



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2016; 4(3): 387-390

© 2016 JEZS

Received: 21-03-2016

Accepted: 22-04-2016

Kritish De

School of Oceanographic Studies

Jadavpur University

Kolkata – 700032

Checklist of Amphibian Fauna of Darjeeling District, West Bengal

Kritish De

Abstract

In this paper a comprehensive list of amphibians recorded from the district of Darjeeling, West Bengal is presented. So far, scientists described 37 species of amphibians under 18 genera, 8 families and 3 orders from the district.

Keywords: Amphibia, Darjeeling, West Bengal

Introduction

Amphibians are one of the most important faunal groups containing 7529 species worldwide^[1] and nearly one-third (32%) of the amphibian species of the world are threatened^[2]. Presently 392 species of amphibians are recorded from India, predominantly from the biodiversity hot spots - Eastern Himalaya, Indo-Burma, Western Ghats and Sundaland (Nicobar group of Islands). Though several research works had been carried out to explore diversity of amphibians in the Darjeeling district of West Bengal, which is the part of Eastern Himalaya biodiversity hotspot, but till date, no comprehensive checklist of amphibians of this district is available. From available published literatures and web resources, a list of amphibians of Darjeeling district, West Bengal is prepared and presented in this paper.

Description of Darjeeling district

Darjeeling (27°13'North to 26°27' North, 87°59'East to 88°53'East) is the northern most district of the state of West Bengal, India. Total geographic area of this district is 3149 km² and it is bounded by the state of Sikkim in the North, Bhutan and Jalpaiguri district (West Bengal) in the East, by the state of Bihar and North Dinajpur district (West Bengal) in the South and by Nepal in the West.

Darjeeling District comprises 4 administrative subdivisions namely Darjeeling Sadar, Kalimpong, Kurseong and Siliguri.

Entire Darjeeling district (except Siliguri subdivision) falls in the Darjeeling Himalayan hill region of the Eastern Himalaya biodiversity hotspot. The Darjeeling Himalayan hill region is divided by the river Teesta in to two regions viz. the region to the west of Teesta river and the region to the east of Teesta river. The region to the west of Teesta river has two hill ranges namely Darjeeling- Kurseong range and Singalila range and the region to the east of Teesta river has Chola hill range. The Siliguri subdivision falls in the Sub-Himalayan region.

Darjeeling has temperate climate with dry winter and warm summer (Cwb, Köppen climate classification). Annual mean maximum temperature is 14.9 °C and annual mean minimum temperature 8.9 °C^[3]. Average Annual rainfall in Darjeeling town is 3092 mm and in Siliguri Town is 3620 mm^[3].

This district has 724 km² very dense forest (lands with tree cover of canopy density of 70% and above), 652 km² moderately dense forest (lands with tree cover of canopy density between 40% and 70% above), 1002 km² open forest (lands with tree cover of canopy density between 10% and 40%), 6 km² scrub (lands with poor tree growth mainly of small or stunted trees having canopy density less than 10 percent) and 765 km² non forest area (Forest Survey of India, 2015)^[4].

Two National parks namely Neora Valley National Park and Singalila National Park and three Wildlife sanctuaries namely Jore Pokhri Wildlife Sanctuary, Mahananda Wildlife Sanctuary and Senchal Wildlife Sanctuary are located in this district.

