

## BORDER HEALTH NEWSLETTER – MARCH 2022

### NAU MAI, HAERE MAI - WELCOME!

Kia ora koutou katoa,

It was great meeting Trainees and HPOs at the Border Health and Ship Sanitation Certificate Course in Christchurch. It is always a pleasure to get to know you and put faces and names together. We wanted to thank Community and Public Health HPOs for their support during the course, especially Angela Sheat and Debbie Smith, for their talks and tour to the Christchurch International Airport, and Jimmy Wong for providing the equipment used during the course. Please remember that you are all welcome to come to the NZB lab for more hands-on training and gain real-time experience of what happens in the lab behind the scenes.



In the news this month, learn why scientists are warning Kiwis about an outbreak of dengue fever in a warmer future. Also, learn about a new type of insecticide that can be used in bed nets in the fight against malaria. Read about the spread of Japanese encephalitis in Australia and why this is causing tougher biosecurity of horse imports to New Zealand from there. Finally, listen to a podcast on mosquito learning and how this helps mosquitoes avoid pesticides.



We can't put this newsletter out there without making a humble, but very well deserved tribute, to one of our favourite HPOs who has just retired from his Public Health duties. He has been, so far, the only HPO granted the award of the Best Mozzie Sample of the month! He also has provided the lab with some unique native mosquito larvae and has created/invented his unique mosquito species the *Petes haslemoris*.



Click here to see the *Petes haslemoris* profile. [Click here to see the Best Mozzie Sample of the month in the March 2019 – NZB Border Health Newsletter](#)

Also, don't forget to scroll down and check the Know Your Mosquito section, this month featuring *Culex annulirostris*, the most important pest mosquito species associated with freshwater wetland habitats in Australia.

Happy reading!

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## SURVEILLANCE

During the month of March, 1332 routine samples were collected by staff from 11 DHBs (Figure 1). The samples included 283 positive larval samples and 181 positive adult samples, leading to a total of 3110 adults and 18062 larvae identified over the past month (Table 1). The dominant larval species this month is *Culex quinquefasciatus*, the same as last year (Table 1).

In total, nine mosquito species have been collected this month (Table 1), two more than collected last month.

Compared to this same month last year, the total number of larvae has shown a 35% decrease, while the number of adults has shown an increase of 145% (Table 1).

Compared to the previous month, both mosquito larval and adult numbers have shown a decrease (39% and 26% respectively).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during March 2021 & 2022

Species (common name)	Adults		Larvae	
	Mar 22	Mar 21	Mar 22	Mar 21
<i>Aedes antipodeus</i> (winter mosquito)	31	82	-	-
<i>Ae australis</i> (saltwater mosquito)	-	-	10	-
<i>Ae notoscriptus</i> (striped mosquito)	598	27	2933	2684
<i>Coquillettidia iracunda</i> (no common name)	31	109	-	-
<i>Coq tenuipalpis</i> (no common name)	2	5	-	-
<i>Culex</i> sp. (likely <i>quinquefasciatus</i> or <i>pervigilans</i> , missing key ID features)	97	45	-	1
<i>Cx asteliae</i> (no common name)	12	53	-	-
<i>Cx pervigilans</i> (vigilant mosquito)	496	100	1748	3186
<i>Cx quinquefasciatus</i> (southern house mosquito)	1843	808	13216	21829
<i>Culiseta tonnoiri</i> (no common name)	-	42	-	-
<i>Opifex fuscus</i> (rock pool mosquito)	-	-	155	87
<b>Total</b>	<b>3110</b>	<b>1271</b>	<b>18062</b>	<b>27787</b>

The highest number of larvae sampled this month was obtained in Community & Public Health with a total of 7361 larvae, followed by Toi Te Ora – Public Health with 4595 larvae (Figure 1).

