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A SPATIO TEMPORAL CHANGES OF WETLANDS SPECIAL REFERENCE TO RAJARHAT NEWTOWN

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Abstract

Wetlands, the kidney of nature are playing vital role for all living environmental survival. It is the most productive ecosystems that support diverse habitats and biodiversity. About half of global wetlands have found to be lost, and the conditions of remaining wetlands are deteriorating due to natural as well as anthropogenic causes. Urbanization and rapid growth of vertical construction is one of the major issues of concern for decreasing wetlands in India. Present research paper focus on this environmental decline and tries to find out the definite scenario of wetland loss of Rajarhat satellite town. The researcher wants to show the difference land use and land cover pattern of rajarhat since 1975 to present days by satellite image analysis, intensive observation and field work.

Keywords: *kidney of nature, ecosystem, biodiversity, urbanization, satellite town Rajarhat*

INTRODUCTION

A wetland area that is saturated with water, either permanently or seasonally, such that it takes on the characteristics of the distinct ecosystem. Under the Ramsar convention treaty ,wetlands are defined as follows: "wetlands are areas of marsh fen, peat land or water ,whether natural or artificial permanent or temporary with water that is static or flowing, fresh, brackish or salt ,including areas of marine water the depth of which at low tide does not exceed 6 meters."Loss and degradation of terrestrial and aquatic habitats and degraded water quality are major environmental concerns worldwide. Especially wetlands are sensitive ecosystems that are subject to stress from human activities. Wetlands are amongst the Earth's most productive ecosystems, providing a diverse array of important ecological functions and values, ranging from flood and flow control to groundwater recharge and discharge, water quality maintenance, habitat for flora and fauna species, biodiversity, carbon sequestration, and other life support functions (Mitsch and Gosselink 1993).

IMPORTANCE OF WETLANDS

- Groundwater replenishment
- Water purification
- Protect aquatic ecosystem
- Extinguishing fire
- Helping in waste water treatment
- Providing fish, aquatic fruits, vegetables and flowers
- Wetland s provide some recreational facilities

SIGNIFICANCE IN PRESENT STUDY

Wetland resources play an important role in sustaining human, plant and animal life. They balance climatic and hydrology cycle to our environment. However, wetlands have been decreased both in time and space. This in turn narrowed the opportunities of wetland services. Thus, the study focused on assessment of the Spatio -Temporal change of wetlands and its

socioeconomic effect in Rajarhat and Newtown area.

AREA OF STUDY

Rajarhat Newtown area has been selected for the study which falls in North &South 24 Parganas district which lies in southern West Bengal, of eastern India. Geographically Rajarhat Newtown area extends in the [from latitude 22º33' north to 23º37’ north and from longitude 88º27' east to 89º32' east. It covers 3075 hector area.

PROBLEMS OF STUDY AREA

- Reduction of wetlands ,due To rapid rate of urbanization
- Jute cultivation is hampered.
- Flood situation is occurred in rainy season.
- Lack of pisciculture
- Loss of biodiversity
- Micro level climatic change
- These areas are transforming into heat island
- Decrease cultivation of fruits and flowers

OBJECTIVES OF THE STUDY

The study will focus on the following objectives:

- To find out present land use and land cover pattern of Rajarhat and Newtown.
- To know present situation of wetlands.
- To evaluate the importance of wetlands of Rajarhat.
- To observe the causes of reduction of Rajarhat wetlands.
- To find out the suspected consequences after wetlands loss of Rajarhat & Newtown.
- To find out the problems faced by the local people due to reduction of wetlands in these area.

HYPOTHESES

Hypotheses are a statement of fact based on observation which is to be tested with the help of different Empirical, Quantitative methods and models.

On the bases of information obtained through preliminary flying survey of the study area following hypotheses has been formulated:

- Wetlands of this area reduced due to construction of settlement and transport network.
- Land use patterns influence due to reduction of wetlands.

REVIEW OF LITERATURE

Nair and Sankar (1995) have done classification and evaluation of coastal wetlands of Kerala using Indian remote sensing satellite. They have used geocoded IRS-1A LISS II FCC (bands 2, 3, 4) images for the fair weather period of 1990-91 on 1:50,000 scale for the preparation of coastal wetland maps. In order to generate information on wetlands on a regional / national level, a classification suggested by Space Application Centre has been suitably modified by CESS so as to suit to Kerala’s geomorphology.

Dutta and Kotoky (2001) have studied the sequential changes in the wetlands of the Dhansiri River channel between the years 1914, 1975, 1990, 1995 and 2000 using SOI toposheets (1914

and 1975) and Indian Remote Sensing (IRS) satellite imagery (1990, 1995 and 2000). The satellite imageries and SOI toposheets from 1910-1914 were registered to the base map using a set of Ground Control Points (GCPs) in ERDAS IMAGINE 8.5 software. Thematic maps of different periods were prepared on 1:50.000 scale and were integrated using Arc view GIS.

