Ecological studies on Jhitka forest under Medinipur Forest Division

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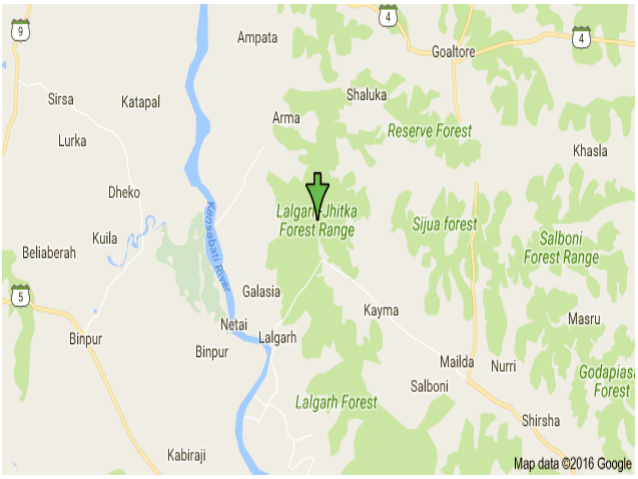
Abstract- *Ecological studies on some strata of vegetation have been done under varied microclimate in Paschim Medinipur of West Bengal. It deals with the first canopy layer of dominated sal vegetation admixed with a few tree species available as 2nd canopy covering elements with a less number of ground vegetation. During monsoon herbaceous vegetation was found maximum and followed by shrubs with profusely covered lianas. Maximum species found there was medicinal and other species were forage but all have ecological significance. This study includes some non-timber forest produces (NTFPs) which are recently collected by people unlawfully through some collectors and being deposited at Satpati daily market for transport. A good example is Ichnocarpus frutescens so called 'dudhi-lata or kali-lata' in Lagarh area of Paschim Medinipur District. The plant is woody climber so that they attaining height and girth of minimal form using maximum time. Large scale collection of the same species is dangerous because it will hamper the forest ecosystem in near future and might be vanished through excessive collection of illegal way. Local people eagerly export the woody stem but the purpose is unknown. The only known purpose is economical exchange. Forest fire causes deterioration of vegetation in forest which destroyed the species and altered the physical features of reproductive structures of plant species or as a whole. In addition to these structures, some micro-flora and some faunal members may change their behaviour and alter the ecosystem thereby. So the present study reflects nature and natural resource of Jhitka forest and their management. We, the knowledgeable person should be very realistic rather than opportunistic to stop the eco-degradation process and to establish the eco-restoration in a more realistic way to protect the forest for our existence.*

Keywords— Jhitka Forest Resource-Eco-degradation and Eco-restoration

I. INTRODUCTION

According to the re-naming of forest divisions (2008) Lalgarh-Jhitka forest range is now under Midnapur Forest division. It is situated along the metallic road Bhadutala Midnapore to Lalgarh under West Bengal State of India (Map 1). The forest is coppice sal (Shorea robusta) with other trees and shrubs scattered in distribution even the unnatural site having some plantation species created by Forest department (FD). Other species found in the forest are regarded as sal associates. Associates of sal of this area are Terminalia arjuna, Terminalia crenulata, Madhuca indica, Pterocarpus marsupium, Terminalia bellerica, Terminalia chebula, Bombax ceiba, Schleichera oleosa, Diospyros sylvatica, Diospyros melanoxylon etc. Plantation site covered by a large number of Eucalyptus hybrids, Acacia auriculoformis, A. mangium, Anacardium occidentale, Bambusa spp. and Tecttona grandis. According to the report of forest department the area is covered with 60% natural sal and other covered with plantation species, scrub jungles and bushes of natural kind. According to Champian seth's classification the forest is a type under major group-II, dry tropical forests group-5, tropical dry deciduous forest, sub-group-5 (b) Northern tropical dry deciduous forest (c) (i) dry sal bearing forest (c) (ii) dry peninsular sal forests. Non continuous forest patches have been observed from one corner to another along with alternate cultivated undulated land and waste land as a group of habitation. According to the report of forest department, there was no significant report of wild fauna but some report revealed scare fauna in this forest area. These ate civet, wild boar, jungle cat, hare, baboon, python, etc. So many avifaunas are available here (Das and Das, 2016). Snakes of venomous and non venomous are common. Venomous snakes like Cobra, Krait, Banded Krait, Vipers etc. are present here. Residential availability of wild elephants are frequently found in the jungle but during July to late February large number of elephant are migrated from Dalma hills of Jharkhand to the Bankura forest through this region and move vice versa. The heterogeneous movement from forest to jungle to cultivated land crate a great problem of this region. The common man-wild elephant conflict is a common phenomenon of this area.



