The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES 19(3): 01-07, 2024 www.thebioscan.com

UNVEILING THE RICH AQUATIC FLORA AND FAUNA OF SANTIJAN *BEEL*, ASSAM, INDIA

ARUP JYOTI BORA[1*] AND ASHOK KUMAR BORA[2]

[1]Research Scholar, Department of Geography, Gauhati University

[2]Retd. Professor, Department of Geography, Gauhati University

Corresponding author

E-mail: arupjyotibora@gauhati.ac.in

DOI: https://doi.org/10.63001/tbs.2024.v19.i03.pp01-07

KEYWORDS
Aquatic lives;
Floral diversity;
Faunal diversity;
Bio-resources;
wetland

Received on:

20-07-2024

Accepted on:

04-11-2024

ABSTRACT

Due to the urbanization, industrialization, advancement of the technological activities, uses of chemical fertilizers, pesticides and insecticides are showing the big threatening to the natural environment. Among the natural features, the water bodies specially the rivers, streams, wetlands suffer most from the human induced activities and resultant actions. Wetlands are the most important element of the biotic world which provide shelter for enormous aquatic species and other living organisms. In the recent years, many study take place for the conservation and measuring the degradation of the wetland ecology. This paper is an attempt to discuss the present scenario of the aquatic floral and faunal species and give a brief knowledge about the richness of the Santijan beel ecology in Nagaon district, Assam. For better understanding and collection of proper data, and analysing these in a good manner a primary filed survey was conducted. The findings of the study disclose that the Santijan is rich in aquatic ecosystem and ecological diversity at the present day context and should be proper managed and conserved.

INTRODUCTION

Wetlands are the natural storehouse of the biotic resources (Bassi *et al.*, 2014) which cover a large area all over the world as a whole (Prasad *et al.*, 2002). It is also said that, wetlands are the home of some specific plant and animal communities (Junk, 2024). Due to some physical and natural factors there are seen many diversities in the world's wetlands. On the same way, there are also seen many diversities in wetland ecology which consist of aquatic plants and animal kingdoms (Gosselink, 2015). Habitation of plants and animals are the important tools for conserving and managing a particular wetland at a highest level (Cronk, 2001). Assam is famous for its riverine characteristics (Deka and Bhagabati, 2015). Wetlands are locally called *beels* in the rural areas of Assam (Bora and Barman, 1998). Despite of monsoonal rainfall, a number of streams are getting dried up and some riverine areas have got transformed into waterlogged areas, surface storage areas, swampy and marshy areas (Deka and Bhagabati, 2015). In these particular areas there are seen biodiversity in terms of wetland ecosystem (Bora and Barman, 1998). There are seen many of the wetlands in Nagaon district are mainly situated to the areas of floodplain and there is seen familiarity between wetlands and nearby rivers and its tributaries (Saikia and Sahariah, 2019). Many natural factors are responsible for the origination of the floodplain wetlands like geomorphological and geological structure, tectonic activities, channel shifting, diversion and migration, seasonal variations in water discharge and flow characteristics (Deka and Bhagabati, 2015). The formation and situation of the Santijan *beel* is found as riverine origin and mainly connect with the mighty river Brahmaputra.

Materials and Methods

Study area

The study area is located in the historically and culturally famous village named Batadraba (Bordowa) where assamese saint Guru Srimanta Sankardeva was born. The study takes place in the district of Nagaon, Assam under the Dhing Revenue Circle at a distance of 20 km from the Nagaon town. The study area lies between the latitudinal extension of 26°21'12" North to 26°28'33" North and the longitudinal extension of 92°28'59" East to 92°35'10" East.

