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Status of Threatened Medicinal Plants in tropical Forest of Malyagiri Hill Ranges, Odisha, India

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Abstract
Malyagiri hill ranges located on the south of Pallahara town of Angul district in the state of Odisha is endowed with rich flora and fauna. This area is rich with large no. of medicinal plants and plants of other socio-economic importance. The tribal people and people near by utilizing plant and plant products for medicinal and other purposes. The distribution, diversity, population structure and occurrence of plant species has been poorly understood by the previous workers. Keeping these facts in mind intensive floristic studies have been undertaken in the different regions. About four hundred medicinal plants have been collected and identified from different locations of this region .During the present investigation it is evident that large number of medicinal plants are found to be present in this region which are much useful for herbal drug industry. Some species are vulnerable, few are endangered, less are critically endangered in this region due to habitat loss. As such conservation and sustainable utilization of medicinal plants is an urgent need for the maintenance of ecological balance in this region.
Keywords: *Threatened medicinal plants, Malyagiri Hill Ranges, status, conservation.*

Introduction

Maximum diversity of plant species found in the tropical and sub-tropical forest type (WCMC 1992). Such type of forest are rich with economically important and medicinal plants with rich values (Champion & Seth, 1968). Rapid urbanization and industrialization, exploitation of such forest type resulted the rapid loss of tropical forest that recognizes one of the serious environmental and economic problem all over the world (Hare et al -1997).A study on threatened medicinal plants of tropical forest is ecological important along with medicinal values.

Malyagiri hill ranges belongs Eastern Ghats of India lies between 21° 23' 30" N latitude and 85°16' 58" E longitude, located in Pallahara sub-division of Angul district under the Deogarh forest division, Odisha. Malyagiri hill consist of a no. of small hills. The hill length measures about 12 kosa (36km.) and width above 12 Kosa (36 k.m.). The mountain heights upto1187mt (3894 ft.) which contributes the second highest mountain in Odisha. There are about 4 perennial waterfalls with dense forest in the northern part known as "Nagira". Religious lord Shiva temple at the hill base of Khuludi reserve forest with perennial

waterfall increases the beauty of nature favours for popular tourist place. Soil of Malyagiri are mainly red and form clays and clay-loams in the valleys (Patra and Choudhury, 1989). The hill range mostly observe 3 climatic distinct condition i.e. Summer, Rain, Winter. The highest temp. as recorded 43.9°c in May and lowest temp. is 14.6° c during December.

Malyagiri flora is an example of tropical deciduous forest of Eastern Ghats, India. The wide range of topographic and climatic condition favours the growth of luxurious flora in the hill ranges (Patra & Choudhury, 1989).Most of the plants have immense medicinal values. But due to over exploitation of medicinal plants in fuel wood collection, habitat destruction, over grazing, plant diversity is decling at alaraming rate, (Sahu et al-2010) which may leads to the extinction of many valuable species. Various floristic & ethnobotanical works (Saxena & Brahmam, 1990; Patra& Choudhury, 1989; Saxena& Dutta 1975; Saxena et al 1991) has been undertaken in this vegetation. Again to create awareness & save the endangered plants with medicinal values, a detailed study was undertaken.

Material and Methods

Malyagiri hill ranges belongs Eastern Ghats of India lies between 21° 23' 30" N latitude and 85° 16' 58"E longitude.

Literatures pertaining to past floristic studies in the Malyagiri hill ranges have been consulted to have a clear idea about the distribution and the status of the vegetation in past. The herbarium of the Central National Herbarium has been consulted to have a clear idea about the abundance and distributional pattern of different species in this region.

Regular field trips have been conducted in different seasons of the year to identify plants of ecological, medicinal and other socio-economic importance along with distributional data in and around different areas of the Malyagiri hill ranges such as Tambur, Rohila, Khantaposi, Padaposi, Gunapal, Jambua, Biralmunda, Sarei, Boitasarei, Jamara. Special attention given to distribution pattern, abudance, dominance, during flowering and fruiting time. Survey had done among different plants to trace out the endangered, vulnerable and critically endangered i.e, threatened plants in several time.

