

Wildlife conservation need of the hour

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CONSERVATION is the optimum rational use of natural resources and the environment, having regard to the various demands made upon them and the need to safeguard and maintain them for the future. It is the protection, improvement and use of natural resources according to principles that will assure their highest economic or social benefits.

Wildlife may be defined as the community of the non-domesticated species of plants animals and microbes growing under wild conditions, excluding those who have been recently introduced. Wildlife Conservation includes all human efforts to preserve wild animals and plants from extinction. It involves the protection and wise management of wild species and their environment. Man's indifference and ignorance has led him to believe that he is independent of natural laws and of natural environments and to forget that he himself is a biological being and is directly and/or indirectly dependent on the natural resources available to him. He exploits, destroys and reduces the renewable natural resources, eradicates wildlife and leads his own race to levels verging on catastrophe. However, all these can be put to an end by careful, long-range ecological planning and conservation.

Ex-situ and in-situ conservation

Ex-situ conservation is the conservation of biodiversity away from its natural habitat. Viable populations of many organisms can be maintained in cultivation or in captivity. Plants may also be maintained in seed banks and germplasm collections; similar techniques are under development for animals (storage of embryos, eggs, sperm) but are more problematic. The maintenance of biological diversity at all levels is fundamentally the maintenance of viable populations of species

or identifiable populations. This can be carried out either on site or off site. The maintenance of wildlife diversity *on site* may be designated as conservation of wildlife diversity in-situ. The maintenance of a significant population of the world's biological diversity at present only appears feasible by maintaining organisms in their wild state and within their existing range. The term wildlife covers all living organisms ranging from microbes to higher animals (microbes, plants and animals), the conservation of wildlife is synonymously used with the conservation of biodiversity. So, sometimes, the term 'biodiversity conservation' is replaced by the term 'wildlife conservation'.

Impact of human actions

The plants are the source of energy for most of the living organisms, especially of the animals. The plants do not provide only the nutritional source for the heterotrophic animals, but suitable shelters and habitats for them which become available in the biosphere because of the plants.

The UNDP's 1995 report suggests that time is running out for tackling Bangladesh's environmental problems and it calls for urgent action. The report identified that the growing population demands, along with other related demands of agriculture and industry, are seemingly devouring natural resources at an alarming rate without replenishment. The wildlife depletion is caused by degradation of land, erosion of valuable top soil, creeping salinity, over extraction of ground water, indiscriminate land conservation, declining soil fertility, water logging and destruction of forests.

The wholesale change of the country's environment is happening due to both human and natural causes. The country is situated at downstream of major transboundary rivers between India and Bangladesh. The diversion of Ganges water occurs at Farakka point just 10 miles from the north-west border of the country. This is causing severe water shortage and affecting the

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flora and fauna in the north-west region. To an ecologist it is the question of alteration of natural hydrological phenomenon over a geographical area in the biosphere.

Such kind of alteration causes severe climatic changes in an ecological area where it has been functioning since long. This abrupt climatic change creates adverse situation for survival of biological resources (both plants and animals) there. Moreover, not only Farakka barrage over the Ganges, various types of water control structures have been constructed by India on about 50 shared rivers between Bangladesh and India. These water control structures are the major causes for desertification and depletion of wildlife.

Exotic species

In Bangladesh, some plant and animal species have been introduced from different countries. These exotic species have hampered endemic species both in their population dynamics and in the position of their trophic levels. At the same time, in many cases the importation has opted for changing ecosystem. In the aquatic ecosystem, the major introduced species those have changed a lot the ecosystem are African magur (*Clarias garipinus*) and red Pirhanha (*Pygocentrus natterii*). In the terrestrial ecosystem the species are *Tectona grandis* (Shegun), *Acacia* spp. *Eucalyptus* spp. and *Swietenia mahagoni*.

The introduction of exotic species changes the ecosystem and affects endemic species severely. It is important that how the exotic species cause

obstacles for endemic ones and affect the environment and wildlife conservation (both ex-situ and in-situ). For example, the forest area of our country from Karer Hat to Teknaf in the Chittagong division has been dominated by the population of garzon (*Dipterocarpus turbinatus*) tree as canopy layer since long time; and it is endemically sustained also for long time. The garzon forests have got some important characters for maintaining the three layers of vegetation. These three layers of vegetation are the endemic characteristics of our forest in connection with the typical rain forests of the south Asian region.

First layer of vegetation is with the soil surface and does not come up to the height of more than one meter. They are mainly the grasses and the members of Zingiberaceae family. They keep the soil surface wet. This layer is the suitable shelter for microbes' growth and sustainability. It supports the second layer of vegetation and also the third canopy layer.

