

Importation of *Aedes Albopictus* in Townsville, Queensland

Peter Foley¹, Craig Hemsley², Keith Muller², Gary Maroske³ and Scott Ritchie⁴

The mosquito *Aedes albopictus* (*Ae. albopictus*) is a vector of dengue virus in southeast Asia. However, it is most notable for its accidental introductions into and subsequent colonisation of new areas. *Ae. albopictus* importations, primarily via used tyres infested with eggs, have been documented in the United States of America,^{1,2} Europe³ and Australia.⁴ The vector has become established in the southeastern part of the United States of America and parts of southern Europe.¹ In the USA, the establishment of *Ae. albopictus* in temperate regions has extended the area at potential risk for the introduction of dengue and other arboviral diseases. To date, in these newly colonised areas, there has been no evidence of dengue transmission and the vector has not been implicated in outbreaks of other arboviral diseases. However, eastern equine encephalomyelitis (EEE) virus has been isolated from wild populations of *Ae. albopictus* in the United States of America.¹

The establishment of *Ae. albopictus* in Australia would be likely to have less impact in the tropical areas than in the temperate zones. Moore and Mitchell¹ state 'in areas where *Ae. aegypti* is abundant, this species might be expected to play a far more important role in dengue transmission than *Ae. Albopictus*'. The major impact of the establishment of this vector would be the extension of the dengue receptive area from tropical Australia into southern coastal areas, and the possibility that it could become involved in the transmission of other arboviruses, such as Ross River virus. In cities with heavy international air traffic, there is a risk of travellers arriving with dengue viraemia. The presence of *Ae. albopictus* in these cities creates the potential for dengue transmission. However, explosive urban epidemics, such as those that

occur in the tropics associated with *Ae. aegypti*,⁵ would be very unlikely.

To prevent the introduction of exotic vectors, Australia has long maintained a strict policy of aircraft disinsection. The Australian Quarantine and Inspection Service (AQIS) also requires the fumigation of shipments of imported used tyres and unprotected new tyres with methylbromide, and inspects cargoes for mosquito larvae. As a result, importations of *Ae. albopictus* in Australia have been recognised early and subsequently controlled.⁴

This report describes an unusual importation of *Ae. albopictus* into Townsville, Queensland. On 10 May 1997, a shipment from Papua New Guinea arrived at the Townsville Port. The cargo included a cement truck agitator bowl that had been loaded on in Port Moresby, PNG, on 2 May 1997. An inspection on 15 May 1997 by AQIS personnel revealed that the agitator bowl contained water with a large number of mosquito larvae and pupae.

The bowl was fumigated with 128 g/m³ of methylbromide that day, while temephos was used to kill the larvae. Larvae were identified by Queensland Health (QH) vector control personnel and a Queensland Institute of Medical Research entomologist, as *Ae. albopictus*.

In response to the finding, an extensive mosquito survey and control program commenced on 22 May 1997 in the Townsville Port precinct and surrounding area. AQIS, QH and Townsville City Council (TCC) personnel conducted house-to-house searches for water-holding containers within 1 km of the wharf. No *Ae. albopictus* larvae were found in the water-holding containers within 1 km of the wharf although some *Ae. notoscriptus* and *Ae. aegypti* larvae

were present. TCC personnel conducted ultra low volume fogging with bioresmethrin in the area to kill any adult *Ae. albopictus*. Seven ovitraps made of used tyres were set on 24 May 1997 in the area and monitored weekly for potential oviposition over a two month period. No *Ae. albopictus* eggs were found in the ovitraps. The larval and ovitrap surveys suggest strongly that *Ae. albopictus* did not establish a population in the Townsville Port area.

It is perhaps fortuitous that *Ae. albopictus* did not establish a population in the area surrounding the port. The large agitator bowl contained numerous larvae and pupae. Adult mosquitoes were also noted inside the bowl, and had 5 days (10-15 May) to disperse. A heavy rain on 16-17 May (45 mm) could have hatched recently laid eggs. However, subsequent weather was cool and dry; June had a mean temperature of 20.2°C, with only 7.6 mm of rain. Overall, these weather conditions would have minimised egg hatching and rapid development of larvae.

