Cololejeunea bhutanica Grolle & Mizut., a new record for India

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ABSTRACT

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Cololejeunea bhutanica Grolle & Mizut. has been discovered from Darjeeling (West Bengal), which is a new record for India. It is mainly characterized by loosely imbricate, ovate-triangulate leaves having single dorsal papillosity on nearly all the leaf-cells; large, inflated leaf-lobule with indistinct first tooth and distinct, 1-celled second tooth.

Key-words: *Cololejeunea bhutanica* Grolle & Mizut., Darjeeling, West Bengal, India.

INTRODUCTION

Genus *Cololejeunea* (Spruce) Schiffn. belongs to subfamily Cololejeuneoideae of family Lejeuneaceae. Spruce (1884-85) was first to introduce *Cololejeunea*, whereas Schiffner (1893) first recognized *Cololejeunea* as a genus. *Cololejeunea* is a very small and delicate liverwort growing mostly as epiphyllous or corticolous. Tixier (1985) provided a considerable account of genus *Cololejeunea*, while Zhu and So (2001) recorded several taxa in their contribution to epiphyllous liverworts of China. In a comprehensive revisionary study of the genus, Asthana and Srivastava (2003) recognized 30 species from India. Out of these, about 23 species are reported from South India, 17 species from eastern Himalaya, 2 species from western Himalaya and one species from central India. Subsequently, five more species have been added to Indian bryoflora (Nair et al. 2005, Singh et al. 2006, Dey et al. 2008, Daniels & Daniels 2009).

During the investigation of the bryophytes from Darjeeling, some interesting plants of *Cololejeunea* have been discovered from Sandakphu. A critical and comparative study revealed that these plants closely resemble *C. bhutanica*, instituted by Grolle (1988) from Bhutan and later described by Zhu and So (1999) from China. As there is no published account available about the occurrence of this taxon in India, it is a new addition to Indian bryoflora. With the discovery of this species, genus *Cololejeunea* is now represented in India by 36 species.

MATERIAL

The present study is based on plant specimens collected from Sandakphu-Phalut area of Darjeeling District, West Bengal. The voucher specimens have been deposited in the Bryophyte Herbarium, National Botanical Research Institute, Lucknow (LWG).

DESCRIPTION

***Cololejeunea bhutanica* Grolle & Mizut.** in J. Bryology 15: 281-287. 1988.

Plate 1, figures 1-8; Text-figures 1-8

Description: Plants light yellowish in colour, delicate, stem 6.0-8.0 mm long and 0.48-0.64 mm wide with leaves. Stem 0.07 mm in diameter. Cross section of stem with 5 cortical cells (20-28 μm x 12-20

