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A STUDY ON BIODIVERSITY AND ITS CONSERVATION IN MAJULI

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Abstract :

Majuli is one of the biodiversity hotspot in India. Majuli the biggest freshwater riverain island in the world and a small district of Assam. It is rich in sattriya culture and natural beauty. The aim of this paper to highlight the elements of biodiversity and also mentioned the flora and fauna and its degradation and conservation. The people of Majuli and departments are struggling the riverbank erosion which badly affected the existence the island and its ecosystem. In winter session many migratory birds are coming from different parts of the world. The people also play a very important role to conserve biodiversity of Majuli.

Keyword- Biodiversity, River island, Conservation, char-chappories.

Introduction:

Bio-diversity or biological diversity refers to the variety of life on earth and all the natural process. It is an important and indispensable part within the periphery of natural environment. Biological diversity encompasses all species of plants, animals, micro-organism, ecosystem, and ecological processes. All these are integral part of bio-diversity. The modern civilization begins to overuse or misuse most of these natural gifts. Human being depends on vast bio-diversity to full fill his needs of food, shelter, medicines and recreation. But this bio-diversity is degraded at a rapid rate by man himself in the name of urbanization, modernization and use of many other scientific inventions.

Different levels of bio-diversity:

Bio-diversity, with its own significance, is usually considered at three different levels:

- Genetic diversity:** Genetic diversity describes the variation of genes within a species.
- Species diversity:** Species diversity describes the variety of species within region.
- Ecosystem diversity:** Ecosystem diversity refers to the number and distribution of ecosystem.

Assam is one of the richest bio-diversity zones in North-East region of India. There are number of tropical rain forest in Assam. Moreover, there are riverside grass lands, bamboo, orchids, and numerous wetland ecosystems. Among the various hot spots, Kaziranga national park is the richest bio-diversity hot spot and it has been included as world Heritage site by UNESCO in 1985.

The present study is an attempt to draw a picture of the bio-diversity of the river Island Majuli which is included as rich and high area of bio-diversity on the one hand and heart of sattriya culture on the other.

Objectives of the study:

The basic objective of the present study is to examine the nature of bio-diversity of Majuli, causes of degradation and measures for protection of it.

Methodology:

The present study is based on historic-analytical method. Data has been collected from primary and secondary sources. Historical records, information, journals and magazines, documents, files, and reports are used for the study.

Area of Study:

The location of the present study is Majuli, the largest fresh water River Island of the world, the cultural centre of Assam, one of the major part of Satra tourism in Assam, has got a peculiar geographical location. It is surrounded by the mighty river Brahmaputra. Due to flood and erosion problem the land has been reducing day by day. According to 1971 census total land of the Island was 1245.59 sq.km. The surface area reduced to 924.60sq. km. in 1991. The land has been reduced to 650 sq. km in 2011. It is a beautiful sight of natural and cultural heritage with 1.60 lakh of population. The study bio-diversity and its conservation is carried out in Majuli, a small district of Assam.

Significance of the Study:

The Majuli Island is very rich in Biodiversity. People are mainly Hindu. Both Aryan and Mongoloid races live peacefully from the time immemorial. Due to great fetching of Vaisnavite saint Srimanta Sankardeva and Madhabdeva, people are very tolerable to one another. Majuli, the river island is characterized by rich bio-diversity since pre-historical period. But due to several shortcomings, like-flood, erosion, destruction of forest area etc., the landmass has been going to lose its originality. Forests and grasslands are continuously being changed to agricultural land and residential place. In this context, it is the responsibility of all the people, Governments, voluntary sector of the country to think and act something positive for the protection of biological diversity of the river island. Therefore, in-depth research based study will help in protecting the natural environment of the island.

Review of related literature:

Published literature on bio-diversity in Majuli is not readily available. Not many systematic works have been done on bio-diversity of Majuli except few articles published in Magazines and Journal, presentation of seminar paper etc. In the present study, most of the important information on “conservation of bio-diversity in Majuli” have been collected from certain articles which help in the continuance of the present study.

