

# frog leg

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## A preliminary survey on amphibian fauna of Sundarbans Mangrove Forest, Bangladesh

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The Sundarbans, an area of one million hectares, is the largest mangrove forest in the world. About 62% of this forest lies in the southern districts of Bangladesh and the rest 38% lies in the south-east of West Bengal in India (Islam *et al.*, 1999). The Bangladesh Sundarbans represents 44% of the total forested area of the country, which comprises 45% of the country's forest reserves. Very few wildlife species of this forest are extensively studied, not even the amphibians, so, the amphibians of this region are not properly known to many of us.

Unfortunately, no in-depth study or survey has yet been done on the status and distribution of amphibians of Bangladesh (Chowdhury 1996). At first Hussain and Rahman (1978) studied amphibians of Bangladesh and published a 12 species amphibian list. Next, Khan (1982) and Sarker & Sarker (1988) studied the amphibian fauna of the country and published checklist of amphibia, which contained 19 and 23 amphibians, respectively. Chowdhury (1996) studied the amphibians of Bangladesh and identified at least 15 amphibian species. But until now, no extensive study has ever been conducted on the amphibians of Bangladesh Sundarbans.

**Study area:** Bangladesh Sundarbans represents the largest tracts of productive mangrove forest. It can be grouped into tropical moist forest because it is located at the south of the Tropic of Cancer near the line. The total area of the forest is about 5,770 km<sup>2</sup>, of which 4,016 km<sup>2</sup> is land and the remaining 1,761 km<sup>2</sup> is under

water, in the form of rivers, canals and creeks (Hussain & Karim, 1994). It lies between 89°00' and 89°55' E longitude and latitude 21°30' and 22°30' N in the southern districts (Bagerhat, Khulna & Satkhira) of the country. This mangrove swamp grows on soil formations of recent origin consisting of alluvial washed down from the Himalaya. The Sundarbans is unique in a number of different ways and that is why it was recently declared as a World Heritage Site. The entire Bangladesh Sundarbans is divided into four ranges, viz. Sarankhola, Chandpai, Khulna and Satkhira. During the present study all the four ranges and the adjacent areas were visited.

**Climate:** The average annual rainfall increases from west to east of the forest. The mean annual rain-fall within the forest varies from about 2000 mm. in the east to 1600 mm. in the west. 80-85% of annual rainfall occurs during the monsoon season from May to September. The coolest temperatures occur during December-January (23°C) and the warmest at the end of the dry season, May-June (35°C). The mean annual relative humidity varies from 70% to 80%. The pH in river water varies from 6.5 to 8.0 (Karim 1994).

**Vegetation:** More than 334 species of plants, of which 27 are common trees, are found in the Sundarbans (Karim, 1994). Out of the 50 species of mangrove trees in the world 40 are found in the Sundarbans. The holophytic tree species mainly form the natural vegetation. The forest is more or less open and canopy height is commonly within 10 m from the ground. Three ecological zones, viz., freshwater zone, moderately saline water zone and saline water zone can be distinguished according to salinity and species composition.

**Method:** A random survey was made in all important water bodies and perennial rivulets and streams. Each possible moist pocket of the forests and the home side and rest house areas were extensively

explored during the present study. A total 480 hours (in 60 days, 8 hrs/day) were spent in the field during March-August 1999, consisting of 8 to 15 days in each month. The status such as very common, common, fairly common, few, occasional is based on the standard practices (Khan 1982). The relative abundance of each species was determined in the same procedure. The specimens were identified by using the diagnostic keys, which were given by Boulenger (1890) and Deuti & Bharati (1995). The nomenclatures adopted were from Dutta (1992) and Das & Dutta (1998). Sometimes the species were identified by the pattern of their calling, which is very prominent.

**Results and discussion:** The Sundarbans, is a heavily forested swampy island, subject to periodic inundation, is not a suitable habitat for the amphibians. Moreover, the biogeographic and geological condition of the Sundarbans does not support a diverse amphibian fauna. Totally, 8 species from three genera belonging to four families of anuran amphibians were identified during the current study. Two specimens remain unidentified.

List of amphibian fauna of Sundarbans Mangrove Forest, Bangladesh, along with their status is listed below.

- Bufo melanostictus* Schneider, 1799  
Very common in east but common in west of the forest.
- Microhyla ornata* (Dumeril & Bibron, 1841)  
Few
- Euphlyctis cyanophlyctis* (Schneider, 1799)  
Very common
- Euphlyctis hexadactylus* (Lesson, 1834)  
Few
- Hoplobatrachus tigerinus* (Daudin, 1803)  
Common
- Limnonectes limnocharis* Boie, 1835  
Common
- \**Rana alticola* Boulenger, 1882  
Occasional



*Polypedates maculatus* (Gray, 1834)  
Common.

According to Sarker (1999) and Rashid *et al.* (1994) *Euphlyctis hexadactylus* is distributed only in the freshwater ponds of the northern portion, along the periphery of the forests. But the present record confirms the presence of at least 20 individuals from a brackish water pond (at Kochikhali rest house area, under Sarankhola range of Sundarbans Forest Division), which is some 80 km. south from the past distribution place. The present distribution place is very close to the Bay of Bengal and the habitat is strongly saline except for some brackish water ponds.

*P. maculatus* and *B. melanostictus* distribution is less common in the western portion than from the eastern portion of the forests, possibly due to high salinity, while Rashid *et al.* (1994) mentioned as widely distributed and very common species respectively.

The high density of human population in Bangladesh, scarcity of natural resources, overexploitation of both timber and wildlife resources and pollution of the water bodies pose threats to Sundarbans systems. So, the amphibians are facing habitat shrinkage and exposed to both aquatic and terrestrial pollutants in the Sundarbans and they are particularly sensitive because of their highly permeable skin, which can rapidly absorb toxic substances (Duellman & Trueb 1986). They are also sensitive to the environmental factors, which even influence their behaviour (Daniels 1991).

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\*Revised nomenclature has been used here, the previous name was *Rana lyderi* (Theobald, 1870)

