

FURTHER NOTES ON STATEWISE DISTRIBUTION OF THE AMPHIBIAN FAUNA OF NORTH EAST INDIA

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The North-East India with its varied physiographic zones harbour a rich and diversified amphibian fauna. It is interesting to note that all the three orders of Class Amphibia namely Anura, Gymnophiona and Caudata are represented in this region.

The region with its seven sister states (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura) is one of the hotspot for amphibian biodiversity.

Elaborate studies on Anurans of N. E. India was first published by Chanda (1994) and reported 54 species of toads and frogs. Dutta (1997) reported 69 species of Amphibia (67 anurans, 1 gymnophiona, 1 caudata) from this region. As per BCPP (C.A.M.P) report (1998), 72 species of amphibia (69 anurans, 2 gymnophiona, 1 caudata) are occurring in N.E. India. Chanda (2002) in his handbook of India reported 64 species of amphibia (60 anurans, 3 gymnophiona, 1 caudata) from this region. The distributional pattern of Amphibia in N.E. India was studied earlier by Pillai and Chanda (1976) and Chanda (1990, 1991, 1992). Statewise, as per Chanda (2002), 35 species of amphibia are occurring in Meghalaya, 24 species in Assam, 43 species in Arunachal Pradesh, 16 species in Mizoram, 12 species in Nagaland, 14 species in Manipur and 8 species in Tripura.

The present study is based on collections present at Eastern Regional Station, Zoological Survey of India, Shillong from different localities of North Eastern India. All the recorded and reported species (Ahmed *et. al.* 2001; Borah *et. al.* 2001; Bordoloi *et. al.* 1999, 2001; Das & Chanda 2000; Deuti *et. al.* 2001, 2002; Dutta *et. al.* 2000; Pillai & Ravichandran 1999; Sarkar *et. al.* 2002; Sen Gupta *et. al.* 2001) have been incorporated here with present nomenclatural status for getting on overall picture of the amphibian fauna of this region.

The systematic arrangement and nomenclatural status followed after Dutta (1997).

SYSTEMATIC LIST

83 species of amphibians comprising of 78 anurans, 4 gymnophiona and 1 caudata have been dealtwith in this paper. Statewise distribution of each species along with their IUCN status (as per BCPP (C.A.M.P.) 1998) wherever available is shown in Table 1.

Table 1. : Amphibia of N. E. India (Recorded & Reported).

Sl. No.	Species	ORD	FAM	M	A	AP	MN	N	MI	T	Status*	Endemic
1.	<i>Pleurodeles varrucosus</i> (Anderson, 1871)	Caudata	Salamandridae	+	-	+	+	-	-	-	EN	
2.	<i>Ichthyophis garoensis</i> Pillai & Ravichandran, 1999	Gymnophiona	Ichthyophidae	+	-	-	-	-	-	-	ne	NE
3.	<i>Ichthyophis glutinosus</i> (Linnaeus, 1754)	Gymnophiona	Ichthyophidae	-	+	-	-	-	-	-	ne	
4.	<i>Ichthyophis husaini</i> Pillai & Ravichandran, 1999	Gymnophiona	Ichthyophidae	+	-	-	-	-	-	-	ne	NE
5.	<i>Gegeniophis fulleri</i> (Alcock, 1904)	Gymnophiona	Caecillidae	-	+	-	-	-	-	-	VU	NE
6.	<i>Leptobrachium hasseltii</i> Tschudii, 1838	Anura	Pelobatidae	+	+	-	-	-	-	-	EN	
7.	<i>Megophrys kempii</i> (Annandale, 1912)	Anura	Pelobatidae	-	-	+	-	-	-	-	EN	
8.	<i>Megophrys lateralis</i> (Anderson, 1871)	Anura	Pelobatidae	-	+	+	-	-	-	-	DD	
9.	<i>Megophrys monticola</i> Kuhl & Van Hasselt, 1822	Anura	Pelobatidae	+	-	+	-	+	-	-	EN	
10.	<i>Megophrys parva</i> (Boulenger, 1893)	Anura	Pelobatidae	+	+	+	-	-	-	-	LR-nt	
11.	<i>Scutiger sikkimensis</i> (Blyth, 1854)	Anura	Pelobatidae	+	-	-	-	+	-	-	LR-nt	
12.	<i>Scutiger mokokchungensis</i> Das & Chanda, 2000	Anura	Pelobatidae	-	-	-	-	+	-	-	ne	NE
13.	<i>Bufo himalayanus</i> Gunther, 1864	Anura	Bufoidea	+	+	+	+	-	-	-	LR-nt	
14.	<i>Bufo melanostictus</i> Schneider, 1799	Anura	Bufoidea	+	+	+	+	+	+	+	VU	
15.	<i>Bufo stomaticus</i> Lutken, 1862	Anura	Bufoidea	-	+	-	-	-	-	-	LR-nt	
16.	<i>Bufo stuarti</i> Smith, 1929	Anura	Bufoidea	-	+	-	-	-	-	-	LR-nt	
17.	<i>Bufoides meghalayanus</i> (Yazdani & Chanda, 1971)	Anura	Bufoidea	+	+	-	-	-	+	-	CR	NE
18.	<i>Pedostibes kempii</i> (Boulenger, 1919)	Anura	Bufoidea	+	-	-	-	-	-	-	CR	NE
19.	<i>Hyla annectans</i> (Jerdon, 1870)	Anura	Hylidae	+	+	-	-	+	-	+	LR-nt	
20.	<i>Kaloula taprobanica</i> (Parker, 1934)	Anura	Microhylidae	+	+	-	-	-	-	+	ne	
21.	<i>Kalophrynus orangensis</i> Dutta, Ahmed & Das, 2000	Anura	Microhylidae	-	+	-	-	-	-	-	ne	NE
22.	<i>Microhyla berdmorei</i> (Blyth, 1856)	Anura	Microhylidae	+	+	+	-	-	+	+	LR-nt	