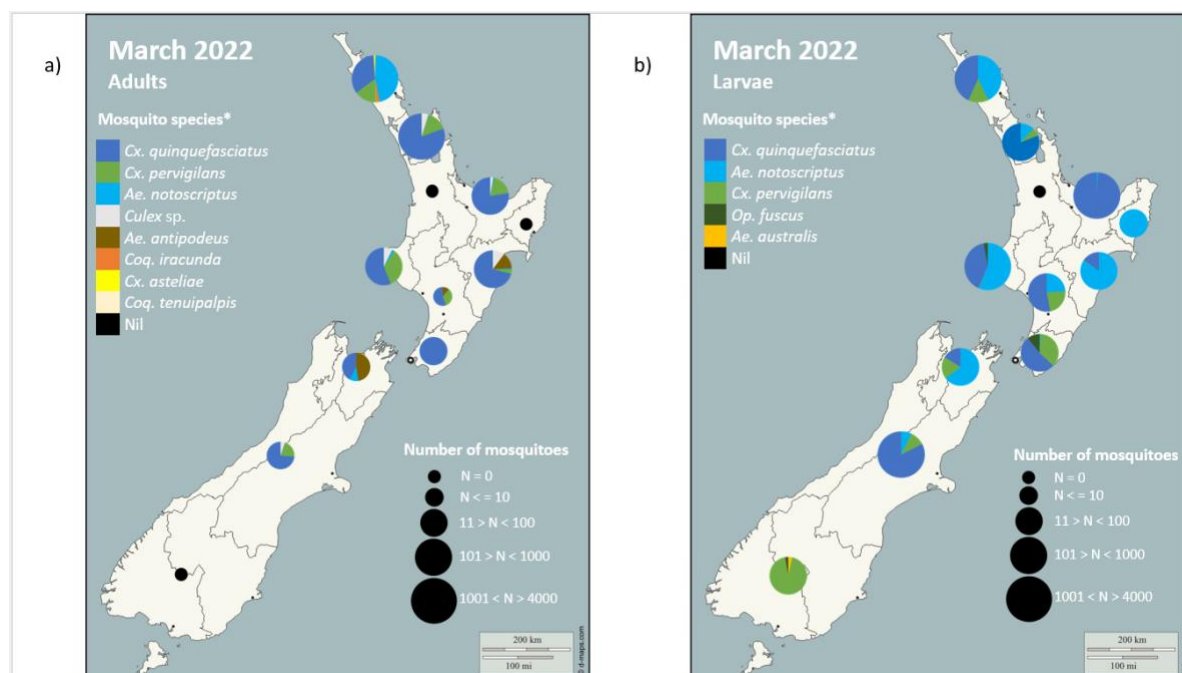
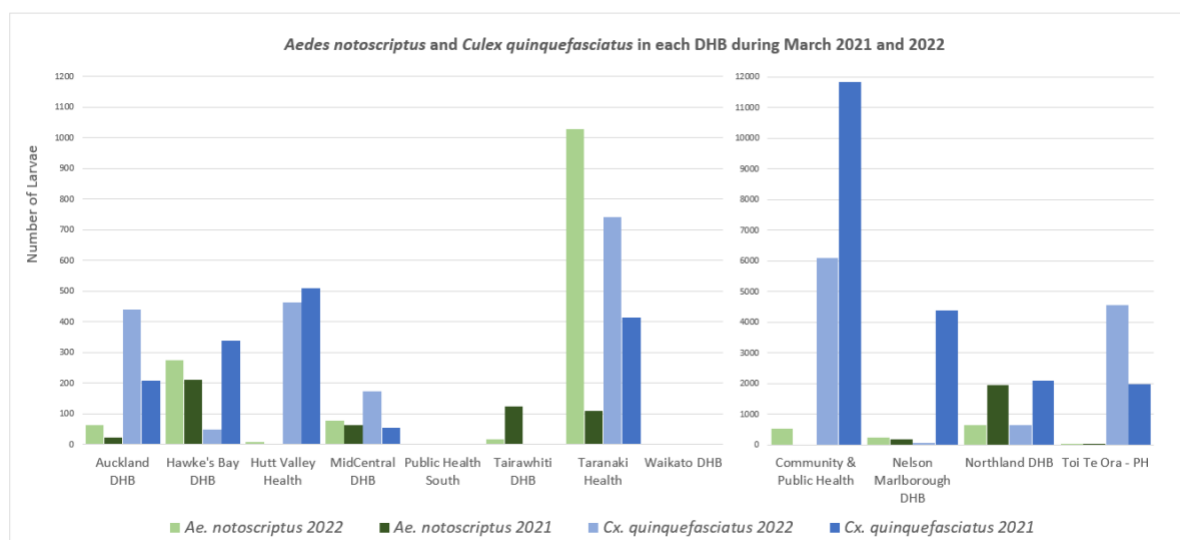


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the March 2022 surveillance period. Please note that the markers represent the DHBs and not the specific sites where the samples have been taken.

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

*Aedes notoscriptus* larval numbers have shown an increase in seven DHBs and a decrease in three DHBs from this same month last year (Figure 2). No sampling occurred in Waikato DHB this month and *Aedes notoscriptus* is therefore shown as absent. As expected, *Aedes notoscriptus* has not been recorded this month, this year, or last year in Public Health South (Figure 2).

