

The Sinking “Beauty” – Sundarbans

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Abstract: Sundarbans is the world’s largest mangrove ecosystem and it is an archipelago comprising of several hundreds of islands. It is located in the eastern coastal region of India. And formed by the sediments brought down by the main three rivers of India and Bangladesh draining in this region namely The Ganga, The Brahmaputra, and The Meghna .The study emphasizes on submergence of the islands and the mangrove forests and it’s impact on the poor and marginalized people of the effected area. In last few years the two islands of Lohachara and Suparibhanga are already engulfed by the raging sea, Ghoramara and Sagar are estimated to be the next victims. The research is done utilizing satellite imageries and using geospatial techniques.

Introduction

The **Sundarbans** is the largest single block of tidal halophytic mangrove forest in the world. The name Sundarban is literally termed as "beautiful forest" in the Bengali language (Sundar, "beautiful" and ban, "forest" or "jungle"). The name may have been derived from the Sundari trees (Mangroves) that are found in Sundarbans in large numbers.

The forest lies in the vast delta of the Bay of Bengal formed by the confluence of the Ganges, Brahmaputra and Meghna rivers across southern Bangladesh and West Bengal, India. The forest lies between 21° 30' to 22° 40' N, 88° 05' to 89° 55' E and covers 20,000 sq.km. It became inscribed as a UNESCO world heritage site in 1997, but while the Bangladeshi and Indian portions constitute the same continuous ecosystem, these are separately listed in the UNESCO world heritage list as the Sundarbans and Sundarbans National Park, respectively. The Sundarbans is intersected by a complex network of tidal waterways, mudflats and small islands of salt-tolerant mangrove forests.

The area is known for the Royal Bengal Tiger , as well as numerous fauna including species of birds, spotted deer, crocodiles and snakes.

The maximum average temperature of 29 °C is felt during June and a minimum of 20°C is felt during December to January. The soils found in this region are mainly are fine deltaic alluvium borne of terrestrial materials.



Island Loss in the Sundarban is a great matter of concern island loss problems are faced by both small and large islands; the main causes of this are coastal erosion, rise in sea-level increased cyclone intensity and flooding.

The Laws that are Active in this Region for it's Protection

The Biological Diversity Act 2002 & Rules provides restriction on access to biological resources or knowledge associated there to for research or for commercial utilization or for bio-survey and bio-utilization.

Coastal Regulation Zone Notification applies to whole of Sundarban because it id ecologically sensitive and mangrove forest area. The restrictions are:

1. No new construction shall be permitted within 500 mts of high tide line.
2. No construction shall be permitted between high tide line and low tide line.

Coastal Aquaculture Authorities Act and Rules makes Compulsory Registration of aquaculture farms. Restrictions of method of farming discharge of pollutants etc.

Marine Fishing Act, WB. Provides restrictions on trawl and large mechanized fishing within 15 kms, of the coast.

Study Area:

East Sundarbans in the Indian Subcontinent , State West Bengal , District North and South 24 parganas.

It covers a region of 9630 sq km, in the coastal region of the Bay of Bengal out of this; 4260 sq km wetland/mangrove constitutes reserved forest. Human settlement is concentrated in 13 blocks of south 24 parganas and 6 blocks of North 24 parganas.

The population of this area is about 4.1 million. About 89% population in this year is agriculturally dependant and a single paddy crop is produced. Another source of income is fisheries.

Methodology:

Both primary and secondary data are used for qualitative and quantitative analysis.

Problem Identification: Steps are taken to study the basic problems that is being faced by this region, relating to it's continous land shrinkage and the increasing amount of climate refugees and there present conditions and scenarios. The governmental help being provided and to the level they are sufficing the people.

Following the problems and the areas most affected satellite images of west Sundarban are obtained for mapping the changes since 1980. The images are mainly sourced from LANDSAT (TM, MSS) MODIS.etc

Vector images are prepared from the obtained images to see the various changing trends, susceptibility of area to water encroachment, loss of mangroves and the trend of migration from various regions. This process is done by using software's ARC-GIS, ARC-VIEW, and ERDAS.

Processing the images and comparing and studying them accordingly thus identifying Land changes in the area and mapping the changes observed and analyzing the Satellite images.

Ground truthing is done by field visit and interviewing local residents by pre developed questionnaires.

Observations:

The main observation noted was island loss. Due to severe coastal erosion caused by rising sea levels the inhabited Lohachara Island has submerged in the sea displacing about 10,000 people from their home. During the same time period the neighbouring island of suparibhanga also submerged. It is also recorded that 45 % of Ghoramara island has also eroded which has forced the people of this island to migrate to the sagar island, the largest island of western sunderban. In South Sagar there is fresh land creation known as 'Char' land, whereas the other section of the islands is facing erosion at a rate of 1 sq km/years. studies state that about 6000 to 7000 people from Lohachara island are living in the sagar island due to island loss. Also the new the new Moore island located 2km from the mouth of Hariabhanga river has completely disappeared from the map due to rise in sea level. This island is said to be around 50 years old and was only 2 meters above the sea level. However there was no permanent settlement reported in this island.

There has been a noticeable change in the frequency and intensity of cyclones in the Bay of Bengal. There has been incursions of saline water and flooding of fishing ponds with sea water limiting the ability of the people to rehabilitate themselves. The increasing trend of out migration is an indicative that the islands are no longer capable of sustaining the economic life of all the inhabitants. Increase in climate refugees due to repetitive cyclonic activities is causing problems like accomodation, employment, water and food. Researches shows the rise in waters resulting in engulfment of islands may render 70,000 people home less by 2015

The density of population of this area as per 2001 census was 845 persons per sq. km. The proportion of the population without work in 2001 was 70%, population was 27% in main employment categories and population in part time or marginal employment was 3%.

It is also seen that dependence on forest and farming is nearly same but deforestation and depletion of mangroves is increasing which in turn is decreasing the holding capacity of soil. There has been extensive Land use change in this area mainly due to urbanisation. The mangrove forest are depleted to practice agriculture and aquaculture. This will also affect fresh water fish species which may become extinct if preventions are not made.

The region suffers massively from the problem of large scale poverty. About 34.79% of the population of the Indian Sundarban falls under the Below Poverty Level. Because of its vulnerable location and inadequate medical facilities there is a large scale death in the region due to diseases like anaemia, goitre, skin disease, malnutrition, etc. However in recent times government is making efforts to upgrade the condition of medical facilities.

Species diversity has gone down in certain areas of coupe working. In the last two decades removal of encroachment and rehabilitation work has also started. The loss of tree cover is causing the wild animals to enter the villages often. For example in the sandeshkali block, people are constantly under threat and they are forced to camp in the local school buildings. GIS cell has been opened in the Office of Director, Sundarban Biosphere Reserve

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