EFFECT OF LAND-USE PATTERNS ON LOTIC HABITATS OF THE NILAMBE OYA CATCHMENT

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Mahaweli Basin, the largest river basin of Sri Lanka, which covers about 20 percent of the Island, has been used by man for different purposes. Diversion and modification of the River and its Basin have resulted from construction of irrigational tanks in the low-country Dry Zone by ancient rulers; and deforestation and intensive cropping with coffee and tea in up-country areas occurred during the British regime. Recently, the accelerated Mahaweli Project has resulted in hydropower dams and irrigational tanks. Rapid changes in a river and its catchment basin would affect the natural equilibrium of the ecosystem and the surrounding environment. Therefore, research on the instream and offstream aquatic ecosystem of the Mahaweli Basin is essential.

Studies are being conducted at a preselected microcatchment (i.e., Nilambe Oya) in the Upper Mahaweli Basin to investigate whether the land-use patterns may have significant effects on physiochemical and biological processes of the lotic habitat. Monthly sampling is carried out at 10 preselected sites which entirely covers the land-use patterns of the Nilambe Oya catchment. Stream water samples are analyzed for physiochemical characteristics. The effects of seasonal discharge of stream flow from the Nilambe power station on the lotic aquatic ecosystem will be investigated by comparing the downstream and upstream areas of the dam. Further, leaf litter decomposition of both exotic and indigenous species will be examined using the litter-bag technique. The decay rate will be determined by analyzing the CHN ratio over time.

Water samples were analyzed for September and October 1989 for pH; conductivity; suspended solids; and concentration of Na^+, K^+, Ca^{++}, Mg^{++}, Fe^{++}, and HCO_3^-. Sediments on substrates were collected and analyzed for organic and inorganic fractions.