



BORDER HEALTH NEWSLETTER – APRIL 2019

WELCOME!

Kia Ora Koutou

This month on April the 25th was the World Malaria Day, an international observance that recognizes global efforts to control malaria. Scroll down to watch a message from Dr Tedros, Director-General of World Health Organization.



Photo credit WHO Yoshi Shimizu

Locally, at Public Health South a second *Culiseta novaezelandiae* larvae has been found in one regular surveillance sample. Well done again Peter Haslemore 😊

In the news this month, researchers found that sensory hairs on the mosquitoes' legs respond to DEET and repel mosquitoes which are landing to blood feed. Recent laboratory experiments have demonstrated that a range of mosquito-borne pathogens can be detected in mosquito excreta, and more.

SURVEILLANCE

During April, 1106 samples were collected by staff from 12 DHBs with 234 positive samples. This included 53 adult samples and 181 larval samples, leading to a total of 263 adults and 9319 larvae identified over the past month (Table 1). The dominant larval species this month, last month and this month last year was *Culex quinquefasciatus*.

Compared to this same month last year the total number of adults have shown a decrease (273%) and larvae have shown an increase (37%; Table 1).

In total five mosquito species have been collected this month (Table 1), that is one more than last month. Hutt Valley Health DHB detected the highest number of mosquito species (4; Figure 1).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during April 2018 & 2019

Species (common name)	Adults		Larvae	
	Apr 19	Apr 18	Apr 19	Apr 18
<i>Aedes notoscriptus</i> (striped mosquito)	16	89	2232	2073
<i>Culex pervigilans</i> (vigilant mosquito)	20	172	624	426
<i>Cx. quinquefasciatus</i> (southern house mosquito)	215	661	6404	3271
<i>Cx. asteliae</i> (no common name)	1			
<i>Culex sp.</i> (likely to be <i>quinquefasciatus</i> / <i>pervigilans</i>)	11	59	-	-
<i>Opifex fuscus</i> (rock pool mosquito)	-	-	59	98
Total	263	983	9319	5868

Compared to last month larvae and adult mosquito numbers have shown a decrease (63% and 70% respectively).

Northland DHB had the highest number of larvae this month (2407), followed by Toi Te Ora - PH (1825) (Figure 1).

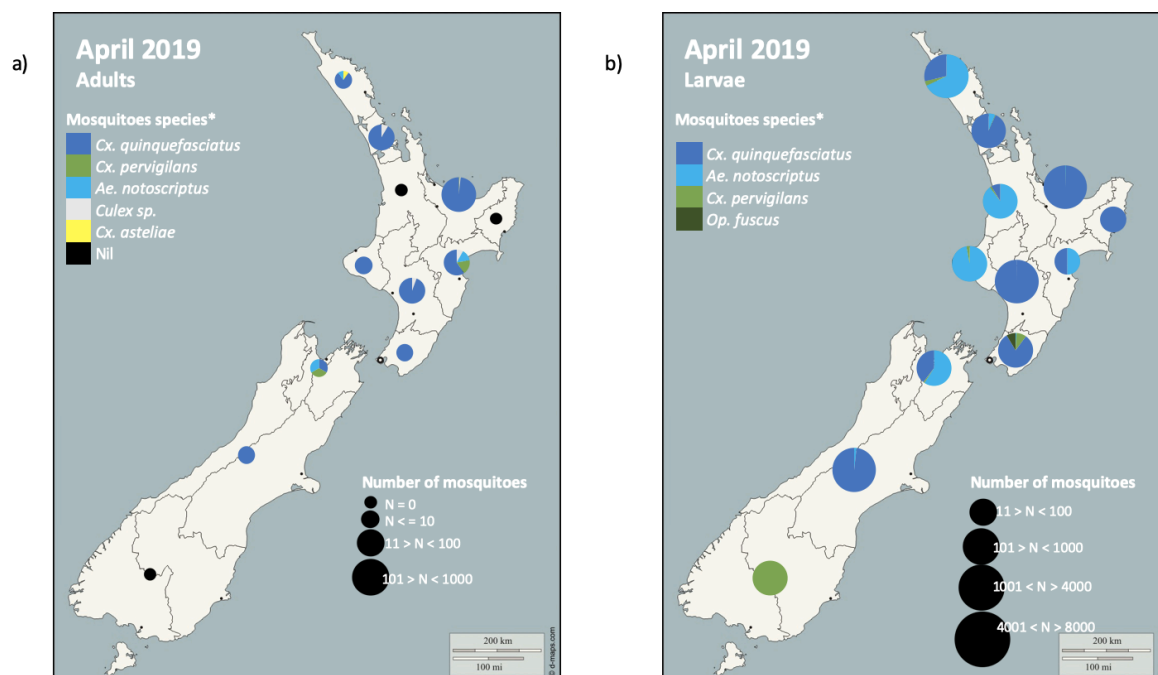


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the April 2019 surveillance period.

