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NATURESERVE CONSERVATION STATUS ASSESSMENT OF *DERRIS SCANDENS* (ROXB.) BENTH. VAR. *SAHARANPURENSIS* (THOTH.) THOTH. (FABACEAE)

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ABSTRACT

The surveys were made in saharanpur forest division and type locality of *derris scandens* var. *Saharanpurensis* (fabaceae), an endemic woody climber of saharanpur (u.p.) India. On the basis of field observations this taxon is recommended for natureserve criteria of critically imperiled [N1].

Keywords: *Derris Scandens* var. *Saharanpurensis*, Endemic, NatureServe Conservation Assessment, Critically Imperiled, Saharanpur (U.P.), India

INTRODUCTION

In Uttar Pradesh there are 2711 species of Angiosperm belonging to 1088 genera and 185 families. Here the family Fabaceae are represented by 233 species (Srivastava, 2011). According to APG III (2009) this family includes 19500 species and 745 genera. The genus *Derris* Lour. includes about 70 species. Of which about 25 species are found in India (Thothathari, 1961). In India the typical *Derris scandens* (Roxb.) Benth. flowers during hot seasons. It is commonly found in the forest of north Oudh. It is distributed in the central and south India, to Ceylon, Bengal, Assam, Andman and Nicobar Islands, Burma, South China and North Australia (Duthie, 1903-1929). Endemism manifests itself at various taxonomic levels from variety to higher category.

Taxon below the rank of variety like form, morph and cultivar are not included in IUCN category. *Derris scandens* (Roxb.) Benth. var. *saharanpurensis* (Thoth.) Thoth. (Fabaceae) was described by Thothathari (1970, 71). It is a data deficient large woody climber (Khanna, 2001). This varietal woody climber is endemic to Saharanpur (Khanna, 2001 and Srivastava, 2011). Uttar Pradesh is the fifth largest state of our country and is spreaded over an area of 2,40,927 sq. km. It is located between 23° 52' N and 31° 28' N latitude and 77° 3' and 84° 39' E longitude.

Western part of Uttar Pradesh includes Saharanpur and Muzaffarnagar which come under Saharanpur forest division. It lies in the upper Indo-gangetic plain. Saharanpur is located at 29° 58' N Latitude and 77° 33' E Longitude. There is absolutely no information on the Conservation status, Detailed Demographic data and Population size of the *Derris scandens* (Roxb.) Benth. var. *saharanpurensis* (Thoth.) Thoth. (Fabaceae). So the aim and objective of this study is preliminary analysis of local population size on the basis of the information of past localities from where the species was collected and to determine the conservation status by applying NatureServe methodology. Here, I have provided some personal reflections on NatureServe conservation status of *Derris scandens* (Roxb.) Benth. var. *saharanpurensis* (Thoth.) Thoth. (Fabaceae).

MATERIALS AND METHODS

Natureserve Methodology

Intensive surveys were made in the entire Saharanpur forest division for the location of the species (Image-1). This taxon was identified by matching it with the specimen kept at BSD, Dehradun (BSD Accession no. 81898). NatureServe is a non-profit organization dedicated to providing the scientific basis for effective conservation. NatureServe conservation status assessments (NaturServe Report, 2009) have been developed primarily at three geographical levels i.e Global (G), National (N) and Subnational (S) but sometimes a nonpolitical region customarily treated as a subnational unit. NatureServe conservation status may also be used for other clearly bounded geographic areas (e.g., national parks). NatureServe

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Conservation status ranks are based on a one to five scale (1, 2, 3, 4, and 5) ranging from critically imperiled (G1, N1 or S1) to demonstrably secure (G5, N5 or S5),

The protocol for assigning a conservation status rank is based on scoring an element against ten conservation status factors, which are grouped into three categories based on the characteristic of the factor: rarity (six factors), trends (two factors), and threats (two factors). The set of factors used to assess conservation status, by category, are:

- **Rarity:** Population Size, Range Extent, Area of Occupancy, Number of Occurrences, Number of Occurrences or Percent Area with Good Viability/ Ecological Integrity, and Environmental Specificity (used only when the Number of Occurrences and Area of Occupancy are unknown);
- **Trends:** Long-term and Short-term Trend in population size or area
- **Threats:** Threat Impact (generated by considering the scope and severity of the major threats), and Intrinsic Vulnerability (used only if Threat Impact is unknown).

Information for all ten conservation status factors is not required to assign a status.

At a minimum, information for only two factors is needed from the set of eight core factors in order to assign a status rank indicating risk of extinction/ extirpation, as long as the two factors assessed are either two rarity category factors (either Range Extent or Area of Occupancy + one of the remaining rarity factors), *or* one rarity factor + one factor from the trends or threats categories

More specifically, to apply the minimum factor requirements, core factors are first grouped according to status factor categories and the rarity category then divided into two groups, as follows:

Rarity1 = Range Extent, Area of Occupancy

Rarity2 = Population Size, Number of Occurrences, Number of Occurrences or Percent Area with Good Viability/Ecological Integrity

Trends/Threats = Long-term Trend, Short-term Trend, Threat Impact

In order to assign a status rank, at a minimum values must be provided for one of the following two combination requirements:

- A. One factor from each of the Rarity1 *and* Rarity2 groups; *or*
- B. One factor from either the Rarity1 *or* Rarity2 group *and* one factor from the Trends/Threats group.