Table 1. : Cont'd.

Sl. No.	Species	ORD	FAM	M	A	AP	MN	N	MI	T	Status*	Endemic
23.	<i>Microhyla ornata</i> (Dumeril & Bibron, 1841)	Anura	Microhylidae	+	+	+	+	+	+	+	LR-lc	
24.	<i>Microhyla rubra</i> (Jerdon, 1853)	Anura	Microhylidae	-	+	-	-	+	+	-	LR-nt	
25.	<i>Uperodon globulosum</i> (Gunther, 1864)	Anura	Microhylidae	-	+	+	-	-	-	-	LR-nt	
26.	<i>Chirixalus doriae</i> Boulenger, 1893	Anura	Rhacophoridae	-	-	+	-	-	-	-	EN	
27.	<i>Chirixalus simus</i> Annandale, 1915	Anura	Rhacophoridae	-	+	-	-	-	-	-	EN	NE
28.	<i>Chirixalus vittatus</i> (Boulenger, 1887)	Anura	Rhacophoridae	-	-	+	-	+	+	-	EN	
29.	<i>Nyctixalus moloch</i> (Annandale, 1912)	Anura	Rhacophoridae	-	+	+	-	-	-	-	EN	
30.	<i>Philautus andersonii</i> (Ahl, 1927)	Anura	Rhacophoridae	+	+	+	-	+	+	-	EN	
31.	<i>Philautus annandalii</i> (Boulenger, 1906)	Anura	Rhacophoridae	+	+	+	-	-	-	-	LR-nt	
32.	<i>Philautus argus</i> (Annandale, 1912)	Anura	Rhacophoridae	-	-	+	-	-	-	-	ne	NE
33.	<i>Philautus cherrapunjiae</i> Roonwal & Kripalani, 1961	Anura	Rhacophoridae	+	+	+	-	-	-	-	EN	NE
34.	<i>Philautus garo</i> (Boulenger, 1919)	Anura	Rhacophoridae	+	+	-	-	-	-	-	CR	NE
35.	<i>Philautus kempiae</i> (Boulenger, 1919)	Anura	Rhacophoridae	+	+	-	-	-	-	-	CR	NE
36.	<i>Philautus namdaphaensis</i> Sarkar & Sanyal, 1985	Anura	Rhacophoridae	-	-	+	-	-	-	-	VU	NE
37.	<i>Philautus shillongensis</i> Pillai & Chanda, 1973	Anura	Rhacophoridae	+	-	-	-	-	-	-	CR	NE
38.	<i>Philautus shyamrupus</i> Chanda & Ghosh, 1989	Anura	Rhacophoridae	-	-	+	-	-	-	-	VU	NE
39.	<i>Polypedates leucomystax</i> (Gravenhorst, 1829)	Anura	Rhacophoridae	+	+	+	+	+	+	+	LR-lc	
40.	<i>Polypedates maculatus</i> (Gray, 1834)	Anura	Rhacophoridae	+	-	+	-	-	-	-	EN	
41.	<i>Rhacophorus appendiculatus</i> Gunther, 1859)	Anura	Rhacophoridae	-	-	+	-	-	-	-	DD	
42.	<i>Rhacophorus bipunctatus</i> Ahl, 1927	Anura	Rhacophoridae	+	+	+	+	+	-	+	LR-nt	
43.	<i>Rhacophorus bisacculus</i> Taylor, 1962	Anura	Rhacophoridae	-	-	-	-	+	-	-	EN	
44.	<i>Rhacophorus jerdonii</i> (Gunther, 1875)	Anura	Rhacophoridae	-	+	+	-	-	-	-	VU	

Table 1. : Cont'd.