* The mosquito species are listed in order from the most abundant to the least abundant.

Please note that the markers represent the DHBs and not the specific sites where the samples have been taken.

As expected *Aedes notoscriptus* has not been recorded this month, this year or last year in Public Health South. In comparison to last year this month, no further *Culex quinquefasciatus* larvae have been recorded in Queenstown (Figure 2).

Aedes notoscriptus larval numbers have shown an increase in just two DHBs from this same

month last year and a decrease in eight DHBs (Figure 2).

Culex quinquefasciatus larval numbers have shown an increase in six DHBs from this same month last year a decrease in three (Figure 2).

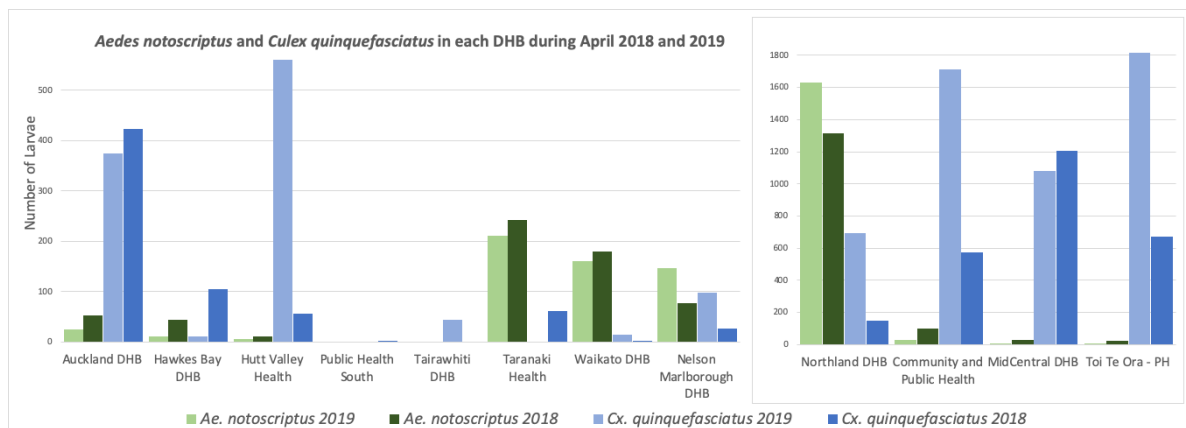


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during March 2018 and 2019. *Please note the different scale for the number of larvae present in Northland, Community and Public Health, MidCentral and Toi Te Ora – PH, in comparison to the other DHBs.

Disclaimer: Note that all comparisons made have not been statistically tested and can be due to sampling effort.

INCURSIONS AND INTERCEPTIONS

During April, four suspected interceptions, including one confirmed, have been recorded (Table 2). Please note that the interceptions of live unwanted mosquitoes are highlighted in red. Exotic species in general are highlighted in light blue.

Table 2. Suspected interceptions during April 2019

Date	Species	Location	Circumstances
28.04.2019	4F <i>Aedes vexans</i>	Auckland International Airport LTD	Found dead on a plane from Fiji
15.04.2019	3M <i>Aedes albopictus</i> 1 4 th & 2 2 nd instar <i>Aedes albopictus</i> larvae	ESR laboratory, Christchurch	Found in rainwater samples from a hospital in Hong Kong (two adults found dead, one adult and larvae found alive)
11.04.2019	Non mosquito (Cecidomyiidae fly)	Menzies transitional facility, Christchurch	Found dead in nursery stock (flowers)
10.04.2019	2F <i>Culex quinquefasciatus</i>	MG Marketing, Penrose, Auckland	Found alive in MPI search room while looking at consignment of bananas from Ecuador

NEWS ARTICLES FROM AROUND THE WORLD

Message from Dr Tedros, Director-General of WHO

After more than a decade of steady advances in fighting malaria, progress has levelled off. According to WHO's latest *World malaria report*, no significant gains were made in reducing malaria cases in the period 2015 to 2017.