Two status factors identified as conditional can be included in the calculation, specifically:

- I.Environmental Specificity is used only if both Number of Occurrences *and* Area of Occupancy are unknown or not assessed.
- II.Intrinsic Vulnerability is used only if Threat Impact is unknown or not assessed.

The remaining eight status rank factors are the core factors.

A rank calculator automates the process of assigning conservation status ranks. NatureServe has also developed a “rank calculator” to increase the repeatability and transparency of its ranking process. Ten status factors are grouped by rarity, threats, and trends categories, and information is recorded for each of the status factors, in so far as possible. The “rank calculator” then computes a numeric score, based on weightings assigned to each factor and some conditional rules, which is translated to a calculated status rank. For calculation of rank I have used NatureServe Conservation Status Assessment: Rank Calculator version 3.185 and 2.0. 2009.

RESULTS AND DISCUSSION

Observations

Floristic structure and Species association- This woody climber prefers to grow in closed places in association with medium and large sized trees. In the study area it found associated with tree species like *Putranjiva roxburghii*, *Bauhinia variegata*, *Barringtonia acutangula*, *Holoptelea integrifolia*, *Mellotus philippensis*, *Ficus mysorensis*, *Ficus benjamina*, *Lagerstroemia parviflora*, *Pongamia glabra*, *Swietenia mahagani* and *Pithecellobium dulce*.

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NatureServe Conservation Assessment-

Rarity:

Range extent:

Rating: A= < 100 sq km



Image 1: Author with Specimen

Comment: This species is found only in its type locality located in the Saharanpur Botanical Garden. Its range of extent is 275m².

Area of Occupancy:

Rating: A=1(4 km² grid)

Comment: Area occupied by the taxon is very poor. It is present in 150 m².

Number of Occurrences:

Rating: A=1-5

Comment: There is single occurrence of this taxon. This reflects very narrow range of distribution.

Population Size:

Rating: A=1-50 individuals.

Comment: I found only nine mature plants and one sapling associated with different taxon. Nine individuals were found in flowering and fruiting stage.

Percentage area with good viability:

Rating: B=Very few (1-3) occurrences with excellent or good viability or ecological integrity.

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Trends:

Long term trends:

Rating: G = Relatively Stable ($\leq 10\%$ Change)

Comment: Population is relatively stable. Initially I observed eleven specimen but one young plant has been cut down in 2013.

Short terms trends:

Rating: G = Relatively Stable ($\leq 10\%$ Change).

Comment:

Threat:

Threat Impact:

Rating: B=High

Comment: Continuous swinging of children on this climber and poor care of mature specimen and sapling are two main anthropogenic threats for this taxon.

Intrinsic Vulnerability:

Rating: A= Highly vulnerable

Comment: The probability of colonization of this variety is almost stable. This variety has very little dispersal. It has been observed that there is premature fruit falling poor and poor seed germination.

NatureServe Conservation Status Rank: - Critically Imperiled [N1]

Conclusion

This variety has very narrow endemic zone of distribution in Western UP including Saharanpur forest division. This variety has very little dispersal and it has evolved some morphological features that are different from its type species. It is declining and is needed to be monitored. So it is a variety of special concern. The probability of colonization of this variety is almost stable and it is facing imminent danger of extinction. Till now there is no effort to increase the number of individual for this species. Immediate effort must be made to ensure its survival by protecting its population in its type locality by in-situ conservation strategies. Besides technique of tissue culture may be used for its propagation and reintroduction of this woody climber in other locality of similar ecological condition.

REFERENCES

APG III (2009). An update of the Angiosperm Phylogeny Group classification for the orders and families of the flowering plants. APG III. *Botanical Journal of Linnaean Society* **161** 105-121.

Duthie JF (1903-1929). *Flora of the upper Gangetic Plain and of the adjacent Siwalik and Subhimalayan Tracts*. Calcutta **1**.

Khanna KK (2001). Endemic plants of Uttar Pradesh (Angiosperms). *Phytotaxonomy* **1** 71-75.

Nature Serve (2009). Nature Serve Conservation Status Assessment: Rank Calculator Version 2.0. 2009. Nature Serve, Arlington, VA, Available: www.natureserve.org/explorer/ranking.htm.

Srivastava SK (2011). Plant diversity and conservation strategies of Uttar Pradesh. *Phytotaxonomy* **11** 45-62.

Tothathari K (1961). Studies on Leguminosae. A taxonomic revision of the genus *Derris* Lour in India. *Bulletin of the Botanical Survey of India* **3**(2) 175-200.

Tothathari K (1970). Studies on Leguminosae. Further contribution to the genus *Derris* Lour. From India. *Bulletin of the Botanical Survey of India* **12**(1-4) 104-107.

Tothathari K (1971). A note on *Derris scandens* (Roxb.) Benth. *Bulletin of the Botanical Survey of India* **13**(1&2) 164.