

# REDISCOVERY OF *PLAGIOCHILION* *MAYEBARAE* S. HATT. FROM NAGALAND, INDIA

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**Abstract:** *Plagiochilion mayebarae* S. Hatt. has been described along with mature sporophytes for the first time from Nagaland state. This taxon has been previously reported from Sikkim Himalaya (Inoue, 1964). Therefore, the present investigation shows the extension of distributional range from Sikkim to Nagaland state (rediscovered after a gap of 49 years). Hand drawing illustrations have been provided for its identification.

## Introduction

*Plagiochilion* S. Hatt. belonging to the family Plagiochilaceae was segregated from the genus *Plagiochila* by Hattori (1947). The genus *Plagiochilion* S. Hatt, was later accepted by Inoue (1958) and Schuster (1959). In India, the genus *Plagiochilion* is poorly understood and so far no intensive work has been done on this taxon. The genus *Plagiochilion* are distinct from the genus *Plagiochila* in having opposite and connate leaves, rhizoids are fasciculate and restricted to near the postical of leaves, and the branching of stem is predominantly intercalary and postical (Inoue, 1964). Inoue (1964) has described the species *P. mayebarae* S. Hatt. and reported the occurrence of the taxa from Sikkim Himalaya from Kurseong, Nagkli, Singalelak, Jongli and Senchal. Therefore, the present investigation on the genus *Plagiochilion* sporophytes have been described for the first time and the occurrence of the genus *Plagiochilion* is an un-

known hitherto to the North East Indian Sub-Himalayan region. The occurrence of this taxon shows the extension of distributional range of genus *Plagiochilion* to North East India sub-Himalayan region in general and Nagaland state in particular. Detailed hand drawing illustrations have been provided for its easy identification.

### **Materials and Methods**

The fresh specimens were collected from their natural localities from Kohima district of Nagaland. The morphological characters were studied under Leica digital Stereo-zoom. The anatomical studies of leaves and stems were studied under Leica digital Microscope. The hand sections of stems, leaves, spores and elaters were mounted in 30% aqueous solution of glycerin and observed under the Leica digital Microscope. The photomicrographs and photomacrographs were taken under Leica digital Microscope (DM1000) and Leica stereo-zoom (S6D) respectively. The preserved specimens were deposited in the Department of Botany, Nagaland University, Hqs: Lumami.

### **Taxonomic Observation**

*Plagiochilion mayebarae* S. Hatt. J. Hattori Bot. Lab. 3: 39. 1950.

Plants medium, light green to dull green, brownish green, in dry herbarium blackish brown, 30-45 mm long, 2-3.5 mm wide including leaves, slightly to closely appressed to the stem; branched, branching of postical intercalary, stolons frequent. Stem reddish brown, cross section circular-oval, 2.5 x 3.5 mm in diameter, 12-15 cells across, 3 thick brownish cortical cells, medullary cells thin walled. Rhizoids in fascicules at the base of the leaves. Leaves slightly imbricate to contiguous, distant, opposite, slightly connate at base, orbicular, ovate, 1.2-1.4 mm long, 1-2 mm wide, not decurrent, margin entire or minutely dentate, 3-5 teeth at leaf apex, 2-4 cells long, 3-4 cells wide at base; leaf cells thin or thick walled, apical cells thick walled, 10-20  $\mu\text{m}$  long, 6-15  $\mu\text{m}$ , trigone minute; median cells 17-34  $\mu\text{m}$  long, 15-23  $\mu\text{m}$  wide, thin wall, trigonous; basal cells 22-36  $\mu\text{m}$  long, 15-27  $\mu\text{m}$  wide, thin walled, trigonous, nodulose, and intermediate thickening present. Underleaves absent. Male plant not seen. Female inflorescence terminal on main stem or on short lateral branched, bracts one pair, oblong-ovate, 1.3-1.8 mm long and 1.2-1.8 mm wide; apex irregular-

ly dentate, tooth 2-4 (-6) cells long, 2-4 cells wide; basal cells trigonous, nodulose, 24-55  $\mu\text{m}$  long, 15-27  $\mu\text{m}$  wide, rectangular; median and apical cells like the lateral leaf cells. Perianth campanulate, 1.6 x 2.5 mm in diameter, mouth irregularly dentate, truncate; spores brownish red, small, circular, spherical, 16 x 18  $\mu\text{m}$  in diameter, globose, granulate, papilate; elaters 131-220  $\mu\text{m}$  long, 7-10  $\mu\text{m}$  in diameter, bi-spiral.