The estimated number of malaria deaths in 2017, at 435 000, remained virtually unchanged over the previous year. Urgent action is needed to get the global response to malaria back on track – and ownership of the challenge lies in the hands of countries most affected by malaria. On World Malaria Day 2019, WHO joins the RBM Partnership to End Malaria, the African Union Commission and other partner organizations in promoting “[Zero malaria starts with me,](#)” a grassroots campaign that aims to keep malaria high on the political agenda, mobilize additional resources, and empower communities to take ownership of malaria prevention and care. [Watch the video.](#)

Potential herd protection against *Plasmodium falciparum* infections conferred by mass antimalarial drug administrations

High mosquito biting rates, living in a house with someone else with malaria, or having an asymptomatic malaria infection were predictors of clinical episodes. Spatial clustering of non-adherence to mass drug administration, even in villages with high overall participation, may frustrate elimination efforts. [Read more.](#)

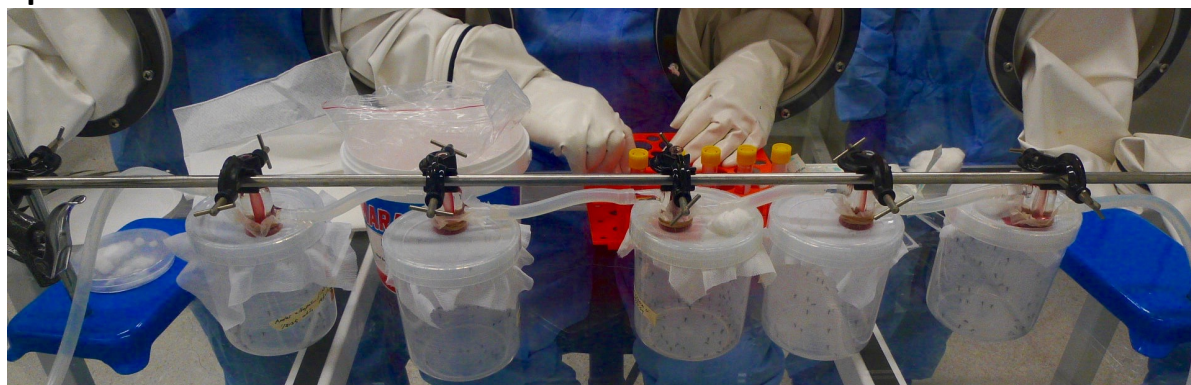
***Aedes aegypti* Mosquitoes Use Their Legs to Sense DEET on Contact**



While the exact mechanism of how DEET works is still not entirely understood, scientists have found that it is not only the smell and bitter taste of DEET that repels mosquitoes. Previous work with DEET has shown that mosquitoes will not feed on blood that is mixed with DEET or other bitter substances, while the smell of DEET will repel mosquitoes with the

odorant coreceptor *orco*. It had been observed that females with a mutated *orco* receptor were not repelled by the smell but were rapidly repelled by contact with DEET treated skin. This study showed that sensory hairs called sensilla on the tarsi respond to DEET and repel mosquitoes which are landing to blood feed. [Read more. Original article.](#)

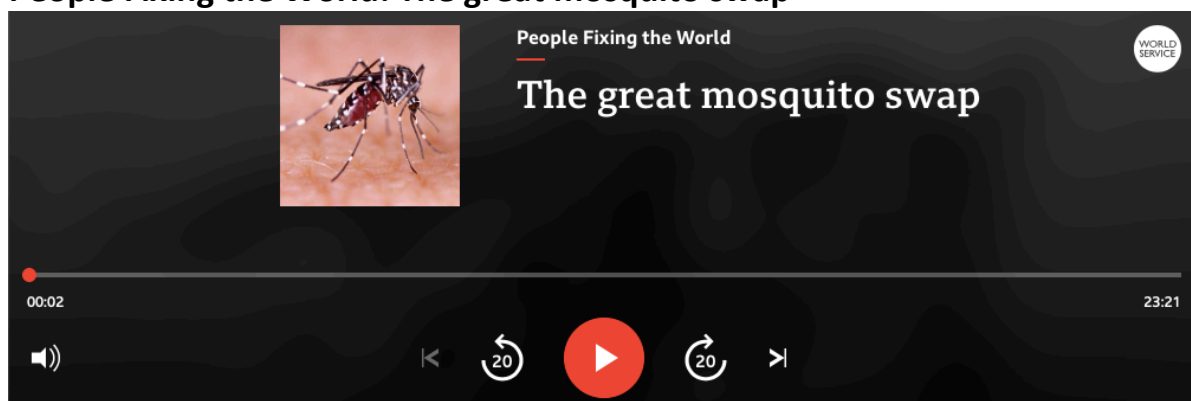
Vector competence of Australian *Aedes aegypti* and *Aedes albopictus* for an epidemic strain of Zika virus



