D-13: Some observations on fish fauna of anopheline breeding habitats at Gomadiyagala; a village in the North-Western Province

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Field studies were carried out in Hakwatuna Oya at Gomadiyagala, a village in the Kurunegala district having a population of about 250 people, mostly migrants, living on slash and burn cultivation. Drying up of the stream in drought provided the breeding habitats for anophelines and consequent outbreaks of malaria.

The study includes the identification of fish fauna, determination of duration time for gut fullness,clarification of related factors of anopheline breeding in riverine habitat and the potential use of larvivorous fish in anopheline control.

The study was carried out during April-October 1991 in the major tributary of the stream.

Sites were selected to study the fish fauna and the physical properties of habitats in relation to fluctuation of anopheline and fish breeding. Fish samples were fixed in 5% formalin every hour to det ermine the duration time of gut fullness. Fish were identified using keys of Manro (1995). Mendis & Fernando (1962); Pethiyagoda (1991). The state of digestion in gut contents for each fish species was determined according to their standard length. Electrical conductivity, dissolved oxygen, temperature, pH and primary productivity were measured fortnightly. Data on rainfall and relative humidity were obtained from the field laboratory. The abundance of fish was determined using beach seine net - 3/8" mesh-in appropriate places at each site and random samples were fixed for gut content analysis.

The fish were grouped according to their standard length and their gut contents removed and diluted in a known volume of distilled water separately to identify the material by using the Sedgewick rafter cell (1 ml).

Thirteen species of fish identified from the stream, include *Esomus danrica thermoicos, Rasbora daniconius Amblypharyngodon meletinus, Danio malbaricus var. aequipinnatus, Chela laubuca, Puntius bimaculatus P.dorsalis, P.sarana, P.filamentosus, Oreochromis mossambicus, Lepidocephalus thermalis, Mastacembelus armatus and Macrones vittatus.*

In almost all omnivorous and herbivorous fish the gut contents were new during early hours of the day and sampling of fish was carried out at this time.

P. dorsalis. M.armatus R.daniconius. D.malabaricus and *C.laubuca* predated on other insect larvae. Only *D.malabaricus* and *R.daniconius* predated on mosquito larvae under certain conditions. *D.malabaricus. R.daniconius* and *C.laubuca* fed on other insect larvae throughout their life. The highest numbers were recorded for *E.danrica. D.malabaricus* and *R.daniconius* were generally recorded in moderate numbers and these were highest in July and September. Anopheline larval abundance fluctuated showing the lowest level in July and September, and the highest in early August when the potential mosquito larvicidal fish density was comparatively low in the stream.

Primary production was very low in the stream except during the rainy season. Dissolved oxygen, temperature and pH remained around 7.8 ppm, 30°C and 8 respectively. Electrical conductivity declined with reduced rainfall.

Total malarial incidence in the area was much higher in May and August.

No exclusive larvivorus fish were found in the stream. However, 2 omnivorous species *D.malabaricus* and *R.daniconius* were potentially larvivorous on mosquito at early stages of their life. The low abundance of the 2 species corresponded with the high abundance of anopheline larvae and consequent resurgence of high malarial incidence.