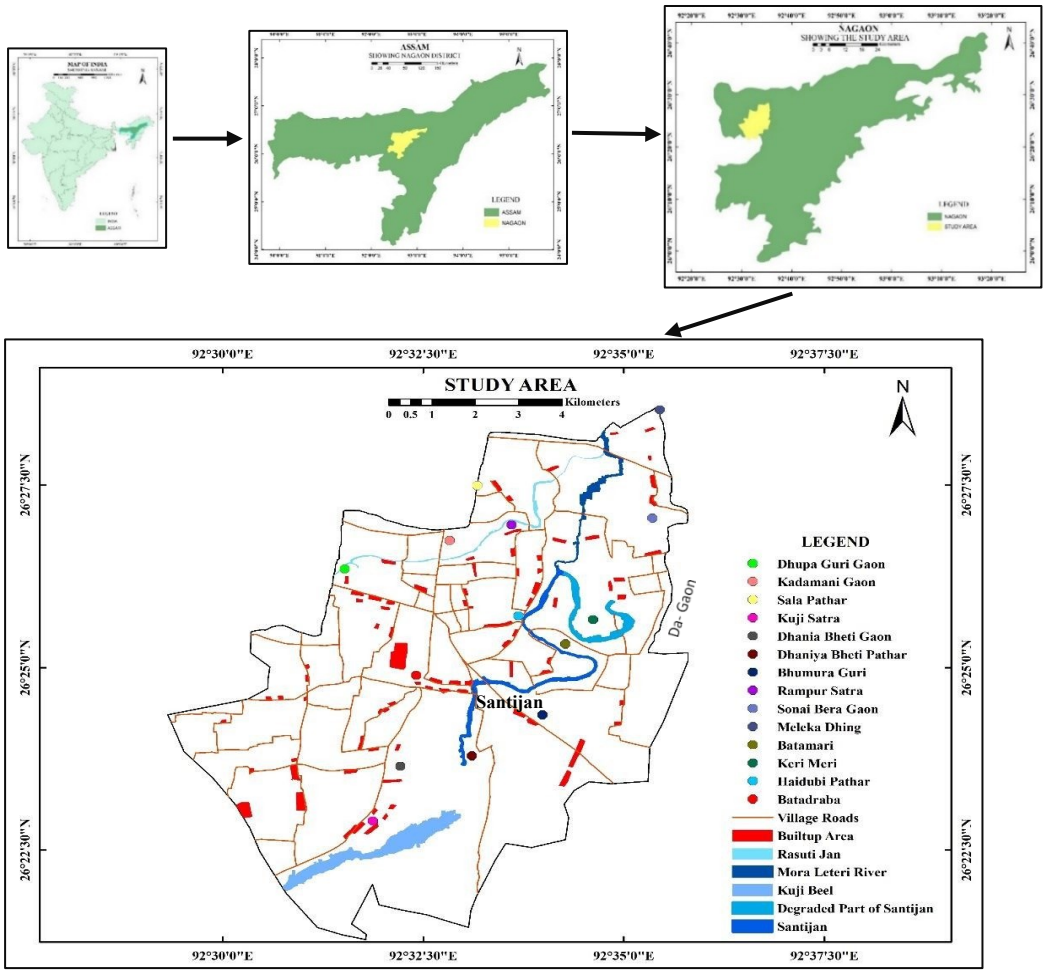

Fig. 1: Location map of Santijan along with its location with reference to Nagaon district, Assam and India.

Database and Methodology

Due to full-fill the task of proper data collection and to present the proper status of the aquatic diversity and ecological richness present at the wetland have been studied with the help of primary data collection from field observations and surveys from December, 2018 to July, 2019 covering 126 households of the adjacent villages of the wetland viz. Meleka Dhing, Sonaibera Gaon, Sola Pathar, Rampur Satra, Kadamani Gaon, Haidubi Pathar, Keri-Meri, Batamari, Bhumura Guri, Dhania Bheti Pathar, Dhania Bheti Gaon, Kuji Satra, Dhupa Guri Gaon, Batadraba in consequence of an organized questionnaire. With the help of the public interaction, information in relation to availability of faunal and floral diversity were collected properly. A series of interactions hold with the local people and the fishermen to know the present status of the wetland resources. The relevant secondary data were also collected from various secondary sources like- cadastral maps obtained from the D.C. Office of Nagaon District to find out the location of Santijan. A map had been obtained which was prepared in 1925 based on toposheets and satellite images from the University of Texas Libraries and Survey of India toposheet 2005. The scientific names of floral and faunal kingdoms of the wetland were collected from other sources of secondary data include different books, magazines, journals related to zoological and botanical domain and also internet and websites. With the help of GPS, the latitudinal and longitudinal extension of the wetland along with elevations of the points are collected.

