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Drosera indica L. Medicinally Important Insectivorous Plant in Kali Tiger Reserve Dandeli of Karnataka, India

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ARTICLE DETAILS

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ABSTRACT

Some angiosperm flowering plants of the plant kingdom obtain essential nutrients for themselves by feeding on small arthropods similar to animals, they are called insectivorous or carnivorous plants. These are often found in such places where the soil is acidic, moist lands and lacking nutrients. The presence of insectivorous plants such as Drosera burmannii and Drosera indica has been reported different sites of India. During the floral survey works Drosera burmannii and Drosera indica have also been reported from Kali Tiger Reserve Dandeli. The availability of insectivorous plants will prove helpful in the study of soil diversity, geographical structure, and climatic environmental conditions. The presence of the specific plants species to create the special characteristic of the area as well as raise the question in mind to observed the association of specific types of insect species and some associated plant species in that region. The anthropogenic activities were also observed. Therefore, population of this naturally growing plants and habitat should need to be conserved before this plant face the day by day global changes.

1. Introduction

Dandeli Wildlife Sanctuary in Uttara Kannada district of Karnataka is located in the northern part of the Central Western Ghats. This rich plant and animal diversity zone were declared as Anshi National Park (ANP) on 2 September 1987. However, under the Project Tiger, Dandeli Wildlife Sanctuary and Anshi National Park were merged and declared as the fourth Tiger Reserve of Karnataka State on 4th January 2007 as the Dandeli-Anshi Tiger Reserve (DATR). It was renamed to Kali Tiger reserve in December 2015. The plant wealth is the rich source of herbal medicine, agriculture and industries, needs to be conserved for the future generation. Without the knowledge of floral composition, sustainable conservation becomes difficult task. Hence the present study was undertaken to study distribution and ecology of insectivorous plant *Drosera indica* from Kali Tiger Reserve Dandeli, Uttara Kannada.

Insectivorous plants eat insects to keep themselves healthy and fit. It consumes insects in the form of nutrient supplements. These are often found growing in swamp or moist acidic and low nutrient soil. They grow seasonally in acidic soil and wet habitats, which include bogs, fens, swamps, and marshes and require a high level of sunlight. Insectivorous plants are classified as polyphytic group based on their specific characteristics and ability to capture and consume insects. *Drosera burmannii, Drosera indica* insectivorous plants have been observed in Kali Tiger Reserve in dandeli. Such glands are found in the leaves of Drosera species, which releasing sticky substances to attract insects. They have derived their name from their rare and extraordinary mode of heterotrophy found in the autotrophic group of plants and insects are one of the most common prey items for these heterotrophic plants. They have an adaptation to low-nutrient, waterlogged habitats, but they need sunshine. The majority are most likely to be found in damp heaths, bogs, swamps, and muddy or sandy shores where water is at least seasonally abundant and nitrogen materials are often scarce or unavailable because of acid or other unfavourable soil conditions. They can attract, trap, digest, and absorb animal life forms or nutrients, especially nitrogen and phosphorous, with the help of different digestive enzymes for their metabolic processes (Mishra and Kumar 2021; Hosamani and Dhruva 2025).

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2. **Insectivorous Nature:**

Droser aindica has leaves covered with glandular hairs (trichomes) that secrete a sticky, mucilaginous substance. This sticky secretion traps insects, which are then digested by enzymes produced by the plant. **Leaves:** The plant's leaves are typically long, narrow, and somewhat lanceolate in shape. The leaf surface is covered with tiny, glandular hairs that secrete a glistening, sticky substance, which helps attract and ensnare prey. **Flowers:** *Drosera indica* produces small, pink to white flowers. The flowering stems are generally tall, and the flowers appear on elongated racemes. These flowers tend to bloom during the warmer months. **Habitat:** It grows in moist, nutrient-poor soils, such as those found in wetlands or marshes. The plant thrives in areas with high humidity and full sun, often in regions with seasonal rainfall. **Size:** This species can grow up to about 15–30 cm tall, depending on its growing conditions. *Drosera indica*, like other sundews, plays an important role in its ecosystem by controlling insect populations. Its sticky, glandular leaves act as traps for small insects, which it digests to obtain nutrients that are otherwise scarce in its growing environment.

3. Materials and Methods

The *Drosera indica* have been identified in October at the Longitude 74º32'28" East and the Latitude 15º21'34" North of Kali Tiger Reserve in dandeli. Authors identified this insectivorous plant near the marshy grassland and adjoining stream in Kali Tiger Reserve in dandeli. Where the availability of moisture is maintained by the stream. The nearby area of insectivorous plant habitat having wet with grassland and the surrounding area has dominant with herbs and shrubs. All the individual plants were counted and collected specimens had been processed to put up on the herbarium sheets as per method proposed by Jain & Rao (1997). The only density (Total no. of individual of a species/Total no. of quadrate studied) of this plant is calculated by the author in 1-meter quadrate and photographs were taken from field surveys and presented here for easy identification in the field.

4. Results

A total 10 quadrates (1meter x 1meter) were placed in the study area, the diameter of the mature *Drosera indica* is an unbranched herbaceous plant with fibrous root system and reaching a height of 5-50 cm. Leaves are narrowly linear, up to 10 cm long with 1 to 1.5 cm pedicels. Young plants stand upright, while older ones from scrambling stems with only the newest growth exhibiting an upright habit. The plant can be yellow green to maroon in colour. Flower petals can be white or pink and photographs were taken from field surveys and presented here for easy identification in the field (Figure 1). The soil nutrient status of the habitat was poor in nitrogen (Table 1).

Table 1: Soil nutrient status of habitat of *Drosera indica*

Macronutrient and Micronutrient elements	
Soil parameters	**Habitat**
Phosphorus	0.024
Potassium	1.03%
Nitrogen	Poor
Iron	5.36
Manganese	0.10
Zinc	0.013
Copper	0.006
Nickel	0.006

Fig 1: Field studies of *Drosera indica*

5. Discussion

The plant density was found patches due to the availability of enough moisture on its ground level due to stream and nutrition that favours growth of plant at the study period and help these plants to complete their life cycle in the month of

December. The existing plant population was seen only in small patches due to effect of various environmental factors such as the less area with good soil moisture, temperature rise and delayed monsoons.

6. Conclusion

Drosera indica sites are subject to persistent anthropogenic disturbance like grazing, soil removal, thatch collection, annual weeding's., use of habitat destruction are the primary threats to persistence and survival of the species. In this aspect, present study in Kali Tiger Reserve, Dandeli concludes that there is a need of more exploration works and the enumerated species in present study should be used for educational purposes, conservation works of their habitat and diversity.

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