

## Effect of water quality parameters and substrate type on fish distribution in upper and middle catchments of 'Gin Ganga' river drainage basin

D. Gajamange, W. A .H. P Guruge , N. J. De. S. Amarasinghe \*

Department of Zoology, University of Ruhuna, Matara.

Both biotic (predation and competition) and abiotic (physico-chemical) factors play significant roles in determining the distribution of fish species, since they may change from upstream to downstream reaches. Present study was carried out to determine the influence of substrate type and water quality parameters on fish distribution in 'Gin Ganga', which located in southwestern ichthyological province of Sri Lanka. Study was commenced in November 2000 and continued until April 2001. The entire study period fall within the dry season. Eight sampling reaches were selected and within each reach two sites of about 15 m stretches consisted of pools, runs and riffles were sampled, during two visits. Fish were caught using encircling net, gillnet, hand net and sweep net. Physico-chemical parameters such as water temperature, flow rate, conductivity, DO, BOD, salinity and pH were recorded in each reach. Substrate composition was also determined by the intensity of particle sizes distributed within randomly placed 1m x 1m quadrates in each reach. Total of 32 fish species were recorded from the entire study area including four salt-water dispersants and twelve endemics. Of the water quality parameters, water temperature and flow rate showed significant variation from headwaters to down stream reaches. Although, it was not correlated with the distribution of each fish species. However, the water temperature was found to be negatively correlated ( $P < 0.05$ ,  $r = 0.8499$ ) with the distribution of *Acanthocobitis urophthalmus* in 'Gongala' mountain stream where water temperature of 21.6 °C which was the lowest. Different substrate compositions of boulder slab, boulders, cobbles, gravel, sand, silt and detritus were found along the study reaches. Nine out of 32-recorded species showed statistically significant substrate specific distribution. This study concludes that the water quality parameters do not pose any effect on the distribution of recorded fish species along the upper reaches to down reaches, whereas the substrate in upper and middle reaches play a major role in the fish distribution of 'Gin Ganga' river basin. However it is also important to note that the water in these stretches of river was in good quality. We also highlight the importance of conducting the study during the wet season to arrive at more valid conclusions.

\* [idesilva@zoo.ruh.ac.lk](mailto:idesilva@zoo.ruh.ac.lk)

Tel: 041 2227025