

Abstract

Bundala National Park (BNP) is the first Ramsar wetland in Sri Lanka. Present study aimed to investigate ecological aspects of Malala lagoon, Embillakala lagoon and Bundala Lewaya in BNP. This study also focused on some sociological aspects in BNP. Physico-chemical parameters and biological parameters of selected lagoons were probed in random, spatial and temporal scale. Diversity and feeding preferences of fish fauna inhabiting these lagoons were examined. Birds associated with lagoons were investigated with a special reference to their habitat preferences and abundance. Ecological importance of pondweed beds of Embillakala lagoon was analyzed. The association between neighboring human community and BNP was also investigated. Morphological features and hydrological characters of each lagoon differed. Present study identified important phytoplankton, zooplankton and benthic assemblages in each lagoon. Seasonal variation of physicochemical parameters and biological parameters of three lagoons were described. Data indicated the spatial and temporal changes of physico-chemical parameters and key zooplankton species in Malala lagoon. Salinity fluctuations accompanied with changing nutrient levels seemed to play a key role in designing the biological environment of the lagoons. Thirty-two fish species were recorded from three lagoons. They were categorized into demersal, pelagic, benthopelagic and reef associated guilds. Fish stomach content analysis highlighted the important food items in lagoons. Fishes

were classified as piscivorous, zooplanktonivorous and omnivorous depending on their feeding preferences. Analysis of bird communities revealed that each lagoon performed as a specific habitat for birds. Lagoon area and salinity strongly correlated with bird abundance. The reduction of abundance of migratory waterfowls and resident water birds taxa were noted. The difference of physico-chemical parameters and biological parameters between pond weed beds and adjacent weed free localities revealed that they perform as an important micro-ecosystem. A significant density of phytoplankton, zooplankton, and benthos inhabited the pondweed beds in contrast to the non-weedy localities. Overall data indicated that studied lagoons are delicate and extremely dynamic ecosystems. Poor education level associated with underprivileged living condition was common in the studied human community. Occupational practices such as fishing, land use practices, utilization of other park resources have profound effects on the health of the Park environment. Freshwater discharge into lagoons and anthropogenic desiccation of lagoons were identified as key factors affecting lagoon hydrology and biology. This study stresses the importance of long term monitoring programs in Bundala lagoons. Action plans and management plans should be designed in accordance with the dynamic nature of lagoons and stakeholder perceptions. Investigation of ecological characteristics more precisely can strengthen sustainable utilization of resources and conservation efforts.