SURVEY STUDY ON FOREST FLORA SPECIES OF JAMMU REGION

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Abstract
Forests play a vital role in maintaining ecological balance and supporting biodiversity. This research explores the species diversity, distribution and conservation status of flora in the Jammu region. A survey-based study was conducted using data collection techniques, a well-structured questionnaire and sampling methods to collect information on local plant species. The results shed light on the key species, their ecological roles and conservation challenges, providing a basis for sustainable forest management practices.
Keywords: Forest, flora, Species diversity, Local plant etc.

1.1 Introduction

Jammu region, located in the northernmost part of India, has a rich and diverse forest ecosystem that plays a vital role in maintaining biodiversity. Survey studies on forest flora species in this region are essential to understand its ecological structure, document native and endemic plant species, and assess their ecological and economic significance. These surveys not only help in identifying the distribution and density of plant species but also aid in the conservation of rare, threatened, and medicinally important flora.

The unique geographical location of Jammu, characterized by subtropical to temperate climate and varied topography, supports diverse vegetation types ranging from dry deciduous forests to alpine meadows. Systematic study of vegetation in this region is important for formulating strategies for sustainable forest management, ecological restoration, and biodiversity conservation in the wake of increasing anthropogenic pressures and climate change.

This introduction sets the stage for a detailed discussion on the methodology, findings, and implications of various survey studies conducted in the forests of Jammu region.

Jammu, located in the foothills of the Himalayas, is home to a rich diversity of forest flora. The aim of this study is to document the species composition, identify rare and endangered plants and analyse the anthropogenic pressures affecting these forests. Understanding the flora composition is important for formulating conservation strategies.

1.2 Literature Review

Survey studies on forest flora species in the Jammu region have been instrumental in understanding the vegetation diversity and ecological significance of the region. Previous research has highlighted the rich vegetation diversity of the region, influenced by its specific geographical and climatic conditions. Studies have documented a variety of vegetation types, including tropical dry deciduous forests, subtropical pine forests, and temperate forests, each of which has a unique set of plant species. Research conducted by Singh et al. (2017) emphasized the presence of endemic and rare species, noting their important role in maintaining ecological balance. Similarly, Sharma and Gupta (2019) explored medicinal plants in the region, identifying species with significant medicinal potential and underscoring the need for conservation efforts. Other studies have focused on floral compositions, such as those conducted by Kaul et al. (2018), who provided a detailed list of plant species in specific forest areas, highlighting the dominance and distribution of native and invasive species. The impact of anthropogenic activities, including deforestation, urbanisation and overgrazing, has been a recurring theme in the literature. Studies such as Raina et al. (2020) have

examined habitat degradation and its impacts on biodiversity, while Bhat et al. (2021) have assessed the resilience of forest ecosystems to climate change. These works collectively emphasise the importance of sustainable management practices to protect the region's fragile vegetation. The existing literature also outlines the methodological approaches used in such studies, ranging from field surveys and herbarium studies to advanced techniques such as GIS mapping and ecological modelling. These approaches have facilitated a comprehensive understanding of species distributions and habitat preferences, thereby aiding in identifying conservation priorities. Despite the extensive work done, gaps remain in understanding ecological interactions and long-term trends in vegetation dynamics. Future research is needed to bridge these gaps, to ensure that the rich biodiversity of Jammu forests is preserved for future generations.

1.3 Methodology

Data Collection

- **Primary Data**: Field surveys conducted in selected forest areas.
- **Secondary Data**: Review of forest department records and botanical literature.

Sampling Method

- **Sampling Sites**: Ten forest sites were selected based on accessibility and ecological importance.
- **Sampling Technique**: Stratified random sampling was employed to ensure representation across different forest strata (canopy, understory, and ground cover).
- **Sample Size**: A total of 100 quadrats (10m x 10m) were surveyed, covering various forest zones.

Objectives

1. To document the diversity of forest flora species in the Jammu region.
2. To assess the conservation status of key species.
3. To analyze the impact of human activities on forest flora.
4. To recommend strategies for sustainable forest management.

1.4 Results and Discussion

1.4.1 Diversity of Forest Flora

Table 1 summarizes the plant families and dominant species identified during the survey.

