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Polytrichastrum formosum (Hedw.) G.L. Smith in India

Ashish Kumar ASTHANA[*]*, Vinay SAHU & Virendra NATH*

Bryology Laboratory, CSIR-National Botanical Research Institute (Council of Scientific & Industrial Research, New Delhi), Lucknow – 226 001, India

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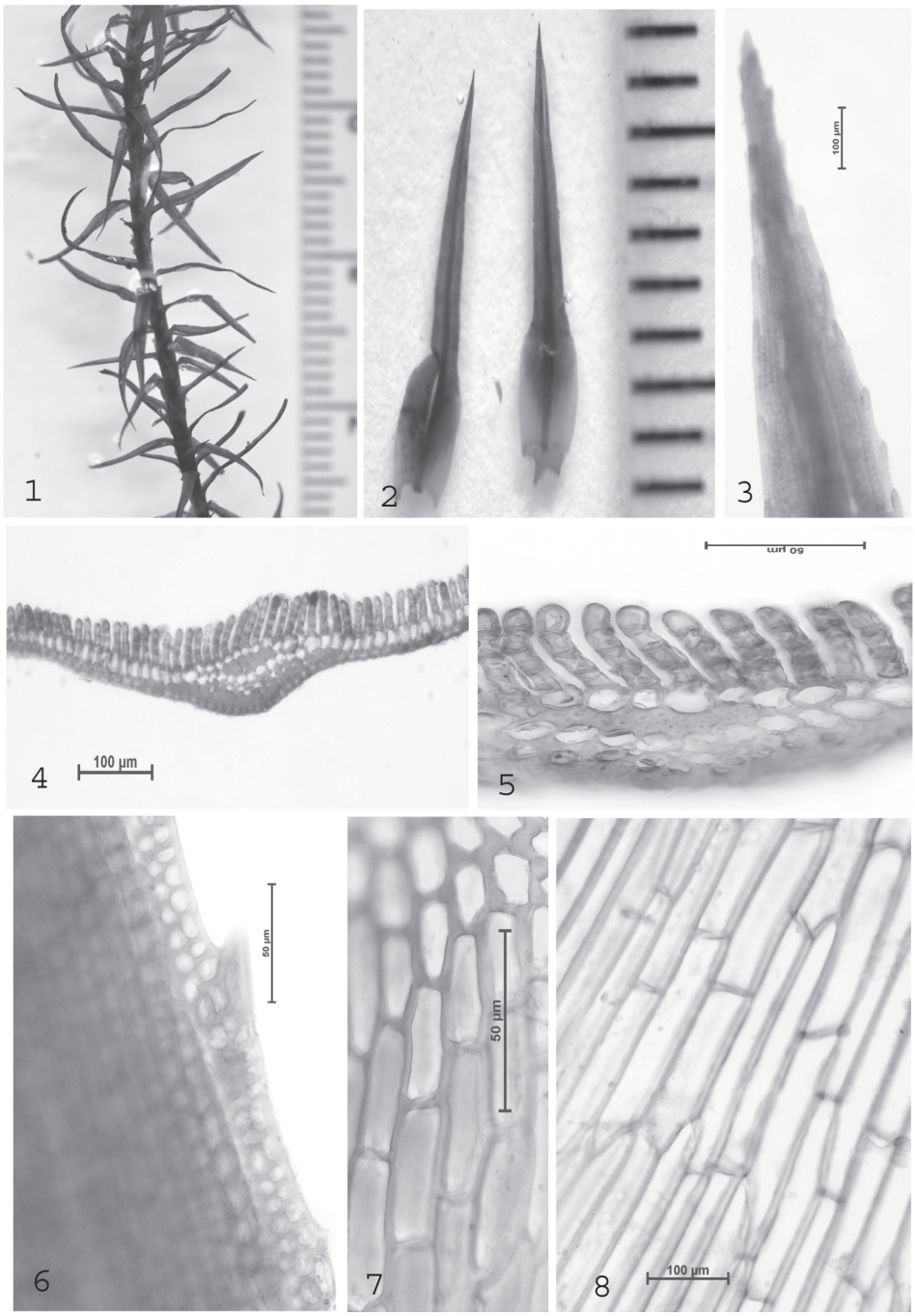
Abstract – During an investigation on the bryophytes of Darjeeling and its neighbouring areas *Polytrichastrum formosum* (Hedw.) G.L. Smith has been identified from Sandakphu region, which is being reported for the first time from Indian territory. The plants of this species are distinctly characterized by its large, robust size; tomentose stem part below, usually unbranched or bifurcate lower region of stem; lanceolate, serrulate leaves; prominent costa, and numerous lamellae (3-4 cells high, uniform) covering ventral surface in cross section of leaves.

