

ASSESSMENT OF BIODIVERSITY IN THE RATAGATA FOREST BLOCK OF DUNGARPUR RANGE, DISTRICT DUNGARPUR.

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Abstract

Biodiversity is the term given to the variety of life on Earth and the natural patterns it forms. The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which we are an integral part and upon which we so fully depend. Biological resources are the pillars upon which we build civilizations. Nature's products support such diverse industries as agriculture, cosmetics, pharmaceuticals, pulp and paper, horticulture, construction and waste treatment. The loss of biodiversity threatens our food supplies, opportunities for recreation and tourism, and sources of wood, medicines and energy. It also interferes with essential ecological functions. While the loss of individual species catches our attention, it is the fragmentation, degradation, and outright loss of forests, wetlands, coral reefs, and other ecosystems that poses the gravest threat to biological diversity. While loss of species has always occurred as a natural phenomenon, the pace of extinction has accelerated dramatically as a result of human activity. Ecosystems are being fragmented or eliminated, and innumerable species are in decline or already extinct.

In this context this study has tried to bring out an assessment of the biodiversity in the Ratagata Forest Block of Dungarpur range. Pure stand of *Tectona Grandis* can be seen in Dungarpur district where it dominates the vegetation but in varied degree of degradation due to biotic influence. Associated trees seen in the area are *Diospyros melanoxylon* (which is the most common), *Terminalia tomentosa*, *Aegle marmelos*, *Anogeissus latifolia*, *Miliusa tomentosa*, *Schrebera swietenoides*. Undergrowth plant varieties cover *Writia tinoria* (which is most abundant), *Zizyphus glaberima*, *Bauhinia racemosa*, *Cassia fistula*.

The present study found that the increasing pressure of both human and livestock population is taking a heavy toll on the biodiversity of the area particularly in terms of rapid falling of trees and excessive grazing of livestock. On the flat plateau and ridges of the hills most of the fertile soil has been washed away due to serious erosion and these areas are not capable for good teak growth. It is therefore suggested that as the soil of hilly and plateau tracks is fragile and has a thin horizon so these areas must be monitored very closely so that the soil erosion due to removal of vegetation cover can be checked by planting of new saplings which can bind the soil in short term and then these areas too can be made viable to support the teak vegetation as they were supporting prior to the deterioration conditions were set in. The study also suggests various ways and means to arrest the degradation of biodiversity in the area and to regenerate the forest cover on the patches which are rendered barren due to manmade practices.

Key words: Dungarpur, Teak, Forest, Rajasthan, Biodiversity.

Introduction

Biodiversity refers to the variety and variability among living organisms and the ecological complexes in which they occur. The site of occurrence of species is determined by the environment conditions of the site and the range of tolerance of the species. Human population depends on the biodiversity for food and other necessities. The increasing human population is depleting natural resources and causing pollution.

In view of this reality, the biologically rich and unique habitats are being destroyed, fragmented and degraded. The loss of biodiversity prevents evolutionary capacity of biota to cope up with environmental changes. Thus the major challenge to science is to check the loss of species and erosion of gene pool.

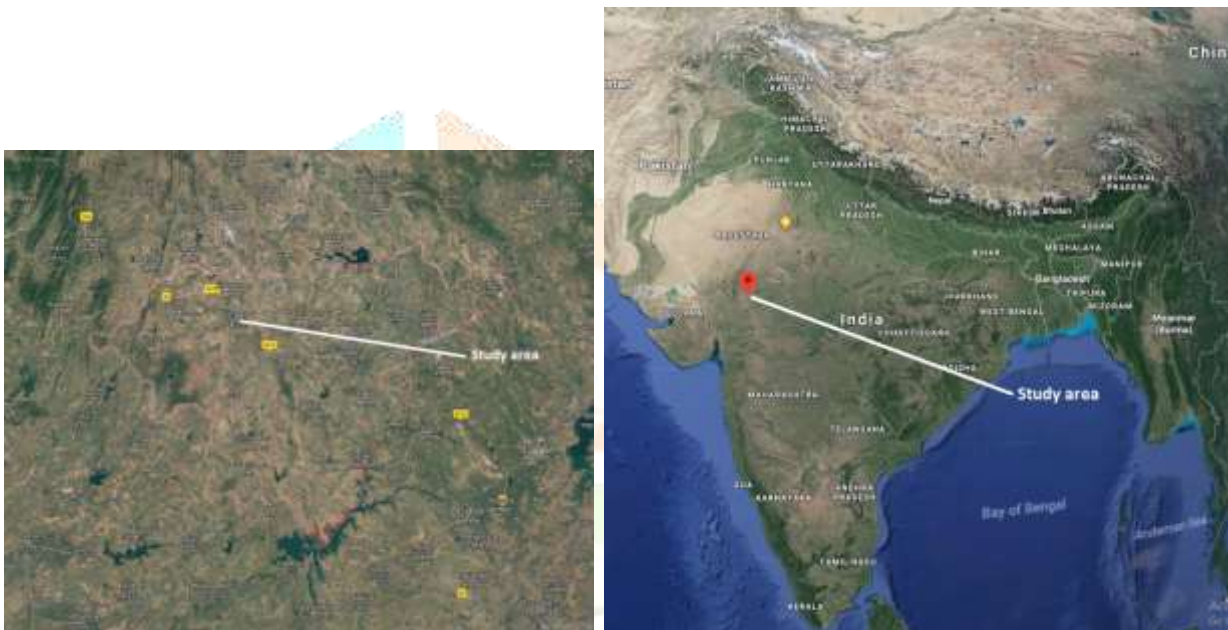
According to 2011 census, total population of Dungarpur district was 1388552 with the composition of 1299809 rural and 88743 urban population and decennial growth rate of 25.36% during the period 2001-2011.