Results and Discussion

Aquatic floral diversity

The wetland is full of natural aquatic diversity (Abbasi, 1997). It is also rich in many medicinal and aquatic plants (Gupta, 2020). But, due to the overpopulation on the both bank sides and increasing of water pollution cause the extinct condition of these valuable plants (Sikdar and Basu, 2021). In the wetland, currently 16 species are found. Some are going to be extinct in upcoming years due the sudden increaseness of human settlement (Sarkar and Maji, 2022) and improper agricultural growth in both bank sides of the wetland (Verhoeven and Setter, 2010). People use harmful pesticides and insecticides in the agricultural fields at the high level (Donald *et al.*, 1999). Due to the harmful chemical reactions of these medicines with wetland water may cause drastic change in the habitant of the floral kingdom (Roger *et al.*, 1994). These also can reduce the abundance of floral community and effect their natural growth, health and reproduction power as well (Simpson and Roger, 1995). The toxic water is the main cause of less habitant (Poissant *et al.*, 2008) of the aquatic plants in the Santijan *beel*.

Table 1: Status of plants which are found in Santijan *beel*

Local name	Botanical name	Nature	Status

Kolmou	*Ipomoea aquatica*	Edible	R
Bhet	*Nymphaea rubra*	Non-edible	R
Podum	*Nelumbo nucifera*	Non-edible	R
Pani Meteka	*Pontederia crassipes*	Non-edible	A
Pani meteka	*Pontederia hastata*	Non-edible	A
Pani kaduri	*Alternanthera philoxeroides*	Non-edible	R
Kochu	*Colocasia esculenta*	Non-edible	A
Kona simolu	*Commelina benghalensis*	Non-edible	A
Bon gheehu, Behu	*Persicaria barbata*	Non-edible	R
Puni	*Pistia stratiotes*	Non-edible	R
Leheti xak	*Hydrolea zeylanica*	Edible	R
Behu	*Persicaria hydropiper*	Non-edible	R
Dhekia xak	*Diplazium esculentum*	Edible	A
Bih dhekia, Bih logoni	*Dryopteris filix-mas*	Non-edible	A
Dalghah	*Hymenachne amplexicaulis*	Non-edible	R
Seleku	_____	Edible	R

Source: Field Study, 2018-2019
Note: A- Available, R- Rare

P 1: During Field Visit

P 2: Blooming Podum (*Nelumbo nucifera) at the beel*.

Aquatic faunal diversity

In Santijan *beel*, there is the impact of encroachment on fish and other bio-resources directly or indirectly caused by human beings. In recent times, people are more technologically advanced. So, they use to catch fish with various types of plastic and nylon nets (**P 3**). In these nets, fishes from small to large are caught. That is why; day by day many species of fish are going to be endangered species in Santijan (**P 4**). Long years ago, in Santijan, River Dolphin, and tortoise were also found, but when the embankments were constructed and the connectivity with the river Brahmaputra is disturbed thereafter these species are presently not found here. There are also rarely seen some migratory birds as compared to the situation ten years back. About a decade ago, many migratory birds like- 'Sorali', 'Raj Hanh', 'Pani Kawori' were also found in Santijan. People in many areas near the Santijan practiced illegal capturing of these valuable species. That is why these species are extinct in condition nowadays.