Rao et al. (1999) studied the Spatio-temporal changes occurred in the coastal wetlands of Sunderbans delta of West Bengal, India between 1973 to1993 using the Landsat MSS data for 1973 and European Remote Sensing (ERS-1) and Synthetic Aperture Radar (SAR) data for 1993. Shrinkage of the wetlands is seen on the periphery of Calcutta due to urbanization as well as the development of new islands in the active coastal zone have been observed over the period of 20 years.

Classification of Backwaters (Kayal in Malayalam) in the coastal zone of Kerala was done by Nair and Thrivikramji using IRS LISS II data of the 1990- 91 period (Nair and Thrivikramji, 1996). Environmental degradation including losses due to reclamation of Vellayani Kayal was done by Nalin Kumar and Nair using IRS data (Nalin Kumar and Nair, 1998).

DATABASE AND RESEARCH METHODOLOGY

The present study based upon both primary and secondary data. Primary data will be collected from personal survey. Secondary data will be gathered from different sources including articles, reports published and unpublished by various Government organizations. References of topographical sheets, consultation of books, maps, satellite images, internet, Google earth etc.I visited several times at Hidco Bhavan Rajarhat, Jalsampad Bhavan, Saltlake, and Barasat Meen Bhavan. Collection of data, information, photographs. Few spots have been visited to talk with the local villagers to find out the problems after changes of wetlands

Methodology may be defined as a tool or instrument processed in formation could be helpful in the completion of research work. For the present study information will be collected both from primary and secondary sources. However most of the study will be done at micro level, using primary source of information. Personal physical survey of the study area will do. Remote sensing techniques have been used to observe the changes in the surface water bodies of.it is related with the assemblages of data generation & presentation by using many statistical & graphical methods .These work is prepared by Microsoft office 2010.The maps are prepared by software namely QGIS, ROLTA GEOMATICA.

FINDINGS

Land use and land cover changes through 1975 to 2019

After 44 years in 2019 the land use and land cover has changed gradually in respect of the total area. The Wetlands area has reduced due to unscientific growth of urbanization. Now a days the wetlands have become threatened landscape. People are destroying it. Now it is only 246 hec.(8%) of total area. And the open space is increased 24%.And the settlement is now 29%.

1. We show that in 1975 the wetland was 18% (553.5 ha.) ,1998 the wetland was 15% that Means it decreased 3%(461.25 ha.) Of late , the existing wetland is only 8% (246 ha.)
2. Decrease production of different fishes like phouli, chela, maurala, magur, singi, chang, koi, til puti, etc fish.
3.Due to insufficient irrigation(wetland based) the production of crops is highly reduced like paddy (mainly aman ,boro) musterd, jute, beetroot, carrot, brinjal .

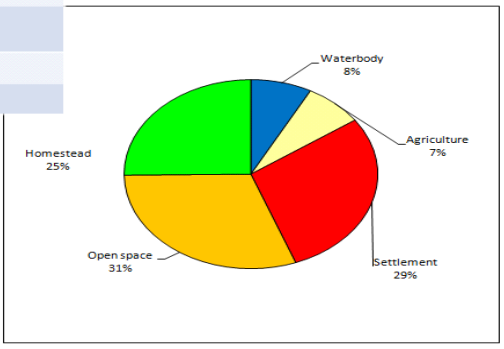
4. The workers who are involved in fishery & aquaculture they suffered from unemployment.
5. Day by day wetlands are highly affected due to rapid rate of urbanization .
6. Local people are displaced from their land by force.

PIE CHART SHOWING THE LANDUSE LANDCOVER OF RAJARHAT OF 2019

TYPE OF LANDUSE LANDCOVER	AREA IN HECTOR	AREA IN PERCENTAGE
WETLANDS	246	8
AGRICULTURAL LAND	215.25	7
HOMESTEAD ORCHARD	768.75	25
SETTLEMENT	891.75	29
OPEN SPACE	953.25	31

SOURCE: satellite image

Landuse and landcover has vastly changed from the year **1975 to 2019** day by day.On the basis of these data we have drown three pie diagrams to show the changing nature of the landuse and landcover of this area



CONCLUSION

Wetlands are the kidney of natural landscape. It is imperative for us to explain whether development of a city should be attempted by sacrificing the interest And development of the surrounding wetlands, villages and whether priority should be given to city's development and not to the development of wetlands. To artifificially develop a city by extension of urban areas and building thoughtlessly high - rises on the ruins of deserted wetlands ignoring the facts of unfortunate. Local people evicted from their livelihood will surely invoke nature's curse.

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