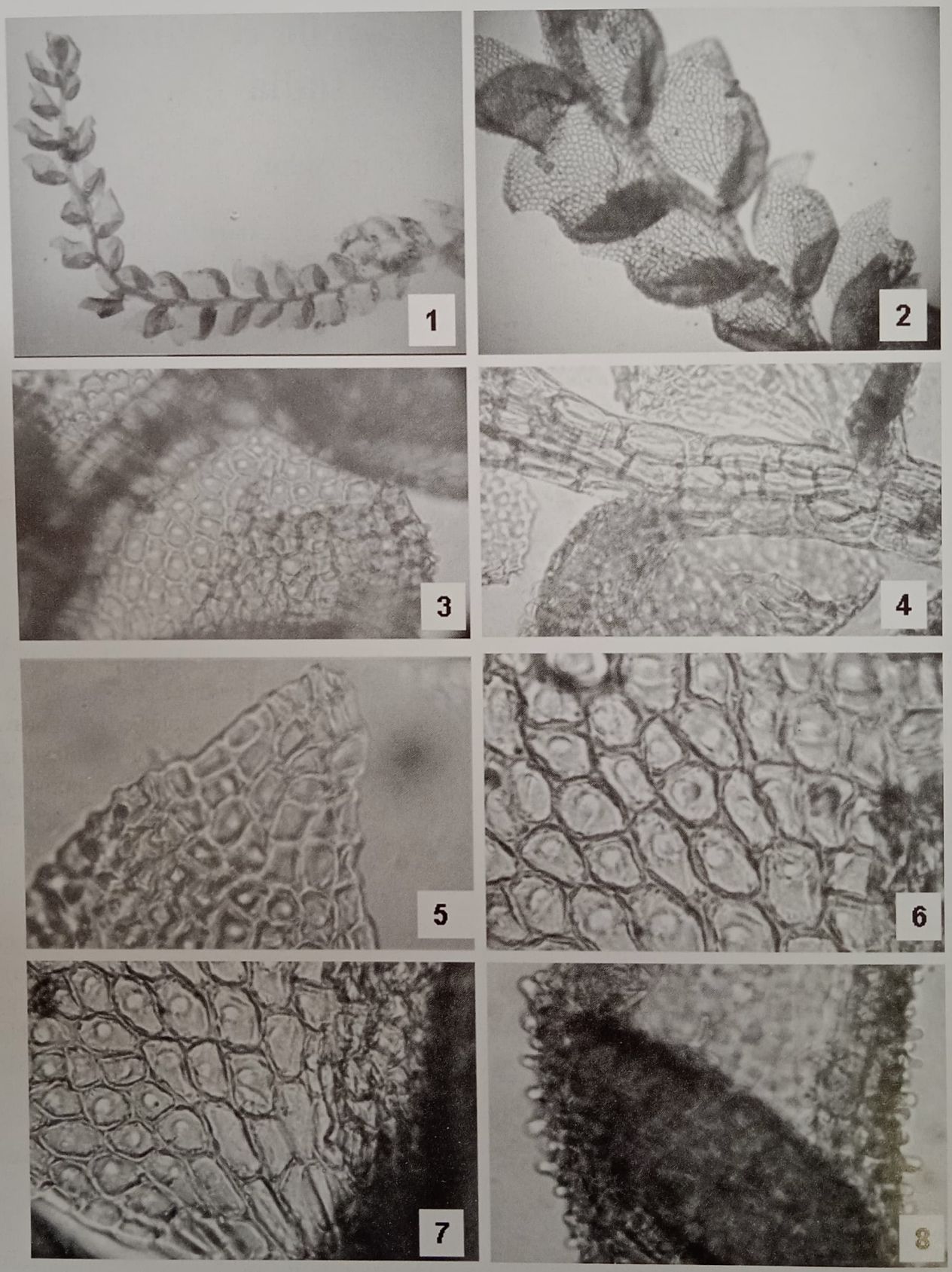
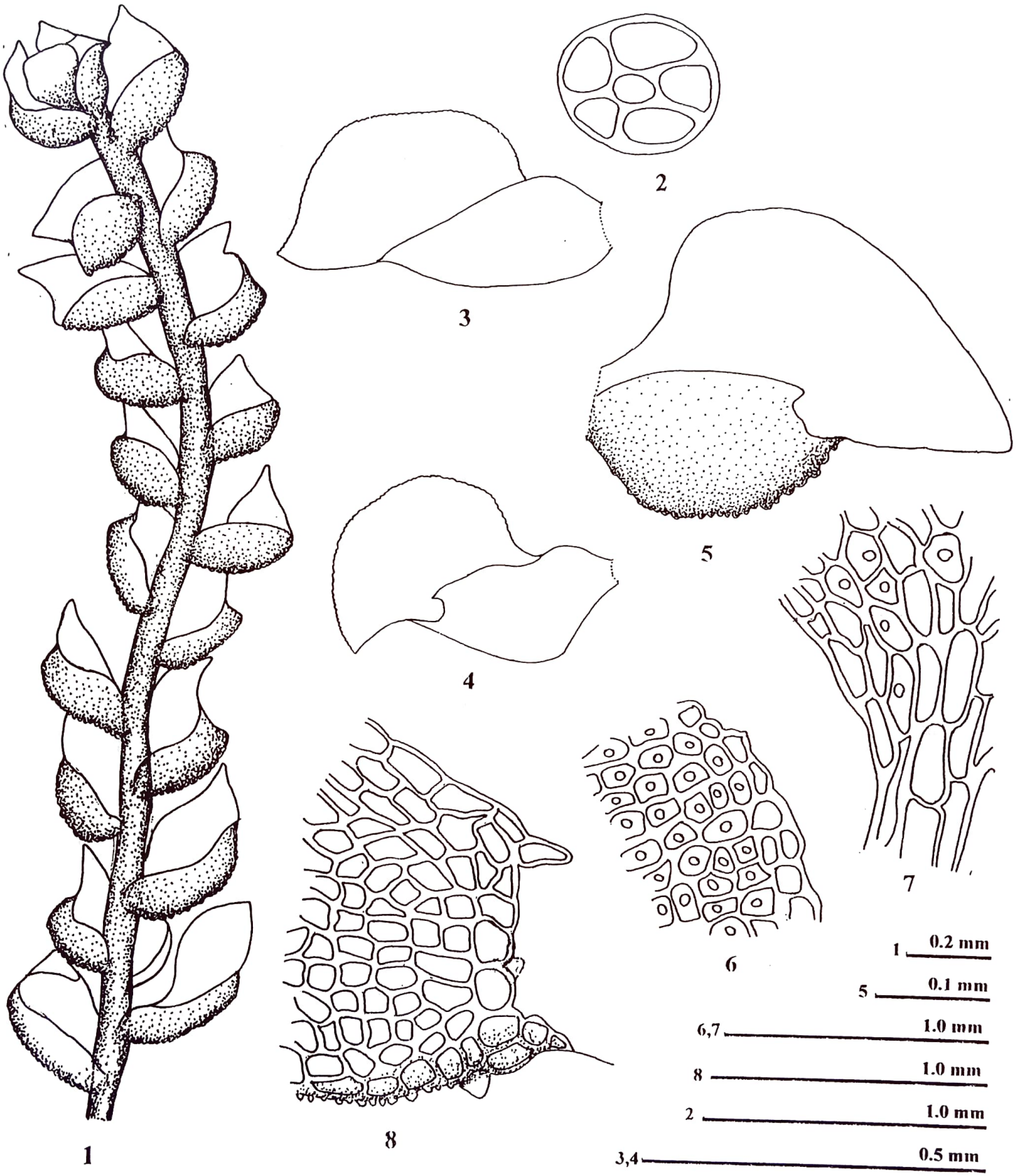