Dungarpur District has rich flora and fauna. The forests include mainly teak, out of total reported area of 385593 ha, forests cover an area of 62204 ha occupying 16% of the total area. The wildlife includes a large variety of wild animals like leopard, chinkara, etc. Common birds in the region are fowl, partridge, black drongo, grey shrike, green bee-eater, bulbul, parrot etc.

The study area constitute one of the important protected forest areas of the district that imitate the general condition of biodiversity in the whole district and also exemplifies the degradation of biodiversity which has been set in over the whole district. The general decline in the biodiversity in the region has some common and known reasons as excessive grazing, overdependence of native population on forest resources, occasional forest fires and some peculiar reasons attached with the location of the area.

The study suggests both short term and long term measures to first arrest the decline in biodiversity and then to enrich it by involving people directly in the management and conservation of the biodiversity of the area.

Study Area



The study was done in Forests of Dungarpur range of Rajasthan State. Dungarpur district, covering geographical area of 3855.93 sq km, forms southern part of the state of Rajasthan. The district is bounded in the north by Udaipur district, in the east by Banswara district, in the southwest it has common border with the state of Gujarat extending between north latitudes 23°20' & 24°01' and east longitudes 73°22' & 74°23'. Major part of the district enjoys sub humid type of climate. However, semi arid type of climate is also experienced in a small area near northern boundary of the district.

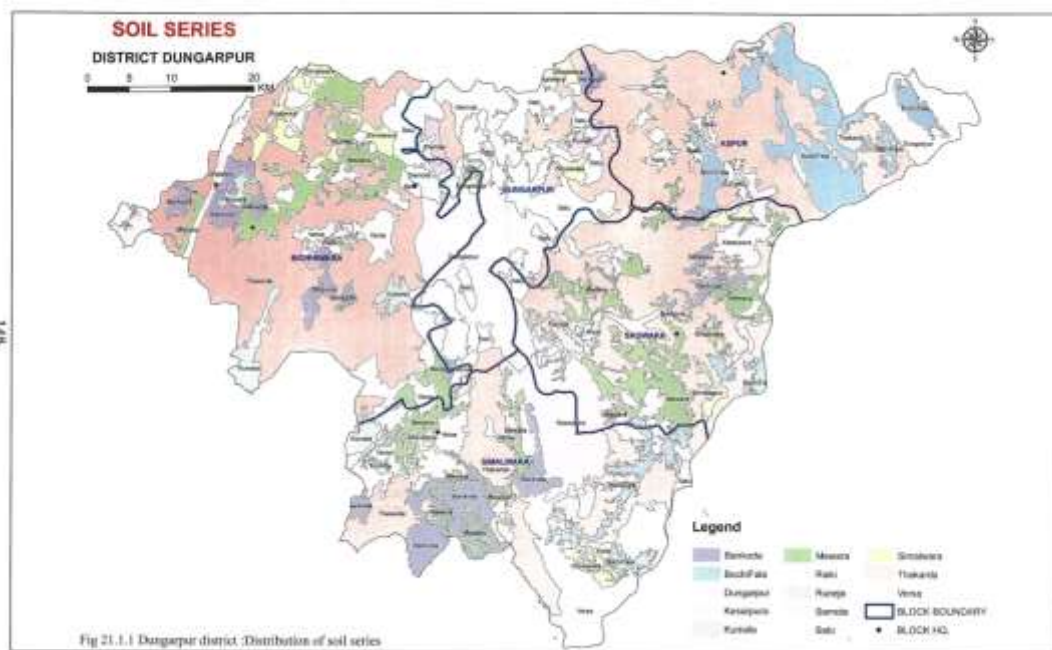
The district is characterised by uneven topography with hills of Aravallis comprising of mainly quartzite and intrusive rocks alternating with low lying areas of phyllites, slates and schists.

Geology: The district is underlain by mainly hard rock formations belonging to Bhilwara Supergroup and Aravalli Supergroup intruded by granite. Along the major river courses, localized patches of shallow alluvium occur overlying the compact basement

Drainage: The district is drained mainly by the rivers Som and Mahi. The former forms the natural boundary between Dungarpur and Udaipur districts and separates Dungarpur district from Banswara district. There are various streams like Jhakham, Majhham, Vatrak, Bhader, Gangli, Sapan and Very Ganga. All these dry up during summer. The seasonal nallahs are Nagdari, Phallu, Padar, Mahaya and Kadva Bagaria.

