Structure of the avifauna in major lagoons of the Bundala National Park (A Ramsar Wetland in Sri Lanka) in relation to several habitat characteristics

Chandana E.P.S[1]., Amarasinghe N. J. de S[1]. and Samayawardhena L.A.[1 2]
Department of Zoology, University of Ruhuna, Matara

[1]Department of Zoology, Faculty of Science, University of Ruhuna [2] present address 20, Kuruppu road, Boralla

Correspondence: pschandana@zoo.ruh.ac.lk

The Bundala National Park (BNP) was initially established as a sanctuary in 1969. BNP was declared as a RAMSAR wetland in 1990 owing to its significant role as a wintering site for migratory birds. Malala (650 ha), Embillakala (450 ha) and Bundala Lewaya (550 ha) are major lagoons in BNP. The ecological relationships between BNP lagoons and associated avifauna were poorly documented. Present study investigated waterbird abundance and diversity with a special reference to the habitat characteristics of BNP lagoons. Freshwater input via several channels increased the water volume in Malala lagoon (3.1 ± 0.3 m) and Embillakala lagoon (2.9 ± 0.3 m) creating unfavorable condition for wading birds and causing water salinity to decrease and nutrients to be loaded at critical levels. Mean Shannon's diversity index and evenness for bird population associated with lagoons (Malala - 2.9 ± 0.8, 0.51 ± 0.2, Bundala Lewaya - 2.1 ± 0.9, 0.72 ± 0.3 and Embillakala - 3.1 ± 0.9, 0.64 ± 0.2) varied among lagoons. Spatial and temporal changes of the bird density and diversity of each lagoon were significant. Although Bundala Lewaya was the shallowest lagoon, it did not support rich wading bird community probably indicating the poor habitat quality by low Chlorophyll a (0.01-0.6 µg/l), low primary productivity (0.05-0.8 mg/l/h) and unfavorable temperature (29-32 ^{0}C), lack of vegetation, low fish diversity and poor benthic and planktonic fauna. In Embillakala and Malala lagoons, Net Primary Productivity, Chlorophyll *a*, temperature and dissolved oxygen varied from 0.4-1.8 mg/l/h, 0.9-6.5 µg/l, 28-30 ^{0}C and 4.8-16.2 mg/l respectively. Highest and lowest salinity levels recorded in Embillakala, Malala and Bundala lagoons during study period were 0.4 ppt-9.6 ppt, 0.71-48.3 ppt and 13.8-46.32 ppt respectively. Fluctuations of bird density and diversity significantly correlated with lagoon area, water depth and salinity. During the study period ducks, egrets, herons, jacanas, storks, stilts, pelicans dominated the Embillakala and Malala lagoon while Bundala Lewaya mainly accommodated sand pipers, sand plovers, terns and cormorants. Malala lagoon supported a moderate density of aquatic birds during the study period. More diverse community of birds was recorded from highly heterogeneous localities. Although these lagoons are in the same landscape, they vary each other physically and chemically so that different bird communities might be supported.

Keywords: Bundala National Park, Lagoons, Waterbirds