

***EGERIA DENSA* PLANCHÓN (HYDROCHARITACEAE) : A NEW
ANGIOSPERMIC RECORD FOR BANGLADESH**

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Hydrocharitaceae of Bangladesh is represented by 6 genera namely, *Hydrilla*, *Blyxa*, *Nechamandra*, *Vallisneria*, *Ottelia* and *Hydrocharis* (Khan and Halim, 1987). Under these genera 9 species have been reported so far. Another member of Hydrocharitaceae, *Egeria densa* Planchón is native to the coast of southeastern Brazil through Argentina. The plant was also cultivated as an aquarium plant and is now considered naturalized in the Eastern United States (Cook and Urmi-König, 1984).

The plant material was collected through a limnological expedition carried out in a remote natural lake of Bangladesh namely Bogakain situated in the hilly Bandarban district (Khondker *et al.*, 2010). Details of the sampling location together with the preliminary limnological condition of the lake has been presented in Khondker *et al.* (2010). Bogakain, an eutrophic hilly natural lake has a vast littoral. The sample was collected on 10 March 2010 from 1 m depth near the shore of the lake as submerged vegetation and transplanted in a concrete house (1 × 0.5 m, depth 0.40 cm) in the Botanical Garden, Department of Botany, University of Dhaka. Some fresh materials were preserved in 4% formaldehyde and few herbarium sheets of the material were prepared and preserved in the Hydrobiology and Limnology Laboratory, Department of Botany, University of Dhaka. The specimen has been identified as *Egeria densa* Planchón with the help of Cook and Urmi-König (1984), Haramoto and Ikusima (1988), Roberts *et al.* (1999), Haynes (2000), Yarrow *et al.* (2009) and Morgan (2010).

Egeria densa Planchón was not reported earlier from the areas that now fall under the territory of Bangladesh in the relevant literatures, *viz.* Hooker (1888), Prain (1903), Heinig (1925), Raizada (1941), Datta and Mitra (1953), Sinclair (1955), Mia and Khan (1995) and Rahman (2004 a, b). 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 specimen.

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Egeria densa Planchón, Annales des Sciences Naturelles, Botanique. sér. 3, 11: 80 (1849). *Anacharis densa* (Planch.) Marie-Vict., Contrib. Lab. Bot. Univ. Montreal 18: 41 (1931); *Elodea densa* Casp., Monatsb. berl. Acad.: 49 (1857); *Philotria densa* Small., Man. Southeast Fl.: 28 (1933). **(Figs 1-2)**

Common names: Brazilian elodea, Brazilian waterweed, Common water weed, Dense water weed, Egeria, Leafy elodea, South American water weed.

