

Project Update: December 2006

Abstract:

In summer 2006, I spent three months in Bangladesh conducting fieldwork. Based on various physical and biological factors I established seven permanent forest sampling sites and three urban and suburban study sites. During this time I recorded 73 species of amphibians and reptiles, including 52 species of particular scientific import. These included at least two species of amphibians and three to five species of reptiles that have not previously been recorded from Bangladesh. I have also documented several new regional distribution records for Bangladesh. The preliminary records suggest that the Lawachara National Park, an evergreen forest, seems to support the highest number of amphibian and reptile species; a deciduous forest habitat, Madhupur National Park, supports some globally important frogs and skinks. I will be repeating the study in the coming two summers to locate additional species and better document the distributions of taxa already found.

I am working in Bangladesh, a global biodiversity hotspot in tropical Asia which contains a unique and highly threatened biota. Least understood in terms of research and conservation initiatives is the herpetofauna. According to a 2000 estimate by IUCN Bangladesh, 131 species of reptiles and amphibians have been reported from the country so far, and 112 of them (85%) are facing conservation threats. About 43% of amphibian and reptile species were categorized as Data Deficient, indicating lack of even basic information. This high number of threatened and data deficient species is likely to be an underestimate, because the country is poorly studied and the data used to develop the IUCN list were mainly partial or outdated. For example, a number of amphibians and reptile species have been reported from Bangladesh since the Red List was produced, and more are in the process of being added.

The goals of my research included producing an updated list of herpetofauna of Bangladesh, producing a set of GIS-based distribution maps for all of them, and estimating species composition and richness in various habitats. I spent three months, June-August 2006, conducting fieldwork in Bangladesh with a research assistant from Ireland and few graduate students from the Department of Zoology, Jahangirnagar University, Bangladesh. Fieldwork was conducted in summer since amphibians and reptiles are most active during this time of a year. Based on physical and biological factors, as well as logistical concerns, I selected seven permanent sampling sites in different forest types (e.g. evergreen and semi-evergreen forest, mangrove and deciduous forest, swamp forest) and three study sites in the urban and suburban areas of Bangladesh (Table 1).

Table 1: Description and location of selected study sites in Bangladesh

Habitat types	Name of the study sites	No of site(s)	No of Sp recorded
Forest habitats			
Primary evergreen forests (situated in the northeast of the country)	Lawachara National Park	1	51
Semi-evergreen hill forest (situated in the southeast)	Bandarban Hill District	1	30
	Kaptai National Park	1	41

Natural moist deciduous forests (plain sal forests: situated in the central and central north)	Madhupur National Park	1	37
Natural coastal mangrove forests (littoral forests: located in the southwest)	Sundarbans Wildlife Sanctuary (World Heritage Site)	2	35
Swamp wetland forest (haor habitat: situated in the northeast of the country)	Tanguar Haor (World Heritage Site)	1	35
<i>Urban and suburban areas</i>			
Plain degraded sal forest (situated in the central part of the country)	Jahangirnagar University Campus	1	34
Patchy forested areas (situated in the south-central part)	Valuka Crocodile Farm	1	27
Tipra hill human dominated degraded habitat (central east of the country)	Comilla Tipra Hills	1	17

I used traditional survey techniques (e.g. direct encounter survey, active searching in microhabitats, night survey, etc.) to conduct the survey. In addition, I also used several trapping techniques (e.g. drift fences with pitfall and funnel traps, cover-boards, PVC pipes, minnow traps, hoop nets, etc.) to maximize the catch in the field. In summer 2006, I have recorded the occurrence of 73 species of amphibians and reptiles from Bangladesh, of which 52 species are of particular scientific import (Table 1). These preliminary results reveal the presence of at least two previously unreported species of amphibians and three to five species of reptiles in Bangladesh. In addition, I have also documented several new regional distribution records. I am working to produce a complete set of GIS-based distribution maps for all recorded species. The final set of maps will be produced at the end of my third field season in 2008.

Whole-animal and body-part specimens (blood, liver or tissue samples) of animals whose taxonomic identity was difficult to assess in the field were collected following standard protocols. The goal is to use advanced molecular systematic methods to assess this material, which is temporarily stored in the Laboratory of Department of Zoology, Jahangirnagar University in Bangladesh. The necessary paperwork required to export this material is currently being processed by Bangladeshi authorities. Once permits are obtained, the samples will be transported to the USA and analyzed in the laboratory of the Biology Sciences Department of Texas Tech University. Specimens will ultimately be donated to a number of major international collections, which have already been contacted, so they are broadly available for future study.

Another goal of my work is to assess the species composition and richness of herpetofauna in different habitats in Bangladesh. Based on my first year's field data, preliminary conclusions can be drawn. Lawachara National Park, an evergreen forest, seems to support the highest number of amphibian and reptile species (51 species so far). I also recorded some critically important frogs and skinks from a deciduous forest habitat, Madhupur

National Park, during the fieldwork. However, these are very preliminary conclusions and I will be replicating the same data collection protocol in the coming two summers.

I am preparing few manuscripts, intended for publication in the 2007 volume of Iguana, Hamadryad and Herp Review which offers a summary of this year's work. When the entire study is completed, it will help produce a conservation priority list and identify high-priority habitats for Bangladeshi amphibians and reptiles. I will produce the final report on the project with these applied goals in mind.



Left: *Naja naja*. Right: *Calotes versicolor*



Left: *Leptobrachium smithi*. Middle: *Kaloula pulchra*. Right: *Rana leptoglossa*