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CONSERVATION OF CROCODILE – A CASE STUDY IN BHAGABATPUR, WEST BENGAL

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Abstract

Habitat loss has been primary factor endangering the Indian crocodiles. They are the key predators in wetland and Marine environment for millions of years. Differing little from their prehistoric ancestors that stalked the earth before the dinosaurs, crocodiles have survived major upheavals i.e. the breakup of the world's continents and the ice-ages. Today, crocodiles are one of the few remaining links to the prehistoric part. Crocodile hunting was banned in India in 1972, but by that time all three species found in the country (the gharial, the saltwater crocodile and the mugger or marsh crocodile) were on the verge of extinction. The increased used of nylon fishing nets resulted in the accidental death and decrease of many baby or young crocodiles. The present paper aims of explain the role of crocodiles in ecosystem and their conservation with the help of a case study in Bhagabatpur of South 24 Parganas.

Key Words: *Crocodile hatching, mangrove forest, eco-tourism, disaster management*

Introduction

Crocodiles are key predators at the top of the food chain and eat a wide range of prey and thus can keep the wetland environment free from being polluted. Like other species crocodiles have economic value. Crocodile farms can get eggs and raise into juvenile crocodiles to obtain high quality leather and meat. Tourism has become a major force, with crocodiles as main

attraction. Being rural based investment, the crocodile farming industry has brought into play another important role i.e. generating employment for rural dwellers in many villages in Sunderban. Apart from the economic value there is a growing interest in the medicinal value of crocodile fats. Fats from around a crocodile heart contain strong medicinal value which is used to treat a number of ailments like skin diseases, asthma, stomach problem etc.

Three types of crocodiles are found in Sunderban. Gharial is completely harmless to man and is most endangered. Stabilization of river banks and dam construction had greatly reduced the gharials' natural environment of free flowing rivers. Saltwater crocodiles are meat eaters. Juvenile crocodiles will eat small mammals, insects, shellfish and fish. Adult crocodile eat snakes, buffaloes, domestic cattle and people. Marsh crocodile is carnivorous and survives on fish, other reptiles, small and large mammals. In rare cases it may attack humans.

The Govt. of India with the assistance of United Nations Development Programme (UNDP) and the Agriculture Organization of the United Nations (FAO) launched a crocodile breeding and conservation project initially in Orissa in 1975. The scheme was subsequently extended to Uttaranchal, Rajasthan, West Bengal and Maharashtra to design and construct special rearing stations. As a result of the breeding projects and their management, the population of all three species has considerably increased. Thousands of crocodiles of these three species have been reared and several of these have been released into the wild.

Bhagabatpur hatchery is the largest is the largest estuarine crocodiles situated at the southern most tip of Patharpratima island with an area of 37 hectares. The area is bounded by $21^{o}32^{/}$-$22^{o}40^{/}$ N latitude and $88^{o}10^{/}$E longitude. River Saptamukhi is situated to the east and river Habila creek passes on the east side. The Bhagabatpur Crocodile Project in the Sunderban has emerged as an important tourist destination of the Sunderban. This is the only crocodile project in West Bengal and is located adjacent to the Lothian Island and on the bank of the Saptamukhi Estuary. Bhagabatpur was declared as reserve forests vide the then Calcutta Gazette notification no. 7737, dated 29.5.1943. This area previously was under Namkhana range.

A crocodile project was set up at Bhagabatpur Reserve forest area in 1976 in order to restore the number of crocodiles in the territorial waters of Sunderbans. The collection of crocodile eggs started in 1976 from Thakuran Block. Two adult crocodiles were also collected

from outside and reared in captivity with the hope of getting eggs in the site itself. Emphasis was given on collection of eggs from surrounding areas and this process was continued in the late '80s. There were 12 adult crocodiles and 148 young crocodiles in Bhagabatpur in 2007. One crocodile was collected from outside. The total number was 161.

Objectives

Crocodile rearing centre under Bhagabatpur crocodile project was established with the following objectives:

i. to restore ecological balance in the wet estuarine ecosystem

ii. to augment fish production

iii. to add a point of attraction for the visitors

iv. to offer scope of research and education

v. to maintain gene pool of estuarine crocodile

Table 1 Stock of Crocodiles in Bhagabatpur Crocodiles Breeding Centre

Year of Birth	Number of Young Crocodiles	Cumulative Total
2001	7	7
2002	12	19
2003	6	25
2004	10	35
2005	39	74
2006	5	79
2007	69	148

