

Eco-Tourism and Its Socio Economic Effects - A Study on Jeypore Rainforest

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Abstract- The Jeypore rainforest is home to a number of wildlife species, including many endangered ones. So far, 46 species of mammals, 283 species of birds, 276 varieties of butterflies, 102 species of orchids, 71 species of reptiles and amphibians, 70 species of fishes and nearly 40 species of dragonflies and damselflies have been recorded here. The present study is focused on identifying the efforts which are being made for the better and larger conservation of biodiversity in this area along with their results. The paper will also try to analyze the socio-economic influence of the forest in the nearby areas with special reference to the eco-tourism in the rain forest and to know about the future prospects of the rain forest and the initiatives of the government in this regard.

Index Terms- Animals, Biodiversity, Environment, Rainforest, Tourism.

I. INTRODUCTION

In India, rainforests are unique to the country's North-Eastern region, parts of the Western Ghats and the Andamans. The upper Assam-Arunachal Pradesh belt is particularly rich. Jeypore Reserve Forest, falling under the Dibrugarh Forest Division of Assam, is one of such rare jewel in India's forest cover. The 'Jeypore rain forest' is well known for its mega bio-diversity and a cynosure for the Botanists and Researchers to appreciate its floral diversity. It is a part of Jeypore-Dihing landscape of the Assam valley lowland evergreen rainforest- part of the northern most rainforests in the world, and among the last stretches of this forest type remaining in the country.

The Jeypore rainforest is home to a number of wildlife species, including many endangered ones. So far, 46 species of mammals, 283 species of birds, 276 varieties of butterflies, 102 species of orchids, 71 species of reptiles and amphibians, 70 species of fishes and nearly 40 species of dragonflies and damselflies have been recorded here.

Jeypore came into focus in 2009 when photographs, taken by wildlife biologist Dr. Kashmira Kakati during a survey by the *Wildlife Conservation Society*, confirmed the co-existence of seven cat species in a single landscape. The research found seven cat species in a 354-square-mile (570-square-kilometer) range, which is the highest diversity of cat species yet photographed in a single area. Using camera traps over a two-year period, wildlife biologist Dr. Kashmira Kakati has discovered seven species of wild cats living in the same forest; the Jeypore-Dehing lowland forests in the northeastern Indian state of Assam.

The Dehing Patkai rainforest, a wildlife sanctuary, has a rich biodiversity that is comparable to the rainforest of Amazon

basin. Jeypore is also part of the Dehing Pataki elephant reserve. With 30 digital camera traps, Kakati captured not only the cats, but a number of other rare forest animals between 2007 and 2009.

Such *Tropical* forests are home to millions of native (indigenous) people who make their livings through subsistence agriculture, hunting and gathering, or through low-impact harvesting of forest products like rubber or nuts. A unique community of people with *Thai origin*, a distinct culture, lives in the peripheries of this forest. A number of medicinal trees and insects are available in this forest.

In a bid to conserve India's easternmost rainforest here, home to seven wild cat species, authorities are trying to promote the wildlife preserve as an eco-tourism destination by involving the local populace.

The *first Rainforest Festival* is being held on the banks of the Burhidihing at Jeypore in to highlight the importance of rainforest, and tourists, including foreigners, have thronged in large numbers. This kind of festivals also gives lot of opportunities to the local people. Over these days, the festival has seen the participation of myriad of ethnic groups showcasing their ethnic culture, dresses and food habits. Elephant safaris, trekking, seminars were also a hit. The other highlights of the festival were display of customary dresses, display of cultural heritage of the local people living in and around these areas, tools, ornaments used by different tribal groups and display of the history of forest, wildlife and their association with local people in their lives.

The rainforest and Dilli reserve forest combine to be the only rainforest area in the state spread across the three upper Assam's districts of Tinsukia, Dibrugarh and Sivasagar comprising a total area of 575 sq km. The forest is listed to be the last lowland forests under the Assam valley wet evergreen forest area in the region.

II. OBJECTIVES

The objectives of the study are:

- To identify the variety of animals and plants in the Jeypore Rain Forest area.
- To find out what efforts are being made for the better and larger conservation of biodiversity in this area along with their results.
- To analyze the socio-economic influence of the forest in the nearby areas with special reference to the eco-tourism in the rain forest.

