

STUDIES ON FLORA OF JABALPUR DISTRICT (MADHYA PRADESH)

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ABSTRACT

The present studies on Flora of Jabalpur District has revealed many interesting facts about 880 plant species belonging to 456 genera and 135 families of Angiosperms. The ratio of Dicots to Monocots is 5 : 1. Many are rare and ethnobotanically interesting plants with a good number of endemic new reports to the region. Throughout the district degradation of vegetation is observed due to deepseated influence of biotic and anthropogenic elements.

INTRODUCTION

Studies on Flora of Jabalpur District of Madhya Pradesh was undertaken during April 1983 to March 1986 under the Botanical Survey of India District Flora Project. Jabalpur is one of the major districts of Madhya Pradesh having an area of 10,164 sq. km and with a population of 21,92,934 as per 1981 census. The district consists of a long narrow plain running from South-West to North-East flanked by the Bhaner and Kaimur ranges of the Vindhyan system on the West and the various hills and spurs of the Mahadeo range and the Maikel range. The Bhitrigarh range and a few subsidiary hills intrude upon in the middle of the district and practically join the Vindhyan and the Satpura systems which together form the Great Central Watershed of India. The hills vary in elevation from 1500 to 2046 feet above mean sea level. Jabalpur is a good epitome of the Geology of India with formations of Archeans, Vindhyan, Gondwanas, Lametas, Deccan trap, Intertrappean and Recent. The rock types too vary from igneous, metamorphic and sedimentary with variety of minerals like micaceous earth, sand stone, quartzites, limestones, bauxite, clay manga-

nese, copper, iron etc. Thus soils of widely different characteristics are formed which vary from loose sandy to stiff black clay soils. The Gondwana sand stone produces a porous acidic soil which creates a condition favourable for the existence of *Shorea robusta* (sal), Vindhyan sand stones give rise to poor, shallow and sandy soil which supports poor types of *Tectona grandis* (teak) mixed forests.

The climate of Jabalpur District is pleasant and salubrious with marked summer, monsoon and winter seasons. The average annual rainfall over the district is 1270 mm. The district has six rivers, such as Narmada, Hiran, Gaur, Mahanadi, Katni and Ken. The Narmada is one of the seven most sacred and principal rivers of India which is referred to even in ancient religious books. There are numerous artificial lakes and tanks in the district. The Bargi dam, under completion, is also in this district, thus the vegetation is subjected to human interference.

PREVIOUS EXPLORATIONS

A perusal of available literature showed that no published flora exists for the State of Madhya Pradesh. Very few workers made floristic survey and study in Madhya Pradesh in general and Jabalpur in particular. Mention may be made of the works

of Hole (1904), Tiwari (1954, 55, 63, 68, 72), Narayanaswamy and Rao (1960), Seerwani (1962), Maheshwari (1963), Tiwari and Maheshwari (1963, 64, 65), Panigrahi *et al.* (1965, 66, 67), Balapure (1966), Ramlal and Panigrahi (1967), Shukla and Panigrahi (1967), Oommachan and Billore (1969), Waheed Khan (1973), Oommachan (1977), Sharma and Mamgain (1983), Kaushik (1983), Mukherjee (1984) and Verma *et al.* (1985). Scrutiny of herbaria showed that there are only 159 sheets of plants of Jabalpur in the B.S.I. Southern Circle Herbarium at Coimbatore which were collected by K. M. Sebastine during 1959, 60 and 62. The duplicates of these collections pertaining to the year 1962, numbering about 85, are also kept in the B.S.I. Central Circle Herbarium at Allahabad. The collections kept at State Forest Research Institute, Jabalpur was also scrutinised and taken into account which was mainly collected by H. O. Saxena. A few of these plants could not be collected from the field during the present survey and are treated as vanishing species.

MATERIALS AND METHODS

Field trips were regularly made throughout the district twice a week during the first year, alternate weeks during the second year and once a month in the third year. Complete specimens were collected and processed and mounted on herbarium sheets according to standard methods and are arranged as per Bentham and Hooker's system of classification. Field notes regarding local names, phenological details, distribution, ethnobotanical notes, ecological notes, folk-lore of plant use and other features of interest also maintained.

