Abstract

This study aims to identify drivers of hydrological changes, their impact on occurrence of aquatic macrophytes, especially of *T. angustifolia* (Typha) that is considered to be invasive in these wetlands, with a view to developing a pragmatic strategy to control its distribution. The relatively high colonization potential of Typha was revealed by the findings on reproductive biology and life cycle, including floral, individual, and population level phenology, pollen and seed biology, breeding system and its adaptation to environmental changes. Analysis of rainfall pattern of Bundala area with temporal data from 1988 to 2019 (30 yrs), revealed that the cause of altered hydrology is not due to increasing rainfall but due to release of agricultural drainage from irrigation works operational since 1986 in the immediate catchment of Bundala wetlands. High resolution satellite images of the wetlands from 2005-2019 were analyzed to trace the spread of *T. angustifolia* in and around the lagoons revealed that distribution of freshwater aquatic macrophytes has reduced the open water areas of the wetlands and the extent occupied by *Nelumbo nucifera* exceeds that of *T. angustifolia.* Findings of this study corroborated that nutrient influx into Malala-Embilikala lagoons through irrigation drainage is a major driver responsible for abundance and distribution of aquatic macrophytes in these wetlands. Findings on diversity and abundance of fish in the lagoons revealed that presence of *T. angustifolia* contributes to provide feeding, breeding and nursery habitats for fish and reptiles (crocodiles). Contribution of Typha to reduce eutrophication and to sequester carbon in soils is noteworthy. Although Typha is not used any form currently by the rural communities, its' potential to be used as food and raw material was researched and found that it could provide raw material to initiate new livelihoods, such as production of health food items, hand-made paper, weaved utility and ornamental items and liquid organic fertilizer. A community-based management strategy is proposed to control its distribution through systematic utilization of *T. angustifolia* in these wetlands as a paradigm for application of MAB concept, i.e. conservation through human welfare. Findings of the present study also highlights that changed hydrology due to irrigation practices has created new habitats conducive for *T. angustifolia,* nevertheless, it has not out-competed other aquatic macrophytes that have colonized the wetlands subjected to hydrological changes. *T. angustifolia* therefore could more realistically classified as a superior colonizer of littoral areas of freshwater/ brackish water wetlands than an invasive plant.

Key words: Hydrology, Invasive plants, Tropical wetlands, *Typha angustifolia,* Wetland services