Table 2: Some endangered fish species which are found in Santijan *beel*

Local Name	Scientific Name	Status
Xol	*Channa maurulius*	A
Patitmutura	*Glossogobius giuris*	R
Goroi	*Chana punctaturs*	A
Kawoi	*Anabas testudinus*	A
Puthi	*Puntinus sp*	A

Mowa	*Amblypharyngodon mola*	A
Dorikona	*Rasbora donieonius*	A
Barali	*Wallago attu*	A
Sengeli	*Chamna gachua*	A
Eleng	*Rasbora elenga*	R
Bami	*Anguilla bengalensis*	R
Misa maas	*Palemon*	R
Kuhi	*Labeo gonius*	R
Bata/ bhangon	*Labeo bata*	R
Rohu	*Labio rohita*	A
Dhekera	*Catla catla*	A
Sitol	*Chitala Chitala*	A
Khoriya	_____	A
Aari	*Sperata aor*	R
Gagol	*Mystus cavasius*	R
Seni Puthi	*Puntius sarana*	R
Koliya Jaro	*Labeo calbasu*	R
Pabho	*Ompok pabda*	R
Tura	*Macrognathus aral*	R
Kutoni Basoni	_____	R
Chanda	*Chanda nama*	R
Bordoriya	_____	R
Naro	*Labeo bata*	R
Neriya	*Clupisoma garua*	R
Bheseli	*Trichogaster lalius/Trichogaster chuna*	A
Kholihona	*Trichogaster fasciata*	R
Bhedbhedi	*Nandus nandus*	R
Singi	*Heteropneustes fossilis*	R
Magur	*Clarias magur*	R
Dhul Bai		R
Tingora	*Mystus tengara*	A
Selekona	*Chela atpar*	R

Source: Personal interviews held with local people.

Note: A- Available, R- Rare

P 3: Catching fishes in Santijan *beel* by fishing nets.

P 4: Some fish species found in Santijan *beel*.

Table 3: Status of birds

Local Name	Scientific Name	Status
Masroka nila	*Alcedo atthis*	R
Bogoli	*Egretta garzetta*	A
Dawok	*Amaurornis phoenicurus*	A
Pani Kawori	*Phalacrocorax niger*	R
Konamusori	*Ardeola grayii*	R

Sorali	*Dendrocygna javanica*	R
Samukbhonga	*Anastomus oscitans*	R
Raj Hanh	*Anser anser*	R/ Migratory
Dhekor	_____	R/ Migratory
Eitakhuli	_____	R/ Migratory
Gonga Siloni	*Chroicocephalus ridibundus*	R/ Migratory
Kuha Sorai	_____	R/ Migratory

Source: Personal interviews held with local people.
Note: A- Available, R- Rare

There are also some endangered Amphibians and Reptiles found near the Santijan's ecological environment. These are like-

Table 4: Status of amphibians

Local Name	Scientific Name	Status
Bamun bhekuli	Hoplobatrachus tigerinus	R
Chook bhekuli	Duttaphrynus melanostictus	A

Source: Personal interviews held with local people.
Note: A- Available, R- Rare

Table 5: Status of reptiles

Local Name	Scientific Name	Status
Guii	Varanus salvator	R
Assam roofed turtle	Pangsura sylhetensis	NA
Naipiya	Lampropholis guichenoti	R
Tezpiya/ Ronga Muriya Goriya Gusai	Calotes versicolor	R

Source: Personal interviews held with local people.
Note: A- Available, R- Rare, NA- Not available

The unwise practice of fishing, especially during the fish breeding season has led to rapid decrease in fish population in the stream in recent days. To reduce this uneven decreaseness of the population of these endangered fish species, there must be restriction and limitation in unseasonal and regular catching of fishes using the plastic and nylon nets. On the other hand, especially during festival time, waste disposals are thrown into the water of the wetland which may affect the water quality and the aquatic living organisms directly or indirectly through chemical reaction and waste products. That is why, there must also be some rules and regulations to be introduced for conserving this wetland at a grand level.

CONCLUSION

In this study we have tried to describe the present status of the aquatic biodiversity of the Santijan *beel*. As a result, we have seen that many wetlands which have the capacity to maintain their own characteristics. Wetlands give the space to other living organisms for their reproduction. These organisms also get the chance to grow their habitation in a proper way. Santijan plays an important role in the present-day context for the floral and faunal kingdom. That is why, in the recent times there are seen many aquatic biodiversity in this particular region. So, the villagers should take the urgent steps and make public awareness for conserving this wetland to prevent from further degradation.

