



## ROLE OF FOREST RESOURCES ON LIVELIHOOD OF LOCAL PEOPLE IN CHAKRASILA WILDLIFE SANCTUARY OF ASSAM

Rita Choudhury<sup>1</sup>, Pritam Saha<sup>2</sup> and Puranjit Das<sup>3\*</sup>

<sup>1</sup>Dept. of Zoology, Lecturer, K.K.H. Junior College, Pathsala, Assam. Pin-781325

<sup>2</sup>P.G. student, Department of Zoology, Bajali College, Pathsala, Assam

<sup>3</sup>Assistant Professor, Department of Zoology, Bajali College, Pathsala, Assam

\*Corresponding Author Email: [puranjitbajali@gmail.com](mailto:puranjitbajali@gmail.com)

### ABSTRACT

*Chakrasila Wildlife Sanctuary, a human dominated protected area situated in Kokrajhar and Dhubri districts of Assam, well known for Golden Langur. The sanctuary is covered by 28 villages inhabiting different ethnic groups such as Bodo, Rabha, Garo, Rajbonghi, Nepali, Muslim etc. The present studies consist of extent of forest dependence and livelihood benefits from various forest resources by local people and their attitude towards biodiversity conservation. Data were obtained by interviewing 326 respondents from 150 families of all 28 villages from various economic and demographic backgrounds during the period of 2<sup>nd</sup> January 2017 to 31<sup>st</sup> March, 2017 by using a questionnaire. The study revealed that forest resources contributing 20-70% income of 95% households directly or indirectly. The poor families have been mostly depending upon forest resources. But economically sound families also utilized various forest resources. The findings provide valuable information on livelihood from forest resources by different sections of inhabitants. Among a section of people, knowledge on wildlife conservation was found in very little though few NGOs have been working relentlessly in this aspect. The Govt and NGOs have to play significant role for better future of the protected area by inculcating the people to reduce their dependency from decreasing forest resources.*

### KEY WORDS

*Forest resources, fringe village, livelihood, wildlife conservation.*

### INTRODUCTION

In a developing country like India forests resources are important for livelihoods of local people as it provide food, fire wood, construction materials and medicinal plants. According to World Bank, approximately 60 million indigenous people are almost wholly dependent on forests, 350 million people who live adjacent to dense forests depend on forests for subsistence and income, and about 1.2 billion people rely on agroforestry farming [1]. For different reasons forests have been vanishing and in the last three decades much of this loss has occurred [2]. This paper analyzed the role of forest resources in livelihoods and dependence of

people living in and around Chakrasila Wildlife Sanctuary, a human dominated protected area. Besides livelihood benefits, the study also consists of conservation initiatives of villagers and their role in biodiversity conservation in human dominated landscapes. The Chakrasila Wildlife Sanctuary is covered by 28 villages with different ethnic groups such as Bodo, Rabha, Garo, Rajbonghi, Nepali and Muslim. The people of these villages are dependent on forest resources for different purposes. This livelihood assessment of Chakrasila Wildlife Sanctuary will be helpful for knowing dependency of fringe villagers on forest and prospects

of conservation and sustainable utilization of forest resources.

## MATERIALS AND METHODS

### Study area-

The Chakrasila Wildlife Sanctuary (26°15'–26°26'N, 90°15'–90°20'E), a 45.658 sq. km protected area, situated in Kokrajhar and Dhubri districts of Assam (Bodoland Territorial Council), well known for Golden Langur (*Trachypithecus geei*). This forest was under the ownership of the Bijni Estate till its acquisition by the government during 1956-57. In 1966 it was subsequently declared as a hill reserve forest. Thereafter, discovery of endangered Golden langur led to the reserve forest to the status of wildlife sanctuary in 1994. Physiographically, the area is hilly with an altitude ranging from 90 to 350 m above mean sea level. The hilly area is covered with dense forest which is mostly semi-evergreen and moist deciduous, with patches of grassland and scattered bushes. The lower hilly regions are covered with Sal tree while the middle and the upper regions are covered with mixed deciduous forest [3]. The major important trees are Sal (*Shorea robusta*), Shimolu (*Bombax ceiba*), Gamari (*Gmelina arborea*), Bhumura (*Terminalia bellirica*), Bandardima (*Dysoxylum binectiferum*), Shilika (*Terminalia chebua*), Poma (*Cedrela toona*), Kodom (*Hymenodictyon excelsum*), Outenga (*Dillenia indica*) etc. Agar (*Xanthium strumarium*) trees are also seen in some of the villages. Other than Golden langur, there are 30 different species of mammals also recorded which includes Leopard cat (*Felis bengalensis*), Pangolin, Deer, Sambar etc. Besides, 125 species of butterfly, 273 species of birds and more than 60 species of fish is found in the sanctuary [4]. Tarang River and Jonri Nala are the most important lotic systems originating from the Chakrasila hill range, while Dheer beel and Diplai beel are the major wetlands in the sanctuary area. The land of Chakrasila is very fertile for cultivation. Eri and Aijung rice (Rice variety) are the two commercially grown crop seen throughout the villages of Chakrasila. Different varieties of pulses are also grown in the area.

