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# Correspondence

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## THE OCCURENCE OF *Aedes (STEGOMYIA) aegypti* IN SABAH\*

**AEDES (STEGOMYIA) AEGYPTI** (Linnaeus, 1758) was incriminated as a vector of yellow fever by Walter Reed and his associates as early as 1900. Since then it has been established that this mosquito is a principal vector of urban yellow fever in Africa and Latin America. *Aedes aegypti*, along with other members of the *scutellaris* group, is also known to be a vector of dengue fever over wide areas of the tropics and subtropics. Since 1956, it has been responsible for major epidemics of dengue haemorrhagic fever in Southeast Asia and this disease has now become a major public health problem in the area (Rudnick, 1967).

Haemorrhagic fever, caused by the dengue viruses, is now known to be widespread in the Philippines, Cambodia, Thailand, Malaysia, Singapore, Indonesia, South Vietnam, Ceylon and in East India (Calcutta). Although only *aegypti* has been definitely associated with the transmission of dengue haemorrhagic fever so far, it is possible that *Aedes albopictus*, which also transmits dengue fever, may transmit the haemorrhagic disease. Dengue haemorrhagic fever occurs mostly in children and in young adults and generally causes a fatality rate of about 10%.

*Aedes aegypti* is also an efficient vector of chikungunya virus and epidemics of this infection occurred recently in Calcutta, Philippines, Thailand, Cambodia, Burma and Ceylon. This disease is a milder form and is non-haemorrhagic. It is not known to cause any mortality.

*Aedes aegypti* is widely distributed around the world, due to the agency of man, and occurs between latitudes 45°N and 35°S (Christophers, 1960). It is widespread in Southeast Asia. The first and only report of its occurrence in Sabah was made by Stanton in 1920. Since then, it has been reported to occur in Indonesian Borneo (Brug, 1924; Bonne-Wepster and Brug, 1937; Brug and Bonne-Wepster, 1947) and in Sarawak (Macdonald, Smith and Webb, 1965). In 1965, Chow reported that *aegypti* had not been encountered in Sabah during the previous seven years. In a recent report, Chow (1970) stated that *aegypti* has not so far been found in Sabah. Dengue fever occurred in Labuan Island, off the West Coast of Sabah in 1969 and this was confirmed by virus isolation and positive serology by the Arbovirus Research Unit of the University of California International Center for Medical Research and Training in Kuala Lumpur. The mosquito vector was, however, not incriminated.

As part of a research programme, organised by the author, to study the mosquito fauna of Malaysia, a team of three technicians were sent to Sabah and this team made extensive collections in Sabah between the period 14 March, 1970 to 8 June, 1970. The survey covered the following areas which includes all the major towns in Sabah; Kota Kinabalu, Papar, Beaufort, Pulau Labuan, Sipitang, Tenom, Kemabong, Keningau, Sapulut, Sook, Tambunan, Ranau, Mount Kinabalu,

Tuaran, Kota Belud, Langkon, Bandan, Kudat, Pulau Banggi, Sandakan, Telupid, Lahad Datu, Semporna and Tawau.

This survey was not made specifically for *aegypti* alone, but was a comprehensive survey with the purpose of collecting as many species of mosquitoes as was possible. However, the team was instructed to pay special attention to the collection of mosquitoes of medical importance. Collections were only made from those habitats or containers that contained both water and immature stages of mosquitoes in them. A total of 1246 collections were made from Sabah. This included 102 collections made from artificial containers, 42 from coconut shells, 310 from tree holes and stumps, and 82 from bamboo stumps. All of these are possible sites for the breeding of *aegypti* in various parts of the world.

*Aedes aegypti* was encountered in the town of Semporna on the East Coast of Sabah. It was found breeding in five artificial containers, three of these being large drums and the other two in wooden boats that were still under construction. A total of 173 adults (84 females and 89 males) were reared from these collections in addition to several larvae that were killed and preserved in alcohol. Other species of mosquitoes that were found breeding in association with *aegypti* were: *Aedes (S) albopictus*, *Culex (C) quinquefasciatus* and *Culex (Cu) fragilis*. On closer examination of *aegypti*, it was seen that 115 adults were of the "type form" and 58 of the "queenslandis form." According to Mattingly (1957-58) the "type form" has narrow basal pale bands on the abdominal tergites, whereas the *queenslandis* form is much paler of the two forms, with numerous white scales on the abdominal tergites.

In order to prevent the accidental extension of the range of yellow fever, Article 20(1) of the World Health Organisation, International Sanitary Regulations (1957), requires that the area within the perimeter of every airport and port be kept free from *Aedes aegypti* in its larval and adult stages. This regulation and the present findings that *aedes aegypti* occurs in Sabah will necessitate the initiation of measures to prevent the breeding of this mosquito in and around the international airport and port at Kota Kinabalu. At present, *Aedes aegypti* has been found to breed only on the east coast of Sabah, but as there is a regular air service between Semporna and Kota Kinabalu, it is quite likely that *aegypti* will spread to Kota Kinabalu and to other places within Sabah. A specific survey for *aegypti* should be made throughout Sabah and its distribution studied. This has also been recommended by Dr. C.Y. Chow (1970), the Regional W.H.O. Entomologist. If the survey confirms the present finding that *aegypti* is only confined to a relatively small area on the east coast, then immediate measures should be taken to eradicate the mosquito from Sabah.

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