

## Detection of the Tiger mosquito, *Aedes albopictus*, in Darwin port areas, NT, Australia 28 November and 5 December 2013

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### Abstract

*Incursions of the exotic Asian Tiger mosquito, Aedes albopictus, were detected in Darwin port areas in the Northern Territory on 28 November and 5 December 2013. During both incursions 1 adult female Ae. albopictus was collected in a Biogents sentinel trap at Toll Marine Logistics (TML) and the Darwin East Arm Wharf (EAW) respectively. Both incursions coincided with the berth of international vessels at the TML and EAW port facilities. In response to both incursions all receptacles in the port facilities and adjacent premises were treated with residual insecticide and adult mosquito control (fogging) was carried out. Enhanced exotic mosquito surveillance was established to monitor for exotic mosquitoes. There have been no further detections of Ae. albopictus at TML or EAW.*

**Key words:** Exotic mosquitoes, *Ae. albopictus*, international vessels, NT ports

### Introduction

The Asian Tiger mosquito, *Aedes albopictus*, is a vector for dengue and chikungunya.<sup>1,2</sup> This mosquito is not present on mainland Australia but is established on several islands in the Torres Strait.<sup>2</sup> *Aedes albopictus* poses a real threat to the Northern Territory (NT) with the Darwin and other NT port areas particularly vulnerable to the importation of this vector. Since 2000/01 *Ae. albopictus* has been detected on 12 occasions as larvae or adults in the Darwin port area with all detections associated with international cargo vessels.<sup>3</sup> There was an additional detection in a tyre on a barge travelling from Malaysia to Melville Island in January 2005. In 2013 alone, there were a total of 5 exotic mosquito incursions in Darwin port areas with *Ae. albopictus* detected at the Darwin East Arm Wharf (EAW) in August and *Ae. aegypti* detected at Toll Marine Logistics (TML) in April and May 2013.<sup>4</sup>

The NT Department of Health's Medical Entomology (ME) team respond to all incursions

following the protocols outlined by the National Arbovirus and Malaria Advisory Committee (NAMAC).<sup>5</sup> This report describes the response to the November and December 2013 incursions.

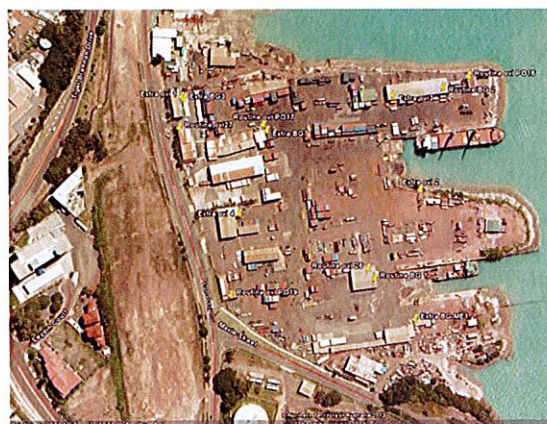
### Detection, Elimination and Surveillance

#### Detection and identification – November 2013

On 28 November 2013 the Australian Department of Agriculture (DoA) collected and delivered a sample from a routine Biogents (BG) sentinel trap to ME. The trap (BG2) was set at the international quarantine shed of the TML port facility in Darwin on 21 November (Figure 1).

The sample was processed on 28 November and 1 adult female *Ae. albopictus* was identified.

**Figure 1.** Routine and enhanced adult BG and ovitrap locations at TML 29 November 2013



#### Survey and control operations – November 2013

Following the positive identification of *Ae. albopictus* ME carried out Ultra Low Volume (ULV) fogging using phenothrin (Twilight®) at TML and Frances Bay Marine (FBM) in the late afternoon on 28 November to eliminate any *Ae. albopictus* adults that might have been present in the area (Figure 2).

On 29 November ME in liaison with DoA carried out a comprehensive larval survey and treatment operation of all receptacles at TML and the adjacent FBM premise. Receptacles



**Figure 2. Exotic mosquito interception location 28 November 2013 and adult mosquito ULV fog route at TML**



were treated with alpha-cypermethrin (Bestox<sup>®</sup>) and s-methoprene briquettes (Prolink<sup>®</sup>). No exotic mosquitoes were detected during the survey.

In addition a cargo of 4 containers of tyres that was unloaded from the international vessel *Kathryn Bay* on 17 November and unpacked on 29 November was preliminarily treated with Bestox<sup>®</sup> by ME staff. The cargo was later chlorinated by TML staff. Water but no mosquito larvae were found in the tyres.

