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Rare and Endangered Plants of Aravalli Region of Sirohi District, Rajasthan

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ABSTRACT: Aravallis ranges are one of the very important features of western part of India which runs from Gujarat to Delhi. It traverses in four states viz., Gujarat, Rajasthan, Haryana and Delhi. Maximum part of Aravallis is confined to Rajasthan. As many as 13 wildlife sanctuaries are confined to Aravallis; 10 in Rajasthan, 2 in Gujarat and 1 in Delhi. As many as 3 protected areas are confined to confluence of Aravallis and Vindhyas, all are in Rajasthan. Forest Department, Rajasthan and Foundation for Revitalization of Local Health Traditions, Bangalore jointly has listed 39 species in the "red list of medicinal plants" from Rajasthan state. Most of these listed medicinal plants are present in 16 protected areas. Out of these 16 protected areas, 6 are rich in medicinal plants. Phulwari, Sitamata, Kumbhalgarh, Mt. Abu. Balaram Ambaji and Jassore sanctuaries having 22, 18, 14, 12, 11 and 10 species respectively. The study revels, that southern part of Aravallis is more rich than northern and central Aravallis and in district Sirohi. The "nals" of southern part of Aravallis are especially rich in medicinal plant diversity

KEYWORDS: Aravalli, endangered, plants, Sirohi, red list, diversity, forest, health, traditions, medicinal

I. INTRODUCTION

The International Union for Conservation of Nature (IUCN) Red List of Threatened Species, also known as the IUCN Red List or Red Data Book, founded in 1964, is an inventory of the global conservation status and extinction risk of biological species.[1] A series of Regional Red Lists are produced by countries and organizations, which assess the risk of extinction to species within a political management unit.[1,2]

The goals of the Red List are to provide scientifically-based information on the status of species and subspecies at a global level, to draw attention to the magnitude and importance of threatened biodiversity, to influence national and international policy and decision-making, and to provide information to guide actions to conserve biological diversity.[2]

The IUCN aims to have the category of every species re-evaluated at least every ten years, and every five years if possible. This is done in a peer reviewed manner through IUCN Species Survival Commission Specialist Groups, which are Red List Authorities responsible for a species, group of species or specific geographic area. The 1964 International Union for Conservation of Nature (IUCN) Red List of Threatened Plants[3,4] used the older pre-criteria Red List assessment system. Plants listed may not, therefore, appear in the current Red List. IUCN advise that it is best to check both the online Red List and the 1997 plants Red List publication. Species are classified by the IUCN Red List into nine groups,[15] specified through criteria such as rate of decline, population size, area of geographic distribution, and degree of population and distribution fragmentation.[16] There is an emphasis on the acceptability of applying any criteria in the absence of high quality data including suspicion and potential future threats, "so long as these can reasonably be supported".:6[17]

- Extinct (EX) – beyond reasonable doubt that the species is no longer extant.
- Extinct in the wild (EW) – survives only in captivity, cultivation and/or outside native range, as presumed after exhaustive surveys.
- Critically endangered (CR) – in a particularly and extremely critical state.

- Endangered (EN) – very high risk of extinction in the wild, meets any of criteria A to E for Endangered.
- Vulnerable (VU) – meets one of the 5 Red List criteria and thus considered to be at high risk of unnatural (human-caused) extinction without further human intervention.
- Near threatened (NT) – close to being endangered in the near future.
- Least concern (LC) – unlikely to become endangered or extinct in the near future.
- Data deficient (DD)
- Not evaluated (NE)

In the IUCN Red List, "threatened" embraces the categories of Critically Endangered, Endangered, and Vulnerable.[5,6]

Dicliptera Abuensis

Dicliptera abuensis is an endangered plant located in the hilly areas of Aravalli of Sirohi district. The plants belong to the Acanthaceae family, which is composed of mostly shrubs or herbs. It is Rare species.

Strobilanthes Halbergii
Strobilanthes halbergii is another plant also a member of the Acanthaceae family. The genus *Strobilanthes* is mostly in tropical Asia. *Strobilanthes* are known for their striking purple flowers and striped purple leaves.This is endangered species.

Ceropegia Odorata
Ceropegia odorata is another plant on the endangered list. It belongs to the Asclepiadaceae family, which is known for its unusual characteristics, such as milky, clear-colored leaves and flowers or leaves set with small holes. The *Ceropegia odorata* can grow in sun to partial shade. It prefers hot weather .

Ammannia Desertorum
Ammannia desertorum is a rare tropical plant located in Sirohi. In Rajasthan, *Ammannia desertorum* is mostly distributed in Aravalli. It's a moisture-loving plant that prefers to live in marshy planes and wet grounds. *Ammannia desertorum* belongs to the Lythraceae family, a group of shrubs, trees and herbs that often have quadrangular stems when young and whorled, decussated leaves.

Indigofera Caerulea
Indigofera caerulea, sometimes simply known as indigofera, is a rare plant with thin branches and oval, rounded green leaves. It belongs to the Fabaceae family, made up of herbs, vines, lianas and trees that live in Aravallis. Though the *Indigofera* itself is rare, the Fabaceae family is one of the largest families of flowering plants, with 18,000 species and 630 genera. *Indigefera caerulea* is used in dying industry in Rajasthan.

