



BORDER HEALTH NEWSLETTER – OCTOBER 2022

NAU MAI, HAERE MAI - WELCOME!

Kia ora koutou katoa,

This month has been another busy one for the NZB team! Once again, we had the pleasure of meeting a whole bunch of amazing HPO's at the final Medical Vectors Surveillance Workshop for 2022 in Auckland. We hope you enjoyed the workshop as much as we did! The lab also had a great time participating in the annual mega survey at Auckland International Airport with Auckland Public Health.



In the news this month, read about a three year long study looking at why some people are more attractive to mosquitoes than others. Then head across the ditch to read about a modelling study that is looking at the possibility of an outbreak of the recently introduced arbovirus Japanese encephalitis, along with how recent flooding events are allowing mosquitoes to thrive. After, continue to the Pacific where mosquito-borne diseases continue to be a threat, and read about a workshop in Brisbane focusing on minimizing this threat. Then head to Africa, where a new malaria vaccine being developed has been found to have up to 80% efficacy and is planned to be rolled out in 2023. And finally, take a minute to watch some amazing high-speed video of cannibalistic mosquito larvae catching their prey.

This month in the Know Your Mosquito Trap section, learn about the BG Sentinel trap and how to keep it in tip top shape! Then have a sing-along to a song all about setting up a mosquito surveillance program, which was performed by one of our very talented groups at the Medical Vectors Workshop, while checking out some of the great practice photos taken during the “How to Take a Mosquito Photo” section of the workshop.

Happy reading!

SURVEILLANCE

During the month of October, 1034 routine samples were collected by staff from 12 PHUs (Figure 1). The samples included 51 positive larval samples and 30 positive adult samples, leading to a total of 159 adults and 1087 larvae identified over the past month (Table 1). The dominant larval species this month is *Aedes notoscriptus*, the same as last year (Table 1).

In total, five mosquito species have been collected this month (Table 1), this is the same number as last month.

Compared to this month last year, mosquito larval numbers have shown a decrease (40% decrease), while adult numbers have shown an increase (1887% increase) (Table 1).

Table 1. Number of adult and larvae sampled by the New Zealand surveillance program during October 2021 & 2022

Species (common name)	Adults		Larvae	
	Oct 22	Oct 21	Oct 22	Oct 21
<i>Aedes antipodeus</i> (winter mosquito)	65	1	-	-
<i>Ae notoscriptus</i> (striped mosquito)	3	2	608	1329
<i>Culex</i> sp. (likely <i>quinquefasciatus</i> or <i>pervigilans</i> , missing key ID features)	7	-	-	-
<i>Cx pervigilans</i> (vigilant mosquito)	65	4	419	356
<i>Cx quinquefasciatus</i> (southern house mosquito)	19	1	54	119
<i>Opifex fuscus</i> (rock pool mosquito)	-	-	6	8
Total	159	8	1087	1812

Compared to the previous month, mosquito larval numbers have shown a decrease (62%), while the total number of adults has shown an increase (231%).

The highest number of larvae sampled this month was obtained in Northland with a total of 632 larvae, followed by Bay of Plenty with 175 larvae (Figure 1).

