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Socio-Economic Aspects and Mangrove Resource Utilization by People in Creek based Villages of Krishna District

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ABSTRACT

Mangroves are highly productive ecosystems with important economic and environmental functions. Based on vegetation status on five creek based villages the present study is to identify the species wise utilization and social-economic aspects among five villages i.e,Pallethummalapalem, Kona, Bhavanipuram, Kammavarichervu and Malakayalanka . The socio-economic situation and resource utilization among all five creek based field stations is studied with the help of questionnaire, the base line data consisting of community status, life style, occupation etc. are developed. From the data, the living conditions and dependency on mangrove forests are analyzed. The relationship between utilization of resources and socio-economic conditions in each field station are compared. It is observed that the mangrove forests are utilized for fire/fuel wood, thatching of houses, temporary walls, boat manufacturing, traditional furniture, medicinal, fodder, tannin, fish nets, fish poisoning extracts etc. by the inhabitants.

Keywords: Mangroves, Creeks, Socio-Economic, Resource Utilization

I. INTRODUCTION

Mangroves comprise salt tolerant plant species that occur along inter-tidal zones of rivers and seas in the form of narrow strips or as extensive patches in estuarine habitats and river deltas of tropical and sub-tropical regions. Allen, (1987), Luther and Greenburg, (2009) identified that mangroves have been used by coastal inhabitants for centuries with the earliest reports.

Mangroves provide a suite of provisioning ecosystem services, including: (i) fisheries production, Nagelkerken et al., (2000), Dorenbosch et al.,(2004, 2005) (ii) aquaculture production Minh et al.,(2001) (iii) pharmaceutical generation Abeysinghe, (2010) (iv) production of timber and fuelwood (the latter being important in the Caribbean and Pacific Lugo,(2002), Walters, (2005), Walters et al., (2008).

Human uses of mangrove resources have been categorised into traditional, commercial and destructive uses Field, (1995). Uses of mangroves can be direct, involving the tangible benefits of mangrove forest products and mangrove-associated fisheries, or indirect, involving the intangible benefits of ecosystem services Saenger et al., (1983), Ewel et al., (1998), Hogarth, (2007), Walters et al., (2008). The former would entail the direct use of products from the ecosystem and the latter would rely on the use of the mangrove ecosystem as a whole Bandaranayake, (1998).

STUDY AREA

The present study is carried out to identify Mangroves vegetation utilization and socio-Economic aspects of people in creek based villages are given below.

Figure 1. Satellite map showing study areas

II. METHODS AND MATERIAL

The socio-economic aspects Nabi et al (2012) and mangrove species utilization base line data are gathered from various selected houses in and around the field stations, by way of obtaining answers to the questionnaire, household form issued to each family. The data are analyzed from family to community and the socio-economic status and mangrove species utilization is estimated. The data on the aspects are generated with the help of physical observations, records of forest department and interviews with natives and NGOs.

In addition, the parameters such as type of forestry operation in area and size and Distance from the patch of natural vegetation or human habitation are also taken into consideration.

III. RESULTS AND DISCUSSION

RESULTS

In the present study it was observed that in creek based region ie Pallethummalapalem, Kona, Bhavanipuram, Kammavarichervu and Malakayalanka there are 18 species namely *Aegiceras corniculatum, Avicennia alba, Avicennia marina,Avicennia officinalis,Bruguiera cylindrical, Bruguiera gymnorrihiza, Ceriops decandra ,Excoecaria agallocha, Lumnitzera racemosa,Rhizophora apiculata, Rhizophora mucronata, Sonneratia apetala, Acanthus Ilicifolius, Aegialitis rotundifolia, Cuscuta reflexa Roxb. Dalbergia spinosa Roxb. Suaeda maritima , Suaeda monoica* belongs to 11 families Myrsinaceae, Avicenniaceae, Rhizophoraceae, Euphorbiaceae, Combretaceae, Lythraceae, Acanthaceae, Plumbaginaceae, Convolvulaceae, Fabaceae and Chenopodiaceae .Prabhakar V.V et al (2017).

