

**IMPACT OF EXOTIC CICHLIDS ON RIVERINE  
COMMUNITIES OF INDIGENOUS FISH SPECIES OF  
SRI LANKA.**

**BY**

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## Abstract

Five species of tilapia were introduced to Sri Lanka freshwaters during the second half of twentieth century to establish an inland fishery in the country in order to increase animal protein supply for rural communities. Of these, *Oreochromis mossambicus* was well established in Sri Lankan reservoirs and now it has become the backbone of the inland fishery. However, there were some claims that introduced cichlids, especially tilapia pose detrimental impacts on the indigenous fish fauna of Sri Lanka. On the other hand, there are controversial opinions to indicate that there is no substantiated evidence of negative impacts of exotic cichlids on indigenous fish communities.

Since introduction of tilapia species into Sri Lanka's inland waters, no critical assessment has been made to study its impacts on indigenous fishes especially in the riverine habitats. In the present study, attempts were made to investigate the impact of *O. mossambicus* on indigenous fish communities in two riverine habitats of Sri Lanka. Dietary overlaps among co-occurring species, food electivity and habitat preference of the constituent species in the fish communities of two streams were the major criteria used for investigating impact of *O. mossambicus* on indigenous fish species.

Studies were conducted in Debegama stream in Kelani river basin (Atalugama in Kegalle district) and Induranella stream in Attanagalu Oya river basin (Waharaka in Gampaha district). In each location in the two river basins, fish species were sampled approximately once in three months from March to November 2004 (three sampling occasions) and the gut/ stomach content was analyzed. The phytoplankton and zooplankton samples were also collected from the habitats simultaneously. Gut/ stomach content and plankton samples were analyzed in the laboratory. Observations were made to identify bottom characteristics and environmental parameters in the two

streams. Dietary overlaps among constituent fish species in the fish communities of the two streams indicated that the food items of fish species with high dietary overlaps are abundant in the habitats. Stenophagus species have low dietary overlaps with *O. mossambicus*. Food electivity indices also showed that *O. mossambicus* and those with high dietary overlaps with *O. mossambicus* prefer food items, which occur in high abundance.

*O. mossambicus* in both streams did not feed on fish. Although fish eggs were present in stomachs of some specimens of *O. mossambicus* in Induranella stream, as a whole, *O. mossambicus* can be treated as a non-piscivore. Canonical Correspondence Analysis indicated that some constituent species share habitats of similar environmental characteristics. Nevertheless, there were no food limitations for any of the constituent species with high dietary overlaps with *O. mossambicus*.

Although there are established *O. mossambicus* populations in the two streams, this species exhibits restricted distribution. Its distribution is restricted by flow velocity because being a limnophilic species, *O. mossambicus* prefers slow flowing habitats.

As *O. mossambicus* and co-occurring native fish species share food items of high abundance and as *O. mossambicus* exhibits restricted distribution in the two riverine habitats, it can be concluded that this exotic cichlid species does not pose a significant threat to existence of native fish species in the two streams.