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Comparison of fish diversity and the habitat structure of streams in rubber and oil-palm plantations in Nakiyadeniya

Nakiyadeniya is situated in Galle District and belongs to lowland wetzone The low land wet zone provides important habitat for the fresh water fauna. A Large number of streams flowing through plantations, those streams are important to our fresh water fauna. In this region planters intend to replace rubber plants with oil palm and no proper studies have been conducted to investigate the effects to the fresh water fish diversity and the environmental impact from these plantations.

The study was carried out to investigate the fresh water fish diversity and the habitat structure of streams in rubber and oil palm plantations. Two streams were selected representing each plantation and they were Rubber (A) and Oil palm (B). Fresh water fish diversity was studied by using gill net (mesh size was 1cm) and specially prepared hand net (mesh size was 0.5cm). Habitat structures partitioned into a physical, chemical and cover components. Depth, flow velocity, temperature, light intensity, substrate characters, and turbidity were measured as physical component where as Biochemical Oxygen Demand (BOD), Total hardness, and pH were measured as chemical component. Under cover component extent of leaf litter, filamentous alga, submerged vegetation, and riparian cover were measured. Field observations were carried out fortnightly from May 2000 to January 2001. In the stream "A", 18 fish species belong to 09 families were recorded. Out of that 08 species were endemic to Sri Lanka. In stream "B", 17 fish species belong to 09 families were recorded and 06 were endemic. No clear variations were observed in Depth, flow velocity, temperature, light intensity, and substrate characters. But stream "B" was more acidic than stream "A". The average BOD values in stream "A" and stream "B" were 0.015 mgl-1 and 0.045 mgl-1 respectively. In comparing the cover component density of submerged vegetation and riparian cover in the stream "B" were higher than that of stream "A". The similarity coefficient of fish community between two streams was 0.8. According to that, similarity among the two fish communities in the both streams was high. Therefore, we can conclude that plantation type is not directly affected to the fish species diversity while there is a difference in the habitat structure. Therefore, a long-term study of systematic biodiversity exploration and application of advance water analysis techniques are necessary for further studies.