Map 1. Lalgarh-Jhitka Forest of Medinipur Forest division, West Bengal, India

The conservation of biological resource as well as environment is urgent issue because in the last few decades the well being of natural resource has been diminishing due to illegal use of land and use pattern of settlement due to heavy pressure of local people in and around the forest. The deforestation and land degradation is another heavy cause to loss of bio-resource which could be a threat to flora and fauna as a whole. Even in protected forests, the anthropogenic effects from newly expanding villages such as harvesting of NTFPs, cattle and similar wild animal grazing and browsing of some domestics cause the loss of resource day by day. The gradual effect of global warming and deficit of rainy days throughout the year in the said zone cause loss of productivity in agricultural as well as in forested land threats the ecological processes. The similar activities made by some workers worked in Thailand which emphasised on the modification of environment by anthropogenic activities which loss the forest floor vegetation by settlement of villages and forest fire including huge collection of medicinal plants, grazing and browsing (Popradit et al. 2015). In west Bengal the same pattern has been increasingly posed due to different activities made by villagers in the forested area. But the work has been done by a few workers truly in the wide span of the state. Vegetation structure of different strata (tree, shrub and herb) were analysed in Garhjungle sacred forest of lateritic zone in West Bengal by Ganguli et al. (2016) at Birbhum district of southwest Bengal. But the theme is that in our Jhitka forest patch no longer work have been made to determine the pattern of vegetation though some cryptic work on different aspects in the study site have been made time to time. Ecologically it is interesting because natural vegetation, plantation stand and degraded land vegetation available better here which may be resource line to study the pattern of degradation hitherto to determine the eco-degradation process that constantly hampering the normal process of succession. Therefore, the present studies have been taken to account as preliminary work on the basis of natural resource management of the said area.

II. MATERIALS AND METHODS

Extensive field visits were carried out to different places of the study site which falls in Between Binpur-II and Salboni block of Paschim Medinipur District, West Bengal. The study site having different zones, like grass land, forest, degraded land, cultivated land, rice fallow land, highland, ponds, creaks, canals and low lying land which have been taken for vegetation association studies. The entire lateritic belt has a plantation of Acacia sp. and Eucalyptus mixed with Cashew Nut (Anacardium sp.). So, the sites with low fluctuations and high eco-niche have been omitted to avoid the biasness of the data. The quadrats as well as transects were taken for monitoring vegetation in late monsoon, and in winter as per the latest ecological methods. For eco-restoration study, vegetation monitoring was done following the concept of Greipsson (2011). Parameter taken for stability study and concept of structure and function of elements in ecosystem along with dynamics of vegetation idea of Dash and Dash (2010), Das (2014) were taken. The management of the policymaker and similar managerial system was taken from internet to get idea regarding the present day scenario of sal dominated forest in lateritic southwest Bengal. Books, Journals and magazine including registers of different departments were also consulted for Literature work. Interviews and cross references were studied using Participatory Rural Appraisal (PRA) technique in field. Plant specimens from field were also collected and processed for presentation as herbarium specimens and for identification using botanical and ecological standard. Specimens were carefully studied, critically examined and cross checked with the specimens housed in different herbaria. For conformity of specimens, local floras were consulted (Prain, Vol-I-II, 1963; Haine, Vol-I-III, 1921, Hooker, 1892-1897). To consult some publications, Taxonomy and similar research papers from website have been downloaded and followed by Das (2013) and Das and Das (2014). Some books published by West Bengal Forest Directorate, Research Wing (2005, 2010) have also been consulted to analyze the report along with my collections that the plants are either medicinally important or economically important. Methodology used for abundance study followed by Groom et al., (2006) along with the thesis of Das (2007) and project work of Das (2009, 2015). Relevant literature have been collected and consulted for the preparation of the manuscript. The voucher specimens were housed in departmental herbarium, Ecology Laboratory of Lalgarh Govt. College, Lalgarh, Paschim Medinipur West Bengal for future study.