Polytrichaceae / *Polytrichastrum formosum* / India

Genus *Polytrichastrum* belongs to family Polytrichaceae. Smith (1971) emended certain taxa of the genus *Polytrichum*, and included them under a new genus, *Polytrichastrum* for the species of Subg. *Leidon*, excluding the species of *Pogonatum* mentioned by Lindberg. Smith (1974) described three species of *Polytrichastrum* from western Himalaya (*P. emodi* G. Sm. – E. Nepal; *P. papillatum* G. Sm. – Kashmir, E. Nepal; *P. torquatum* Mitt. *ex* Osada et G. Sm. – Bhutan and E. Nepal). Chopra and Kumar (1981) described three species of *Polytrichastrum* from western Himalaya, *P. emodii* G. Sm., *P. alpinum* (Hedw.) G. Sm. and *P. papillatum* G. Sm. Lal (2005) listed 4 species of *Polytrichastrum*, out of which two species are from Nepal (*P. emodi* and *P. torquatum*), one species (*P. papillatum*) is listed from western Himalaya and one (*P. xanthopilum*) from eastern Himalaya.

During a recent investigation on the bryophytes of Darjeeling, plants of *Polytrichastrum formosum* (Hedw.) G.L. Smith were encountered from Sandakphu – Phalut, which is new to Indian subcontinent as earlier it is known from China, E. Nepal, Europe, Japan, N. Africa, N. America and Russia (Yu & Wu, 2005). Earlier, this species was described as *Polytrichum formosum* Hedw. by Gangulee (1969-72) and Chopra (1975) from east Nepal. However, Smith (1971) synonymized this species under *Polytrichastrum formosum* (Hedw.) G.L. Smith. Later on Yu & Wu (2005) subdivided the species into two varieties viz., *P. formosum* var. *formosum* G.L. Smith and *P. formosum* var. *densifolium* (Wils. *ex* Mitt.) Iwats. *et* Nog. In the present contribution the extended range of distribution of the taxon in India within Asia is provided.

* Correspondance and reprints: drakasthana@rediffmail.com



Figs 1-8. *Polytrichastrum formosum* (Hedw.) G.L. Smith. **1:** a portion of plant. **2:** Leaves. **3:** Leaf apex. **4, 5:** Cross section of leaf. **6:** Marginal cells. **7, 8:** Median and basal cells.

***Polytrichastrum formosum* (Hedw.) G. L. Smith**, *Mem. New York Bot. Gard.* 21 (3): 37 (1971); *Polytrichum formosum* Hedw., *Sp. Musc. Frond.*, 92 (1801); *Polytrichum attenuatum* Menz. *ex* Brid., *J. Bot.* (Schrader) 1800 (2): 286. 1801; *Moss Flora of China* (Wu *et al.*, eds) 8:354 (2005). **Figs 1-8**

Specimens examined: India, eastern Himalaya: Darjeeling (Sandakphu - Phalut, alt. ca 3500 m) 26.04.1965, *leg. S. Chandra, 202383 A, 202417 A* (LWG).

Range of Distribution: India (Sadakphu-Phalut, Darjeeling); China, E. Nepal, Europe, Japan, N. Africa, N. America, Russia (Fig. 9).

Indian plants closely approach to *P. formosum* in most of the features but slightly differ from *P. formosum* var. *formosum* (Yu & Wu, 2005) in having 3-4 cells high lamellae on leaf surface and slightly longer basal cells.

