

Evolution and Function of Wetlands in a portion of Raiganj C.D. Block, Uttar Dinajpur District, West Bengal: A Case Study

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Abstract: The wetness area is known as wetland. The floral and faunal diversity are very interesting in the wetlands. Civilization, Business and Population grow along with the wetland. Different types of wetland found throughout the world. Natural and artificial wetland is the main types of wetlands. Riverine wetland is one of them. Old river channel, cut-off are the example of Riverine wetland. The Riverine wetlands are situated in the flood plain region. Periodic flood is the main cause to develop the Riverine wetlands. The study area comes under the flood plain region. Meandering Kulik is the main River in the study area. Old River channel, cut-off types Riverine wetlands are also formed in the study area by this River. The water of these wetlands is stagnant. The habitats use the stagnant water throughout the year. Function and values of wetlands in the study area are so important. Local water quality, local geomorphic process, local economy, local weather is also depending on these types of wetlands in the study area.

Key words: Wetland, Riverine Wetland, Flood plain, Economy.

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I. Introduction:

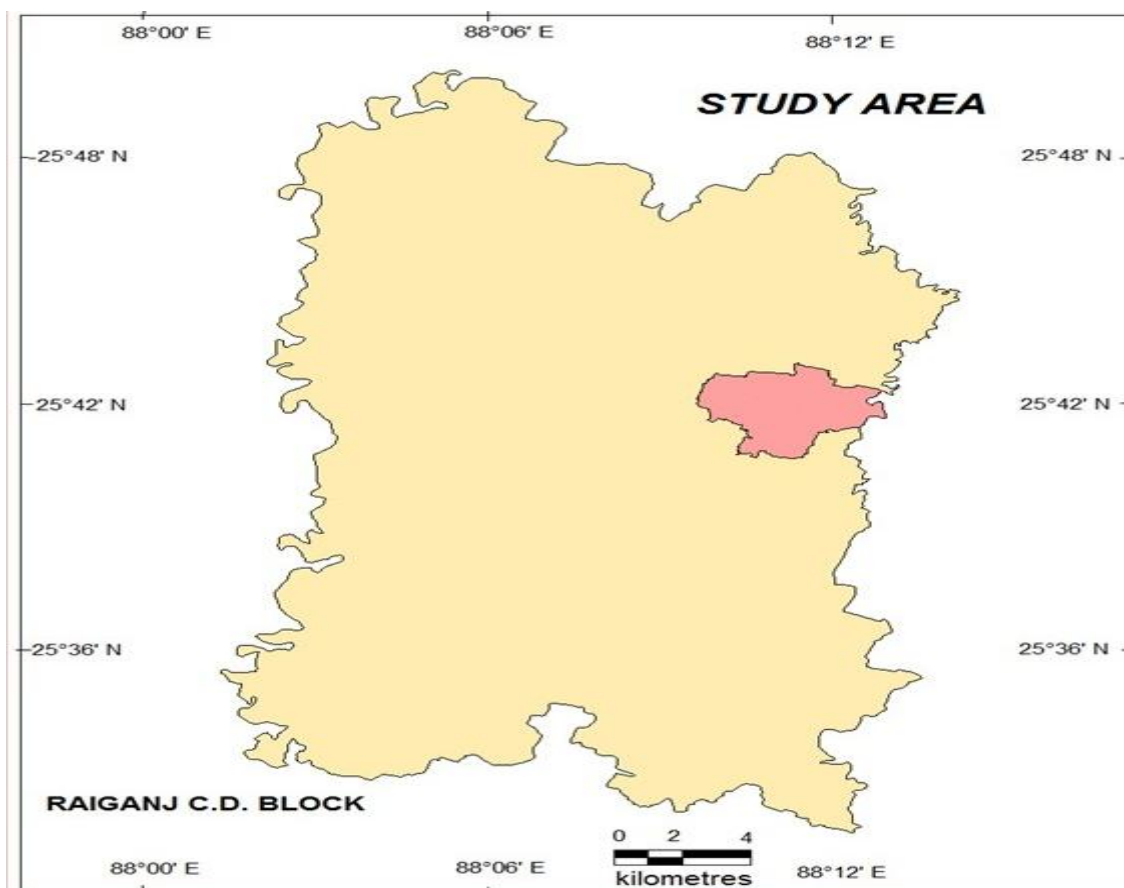
A wetland is an ecosystem that arises when inundation by water produces soils dominated by anaerobic processes, which, in turn, forces the biota, particularly rooted plants, to adapt to flooding. Modern wetlands are characterised by water at or near the soil surface for some part of the year, and plants that are adapted to living in conditions of water saturation all or part of the year (National Research Council, 1995; Keddy, 2000; Mitsch and Gosselink, 2000). Natural and Artificial both types of wetlands are found throughout the world. Marine, Estuarine, Lacustrine, Riverine and Palustrine are categorised under the Natural wetland. On the other hand, Aquaculture or Mari culture, Agriculture, Salt exploitation, Urban or Industrial and water storage area are the categorised under artificial wetland. Swamps (Forested wetland and Non peat), Marshes (Dominated by Herbaceous), Fens (No forested with peat substrates) and bogs are the basic types of wetland. Most of all wetlands are categorised under Swamps, Marshes and Fens throughout the world. These three types of wetland are formed due to the depression in the landscape. Bog basically is a waterlogged peat land and it form due to depression or in the old basin. Wetland plays a significant role in regional ecosystem, such as the regulation of climate, cleansing of environment and balancing of regional water. To conserve the biological diversity and River Basin Management wetlands are also important. Actually wetlands are hydrologically or ecologically linked to the river basin. There are critical linkages among wetlands, water and River Basin management.