Sl. No.	Species	ORD	FAM	M	A	AP	MN	N	MI	T	Status*	Endemic
45.	<i>Rhacophorus maximus</i> Gunther, 1858	Anura	Rhacophoridae	+	+	+	+	+	+	-	LR-nt	
46.	<i>Rhacophorus namdaphaensis</i> Sarkar & Sanyal, 1985	Anura	Rhacophoridae	-	-	+	-	-	-	-	VU	NE
47.	<i>Rhacophorus naso</i> Annandale, 1912	Anura	Rhacophoridae	-	-	+	-	-	-	-	DD	NE
48.	<i>Rhacophorus nigropalmatus</i> Boulenger, 1895	Anura	Rhacophoridae	+	-	+	-	-	-	-	ne	
49.	<i>Rhacophorus reinwardtii</i> (Kuhi & van Hasselt, 1822)	Anura	Rhacophoridae	+	-	+	-	-	-	-	LR-nt	
50.	<i>Rhacophorus tuberculatus</i> (Anderson, 1871)	Anura	Rhacophoridae	+	+	+	-	-	-	-	LR-nt	
51.	<i>Theلودerma asper</i> (Boulenger)	Anura	Rhacophoridae	-	+	+	-	-	-	-	DD	
52.	<i>Amolops afghanus</i> (Gunther, 1858)	Anura	Ranidae	+	+	+	+	+	+	+	LR-nt	
53.	<i>Amolops formosus</i> (Annandale, 1875)	Anura	Ranidae	+	-	+	-	+	-	-	LR-nt	
54.	<i>Amolops gerbillus</i> (Annandale, 1912)	Anura	Ranidae	+	+	+	-	-	+	-	LR-nt	
55.	<i>Chaparana sikimensis</i> (Jerdon, 1870)	Anura	Ranidae	+	-	-	-	-	-	-	LR-nt	
56.	<i>Euphlyctis cyanophlyctis</i> (Schneider, 1799)	Anura	Ranidae	+	+	+	+	+	+	+	LR-nt	
57.	<i>Euphlyctis ghosi</i> (Chanda, 1990)	Anura	Ranidae	-	-	-	+	-	-	-	EN	NE
58.	<i>Euphlyctis hexadactylus</i> (Lesson, 1834)	Anura	Ranidae	-	-	-	-	-	-	+	LR-nt	
59.	<i>Hoplobatrachus crassus</i> (Jerdon, 1853)	Anura	Ranidae	-	+	+	-	+	-	+	ne	
60.	<i>Hoplobatrachus tigerinus</i> (Daudin, 1802)	Anura	Ranidae	+	+	+	+	+	+	+	VU	
61.	<i>Limnonectes khasiensis</i> (Anderson, 1871)	Anura	Ranidae	+	-	-	-	-	-	-	DD	NE
62.	<i>Limnonectes kuhlii</i> (Tschudi, 1838)	Anura	Ranidae	+	+	-	-	-	-	-	ne	
63.	<i>Limnonectes laticeps</i> (Boulenger, 1882)	Anura	Ranidae	+	+	+	-	-	-	-	ne	
64.	<i>Limnonectes limnocharis</i> (Gravenhorst, 1829)	Anura	Ranidae	+	+	+	+	+	+	+	VU	
65.	<i>Limnonectes mawlyndipi</i> (Chanda, 1990)	Anura	Ranidae	+	-	-	-	-	-	-	CR	
66.	<i>Limnonectes mawphlangensis</i> (Pillai & Chanda, 1977)	Anura	Ranidae	+	-	-	+	-	-	-	CR	

Table 1. : Cont'd.

