The Fishery of the Nuwara wewa and Ranawa Reservoir in the Anuradhapura district: a Comparative Study

R.M.G.N. Rajapaksha, T.V. Sundarabarathy and S. Nathanael

Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale

Sri Lanka is blessed to possess a large acreage of reservoirs, mostly located in the dry zone of the country. These reservoirs which are mostly irrigational supported a lucrative commercial fishery primarily based on the exotic tilapia species *Oreochromis mossambicus* and *O. niloticus*.

The present study focused on comparing the current status of the fishery and water quality parameters in the Nuwara wewa and Ranawa reservoir. Data were collected over a four month period by visiting fish landing sites of the two reservoirs and recording the fish catches, length and weight measurements of the dominant fish species in the catches and by using a pre-tested questionnaire. Fish catch data were analyzed using MS EXEL. Correlations between fish yield and diversity indices with physico-chemical parameters of water were analyzed using PC-ORD4 and SAS packages. MINITAB was used for computation of a one-way ANOVA.

The fishery at Nuwara wewa depends on the exotic tilapias *O. niloticus* and *O. mossambicus* whereas the Ranawa reservoir depends on stocked *Catla catla, Cyprinus carpio* and *O. niloticus*. As there were no fish stocking programmes in Nuwara wewa, carps are not available in the fish catches. Estimated total fish production per month in Nuwara wewa and Ranawa reservoir were significantly different ($p<0.05$) with a higher yield being recorded at the Ranawa reservoir. A significant difference ($p<0.05$) in condition factor of the fish species and water quality parameters except for water temperature and dissolved oxygen occurs between the two reservoirs. Dominant fishes in both reservoirs showed an allometric growth except for *O. niloticus* in the Nuwara wewa. A strong correlation was obtained between water quality parameters (conductivity and pH) and fish yields with water level fluctuation. Species richness and dominance in both reservoirs were strongly correlated with dissolved oxygen, biochemical oxygen demand, conductivity and pH which were within the preferable range for the fish species found in the water bodies.

Overexploitation of the resource by illegal fishing, irregularity in fish stocking, lack of intervention by responsible authorities, and conflicts between stakeholders were the main factors that have led to declining fish yields in the Nuwara wewa. In contrast, Ranawa reservoir maintains a good fish yield through suitable management by an efficient fisheries society. Active participation of both resource users viz. members of the fishing community and state representatives for fishery activities, controlling illegal fishing, management of the fisheries society through skilled leadership and regular stocking are some suggested remedial measures to uplift the dwindling fishery of the Nuwara wewa.