Annals of Plant Sciences
ISSN: 2287-688X
Original Research Article

Status of threatened medicinal plants of Jhabua district, Madhya Pradesh, India

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Received for publication: July 14, 2013; **Accepted**: August 28, 2013.

Abstract: Recent years have witnessed an upsurge in the popularity of herbal medicines which are obtained from rich diversity of medicinal and aromatic plants available in India. However, these plants are still to large extent gathered and collected from the natural stands with little attention to its replenishment. The present study was carried out in Jhabua district of Madhya Pradesh, to know the conservation assessment and present status of population of medicinal and other plant species. The paper highlights the presence of 6 Critically Endangered, 25 Endangered and 22 Vulnerable species in various localities of Jhabua district.

Keywords: Medicinal plants; Threatened Status; Jhabua district.

Introduction

Medicinal plants are the most important source of curative drugs for the majority of the world population. Plants used in medicine are freely available in forests and villages in different parts of India. Forests are the principal repositories of large number of medicinal and aromatic plants, which are being largely collected as raw materials for manufacture of drugs and oriental perfumery products. It has resulted in occurrence of several serious problems such as, depletion of resources extinction of rare species, material not being available in large quantities and over exploitation that even results in ecological imbalance. Thus there is an urgent need for preserving ancient medicinal plants not only to create novelty but also for sustainable use.

Alcorn (1984) emphasized that once species gets known as a resource in any human society the impact of this knowledge on expansion, distribution, threats to that species and in cases even its extinction play great role. Ehrlich (1991) mentioned that the extinction and origin of new species have been an integral part of the evolutionary process of the biological systems. Reid (1992) has estimated that the current rate of about 2-8 % of extinction of species on the earth will extinct in the next 25 years.

Important information on threatened medicinal plants was made available by several workers e.g. Briton (1907); Vajruelis (1983); Jain (1988); Davis *et al.* (1988), Myers (1988), Mc. Neely *et al.*,(1990) Ghate and Vartak (1990); Balsubramanian and Prasea (1996), Kaul (1996), Oldfield *et al.* (1998), Margules and Pressey (2000), IUCN (2001, 2005), Chaudhary and Sarkar (2002), Das (2003); Burton (2003) Chakraborty and Pal (2004) and Jain and Vairale (2007).

Jhabua division of Madhya Pradesh is a vast emporium of plants resources used in various system of medicine as well as indigenous mode of treatment. Local tribals i.e. *Bhil, Bhilala* and *Pataya* are mostly dependent on forest for their daily needs. Several natural and man made factors are forcing plants at the verge of extinction. Earlier some sporadic observations on phytodiversity of Jhabua district were made by Samvatsar (1996) and Samvatsar and Diwanji (2000). Later Kadel (2006a) and Kadel and Jain (2006b) made detailed studies on Jhabua distrct with special reference to ethnobotanical aspects. During the survey it was observed that a good number of species are facing threat due to several man made and natural factors. The present work is an attempt to record the threatened medicinal species from various forest localities of this district and categorize them according to the criteria of IUCN.

Materials and Methods

Extensive surveys were conducted in different forest localities of Jhabua district between May 2007 to April 2010. During the survey it was observed that several plant species are facing high risk of extinction. Factors responsible for threatened status of

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species were also observed, for this purpose help of elderly persons of the region was sought to find out the status of species in the past. Questions pertaining to various aspects of occurrence of species in the past and changes took place since then were asked from local people. Threat factors operating upon the depletion of vegetation were observed personally.

Threat assessment for individual plant species was analyzed by applying IUCN criterion, 2001 (Version, 3.0). The following 53 plant species were found to be passing through critical stage of threat due to various factors. Species have been arranged in alphabetical order followed by family, collection number, local name, Habit, part traded, criteria based on, threat factors and IUCN status (Table-1). The plant species have been collected from the field and identified with the help of local flora and pertinent literature. Voucher specimens are deposited in the herbarium of School of Studies in Botany, Jiwaji University, Gwalior.

