

## **Factors affecting the invasion of *Najas marina*, Linnaeus 1753 (Family Najadaceae) in the Ramsar Wetland of Madu Ganga Estuary, Sri Lanka**

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*Najas marina* is one of the nine invasive alien floral species that have been identified in the Ramsar wetland of Madu Ganga Estuary. This aquatic macrophyte is considered as a huge threat to the existing ecological balance of this ecosystem and also it is a nuisance to the tourism industry operated within the estuary. Present study was conducted from March to November 2014 to identify the physicochemical parameters that are important for the spatial and temporal distribution of *Najas marina* in this estuary. Five sampling sites where *Najas marina* was present and another five sampling sites where it was absent were selected to cover the entire estuary. The ranges of the physicochemical parameters during the study period were depth: 0.60 - 5.84 m; Secchi disc depth: 0.47 - 1.48 m; temperature: 27.05 - 34.92 °C; salinity: 0.86 - 21.57 ppt; pH: 5.04 - 8.80; Dissolved Oxygen (DO): 4.60 - 9.62 mg/L; Biological Oxygen Demand (BOD<sub>5</sub>): 0.25 - 2.89 mg/L; nitrate-N: 0.01 - 0.87 mg/L; total dissolved phosphorous: 0.03 - 0.26mg/L and total phosphorous concentration: 0.04 - 0.46mg/L. The distribution of *N. marina* in Madu Ganga Estuary was found to be determined by a combination of physicochemical parameters including depth, Secchi disc depth, DO, salinity, nitrate-N concentration and total phosphorous concentration. *N. marina* entirely disappeared from the estuary by May 2014 with decreasing salinity (8.55ppt) and again started to emerge by September 2014 at a bay region where water was stagnated. It was present in shallow sites with high nitrate and total phosphorous concentrations and low DO levels. The study showed that the entire estuary is under the threat of invasion by *N. marina* because when all physicochemical parameters were considered, the 10 sites were more or less similar to each other at 94.5% level. Although the invasion of *N. marina* is highly temporal and naturally controlled, the further spread of this species could be controlled by mechanical removal.

Keywords: invasive flora, wetland, BOD, DO