Membrane feeding apparatus that provided blood and Zika virus to the test mosquitoes. Image: QIMR Berghofer

Both *Aedes (Ae.) aegypti* and *Ae. albopictus* are known to transmit ZIKV but variable vector competence has been observed between mosquito populations from different geographical regions and different virus strains. This study evaluated the vector competence of Australian *Aedes (Ae.) aegypti* and *Ae. albopictus* (specifically those from north and central Queensland) to a Brazilian epidemic ZIKV strain. They found that, although both species were susceptible to ZIKV infection, *Ae. aegypti* is more likely to transmit the virus. [Read more. Original article.](#)

People Fixing the World: The great mosquito swap



Medellin in Colombia has been badly affected by dengue fever outbreaks. But now an ambitious project aims to stop the disease – by changing the mosquito population. [Listen the podcast.](#)

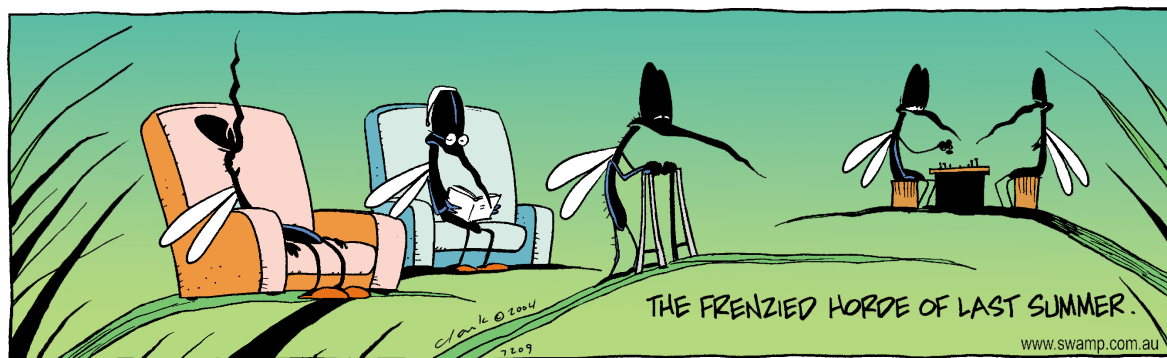


Development and Field Evaluation of a System to Collect Mosquito Excreta for the Detection of Arboviruses

Recent laboratory experiments have demonstrated that a range of mosquito-borne pathogens can be detected in mosquito excreta. In the current study, we have modified light and passive mosquito traps to collect their excreta and assessed their efficacy in field evaluations. From these field-collections, we detected West Nile, Ross River, and Murray Valley encephalitis viruses. Our findings suggest that mosquito traps are easily modified to collect excreta and, that this system has the potential to enhance detection of pathogens.

[Read more.](#)

A BITE OF HUMOUR



THE BEST INTERCEPTION MOZZIE PICTURE OF THE MONTH



2 Female *Culex quinquefasciatus* found alive in MPI search room while looking at consignment of bananas from Ecuador At Freshmax NZ Ltd transitional facility, MG Marketing, Penrose, Auckland. Photographer: Aaron Guanlao.



NEW ZEALAND BIOSECURE

RISK MAPS

[Dengue Map](#) – Centres for Disease Control and Prevention

[Zika Map](#) – Centres for Disease Control and Prevention

[Malaria](#) – Centres for Disease Control and Prevention

DISEASE OUTBREAKS

To find out where the latest disease outbreaks have occurred visit:

[Epidemic and emerging disease alerts in the Pacific region](#) - Produced by the Pacific Community (SPC) for the Pacific Public Health Surveillance Network (PPHSN).

[World Health Organization](#) – World Health Organization.

[Public Health Surveillance](#) - Institute of Environmental Science and Research (ESR) - Information for New Zealand Public Health Action.

[Communicable disease threats report](#) - European Centre for Disease Prevention and Control
