



## BORDER HEALTH NEWSLETTER – OCTOBER 2018

### WELCOME!

Kia Ora Koutou

It was great to meet many of you in the Pest and Vectors course this month in Auckland. It is fantastic to put faces to the names of the people you work with every day!

This month we have some tips for you to protect yourself from mosquito-borne diseases. Thanks very much to all of you for your patience and feedback to improve the new online database which is now live.

The news this month focusses on the importance of public involvement and government diligence when it comes to mosquito control and identification for example, a story from Maryland USA discusses how getting home owners in a suburb of Maryland involved with mosquito trapping has seen a 76% reduction in the Asian tiger mosquito in the neighbourhood! In other news find out the latest research into controlling mosquito borne diseases using different techniques and more!



### SURVEILLANCE

During October 1099 samples were collected by staff from 11 DHBs with 64 positive samples. This included 19 adult samples and 100 larval samples, leading to a total of 24 adults and 3555 larvae identified over the past month (Table 1). The dominant larval species this month, last month and this month last year was *Aedes notoscriptus*.

Compared to this same month last year the total number of adults have shown a decrease (1650%), this is mainly due to the lack of adult samples from Northland DHB this year in comparison to last year. On the other hand, larvae have shown a slight increase (8%; Table 1).

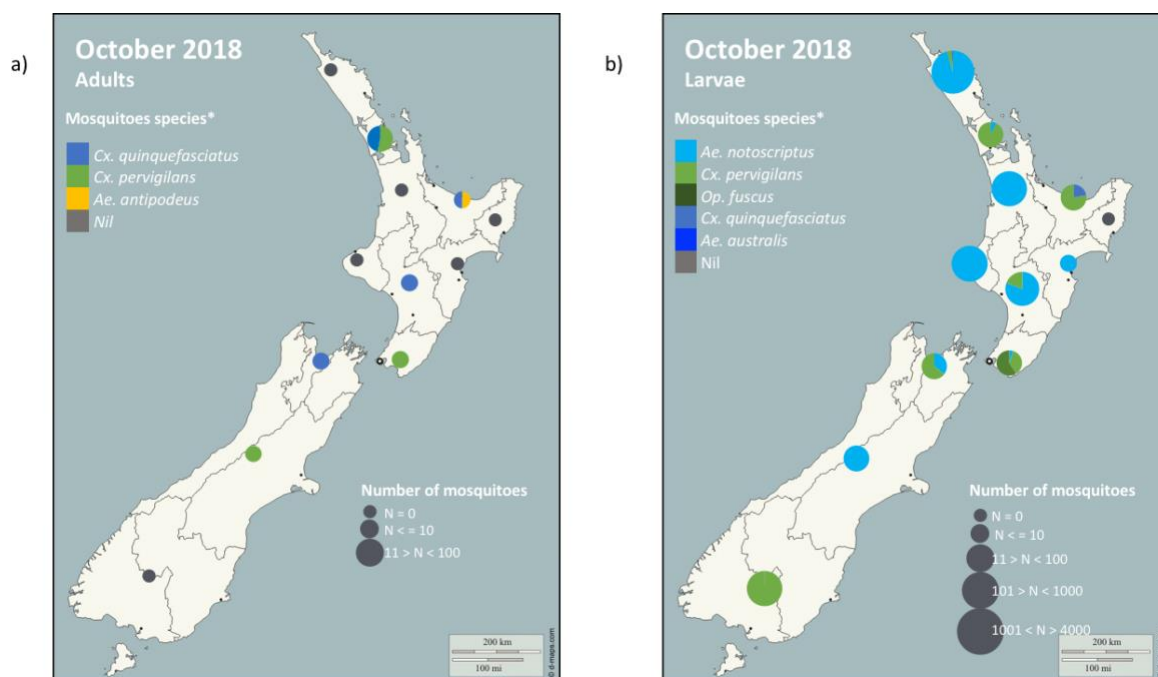
**Table 1.** Adult and larvae sampled by the New Zealand surveillance program during October of last year and this year.

<i>Species (common name)</i>	Adults		Larvae	
	Oct 18	Oct 17	Oct 18	Oct 17
<i>Aedes notoscriptus</i> (striped mosquito)	-	262	2906	1955
<i>Ae. antipodeus</i> (winter mosquito)	2	22	-	-
<i>Ae. australis</i> (saltwater mosquito)	-	-	1	-
<i>Culex pervigilans</i> (vigilant mosquito)	11	88	608	1282
<i>Cx. quinquefasciatus</i> (southern house mosquito)	11	45	17	4
<i>Coquillettidia iracunda</i>	-	3	-	-
<i>Opifex fuscus</i> (rock pool mosquito)	-	-	23	33
<b>Total</b>	<b>24</b>	<b>420</b>	<b>3555</b>	<b>3274</b>

In total six mosquito species have been collected this month (Table 1), same number than last month. Toi Te Ora – PH detected the highest number of mosquito species (4) per DHB this month (Figure 1).

