Bangladesh J. Bot. **39**(1): 111-114, 2010 (June) **- Short communication**

LAMPROTHAMNIUM PAPULOSUM (WALLR.) J. GROVES (CHAROPHYTA), A NEW RECORD FROM BANGLADESH

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Abstract

Lamprothamnium papulosum (Wall.) J. Groves has been reported and described for the first time from Bangladesh.

A detailed study on the Charophytes of northern Bangladesh was made by Kundu (1929,1934, 1935, 1938a-b, 1959). Investigation on charophytes was also carried out by Agharkar and Kundu (1937), Islam and Sarma (1968, 1976), Zaman and Alam (1977), Aziz and Islam (1986), Zaman (2001), Aziz and Tanbir (2003) from different parts of Bangladesh and these include spp. of genera *Chara*, *Nitella* and *Lychnothamnus*. Present communication is made on the genus *Lamprothamnium* recorded for the first time from Bangladesh.

The algal specimens were collected (No. 154) from 15 cm depth in the river Mahananda of Chapai - Nawabganj district situated at 24º 25′ N to 88º 21′ E. The alga was growing with *Chara braunii* Gmelin, *Spirogyra* spp., *Nitella furcata* subsp. *flagelliformis* A. Br. The specimens were preserved in Transeau's solution and a herbarium sheet was made in the Herbarium of Department of Botany, University of Rajshahi, Rajshahi, Bangladesh.

Lamprothamnium papulosum (Wallr.) J. Groves (**Figs 1 A-M, 2 A-G**)

(Groves and Bullock-Webster 1924, pp.7-9, Pl. 25; Pal *et al*. 1962, pp. 83-85, 182-189; Wood and Imahori 1965, pp. 330-332, icons 162-166; Blindow and Langangen 1995; Schubert and Blindow 2003, pp.156-162, Fig. 4.18.1; Langangen 2004, 2007)

Synonym: *Chara wallrothii* Ruprecht, *Chara alopecuroidea* Delile ex Braun, *Lamprothamnus alopecuroides* A. Braun & O. Nordstedt.

Plants monoecious, up to 12 cm high, slender, unincrusted, glossy; stem 486 μm in diameter, entirely ecorticate, uppermost whorls of branchlet slightly foxtail appearance; stipulodes well developed, sturdy, small to long (472 μm) opposite to spreading and sometimes rudimentary, one series, acute; branchlets 7 - 10 in a whorl, rarely swollen branchlet present (segments 4), 700 μm in diameter, other branchlets straight to curved, up to 2.6 cm long, segments 2 - 5, elongated, end cell 1 - 3 celled, acute, often mucronate; bract cells 4 - 9, up to 1400 μm long, unilateral to verticillate, as long as nucule, occasionally absent; bracteols similar to bract cells; specimen richly fertile, nucule and globule present at the lowest 1 - 2 branchlet nodes; normally sejoined, occasionally conjoined; nucule is above the globule, solitary globule sometimes present on separate branchlet and rarely geminate nucule present; nucule ellipsoid to subcylindrical, glossy, elongated, 414 - 815 μm long (including corona), 243 - 500 μm broad with 10 - 12 convolutions; corona 143 μm long, 129 - 172 μm broad, cells erect to slight spreading; oospore ripe, brown to black, ellipsoid, 472 - 600 μm long, 300 - 358 μm broad with 9 - 12 prominent ridges; membrane smooth; globule 272 μm in diameter; round, clustered white bulbils present.