Second layer of vegetation is the vegetation of man height level in the forest. This layer is above the first layer of vegetation. The layer is comprised of vines, grubs, hedges and shrubs plants. These provide enough shades, protection and make favourable conditions for plants and microbes growth in first layer of vegetation. The layer is called "Undergrowth Vegetation" in the forest.

Third layer is the canopy layer of typical Garzon population or the population with other related trees. This third layer protects the grubs, vines, shrubs and hedges. During the variation of the

seasons in a year or because of seasonal changes, the leaves fall on the ground and the fallen leaves provide enough organic deposition for the growth of both first and second layer of vegetation.

In this way the entire typical forest ecosystem in the endemism sustains and survives in a normal and usual situation. If any unusualness appears because of introduction of any exotic species then the change or alter of the ecosystem makes conservation of wildlife vulnerable.

The introduced species *firstly* hampers the phenological stages (for plants) and the stages of life cycle (for animals) of the endemic species. *Secondly* they reduce the functioning of the organisms in-situ and their respective trophic level. Thirdly, population of endemic species is seriously threatened to extinction. *Fourthly*, ecosystem of harbouring exotic species becomes weak. *Fifthly*, alteration of the ecosystem happens and gets established on a permanent pattern. There are obvious short-term consequences, but all too often the long-term effects cause the depletion of wildlife.

Deforestation

The Bangladesh forest with its exuberant majesty and biodiversity depleted and shrank to six percent from 20 percent of land area within a time span of 50 years after 1947. This happened due to policy weakness, over-exploitation and law and order failures. It is a fact that there is lack of legislation to provide protection to the national forest but poor implementation mechanism of the existing rules perhaps cause greater damage in this regard.

Since the beginning of the British rule, the Indian subcontinent including Bangladesh appeared to hold inexhaustible forest resource base. Rennel's map (1886) indicated that the Sundarbans, sal forest of the Bhawal-Madhupur tracts covered an area several times larger than it is at present. The hill forests of Chittagong, CHT, Sylhet, Mymensingh and Comilla were also densely populated by more than 2000 flowering plant species including 300 tree species. Nearly 30 tree species in hill forest 20 species in plain land forest and 30 species in the littoral forests used to be commercially exploited.

For over the centuries the policy pursued was only to expand the agricultural land area by clearing the forests ignoring or underestimating their tangible contributions. The destructive policy, rapid change of society from rural to urban and fast growth of population put extra stress on forests that consequently depleted them to the present level.

Environmental Biology and Biodiversity Laboratory (EBBL), University of Dhaka made a study (1999-2003) on the traditional and cultural involvement of local people and the causes of deforestation in some forest areas of Chittagong and Cox's Bazar districts. The local people (because they are poor and illiterate) are culturally habituated to go inside the forest every morning and have some wood or undergrowth plant's cut for selling in the market nearby for a few taka only. Most of the local people were found "governed" by the local leaders and influential men. They were not only

illiterate, size of their family was found very large. Out of 351 interviewed individuals, 164 individuals were found with family members varying from seven to 10. This in the forest areas definitely creates high population pressure; and the unwanted and unplanned illiterate people also often become main cause of deforestation. Enactment of appropriate policy and legislation and their proper implementation could probably help to save the country from present precarious situation in respect of forest resources.

Bangladesh has got enormous possibility to protect forests and to increase afforestation by adopting some scientific and socio-cultural practices. Vast forest area of Chittagong, Cox's Bazar and Chittagong Hill Tracts could be taken under the programme of ecotourism management. With the implementation of the ecotourism programme, the local people's involvement could be made usual and fruitful. Poverty alleviation of the local and or tribal people could be easily initiated. In many countries ecotourism is helping the local population in this way.

If ecotourism management could be made functional in cooperation with local people, then the forests will automatically attain the participatory forest status. In the participatory forest status, the local people will be very much eager to protect the forests for their own interests when they will understand that the forests are essential not only for environmental soundness but also for their economic support.

Conservation is imperative

In Bangladesh, we have some important forest areas (Chittagong (Sitakundo, Karaerhat, Chunati), Cox's Bazar (Eidgaon, Eidgar, Fashikhali), Sylhet (Lawasara and Rama Kalenga), Mymensingh (Sherpur), Tangail (Modhupur), Noakhali (Nijhum Islands) and Khulna (Sundarbans: the largest mangrove) to be treated as ecotourism spots which could be used

as the potential tools for the conservation of forests, nature and as well as the beauties of the nation's endemism.

In Bangladesh, wildlife may be put under 'double sided' characters. One side is the 'species richness'; another side, the population size of the existing species is very small almost in all cases. This characteristic bears hopefulness in the way that if the species richness is preserved immediately then the biodiversity could be used both for the economic benefit and environmental soundness. But the low population size per species is risky for the species to be extinct. So, maximum species are at the stage of seriously "threatened" status. This is the negative side of the double sided characteristics.