A brief picture of Environment and Bio-diversity of Majuli:

Majuli river island is directly controlled by water bodies. The island mainly consists of lowland, swamps, tributaries, sand flats, channels, hills and wetlands. It is biological hot spot for flora and fauna. Among these, hills are used as important fishing grounds. Likewise, the climate of Majuli is Sub-tropical monsoon. This type of climate is characterized by hot, coolness and extreme humidity. This climate determines the entire ecological balance of the island.

The mighty river Brahmaputra erects new small and big sandbars (Chapari) and such sandy are as gradually and automatically converted into a green gram lands. People shifted one after another sand bars for grazing. Villages are growing where adequate environment for living. The main sandbars of Majuli (list of Chappories):

- | | |
|-------------------------|----------------------------|
| 1. Daabali Chapori | 2. Dhenu Khanda Chapori |
| 3. Gopal Chapori | 4. 1No Banaria Chapori |
| 5. 2No. Banaria Chapori | 6. Dhanai Chapori |
| 7. Bagariguri Chapori | 8. Radha Chapori |
| 9. Rupali Chapori | 10. Kumalia Chapori |
| 11. Pakimuri Chapori | 12. Kartik Chapori |
| 13. Mekahi Chapori | 14. Maarbal Chapori |
| 15. Palaashani Chapori | 16. Bhakat Chapori |
| 17. Ulupaam Chapori | 18. Baapeke Nopoha Chapori |
| 19. Owna Chapori | 20. Karreng Chapori |
| 21. Nigani Chapori | 22. Dhodang Chapori |
| 23. Vekeli Chapori | 24. Kaath Chapori |
| 25. Charai Chapori | 26. Burha Chapori |
| 27. Chechuguri Chapori | 28. Poram Chapori |
| 29. Kangsha Chapori | 30. Saadhu Chapori |

(Source/Majuli Char development Office-2017)

All the Chapori are surrounded by the fresh water of the river, each sand bars are very rich in biodiversity. Different species of birds animals, reptiles amphibians and insects are available here. IUCN threatened birds are available in this Chappories and wetlands of Majuli. The sandbars also a good shelter of tiger and buffaloes.

The river Island is rich in bio-diversity being in the tropical rain forest region. The area is primary or secondary sources of origin of many plants and animals. Particularly wild food plants, flowers, medicinal plants, building raw materials including many other products of biological origin. Majuli has a lot a lot of wetland which provide home for large number of rich flora and fauna, specially the migratory waterfowl. The people of Majuli specialty ST dominated area still depend on wild medicinal plants for any diseases.

A J Moffal Milla wrote about Majuli-“The Island is situated between the Brahmaputra and the Lohit river and was formally well inhabited and cultivated but is almost entirely over run deep gram and forest jungle, it contains an area of 2,82,165 areas of which only 7446 pay rent. The soil is rich and alluvial and cultivated for the growth of every kind of crop.”

The whole area is, by and large, full of vegetation except the chars or Chars or Chappories and eroded areas. The soil of the island is very fertile and pollution free. Natural vegetation and local trees have made Majuli an important resourceful area. The local trees provide building materials, valuable timbers, fire wood, food of human being and wildlife etc. These vegetations are also sources of precipitation, weather, flood control, and protection of soil erosion. Moreover, geographical location of Majuli has made favourable for the growth of various dominant trees, aquatic plants, herbs and shrubs. Some trees of the river island are like-simolu (*Bombax ceiba*), ajar, (*Lagerstroemia*), bogori (*Zizyphus jujube*), sisoo (*Dalbengia sisoo*), gamhari (*Gmelina arborea*), sonaru (*Assia fistula*), dillenia, siris (*Albizzia*), kanchan (*Bauhinia*), Kadam, arjun, nahar (*Messua ferrea*), silikha (*Myrobalan*), etc. There are also available aquatic plants like-water hyacinth (*Eichhornia*), salvinia, duck-weed (*Lemna*), water chestnut (*Trapa*), etc. Majuli bambusa (Bamboo), amaranthus, chenopodium, brassica, etc. Local tree like *Bambax* and *Lagerstroemia* are available and use for business and domestic purpose. At present there are 303 variety of plants among them 8 different species of Local bananas, 16 varieties paddy crops, 7 species of kochu use of Soil

Total Agriculture Land : 30,556 Hecter.

