



Endangered Plants and their uses of Sivasagar District, Assam, India

P Jiji

Department of Botany, Swahid Peoli Phukan College, Namti Namtidole, Sivasagar, Assam, INDIA

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Abstract

Assam is a strategically very important state of North Eastern region. It has a treasure of biodiversity. Sivasagar District of Assam is a historical place was capital city of ahom dynasty. The district is also important due to their natural resources. The district have six reserve forest areas, viz. Sapekati, Dilli, Abhaypur, Sola, Gelekey, and Panidihing reserve forests, having treasure of biodiversity due to wide variability in climatic and edaphic condition. Major parts of the flora of Assam are found in Sivasagar District. Ethnic people (Tai-Ahom, Tai-Shyam, Tai-Phake, Mising, Kachari, Sonowal and various Tea-tribe) are living neighboring these forests. They depend the forest for their shelter, food, medicines, fodder etc. But biodiversity of district is declining fast and most of the plants were coming under IUCN red list due to increased demand, destructive harvesting over exploitation, illegal trade, opens grazing, developing buildings etc. To meet the demand of authentic plant materials from the field, plantation of medicinal plant farm helps for sustainable utilization.

Keywords: Endangered, ethno medicinal plants, conservation, sustainable use.

Introduction

Assam is the gateway of Northeastern India, having an area of 78,438 km² and is one of the most sensitive biodiversity zones of the world. It is a hotspot coming under eastern Himalaya. It lies between 94°8'-94°4' east longitude and 26°7'-27°2' north latitude and an altitude of 110M. The district is famous historically and for its natural resources. The total area of Sivasagar district is 2662 Km² (figure-1), their 11% is comprised of Forest area. The district comprises six reserve forest areas viz Sola, Abhaypur, Sapekati, Gelekey, Dilli and Panidihing Bird sanctuary, with luxuriant vegetation. Neighboring the forests number of ethnic people inhabits, North Eastern States comprising 8 states harbor more than 180 major tribal communities, 12.8% of the total tribal population of India found in Assam¹. Sivasagar district also have different ethnic people viz, Tai Ahom, Tai Khamyang, Tai fake, Moran, Motok, Sonowal, Kachari, Mising, Naga, Tea garden tribes and Indian Nepalese.

Major parts of the flora of Assam are found in Sivasagar; become a biodiversity Hotspot due to varying climatic and edaphic condition. The people live near areas depends on these forest for their food, fodder and medicines. Varieties of endangered and ethno medicinal plants are available here.

Biodiversity is decreasing everywhere, due to industries and increasing population their activities like open grazing, destructive harvesting and habitat fragmentation (Tea gardens, paddy field, building home etc). Endangered and endemic plants are incredible parts of biodiversity. Therefore, conservation of these plants is necessary for future.

Material and Methods

The study based on fieldwork, literary survey, herbarium scrutiny of plant specimen. Repeated field visits in different seasons during 2013-14 of the year and with direct interaction with the traditional healers and age-old people, who conventionally linked with preparation of ethno medicine and other manufacturer. After identification specimens were enumerate as scientific name, family, vernacular name, uses, habit and habitat, flowering and fruiting period and IUCN threat status.

Results and Discussion

The interviews provided some interesting information regarding endangered ethno medicinal plants practice of various tribal and non-tribal people of the district. Moreover, other uses of the endangered plants.

In the present studies recorded 24 species (listed below) in 24 genera and 21 families. Out of these 15 are dicotyledones and eight monocotyledons and 1 gymnosperm, which frequently used for the curing of various ailments by traditional practitioners.

List of some endangered plants and their uses: Scientific name: *Acorus calamus* L., Family: Araceae, Vernacular name: Boch. Uses of the plant: The rhizome is cough, bronchitis, gout, depression and other mental disorders, tumors and skin disease. Essential oil present in rhizome used in the perfume industry. The rhizome essence flavor pipe tobacco. Habit and habitat: Herb, semi aquatic. Flowering period: April – June. Status: Threatened

