NEW ZEALAND BIOSECURE

BORDER HEALTH NEWSLETTER - JULY 2018

WELCOME!

Kia Ora Koutou

It was great to meet many of you in Wellington this month. We hope you enjoyed the course and that you are looking forward to using any new skills gained. Feel free to contact us if you have any queries.

In the news this month; Scientist alert about the relationship between dams and *Anopheles* mosquitoes, studies suggest that *Anopheles* mosquitoes could be eliminated in local areas without impacting the ecosystem; Parasitism by water mites has the potential to be used as biological control for mosquitoes; Mosquitoes infected with *Wolbachia* successfully controlled mosquitoes in Townsville, Queensland and more!

Happy reading!

"Uncertainty is an uncomfortable position. But certainty is an absurd one." Voltaire

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SURVEILLANCE

During June 740 samples were collected by staff from 11 DHBs with just 46 positive samples. This included 12 adult samples and 34 larval samples, leading to a total of 14 adults and 1072 larvae identified over the past month (Table 1). No information relating to the surveillance program in Tairawhiti DHB has been received this month.

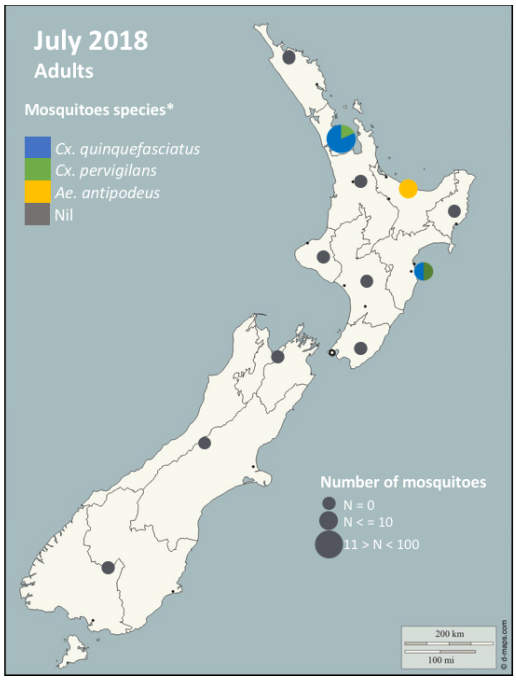
Table 1. Adult and larvae sampled by the New Zealand surveillance program during July of last year and this year.

Species (common name)	Adults		Larvae	
	July 18	July 17	July 18	July 17
Aedes notoscriptus (striped mosquito)	0	0	938	847
Ae. antipodeus (winter mosquito)	1	0	0	0
Ae. subalbirostris (no common name)	0	0	0	**1**
Culex pervigilans (vigilant mosquito)	3	2	61	66
Cx. quinquefasciatus (southern house mosquito)	10	3	38	218
Opifex fuscus (rockpool mosquito)	0	0	35	18
Total	**14**	**5**	**1072**	**1150**

Compared to this same month last year, total adult numbers have increased (64%) and total larvae numbers have shown a slight decrease (7%, Table 1). Compared to June, both adult and larvae number have shown a decrease (75% and 2% respectively).

In total five mosquito species have been collected this month, one less than last month. Four was the maximum number of mosquito species detected this month from the Hutt Valley Health DHB followed by Northland DHB with three mosquito species (Figure 1). Northland is the DHB with the highest number of larvae this month (903, very similar number to last month (907)) followed by Waikato (54, eighteen times higher than last month).

a)



b)

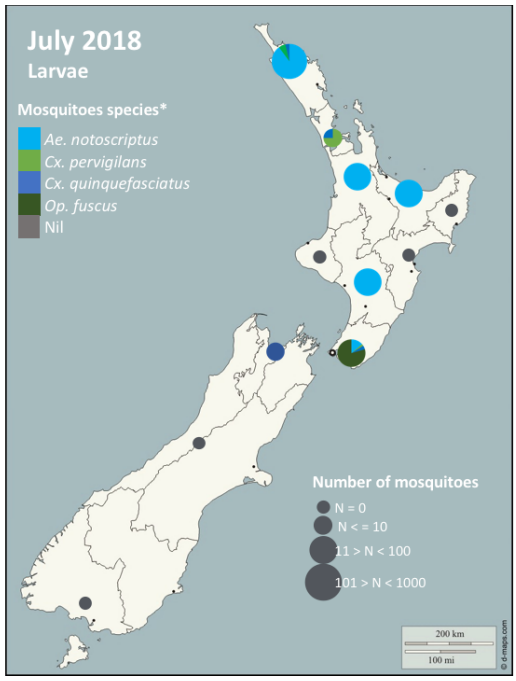


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the July 2018 surveillance period.

* 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.

Auckland DHB had the highest adult numbers this month (11, 67% less than last month), followed by the Hawkes Bay DHB (2, 60% less than last month Figure 1). Two of the introduced species, *Aedes notosciptus* and *Culex quinquefasciatus* have been found this month (Table 1, Figure 1), nil *Aedes australis* have been recorded this or last month.