REFERENCES

- Abbasi, S.A., 1997. *Wetlands of India: ecology and threats. Vol. 1: the ecology and the exploitation of typical South Indian wetlands* (pp. 151-pp).
- Balwan, W.K. and Kour, S., 2021. Wetland-an ecological boon for the environment. *East African Scholars Journal of Agriculture and Life Sciences*, *4*(3), pp.38-48.
- Bassi, N., Kumar, M.D., Sharma, A. and Pardha-Saradhi, P., 2014. Status of wetlands in India: A review of extent, ecosystem benefits, threats and management strategies. *Journal of Hydrology: Regional Studies*, *2*, pp.1-19.
- Bora, A.K and Barman, B., 1998. *A Geo-Ecological Study of the Wetlands of Barpeta District, Assam, North Eastern Geographer, vol. 29 No. 1 and 2.*
- Cronk, J.K., & Fennessy, M.S. (2001). Wetland Plants: Biology and Ecology (1st ed.). CRC Press. https://doi.org/10.1201/9781420032925
- Deka, N., & Bhagabati, A. K. (2015). *Wetlands in a Village Environment: A Case from Brahmaputra Floodplain, Assam. Trans. Inst. Indian Geography, 37,* pp.35-46.
- Donald, D.B., Syrgiannis, J., Hunter, F. and Weiss, G., 1999. Agricultural pesticides threaten the ecological integrity of northern prairie wetlands. *Science of the Total Environment*, *231*(2-3), pp.173-181.
- Gupta, G., Khan, J., Upadhyay, A.K. and Singh, N.K., 2020. Wetland as a sustainable reservoir of ecosystem services: prospects of threat and conservation. *Restoration of wetland ecosystem: A trajectory towards a sustainable environment*, pp.31-43.
- Junk, W.J. World wetlands classification: a new hierarchic hydro-ecological approach. *Wetlands Ecol Manage* (2024). https://doi.org/10.1007/s11273-024-10010-7
- Kausar, Afifa & Bhowal, Kabyashree. (2024). *A Study on the Present Status of the Ornamental Ichthyofauna Population in Hahila Beel in Nagaon District, Assam.*
- Mitsch, William & Gosselink, James. (2015). *Wetlands, 5th edition.*
- Poissant, L., Beauvais, C., Lafrance, P. and Deblois, C., 2008. Pesticides in fluvial wetlands catchments under intensive agricultural activities. *Science of the total environment*, *404*(1), pp.182-195.
- Prasad, S.N., Ramachandra, T.V., Ahalya, N., Sengupta, T., Kumar, A., Tiwari, A.K., Vijayan, V.S. and Vijayan, L., 2002. Conservation of wetlands of India-a review. *Tropical Ecology*, *43*(1), 173-186.
- Roger, P.A., Simpson, I., Oficial, R., Ardales, S. and Jimenez, R., 1994. Impact of pesticides on soil and water microflora and fauna in wetland ricefields. *Rice pest science and management*, pp.255-276.
- Saikia, Banashree & Sahariah, Dhrubajyoti. (2019). *Geo-Ecological Status, Conservation And Management Of The Hahila Beel In Nagaon District, Assam, 40,* pp.78-93.
- Sikdar, P.K. and Basu, S., 2021. Contemporary Environmental Issues–The Indian Perspective. *Habitat, Ecology and Ekistics: Case Studies of Human-Environment Interactions in India*, pp.11-51.
- Simpson, I.C. and Roger, P.A., 1995. The impact of pesticides on nontarget aquatic invertebrates in wetland ricefields: a review. *Impact of pesticides on farmer health and the rice environment*, pp.249-270.
- Sarkar, D. and Maji, N., 2022. Status and threats of wetland change in land use pattern and planning: impact of land use patterns and urbanization. In *Handbook of Research on Monitoring and Evaluating the Ecological Health of Wetlands* (pp. 106-127). IGI Global.
- Verhoeven, J.T. and Setter, T.L., 2010. Agricultural use of wetlands: opportunities and limitations. *Annals of botany*, *105*(1), pp.155-163.