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Assessment of Threatened Plants at Reserve Forest Area and Sacred Grove of Taranagar (Churu): Diversity and Conservation Challenges

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ABSTRACT

Rajasthan, the largest state in India, is acknowledged for its arid and semi-arid ecosystems, including the Thar Desert and various landscapes. Despite harsh and adverse climatic conditions, the region comprises a unique diversity of flora, many of which are now threatened due to over exploitation, habitat destruction, grazing, and climate change. Reserve forest area and sacred groves are having remarkable role in conservation of such plants. This research paper documents the threatened plant species of Taranagar (Churu) of Rajasthan, major threats, and possible conservation strategies. Data has been compiled from the IUCN Red List, Botanical Survey of India (BSI), various research studies, discussions with local knowledgeable persons and observations. The study highlights the vital need for *in-situ* and *ex-situ* conservation exercises to protect Rajasthan's endangered plant biodiversity.

Key Words - Threatened Plants, Endangered Plants, Sacred Grove, Reserve Forest Area.

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INTRODUCTION

Rajasthan's vegetation ranges from dry deciduous forests in the Aravalli hills to xerophytic scrublands in the Thar Desert. The state hosts several endemic and economically important plant species, many of which are under severe threat due to anthropogenic pressures. The International Union for Conservation of Nature (IUCN) and the Government of India have listed numerous plant species from Rajasthan under different threat categories. This paper focuses on critically endangered, endangered, and vulnerable plant species in the region. The most reliable source of information on the worldwide extinction risk status of plant, animal, and fungal species is the IUCN Red List of Threatened Species. It is easily available to everyone. Recent studies reveal that 169420 species of plant, animal, and fungus have been assessed and out of these 47187 is in the list of threatened species (IUCN, 2024).

The number of Indian plants in the IUCN (International Union for Conservation of Nature) Red List is steadily rising much to the dismay of conservationists. In 2018, the Red List featured 4537 endangered species globally while in 2019-20, this number went up to 4,993. In 2019, around 176 endangered species were recorded from India. The major threat noted were habitat destruction due to increased pollution, over-utilization of chemical fertilizers and plastics, urbanization, and global warming (IUCN, 2018; BSIENVIS, 2020).

In 17 states of India, 14 Conservation Assessment and Management Prioritization (CAMP) workshops were conducted during previous two decades, for assessment of prioritized and important medicinal plant species in different regions of India by the Conservation Breeding Specialist Group (CBSG),

India, in association with Foundation for Revitalization of Local Health Traditions (FRLHT). These studies illustrated that *Commifora wightii* is Critically Endangered, *Leptadenia reticulata* and *Tecomella undulata* are Endangered, *Butea monosperma* and Peganum harmala are Vulnerable (Goraya and Ved, 2017). From the study of the plant species of Beer Jhunjhunu Conservation Reserve, it was inferred that climbers like *Ceropegia bulbosa, Leptadenia reticulata,* and *Sarcostemma viminale* were documented critically endangered. Among these *Ceropegia bulbosa* is vulnerable due to its edible tubers, which is normally consumed by local communities and herders for its vital medicinal value (Chaudhary, 2014).

Study Area:

District Churu, is one of the 41 districts (earlier 33 districts) of Rajasthan state which is located in the part of the Great Thar Desert of India. The total area of this district is estimated nearby 16830 square km. having 08 tehsils counting Churu, Ratangarh, Sardarshahar, Sadulpur, Sujangarh, Taranagar, Bidasar and Sidhmukh. The Taranagar tehsil is situated at 28°66'N Latitude and 75°03'E Longitude and 50 km. far from districts headquarter Churu and about 250 km. far from State Capital Jaipur (PRO, 2019).

Two locations has been selected for study on Threatened plants in Taranagar tehsil: the Sacred Grove near Kailash village of Taranagar tehsil and Beer Taranagar Reserve Forest Area. The 'Sacred Grove' is also a reserve forest area surrounding a very famous 'Shyam Pandia Temple' in the middle of this area. Both areas are extremely protected and destructive activities are prohibited here. Local people protect and preserve local flora and fauna in this area. So, the Biodiversity of both sites is highly rich. Gymnosperm *Ephedra* and many more Angiosperms like *Acacia senegal, Tecomella undulata, Argemone maxicana, Sida cordifolia, Leptadenia pyrotechnica, Calligonum polygonoides, Pedalium murex, Capparis decidua, Chenopodium album* are very common in this area (Sweta & Sharma, 2018; Kumar *et al.,* 2015).

