



BORDER HEALTH NEWSLETTER – AUGUST 2018

WELCOME!

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In the news this month: Scientists are studying the relationship between *Aedes* mosquito replacement and selective mating behaviour; *CBS News* are drawing attention to an increase of mosquito “disease danger days” due to temperature increases; Researchers warn about mosquitoes becoming resistant to pyrethroid-based insecticides; *Science* published an article explaining that malaria infection may make humans more attractive to mosquitoes and the 20th of August was World Mosquito day. Scroll down and find out why and more!

In the new section “Know your mosquito” learn more about *Aedes australis*.

Happy reading!

SURVEILLANCE

During August 865 samples were collected by staff from 12 DHBs with 60 positive samples. This included 15 adult samples and 41 larval samples, leading to a total of 162 adults and 2080 larvae identified over the past month (Table 1). The dominant larval species this month, last month and this month last year was *Aedes notoscriptus*.

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

Species (common name)	Adults		Larvae	
	Aug 18	Aug 17	Aug 18	Aug 17
<i>Aedes notoscriptus</i> (striped mosquito)	128	0	1934	1543
<i>Ae. antipodeus</i> (winter mosquito)	5	0	0	0
<i>Ae. subalbirostris</i> (no common name)	0	0	7	0
<i>Ae. australis</i> (saltwater mosquito)	0	0	2	0
<i>Culex pervigilans</i> (vigilant mosquito)	12	4	59	91
<i>Cx. quinquefasciatus</i> (southern house mosquito)	17	5	46	20
<i>Opifex fuscus</i> (rockpool mosquito)	0	0	32	22
Total	162	9	2080	1676

Compared to this same month last year the total number of adults (94%) and larvae have shown an increase (19%, Table 1). Compared to July both adult and larvae numbers have also shown an increase (1057% and 94% respectively).

In total seven mosquito species have been collected this month (Table 1), this is two more than last month and included *Aedes subalbirostris* and *Aedes australis*. Both were detected in Public Health South, they are not as commonly detected as other species however they are known to be present in this area.

Four was the maximum number of mosquito species detected this month from the Northland DHB followed by Auckland DHB with three mosquito species (Figure 1).

Northland is the DHB with the highest number of larvae this month (1882, 108% higher than last month (903)) followed by Hutt Valley (37, that is 16% less than last month, Figure 1).

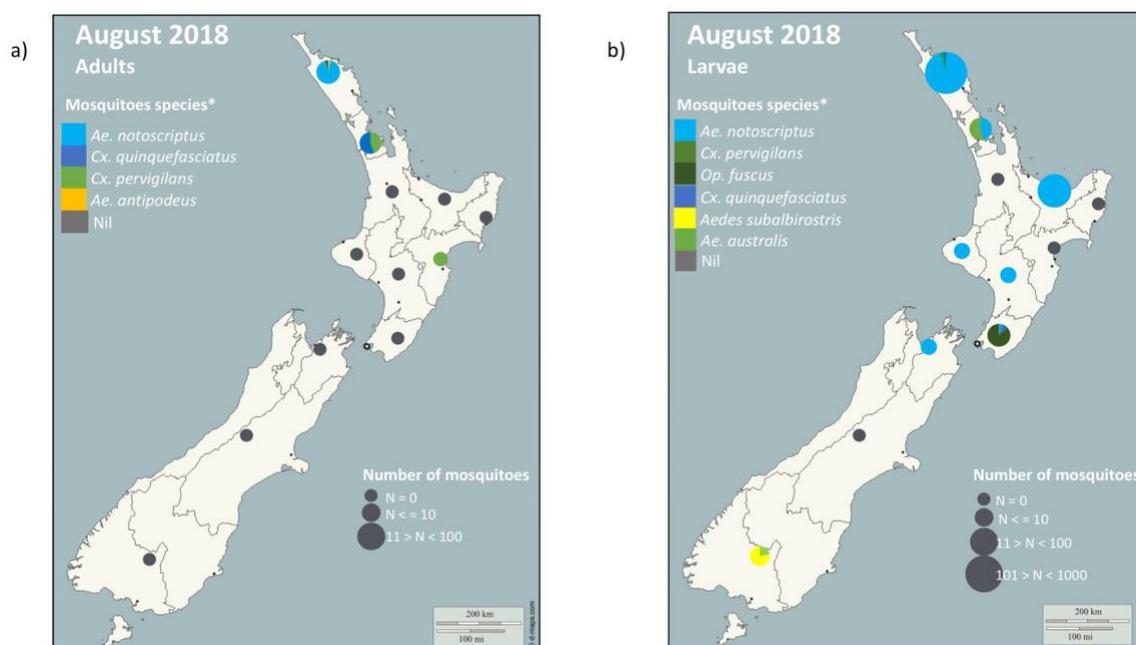


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the August 2018 surveillance period.

* 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.