Table.1: List of threatened medicinal plants in Jhabua district

Sr. No.	Botanical Name and Family	Collection Number	Local Name	Habit	Parts Traded	Criteria based on	Threat Factors	IUCN Status
1	*Abrus precatorius* L. (Fabaceae)	JBA-44	Gomchi	Climber	Seed/Leaves	A2 c, d	Hm; Hp	VU
2	*Acorus calamus* L. (Araceae)	JBA-175	Buch	Herb	Rhizome	B2 a,c (iii)	Hm, Tp	EN
3	*Amorphophallus paeoniifolius* (Dennst.) Nicolson (Araceae) (Fig.1)	JBA-131	Jangali Suran	Herb	Corm	A2 c, e	Hm,L,Hf	CR
4	*Ampelocissus latifolia* (Roxb.) Planch. (Vitaceae)	JBA-280	Panibel	Climber	Rhizome	B2 a, b (iv)	Hm, Sd,	VU
5	*Andrographis paniculata* (Burm.f.) Wall. ex Nees (Acanthaceae)	JBA-47	Bhui Nimbdi	Herb	Whole plant	B2, a, b (iii)	Hm,Sf	VU
6	*Arisaema tortuosum* (Wall.) Schott (Araceae)	JBA-418	Jungali Bhuta	Herb	Corm	A2 c, d	Hm, Sd,	EN
7	*Aristolochia indica* L. (Aristolochiaceae) (Fig.2)	JBA-215	Isharmul	Climber	Root	B2 a, b	Hm, Hp	EN
8	*Asparagus racemosus* Willd. (Liliaceae)	JBA-391	Sesliyaghas	Climber	Tuberous root	A2 c	Hm, Sd, Sf	VU
9	*Bacopa monnieri* (L.) Wettst. (Scrophulariaceae)	JBA-465	Bam	Herb	Whole plant	B1 a, b	Hm, Sd	VU
10	*Boswellia serrata* Roxb.ex Colebr. (Burseraceae)	JBA-293	Salai	Tree	Wood/Gum	B2 a, b (iv)	Hm, Hp	VU
11	*Bridelia retusa* (L.) Spreng. (Euphorbiaceae)	JBA-93	Agon	Tree	Fruit/Wood	A2 c, d	Hm, Tp	VU
12	*Buchanania lanzan* Spreng. (Anacardiaceae)	JBA-327	Chirongi	Tree	Fruit/Wood	A2 c	Hp,Tp	VU
13	*Butea monosperma var. lutea* (Witt) Maheshwari (Fabaceae)	JBA-247	Pila palash	Tree	Wood	A2 c, d	Hm, Tp	CR
14	*Butea superba* Roxb. (Fabaceae)	JBA-177	Palash bel	Liana	Flower and stem bark	B2 a, b (iii)	Hm, Hp, Tp	EN
15	*Careya arborea* Roxb. (Lecythidaceae)	JBA-192	Kumbhi	Tree	Bark and flower	B1 a, c (iii)	Hp, Tp	VU
16	*Celastrus paniculatus* Willd. (Celastraceae)	JBA-412	Kangan	Climber	Seed	A2 c, d	Hm, Tp	VU
17	*Ceropegia bulbosa* Roxb. (Asclepiadaceae) (Fig.3)	JBA-17	Ghilonta	Climber	Tuber	A2 c, d	Hm, Sf,	EN
18	*Chlorophytum borivilianum* Santapau & R.R. Fern. (Liliaceae)	JBA-99	Dhawali musli	Herb	Tuberous root	A2 c, d	Hm, L,Tp	CR
19	*Clerodendrum serratum* (L.) Moon (Verbenaceae)	JBA-188	Bharangi	Shrub	Root	B2 a, b(iii)	Hm, Sd	EN
20	*Corallocarpus epigaeus (*Rottl. & Willd.) Hook. f. (Cucurbitaceae) (Fig.4)	JBA-209	Marchikando	Climber	Fruit/ Bulb	A2 c, d	Hm, Sd	CR
21	*Costus speciosus* (J.Koeing) Sm. (Costaceae) (Fig.5)	JBA-189	Jangali Aadu	Herb	Rhizome	A2 c, d	Hm, Sf	VU
22	*Curculigo orchioides* Gaertn. (Hypoxidaceae)	JBA-133	Kali musli	Herb	Tuberous root	B1 a, b (iii)	Hm, Tp, Sd	EN
23	*Curcuma pseudomontana* J. Graham (Zingiberaceae)	JBA-405	Jangali haldi	Herb	Rhizome	A2 c, d	Hm, Hp, L	EN
24	*Dioscorea bulbifera* L. (Dioscoreaceae)	JBA-239	Kanda	Climber	Corm	A2 c, d	Hm , Hf	EN
25	*Eulophia herbacea* Lindle. (Orchidaceae)	JBA-178	Jangali Aalu	Herb	Bulb	B2 a, b (iv)	Hm, L, Hp	CR
26	*Gardenia gummifera* L. (Rubiaceae)	JBA-190	Dikamli	Tree	Wood/Gum	A2 c, d	Hm, Hp, L	EN
27	*Gloriosa superba* L. (Liliaceae) (Fig.6)	JBA-176	Ranchendi	Climber	Tuberous root	A2 c, d	Hm, Hp	EN