Land resource Utilization

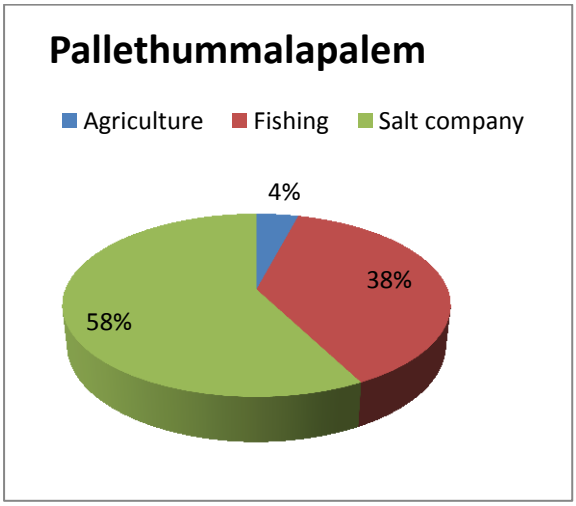
The land in study area is mostly wetland and it covers mangrove vegetation, mudflats and water bodies like rivers, creeks, channels, canals and agriculture drains and it is used for aquaculture and agriculture (mainly for paddy growing).Only very less amount of aquaculture ponds are reconverted into agricultural land in the recent years

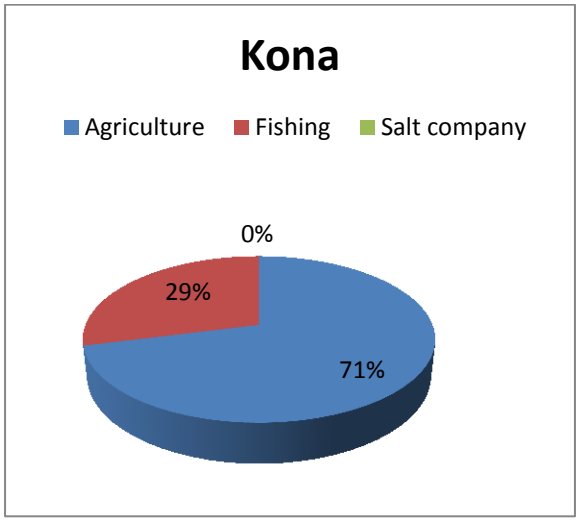
Cropping pattern

The major agricultural crop that is cultivated in coastal villages near mangrove areas is paddy. Irrigation is mainly done by means of canals, channels, drains of Krishna river and upputeru. The forest department has raised casuarina plantations under its "Shelter-belt Programme" .The plantations are being raised by Vana Samrakshana Samiti (VSS), a village level society formed under Joint Forest Management programme of the Andhra Pradesh Forest Department in the non-sanctuary area.

Aquaculture

Coastal aquaculture has been practiced for several hundred years both in revenue lands and forest areas; it has been part of the traditional livelihood for people living in mangrove areas. "Trapping and holding "operations, wild shrimp and other aquatic species, were carried into the pond by tidal flow, and were then harvested after a suitable interval of residence by the fishermen. In some places, paddy fields have been converted to prawn, crab farms; in other areas the same farms have been reconverted into paddy fields.





