



BORDER HEALTH NEWSLETTER - FEBRUARY 2018

WELCOME!

Kia Ora Koutou,

This February has shown very high mozzie numbers, breaking the record of last year's *Culex quinquefasciatus* larvae, with everything suggesting that next month will be very active as well.

We are glad to say that the live *Maorigoeldia argyropus* that were sent to the lab last month have produced some adults. These were added to the lab reference collection. Thanks again for the larvae Peter Haslemore! We are also very grateful with Debe Anderson for bringing an adult *Aedes polynesiensis*, some *Ae. aegypti* larvae and *Ae. albopictus* larvae from Rarotonga for our collection as well.

In the news, Dengue Fever is spreading among the Pacific Islands, India and the Americas, while Chikungunya is spreading in Kenya. Meanwhile, scientists are focused on mosquito brains to help them to understand mosquito behaviour and also to help create a Zika vaccine.

SURVEILLANCE

During February 1139 samples were collected by staff from the 12 DHBs with 439 positive samples. This included 119 adult samples and 320 larval samples, leading to a total of 4335 adults and 24669 larvae identified over the past month (Table 1).

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

| Species (common name) | Adults | | Larvae | |
|---|-------------|-------------|--------------|--------------|
| | Feb. 18 | Feb. 17 | Feb. 18 | Feb. 17 |
| <i>Aedes notoscriptus</i> (striped mosquito) | 360 | 658 | 4523 | 1802 |
| <i>Ae. antipodeus</i> (winter mosquito) | 3 | 3 | 0 | 0 |
| <i>Ae. australis</i> (saltwater mosquito) | 0 | 0 | 0 | 12 |
| <i>Ae. sualbirostris</i> | 0 | 0 | 0 | 1 |
| <i>Coquillettidia iracunda</i> | 9 | 17 | 0 | 0 |
| <i>Culex pervigilans</i> (vigilant mosquito) | 455 | 26 | 2736 | 4162 |
| <i>Cx. quinquefasciatus</i> (southern house mosquito) | 3507 | 1060 | 17352 | 14709 |
| <i>Culiseta tonnoiri</i> | 1 | 0 | 0 | 0 |
| <i>Opifex fuscus</i> (rockpool mosquito) | 0 | 0 | 58 | 62 |
| Total | 4335 | 1764 | 24669 | 20748 |

Compared to this same month last year, both adult and larvae numbers have shown a significant increase (146% and 19% respectively, Table 1).

In total 7 mosquito species have been found this month, 2 less than last month. Northland DHB presented the highest number of species this month with 5 mosquito species (3 less than last month), followed by Toi Te Ora – PH and Hutt Valley Health with 4 species. Of the remaining DHBs; 3 species from Public Health South and Nelson Marlborough with 2, followed by Tairāwhiti DHB with 1 (Figure 1).

MidCentral is the DHB with the highest numbers of larvae this month (7067, 255% more than last month) followed by Toi Te Ora - PH (6012, 34% more than last month) and Northland DHB (2614, 45% more than last month). Northland is the DHB with the highest numbers adults (2479, 10 % less than last month) followed by Auckland DHB (1225, 35% less than last month; Figure 1).