### Data collection and analysis-

Household data were obtained by interviewing 326 respondents from 150 families of all 28 villages from various economic and demographic backgrounds during the period of 2<sup>nd</sup> January to 31<sup>st</sup> March 2017 by using a questionnaire. To gather information about the various livelihood practices, on spot interview at various places

like paddy field, firewood collection site, school, NGOs office, shop and small business establishments were chosen. Respondent households were selected in consultation with Head of the village and local NGO. During visit, the head of the household was interviewed and, in the absence of head the wife or the other member (son/daughter) was interviewed. Below mentioned data were collected from each household such as sources of main income (occupation), use of forest resources for generating income, movable and immovable property (land and its type i.e. own or government, types livestock and number, education level, how long they live there, ethnicity and attitude towards conservation or knowledge of wildlife conservation. Various data obtained during field study were compiled and analyzed using the Microsoft Office Excel 2010. The incomes of households were computed by using a formula [5] where the total household annual income was calculated by adding occupational income with agriculture income, Livestock income and Total forest income. The "Total forest income" is the income generated by selling forest product (if any) and daily household usage of forest resources.

### Results-

The villagers of Chakrasila Wildlife Sanctuary are economically very weak and backward, where a large number of families are still living below the poverty line. The various criteria related with livelihood of people are discussed below-

#### a) Education and Economic condition-

The door to door to selective household survey showed that a considerable portion of population is either illiterate or ended their education at primary level. During field survey, the educational status of villagers was collected. Data was divided into 5 levels and percentage of illiterate, primary level, upto 10<sup>th</sup> class, upto 12<sup>th</sup> class and graduate level were found as 8, 32, 46, 9 and 5 respectively. Only a small percentage of people pursued higher education.

**b) Occupation-**In almost all villages' agriculture and allied cultures/farming are the main occupation. The allied culture includes, livestock rearing and rubber plantation. Few educated people are engaged in government job or doing small to medium type of business. A large section of people are poor and low income group and involved in agriculture, livestock farming and daily wage labour. Few people were also found as woodcutters. Paddy is the primary crop in the

area. Most of the household generate income by agricultural activities in addition to other occupation, though for some families it is the sole way of livelihood

**c) Land-** Most households have their own patta land. But 10% people found to use forest land for cultivation. The people use their household plot for growing various vegetables, household plantation and some use for rubber plantation.

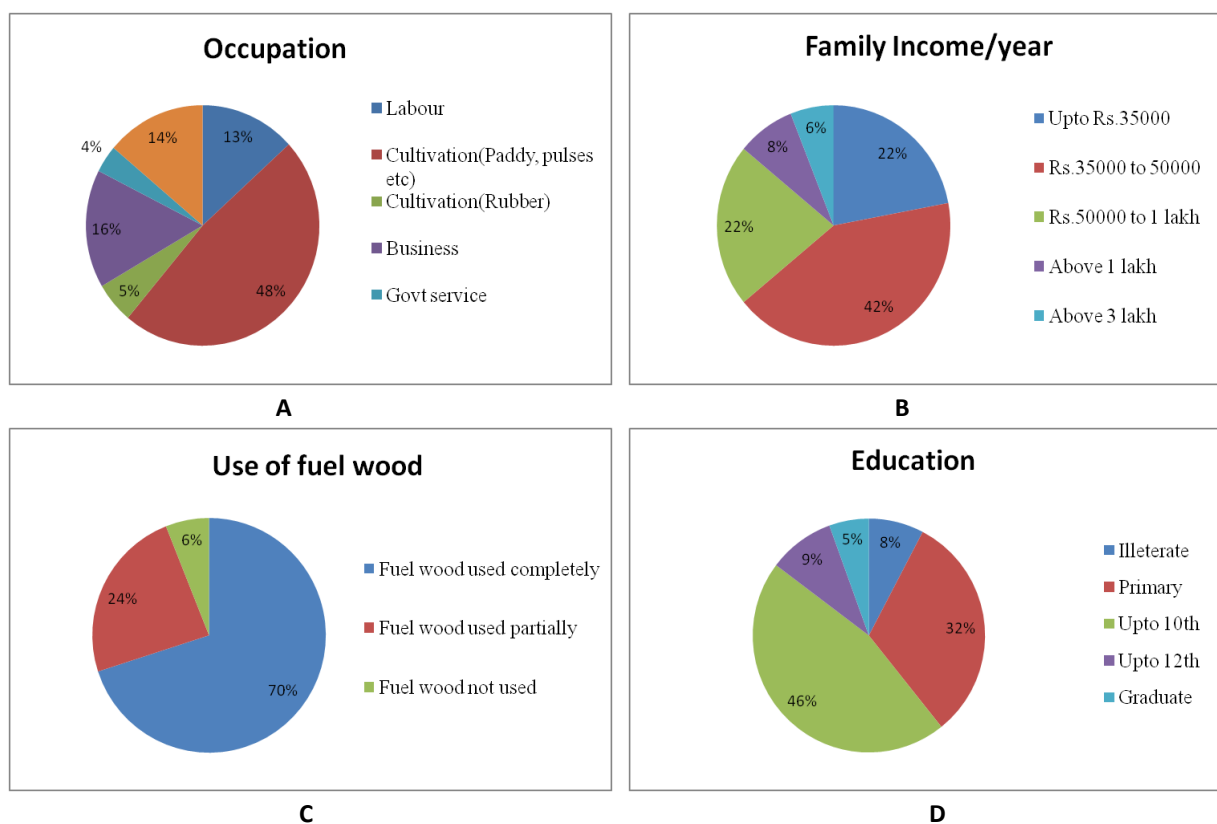
**d) Age structure-** The human population of villages of Chakrasila is healthy and growing population. It was found during the study that people of reproductive age group is highest followed by children. The percentage of

