



## BORDER HEALTH NEWSLETTER – NOVEMBER 2018

### WELCOME!

Kia Ora Koutou

As some of you may have already heard, Laura has left the lab. We secretly hope she may come back at some point in the future. In any case, we wish her the best. We warmly welcome the new Junior Taxonomist Carolyn Edgecumbe to our team! We are really happy with her progress so far and believe she will do great in the lab. We also thank Julia Kasper for her assistance with the on-call service while Carolyn is getting ready for that. By the way, we would like to congratulate Julia, she has been elected President of the Entomological Society Wellington Branch!

In the news this month, more about the relationship between a warmer planet and the increase of vector borne diseases; researchers found out that Zika virus may be useful in treating neuroblastoma; *Anopheles* mosquitoes may be capable of carrying and transmitting Mayaro virus, an emerging pathogen and more!

In the section “Know your mosquito” learn more about *Aedes aegypti* and in the section “A bite of humour” have fun with Gary Clark’s cartoons ☺

Thanks to everyone who helped with the updated online database, your feedback was most appreciated. The user guideline can be downloaded from our website, please [click here](#).



The Lab is closed for routine activities during Statutory Holidays and open on days in between and following.  
As always, the on-call response is available throughout the period including Public Holidays.

PS: *Aedes aegypti* you are not welcome in New Zealand.

## SURVEILLANCE

During November 1129 samples were collected by staff from 12 DHBs with 110 positive samples. This included 24 adult samples and 86 larval samples, leading to a total of 343 adults and 2340 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 and larvae have shown a decrease (148% and 152% respectively; Table 1).

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

Species (common name)	Adults		Larvae	
	Nov 18	Nov 17	Nov 18	Nov 17
<i>Aedes notoscriptus</i> (striped mosquito)	107	394	1194	2646
<i>Ae. antipodeus</i> (winter mosquito)	20	70	-	1
<i>Ae. australis</i> (saltwater mosquito)	-	-	-	2
<i>Ae. subalbirostris</i> (no common name)	-	-	3	-
<i>Culex pervigilans</i> (vigilant mosquito)	17	149	1069	2870
<i>Cx. quinquefasciatus</i> (southern house mosquito)	178	96	43	329
<i>Culex</i> sp. (missing their abdomens, likely to be <i>quinquefasciatus</i> or <i>pervigilans</i> )	6	30	-	-
<i>Coquillettidia iracunda</i>	14	137	-	-
<i>Coquillettidia tenuipalpis</i>	-	2	-	-
<i>Culiseta tonnoiri</i>	-	1	-	-
<i>Opifex fuscus</i> (rock pool mosquito)	1	-	31	47
<b>Total</b>	<b>343</b>	<b>879</b>	<b>2340</b>	<b>5895</b>