It is an imperative that, species conservation strategies must be taken up immediately. Otherwise, species richness will fall very soon and the dwindling forest and aquatic ecosystems in the country will have their negative impact on the human population. Positive side of the characteristics is that, if we can go quick for conserving species and their population size, then still there is high possibility of keeping the ecosystems 'rich in biodiversity'.

The gravity of threat to Bangladesh wildlife could be cited with the population size of marsh crocodile (*Gravialis gangeticus*) in the aquatic ecosystem and bird wing butterfly (*Troides* spp.) in the forest ecosystem. In both cases population size is very small; if conservation strategies are not attempted immediately the species will be extinct very soon. On the other hand, immediate attempt to protect them will be beneficial for ecotourism industry, earning revenue, sustenance of biodiversity and for nature conservation. Both of the animals are rare species and at the same time very attractive to the tourists.

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Either ex-situ or in-situ conservation process, the situation of prevailing groupingness is to be preserved.



When mammals in the wild are free to feed on their own, they expose the insect larvae, annelids, mollusks, and other eatable smaller animal feeds for birds



Reptile is very much disturbed when human interference is in its normal activities even in the forest habitat.



Plant-animal association is a necessity for the establishment of gene-flow mechanism in the wilderness.

Climate change and tourism

UNWTO is to underline global warming at Davos meet

MOHAMMAD SHAHIDUL ISLAM

CLIMATE change is not a theoretical concept for tourism. It is a phenomenon that affects the sector, and certain destinations in particular. The tourism industry also contributes to the greenhouse effect, largely through the transportation of tourists. There is, nowadays, wide acceptance of the burning need for employing tactics to face the changing climatic conditions and take precautionary actions against future impacts. The world must respond in a holistic way to the twin challenges of climate change and poverty.

That tourism contributes to conservation of environment has recently drawn the attention of The United Nations World Tourism Organization (UNWTO). The organization is going to hold its second international conference on global warming and tourism in Davos, Switzerland. The subject climate change and tourism will be given importance at the conference, to be held from October 1-3. UNWTO's first conference on climate change and tourism was held in Djerba, Tunisia, in 2003.

In the General Assembly in Colombia, UNWTO firmly stated that the meetings would advance research and policy measures that would help tourism to defeat the challenges caused by climate change, and at the same time go on with providing major contributions towards poverty alleviation. In this context, the UN Secretary-General, Ban Ki-moon, praised the results of these discussions as a tourism input to UN's conference on climate change to be held in Bali this December. In the spirit of UNWTO's Global Code of Ethics for Tourism, and in connection with the UN's Millennium Development Goals, the tourism sector can and must act out its part.

World leaders in recent years have documented a range of challenges of truly global import, with acute poverty and climate change as the most forceful issues. They entail innovative and changed behaviour to effectively respond over time, and tourism can

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and must play its part in the solutions to both. World tourism has entered a historically new phase of growth, which began three years ago. A more solid and more accountable type of growth distinguishes this new phase. The UNWTO will encourage stakeholders from the public and private sectors, and representatives from the civil society, as "climate change has become a key issue for policymakers worldwide, and tourism is an important element of discussions."

In remarking about the upcoming event, UNWTO secretary-general Francesco Frangialli said: "UNWTO as the lead tourism organization in the UN family is collaborating with UNEP as the key environment agency to guarantee that the tourism sector plays its part in this matter."

The Davos conference will be followed by a Ministerial Summit,

supported by the United Kingdom, at the World Travel Market in London on November 13. "The Davos International Conference and the follow-up Ministerial Summit in London will trigger research and policy measures that will enable tourism to respond to the challenges of climate change and, at the same time, reduce the industry's own contributions to global warming," the secretary-general added in a meeting.

The options open to the tourism sector for adaptation to climate changes will be talked about, in three panel sessions, from a destination's perspective: coastal destinations and small islands, mountain regions, and nature-based destinations. Possibilities for improvement will be discussed in three panel sessions: improvement in the transport sector, improvement in hotels and other

tourism establishments, and improvement of tourism impact on the natural environment, and strengthening of the resilience of ecosystems.

Climate is an essential resource for tourism, especially for the beach, nature, and winter sports tourism sections. Changing climate and weather patterns at tourist destinations and tourist generating countries can significantly affect the tourists' comfort and their travel decisions. Changing demand patterns and tourist flows will have an impact on tourism business and on host communities, as well as knock-off effects on related sectors, such as agriculture, handicraft or construction. In small island states and developing countries, where tourism is a major economic activity, any significant reduction in tourist arrivals will have serious employment impact and engender further poverty.

Governments and private sector must lay augmented importance on these factors in tourism development strategies, and in climate and poverty strategies. They are interdependent, and must be dealt with in a holistic fashion. This calls for a more accountable growth. Tourism has become both the victim and the victor of climate change. The sector has to reduce its discharge; it also has to adapt.

