
Larvivorous Potential of the Guppy, *Poecilia reticulata*, in Anopheline Mosquito Control in Riverbed Pools Below the Kotmale Dam, Sri Lanka

P. H. D. Kusumawathie, MPhil, PhD, A. R. Wickremasinghe, MPH, PhD,
N. D. Karunaweera, MBBS, PhD, and M. J. S. Wijeyaratne, PhD

The larvivorous potential of *Poecilia reticulata* was studied in the laboratory and in the field. In the laboratory, the number of anopheline larvae consumed per fish per day and the number of larvae in fecal matter per fish were determined. In the field study, 29 of 60 selected riverbed pools in Kotmale oya, below the Kotmale dam, were stocked with *P. reticulata*, whereas the rest served as controls. Anopheline larval surveys were carried out starting from 1 day prior to stocking of fish and on selected days subsequently. *P. reticulata* consumed an average of 117 ± 32.33 larvae per fish per day. Fecal matter of *P. reticulata* contained an average of 2.7 ± 2.68 larvae per fish. There was a significant reduction in the number of pools positive for anopheline larvae ($P = .001$) after stocking fish and the number of larvae per pool ($P = .001$) and per 100 dips ($P = .001$) as compared with controls.

Keywords: anopheline larvae; larvivorous potential; *Poecilia reticulata*; riverbed pools

Anopheline mosquitoes are important globally as they transmit human malaria. In Sri Lanka, 22 anopheline species have been recorded,¹ of which 11 have been incriminated with natural infection and are considered potential vectors of malaria.²⁻⁴ *Anopheles culicifacies* is still considered the principal vector of malaria in the country, whereas *Anopheles annularis*, *Anopheles subpictus*, and *Anopheles tessellatus* are considered vectors of local importance.^{2,5,6}

In Sri Lanka, anopheline mosquitoes primarily breed in river and stream bed pools; hence, malaria is closely associated with the river systems in the country. The Mahaweli River, since many decades, has been considered to play an important role in malaria transmission.^{7,8} Under the Mahaweli Development Project, a massive development project in Sri Lanka initiated in 1970, the Mahaweli River was dammed at several sites to create reservoirs for hydroelectric power generation and irrigation.⁹ The water in each reservoir is

From the Regional Office, Anti Malaria Campaign, Kandy, Sri Lanka (PHDK); Department of Public Health, Faculty of Medicine, University of Kelaniya, Ragama, Sri Lanka (ARW); Department of Parasitology, Faculty of Medicine, University of Colombo, Colombo 8, Sri Lanka (NDK); and Department of Zoology, University of Kelaniya, Kelaniya, Sri Lanka (MJSW).

Address correspondence to: Professor A. R. Wickremasinghe, Department of Public Health, Faculty of Medicine, University of Kelaniya, PO Box 6, Thalagolla Road, Ragama, Sri Lanka; e-mail: arwicks@slt.net.lk.