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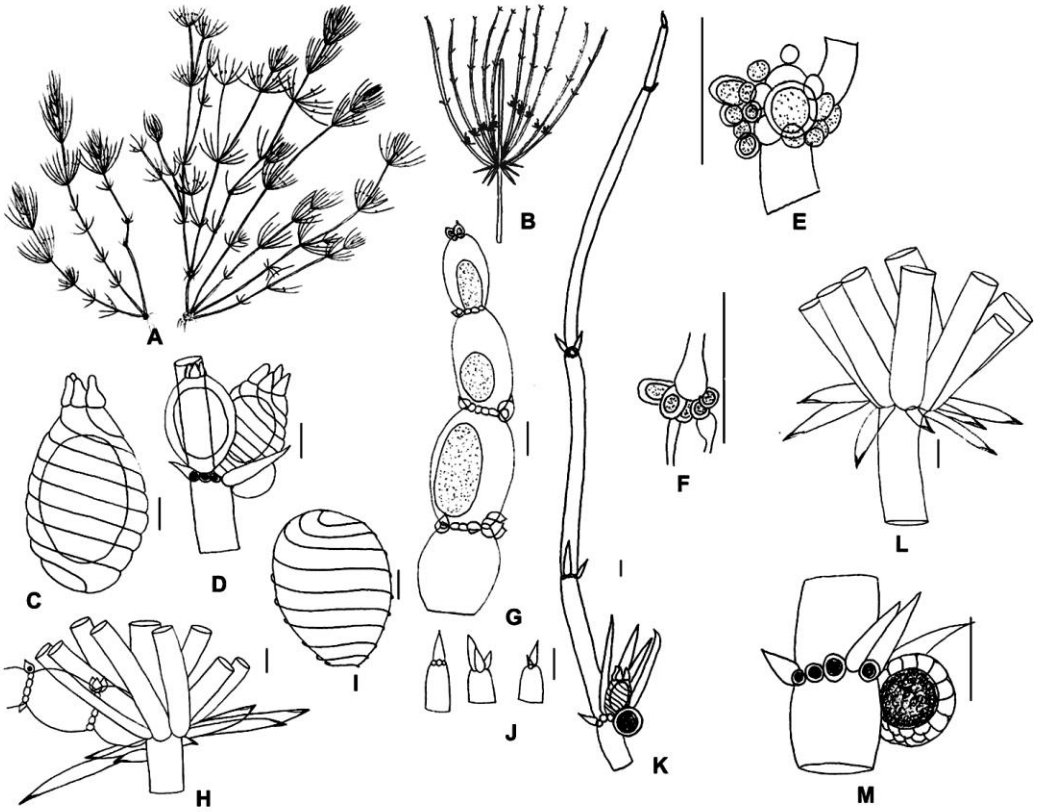

Fig. 1A-M: *Lamprothamnium papulosum* (Wallr.) J. Groves. A. Habit, B. A whorl, C. Nucule, D. Nucule and globule, E-F. Clustered round bulbils, G. Swollen branchlet, H. A whorl with swollen branchlet and stipulodes, I. Oospore, J. Tip cells of branchlet, K. A fertile branchlet, L. A whorl of stipulodes, M. A node with a globule. (C-M Scale = 200 µm)

Note: Lamprothamnium J. Groves can easily be mistaken with other ecorticate charads e.g. *C. braunii*, *C. corallina*. Wood and Imahori (1965) compared with variants of *L. papulosum*, the similarities become apparent including opposite stipulodes, 1-2 celled allantoids end segments, verticillate (through occasionally unilateral) bract cells. But presence of clustered bulbils are unique difference between these species and the opposite stipulodes will also identify that this specimen as *Lamprothamnium papulosum* (Wallr.) J. Groves.

Wood and Imahori (1965) designated that nucule is below the globule of *L. papulosum* (Wallr.) J. Groves and mentioned it as an important key characteristic of this species. But Blindow and Langangen (1995) described nucule is above the globule and similar observation has been made in present investigation. Again Schubert and Blindow (2003) reported stipulodes are well developed, acuminate, about twice as long as the stem diameter or even longer and occur in a single row pointing downward. Bract cells are at least two times longer than the nucule and *L. papulasum* is monoecious, with the nucule below or beside the globule and clusters of globular bulbils. Groves and Bullock-Webster (1924) stated nucule produced at the base of the globule usually grows downwards and therefore situated below the globule but occasionally by the side of or rarely above it. As mentioned earlier, in the present material position of nucule was found to be

mostly above the globule or beside the globule. So, it can be concluded that position of nucule may vary in case of *L. papulosum* and not to be considered as key characteristic for identification.