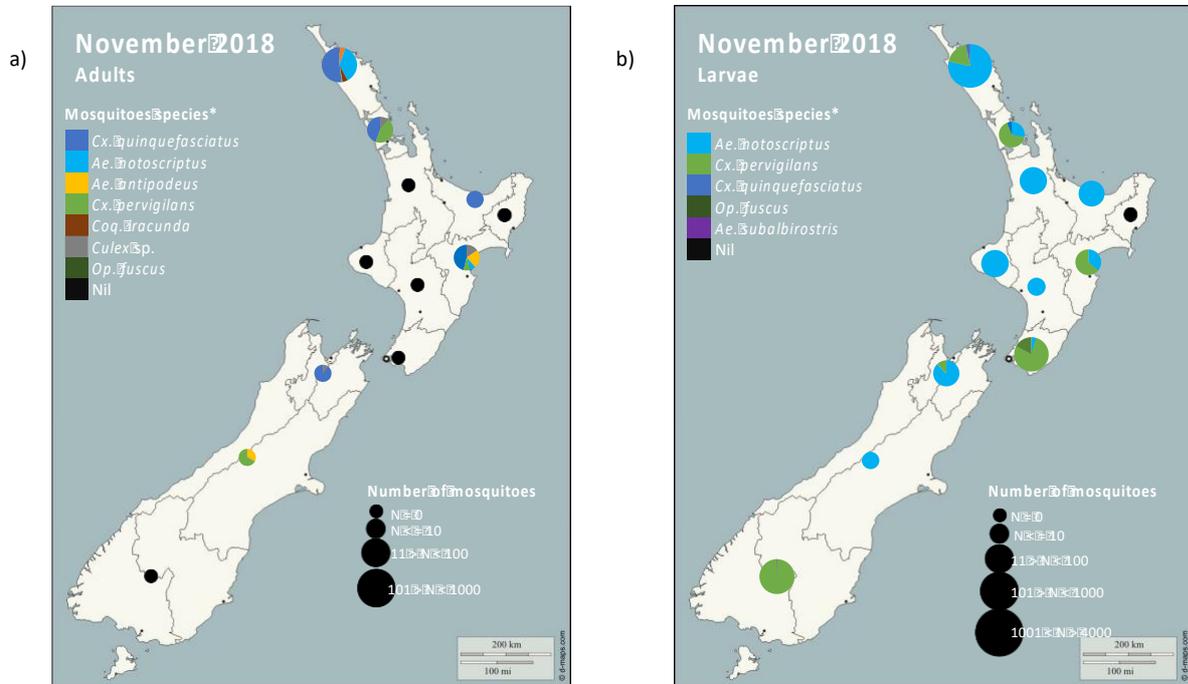
In total seven mosquito species have been collected this month (Table 1), that is two species less than same month last year, and one more than last month. Northland detected the highest number of mosquito species (6) per DHB this month (Figure 1).

As expected Northland DHB had the highest number of larvae this month (1302, 39% less than last month) followed by Public Health South (637, that is 96% more than last month, Figure 1).

Also 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 three DHBs from this same month last year and a decrease in seven DHBs (Figure 2).

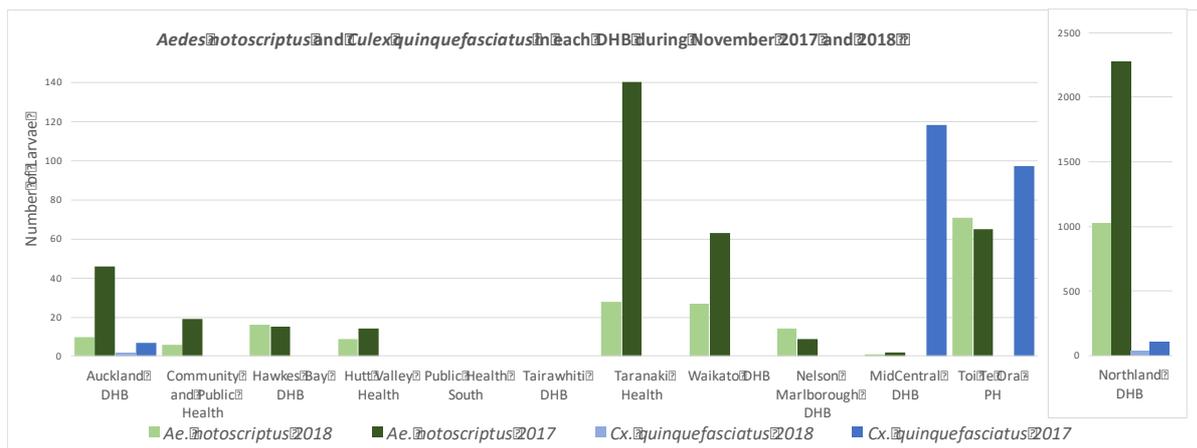
*Culex quinquefasciatus* larval numbers have shown a decrease in four DHBs, and has not been recorded in MidCentral and Toi Te Ora this year (Figure 2). Nil *Cx. quinquefasciatus* have been registered in eight DHBs this month or this same month last year (Figure 2).



**Figure 1.** Total mosquito adults (a) and larvae (b) sampled in New Zealand during the November 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.



