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Status, Cause and Resurrection of Rare, Endangered and Threatened Forest Tree species of Madhya Pradesh

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Abstract : Present work deals with the current status of RET forest tree species of Madhya Pradesh in relation to their conservation strategies.Out of 260 tree species present in forest40 speciesfrom 24families reported as various categories of IUCN criteria of RET tree species. Due to their unsustainable utilization these species are now limited in forest area and remainvery few in number. Forest department took initiative to conserve these species and raise saplings of 30 RET tree species in 11research and extension circlenurseries throughout the Madhya Pradesh. Forest department alsoplanted 10% of RET species in each plantation programme as mandate so that these tree species cover will be increase and restore naturally.
Keywords: Conservation, criteria, saplings, strategies,unsustainable.

Introduction - Madhya Pradesh has the largest forest cover in the countrywith more than 260 tree speciesreported in forest,villages and urban settlements areas.The forest types of Madhya Pradesh are mainly montane subtropical, tropical moist deciduous, tropical dry deciduous and dry deciduous scrub forest (Champion, H. G. & S.K. Seth, 1968).The region has different types of landscapes valley, plains, plateau and hilly terrains which provide the diversity for tree species.The climate of the area is typical monsoonic with cool dry winter and warm moist summer. The Soil of the area is sandy loam to black cotton soil. In terms of forest canopy according to density classes, Madhya Pradesh has 6676.02 square km under very dense forest (2.17% of the geographical area), 34,341.40 square km under moderately dense forest (11.14% of geographical area) and 36,465.07 square km (11.83% of geographical area of the state) under open forest, as per Forest Survey of India (FSI) report 2011.

In recent past overall forest cover increase marginally due to inclusion of area under tree outside forest, but the dense forest cover reduces in Madhya Pradesh.However, due to unsustainable and species-specific utilization of plant resourcesfor various purposes like timber, food, forage, medicinal use and poor regeneration, some majortree species wererecognisedunder IUCN categories (2001), such as critically endangered, endangered, vulnerable and near threatenedin forest area of Madhya Pradesh.For their restoration and conservation Forest Department raise saplings of these RET tree species in different research and extension nurseries of Madhya Pradesh and planted as ex-situ and in situ conservation practice in different forest area, parks and other placesfor their resurrection.

Current status of RET tree species: At present 40tree species belonging to 24 families are reported under various categories of IUCN (K.K.Khanna et.al,2021). Such as 2 species critically endangeredSalyakarni(*Dilleniapentagyna*) and Maida(*Litseaglutinosa*), 6 species as endangered Dahiman (*Cordia macleodii*), Sonpatha (*Oroxylum indicum*),Agnimanth (*Premnamollissima*), Garudphal (*Radermacheraxylocarpa*), Lodhra (*Symplocosrecemosa*) and Charaigoda (*Vitex penducularis*).

11 species as VulnerableKumbhi (*Careya arborea*), Gabdi (*Cochlospermumreligiosum*), Varuna (*Crateva religiosa*), Kala Sheesham (*Dalbergia latifolia*), Kekad (*Garuga pinnata*),Bijasal (*Pterocarpus marsupium*), Rohina (*Soymidafebrifuga*),Kullu (*Sterculia urens*), Padar (*Stereospermum suaveolens*), Nirmali (*Strychnou-spotatorum*), Dudhi (*Wrightia tinctoria*)and 21 species as near threatenedHaldu (*Adina cardifolia),*Khair (*Acacia catechu*), Dhawa (*Anogeissus latifolia*), Salai (*Boswellia serrata*), Achar (*Buchananialanzan*), Kharhar (*Ceriscoide-sturgida*), Tamoli(*Dolichandronefalcata*), Gadhapalash (*Erythrina suberosa*), Kuwarin (*Firmianacolorata),* Dhamin (*Grewia tiliifolia*), Anjan (*Hardwickiabinata*), Bhurkut (*Hymenodictiyonorixense*), Tinsa (*Ougeiniadelbergioides*), Peelu (*Salvadora oleoides*), Kusum (*Scheichera oleosa*), Mokha (*Schreberaswietenioides*), Bhilma (*Semecarpus anacardium*), Khatamb(*Spondias pinnata*), Bherar (*Tamilnadiauliginiosa*), Harra (*Terminalia chebula*) and Tilwan (*Wendlendiaheynei*).Critically endangered and endangered tree species are remained in few patches in forest areaalso vulnerable and near threatened species has very poor status in forestarea of Madhya Pradesh. Some

