

## ***Gymnomitrium crenatilobum* Grolle (Marchantiophyta: Gymnomitriaceae): A rare liverwort, new to India**

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**Abstract** – *Gymnomitrium crenatilobum* Grolle, earlier reported from Nepal and known from the type only, is reported from Uttarakhand, India. The plants are clearly distinguishable based on a 2-3 cells wide hyaline leaf margin which is crenulate in apical half of leaves and smooth in basal half.

**Jungermanniales / liverwort / Uttarakhand / New record**

### INTRODUCTION

The genus *Gymnomitrium* is represented by 33 species worldwide (Söderström *et al.*, 2016). Parihar *et al.* (1994) listed eight species of *Gymnomitrium* in their checklist of Hepatics and Anthocerotales of India, however six were from Nepal [*G. concinnatum* (Lightf.) Corda, *G. laceratum* (Steph.) Horik., *G. mucronulatum* (Kitag.) Kitag., *G. obtusilobum* Kitag., *G. papillosum* Kitag. & Hatt. and *G. sinense* K. Müll.] while two records [*G. crenatilobum* Grolle from Himalayas and *G. obtusum* (Lindb.) Pears. from Eastern Himalayas and Nepal] lacked detailed information on the occurrence in India. These records must thus be considered ambiguous. Recently Singh *et al.* (2008) listed *G. concinnatum* from Sikkim based on Mitten (1860-61) and Bapna and Kachroo (2000), however, this record was later assessed as *Apomarsupella verrucosa* (Nichols.) Váňa (Váňa & Long, 2010). Váňa and Long (2010) revised the Sino-Himalayan Gymnomitriaceae and did not mention the presence of any of these *Gymnomitrium* taxa in India, but listed *G. brevissimum* (Dumort.) Warnst. [= *Marsupella brevissima* (Dumort.) Grolle] from India (Eastern Himalayas) based on Bapna and Kachroo (2000). However, Bapna and Kachroo (2000) did not report any exact locality. Hence, the presence of any species of *Gymnomitrium* in India could not yet be confirmed.

While working on some samples collected in Govind National Park in the Uttarkashi district of Uttarakhand state, India, some plants were observed and identified as *G. crenatilobum* Grolle. *Gymnomitrium crenatilobum* is a new record for the Indian bryoflora; the species range is extended to the Indian subcontinent.

As the species is rare and so far known only from the type description, a detailed description of the Indian plants is provided here.

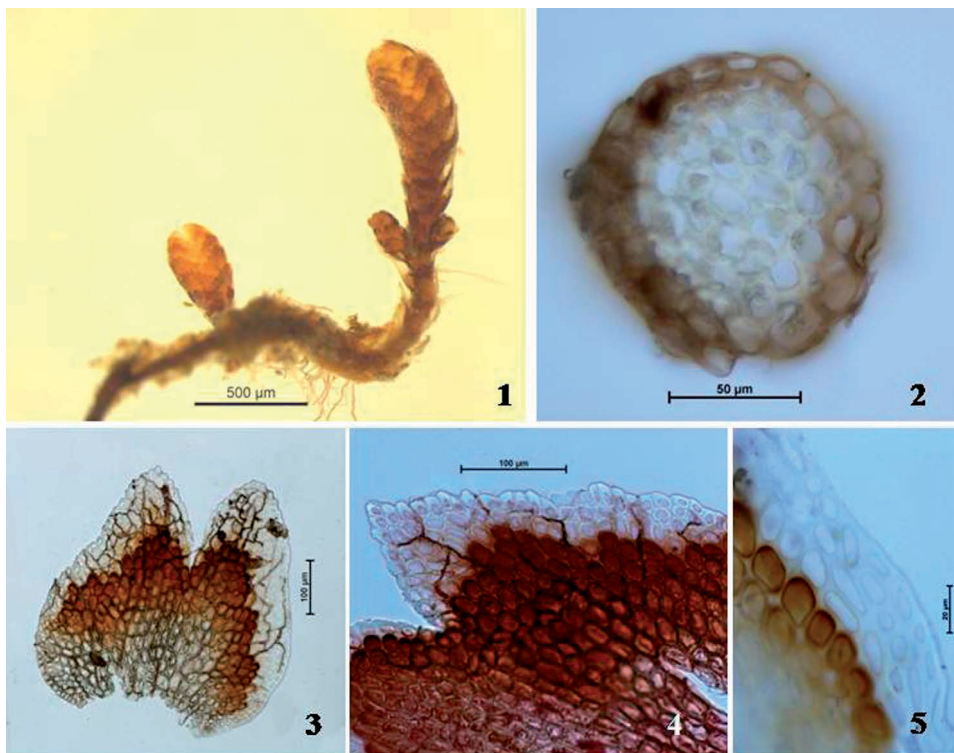
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*Gymnomitrium crenatilobum* Grolle