Source of Data: Directorate of Forests, Govt. of West Bengal

Appraisal of the Present Arrangement

Bhagabatpur crocodile rearing centre has four big wallow pools in which big crocodiles have been kept in captivity for rearing and breeding. An artificial hatchery has been built at one corner to facilitate building up of simulating nests and to get the eggs hatched in a controlled condition. Hatching pools are made and fenced with small walls and chicken-mesh nets where in crocodiles from juvenile to sub adult are kept size wise. Arrangement of pouring water in the pools and drawing it out after certain hours has been made. There is a sluice gate near the embankment at the outskirt of the project area which has been constructed to facilitate in coming of tidewater in big wallows. Water settles down for some hours and with the help of low ebb it is again allowed to gush out through the natural canals and other drainage system. Felling on trees is totally stopped to protect the existing wetland ecology from being depleted. Storage and food supply system for the crocodiles are good and adequate. About 21 kg ray fishes or meat are being provided to the adult crocodiles by purchasing the same from the open market. Six persons are employed to collect live mudskaters from the forest floor to feed the crocodiles. The sub adult to adult juveniles are fed with small shrimps etc. The local veterinary doctors are called on for health check up of the captive animals and arranged at regular intervals. Sanitation system is maintained to keep good health of the crocodiles rearing in this centre. There is an interpretation centre at this rearing station which has sitting arrangements, sanitary facilities for the visitors. A round the clock security is maintained by deploying daily rated workers.

Table 2 Budget Requirement for Infrastructure Development

Sl. No.	Particulars of Work	Fund Requirement (%)
1	Construction of big wallows	4.55
2	Construction of earthen embankments	5.69
3	Construction of sluice gate & drainage system	9.11

4	Installation of veterinary unit	1.52
5	Renovation of brick pavement	19.92
6	Arrangement of power	2.28
7	Construction of a flood shelter	7.59
8	Construction of an aquarium	7.59
9	Renovation of interpretation centre	3.04
10	Maintenance of water vessels	7.59
11	Construction of 1 house of nocturnal animals	7.59
12	Construction of watch tower	6.07
13	Construction of staff barrack	12.91
14	Renovation of existing rest shed	4.55
Total		**100**

Source of Data: Field Survey

Problem

i. The hatching pools were constructed way back in late 1970's are very old and require to be renovated.

ii. The walls around the big wallows require repairs and renovation.

iii. There is no standard cage for keeping the animals in quarantine.

iv. Veterinary facilities for the animals of the centre are not adequate.

v. The earthen embankments around the big wallows where adult crocodiles are kept should be made of concrete for security purpose.

Tourism at Bhagabatpur

The dense mangrove forest at the confluence of Saptamukhi river system has immense natural beauty to attract tourist all throughout the year. This hatchery of estuarine crocodile and Batagur Baska species of tortoise in the project has crocodiles of varying ages. The Sunderban - the largest continuous block of mangrove forest in the world. It is a part of the world's largest delta. About one third of the total area of this forest is covered by river channels and tidal creeks, varying in width from just a few meters to 5 kilometers in some places. All parts of the Bhagabatpur forest are subject to tidal inundation during spring tides. The climate is mainly tropical maritime with lots of rain, most of which falls during the monsoon. The monsoon season (May – October) is hot and humid, while winter (October – February) is mild and dry. The entire area is covered by 17 species of mangrove trees. There are small patches of brackish marshes on emerging islands and riverbanks, and sandy areas with grass and low shrubs on some of the outer islands. Bhagabatpur is home to about 12 species of birds, 10 animals, insects, reptiles and fishes. Among these jungle cat, jackal, chital deer, Indian wild boar, Gangetic dolphin, fishing cats, hoarse show crab and crocodiles are important. Over 100 species of fish have been recorded in the Bhagabatpur.

Table 3 Number of Tourist in Bhagabatpur

Year	Number of Tourist
2002-2003	14963
2003-2004	19014
2004-2005	17896
2005-2006	18867

Source of Data: Directorate of Forests, Govt. of West Bengal

The area is such that it should be sustainable ecologically, sociologically and culturally. There is a participation of the local communities in a way that the local communities are involved in providing facilities to the tourists visiting Bhagabatpur. The facilities include service as guide, as launch and speedboat operators, supply of food to the tourists etc. The eco-tourism in Bhagabatpur so far has been a low profile venture as

Table 4 Year wise Record of Crocodile Hatching in Bhagatpur

Year	Male 0+	Female 0+	Total	Cumula-tive Total	Place of Release
1979	113	27	40	40	Parchamutli, Matla-Ii, Gosaba, Pirkhali I, Pirkhali Ii, Lothian
1982	3	22	25	65	Nethidhopani, Gowa-Ii, Chamta
1983	6	12	18	83	Nethidhopani, Matla, Chandkhali
1984	6	15	21	104	Nethidhopani, Chamta II, Bhurkunda Khali, Bagmari
1986	1	29	30	134	Nethidhopani, Chhota Chamta, Arbiga
1987	17	13	30	164	Pirkhali-7, Chhota Hodi Chamta-4
1988	15	12	27	191	Haldibari,Buridabri, Chamta
1989	1	12	13	204	Nethidhopani, Panchamundi, Chamta-4
1991	11	9	20	224	Chamta -2&4, Nethidhopani
1992	7	8	15	239	Matla-2 (Surajmukhi Khal)

