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Research Article

Floral Biodiversity of Sariska Tiger Reserve on Medicinal and Endemic Plants

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A B S T R A C T

The Sariska tiger reserve in Aravallis has its own importance and specific characteristics endowed with unique biodiversity. In the present study an attempt has been made to ascertain the current status of the flora in all the possible study area. Attention is focused on one of the important reserve forest of state of Rajasthan with pace of their endemism, medicinal important plants species and along with facing number of challenges in this reserve. In present study emphasize on taxonomic richness, genetic difference within each taxon; the communities, ecosystem and landscape occupied by this reserve. The status of medicinal plants with their uses is also incorporate with overall study of floral diversity in the study area. Several studies so far conducted in Aravallis like which supported checklist of plant diversity in this natural reserve.

Keywords: Floral Diversity, Sariska Tiger Reserve, Aravallis, Endemism

Introduction

Biodiversity is the mass of different living beings in a particular ecosystem or on the whole earth. It exists in three different levels, genes, species and ecosystems. Each of the components has its own composition, structure and function (Redford, Richter, 2001, Noss, 2005). Biodiversity provides the basis for ecosystems and their services, upon which all people fundamentally depended (Cardinale et al., 2012). Biodiversity is considered as the base of agriculture, source of all recent crops and domestic livestock species since the beginning of human civilization. Similarly, the origin of biotechnology is very deep rooted in the human history from the starting of domestication of wild plants and animals to recent time. Genetic manipulation by classical methods of plant breeding and selection of superior and new varieties started since prehistoric time.

Study Area

The "Sariska Tiger Reserve" (74°14′ to 76°34′ N and 25° 5′ to 27° 3′ E) is situated in the Aravalli hill range and lies in the semi-arid part of Rajasthan (Rodgers and Panwar, 1988). It became a wild life sanctuary in 1955 and Tiger reserve in 1982. According to Department of Forest, Government of Rajasthan the total area of the Sariska Tiger Reserve is 866 sq.km, of which 302.2 sq. km. is buffer zone and 497.8 sq.km is core zone. Sariska core zone is comprised of three isolated; pockets: Core-I (273.8 sq.km), II (126.5 sq.km.) and III (97.5 sq.km). The status of the Core I has been notified as a National park in 1982. Sariska is undulating to hilly and has numerous narrow valleys. Kiraska and Kankwari plateau and two large lakes Mansarovar and Somsagar. Silisad lake is situated just along the north eastern boundary of the reserve. The altitude of Sariska varies from 540 to 777 meters. Earlier Sariska was the private hunting grounds of Alwar's royal family, today only 20 percent of this vast expanse of jungle is "Tiger Habitat". The vegetation of Sariska correspond to Northern tropical dry deciduous forests (sub group 5 B, 5/ EI and 5/ E2) and Northern tropical thorn forest (Sub Group 6 B) (Champion and Seth, 1968). The forest being scattered and sparse over a large area

on various geological and soil formation and vary greatly in composition. *Anogeissus pendula* (*Dhok*) is dominant species in the undulating area and on the hills. *Boswellia serrata* (*Salar*) and *Lannea coromandelica* (*Garjan*) grows on steep rocky areas. *Acacia catechu* (*Khair*), *Zizyphus mauritiana* (*Bordi*) and Butea *monosperma* (*Dhak*) are found in valleys. Dendrocalamus strictus is extremely limited in distribution and is found along the well drained reaches of the streams and moist and colder part of the hills.

Material and Method

In the present study emphasis was laid on the study of floral diversity in Sariska Tiger Reserve, during January, 2017 to March, 2020. This study revealed that biodiversity of the study area was affected due to anthropogenic activities. It provides an assessment of the key human factors and their relative roles in driving the destruction of biodiversity, which are likely to operate, not only in core zone but immediately surrounding buffer zone. Personal observations were taken in the field by visiting the study area and its different landforms. It was a great help that the field staff of Sariska Tiger Reserve, Department of Forest, Government of Rajasthan was associated always in the field. Plant samples (leaf, flower etc.) were brought to Indira Gandhi Centre for Human Ecology, Environmental and Population Studies, herbarium sheets for important species were prepared and help and cooperation was sought from the "Herbarium" of Department of Botany, University of Rajasthan, Jaipur for finding out the current status of vegetation in the study area. The properties of medicinal important plants are assessed by interview of local dweller, ayurvedic doctors, local medicomen and elder man and women of inside and outside the reserve. The exudates of different parts of plants species shall be carried out by the help of pharmaceutical professional and through laboratory investigation.