28	*Gymnema sylvestre* (Retz.) R.Br. ex Schult. (Asclepiadaceae)	JBA-187	Merashrangi	Climber	Whole plant	B1 a, e (iii)	Hm, Hp	EN
29	*Hardwickia binata* Roxb. (Fabaceae)	JBA-17	Anjan	Tree	Wood/Leaves	B2 a, b (iii)	Hm,Hp	VU
30	*Helicteres isora* L. (Sterculiaceae)	JBA-138	Atodi	Shrub	Pod	A2 c, d	Hm, Hp, Sf	VU
31	*Iphigenia indica* (L.) A. Gray (Liliaceae)	JBA-214	Jangali lahsun	Herb	Tuber	A2 c, d	Hm, Sd, L	EN
32	*Lasia spinosa* (L.) Thwaites (Araceae)	JBA-309	Badwa zadi	Herb	Corm and Seeds	A2 c, d	Hm, Sd, Sf	EN
33	*Leea asiatica* (L.) Ridsdale (Leeaceae) (Fig.7)	JBA-426	Nanli Danhi	Herb	Bulbs and fruit	A2 c, d	Hm, Sf, Tp	EN
34	*Leea macrophylla* Roxb. ex Hornem. (Leeaceae)	JBA-425	Motali Danhi	Herb	Rhizome and fruit	B2 a, b (ii)	Hm,Hp, Sd,	EN
35	*Marsdenia tenacissima* (Roxb.) Moon (Asclepiadaceae)	JBA-588	Moorwabel	Climber	Root and Flower	B1 a, b (iii)	Hm, Sf,	VU
36	*Mucuna pruriens* (L.) DC. (Fabaceae)	JBA-31	Kewanch	Climber	Seed	A2 c, d	Hm, Sd	EN
37	*Musa rosacea* Jacq. (Musaceae)	JBA-254	Jangali Kela	Herb	Seed/ Corm	A2 d, e	Hm, Sd, Sf	EN
38	*Nervillea aragoana* Gaud. (Orchidaceae) (Fig.8)	JBA-200	Dudhgoliya	Herb	Bulb	A2 c, d	Hm, Sd	EN
39	*Oroxylum indicum* (L.) Venten. (Bignoniaceae)	JBA-302	Sonpatta	Tree	Timber	A2 c, d	Hp, Tp	VU
40	*Plumbago zeylanica* L. (Plumbaginaceae)	JBA-547	Chitawal	Shrub	Root	A2 c, d	Hm, Hp	VU
41	*Pterocarpus marsupium* Roxb. (Fabaceae)	JBA-206	Bijasal	Tree	Wood	B2 a,b (iv)	Hm, Tp	EN
42	*Pueraria tuberosa* (Roxb.ex Willd.) DC. (Fabaceae) (Fig.9)	JBA-303	Sirbala	Climber	Tuber	B1 a, b (iv)	Hm, Hp	EN
43	*Sauromatum venosum* (Aiton) Schott (Araceae) (Fig.10)	JBA-249	Pebada	Herb	Corm	B1 a, b (iii)	Hm, Sd, Hf	EN
44	*Schleichera oleosa* (Lour.) Oken. (Sapindaceae)	JBA-481	Kusumda	Tree	Seed/Wood	A2 c, d	Hm, Hp	VU
45	*Semecarpus anacardium* L.*f.*(Anacardiaceae)	JBA-204	Bhilama	Tree	Seed	A2 c, d	Hm, Sf	VU
46	*Soymida febrifuga* (Roxb.) A.Juss. (Meliaceae)	JBA-463	Rohan	Tree	Bark / Fruit	A2 c, d	Hm. Hp	VU
47	*Spigelia anthelmintica* L. (Gentianaceae)	JBA-541	Gudari	Herb	Whole plant	B2 a, b (iii)	Hm,L	VU
48	*Sterculia urens* Roxb. (Sterculiaceae)	JBA-152	Guggal	Tree	Wood/ Gum	A2 c, d	Hm, Hp	VU
49	*Tinospora cordifolia* (Willd.) Miers ex Hook.f. & Thoms. (Menispermaceae)	JBA-155	Giloy	Climber	Stem	A2 c, d	Hm, Sf	EN
50	*Trichosanthes bracteata* (Lam.) Voigt. (Cucurbitaceae)	JBA-304	Lal indrayan	Climber	Fruit	B1 a, b (ii)	Hm, Sd, Sf, L	CR
51	*Trichosanthes cucumerina* L. (Cucurbitaceae)	JBA-251	Jangali Chichinda	Climber	Root	B2 a, b (iii)	Hm, Sd, L	VU
52	*Urginea indica* (Roxb.) Kunth (Liliaceae) (fig.11)	JBA-196	Jangali Pyaz	Herb	Bulb	A2 c, d	Hm, Sd, Sf	EN
53	*Vernonia anthelmintica* (L.) Willd. (Asteraceae) (Fig.12)	JBA-174	Ghoda Jira	Herb	Seeds	A2 c, d	Hm, L	EN

Hm-Harvest for medicine, **Hp**-Harvest for parts, **Sd**- Draught, **Sf-** Forest fire, **L-** Loss of Habitat, **Hf-** Harvest for food, **Tp-** Trade for parts, **VU-**Vulnerable, **CR-** Critically endangered, **EN-**Endangered

Fig.1: *Amorphophallus paeniifolius* (Dennst.) Nicolson

Fig.2: *Aristolochia indica* L.

