

Diversity and distribution of genus *Bryum* Hedw. in Gangetic Plains, India

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Manuscript received: 05 February 2014

Accepted for publication: 03 June 2014

ABSTRACT

Bansal P. & Nath V. 2014. Diversity and distribution of genus *Bryum* Hedw. in Gangetic Plains, India. *Geophytology* 44(2): 175-179.

Bryum Hedw. (family Bryaceae), an acrocarpous moss, occurs in variety of habitats in tropical and subtropical regions of the world. The present paper deals with the current status of this genus in Gangetic Plains, India. The study reveals occurrence of six species of this genus in 5 states, phytogeographically placed under Gangetic Plains, viz. Delhi, Jharkhand, Uttar Pradesh, Odisha and West Bengal. *Bryum apiculatum* Schwaegr. has been reported from Delhi, Jharkhand, Uttar Pradesh and West Bengal, *B. coronatum* Schwaegr. from Delhi and West Bengal, and *B. klinggraeffii* Schimp. found in Delhi and Uttar Pradesh. However, *B. cellulare* Hook., *B. argenteum* Hedw. and *B. dichotomum* Hedw. have been reported only from Delhi, Odisha and Uttar Pradesh, respectively. *B. apiculatum* is reported for the first time from Uttar Pradesh. These species show altitudinal range from 182 m to 218 m within Gangetic Plains and are either corticolous, saxicolous or terricolous. Saxicolous and terricolous species are represented by 4 taxa each, whereas *B. coronatum* is found to grow on rocks and tree barks.

Key-words: *Bryum* Hedw., Bryaceae, diversity and distribution, Gangetic Plains, India.

INTRODUCTION

Bryaceae is the largest family of mosses after Pottiaceae (Vohra & Aziz 1997) with 13 genera and about 850 species (Shaw 1985). Lal (2005) reported 11 genera under this family from India. The genus *Bryum* Hedw. of this family occurs in a variety of habitats in tropical and subtropical regions of the world, yet it is poorly understood taxonomically due to its great species diversity and morphological plasticity within the species. The genus is characterized by medium-sized to small habit, usually in compact tufts, tomentose stems, mostly with subapical innovations, more or less concave leaves which are ovate or broadly

oblong-lanceolate, elliptic or spatulate, often with very narrow margin forming a more or less distinct border, generally strong and often excurrent costa, mostly rhombic to rhomboid-six-sided cells at apex and quadrate to elongate-rectangular at base.

Among the bryogeographical regions of India, the Gangetic Plains have considerably rich in bryological diversity, which is due to the variable climatic conditions, habitat, geography and altitudinal variations. Earlier published records show that Gangetic Plains are rich in terms of moss flora, but only few reports are available for species of *Bryum* occurring in different states of this region. Chopra and Kanta (1966) listed 17

