

Brachymerium capitulatum (Mitt.) Kindb. – new to Garhwal Hills, western Himalaya

Virendra Nath and Bharti Srivastava

National Botanical Research Institute, Rana Pratap Marg, Lucknow-226001, India
E-mail : drvirendranath2001@rediffmail.com, bharti_reshu@rediffmail.com

ABSTRACT

Nath V. & Srivastava B. 2010. *Brachymerium capitulatum* (Mitt.) Kindb.- new to Garhwal Hills, western Himalaya. *Geophytology* 38(1-2): 93-95.

The present paper deals with the morphotaxonomic study, habitat and distribution of *Brachymerium capitulatum* (Mitt.) Kindb. collected from Lal Tibba, Mussoorie in Garhwal Hills, western Himalaya. The species is being described for the first time from Garhwal Hills.

Key-words : Moss, Bryaceae, *Brachymerium capitulatum* (Mitt.) Kindb., Garhwal Hills, western Himalaya.

INTRODUCTION

Brachymerium capitulatum (Mitt.) Kindb. was earlier described from eastern Himalaya (Gangulee 1977), Kumaun Hills, western Himalaya (Tewari & Pant 1994), south India (Kumar & Krishnamurthy 2007) and also from Africa, Bhutan, China, east Nepal, Papua New Guinea and Taiwan. During the investigation on bryophytes of Garhwal Hills, *Brachymerium capitulatum* (Mitt.) Kindb. (family Bryaceae) was discovered, which is a new record of this species from the Garhwal Hills, western Himalaya.

Mussoorie, a hill station situated at about 34 km from Dehradun, is one of the floristically rich hilly areas in Uttarakhand State. This hill station is located in the foothills of Garhwal region, western Himalaya at an altitude of ca. 2127 m and with annual rainfall about 180 cm. The temperature in Mussoorie ranges from 10°C to 23°C during summer and from 1°C to 10°C during winter. These climatic conditions suit to the luxuriant growth of bryophytes. The specimens studied here were collected from Lal Tibba, the highest peak of Mussoorie (Text-figure 1).

The genus is now represented in India by 16 validly published species. However, Lal (2005) has earlier reported only 14 species of the genus.

Only three species of *Brachymerium*, viz. *B. exile*

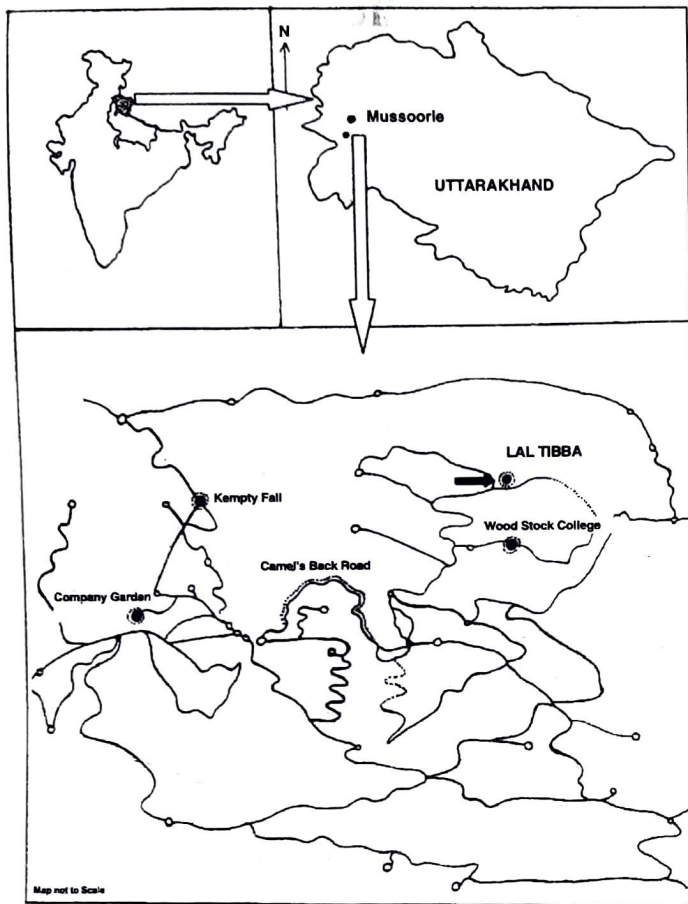
(Doz. et Molk). Bosch. & Lac, *B. nepalense* Hook., and *B. bryoides* Hook. ex Schwaegr. are reported from western Himalaya. *Brachymerium nepalense* Hook., and *B. bryoides* Hook. ex Schwaegr. are reported from both Garhwal and Kumaun Hills whereas *B. exile* (Doz. et Molk.) Bosch. & Lac. is reported only from Garhwal Hills. As per records, only three species have so far been reported from Garhwal Hills, thus *B. capitulatum* (Mitt.) Kindb. is being recorded for the first time from this region.

