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An analysis of flora of Gautam Budh Nagar (Noida) U. P. with reference to endangered species

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Abstract

Gautam Budh Nagar (Noida), previously was a Tehsil of district Ghaziabad. It is an important district from industrial and agriculture point of view. It is also known as "Electronic City" it covers a total area of 86007.30 hectare and the forest area 3698.31 hectare. The present work is the result of two years (April 2005-April 2007) of extensive survey and exploration of Angiospermic flora of district Gautam Budh Nagar with reference to endangered species. A total number of 757 species (including varieties) belonging to 432 genera and 134 families have been intensively studied and are reported from the Gautam Budh Nagar district during the study. Out of 757 species, 620 species of 322 genera and 109 families belong to dicotyledons and 137 species of 110 genera and 25 families belong to monocotyledons. There are 60 families which are represented by a single species and 8 families which are represented by single genus and more than one family. It means there are 68 monogeneric families in the present study of Gautam Budh Nagar district.

Keywords: endangered species, monogeneric, dicotyledons

Introduction

The knowledge of vegetational and floristic composition of any region is essential for the study of various ecosystems. This is necessary for a worker in the taxonomic field to assess and evaluate from time to time the floristic composition of the region. Since the publication of "The Flora of British India" by Sir J. D. Hooker (1872- 1897) a large number of new plants have been discovered and many nomenclatural changes have been introduced. With the revival of Botanical survey of India in 1954, much emphasis has been laid on an intensive study of local floras. Santapau (1958) suggested that "Our universities can do excellent work in the selected areas in the neighbourhood of their headquarters." Similar suggestions and recommendations were also made by Maheshwari (1975) in the silver jubilee volume of "Botanica".

The present situation of plant exploration in our country is promising and there is fairly a wide scope for more intensive study of many areas and districts in order to have adequate information on distribution and phenology of different taxa for fruitful utilisation. Therefore, the present work is undertaken on the floristic study of the newly carved out district Gautam Budh Nagar (Noida) U.P. with reference to endangered species of the area.

Materials and Method

Area Under Study: District Gautam Budh Nagar (Noida) lies between 28° 36'54 north latitudes and 77° 21'44 east longitudes. It is bounded by Ghaziabad District in north, by Aligarh district south, by Bulandshahr district in east, by Delhi and Haryana state in west.

Topography: Gautam Budh Nagar district is a part of Indo-gangetic plain of north-west India. It is plain area with gradual slope from north to south.

Rivers and canals: No river passes in Gautam Budh Nagar area. There is only one canal named as Rajwaha main Kaldha and only small portion of fertile land is irrigated by this canal. Most of the fertile land is irrigated by tubewells.

Jheels and Ponds: There are several permanent and temporary ponds throughout the area. These jheels and ponds are full of water throughout the year and show a rich growth of aquatic vegetation.

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Geology and Soil: Geologically, the district Gautambudh Nagar is generally covered by a thick layer of Indo-gangetic alluvium of Pleistocene to subrecent periods. The alluvium owes its origin to a continuous and conformable series of fluvial and subaerial deposits composed of interbedded layer of sand, slit and clay.

Climate: The climate of Gautambudh Nagar is semi-arid in nature due to low rainfall. In Gautambudh Nagar district the maximum temperature reaches upto 45°C and the minimum temperature fall upto 6.2°C - 1°C. The climate is markedly periodic and can be divided into three vegetational session:

1. The dry and hot session - March to June
2. The dry and cold winter – October to February
3. Warm monsoon period – July to September

Rainfall: The Monsoon in this part of the country starts in the last week of the June or first week of the July. For years 2002 to 2004, the total annual rainfall has been 763-1247 mm. Most of the yearly rainfall occurs in month of July to September.

Wind: The winds are strongest in June and lightest in November. Usually the direction of wind is west to northwest during September to may.

Soil: The testing of soil samples in districts during the past years conducted for organic carbon, phosphorus and potash content indicates that it is low in organic carbon and phosphorus and high in potash in whole district, so it requires regular application of nitrogenous and phosphatic fertilizers.

