

**AZOLLA MICROPHYLLA KAULF. (SALVINIACEAE): A NEW
PTERIDOPHYTIC RECORD FOR BANGLADESH**

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Azolla Lam., a pteridophytic genus is represented by only seven species throughout the world and in Bangladesh this genus is constituted by two species, namely *A. pinnata* R. Br. and *A. filiculoides* Lam. *Azolla* are weeds in many countries of the world, covering some water bodies entirely (Ahmed *et al.*, 2009. <http://www.theplantlist.org/1.1/browse/P/Salviniaceae/Azolla/>). *Azolla* are used for biological control of mosquito in many countries of the world. *Azolla* is a highly productive plant. It doubles its biomass in 1.9 days or more, depending on conditions, and yield can reach up to 10 tonnes fresh matter/ha in Asian rice fields (Hasan and Chakrabarty, 2009). 37.8 t fresh weight/ha (2.78 t DM/ha dry weight) has been reported for *Azolla pinnata* in India (Ahmed *et al.*, 2009).

The plant materials of this study were collected through a hydrobiological expedition carried out in a natural *Haor*, namely Kuniar *Haor* located at the Baribari union under Itna upazila of Kishoreganj district in the northern part of Bangladesh. Geographically, the *Haor* is located between 24°49' 94.40" N to 24°50' 03.23" N latitude and 91°00' 95.84" E to 91°00' 97.07" E longitude at an altitude of nearly 46 m above the mean sea level. This *Haor* is located at the meeting point of the River Narasunda and the River Danu. The current research work was carried out from May 2019 to September 2019. The sample was collected from the surface near the bank of the *Haor* with some other aquatic angiosperms in a large air tight polyethylene bag with some water inside. It was transported to the Phycology, Limnology and Hydrobiology Laboratory, Department of Botany, University of Dhaka within six hours of sample collection. Some fresh materials were preserved in 4% formaldehyde and voucher specimens of the material were prepared and preserved in the laboratory. The remaining plant sample was transferred in a concrete house (1 × 0.5 m length, depth 0.40 cm) in the Botanical Garden, Department of Botany, University of Dhaka for culturing. The specimen has been identified as *Azolla microphylla* Kaulf by consulting standard literature (Kunze, 1845; Svenson, 1944; Fassett, 1957; Jain *et al.*, 1989; Zimmerman *et al.*, 1989; Fernandez *et al.*, 1993; Wagner, 1997; Fiogbe, 2004; Edward and Hove, 2004; Hasan and Chakrabarty 2009; Dey, 2017). *Azolla microphylla* Kaulf was not reported earlier in the previous studies or literature, *viz.* Hooker (1888), Prain (1903), Ahmed *et al.* (2009) from the areas that now fall under the territory of present Bangladesh. Hence, it is reported here as a new record for Bangladesh.

A detailed taxonomic account along with illustrations of the species has been prepared based on the fresh specimens.

***Azolla microphylla* Kaulf, Int J. Pl. Sci. 167: 529-538 (2006). (Fig. 1)**

Synonym: *Azolla mexicana* Schldl. & Cham. Ex C. Presl, Pl. Usda.gov. (1996)

Common names: Mexican mosquito fern, Mosquito fern.

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Prostrate, floating on the water's surface, long, stalk less, alternate, often overlapping, like shingles, along branching stems. Stem up to about 1.3 cm long, usually branched, typically fan-shaped in outline in well-developed plants; new growth bright green to blue-green, often turning dark red later in the season, or having at least some red-tinged leaves. Plants can form large surface area colonies, which sometime cover entire aquatic body, and may form multi-layer mats, up to 3.81 cm thick. Leaves 65-72 x 22-38 μm , divided into 2 lobes, folded, upper lobe above the water's surface, blunt to pointed at the tip, somewhat succulent and covered in short, glass-like hairs, the lower lobe submersed, more membranous and rounded at the tip, the distance between two leaves is around 12-18 μm .