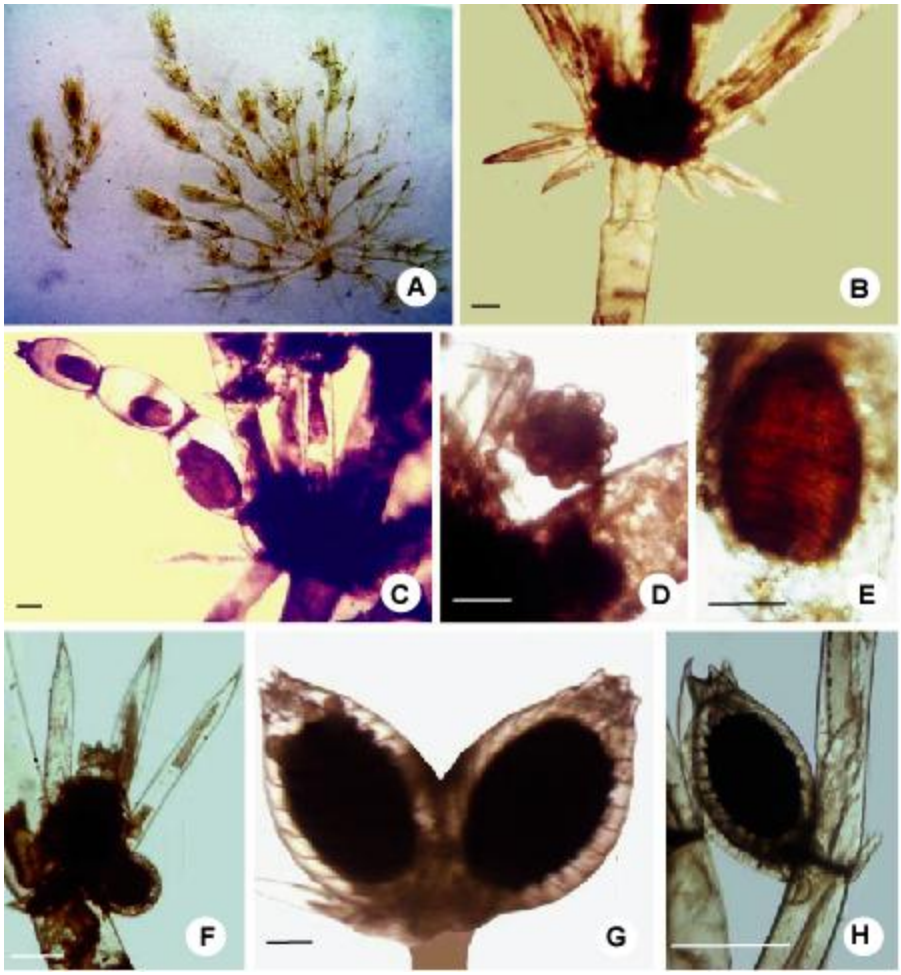

Fig. 2A-H: Photomicrograph of *Lamprothamnium papulosum* (Wallr.) J. Groves. A. Habit. B. Stipulodes and branchlets. C. Swollen branchlet among other normal branchlets. D. Clustered round bulbil. E. Oospore. F. Nucules and globule. G. Geminate nucule. H. Solitary nucule and bract cells. (Bar = 200 µm).

Additional remarks: The presence of *L. papulosum* (Wallr.) J. Groves with rarely swollen branchlet is interesting. This is presumed to be an adaptation to low light regime. Similar observation was also made by Langangen (2004) at Cyclade Island in Greece. He observed at Kamari Lake *L. papulosum* covered by white salt crystals where light penetration was limited and the specimen found had developed swollen branchlets. At present study swollen branchlet was found once in a whole population (three bushy plants). At collection time the surface of water of the location was covered with thick mat of filamentous algae *Spirogyra* sp., other algae intermingled were *Chara braunii* Gmelin, *Nitella furcata* subsp. *flagelliformis* (A.Br.) R.D.W. which indicate competition for light and space. Langangen (2004) stated that *L. papulosum* growing in extreme habitats ensures their process of regeneration through round bulbil together with nucule.

Distribution: **Asia**: China, India, Pakistan (Not common in Asia); **Europe**: From Scandinavia, British Isles and Baltic region southward along the coast, eastward along the Mediterranean Sea to Italy; Norway, Sweden, Denmark, Germany (Baltic coast), Spain, France, the Iberian Peninsula and Greece; **Africa**: South Africa (Port Elizabeth), N.W. Africa, Algiers; **Oceania**: Australia and New Zealand. (Wood and Imahori 1965, Moore 1986, Stewart and Church 1992.)

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