III. RESULTS AND DISCUSSION

Forest is a natural site that has multi-layered tree species with multifunctional role to develop ecosystem. Firstly, it is a natural habitat for plants and animals which is locally fit for in-borne and locally hosted species. Secondly, it harbours some exotic and alliance species of foreign origin. Thirdly, it is a interactive zone between two separate eco-zones i.e. manmade environment and natural environment. Ecosystem of well established self supported environment is ruined by exotic forces day by day which hampered the true pristine ecosystem. Jhitka forest supplies resource like green and dry sal levaes (fuels), twigs as jhati-jhuri, tooth brush from sal twigs, atang stem for making basket, red ant a special item for making Santali dish, hatikan (Elephantopus scaber) for the preparation of tablets used in making local beer (Haria), medicinal herbs, kalilat (Ichnocarpus sp.) for preparation of basket and as medicinal herb, fishing staff, edible fruits (Kendu/tendu, baichi, amlaki, harituki, bahera, chiranji, kalojam) etc. The leaves of small kendu plant (Diospyros melanoxylon) for bidi leaf preparation. Large Scale Multipurpose Society (LAMP) is actively engaged to collect and transport the bidi leaf abroad. Mahul (Madhuca iondica) fruitrs are used for local wine preparation. Different types of grasses and stem less date palm for broom and brush making purpose.

But resources are limited and structural ambiguity is restricted though the use pattern is varied. Ultimately forest ecosystem becomes more fragile and losing its thick bonding by loosing own flora and fauna. Due to havoc collection of different forest products by any means disturbing the ecosystem process that hampered the productivity as well as eco-balance of the environment. Another degradation process is soil erosion and encroachment of cultivated land towards the forest patches by local people which pushing force towards the forest. A thin line between cultivable islands and forest patch always make bond to form eco-mixture land or ecotone. Conversion of the same land or same type of forest causes abnormality, ultimately it ruins the composition and interactions of species. Another threat in ecosystem is heavy penetration of exotic and alien species like Eupatorium, Lantana and Parthenium which hamper the normal onset of seedlings after monsoon. Heavy collection of twigs, leaves, medicinal plants, fuel wood, leaf litter and unscientific management pose another anthropogenic loss to the forest ecosystem though some part having scientifically managed as the forest Protection committees are there. So, need scientific study, social manipulation and departmental liability including multifunctional activities of the local people to retain the forest for eco-sustenance of resources. Hope that all people will concern with the forest ecosystem and will take active participation to conserve the ecosystem of Jhitka forest in West Midnapore in near future.

