae and extending beyond its posterior border; distance between the two series greater than the distance between the choanae and first series of vomerine teeth; forefeet digital tips dilated into small discs, longer than broad, with circummarginal grooves; 1st digit longer than 2nd, subarticular tubercle moderate in size; tibio-trsral articulation reaching the nostril; tibia shorter than the forelimb, slightly longer than foot; heels strongly overlapping toes moderately long, webbed upto the discs, except the fourth toe with 1 1/2 phalanges free; tarsal fold absent, inner matatarsal tubercule small, rounded and conspicuous; skin smooth with minute granules; a narrow white darsolateral fold above the tympanum to hip; a glandular fold below the eye to shoulder; ventral smooth.

Morphometry

The data on the morphometry based on the study of the two specimens of *Rana aurantiaca* (table 1) indicate that the distance between the two nostrils is slightly more than the inter-orbital space, the former almost equal to the length of the upper eye lid. The tympanum is 3/4th diameter of the eye,

2 1/2 times its distance from eye (not shown in the table). Tibia approximately 4.75 times as long as broad and shorter than the forelimb but slightly longer than the foot. The snout-vent length is 1.75 times as long as the tibia. Inner metatarsal tubercle is 1/4th the length of the inner toe.

Table 1 Morphometric measurements of *Rana aurantiaca* collected from the forests of Sringeri (values are in mm)

Sl. No.	Parameters	Specimen 1	Specimen 2
1.	Snout-vent length	32.0	36.0
2.	Length of the fore limb	18.0	23.0
3.	Length of the 1st finger	4.5	5.0
4.	Length of the 2nd finger	4.0	4.0
5.	Length of the hind limb	51.0	59.0
6.	Length of the tibia	17.0	19.0
7.	Maximum width of tibia	3.5	4.0
8.	Length of the foot	14.0	17.0
9.	Length of the inner toe	4.0	5.0
10.	Length of inner metatarsal tubercle	0.8	1.0
11.	Tympanum	2.5	3.0
12.	Eye	3.5	4.0
13.	Uper eyelid	3.5	4.0
14.	Inter-orbital distance	3.0	3.5
15.	Distance between nostrils	3.5	4.0

Taxonomic Notes

The present specimens were compared with the descriptions given by Boulenger (1904, 1920) for (I) *Rana aurantiaca*, collected from Travancore and (II) *R. erythraea* and Rao (1992), and Dutta (1989) for (III) *R. bhagmandlensis*, and assessed.

I. *Rana aurantiaca* of Sringeri differs slightly from the descriptions given by Boulenger (1904) for the same species by the presence of dark bands of the limbs; more slender tibia and the foot conspicuously smaller than the tibia.

II. In colouration and several other aspects of morphology and morphometry it differs from *Rana erythraea* (Boulenger 1920), by the absence of varying colour with tympanum reddish-brown, prominent and large metatarsal tubercle and large size of the specimen (SVL : 37-78 mm).

III. In colouration and morphology it compares well with the description of *R. bhagmandlensis* but differs from the latter in having its snout projecting beyond the mouth, by the presence of a dermal border as well as by the 2/3 webbing of the foot.

Table 2 indicates that the snout-vent length percentage, differs significantly from that of *R. bhagandlensis*. However, the ratio between the percentage of length of the forelimb to the SVL (1.7) recorded for *Rana aurantiaca* (Boulenger 1920) is comparable with the present specimens (1.8 and 1.78), while the same is too wide in case of *R. bhagmandlensis* (3.2, 2.4 and 2.3 respectively). Similarly, the ratio between the percentage length of fore and hind limb to SVL for *Rana aurantiaca* reported earlier and that of the present specimens were comparable (2.6, 2.6 and 2.8 respectively), while that of *R. bhamandlensis*, it is reported to range from 2.3 to 3.2. Interestingly, the inter-orbital width in present specimens is smaller than the inter-nasal distance which is reported to be equal in both *Rana aurantiaca* and *R. bhagmandlensis*.

Discussion

Although considerable literature is available on the taxonomy/distribution of Indian

Table 2 Various morphometric parameters represented as percentage of SVL (mm), Specimen No. 1 = *Rana aurantiaca* (Boulenger 1920), 2, 3 & 4 = *Rana bhagmandlensis* (Rao 1922) and 5 & 6 are for the present specimens

Morphometric parameters	Specimen Nos.					
	1	2	3	4	5	6
Snout-vent length (mm)	38.00	30.00	23.50	16.00	36.00	32.00
Length of fore limb	65.78	60.00	72.34	62.50	63.80	56.30
Length of 1st finger	-	13.30	10.63	12.50	13.90	14.00
Length of 2nd finger	-	13.30	10.53	12.50	11.10	12.50
Length of hindlimb	168.40	190.00	172.30	140.60	164.00	160.00
Length of tibia	50.00	53.30	55.40	50.00	53.00	53.00
Width of tibia	-	13.30	13.00	-	11.10	10.90
Foot	50.00	70.00	47.20	62.50	47.20	43.75
Inter-orbital width	7.80	10.00	12.80	12.50	9.72	9.40
Inter-nasal distance	-	10.00	12.80	12.80	11.10	10.90

amphibians, the data on amphibians of western ghats are scattered. There are a few checklist on amphibians of western ghats (Daniels 1992, Krishnamurthy & Katre 1993), but those dealing with taxonomy in-depth are wanting. The available literature on either taxonomy or distribution of *Rana aurantiaca* is of 1904 and 1920. However, that of *R. bhagnandlensis*, although reported as a junior synonym by Dutta (1989), and Daniels (1992; as *Rana aurantiaca/bhagmandlensis*), the taxonomic approach is not detailed. This

could be due to their feeble occurrence and/or very confined distribution, as evidenced by the present studies with repeated attempts to collect more specimens (from 1990 to 1995) were futile, even in the same habitat, as described above. However with the limited account of literature, the present specimens showed close similarity with *Rana aurantiaca* than *R. bhagmandlensis* and the subtle differences could be only due to geographical variations.

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