**Figure 2.** Comparison between introduced mosquitoes sampled in each DHB New Zealand during November 2017 and 2018. \*Please note the different scale for the number of larvae present in 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 November, two suspected interception has been recorded (Table 2).

Table 2. Suspected interceptions during November 2018

Date	Species	Location	Circumstances
13.11.2018	2 Non-mosquitoes	HoriCentre, Transitional Facility, Auckland	Found dead while devanning a container of Calcium Nitrite Fertilizer from Singapore
22.11.2018	1 F <i>Culex quinquefasciatus</i>	Fresh Direct, TF, Mt Wellington, Auckland	Found dead inside a bag of onion from California, USA

## NEWS ARTICLES FROM AROUND THE WORLD

### Climate of Change: Rise of the mosquitoes



As temperatures rise across the globe, the tiny mosquito is finding new places to call home. But spreading in its wake are disease and death, which together affect hundreds of millions of people every year. In the fifth of six special reports on climate change, Insight looks at how a warming world is making its deadliest animal even more lethal, and efforts to combat the scourge. [Read more.](#)

### Detecting dengue, Zika, and chikangunya within minutes



An MIT Tata Center funded research team have developed a paper-based diagnostic test to detect Zika, dengue, chikungunya and other related viruses within minutes. To commercialize the venture, they recently formed life sciences startup, E25Bio, to not only change the way mosquito-borne illnesses are diagnosed, but also enable governments to effectively prevent an outbreak from turning into a public health crisis. [Read more.](#)



## Zika: The Enemy of My Enemy



For pregnant women and those who come in contact with them, the Zika virus is terrifying, with the potential to cause birth defects and miscarriage. However, as shown in this video from Nemours Children's Hospital in Florida, the virus might be useful in treating neuroblastoma, a deadly childhood cancer. [Watch the video.](#)

## **Anopheles species may be important vectors driving spread of Mayaro virus in the U.S.**

Mosquitoes of the genus *Anopheles* are well known as primary vectors of malaria. But a new study suggests that *Anopheles* species, including some found in the United States, also are capable of carrying and transmitting an emerging pathogen, Mayaro virus, which has caused outbreaks of disease in South America and the Caribbean. [Read more.](#)

## **Why Mosquitoes prefer some people over others: Genetic discovery**



*Aedes aegypti* mosquito on human skin. Image Credit: khlungcenter / Shutterstock

A new study has tried to assess the genetic variants among mosquitoes that make them more susceptible to spreading deadly viral diseases such as dengue, yellow fever, Zika and chikungunya and more resistant to insecticides that are used to kill them. [Read more.](#)

## **Researchers generate six antibodies to diagnose and treat Zika virus**

Researchers have generated six Zika virus antibodies that could be used to test for and possibly treat a mosquito-borne disease that has infected more than 1.5 million people worldwide. The antibodies "may have the dual utility as diagnostics capable of recognizing Zika virus subtypes and may be further developed to treat Zika virus infection," corresponding author Ravi Durvasula, MD, and colleagues report in a study published in the journal *PLOS ONE*. [Read more.](#) [Original article.](#)



## A BITE OF HUMOUR



Thanks very much Gary Clark for this cartoon!

If you wish to know more about Gary and the Swamp [click here](http://www.swamp.com.au).

## KNOW YOUR MOSQUITO



*Aedes aegypti*  
(Yellow Fever Mosquito)

- Known to transmit Dengue, Yellow fever, Zika and Chikungunya. Can also transmit Murray Valley Encephalitis and Ross River in the lab.
- A very domesticated mosquito which breeds in artificial containers such as plant pots, tyres, gutters. Also breeds in natural containers such as tree holes, leaf axils and bromeliads.
- Aggressive daytime biter which is commonly found indoors.
- *Aedes aegypti* has been intercepted a number of times at the NZ border, with most recent interceptions coming from the Auckland International Airport.

## 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.

## DISEASE OUTBREAKS

[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.