



Anthropogenic Interferences on Wetland in Tufanganj II CD Block in Coochbihar District

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Abstract:

The paper basically takes upon the view of the significance and areal extent of wetland as defined by the National Water Act, Act. 36 of 1998 as a transitional zone between the terrestrial and aquatic ecosystems where the water table is generally at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil. An attempt has been made to know the status of wetland and degradation of wetland ecosystem due to anthropogenic interferences in Tufanganj II block in Coochbihar district. The study is based on both primary and secondary data. The study also leads to the sustainable management of natural wetland in the form of oxbow lake in that particular area.

Keywords: Wetland, Sustainable management, Wetland ecosystem,

Introduction:

“Wetland” the term first used in 1953 by the US Fish and Wildlife Service (Crandell, 2017) can be defined as the ‘wet’ lands that exist because the inflow of water exceeds the outflow for brief to extended periods of time during the growing season (Ramana et al., 2008). No single definition of wetland has been opted for all landscape (Crandell, 2017). The internationally accepted definition of wetland is “areas of marsh, fen, peatland 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 tides does not exceed six meters”. (Ramsar convention, article 1.1). Wetland performs many functions such as groundwater recharge, wastewater treatment, flood mitigation, support terrestrial and aquatic habitat, stabilization of local climate etc. Wetland has both use and non use value (Turner et al., 2000) because it is very fruitful to human (Mitsch and Gosselink, 1993).

In Tufanganj II CD block many natural wetlands have been developed in the form of Ox Bow Lake which is locally known as Beel or Baor. These beels are nothing but the remnants of the old beds of rivers. The beels are the nurseries of fish and tortoise. These are also used for washing jute and watering the cattle. All such marshes and beels as are above 10 standard bighas in the area are directly held by the state and let out in the farm, usually for a period of 3 years by auction. These leases are often very profitable as fish is much in demand and fetches a high price in the local markets. The people living in the immediate neighborhoods of these fisheries also make their own terms with the farmers of catching fish, as well as steeping jute in them and usually pay in paddy and jute fibers, the money equivalent of which is often as good as a couple of rupees per head per annum. (Chowdhury, 1903). The objectives of the study are given as follows:

1. To find out the location and areal extent of beels.
2. Identify the status of beel based on qualitative impact assessment due to anthropogenic interferences.
3. Sort out possible measures for the sustainable management of the beel.

Study site:

The study area encompasses 54 villages of Tufanganj II CD block in Coochbehar District, situated on the eastern border of West Bengal with a latitudinal and longitudinal extension of 26°7'30"N to 26°18'N and 89°22'30" E to 89° 32'24"E bordered by Assam in East, Aipurduar district of West Bengal in the north, Dinhata block of the Coochbehar district in the south and Tufanganj I in the West. The total water area of the block is 378.55 ha. Among them the beel area comprises 178.55 ha. Rasik beel wetland complex, Haripur beel, Changao Beel, Jhingapuni beel, Silhagri beel are the floodplain wetlands along the river Bura Raidak, Dipo nadi and Ghoramara rivers. The mean annual rainfall of this region is 2500mm.