Three DHB's recorded positive adult samples this month. Northland recorded the highest adult numbers with *Aedes notoscriptus* being the dominant species. This was followed by Auckland with a total of 18 mosquito adults, followed by the Hawkes Bay with 1 mosquito. No positive adult samples were taken in the remaining 9 DHB's.

As expected *Aedes notoscriptus* has not been recorded this month, this year and last year in Public Health South. No *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 (Northland and Toi Te Ora), and a decrease in four DHBs (Auckland, Hutt Valley, Taranaki and Nelson Marlborough, Figure 2).

Culex quinquefasciatus larval numbers have shown an increase in Northland DHB, and is now present in Hutt Valley, Figure 2. Nil *Cx. quinquefasciatus* have been registered in Community and Public Health, Taranaki, Tairāwhiti, Hawkes Bay, Public Health South, Waikato or Nelson Marlborough this month or this same month last year (Figure 2).

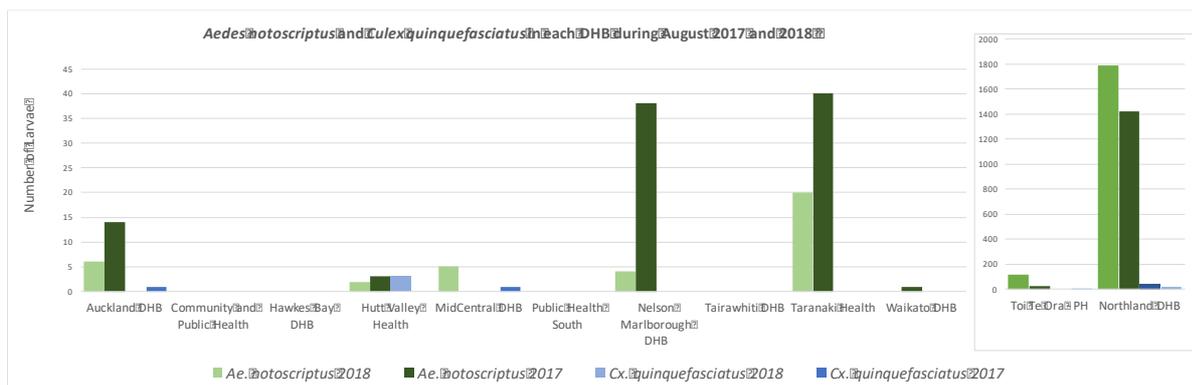


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during August 2017 and 2018. * Please note the different scale for the number of larvae present in Northland in comparison to the other DHBs.

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

INCURSIONS AND INTERCEPTIONS

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

Table 2. Suspected interceptions during August 2018

Date	Species	Location	Circumstances
04.08.2018	1 male <i>Culex quinquefasciatus</i>	Hellman Worldwide TF, Auckland	Found alive in MPI inspection room during inspection of imported flowers from Colombia

NEWS ARTICLES FROM AROUND THE WORLD

World Mosquito Day: History and importance

World Mosquito Day: The day marks the groundbreaking discovery of British doctor, Sir Ronald Ross. Way back in 1897 he had identified the link between mosquitoes and malaria. The day, as the name suggests, intends to raise awareness regarding what all causes malaria and ways to prevent it. [Read more.](#)

Female mosquitoes get choosy quickly to offset invasions

Certain female mosquitoes quickly evolve more selective mating behaviour when faced with existential threats from other invasive mosquito species, with concurrent changes to certain genetic regions, according to new research from North Carolina State University. The findings

