Thesis Title	Ecological and Genetical Studies of the *Anopheles Dirus* Complex in Relation to Malaria Transmission in Mudon Township, Mon State, Myanmar
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ABSTRACT

Studies were conducted in Myanmar to assess the well breeding ***An. dirus*** and other vectors or potential vectors in relation to malaria transmission in a typical malaria endemic area. The present studies of ***An. dirus*** consisted of both field and laboratory investigations.

These field investigations revealed the pattern and extent of distribution of ***An. dirus*** during rainy, cool-dry and hot-dry seasons. ***Anopheles dirus*** was found to be the predominant vector species in the study area and was found throughout the year with the man-biting-rate (0.5 and 0.84 bite/man/hour) increasing during pre-monsoon (late May) and reaching the peak (0.6 and 0.86 bite/man/hour) at post monsoon (late October). ***Anopheles dirus*** was active throughout the year, although the population was at a low level during the hot season. Among the 13 anopheline species collected, only ***An. dirus*** was found infected with malaria sporozoites (2.63% positive). The

results showed that attention must be given to ***An. dirus*** as a responsible vector where it is present in malaria foci in Mon State. Thus the present study mainly emphasized ***An. dirus*** ecosystems and its genetical status within and among the three populations (from three different environments) and in comparison with a laboratory colony of ***An. dirus*** species **D.** This studies include relationships of ***An. dirus*** Adult density (AD), Larval Density (LD), Entomological Inoculation Rates (EIR), malaria Slide Positivity Rates (SPR) [for 1992, January= 14.5%, March= 12.32%, May= 17.77% and October=30.29%] and various indices. The applicability of these information on the assessment and control of malaria transmission with good scientific merit needs to be explored by pursuing futher studies.

Using horizontal polyacrylamide slab gel electrophoresis, a total of 9 gene-enzyme systems was conducted. The banding phenotypes (isomorphs) of 9 loci and degree of genetic variation among the three diferent populations of Mudon were compared to that of chromosomally known ***An. dirus*** species **D.** Major breeding sources for ***An. dirus*** in Mudon are wells (50% in January, 1992; 40% in March, 1992; 63.3% in May,1992 and October, 1992) were found infested with ***An. dirus*** larvae and pupae) dug by people for their daily usage. Based on the above multifactorial findings and previous recorded data, the potential danger of urban malaria epidemic occurring in the near future (at least in Mon State, Myanmar) was discussed. This thesis is a contribution, not only to our knowledge on biology, ecology and allozyme of ***An. dirus,*** but also describes and highlights when and where the control should initiated and emphasized.