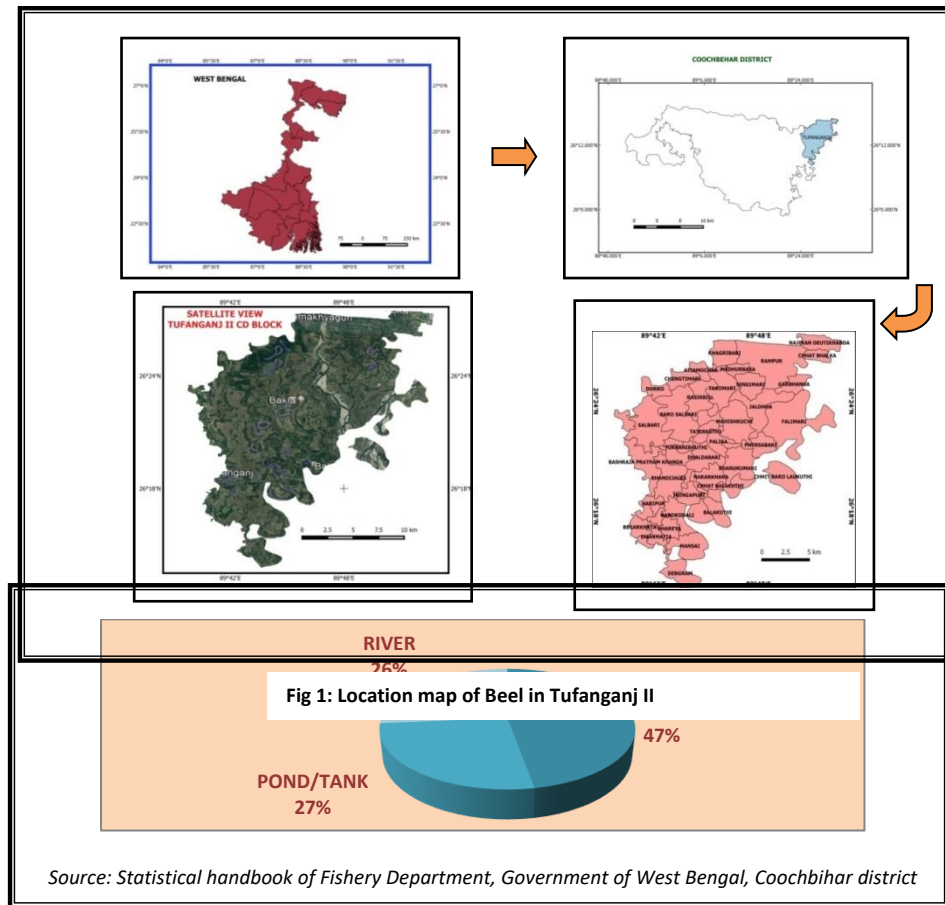


Fig 2: Distribution of water area in Tufanganj II

Materials and methods:

Survey of India toposheets of 1:250000 and 1:50000(78F/11) scales were used to generate the base layer. Field data have been collected with the handheld GPS to know the status and location of beel. Google earth data (<http://earth.google.com>) have been incorporated for the validation of results. The geological map, the police station map, the Rennel's map of Bihar and Bengal, 1776 have been used to pursue the evolution of the *Beel* or *Baor* in the particular area. The secondary data from the fishery department, irrigation department is also very helpful to know the present status of *Beel*. Besides, the secondary data from different sources the extensive primary survey has also been incorporated to know the status of *Beel* in this particular area.

Results and discussions:

After 1787 destructive flood Tista changed its flow direction and succeeded in cutting for itself a new and capacious channel by which it found its way to the Brhamaputra. Though the region has the Quaternary period deposits consisting with sand, silt and clay, the oil and natural gas commission report said that the igneous and metamorphic rocks are found in this region at 1000 to 1500 meters depth (Pal, 1992). A large network of river Raidak, Sankosh is found in this region. Due to the sedimentation and destructive flood in the said region the rivers have shifted their course from one to other and formed the beel like Haripur, Changao, Rasikbeel etc.

SL NO	NAME OF BEEL	AREA IN HA	VILLAGE NAME
1	Nakarkhana Beel	7.39	Nakarkhana
2	Raidaknadir Chara	46.00	Debgram
3	Haripur Madhya Raidak Nadir Chara	26.78	Haripur
4	Mechkhoka Nadi	8.74	Mechkhoka
5	Palika Beel	12.18	Palika
6	Raidak nadi(Northern part)	8.29	Rampur
7	Bhanukumari	4.80	Bhanukumari
8	Bamani Nadi	16.84	Bajrapur
9	Jarimara Raidak Nadi	9.37	Rampur
10	Boser Chara	41.05	Debgram
11	Changaon beel	43.87	Nakarkhana
12	Jari Mara raidak nadi	8.23	Bara Salbari
13	Jari Raidak Nadi	9.37	Rampur
14	Jari Bura Raidak Nadi	6.39	Bansraja