As expected *Aedes notoscriptus* have not been recorded this month, this year and last year in Public Health South. Nil *Culex quinquefasciatus* larvae have been recorded in Queenstown this month (Figure 2).

Aedes notoscriptus larval numbers have shown an increase in two DHBs from this same month last year (Waikato and Northland), and is now present in two DHBs (Hutt Valley and MidCentral, Figure 2).

Culex quinquefasciatus larval numbers have shown a decrease in two DHBs from this same month last year (Auckland and Northland), and is now present in two DHBs (Nelson Marlborough and Hutt Valley, Figure 2). Nil *Cx. quinquefasciatus* have been registered in Community and Public Health, Taranaki, Hawkes Bay, Public Health South, MidCentral or Toi Te Ora this month or this same month last year (Figure 2).

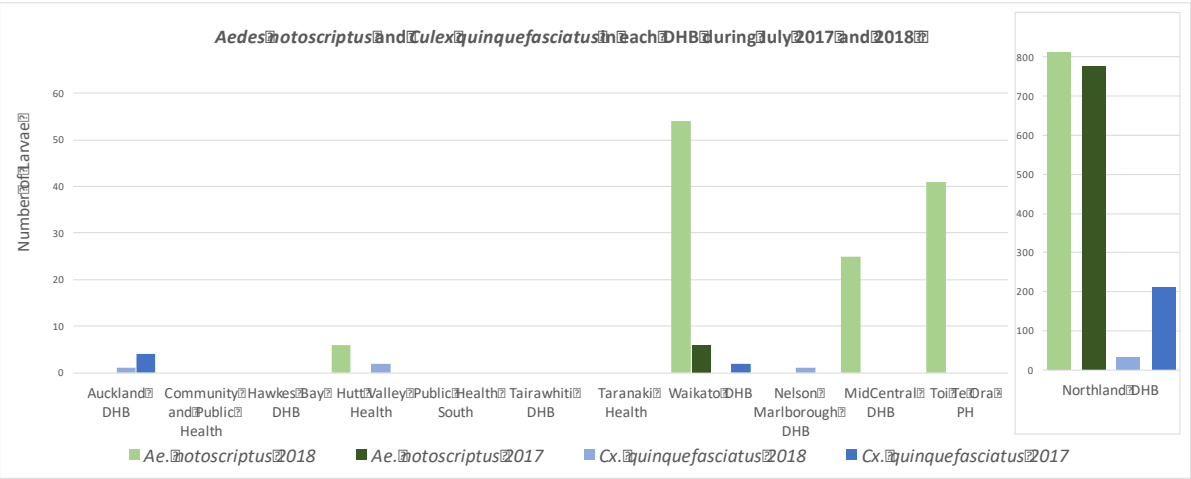


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during July 2017 and 2018. * Please note the different scale for the number of larvae present in Northland in comparison to the other DHBs.

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

INCURSIONS AND INTERCEPTIONS

During July, one suspected interception has been recorded (Table 2).

Table 2. Suspected interceptions during June 2018

Date	Species	Location	Circumstances
02.07.18	1 Non-mosquito (Window gnat)	Transitional Facility, Auckland	Found alive while devanning container.

NEWS ARTICLES FROM AROUND THE WORLD

Water mites discovered parasitizing two mosquito species in Pennsylvania

Aedes japonicus with a larval mite (red) attached to its head. (Photo credit: Michael Hutchinson)

The Asian tiger mosquito (*Aedes albopictus*) and the mosquito species *Aedes japonicus* (sometimes also known as the Asian bush mosquito) can spread viruses dangerous to humans. Both mosquitoes are invasive species in the United States. Some mosquito species have been found to be parasitized by larval water mites—tiny, brightly covered arachnids that live in fresh water habitats. Water mites can reduce the survival and reproductive success of mosquitoes, and entomologists are investigating such parasitism to evaluate its potential as a method for biological control efforts. Read more.

Researchers sequence complete mitochondrial genome of malaria mosquitoes

A team led by scientists from the Johns Hopkins Bloomberg School of Public Health has sequenced and annotated the first complete mitochondrial genome of *Anopheles funestus*, one of the main vectors of malaria in sub-Saharan Africa. This milestone, published in June in *Scientific Reports*, offers a glimpse inside this insect's genetic diversity, ancestral history, and evolution--information that researchers might eventually exploit to develop new ways to prevent this deadly disease. Read more. Original article.

Removing malaria-carrying mosquitoes unlikely to affect ecosystems

Imperial College London researchers suggests the mosquito can be reduced or even eliminated in local areas without impacting the ecosystem. Locally eliminating this one species of mosquito could drastically cut cases of malaria, although the team note that more research is needed in the field to test that the ecosystem is not significantly perturbed. Read more.

