

113. Museums for Biodiversity Conservation and Environment Education

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Abstract. Public consciousness about biodiversity and the environment, and their importance for sustainable development is not so widespread in India. This article focuses on non formal environment education through nature interpretation centres and science museums. Information is provided about the potentiality of museums in providing recreation-cum-education to the general people and children. Some universities have small museums, botanical gardens, and other biodiversity exhibits for instruction and research, but these and the few zoos and wildlife centers are poorly funded or managed. Environmental problems like pollution, population explosion, deforestation, natural calamities, destruction and poaching of wildlife, overuse of pesticides all need serious attention. People are generally unaware of the importance and significance of the surrounding environment due to illiteracy and lack of education. For school children, Environmental Education has been regarded as a compulsory subject upto the senior level. Even Environmental Education is a subject of Graduation. But it is doubtful whether the students are really learning to protect the environment and work for its preservation or just learning it by heart to score in their exams. So, theoretical learning is not at all fruitful until supplemented by use of all five senses. In the context of globalization and rapid advancement of technological arena, Museums should take the challenge of preserving the environment. Creating Environmental awareness will not only be beneficial for the society, but at the same time museum will too be benefited. For environmental degradation in form of pollution is harmful for museum buildings and objects. Environmental education seeks to empower individuals with an understanding of environmental problems and the skills to solve them. Besides the traditional role of documenting and displaying, educational programmes, a Science Museum and Natural History Museum can take up challenges of implementing and inculcating the environment awareness to all target groups.

Keywords: Biodiversity, Conservation, Environment Education, Interpretation centre, Sundarban,

Introduction

Plant and wildlife resources are of great economic as well as ecological importance. Each species is unique and irreplaceable. Every species is of scientific interest and makes some contribution to its ecosystem. However millions of species are disappearing from our earth. In the recent time, the rate of species extinction has gone up alarmingly high and is a matter of great concern. Taking into account the fast disappearance of Biological species, the year 2010 has been designated the International Year of Biodiversity by United Nations General Assembly so as to send the message of the need of Biodiversity conservation in a global perspective.

In today's world, the "natural habitat" of people has become the built environment where children spend on average 90% of their time (Stephen Kellert, Yale School of Forestry, Lecture in the San Diego Natural History Museum). So strategies need to be developed for a strong connection between the natural and built environments.

Many attempts have been made to bridge the gap between nature and layman. Attempts have been made through books, magazines, television programmes and school curricula. But such attempts will not be fruitful unless the theoretical knowledge are supplemented by props- that is interactive way by which people can make themselves feel to be a part of the surrounding environment. There is need for an environment in which people can become familiar with the details of biological diversity and environment and gain some understanding by watching nature and various plant and animals behaviours.(Frank Oppenheimer-University of Colorado, November 1968).

Of the different types of Science museums, Nature Interpretation Centres can form a strong link in connecting nature with man. Interpretation Centers are buildings generally located at the place of interest that is an ecologically rich zone, nature reserve, etc. for dissemination of knowledge and information of the site through different exhibits. They are specialized for communicating the significance and meaning of natural or cultural heritage and serve for education and awareness. Visitors or tourists need to consider the visit to the interpretation centre as a part of their work before visiting the respective ecologically important site. The Environmental Committee of the American association of Museum, 1971 states: "Museums have seldom applied their influence to public issues: but the time has

come when these institutions, which through the years have preserved man's treasures and nourished his spirit, must also apply themselves to the preservation of an environment fit for life". One of the thrust areas that pose a challenge to museologists is Environment. Presently, there is a growing concern throughout the world about the alarming condition of our environment.

Objectives

The present paper elaborates on the role of some Interpretation centres within West Bengal, India and how they communicate the importance of biodiversity conservation. The museums or Interpretation Centres under survey centres on the existing biodiversity of Sundarban National Park, 24 Pgs (S), West Bengal. The rate of biodiversity loss is increasing and we need to act now to significantly reduce it and remove this global extinction crisis. Our lives are inextricably linked with biodiversity and environment and ultimately its protection is essential for our own survival.

