Modern pollen deposition in Mikir hills, Assam

S.K. BERA

Birbal Sahni Institute of Palaeobotany, 53 University Road, Lucknow 226 007, India.

(Received 28 June 1999; revised version accepted 12 January 2000)

ABSTRACT


In the present investigation eight surface samples collected in a transect from within the forest to open land around Diphu-Lumding areas or Karbi Anglong District (Lat. 25°2' & 26° I' N; Long. 92°44' & 93°42' E) in Assam were studied with a view to construct pollen spectra from Mikir hills of Assam.

Key-words— Pollen spectra, Mikir hills, Assam, India.

INTRODUCTION

HITHERTO no information is available on recent pollen spectra from Mikir hills region of Assam. Although preliminary works have been carried out at Cinnamara (Gupta, 1971), Ledo Matikhad (Bhattacharya & Goswami, 1981), Digboi (Bhattacharya & Chanda, 1982), Upper Assam (Bhattacharya, 1985; Bhattacharya et al., 1986). This is the first comprehensive attempt has been made to study the composition of pollen rain through pollen analysis and surface sediments from Mikir hill region (Fig. 1).

The area experiences a typical subtropical monsoon climate with mean annual rainfall of 22 to 35 cm. The forest types are of moist evergreen and moist mixed deciduous. The forest is dominated by principal arboreal taxa like Tetrameles nudiflora, Amoora wallichii, Artocarpus chaplasha, Mesua ferrea, Terminalia chebula, Morus laevigata, Cinnamomum glanduliforum, Bombax ceiba, Adina cordifolia, Lagerstroemia parviflora, Dillenia pentagyna, Anthocephalus cadamba, Bauhinia variegata, Murraya koelugii, Clerodendron viscosum, etc. Another forest formation occasionally found at places is bamboo mixed with wild banana trees. Due to extensive felling of important taxa, the condition of the major crops of the formation have deteriorated over the years and natural regeneration is almost absent due to grazing by the cattle of the neighbouring villages.

The object of undertaking of moss cushion soil and mud samples collected in a transect at 100 m interval from within the forest into the open land with a view to understand the pollen/vegetation relationship in Mikir hills which will help in
(moss cushion) were collected from an open area. The samples were chemically processed by the conventional acetolysis (Erdtman, 1943) method.

All the type and figured specimens are deposited in the repository of Birbal Sahni Institute of Palaeobotany, Lucknow.

POLLEN / VEGETATION RELATIONSHIP

The pollen spectra (Fig. 2) show pollen and spores of various taxa in varying proportions. High altitude taxa like *Pinus, Alnus* and *Larix* effectively mask the local taxa. The major arboreal taxa like *Ardisia, Artocarpus, Dillenia, Terminalia, Oleaceae, Malvaceae, Anacardiaceae* and *Meliaceae* are the only elements recorded within 9-32% out of which the high altitude taxa attain upto 3-8%.

Ground vegetation is largely dominated by graminids (21-27%) followed by other herbaceous elements like *Asteraceae* (14-15%), *Chenopodiaceae* (2-4%), and *Lamiaceae, Apiaceae, Rubiaceae, Ranunculaceae* and *Impatiens* are recorded within 1-3%. *Brassica nigra* (4-6%) is recorded in the samples collected from near the cultivated land. *Cyperaceae, Polygonum serrulatum, P. plebejam* are the main marshy elements whereas, *Potamogeton, Typha* and *Liliaeceae* represent aquatic vegetation.

![Fig. 1—Showing site of sampling.](image1)

Fig. 1—Showing site of sampling.

Ascertaining various climatic cycles to a great extent involving various controlling factors in the past.

MATERIAL AND METHODS

Sample numbers 1-4 (soil) were collected in a transect from within the forest to the edge, numbers 5 and 8 (mud) were collected from near the cultivated land whereas, 6 and 7

![Fig. 2—Showing pollen spectra from Mikir Hills](image2)

Fig. 2—Showing pollen spectra from Mikir Hills

PLATE I

(All figures X 1000)

1. *Terminalia* sp. 11. *Amaranthaceae*
3. *Salinaria* sp. 13. *Cyperaceae*
5. *Moraceae* 15. *Chenopodiaceae*
10. *Ranunculaceae* 20. *Anacardiaceae*
21. *Euphorbiaceae*
22. & 23. *Asteraceae-tubuliflorae*
27. & 31. & 33. *Unidentified*
28. & 29. *Fungal spores*
30. *Pteris sp.*
32. *Monolete fern spore*
34. *Nigrospora sp.*
35. *Curvularia sp.*
Monolete as well as trilete fern spores are mainly derived from the species of *Polypodium*, *Davalla*, *Pteris*, *Pteridium* and *Polystichum*, etc. A large number of saprophytic fungi have been encountered in the sediments. A composite pollen spectra showing relationship between exotic plants and other arboREALS with grasses and other non arboREALS and ferns could be an aid to understand the pattern of pollen dispersal and deposition in and around Mikir hills, Assam (Fig. 3).

**CONCLUSION**

Although the study does not fully cohere with the present day set up of vegetation the permutation and combination of the pollen data would be valuable for tracing the Quaternary vegetational history and changes in palaeoclimate and ecology in and around Mikir hills, Assam.

Reasons for pollen/vegetation anomalies seem to be more than one, such as; i) differential pollen production of different species in different years, ii) difference in pollen transport distance which varies widely because of the physical properties of the pollen grains themselves, and influenced by topography, vegetation cover and atmospheric conditions, iii) differences in preservation and pattern of deposition of pollen types, iv) local variations in species distribution and frequency of the present vegetation, v) entomophily among most of the forest constituents and bushy fencing of the forest elements which precludes the exit of tree pollen from the forest, vi) alkaline nature of soil which is not congenial for preservation of pollen grains, spores and other microbiota, vii) preponderance of saprophytic fungi in the sediments leading to biodegradation of certain pollen and spores.

**REFERENCES**


Erdtman G 1943. An introduction to pollen analysis. Waltham, Mass. USA.