Figs 1-5

*Khumbu Himal.* 278, 1966. Type: Nepal: Lobuche, 5000 m, 1962, leg.: Poelt (M, Holotype; JE, NICH, Isotypes)

Plants yellowish-brown, growing in tufts, originating from interwoven rhizomatous shoots, creeping, only apical portion erect, small, 3.0-5.0 mm long, up to 140  $\mu\text{m}$  wide; branching occasional, lateral-intercalary, rarely terminal. Stem completely hidden under leaves, 8-9 cells across in cross section, differentiated, cortical region 1-2 cell layered, cells thick-walled, pigmented, 8-16  $\times$  8-12  $\mu\text{m}$  in size; medullary cells thick-walled, non-pigmented, 12-20  $\times$  12-16  $\mu\text{m}$  in size; rhizoids colourless, scattered, mostly on creeping portions of stem. Leaves densely imbricate, contiguous, overlapping, appressed to stem, concave, broadly ovate, pigmented in middle, hyaline near margin, 0.32-0.48 mm long, 0.32-0.40 mm wide, almost transversely inserted, bilobed upto  $\frac{1}{4}$  of the leaf length, lobe apex narrow, acuminate, margin smooth in basal half of leaves, irregularly crenulate in apical half, marginal cells hyaline, forming 2-3 cells broad strip, mostly squarrose to rectangulate, 8-12  $\times$  8  $\mu\text{m}$ , triangulate and projecting outwards in crenulated part; apical cells hyaline, 20-24  $\mu\text{m}$  in diameter; median cells pigmented, polygonal, 16-36  $\times$  8-16  $\mu\text{m}$ ; mid-basal cells pigmented, rectangulate, 12-32  $\times$  12-16  $\mu\text{m}$ ; trigones minute, cuticle smooth. Underleaves absent. Only vegetative plants found.



Figs 1-5. *Gymnomitrium crenatilobum* Grolle – 1. Plant habit. 2. Cross section of stem. 3. Leaf. 4. Apical cells of leaf showing crenulated margin. 5. Cells of basal leaf region showing smooth margin.

**Specimens examined:** INDIA: Uttarakhand; Uttarkashi-Govind National Park, Har Ki Doon, near GMVN rest house; on soil covered rock, 31°09'18" N, 78°25'85" E, ca. 3517 m, K.K. Rawat 257373A7 (LWG). Uttarakhand; Uttarkashi- Govind National Park, Between Badang and Daldhar, on rock, 31°10'01.62" N, 78°11'33.04" E, ca. 3631 m, 08.10.2015, K.K. Rawat 300495 (LWG).

**Distribution:** Nepal: Lobuche (Grolle, 1966; Parihar *et al.*, 1994; Váňa and Long, 2010), India: Uttarakhand, Uttarkashi district- Govind National Park.

*Gymnomitrium crenatilobum* was described from Nepal by Grolle (1966) and so far known only from the type. The species was accepted by Parihar *et al.* (1994), Váňa & Long (2010) and Váňa *et al.* (2010) on the basis of the original discovery. The plants of *G. crenatilobum* show close affinity to *G. crenulatum* Gottsche ex Carrington in morphological features, however, both species are clearly distinct. *Gymnomitrium crenulatum* has a crenulate leaf margin whereas in *G. crenatilobum* only apical portion of the leaf margin is crenulate.

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