Correspondence

Kritish De

School of Oceanographic Studies

Jadavpur University

Kolkata – 700032

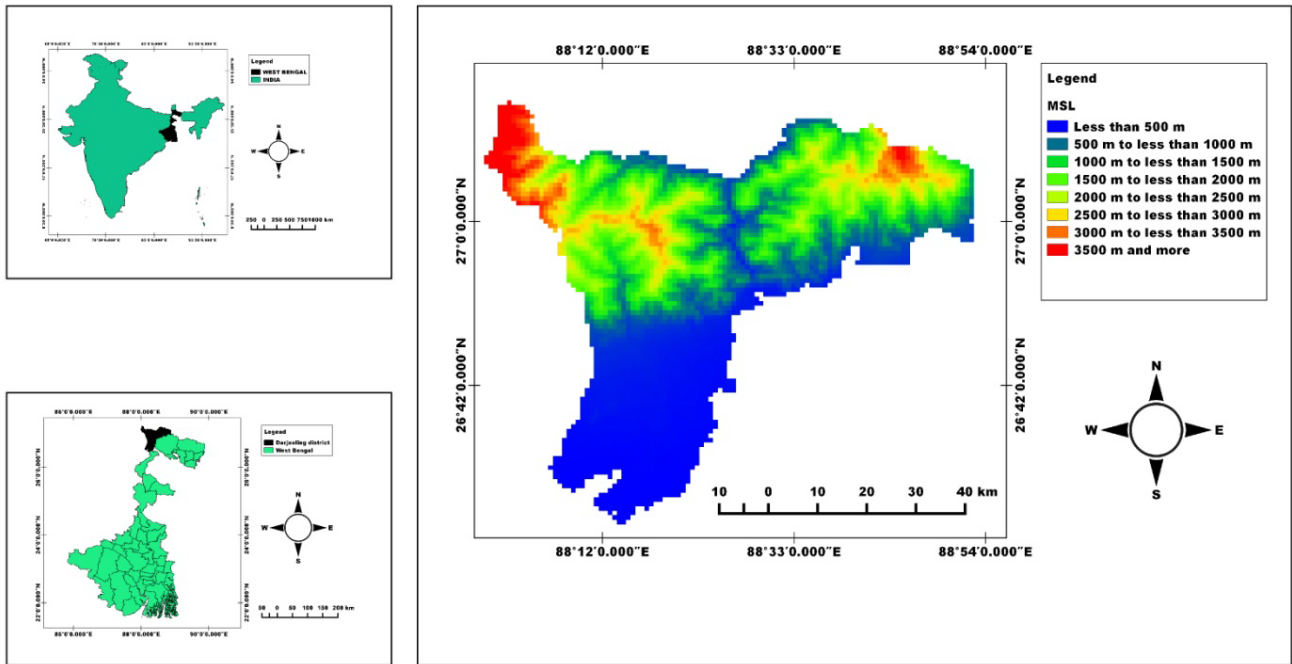


Fig 1: Location and area with different elevation of Darjeeling district, West Bengal

Diversity of amphibians in Darjeeling District

Before and after independence, several species of amphibians were recorded from the Darjeeling district. But, published comprehensive lists of amphibians of this area are very less. Daniel (1962) gave account of 7 species of amphibians of Darjeeling area of West Bengal [5]. Sarkar, Biswas and Ray (1992) published list of amphibians of the state of West Bengal where they included 30 species of amphibians from Darjeeling district [6]. Dinesh, Radhakrishnan, Gururaja and Bhatta (2009) in the list of amphibians of India, included some species from Darjeeling district [7]. So far, presence of 37 species of amphibians under 18 genera, 8 families and 3 orders were described from Darjeeling

district, West Bengal (Table 1).

From Order Anura 34 species of amphibians under 16 genera and 6 families were described from Darjeeling district, West Bengal so far. Among these 6 families, highest numbers of species (12 species) were recorded from Family Dicroglossidae, followed by Family Ranidae (8 species) and Family Rhacophoridae (7 species), Family Megophryidae (4 species), Family Bufonidae (2 species) and Family Microhylidae (1 species). From Order Caudata 2 species of amphibians under 1 genus and 1 family (Salamandridae) were described and from Order Gymnophiona, 1 species of amphibian under 1 genus and 1 family (Ichthyophiidae) were described from Darjeeling district, West Bengal so far.

Table 1: Checklist of amphibians of Darjeeling district, West Bengal. Scientific names and systematic position followed in this checklist are after Frost (2016) [8] and common names are obtained from Dinesh, Radhakrishnan, Gururaja and Bhatta (2009) [7] and Mathew and Sen (2010) [10].

Scientific Name	Common Name
Order: ANURA Fischer von Waldheim, 1813	
Family: BUFONIDAE Gray, 1825	
<i>Duttaphrynus himalayanus</i> (Günther, 1864)	Himalayan Toad
<i>Duttaphrynus melanostictus</i> (Schneider, 1799)	Common Indian Toad
Family: DICROGLOSSIDAE Anderson, 1871	
<i>Euphlyctis cyanophlyctis</i> (Schneider, 1799)	Skittering Frog
<i>Euphlyctis hexadactylus</i> (Lesson, 1834)	Indian Pond Frog
<i>Fejervarya teraiensis</i> (Dubois, 1984)	Terai Cricket Frog
<i>Hoplobatrachus tigerinus</i> (Daudin, 1802)	Indian Bull Frog
<i>Limnonectes mawlyndipi</i> (Chanda, 1990)	Mawlyndip Frog
<i>Nanorana annandalii</i> (Boulenger, 1920)	Boulenger's Hill Frog
<i>Nanorana arnoldi</i> (Dubois, 1975)	Arnold's Paa Frog
<i>Nanorana blanfordii</i> (Boulenger, 1882)	Blanford's Frog
<i>Nanorana chayuensis</i> (Ye, 1977)	Chayu Spiny Frog
<i>Nanorana gammii</i> (Anderson, 1871)	Gammii Frog
<i>Nanorana liebigii</i> (Günther, 1860)	Liebig's Frog
<i>Ombrana sikimensis</i> (Jerdon, 1870)	Sikkimese Frog
Family: MEGOPHRYIDAE Bonaparte, 1850	
<i>Megophrys glandulosa</i> Fei, Ye, and Huang, 1990	Glandular Horned Toad
<i>Megophrys major</i> Boulenger, 1908	Great Stream Horned Frog
<i>Megophrys parva</i> (Boulenger, 1893)	Brown Horn Frog
<i>Megophrys robusta</i> Boulenger, 1908	Robust Spadefoot Toad
Family: MICROHYLIDAE Günther, 1858 (1843)	
<i>Microhyla ornata</i> (Duméril and Bibron, 1841)	Ornate Narrow-mouthed Frog
Family: RANIDAE Batsch 1796	