1993	7	8	15	254	Kheora Shuli, Narayantala, Chhota Chamta-1
1994	3	18	21	275	Chhota Hardy Camp-2, Chand Khali Camp-4
1995	2	12	14	289	Ejukhali, Matla-1, Nethidhopani
1996	5	10	15	304	Chamta-4 (Chandraduani)
1997	4	10	14	318	Nethidhopani, Chamta
1998	4	11	15	333	Nethidhopani, Chamta
1999	14	6	20	353	Sajnekhali, Nethidhopani, Bakkhali, Sudha- nyakhali
2002	5	15	20	373	Chamta , Nethidhopani
2004	4	8	12	385	Chulkati – 4 and 5
2005	2	8	10	395	Handed over to STR
2006	2	10	12	407	Handed over to Burdwan division and released in Ajmolmari-7

Source of Data: Directorate of Forests, Govt. of West Bengal

not much of civil structures are constructed and much of disturbance is caused to the wildlife habitat. For the purposes of planning the development strategy and supporting investment plan for the Indian Bhagabatpur, a broad and inclusive approach to the definition of eco-tourism may be suggested: "Styles of tourism that positively respond to the needs of local communities and enhance the conservation of the protected areas". The pattern of development in tourism in this region should be in and around the Bhagabatpur should be focused on Nature Tourism**.** This will be determined largely by the improvement to the essential tourism products, which include the unique biosphere and long stretches of firm sea beaches of Bhagabatpur. Providing facilities for movement and halting both to the domestic and international tourists as well as improvements to

quality of the presentation of these essential products are the corner stone of success in this venture. The improvement in these sectors is essentially required the productive partnerships between public, private and community stakeholders and to actively foster development options that favour local participation and community benefits.

In the recent years, some private entrepreneurs have started venturing into the field and it is expected that they would abide by basic principles of eco-tourism in order to protect the Bhagabatpur on sustainable basis. Eco-tourism is an important industry, which can thrive in Bhagabatpur involving local communities, at the same time causing no damage to the environment of this sensitive biosphere.

The Bhagabatpur is an important and unique natural resource endowment, characterized by an extensive mangrove forest breeding and nursery ground contiguous with a wide marine shelf receiving significant freshwater discharge. It has a potential for generating substantial benefit in the form of income and economic growth for people using its resources, particularly in the fisheries sector where the Bhagabatpur has a high comparative advantage for brackish water fish production and costal marine fisheries.

Disaster Management Plan

Owing to its unique geographical location the entire Bhagabatpur and especially the 2 thickly populated (population density >700/ sq. km) riverine blocks of the District are under constant threat of powerful nor'westers, bay cyclones, tidal surges and constant change of courses by the numerous distributaries in the active part of the delta. Being a part of the active delta of the Ganga, South 24-Parganas is basically a district of islands interspersed by many streams and a maze of innumerable distributaries and fearfully wide tidal creeks. It is very sad to admit that to most of these islanders' wide roads, safe water transport, safe jetties or bridges, electricity or telephones are till date – distant dreams. The heights of the embankments are to be increased to withstand the pressure of high tide to gush in at the time of inclement water. They do not have many strong and high buildings that can be used as shelters during large scale disasters and they hardly have any large vessel to help large scale evacuation.

Recommendations

i. Three big wallow pools can be constructed in the open area near jetty ghat which will be interwoven with a drainage system fitted with a pucca sluice gate.

ii. A sluice gate should be constructed at the mouth of main canal through which water from the river Saptamukhi will be allowed to gush in and gush out at the time of low ebb in order to keep the poll flow perfect for the captive crocodiles.

iii. A veterinary unit is required to be constructed in the vicinity of the office along with a laboratory for postmortem of dead animals and a burial ground for the carcasses.

iv. Power supply should be adequate to develop the region as a tourist spot. At least SPV street light system should be set up to bring the whole area illuminated at night.

v. Most of the water vessels are old and not fit for the patrolling during inclement weather. These should be repaired at regular intervals or can be replaced with new ones.

vi. An aquarium should be made to add attraction for the visitors.

vii. Renovation of the interpretation centre should immediately be undertaken to make it a befitting centre for this important area.

viii. One house of nocturnal animals can be built up by using local material for giving proper shelter. In the recent past a good number of owl, owlet, palm civet, fishing cat etc. have been seized which can be brought to this centre and can be kept in a suitable environment for the purpose of the study and tourist attraction.

ix. Almost all the staff posted at Bhagabatpur rearing centre spend their night outside the Crocodile Rearing Centre compound as the wooden hutments which were made in early 1970's are not habitable and not fit for repairs. A watch tower can be constructed to keep constant vigil over prentice island RF area and over northern side of Lothian Wildlife Sanctuary.

x. In order to facilitate inspection of the officers and research work of the scholars, the rest shed existing in the centre premises should be renovated.

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