Area of study

The Sundarban comprising the largest mangrove cover in the world and Bengal's only Natural Heritage Site (as recognized by UNESCO) boasts of its importance in sheltering some of the endangered and critically endangered animals of the world. The Estuarine crocodile (*Crocodylus porosus* Schneider), forming the topmost consumer of the Aquatic Food Chain of the Mangrove ecosystem is one of such endangered reptiles. But in the recent past, the number of naturally reared crocodiles has decreased in number. Estuarine crocodiles form a very important part of the mangrove ecosystem. Any decline in the Crocodile population can cause tremendous impact on the primary and secondary consumers of the Mangrove ecosystem.

So, in order to restore the crocodile population, Forest Department of West Bengal has initiated a site for Breeding and rearing of these majestic estuarine reptiles in captivity at Bhagabatpur, 24 Parganas (S), followed by the release of the matured crocodiles back into their natural habitat, i.e. the tidal creeks of Sundarban. If one takes the chance of visiting the site, he or she may be able to get a clear idea about the birth and nurturing of baby crocodiles, their food habits, their gaining of maturity and final release into the estuaries. To supplement the living reptiles, an Interpretation Centre has been set up adjacent to the Breeding site. Visitors visiting this site should feel fortunate to come across such an informative resource centre. Within the Bhagabatpur Crocodile Breeding Project, an interpretation centre had been established adjacent to the breeding zone for creating awareness on crocodiles and floral and faunal heritage of Sundarban.

Methodology

Other museums involving Sundarbans include the Nature interpretation centres at other islands of Sundarbans which include Bonnie Camp, Ajmalmari Block, Sajnekhali and Bhagabatpur. Field visits were made and various literatures were consulted and correspondences with Forest Department made to gather information about the various activities of the Museum.

The data collected through the questionnaires were supplemented with additional data from semi structured interviews conducted immediately after the visit. Comparison was made with other leading Natural History museums in India.

Observations

The following observations were made during visit and survey of Bhagabatpur Interpretation Centre, Sundarban, 24 Pgs (S).

The entry point to the Breeding Project area bears some of the notable signage as mentioned below:

1. List of common flora in the Protected Areas, i.e. Lothian and Haliday Wildlife Sanctuaries of Sundarban. This includes true mangroves, mangrove associates, back mangroves as well as a few associated non-mangroves, thus highlighting the floral heritage of Sundarban.
2. A display board mentioning about the Do-s and Don't-s for the visitors. The instructions are written both in local language, ie. Bengali as well as English and clearly makes even a layman aware of the basic rules that are to be maintained within the breeding project area.
3. One of the Display board requests the visitors to pay a visit to the Interpretation Centre, at the entrance of breeding place for information on wildlife. So from the entry point itself, an indication is there to pay a visit to the Interpretation Centre suggesting there might be something valuable to gain from the Centre.
4. Request to the visitors to sign in and leave their comments in the Visitor Register. This is very important for it

is an aid through which the authorities can evaluate the effectiveness of their communication and awareness on the heritage of Sundarban. The dense growth of some mangrove species like Garjan (*Rhizophora mucronata*), Gneoa (*Excoecaria agallocha*),

Kankra (*Brugueira gymnorrhiza*), *Avicennia* sp., Hental (*Phoenix paludosa*), Golpata (*Nypa fruticans*), *Heritiera fomes* (Sundari), Hargoja (*Acanthus ilicifolius*), Nona jhau (*Tamarix dioica*) and the mangrove fern *Acrostichum aureum* (Hudo) surrounding the breeding project as well as the Interpretation Centre are a feast to every visitor's eyes.