*Ecology and Distribution:* The plants grow on the bark (epiphytic) in association with *Plagiochila corticola*, *Plagiochila semidecurrens*, *Lejeunea* sp., and Mosses.

*Range:* Japan, China, Formosa, India.

*Specimen examined:* Nagaland: Khuzama: 16.11.2009, KE 10155, Kazuhrii Eshuo; Khonoma: 19.03.2011, KE 10423, Kazuhrii Eshuo.

## Discussion

*Plagiochilion mayebarae* S. Hatt. is somewhat variable in regards to the walls of its leaf cells (Inoue, 1960). *P. mayebarae* is closely allied to *P. braunianus* and earlier workers had erroneously reported as *Plagiochila brauniana* from Sikkim-Himalaya, China, and Formosa. However, *P. braunianus* can easily be distinguished from *P. mayebarae* in having reniform leaves, always entire, large trigones, nodulose trigones along leaf margin cells and cylindrical perianth whereas *P. mayebarae* have orbicular and non-decurrent leaves, margin with 1-6 small teeth or sometime entire, minute trigones and thick walled at leaf apex and margin, campanulate perianth. The diameter of the leaf cells especially the median and basal have larger size as described by Inoue and this is considered to be due to ecological variation by the present authors.

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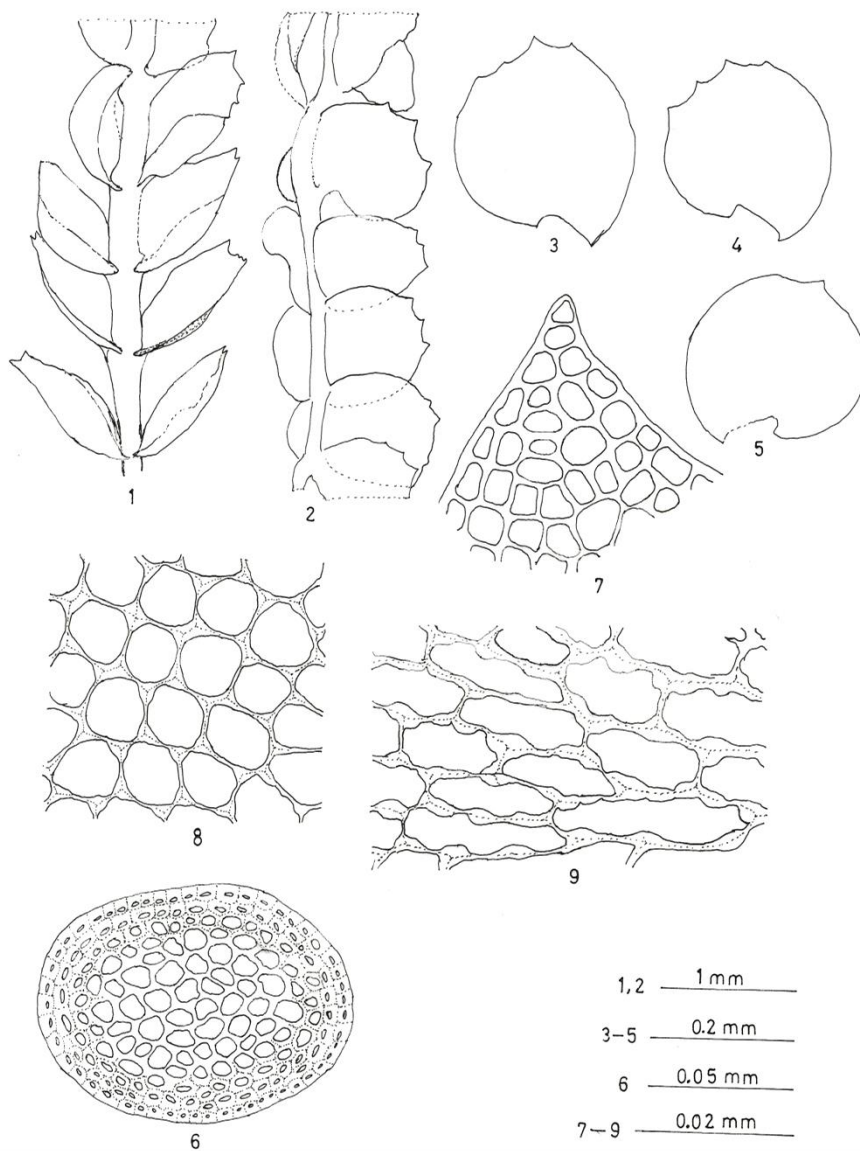