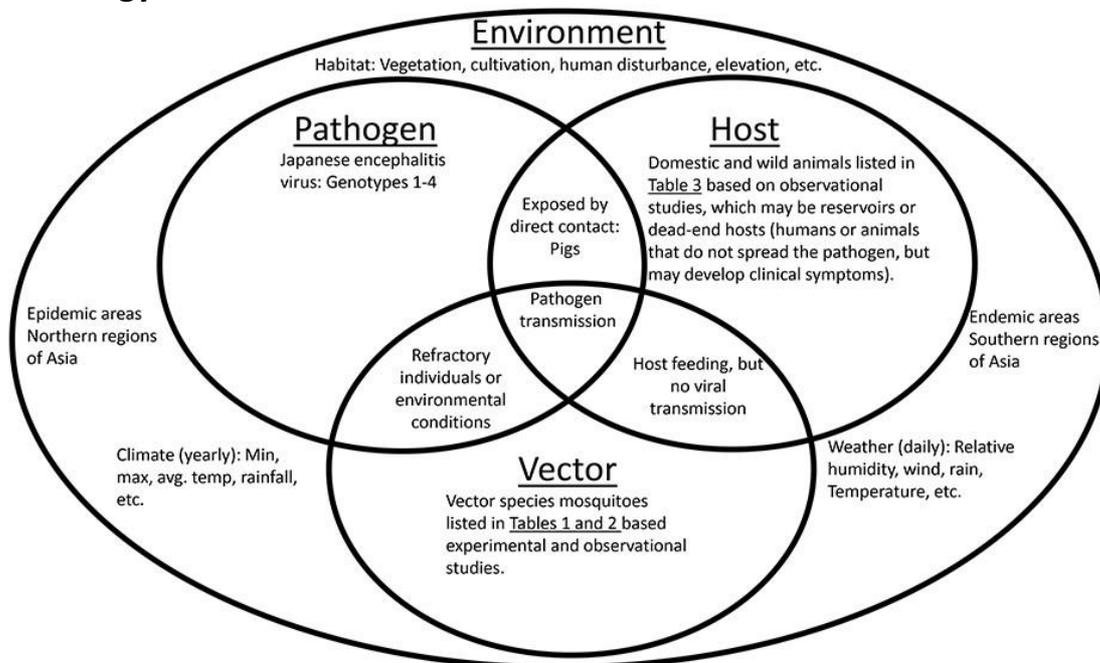


shed light on the genetics behind insect mating behaviour and could have implications for controlling mosquito pests that plague humans. [Read more.](#)

Next-gen insect repellents to combat mosquito-borne diseases

Nearly 700 million people suffer from mosquito-borne diseases -- such as malaria, West Nile, Zika and dengue fever -- each year, resulting in more than 1 million deaths. Increasingly, many species of mosquitoes have become resistant to the popular pyrethroid-based insecticides. Today, researchers report a new class of mosquito repellents based on naturally occurring compounds that are effective in repelling mosquitoes with potentially fewer environmental side effects than existing repellents. [Read more.](#)

The Case for Greater Focus on Mosquitoes and Other Arthropod Vectors in Epidemiology



Management strategies applied at these levels tend to be more sustainable and effective.” (Image originally published in Oliveira et al 2018, *Annals of the Entomological Society of America*)

The textbook approach to managing disease outbreaks focuses on three factors—pathogen, host, and environment—but it leaves out one critical component in the case of afflictions such as Zika, malaria, and Lyme: the insect or arthropod responsible for transmission to humans. The emergence of the mosquito-borne Zika virus captured the world’s attention in 2016, and likewise the continued rise of tick-borne Lyme disease in the United States has highlighted the need for robust response capabilities to vector-borne disease. The classic “epidemiologic triad,” however, is due for a revision in the case of infections spread primarily by insects and related arthropods, and a new report published today in the *Annals of the Entomological Society of America* proposes a new version that better reflects the complexities of managing vector-borne diseases. [Read more.](#)



Significant rise in mosquito “disease danger days” in U.S., report warns



An *Aedes aegypti* mosquito is photographed on human skin in a lab of the International Training and Medical Research Training Centre on January 25, 2016, in Cali, Colombia. LUIS ROBAYO / AFP/GETTY IMAGES

As global temperatures continue to rise, the number of mosquito "disease danger days" is increasing across much of the United States, representing a greater risk for transmission of mosquito-borne diseases, according to a new report. Among the many consequences of climate change is a shift in the pattern, incidence and location of insect-borne diseases, including those spread by the bites of mosquitoes, ticks and fleas. [Read more.](#)

Malaria infection creates a ‘human perfume’ that makes us more attractive to mosquitoes



Mosquitoes are attracted to people infected with malaria because the infection changes body odour. HANS VERBURG/ALAMY STOCK PHOTO

The parasite that causes malaria can change the way you smell, making you more attractive to mosquitoes, according to a new study. The work may help explain why the disease is able to spread so effectively. The new study adds important details about how human odor is influenced by malaria, says Audrey Odom John, a parasitologist at Washington University School of Medicine in St. Louis, Missouri who was not involved in the study. “This is very cool, and it’s been needed for some time.” [Read more.](#)

10 myths about mosquitoes debunked by experts

Mosquitoes have the reputation as some of the peskiest annoyances in the summer, but they are also among the deadliest. “A lot of people are blasé about mosquitoes,” Janis Reed,



an entomology correspondent for Mosquito Squad, said. “They’ll smack it on their leg and move on, but it’s important to protect yourself and that doesn’t mean just using a repellent, it’s also important to follow other steps.” [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.

KNOW YOUR MOSQUITO



- INTRODUCED SPECIES FROM AUSTRALIA FIRST FOUND IN NEW ZEALAND IN 1961
- KNOWN MINOR VECTOR OF ROSS RIVER VIRUS IN TASMANIA AND SHOWN TO BE A COMPETENT VECTOR OF ROSS RIVER VIRUS AND DENGUE FEVER IN THE LABORATORY.
- WAS FIRST DISCOVERED IN A SHIPS HULL ON STEWART ISLAND AND WAS LATER FOUND IN PORTS OF BLUFF AND DUNEDIN.

Aedes australis
(saltwater mosquito) ★