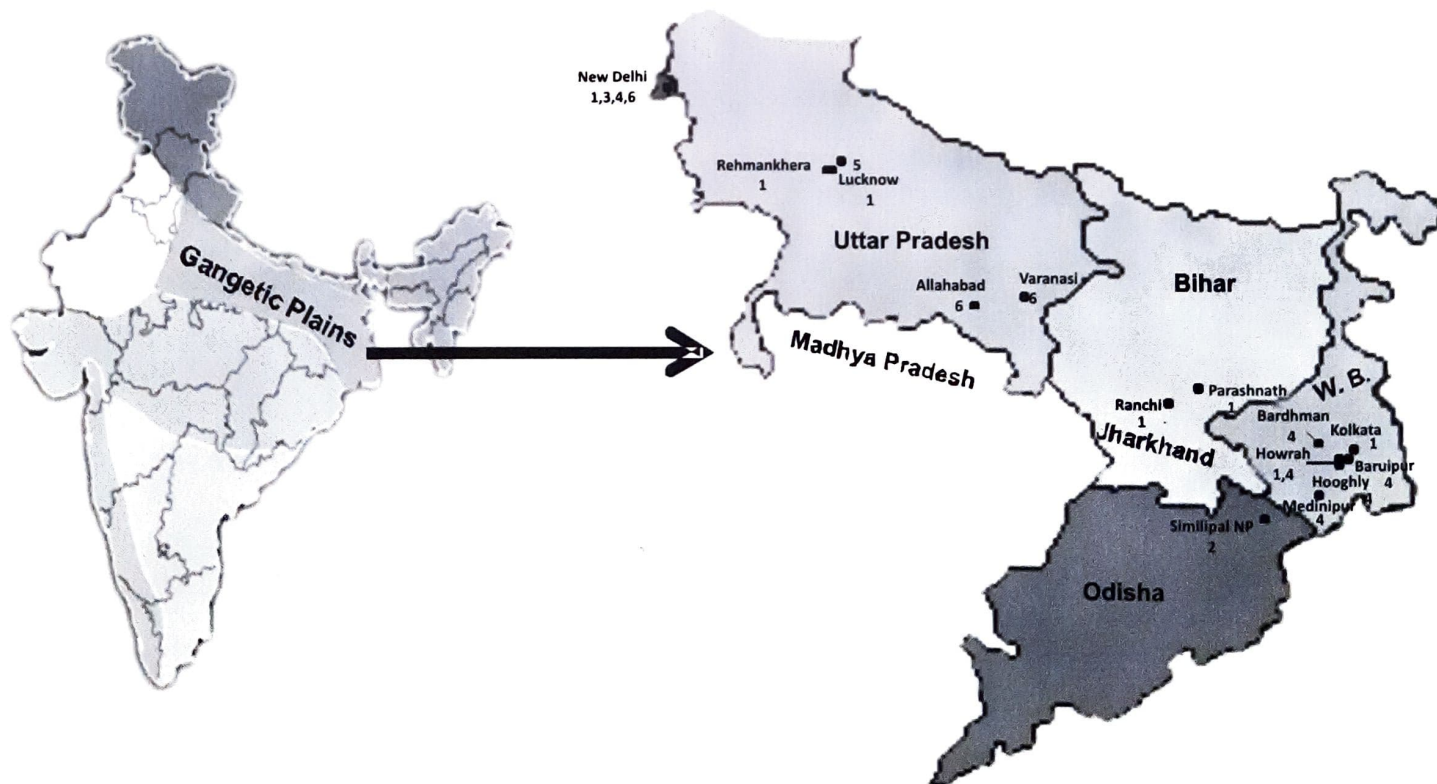
species of mosses from Delhi including 3 species of *Bryum*, of which *B. klinggraeffii* was recorded new to the Indian flora, while *B. coronatum* Schwaegr. was new to Delhi. Later, Vohra (1970) reported *B. klinggraeffii* from Varanasi in association with *Physcomitrium cyathicarpum* Mitt.

Gangulee (1974-1977) made valuable contributions on the Mosses of Eastern India and adjacent regions and described twenty two taxa from different parts of country and reported *B. coronatum* from Kolkata, Howrah, Hoogli, Burdwan, Midnapore and *B. plumosum* from Kolkata, Howrah, Parashnath (Chhota Nagpur) and Ranchi.

Lal (2005) in his Checklist of Indian Mosses reported only 4 taxa of the genus from Gangetic Plains. Subsequently, Lal (2007) while working on the mosses of Gangetic Plains reported *B. coronatum* from Kolkata, Howrah, Burdwan, Midnapore (West Bengal), *B. klinggraeffii* from Allahabad (Uttar Pradesh), Delhi and *B. plumosum* from Parashnath (Chhota Nagpur), Kolkata,

Howrah (West Bengal). However, Dandotiya et al. (2011) provided a checklist of 45 taxa of *Bryum* from India along with their distribution pattern. They listed 4 taxa from Uttar Pradesh including *B. klinggraeffii* from Allahabad, Delhi; *B. hemisphaericarpum* from Uttar Pradesh and 2 species (*B. coronatum* and *B. plumosum*) from Kolkata-Howrah, while *B. plumosum* from Chhota Nagpur also. Recently, Alam et al. (2013) reported *B. argenteum* from Similipal Biosphere Reserve of Mayurbhanj District, Odisha.

The present work provides the current status of genus *Bryum* in Gangetic Plains which includes 4 species (*B. apiculatum*, *B. cellulare*, *B. coronatum*, *B. klinggraeffii*) from Delhi, 3 (*B. apiculatum*, *B. dichotomum*, *B. klinggraeffii*) from Uttar Pradesh, 2 (*B. apiculatum*, *B. coronatum*) from West Bengal and only 1 species each from Jharkhand (*B. apiculatum*) and Odisha (*B. argenteum*), out of which *B. apiculatum* is an addition to the bryoflora of Uttar Pradesh.