Plate 1

1-8. *Cololejeunea bhutanica* Grolle & Mizut. 1-2. Plants (in ventral view). 3. Leaf lobule showing tooth. 4. Leaf attachment to stem. 5. Apical leaf cells. 6. Median leaf cells. 7. Basal leaf cells. 8. Papillosity on dorsal surface of leaf.



Text-figures 1-8. *Cololejeunea bhutanica* Grolle & Mizut. 1. A plant in ventral view. 2. Cross section of stem. 3-4. Leaf lobes with lobule. 5. Enlarged view of leaf lobe. 6. Median and marginal leaf cells showing papillosity. 7. Basal leaf cells. 8. Enlarged view of lobule showing hyaline papilla and second tooth.

μm) and 1 medullary cell (12 μm in diameter). Leaves alternate, obliquely spreading, loosely imbricate, ovate – triangulate, more or less elliptical, 0.32-0.40 mm long and 0.16-0.20 mm wide, apex narrow and acute, margin crenate, cells thin walled, with weak trigones and without intermediate nodular thickenings, rectangular to polygonal, marginal cells 15-20 x 11.25 μm, median cells rectangular 18.75-22.5 x 15 μm, polygonal, basal cells 45-48.75 x 11.25-18.75 μm, elongated polygonal. Dorsal papillosity on leaf cells present, papilla 4-8 μm in diameter. Leaf lobule inflated, roughly rectangular, covering half of the leaf length, first tooth indistinct with hyaline papilla, second tooth distinct, 1(2)-celled, keel broad and arched, crenulate. Fertile plants not found.

Specimens examined: India: Eastern Himalaya, West Bengal, Darjeeling, Sandakphu - Phalut (alt. ca. 3500 m), 26.04.1965, Leg. S. Chandra, 202398 F (LWG).

Remarks: The present species belongs to subgenus *Cololejeunea* due to presence of prominent dorsal papillosity in leaf cells and absence of vitta cells. However, it can be clearly recognized from other species of the same subgenus in having ovate-elongate leaves with acute apex, roughly rectangular lobule which is nearly ½ of the leaf length, indistinct first tooth with hyaline papilla and 1-celled second tooth. The plants exhibit close resemblance with *Cololejeunea longifolia* (Mitt) Benedix ex Mizut. in overall appearance at a glance but the plants of *C. bhutanica* are clearly distinct in having characteristic dorsal papillosity on the leaf-cells, weak trigones, absence of intermediate nodular thickenings, indistinct first tooth associated with hyaline papilla and 1-celled second tooth (Text-figure 8). The plants of this species have also been compared with those of *C. peponiformis* Mizutani (Mizutani 1970, Tixier 1985) which revealed that former looks alike with latter in acute leaf apex, saccate and somewhat rectangulate leaf lobule with indistinct first tooth and prominent, 1 celled, second tooth, whereas presence of dorsal papillosity in leaf cells makes former distinctly different from the latter species.

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