Study Area in Brief:

North Bengal comes under the northern plain physiographic division in the West Bengal. This physiographic division is three types- a) Tal, b) Diara and c) Barind. Raiganj C.D. Block comes under the Tal Plain which means lake. It is much lower and flatter than the Tarai to its north and the Barind to its south. The Tal region is flood prone.

Dhurail, Serpur, Gobindapur and Daudpur Mouzas of Raiganj C. D. Block of the Uttar Dinajpur district are the study region. Geographically the study area located between $25^{\circ}39'15''N$ to $25^{\circ}44'6''N$ latitude and $88^{\circ}9'8''E$ to $88^{\circ}13'11''E$ longitude. The northern part is surrounded by the Mouzas of Patol, Shibpur, Khoksa and brahmapur mouza; Mathurapur, kokra and bamuha Mouza are in the western part; khalsi, Mahespur, Mirual and Dangapara are in the southern part of the study area and finally Sonabari mouza and Hemtabad C.D. Block are in the eastern boundary. Total areas of the four mouza are respectively 163.79 sq.km., 758.8 sq.km., 361.77 sq.km. and 140.18 sq.km. Total population of the four mouza are respectively 1318 person, 5624 person, 3690 person and 577 person. The population densities of these four Mouzas are 8.04 person/sq.km., 7.41 person/sq.km., 10.19 person/sq.km. and 4.11 person/sq.km respectively. Number of house hold of the four mouza are 271, 1265, 664 and 123. Actually the total area, total population and the population density of the study area are respectively 1424.54 sq.km., 11209 person and 7.87 person/sq.km. In the study area, Kulik is the main River and all type of settlements is situated for this river. Actually this river belt is useful to cultivate the

different types of crops like Kharif and Rabi types. River water is used for the irrigation purpose. This river is also helpful for the fishing. Different types of primary activities are developed due to this river. This River shifts its course in the different time. This River changes its course. So this River flows with a new channel and old channels form a good number of wetlands along its older flow path. There have been seen a critical linkages among wetlands, water and River Basin management in the Kulik River Basin.



Source: Compiled by the Author

Objective:

- 1) To identify the evolution process of paleochannels of Kulik River as wetlands in the study area.
- 2) To identify the function of paleochannels of Kulik River as wetlands in the study area.
- 3) To identify the benefit of this type of channel in the study area.

Method:

The analysis is limited mainly to wetlands. Quantitative and qualitative both methods have taken into consideration. Function of wetland has been done on the basis of the field survey. Some quantitative sample is used to analyse the significant of wetlands. Primary and secondary both type of data are used in this paper. Topographical sheet no.78 C /2, Google Earth Image, GIS software and field data have been taken into consideration for the identification and analysis of the wetlands.