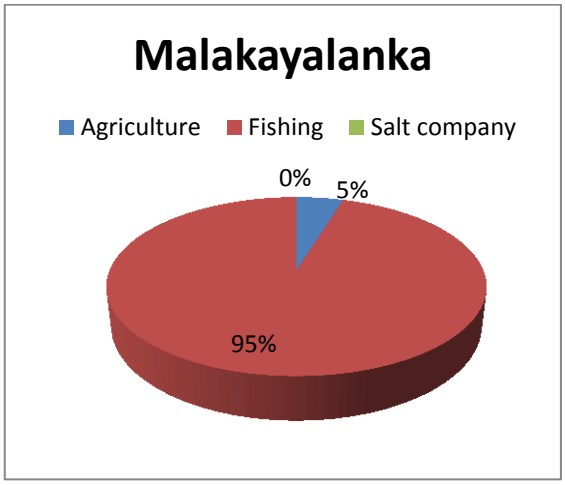
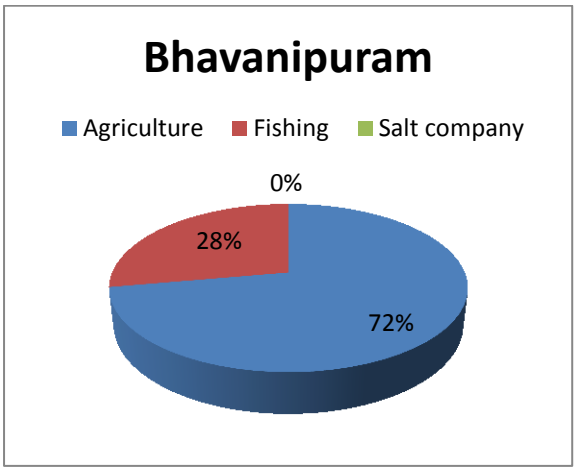
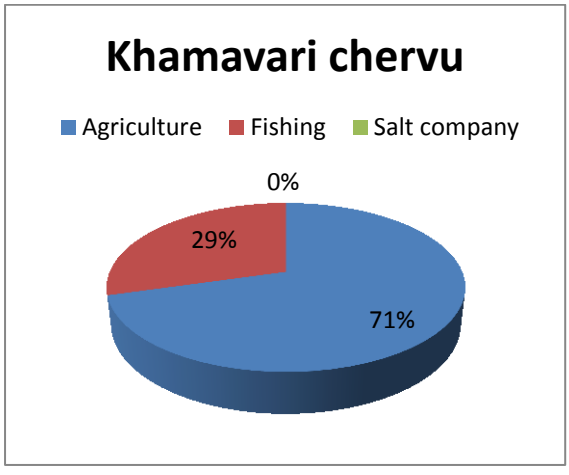


Figure 2 : Land utilization pattern





Socio-economic status:

The socio-economic situation among all field stations is studied with the help of questionnaire. From the responses to the questionnaire, the base line data consisting of community status, life style, occupation etc. are developed. From the data, the living conditions and dependency on mangrove forests are analyzed and the relationship between utilization of resources and socio-economic conditions in each field station are compared. It is observed that the mangrove forests are utilized for fire/fuel wood, thatching of houses, temporary walls, boat manufacturing, traditional furniture, medicinal, fodder, tannin, fish nets, fish poisoning extracts etc. by the inhabitants.

Socio-economic aspects of Pallethummala Palem:

It has a human population of 2567 living in 764 households. Out of 764 houses 525 are of RCC roof and 239 are kutcha houses. The RCC houses are built with the aid given by the State Government under the schemes Indiramma pathakam, World Vision of India (WVI), Social Service Organisations like RCM.

Most of the families have more than 4 members. About 57.43% of the population is literate. Total workers are 1389 which go for occupation like Agriculture, fishing, salt workers and daily wage workers. The annual income of most of the people ranges between ₹60000 to ₹ 100000 while others have ₹60000.

The plant species are used for tradition purpose and as subsistence for living. The species *Avicennia marina,*

Bruguiera cylindrica, Acanthus ilicifolius are used for firewood, fodder, timber and medicinal purposes.

Socio-economic aspects of Kona:

The village has a human population of 3124 living in 875 households. Out of 875 houses nearly 500 are of RCC roof and the remaining are kutcha houses. The RCC houses are built with the aid given by the State Government under the schemes Indiramma Gruhalu, World Vision of India and Social Service Organisations like Reconciliation Christian Ministry (RCM).

Most of the families have more than 4 members. About 69.60% of the population is literate. Total workers are 1755 which go for occupation like Agriculture, fishing, salt workers and daily wage workers. The annual income of most of the people ranges between ₹60000 to ₹ 100000 while others have ₹60000

The plant species are utilized for traditional purpose and as subsistence for livelihood. The species Avicennia *marina, Bruguiera cylindrica, Rhizophora mucronata, Acanthus ilicifolius* are used for firewood, fodder, timber, tannin and medicinal purposes.

