

JUNGERMANNIA EXERTIFOLIA STEPH. - A NEW BRYOPHYTE RECORD FROM BANGLADESH

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Abstract

A leafy liverwort, *Jungermannia exertifolia* Steph. (Hepaticae, Jungermanniales,) has been reported from the Adampur Forest of Moulvibazar district as a new species record for Bangladesh. *Jungermannia exertifolia* is characterized by its flattened leaves and rhizoids arising ventrally all along the stem with alternate leaves, which are obliquely inserted and succubous in arrangement. It grows in the shady habitats of Adampur forest on the surface of the hilly rocks. Detailed taxonomy of the newly reported species along with its photographs is provided.

Bryophytes are the one of the most important group of plants consisting of about 24,000 species worldwide with a wide range of distribution. These cosmopolitan species are distributed from the polar region to the tropics⁽¹⁾. They grow especially in hills and forests throughout the year. Bangladesh is plentiful in terms of bryophytes growing area.

Bryophytes represents one of the richest groups of the plants in Bangladesh and occupy a wide range of substrata. Recently 248 species of bryophytes from 73 genera under 34 families have been documented⁽²⁾. Considering the traditional medicinal and food value of bryophytes a very few studies were carried out. *Distichophyllum schmidtii* Broth., a Pleurocarpous moss and *Funaria hygrometrica* Hedw., an Acrocarpous moss were two new records from Bangladesh^(3,4). Later on 51 species of bryopsida⁽⁵⁾ and 48 species of Hepaticopsida and Anthoceropsida from Mymensingh were recorded⁽⁶⁾. Despite some sporadic studies on some groups of Bryophytes carried out in the recent past, much effort need to be made to explore the bryophyte flora of the country.

The leafy liverworts Jungermanniales is the largest order of the Class Hepaticae represented by 275 genera and 7,000 species⁽⁷⁻⁹⁾. However, there have no records of *Jungermannia* from Bangladesh but the genus was reported from the neighbouring countries i.e. Nepal and India^(8,9). Recently a taxonomic field survey was carried out to study the bryophytic flora of Adampur Forest of Moulvibazar district in Bangladesh. Specimens of about 20 species of bryophytes were collected from Adampur Forest.

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Among them the genus *Jungermannia* belonging to the order Jungermanniales has been found as new record to the bryophyte flora of Bangladesh as it has not been reported in relevant literature of the country.

Jungermanniaceae is the most diverse family of this order representing three subfamilies *viz.* Jamesonielloideae, Mylioideae and Jungermannideae. *Jungermannia* is the widely distributed genus of the family Jungermanniaceae, and may be dioecious or paroecious. Shoots are prostrate or erect with lateral branches. Rhizoids are pale white to brownish arising from the ventral surface. Lateral leaves are oval in shape with entire margin and succubous in arrangement. The collected specimen of the genus from the moist hilly rocks of Adampur Forest is a leafy liverwort and has been finally identified as *Jungermannia exertifolia* Steph. and reported here as the first record of *Jungermannia* species for Bangladesh.

The Rajkandi Reserve Forest is located between the 24°12'–24°17'N and 91°51'–91°55'E in the northeast area of Kamalganj Upazila of Moulvibazar district⁽¹⁰⁾. Rajkandi Reserve Forest situated in northeast area and the Bhanugach mountains are in west part of the Kamalganj Upazilla under the jurisdiction of Rajkandi forest range, Adampur Forest is a reserve hill forest which is located in the southern part of Moulvibazar district⁽¹¹⁾. This area is comprised of dense forest and hillocks. A *chara* is running through the forest and there are some plantation programs. This tropical forest comprises an area of 13,080 acres and is situated southeast of Lawachara National Park. The Dhalai river flows adjacent to this forest and numerous hillocks with water streams form part of the topography of Adampur. The study area has an average annual rainfall of 3,931 mm where 90% of the total rainfall occurs during June to September. The mean relative humidity usually remains between 69 and 95% throughout the year, though the average minimum temperature is 30.7 °C from November to March^(10,11).

The plant specimens were collected during several field visits in the year 2017. Field photographs were taken by using Cannon DSLR 600D. The collected specimens of bryophytes were preserved in dry form and in preservative. The specimens were critically studied and observed using fluorescent microscope (Nikon, H600L) and Axio Vision Rel 4.8 microscope. The identification of the collected specimens were confirmed following the published articles on this species and online information⁽⁷⁻⁹⁾. The specimens have been preserved at the Department of Botany, University of Dhaka.

A detailed taxonomic description of the species based on the fresh material along with its distribution and photographs has been provided.

