

**ASSESSMENT OF BIODIVERSITY IN THE FORESTS OF BANSWARA
RANGE, DISTRICT BANSWARA**

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Abstract

The present study has tried to bring out an assessment of the biodiversity in the forests of Banswara Range, District Banswara, whose most conspicuous part of the biodiversity are the teak forests. The entire Banswara district supports *Tectona grandis* in fairly good form but presently in various stages of degradation. Along with the *Tectona grandis* other stand top storey varieties are *Diospyros melanoxylon*, *Anogeissus latifolia*, *Lunnea coromandelica*, *Boswellia serrata*, *Scymida febrifuga*, *Delbergia peniculata*, *Terminalia tomentosa*, *Schrebera swietenoides*, *Garuga swietenoides*, *Garuga pinnata*. *Butea monosperma* is common in the drainage system and at the base of the hills.

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 : Banswara, Teak, Forest, Rajasthan, Biodiversity.

Introduction

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,

An International Multidisciplinary Research e-Journal

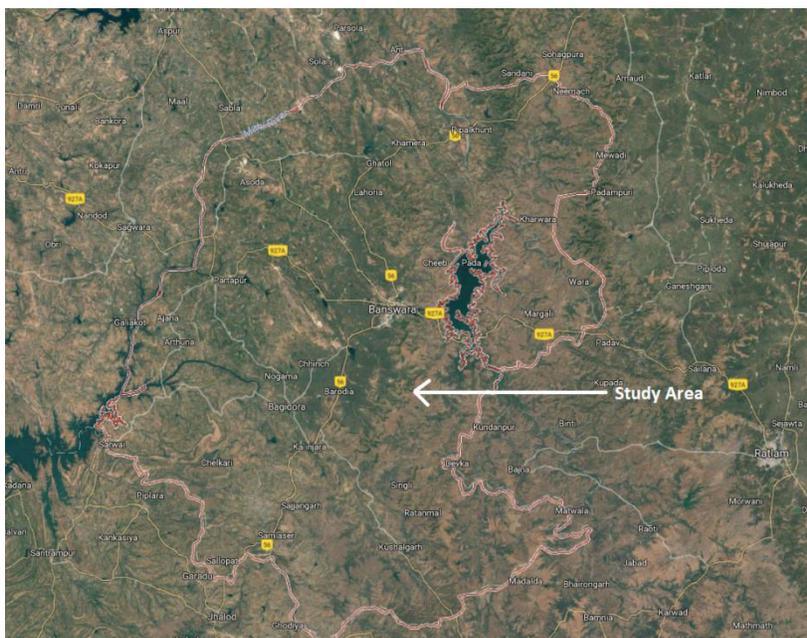
and outright loss of forests, wetlands, coral reefs, and other ecosystems that poses the gravest threat to biological diversity. While loss of species has always occurred as a natural phenomenon, the pace of extinction has accelerated dramatically as a result of human activity. Ecosystems are being fragmented or eliminated, and innumerable species are in decline or already extinct.

Banswara District has rich flora and fauna. It is also named so because of the bamboos (Bans) which were found in abundance in the forests. The forests include mainly teak. 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 reserve 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 the common and known reasons as excessive grazing, overdependence of native population on forest reources etc but the repercussions of that are not properly understood as the gradual declining teak population and its replacement by *Nyctanthes arbor-tristis* will in long run change the vegetative profile of the region. This is a very important belt of teak forests in the state and therefore it must be preserved and enriched as rapid deforestation is leading to the decline of this resources in the state.

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 the forests of the Bhojia Samaria block of Banswara range in the Banswara District of Rajasthan State. Banswara District has an area of 5,037 km², 1.47% of Rajasthan state. It is bounded on the north by Udaipur District, on the northeast by Pratapgarh District, on the east and southeast by Madhya Pradesh state, on the southwest by Gujarat state, and on the west by Dungarpur District. Banswara is located at 23.55°N 74.45°E.^[1] It has an average elevation of 302 metres (990 ft). Banswara is part of the Vagad region of southern Rajasthan, which includes Banswara and Dungarpur districts. The region is mainly inhabited by tribals, predominantly Bhils. Banswara and Dungarpur are collectively called as VAGAR, and in both the places local language is VAGRI.