OBSERVATIONS AND CONCLUSIONS

The Forests of Jabalpur District are dry tropical forests. The trees which occur commonly almost in every block of forests are *Terminalia tomentosa*, *Anogeissus latifolia*, *Diospyros melanoxylon*, *Lagerstroemia*

parviflora, *Pterocarpus marsupium*, *Madhuca indica*, *Dalbergia paniculata*, *Eleodendron glaucum*, *Adina cordifolia*, *Semecarpus anacardium*, *Cassia fistula*, *Butea monosperma*, *Flacourtia ramontchi*, with undergrowth of *Nyctanthes arborescens*, *Carissa carandas*, *Woodfordia floribunda*, and *Helicteres isora*. The grasslands are seral and among the grasses *Anthistiria ciliata*, *Imperata arundinacea*, *Eragrostis tenella* occur throughout the district. The climbers occurring in all types of forests are *Bauhinia vahlii*, *Butea superba*, *Cryptolepis buchananii*, *Smilax zeylanica*, and *Zizyphus oenophia*.

The two types of major forests of this district are : 1. Northern tropical dry deciduous forest ; 2. Southern tropical dry deciduous forest.

The Northern tropical dry deciduous forests are divided into two group, viz. the North Indian dry mixed deciduous forests and the dry sal forests. The former is characterized by the occurrence of species like *Lannea coromandelica*, *Boswellia serrata*, *Terminalia arjuna*, *T. chebula*, *Albizia lebbbeck*, *Eugenia jambolana* with an underwood or undergrowth of *Kydia calycina*, *Buchanania lanzan*, *Embllica officinalis*, *Soyimida febrifuga*, *Aegle marmelos*, *Ougenia oojeinensis*, *Grewia tilaefolia*, *Gardenia latifolia*, *Ficus infectoria*, *Bridelia retusa*, *Bauhinia variegata*, *Zizyphus xylopyra*, *Randia dumetorum*, *Phoenix acaulis*, *Indigofera cassioides*, *Embelia robusta*, *Grewia hirsuta*, *Flemingia strobilifera*, *Asparagus racemosus* and *Holarrhena antidysenterica*. In the dry sal forests the trees are discontinuous with a dense and rapid growth of younger trees.

The Southern tropical dry forests are also divided into two distinct groups. The dry teak forest and the South Indian mixed deciduous forest. The best teak forests are in Kundwara and Bargi ranges. Bamboo generally forms an understorey, the prevailing species being *Dendrocalamus strictus*. Occa-

sionally *Bambusa arundinacea* is found on alluvial soil along the rivers. In the dry teak forests *Sterculia urens*, *Gmelina arborea*, *Stereospermum suaveolens*, *S. chelenoides*, *Bridelia retusa*, *Dalbergia latifolia*, *Indigofera cassioides*, *Stobilanthes* spp., *Clerodendron serratum*, *Vitex negundo*, *Alangium lam-arkii* etc. are also found. *Abrus precatorius* and *Acacia pennata* are climbers in this forest.

