

ENVIS CENTRE ON FLORAL DIVERSITY

ENVIS

NEWSLETTER



Vol. 19(1), 2014

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From Director's Desk

According to Principle 22 of the 1992 Earth Summit, indigenous people play a significant role in environmental management and sustainable development because of their traditional knowledge and practices. The traditional and predominant dependence of many indigenous and local communities on biological resources, make them to conserve the biodiversity and utilize the biological resources in a sustainable way. Knowing the importance of traditional knowledge, the signatories of Convention on Biological Diversity (CBD) across the world have undertaken sincere efforts to preserve and maintain the traditional knowledge relevant to the conservation and sustainable use of biological diversity [Article 8(j) of CBD].

In recent years, traditional knowledge has often been used by various pharmaceutical, cosmetic, beverage and nutrition industries to develop new techniques and products. The indigenous knowledge has also been applied in agriculture and environmental management. This issue of ENVIS Newsletter also comprises a few articles on traditional knowledge of local communities in India. The article on traditional use of *Saccharum bengalense* explains the conventional method to control sand erosion, and in another article the leaf extract of *Eclipta prostrata* used as a hair colourant by local people is briefly outlined. The article on handia, an indigenous beverage of tribals in Odisha describes the method of handia preparation and the significant role of handia in the life of tribal communities. Article on *Epirixanthes elongata*, a mycoheterotroph from Mizoram and *Phanera nervosa* from Meghalaya describes the significant features, rarity and recollection of these species. Apart, this issue also reports a first successful artificial pollination and fruit-set in double coconut, growing at AJC Bose Indian Botanic Garden (AJCBIBG), salient features and uses of *Mouriri guianensis*, a South American species (only one tree) growing at AJCBIBG, and a date palm with 12 branches found in Bongaon subdivision, North 24 Parganas district and fruit-set in *Corypha utan* at the Indian Railway Garden, Kanchrapara.

I appreciate very much the efforts of entire team of ENVIS Centre on Floral Diversity in bringing out this informative issue.


(Paramjit Singh)

Director & Scientist 'G'
Botanical Survey of India

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Editorial Committee

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P.V. Prasanna
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Eclipta prostrata (Asteraceae) – A natural hair colourant

Eclipta prostrata (L.) L. is a prostrate or decumbent to erect herb, native to Tropical America. The rural people in Purba Medinipur district, West Bengal use the leaf extract of this plant, which contains a black dye, for darkening grey hair. The plant is locally known as 'Bhringraj'.

Fresh leaves of the plant are washed thoroughly in water, then a dark greenish black juice was extracted, and the juice is collected in a container. After that a small amount of watery mucilage of *Musa paradisiaca* L. is diluted with water and added to the leaf extract. Then the solution is applied to hair by hand or brush and allowed it to bind with hair for 20–30 minutes. The solution is re-applied and then washed. The dye lasts for 7–10 days. It also acts as a natural hair tonic, prevents loss of hair and promotes hair growth. Alternatively, the leaf-powder is mixed with coconut oil and heated; it is then cooled and bottled for future use.

S. Tripathi & A.K. Mondal*

Department of Botany and Forestry, Vidyasagar University,
Medinipur – 721 102.

*E-mail: amalcaebotvu@gmail.com



a. *Eclipta prostrata*: Habit; inset: A head; b. Dark greenish black leaf extract in a bowl; c. Village woman dyeing her hair with the leaf extract

Epirixanthes elongata (Polygalaceae) from Mizoram

The genus *Epirixanthes* Blume is known by six species in the world and distributed in Eastern India, China, Thailand and Malesia (Pendry, 2010). They are mycoheterotrophs found on the humus-rich forest floor amidst leaf litter. Some species are rare, and some of them are locally abundant.

The only Indian species, *E. elongata* Blume was collected from a bamboo forest of Khawanglung Wildlife Sanctuary, Mizoram during a botanical exploration in December 2012 (S. Panday 53191, CAL). The species was found saprophytic on the roots of *Chimonobambusa callosa* Nakai. It is closely allied to the Malesian *E. pallida* T. Wendt, but differs from it in having cuspidate bracts and longer styles, whereas in *E. pallida* the bracts are rounded and the style is shorter.

The species is poorly represented in Indian herbaria. This is probably because the plant is easily overlooked by field botanists due to its brownish red body and yellow-brown inflorescence, which gets disguised in the leaf litter. Further, it may also be due to its short existence and the very small supra-terrestrial parts, which can be recognized only at the flowering stage.