Used land : 28,402 Hecter.

(District Agriculture office)

The island Majuli is also rich in avifauna. The available diverse species of fauna are amphibian, insects, reptiles, mammals, fish and zoo-plankton, etc. Wildlife species like-fox, monkey, squirrel, etc. are included in the mammal. Non-mammal wildlife are also found here such as shiu (*platamista gangetica*), turtle, etc. There are also variety of snakes like-cobra, viper, and other species in the island. It has number of species of butterflies and birds-local and foreign or migratory, large and small, charming and terrifying. Different species of birds are also available in Majuli like little cormorant, little egret, open bill stork, lesserwhistling teal, cotton teal, black winged kite, various types of ducks, vulture, variety of doves, parrots, common pigeon, moorhen, jungle crow, house crow, black capped kingfisher, lorikeet, great Indian bustard, polar warbler, Siberian common chine, white wings wood duck, great horned owl, common hawk cuckoo, red vented bulbul, purple moorhen, etc. The migratory birds are generally assembled in the wetland from the early part of every winter and thus they have been becoming the real guests of nature and also becoming the centre of beauty and attraction for the people coming from different parts of the world.

As Majuli bounds by water-bodies, i.e. rivers, swamps, channels, beels and wetlands, there are variety of fish fauna in the whole area. Some of the fish live in the rivers, tributaries, streams, and some in numerous beels, swamps, and lowlands. About 26% people of Majuli are directly or indirectly depend on fishing occupation.

Nature and Biodiversity gives a separates identity of a particular region. A particular area can be differentiate to other with its biodiversity and Nature. Natural water bodies gives a separated identity of Majuli.

List of Bills :**Karatipar GP**

- | | |
|--------------------------|------------------------|
| 1.Gondhoah Bill | 2.Misamara Bahir Ghuli |
| 3.Misamara Cherapai Bill | 4.Chiram Chapari |
| 5.Kangkur Chapari | |

Ahatguri GP

- | | | |
|------------|-----------|----------------|
| 6.Geladoar | 7.Bordoar | 8.Kath Chapari |
|------------|-----------|----------------|

Sri Luhit GP

- | | |
|--------------------|------------------|
| 9.Belaguri | 10.Naldoar |
| 11.Kalia Bill | 12.Dighalia Bill |
| 13.Malapindha Bill | 14.Laliti Bali |

Garamur GP

- | | |
|----------------------|------------------------------|
| 15.Mari Kharjan Suti | 16.Garamur Phutuki |
| 17.Marikharjaan Bill | 18.13 km Garamur Jogi Pathar |

Chilakala GP

- | | |
|------------------|-------------------|
| 19.Barachuk Nadu | 20.1 No. Bargayan |
|------------------|-------------------|

Rawnapar GP

- | | |
|------------------------|--------------------------|
| 21.Pithakhowah Bill | 22.Totoya Bill |
| 23.Totoya Owduubi Bill | 24.Totoya Khanidubi Bill |
| 25.Potia Kachari Boka | 26.Rawnapar Dubi |
| 27.Patia Nodiya | 28.Totoya Gaon Bill |
| 29.Deka Chenchua Bill | 30.Mekheli Gaon Bill |
| 31.Dubari Tali | 32.Bih Dia Bill |

Dakhin Kamalabari GP

- | | |
|---------------------|----------------------------|
| 33.Jugunidhari Bill | 34.Laholial Road west part |
| 35.Lahalia Sakuli | 36.Dhera Para Bill |
| 37.Dauk Para Bill | |

Kamalabari GP

- 38.Barhola Bill (adjacent to Kamalabari GP Office)
- 39.Khani Bill 40.Pohardia Bill
- 41.Bhogpur Bill 42.Pohardia Dighali
- 43.Matiabari Bill(Malaha Khoah) 44.Daria Alisiga
- 45.Kerelagaon Alisiga 46.2 No Mahkhuti
- 47.Barkhahuli 48.Kerelagaon (Katimora) Bill