In response to the time delay from ship arrival until inspection, AQIS have instigated procedures to ensure that cargo is inspected within 24 hours of arrival. While it appears that establishment of *Ae. albopictus* in Australia was avoided on this occasion, this event highlights the fact that mosquitoes can be transported in cargo other than tyres, and that a quick, thorough response can prevent colonisation.

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1. Tropical Public Health Unit, Queensland Health, Townsville, Queensland
2. Australian Quarantine Inspection Service, Townsville, Queensland
3. Australian Quarantine Inspection Service, Cairns, Queensland
4. Corresponding author: Tropical Public Health Unit, Queensland Health, PO Box 1103, Cairns, Queensland 4870.

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Dengue in Queensland

Queensland Health's Tropical Public Health Unit has reported 40 confirmed and 15 probable cases of dengue fever in Cairns, up until 21 January 1998. Fourteen patients have been hospitalised.

The outbreak which began in December 1997 is due to dengue type

3 (outbreaks in northern Queensland in recent years have been due to dengue type 2). There appears to more than a single focus of infection. Residents have been advised to take action to stop mosquitoes breeding around their homes and to avoid being bitten. Mosquito control teams

from the Tropical Public Health Unit and Cairns City Council are spraying in and around homes in the dengue warning area. Other recommendations include the screening of doors and windows to prevent mosquito entry and the use of personal insect repellent.

Surveillance data in *CDI*

The Communicable Diseases Surveillance section of *Communicable Diseases Intelligence (CDI)* includes reports from a number of national surveillance schemes. These schemes are conducted to monitor the occurrence of communicable diseases in Australia, to detect trends, to highlight needs for further investigation and to implement or manage control measures. This article describes the surveillance schemes which are routinely reported on in *CDI*.

Surveillance has been defined by the World Health Organization as the 'continuing scrutiny of all aspects of the occurrence and spread of disease that are pertinent to effective control', it is characterised by 'methods distinguished by their practicability, uniformity, and frequently by their rapidity, rather than complete accuracy'.¹ Although some surveillance schemes aim for complete case ascertainment, some include only a sample of all cases of the conditions under surveillance, and these samples are subject to systematic and other biases.

Results generated from surveillance schemes must be interpreted with caution, particularly when comparing results between schemes, between different geographical areas or jurisdictions and over time. Surveillance data may also differ from data on communicable diseases which may be gathered in other settings.

The major features of the surveillance schemes for which *CDI* publishes regular reports are described below. Other surveillance schemes for which *CDI* publishes occasional reports include the National Mycobacterial Surveillance System (*CDI* 1997;21:261-269), the Australian Mycobacterium Reference Laboratory Network (*CDI* 1997;21:245-249), the Hib Case Surveillance Scheme (*CDI* 1997;21:173-176) and the National *Neisseria* Network (*CDI* 1997;21:189-192 and *CDI* 1997;21:217-221).

National Notifiable Diseases Surveillance System

National compilations of notifiable diseases have been published intermittently in a number of publications since 1917 (see *CDI* 1993;17:226-236). The National Notifiable Diseases Surveillance System (NNDSS) was established in 1990 under the auspices of the

Communicable Diseases Network Australia New Zealand (CDNANZ).

The system coordinates the national surveillance of more than 40 communicable diseases or disease groups endorsed by the National Health and Medical Research Council (NHMRC).² Under this scheme, notifications are made to the State or Territory health authority under the provisions of the public health legislation in their jurisdiction. Computerised, de-identified unit records of notifications are supplied to the network secretariat at the Department of Health and Family Services for collation, analysis and publication in *CDI*.

Data provided for each notification include a unique record reference number, State or Territory code, disease code, date of onset, date of notification to the relevant health authority, sex, age, Aboriginality, postcode of residence, and the confirmation status of the report (as defined by each State or Territory).