species like *Dalbergia latifolia, Buchananialanzan, Adina cardifolia*are produced and planted in good number and their status is now improving but other tree species in not fairly grown as much as required for their restoration. Out of 40 reported RET tree species 10 tree species still not grown in any nursery and is of much concern that how it will be conserved or restored.

Causes of the current status of RET tree species: The main reason for current status of Rare, Endangered and Threatenedtree species is unsustainable utilization of plant resources by local peoples.The depletion in forest coveris due to population reduction of trees and overexploitation of tree for various purpose of plant part or whole plant. Habitat loss or habitat fragmentation byencroachmentof forest areafor agriculture purpose and other activity also threatens locally available tree species, overgrazingin forest area affect the regeneration of some sensitive species because new saplings are grazed by animals or destruct by their movement in forest.Also, poor regeneration, false seeding, less germination, survival of saplings and natural barriers of germination affect the status of these RET tree species.

Destruction of forest,clearing and cutting of large number of trees for various development projects such as Roads,Dams, Power plants, Industry setup etc largely affect the specific species of any area, Over utilization of some local available plants for firewood, daily use and earning without knowing their status of regeneration, whole plant felling for any plant part, leaf or fruit collection by local people, overutilization of medicinal important RET species alsoincrease in pollution and failure of pollination due to unavailability of those plants which required for pollinators attractions. Natural calamities such as flood, drought, land slide and fire also affect these tree species.The status of RET tree species will further become critical if appropriate conservation plans are not applied.

Resurrectionstrategies for RET tree species: All these RET tree species have unique quality of utilization purpose such asBijasal, used to cure diabetes in ayurveda,having very good timberquality like teak, alsoused for fodder,Tinsa, used to improve womenfertility in local tradition,Salai, producing medicinally important resin and gum; Dahiman, utilized to cure high blood pressure in etnomedicine. Critically endangered Dahiman tree reporting some cancer-curing properties.Kala sheesham tree is used as fodder, medicines, best quality furniture and musical instruments. Lodhra, Padar and Sonpatha also utilize as medicines.

In order to revive the RET tree species, the forest department is producing saplings of these species in 11 research and extension circle nurseries of state with the special treatment they needfor their survival and priority with locally available species. Providing special facilities for better germination and success ratio for overcome the barriers. Polyhouse, mist chamber, green shade net house, sprinklers, moisture controller, automation of temperature, humidity and other facilities arranged forcontrolled condition for germination, proper growth and survival of these RET tree species. Also, some tree species are produced with the help of plant tissue culture technique in SFRI and plantlets then provides to ResearchandExtensionnurseries for further distribution in different region of Madhya Pradesh. At present forest department raised47.93 lakh saplings of 30 RET tree species in various nursery of 11 research and extension circles of Madhya Pradesh forest department (Table.1). Saplings of RET tree species, which are used as lifesaving and medicine, are also the source of income of villagers and forest dwellers. Forest department mandatory plant 10 % of RET tree species in every plantation programme also RET special plantation planned to resurrect the tree species in forest area. Plants of RET species can be purchased by locals from the nurseries of the forest department at very nominal rates so that these species will be planted outside the forest for ex-situ conservation.But still 10 RET tree speciesAgnimanth (*Premnamollissima*) ,Lodhra (*Symplocosrecemosa*),Charaigoda (*Vitex penducularis*),Varuna (*Crateva religiosa*),Kharhar (*Ceriscoidesturgida*), Kuwarin (*Firmianacolorata*), Peelu (*Salvadora oleoides*),Khatamb (*Spondias pinnata*), Bherar (*Tamilnadiauliginiosa*), Tilwan (*Wendlendiaheynei)*saplings are not available and forest department need to produce those species saplings so that the status of these RET tree species could be improve.

