

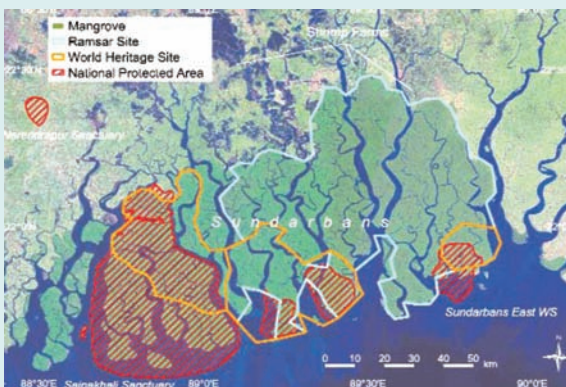
The Sundarban of Bangladesh

Introduction

The coastal areas of Bangladesh contains several ecosystems that have important conservation values. Part of the Sundarbans, the world's largest stretch of mangrove ecosystem, has been declared a World Heritage Site, whereas coral ecosystems are found around St Martin's Island. Research indicates a network of coastal defences, especially a belt of mangroves, is capable of absorbing 30 to 40 per cent of the total force of a tsunami or typhoon and ensuing waves before they swirl over inhabited areas by the shore. Healthy mangroves not only protect coastal communities from the sea, but they are also profitable ecosystems in themselves. Mangroves act as nurseries for a wide range of species: fish and shrimp spawn and mature in mangrove ecosystems before moving into deep and open waters. As such, mangroves play an important role in the ecology that supports artisan fisheries of coastal communities.

Although mangrove ecosystems have tremendous value for coastal communities and associated species, they are being destroyed at alarming rates. Over the last 50 years, about one-third of the world's mangrove forests have been lost (Alongi 002). Human threats to mangroves include the overexploitation of forest resources by local communities, conversion into large scale development such as agriculture, forestry, salt extraction, urban development and infrastructure, and diversion of freshwater for irrigation (UNEP 1994). The greatest human threat to mangroves is the establishment of shrimp aquaculture ponds. Because mangroves are often viewed as wastelands, many developing countries are replacing these forests with agricultural land and/or shrimp aquaculture production. Shrimp aquaculture accounts for the loss of 20 to 50 percent of mangroves worldwide (Primavera 1997).

In Bangladesh there also have a rich stock of mangrove vegetation with a variety of flora and diverse fauna in a unique ecosystem. But the natural environment and coastal ecosystem of this Biosphere Reserve and World Heritage Site is under threat of physical disaster due to unscientific and excessive human interference. In the 1990s, the 'Shrimp Culture project' in the southern part of Bangladesh resulted complete destruction of 'Chokoria Sundarban' the second largest mangrove patch of Bangladesh of about 21020.45 acre.



In addition to these anthropogenic threats, mangroves are also threatened by the impact of global climate change. Global climate change and concomitant effects such as changes in temperature and CO₂, altered precipitation patterns, storminess, and eustatic sea-level rise as observed over recent decades, are due primarily to anthropogenic activities. Most of the observed warming over the last 50 years is attributed to an increase in greenhouse gas concentrations in the atmosphere.

Rising sea level threatens to inundate low-lying areas and offshore islands in the country's coastal belt and destroy ecosystems such as mangroves and wetlands that protect the coast against storms and surges. Sea level rose between four and eight inches in the past 100 years while, according to the scientists, it can rise between 4 inches and 36 inches over the next 100 years. The Sunderbans, has been faced with the threat of going under water because of global warming. (The New Nation Mar 07, 2007)

Impact on mangrove bio-diversity

The rise in sea level and availability of less fresh water particularly during winter when rainfall will be less will cause inland intrusion of saline water. As a result, many mangrove species, intolerant of increased salinity, may be threatened. In addition, the highly dense human settlements just outside the mangrove area will restrict the migration of the mangrove areas to less saline area. The shrinking of the mangrove areas will have effect on the country's economy.

Many industries which depend on raw materials from the Sundarbans will be threatened with closure and create large unemployment. Climate change is real a threat to ecosystem and bio-diversity. The Sundarbans may be completely inundated by a 1m rise in sea level. Increase in temperature and sea level rise will seriously affect the Sundarbans' ecosystem and bio-diversity. The area may shrink and many flora and fauna species may face extinction. Water stress during winter and excess water during summer will have effects on ecosystem and bio-diversity. A wide range of mammals, birds, amphibians, reptiles, crustaceans, and above all the Royal Bengal Tiger will face extinction. The ecosystem of the only coral island of the St. Martin's island may also be affected. The coastal length covered by mangrove forest will be exposed to cyclones and storm surges.

Top dying of Sundri tree (*Heritiera fomes*) and salinity increase due to lack of freshwater flush during the dry months. These are causing the negative effects in the ecology of Sundarbans. The ODA inventory report presented a table showing number of stem of *H. fomes* (Sundari)/ha per 5 cm dbh classes which reveals that about 0.45 million (114 trees/ha on 395.514 ha) trees are already affected by top dying (Mangroves of the Sundarbans: Vol. II: Bangladesh).

