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FLORISTIC DIVERSITY OF BANDHAVGARH NATIONAL PARK, MADHYA PRADESH

S.K. SRIVASTAVA

Botanical Survey of India, Dehradun

ABSTRACT

The paper presents the floristic composition of Bandhavgarh National Park in Vindhyan ranges of North-Eastern Madhya Pradesh. The vegetation of the park is mainly tropical moist deciduous type. The analysis of the flora reveals that it comprises 503 species belonging to 383 genera under 121 families represented in varied vegetation type. Apart from this, large number of species are known for their medicinal, timber, fodder and of various other economic uses.

INTRODUCTION

The forests in Madhya Pradesh fall under tropical regions and many of the patches were preserved by ex-rulers as their hunting reserves. Later the Government of state and India have preserved and developed them as Reserve forest, Game Sanctuaries and National Parks through various legislative measures. Bandhavgarh National Park is one of the nine parks existing in the state. It is a small plateau of *ca* 850 sq. km situated in the reserve forest of *ca* 5 km south of village Tala on Rewa-Umaria road in district Umaria, Madhya Pradesh. The area of the park falls in the Vindhyan ranges, one of the rich hot spot in North-Eastern Madhya Pradesh. Biogeographically, it lies in the zone 6A-Deccan Peninsula, Central highlands. Bandhavgarh is a well known place due to its long historical background, with wild animals, flowing streams and their banks, high elevations, dilapidated buildings, water falls, abandoned cultivation and habitation and well afforested areas in the valleys and on the hill slopes including, grasslands, etc. The average rainfall is 100 to 120 cm in a year. The maximum summer temperature rises up to 42°C while the minimum winter temperature varies from 4-6°C in the park area. The main underlying rock is Vindhyan sandstone which occurs in thick sheets and form a shape of large boulders. Quartzites pieces are frequently seen. Soil is porous, very sandy, light brown in colour and easily erosive.

FLORA AND VEGETATION

The area of the park falls in the sal zone of North-eastern Madhya Pradesh which belongs to the moist deciduous type of forest. The representation and richness of the

floristic elements available in the park area has been greatly affected by the history of the park. The vegetation of the park has been categorised into three subtypes.

(i) Sal Forest

The vegetation found on lower slopes and on the plains represents a good patch of *Shorea robusta*. The main association are *Pterocarpus marsupium, Lagerstroemia parviflora, Terminalia bellerica, Emblica officinalis, Buchanania lanzan* and *Careya arborea. Combretum ovalifolium, Ventilago denticulata, Butea parviflora* and *B. superba* are among the climbers. The undergrowth along the forest roadsides represent number of grasses and herbs. Some of these are *Perotis* sp., *Flemingia strobilifera, Indigofera echinata, Desmodium motorium, Sporobolus diander, Andrographis paniculata.* On the rocky slopes *Dioscorea* species are found. Ferns, mosses and liverworts are frequent along the springs and also on the seepaged wall. These are *Adiantum lunulatum, Diplazium esculentum, Aleuritopteris grisea, Cheilanthes tenuifolia. Marchantia polymorpha, Plagiochasma appendiculata, Bryum* sp., *Fissidens* sp. and *Rhodobryum giganteum* are some liverworts and mosses growing on wet walls of the fort annexae. Apart from these, *Lasia spinosa, Colocasia indica* and *Hygrophila salicifolia* are also seen. Among the grass species *Heteropogon contortus, H. melanocarpus* and *Imperata cylindrica* are frequent. The plants growing in stagnant water or on marshy land are *Jussiaea suffruticosa, Ludwigia octovalvis, Hygrorhiza aristata, Neptunia oleracea,* etc.

(ii) Mixed forests

These forests represent the deciduous elements but the vegetation seen in the lower storey comprise evergreen species. Among the tree species *Shorea robusta* mixed with *Tectona grandis, Terminalia alata, T. chebula, Lannea coromandelica, Boswellia serrata, Bombax ceiba, Garuga pinnata, Soymida febrifuga* and *Anoegeissus latifolia* are common. *Cochlospermum religiosum, Erythrina stricta, Mallotus philippensis, Cleistanthus collinus, Diospyros melanoxylon, Aegle marmelos, Dillenia pentagyna, Bridelia squamosa, Helictres isora, Gardenia gummifera, Holarrhena antidysenterica, Acacia catechu, Ficus racemosa,* etc. are the medium sized trees. On the remnants of the ancient historical structures *Ziziphus mauritiana, Emblica officinalis, Madhuca longifolia* var. *latifolia, Calotropis procera, Boerhavia diffusa* and species of *Saccharum* are found growing luxuriantly. Clumps of *Dendrocalamus strictus* are observed in the park area. Among the lianas *Bauhinia vahlii, Smilax zeylanica, Millettia extensa, Celastrus paniculatus, Ichnocarpus frutescens, Dioscorea* spp., *Pueraria tuberosa,* etc. are found. The undergrowth represents *Eranthemum purpurascens, Desmodium* sp., *Globba racemosa, Leonotis nepetifolia, Nelsonia canascens, Barleria cristata, Elephantopus scaber, Vernonia cinerea,* etc.