- To know about the future prospects of the rain forest and the initiatives of the government in this regard.

Research Methodology

The study is an admixture of both primary and secondary data. Primary data includes a survey made on the various forest officials responsible for taking care of the inhabitants of the forest, the residents of the locality and also the tourists visiting the site.

Ecotourism in Jeypore Rainforest:

Assam Chief Minister Tarun Gogoi focused on the promotion of ecotourism by harnessing potentialities available in the Jeypore Rainforest and the consequent economic improvement and employment generation. Promising to include Jeypore Rainforest Festival in the government itinerary, Gogoi further said that the present government has planned to construct an eco-lodge here for attracting more and more tourists.

While presiding over the rain forest function, Dibrugarh DC KK Dwivedi said that a proposal had already been submitted to the government for giving recognition to the Jeypore Rainforest as a National Park.

For promoting ecotourism, the government is planning for making tourists tracks, rope ways. Government has also planning to allot 3 houses with proper accommodation facilities for lodging of the tourists.

The Scope for developing ecotourism in Jeypore Rain forest can be highlighted in the following points:

- **Biodiversity:**

Jeypore is the home to a wide variety of plants and animals, that can easily attract tourists, and thus there is a high possibility for the development of ecotourism in this area. In the rain forest, there are a number of rare plants and animals, which can be found in this forest only. A large number of species of Orchids, Butterflies, Birds, Cats, and Fishes are the central attractive issues of the forest which cannot be found in any other rain forests.

- **Convenient to reach:**

Moreover, the Jeypore rain forest is well connected to by air, road and rail. Mohanbari is the nearest airport, situated at a distance of only 65 km., from where the road journey to Jeypore will take only 2 hours. The nearest railway station is Naharkatia, situated at a distance of only 8 km., which has direct rail links with rest of the country. One can also reach Jeypore from Dibrugarh (70km.) and from Tinsukia (65 km.) by P.W.D. road.

- **Existence of other tourist destinations near the Rainforest:**

There exist a number of attractive tourist places in the peripheries of Jeypore Rainforest, widening the scope for promoting ecotourism in the Jeypore Rainforest area. These are as follows:

- **Namrup:** Namrup is situated in the foot hills of Patkai range of hills and contiguous to the beautiful evergreen Jeypore Rainforest. It is one of the top most industrial towns of North east. The historical name of Namrup was Namhuk. Namrup is famous for having heavy fertilizer industries, petro chemical

industry and thermal plant. A 2 to 3 days stay at Namrup will be a pleasant trip for tourists.

- **Sitakunda:** Another attractive and beautiful place situated nearby the rainforest in the upstream of Dehing river is Sitakunda. An annual big religious festival takes place at this place during Makar Sankranti, where devotees come in large number every year. Sitakunda is a small rocky Majuli in the midstream of Buridihing river with a beautiful temple constructed on a large stone.

- **Namphake village and Buddhist Monastery:** After migrating for 75 years, the Tai Phake people established Namphake village near Naharkatia and Tipam Phake village near Jeypore in the year 1850. At present, these are the two most populous and large Tai phake villages in Assam. Tai phake people are famous for their unique language, food habit, traditional culture, handloom items, traditional dresses and beautiful craftsmanship. The Buddhist Monastery situated here is the centre of attraction for both domestic and international tourists, wherein the Golden idol of Lord Buddha is there. The traditional unique lifestyle and culture of the inhabitants are also subject of attraction to the tourists.

- **Hukanjuri:** This location within the rainforest, situated on the bank of Namsang River with the background of hills range of Arunachal Pradesh, has a special beautiful spot for visiting tourists. Tourists might get enjoyment by availing open Jeep Safari from Jeypore to Hukanjuri enjoying the jungle beauty on the both sides of the road. One night halt at Hukanjuri will also be more pleasurable for the tourists.

- **Favourable climate:** The temperature and climate of the Jeypore Rainforest is favourable for the tourists in all the 12 months of a year.