Table 1: Distribution of Beel in Tufanganj II block

Source: Meen Bhavan, Coochbihar District

But this wetland system is getting interrupted by some anthropogenic activities identified in this region. The population pressure of the surrounding villages of the beels has been increasing day by day. The villagers are mostly dependent on these beels for agriculture and fishing purpose. Human interferences have both the positive and negative effects. Mostly high yielding crops such as Boro paddy, Jute are cultivated in the beel. Thus the mixing of pesticides through agricultural runoff deteriorates the water quality of the beels. Aquatic plants are not at all harmful for the wetlands. Due to the heavy nutrient the growth of some plants is very high and obnoxious for the wetland ecosystem. Among them water Hyacinth is the most common which is found in every beel in Tufanganj II. These types of plants increase the solid masses to the wetland which effect on the lowering the depth of the water in the wetland system. The mats of these plants block the air-water interface and diminish the oxygen level leading to the degradation of water quality. This in turn affects the species richness of the aquatic ecosystem. The mats also eliminate submerged plants by blocking sunlight. The Rasikbeel wetland complex is very famous for tourist spot as well as ecologically important. The **Rasik Beel** in Tufanganj II block of Coochbihar district has been identified as Wetlands of National Importance and is under National Wetlands Conservation Programme (Department of environment, Government of West Bengal, 2012)

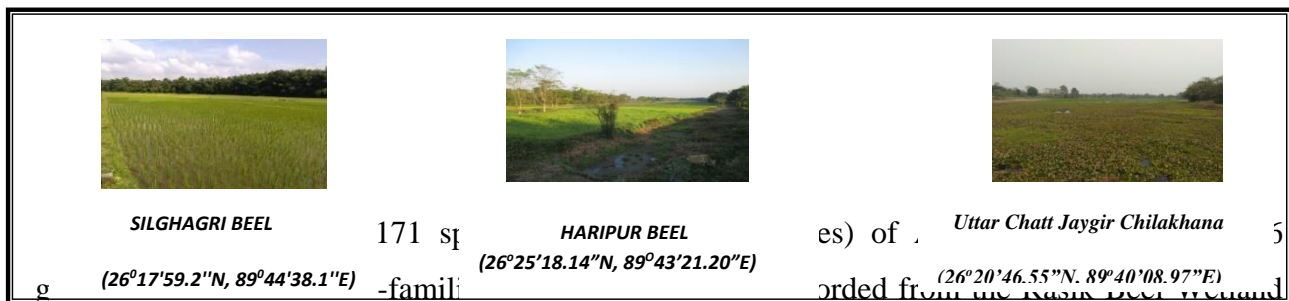


Fig 3: Anthropogenic Interferences in Different Beels which 41 are exclusively migratory and other 43 varieties were belonging to the status of resident-migratory or local-migratory. Eight hydrophytes and 12 thalophytes are in vicinity in this wetland. The overnight

tourists are visiting the site for birds' interest, but day tourists come primarily for the picnic. Thus the noise pollution leads to the disturbance in birds' population.

But due to the human interferences, the avifauna population in Rasikbeel wetland has been decreased from 171 to 138 species from 2009 to 2011. The local people claim that apart from migratory birds of diverse colors, some endangered species like *Porcupine*, *Anteater* could be seen only a few years back. In this way the depth of the Beels decreases with time due to the anthropogenic interferences which increases the frequency of flood. As per the report of Coochbihar Irrigation division, Government of West Bengal occurrence of flash floods is a common phenomenon in the district. From 2006 to 2017, Flash Floods occurred every year.