(iii) Grasslands

The park has a good representation of grasslands as most of the ungulate population in the area subsist to very great extent on grazing. The grassy meadows are the important source of food for herbivores and also provide the habitat to the wild animals

in the park. The common species are *Apluda mutica, Arundinella setosa, Digitaria longiflora, Bothriochloa intermedia, Dichanthium* sp., *Phragmites karka.* The species growing on hill slopes are *Thysanolaena maxima, Themeda quadrivalvis, Arundinella setosa* and *Saccharum spontaneum.*

Bandhavgarh National Park harbours few water bodies. Of these, Bhadrashila lake, near Tala range along roadside of Umaria, is a representative of a typical wetland. The aquatic vegetation of the lake has been categorised into two major groups.

(a) Free floating, submerged and anchored hydrophytes : The species growing are *Ceratophyllum demersum, Utricularia* sp., *Eichhornia crassipes, Lemna perpusilla, Hydrilla verticillata, Najas minor, Potamogeton indicus, Cyperus platystylis, Hygrorhiza aristata, Ipomoea aquatica, Ludwigia adscendens Neptunia oleracea, Nymphaea pubescens, Sagittaria guayanensis, Monocharia hastata,* etc.

(b) Marshy hydrophytes : A large number of species growing along the lake on marshy land are *Acorus calamus, Aeschynomene aspera, Ammannia baccifera, Coix aquatica, Cyperus distans, Eleocharis palustris, Eriocaulon quinquangulare, Limnophila aromatica, Ludwigia octovalvis, Phragmites karka, Polygonum barbatum, P. glabrum, P. limbatum, Ranunculus sceleratus, Rotala indica, Typha angustifolia,* etc.

Medicinal and Economical plants

The park harbours a rich wealth of medicinal and economic plants. Many of these are used for amelioration of people's sufferings. These are *Acacia catechu, Aegle marmelos, Adhatoda zeylanica, Andrographis paniculata, Boerhavia diffusa, Centella asiatica, Chlorophytum tuberosum, Curculigo orchioides, Strychnos nux-vomica, Dioscorea* sp., *Tylophora indica, Tinospora cordifolia, Withania somnifera* and *Vitex negundo.* Besides, among the economic plants are *Bauhinia vahlii, Moringa oleifera, Madhuca longifolia* var. *latifolia, Buchanania lanzan, Themeda* sp., *Apluda mutica, Bothriochloa intermedia, Pterocarpus marsupium, Tectona grandis, Shorea robusta, Butea monosperma, Boswellia serrata, Cochlospermum religiosum, Dendrocalamus strictus, Phragmites karka,* etc.

Wild animals

The diversity and richness in the flora, the topography and physical nature of the park provides the suitable habitat to a number of wild animals. Among the major predators are Tigers, Panthers, Wild dogs and the prey animals are Chital, Barking deer, Sambar and Chinkara. Apart from these, Hyena, Jackal, Sloth Bear, Grey Mongoose, Wild Boar, Jungle cat and Nilgai are very common in the park. Langurs are plenty throughout the park. Several migratory birds are also being observed in different seasons around Bhadrashila lake.

Floristic analysis :

Tewari (1968) in his work on Flora of Bandhavgarh has enumerated nearly 500 species, of those, 390 species have been mentioned in Balakrishnan's (1963) work on the flora of North-eastern Madhya Pradesh. The present work is based on two field surveys and the plants recorded from this area by earlier collection lodged in the herbarium of Botanical Survey of India, Allahabad (BSA).

The present floristic analysis reveals that the park has 503 species belonging to 383 genera under 121 families of vascular plants as follows :

Groups	Species	Genera	Families
Pteridophytes	14	10	9
Angiosperms			
Dicots	365	288	91
Monocots	124	85	21
Total :	503	383	121

Conservation measures

The innumerable life forms exist in the park providing food, fodder, fuel, medicine, genetic resources which play an important role in an ecosystem. Although values and potential of most of the species are known many have not been yet recorded and described from economic point of view. Hence, there is a great need to conserve biodiversity of the National Park because of interdependence of species in nature for survival which demands conservation of all element of biodiversity. To meet out the conservation of plant resources following measures are proposed.

1. The interference of village population in the park area should be checked otherwise it will lead to further depletion of the resources and destruction of forest.
2. Grazing should be restricted in certain patches of buffer zone only.
3. Over exploitation of non timber forest produce may be banned.
4. Rare and endangered species should be brought under *ex-situ* conservation.
5. Vehicular movement within the park area should be controlled, as it causes disturbance to wildlife and also add noise and air pollution in core zone, especially in Tala.

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