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A Preliminary Analysis of Angiospermic Flora of Sonbhadra District, Uttar Pradesh

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Introduction

The information of the floristic alignment of a plant community is an essential to know the overall structure and function of any environment. A forest is a large area of land covered with tree, herbs, shrubs or other woody vegetation and known to be critically important habitats in terms of the biological diversity. About 400000 species are estimated from throughout the world, of which 46000 species have been reported from India, which constitute about 11 % of total world floral wealth. In angiosperm alone, India has more than 19000 species from throughout the country, but there is still about 30 % land area is yet to be explored and floral wealth present there awaiting exploration, identification and scientific research (Sanjappa, 2008). Brummit *et al.* (2001) have also very rightly said that we have not so far completed the cataloguing of half of the higher plants found on the Earth. In view of this, the unexplored and underexplored areas with high percentage of plant diversity need to be studied further. The present study provides a preliminary analysis of higher plants of Sonbhadra district of Uttar Pradesh as it has very rich plant diversity and is not yet properly explored to know the plant wealth of the area.

Sonbhadra district is located between 24°41'23"N and 23°03'55"E with an area of 6788 sq. km at elevation of 285 feet from the sea level. Total Forest area in the district is reported to be about 3,782.86 sq. km, which accounts for about 56% of total land area (Anonymous, 2011). The district is situated in the extreme south east of the state in the Vindhyan region. It is bounded by Mirzapur district to the north west, Chandauli district to the north, Kaimur, Rohtas district of Bihar state to the north east, Garhwa district of Jharkhand state to the east, Koriya and Surguja districts of Chhattisgarh state in the south and Singrauli district of Madhya Pradesh in the west (Map 1). Sonbhadra has a relatively tropical climate with high variation between summer and winter temperatures. The average temperature is 32°C-42°C in the summer and 2°C-15°C in the winter. The entire area of the district is uneven and dominated by tropical dry deciduous forests.

Although, the area has very rich plant diversity, but it has not been properly assessed after its separation from Mirzapur district. Only a few scattered information are available on the plants of the area in the work of Bhattacharyya (1963, 1964) and Srivastava (1955). In recent time, only Kushwaha *et al.* (2016) have published a brief taxonomic account of family Cucurbitaceae of the area. Except these works, the other works (Singh *et al* , 2002; Singh *et al.*, 2010; Chaudhary, 2010; Singh *et al.*, 2012; Singh & Dubey, 2012; Mishra *et al.*, 2012) available from the area is chiefly pertaining to the ethnobotany or study on medicinal plants. So, it is the first report of the plant diversity occurring in Sonbhadra district.

During last three years (2012–2015), entire area was thoroughly explored in different seasons to study the vegetation and collect the plant materials for taxonomic study. Besides, the specimens collected previously by different organizations and persons and housed at BSA, BSD, DD and LWG were also examined to know plant diversity of the region. All our collections have been deposited at LWG for future record and reference after following proper procedures, out lined by Lawrence (1951) and Jain & Rao (1977).

Result and Discussion

So far, more than 2000 specimens have been examined in the present study, which have resulted about 747 species under 114 families of higher plants from the study area. As usual, the dicots with 586 species dominate the area over monocots which contain about 161 species only (Figure 2, 3). The area

Figure 1: Map of Sonbhdra district.

