Gunathilaka, P.A.D.H.N.

Fernando, M.A.S.T

Hapugoda, M.D

Wijeyerathne, P.

Wickremasinghe, A.R

W. Abeyewickreme

PAPER

**Breeding of *Anopheles culicifacies* in Different Water Bodies in the District of Trincomalee**

P.A.D.H.N.Gunathilaka, M.A.S.T Fernando,M.D Hapugoda, W. Abeyewickreme, Tropical Environmental Diseases & Health Associates, Colombo 5 &  Molecular Medicine Unit, University of Kelaniya

P. Wijeyerathne, Tropical Environmental Diseases & Health Associates, Colombo 5

A.R Wickremasinghe, Tropical Environmental Diseases & Health Associates, Colombo 5 & Department of Public Health, University of Kelaniya

**Introduction:** *Anopheles culicifacies* (Diptera: Culicidae), the major vector of malaria in Sri Lanka is known to breed in clean and clear water. This study was focused to understand the larval habitats of the major malaria vector with the eco system changes in the Trincomalee district of the Eastern Province.

**Method:** Potential larval habitats for *Anopheles* mosquitoes were surveyed on a monthly basis for 17 months (January 2011 –June 2012) in 4 different selected sampling sites (Murthankulam, Kommnaimottai, Paranamadawachchiya and Kokmotawewa). Collected larvae were identified using standard taxonomic keys. The species Distribution (C) and Density (D) were calculated.

**Results:** A total of 2996 larval specimens representing 13 *Anopheles* species were reported  from 16 different breeding  habitats  namely, waste water (n= 635), built well (n= 1229), earth well (n=149), agricultural well (n=9), rain water collection (n=89), animal hoof print (n=17), burrow pit (n=256), rock pool (n=10), canal (n=15), irrigation canal (n=27), lake margin (n=27), tank margin (n=448), pond margin (n=15), marshy land (n=13), paddy field (n=15) and slow moving water (n=42). *An. culicifacies* was observed as the most predominant species throughout the survey. According to Density criterion, *An. culicifacies* (44.0%), *An. subpictus* (19.2%), *An. barbirostris* (13.2%), *An. peditaeniatus* (10.28%) and *An. nigerrimus* (8.7%) were within the dominant class; (D > 5%).  Two species (*An. vagus, An. pallidus*) were in the subdominant class (1< D <5%). Only *An. annularis, An. varuna, An. barbumbrosus, An. pseudojamesi, An. jamesii* and *An. tessellatus* were the satellite species (D < 1%).

*An. nigerrimus*, *An. subpictus* and *An. peditaeniatus* can be regarded as constant according to distribution (C= 80.1-100%). Only *An. vagus* was the most frequently reported (C= 60.1 – 80%) species. All other *Anopheles* including *An. culicifacies* were observed as infrequent species (C= 20.1 – 40%) and no species was identified as sporadic appearance (C= 0 – 20%). Most productive breeding site for *An. culicifacies* were drains covered with waste water (Density= 81.57%) in remote areas.

**Interpretation & conclusion:** These results indicate that *An. culicifacies* has adapted to breed in a wide range of water bodies including waste water collections although they are considered to breed in clean and clear water. The survival of the major vector mosquito in widespread water bodies could be responsible for the increase in the incidence of malaria in the future.