Compared to last month both adult and larvae numbers have shown an increase (167% and 72% respectively).

Northland DHB had the highest number of larvae this month (2151, 48% more than last month) followed by Taranaki Health (520, that is 46% more than last month, Figure 1).



**Figure 1.** Total mosquito adults (a) and larvae (b) sampled in New Zealand during the October 2018 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. No further *Culex quinquefasciatus* larvae have been recorded in Queenstown this month (Figure 2).

*Aedes notoscriptus* larval numbers have shown an increase in five DHBs from this same month last year and a decrease in four DHBs (Figure 2).

*Culex quinquefasciatus* larval numbers have shown an increase in Northland DHB, and has not been recorded in Auckland and Toi Te Ora this year (Figure 2). Nil *Cx. quinquefasciatus* have been registered in, Community and Public Health, Hutt Valley, Taranaki, Public Health South, Mid Central, Waikato, Hawkes Bay or Nelson Marlborough this month or this same month last year (Figure 2).

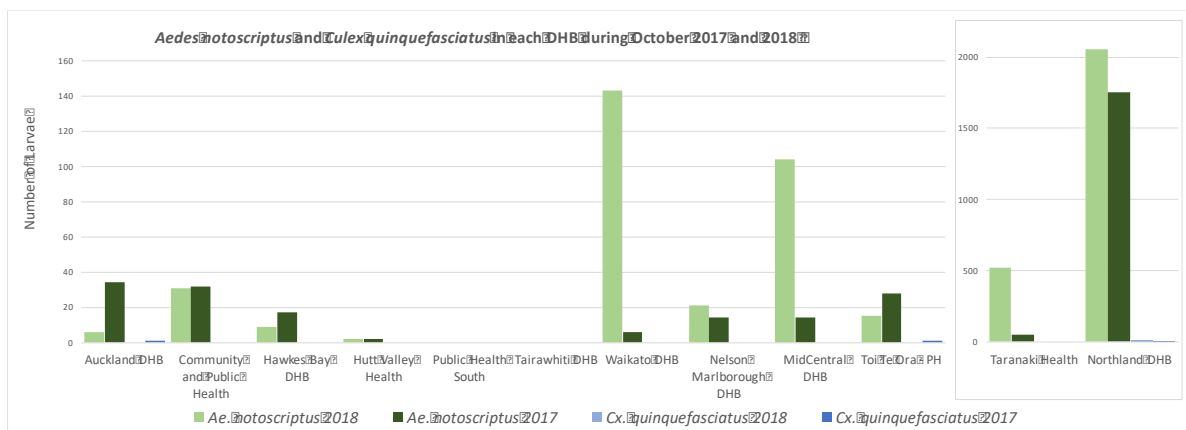


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during October 2017 and 2018. \*Please note the different scale for the number of larvae present in Taranaki and Northland in comparison to the other DHBs.

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

## INCURSIONS AND INTERCEPTIONS

During October, two suspected interceptions have been recorded (Table 2).

Table 2. Suspected interceptions during October 2018

Date	Species	Location	Circumstances
12.10.2018	1F <i>Culex quinquefasciatus</i> 2F <i>Culex</i> sp.	Auckland International Inspection Area	Found dead in the passenger inspection area
12.10.2018	1F <i>Culex pervigilans</i>	Wellington Airport	Found alive in a container from Fiji



## NEWS ARTICLES FROM AROUND THE WORLD

### Researchers identify new approach for controlling dengue fever and Zika virus



Alexander Raikhel in his office at UC Riverside. Credit: I Pittalwala, UC Riverside.

