

AMPHIBIA

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INTRODUCTION

The present paper is based on material collected from Namdapha National Park in Tirap district of Arunachal Pradesh, India. The material is not only rich in number (64 specimens) but also in variety, consisting of 14 species belonging to 5 genera distributed in 3 families. Two species are new to science and 12 species (9 frogs and 3 toads) are recorded for the first time from this proposed Biosphere Reserve. The amphibian fauna of the area is quite rich and has got a close similarity with that of Burmese fauna.

SYSTEMATIC ACCOUNT

Order : ANURA

Family : RANIDAE

Genus (1) **Amolops** Cope, 1865

1. **Amolops afghanus** (Gunther)

Material examined : 1 ex., Hornbill Camp (alt. 680 m.), ca. 30 km. N. E. of Miao, 11.iv.1981 ; 1 ex., Gibbons Land, 29.iv.1981.

Measurements : Snout to Vent length, 40-48 mm.

Distribution : India (Darjeeling and Khasi Hills), Nepal, Burma and South Yunnan.

Remarks : Skin of all the above specimens is quite smooth except that the posterior part of the thighs is granulated. Example from Hornbill camp is darker and having darker spots on throat and breast. Discs on toes in both the examples are much smaller than those on fingers.

Genus (2) **Rana** Linnaeus, 1766

2. **Rana kuhlii** Schlegel in Dumeril and Bibron

Material examined : 4 ex., Hornbill (alt. 680 m.), ca. 30 km. N. E.

of Miao, 11.iv.1981 ; 1 ex., Farmbase, 19.iv.1981 ; 1 ex., Namdapha (alt. 350m.), 58 km. from Miao, 21.iv.1981 ; 1 ex., Gibbons land, 29.iv.1981.

Measurements : Snout to Vent length, 23-70 mm.

Distribution : The species is widely distributed from India (Meghalaya), Burma, Southern China, Taiwan to Malaysia, Sumatra, Borneo, Java and Celebes.

Remarks : Dorsal surface brownish with broad darker spots. Ventral surface reddish brown with dark brown spots on sides, breast and throat. Skin on the outer surface of tibia, tarsus and metatarsals is thickly tuberculated. Skin throughout the rest of the body is more or less smooth.

3. *Rana limnocharis limnocharis* Boie in Wiegmann

Material examined : 2 ex., Miao (Alt. 310 m.), 4.iv.1981 ; 1 ex., Farmbase Camp (alt. 350 m.), 19.iv.1981 ; 6 ex., Namdapha Camp (Alt. 350 m.), 58 km. from Miao, 21.iv.1981 ; 2 ex., 31 miles point on M. V road, ca. 42 km. from Miao, 26.iv.1981 ; 8 ex., Deban (alt. 340 m.), ca. 27 km. E. of Miao, 27.iv.1981 ; 2 ex., Gibbons land (290 m.), 16 km. E. of Miao, 1.v.1981.

Measurements : Snout to Vent length, 24-55 mm.

Distribution : Widely distributed in India.

ELSEWHERE : Pakistan, Nepal, Sri Lanka, Burma and China to Japan.

Remarks : The frog collected from Farmbase Camp vary from other Indian examples as it possesses a thickly tuberculated dorsal skin.

Family : RHACOPHORIDAE

Genus (3) *Philautus* Gistel, 1848

4. *Philautus cherrapunjiae* Roonwal and Kripalani

Material examined : 14 ex., Gibbons land, 1.v.1981.

Measurements : Snout to Vent length, 21-24 mm.

Distribution : India (Cherrapunji).

Remarks : These are the largest of all the specimens so far recorded for this species and constitute the new locality record from Namdapha. Examples from Namdapha vary from other Indian examples (Roonwal & Kripalani, 1961 and Pillai & Chanda 1979) by possessing a

distinct and long palmer wart at the base of the first finger. They also vary by having a small (almost indistinct) inner metatarsal tubercle.

5. *Philautus namdaphaensis* n. sp.

(Plate I ; Figs. 1 & 2)

Material examined : 3 adult ♂♂, Farmbase Camp (alt. 350 m.) Tirap district, Arunachal Pradesh, India, 18.vi.1981 (Day, from a bush). Coll. *Shamrup Biswas*.