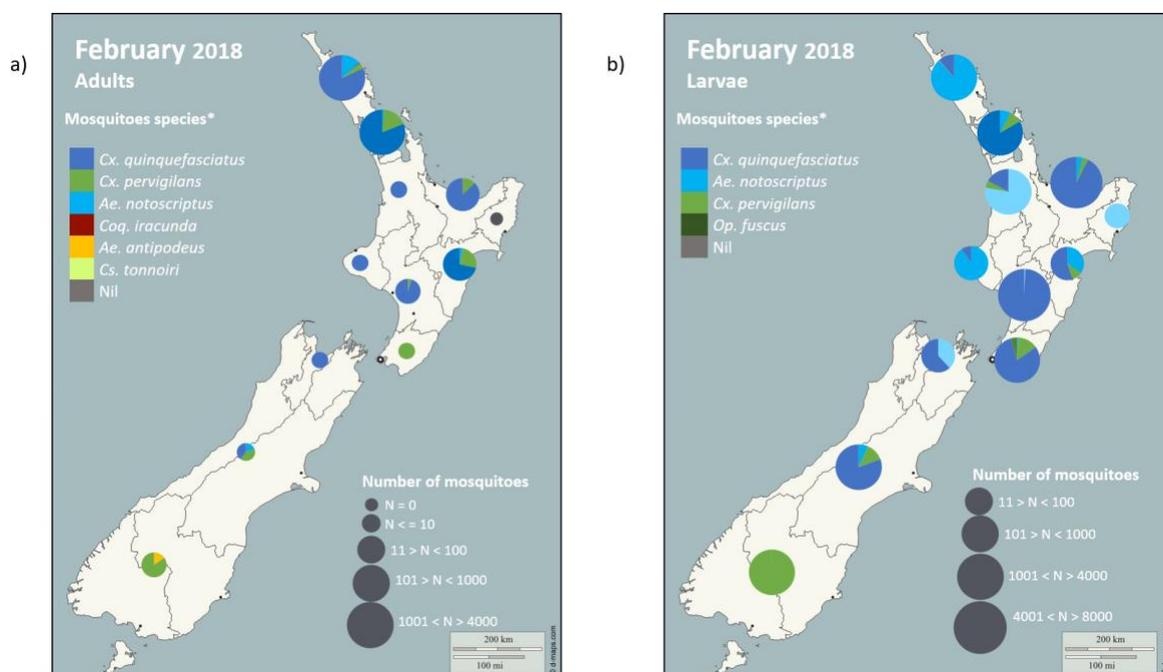


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the February 2018 surveillance period.

* 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. The introduced species for February are represented by *Aedes notoscriptus* and *Culex quinquefasciatus*. Nil *Ae. australis* have been found this month nor this same month last year (Table 1, Figure 1).

As expected *Ae. notoscriptus* and *Culex quinquefasciatus* have not been recorded this month, this year or last year in Public Health South. Routine sampling shows that populations remain unestablished in this area (Figure 2).

Larvae numbers for the introduced mosquitoes *Aedes notoscriptus* and *Culex quinquefasciatus*, have shown a significant increase this month compared to the same month last year (541% and 25% respectively) (Table 1).

Aedes notoscriptus larval numbers have shown an increase in 5 DHBs from this same month last year (Auckland, Community and Public Health, Hawkes Bay, Nelson Marlborough and Northland), and shown a decrease in MidCentral (Figure 2). In comparison with this same month last year, *Ae. notoscriptus* has been detected in Hutt Valley Health, Taranaki, Waikato and Toi Te Ora - PH (Figure 2).

Culex quinquefasciatus larval numbers have shown an increase in 5 DHBs from this same month last year (Auckland, Community and Public Health, Nelson Marlborough, Northland and MidCentral), and shown a decrease in 3 DHBs (Hawkes Bay, Waikato and Toi Te Ora, Figure 2). *Cx. quinquefasciatus* was not detected in Taranaki Heath, Public Health South or Tairawhiti this month or this same month last year, and is now present in Hutt Valley Health (Figure 2).