Methodology

1. **Collection of plants:** The collection of plants were made in all seasons and in all blocks and tehsils of Gautambudh Nagar district. The plants were collected atleast four times in each season. During plant excursions effort were made to collect all wild species, annuals, perennial and ornamentals. Excursions were planned to cover maximum area. The plant collection was carried out in three seasons: rainy, winter and summer.
2. **Preservation of Plants:** The plants were preserved after every collection. The plants were dried and properly mounted on standard size (16.5" x 11.5") herbarium sheets. The plants were taken from every tehsil and block to mark out all ecological variants. The plants were pressed in rough papers and blotting papers till they become completely dry. The preserved plants were poisoned with 1% Hg Cl₂ solution in rectified spirit and stored carefully. Napthalene balls and periodical fumigation with formaldehyde was used as repellent for keeping herbarium sheets in herbarium almirahs. The preserved plants collection was submitted to Department Of Botany, Meerut College Herbarium, which was major place of study.
3. **Identification:** The plants were identified after studying all the characters and compared with all available standard flora and other taxonomic literature. The plants were verified and get checked at Botanical Survey of India Northern Circle and Forest Research Institute, Dehradun.
4. **Classification:** According to Benthum and Hooker's system of Classification (1862-1883)was followed in this present study and families were arranged accordingly. The flora was analysed in all possible aspects.

5. **Endangered Species:** A special mention was made for endangered species observed during plant collection in district Gautambudh Nagar (U.P.). Special measures were suggested for the survival, so that the endangered species occurring in the area may not become extinct.

Result

The present work is the result of two years (April 2005-April 2007) of extensive survey and exploration of Angiospermic flora of district Gautam Budh Nagar with reference to endangered species. Both cultivated and wild plants are collected in flowering and fruiting stages as far as possible. The specimens were critically examined and identified with the help of the available floras. The critical herbarium specimens were matched with the authentic specimens lodged at Forest Research Institute (FRI), Dehradun and Botanical Survey of India (BSI), Dehradun. The families of flowering plants were arranged according to Bentham and Hooker's (1862- 1883) system of classification. A key to the genera of each family and to the species of each genus is provided. An attempt has been made to check-up the nomenclature upto-date as far as possible after consulting the available literature. A concise account of diagnostic characters of all the plants is given. The description of plants is followed by field notes and flowering and fruiting periods. Local names and local uses are also given as far as possible.

A total number of 757 species (including varieties) belonging to 432 genera and 134 families have been intensively studied and are reported from the Gautam Budh Nagar district during the study. Out of 757 species, 620 species of 322 genera and 109 families belong to dicotyledons and 137 species of 110 genera and 25 families belong to monocotyledons. There are 60 families which are represented by a single species and 8 families which are represented by single genus and more than one family. It means there are 68 monogeneric families in the present study of Gautam Budh Nagar district.

The family Fabaceae (Papilionaceae) with 89 species occupy the first position, Poaceae (Gramineae) with 65 species the second and Asteraceae (Compositae) with 52 species the third position. The ratio of species between monocots and dicots is 1:4.52, of genera is 1:2.93, of families is 1:4.36 and that of genera to species is 1:1.75.

Out of 757 species collected, five species have been reported for the first time from this area. These are:

1. *Tephrosia Villosa* var. *incana* : Fabaceae
2. *Trigonella repens* : Fabaceae
3. *Adenosma capitatum* : Scrophulariaceae
4. *Eleocharis capitata* : Cyperaceae
5. *Isachne albens* : Poaceae

Due to environmental pollution and deforestation, some of the species have been shown their occurrence as rare, they may be considered as threatened and endangered species, namely:

1. *Rauvolfia serpentine*, Linn : Apocynaceae
2. *Feronia Limonia*, Correa : Rutaceae

6 rare species have been reported from this area, namely:

1. *Ficus benghalensis*, Linn. : Moraceae
2. *Ficus religiosa*, Linn. : Moraceae
3. *Ficus glomerate*, Linn : Moraceae
4. *Balanites roxburghii*, Planch : Simaroubaceae
5. *Streblus asper*, Lour. : Moraceae
6. *Madhuca sativa*, Gmel. : Sapotaceae

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