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First Red List of Medicinal Plants of Andhra Pradesh, India - Conservation Assessment and Management Planning

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ABSTRACT

The present article is based on the First Conservation Assessment and Management Planning (CAMP) workshop organized by Medicinal Plants Conservation Centre, Environment Protection Training and Research Institute, Hyderabad, India based on IUCN Red List categories - 2000. In the workshop 50 prioritised medicinal plant species found in Andhra Pradesh were assessed and out of these 39 found to be threatened in the State of Andhra Pradesh, India.

INTRODUCTION

Conservation Assessment and Management Planning (CAMP) workshop was held from 9th to 11th March 2001 at Hyderabad. The objective of the workshop was rapid threat assessment of medicinal plants of Andhra Pradesh, based on the criteria developed by the International Union for Conservation of Nature and Natural Resources (IUCN), now known as the World Conservation Union. The workshop is organized by Medicinal Plants Conservation Centre, Environment Protection Training and Research Institute, Hyderabad, India with support of FRLHT under the UNDP – MoEF sponsored project, entitled *"In situ* Conservation and sustainable utilization of Medicinal Plants in Andhra Pradesh".

ANDHRA PRADESH: STUDY AREA

The State of Andhra Pradesh (The land of Telugu people) is situated in the middle of eastern half of the Indian Peninsula lying between 12^{o} 41' – 19^{o} 54' N latitudes and 76^{o} 46' – 84^{o} 45' E longitudes. It is bounded by the Bay of Bengal in the east, Tamil Nadu in the south, Karnataka in the west, and Maharashtra, Chattisgadh and Orissa in the north.

Administratively, Andhra Pradesh has 23 districts which were grouped into three zones: (1) *Circars* or *Coastal Andhra* with nine distrcts, i.e. East Godavari, Guntur, Krishna, Nellore, Prakasam, Srikakulam, Vizianagaram, Visakhapatnam and West Godavari (2) *Rayalaseema* with four Ceded districts, i.e. Anantapur, Chittoor, Cuddapah and Kurnool (3) *Telangana* (Deccan or erstwhile Nizam's Dominions of Hyderabad State) with 10 districts, i.e. Adilabad, Hyderabad, Karimnagar, Khammam, Mahabubnagar, Medak, Nalgonda, Nizamabad, Rangareddy and Warangal.

Geographically, the State is categorized into three regions, namely: (1) the *Coastal Plains* (along the east coast, a low-lying area from from Srikakulam to Nellore) mainly of agricultural land, (2) the *Eastern Ghats*, forming a chain of discontinuous range of hills along the coast with good vegetation, and (3) the *Deccan Plateau* consisting of agricultural lands, scrub and deciduous forests, which cover part of Kurnool (excl. Nallamalais), Anantapur districts and the whole of Telangana.

The wide range of topography and other physical features of the State, provided by the hills rising from almost sea level to about 1500 m altitude, shaped the land to harbour rich and varied flora. In Andhra Pradesh, vegetation cover occupies 23.03% of the total geographical area of 275, 068 sq. km (Reddy *et al*. 2008). The forests in the State are broadly classified into Dry deciduous, Moist deciduous and Semi-evergreen types. Besides, there are mangroves, other subsidiary and serial types spread over limited areas (Reddy, 2007).

METHODOLOGY

Initially, 101 medicinal plants of conservation concern were identified with the help of eminent botanists and field researchers of Andhra Pradesh and FRLHT, Bangalore. On the advice of these experts, the list was short listed to 50 taxa as candidates for the CAMP workshop.

The workshop deliberations involved preparation of data sheets for each selected species. This was facilitated by the formation of 5 different working groups, each consisting of eminent botanists from Andhra Pradesh as well as representatives of BSI, NBPGR, user groups and forest managers. Each working group was assigned 10 taxa for assessment. The taxon data sheets filled up by one group were reviewed by other working groups and finalized in the final plenary session which provided opportunity to each participant to contribute and or modify the details filled in each taxon sheet.