Socio-economic aspects of Bhavanipuram:

It has a human population of 180 living in 48 households, out of them only about 25 are of RCC roof and the remaining are kutcha houses.The RCC houses are built with the aid given by the State Government under the schemes Indiramma pathakam and World Vision of India.

Most of the families have more than 4 members. About 31% of the population is literate. Total workers are 89 which go for occupation like Agriculture, fishing, salt workers and daily wage workers. The annual income of most of the people is below ₹60000.

The plant species are used for traditional purpose and as subsistence for livelihood. The species Avicennia *marina, Bruguiera gymnorrhiza, Bruguiera cylindrica, Rhizophora mucronata, Acanthus ilicifolius, Ceriops decandra* are used for firewood, fodder, timber, tannin and medinal purposes.

Socio-economic aspects of Kammavari chervu:

It has a human population of 170 living in 45 households. Most of them are of RCC roof. The RCC houses are built with the aid given by the State Government under the schemes Indiramma Gruhalu and World Vision of India.

Most of the families have more than 4 members. About 90% of the population is literate. Total workers are 125 which go for occupation like Agriculture and fishing. The annual income of most of the people ranges between ₹60000 to ₹ 100000 while others have less than ₹ 60000.

The plant species are utilized for traditional purpose and as subsistence for livelihood. The species Avicennia *marina, Bruguiera cylindrica, Acanthus ilicifolius* are used for firewood, fodder, timber and medinal purposes.

Socio-economic aspects of Malakayalanka

It has a human population of 210 living in 55 households, out of them only about 45 are of RCC roof and the remaining are kutcha houses. The RCC houses are built with the aid given by the State Government under the schemes Indiramma pathakam and World Vision of India.

Most of the families have more than 4 members. About 31% of the population is literate. Fishing, agriculture workers and daily wage workers.The annual income of most of the people is below ₹ 60000.

The plant species are used for traditional purpose and as subsistence for livelihood. The species Avicennia *marina, Bruguiera gymnorrhiza, Bruguiera cylindrica, Rhizophora mucronata, Acanthus ilicifolius, Ceriops decandra* are used for firewood, fodder, timber, tannin and medinal purposes.

DISCUSSION

Village named Malakayalanka, Kammavaricheruvu the bark of *Ceriops decandra* is used for making dye for tanning fishing nets .The bark of *Ceriops decandra* yields a brown coloured dye, which the fishermen use to preserve cotton fishing nets (Raju et al., 2008) and also

the ribs and keels of larger vessels such as the traditional boats like dhows are built from *Sonneratiaalba*, *Heritiera littoralis* or *Avicennia marina* in Kenya (Dahdouh-Guebas et al., 2000).

Excoecaria agallocha are used to catch fish, while branches and twigs with intact leaves are used mainly to catch shrimp in Kanuru and Kruthivenu regions.(Kapetsky, 1981) As brush park fisheries require intensive labour, the introduction of brush parks as a fishing method creates employment and also used for pulp and paper (Alam, 2006) which is found in the study area which is used for paper making.

Cattle were fed with foliage of *Avicennia marina* (leaves, twigs and sometimes propagules) in both the regions and they been used for incrising milk production. It is evident that *Avicennia* foliage can be served both as feed and salt nutrient supplement for dairy cattle (Maxwell & Lai 2012). The dependency of people and utilization of resources in this region were observed in a traditional and subsistence pattern.

IV. CONCLUSION

Socio-economic condition of the people in the study areas are poor, unemployment, seasonal agriculture and income generated is not sufficient to survive and to provide needs to family .this situation made them to shift to the income generating activity such as prawn seed collection, aquaculture, which are introduced in the recent past, have become popular, even though these are ecologically unsound. Recent development activities such as construction of bridge at Bhavanipuram roads and the proposal of major port and Satellite launching station threaten the existence of mangrove vegetation in this region.

Developmental activities will have a serious impact on the mangroves in study area. It is now increasingly recognized as neither politically feasible nor ethically justifiable to deny the poor from the use of natural resources without providing them alternative means of livelihood. In this context, ecological studies and the socio economic evaluation study in the area are needed for conservation, restoration and management practices.

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