

## **Influence of rainfall and lunar rhythm on daily catches in the fisheries of three Sri Lankan reservoirs: A fresh view of management**

RPPK Jayasinghe, US Amarasinghe

Department of Zoology, University of Kelaniya

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### **ABSTRACT**

The status of the fisheries was studied in three Sri Lankan reservoirs namely Minneriya, Victoria and Udawalawe. Monthly fish yields were 29.9-38.9, 3.96-25.36 and 10.17-171.62 ( $\times 10^3$  kg) in the three reservoirs respectively. Two cichlid species (*Oreochromis mossambicus*, and *O. niloticus*) represented the majority of the commercial fish catches in Minneriya and Victoria Reservoirs but in Udawalawe reservoir, native cyprinids and introduced Indian carps formed significant proportions in the landings. The highest (1165.80) and the lowest (212.18) values of catch per unit effort (CPUE in  $\text{kg fisher}^{-1} \text{ month}^{-1}$ ) were recorded in Udawalawe and Minneriya reservoirs respectively.

It was noted that there was a significant daily variation in CPUE so that the mean monthly CPUE did not reflect the actual contribution of the fishery to the maintenance of living standards of fishing communities. Attempts were therefore made to investigate the influence of rainfall and lunar rhythm on the daily CPUE. Linear regression analysis carried out with a one-day time lag, indicated that in Udawalawe reservoir, CPUE of indigenous cyprinid *Labeo dussumieri* ( $R^2 = 0.055$ ;  $p < 0.05$ ) has significantly increased with rainfall. Kruskal Wallis test indicated that CPUE of cyprinids (*Labeo dussumieri* and *Catla catla*) varied significantly ( $H = 15.60$  and  $H = 10.84$ ;  $p < 0.05$  respectively) with lunar phase, the highest CPUE being in the first quarter phase in Udawalawe reservoir. The same trend was observed in Victoria reservoir for exotic cichlids (*Oreochromis mossambicus*, and *O. niloticus*). As the fishers usually have the habit of spending the entire daily income, it is essential to take daily variation in CPUE into account in defining management strategies for the fishery. This should involve introducing a money savings system based on rural banking.