RESULTS AND DISCUSSION

Out of the 50 medicinal plants assessed during the workshop 12 are endemic to India and the remaining 38 are non-endemic. These 12 species are *Boswellia ovalifoliolata, Butea monosperma* var. *lutea, Cycas beddomei, Decalepis hamiltonii, Hildegardia populfolia, Phyllanthus indofischeri, Pimpinella tirupatiensis, Pterocarpus santalinus, Shorea tumbuggaia, Syzygium alternifolium, Terminalia pallida* and *Urginea nagarjunae.* Out of these Endemic species, three species namely, *Boswellia ovalifoliolata, Cycas beddomei* and *Pimpinella tirupatiensis* are entirely confined to Andhra Pradesh. *Pterocarpus santalinus, Shorea tumbuggaia, Syzygium alternifolium, Terminalia pallida* and *Urginea nagarjunae* are endemic to Eastern Ghats.The list of assessed medicinal plants incorporating their Red List status and estimated proportion (in Andhra Pradesh) of global presence are being appended. The table also incorporates information criteria, as per IUCN – 2000 (version 3.1), for assignment of Red List status to each taxon.

More than 40 participants form 10 different Research Institutions like Botanical Survey of India, Universities, Colleges and Forest Department participated in this three day CAMP deliberation which involved the assessment of taxon data sheets. The participants included eminent botanists, field botanists, wildlife managers, ecologists and scientists from various academic communities, students of botany, ayurvedic physicians and even folk botanists. To mention a few, eminent botanists like Dr. M.P. Nayar, Prof. Rolla Seshagiri Rao, Dr. J.L. Ellis, Dr. K. Hemadri, Prof. Vatsavaya S. Raju, Prof. R.R. Venkata Raju, Prof. T. Pullaiah, Prof. P.N. Rao, Dr. R. Venkateshwar Reddy, Dr. N. Ramarao, Dr. K. Ravikumar, Dr. B. Suryanarayana, Prof. Y.N.R. Varma, Dr. N. Venugopal and also folk practitioners like Mr. Bodd Reddy, Mr. Linga Reddy, Mr. Ganapathi & Mr. Sree Ramulu and Forest officials Mr. K.S. Rao IFS, Chief Conservator of Forests, Mr.C. Shivshankar Reddy IFS, Chief Conservator of Forests, attended the workshop. The Chief guests were Mr. K. Subba Rao, IFS,

Principal Chief Conservator of Forests of Andhra Pradesh, Mr. R. Rajamani, IAS, Retired Union Secretary of Ministry of Environment and Forests and Ms. Gayathri Ramachandran, IAS, Director General, Environment Protection Training & Research Institute (EPTRI).

It can be concluded that out of the 50 taxa, which were assessed during the workshop, 39 fall into threatened group (Table 1). These have been further assigned Red List status of Critically Endangered (4), Endangered (24) and Vulnerable (11); highlighting the pressing need for urgent conservation action. Such CAMP workshops highlight the need for the application of intensive management techniques for medicinal plant species threatened with extinction (Reddy *et al*. 2001; Jadhav *et al*. 2001).

Table 1. Threat Status of Assessed (Red listed) Medicinal Plant Species.

Sl.	Species	IUCN Status	Criteria based on presence in the region	Estd. Proportion of global presence in the region
1	*Acorus calamus*	Endangered	B2 a, b(iii)	<1 %
2	*Aegle marmelos*	Vulnerable	A2 c,d	2 - 5%
3	*Amorphophallus sylvaticus*	Vulnerable	A2 c	5 - 10%
4	*Angiopteris evecta*	Endangered	B1a,b (iii,v) & B2 a,b (iii,v)	1 - 2 %
5	*Anodendron paniculatum*	Endangered	B2 a,b (iii, v)	0.5 - 1%
6	*Boswellia ovalifoliolata*	Endangered (Globally)	B1 & B2 a,b(iii, v)	100%
7	*Butea monosperma var. lutea*	Endangered (Globally)	A2 c,d / D	30-40%
8	*Celastrus paniculatus*	Near Threatened		2 - 3%
9	*Chlorophytum arundinaceum*	Least Concerned		< 1%
10	*Plectranthus barbatus*	Endangered	B2 a,b (iii)	< 1%
11	*Costus speciosus*	Near Threatened	A2 c,d	2 - 5%
12	*Cycas beddomei*	Critically Endangered (Globally)	B1 a,b (ii,iii,iv,v)	100%