UC Riverside study uses gene-editing tool to disrupt serotonin receptor linked to egg production in *Aedes aegypti* mosquitoes. A pair of researchers at the University of California, Riverside, have succeeded in using [CRISPR-Cas9](#), a powerful tool for altering DNA sequences and modifying gene function, to decrease mosquito body size, moving the research one step closer to eliminating mosquitoes that carry dengue fever and Zika virus. The researchers succeeded in postponing mosquito development, shortening the animal's lifespan, retarding egg development, and diminishing fat accumulation. [Read more.](#)

### First Came the Hurricane. Now Come the Mosquitoes.



*Aedes aegypti* mosquito larvae swim in a container displayed at the Florida Mosquito Control District Office. Wilfredo Lee/AP

Heavy rains and flooding create ideal conditions for swarms. For public health officials, the focus is on curbing the potential for viruses to spread. Spikes in bloodthirsty mosquito populations are common after major storms. And with climate change bringing more storms like Florence, and also [upping their strength](#), the increased potential for the transmission of vector-borne illnesses like Zika, West Nile, and the chikungunya virus are a top concern for public health experts. [Read more.](#)



## Tiger mosquito spotted in Eindhoven, locals warned to be aware



Female Asian tiger mosquito

An Asian tiger mosquito has been spotted in Eindhoven, prompting government safety experts to put up more traps around the city in an effort to see if they are breeding. Locals living in a 500 metre radius of the sighting have been sent a letter by the public safety body NVWA warning them about the presence of the mosquito and asking people to empty plant pots which may contain water where the mosquitoes could breed. [Read more.](#)

## Why a Scottish lab is breeding mosquitoes?

The Medical Research Council-University of Glasgow Centre for Virus Research (CVR) is trying to stop further epidemics of diseases such as Zika, Dengue and yellow fever. In what is the world's largest group of human and veterinary virologists under one roof, they're looking at the problem for every level, from molecules up to entire ecosystems. It's at the latter level that the mosquitoes come in. Or rather where I come in to where the mosquitoes are. [Read more.](#)

## Vaccinating humans to protect mosquitoes from malaria



*Anopheles gambiae* mosquito, feeding on blood. Credit: James Gathany, Centers for Disease Control and Prevention

For decades, scientists have been trying to develop a vaccine that prevents mosquitoes from spreading malaria among humans. This unique approach—in which immunized humans transfer anti-malarial proteins to [mosquitoes](#) when bitten—is called a transmission-blocking [vaccine](#) (TBV). A few malarial TBVs have shown promise but they have not been widely tested



due to unwanted side effects or limited effectiveness. That could change. A biotechnology advancement reported Monday, Oct. 8, in the journal *Nature Nanotechnology* describes how a University at Buffalo-led research team has devised a simple way to boost the efficacy of malarial TBVs. [Read more.](#)

### **Fighting mosquitoes in your backyard with scientists' help**

Thanks to an innovative mosquito control approach developed at Rutgers University-New Brunswick, residents in several Maryland neighbourhoods reduced populations of invasive Asian tiger mosquitoes by an impressive 76 percent, on average. The Rutgers-led project, called Citizen Action through Science (Citizen AcTS), mobilizes neighbours guided by scientists to address local problems, according to a study in the journal *Scientific Reports* this week. [Read more.](#)

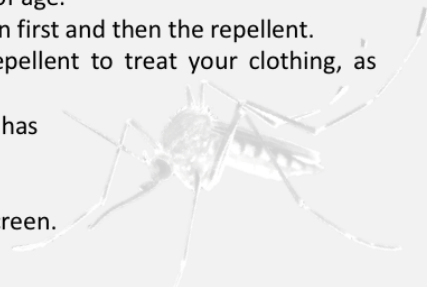
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## **PROTECT YOURSELF FROM MOSQUITOES**



### **If you are traveling around this summer please consider this tips to ensure you don't get bitten by mosquitoes!**

- Use insect repellents and check the label to make sure they contain DEET, picaridin, oil of lemon eucalyptus (OLE), or IR3535. Always use as directed.
- Insect repellents containing DEET, picaridin, and IR3535 are safe for pregnant and breastfeeding women and children older than 2 months when used according to the product label. Oil of lemon eucalyptus products should not be used on children under 3 years of age.
- If you use both sunscreen and insect repellent, apply the sunscreen first and then the repellent.
- Wear long-sleeved shirts and long pants. You can use insect repellent to treat your clothing, as directed.
- Use clothing and gear (such as boots, pants, socks, and tents) that has been treated with the insecticide permethrin.
- Use insecticide spray as directed to get rid of mosquitoes.
- Use bed nets to protect your sleeping area; in tents use a zip-up screen.
- Stay and sleep in screened-in or air-conditioned rooms.



Find information for travellers [HERE](#) - Centers for Disease Control and Prevention

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## **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. Choose a country to display the current distribution of Malaria.



NEW ZEALAND BioSECURE

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## 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.

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