

## BORDER HEALTH NEWSLETTER - NOVEMBER 2017

### WELCOME!

Kia Ora Koutou

The mosquito season is upon us, with numbers increasing hastily. This month temperatures have been high and water levels low in many regions. The nutrients dissolved in the water are becoming more concentrated. Could this make the mozzie numbers increase rapidly with the next rain? This month the news is focused on predicting the mozzies next steps and the different ways to fight against them.

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.

We would like to wish you all a Merry Christmas and Happy New Year.

### SURVEILLANCE

During November 1333 samples were collected by staff from the 12 DHBs with 212 positive samples. This included 52 adult samples and 160 larval samples, leading to a total of 849 Adults and 5895 larvae identified over the past month (Table 1).

Compared to this same month last year, larvae numbers have shown a 39% increase, while there has been a slight increase (16%) in adult numbers (Table 1).

Table 1. Adult and larvae numbers found by the surveillance program during November of last year and this year.

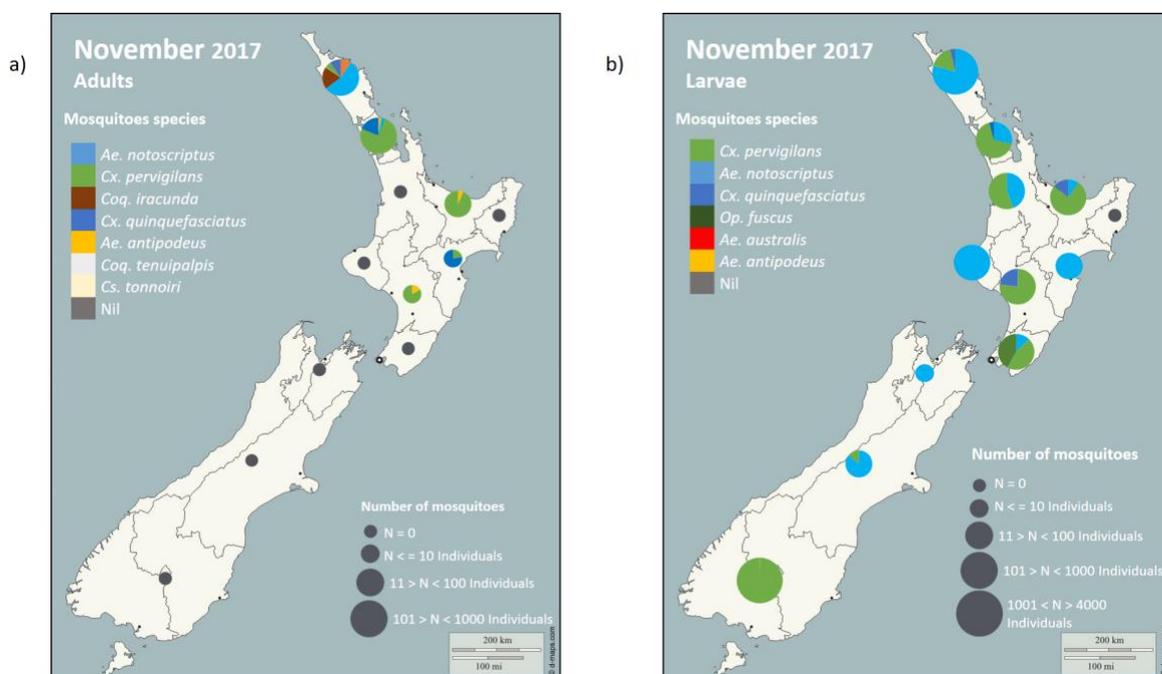
Species (common name)	Adults		Larvae	
	Nov. 17	Nov. 16	Nov. 17	Nov. 16
<i>Aedes notoscriptus</i> (striped mosquito)	394	193	2646	1759
<i>Ae. antipodeus</i> (winter mosquito)	70	23	1	0
<i>Ae. australis</i> (saltwater mosquito)	0	0	2	3
<i>Culex pervigilans</i> (vigilant mosquito)	149	426	2870	1689
<i>Cx. quinquefasciatus</i> (southern house mosquito)	96	18	329	97
<i>Cx. asteliae</i>	0	0	0	14
<i>Coquillettidia iracunda</i>	137	56	0	0
<i>Coq. tenuipalpis</i>	2	0	0	0
<i>Culiseta tonnoiri</i>	1	0	0	0
<i>Opifex fuscus</i> (rockpool mosquito)	0	0	47	48
<b>Total</b>	<b>849</b>	<b>716</b>	<b>5895</b>	<b>3610</b>

The endemic species this month are represented by *Culex pervigilans*, *Opifex fuscus*, *Aedes antipodeus*, *Coquillettidia iracunda*, *Coq. tenuipalpis* and *Culiseta tonnoriri*. Nil *Culex asteliae* larvae has been found this year in contrast to this month last year. Endemic larvae have shown a significant increase (40%) in November this year compared to last year (Table 1) and have also shown a significant increase in comparison to the number in the previous month (47% more than in October) of this year.