Epirixanthes elongata is a brownish red annual with sessile scale leaves, compact elongate conical spikes with cream-yellow flowers above and matured blackish capsules below. It was earlier reported from Meghalaya by Joseph (1968). Singh (2002) reported it from Dampatlang in Mizoram and Jayanthi & al. (2012) reported it from Andaman and Nicobar Islands.



Epirixanthes elongata

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S. Panday^{1*}, B.K. Sinha² & S.K. Singh³

¹Central National Herbarium, Botanical Survey of India, Howrah – 711 103.

²Industrial Section, Indian Museum, Botanical Survey of India, Kolkata – 700 016.

³Eastern Regional Centre, Botanical Survey of India, Shillong – 793 003.

*E-mail: samicnh@gmail.com

Phoenix sylvestris (L.) Roxb. (Arecaceae), commonly known as 'Silver Date Palm' or 'Sugar Date Palm' usually has unbranched, cylindrical stem covered with leaf scars or persistent leaf-bases and with a crown of pinnately compound leaves. Interestingly, a palm with 12 healthy branches was found growing in Bongaon subdivision, North 24 Parganas district, West Bengal.

P. Pramanick¹ & M. Mandal^{2*}

¹Department of Botany, University of Kalyani, Kalyani – 741 235.

²Department of Botany, University of Calcutta, Kolkata – 700 019.

*E-mail: manasimandal175@yahoo.com



Phoenix sylvestris

Handia – The indigenous rice beer of tribals in Odisha

Rice beer, locally known as 'Handia' or 'Hadia' is an ethnic fermented drink, popular among the tribal communities of Mayurbhanj, Sundargarh, Deogarh and Angul districts of Odisha. The drink is called handia, as it is prepared using handi (earthen pot). Tribal women of different communities sell handia near roadsides or in weekly markets. In every tribal home rice beer is prepared using a specific variety of brown rice and a whitish homemade fermenting agent, locally known as 'Bakaro', 'Ranu', 'Dawayee' or 'Mulika'.

Ingredients of the fermenting agent are said to be amalgam of 21 herbs mixed with polished rice. These are made into pebble-like pieces and dried for four days. The plants used

are leaves of *Andrographis paniculata* (Burm.f.) Wall. ex Nees, roots of *Cissampelos pareira* L., *Elephantopus scaber* L., *Erycibe paniculata* Roxb., *Imperata cylindrica* (L.) P. Beauv. and *Ruellia suffruticosa* Roxb. and stem bark of *Holarrhena pubescens* (Buch-Ham.) Wall. ex G. Don. These pebble-like pieces (3 pieces for 1 kg of rice) are put in a large earthen pot, which is covered with leaves of *Shorea robusta* Gaertn. and left for three to four days, for fermentation. The fermented whitish, sour liquid is collected in earthen pots for consumption. It contains only 1.21% of alcohol.

Handia is an integral part of life of tribal communities. It plays a significant role in their social, cultural and economic life. It is commonly consumed during marriages, birth anniversaries, social meetings, functions and festivals. Apart, it is carried as a gift when they visit their relatives. Handia also has religious values. It is considered as a sacred drink, and offered to local deities and dead ancestors. Even the deceased's household offers handia to the villagers and relatives during the funeral ceremonies. The preparation and consumption of handia was initially started among the Munda and Santhal tribal communities, but now it is relished by all the tribal communities of Odisha.

H. Singh^{*1}, G. Krishna², R. Saravanan¹, P.A. Dhole¹ & P.K. Baske²

¹Central Botanical Laboratory, Botanical Survey of India, Howrah – 711 103.

²Central National Herbarium, Botanical Survey of India, Howrah – 711 103.

*E-mail: harish_bsi@yahoo.co.in



a. Bakaro sold in a weekly market at Udala, Mayurbhanj;
b. Handia sold in a weekly market at Badam Pahad, Mayurbhanj;
c. A tribal woman drinking handia

Mouriri guianensis (Memecylaceae) at AJC Bose Indian Botanic Garden, Howrah

Mouriri guianensis Aubl., a South American species, native to Guiana is growing (only one tree) in Division No. 22, adjacent to the Great Banyan Tree of the AJC Bose Indian Botanic Garden, Howrah.

It is an evergreen tree, looks like a species of *Memecylon*. The tree is seen either in flowers or in fruits almost round the year, however, profuse flowering is observed during April–June. The tree is about 10 m in height and has ovate to elliptic, glossy leaves, pentamerous pinkish flowers and purple-black to orange-red fruits. The bark has astringent property. Wood is used in construction, and also as fuel. The tree is cultivated for its colourful flowers and tasty edible fruits.



