

## **Impact of fishing using exotic plant, white hoary pea *Tephrosia candida* (Papilionoideae) on diversity & abundance of fish in the streams at the boundary of Sinharaja Man and Biosphere forest reserve, Sri Lanka**

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Fish poisoning using exotic plant, *Tephrosia candida* is currently taking place in streams in southern part of Sri Lanka. This study was carried out to investigate the impact of this fishing activity on fish diversity and abundance in streams at the boundary of the Sinharaja forest. The Sinharaja forest that is located in south west part of the country is one of the most important watersheds in the country with number of streams draining into 'Kalu Ganga' and 'Gin Ganga' rivers.

Three streams that were subjected to fish poisoning served as treatments while two streams that did not subject to fish poisoning served as controls. Physico-chemical parameters of water in streams were measured in bimonthly intervals for six times. Fish were sampled in three randomly selected locations (6 x 2m stretch) along each stream using electro fishing device, hand net and cast net. Number of fish species and their abundance in the streams were recorded and Shannon-Weiner diversity index for each stream was calculated.

Physico-chemical parameters of water were not significantly different among streams. Out of fifteen fish species recorded, nine were endemic, *Aplocheilus dayi*, *Belontia signata*, *Clarias brachysoma*, *Dawkinsia singhala*, *Garra ceylonensis*, *Schistura notostigma*, *Pethiya nigrofasciatus*, *Puntius titteya* and *Systemus pleurotaenia* while six were indigenous, *Glossogobius giuris*, *Devario malabaricus*, *Puntius bimaculatus*, *Puntius dorsalis*, *Puntius vittatus* and *Rasbora dandia*. All fifteen fish species were recorded in two control streams while only six species were recorded in treatment streams. The total fish abundance of the control streams (30-39) were significantly higher than the treatment streams (4-9). The Shannon-Weiner diversity index was significantly higher in the control streams (1.98-2.04) than the treatment streams (0.99-1.52). According to the cluster analysis based on Bray-Curtis similarity matrix of fish composition, mainly two clusters were formed. The fish composition in three treatment streams was more or less similar to each other while fish composition in control streams clustered together. The two clusters were significantly different from each other (one way ANOSIM;  $p < 0.05$ ). Fish community composition of treatment streams has changed as a result of fish poisoning using *T. candida*. Therefore fishing using *T. candida* poses a great threat to freshwater fish diversity, abundance and species richness in the country.

Keywords: *Tephrosia candida*, sinharaja forest, fish diversity, endemic fish