Result and Discussion

Urbanization & industrialization causes severe damage to natural forest, which threatens the survival of several indigenous medicinal plants. The unsustainable medicinal plants placed them in threatened and vulnerable categories in conservation assessment and management plan. (Ved et.al 2007) of Odisha. The table highlighting the 3 critically endangered,5 endangered and 9 vulnerable species along with their botanical name, family, locality, local name, life form, distribution and IUCN status. (Gamble & Fischer, 1915-35; Saxena & Brahmam, 1996). It is critical to conserve these plants locally if not globally. They may be preserve through ex-situ and in-situ methods of conservation by the bio-diversity board of Odisha. The *in-situ* method of conservation should be implemented by the board to conserve medicinal plants by natural habitat. (like sanctuary or biosphere reserve).Hence it is necessary to declare Malyagiri hills as wild life sanctuary to preserve (ex-situ) the notable threatened medicinal plants as earlier as possible. The collection of such threatened medicinal plants as a whole or parts by the people should be checked to maintain healthy population structure. This tabulation structure on threatened medicinal plants highlights the status of such plants which needs the immediate attention for conservation and propagation through *in-situ* & ex-situ or through latest biotechnological approaches.

Table 1 List of Threatened Medicinal Plants in Malyagiri Hill

	Botanical Name	Family/ Locality	Local Name	Life form	IUCN Status
1	*Bauhinia vahlii* Wight & Arn. 1076	Ceasalpineae, Rohila	Siali	Climber	Vulnerable
2	*Ceaesalpinia bonduc* (L.) Roxb. 1072	Ceasalpineae, Tampar	Gila	Climber	Vulnerable
3	*Carissa carandas* L. 1333	Apocyanaceae, Muktapur	Kerandakoli	Tree	Vulnerable
4	*Dalbergia* sisooRoxb. 1092	Fabaceae, Tenteinali	Sisoo	Tree	Endangered
5	*Garcinia cowa*Roxb. ex DC. .1020	Clausiaceae, Raipal	Sarbana	Tree	Vulnerable
6	*Gardenia gummifera* L.F. 1277	Rubiaceae Tenteinali	Gurudu	Shrub	Vulnerable
7	*Gloriosa superb* L .1546	Lilliaceae, Kamparkila	Panchaangulia	Climbing herb	Vulnerable
8	*Haldinia cordifolia* (Roxb.) Ridsd. 1278	Rubiaceae, Jambua	Kuruma	Tree	Vulnerable
9	*Litseaglutinosa* (Lour.) Robins. 1491	Lauraceae Gudapada	Debasandha	Tree	Endangered
10	*Mesua ferrea* L.1027	Clausiaceae, Phulabadi	Nageswar	Tree	Endangered
11	*Pueraria tuberose* (Willd.)DC.1132	Fabaceae, Chandposi	Bhuinkakharu	Woody climber	Vulnerable
12	*Pterocarpus marsypium* Roxb .1125	Fabaceae, Barnamuhan	Piasala	Tree	Endangered
13	*Rouvolfia serpentine* (L.) Bent.1599	Apooyanaceae, Balimi	Patalgaruda	Shrub	Critically endangered
14	*Symplocos acemosa* Roxb. 1321	Symplocaceae, Kantala	Lodha	Tree	Endangered
15	*Strychnos potatorum.* L.f. 1376	Strychnaceae, Barnamuhan	Nirmali	Tree	Vulnerable
16	*Terminallia bellerica* (Gaerth.) Roxb. 1265	Combretaceae, Tenteinali	Bahada	Tree	Critically endangered
17	*Uraria picta* (Jacq.) Desv. 1146	Fabaceae, Kadalibadi	Iswarjata	Shrub	Critically endangered

Fig-1

Fig-2

Mesuaferrea plants near Phulabadi of Malyagiri Hill.