The introduced species for November are represented by *Aedes notoscriptus*, *Ae. australis* and *Culex quinquefasciatus*.

Larvae numbers for the most representative introduced mosquitoes, both *Aedes notoscriptus* and *Culex quinquefasciatus* have shown an increase this month compared to last month (26% and 99% respectively; Table 1).

In total 9 mosquito species have been found this month, that is three more than last month. Northland DHB was the most specious DHB this month with 7 mosquito species (two more than last month), followed by Auckland DHB, Toi Te Ora - PH and MidCentral DHB with 4 species each. In contrast, and equal to last month, Tairawhiti DHB has not detected any mosquitoes this month (Figure 1). Northland is also the DHB with the highest numbers of larvae (2871) and adults (701), followed again by Public Health South for larvae numbers (1225) and for Auckland DHB for the adult numbers (118) (Figure 1).



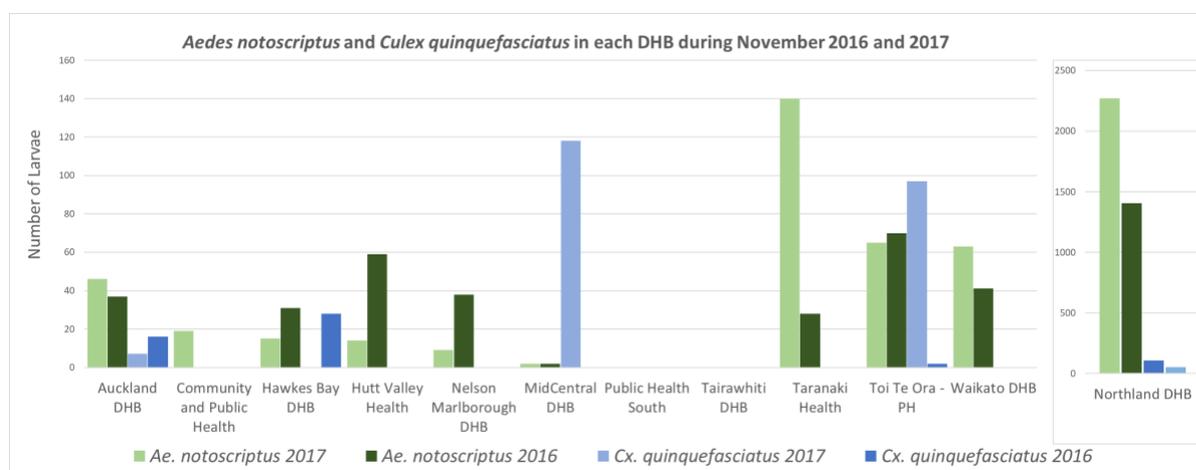
**Figure 1.** Mosquitoes adults (a) and larvae (b) sampled during the November 2017 surveillance period.

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

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

*Aedes notoscriptus* larval numbers have shown a decrease in 4 DHBs from this same month last year (Hawkes Bay DHB, Hutt Valley Health, Nelson Marlborough DHB and Toi Te Ora - PH), and shown an increase in the other 5 DHBs (Auckland DHB, Community and Public Health, Taranaki Health, Northland DHB and Waikato DHB, Figure 2).

As expected *Ae. notoscriptus* has not been recorded this month, this year and last year in Public Health South, with routine sampling showing that it has not yet established populations in this area. *Ae. notoscriptus* was also not detected in Tairāwhiti DHB in the same periods (Figure 2). *Culex quinquefasciatus* was absent in samples in 8 DHB's this month and has shown an increase in MidCentral DHB and Northland DHB while it has shown a decrease in Auckland DHB (Figure 2).



**Figure 2.** Comparison between introduced mosquitoes sampled in each DHB during November 2016 and November 2017.

\* Please note the different scale for the number of larvae present in Northland DHB in comparison to the other DHBs.

## INCURSIONS AND INTERCEPTIONS

During November, 2 suspected interceptions have been recorded (Table 2) and 4 mosquito-like insects have been detected (Table 3).