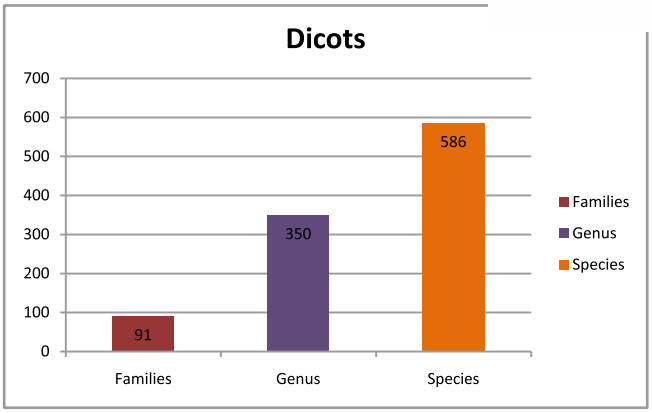

Figure 2: Dicot species with family and genus

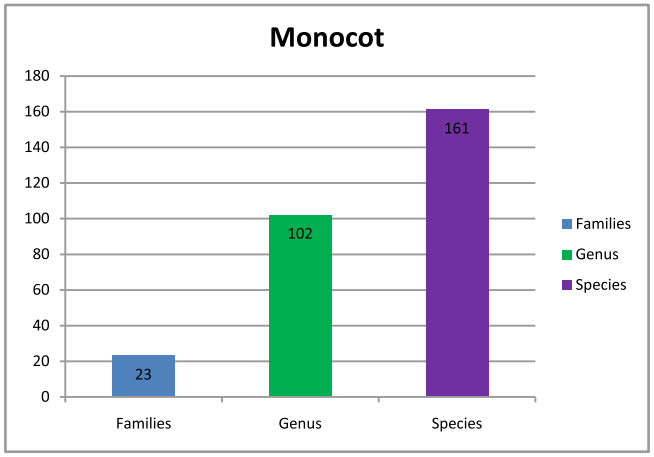

Figure 3: Monocot species with family and genus

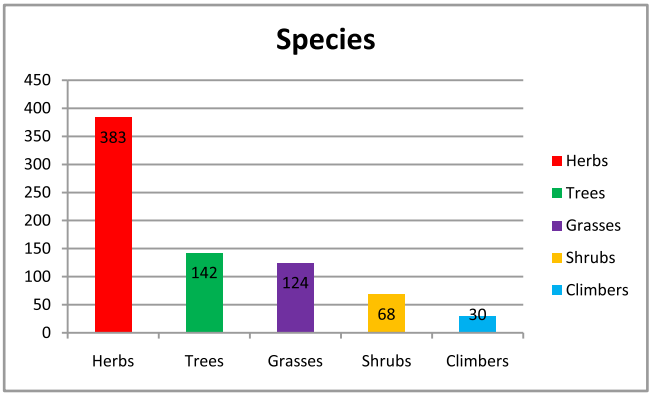

Figure 4: Distribution of species among different groups of plant.

contains more herbs (383 species) followed by trees (142 species), shrubs (68 species), climber and creepers (30 species). The. 124 species also belong to grasses (Figure 4).

Some of the dominant species under different categories of plant found in the study area are as follows:

Trees: *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guillem. & Perr., *Soymida febrifuga* (Roxb.) *A. Juss.*, *Bombax ceiba* L., *Bridelia retusa* (L.) A.Juss., *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn., *Bauhinia racemosa* Lam., *Diospyros melanoxylon* Roxb., *Syzygium cumini* (L.) Skeels., *Lagerstroemia parviflora* Roxb., *Miliusa tomentosa* (Roxb.) Sinclair, *Haldina cordifolia* (Roxb.) *Ridsdale, Nyctanthes arbortristis* L. *Cassia fistula* L., *Albbizia* spp., *Ziziphus nummularia* (Burm.f.) Wight & Arn., *Briedelia retusa, Hardwickia binata* Roxb., *Terminalia alata* Roth, *Butea monosperma* (Lam.) Taub., *Shorea robusta* Gaertn., *Acacia catechu* (L.f.) Willd. Etc.

Shrubs: *Adhatoda zeylanica* Medik., *Barleria prionitis* L., *Calotropis procera* (Aiton) Dryand. *Rauvolfia tetraphylla* L., *Opuntia cochenillifera* (L.) Mill., *Clerodendrum infortunatum* L., *Croton bonplandianus* Baill., *Capparis zeylanica* L.,

Figure 5 : Habit of plants. A: *Bombax ceiba* L. B: *Bridelia retusa* (L.) A. Juss. C:

Jatropha gossypiifolia L., *Argemone mexicana* L., *Arundo donax* L., *Ricinus communis* L., *Sagittaria sagittifolia* L., *Crotalaria albida* Roth., *Indigofera tinctoria* L., *Lawsonia inermis* L., *Hibiscus cannabinus* L.

Herbs: *Acanthospermum hispidum* DC., *Acmella calva* (DC.) Jansen, *Blumea laciniata* (Wall. ex Roxb.) DC., *Gnaphalium indicum* L., *Tagetes erecta* L., *Chenopodium murale* L., *Elephantopus scaber* L., *Eichhornia crassipes* (Mart.) Solms., *Uraria picta* (Jacq.) DC., *Tephrosia pumila* (Lam.) Pers., *Evolvulus alsinoides* L., *Crotalaria prostrata* Willd., *Hyptis suaveolens* (L.) Poit., *Bidens biternata* (Lour.) Merr. & Sherff.

Climbers: *Ampelocissus latifolia* (Roxb.) Planch., *Cryptolepis dubia* (Burm.f.) M.R. *Almeida*, and *Mucuna pruriens* (L.) DC.

Grasses: *Cyperus compressus* L., *Cyperus rotundus* L. *Fimbristylis dichotoma* (L.)Vahl., *Fimbristylis tetragona* R.Br., *Eleocharis quinqueflora* (Hartmann) O. Schwarz., *Kyllinga brevifolia* Rottb., *Schoenoplectiella erecta* (Poir.) Lye., *Scirpus supinus* L., *Scleria levis* Retz. (Figure 5).

The entire area is very rich in plant diversity of typical Vindhyan region, but it faces sever anthropogenic pressure from all sides. The previous reports reveal that the area also contains large number of medicinal plants used by different tribal and local people. *Hardwickia binata* Roxb., an endemic species to India, is one of the dominant constituents of the flora of the region. Since, the area has many important plant species, the whole area should be conserved for the protection of biodiversity available there.

Terminalia arjuna (Roxb. ex DC.) Wight & Arn., D: *Hardwickia binata* Roxb., E: *Acacia catechu* (L.f.) Willd. F: *Syzygium cumini* (L.) Skeels. G: *Solanum surattense* Burm. f. H: *Croton bonplandianus* Baill. I: *Clerodendrum phlomidis* L.f. J: *Eichhornia crassipes* (Mart.) Solms. K: *Acmella calva* (DC.) Jansen. L: *Argemone mexicana* L. M: *Sagittaria sagittifolia* L., N: *Eleocharis quinqueflora* (Hartmann) O.Schwarz. O: *Cyperus rotundus* L.

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