Biodiversity and its conservation

The Jeypore rain forest forms part of the world heritage of Tropical wet evergreen forests which is characterized by multi storied in structure and rich in biodiversity. 100% respondents belonging to forest employees and local people and 90% of the tourist respondents have responded in favor of its richness. This rain forest harbors rich varieties of flora, avifauna, wildlife and reptiles.

Flora: The peculiarity of the Jeypore rain forest is the three tier structure. The top tier looms over the rest and consists of isolated, tall, evergreen or deciduous trees which grow to a height of around 150 feet(46 meters). The common species among them are :

- Dipterocarpus macrocarpus (Hollong)

- Artocarpus chompsonii (Sam)
- Mekai (Shorea assamica)
- Bhelu (Tetramelia nudiflora) and
- Hollok (Teminalia myriocarpa),

Each of these is growing tall and handsome with spreading branches and abundant foliage. Other species which are found to occur in the top canopy sporadically are,

- Sopa (Michelia champaca)
- Dhuna (Canarium resiniferum)
- Jutuli (Altingia excels)
- Amari (Amoora wallichii)
- Barpat (Ailanthus grandis).

The middle tier consists of several medium sized trees growing up to a height of about 80 feet (25 meters). Colophyllum, Nahor (Measua ferra), Amoora, Gonsoroi (Cinnamomum cecidodapene), Mekahi (Phoebe attenuate), Machilus and Khokan (Duabanga sonneratoides) form the mixed middle canopy. Ficus elastica, Michelia, Maugolia and Schima are also found.

The ground tier consists of shrubs and climbers, orchids and ferns that cover every inch of the land. The undergrowth is composed of woody shrubs, like Kaupat, Bogitora etc. palms such as Gerugatamul, Tokopat etc. and canes such as Jengu, Raidang, Haukabet, Lejai etc.

Fauna: Being a completely virgin rainforest, this sanctuary is very rich in terms of biodiversity. It is an ideal habitat for non-human primates. Till date, 46 species of mammals, 71 species of reptiles and amphibians, 70 species of fishes and nearly 40 species of dragonflies and 276 species of butterflies have been listed from here.

The most common mammal species of this sanctuary are – Hoolock Gibbon, Slow loris, Pig-tailed Macaque, Stump-tailed Macaque, Capped Langur, Asian Elephant, Tiger, Black Panther, Leopard, Gaur, Chinese Pangolin, Himalayan Black Bear, Himalayan Squirrel, Leopard Cat, Clouded Leopard, Porcupine, Crab Eating Mongoose, Sambar, Sun bear, Binturong, Barking deer, Golden cat, Marbled cat etc.

The reptiles here include Burmese Rock python (Python molurus), Bamboo pit viper (Trimeresurus gramineus), King cobra (Ophiophagus Hannah), Asian leaf turtle (Cyclemys oldhami), and Water lizard/monitor (Varanus salvator).

Jeypore rainforest has reported 28% i.e. 276 species of colourful Butterflies have been recorded from Jeypore so far.

Avifauna: Dehing Patkai Rain forest in Upper Assam is a bird-watchers delight, known to harbor about 293 bird species, belonging to 174 genera and 51 families. The majority is residents (63.7%), some are winter visitors (23.1%), and very few are summer visitors (2.5%). About 10.7% are altitudinal migrants, coming mainly from the higher reaches of the western, central and eastern Himalayas. There are 13 globally threatened species here viz. the Slender-billed Vulture, White-winged Duck, Greater Adjutant, Greater Spotted Eagle, Lesser Adjutant, Beautiful Nuthatch, Marsh Babbler, Tawny-breasted Wren Babbler, White-cheeked Hill Partridge, Great Hornbill, Brown Hornbill, Oriental Darter and Painted Stork.

At least 10 of the bird species are listed in Schedule-I of Wildlife Protection Act 1972 (1994) including the White-winged

Duck, Kalij Pheasant Grey Peacock Pheasant, Besra, Black Baza, Slender-billed Vulture, Osprey Great, Hornbill Wreathed Hornbill and Common Hill Myna.

