



REPORT ON AMPHIBIAN FAUNA OF KHONSA CIRCLE, TIRAP DISTRICT, ARUNACHAL PRADESH, INDIA

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ABSTRACT

The amphibian diversity of Tirap district has been documented after carrying out a seasonal survey for two years. The present survey was conducted for documenting the amphibians of tirap district. The species were documented by means of visual encounter survey in and around the lotic and lentic habitats of the Charju river system, and with the help of local villagers. The present study on Tirap district, Arunachal Pradesh, India resulted in recording of 24 amphibian species belonging to 2 orders, 7 families and 17 genera. Ranids and Rhacophorids were the most dominant families represented by 7 species each followed by Dicroglossids with 5 species, Megophryids with 2 species and Bufonids, Microhylids and Ichthyophids with 1 species each. Of the total recording 1 species is Vulnerable, 3 are Data Deficient, 3 are Not Evaluated and rest comes under LC category as per IUCN red list. This is the first ever study on the amphibian diversity of the district.

KEYWORDS- Amphibian, Khonsa, Tirap district, Diversity.

INTRODUCTION

The ecosystems of Arunachal Pradesh are rich repositories of natural resources and biological wealth. The rich biodiversity of Amphibians has remained under explored and unexplored in certain parts of Arunachal Pradesh due to inaccessibility in difficult hilly terrain, lack of communication network and other reasons. In recent years, amphibian diversity of Arunachal Pradesh has been studied by many workers. There have been studies on the amphibian and reptilian diversity of Arunachal Pradesh. But those were done on the more accessible parts of the state with new records and also descriptions of some species. We owe a lot to the pioneers like Gunther (1864), Stolicza (1870), Boulenger (1890), and Annandale (1912) for recording aquatic biodiversity of Arunachal Pradesh. Annandale (1912) studied in Siang district. Smith (1929) reported 7 species of frogs from Eastern Himalaya. Sarkar and Sanyal (1985) reported 14 species of amphibians from Namdapha National Park of the then Tirap district, now in Changlang district of Arunachal Pradesh. Chanda (1990, 1994) summarized all earlier reports and his own collection and raised the number of amphibian record to 23 from the state. Bordoloi and Borah (1999, 2000 and 2001) reported *Haplobatrachus crassus* from Arunachal and northeastern Assam. They also published an overview of amphibians of Arunachal Pradesh and reported 9 new records of anurans from the state. They also reported occurrence of ranid frog, *Paa annandalii* (Boulenger, 1920) including description of larval stages. Chanda (2002) published a handbook on Indian amphibians where he included 43 species from Arunachal Pradesh. Bordoloi (2002) studied amphibian and insects fauna of Dihang Dibang Biosphere Reserve. She also recorded the occurrence of *Rhacophorus translineatus* (Wu, 1977) from

the state which also was the first record for the country. Bordoloi *et al.* (2007) described a new species

Rhacophorus suffry from Assam. Sengupta *et al.* (2008) discovered *Amolops assamensis* from Assam in northeast India. Bordoloi and Borah (2009) studied the diversity of amphibian fauna in the wetlands of 11 districts of Arunachal Pradesh and raised the number of amphibian species in the state to 63. Bortamuli *et al.* (2010) described the tadpoles of *Hylarana humeralis* and *H. leptoglossa* with respect to their external morphology, buccal features and their ontogenetic data. Later in 2011, a new species *Leptobrachium bompu* was discovered and described by Sanjay Sondhi and Annemarie Ohler from Eaglenest Wildlife Sanctuary. This paper gives the result of survey taken up for recording the amphibian diversity in the Tirap district of Arunachal Pradesh.

Study area

Arunachal Pradesh comes under Indo Burma biodiversity hotspot region. Tirap District lies between the latitudes 26° 38' N and 27° 47' N and the longitudes 96° 16' E and 95° 40' E. The district lies in the Indo-Myanmar biodiversity hotspot region. It is bounded by Myanmar towards South, by Changlang District of Arunachal Pradesh towards the east, by Dibrugarh District of Assam in the North and by Sivsagar (Assam) and Mon (Nagaland) districts towards the West. It covers a total area of 2362 sq. km. The district is drained by many small rivers and streams, but mainly by river Tirap, from which the district derives its name. The climate varies considerably from place to place due to the mountainous nature of the terrain. The climate of the district is largely influenced by the terrain which is marked high hills, deep ravines and valleys through which the streams and rivers

flow. The vegetation of Tirap comprises mainly of tropical and subtropical evergreen forests with inter spread grasslands and temperate forests in the higher altitudes.