Fig. 3: *Ceropegia bulbosa* Roxb.

Fig. 4: *Corallocarpus epigaeus (*Rottl. & Willd.) Hook. f.

Fig.5: *Costus speciosus* (J.Koeing) Sm.

Fig.6: *Gloriosa superba* L.

Fig.7: *Leea asiatica* (L.) Ridsdale

Fig.8: *Nervillea aragoana* Gaud.

Fig.9: *Pueraria tuberosa* (Roxb.ex Willd.) DC.

Fig.10: *Sauromatum venosum* (Aiton) Schott

Fig.11: *Urginea indica* (Roxb.) Kunth

Fig.12: *Vernonia anthelmintica* (L.) Willd.

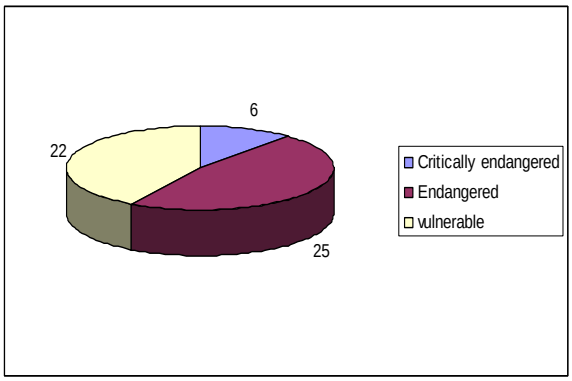

Fig.13: Plants in various threat categories

Result and Discussion

Biodiversity of any region plays an important role in social, cultural and economic status of its inhabitants. Phytodiversity of Jhabua district comprises a large number of plant species which have got a wide relationship with tribal and local people. Jhabua Forest Division of Madhya Pradesh is completely unexplored region from floristic and threatened taxa point of view.

In the present study the IUCN criteria has been applied at local level i.e. for one district of the state. Threatened status of above mentioned species is an alarming situation for the plant treasure of the state. Almost all species under various threat categories are directly or indirectly concerned with the livelihood of the local people because of their medicinal and other economic importance. Besides this these species also play a key role in maintaining the equilibrium among different components of ecosystem.

Madhya Pradesh is a pioneer state in the country having rich natural resources of medicinal plants due to its unique geographic position. The present study revealed that the status of population, existence of medicinal plants. The present paper highlights the 6 Critically endangered, 25 Endangered and 22 Vulnerable species (Fig. 13) along with their botanical name, local name, family, collection number, parts traded, threat factors and their IUCN status. Most of the species are harvested for medicinal purposes in unscientific manner.

The present observation put into record some novel traditional uses of certain plants as medicine e.g. Gum and resin of *Boswellia serrata* is used in leucorrhoea and in preparation of lac bangles, *Butea monosperma var. lutea* seed is used against snakebite, tuber of *Ceropegia bulbosa* is used in retention of urine, Corm of *Amorphophallus paeniifolius* is used in intenstinal ulcers. Leaf extract of *Andrographis paniculata* is given in malaria, tuber of *Chlorophytum borivilianum* is eaten raw in muscular weakness, rhizome of *Costus speciosus* is very much effective in bronchial disorders, tuber of *Gloriosa superba* is used for curing bleeding piles, seeds of *Mucuna pruriens* are given in spermatorrhoea and bark decoction of *Oroxylum indicum* is given in pneumonia. Most of the drug of the tribal of Jhabua district contains one or more compounds derived from plants. They are totally depending on the forest for their day to day ailments. Increasing demand and destructive harvesting posing some species at the verge of extinction. These plants are still to a large extent gathered and collected from natural stands with little attention to its replenishment.

As mentioned under various threat factors most of the species are struggling for their existence due to uncontrolled exploitation, loss of habitat and trading for various purposes. There is need for

quantitative estimation of threatened species; these species require immediate attention of conservation.

Acknowledgement

The authors are thankful to MPCST and UGC for the financial assistance. The tribals communities are acknowledge for their co-operation. The authors are also thankful to Divisional Forest Officer Jhabua for providing the assurance in forest.

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Source of support: MPCST and UGC
Conflict of interest: None Declared