Jungermannia exertifolia Steph. Spec. Hepat. 6: 86 (1971); Vana, J. Hattori Bot. Lab. 35: 312 (1972); Sm., Liverworts Brit. & Ireland: 142 (1996). (Fig. 1).

Prostrate to erect shoots with leafy thallus, yellowish green to brown. Shoots 5 - 6 cm long, 1.2 - 2.5 mm wide, laterally arising creeper shoot profusely branched, and rhizoids

hyaline to brown or purple. Succubous leaves usually flat or slightly concave, obliquely inserted, alternately arranged, 3×2 mm, broadly ovate to cordate in shape, margin entire, cells of middle lamina hexagonal with oil bodies, leaf walls reddish to brown, spores spherical, light brown. No gemmae observed.

Habitat: Hilly forest.

Status: Rare.

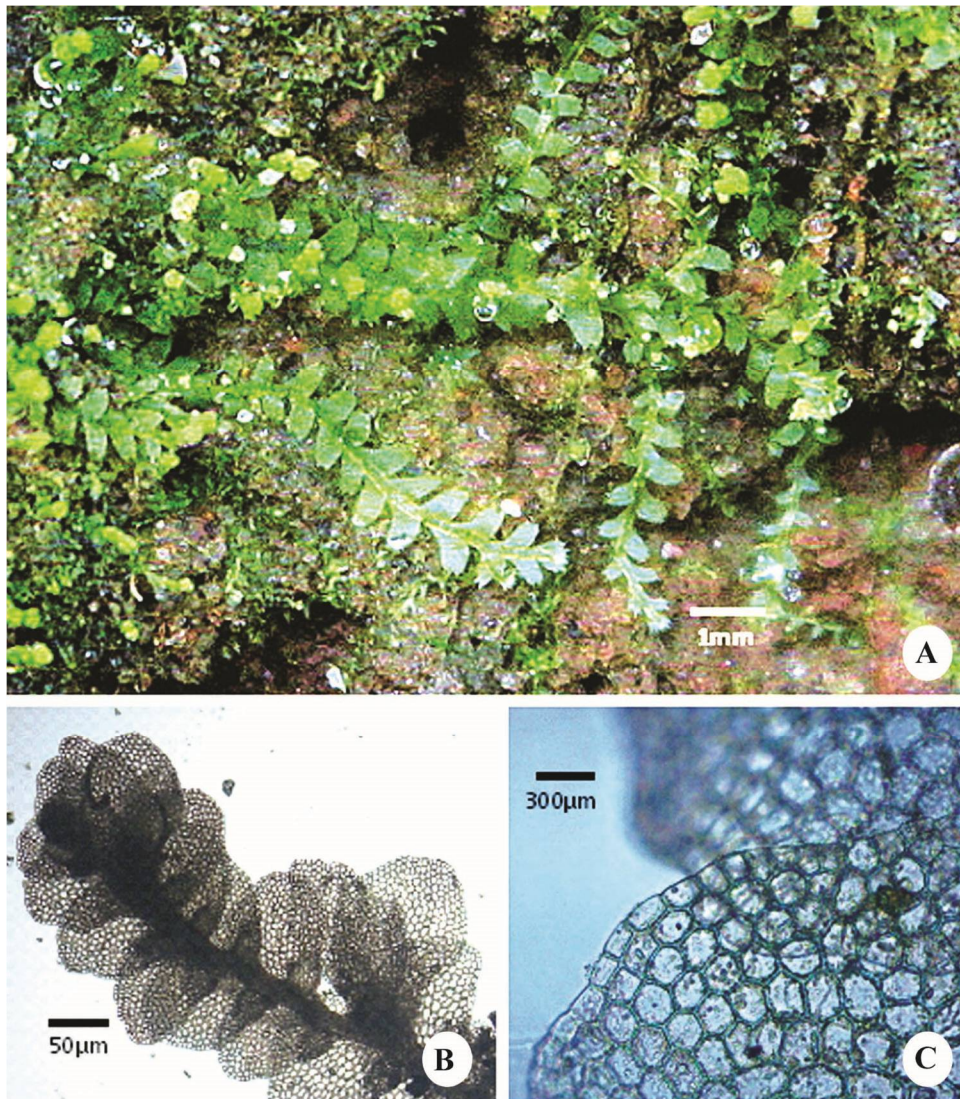


Fig. 1. *Jungermannia exertifolia* Steph. A. Habit of the plant, B. Magnified portion of plant showing the apical portion, C. Marginal cells of leaf (Under the Axio Vision Rel 4.8 microscope).

Specimen examined: Moulvibazar: Adampur Forest, Rajkandi Bit, 18.11.2016, Nadra, 61.

Distribution: Nepal, Canada, Caucasus, China, Europe, Greenland, Iceland, Japan, North Italy and South Spain.

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