Dehing Patkai Rain forest is home to five endemic bird species, which is 26% of the endemics reported from the north eastern region and all belong to the family Sylviidae. These are the Yellow-vented Warbler, Broad-billed Warbler, Marsh Babbler, Tawny-breasted Wren Babbler and White-naped Yuhina.

The birds of Dehing Patkai Rain forest thrive in the diversity of microhabitats in the predominantly evergreen forest such as dense evergreen forest, rivers & streams, evergreen forest edge, swamps, semi-open evergreen forest that includes the logged areas where openings are present, agriculture (cultivations, fallows and tea gardens) along the edge and habitations on evergreen forest edge. Most species are habitat specialists i.e. they are found only in a single microhabitat, with dense evergreen forest harbouring the maximum of 111 of the total 281 birds species recorded in Jeypore, of which insectivores are the most dominant guild with 79 species. 44 species were recorded along rivers or streams, 37 species in evergreen forest edge and 23 species in semi-open evergreen forest.

The insectivorous, carnivorous and most of the omnivorous birds help control the insect and rodent pests in the forest as well as in the agricultural ecosystem adjoining the forest. Frugivores like the hornbills, barbets, pigeons and koel, along with some of the omnivores like crows, mynas and starlings that feed on fruits serve as seed dispersers. Nectarivores and some of the insectivores and omnivores that feed on nectar help in plant pollination. There are terrestrial piscivores and 31 aquatic species that depend on the rivers and streams inside the forest and the agricultural fields along the forest edge.

Specialties of Jeypore Rainforest:

93% of the respondents belonging to forest employees and 77% tourist respondents have opined that the forest is successful in preserving many plants and animals from their extinction, as the forest has some rare animals and plants that cannot be found in any other forests in the world.

From the following highlights of the Jeypore Rainforest, it will be clear that the forest is successful in preventing extinction of a huge species of plants and animals.

- **7 species of cat:** The research found seven cat species in a 354-square-mile (570-square-kilometer) range, which is the highest diversity of cat species yet photographed in a single area. Using camera traps over a two-year period, wildlife biologist Dr. Kashmira Kakati has discovered seven species of wild cats living in the same forest; the Jeypore-Dehing lowland forests in the northeastern Indian state of Assam. The cats are namely, the jungle cat (*Felis chaus*), leopard cat (*Prionailurus bengalensis*), golden cat (*Catopuma temminckii*), the clouded leopard (*Neofelis nebulosa*), marbled cat (*Pardofelis marmorata*), the leopard (*Panthera pardus*), and the world's largest cat, the tiger (*Panthera tigris*).
- **Orchids:** Orchids are literally the jewels of the forest. They lend a beauty and charm of its own to

the landscape due to their bewildering variety of flowers, many showy and colorful and exquisitely beautiful and fragrant. They are also used in medicine, and are important parts of the culture of many societies, including the Assamese. Orchids are also important ecological indicators, disappearing rapidly when the quality of soil and air of the region degrades. So far, 101 species of orchids within 45 genera have been recorded here. Of these, 79 are epiphytic, 21 are terrestrial and 1 species is a saprophyte.

Eight of the species found here are critically endangered, 15 species are endangered, 5 species are near threatened and 28 species are in the vulnerable category. Jeypore Rainforest has the distinction of several new orchid records for the region. *Thrixspermum acuminatissimum* is a new record to India; 9 species *Bulbophyllum ebulbum*, *Chrysoglossum erraticum*, *robinsonii*, *Eria connate*, *pudica*, *Hetaeria affinis*, *Thelasis pygmaea*, *Taeniophyllum crepidiforme* and *Zeuxine clandestine* are new records from Assam; and 12 species *Anoectochilus brevilabris*, *Bulbophyllum protractum*, *spathulatum*, *Calanthe lyroglossa*, *Ceratostylis sabulata*, *Cleisostoma discolor*, *Podochilus khasianus*, *Tainia minor*, *T. waryana*, *Thelasis longifolia*, *Trichotosia velutina*, and *Tylostylis discolor* are new records from Upper Assam. It is important to focus conservation on species like *Acanthephippium striatum*, *Anoectochilus brevilabris*, *Bulbophyllum spathulatum*, *Cymbidium bicolor*, *dayanum*, *Dendrobium nobile*, *Eria paniculatum*, *Gastrochilus calceolaris*, *Phalanopsis manni*, *P. parishii* and *Zeuxine clandestine* that are already very rare in Jeypore.