Taranagar tehsil is placed in arid zone of the Thar Desert of Rajasthan. The deviation between the temperature of summer and winter season is exceptionally high. In May-June, the temperature rises up to scorching hot and in winter season the temperature falls down up to freezing point. The average annual rainfall of this area is 381mm. This area is adversely affected with 'Sandstorms' during summer season (IMD, 2019).

MATERIAL & METHODS

The study is based on:

- Review of published literature, including research papers and reports from BSI, IUCN and Conservation Assessment and Management Prioritization (CAMP) workshops.
- Field surveys, herbarium records, large scale discussions, meetings and interviews with local villagers, knowledgeable people, Ayurveda practitioners, hakims, saints and local tribes.
- Assessment of conservation status as per IUCN Red List categories.
- Flora of Indian Desert (Bhandari, 1990), Flora of North East Rajasthan (Sharma & Tiagi, 1979), The Flora of British India (Hooker, 1975-97), An Illustrated and Photographic Flora of Rajasthan (Meena, 2017), eFlora of BSI (EFlora, 2014), were used in taxonomic identification of plants.

OBSERVATIONS

Plant species are placed in a threatened status due to species restrictions brought on by over exploitation of plants for traditional folk and herbal medicines by tribal communities, Ayurvedic, Unani and Naturopathic herbal drugs, to provide fodder for livestock, use for fuel, timber, making huts, fencing and food. These are some basic reasons which causes threats to plants species.

During the assessment of threatened plant species, the twenty-two plant species growing in the study area have been reported in this criterion. The threatened status of plant species is categorized in Critically Endangered, Endangered and Vulnerable plants as per IUCN.

Table: Enumeration of Threatened Plants Species

SN	Botanical Name	Local Name	Family	Habit	Status in Study Area	Major Threats
1	*Abrus precatorius* Linn.	Chirmi, Ratti Chanboi, Sarmai	Fabaceae	Climber	Endangered	Exploited for medicine
2	*Abutilon bidentatum* Hochst. ex A. Rich.	Kanghi	Malvaceae	Undershurb	Endangered	Habitat Degradation
3	*Acacia jacquemontii* Benth.	Bu-banvali, Kinkar	Fabaceae	Tree	Endangered	Habitat Degradation
4	*Albizia procera* (Roxb.) Benth.	Safed siris	Fabaceae	Tree	Critically Endangered	Habitat Degradation
5	*Alysicarpus monilifer* (Linn.) DC.	Leel, Gumal	Fabaceae	Herb	Endangered	Overgrazing
6	*Balanites aegyptiaca* (Linn.) Del.	Hingotia	Zygophyllaceae	Tree	Vulnerable	Habitat Degradation
7	*Boerhavia erecta* Linn.	Satha, Saata, Punarnava	Nyctaginaceae	Herb	Endangered	Exploited for medicine
8	*Calligonum polygonoides* Linn.	Phog, Phoglo	Polygonaceae	Shurb	Endangered	Overgrazing
9	*Cenchrus prieurii* (Kunth) Maire	Lambo Bharunt	Poaceae	Herb	Endangered	Overgrazing
10	*Ceropegia bulbosa var. bulbosa* Roxb.	Khadula	Asclepiadaceae	Climber	Critically Endangered	Exploited for medicine
11	*Circium wallichii* DC.	Bhahm dandi	Asteraceae	Herb	Vulnerable	Exploited for medicine
12	*Cordia gharaf* (Forsk.) Ehrenb. & Asch.	Goondi	Boraginaceae	Tree	Vulnerable	Habitat Degradation
13	*Ephedra foliata* Boiss. & Kotschy ex Boiss.	Unt phog, Suo- Phogaro, Andho Kheemp	Gnetaceae	Climber	Vulnerable	Exploited for medicine
14	*Ipomoea cairica* (Linn.) Sweet	Railway creeper	Convolvulaceae	Climber	Endangered	Habitat Degradation
15	*Lasiurus sindicus* Henr.	Sewan ghas	Poaceae	Herb	Endangered	Overgrazing
16	*Leptadenia reticulata* (Retz.) Wt. & Arn.	Jiwanti	Asclepiadaceae	Climber	Endangered	Habitat Degradation
17	*Oligochaeta ramosa* (Roxb.) Wagenitz.	Brahm buti	Asteraceae	Herb	Vulnerable	Habitat Degradation
18	*Peganum harmala* Linn.	Harmal	Zygophyllaceae	Herb	Vulnerable	Exploited for medicine
19	*Salvadora persica* Linn.	Jaal, Pilu Kharo jaal	Salvadoraceae	Tree	Endangered	Exploited for medicine
20	*Tamarix aphylla* (Linn.) H. Karst.	Farash	Tamaricaceae	Tree	Vulnerable	Habitat Degradation
21	*Tecomella undulata* (Sm.) Seem.	Rohida, Rohiro	Bignoniaceae	Tree	Vulnerable	Exploited for Timber
22	*Tephrosia falciformis* Ramaswamy	Bansa, Rati-biyani	Fabaceae	Herb	Endangered	Habitat Degradation