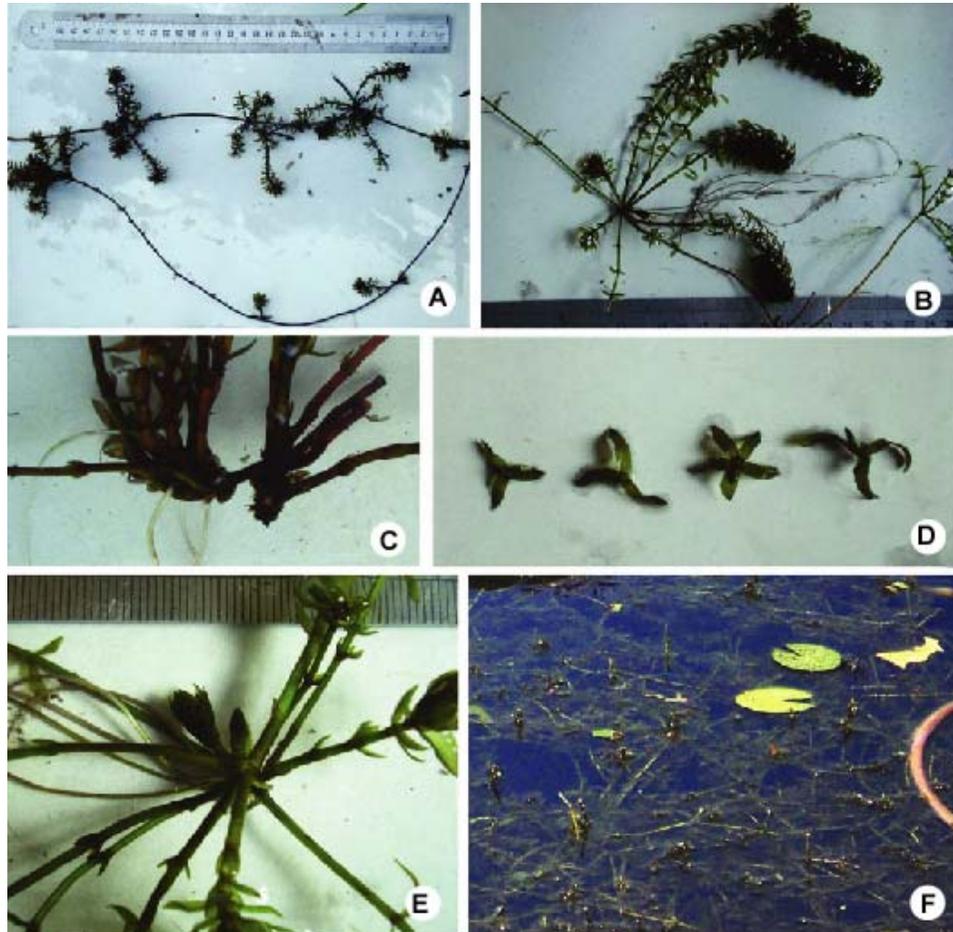


Fig. 1 A-F. A, Habit of *E. densa* with long stem (just after collection from the lake), B, Habit after culturing in a concrete house, C, A double-node (2 adjacent nodes separated by a short internode), D, Leaves found to be present at nodes, E, Lateral buds, branches and adventitious roots growing from a double-node region of the stem, F, Plant canopy in the natural habitat (Lake Bogakain).

A submerged, dioecious, freshwater perennial herb, rooted between 1 and 2(7) m below water surface. Stems trailing, elongate, slender, 2-3 mm thick, single or sparingly branched, up to 2 m long, they form dense mat over the water surface, producing adventitious roots at double-nodes. Stem fragments having double-node gives out roots

and continue growth, forming dense monospecific stands covering extensive areas. Leaves and stems generally bright green, short internodes frequently give plant very leafy appearance, may persist as fragments, drifting in water column. Leaves 3-6(-8) whorled, densely arranged towards the apex, linear to oblong, cuneate, up to 1.6×0.3 cm, minutely serrated, apex acute. Tubers absent.



Fig. 2. Comparative morphology between *Egeria densa* and *Hydrilla verticillata*. A₁. Habit of *E. densa* with no tuber, A₂. *H. verticillata* with tuber, B₁. Dense leaf of *E. densa* compared to *H. verticillata*, B₂. Light leaf of *H. verticillata*, C. Two double-nodes separated by 6 short internodes in *Egeria densa*, D₁. Germinating tuber of *H. verticillata*, D₂. Growing buds of *E. densa*.

The present specimen has been identified based on leaf and canopy characters, unbranched adventitious roots, buds and canopy like branching arising at double-nodes (Fig. 1 and 2) and absence of tubers.

Ecology: *E. densa* found in lentic and lotic waters that forms dense monospecific stands which restrict water movement, trap sediment, and cause fluctuations in water quality.

Distribution: *E. densa* is distributed in Brazil, Argentina, Uruguay, Alaska, Hawaii, has invaded New Zealand (Coffey and Clayton, 1986), Japan (Hamabata and Kobayashi, 2002), in a high altitude lake in Colombia (Carrillo *et al.*, 2006), Chile (Cook and Urmi-König, 1984) and Australia (Roberts *et al.*, 1999) and numerous areas across Europe (Dutartre *et al.*, 1999). In the United States, *E. densa* has invaded lakes and ponds across most East Coast states, from New England (Vermont, New Hampshire, Massachusetts, Connecticut) south to Florida. In the Western US, it has heavily infested areas of the California delta as well as many lakes in Oregon and Washington. Most recently three water bodies near Moscow and Boise, Idaho were found and treated for infestations (Morgan, 2010).

Specimens examined: Lake Bogakain, Ruma Upazila, Bandarban, 10.03.2010, Khondker, M. and Alfasane, M. A., HYD 1003101.

Notes: *Egeria* typically looks larger and leafier than *Hydrilla* and in the former genus, the majority of biomass is located near the water surface (Fig. 1F). Leaves curved downwards in *Egeria*. On the other hand, *Hydrilla* leaves are narrow and straight. No tuber formation occurs in *Egeria*, but potato-like tubers found in *Hydrilla* which remains attached to the roots in the mud. Double nodes present in *Egeria*, which produce lateral buds, branches, and adventitious roots. Double nodes typically spaced along stems at 6-12 node intervals in *Egeria* (Cook and Urmi-König, 1984). Only fragments with a double node develop into new plant. In *Hydrilla* double node is absent. All these differences are shown in Fig. 2.

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