DESCRIPTION

Dorsum dark brown; speckled with irregular chocolate spots in holotype and one paratype (another paratype is devoid of such spots). A thin, less prominent line starts from the snout and reaches up to the vent on the mid-dorsal aspect. Upper surface of limbs dark brown, with indistinct crossbars and with a thin line originating from vent and reaching up to heel through the femur and tibia. A broad white band in between the eyes, covering the anterior part of both the upper eyelids. Lateral aspects of thigh, tibia and groin brownish, with dark blotches at places. Ventrums dirty white in all the examples.

Body short, stout and flattened.

Head : Head more or less triangular, slightly broader than long ; snout subacuminate, a little longer than the maximum diameter of the eye ; canthus rostralis not very distinct ; loreal region slightly concave ; nostril equidistant from the eye and the snout ; interorbital region broader than the breadth of the upper eyelid ; tympanum indistinct ; tongue fairly large, free and bifid behind, and without a papilla ; vomerine teeth absent.

Forelimbs : Fairly stout, with moderate fingers possessing intercalary ossicle, fingers free with distinct round discs, more or less equal to that of toes ; subarticular tubercles very distinct ; a feebly prominent long palmer wart placed laterally at the base of first finger.

Hindlimbs : Fairly stout, with moderate toes possessing intercalary ossicle ; toes nearly half-webbed, web reaches at the base of second penultimate phalange of the fourth toe and at the first penultimate phalange of the third and fifth toes ; a small feebly distinct inner metatarsal tubercle present, no outer metatarsal tubercle ; tibio-tarsal articulation reaches in between anterior part of the eye and the nostril ; subarticular tubercles not very distinct.

holotype above, Z. S. I. Reg. No. A7178 and A7179 also in Z. S. I. Collection, Calcutta.

Type-locality and distribution : India :

Type-locality : Farmbase camp, Tirap district, Arunachal Pradesh.

Distribution : Known from Type-locality only.

Comparison : *Philautus namdaphaensis* n. sp. comes close to *Philautus parvulus* (Boulenger, 1893) from Karin Bia-po, Burma but differs from it as follows :—

1. Snout subacuminate, a little longer than the diameter of the eye (*vs.* snout rounded, a little shorter than the diameter of the eye).
2. Canthus nostralis feebly distinct (*vs.* Canthus rostralis indistinct).
3. Toes moderate, half-webbed (*vs.* toes short, webbed at the base).
4. The tibiotarsal articulation reaches in between the anterior border of eye and nostril (*vs.* the tibio-tarsal articulation reaches the posterior border of eye).
5. Dark-brown above, uniform or with a broad white band between the anterior half of the eyes (*vs.* Greyish or brown above, uniform or with a dark bar or triangular blotch between the eyes).

Remarks : The species has been named after locality, "Namdapha".

Genus (4) **Rhacophorus** Kuhl, 1827

6. **Rhacophorus leucomystax himalayensis** Annandale

Material examined : 2 ex., 31 mile point on M. V. road, ca. 42 km. from Miao, 26.iv.1981.

Measurements : Snout to Vent length, 50-53 mm.

Distribution : India (The Eastern Himalayas, Assam) and Western China (Annandale, 1912 and Ahl, 1931).

Remarks : Skin smooth on the dorsum and throat, and granular on the belly. Colour of skin dark brown above and dull whitish beneath.

7. **Rhacophorus leucomystax sexvirgata** (Reinward)

Material examined : 1 ex., Deban (alt. 340 m.), ca. 27 km. E. of Miao, 27.iv.1981.

Measurements : Snout to Vent length, 58 mm.

Distribution : India to Malay Peninsula (Van Kampen, 1923), Sumatra, Borneo, Java, Singapore, Taiwan, Philippines,

Remarks : Four light dark longitudinal bands present on the dorsum. The inner two bands originate from above the nostrils, unite at the middle of the body and end interruptedly near the joint of the thighs with the body, and the outer two originate from the anterior side of the upper eyelids and end near the joint of thighs with the body.

8. *Rhacophorus maculatus* (Gray)

Material examined : 1 ex., Deban (alt. 340 m.), ca. 27 km. E. of Miao, 27.iv.1981.

Distribution : India (Calcutta, Tamil Nadu) and Sri Lanka.

Remarks : Damaged specimen.

9. *Rhacophorus maximus* Günther

Material examined : 1 ex., 31 mile point on M. V. road, ca. 42 km. from Miao, 26.iv.1981 ; 2 ex., Deban (alt. 340 m.), ca. 27 km. E. of Miao, 27.iv.1981.

Measurements : Snout to Vent length, 84-112 mm.