Dams are a breeding ground for mosquitoes – to eradicate malaria, we must rethink their design

Dams are critical for water security in most countries. However, studies have shown they can create numerous small pools of standing water in which malaria-transmitting mosquitoes often breed. Despite a 40 per cent decline in transmission of the disease since 2000, research shows that its occurrence near large dams is set to intensify. Read more.

1st Malaria World Congress

1-5 July 2018 - Melbourne Convention & Exhibition Centre, Australia
A unique platform for ALL stakeholders to build a solid framework for collaborative action against malaria. Read more.

Dengue fever outbreak halted by release of special mosquitoes

Children from Townsville took part in the project, helping to release the infected mosquitoes into their breeding areas. © World Mosquito Program

The first large-scale deployment of mosquitoes infected with *Wolbachia* bacteria, which makes them unable to transmit viruses, has stopped all outbreaks of dengue fever in a city in northern Australia for the last four years. The success of the project in Townsville, Queensland, will encourage hopes that *Wolbachia* can provide a knockout blow against the Zika virus in Brazil as well. Until now, the technology has looked promising but has only been tried in small pilot projects around the world of 1 to 1.5 square km. Read more.

Mosquito screening found to be useful for tracking recurrence of lymphatic filariasis

To ensure elimination of the *Wuchereria bancrofti,* a parasitic roundworm that causes lymphatic filariasis, public health workers must follow up mass drug administration with careful monitoring for recurrence. To that end, a study published this week in *PLOS Neglected Tropical Diseases* analyzes the effectiveness of mosquito screening as a tool to gauge parasite presence. Read more

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

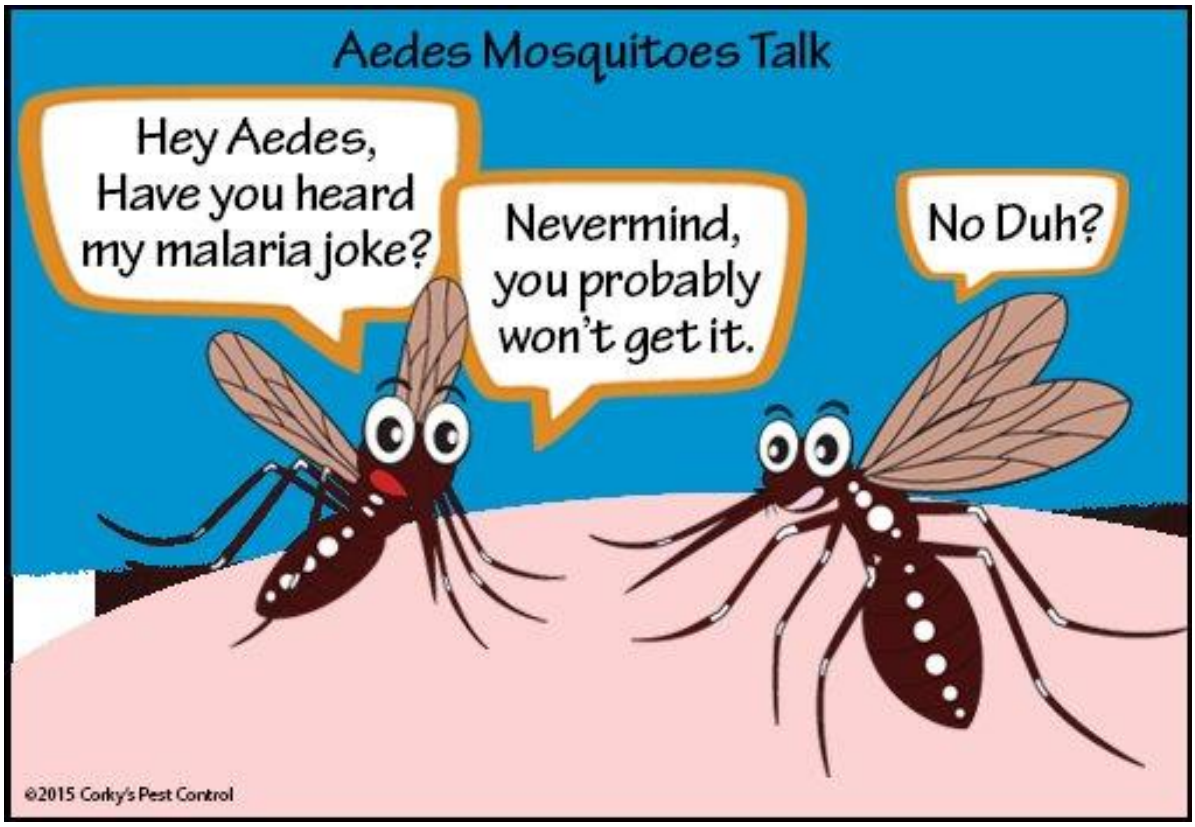
To find out where the latest disease outbreaks have occurred visit:

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



KNOW YOUR MOSQUITO