Text-figure 1. Distribution of *Bryum* Hedw. in Gangetic Plains. 1. *B. apiculatum* Schwaegr. 2. *B. argenteum* Hedw. 3. *B. cellulare* Hook. 4. *B. coronatum* Schwaegr. 5. *B. dichotomum* Hedw. 6. *B. klinggraeffii* Schimp.

MATERIAL AND METHOD

The study is based on the specimens available at the Bryophyte Herbarium of the National Botanical Research Institute, Lucknow (LWG) collected earlier from various states of Gangetic Plains as well as those loaned from Farlow Herbarium (F.H.). The data on their distribution is based on the information collected from herbarium specimens as well as literature (Text-figure 1).

TAXONOMIC OBSERVATION

1. *Bryum apiculatum* Schwaegr., Sp. Musc.

Fronde., Suppl. 1(2): 102. f. 72. 1816.

Plate 1, figures A-B

Habitat: Terricolous and Saxicolous.

Range of distribution in Gangetic Plains:

Delhi; Jharkhand: Chhota Nagpur (Parashnath), Ranchi; Uttar Pradesh: Lucknow; West Bengal: Kolkata, Howrah.

Specimens examined: Delhi: *B. nitens* Hook., 700-720 ft, garden beds, sterile, produces abundant rhizoidal tubers, grows from December to March., Leg.: M. Lal, 11, Det.: E. B. Bartram (F.H.); Uttar Pradesh: Lucknow, Rehmankhera, Mango Research Centre, alt. ca 182 m, grows on soil, 28.09.2005, Leg.: V. Nath and party, 228152, 228154 (LWG); N.B.R.I., Fern House, alt. ca 182 m, grows on brick, 01.06.2006, Leg.: S. Verma 228257, 228259 (LWG); West Bengal: *B. nitens* Hook., India, Kolkata, on palm pot soil, 12.I.59 (F.H. 3413).

2. *Bryum argenteum* Hedw., Sp. Musc. Frond. 181. 1801.

Habitat: Terricolous and Saxicolous.

Range of distribution in Gangetic Plains:

Odisha: Mayurbhanj (Similipal Biosphere Reserve).

Remarks: The information about this species is based only on literature.

3. *Bryum cellulare* Hook., Sp. Musc. Frond., Suppl. 3(1): 214. 1827.

Plate 1, figure C

Habitat: Saxicolous.

Range of distribution in Gangetic Plains:

Delhi.

Specimen examined: Delhi: Jamuna, exposed wall of water outlet in constant spray, 707 ft, June 1956, Leg.: B. M. Johri J4, Det.: E. B. Bartram (F.H.).

4. *Bryum coronatum* Schwaegr., Sp. Musc. Fronde., Suppl. 1(2): 103. pl. 71. 1816.

Plate 1, figure D

Habitat: Saxicolous and Corticolous.

Range of distribution in Gangetic Plains:

Delhi; West Bengal: Burdwan, Hooghli, Howrah, Kolkata, Midnapore.

Specimen examined: West Bengal: Baruipur (near Kolkata), on brick wall, September 7, 1958, Coll.: H. C. Gangulee 793 (F.H.).

5. *Bryum dichotomum* Hedw., Sp. Musc. Frond. 183. 1801.

Habitat: Terricolous.

Range of distribution in Gangetic Plains:

Uttar Pradesh.

Remarks: The information about this species is based only on literature.

6. *Bryum klinggraeffii* Schimp. in Klinggr., Höh. Crypt. Preuss.: 81. 1858.

Habitat: Terricolous.

Range of distribution in Gangetic Plains:

Delhi; Uttar Pradesh: Allahabad, Varanasi.

Remarks: The information about this species is based only on literature.