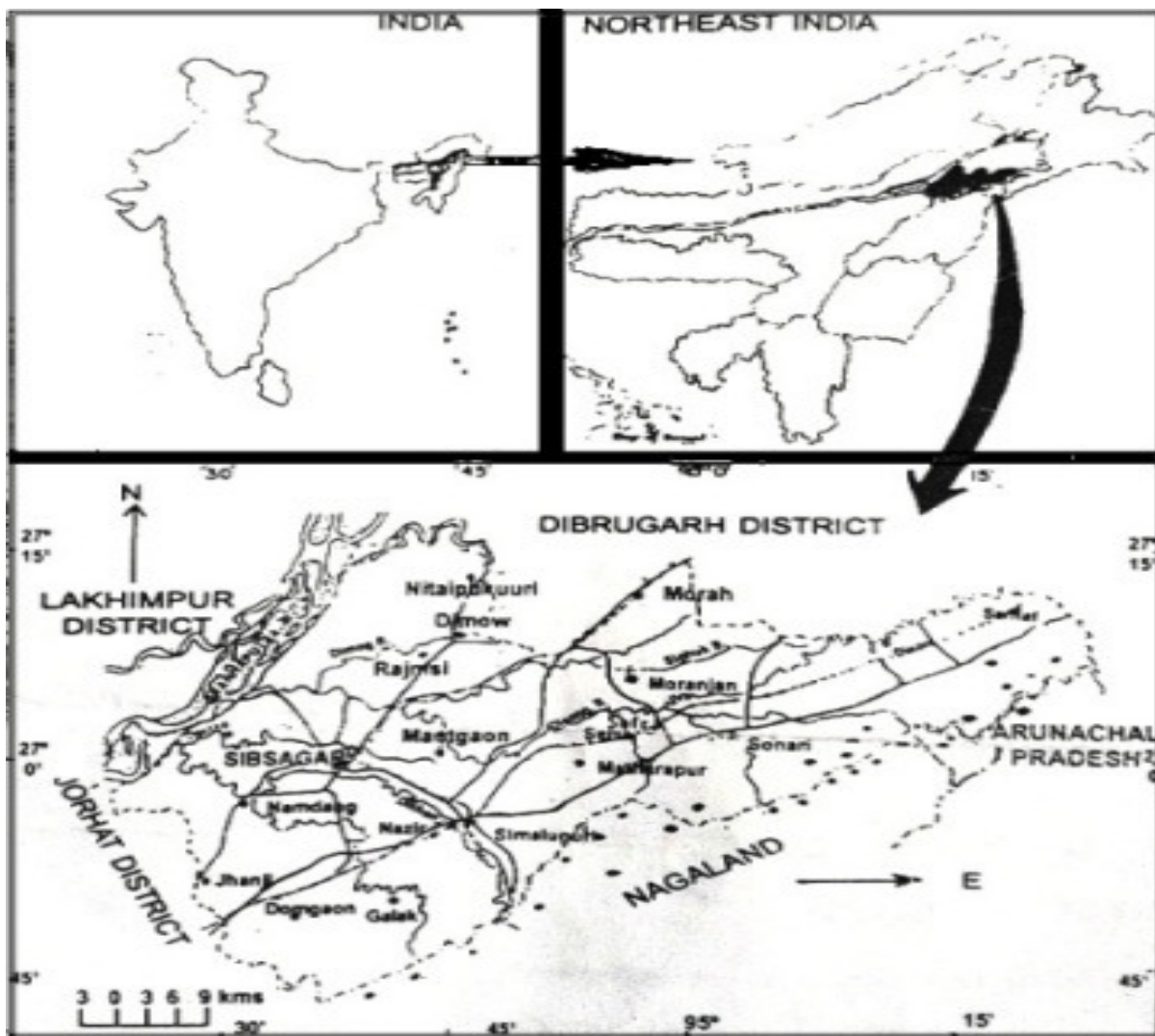


Figure-1
Map of Sivasagar District

Scientific name: *Aquillaria malaccensis* Lamk. Family: Thymelaeaceae. Vernacular name: Sasi. Uses of the plant: Resinous heartwood used for perfume and incense. Also used as stimulant, nausea, nerves, carminative, smallpox, rheumatism, asthma, abdominal pain, and diarrhea. Habit and habitat: Terrestrial tree. Flowering period: Dry season. Status: Endemic and Vulnerable.

Scientific name: *Andrographis paniculata* (Burm.f) Nees. Family: Acanthaceae. Vernacular name: Kalmegh. Uses of the plant: The plant considered antihelminthic, febrifuge, stomachic and tonic. Also used in diarrhea, dysentery, dyspepsia, bronchitis, influenza and stomach problem. Extracts may have the potential to be use as a mosquito repellent. Pregnant women should not use *Andrographis* because it could terminate pregnancy. Habit and habitat: Terrestrial erect herb. Flowering period: September-December. Status: Threatened.

Scientific name: *Anisomeles indica* L., Kuntz. Family:

Lamiaceae. Local name: Bon til. Uses of the plant: The plant has carminative, astringent, and tonic properties. Seeds yield an essential oil used in uterine infections also an appetizer. Habit and habitat: Terrestrial under shrub. Flowering period: September-February. Status: Rare.