<i>Amolops formosus</i> (Günther, 1876)	Assam Cascade Frog
<i>Amolops gerbillus</i> (Annandale, 1912)	Gerbil Stream Frog
<i>Amolops himalayanus</i> (Boulenger, 1888)	Himalaya Sucker Frog
<i>Amolops marmoratus</i> (Blyth, 1855)	Marbled Cascade Frog
<i>Amolops monticola</i> (Anderson, 1871)	Mountain Stream Frog
<i>Odorrana chloronota</i> (Günther, 1876)	Chloronate Huia Frog
<i>Odorrana livida</i> (Blyth, 1856)	Green Cascade Frog
<i>Odorrana mawphlangensis</i> (Pillai and Chanda, 1977)	Mawphlang Frog
Family: RHACOPHORIDAE Hoffman, 1932 (1858)	
<i>Frankixalus jerdonii</i> (Günther, 1876)	Jerdon's Bush Frog
<i>Philautus dubius</i> (Boulenger, 1882)	Boulenger's Tree Frog
<i>Polypedates teraiensis</i> (Dubois, 1987)	Common Tree Frog
<i>Polypedates maculatus</i> (Gray, 1830)	Spotted Tree Frog
<i>Raorchestes annandalii</i> (Boulenger, 1906)	Annandale's Bush Frog
<i>Rhacophorus bipunctatus</i> Ahl, 1927	Double-spotted Red-webbed Tree Frog
<i>Rhacophorus maximus</i> Günther, 1858	Günther's Tree Frog
Order: CAUDATA Fischer von Waldheim, 1813	
Family: SALAMANDRIDAE Goldfuss, 1820	
<i>Tylotriton himalayanus</i> Khatiwada, Wang, Ghimire, Vasudevan, Paudel and Jiang, 2015	
<i>Tylotriton verrucosus</i> Anderson, 1871	Himalayan Newt
Order: GYMNOPIHIONA Müller, 1832	
Family: ICHTHYOPHIIDAE Taylor, 1968	
<i>Ichthyophis sikkimensis</i> Taylor, 1960	Sikkimese Caecilian

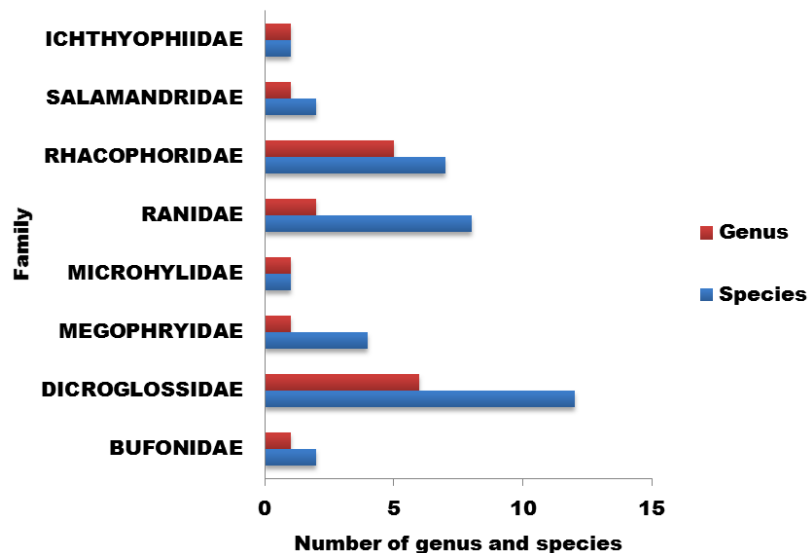


Fig 2: Comparative account of numbers of genus and species of amphibians recorded from Darjeeling district, West Bengal

Comment on some species

Fejervarya limnocharis (Gravenhorst, 1829): Sarkar, Biswas and Ray (1992) reported this species from Darjeeling [6]. Daniels (2005) reported presence of this species (as *Limnonectes limnocharis*) in India [8]. But these records “almost assuredly apply to other species” [8]. It is not included in the Checklist of Amphibia of India [9]. So, in the present checklist of amphibians of Darjeeling, this species is not included.