Soils: There are pre-dominantly two types of soils in the district. Red loam soils are found in the southeastern parts of the district, adjoining Gujarat border. These are soils of hilly plains (flats) i.e. brought down from nearby hills and deposited in low lying areas.

They are characteristically shallow to moderately deep, reddish in colour medium in texture, sandy loam to loam in nature, non calcareous, granular, well drained, free of salts and may have slight calcareous carbonates in lower layers. Hilly soils are found along the hill ranges of Aravallis in the northern and western parts of the district. These soils are very shallow with gravelly material, very near to the surface. These are in general, light in texture and reddish brown to greyish brown in colour, non calcareous and freely drained. These extend in small patches on uneven terrain.



The study area as already been described is situated at an altitude of 300-360 m and 23 kms from Dungarpur, has hilly relief and a slope of 40 degree varying aspect. Geologically the region has Phyllite, quartzite and sandstone rock with outcrops common. The region has Yellowish red and sandy loam 22-30 cm deep.

Methodology

The methodology adopted for the study includes the first step of analysis and assessment of biodiversity in the region through field visits to understand the existing status and causes of degradation of biodiversity. Data pertaining to all related aspects of biodiversity have been collected from books, gazetteers, forest working plans, scientific monographs, journals, research papers and library records. The compilation of collected information has been done by collecting and collating material relevant for the study from diverse sources.

Result



Just like the entire Dungarpur district the study area also supports Tectona Grandis or Teak in fairly good form but presently in various stages of degradation. Other species includes Aegle marmelos, Mitragyana parvilolia etc , whereas undergrowth is dominated by Writia tinctoria. The complete classification of the vegetation is presented in tabulation form as follows :

Particulars	Descriptions																											
Description of stand top storey	Average height 12 metres , Density 0.6																											
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Ground flora	Cassia tora, Tridax procumbens, Sida acuta. Among grasses low grasses like Aristida hystrix, Sporobolus diander, Andropogon pumilus and Oplismenus burmanii are found.																		
Climbers	Occasional Capparis sepialia.																		
Champion's type	Dry tropical forests 4 a C1 dry teak.																		
Proposed type	Tectona grandis series.																		

Remarks

This area is a reserve forest for many years but now in mostly degraded conditions. The whole area has been subject to heavy feeling and severe loss of biodiversity during past 7 decades. Grazing, browsing, pollarding and lopping have been very common. Damage from fire is common. Damage from fire is common feature. Tectona grandis have been seen to be attacked by insect borers. Leaf skeletonisers are also found.

It is a typical feature of this forest that teak has Mitragyana parvilolia and Aegle marmelos as its characteristic associates.

The forest area is in close of Dungarpur town and damage to biodiversity is inevitable due human and livestock interface.

The spurs and ridges have very little of vegetation only along drains and depressions where tree vegetation is found in degraded form.

Increasing pressure of both human and livestock population is taking a heavy toll on the biodiversity of the area particularly in terms of rapid falling of trees and excessive grazing of livestock. Soil of hilly and plateau tracks is fragile and has a thin horizon so these areas must be monitored very closely so that the soil erosion due to removal of vegetation cover can be checked by planting of new saplings which can bind the soil in short term and then these areas too can be made viable to support the teak vegetation as they were supporting prior to the deterioration conditions were set in.

The mechanism of joint forest management should be strengthened further so that people should be made a part of conservation efforts and they can be educated on various practices related to forestry as this type of participatory approach has always yielded good results the world over. The strategy can have Micro-level planning, Involving of women, Involvement of NGOs, Attention to poor, Marketing, Integrated rural development programme, Conflict resolution, and Equitable distribution of benefits as its components. Various practices such as Agro forestry, Community forestry and Farm forestry should be encouraged so that the dependence of the local population on the forests for fuel and fodder can be reduced to a large extent and the forests resources which are in a precarious state can be conserved.

References

Burley J and BT Styles (1976). Tropical trees, variation breeding and conservation. Academic press London.

Chauhan T.S (1993). Natural and Human Resources of Rajasthan, Scientific Publishers, Jodhpur.

Charner Ec, GH orians and K Hytt(1976). The ecological impression of resource depression

Clawson M(1975). Forest for whom and for what, Hopkings Baltimore.

Dasmann R (1975). The conservation alternative, Wiley, New York.

Forest Department, Government of Rajasthan, Jaipur. State Forestry Action Programme:-1996-2016, Forest Department, Government of Rajasthan, Jaipur.

Forestry Training Institute, Jaipur. Selected readings for grassland ecology and Genepool Conservation.

Jones RL (1980). Biogeography

Likens GE, FH Bormann RS Perce, JS Eaton and NM Johnson (1977). Biochemistry of a forested ecosystem.

Hodges RD (1978), The case for biological agriculture, The ecological quaterly,II¹