Scientific name: *Bacopa monnieri* (L) Penn. Family: Scrophulariaceae. Vernacular name: Brahmi. Uses of the plant: Leaves are useful as nerve tonic, and in constipation used as a remedy for bronchitis and cough of children and given in rheumatism and jaundice. It is use to increase the memory power and decrease hair loss. Habit and habitat: Semi aquatic, creeping herb. Flowering period: Almost throughout the year. Status: Endangered.

Scientific name: *Calamus floribundus* Roxb. Family: Arecaceae. Vernacular name: Jati bet. Uses of the plant: Stem used for making furniture, split stem to tie and make household

articles. Young stem used as vegetables and medicine for stomach trouble. Flowering period: September–May. Status: Endemic.

Scientific name: *Canarium bengalense* Roxb. Family: Burseraceae. Vernacular name: Dhuna goss. Uses of the plant: Leaves and bark are used externally or rheumatic swellings. Habit and habitat: Tree. Flowering period: Jul-Oct. Status: Threatened.

Scientific name: *Cannabis sativa* L. Family: Cannabinaceae. Local name: Bhang/Ganja. Uses of the plant: The plant is a source of narcotic bhang, ganja and charas. The leaves and flowers are use in diarrhea and dysentery; crushed leaves are use in skin diseases. Habit and habitat: An erect annual aromatic herb with different height. Flowering period: Throughout the year. Status: Least concern.

Scientific name: *Cinnamomum tamala* Nees&Eleerm. Family: Lauraceae. Vernacular name: Tejpat. Uses of the plant: Bark and leaves used as spice. Medicinally used in the treatment of diabetes. Habit and habitat: Terrestrial Tree. Flowering period: Feb- May. Status: Endangered

Scientific name: *Clerodendrum colebrookianum* Walp. Family: Verbeceae. Vernacular name: Nephafu. Uses of the plant: The leaves eaten as vegetable against normal blood pressure. The leaves are vermifuge and its juice destroys intestinal helminthes worms. Habit and habitat: Terrestrial shrub. Flowering period: April, June. Status: Vulnerable.

Scientific name: *Curcuma amada* L. Family: Zingiberaceae. Vernacular name: Amada. Uses of the plant: Rhizomes are carminative and stomachic used in pickles. It used for healing of wounds, cuts, itching, also for sprains and skin diseases and rhizome juice effective for colds and coughs. Habit and habitat: herb, met in wet areas. Flowering period: During rainy season. Status: Endangered.

Scientific name: *Dioscorea deltoidea*. Family: Dioscoreaceae. Vernacular name: Katalu. Uses of the plant: Tubers are rich in saponin and is use for washing. Tubers used as vegetable; Tubers contain 21% starch and can be ground in to a meal and used as vegetable. Considered as antihelminthic; also used in leprosy and piles. Cortisone extract from *Dioscorea* is useful in the treatment of rheumatic arthritis, asthma. Habit and habitat: Herbaceous Climber. Flowering period: April, August. Status: Endangered.

Scientific name: *Dendrobium auranticum*. Family: Orchidaceae. Vernacular name: Kopou. Uses of the plant: Leaves used against diabetes. Habit and habitat: Epiphytic herb. Flowering period: April-May. Status: Endemic.

Scientific name: *Gloriosa superba* L. Family: Liliaceae . Vernacular name: Agnisikha. Uses of the plant: Used against

Diabetes, Labor pain, Abortion, General debility. Habit and habitat: Semi aquatic herb. Flowering period: Rainy season. Status: Endangered.

Scientific name: *Gnetum gnemon* L. Family: Gnetaceae. Vernacular name: Uses of the plant Regarded as a vegetable of high status. Its flower, young leaves and fruit are use as ingredients in traditional vegetable curry. Habit and habitat: Lianes. Flowering period: June-Sep. Status: Endemic.

Scientific name: *Litsea cubeba* Pers. Family: Lauraceae. Vernacular name: Majankari. Uses of the plant: Stem bark in the form of paste is applied locally in scabies. Crushed fruits apply on forehead in headache. It produces a fruit, which processed for its lemony essential oil, essential oil from the seed used for treatment of lung cancer. Habit and habitat: Flowering period: July, September. Status: Endangered.

Scientific name: *Mangifera sylvatica* Roxb. Family: Anacardiaceae. Vernacular name: Aam. Uses of the plant: Edible fruit. Habit and habitat: Terrestrial tree. Flowering period: Apr-June. Status: Threatened.