Fejervarya nicobariensis (Stoliczka, 1870): Sarkar, Biswas and Ray (1992) reported presence of this species in Darjeeling [6] but it is “known only from the type locality (Nicobar Island, India)” [8]. So, in the present checklist of amphibians of Darjeeling, this species is not included.

Amolops afghanus (Günther, 1858): Sarkar, Biswas and Ray (1992) reported presence of this species in Darjeeling [6] but “records for other nations (e.g., Nepal and India) are problematic and very likely apply to other species” [8]. It is not included in the Checklist of Amphibia of India [9]. So, in the present checklist of amphibians of Darjeeling, this species is not included.

Amolops marmoratus (Blyth, 1855): “Populations from the eastern Himalayan region of India (Himanchal Pradesh, Nagaland, Manipur, West Bengal, Meghalaya, Assam, Arunachal Pradesh, Mizoram, Tripura), adjacent China (in southeastern Xizang and western Yunnan), eastern borderlands of Bangladesh, and Nepal, formerly assigned to this name have not been studied and although there are names available for these populations, their range(s) and status remains problematic” [8]. It is included in the Checklist of Amphibia of India [9]. So, in the present checklist of amphibians of Darjeeling, this species is included.

Discussion

As Darjeeling district (except Siliguri subdivision) falls in the Darjeeling Himalayan hill region of the Eastern Himalaya biodiversity hotspot which is in close vicinity with Indo-Burma biodiversity hotspot. So, this region has high faunal diversity, including amphibians. In India, only in this area, members of the Order: Caudata (commonly called Salamanders) are reported so far. Jore Pokhri Wildlife Sanctuary was established to protect especially this amphibian

group. So far, 37 species of amphibians under 18 genera, 8 families and 3 orders are recorded from the district which is about 9.44% of the total amphibians recorded from India. Further survey works coupled with molecular systematic study will report more amphibian fauna from the region.

Acknowledgement

Author is thankful to Director, School of Oceanographic Studies, Jadavpur University for providing facilities for this study.

References

1. Amphibia Web Species Numbers. <http://amphibiaweb.org/amphibian/speciesnums.html>. April 04, 2016
2. Worldwide Amphibian Declines: How big is the problem, what are the causes and what can be done? <http://amphibiaweb.org/declines/declines.html>. April 04, 2016.
3. Darjeeling District Profile. <http://www.darjeeling.gov.in/dist-prof.html>. 04 April, 2016
4. Forest Survey of India. India State of Forest Report – 2015. Ministry of Forests, Environment and Climate Change, Government of India, 2015, 258-262.
5. Daniel JC. Notes on Some Amphibians of the Darjeeling Area, West Bengal. *Journal of Bombay Natural History Society*. 1962; 59(2):666-668.
6. Sarkar AK, Biswas ML, Ray S. Amphibia. In: Fauna of the West Bengal Part 2, State Fauna Series 3. Zoological Survey of India, Kolkata, 1992, 67-100.
7. Dinesh KP, Radhakrishnan C, Gururaja KV, Bhatta G. An annotated checklist of Amphibia of India with some insights into the patterns of species discoveries, distribution and endemism. *Records of the Zoological Survey of India, Occasional Paper* 2009; 302:1-153.
8. Frost DR. Amphibian Species of the World: An Online Reference. Version 6.0 American Museum of Natural History, New York, USA. <http://research.amnh.org/herpetology/amphibia/index.html>. 04 April, 2016
9. Dinesh KP, Radhakrishnan C, Channakeshavamurthy BH, Kulkarni NU. A Checklist of Amphibians of India (Updated till January 2015). <http://mhadeiresearchcenter.org/resources>
10. Mathew R, Sen N. Pictorial Guide to Amphibians of North East India. Zoological Survey of India, Kolkata, 1-144
11. Biju SD, Senevirathne G, Garg S, Mahony S, Kamei RG, Thomas A *et al.* *Frankixalus*, a New Rhacophorid Genus of Tree Hole Breeding Frogs with Oophagous Tadpoles. *PLoS ONE* 2016; 11(1):e0145727 doi:10.1371/journal.pone.0145727
12. Deuti K, Ayyaswamy AK. Three new records of amphibians from West Bengal. *Records of the Zoological Survey of India* 2009; 108 (Part - 4):17-20.
13. Khatiwada JR, Wang B, Ghimire S, Vasudevan K, Paudel S, Jiang J-p. A new species of the genus *Tylotriton* (Amphibia: Urodela: Salamandridae) from eastern Himalaya. *Asian Herpetological Research* 2015; 6:245-256. DOI: 10.16373/j.cnki.ahr.140097