Sl. No.	Species	ORD	FAM	M	A	AP	MN	N	MI	T	Status*	Endemic
67.	<i>Paa annandalii</i> (Boulenger, 1920)	Anura	Ranidae	-	-	+	-	-	-	-	ne	
68.	<i>Paa blanfordii</i> (Boulenger, 1882)	Anura	Ranidae	+	-	-	-	-	-	-	LR-nt	
69.	<i>Paa liebigeri</i> (Gunther, 1860)	Anura	Ranidae	-	-	+	-	-	-	-	LR-nt	
70.	<i>Phrynoglossus borealis</i> (Annandale, 1912)	Anura	Ranidae	-	-	+	-	-	-	-	EN	NE
71.	<i>Rana alticola</i> Boulenger, 1882	Anura	Ranidae	+	+	-	-	+	+	+	LR-nt	
72.	<i>Rana assamensis</i> Sclater, 1892	Anura	Ranidae	+	-	-	-	-	-	-	LR-nt	
73.	<i>Rana danieli</i> Pillai & Chanda, 1977	Anura	Ranidae	+	+	+	+	-	+	-	LR-nt	
74.	<i>Rana erythraea</i> (Schlegel, 1837)	Anura	Ranidae	+	+	+	-	+	+	-	LR-nt	
75.	<i>Rana garoensis</i> Boulenger, 1920	Anura	Ranidae	+	+	+	+	-	-	-	EN	NE
76.	<i>Rana keralensis</i> Dubois, 1980	Anura	Ranidae	-	-	-	-	-	-	+	ne	
77.	<i>Rana khare</i> (Kiyasetuo & Khare, 1986)	Anura	Ranidae	-	-	-	+	+	+	-	EN	NE
78.	<i>Rana leptoglossa</i> (Cope, 1868)	Anura	Ranidae	+	+	-	-	-	-	-	EN	
79.	<i>Rana livida</i> (Blyth, 1855)	Anura	Ranidae	+	+	-	+	-	-	-	LR-nt	
80.	<i>Rana malabarica</i> Tschudi, 1838	Anura	Ranidae	-	+	-	-	-	+	-	ne	
81.	<i>Rana nicobarensis</i> (Stoliczkae, 1870)	Anura	Ranidae	-	+	-	-	-	-	+	LR-nt	
82.	<i>Rana nigrovittata</i> (Blyth, 1855)	Anura	Ranidae	-	+	-	-	-	-	-	EN	
83.	<i>Rana taipehensis</i> Van Denburgh, 1909	Anura	Ranidae	+	+	+	-	-	-	-	ne	

M–Meghalaya, A–Assam, AP–Arunachal Pradesh, MN–Manipur, N–Nagaland, MI–Mizoram, T–Tripura.

* As per BCPP (C.A.M.P.) 1998, CR–Critical, EN–Endangered, VU–Vulnerable, LR–nt–Low risk near threatened,

LR–lc–Low risk least concerned, DD–Data deficient, ne–not evaluated, NE–North Eastern Region

78 species of anurans belonging to 25 genera, 6 families, 1 order; 4 species of gymnophiona belonging to 2 genera, 2 families, 1 order and 1 species of caudata belonging to 1 genus, 1 family and 1 order have so far been recorded and reported from N. E. India.

Statewise, Meghalaya is represented by 49 species belonging to 8 families and 3 orders., followed by Assam (48 spp. under 8 families and 2 orders), Arunachal Pradesh (46 spp. under 6 families and 2 orders), Nagaland (22 spp. under 6 families and 1 order), Mizoram (19 spp. under 4 families and 1 order), Manipur (17 spp. under 5 families and 2 orders) and Tripura (16 spp. under 5 families and 1 order).

DISCUSSION

The present paper dealt with 83 species of amphibia recorded and reported from N. E. India. Major percentage belongs to family Ranidae (38.55%) followed by Rhacophoridae (31.33%), Pelobatidae (8.43%), Bufonidae, Microhylidae (7.24% each), Ichthyophiidae (3.61%), Hylidae, Caecillidae and Salamandridae (1.20% each).

As per record, 22 species are endemic to North East India. Out of which 6 spp. (*Philautus argus*, *P. namdaphaensis*, *P. shyamrupus*, *Rhacophorus namdaphaensis*; *R. naso*, *Phrynoglossus borealis*) are endemic to Arunachal Pradesh; 3 spp. (*Gegeniophis fulleri*, *Kalophrynus ornagensis*, *Chirixalus simus*) to Assam; 5 spp. (*Ichthyophis garoensis*, *I. husaini*, *Pedostibes kempi*, *Philautus shillongensis*, *Limnonectes khasiensis*) to Meghalaya; 1 sp. (*Euphlyctis ghosi*) to Manipur, 1 sp. (*Scutigera mokochungensis*) to Nagaland and the rest 6 spp. (*Bufoides meghalayanus*, *Philautus cherrapunjie*, *P. garo*, *P. kempiae*, *Rana garoensis*, *R. khare*) are endemic to Northern Eastern Region as a whole.

Of 83 species, status of 68 species have so far been evaluated (BCPP, C.A.M.P. 1998) which include 33 threatened species (7 CR, 18 EN and 8 VU) from this region.

As per evaluation, 18 threatened (7 CR, 8 EN, 3 VU) species are occurring in Meghalaya followed by 18 (11 EN, 7 VU) in Arunachal Pradesh; 16 (3 CR, 8 EN, 5 VU) in Assam; 8 (1 CR, 4 EN, 3 VU) in Manipur; 8 (5 EN, 3 VU) in Nagaland; 7 (1 CR, 3 EN, 3 VU) in Mizoram and 3 VU species in Tripura.

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