SPATIAL AND TEMPORAL VARIATIONS OF FISH ASSEMBLAGES AND THEIR ASSOCIATIONS IN THE KALA OYA RIVER BASIN, SRI LANKA

T.A. Hangawatta*, T.S.P. Fernando, D.D.G.L. Dahanayaka

Department of Zoology, The Open University of Sri Lanka

The present study was carried out to determine the fish species composition, abundance and distribution in the Kala Oya River Basin (KOB), Sri Lanka to investigate how the distribution of fish species is affected by habitat variables such as lentic/lotic nature and disturbed/ undisturbed nature of land usage in the area. Fish samples were obtained from 08 sampling sites scattered throughout the KOB and among them, two represented lentic habitats and the rest were lotic habitats. Considering the land usage, five of the selected sampling sites were in a disturbed condition due to the input of various pollutants and high agricultural utilization activities. The other three sites were comparatively undisturbed by anthropogenic activities as they are situated along the Wilpattu forest boundary. Sampling was carried out in monthly intervals from August 2018 to January 2019. Cast nets (1/2" mesh size and 8/5" mesh size), hand net (36 cm * 25 cm), underwater visual censes of line transects and point counts were used for the sampling of fish species. Standard keys and descriptions were used to identify fish species. Diversity indices such as species richness, Shannon-Weiner diversity index, Buzas and Gibson's evenness and species dominance were calculated. Analysis of similarity (one-way ANOSIM) was performed to test significant differences in species diversity among sampling locations and sampling months to understand spatial and temporal variations of fish species composition. General water quality and environmental parameters were also measured to understand microhabitat conditions.

The study records 45 fish species belonging to 18 families and among them 10 endemic species were recorded. *Amblypharyngodon grandisquamis, Dawkinsia singhala, Devario malabaricus, Puntius bimaculatus, Puntius dorsalis, Puntius thermalis* and *Rasbora microcephalus* was the most common species throughout the study site. *Rasbora microcephalus* was the species with the highest abundance. Pairwise analysis of similarity shows significant dissimilarity in fish species composition in lentic and lotic habitats as well as in wet - dry seasons. There was no significant dissimilarity of fish species composition in disturbed and undisturbed habitats. Measured environmental factors did not signify detrimental impacts upon fish species throughout the study. However, further detailed study of environmental factors will provide better insight to understand the impact of environmental factors towards the abundance of fish species. The results of the present study clearly show that the KOB is rich in fish species diversity. Some fish species that were not recorded in earlier studies in the KOB were also recorded during the present study. Results of this study further indicates that fish species composition and diversity in spatial-temporal scale,

and their relations to dynamic environment conditions provide insight for the necessity of conservation and management of the river basin community.

Keywords**:** Fish species diversity, Kala Oya river Basin, Underwater visual census

**Corresponding author: theraa162@gmail.com*