Table 2. Suspected interceptions during November 2017			
Date	Species	Location	Circumstances
14/11/17	1 Female <i>Culex quinquefasciatus</i> , 2 Male <i>Culex quinquefasciatus</i> , 1 <i>Culex</i> sp. and 1 unidentifiable mosquito	Tauranga Port	All found dead by MPI staff carrying out routine container inspection. Container was empty and had just been unloaded from a vessel with last port being Fiji.
25/11/17	1 Female <i>Culex pervigilans</i>	Auckland International Airport	Caught flying around inside the ITB in the dog land area.



Table 3. Mosquito-like insects detected November 2017

Date	Species	Location	Circumstances
01/11/17	Crane Fly	Auckland International Airport	Complaint by Rental car company at Auckland International Airport.
02/11/17	Crane Fly	Auckland International Airport	Found by MPI staff in dog handling complex
02/11/17	Crane Fly	Nelson Port	Found by MPI at Port of Nelson
16/11/17	Window Gnat	Tauranga Port	Found dead in a container

## NEWS ARTICLES FROM AROUND THE WORLD

### Drones scatter mosquitoes to fight diseases



The drones can carry hundreds of thousands of sterile mosquitoes.

Drones that scatter swarms of sterile mosquitoes over wide areas are being developed to help stop the spread of diseases such as malaria. Sterile male mosquitoes cannot produce offspring when they mate with females. By crowding out other males, they reduce the mosquito population. But spreading them is difficult in areas without roads, so technology organisation WeRobotics has been developing drones to do the job. [Read more.](#)

### Climate change: NZ's mozzie-borne disease risk to rise





A species such as *Aedes albopictus* - or Asian tiger mosquito - becoming established in New Zealand could be a worst-case scenario. Photo / File NZ Herald. By: Lynley Hargreaves

It's a familiar New Zealand story, the havoc wreaked by all the pest species we've brought in. But in the case of mosquitoes, the worst might be yet to come. There were 12 mostly bird-nibbling mosquito species in pre-European times. Since our arrival, three new species have become permanently established here. We've stopped dozens more at our ports, and eradicated one. Climate change will make that border control more difficult, says University of Auckland Senior Research Fellow Jose Derraik. [Read more.](#)

## **New genetic study of mosquitoes demonstrates movement of insecticide resistance across Africa**



1000 genomes project sequenced the DNA of 765 wild *Anopheles* mosquitoes.

The largest ever genetic study of mosquitoes reveals the movement of insecticide resistance between different regions of Africa and finds several rapidly evolving insecticide resistance genes. Reported today (29 November) in *Nature*, this genetic resource will be used to develop new tools for monitoring resistance and managing insecticide use, and for designing novel control methods. [Read more.](#)

## **Heavy rainfall can help predict mosquito-borne virus outbreaks**

A new study demonstrates that outbreaks of mosquito-borne viruses Zika and Chikungunya generally occur about three weeks after heavy rainfall. Researchers also found that Chikungunya will predominate over Zika when both circulate at the same time, because Chikungunya has a shorter incubation period -- just two days, versus 10 days for Zika. The latter finding explains why a late-2015 Zika epidemic in Rio de Janeiro ended while the number of Chikungunya cases increased in February 2016. [Read more.](#)

## **Mosquitoes and why they might be attracted to your blood more than the person's next to you**

According to Dr Webb, we first need to understand that the hundreds of species of mosquitoes are attracted by different things at certain distances from you. "As a long-range



attractant, mosquitoes can smell the carbon dioxide we breathe out, that's the one common denominator between warm-blooded animals — whether it's a bird, a cow or a kangaroo." Once she gets closer, a mosquito will respond to the smell of the potential blood source's skin. There are many factors, including the bacteria on your skin, that makes you smell different that attracts a certain mosquito. [Read more.](#)

## US government approves 'killer' mosquitoes to fight disease

US Environmental Protection Agency will allow release of insects in 20 states and Washington DC. The US Environmental Protection Agency (EPA) has approved the use of a common bacterium to kill wild mosquitoes that transmit viruses such as dengue, yellow fever and Zika, *Nature's* news team has learned. On 3 November, the agency told [biotechnology start-up MosquitoMate](#) that it could release the bacterium *Wolbachia pipientis* into the environment as a tool against the Asian tiger mosquito (*Aedes albopictus*). Lab-reared mosquitoes will deliver the bacterium to wild mosquito populations. [Read more.](#)

## A VERY MOZZIE CHRISTMAS



Merry  
Christmas  
from the Lab  
and friends!!!!

## RISK MAPS



NEW ZEALAND BIOSECURE



[Dengue Map](#)

[Zika Map](#)

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## DISEASE OUTBREAKS

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

[World Health Organization](#)

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

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