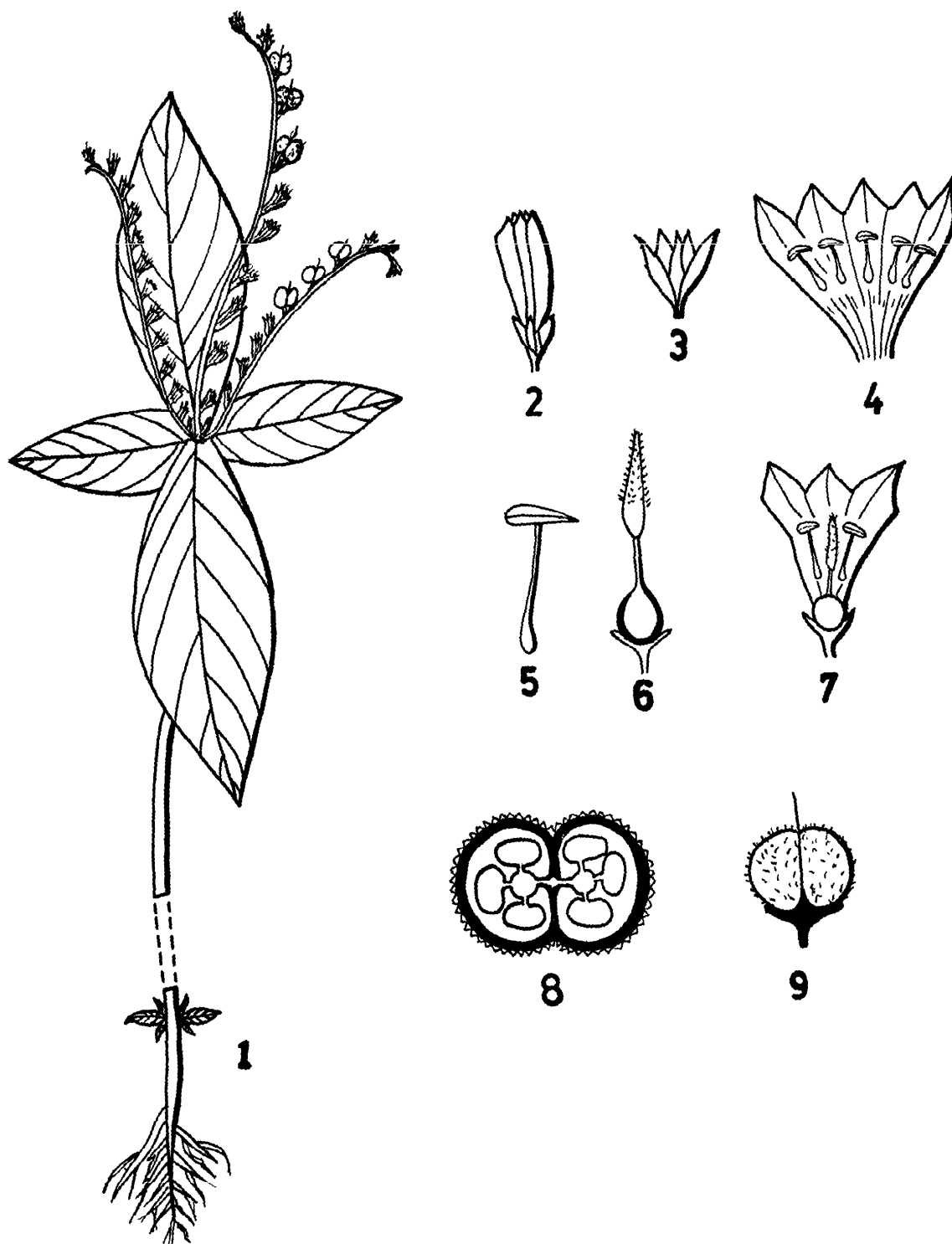
The other major vegetational types are wasteland vegetation and the hydrophytic vegetation. Plants commonly growing in wastelands are *Acacia nilotica*, *Aegle marmelos*, *Anogeissus pendula*, *Azadirachta indica*, *Cordia dichotoma*, *Madhuca indica*, *Mangifera indica*, *Ficus benghalensis*, *Ficus religiosa*, *Phoenix sylvestris*, *Pithecellobium dulce*, *Zizyphus mauritiana*, *Z. nummularia*, *Abutilon indicum*, *Acacia insia*, *Adhatoda zeylanica*, *Calotropis procera*, *Capparis sepia-ria*, *C. zeylanica*, *Clerodendron phlomidis*, *Kirganelia reticulata*, *Lantana camara*, *L. indica*, *Woodfordia fruticosa*, etc. The under-shrubs growing in the wastelands are *Achyranthes aspera*, *Cassia auriculata*, *C. occidentalis*, *C. tora*, *Crotalaria* spp., *Desmodium gangeticum*, *Barleria prionitis*, *Peristrophe bicalyculata*, *Pupalia lappacea*, *Sida cordifolia*, *S. ovata*, *Triumfetta rhomboidea*, *T. rotundifolia*, *Xanthium strumarium*, *Argemone mexicana*, *A. ochroleuca* etc. Common parasitic plants are *Dendrophthoe falcata*, *Viscum nepalense*, *Scurrula cordifolia*, *S. parasitica*, *Cuscuta hyalina*, and *C. reflexa*. Common epiphytes are *Vanda roxburghii*, *V. tessellata*, and *Rhynchostylis retusa* etc.

Among the common hydrophytes are *Ipomoea aquatica*, *Jussia repens*, *Nymphaea nouchali*, *Nymphoides cristata*, *Potamogeton nodosus* and *Sagittaria sagittifolia* are fixed floating hydrophytes; *Hydrilla verticillata*, *Ottelia alismoides*, *Vallisneria spiralis* and *Potamogeton* spp. are fixed submerged hydrophytes; *Pistia*, *Eichhornia*, *Utricularia*,

Trapa and *Wolffia* are free floating hydrophytes; *Aeschynomene indica*, *Limnophila indica*, *Polygonum glabrum*, *Commelina forskalii*, *Scirpus tuberosus*, *Ischaemum rugosum* are emergent amphibious hydrophytes and *Smithia conferta*, *Eclipta alba*, *Phyla nodiflora*, *Alternanthera sessilis*, *Ammannia baccifera*, *Caesulia axillaris*, *Hygrophila auriculata* etc. are marshy amphibious hydrophytes.