No one now doubts the reality of climate change, and the UN system is committed to seeking solutions that are coherent with other global challenges, particularly the war on poverty. This is important for tourism, which is a vital export for poor countries.

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Land use and land cover change affecting sustainable development

BYOMKESH TALUKDER

LAND use and land cover change may denote changes in one particular type of land cover to another new type, such as from forest to agriculture or it may represent modification within the existing land use or land cover type such as growing crops in smaller patches within a large forest cover. In another way land use may be defined as the way land is developed and used in terms of the types of activities allowed such as agriculture, residence, urban area, industries, etc. whereas land cover means the physical coverage of land, usually expressed in terms of vegetation cover, or lack thereof.

Land use and land cover change has a relation with the sustainable development of a region. Land use and land cover is associated with energy flow, material flow, landscape condition, biotic condition, hydrology and geomorphology and chemical and physical characteristics. Thus it is related with the environmental part of sustainable development.

Sustainable development is the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of "needs", in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet the present and the future needs. (Brundtland Commission, 1987).

Sustainable development is based on environmental sustainability (ecosystem protection, environmental management etc.), economic prosperity (economic growth, employment opportunity etc.) and social equity (socio-cultural development, political stability and decorum etc.), which in broader sense basically

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somehow related with the land use and land cover change. The rapid removal of land cover and change in land use, while beneficial to some in the short term, may doom our next generations to a life devoid of the services provided by land use and land cover ecosystems and contribute to human impoverishment in both economic and aesthetic terms.

It is only in the past two decades that we began to recognise the cumulative consequences of land use and land cover change to life on earth. It can cause (i) soil losses due to erosion and leaching; (iii) silting up of rivers rendering costly dams useless; (iv) change in local and regional patterns of rainfall and temperature which can negatively affect locally growing plants; (v) removal of tons of carbon through logging; (vi) emission of carbon from tropical deforestation through burning and decomposition; and (vii) biodiversity losses, given the still poorly understood value of plant and animal species' contribution to our life and living.

An understanding of the implications of changes in land cover and land use is a fundamental part of planning for sustainable development. On the one hand the transformation of land cover and land use by human action can affect the integrity of natural resource systems and the output of ecosystem goods and services. On the other hand, by careful planning, the development of new patterns of land cover and use can enhance the well-being of people

(Millennium Ecosystem Assessment, 2005). The need to consider the coupling of social and ecological systems through the study of land use and land cover change has been identified as an urgent priority by a number of organisations. The recently announced Global Land Project (GLP, 2005) which is a joint initiative promoted by the International Geosphere-Biosphere Programme (IGBP) and the International Human Dimensions Programme on Global Environmental Change (IHDP), for example, takes as its starting point the proposition that there is a limit beyond which the Earth System (which includes all its biophysical, economic, technological and societal elements) can no longer absorb the impact of human activity. According to the GLP, this represents the sustainability limit.

Now-a-days in Bangladesh scientists and policy makers are recognising the land-systems perspective. The law of declaration of "Ecological Critical Zone" is one of the examples of that. The importance of a landscape and land cover concerns have also been emphasized through the several environmental laws of Bangladesh (Environmental policy, Water policy, Forest policy, Agricultural policy etc.). In the United Nations Secretary-General's report, Toward a Larger Freedom, it has been described that access to land and secure rights over natural resources is fundamentally linked to the three pillars (Development, Human Rights and Security) for achieving the

Millennium Development Goals (MDGs).

Human systems depend critically on the state of the environment. Managing a sustainable evolution of land-use systems at the regional scale concerns various themes of vital importance: To achieve food security, agricultural production must be expanded and intensified in harmony with demographic, socioeconomic and technological changes. This requires prudent land management to maintain healthy agro-ecosystems.

Land-use/cover changes affect the hydrological cycle both qualitatively and quantitatively by influencing how precipitation is intercepted, evapotranspired, and retained in soils, which in turn determines the amount and speed of runoff. Land-cover change also influences local soil erosion and nutrient losses. At the river basins, it determines water availability and the intensity and frequency of flooding. Ecosystems and land in general store waste materials and provide critically important purification functions. The ability to provide these services is threatened by pollution and land degradation due to inappropriate land use, or over-exploitation that transgresses capacity thresholds.

In Bangladesh people still depend on natural resources -- land, water, crops, fish, trees, fruits, vegetables both from land and water, poultry, livestock to manage their livelihood portfolios. Any degradation and loss of access to natural resources deprive them of their livelihood potential.. Any destruction of necosystem based natural resources affect the poor people's nutrition intake and make them most vulnerable. As natural resources are strongly related with the land use and land cover change so it is a very important issue for sustainable development in Bangladesh.

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