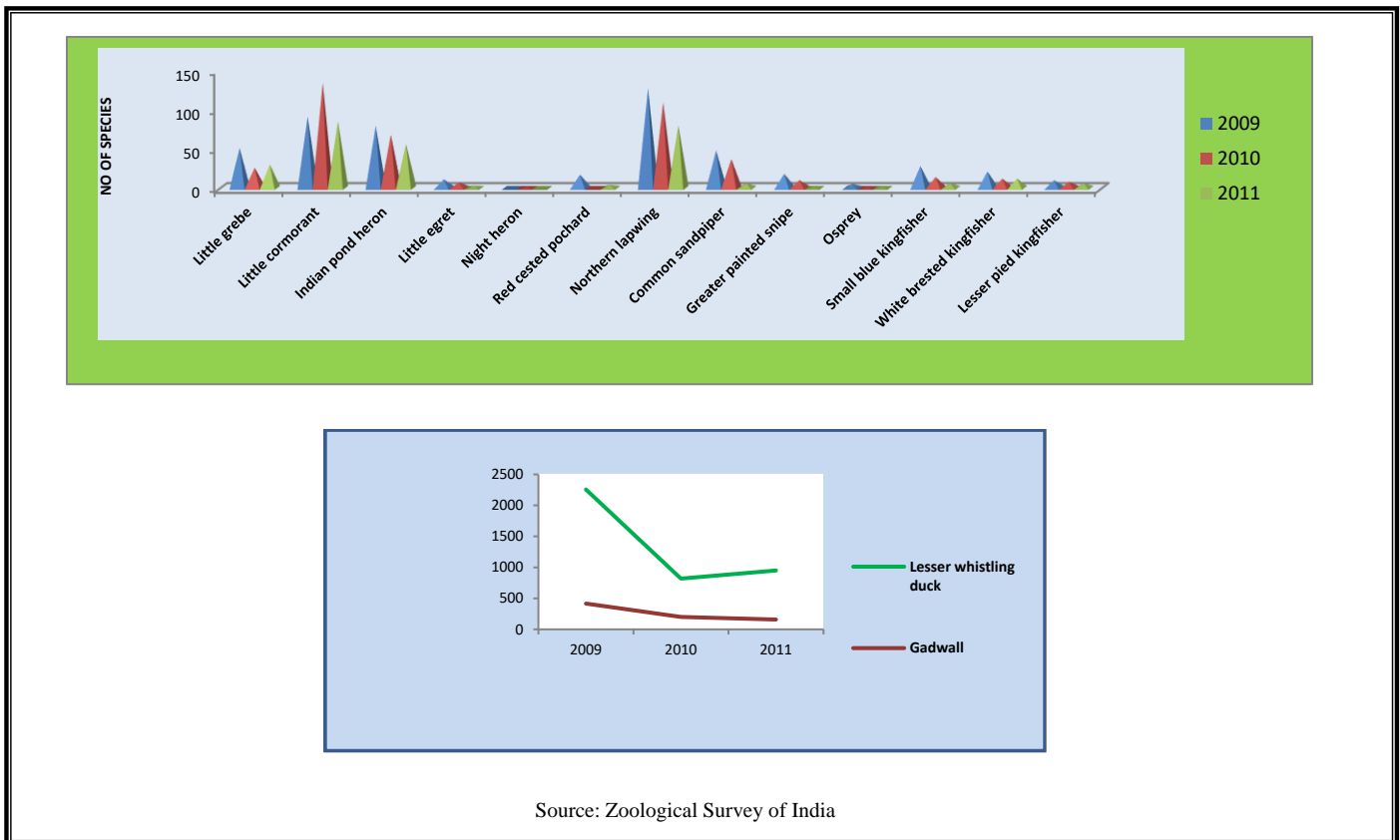


Fig 4: Trends of Birds' Population in Rasikbeel Wetland

Conclusions:

Wetland performs a pivotal role in sustaining the environmental condition of the area. The Beels in Tufanganj II has been experiencing threats due to anthropogenic interferences. The anthropogenic interferences have been mainly identified as agriculture, overexploitation of species, recreational facilities, construction of roads and obnoxious diversity. In rainy season the agricultural activities have been getting interrupted. Then only fishing activities are practiced in the beels. Though the practicing of fishing activity is good for the maintaining the health of the water bodies. But using trap net should be avoided for fishing because it indirectly affects the wetland ecosystem. Mainly the wetland ecosystem in Tufanganj II has been getting affected by livelihood.

So, the study reveals the significance and proper management of beel resources in a sustaining way in Tufanganj II block in Coochbihar district. The beels are actually a very lucrative source of fish. The study has also taken into consideration the conservation of the beel. Local peoples' participation has been taken as a beneficial role in proper maintaining the beel ecosystem.

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