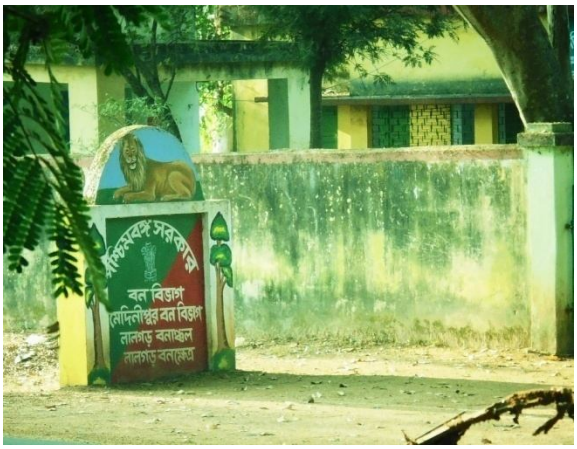


Fig. 1 Forest Office at Lalgarh, Midnapore, W.B.; stand behind it's Saplings of sal

Fig. 2 Old *sal* (*Shorea robusta*) stock as preserve

Fig. 3 Kendu tree (Diospyros melanoxylon) under stress; in front of Paddy field

Fig. 4 Coppice stand of Eucalyptus plantation

Fig. 5 Islands of Paddy field nearby sal (Shorea robusta) dominated forest

Fig. 6 *Sal* vegetation with *atang* -a woody liana as NTFP

Fig. 7 Woody climbers in sal forest used as NTFPs of forest;

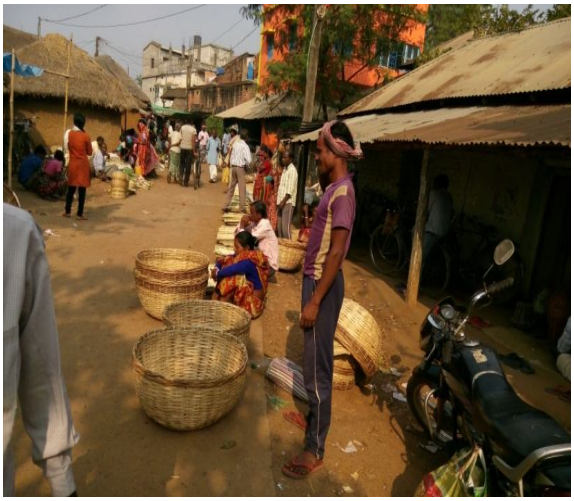


Fig. 8 Basket of Atang (Combretum decundrum)-a NTFP of Jhitka, Lalgarg, West Bengal available in weekly market at Lalgarh.

Fig. 9 Sal plates and green sal leaves at Lalgarh Weekly market (Hat);

Fig. 10 Kurkut i.e. red ant and its egg used in preparing local delicious dish

Fig. 11 Dry mahul flower (Madhuca indica) used to prepare local wine;

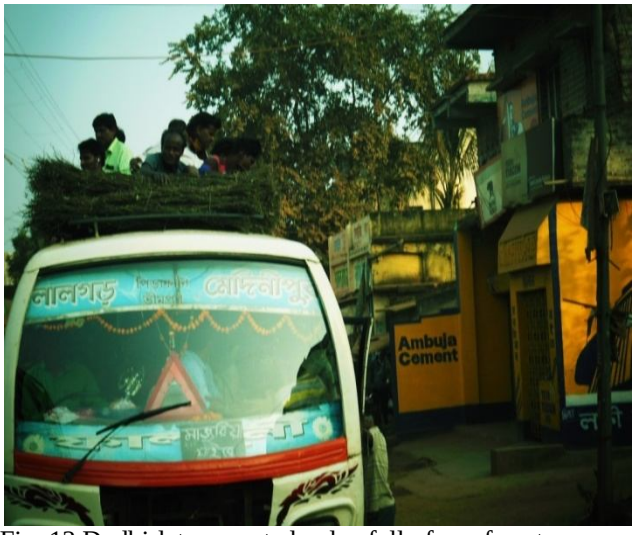


Fig. 12 Dudhi-lata exported unlawfully from forest area-an ecological threat

Fig. 13 Bamboo thicket at the margin of the Forest;

Fig. 14 Grazing in Field near forest

Fig. 15-20: Some avifauna: White breasted hen, Mourning dove, Spotted dove, Starling, Cuckoo and Rock dove

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