EXTENT OF THE CHATCHMENT OF RESERVOIRS OF SRI LANKA : AN IMPORTANT ASPECT IN THE MANAGEMENT OF THEIR CAPTURE FISHERIES

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Tropical reservoirs are extensive and are bound to increase further in the twenty first century leading to significant changes in landscape of the tropical belt. These reservoirs are primarily constructed for irrigation, generation of hydroelectricity and water supply schemes etc. Development of inland fisheries is a secondary use of most reservoirs. In Sri Lanka, most reservoirs are scattered in the rural areas of the country so that investigation of the fisheries of individual reservoirs in order to draw up a fisheries management plan for reservoirs of the country, is practically difficult if not impossible.

Studies were carried out in 11 perennial reservoirs of Sri Lanka. Basic limnological parameters were determined in each of these reservoirs. Daily data in fish production and fishing effort were collected on each reservoir at the landing sites with the help of field data collectors. Data on catchment areas of reservoirs were obtained from Irrigation and Survey Departments. Attempts were made to determine land-use patterns of catchment areas of reservoirs using Geographical Information Systems (GIS) based on 1:50,000 maps.

It is evident that the chlorophyll-a contents (Chl-a) in reservoirs are positively influenced by their catchment areas. Catch per unit effort (C/f) expressed as catch per boat per day is positively influenced by Chl-a. Present data do not indicates that morphoedaphic indices defined as ratios of Alkalinity and Conductivity to mean depth, are significantly related to C/f.

Catch per unit effort (C/f) is positively correlated with catchment area (CA) of reservoir according to the following equation.
$$C/f = 8.4266 + 0.0147 \, CA \; (\, r = 0.834; \, p < 0.01)$$
Land-use patterns of catchment areas of reservoirs almost entirely consist of dense forests. Present study indicates that in any strategies for the sustainable management of reservoir fisheries of Sri Lanka, a provision should be included for the management of catchment areas of reservoirs. As evident from the present study, GIS is an effective tool for planning a practically feasible management strategy for catchment areas, hence capture fisheries of reservoirs of Sri Lanka.

KEYWORDS: Reservoirs fisheries; Geographical Information Systems; GIS; Catchment; Limnology