

Assessment of invasive alien species at Bundala Ramsar wetland, Sri Lanka, for their control and management

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Invasive Alien Species (IAS) are a current focus of interest to ecologists, conservationists and natural resource managers, due to their rapid spread, threat to existing biodiversity and damage to ecosystems. The increasing environmental losses in national parks of Sri Lanka caused by IAS amplify the need for their identification and implementation of measures to control them. Bundala National Park (06°08' - 06°14' N; 81°08' - 81°18' E), covering an area of 6,216 ha, is located about 250 km Southeast of Colombo. The Park is Sri Lanka's first wetland ecosystem that has been declared under the Ramsar Convention. It consists of mainly a dry thorny scrubland and shallow brackish water lagoons with rich biodiversity. No detailed studies have been conducted so far on IAS of this important wetland habitat. Hence, field surveys with GIS-based continuous monitoring are vital for conserving the biodiversity of such ecosystems. The main aim of this study is to determine the extent of IAS and strategies that are suitable for controlling the invasion of IAS within the park. A GIS approach combined with field surveys was carried out during January to August, 2016, to determine the extent of IAS spread in the park. The National Park was divided into a 100 m × 100 m grid, and the coverage of invasive plants was mapped using a Global Positioning System (GPS). Maps showing the distribution of invasive plants were prepared using Arc GIS version 10.4.1. Information on the extent and distribution of invasive plants derived from GIS maps and data on species composition were carefully analyzed. According to the survey, *Prosopis juliflora* and *Opuntia dillenii* were the most abundant species and covered approximately 486 ha (8%) and 567 ha (9%) of the total area of the park, respectively. Because of increasing encroachment by IAS, a proper management plan to control populations, and an efficient monitoring programme are needed. Significant spread of invasive aquatic plant species such as *Eichhornia crassipes*, *Salvinia molesta* and *Typha angustifolia* in lagoon areas of the park was recorded and habitat management can be recommended to control populations. Changing landscape characteristics, degrading feeding grounds of fauna, and blocking migratory and movement pathways of animals by IAS are the most notable impacts of IAS in the wetland. The information on the extent and the distribution of invasive plants in the Bundala wetland is useful to conduct successful and scientifically acceptable eradication programmes.

Keywords: Bundala Ramsar wetland, invasive alien plant species, aquatic invasive plant