Near the entry point of the Interpretation Centre, there are display boards portraying the following themes:

1. World distribution of Crocodile, Alligator, Caiman & Gharial- which gives an impression of the distribution pattern and types of crocodiles across the world including the number of species.
2. Another interesting display is the "Salient features of Estuarine crocodiles". This indeed gives an overall impression regarding the external or identifying features by which we can identify an estuarine crocodile from other members like gharial and alligator. So one can note down the characteristic features and compare them with the live specimens. This will increase their power of observation of the morphological features of the crocodile hatchlings, which they could have missed had they seen the hatchlings without noticing the display board.
3. One display board gives an idea of the overall captive breeding procedure by means of flowcharts.
4. Once again, the ways of alerting people about the do's and don'ts of visiting the breeding centre is highlighted in a very lucid way.
5. The colorful pictorial depiction of the Food web prevalent in the mangrove ecosystem where crocodile forms the topmost of the food chain is of special interest to children and students.
6. A statistics of the success of the breeding of Estuarine crocodile in Bhagabatpur and around the world have also being displayed.

Display Technique of exhibits within interpretation centre

The Interpretation centre comprises of a large single Hall displaying various exhibits and specimens as listed below:

1. Preserved Specimens: As one crosses the entrance, he or she will inevitably be attracted towards the different stages of crocodile hatchlings starting from the large ovoid creamish white eggs. The eggs and crocodile hatchlings have been preserved within a chemical preservative-Formaldehyde. The labeled jars are kept at different levels for better viewing by the visitors.
2. Model: To notify the location of the island and the Breeding Project in particular, a 3D Model of the map of Sundarban have been kept well lighted.
3. Photographs:
 - The entire wall displays a large number of enlarged photographs on different stages of capturing of the mature crocodiles from breeding centres and their release into the various tidal creeks of Sundarban.
 - (Besides the estuarine crocodiles the floral and avi-faunal diversity of Sundarban have been portrayed through such enlarged photographs.
 - Enlarged photographs of general themes such as honey collection, fishing, agriculture, prawn seed collection also add to the display. Thus the socio-economic aspects of Sundarban have also been portrayed.
4. Laminated posters: Enlarged laminated illustrated posters on important flora and fauna of Sundarban, List of endangered, rare and extinct fauna of Sundarban, Prey species of Sundarban tiger and Ecodevelopment activities have been portrayed.
5. Sketches: Black and white labeled sketches showing distinguishing features of tongues of estuarine crocodile, marsh crocodile and alligator forms an added attraction.
6. Charts: A chart displaying the origin and evolution of reptiles is very interesting as well as informative
7. Map: A map portraying the wildlife of India is a source of added information to all types of visitors, especially wildlife lovers.

Analysis

Till date, various local schools, including a Blind Boys school have visited the interpretation centre and have immensely enjoyed their visit as evident from their remark on the Visitor Register. Research scholars from different universities visit the Breeding Centre quite often. General visitors, tourists and foreigners throng the breeding centre during the pleasant winter season. Tourists from Lucknow, Germany, Spain, Canada, and U.S.A have visited the entire complex, i.e. breeding site as well as the Interpretation Centre.

The Interpretation Centre at Bhagabatpur has thus being quite successful in reaching out to people, not only regional, but also at global level. However, more of publicity through educational awareness programmes, outreach programmes and most importantly developing popular as well as some scholarly publications will definitely enhance its success rate. Setting up of such a valuable Interpretation Centre in the rural area of Bhagabatpur, taking into consideration the dependence on solar power and adverse climatic conditions is indeed praiseworthy. Visitors will be enriched about not only the endangered crocodiles, but other important flora, fauna of the mangrove ecosystem.

Conclusion

Thus, it is seen that a Nature Interpretation Centre should not only highlight environment through its exhibits, but also device different communication techniques, which preferably centres on burning issues of today. In the fast changing world, where environment is at stake, a museum professional should rightfully consider Environmental degradation as an issue to be given due importance through the public. According to the keynote address delivered by Director General, Natural History Museum, Vienna, at NATHIST meeting, 20th August 2007, "... the major concern of the museum of Natural History is to take care that nature will not become history. Busier than ever all museums are collecting, conserving and defending cultural and natural values on an overpopulated planet, where the human race is to be blamed for mass-extinction of plants and animals, the rate speeding up to a thousand times the natural extinction rate in evolution...." So, environment awareness and conservation of Biodiversity is one of the challenges to be taken up by Nature Interpretation Centres to prevent nature turning into history.

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