13	*Decalepis hamiltonii*	Endangered (Globally)	A2 c,d	40 - 50%
14	*Embelia ribes*	Critically Endangered	B1&2 a,b(iii), D	<1%
15	*Entada pursaetha*	Endangered	B2 a,b (ii, iii)	< 1%
16	*Euphorbia fusiformis*	Vulnerable	A2 c,d	2 - 5%
17	*Gloriosa superba*	Vulnerable	A2 d	0.5 - 1%
18	*Gymnema sylvestre*	Vulnerable	A2 c,d	2 - 5%
19	*Hildegardia populifolia*	Vulnerable (Globally)	A2 c,d	80 - 90%
20	*Holostemma ada-kodien*	Near Threatened		2 - 3%
21	*Lasia spinosa*	Endangered	B1&B2 a,b(iii, iv,v)	<1%
22	*Litsea glutinosa*	Critically Endangered	A2 c,d	0.5 - 1%
23	*Merremia turpethum*	Least Concerned		2 - 5%
24	*Mesua ferrea*	Not Evaluated		<1%
25	*Nervilia aragoana*	Endangered	A2 c / B2 a, b (ii, iii, iv)	<1%
26	*Oroxylum indicum*	Vulnerable	A2 c,d	3 - 5%
27	*Paederia foetida*	Near Threatened		<1%
28	*Phyllanthus indofischeri*	Vulnerable (Globally)	A2 c	25 - 30%
29	*Pimpinella tirupatiensis*	Endangered (Globally)	B1&2 a,b (ii,iii)	100%
30	*Piper nigrum*	Endangered	B2 a,b(ii)	<1%
31	*Plumbago indica*	Endangered	B2 a,b (iii)	<1%
32	*Pterocarpus santalinus*	Endangered (Globally)	A4 c,d	> 90%
33	*Pueraria tuberosa*	Near Threatened		5-10%
34	*Rauvolfia serpentina*	Critically Endangered	A2 c,d	2 - 5%
35	*Rhaphidophora decursiva*	Endangered	B1 & B2 a,b(iii)	<1%
36	*Rubia cordifolia*	Vulnerable	A2 c	< 2%
37	*Santalum album*	Endangered	A2 c,d	2 - 5%

38	*Saraca asoca*	Endangered	B2 a,b(iii)	<2%
39	*Shorea robusta*	Near Threatened		< 2%
40	*Shorea tumbaggaia*	Endangered	B1 & B2 a,b(ii)	95%
41	*Stemona tuberosa*	Vulnerable	A2 c	<1%
42	*Sterculia urens*	Vulnerable	A2 c,d	3 - 5%
43	*Strychnos colubrina*	Endangered	B1 & B2 a,b(ii, iii)	2 - 5%
44	*Syzygium alternifolium*	Endangered (Globally)	A2 c	95%
45	*Tacca leontopetaloides*	Near Threatened		<1%
46	*Terminalia pallida*	Endangered (Globally)	A2 c & B2 a,b(ii, iii, iv)	90%
47	*Trichosanthes cucumerina*	Near Threatened		2 - 3%
48	*Urginea nagarjunae*	Endangered (Globally)	B1a,b(ii, iii) B2 a,b(ii, iii) / C1	40 - 50%
49	*Zanthoxylum rhetsa*	Endangered	B1 & B2 a,b(ii, iii) / C1	< 1%
50	*Zingiber roseum*	Endangered	B2 a,b(ii, iii)	10 - 20%

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