

LIVERWORTS OF BHADERWAH (JAMMU AND KASHMIR, NORTH WEST HIMALAYA), INDIA

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Abstract: The Present compilation of liverwort flora of Bhaderwah region of J.&K. includes thirteen species, all of which are being reported for the first time from the area.

Key words: Bryophyta, Hepaticae, Bhaderwah, Jammu and Kashmir State, North West Himalaya.

INTRODUCTION

Jammu and Kashmir, a part of North West Himalaya is rich in hepatic diversity. Nearly 120 hepatics have been reported from this region (comprising Jammu, Kashmir and Ladakh) so far by Banday *et al.* (1998); Tanwir (2005); Tanwir and Langer (2004, 2006). Exploration of Jammu region undertaken by Langer *et al.* (2003); Tanwir (2005) and Tanwir *et al.* (2008) has yielded more than one hundred liverworts and four hornwort taxa including seven of the nine species included in the list of threatened hepatics of Nanital by Pant (1983). This richness has been attributed to the hilly, inaccessible and virgin habitats of the region (Tanwir, 2005).

One of such hilly areas of North West Himalaya is Bhaderwah tehsil of Jammu region. The area lying between 32° 08'-32° 52' N latitude and 75° 48'- 75 ° 32' E longitudes has an altitudinal range of 821-4341 meters. It receives an annual rainfall up to 249.6 m with 84% maximum humidity (Chander, 2005). The climate of Bhaderwah is temperate, temperature varies from minimum mean 17.3°C to maximum mean 29.9°C in summers and minimum mean -0.9°C to maximum mean 02.8°C in winters. Area experiences heavy snowfall generally during January and February. Altitudinal range of Bhaderwah covers the one, believed to be the optimal for hepatic luxuriance in western Himalaya (1824-2432 m; Srivastava, 1998), resulting in its rich biodiversity.

The voucher specimens of the taxa collected presently have been deposited in the Herbarium, Department of Botany, University of Jammu, Jammu. Following is the complete list of liverworts collected so far from Bhaderwah region, along with their habitat, altitude and place of collection.

1. *Aneura pinguis* (L.) Dum.: on moist sandy soil; Nalthi, 2000 m.

2. *Asterella angusta* (St.) Kachroo: on moist shady soil; Saringal, 1400 m.
3. *Athalamia pinguis* Falc.: Terricolous, Kansar, 2200 m.
4. *Chiloscyphus kashyapii* (St.): on moist shady soil, sungli, 1500 m.
5. *Conocephalum conicum* (L.) Dumort.: under dripping water on soil capped stone; under snow cover on soil capped stone; Saringal, 1700 m, Basohla, 2500 m.
6. *Dumortiera hirsuta* (S.W.) Nees.: on the sides of water fall, near/under dripping water on soil capped stone; submerged in water; Saringal, 1700 m, Chabra, 1400 m
7. *Marchantia nepalensis* L. & L. (Nees.): on bank of river on shady soil. Haroot, 1610 m.
8. *Marchantia polymorpha* (L.): on sides of running water channel on soil capped stone. Heman, 1560 m.
9. *Pellia endivaefolia* Dicks. (Dumort): on moist sandy soil; Chabra, 1530 m
10. *Plagiochasma appendiculata* (L. *et al.*): on moist soil capped rock; Nalthi, 1840 m
11. *Reboulia hemispherica* (L.) Raddi.: on moist shady soil; sungli, 1730 m
12. *Riccia discolor* (L. *et al.*): on moist shady soil; Draman, 2000 m
13. *Wiesnerella denudata* (Mitt.): on soil capped stone; Saringal, 1820 m.

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Fig.1 & 2 - Patches of thalii of *Dumortiera hirsuta* and *Conocephalum conicum*

Fig. 3 & 4 - Thalii of *Marchantia polymorpha* showing gemma cups and female plants of *Marchantia nepalensis*

Fig. 5 & 6 - Fertile thalii of *Reboulia hemispherica* and *Plagiochasma appendiculata* plants of *Marchantia nepalensis*.