Depending on the sunlight, temperature and other microhabitat requirements, orchids grow in different layers of the Jeypore rainforest. Light-loving orchids like *Acampe papillosa*, *A. rigida* and *Dendrobium acinaciforme* grow well at the top storey upto 20-30 meter height. Species such as *Aerides odoratum*, *Bulbophyllum affine*, *Cleisostoma appendiculatum* and *Coelogynne ovalis* grow in the middle story; while shade-preferring species like *Bulbophyllum delitescens*, *Cymbidium bicolor*, and *Dendrobium aduncum* grow best in the lower stories of the forest. Occasionally, one may chance upon terrestrial orchids that grow in the diffused sunlight of the dense forest floor of Jeypore.

- **Butterflies:** In Europe, butterflies are used as pollution indicators because they are very sensitive to atmospheric carbon dioxide. Butterfly parks are built in cities, and any die off of butterflies are taken as an indication that pollution levels have risen. Northeast India is by far the richest habitant of butterflies, the best known pollinators after honey bees. Out of the one thousand species of butterflies here, Jeypore has reported nearly 28% i.e. 276 species of these colorful Lepidopteron have been recorded from Jeypore so far.

Two new butterflies' records from Jeypore are the rediscovery of the *White Punch* and *Yellow banded Flat*. Jeypore takes a very special place on the butterfly map of India with the presence of very rare Peal's *Palmy*; the forest probably

also has the best population in the northeast India of the *White Dragon tail butterfly*.

- **Birds:** Birds form an intrinsic part of most cultures most apparently because of their fabulous colors and melodious calls. Of deeper significance is their role as predators, prey and dispersers of pollen and plant seed which are necessary for the survival of natural ecosystems. India, with its predominantly tropical climate and diverse habitats has 1,306 species of birds, which forms more than 13% of the world's bird assemblage with 57 or 4.4% being endemic species. Of these, 953 species have been recorded in the north-eastern region of which 19 species are endemic

Jeypore Rainforest in Upper Assam is a bird-watchers delight, known to harbour about 281 bird species, belonging to 174 genera and 51 families. The majority is residents (63.7%), some are winter visitors (23.1%), and very few are summer visitors (2.5%). About 10.7% are altitudinal migrants, coming mainly from the higher reaches of the western, central and eastern Himalayas. There are 13 globally threatened species here viz. the Slender-billed Vulture, White-winged Duck, Greater Adjutant, Greater Spotted Eagle, Lesser Adjutant, Beautiful Nuthatch, Marsh Babbler, Tawny-breasted Wren Babbler, White-cheeked Hill Partridge, Great Hornbill, Brown Hornbill, Oriental Darter and Painted Stork. Jeypore is home to five endemic bird species, which is 26% of the endemics reported from the north eastern region and all belong to the family Sylviidae. These are the Yellow-vented Warbler, Broad-billed Warbler, Marsh Babbler, Tawny-breasted Wren Babbler and White-napped Yuhina.

- **Hornbills:** 5 endangered species of hornbill are found here. These are: Oriental pied hornbill, Great pied Hornbill, Rufous necked hornbill, Wreathed hornbill and Brown hornbill
- **Fishes:** Out of around 1000 species of the world, in Jeypore Rain Forest, 71 species of fish belonging to 21 families and 48 genera were recorded in a preliminary survey of the River Buridihing and its tributaries in the forest landscape including the Tipam, Dilli and smaller forest streams and beels. The dominant families are Cyprinidae, Bagridae, Schilbeidae and Cobitidae, with the cyprinid fishes constituting the major group of fish fauna, accounting for 40% of the total species recorded. Four species are endangered, while 14 species are considered Vulnerable and 36 species are Near Threatened. Common fish genera in Jeypore include *Labeo*, *Barilius*, *Puntius*, *Aspidoparia*, *Phylorinchus*, *Raimas*, *Danio*, *Salmostoma*, *Cirrhinus*, *Salmostoma*, *Erethistes* and *Rita*.