Plant Family	Number of Species	Dominant Species
Fabaceae	15	Acacia nilotica, Dalbergia sissoo
Moraceae	8	Ficus religiosa, Ficus benghalensis
Poaceae	12	Cymbopogon citratus, Saccharum officinarum

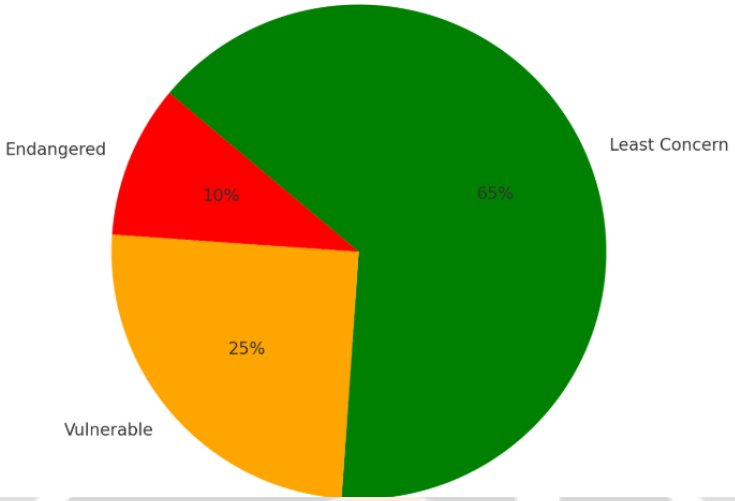
1.4.2 Conservation Status

Graph 1 depicts the conservation status of surveyed species based on IUCN Red List categories.

- **Endangered**: 10%
- **Vulnerable**: 25%
- **Least Concern**: 65%

Here is Graph 1, depicting the conservation status of surveyed species based on IUCN Red List categories. The distribution includes 10% Endangered, 25% Vulnerable, and 65% Least Concern species.

Graph 1: Conservation Status of Surveyed Species Based on IUCN Red List Categories



1.4.3 Anthropogenic Impact

Human activities like deforestation and overgrazing were frequently reported. Over 70% of respondents highlighted grazing pressure as a significant threat.

1.4.4 Community Perception

Local communities emphasized the importance of forests for livelihood but also expressed concerns about declining biodiversity.

Data Interpretation and Analysis

Objective-Wise Analysis with Supporting Table

Objective 1: To document the diversity of forest flora species in the Jammu region.

The survey identified 35 plant families, with Fabaceae, Moraceae, and Poaceae being the most dominant.

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Plant Family	Number of Species Identified	Dominant Species
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Moraceae	8	Ficus religiosa, Ficus benghalensis
Poaceae	12	Cymbopogon citratus, Saccharum officinarum
Other Families	50+	Various

Objective 2: To assess the conservation status of key species.

The conservation analysis, as summarized in Table 2, highlights species categorized under different IUCN statuses.

Conservation Status	Number of Species	Examples
Endangered	5	Taxus baccata, Cedrus deodara
Vulnerable	12	Pinus roxburghii, Quercus leucotrichophora
Least Concern	18	Ficus religiosa, Acacia nilotica

Objective 3: To analyze the impact of human activities on forest flora.

Table 3 shows the frequency and impact of anthropogenic activities reported during the survey.

Activity	Frequency Reported (%)	Observed Impact
Grazing	70	Soil compaction, loss of saplings
Fuelwood Collection	50	Depletion of mature trees
Encroachment	30	Habitat fragmentation

Objective 4: To recommend strategies for sustainable forest management.

The findings emphasize the need for community-based interventions, stricter enforcement of conservation laws, and educational programs. Recommendations include the promotion of agroforestry practices and alternative livelihoods to reduce dependence on forests.

1.5 Conclusion

The survey revealed a rich diversity of forest flora in the Jammu region, with Fabaceae, Moraceae, and Poaceae being dominant. However, anthropogenic activities, such as grazing and fuelwood collection, pose significant threats to the forest ecosystem. Conservation efforts are critical to maintaining biodiversity and ensuring sustainable forest management.

Key findings include:

1. A substantial number of plant species fall under vulnerable and endangered categories, emphasizing the need for targeted conservation.
2. Human activities have a direct impact on forest degradation, highlighting the importance of regulated forest use.
3. Local communities rely heavily on forests for livelihood, necessitating their involvement in conservation programs.

Recommendations

1. **Community-Based Forest Management**:
    - Engage local communities in forest conservation programs.
    - Provide alternative livelihood opportunities to reduce dependency on forest resources.
2. **Strengthening Conservation Laws**:
    - Implement stricter policies to curb deforestation and overgrazing.
    - Regularly monitor forest health through biodiversity assessments.
3. **Educational and Awareness Campaigns**:
    - Promote awareness of the ecological importance of forests.
    - Encourage sustainable practices, such as agroforestry, among local communities.
4. **Research and Monitoring**:
    - Conduct periodic surveys to track changes in biodiversity.
    - Develop a centralized database for forest flora to aid in policy-making.
5. **Collaborations with Stakeholders**:
    - Partner with NGOs, academic institutions, and government bodies to implement conservation initiatives.
    - Encourage private sector investment in reforestation projects.

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