Distribution : India (Assam, Meghalaya : Khasi Hills) and Nepal.

Remarks : The frogs are bluish dorsally and brownish ventrally. Dorsal skin is smooth. Ventral skin is granular. In one example (from 31 mile point) the skin on throat is devoid of granules.

10. *Rhacophorus namdaphaensis* n. sp.

(Plate I, Figs. 3 & 4)

Material examined : 5 ex., Namdapha camp (alt., 350 m.), ca. 58 km. from Miao, Tirap district, Arunachal Pradesh, India, 21.iv.1981 (Day, from a wild banana plant). Coll. *Shamrup Biswas*.

DESCRIPTION

Dorsum reddish-brown intermixed with variable black spots. Upper surface of limbs with faint cross-bars. Under surface of hindlimbs reddish brown. A large, more or less round black spot on each side behind the armpit. Ventrums brownish.

Body short and stout.

Head : More or less triangular, slightly broader than long ; snout subacuminate, little longer than the maximum diameter of the eye ;

canthus rostralis not very distinct ; loreal region angular, slightly concave ; nostril in between the eye and tip of the snout ; interorbital region much broader than the breadth of the upper eyelid ; tympanum not very distinct, about half the diameter of the eye ; tongue fairly large, free and bifid behind, and without a papilla ; vomerine teeth in two distinct longitudinal transverse series placed in between the choanae and touching anterior inner corners of the choanae.

Forelimbs : Fairly stout, with moderately long fingers possessing intercalary ossicle ; fingers not entirely webbed, web reaches at the base of penultimate phalange (behind the disc) of the first and third fingers, and nearly the discs on the outer side of the second and inner side of the fourth fingers ; first finger shorter than the second ; discs of fingers smaller than the tympanum, and slightly larger than those of toes ; subarticular tubercles well-developed ; a very prominent long palmer wart placed laterally at the base of first finger.

Hindlimbs : Slender, with the long toes possessing inter-calary ossicle ; toes nearly entirely webbed, web reaches the discs of toes, except in fourth toe where it reaches at the middle of the penultimate phalange ; outer metatarsal separated by web at the base ; a small feebly distinct inner metatarsal tubercle present, no outer metatarsal tubercle ; subarticular tubercles of toes not very distinct ; tibio-tarsal articulation reaches mid-eye.

Skin : Skin of upper surface including that of limbs with microscopic scattered darker warts, of belly and lower surface of thighs granular, and of chest and throat smooth. A fold from posterior end of the eye to shoulder above the tympanum present ; a dermal fringe along the outer edge of fore-arm (except humerus) and fourth finger, and along that of tarsus and fifth toe present ; a transverse flap of skin above the vent and another on the heel present.

Sexes are not distinguishable externally.

Measurements : (in mm.)

			Holotype		Paratypes		
Regd. No.	...	...	A. 7180	A 7181	A 7182	A 7183	A 7184
From snout to vent	...	...	39	40	37	36	35
Head length	...	...	11	11	10	10	10
Width of head	...	...	12.5	12	11.5	11	11
Snout	...	...	6	6	5	5	5

		Holotype		Paratypes		
Snout to nostril	...	3	3	2.5	2.5	2.5
Eye	... ..	5.5	5	4.5	4	4
Interorbital width	...	4.5	4.5	4.5	4.5	4
Upper eyelid	... ..	3.5	3	3	2.5	2.5
Tympanum	... ..	3	2.5	2	2	2
Fore limb	... ..	26	25	23	23	23
First finger	... ..	5	5	4	4	4
Second finger	... ..	6	6.5	5	5	6
Third finger	... ..	8.5	9	7.5	7	7
Fourth finger	... ..	7	8	6	6	6.5
Hind limb	... ..	60	60	59	57	56
Tibia	... ..	18	18	18	17	17
Foot	... ..	14	14	13.5	13.5	13
First toe	... ..	5	5	4.5	4.5	4
Third toe	... ..	10	10	10	9.5	8
Fourth toe	... ..	13	13	12	13	12
Fifth toe	... ..	11	11.5	11	11	10.5
In. Metatarsal tub.	...	1	1	1	1	1
Out. Met. tub.	... ..	Absent	Absent	Absent	Absent	Absent
Tibiotarsal art.	...	Ant. Eye.	Mid. Eye.	Eye to nostril	Mid. Eye	Mid. Eye.
Breadth of disc on						
Fourth finger	... ..	2	2	2	2	2
Breadth of disc on						
Fifth toe	... ..	1.5	1.5	1.5	1.5	1.5

Type specimens : *Holotype* : An adult (in spirit), vide "material" above, Z. S. I. Reg. No. A7180 deposited in National Zoological Collections, Zoological Survey of India, Calcutta.

