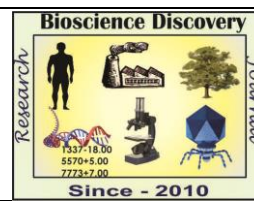


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Print & Online, Open Access, Research Journal Available on <http://jbsd.in>

ISSN: 2229-3469 (Print); ISSN: 2231-024X (Online)

Research Article



Occurrence of ancient land vascular plant *Helminthostachys zeylanica* from the bank of Periyar River, Kerala

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Article Info

Received: 19-09-2017,

Revised: 01-12-2017,

Accepted: 09-12-2017

Keywords:

Thattekkad Bird Sanctuary (TBS), *Helminthostachys zeylanica*, Rare, Rhizome, Ancient vascular plant.

Abstract

Helminthostachys zeylanica, is a terrestrial herbaceous fern, belonging to ophioglossaceae family. It is a rare and endangered flora of India and the whole plant has medicinal properties. This article provides distribution, description, and uses of *Helminthostachys zeylanica*. Its distribution is restricted to a few geographical locations due to alteration of their actual or potential habitat. Obviously this ancient fern species deserves protection and conservation.

INTRODUCTION

Helminthostachys zeylanica(L) Hook is a monotypic genus belonging to the family Ophioglossaceae (commonly known as Kamraj) which grows abundantly in North Australia and along Indo-Malayan region. *H zeylanica* is a very rare and endangered flora and has been reported from Triruvanathapuram (Thiruvallam), Kottayam (Aymanam) and Malappuram (Nilambur and Parakkadavu) from Kerala (Nampy and Madusoodanan, 1994). *Helminthostachys zeylanica* is reported for the first time from Ernakulam District and as a new flora in Thattekkad Bird Sanctuary. Its distribution is restricted to a few pockets of the world due to extensive grazing rate of the open grass land, extension of the cultivable land and over utilization by the local communities as food, fodder and mainly as medicine (Joshi, 2011 a). Very low spore germination rate and preference of vegetative propagation by the rhizomatous part also lead to confinement of this novel species to a few localities. Habitat preference as well as specific association pattern with other

plant associate regulates the key function to the establishment of this ancient genetic resource. Identification of their potential habitats and conservation of this species are needed immediately to protect this ancient gene pool.

MATERIALS AND METHODS

Study area

'Thattekkad Bird' Sanctuary, is the only tropical Bird Sanctuary in Kerala and is described as the richest bird habitat in peninsular India by (Late) Dr. Salim Ali. Thattekkad Bird Sanctuary falls between 10° 7' and 11° N latitude and 76° 40' and 76° 45' E longitude. In 1997 the Sanctuary was re-named as Salim Ali Bird Sanctuary, to honour Dr. Salim Ali, lies at an altitude ranging from 500 to 1500 MSL. Sanctuary covers appx. 25.16 sq.km on the banks of river Periyar constitute the sanctuary. The Periyar vally irrigation project barrage constructed across Periyar river during 1960's submerged the river sides to form a lake (Varghese, 2012).

