

Correlation between the Larvae Density (Diptera: Culicidae) and Physicochemical Characteristics of Habitats in Mazandaran Province, Northern Iran

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Abstract : Background: Mosquitoes look for all kinds of aquatic habitats for laying eggs. Characteristics of water habitats are important factors in determining whether a mosquito can survive and successfully completed their developmental stages. Physicochemical factors can display an important role in vector control programs. This investigate determined whether physicochemical factors differ between habitats can be effective in the larvae density in Mazandaran province. Methods: Larvae were collected by the standard dipper up to 350 ml for 15-20 minutes from fixed habitats in 16 villages of 30 townships, the specimens identified by morphological key. Water samples were collected during larval collection and were evaluated for temperature (°C), acidity (pH), turbidity (NTU), electrical conductivity ($\mu\text{S}/\text{cm}$), alkalinity (mg/l), total hardness (mg/l), nitrate (mg/l), chloride (mg/l), phosphate (mg/l), sulfate (mg/l) in selected habitats using standard methods. Spearman Correlation coefficient was used for analyze data. Results: Totally 7566 mosquito larvae of three genera and 15 species were collected of fixed habitats. *Cx. pipiens* was the dominant species except in villages of Tileno, Zavaf, Asad Abad, Shah Mansur Mahale which *An. maculipennis*, *Cx. torrentium* were as the predominant species. Turbidity in Karat Koti, Chloride in Al Tappeh, nitrate, phosphate and sulfate in Chalmardi, electrical conductivity, alkalinity, total hardness in Komishan villages were significantly higher than other villages ($P < 0.05$). There were a significant positive correlation between *Cx. pipiens* and Electrical conductivity, Alkalinity, Total hardness, Chloride, *Cx. tritaeniorhynchus* and Chloride, whereas a significant negative correlation observed between Sulfate and *Cx. perexiguus*. Conclusion: The correlations observed between physicochemical factor and larval density, possibly can confirm the effect of these parameters on the breeding activities of mosquitoes, and could probability facilitate larval control programs by the handwork of such factors.

Keywords : anopheles, culex, culiseta, physicochemical, habitats, larvae density, correlation

Conference Title : ICE 2015 : International Conference on Entomology

Conference Location : Penang, Malaysia

Conference Dates : December 03-04, 2015