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POSTER

Species succession of malaria vector mosquitoes and physicochemical factors affecting their abundance in rice ecosystems in Trincomalee, Sri Lanka

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Background:
Mosquito-borne diseases are a major public health threat in Asia. The present investigation was carried out to study the ecology of vector mosquitoes in Sri Lanka, in order to explore effective mosquito control strategies in rice ecosystems from the ecological point of view.

Method:
As part of investigations on potential linkages between irrigation and malaria transmission, all surface water bodies in and around 20 selected villages along an irrigation distributary in the District of Trincomalee, Sri Lanka, were surveyed for anopheline mosquito larvae (Diptera: Culicidae) from January 2012 - June 2013. Breeding sites were characterized according to exposure to sunlight, substratum, and presence of vegetation, fauna, inorganic matter and physical water condition (clear/turbid). Dissolved Oxygen (DO), conductivity, salinity, pH, temperature, Total Dissolved Solids (TDS) and turbidity were recorded.

Results:
A total of 3914 *Anopheles* larvae of twelve morphological types were collected from 685 breeding habitats. *Anopheles peditaeniatus* (n= 1041), was the most abundant, followed by *An. subpictus* (n= 893), *An. nigerrimus* (n= 808), *An. barbirostris* (n= 581), *An. pallidus* (n= 184), *An. annularis* (n=124), *An. jamesii* (n= 80), *An. varuna* (n= 76), *An. vagus* (n= 56), *An. barbumbrosus* (n= 48). *An. culicifacies* (n= 22) and *An. aconitus* (n= 1). The four most abundant species were significantly associated with waterlogged paddy fields. *Anopheles culicifacies* was noted only from irrigational canals with vegetation. Conductivity, salinity, and TDS were positively correlated with larval densities of *An. peditaeniatus* (Pearson correlations= 0.04, 0.17,

0.33: P= 0.94, 0.77, 0.58), *An. subpictus* (Pearson correlations= 0.6, 0.68, 0.56: P= 0.19, 0.20, 0.31), and *An. vagus* (Pearson correlations= 0.6, 0.42, 0.17: P= 0.28, 0.47, 0.77). However all physicochemical variables were negatively correlated with *An. culicifacies* densities.

Conclusion:

Major malaria vector of *An. culicifacies* complex occurred at relatively low densities, mainly in irrigated and waterlogged fields. These findings support understanding of mosquito ecology and will support future mosquito control strategies in rice ecosystems in Sri Lanka.

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