Pakajara GP

- 50.Pakajara Bill 51.3 No. Mahkhuti
- 52.38 No. Pakajara 53.Baali Dubi Bill
- 54.325 No.Pakajara Charala 55.Garubaat Bill
- 56.Pakajara Charala 57.161 No. Jakaiboah
- 58.Thakur Suti (Garoimari) Bill 59.3 No Bhuramara
60. Tekeli Dubi (Solemari) Bill 61.Kila Jakaiboah

Bongaon GP

- 62.Charala Bill 63.Kapordhoah (in Saalmara)
- 64.Tuni Nadi baalichaat 65.Dhowachala Poram
- 66.Baghemari Bill 67.Kaamjan (in salmara)
- 68.Gosai Phukuri

Dakhipat GP

- 69.Boka Bill 70. Maran Bill
- 71.Goromari 72.Ghotahola
- 73.Maagurmaari 74.Marshy Area of Dakhipat Satra

Luitporia GP

- 75.Marisuti garkaapatani Sigaa
- 76.Panikhaitee
- 77.Kandulimari Mathauri Siga
- 78.Kachamari Gaon Samipar Siga
- 79.Kachari Bhagania Bill

80.Tengapani Bill

81.Kandulimari Bahir Bhitar Bill

Ratanpur GP

82.Miligaon Tiniali Mathauri Siga

83.Miligaon Haladhibari 1 No. Garkaptani Siga

84.Gejera Mathauri Siga

85.Chaurekia Mathauri siga

86.E & D Siga, Haldhibari

87.Haladhibari Garkaptani Siga

88.Bhukaguri Siga

Jengraimukh GP

89.Barpamuah Alisiga Doba

90.Alengmara (Cherai Chong)

