

BIODIVERSITY CONSERVATION STRATEGIES IN BANGLADESH: THE STATE OF PROTECTED AREAS

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Introduction

Over the past few decades, biodiversity has become the issue of global concern due to its rapid reduction worldwide. It is also widely supposed that it is the poorest people of most developing countries, who depend most immediately upon local ecosystems for their livelihoods, that will be most affected by the consequences of this biodiversity loss (CBD, 2006). It is, therefore, essential to conserve this threatened biodiversity for the well being of these people. To date, various programs and strategies have been undertaken to tackle this problem at both national and regional levels. Governments throughout the world have been strengthening their conservation capacity by developing and adopting various policies, legislations and innovative approaches.

Bangladesh, the world largest deltaic region, lies in the northeastern part of South Asia, between 20°34' and 26°38' north latitude and 88°01' and 92°41' east longitude. The majority of the country's land was formed by river alluvium from the Ganges and the Brahmaputra and their tributaries, which consists mostly of flood plains (80%) with some hilly areas (12%). Although a small country, Bangladesh is exceptionally endowed with a vast variety of flora and fauna due to its unique geophysical location (Nishat *et. al.*, 2002; Hossain, 2001). An estimated 5,700 species of angiosperms alone, including 68 woody legumes, 130 fiber yielding plants, 500 medicinal plants, 29 orchids, 3 species of gymnosperms and 1,700 pteridophytes has been recorded from the country (Islam, 2003). The country also possesses a rich faunal diversity and has approximately 113 species of mammals, more than 628 species of birds (both passerine and non-passerine), 126 species of reptiles, 22 species of amphibians, 708 species of marine and freshwater fish, 2,493 species of insects, 19 species

of mites, 164 species of algae (or seaweed) and 4 species of echinoderms (Islam *et. al.*, 2003; IUCN, 2000).

Like in other regions around the globe, the biodiversity of Bangladesh is also entering through a critical period. Already, 12 wildlife species have become extinct from the country (Rahman, 2004). In addition, IUCN (2000) has listed a total of 40 inland mammal species, 41 bird species, 58 reptiles and 8 amphibians under various degrees of risk in the country, and the Bangladesh National Herbarium reported 106 vascular plant species under risk of various degrees of extinction in the country (Khan *et. al.*, 2001).

Biodiversity conservation initiatives in Bangladesh

Bangladesh has practiced both *in situ* and *ex situ* conservation methods to maintain the remnants of the country's biological diversity. The declaration of protected areas, ecologically critical areas (ECAs), World Heritage Sites and Ramsar sites are some examples of *in situ* conservation; alternatively, *ex situ* conservation measures includes botanical gardens, preservation plots, gene banks, arboretums, etc. There are also five eco parks and one safari park in the country, which also contribute significantly to biodiversity conservation.

The country has ratified most of the international treaties and conventions related to conservation of biodiversity. As a signatory party of these agreements the government has developed various legislative policies and inventions to conserve its remaining biodiversity (Ali and Ahmed, 2001; Kothari *et. al.*, 2000). Following are the major legislative policies and approaches taken by the government which provide provisions

for biodiversity conservation in the country. These include the following:

- National Biodiversity Strategy and Action Plan (NBSAP);
- National Conservation Strategy (NCS);
- Bangladesh Wildlife (Preservation) (Amendment) Act, 1974;
- Bangladesh Forest Act, 1978 and subsequent amendments;
- National Environment Management Action Plan (NEMAP);
- The Bangladesh Environment Conservation Act, 1995 and Environment Conservation Rules 1997;
- Sustainable Environment Management Programme (SEMP); and the
- Nishorgo Support Project (NSP) for the co-management of protected areas.

Protected Areas of Bangladesh

Declaring protected areas has long been the most effective and widespread measure for conserving nature and natural resources around the world; however, the declaration of PAs for biodiversity conservation is rather a new concept in Bangladesh. In 1974, the Bangladesh Wildlife Preservation Act defined three types of PA under different IUCN protected area management categories in the country, namely:

- **Wildlife Sanctuary:** an area maintained as an undisturbed breeding ground for wild fauna and where the habitat is protected for the continued well-being of the resident or migratory fauna.
- **National Park:** a comparatively large area of natural beauty to which the members of the public have access for recreation, education and research, and in which the wildlife is protected.
- **Game Reserve:** normally comprises a relatively isolated area meant for protection of wildlife in general and to increase the population of specified species.