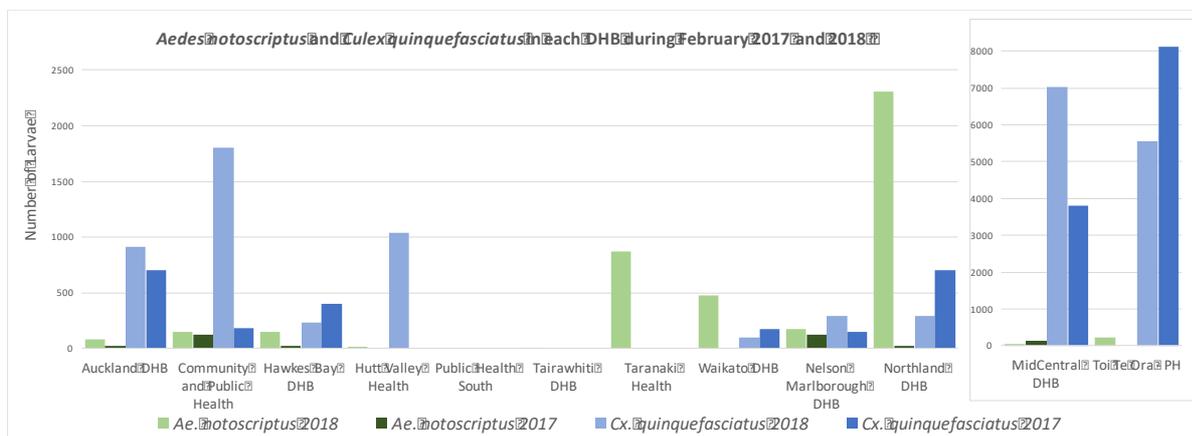


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during February 2017 and 2018.

* Please note the different scale for the number of larvae present in MidCentral DHB and Toi Te Ora – PH in comparison to the other DHBs.

INCURSIONS AND INTERCEPTIONS

During February, 10 suspected interceptions have been recorded (Table 2). The exotic species are highlighted in pale blue.

| Table 2. Suspected interceptions during February 2018 | | | |
|---|--|--|--|
| Date | Species | Location | Circumstances |
| 02.02.18 | 1 Male <i>Culex quinquefasciatus</i> 1 Female <i>Culex quinquefasciatus</i> | Moving Co. Transitional Facility, Auckland | Male found dead and female alive inside imported car from Brisbane |
| 02.02.18 | 1 Female <i>Culex pervigilans</i> | ITB of the Auckland International Airport | Found alive by X-ray machine |
| 05.02.18 | 1 Female <i>Aedes notoscriptus</i> | TF -151 Marua Road Mt Wellington, Auckland | Found alive by MPI halfway through devanning container |
| 07.02.18 | 1 Female <i>Culex pervigilans</i> | Wellington International Airport | Found alive by MPI at Biosecurity Control Area |



| Date | Species | Location | Circumstances |
|----------|---|---|--|
| 07.02.18 | 1 Female <i>Culex pervigilans</i> | 34 Jamaica Drive, Grenada North | Found dead in a cargo with grapes from Peru |
| 14.02.18 | 1 Female <i>Culex quinquefasciatus</i> | ITB of the Auckland International Airport | Found alive By X-ray machine by an MPI officer |
| 15.02.18 | 1 Male <i>Culex pipiens</i> | Allied Pickfords, Wellington | Found by an MPI officer in a sealed box of sewing equipment from Germany |
| 18.02.18 | 1 Female <i>Culex pervigilans</i> | ITB of the Auckland International Airport | Found alive near X-ray machine |
| 18.02.18 | 1 Male <i>Culex quinquefasciatus</i> | ITB of the Auckland International Airport | Found alive near X-ray machine |
| 26.02.18 | 2 Male and 9 Female <i>Aedes vexans</i> | Freyberg Wharf, Auckland | Found dead inside an empty container from Tonga |

NEWS ARTICLES FROM AROUND THE WORLD

Disappearing act: Biologists document the secondary extinction of a disease-carrying mosquito



Native to Southeast Asia, the Asian tiger mosquito (*Aedes albopictus*) has spread to many countries through the transport of goods and international travel. Credit: University of California - Santa Barbara

In 2011, to help Palmyra recover from the ecological damage wreaked by the non-native rats, land managers implemented an aerial drop of rodenticide that quickly eradicated them. Without rats to feed on, the mosquitoes were left with only humans to bite. But rather than being bitten more, people eventually were not bitten at all. Researchers began to wonder if the Asian tiger mosquito had disappeared along with the rats. [Read more.](#)

Breakthrough study on mosquito brains could crack the code to creating viable Zika vaccine