Mouriri guianensis: a. Habit; b. Inflorescence

Moumita Das Das*¹, K.A. Sujana¹, A. Pramanik², D. Maity³ & P.V. Sreekumar²

¹Central Botanical Laboratory, Botanical Survey of India, Howrah – 711 103.

²AJC Bose Indian Botanic Garden, Botanical Survey of India, Howrah – 711 103.

³Department of Botany, University of Calcutta, Kolkata – 700 019.

*E-mail: dasdas.moumita10@gmail.com

A note on recollection of *Phanera nervosa* (Fabaceae: Caesalpinioideae) in India

In India, *Phanera nervosa* Benth. [syn. *Bauhinia nervosa* (Benth.) Wall. ex Baker] occurs in Assam and Meghalaya. It is a tendrillar liana with flowers initially white, turning yellow with age. Recently, we have collected this species at Rimasar in East Khasi Hills, on way from Pongtung to Mawlynnong. A population of five individuals was also located at Darrang, Jaintia Hills in Meghalaya at elevations ranging from 150 to 400 m.

It was last collected on 15.9.1975 from Baghmara, Garo Hills in Meghalaya (M.K.V. Rao 64131) and housed at ASSAM, and thereafter it was never collected again. The present collection (Meghalaya, Jaintia Hills, Darrang, 202 m, 25°11'52.7'' N, 92°01'40.7'' E, 8.12.2013, R. Kumar & S. Sharma 125168, ASSAM) after a gap of about four decades is significant.

This species seems to be sparsely distributed in Assam and Meghalaya. In Meghalaya, it is confined to lower elevation areas with hot and humid climatic conditions. The State Forest Department should take necessary efforts to conserve this species. For instance, the forest department can raise seedlings in nurseries to increase the population. The raised seedlings



Mr. Prakash Javadekar, Hon'ble Minister of State (Independent Charge), for Environment, Forests and Climate Change with agriculture scientist Prof. M.S. Swaminathan and others releasing a book entitled, 'Plant Discoveries 2013' during a World Environment Day function held in New Delhi on 5th June 2014.

'Plant Discoveries' is an annual publication by Botanical Survey of India, which is released every year on the World Environment Day. It is a comprehensive compilation of country's new discoveries and new distributional records of plants in every year.

may be planted in suitable habitats. It can also be introduced in gardens. During the present study the seeds are collected to raise seedlings in garden at BSI Regional Centre, Shillong.

R. Kumar*, S. Sharma & A.A. Mao

Eastern Regional Centre, Botanical Survey of India, Shillong – 793 003.

*E-mail: rkpaliwalbsi@yahoo.com



Phanera nervosa

A traditional use of *Saccharum bengalense* (Poaceae) in Hooghly district, West Bengal

Saccharum bengalense Retz. is commonly known as 'Munj' or 'Khari' in Bengali. It is a very tall grass growing in clumps; the flowering culms grow up to 6 m high. The traditional use of this grass by the locals at Khanakul and Arambag in Hooghly district of West Bengal in controlling the erosion of sand bandhs laid across the river is presented here in detail with photographs.

Mundeshwari, one of the tributaries of River Damodar flows in the Hooghly district. Due to inadequate water supply of Mundeshwari, the cultivation of Kharif crops is very much uncertain in the region. The Irrigation Department of West Bengal blocks the flow of the rivers every year by making temporary 'Bandhs', locally known as 'Boro Bandhs', made

of sand along with bamboo and wooden pegs, for storage of water for irrigation during the dry season. The bandhs are constructed in the middle of December. The water stored in these bandhs is used for irrigation through interconnected canals during Rabi and Boro seasons.

To strengthen these temporary bandhs and to check the erosion of the sand, dried plants of *S. bengalense* are placed lengthwise over straw-ropes, at a gap of two to three feet from one another, in the form of a mat. Sand is then heaped on the grass-mat uniformly to a height of about one foot from the ground level. The grass-mat is then rolled taking care that the sand does not come out and tied with the straw-ropes, which will look-like a bolster of great length and locally known as 'Hete'. Such hetes are placed end to end in four or five tiers, the first one closest to the river water and other three or four in parallel tiers one above the



a. Sand erosion of boro bandh on Mundeshwari river at Chingra, Khanakul, Hooghly; b. Habit of *Saccharum bengalense* (inset: Bundles of culms); c. & d. Hete arranged and fixed to prevent sand erosion

other on the river bank, keeping certain distance between them. Bamboo pegs are then fixed on either side of these hetes to secure them in their places so that they do not get displaced by the pressure of the water flow. This cost-effective temporary technique can also be tried in other parts of West Bengal to protect the river bandhs.