Evolution process of paleochannel of Kulik River as wetlands:

The study area is situated on the Kulik River floodplain region. The region is characterised by the former channels of the river of Tista. Due to the river avulsion during 1787 flood the river Tista was shifted its course and it joins to the Brahmaputra rather than Ganga (Padma) in Bangladesh. Kulik river is supposed to a older channel of Tista. Therefore, due the hugh shifting of channels a remarkable number of palaeo channel, cut-off and ox-bow are evolved since the last 200 years almost. The processes mainly erosion and deposition are responsible for the formation of wet lands along the paleochannels significantly. The flood prone river Kulik changes its hydraulic characteristics by valley deepening and valley widening during the floods evidently. Over bank discharge during the rainy season is resulted into the formation of cut-offs. During floods the depth of ground water table decreases which helps to change the flows with a new channel. The study area is the

witnessed of the several floods. Therefore, Kulik River changes her path a several time and forms new channels. After flood the old channel is deposited by alluvial and the old channel abandoned. Again on the rainy season this old channel filled with the rain water and this water stay throughout the year, basically older thalweg points contain water which supports pisciculture and jute processing.



Source: Compiled by the Author

Function and values:

Wetland is known as “Biological supermarkets”. In the study area this types of wetlands serve the different function.

1. Improving water quality

Water Hyacinth, which can absorb chemical and pollutant materials, grows in the stagnant water has been found in the study area. During rainy season older channels, cut-off, ox-bow lakes etc. meet with the current River channel. Hyacinth purify to some extent the water stored in the old channels. Water comes from these wetlands supply fresh water by removing or retaining inorganic nutrients, processing organic wastes, and reducing suspended sediments to the present channel.

2. Prevent soil erosion

This types of wetlands are decreasing the downwards soil erosion and the materials are deposited in this place. So, in the dry season this place is used as seedbed. Many seed bed have been noticed in the study area during field survey.

3. Recharge ground water

Generally these types of wetlands help the ground water recharge. For this causes many tube wells are used for drinking water. Deep tube wells have not seen during field survey in the study area. It shows that ground water level is high.

4. Habitat

Many fishes, Organism, Plants have shown in the wetlands. ‘Koi’, ‘Magur’, ‘Singhi’ and other varieties of local fishes have found in the wetlands and these are brought to local market. Many kinds of insects, frog, and snake have also found in the wetlands. Water lotus, water-chestnut, paddy have also found in the wetlands. Numerous birds like water duck, geese have shown in the study area.

5. Flood control

Wetlands contain soil that is like a sponge. This soil can soak up a lot of water and release it slowly. Wetlands play as a local water reservoir. It store water and release it slowly. During rainy season it plays a

significant role to prevent flood. Though it is too small to control the extraordinary flood but it is so significant to control the ordinary local flood.

6. Control Local Weather

Wetlands control the local weather. During field survey it has been seen that the temperature is low in the nearest place of wetlands. Wetland helps to blow the local breeze. To control humidity, temperature, local wind wetlands play an important role. During field survey it is observed that in the afternoon of summer season local people gathered near to the wetland for pleasurable environment in the study area.

7. Economic Benefits

To support the local economy wetlands play an important role. Perishable products like fish needs local market which can reduces the preserving charges. With a minimum investment local people can collect the product of wetlands like fish, many cultivable products etc from there and these products are sold. Local people mainly depend on this and the price of these products are lower than the other products which are brought from outside.

Products of wetlands in the study area

| Species | Product Name/ Local Name |
|---------|---|
| Fish | Singhi, Magur, Koi, Sati, Sol, Chang, Chingri, Tangra, Gachi etc. |
| Plant | Lotus, Water lotus, Paddy, Jute, Saluk, Halencha, Susni etc. |
| Birds | Duck, Goose, Bittern, Halcyon/ Kingfishers etc. |

Source: Field Survey

Price list of fish

| Fish | Price in Rs./ kg (From local wetland) | Price in Rs./ kg(From Outside) |
|---------|---------------------------------------|--------------------------------|
| Singhi | 300 | 450 |
| Magur | 200 | 300 |
| Koi | 350 | 450 |
| Sati | 100 | Not Found |
| Sol | 150 | 250 |
| Chang | 50 | Not Found |
| Chingri | 200 | 300 |
| Tangra | 200 | 400 |
| Gachi | 100 | 200 |

Source: Field Survey

II. Conclusion:

In the several wetlands formed due to flood time erosion and deposition. These types of wetlands help local economy. After rainy season these wetlands are used as several purposes in the study area. The significance of wetlands in the study area is indefeasible.

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