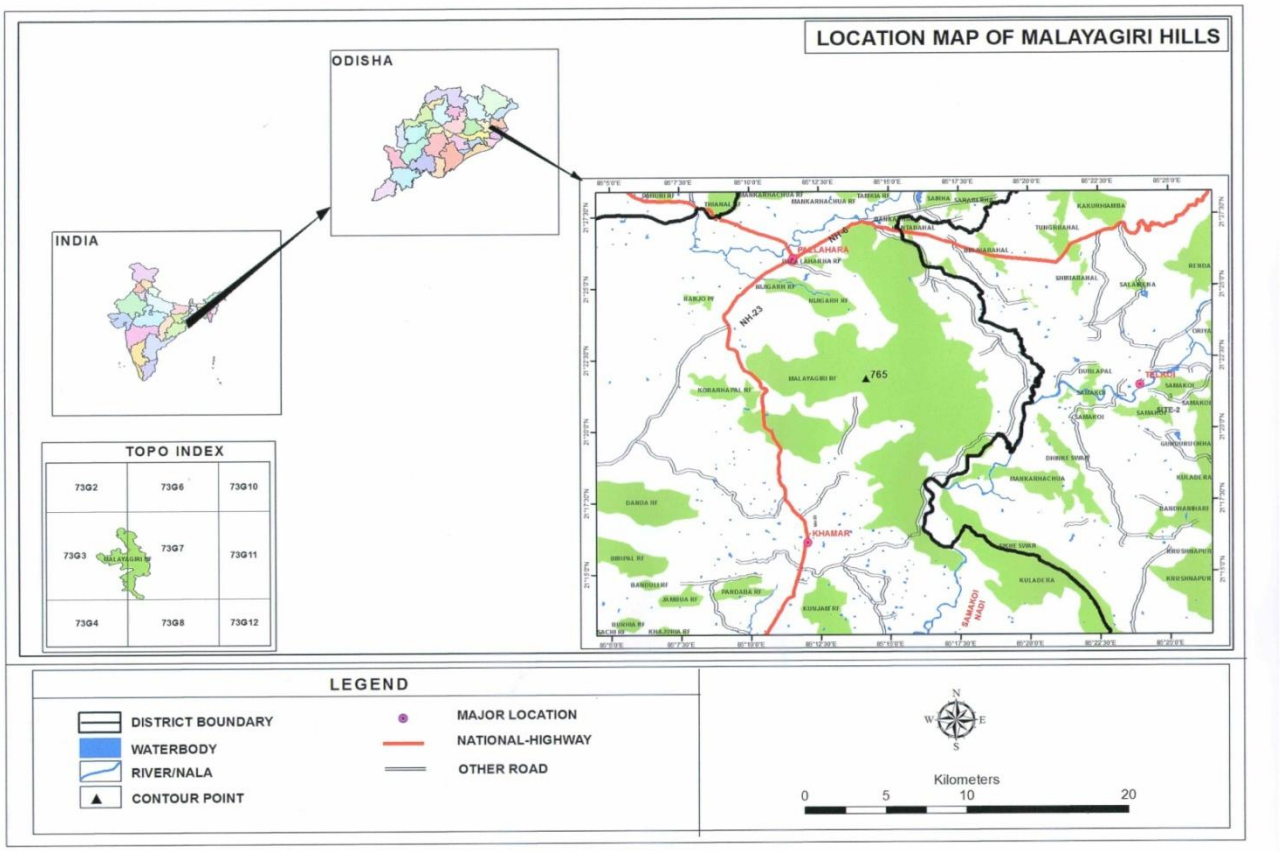

Fig-3 Map of Malyagiri Hill Ranges

Conclusion

Different organization like International union for conservation of nature and natural resources (IUCN) and National committee on man and biosphere (MAB) are working on threatened species and taking necessary measures for their conservation.

The paper highlights the critically endangered, endangered and vulnerable species along with their botanical name, voucher specimen number, family, locality, local name, life form, distribution and IUCN status. So it is an urgent necessary to conserve the medicinal plants prior to its extinction. This may be planned through in situ or ex situ method for preserving the plant diversity of Malyagiri hills.

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