Ratanpur Gayan GP

91.Boka Bill

92.Bokajan Bill

93.Kotai Naharani Bill

94.Kathal Khoah Kathamia

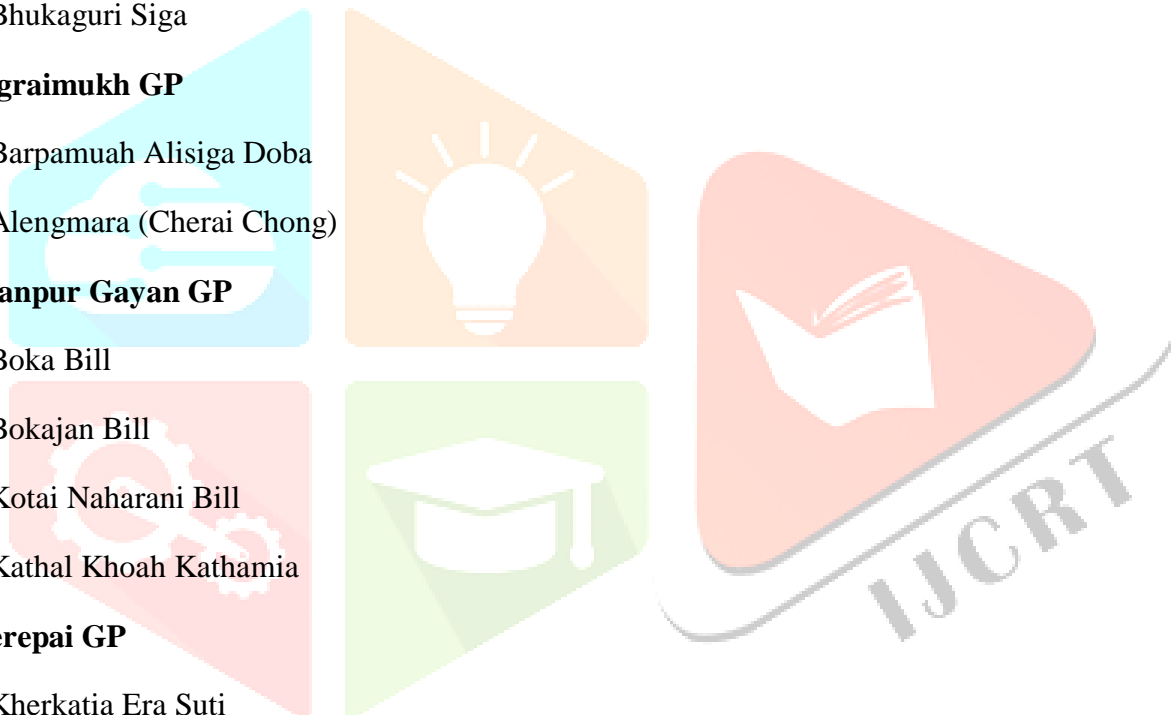
Cherepai GP

95.Kherkatia Era Suti

96.Kumar Bari Ali Dubi

97.Salmari

98.Cherepai Major Dubi



Phuloni GP

99.Gatanga Pulumukhy Doba

100.Phulani Dalang

101.Gitjala Alisiga

102.Phulani Alichiga

103.Naganchuk Alisiga

104.Sonari Bill

105.Kalia Bill

106. Mudoi Bill

107.Hatimuria Bill

108.Bokajan Bill

109.Sriram Deori

110.Chengamari Dubi

111.Horai Dubi

112.Bokajan Dubi

113.Deuri Bill

Rangachahi GP

114.Baraguri Alisiga

115.Pahumara Chawla Dubi

116.Sonariati Alisiga

117.Rangachahi Doba

118.Batamari Bill

119.Nalani Bill

120.Borbam Chapori Major Doba 121.Pahumara Na-Bhanga Doba

122.Kherkatia Bill

123.Pahumara Alisiga

124.Thakursuti

125.Chandamari Bill

126. 30 No. Bhuramara Bill.

(Source/Majuli District revenue office-2017)

But now many beels and swamps have become silted up. This had led to scarcity of fish in Majuli and large variations of fish are on way to extinction. Now the scarcity of local fish is so high that, for last 7/8 years fish have been exported from different parts of the country to full fill the demand of the people.

Quietly but rapidly, many of the 200 rare healing herbs, some of the 150 species of birds, unique and rich flora and fauna, endemic to the region, have disappeared. The number of migratory birds that visit the

island annually has declined. Inland water and fresh water bio-diversity is endangered because of increase in temperatures. Warmer temperatures, rapid change in seasonal flow regimes, total flows, lake level of water quality, affected fish and other aquatic resources.

Every year the local communities gather at different parts of the island to pray God to save them from being engulfed by the tempestuous Brahmaputra River. All efforts to protect the island and curb erosion, caused by the glacial waters of the Himalayas, have failed. The villagers spend sleepless night in fear of floods and erosion. They take turns to keep vigil, ready to relocate instantaneously with their belongings and domestic animals.

Major findings:

The observation shows that the river island is rich in physical environment, flora, and fauna. But this healthy natural environment of Majuli is now at the worst degraded. In spite of having such rich natural character and natural heritage, the island has been facing several shortcomings:

Climate change : Climate change affects the bio-diversity of the island in many ways – such as warming of fresh water, reduction of dissolved oxygen, changes in the interaction between water and their watersheds, changes in biogeochemical cycling, greater frequencies of extreme events including flood and drought, reproduction and distribution of organism. Increase in water levels has submerged crucial breeding grounds of rare and endangered migratory birds.

Flood and erosion: The Island is crying for survival. Each monsoon, the Satradhikars invoke the Gods to seek divine intervention, because their homeland Majuli is fast disappearing due to continuous erosion. The vast valuable agricultural fields of Majuli have been turned into some sandy areas for severe floods and bank erosion.

Use of fertilizer or pesticides: Excessive use of chemical fertilizers is another threat to bio-diversity of the island. Most of the cultivators use pesticides without having knowledge on it. Blindly using of modern chemical fertilizer can destroy the productive quality of land. Many plants are threatened due to over harvesting and excessive use of chemicals. As a result, most of the species (fishes, trees, birds, reptiles etc.) have been lost from the island. Another impact is natural quality of the land has been declining.

Defective construction of embankments : Defective construction of embankments is the most responsible factor for soil erosion and continuous flood of Majuli. Embankments are made non-scientifically. All water channels, which are linked with mighty Brahmaputra and other major rivers, have been blocked by making embankments surrounding the island. Water level inside the island has been decreasing and fish production is very low.