Scientific name: *Michelia champaka* L. Family: Magnoliaceae. Vernacular name: Tita chopu. Uses of the plant: Leaves are use against Scorpion sting, flowers against dyspepsia, nausea and fever. Also use in diuretic in renal disease, gonorrhoea, gastric and fever. Habit and habitat: Big terrestrial Tree. Flowering period: Apr-July. Status: Threatened.

Scientific name: *Pandanus fascicularis* Lam. Family: Pandanaceae. Vernacular name: keteki. Uses of the plant: Dried leaves used for mat and umbrella making, and roots used to make basket and brush. Root and flowers are used in rheumatism, indigestion, constipation, and scabies. Habit and habitat: Semi aquatic herb. Flowering period: August – October. Status: Endangered

Scientific name: *Piper longum* L. Family: Piperaceae. Vernacular name: Pipali. Uses of the plant: Infusion is orally in rheumatism. Paste applied in leucoderma. Habit and habitat: Climbing herb. Flowering period: Rainy season and cold season. Status: Endangered.

Scientific name: *Rauvolfia serpentina* (L.) Benth ex. Kurz. Family: Apocyanaceae. Vernacular name: Sarpagandha. Uses of the plant: Against hypertension, mental illness, snakebite, eye disease etc. Habit and habitat: Terrestrial shrub. Flowering period: Major part of the year. Status: Endangered.

Scientific name: *Rhyncostylis retusa* (L) Bl. Family: Orchidaceae. Vernacular name: Kopou. Uses of the plant: The plant is abortifacient. Leaves used against rheumatic fever. Habit and habitat: Epiphytic herb. Flowering period: April-June. Status: Endemic.

Scientific name: *Swertia chirayita* (Roxb. ex Fleming) Karsten.
Family: Gentianaceae. Vernacular name: Chirata. Uses of the plant: Plant has antipyretic, hypoglycemic, antifungal and antibacterial properties. This herb is also used for Skin diseases, Intestinal worms, Bronchial asthma and burning of the body. Habit and habitat: Herb. Flowering period: Sept.-Nov. Status: Endangered.

Scientific name: *Zingiber zerumbet* Rose. ex Sm. Family: Zingiberaceae. Vernacular name: Borahu. Uses of the plant: Rhizome is used against cough, stomachache and asthma, also used against leprosy and skin diseases. Habit and habitat: Semi aquatic herb. Flowering period: Rainy season. Status: Endangered.

According to World Health Organization (WHO), varieties of drugs were obtained from medicinal plants. Traditional medicines and compounds derived from medicinal plants were used by 80% of individuals from developed countries. All collected plants were found to be medicinal and were used by ethnic people for their own treatment.

The earliest written record of Rig-Veda², followed by Atharvaveda (2000-1000 BC) and Ayurveda (600-100 BC) recorded ethno medicinal plants from the Himalayas 6,500 year old^{3,4}. Today the villagers have much knowledge about the health and curing activities of diseases. The people of rural areas still dependent on traditional medicines for health care and treatment of diseases. Traditional medicines have developed through experience of many generations and have been primarily dependent upon locally available plants. Medicinal plants are one of the major natural resource in pharmaceuticals and healthcare activities.

Many high value medicinal plant species were decline because of continuous exploitation of several medicinal plant species and substantial loss of their habitats^{5,6}. Endangered plants are the biodiversity factor of that area. Involvement of citizens at grassroots level is the best way for biodiversity management. Cultural diversity depends on biodiversity of that area, facilitating a deeper relationship with the environment; the world's diversity can be conserve for the future. Recreation and awareness campaign, consumption guidelines and consumer education can helpful to inform people to approach their life style to 'biodiversity-friendly' manner. Therefore, this is the high time to preserve these important endangered medicinal plants for future application. All the selected plants are endangered and use against various ailments. Growing such endangered ethno medicinal plants at different area of district will give best result for their sustainable use.

Conclusion

Assam especially Sivasagar district is one of the sensitive zone of rapid loss of biodiversity. Most of the plants have medicinal value and the traditional practitioner used all the collected endangered plants as ethno medicine. Anthropogenic threat like hunting, jhum cultivation and capturing forest areas for cultivation is common in this region, also the people lived around are depend on this forest for timber, vegetables, medicine etc. Also drilling activities of ONGC inside forest area is one of the major causes of depletion of biodiversity. Therefore, it is the responsibility of local authorities to expand this connection to a deeper understanding of ecosystems. Sharing of information on local biodiversity with the public through signboards, instructive displays, leaflet dissemination, botanical gardens, newsletters or local media can be effective.

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