Note: Different species of *Azolla* look much alike, and some of them are very difficult to distinguish without size and shape of leaves.

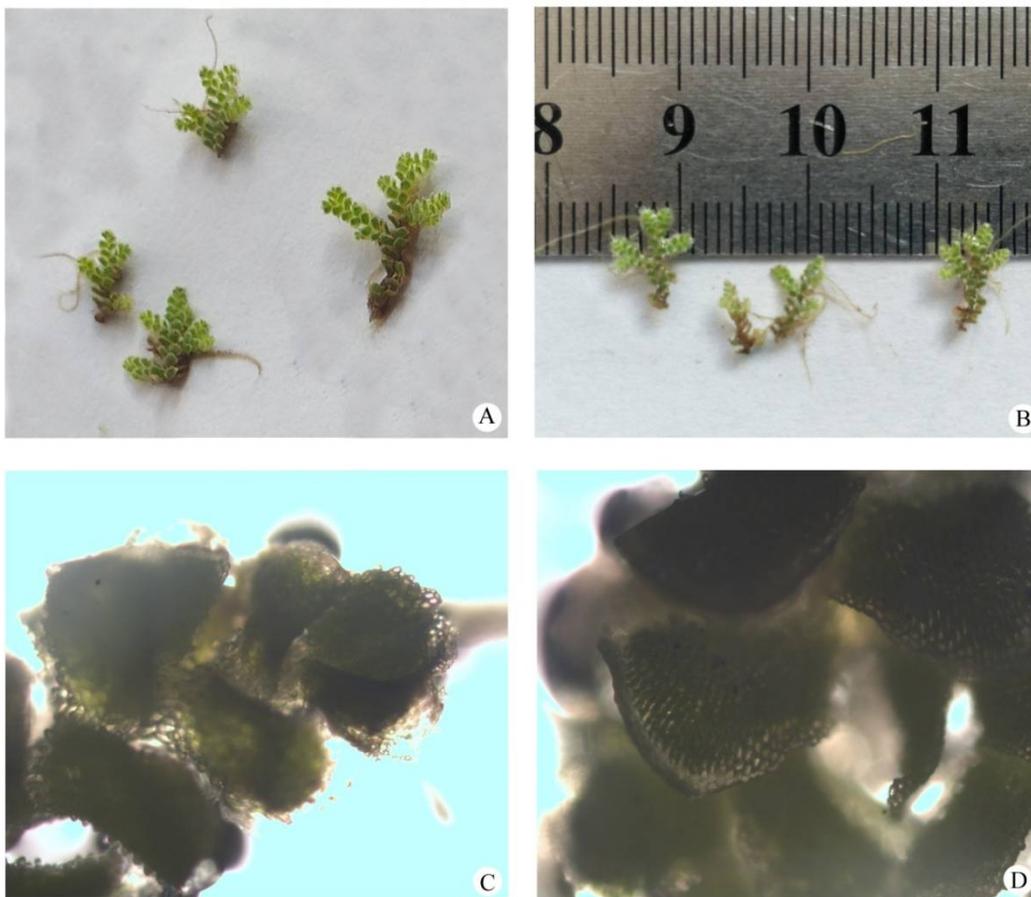


Fig. 1. *Azolla microphylla* Kaulf.; A. Whole plant; B. Plants showing microscopic leaves; C. Arrangement of upper and lower lobes of leaves; D. Cell arrangements of leaves.

Ecology: *Azolla microphylla* Kaulf can grow in the edges of Kunier Haor. This species also grows in rice fields, shallow wetlands, slow moving streams, irrigation reservoirs or canals, edges of lakes, ponds, sloughs, or backwaters. *A. microphylla* Kaulf can grow in water surface and

tolerates any range of water levels. It can also develop in higher water levels and high-nutrient environments (<http://www.theplantlist.org/tpl1.1/record/tro-26608433>). Numerous rooting of *A. microphylla* Kaulf were observed in the surface of the Kunier Haor. *A. microphylla* requires no rooting in bottom sediments.

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