The ethanobotanical aspects of the plants species of the reserve area can elaborate by the medicinal and folk dietary practices of local indigenous people.

Table 1.Current Status of Vegetation in Sariska Tiger Reserve

	Families	Genera	Species
Monocotyledons	13	59	90
Dicotyledons	69	208	308
Total	82	267	398
Pteridophytes	3	3	4
Gymnosperm	1	1	1
Total	86	271	403

Landwise floral (endemic) composition of Sariska Tiger reserve in Aravallis: Sariska Tiger reserve nestled amidst the Aravillis which used to be hunting place (Sikargrah) of princely state Alwar in the past, is now a days a tiger reserve of international reputation. Sariska is very rich in biodiversity with wide spectrum of flora and ample of wild life. According to the latest "Revised forest types of India " by Sir HG Champion and Shri SK Seth, the forests, met within the division fall under group 5 "Tropical dry deciduous forest" and group 6 "Tropical thorn forests" under the broad category 'Dry tropical forests'. The main endemic and economically valuable species are *dhok* (*Anogeissus pendula*) *salar (Boswellia serrata), khair (Acacia catechu), bamboos* (*Dendrocalamus strictus*), *dhak* (*Butea monosperma*), *kair* (*Capparis decidua*), *ber* (*Zizyphus mauritiana*) with having lot of ground flora comprised of shrubs, herbs, grasses and sedges etc. The forest being scattered over a large area and occurring on various geological and soil formation vary greatly in composition and quality.

Approximately 35 percent of the forest area is either occupied by bare rocks or covered specially with degraded and poor type of scrub growth. The growth of the principal trees is generally slow and the height poor. On average the height varies from 4.5 meters to 7.5 meters, in favorable localities like core area the height reaching unto 12 meters. The diameter increment, too is slow and most of the principal species over 30 cm wide in width. The dominating species with occurrence in particular height are divided into upper canopy, middle canopy and ground flora as grasses and sedges mainly. The forests being scattered and sparse over a large area on various geological and soil formations, vary greatly in composition. In the valleys where better soil and moisture conditions exist, the vegetation is comparatively denser.

Anogeissus pendula is the dominant tree species, covering over 90 percent area of the forests. Boswellia serrata and Lannea coromandelica grow on rocks and dry slopes. Acacia catechu is common in valleys, where Dendrocalamus strictus is extremely limited and are found along well drained reaches of the streams and moist and cooler parts of the hills. The trees are generally slow growing an attain poor height. Albizia lebbeck, Diospyros melanoxylon, Syzygium cumini, Tamarindus indica and Ficus spp. which are found in moist localities attain large size both in crown grows gregariously, where valleys fan out and becoming flat and wide.

On the Basis of their Composition

The forests of Sariska Tiger Reserve can be classified as follows (i): Anogeissus pendula forest (ii) Boswellia serrata forest (iii) Acacia catechu forest and (iv) Miscellaneous type of forests which can further be divided into three categories namely (a) Butea monosperma forest (b) Forests along nallahs (c) Scrub forest.

Result and Discussion

A total number of 403 indigenous and naturalised plant species belonging to 271 genera under 86 families can be observed in Sariska Tiger Reserve. This also includes four species of Petriodophytes belonging to three genera and three families, a species of Gymnosperm. Table (a) includes the number of families, genera and species, under Dictoyledons and Monocotyledons, Pteridophytes and Gymnosperm. Except for Poaceae (56 species) and Cyperaceae (17 species) the Monocotyledons are poorly represented. The remaining 16 species of Monocotyledons belong to 10 different families.

Conclusion

Aravallis is known for very valuable plant and animal species. The local people and Ayurvedic doctors have been using plant products (leaf, seeds, bark, fruit etc.) in a crude manner. It reveals that these plant species are of medicinal values of which full potential is yet to be explored and utilized. There is ample scope of researches in the field of Phytochemistry, Biochemistry. Pharmacognosy and Biotechnology. Analysis of interview schedule revealed that there are Fifty four plant species occurring in the study area, which can be considered as medicinal plant species. These medicinal plants species with their use of different parts are the subject matter of endemism of the particular area and time to concentrate to conserve their status so far. The information and practices avail by local indigenous people is subject matter of conservation because they are the real custodian of biodiversity. Their indigenous practices great helps in conserving the biological diversity on madiculous, aesthetic or knowledge based ground which is divine gift to cradle for future endeavour.

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