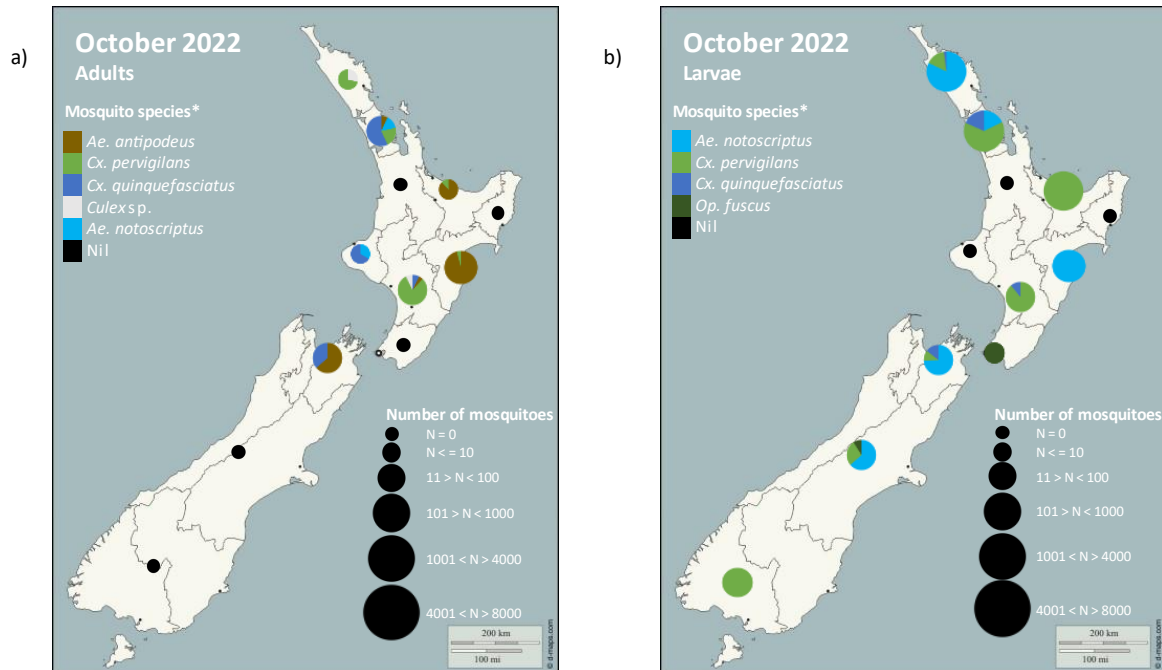


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the October 2022 surveillance period. Please note that the markers represent the PHUs and not the specific sites where the samples have been taken.
 * The mosquito species are listed in order from the most abundant to the least abundant.

Aedes notoscriptus larval numbers have shown an increase in two PHUs and a decrease in four PHUs from this same month last year (Figure 2). 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 two PHUs and a decrease in three PHUs 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).

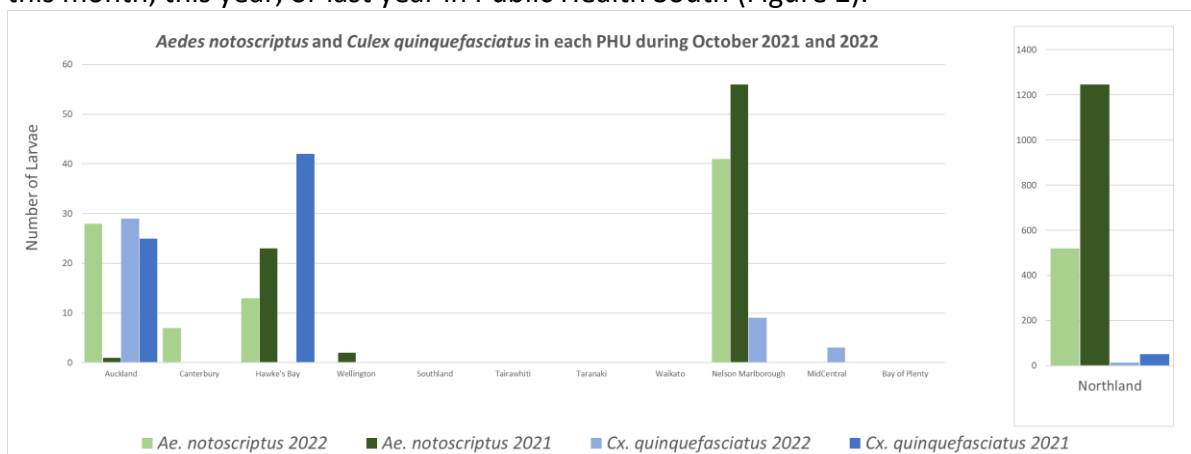


Figure 2. Comparison between introduced mosquito species sampled in each PHU during October 2021 and 2022.
 *Please note the different scale for the number of larvae present in Northland in comparison to the other PHUs.



INCURSIONS AND INTERCEPTIONS

During October there were nil interceptions.

NEWS ARTICLES FROM AROUND THE WORLD

Scientists Discover Why Some People Are Mosquito Magnets

There are many popular theories for why some people are considered “mosquito magnets” including blood type, blood sugar level, consuming garlic or bananas, being a woman, and being a child. Since there is little credible data supporting most of these theories, researchers in Rockefeller University’s Laboratory of Neurogenetics are investigating the leading theory, individual odour variations connected to skin microbiota. Over the 3-year study, participants wore nylon stockings on their forearms that were then used to observe if *Aedes aegypti* were more attracted to certain subjects. A huge effect was found with subject 33 being the most attractive to the mosquito by a long way. Chemical analysis techniques were used to determine what differentiated the high attractors from the low attractors. [Read more here.](#)
[Access full article here.](#)