Jeypore provides a wide diversity of micro habitats for fish. Rocky, fast-flowing streams have fish such as *Psilorhynchus balitora*, *Acanthobitis botia*, *Lepidocephalus guntea*; while streams with moderate current and sand-pebble beds are home to species like *Devario devario*, *Danio dangila*, *Danio aequipinnatus*

and Raiamus bola. Deep pools with sandy beds provide shelter to species like Rita rita, Notopterus notopterus, Salmostoma bacila, Cirrhinus reba etc. and the shallow streams with gravel beds and rooted macrophytes harbour species such as Erethistes hara, Botia Dario and Psilorhynchus balitora. The rivers have a few deep pools locally called doobis where relatively larger sized fish like Rita, Cirrhinus, Labeo, Wallago, Clarias, Sperata dwell and feed year round. Fish swim into the small, usually seasonal rivulets that empty into the Buridehing River during the rainy months to forage and possibly breed there.

Some of the fishes that are special to Jeypore include the *Olyra longicaudata*, *locally known as tulaji or pahari singhi* because it is found in hilly areas; *Psilorhynchus balitora*, *locally known as balitora*; the rare *carni-omnivorous Raiamas bola*, *locally known as korang* whose coloration of greenish grey dorsally and silvery on the belly is excellent camouflage in the rainforest habitat it occupies. Other interesting fish in Jeypore are Danio aequipinnatus and the migratory, *carnivorous Anguilla benghalensis*, *locally known as nagbami* which is an endangered species.

- **Monkeys, Ape and elephants:** So far, 46 species of mammals have been identified. Among these there exist 7 *endangered species of monkeys*, namely Hoolock gibbon, Capped langur, Slow loris, Rhesus Macaque, Assamese Macaque, Stumptailed Macaque and Pig tailed macaque.

Mid-mornings in Jeypore ring out with the loud calls of the *hoolock gibbon*, a globally critically endangered species for which this is one of the most secure sites in its range.

It is part of the range also of some 200 elephants that roam in the landscape, within the Dehing-Patkai Elephant Reserve and represents India's eastern-most viable population of this endangered National Heritage animal at present. Ape is one of the rare animals, found in the forest.

The forest department is making their own efforts for the conservation of biodiversity by:

- Imposing restrictions on use of forest resources even fallen trees, broken woods etc. as these are main source of biodiversity conservation. Insects lives and grows in these fallen trees.
- The forest department organizes meetings and seminars in nearby areas to get valuable suggestions from the knowledgeable people regarding conservation of biodiversity. 57% local people have participated in the forest meetings on the topic of conservation of biodiversity.
- The department of Tourism also organizes seminars on the schools and colleges of the areas to spread knowledge about the importance of biodiversity among students and local inhabitants, for gaining cooperation for conserving biodiversity.

The government is not taking active initiatives for conserving biodiversity in the forest. Some funds have been allotted for the same by the government, but have not been obtained by the forest department yet.

Forest festival was the single successful effort made by the government to make people aware of the biodiversity and its importance.

All other schemes and plans of the government for the same are still in their planned form only and have not been implementing. Government's announcement for making the forest a national park is also in its infancy.

Assam's first ever Rainforest festival in Jeypore and its Socio-economic effects

To bring the unique rain forest into highlight and also to save them by creating consciousness among the local tribes of the region, government organized a Rainforest festival for the first time, from February 11th to 13th, 2011. As it was celebrated in the Jeypore rainforest of Assam, India, the festival was also named as Jeypore Rainforest Festival, 2011.

In a bid to conserve India's easternmost rainforest here, home to seven wildcat species, authorities are trying to promote the wildlife preserve as an eco-tourism destination by involving the local populace. The first Rainforest Festival is being held on the banks of the Burhidihing at Jeypore and tourists, including foreigners, have thronged in large numbers. The aim was to develop an exemplary eco-tourism roadmap for Jeypore. And for this purpose, community-based eco-tourism is the best option. To promote the rainforest and attract tourists, some long-term measures will be adopted like more accommodation units, involvement of locals and awareness programmes.