Indigofera

II. DISCUSSION

Red listed Plants of Sirohi, Rajasthan			
Scientific_name	Family	Rdb_status	Distribution_sites_and_average_altitude
Dicliptera abuensis	ACANTHACEAE	Endangered	Dhobi Ghats & Adjoining hilly areas of Mount Abu and Aravalli, Sirohi.
Strobilanthes halbergii	ACANTHACEAE	Endangered	Mount Abu, Sirohi
Ceropegia odorata	ASCLEPIADACEAE	Endangered	Endemic to Western India, Mount Abu, Aravallis and Sirohi
Heliotropium calcareum	BORAGINACEAE	Rare	Jodhpur and Sirohi
Anogeissus sericea	COMBRETACEAE	Rare	Ajmer, Pati, Udaipur. Endemic to North Western India. 305 m.Aravallis of Sirohi
Indigofera caerulea	FABACEAE	Rare	Pali. Endemic. 1000-1350 m.Sirohi, Aravalli
Ammania desertorum	LYTHRACEAE	Rare	Jodhpur, Devikot., Aravalli, Sirohi

III. RESULTS

In 1997, the IUCN Red List received criticism on the grounds of secrecy (or at least poor documentation) surrounding the sources of its data.[23] These allegations have led to efforts by the IUCN to improve its documentation and data quality, and to include peer reviews of taxa on the Red List.[16] The list is also open to petitions against its classifications, on the basis of documentation or criteria.[24]

In the November 2002 issue of *Trends in Ecology & Evolution*, an article suggested that the IUCN Red List and similar works are prone to misuse by governments and other groups that draw possibly inappropriate conclusions on the state of the environment or to affect exploitation of natural resources.[25]

In the November 2016 issue of *Science Advances*, a research article claims there are serious inconsistencies in the way species are classified by the IUCN. The researchers contend that the IUCN's process of categorization is "outdated, and leaves room for improvement", and further emphasize the importance of readily available and easy-to-include geospatial data, such as satellite and aerial imaging.[7,8] Their conclusion questioned not only the IUCN's method but also the validity of where certain species fall on the List. They believe that combining geographical data can significantly increase the number of species that need to be reclassified to a higher risk category.[26]

Many factors are taken into account when assessing conservation status: not simply the number of individuals remaining, but the overall increase or decrease in the population over time, breeding success rates, and known threats. Various systems of conservation status are in use at international, multi-country, national and local levels, as well as for consumer use such as sustainable seafood advisory lists and certification. The two international systems are by the International Union for Conservation of Nature IUCN and The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)[9,10]

The IUCN Red List of Threatened Species by the International Union for Conservation of Nature is the best known worldwide conservation status listing and ranking system. Species are classified by the IUCN Red List into nine groups set through criteria such as rate of decline, population size, area of geographic distribution, and degree of population and distribution fragmentation.[1][2]

Also included are species that have gone extinct since 1500 CE.[3] When discussing the IUCN Red List, the official term "threatened" is a grouping of three categories: critically endangered, endangered, and vulnerable.[11,12]

- Extinct (EX) – No known living individuals
- Extinct in the wild (EW) – Known only to survive in captivity, or as a naturalized population outside its historic range
- Critically Endangered (CR) – Highest risk of extinction in the wild
- Endangered (EN) – Higher risk of extinction in the wild
- Vulnerable (VU) – High risk of extinction in the wild
- Near Threatened (NT) – Likely to become endangered in the near future
- Conservation Dependent (CD) – Low risk; is conserved to prevent being near threatened, certain events may lead it to being a higher risk level
- Least concern (LC) – Very Low risk; does not qualify for a higher risk category and not likely to be threatened in the near future. Widespread and abundant taxa are included in this category.[23,24]
- Data deficient (DD) – Not enough data to make an assessment of its risk of extinction
- Not evaluated (NE) – Has not yet been evaluated against the criteria.

India has the Wild Life Protection Act, 1972, Amended 2003 and the Biological Diversity Act, 2002. The *Red List Index (RLI)*, based on the IUCN Red List of Threatened Species, is an indicator of the changing state of global biodiversity. It defines the conservation status of major species groups, and measures trends in extinction risk over time. By conducting conservation assessments at regular intervals, changes in the threat status of species in a taxonomic group can be used to monitor trends in extinction risk.[25,26]

The Biodiversity Indicators Partnership (BIP) brings together a host of international organizations working on indicator development, to provide the best available information on biodiversity trends to the global community. [15,16]The Partnership was initially established to help monitor progress towards the Convention on Biological Diversity (CBD) 2010 Biodiversity target. However, since its establishment in 2006 the BIP has developed a strong identity not only within the CBD but with other Multilateral Environmental Agreements (MEAs), national and regional governments and other sectors. As a result, the Partnership will continue through international collaboration and cooperation to provide biodiversity indicator information and trends into the future.[13,14]

IV. CONCLUSIONS

Biodiversity encompasses the entire variety of life on Earth. It is vital for human survival and is a key measure of the health of our planet. Human activities are irreversibly impacting biodiversity. In all regions of the world species extinction rates have increased, ecosystems have been degraded, and genetic diversity has declined.[17,18]

In response to this situation, the international community agreed *"to achieve by 2010 a significant reduction of the current rate of biodiversity loss at global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth."* This '2010 Biodiversity Target' was adopted by governments in 2002 at the 6th Conference of the Parties (COP 6) of the Convention on Biological Diversity (CBD).[19,20]

An essential part of reaching the 2010 biodiversity target was being able to measure and communicate progress. For this purpose the CBD adopted a framework in 2004, which included the use of a range of biodiversity indicators to measure progress towards the 2010 target. In 2006 this framework was further elaborated and the '*2010 Biodiversity Indicators Partnership* was established, as a global initiative to further develop and promote indicators for the consistent monitoring and assessment of biodiversity. The 2010 BIP was established with major support from the Global Environment Facility (GEF).[21,22]

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