adult, juvenile, children (below 5 years) and elderly person (above 60 years) population is 52% and 23%, 16% and 8% respectively. The resource demand for livelihood activities are more in such a population which require more land and other resources for new settlement.

**e) Livelihood Activities based on forest resources-** The forest dependence of villagers was measured from various forms of activities performed in day to day life, and then calculated out as percentage (Table-1) after interviewed with the family heads and other members.

**Table 1. List of various forest products (% of uses, figure rounded) use by villagers**

Forest Product	Use from forest	Use from own land/Market
Firewood	82	18
Timber/bamboo	5	95
Fish/snails/insects	72	28
Animal fodder	64	36
Medicinal plant & leafy vegetables	25	75



**Fig1- Pie chart showing percentage of A) Various occupation B) Family or household income C) Use of firewood and D) levels of Education of fringe villager of Chakrasila Wildlife Sanctuary**

**i) Livestock Farming-** Livestock rearing is a common practice in the villages of the study area which comprises cattle, pigs, goats and poultry culture. It is found to be an important activity undertaken by every household. It was found that cattle farming mainly depends on household fodder and forest fodder.

**ii) Firewood usage-** Firewood is the most collected product by villagers and 88% household collect firewood from forest. They mainly collect dead trees, bushes and non-timber yielding trees. But some instances of cutting of trees were also found.

**f) Forest dependence-** The household data depicts that almost all income groups directly or indirectly dependent on forest resources. However, it was found that a few numbers of families such as woodcutter (3%) almost wholly depend on forest resources. In the villages, economically sound families also used firewood as secondary fuel for preparing human and animal food. Another important forest resource used by the village people is animal fodder which includes grass, bushes and leaves because 70% household possess domestic animals.

## DISCUSSION:

From the study it has been found that livelihood of people of fringe villages essentially depend upon cultivating crops and raising livestock. Previous studies also depict same result on livelihood of people residing in and around forest [6]. The forest fringe villagers generate considerable income from various forest resources such as trees or its parts such as leaves and bushes; fish, insects and snails from terrestrial and aquatic environments. In Chakrasila WLS the most common livelihood activities include agriculture farming and livestock keeping. Besides paddy, rubber plantation also contributes a good proportion of earning as cash crop in several families. The population of fringe villages is about 18000 and 70% people depend on various forests resources. Thus, the study revealed that the people of Chakrasila WLS rely variously on forests resources to support their livelihood. They use forest products as directly as firewood, medicinal plants and indirectly by utilizing forest land. The study revealed that out of different forest resources the use of firewood and timber is the most crucial to the ecosystem. Though it was found that local people seldom use timber, but it is a matter of grave concern over the illegal felling and smuggling of timber. So far

conservation attitude of village people is concerned, people of few villages have good knowledge on conservation. But unfortunately, a large number of village people still unaware about wildlife conservation and sustainable utilization of the natural resources. During 1990s, with the initiatives of Nature's Beckon (an NGO), the Chakrasila WLS transformed into a success story of Community Based Conservation [7, 8] where village people played active role in protecting and safeguarding forest resources by direct participation and concentrated on the economic development of the poor villagers by various ways like weaving, raise poultry and pigs etc vis a vis tried to change the mindset on conservation of wildlife including plantation. Thereafter, the people of Chakrasila WLS have been protecting the flagship species Golden langur and protecting the Sal forest from illegal felling by poachers and smugglers. A large number of peoples in Chakrasila WLS have been protecting golden langur and other wild animals from poachers. The future of biodiversity conservation in such type of human dominated protected areas the involvement of local people and coordination with forest officials as well as strict protection forces are necessary. Because the forests are essential for human survival as it harbour numerous animal and plant species and provide us with food, oxygen, shelter, recreation and sustenance [9]. Therefore, a greater role to be played by the forest department for wildlife conservation by making coordination with village community and NGOs together, need to maximize the process of protection and plantation and minimize the utilization of forest resources in Chakrasila WLS by generating alternative livelihood activities.

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**\*Corresponding Author:**

**Puranjit Das\***

Email: [puranjitbajali@gmail.com](mailto:puranjitbajali@gmail.com)