The local people have taken an active part in the festival. They have put up over 100 stalls of handicrafts, artifacts, bamboo products, pickles and ethnic food. Festivals like these help in a long way in generating employment at the local level.

The festival has seen the participation of myriad of ethnic groups showcasing their ethnic culture, dresses and food habits. Elephant safaris, trekking, seminars were also a hit.

The other highlights of the festival were display of customary dresses, display of cultural heritage of the local people living in and around these areas, tools, ornaments used by different tribal groups and display of the history of forest, wildlife and their association with local people in their lives.

The Rainforest festival was to give tribute to this biodiversity of the region. The forest is surrounded by people of the tribes *Tai Nam Phake, Singpho, Wangchu, Naga, Nocte*, etc. Various cultural activities from these tribes were part of the festival. Also various traditional artifacts which are eco-friendly from these tribes were on display. The elephant procession was the main highlight of the event. The visitors were engaged in Elephant rides, Bird Watching, Trekking, boating and other wildlife activities.

The rainforest and Dilli reserve forest combine to be the only rainforest area in the state spread across the three upper Assam's districts of Tinsukia, Dibrugarh and Sivasagar comprising a total area of 575 sq km. The forest is listed to be the last lowland forests under the Assam valley wet evergreen forest area in the region.

III. SOCIO-ECONOMIC SIGNIFICANCE

The local people are getting pollution free and calm area due to the existence of the rain forest and ranked this rainforest

benefit in number 1. Most of the respondents belonging to local people opined that the forest is making the nearby areas pollution free. The forest has enough resources to contribute towards the economy, such as medicinal trees, bamboo, woods, fodders etc. But these resources have not been used up profitably yet. Government is not taking initiatives to use the medicinal trees, having scope for greater economic influence. Silkworm available here is also used to produce silk clothes.

Few people use the fodders derived from the forest to sell in the nearby markets. Despite direct sale, fodders like mango, orange, pineapple, tomato, coconut, guava, banana etc can be used to produce jam, pickle, juice etc. and to sale in markets. Such fodders are available in plenty in the Jeypore Rainforest.

The forest has a tree popularly known as the "lipstick tree" that is used during the season of bihu to produce lipsticks.

The orchids available here are very precious. Seasonal orchids are used during various festivals. The local people sell them in the nearby markets to earn money. Orchids also have medicinal use.

The insectivorous, carnivorous and most of the omnivorous birds help control the insect and rodent pests in the forest as well as in the agricultural ecosystem adjoining the forest. The forest department provides employment facility to the local eligible people with their own efforts. They appoint tourist guides by paying lump sum money. 53% local people are aware of the employment opportunities provided by the forest department, and satisfied with the same.

Some people of the peripheries of the rain forest use forest resources like, firewood, fodder, livestock, and timber for their household purposes. From the responses of the forest employees and local people it is found that fodders and firewood are the only mentionable items used by the nearby people. However use of other items is negligible. Imposition of restrictions on the use of these resources is the main reason for less use of the forest products.

Existence of the rainforest in the area is developing the infrastructure facilities especially communication system of the Jeypore and its nearby areas.

The forest is also making the nearby areas globally known and improving the overall economy of these areas and these benefits provided by the rain forest is getting 2nd and 3rd positions respectively by the local people.

The rain forest is one of the most beautiful attractions for the tourists in India for being rich in biodiversity and consisting beautiful, colorful and attractive flora and fauna; having wide scope of economic contribution. But due to the lack of initiatives on the part of the government for developing eco-tourism in this area, it is failing to provide economic significance.

The forest is not a satisfactory tourist place according to 30% tourist respondents. While 47% tourists found it a satisfactory one and only 23% said that it is a highly satisfactory tourist place. Rich biodiversity exist in the rain forest is the primary reason mentioned by the respondents for ranking the forest a satisfactory tourist spot. Some of them also mentioned that the way to reach the forest is convenient.

Most of the tourists mentioned that there is a lack of water logging area, where they could see the birds and animals together. Due to this, they find it difficult to enjoy the view of the variety of species.

Lack of trekking and rope way facilities for the tourists within the rainforest is another drawback.

