ABUNDANCE AND diversity of Avifauna IN MIHINTALE tank

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Wetlands are recognized as highly important ecosystems with diverse attributes including a distinctive avifauna. Freshwater wetlands provide suitable breeding and foraging sites for many birds. Globally threatened and non-threatened bird species are depending on wetlands to fulfill their daily requirements such as food, water and shelter. Mihintale tank is one of the most important wetlands, which is located in Mihintale Sanctuary, which is situated eight miles from Anuradhapura in the North Central province, Sri Lanka. It is also one of the 70 *Important Bird Areas* (*IBAs*) in Sri Lanka[1] in its presence of vigorous members of water birds. The aim of this study was to determine the abundance, species richness, diversity of the water birds in the tank and the anthropogenic threats encountered.

This research was carried out from September, 2011 to July, 2012 and was conducted in Mihintale tank, demarcated by the boundary of A9 road, A12 road and Rajarata university premises. It is surrounded by grasslands and shrub lands. *Terminalia arjuna, Ficus* spp. and *Syzygium* spp. are the dominant species surrounding the tank. Point count and opportunistic methods were conducted daily in the three selected sites around the tank to determine the species richness and abundance. Abundance was calculated using number of individual birds in each species during the study period. Data was collected from 6.00 to 7.30 hrs and from 16.30 to 18.00 hrs. On the spot identifications were made using binoculars with 10x50 field 5.70 100MAt 1000M, with the aid of field guide books [2]. Data were analyzed using MINITAB version 15. The tank is dominated by several flora species such as *Cyperus rotundus, Nelumbo sp., Nymphea sp., Azolla,* and *Typha.* Eastern boarder of the tank is dominated by *Typha* sp. (80%) and other reed species (20%) while the western border is covered with *Ceyperus* sp. and *Panicum* sp. Middle of the tank is covered with *Nelumbo sp. and Nymphea sp. while some areas were covered with Salvenia and Eichhornia spp. Some dead trees present along the periphery of the tank and provided habitats for the water birds.*

Altogether, 36 bird species belonging to 23 families were recorded during the study period. Out of 36 species, 01 was a winter visitor and 35 were resident species. A total of 105±80 individual birds were recorded. There were 7 species recorded as dominant species while 3 species namely Spotted-billed pelican (*Pelecanus philippensis*), Black winged stilt (*Himantopus himantopus*) and white cotton pigmy goose (*Nettapus coromandelianus)* were recorded as rare species. Bird populations are influenced by a variety of factors that range from the presence of suitable nesting habitat, predators, and food supplies to climatic conditions and land-use patterns [3]. Present study revealed that there was no uniformity in the bird distribution pattern in the tank. Total numbers of bird species fluctuated with the climatic factors. Lesser whistling ducks (*Dendrocygna javanica*) and Purple swamp hen (*Porphyrio porphyrio*) were high in rainy days (fig 1). Cattle egrets (*Bubulcus ibis*), Little cormorants (*Microcarbo niger*) and pheasant-tailed jacanas (*Hydrophasianus chirurgus*) can adapt for the both weather types. Abundance of Black headed ibis (*Threskiornis melanocephalus*) was high in early September and their abundance was reduced gradually, rest of the months. This may be due to the reduction of food availability and inundation of the area during the rainy season. This species was found migrating to the nearby paddy fields during the farming period. Abundance of birds was significantly different in evening than in morning hours ($p=0.098$). The reason may be to access to roosting sites. Shannon Diversity Index (H') for morning and evening were 1.07 and 1.52, respectively. Among the 7 dominant species, abundance of the cattle egrets (*B. ibis*) and the lesser whistling ducks (*D. Javanica) were high both in the morning and evening hours (fig 2).*

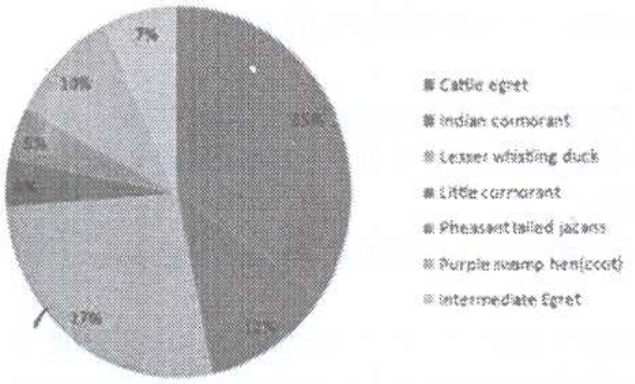

Figure 1: Abundance of dominant species

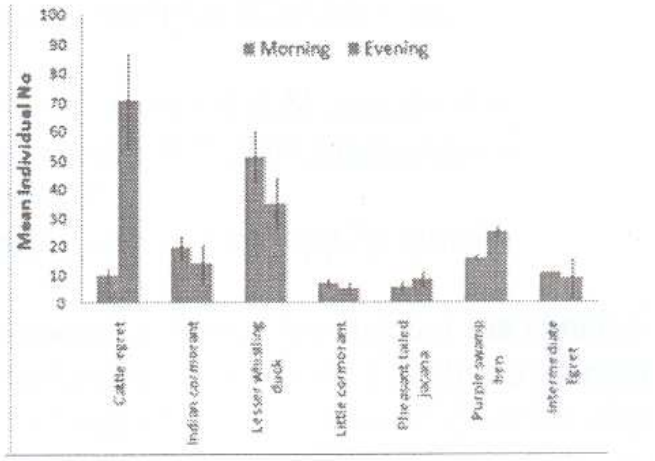

Figure 2: Diurnal variations of dominant species in the study area

Birds are ideal as an Index of Biotic Integrity since their presence or absence tends to signal the health of several conditions that are keys to the proper functioning of an ecosystem. Furthermore, this relationship is often associated with levels of human disturbance [5]. They are relatively easy to sample and their natural history is well described relative to other taxonomic groups in wetland ecosystems. Major threats in the tank ecosystem are invasion of the. *Nelumbo sp.* and *Typha* sp. and discharging effluents from the adjacent hotels. Even though the *Typha* sp. was identified as an invasive species this provides micro-habitats for some birds like munias (*Lonchura* sp.), Baya weavers (*Ploceus* sp.), water hens (*Amaurornis phoenicurus*) etc. Also villagers use this tank for fishing and flower collecting as one of their major source of income generation activities. Another pathetic situation was, people were using this environmentally important area for their entertainment and garbage dumping. Those pollutants could change the quality of water in the tank. Changes of water quality directly affect to the aquatic fauna in the tank [4].

Seven species dominated in the tank and bird species undergo a diurnal fluctuation in this area. The major threats of birds in this area were dumping of garbage, discharge of waste water, fishing activities and urbanization. Continuous monitoring of aquatic bird populations with relation to habitat parameters is highly recommended.

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