Brachymerium capitulatum (Mitt.) Kindb.

Text-figure 2

Synonym: *Brachymerium ochianum* Gangulee in Mosses of eastern India and adjacent regions : 934–936, 1977; *Brachymerium contortum* Hampe ex Ochi, J. Jap. Bot. 43 (4): 109, 1968, nom. illegit., non Griff. 1843; Chaung in J. Hattori Bot. Lab. 37: 481, 1973; *Bryum capitulatum* Mitt. in J. Linn. Soc. Bot. 22: 306, 1886.

Description: Plant acrocarpous, medium sized, 4-5 mm long, tufted, greenish – yellowish above and brownish below. Stem erect, tomentose, 2-3 subfloral innovations. Leaves erectopate, oblong, spathulate, 2-4 mm long and 1 mm broad, acuminate, margin revolute from base to 2/3 of the leaf, dentate at apex, costa strong, excurrent in 0.3 mm arista. Leaf cells thin



Text-figure 1. Showing location of Lal Tibba at Mussoorie (Uttarakhand), from where *Brachymenium* specimens were collected.

walled, rhomboidal upto 42-50 μm long and 12-21 μm wide at apex, 50-67 μm long and 16-25 μm wide at mid leaf; basal cells rectangular to subrectangular about 37-63 μm long and 16-25 μm wide; 2-3 rows of border cells are elongated about 92-100 μm long and 8 μm wide. Seta apical, reddish, erect, 20-25 mm long. Capsule erect, ovate, cylindrical, 3.5-5 mm long and 1.0-1.3 mm wide, apophysis about 1.3 mm in length. Operculum not seen. Exothecial cells irregularly rectangular with wavy walls. Peristome teeth bryoid type. Outer teeth 294 μm high and 60-67 μm wide at base. Inner peristome teeth represent only basal membrane. Spores lightly papillate, yellowish-brownish, 16.8-29.4 μm in diameter.

Habitat: Epiphytic on trunk of *Quercus leucotrichophora* Roxb. and *Cedrus deodara* (Roxb.) Loud.

Type locality: Darjeeling (eastern Himalaya).

Distribution: *Brachymenium capitulatum*

(Mitt.) Kindb. has been earlier reported from Darjeeling, Sikkim (eastern Himalaya); Nainital (Kumaun Hills, western Himalaya); Cauvery Peak, Lady's Seat, Sanyasi Hills (South India). It has also been reported from Africa; Bhutan; China; east Nepal; Papua New Guinea and Taiwan.

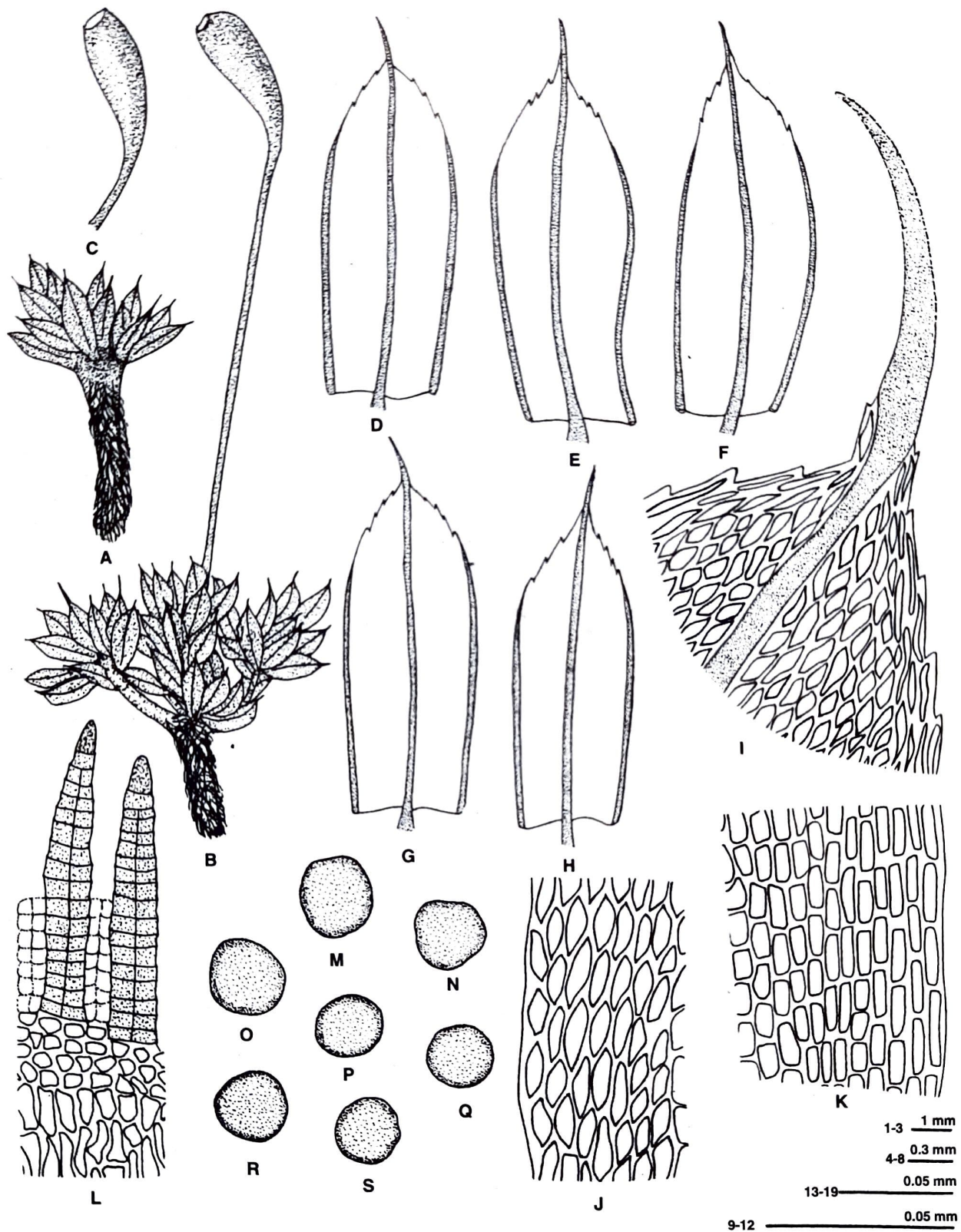
Specimens examined: India, western Himalaya, Garhwal Hills, Mussoorie, Lal Tibba, ca 2127 m, Epiphytic, October 1964, leg. S. Chandra, LWG No. 200974.