Modelling study suggests the possibility of Japanese encephalitis virus outbreak in Australia

A paper led by the QIMR Berghofer Medical Research Institute in Brisbane suggests that up to 750,000 people across Australia could be at risk of exposure to Japanese encephalitis (JEV). The virus has spread across Australia this year. An extended La Niña weather event is thought to be responsible for the virus expansion as flooding has provided breeding grounds for common vector mosquito, *Culex annulirostris*. Modelling and mapping has allowed researchers to estimate the potential population at risk, and therefore, the potential number of vaccine doses required to fight the virus. [Read more. Access the full article.](#)

Mosquito-borne diseases remain a significant threat to Pacific says expert

Mosquito-borne diseases remain a significant threat to the health and socio-economic well-being of the region according to the Pacific Community's senior epidemiologist Dr Salanieta Saketa. She stresses the number of outbreaks is rising with 96 reported in the Pacific region between 2012 and 2021, including 69 dengue outbreaks, 12 zika virus and 15 chikungunya. Saketa joined other experts from the region at a workshop at the QIMR Berghofer's Mosquito Control Laboratory in Brisbane, Australia. The gathering involved lab work, a field trip, and modules on how to identify different mosquito species, test for insecticide resistance, and assess the effectiveness of key control tools such as bed nets. [Read more here.](#)





Australia Flooding Heightens Risk of Mosquito-Borne Diseases

Experts say record-breaking floods in Australia are allowing mosquitoes to thrive, increasing the risk of spreading diseases like Japanese encephalitis which gained a foothold in Australia for the first time. Communities across three states have in recent days been hit by flooding, and parts of eastern Australia have been repeatedly flooded in the past two-years. Mosquito-borne diseases are a perennial problem in Australia, where thousands of people are infected with the Ross River virus each year. [Learn more here.](#)

High-speed video captures how cannibalistic mosquito larvae snag their prey

While most mosquito larvae feed on algae or bacteria and similar microorganisms, some predatory species feed on other insects, including the larvae of other mosquitos. In a recent study published in the journal *Annals of the Entomological Society of America*, the unique attack methods of *Toxorhynchites amboinensis*, *Psorophora ciliata*, and *Sabethes cyaneus* have been captured on video, revealing how they capture their prey with lightning-fast strikes. The researchers induced strikes by placing the predatory larvae into well slides with water, and then presenting live prey larvae with a jeweller's forceps. The striking behaviour was captured on video using high-speed microcinematography.

[Read more here, See the full article.](#)





New malaria vaccine rollout planned in 2023

Researchers from the University of Oxford and the Health Sciences Research Institute (IRSS) in Nanoro, Burkina Faso say they plan to roll out a new malaria vaccine next year after tests on children in West Africa found it to be up to 80 per cent effective. Scientists have warned that progress has stalled in the fight against the mosquito-borne disease, which caused over 640,000 deaths in 2020, the majority of them children in Sub-Saharan Africa. The new vaccine is described as an improved version of the RTS,S vaccine that is being rolled out in a number of African countries. [Read more here](#), [Find original article here](#).

KNOW YOUR MOSQUITO TRAP

Caring for your BGII Sentinel Adult Trap



What mosquitoes does it attract?

- Specifically designed to attract *Aedes aegypti* and *Aedes albopictus*, but also collects the common species in NZ



Attractants

- Convection currents that mimic a human body
- Contrasting colours
- BG Lure that emits a scent mimicking odours that the human body releases

Maintenance/Cleaning

- To maintain optimal function and airflow, all parts of the trap could be cleaned regularly
- Rinse the catch bags with fresh water weekly to remove any dust, cobwebs, and bits of insect caught in them
 - avoid using scented soaps/detergent
- The black funnel intake and white top can be dusted in the field using a cloth or toothbrush.
- Clean the full trap itself regularly
 - The trap can be swapped for a spare to allow it to be cleaned thoroughly
- Remove the fan to clean the body of the trap
 - The fan can also be gently cleaned with a toothbrush or cloth once it's removed
- Remove dust and cobwebs from the inside of the trap body using a damp cloth
- Finally, ensure all parts are completely dry before putting the trap back into service or storage to avoid mould or wet mozzies!



SING-ALONG – IT’S A MARVELLOUS DAY TO ACTIVATE A MOSQUITO SURVEILLANCE PLAN

Lyrics written by Noel and his team, Alek, Tina and Maddi, at the Medical Vectors Surveillance Workshop and sung to the tune of Van Morrison’s “Moondance”.