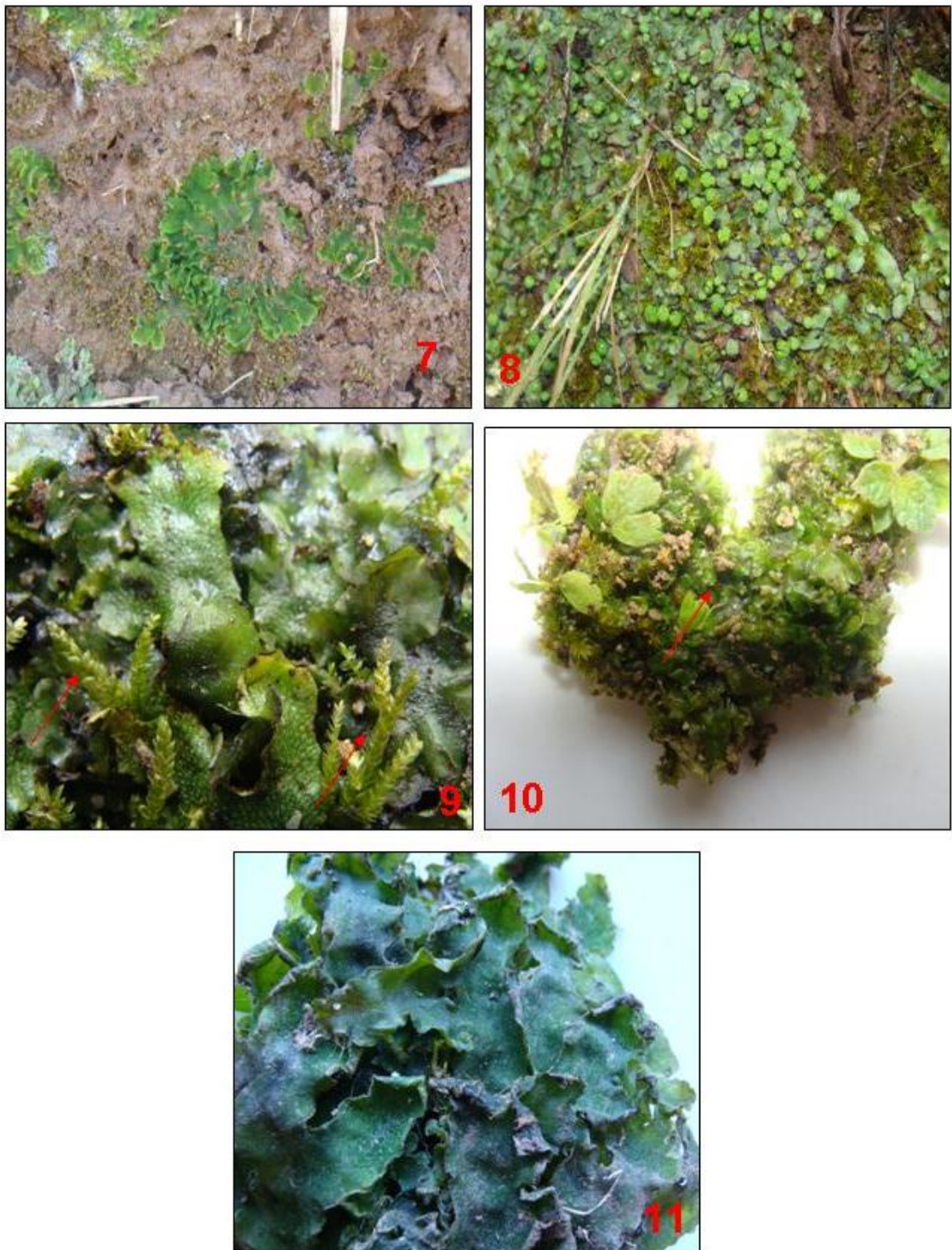


Fig. 7 & 8 - Patches of *Aneura pinguis* and *Asterella angusta*

Fig. 9 & 10 - Thalli of *Chiloscyphus kashyapii* and *Pellia endivaefolia*

Fig. 11 - A patch of *Wiesnerella denudata*

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