The District lies in the Mahi River basin. The Mahi flows north through the district from its origin in the Vindhya Range of Madhya Pradesh, entering the district from the southeast and flowing north towards the northern end of the district, where it turns southwest to form the boundary between Banswara and Dungarpur districts before entering Gujarat and emptying into the Gulf of Cambay. It is also known as 'City of Hundred Islands', due to presence of numerous islands in the Mahi River, which flows through Banswara.

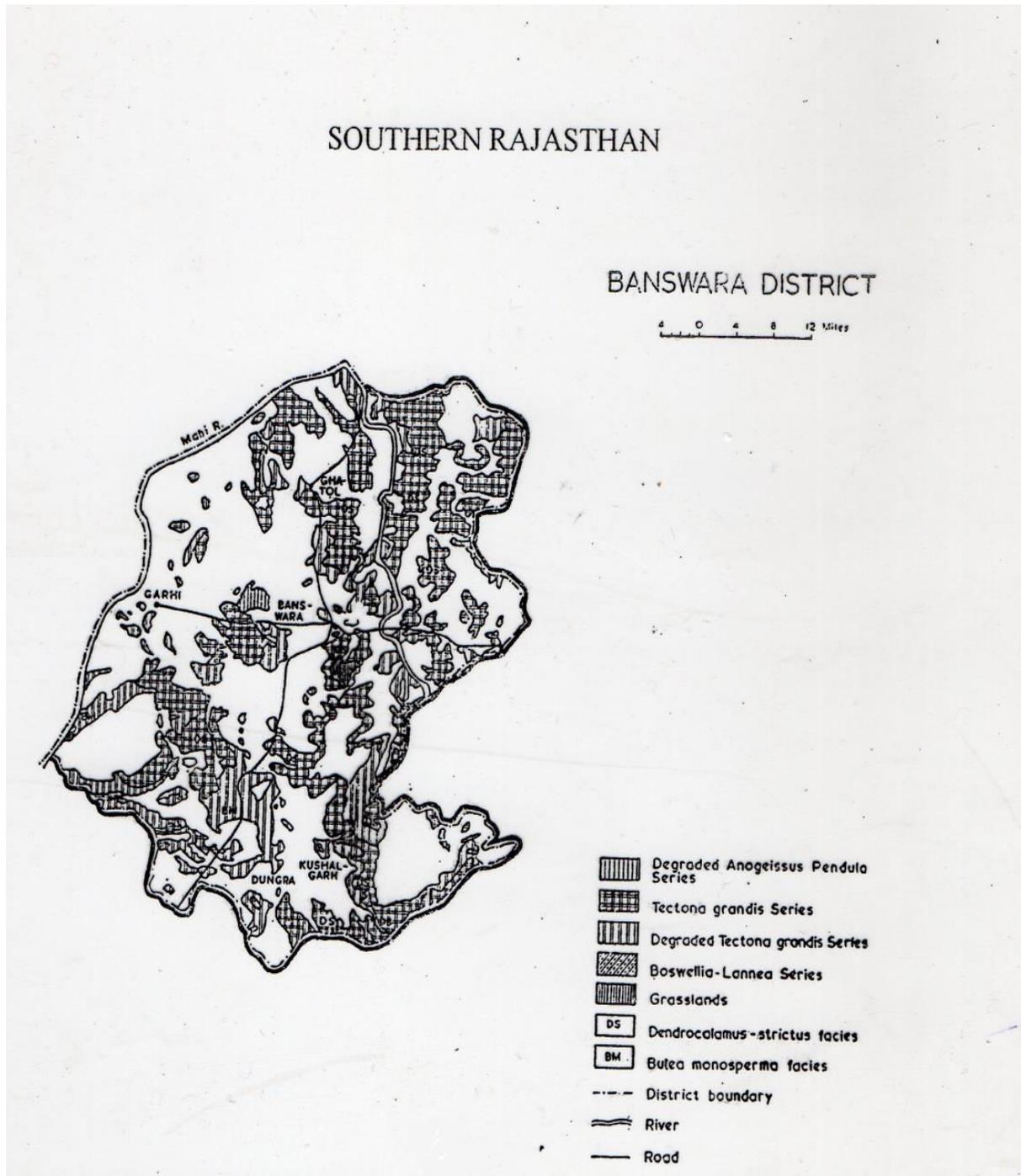
The study area as already been described is situated at an latitude of 360-420 m ,relief of undulated hills of 20-50 degree slope with varying aspect. Geologically this is a part of Deccan trap with high abundance of quartz stones. Soil is greyish black, clayey loam shallow 15 to 25 cm deep strewn with trap boulders.