*Culex quinquefasciatus* larval numbers have shown an increase in four DHBs and a decrease in five DHBs from this same month last year. *Culex quinquefasciatus* has not been recorded this month, this year, or last year in Public Health South (Figure 2).



**Figure 2.** Comparison between introduced mosquito species sampled in each DHB during March 2021 and 2022. \*Please note the different scale for the number of larvae present in Community & Public Health, Nelson Marlborough DHB, Northland DHB, and Toi Te Ora - PH in comparison to the other DHBs.

## INCURSIONS AND INTERCEPTIONS

During March, HPOs responded to one suspected interception (Table 2).

Table 2. Suspected interception during March 2022.

Date	Species	Location	Circumstances
10.03.2022	1 female <i>Culex quinquefasciatus</i>	Main freight depot at AIAL, Auckland	Found alive in the room where fresh tropical fruit from Fiji was being devanned. The mosquito was not associated with the consignment.



## NEWS ARTICLES FROM AROUND THE WORLD

### The pesticide avoiding power of mosquitoes



In New Zealand they are a bloodsucking nuisance, but in other parts of the world mosquitos spread serious disease - including the Zika virus, West Nile virus, dengue, and malaria. The Ministry of Health website states that Mosquitoes are responsible for more human deaths than any other living creature. UK based, medical entomologist at Keele University, Frederic Tripet is the co-author of a study recently published in the journal Scientific. The study has found that mossies have learned to avoid five common pesticides after a single non-lethal dose. [Listen to the podcast](#) or [access the original article here](#).

### Aotearoa's biggest tropical disease threat: the tiny killers you can dispatch with a finger



Scientists warn the public that the only ingredient missing in New Zealand for a Dengue outbreak on a warming planet is the Aedes mosquitoes capable of transmitting the disease. In 2001 a modelling study funded by the Health Research Council looked at where Aedes aegypti and Aedes albopictus could establish in a warming Aotearoa. Ae albopictus copes with cooler weather than Ae aegypti and could technically survive in Auckland and Northland now, although they point out it doesn't seem to be here. [Read more here](#). [Access the original article here](#).



## US poised to release 2.4bn genetically modified male mosquitoes to battle deadly diseases



Genetically modified male mosquitoes may soon be buzzing across areas of California, in an experiment to stop the spread of invasive species in a warming climate. Earlier this month, the EPA cleared the UK-based biotech company Oxitec to release a maximum of roughly 2.4bn of its genetically modified mosquitoes through 2024, expand its existing trial in Florida and start a new pilot project in California's Central Valley, where mosquito numbers are on the rise. [You can read the news article here.](#)

## Oz mosquito virus prompts changes to NZ horse imports



Horse imports from Australia are facing tougher scrutiny, as the country sees rising cases of a potentially deadly virus spread by mosquitoes. Some of the animals will be turned away over fears they could tarnish New Zealand's record of being free of Japanese encephalitis (JE). Two people have been killed in Australia so far by the virus which is spread to humans through mosquito bites. While less than 1% of people infected with JE will experience symptoms, the fatality rate for those who become symptomatic can be as high as 30%. [Read more here.](#)



## New 'mosquito grounding' insecticide could revive stalling fight against malaria



A new insecticide which causes a mosquito's wings to spasm and wither could revolutionise the stalling fight against malaria, scientists say. The rollout of insecticide-treated bed nets has been central in efforts to reduce the spread of malaria, a mosquito-borne pathogen which remains one of the world's deadliest infectious diseases. But, despite a significant drop in fatalities in the last 20 years, rising insecticide resistance among mosquitos has hampered recent progress. In 2020 the disease killed 627,000 people – the highest annual death toll since 2011. Now, scientists believe a "mosquito-grounding" substance – the first new insecticide to be deemed safe and effective in roughly 40 years – could turn the tide against rising incidence. [You can read the news article here](#) and the [original article here](#).

## KNOW YOUR MOSQUITO

### *Culex annulirostris*

(Common Banded Mosquito)



- *Cx annulirostris* is the most important pest mosquito species associated with freshwater wetland habitats in Australia.
- It is widespread across Australia, southeast Asia, and a number of Pacific Islands.

- It is an important vector for a number of arboviruses, including Murray Valley encephalitis virus, Ross River virus, Barmah Forest virus, Kunjin virus and Japanese encephalitis
- It bites humans, other mammals, marsupials, and birds.
- It is suspected to be involved in the current JEV outbreak in Australia





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## 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

[Malaria](#) – World Health Organisation

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## 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).

[Disease Outbreak News](#) - World Health Organization.

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

[Communicable disease threats report](#) - European Centre for Disease Prevention and Control

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