On 2 December additional exotic larval surveys were carried out by ME at FBM. Following a routine pre-wet season barrier treatment at FBM on 7 November no comprehensive receptacle treatment was carried out at the premise as the earlier applied barrier spray was still active. No exotic mosquitoes were detected.

#### *Enhanced surveillance – November 2013*

##### *Ovitrap*

ME and DoA constantly maintain 5 ovitraps (egg traps) within TML and the adjacent premise of FBM with 2 sentinel tyre traps also located at TML and maintained by DoA (Figure 1).

There were 4 extra ovitraps set by ME at TML on the 29 November 2013 and all traps were serviced weekly for 4 weeks (Figure 1).

##### *Adult traps*

Following the incursion the 2 routine DoA BG traps at TML (BG1 and BG2) were serviced on

29 November with an additional 3 BG traps deployed at TML on the same day (Figure 1). The BG traps were baited with CO<sub>2</sub> gas delivered through a regulator attached to a D size gas bottle and these were serviced daily. Samples were also collected daily until 6 December.

#### *Detection & identification – December 2013*

On 5 December 2013 a female adult *Ae. albopictus* was collected in the DoA-serviced BG8 trap at the Darwin EAW (Figure 3). The trap was set on 28 November and collected on 5 December with the specimen identified by ME staff.

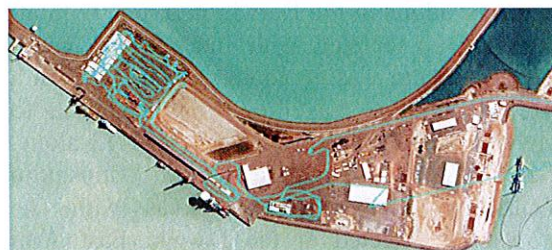
**Figure 3. Routine and enhanced adult BG, sentinel tyre and ovitrap locations at EAW 6 December 2013**



#### *Survey and control operations – December 2013*

In response to the EAW incursion ME carried out a fogging operation at EAW in the late afternoon on 5 December using the same insecticide as during the TLM incursion (Figure 4).

**Figure 4. Adult mosquito ULV fog route at EAW 5 December 2013**



On 6 December ME, in liaison with DoA, carried out a comprehensive exotic larval survey at the wharf with all water-filled and potential receptacles treated with Bestox<sup>®</sup>. No exotic mosquitoes were found during the survey.



*Enhanced surveillance – December 2013**Ovitrap*

In addition to the routine DoA ovitraps at EAW (PO1 and PO4) and the 2 sentinel tyre traps, ME established another ovitrap to enhance exotic surveillance (Figure 3). All 3 ovitraps were serviced weekly over the next 4 weeks.

*Adult traps*

DoA routinely services 2 BG traps at EAW (BG8 and BG4). ME established an additional BG trap (BG9) for enhanced surveillance (Figure 3). All 3 BG traps were serviced daily from 6 to 13 December and then weekly until 3 January 2014.

**Discussion and conclusion**

The 2 incursions of *Ae. albopictus* at TML and EAW in November and December 2013, in addition to the *Ae. albopictus* incursion at EAW in August (unpublished data), and the *Ae. aegypti* incursions at TML in April and May 2013,<sup>4</sup> clearly demonstrate the vulnerability of the Darwin port area as an entry point for exotic mosquito vectors in the NT. The frequent incursions also emphasise the importance of the routine vector surveillance and control operations in such areas to prevent the establishment of exotic mosquito vectors in the NT.

The international vessel *Kathryn Bay* was most likely associated with the *Ae. aegypti* incursion in April,<sup>4</sup> and has most likely been the source for the female *Ae. albopictus* collected at TML in November. The vessel was unloaded at TML on 17 November with *Ae. albopictus* collected in the trap set from 21 to 28 November.

A BG trap was set on deck of the *Kathryn Bay* during the May incursion, in an attempt to obtain information on the likely source for exotic mosquitoes at NT ports.<sup>4</sup> An attempt was also made with a BG trap set overnight on another international vessel *Team Spirit* that docked at TML on 2 December. However, no exotic mosquitoes were captured during either trapping episode. This might be due to adult mosquitoes harbouring in the cargo hold of

the vessel, escaping while the cargo is unloaded.

Therefore, it is suggested that placing of a trap, such as the recently developed Gravid *Aedes* trap should be considered in the cargo hold of the vessel to monitor for exotic adult mosquitoes.<sup>6</sup> Determining the source of exotic mosquitoes detected at NT ports is of high importance. The possibility of pre-emptive barrier treatment of the source, such as high risk vessels could be investigated, which would most likely lead to fewer exotic incursions at NT ports in the future.

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**References**

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