Presently, there are 18 notified protected areas (i.e., ten national parks, seven wildlife sanctuaries and one game reserve) in Bangladesh (NSP, 2006). Compared to other regions of the world, this figure is still very poor. The PAs of Bangladesh cover nearly 1.7% of the total landmass of the country,

which is the second lowest per capita area under PAs in any country. Also, the PAs of Bangladesh do not effectively represent all the ecosystems, habitats and species important for conservation. At present, the PAs of the country cover 11.08% of the total forest area of the country and represent hill forests, sal forests and mangrove forest in percentages of 5.22%, 11.24% and 23.3% respectively.

Threats to protected areas of Bangladesh

In Bangladesh, protected areas are part of the Reserved Forests and have been notified as PAs after severe ecological degradation and destruction. The following are some major challenges concerning sound PA management in the country:

- rural poverty and the high unemployment rate in the surrounding of protected areas;
- conflicts between the Forest Department and local forest-dependent people due to ignoring local people's customary resource use practices;
- fuelwood collection, illegal poaching and overexploitation of other non-timber forest resources;
- poor and inefficient management facilities due to a shortage of trained personnel, modern equipment and budget deficiencies;
- the absence of a proper monitoring body and improper implementation of laws; and
- lack of people's awareness about the importance of biodiversity.

Conclusions and recommendations

During the last few decades a noteworthy area of Bangladesh forests has been converted to other land use practices (e.g., agricultural crop fields) due to country's enormous population pressure. It is now essential to conserve the country's remaining natural forest patches by bringing them under a well defined PA network system, ensuring a fair representation of all vegetation types. However, in Bangladesh, simply declaring a protected area under the provision of the law, but excluding the needs of the rural people, cannot stop the rapid loss of biodiversity or secure the future of PAs, since the local people will consider such efforts to be ignoring their traditional rights

to the forest, which they have enjoyed for generations. The Government needs to manage PAs through an adaptive collaborative management system and should immediately consider the following in order to achieve a long-term and effective PA managerial system:

- Implementing poverty reduction strategies around PAs by developing alternative income generating (AIG) activities and providing micro-credit facilities to the rural people.
- Create opportunities to develop the tourist industry (ecotourism) based on protected areas.
- Adopting a participatory PA management regime which ensures the equity of the local people in decision making and benefit sharing.
- Restore and manage buffer zones as an alternative resource exploitation zone, as well as fixing an allowable resource exploitation limit from the PAs; this offers both ecological and economical sustainability in the local environment and livelihoods.
- Formulate a separate institutional body for the management and monitoring of PAs.
- Promote capacity building of PA managerial staffs by designing specialized courses in the conservation and management of PAs.
- Generate and create internal income sources (e.g., selling entry tickets, permissions for photographs, souvenir, etc.) for the sustainable financing of protected areas.

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Table 1. List of protected areas of Bangladesh

Sl.	Protected Areas	Forest types	Location	Area (ha)	Established (Extended)
A. NATIONAL PARKS (IUCN category V)					
01.	Modhupur NP	Sal forest	Tangail	8,436	1962(1982)
02.	Bhawal NP	Sal forest	Gazipur	5,022	1974 (1982)
03.	Himchari NP	Hill forest	Cox's Bazar	1,729	1980
04.	Lawachara NP	Hill forest	Maulvibazar	1,250	1996
05.	Kaptai NP	Hill forest	Rangamati	5,464	1999
06.	Ramsagar NP	Sal forest	Dinajpur	27.75	2001
07.	Nijhum Dweep NP	Coastal mangrove	Noakhali	16,352.23	2001
08.	Medha Kachapia NP	Hill forest	Cox's Bazar	395.92	2004
09.	Satchari NP	Hill forest	Habiganj	242.82	2005
10.	Khadimnagar NP	Hill forest	Sylhet	679	2006
B. WILD LIFE SANCTUARIES (IUCN category IV)					
11.	Sundarban (East) WS	Natural mangrove	Bagerhat	31,226.94	1960 (1996)
12.	Pablakhali WS	Hill forest	Rangamati	42,087	1962 (1983)
13.	Char Kukri Mukri WS	Coastal mangrove	Bhola	40	1981
14.	Chunati WS	Hill forest	Chittagong	7,761	1986
15.	Rema-Kalenga WS	Hill forest	Habiganj	1,795.54	1996
16.	Sundarban (South) WS	Natural mangrove	Khulna	36,970.45	1996
17.	Sundarban (West) WS	Natural mangrove	Satkhira	71,502.13	1996
C. GAME RESERVE					
18.	Teknaf GR	Hill forest	Cox's Bazar	11,615	1983