During our survey and study of the Flora of Jabalpur District (Madhya Pradesh) under the Botanical Survey of India District Flora Project we collected a plant specimen from C.O.D. and Water works forest areas in wild condition and in good number which is now identified by Kew Herbarium curator of Loganiaceae as *Spigelia anthelmia* L. (Sp. plant. 1753) of Spigeliaceae which is a native of South America and naturalized in W. Africa. There is one report from Malaysia (Flora Malesiana, 6:1, 378, 1962) but not previously reported from India. This weed has been found on the road sides, waste places in the forests and on sandy soils during rainy season in two localities in Jabalpur dist. The plant is toxic and its root extract said to be used by natives as vermifuge. (Figs. 1-9).

As a result of periodic and extensive study made at Jabalpur District from April 1983 to March 1986 over a thousand field numbers of plants have been collected, processed and studied. Identification of 738 dicot and 142 monocot species could be made which are enumerated in the flora, to be published shortly by the Botanical Survey of India under its District Flora Series. These 880 species belong to 456 genera and 135 families. Except for Commelinaceae, Cyperaceae and Poaceae, the monocots are poorly represented. Infact, more than 50% of the species of monocots belong to these families. Among the dicots Leguminosae and Astera-ceae constitute about one-fourth of the total



Spigelia anthelmia L.

Figs. 1-9 : 1. Habit $\times \frac{1}{2}$. 2. Flower $\times 3$. 3. Calyx $\times 4$. 4. Corolla with Androecium $\times 4$. 5. Stamens $\times 10$. 6. Gynoecium $\times 6$. 7. L. S. Flower $\times 4\frac{1}{2}$. 8. C. S. Ovary $\times 25$. 9. Fruit $\times 3$.

species. The ratio of species belonging to dicots and monocots is 5:1.

A comparison of the ten dominant families in order of their species content is as under : Leguminosae (114), Asteraceae (49), Euphorbiaceae (42), Graminae (39), Acanthaceae (27), Scrophulariaceae (25), Malvaceae (25), Labiatae (22), Convolvulaceae (21), and Verbenaceae (17).

Some less known ethnobotanical and economic uses of plants of this region are :

(1) Leaves and flowers of *Annona squamosa*, *Clerodendron phlomidis*, *Gymnema sylvestre* and roots of *Tephrosia purpurea* are held in high repute as antidiabetic agents ;

(2) Entire plant of *Corchorus aestuans*, *Plumbago zeylanica*, latex of *Jatropha curcas*, fruits of *Solanum nigrum*, roots of *Xanthium strumarium* are said to possess anti-carcinogenic activity ;

(3) The leaves of *Erythrina suberosa*, *Mimosa pudica*, *Tridax procumbens* and extract from the fresh root of *Butea monosperma* have been found to be very effective healing agents ;

(4) Fruit pulp of *Adansonia digitata*, root bark of *Alangium salviifolium*, root of *Cardiospermum helicacabum*, and bulb of *Crinum asiaticum* are diaphoretics ;

(5) Seeds of *Abrus precatorius*, *Daucus carota*, spikes of *Achyranthes aspera*, latex of *Calotropis procera* are held in high esteem as abortifacients ;

(6) Plants of *Euphorbia thymifolia* is used in gonorrhoea and in certain ophthalmic diseases, the leaves of *Centella asiatica* is efficacious in headache, bark of *Terminalia arjuna* and stem cuttings of *Euphorbia tirucalli* are anti-asthmatics ;

(7) Among the economically useful plants *Acacia nilotica*, *Albizia lebbek*, *Cassia fistula*, *Ficus religiosa*, *Madhuca indica*, *Terminalia arjuna* yield tannin, *Butea monosperma* yield dye ; *Aegle marmelos*, *Anogeisus latifolia*, *Boswellia serrata*, *Sterculia*

urens yield gums and resins ; *Tectona grandis*, *Shorea robusta*, etc. are very valuable timber yielding plants.

The vast and valuable plant wealth of the district can be judiciously tapped for the economic development of the tribal dominated areas of Jabalpur district. The urban areas of the district showed deep-seated influence of biotic and anthropogenic elements. In such areas drastic floristic changes are observed with a lot of degradation of vegetation. It has in turn even changed the surrounding environment and are also reducing many lakes and hydrophytic situations into marshy areas whereby the hydrophytic flora is also much dwindling due to the onslaught of the obnoxious weeds.

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