The present study is an attempt to focus on the distribution and taxonomic description of *Brachymenium capitulatum* (Mitt.) Kindb. This species, now reported from Garhwal Hills, shows some resemblance with *B. nepalense* Hook. and *B. exile* (Doz. et Molk.) Bosch. & Lac. in having tufted stem with 4-5 subfloral innovations, erectopotent leaves, dentate margins at apex, excurrent costa and arista. However, it differs in the leaf shape as in *B. nepalense* Hook. it is oblong to lingulate, in *B. bryoides* Hook. ex Schwaegr. it is ovate to lanceolate whereas in *B. exile* (Doz. et Molk.) Bosch. & Lac. it is ovate to concave. Border cells are absent in *B. exile* (Doz. et Molk.) Bosch. & Lac. and one row of border cells in *B. bryoides* Hook. ex Schwaegr. while in *B. capitulatum* (Mitt.) Kindb. and *B. nepalense* Hook. border cells are in 2-3 rows. Other apparent variations are concerned with sporophyte. The seta in the present species is shorter than those of *B. nepalense* Hook. and longer than those of *B. exile* (Doz. et Molk.) Bosch. & Lac. Absence of annulus and presence of largest spores in the present species, makes it different from the other two species.

Moreover, specimens collected from Garhwal hills, western Himalaya, have larger spores up to 30 μm in diameter whereas the spores in east Himalayan plants are comparatively smaller in size up to approx. 22 μm in diameter. It is possibly due to the different ecological factors and environmental conditions.

ACKNOWLEDGEMENT

The authors are thankful to the Director, National Botanical Research Institute, Lucknow for encouragement and for providing the facilities.



Text-figure 2. *Brachymenium capitulatum* (Mitt.) Kindb.; A. Vegetative Plant. B. Plant with sporophyte. C. A part of capsule. D-H. Leaves. I. Apical Leaf cells. J. Median Leaf cells. K. Basal Leaf cells. L. Peristome teeth. M-S. Spores.

REFERENCES

- Gangulee H. C. 1977. Mosses of eastern India and adjacent regions. Vol. II. Books & Allied (Pvt.) Ltd. Calcutta, India: 934-936.
- Kumar G. V. & Krishnamurthy K. V. 2007. Moss flora of Shervaroy Hills of Eastern Ghats. In Nath V. & Asthana A. K. (Editors) - Current Trends in Bryology. Bishen Singh Mahendra Pal Singh, Dehradun, India: 37-45.
- Lal J. 2005. A Checklist of Indian Mosses. Bishen Singh Mahendra Pal Singh, Dehradun, India.
- Tewari S. D. & Pant G. 1994. Bryophytes of Kumaun Himalaya, Bishen Singh Mahendra Pal Singh, Dehradun, India.