Deakin neuro-engineers have conducted an investigation into how mosquito brains are affected by the Zika virus, in a breakthrough study that could crack the code to creating a viable vaccine. Associate Professor Asim Bhatti, who is the research leader in neuro-engineering at Deakin's Institute for Intelligent Systems Research and Innovation (IISRI), said



his team discovered that mosquitoes infected with the Zika virus were naturally resistant to its most debilitating effects. [Read more.](#)

Female mosquito brain map may help uncover neural circuitry behind biting and other behaviours

A mosquito's head is about the size of a pencil tip, but it packs a dangerous punch: it is the delivery system for malaria, yellow fever, and Zika, among other blood-borne diseases. In most mosquito species, females are the more dangerous sex. They're the ones drinking - and transferring - blood. Professor Bhatti's research showed mosquito cells fought through the potentially lethal stimulation in a way that actually made the insects more effective at spreading the virus "Mosquitoes infected with the Zika virus show massive spikes in stimulation and changes to their behaviour" he said. [Read more.](#)

Mosquito WAR: Thousands of infected bugs to be RELEASED this WEEK to battle deadly virus



Female *Aedes aegypti*.

Mosquitoes infected with a naturally occurring bacteria known as Wolbachia will be released this week in a desperate attempt to thwart the spread of the deadly Zika virus other, it has emerged. The mosquitos have been infected with the bacteria in labs - the plan aims for males to mate with females carrying the deadly diseases such as Zika, dengue and yellow fever. The sterilising Wolbachia will cause eggs from the females to die before they are able to hatch. [Read more.](#)

MOH: Dengue outbreak in western Fiji

Fiji's Ministry of Health and Medical Services has declared an outbreak of dengue fever in Nadi and Ba. A Government statement issued today revealed that since the beginning of this year, there have been 312 confirmed cases of dengue fever in the Western Division, with the majority of cases from Nadi and Ba subdivisions. [Read more.](#)



Dengue epidemic declared in New Caledonia

A dengue epidemic has been declared in New Caledonia. The government said there was a significant rise in the number of infections this year. It said about 100 cases of type 2 dengue have been diagnosed since the beginning of the year, suggesting that the people are to immune the virus. [Read more.](#)

Cyclone Gita might have blown away Tonga's dengue mosquito outbreak



As tens of thousands of people on Tonga's main island struggle to rebuild after Cyclone Gita, authorities say the storm fortuitously blew away many dangerous dengue-carrying mosquitos. Dr 'Akau'ola said since the cyclone, the number of dengue-carrying mosquitoes — *Aedes aegypti* — had significantly decreased, while there was an increase in harmless *Culex* mosquitos that breed in swamps. However, with many pools and reservoirs of stagnant water creating a breeding ground for mosquitoes, the risk of a dengue outbreak is one of several health challenges for authorities with 2,000 people still living in 30-40 evacuation centres. [Read more.](#)

India: Winged menace: Despite the cold, 478 dengue cases surface; officials baffled

At a time when burgeoning cases of swine flu and deaths are presenting a challenge to the state health department, a sudden spurt in the cases of dengue has put the state health officials on their toes. In January this year, a total of 478 cases of dengue has been reported across the state. [Read more.](#)

Africa: Chikungunya – Mombasa, Kenya

From mid-December 2017 through 3 February 2018, the Ministry of Health (MoH) of Kenya reported 453 cases, including 32 laboratory-confirmed cases and 421 suspected cases, of chikungunya from Mombasa County. The outbreak was detected due to an increase in the number of patients presenting to health facilities in Mombasa County with high grade fever, joint pain and general body weakness. [Read more.](#)



THE BEST INTERCEPTION MOZZIE PICTURE OF THE MONTH



Male *Culex quinquefasciatus* found dead inside imported car from Brisbane, Moving Co. Transitional Facility, Auckland.

About the photographer: Brett Thompson is a Health Protection/Technical Officer working in the Auckland Regional Public Health Service.

About the picture: It has been taken with a Samsung Galaxy A3 with an external clip on magnifying lens (Macro).

Characteristics of a good Mozzie picture:

- Picture is in focus
- The light allows the viewer to interpret the different colours.
- All body parts are distinguishable.

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

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.

A BITE OF HUMOUR

