

EFFECT OF WATER QUALITY ON THE DENSITY OF *ANOPHELES* MOSQUITO LARVAE BREEDING IN DIFFERENT HABITATS IN THE DISTRICT OF BATTICALOA

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Malaria is one of the most important diseases in the world and it is endemic throughout the tropical and subtropical regions. A large number of malaria cases were recorded in Sri Lanka in the past. However, at present Sri Lanka is in the phase of elimination of malaria. Although the number of endemic malaria cases is very low there is an increase in the number of recorded imported cases of malaria in the island. *Anopheles culicifacies* s.l. (Diptera:Culicidae) is considered as the major vector and a number of other Anopheline mosquito species act as potential vectors of malaria in Sri Lanka. A study on the density of vector mosquitoes is important to eliminate cases of endemic malaria and to prevent spreading of imported malaria in a given area. This study was aimed at determining how physical water characteristics affected the density of *Anopheles* larvae in the District of Batticaloa.

Three possible areas (sentinel sites) where the malaria risk is high, namely Mandur, Vakareni and Vakarei were selected. These areas were selected based on the presence of possible *Anopheles* breeding sites, *Anopheles* mosquitoes, human dwellings and a previous study conducted in these areas by the Molecular Medicine Unit, Faculty of Medicine, University of Kelaniya. In each sentinel site 4 localities (within 5-20 km) were selected in order to collect Anopheline larvae. From each breeding site approximately 100 dips were collected from 5 spots (20 dips per spot) depending on the size of the breeding site by a dipper. Single dip contains about 200-250 ml. The number of dips were determined by considering the size of the breeding site (i.e. about 4 dips for 1 m² size breeding site). The number of dips and *Anopheles* sp. positive dips were recorded. Among the positive dips the number of different larval stages was recorded (I-II and III-IV). Physico-chemical parameters of water such as Dissolved Oxygen (DO), conductivity, salinity, pH, temperature, Total Dissolved Solids (TDS) and turbidity were recorded at each breeding site during the period of June-November, 2013. Statistical analysis was done using Pearson correlation

The major vector, *An. culicifacies* was not identified from any breeding sites. However, a total of 1378 other *Anopheles* larvae were identified in 1432 breeding habitats. *An. subpictus* (n=791) was the most abundant, followed by *An. peditaeniatus* (n=423) and *An. nigerrimus* (n=164). The three most abundant species were significantly associated with breeding in sand pools. pH and temperature were negatively correlated with mean monthly larval densities of *An. peditaeniatus* and *An. subpictus* (p<0.05). The abundance of *An. subpictus* and *An. peditaeniatus* did not significantly correlated with mean monthly conductivity, salinity, DO, TDS and turbidity (p>0.05). All physico-chemical parameters did not significantly correlate with the abundance of *An. nigerrimus* (p>0.05).

Mosquito breeding activities in conventional larval habitats in Batticaloa is heterogeneous, with the sand pools being the most active source of malaria vector mosquito production. It is envisaged that these findings will promote the development of targeted larviciding interventions thus reducing the costs and efforts required for effective mosquito vector control in Sri Lanka.

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