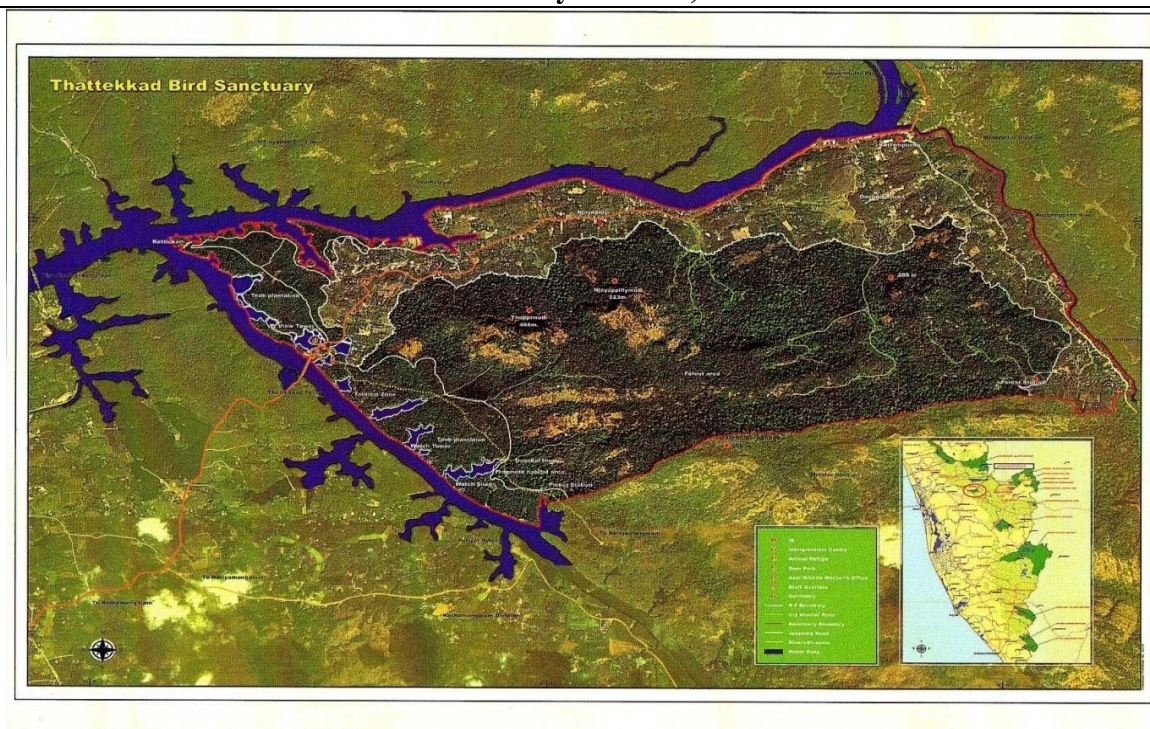


Fig 1. Location map of the study area (THB)

The present study is based on the field survey conducted from 2014 onwards in different sampling locations of Thattekkad Bird Sanctuary. From the different sampling location this taxon was collected from only two locations. These specimens are commonly associated with *Cynodon dactylon*.

Habitat :- This taxon constitutes a part of deciduous forest in plain (moist). Soil constitutes rich humus and decayed organic matter. It grows in brownish gray sandy loam soil. Specimens of this genus were from a well-exposed land with dwarf bushy vegetation in the water-soaked area of TBS. *Helminthostachys zeylanica* was reported during June to November in this area.

This genus is a terrestrial herbaceous fern with thick short creeping horizontal rhizome. Rhizome is short, underground, cylindrical, tuberous, up to 1 cm diameter, and thick fleshy roots (and hence called “Pazhuthara kali” for its resemblance to “Pazhuthara” [centipede]). Leaves are lanceolate with margin. Leaf stalk single,

cylindrical, hairless, about 30 cm long and produced every year from the same rhizome. The frond is ternately divided with lamina round in shape with short stalk. Some leaves are sterile (without spike) but most of the leaves bear fertile spike. Fertile branch is solitary, arising from the base of the leaf blade bearing about 8-10 cm long spike, which contains many crested clusters of sporangia. Reproductive organ (Sporangia) containing spores produce powdery spores through which the plant is propagated (Ravikumar and Ved, 2000).

Uses :- The entire portion of this plant is used against various types of diseases (Singh *et al.*, 1989). Leaf juice cures blisters on the tongue. Rhizome of this plant is used against snake bite and is also used to revert impotency. This plant is used for vitality and as a brain tonic (Joshi, 2011). Whole part of this plant is widely used by tribal community of Malappuram district, Kerala (Nampy and Madusoodanan, 1994).