Lack of awareness: Most of the people of the island are not aware about bio-diversity, its importance, positive and negative impact of it upon the human being and the environment. There is no opportunity and source for the people to acquire knowledge on bio-diversity which will help in increasing awareness and consciousness among them to protect the environment.

Other factors: Indiscriminate felling of trees, killing of wild animals and birds (by using medicines in particular areas) have been rapidly depleting these resources in recent years. Illegal trade of wildlife by killing prohibited endangered animals is now simple and common phenomenon in today's Assam.

Destruction of wild plants and forests disturbs the balance of nature and reduces the freedom of movement of wild animals to very large extent. Besides these, men's misdeed, population explosion, habitat destruction, man-wildlife conflict, excessive fishing etc. are the responsible factor for vast declining of bio-diversity of Majuli.

NGOs' activates: Non-Government organization have been playing significant role for the protection of bio-diversity of the island since 1966 in the field of agriculture, soil conservation, protection of local and migratory birds, forests, fishes etc. In the said year an NGO-MIPADC (Majuli Island protection and Development council) was formed with an aim to protect the geographical land from erosion. The NGO placed demand to the concerned authority for its protection and reorganization Majuli as world Heritage site. During 1996-97, another NGO-AVARD-NE, worked under the leadership of an international personality, Sanjay Ghose for the preservation of the island and all round development. Since 2003, IMPACT-NE, an active NGO, has been working with its soul objective –Think for Nature and work for society. The extended activities of these NGOs are also supplementing governmental efforts in saving the bio-diversity of the river island.

Measures and Suggestion for Conservation:

Keeping in view the interaction and the findings of the study, following suggestions can be put forwarded:

- a) The geographical landmass of the island is to be protected by adopting recent scientific tools and techniques with full co-operation and good will of the government machinery and local people.
- b) Expansion of forest area is highly essential in Majuli for conservation of environment, bio-diversity, and ecological system. Plantation on the bank of the river will help in reducing the burning erosion problem of the river island.
- c) Siltation of river Brahmaputra is one of important and major causes of soil erosion. Strong scientific measures should be taken by the government for solving the problem.
- d) Knowledge on environment and bio-diversity is very essential. To acquire knowledge and to make people alert, awareness programmes should be organized by concerned authorities.
- e) Compulsory education on environment should be introduced at school and college level. Such a step a step will help in forwarding a message to the society and in developing consciousness among the people on environment.
- f) Lack of knowledge of the cultivators in using fertilizers or pesticides is becoming threat to bio-diversity of the region. In this context, agriculture department and NGOs have to play significant role.
- g) Eco- friendly attitude of the people and their direct participation will pave way for successful conservation of bio-diversity.
- h) Construction of big dams by NHPC on subonshree has been becoming threat to a large part of Assam including Majuli not only for its environment, bio-diversity, and ecology but also life, liberty, and property of the individual. For the greater interest, something positive steps must be taken. For the greater interest, something positive steps must be taken. But a question arises-who will do it?
- i) Awareness camps should be organized in different parts of the region to make aware the people about different aspects of bio-diversity. Beside this, help centers can be also established in villages to guide them.

Conclusion:

It is well known that , Human civilization depends on bio-diversity to full fill their basic needs including medicines and recreation. The loss of habitats, due to rapid growth of human population, habitat destruction, pollution, and poisoning , introduction of exotics, hunting, industrialization, urbanization, modernization, and other economic developmental activites are the major responsible factor for declining many species and the rapid global eroding of bio-diversity in Assam. Majuli is also not lacking behind it. It has a rich and varied heritage of bio-diversity, consisting of a wide spectrum of habitats. The extinction of several species or loss of bio-diversity stands as a major threat to the people of the island. For the protection and preservation of the forests and wildlife, importance should be given on strict implementation of pertaining laws. All the above, peoples consciousness, co-operation, good will and effective participation is the only way to protect and preserve the bio-diversity of Majuli and the entire world.

Note: 1. S.D.C. Office , Majuli.

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