A comparative study with the allied species revealed that in case of *P. alpinum* and *P. papillatum* terminal cells of the lamellae are papillose, while in *P. formosum*, terminal cells of lamellae are smooth. In *P. emodi* G. L. Smith

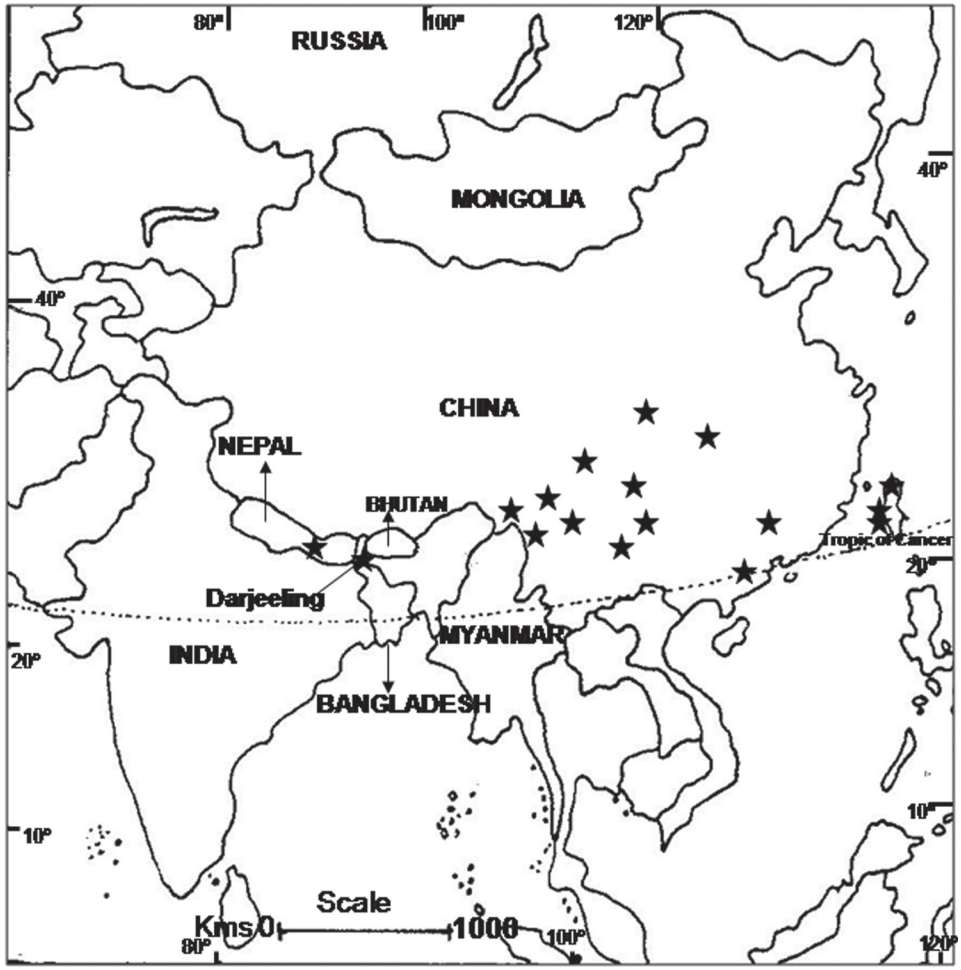


Fig. 9. Map showing distribution of *Polytrichastrum formosum* (Hedw.) G.L. Smith in Asia.

lamellae cover most of the lamina, each lamella 5-7 cells high with the terminal cells (in transverse section) conical. *Polytrichastrum torquatum* closely approaches to *P. formosum*, but former may be distinguished from the latter by lamellar cells diminishing in size from bottom to top and by the scarcely broadened oblong sheath. *Polytrichastrum xanthopilum* differs from *P. formosum* by branched stems, lamellae on leaf 4-7 cells high, top cells smaller and flask shaped, thin walled, capsule with a conspicuous apophysis.

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