MATERIALS & METHODS

Amphibian sighting and collection is seasonal and hence the ecosystems were surveyed and the species were collected from 2 seasons, pre- monsoon and monsoon of two consecutive years viz. 2011 and 2012. They show the highest activity during the monsoon season. Some species are early breeders; some are late breeders whereas some breed throughout the year. Their breeding is associated with monsoon and hence the surveys were undertaken mostly during the monsoon season. The lotic and lentic water bodies were explored along with the leaf litter, bushes etc. Data sheet for the amphibian recordings were filled up in the field. The species identified were photographed; the data sheets were filled and were released. As few species could be identified on spot, photographs were taken for record. In case identification is doubtful, the collected species were fixed and preserved in 8% formaldehyde solution for further laboratory analysis. The various morphometric measurements were taken with Matutoyo dial vernier caliper with an accuracy of 0.01 mm. Morphological characters were described following Ohler (1996, 2002). Identification was done with the help of standard publications such as Boulenger (1920), Chanda (1994), Dutta (1997), Dubois & Ohler (2000) and Ao et al. (2003) and Current species and family names are as per IUCN (2013).

RESULTS & DISCUSSION

The present survey resulted in the recording of 24 species of amphibians, of which 23 are anuran and 1 is a caecilian species as given in Table 1. The species belonged to 7 families and 17 genera. Ranids and Rhacophorids were the

most dominant group represented by 7 species each followed by Dicroglossids with 5 species, Megophryids with 2 species and Bufonids, Microhylids and Ichthyophids with 1 species each. The conservation status was based on IUCN (www.iucnredlist.org). It shows that of the total recording, *Pterorana khare* belongs to VU category, 3 species belongs to DD category, 3 to NE category, rest to LC category. The Data Deficient species are *Odorrana livida*, *Amolops assamensis* and *Xenophrys wuliangshanensis*. The NE species are *Philautus namdaphaensis*, *Polypedates teraiensis* and *Ichthyophis sendenyu* (Fig 1). The 24 species recorded during the study include a number of amphibians of conservational importance. The study reveals the importance of the habitat for amphibian species. Conservation of the species recorded is possible through habitat conservation. Continuous monitoring may lead to recording of some more species in future. Besides recording of the species, the identification of their habitat was done which are important and most irreplaceable. The general goal of biodiversity conservation is to minimize loss of irreplaceable biodiversity. This not only includes individual species, but also habitats and ecosystems where these are known to be unlikely to regenerate naturally or difficult to restore artificially. The first step in planning for biodiversity conservation at any geographic scale is to assess the diversity of natural resources present and identify those which are most important, or in this context, most irreplaceable. In order to properly assess the full biodiversity and to optimize its conservation efforts, an amphibian study of this region is a must in order to fill in the many gaps in amphibian knowledge of Arunachal Pradesh. The purpose of this study is surveying and documenting the amphibian fauna of Tirap district.

TABLE 1- List of Amphibian species recorded

Family	Species	IUCN status
Bufonidae	<i>Duttaphrynus melanostictus</i> (Schneider, 1799)	LC
Ranidae	<i>Hylarana leptoglossa</i> (Cope, 1868)	LC
	<i>Hylarana humeralis</i> (Boulenger, 1887)	LC
	<i>Haplobatrachus crassus</i> (Jerdon, 1853)	LC
	<i>Odorrana livida</i> (Blyth, 1856)	DD
	<i>Pterorana khare</i> Kiyasetuo and Khare, 1986	VU
	<i>Amolops assamensis</i> Sengupta et al, 2008	DD
	<i>Amolops marmoratus</i> (Blyth, 1855)	LC
Microhylidae	<i>Microhyla ornata</i> (Dumeril & Bibron, 1841)	LC
Dicroglossidae	<i>Limnonectes laticeps</i> (Boulenger, 1882)	LC
	<i>Euphyctis cyanophlyctis</i> (Schneider, 1799)	LC
	<i>Fejervarya nepalensis</i> (Dubois, 1975)	LC
	<i>Fejervarya teraiensis</i> (Dubois, 1984)	LC
	<i>Fejervarya pierrei</i> (Dubois, 1975)	LC
Rhacophoridae	<i>Raorchestes annandalii</i> (Boulenger, 1906)	LC
	<i>Philautus namdaphaensis</i> Sarkar and Sanyal, 1985	NE
	<i>Polypedates teraiensis</i> (Dubois, 1987)	NE
	<i>Polypedates magacephalus</i> (Hallowell, 1860)	LC
	<i>Rhacophorus maximus</i> (Gunther, 1858)	LC
	<i>Rhacophorous suffry</i> Bordoloi, Bortamuli and Ohler, 2007	LC
	<i>Theloderma asperum</i> (Boulenger, 1886)	LC
Megophryidae	<i>Xenophrys wuliangshanensis</i> Ye & Fei, 1995	DD
	<i>Xenophrys major</i> (Boulenger, 1908)	LC
Ichthyophidae	<i>Ichthyophis sendenyu</i> Kamei et al, 2009	NE

VU- Vulnerable

EN- Endangered

LC-Least Concern DD-Data Deficient NE-Not Evaluated

ACKNOWLEDGEMENT

Authors gratefully acknowledge the financial assistance provided by Department of Science and Technology (DST), Govt of India. Authors would like to thank the Director, IASST for providing necessary infrastructural facilities.

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