Table (see in next page)

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Table 1: Availability of RET tree species Saplings at various R&E Circles of Madhya Pradesh

S.	Species Name	Research and Extension Circle Name and Quantityof available plants (March 2025)										
		Indore	Khandwa	Gwalior	Jabalpur	Jhabua	Betul	Bhopal	Ratlam	Rewa	Sagar	Seoni
1	*Acacia catechu*	18752	16862	631510	11500	54563	485	14844	46822	29486	16561	1765
2	*Adina cordifolia*	0	1570	0	9398	33534	0	79298	0	4578	29152	3850
3	*Anogeissus latifolia*	0	0	0	280	0	0	4785	0	8431	800	0
4	*Boswellia serrata*	12194	1421	222695	5000	12000	15	0	10000	17214	2000	0
5	*Buchnanialanzan*	7533	3496	0	7549	4475	1535	18393	200	167197	10302	8975
6	*Careya arborea*	0	0	0	1437	0	2639	61145	0	1914	6736	0
7	*Cochlospermum -religiosum*	0	0	0	3620	0	0	17414	0	0	700	0
8	*Cordia macleodii*	6619	0	0	3101	0	0	0	0	11708	416	0
9	*Dalbergia latifolia*	9358	7142	15367	198251	74970	14127	180138	30307	59380	470930	114222
10	*Dilleniapentagyna*	0	0	0	0	0	0	0	0	860	0	0
11	*Dolichondre falcata*	0	0	0	0	100	0	0	0	0	0	0
12	*Erythrina suberosa*	216	1200	1546	822	7810	0	1000	2100	1200	0	0
13	*Garuga pinnata*	0	0	0	1000	0	0	311	0	0	6070	0
14	*Grewia tiliifolia*	0	0	0	0	0	0	0	0	0	19026	0
15	*Hardwickiabinnata*	11256	9298	3900	7150	17970	25	26322	6335	0	20370	500
16	*Hymenodictiyon -orixence*	0	0	0	0	0	0	0	0	5416	0	0
17	*Litseaglutinosa*	0	0	0	460	0	0	0	0	6800	1165	0
18	*Oroxylum indicum*	0	440	0	16747	0	5	6105	0	9345	8388	190
19	*Ougeiniaoojeinense*	5514	2538	1200	71310	24280	1298	159202	0	3800	144964	18209
20	*Pterocarpus marsupium*	6460	2255	2842	18738	14009	194	54384	1200	4980	34298	16478
21	*Radermachera xylocarpa*	110	1183	0	33049	0	5	5739	0	5434	1934	0
22	*Schereberasw -eitenioides*	0	0	0	1000	0	0	0	0	0	0	0
23	*Scleichera oleosa*	26511	2981	19599	2822	20870	3345	174430	14331	25888	36800	34131
24	*Semecarpus anacardium*	1083	660	3100	18565	1000	90	7857	0	526	48650	119781
25	*Soymidafabrifuga*	0	0	0	1020	2900	0	0	0	1900	5600	0
26	*Sterculia urens*	1651	6701	1521	4091	30802	50	14444	500	3559	4863	345
27	*Stereospermum -chelonoides*	0	346	0	3701	0	0	200	0	10750	15523	549
28	*Strychnous potatorum*	0	0	0	66	0	0	0	0	3000	5000	0
29	*Terminalia chebula*	9320	2354	18460	138559	9935	12611	97198	2450	36301	49648	55156
30	*Wrightia tinctoria*	0	1850	0	1880	300	0	13084	0	1200	150	0
	Total	**4793274**										

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