DISTRIBUTION AND ECOLOGY

The present study reveals that Delhi is represented by maximum number of 5 species followed by Uttar Pradesh (3 species), West Bengal (2 species) and Jharkhand and Odisha (1 species each). Majority of the *Bryum* species are distributed between 212 m and 218 m altitudes except *B. apiculatum*, which is found at lower elevation (182 m). The *Bryum* species in Gangetic Plains occur as corticolous, saxicolous and terricolous. Terricolous and saxicolous species are dominant (with 4 taxa each) whereas only

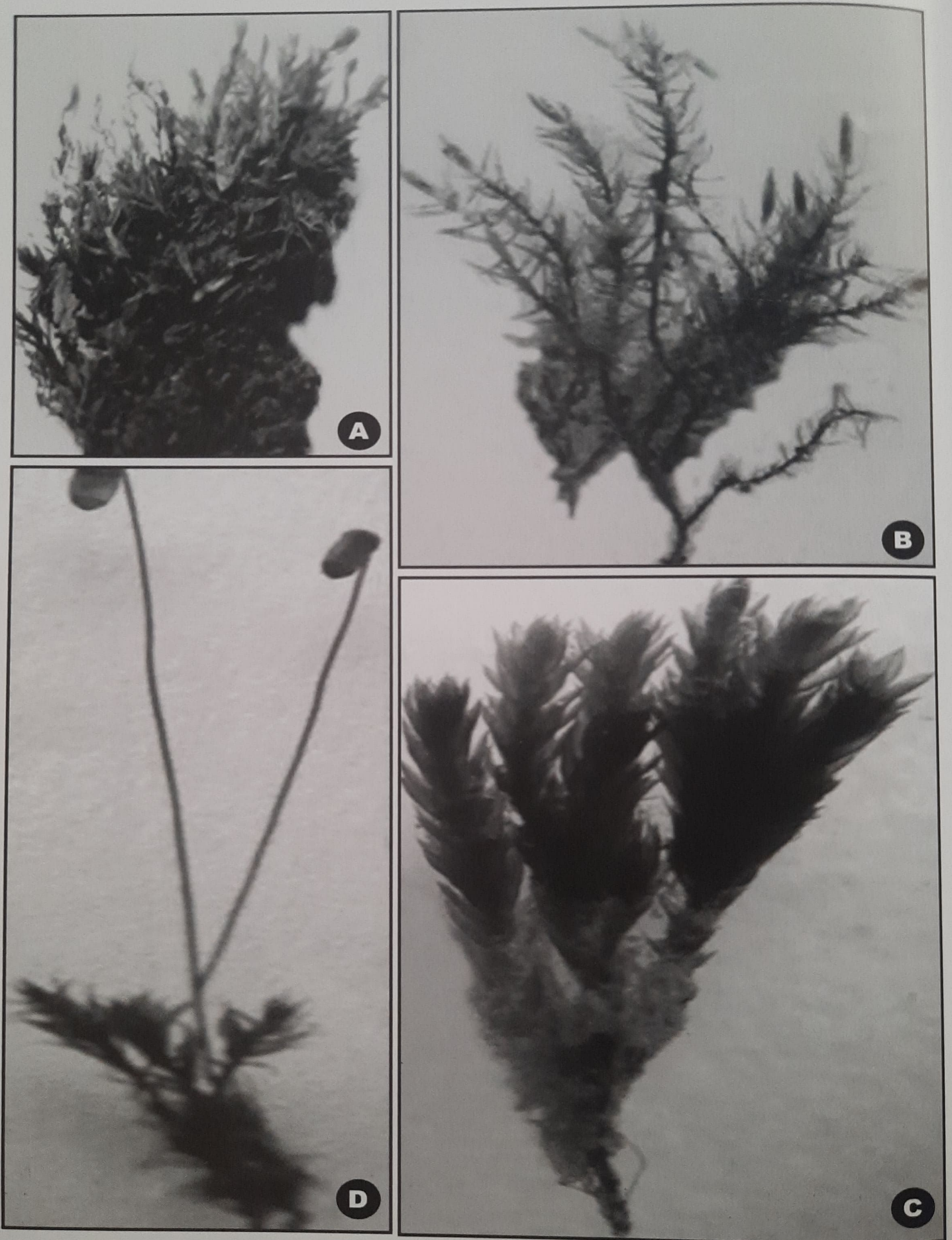


Plate 1

A, B. *Bryum apiculatum* Schwaegr. C. *Bryum cellulare* Hook. D. *Bryum coronatum* Schwaegr.

one species (*B. coronatum*) is reported as both saxicolous and corticolous.

ACKNOWLEDGEMENTS

Thanks are due to the Director, CSIR-National Botanical Research Institute, Lucknow for providing facilities and to the Council of Scientific and Industrial Research, New Delhi for Senior Research Fellowship to first author (P.B.) and Emeritus Scientist Scheme to second author (V.N.). Curator of Farlow Herbarium (F.H.) is acknowledged for sending specimens on loan for present study.

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