Plate 1. *Plagiochilium mayebarae* S. Hatt., Figs. 1-9.

Figs. 1. A portion of plant in ventral view; 2. A portion of plant in lateral view; 3-5. Leaves; 6. Cross section of the stem; 7. Leaf apical cells; 8. Leaf median cells; 9. Leaf basal cells.

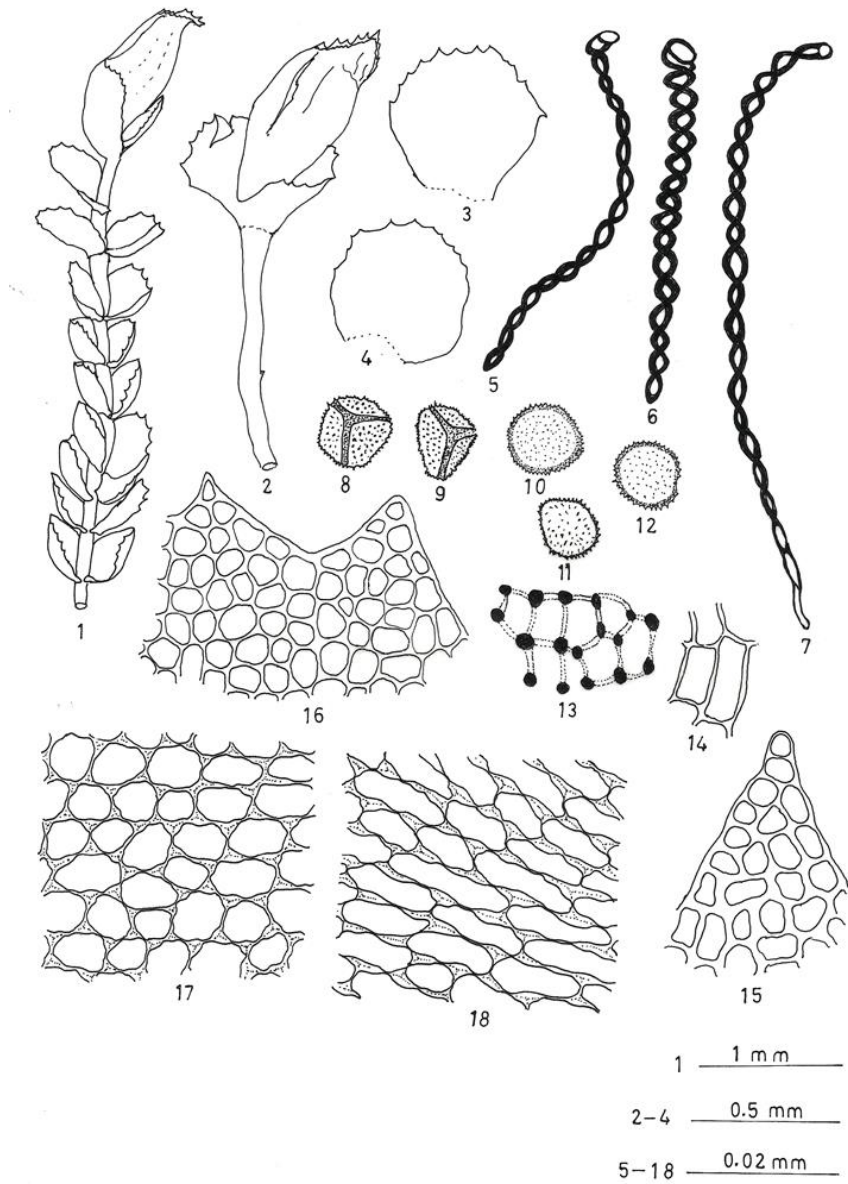
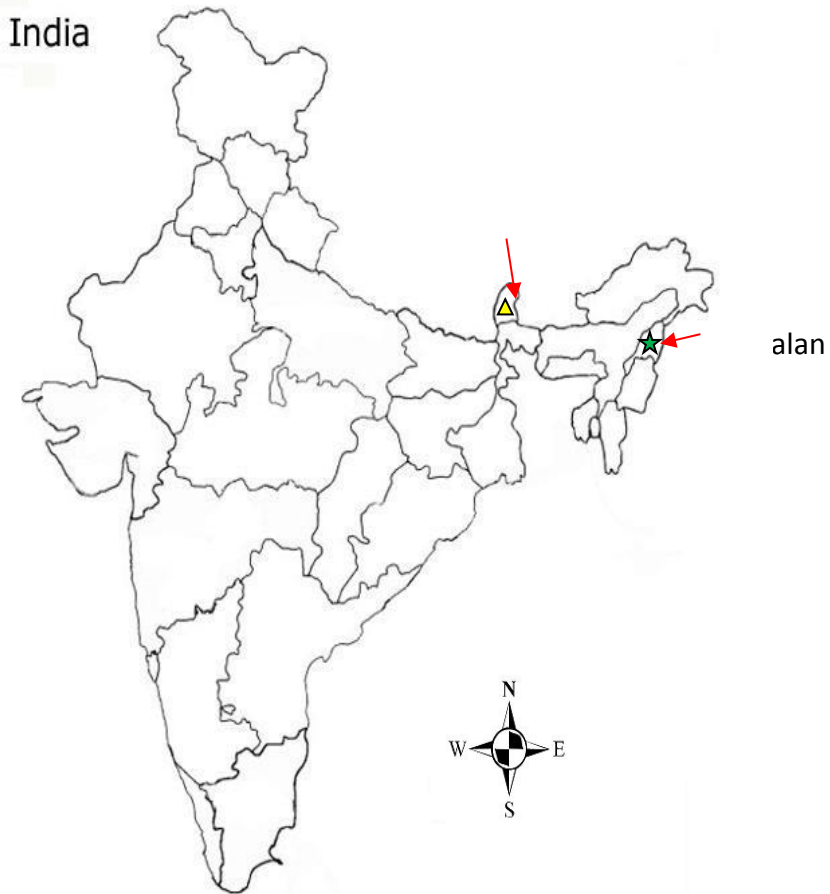




Plate 2. *Plagiochilium mayebarae* S. Hatt., Figs. 1-18.

Figs. 1-2. A female plants showing perianth; 3-4. Female bracts; 5-7. Elaters; 8-12. Spores, 8-9. Spores in proximal view, 10-12. Spores on distal view; 13. Inner wall of sporangium thickenings; 14. Outer wall layer of sporangium; 15-16. Female bract apical cells; 17. Female bract median cells; 18. Female bract basal cells.



Map I: Showing the distribution of *Plagiochilium mayebarae* S. Hatt. in India

 = Shows the distribution of *P. mayebarae* S. Hatt. from Sikkim, India.

 = Shows the distribution of *P. mayebarae* S. Hatt. from Nagaland [Khuzama; Khonoma] India.