K.L. Maity* & S. Biswa

Central National Herbarium, Botanical Survey of India,
Howrah – 711 103.

*E-mail: kanailmaity@yahoo.com

A first successful artificial pollination and fruit-set in double coconut growing in India

The only individual of double coconut palm [*Lodoicea maldivica* (J.F. Gmel.) Pers.] that exists in India, was introduced in 1894, and since then it has been conserved in the large palm house of the AJC Bose Indian Botanic Garden, Howrah. Since 2006, every year during flowering season cross-country pollination attempts have been made to pollinate the female flowers using pollen grains collected from Peradeniya Botanic Garden, Sri Lanka and Nong Nooch Tropical Botanic Garden (NNTBG), Thailand. However, a successful artificial pollination and fruit-set in double coconut was achieved through an effort made in August, 2013, with pollen grains collected from NNTBG, Thailand, by a team of scientists lead by Dr. S.S. Hameed.

S.S. Hameed*, M.U. Sharief & A. Pramanik

AJC Bose Indian Botanic Garden, Botanical Survey of India,
Howrah – 711 103.

*E-mail: saheeds_kkm@yahoo.com



Lodoicea maldivica

Corypha utan Lam. (Arecaceae) is a rare monocarpic palm with a massive, compound inflorescence, native to South and Southeast Asia and Australasia. Recently, it was found in fruiting stage at the Indian Railway Garden, Kanchrapara, North 24 Parganas district, West Bengal. According to the station authority it was introduced in the garden nearly 30 years back. There is also a young palm, which is about 15 years old.

D. Maity¹* & P. Pramanick²

¹Department of Botany, University of Calcutta,
Kolkata – 700 019.

²Department of Botany, University of Kalyani,
Kalyani – 741 235.

*E-mail: debmaity@yahoo.com



Corypha utan



a. Visit of Mr. Surjith Karthikeyan, Assistant Director, MoEF, New Delhi to ENVIS Centre; b. A meeting between ENVIS officials/staff and Mr. Kumar Rajnish, National Programme Coordinator, ENVIS Secretariat, New Delhi; c. Visit of Prof. C.R. Babu, Emeritus Professor, University of Delhi to ENVIS Centre; d. Cleaning the ENVIS Centre as part of 'Swachh Bharat Abhiyan'

ENVIS CENTRE

Established : April, 1994

Subject Area : Floral Diversity

Contact Person : Dr. P. LAKSHMINARASIMHAN

Address : Scientist 'D' & HoO, CNH, BSI & Scientist-in-Charge, ENVIS Centre
Botanical Survey of India, Central National Herbarium
P.O. Botanic Garden, Howrah – 711 103.

Phone : (033) 2668 0667

Fax : (033) 2668 6226

E-mail : envis@cal2.vsnl.net.in; bsi@envis.nic.in

Website : <http://www.bsienvis.nic.in>

Activities of the Centre: The Botanical Survey of India having involved in exploration activity has been collecting diverse data pertaining to floral diversity and its ENVIS Centre proposes to disseminate this information by building databases on the distribution of endemic and threatened plants, documentation of traditional/ethnobotanical knowledge, carnivorous plants and mangroves of India. It is also engaged in publication of state-wise bibliography including abstracts of papers pertaining to plants of India and also selected publications that have relevance both in documentation and conservation.

List of publications brought out so far:

- Books:**
1. Mangroves, Associates and Salt Marshes of the Godavari and Krishna Delta, Andhra Pradesh – India
 2. Diversity of Coastal Plant Communities in India (Priced publication) ` 804.00*
 3. Red List of Threatened Vascular Plant Species in India
 4. A Pictorial Guide to some of the Indian Plants included in CITES and Negative List of Exports
 5. Bibliography and Abstracts of Papers on Flora of West Bengal – I & II
 6. Bibliography and Abstracts of Papers on Flora of North East India – I
 7. Bibliography and Abstracts of Papers on Flora of Andaman and Nicobar Islands
 8. Bibliography and Abstracts of Papers on Flora of Maharashtra
 9. Bibliography and Abstracts of Papers on Flora of Kerala
 10. Bibliography and Abstracts of Papers on Flora of Tamil Nadu

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*Demand Draft (DD) is to be drawn in favour of ACCOUNTS OFFICER, PAO (BSI/ZSI) and to be sent to the address of the ENVIS Centre given above