

ABSTRACT

Wetlands are important natural resources and critical for biodiversity of any country. They are significant in environmental functions and important in food chains and webs. Each wetland is an ecosystem with plants, animals and depends on each other. The role of wetlands has emerged as a key element in the delivery of inland freshwater and coastal ecosystem conservation through the Convention on Biological Diversity, 1992 and Ramsar Convention on Wetlands, 1971. Wetland means the areas with sufficient wetness. The wetlands soil is generally very rich in nutrients, which is very much responsible for its interesting floral and faunal diversity. These are the areas where terrestrial habitat meet with aquatic habitat and the depth is not more than 6 meters.

In West Bengal 3,44,570 hectares area is under fresh water wetlands and 4200 sq km area is under Mangrove ecosystem. 54 natural and 9 artificial wetlands are present in West Bengal which are covering 2,919,63 hectares and 52,564 hectares areas respectively. The wetland system of West Bengal is divided into in three regions based on land topography:

1. Sub-Himalayan region that generally extended from Darjeeling to eastern bank of Ganga river i.e. upto Maldah district.

2. Gangetic region that covers plains of entire Southern part of Bengal except the active delta and coastal areas.

3. Coastal region that covers only North and South 24-parganas and Coastal part of Purba Medinipur districts.

Majority of wetlands of Cooch Behar district are *Palustrine*, *Lacustrine* and *Riverine* types. Majority of the wetlands of the area originated mainly due to the shifting of the courses of different rivers flowing through the unstable soil of the rolling plains of Terai and Duars region. Large number of rivers are passing through the district and most of them have changed their courses very frequently, as a result abundant channels, meanders and ox-bow lakes of different sizes are very common. Tista, Mansai, Jaldhaka, Torsa, Raidak, Shutunga and Gadadhar are the important rivers. Some such wetlands like Rasik Beel, Gossanimari Beel, Sitai Beel and Rasomati Beel came into the focus of National Wetland Conservation programme. Wetlands having an area more than 2.25 ha altogether covering 4930.51 ha, which is almost 1.46 % of the total geographic area of the district. The Rasik Beel complex is lies between *Burah Raidak* and *Ghoramara* Rivers in the Salbari Block under Tufanganj Sub-Division of the District of Cooch Behar, West Bengal. The geographical location at the central part of the lake is 89°44' 10" E Longitude and 26° 25' 40" N Latitude.

In Champion & Seth's (1968) classification the vegetation of Rasik Beel complex and its surrounded areas matches partially with **4D/SS₂** and **4D/SS₄**, **Tropical Seasonal Forest: *Syzygium cumini* swamp forest** and **Low Swamp Forest**.

The central island is now planted with mainly *Salix tetrasperma*, *Terminalia arjuna* and *Lagerstroemia hirsuta*.

South-Western monsoon is the primary source of rainfall. Monsoon is quite broad, extending from the middle of June to the later part of September. Rains during winter months are rare but common during summer. Temperature of the Rasik Beel area begins to raise from the end of April and reaches its maximum during June - August.

The Flora: A total of 614 species of vascular plants has been recorded through the intensive survey in the area since the year 2007. Of these, angiosperms are represented by 581 species under

397 genera belonging to 124 families. In addition, 3 species of 3 genera from 3 families of gymnosperms and 30 species of fern and fern allies covering 25 genera belonging to 17 families have been recorded from the Rasik Beel wetland complex during the present exploration. 428 species under 300 genera are recorded from 96 dicotyledons families and 153 species belonging to 97 genera in 28 monocot families. Only 3 species of gymnosperm belonging to 3 genera under 3 families and a total of 30 species of ferns and fern-allies were recorded under 25 genera belonging to 17 families. The largest genus is *Ficus* of Moraceae with 7 species and is followed by *Cassia* of Fabaceae, *Solanum* of Solanaceae, *Persicaria* of Polygonaceae, *Cyperus* of Cyperaceae etc. are all with 6 species.

Invasive and Alien Species

As much as 190 invasive alien species under 112 genera, belonging to 47 families has been recorded of which dicotyledons flora is represented by 170 species under 95 genera of 40 families and monocotyledons by 20 species belongs to 17 genera of 7 families. 95 species has been recognized as exotics of which 54 has been naturalized.

Useful Plants

A total of 283 species of useful plants has been recorded from the Rasik Beel area of which 92 species are medicinal, 27 species in ethno-veterinary treatments, 54 species as vegetable or ripe fruits, 14 species used in various religious purposes, 4 species as spice, and 173 species used as fodder for their domestic animals.

Phytosociology

In the pre-monsoon wetland vegetation, *Salvinia cucullata* showing highest frequency and *Salvinia cucullata* showing highest density. In monsoon season, whole wetland vegetation turns to change and highest frequency and density shows by *Najas graminea*. In post-monsoon wetland vegetation, *Salvinia natans* has highest frequency but highest density showing by *Azolla pinnata* subsp. *africana*.

Pre monsoon Wetland vegetation, 16 species showing highest SDI [Shannon – Weiner Index] 1. In monsoon, 21 species showing highest SDI 1. Highest SDI 1 presented by *Melastoma malabathricum*, *Ardisia solanacea*, *Capparis zeylanica*, *Grewia optiva* and *Streblus asper* presented in post monsoon wetland vegetation. Highest EH [Simpson's Index] showing by *Schoenoplectus juncooides* 177.79, *Nymphaea pubescens* and *Grangea maderaspatana* 40.38, *Cyanotis axillaris* 117.10, *Ranunculus sceleratus* 101.12. 21 species showing highest SDI 1 in the monsoon. Highest EH shows by *Colocasia esculenta* 241.29 and followed by *Typha elephantina* and *Wolffia arrhiza* 190.05. Lowest EH shows by *Najas graminea* 15.5. Post monsoon vegetation is very rich and 24 species showing highest SDI 1. *Typha elephantina* showing heist EH 535.84, *Ludwigia adscendens* 379.49. Lowest EH presented by *Azolla pinnata* subsp. *Africana* 19.95.

Changes in Vegetation

Main reason behind the changes is the establishment of tourism center surrounding Rasik Beel. Clearing of local native vegetation developing plantations with desired species for ornamentation, fodder production, domestic requirement, etc. are the other important reasons of modification.

A large part of the Beel area is allowed free for fishing. The villagers cultivate economically important exotic fishes in that area. So, the original ichthyofauna of Rasik Beel regularly decreases or altering and changing its basic nature. Natural habitat of the local fishes has been damaged and due

to exotic fish culture, the food habit of local ichthyofauna has been changed. Local farmers use pesticide in their Beel side cultivation lands and make a great threats to the native fishes when enters there with run-away water from crop-fields. Local fishermen are also disturbing the local and migratory avifauna and damaging different formations of free-floating and other aquatic vegetation, etc. Poor knowledge of NTFP collection by local villagers is also one important cause of disturbing the food production and food-web leading to the food crisis of aquatic birds. Highly attractive ecotourism and its related activities are also seriously disturbing the local floral and faunal communities. Local people acquired submerge and immerse lands for paddy cultivation. After 2 – 3 years of acquiring the land, they construct houses there and through such encroachments the Wetland complex area is decreasing regularly.

Unless the authority become serious for conservation and can forget the commercial and sociological interaction, the originality of Rasik Beel vegetation along with its flora and fauna will be lost very soon.