It’s a marvellous day to activate a Mosquito
Surveillance Plan
With the cloud up so high in the sky
A fantabulous day to go mozzie hunting
Under the cover of October skies

Every tin can we see we will smile with glee
We won’t kick it on down the street (taken from “I
Think It’s Going To Rain Today”-Randy Newman)
We will empty it straight away
After checking it out for larvae

And every.... used tyre.... will simply... blow our
minds
Cause we know...how much...we need to sample,
record, spray and walk away

Can we just have one more Medical Vector
Surveillance Course with you Southern Monitoring
Services et al?
Can we just make some more improvements to our
Exotic Mosquito Surveillance Plan’s with you, SMS et
al?

Access Security Cards we will all have in our hands
To make sure we are allowed to be there
Our devices will all have electronic maps on them
To record everything far and near

Trained and competent samplers we are
With success on our minds
With equipment for every scenario
To deal with all of our finds

Lots of...food and water...we will take to the scene
And you know how much we can eat, I repeat

Can we just have one more Medical Vector
Surveillance Course with you Southern Monitoring
Services et al?

Can we just make some more improvements to our
Exotic Mosquito Surveillance Plan’s with you, SMS
et al?

What surveillance occurs already at site?
And what has it found recently?
This might give us some clues
Intel vital for you and for me

An awareness campaign to employee’s at site
Tubes and collecting gear
Getting bitten a lot dear?
Just call us, we’ll be there
Straight into our traps they will run

Every... larvae...will just tremble with fear
Cause they know how much we want them dead, it
just has to be said

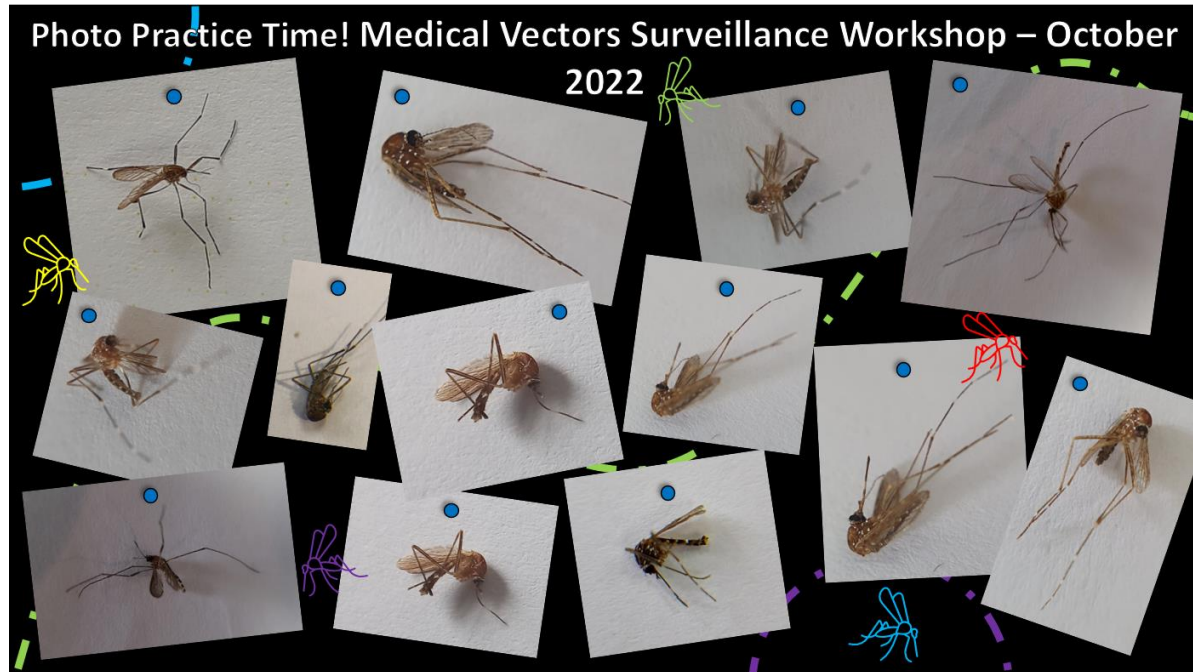
Can we just have one more Medical Vector
Surveillance Course with you Southern Monitoring
Services et al?

Can we just make some more improvements to our
Exotic Mosquito Surveillance Plan’s with you, SMS
et al?

Can we... just have... a day out the office with you...
S...M...S?



MOZZIE PHOTO PRACTICE TIME



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

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