Paratypes : 4 adults (in spirit), vide same "material" that of holotype above Z. S. I. Reg. No. A7181 to A7184 also in Z. S. I. Collection, Calcutta.

Type-locality and distribution : India.

Type-locality : Namdapha camp, ca. 58 km. from Miao, Tirap district, Arunachal Pradesh.

Distribution : Known from Type-locality only.

Comparison : *Rhacophorus namdaphaensis* n. sp. is closely allied to *Rhacophorus dulitensis* (Boulenger, 1892) from Sumatra, but differs from it as follows :—

1. Tympanum almost indistinct, not more than half of the

diameter of the eye (*vs.* Tympanum distinct, more than half of the diameter of the eye).

2. Fingers not entirely webbed, web does not reach the disc of fourth finger (*vs.* Fingers almost entirely webbed, web reaches the disc of fourth finger).

3. Toes not webbed entirely (*vs.* Toes almost webbed entirely).

4. The heel reaches between the mid-eye and the nostril (*vs.* The heel reaches the tip of the snout).

Remarks : The species has been named after the place of collection, "Namdapha".

11. *Rhacophorus reinwardtii* (Boie)

Material examined : 1 ex., Chiria Camp (alt. 520 m.), ca. 64 km. E. of Miao, 24.iv.1981.

Measurements : Snout to Vent length, 70 mm.

Distribution : India (Khasi Hills), Sumatra, Banka and Java.

Remarks : Snout pointed, little longer than the upper eyelid. Upper (anterior) surface of head dull olive coloured ; dorsal surface of body, forelimbs and hindlimbs darker ; two more or less round small darker spots on the outer lateral aspects of thighs ; webs between third and fourth fingers, and fourth and fifth toes slightly blackish, and in this respect this example resembles more with those described by Jerdon (1870) from Khasi Hills (Meghalaya).

Family : BUFONIDAE

Genus (5) *Bufo* Laurenti, 1768

12. *Bufo himalayanus* Günther

Material examined : 2 ex., Chiria Camp (alt. 520 m.), 24.iv.1981.

Measurements : Snout to Vent length, 95-100 mm.

Distribution : India (Eastern Himalayas upto Arunachal Pradesh), Nepal.

Remarks : Smaller specimen is dark brown while the larger one is brownish in colouration. Dorsal surface of head and body (except Parotids) more or less smooth, with indistinct flat, porous warts scattered all over.

13. **Bufo melanostictus** Schneider

Material examined : 1 ex., Miao (alt. 310 m.), 4.iv.1981.

Measurements : Snout to Vent length, 75 mm.

Distribution : India (Common throughout the plains of the country), Nepal, Sri Lanka, Burma, Southern China to Malay Peninsula and Philippines.

14. **Bufo macrotis** (?) Boulenger

Material examined : 1 ex., Camera point (alt. 440 m.), 57 km. from Miao, on the M. V. Road, 23.iv.1981.

Measurements : Snout to Vent length, 37 mm.

Distribution : Upper Burma.

Remarks : This is a damaged specimen, both the forelimbs of which are broken. Body rough and covered with spiny warts, parotoids elongated; dorsal surface dark brown and ventral surface brownish with darker spots. Head without bony ridges; snout short, truncated; interorbital space flat, a little broader than the upper eyelid; tympanum distinct, vertically oval, more than half the diameter of the eye and close to it. Toes barely half webbed with irregular spiny tubercles beneath; two small but distinct metatarsal tubercles present.

SUMMARY

This paper deals with the Amphibian fauna of Namdapha National Park in Tirap district of Arunachal Pradesh, India. It is consisting of 64 examples of Anurans (Frogs and Toads) belonging to three families, five genera and fourteen species, out of which two species, *Philautus namdaphaensis* and *Rhacophorus namdaphaensis*, are new to science and rest are recorded for the first time from this National Park. Six species namely, *Rana kuhlii*, *Philautus cherrapunjiae*, *Rhacophorus leucomystax sexvirgata*, *Rhacophorus maculatus*, *Rhacophorus reinwardtii* and *Bufo macrotis* are also recorded for the first time from Arunachal Pradesh, India.

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