

Chatchai Tananchai 2012: Biting Patterns of *Anopheles dirus* and *Anopheles baimaii* and Response to Insecticides by *Anopheles dirus*. Master of Science (Entomology), Major Field: Entomology, Department of Entomology. Thesis Advisor: Professor Theeraphap Chareonviriphap, Ph.D. 85 pages.

Two species from the Dirus complex, *Anopheles dirus* and *Anopheles baimaii*, were surveyed from Pu Teuy Village, Sai Yok District, Kanchanaburi Province, western Thailand between September 2009 and August 2010. A total of 598 *An. dirus* (91.2%) and 58 *An. baimaii* (8.8%) was identified. The trophic behavior, host preference and seasonal abundance were determined for both *An. dirus* and *An. baimaii*. Both species demonstrated exophagic and zoophilic activities. Outdoor landing catches by *An. dirus* occurred between 2300 and 2400 hr, and indoor landing showed activity between 1900 and 2000 hr. whereas *An. baimaii* presented two peaks in indoor human landing, between 1900 and 2000 hr and between 0200 and 0300 hr, outdoor human landing activity peaks showed between midnight and 0100 hr. Significantly greater numbers of *An. dirus* were collected from cattle compared to humans ( $P < 0.05$ ). Both species were also more abundant during the wet season rather than the dry and hot seasons.

In addition, the behavioral response of wild-caught populations of *An. dirus* to the operational field dose of three synthetic pyrethroids (0.025 g a.i./m<sup>2</sup> of bifenthrin, 0.03 g a.i./m<sup>2</sup> of alpha-cypermethrin and 0.02 g a.i./m<sup>2</sup> of lambda-cyhalothrin) was evaluated for contact and noncontact actions using an exito-repellency escape chamber. DEET was used as the repellent standard for comparison with the other three synthetic pyrethroids. Result showed that test populations rapidly escaped from direct contact with treated surfaces for each of the three synthetic pyrethroids and DEET. Alpha-cypermethrin (88.70%) demonstrated the strongest irritant action, followed by DEET (80.05%) and lambda-cyhalothrin (72.49%). Fewer mosquitoes escaped from noncontact treatment chambers as compared contact trials but a significant escape response compared to the matched controls ( $P < 0.05$ ) was achieved. I conclude that a better understanding of the behavioral responses of vectors to various chemicals will allow for greater efficiency in program design for targeting appropriate vectors.

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