(A) *Ephedra foliata*

(B) *Tecomella undulata*

(C) *Calligonum polygonoides*

(D) *Salvadora persica*

RESULTS & DISCUSSION

The Present study includes 22 threatened plants belonging to 13 families of angiosperms and 01 family of gymnosperms. The only gymnosperm *Ephedra foliata,* present in study area, is in the Endangered category. Out of 22 species only 02 species are under the Critically Endangered category, 12 species are under the Endangered and 08 species are under the Vulnerable category. *Leptadenia reticulata* (EN), *Tecomella undulata* (EN) and *Peganum harmala* (VU) are in the threat list of Conservation Assessment and Management Prioritization (CAMP) workshops and are under threat in the study area too, so they require more efforts of conservation. Most of the plants are facing the problem of habitat degradation and over exploitation for medicines. Overgrazing is also a serious concern. The timber of *Tecomella undulata* is used by locals so this plant species is being cut blindly.

Sacred grove and reserve forest area escapes above plants from various type of risks and play a vital role in conservation of plants. They provide better climatic conditions, security, and habitat. It is required to aware the surrounding people and communities to protect the local flora and to encourage the plantation drive. To conserve and to increase the population of threatened plants, more places should be reserved as sacred grove and reserve forest area.

REFERENCES

Bhandari M. M. 1990. Flora of Indian Desert. Scientific Publisher, Jodhpur.

BSIENVIS. 2020. ENVIS center of Botanical Survey of India, EIACP Resource Partner on Biodiversity. Retrieved from http://bsienvis.nic.in/Database/RedlistedPlants_3940.aspx

Chaudhary M. 2014. Some Threatened Medicinal Plants of Beer Jhunjhunu Conservation Reserve of Rajasthan, India. *International Journal of Pharmaceutical and Medical Research,* 2(1): 27-33.

E Flora 2014. Botanical Survey of India Flora. Retrieved from http://efloraindia.nic.in/efloraindia/homePage.action.

Goraya G. S. & Ved D. K. 2017. Medicinal plants in India: an assessment of their demand and supply. National Medicinal Plants Board, Ministry of AYUSH, Government of India. Dehradun: New Delhi and Indian Council of Forestry Research and Education. Retrieved from https://scholar.google.com/.

Hooker J. D. 1975-97. The Flora of British India. Retrieved from DOI: http://efloraindia.nic.in/efloraindia/homePage.action.

IMD. 2019. Retrieved from India Meteorological Department, Govt. of India: http://www.imd.gov.in/pages/regional_weather.php?view=frommap&state_id=22.

IUCN. 2018. International Union for Conservation of Nature and Natural Resources Red List. Retrieved from https://www.iucnredlist.org/

IUCN. 2024. International Union for Conservation of Nature and Natural Resources Red List of Threatened Species. Retrieved from https://iucn.org/resources/conservation-tool/iucn-red-list-threatened-species.

Kumar M., Tiwari M., Mohil P., Bharti V. & Jain U. 2015. Calligonum polygonoides : An Important Rare Shurb species in Thar Desert of India. *Indian Journal of Plant Sciences,* 4(2): 63-66.

Meena K. L. 2017. An Illustrated and Photographic Flora of Rajasthan. Lap Lambrt Academic Publishing, London.

PRO. 2019. Retrieved from Official Website of Churu District edited by Public Relation Officer (PRO): http://churu.rajasthan.gov.in/content/raj/churu/en/about-churu/blocks-tehsil-pnchayats.html.

Sharma S. & Tiagi B. 1979. Flora of North East Rajasthan. Kalyani Publication, New Delhi.

Sweta & Sharma D. 2018. Study of Phytodiversity in Sahwa and Taranagar area of Churu District, Rajasthan. *Innovation the Research Concept,* 3(2): 258-267.