Table I:- Variation of Chemical Parameters of soil in two locations

Sl No.	pH	EC(mhos/cm)	Organic Carbon(%)	Phosphorus(kg/ha.)	Potassium(kg/ha.)
1	5.4	0.14	0.52	62	106.4
2	5.5	0.13	1.32	78	100.8



Rizhome(like centipede)



Germinating plant



Younger Plant



Mature Plant

To test the quality of soil two locations were selected randomly where the plant grows. The result showed that the texture pH was 5 ± 6 , Organic carbon $0.52\pm 1.32\%$, Phosphorus in the range of

$60\pm 78\text{kg/ha}$. and Pottassium in the range of $100\pm 106.4\text{kg/ha}$. This plant grows very fast during June to September(rainy season).



Helminthostachys zeylanica with branched fertile spike

Commonly, *H zeylanica* has unbranched spike. This material is characterised by branched spike. The branching of spike in this species was earlier reported as an abnormality from North Bengal (Banerji, 1951). Nampy and Madhusoodanan(1994) described it as a distinct variety of *H zeylanica*.

Distribution :- *Helminthostachys zeylanica* is a primitive fern with restricted distribution in Malaysia, Sri Lanka and India. India, it is known to occur in Bengal Plains, Assam, eastern U.P., Uttarakhand, and South India. This taxon has been earlier reported from Triruvanathapuram (Thiruvallam), Kottayam (Aymanam) and Malappuram (Nilambur and Parakkadavu) all in Kerala (Nampy and Madusoodanan, 1994). *Helminthostachys zeylanica* is reported for the first

time from Ernakulam District and as a new flora in TBS.

Helminthostachys zeylanica is an ancient land vascular plant. Its distribution is restricted to a few geographical locations due to alteration of their potential habitat. In natural habitat, germination of this plant is very poor and propagation is mainly through rhizome. Population of this ancient form has declined considerably over the years because of its exploitation, so it needs immediate attention for conservation.

Acknowledgement

This study was financially supported by the Welfare Department, Government of Kerala. The Authors are thankful to the Director, School of Environmental Studies, Cochin University of

Science and Technology for continuous encouragement and facilities provided for the study. Special thanks are due to The Principal Chief Conservator of Forest (PCCF), Government of Kerala, for giving the required permission to carry out the study at TBS. We are grateful to Dr. P V Madhusoodanan, Department of Botany, Calicut university, Dr. Basker Joshy, Scientist, Patanjali Herbal Research Department, Haridwar, Uttarakhand, and Dr. M S Francis and Dr. Giby Kuriakose Department of Botany S H College Thevara, Kohi for the identification of *H zeylanica*.

REFERENCES

Banerji M, 1951. Abnormal spike of *Helminthostachys zeylanica* L *Curr. Sci* .**20**:213
Joshy B, 2011. Ecology and Medicinal Uses of *Helminthostachys zeylanica* (L.) Hook. “An endangered flora of India”reported at Foothills of Kumaun Himalaya (Kashipur), Uttarakhand, *Researcher*, **3**(4):51-54.

Joshy B, 2011a.The magical herb “*Euphorbia hirta* L.”An important Traditional Therapeutic Herb for Wart disease among the Vangujjars of Forest near Kashipur, Uttarakhand. *NewYork Science Journal*, **4**(2):96-97.

Nampy S and Madhusoodanan PV, 1994. A New Variety of *Helminthostachys zeylanica*(L) Hook(Ophioglossaceae:Pteridophyta) from Kerala, South India, *J Econ, Tax.Bot*, **18**:189.

Ravikumar K and Ved DK, 2000. Red Listed Medicinal Plants of Conservation Concern in South India, Foundation for Revitalisation of Local Health Traditions, Bangalore.

Singh KK, Saha S, Maheswari JK, 1989. Ethnomedical uses of ferns. *Indian Fern J.* **6**(1-2)63-67.

Varghese S. 2012.Third Management Plan of Thattekkad Bird Sanctuary 2012-2013 to 2021-2022. Kerala Forest and Wildlife Department.

How to cite this article

Ambily C B, Mohandas A, Rajathy S And Sugathan R, 2018. Occurrence of ancient land vascular plant *Helminthostachys zeylanica* from the bank of Periyar River, Kerala. *Bioscience Discovery*, **9**(1): 141-145.