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PRELIMINARY STUDIES ON THE MOSQUITOES (DIPTERA: CULICIDAE) IN COCONUT SHELLS AT ASAJAYA, SARAWAK

Siew Fui Wong, Ichiro Miyagi, Takao Okazawa, Takako Toma and Moi Ung Leh

ABSTRACT

Mosquito larvae were collected from coconut shells in a coconut farm in Asajaya, Samarahan, Sarawak between May and September, 2011. Seven species were identified from the total of 572 individuals collected in the coconut shells. Species belonging to the genus *Armigeres* are the most common mosquitoes in the coconut shells. The air temperature and humidity at the coconut farm were recorded while COD (chemical oxygen demand), pH values and water temperature of each coconut shell were also measured. There is high COD in the coconut shells in the first three months and the mosquito immatures appeared when the COD level dropped. The COD value relates to the occurrence of the mosquitoes.

Keywords: mosquitoes, coconut shells, Sarawak, Malaysia



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Abstract

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INTRODUCTION

Mosquitoes belong to the family Culicidae in the Order Diptera. The family is divided into three subfamilies which are Anophelinae, Culicinae and Toxorhynchitinae (Clements, 1992; Goma, 1966; Snow, 1990). According to Miyagi and Toma (2000), about 200 species of mosquitoes were recorded from East Malaysia, Sarawak and Sabah. The most common species belong to the genera *Anopheles*, *Aedes* and *Culex*.

The life cycle of mosquitoes consists of egg, larval, pupal and adult stages. The adult females lay eggs in standing water such as a lake, a natural reservoir on a plant or an artificial container such as plastic bucket, discarded bottle or any receptacle. The female

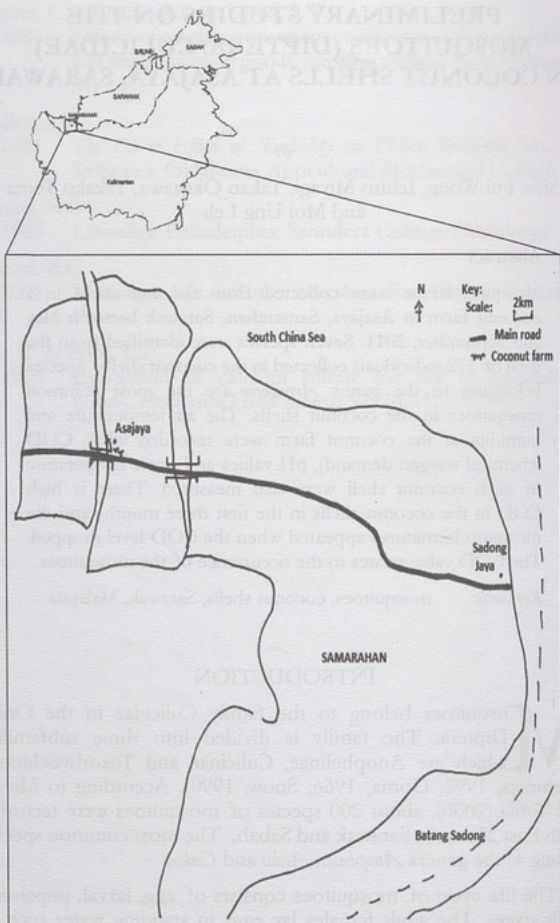


Fig. 1: A map showing the location of the sampling site at the coconut farm, Asajaya, Samarahan, Sarawak.

mosquitoes suck blood from different kinds of warm- and cold-blooded animals, in order to develop their eggs, while the male mosquitoes usually feed only on plant nectar (Renchie *et al.*, 2007).

Some of the common mosquitoes are known to carry pathogens and transmit diseases from human to human through parasites and viruses, with examples like malaria, filariasis, yellow fever, dengue and chikungunya (Goma, 1966; Snow, 1990). In order to control disease vectors, we have to understand the biology of the mosquitoes.

In the coastal plain of Sarawak, a large area of Samarahan has been cultivated with coconut plantations. Copra is the dried meat of coconut and an important agricultural commodity in this area. Coconut shells are important breeding sites for mosquitoes, such as *Aedes albopictus* which may bite human. However, with the recent introduction of oil palm (*Elaeis*) for biomass energy, the coconut plantation is quickly replaced with oil palm plantation. Taxonomic studies on mosquitoes breeding in the coconut shells in the coastal plain of Sarawak were made by Toma *et al.*, 2010. The aim of this preliminary study is to elucidate the breeding habits of the mosquitoes found in coconut shells at Asajaya, Sarawak.

STUDY AREA

This study is conducted in a traditional small-holder coconut farm in Asajaya, a small town located on the coastal plain of the Samarahan Division of Sarawak. Samarahan Division has an area of 389.52 km². The location of the coconut farm at Asajaya is 1°32'45.32''N, 110°34'4.09''E (Fig. 1). The town has a population of 20,000 villagers comprising Malay, Chinese, Iban, Bidayuh and Melanau. Agriculture is the main activity of the town besides livestock farming, fish rearing and fishing. Other agricultural crops found in Asajaya consist of coconut, oil palm, rice, cocoa, fruit trees, banana and vegetables (lady's fingers, round aubergines, chilly and turmeric). Asajaya has been considered as an area of permanent food production because it supplies raw agricultural materials to foreign and domestic markets (Williams *et al.*, 2007).

MATERIALS AND METHOD

Prior permission was obtained from the owner of the coconut farm before the study commenced in May 2011. Eight mature