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.

Finding

Just like the entire Banswara district the study area also supports Tectona Grandis or Teak in fairly good form but presently in various stages of degradation. The study area has 60% of teak in different stands with several other associates in which Diospyros melanoxylon (20%) is most prominent. The complete classification of the vegetation is presented in tabulation form as follows :



Particulars	Descriptions																								
Description of stand top storey	<p>Average height 12 metres , Density 0.5</p> <table border="0"> <thead> <tr> <th>Species</th> <th>Percentage of species</th> </tr> </thead> <tbody> <tr> <td>Tectona grandis</td> <td>60</td> </tr> <tr> <td>Diospyros melanoxylon</td> <td>20</td> </tr> <tr> <td>Anogeissus latifolia</td> <td>5</td> </tr> <tr> <td>Lunnea coromandelica</td> <td>All 15 percent</td> </tr> <tr> <td>Boswellia serrata</td> <td></td> </tr> <tr> <td>Scymida febrifuga</td> <td></td> </tr> <tr> <td>Delbergia peniculata</td> <td></td> </tr> <tr> <td>Terminalia tomentosa</td> <td></td> </tr> <tr> <td>Schrebera swietenoides</td> <td></td> </tr> <tr> <td>Garuga swietenoides</td> <td></td> </tr> <tr> <td>Garuga pinnata</td> <td></td> </tr> </tbody> </table> <p>On upper reaches, proportion of Anogeissus latifolia, Lunnea coromandelica and Boswellia serrata is more whereas in lower reaches and along drains proportion of Tectona grandis is more.</p>	Species	Percentage of species	Tectona grandis	60	Diospyros melanoxylon	20	Anogeissus latifolia	5	Lunnea coromandelica	All 15 percent	Boswellia serrata		Scymida febrifuga		Delbergia peniculata		Terminalia tomentosa		Schrebera swietenoides		Garuga swietenoides		Garuga pinnata	
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Under growth	1.5 m high, 250 bushes per hectare covering about 30 percent of the ground. Dichrostachys cinerea Holarrhena antydysenterica Gardebia turgida Helicteres isora
Ground flora	Fair consisting of Cassia tora, Sida grewioides, Gorehorus trilocularia, Boerhavia diffusa, Tridax procumbens. Among grasses, Themeda quadrivalvis, Aristida hystrix, Heteropogon contortus and Eragrostis spp are found. Themeda and Apluda reach a height of about 0.6m during rains but not dense.
Climbers	Hemidesmus indicus, Acacia pennata are found. Accacia pennata is causing some damage to the crown development of tree species. On upper reaches Dendrophthoe falcate is parasitizing some of the Boswellia trees.
Humus	Leaf litter about 2.5 cms present
Champion's type	Dry tropical forests 4 a C1 dry teak, e-12 Bamboo brake.
Proposed type	Tectona grandis series with Dendrocalamus Facies.

Result and Discussion

Such biodiversity is found in slightly moist localities of the division in which characteristically Terminalia tomentosa, Garunga pinnata, and Dendrocalamus strictus are common.

The area remained protected for many years. Economically valuable trees like Anogeissus latifolia were removed on permit system. Dendrocalamus strictus has also been removed on permit system. Excessive hacking and grazing, lopping and pollarding are prevalent uninterrupted causing serious damage to biodiversity. Degradation of Tectona Grandis series has been caused due to excessive hacking coupled with frequent fires, heavy browsing and grazing. Survival rate of teak trees in the region is between 40-50 percent. Nyctanthes arbor-tristis is the common species which comes immediately following the felling or cutting of the teak trees in most of the areas and as the time passes, Tectona grandis get further reduced and Nyctanthes practically monopolises the entire hilly tracts. The foothills and lower slopes generally support Butea monosperma in varied degree of mixture.

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.

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. 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.

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