Inadequate lodging facility is also a drawback of the rainforest. 77% tourists opined that they did not get any lodging facility from the forest. It is also identified that the forest has a heritage bungalow with ample amenities, but it is available for the VIP tourists only. Common tourists do not get any such lodging facilities from the forest.

However, the guiding facility provided to the tourists is satisfactory. 80% tourists are satisfied with the guiding facility provided to them.

A variety of valuable woods like *sopa*, *dhuna*, *sam* etc. are available, which have various socio-economic uses.

IV. SOCIO ECONOMIC EFFECTS OF JEYPORE RAINFOREST FESTIVAL

For spreading biodiversity conservation consciousness among people and promoting ecotourism in the Jeypore rainforest, government has organized the Jeypore Rainforest festival. The local people have taken an active part in the festival. They have put up over 100 stalls of handicrafts, artifacts, bamboo products, pickles and ethnic food.

The highlights of the festival were- display of customary dresses, display of cultural heritage, food habits of the local people living in and around these areas. The various tribes living in the peripheries of the forest are: *Sonowal kachari*, *Tai Nam Phake*, *Singpho*, *Wangchu*, *Naga*, *Nocte*, etc.

Display of tools, ornaments used by different tribal groups and display of the history of forest, wildlife and their association with local people in their lives were also included in the festival.

The elephant procession was the main highlight of the event. The visitors were engaged in Elephant rides, Bird Watching, Trekking, boating and other wildlife activities.

V. FUTURE PROSPECTS OF THE RAIN FOREST

The government is planning for making the forest a satisfactory eco tourism spot. However the efforts made by the government in this regard was not helpful. But the plan to organize another rain forest festival will help in achieving this target to a great extent. Festivals like these will also help in generating employment at the local level.

For developing tourism in this area, the government and forest department is planning for rope way; however it has not been implemented yet. Making tracks for tourists and water logging area in the forest is another plan of the government for developing tourism. For promoting tourism, the government has declared to allot 3 houses with sufficient accommodation facilities for lodging of the tourists. The estimates for the same has been made but not yet started. The government is also planning for making the forest "a national park".

Both the government and forest department are expecting for providing larger employment facility to the nearby areas, when ecotourism will develop. Local people also expect the same. Government's plan for developing ecotourism in Jeypore Rain forest will be most advantageous for generating local employment, especially in the field of tourists' guides. 87%

respondents have responded in the favor of this advantage. 70% respondents have opined that promotion of ecotourism in the rain forest will improve the communication system in the local areas. 60% respondents have opined that ecotourism development will improve the overall economy of the nearby areas. Developed ecotourism in this area, in the long run will contribute a large portion towards the total foreign revenue of the country.

VI. SUGGESTIONS AND RECOMMENDATIONS

As shown in the study, the Jeypore rain forest is the richest rain forest of India having a wide range of biodiversity and a number of rare species of plants and animals; having wide scope for socio-economic significance. But still the forest is not getting the desired attention for its development. The following recommendations are made on the basis of the present study:

- ❖ The government must provide sufficient financial and other skilled assistance to the forest department for better conservation of the biodiversity in the rain forest.
- ❖ The government should appoint eligible persons in the Jeypore rain forest department having knowledge on biodiversity conservation.
- ❖ Government should provide scope and assistance to the researchers interested in doing research on this area.
- ❖ The plans made by the government for making tourist tracks and rope ways should be implemented soon.
- ❖ The lodging facility for tourists must be developed and houses with proper accommodation facilities should be allotted.
- ❖ The forest department should train the present and prospective guides for efficient guiding to the tourists. Government help in this regard is essential.
- ❖ The government must use the medicinal trees like orchids to get the best possible results out of them.
- ❖ The forest department should motivate the local NGO's to get help for the development of the forest.
- ❖ As the first rain forest festival had a great success providing socio-economic development opportunities to the nearby areas, such festivals should be held by the government annually.
- ❖ Bamboo found in this area in plenty. The government and the forest department must

encourage the local people for the efficient economic use of bamboo.

- ❖ The government must provide assistance for the development of the Jeypore forest department, as this department has consistently been ignoring by the government.
- ❖ The forest department and the government must organize seminars in the nearby areas for providing training on the profitable use of the rain forest products.

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