Taxonomic studies on Fern and Fern-allies of Nokrek Biosphere Reserve in Meghalaya State, India

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ABSTRACT: The present research work is the first survey report on the Pteridophytic flora of Nokrek Biosphere Reserve, Meghalaya. An enumeration of 69 species under 38 genera and 24 families has been provided. Among these 14 species are new records for the Meghalaya State, while 41 species extend their distribution from Khasi and Jaintia hills to Garo hills district. Ecologically 36 species recorded growing in terrestrial condition while 26 are epiphytic and 07 species are lithophytes. This paper deals with brief taxonomic description, phenology, key to genera and species for easy identification of the pteridophytes.

[Bikarma Singh, V.N. Singh, S.J. Phukan, B.K. Sinha and S.K. Borthakur. **Taxonomic studies on Fern and Fern-allies of Nokrek Biosphere Reserve in Meghalaya State, India.** Researcher. 2011;3(6):53-54]. (ISSN: 1553-9865). http://www.sciencepub.net.

Key words: Pteridophytes, Nokrek Biosphere Reserve, Garo Hills, Meghalaya.

INTRODUCTION

The eastern parts of east Himalayas is one of the biologically recognized biodiversity hotspot area in the world (IUCN, 1987; Nayar, 1980), due to crossroads of two continental plates represented by two biogeographical realms, viz.: the lowland of Indo-Malayan realm and the elevated Palearctic realm. The meeting of these has created Himalayan regions as one of the biologically richest areas on earth. Climatic variability and altitudinal gradation have forged the region into Asia's land of contrasts, encompassing some of nature's most magnificent spaces, from the world's highest mountains and several of the world's deepest gorges, to subtropical jungles, temperate forests, tall grasslands, savannas and rich alpine meadows.

Nokrek Biosphere Reserve is one of the 16 biosphere reserve of India, situating in eastern parts of Himalaya region, rich in floral and faunal diversity, and is an interesting botanical regions of the North-east India. The reserve is located in the Meghalaya State, one of the eight North-eastern States of India. It falls between the geographical limits 25˚15′ to 25˚29′ N latitude and 90˚13′ to 90˚35′ E longitude with an area of about 820 sq.km including 47.48 sq.km as core zone (Figure 1). The biosphere reserve spreads in parts of three garo hills districts of the state, viz. east garo hills, west garo hills and south garo hills districts. The altitude of this biosphere reserve varies from 250 to 1412 m msl. The highest peak is the Nokrek Peak, which is situated in the core zone of this reserve. The area falls under the tropical climate with high rainfall and high humidity. Temperature ranges from 6˚C-8˚C in winter to about 25˚C-37˚C in summer season. The average annual rainfall is about 2,400 mm. Due to the above all climatic condition, the area posses a dense canopy of tropical to sub-tropical forests that support the rich pteridophyte diversity.

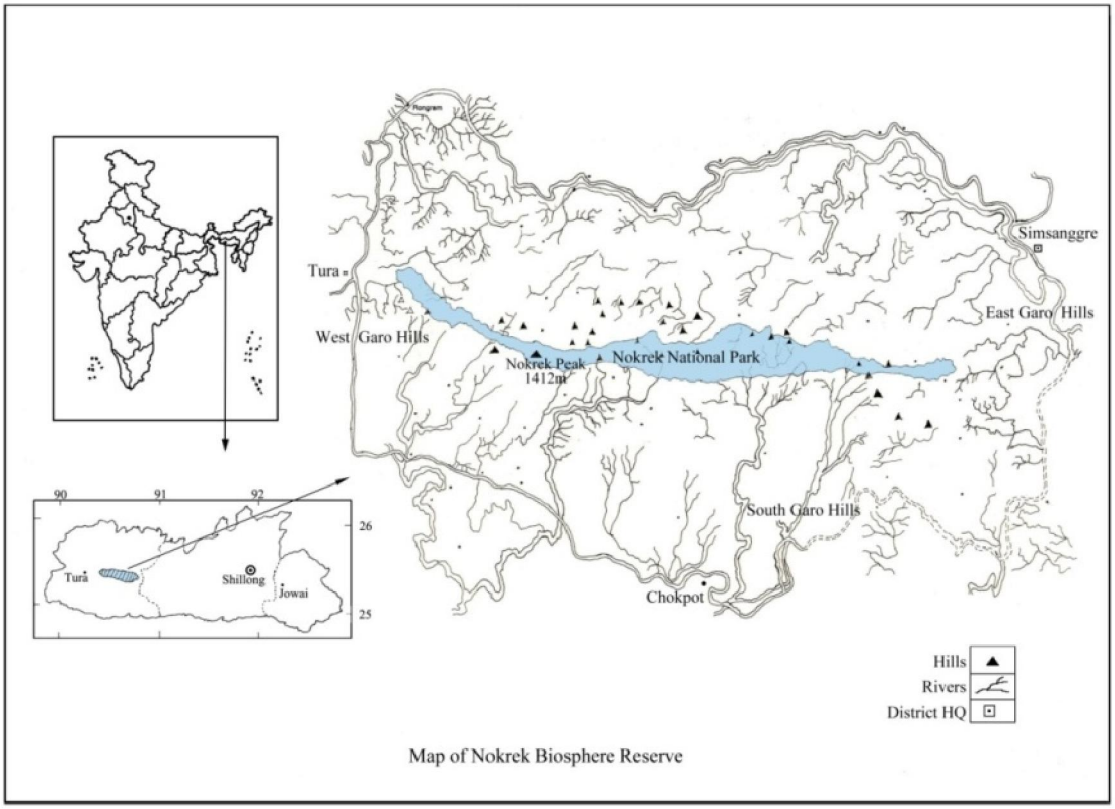
MATERIALS AND METHODS

Field collections of ferns and fern allies were conducted at monthly intervals from all parts of Nokrek Biosphere Reserve (NBR) during January 2007 to May 2010 with altitudes ranging from 200-1412m msl. Three duplicates of specimens were collected and photographs were taken of each species. Some specific fern-rich sites, such as forest trail, waterfalls and limestone hills, were selected for repeated visits in the biosphere reserve. Field notes *viz*. ecological data, habit, habitat and some diagnostic characters of each species were recorded during field tours. Some common species were observed in the field by the authors without voucher specimens being collected; they were referred to as sight records. Laboratory study was

conducted ASSAM herbarium at the Botanical Survey of India, eastern regional centre, Shillong and Department of Botany, Faculty of Science, Gauhati University. Dried herbarium specimens were prepared as described in Jain & Rao (1977) and Boonkerd et al. (1987), and deposited at ASSAM herbarium. Internal and external morphological characters of each specimen were studied. Pteridophyte specimens were identified using keys and descriptions from taxonomic literature, such as Floras, manuals, monographs, as well as research papers, etc. Botanical names of all specimens were verified by comparison with voucher herbarium specimens deposited at ASSAM, CAL, GU and NEHU. The authors of scientific names and abbreviations follow the standard procedure for quoting authors of plant names (Brummitt and Powell, 1992).

Review of Literatures:

Pteridophytes are an important component of the flora in terms of species-diversity, next to Angiopsperms in number (Chandra et al., 2008). More than 1200 species of ferns and fern allies have reported from India (Dixit, 1984; Chandra, 2000). In the recent years, comprehensive accounts on pteridophytes have been published for various states and regions of India.



Map of Nokrek Biosphere Reserve

4/6/2011