



NEW ZEALAND BIOSECURE



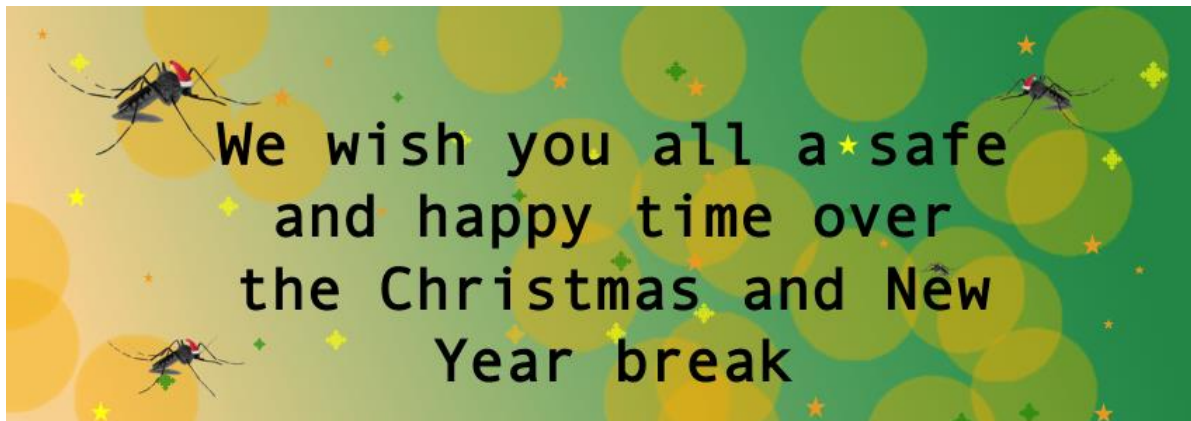
## BORDER HEALTH NEWSLETTER – NOVEMBER 2020

### WELCOME!

Kia Ora Koutou,

Thank you to all Public Health people for your patience, feedback and support while updating the database. We hope you all have your CSV to upload routine surveillance up and running. If you still don't have yours, [click here to download](#) a CSV example. For more templates and guidelines related to the Online Database visit the [NZBEL-SMSL web page](#) or contact the [NZB Lab](#).

In the news this month read about the results researchers obtained while studying the effects on *Plasmodium* infection on mosquito attraction, and tick host selection while temperature rises. An international group of researchers found that Chikungunya can infect the central nervous system. In other news, after four years work, the app which identifies mosquitoes by their sound, is about to be launched. Finally read about *Aedes vittatus*, the mosquito of the month, which has been declared established in the Caribbean. Scroll down to read about these stories and more!



The NZB lab is closed for routine activities during Statutory Holidays and open on days between and following.

As always, the on-call response is available throughout the period including Public Holidays.

As always, *Aedes aegypti*, *Ae albopictus* and friends are not welcome in New Zealand



## SURVEILLANCE

During November 1044 samples were collected by staff from 11 DHBs (Figure 1). The samples included 85 positive larval samples and 12 positive adult samples, leading to a total of 20 adults and 5922 larvae identified over the past month (Table 1). The dominant larval species this month, this year and last year is *Aedes notoscriptus*.

Compared to this same month last year, the total number of larvae has shown an increase (52%) while the total number of adults has shown a very significant decrease (2530%) (Table 1).

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

Compared to last month, mosquito larval and adult numbers have shown an increase (30% and 18% respectively (Table 1).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during November 2019 & 2020

Species (common name)	Adults		Larvae	
	Nov 20	Nov 19	Nov 20	Nov 19
<i>Aedes notoscriptus</i> (striped mosquito)	-	277	2458	1581
<i>Ae antipodeus</i> (Winter mosquito)	5	6	-	8
<i>Ae subalbirostris</i> (no common name)	-	2	-	10
<i>Coquillettidia iracunda</i> (no common name)	-	57	-	-
<i>Coq. Tenuipalpis</i> (no common name)	-	1	-	-
<i>Culex pervigilans</i> (vigilant mosquito)	6	37	2077	1093
<i>Cx quinquefasciatus</i> (southern house mosquito)	7	141	1354	102
<i>Culex sp.</i>	2	3	-	-
<i>Culiseta tonnoiri</i>	-	1		
<i>Opifex fuscus</i> (rock pool mosquito)	-	1	33	51
<b>Total</b>	<b>20</b>	<b>526</b>	<b>5922</b>	<b>2845</b>

The highest number of larvae sampled this month was obtained in Northland DHB (4198 larvae) followed by Toi Te Ora - PH (1094 larvae) (Figure 1).

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

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

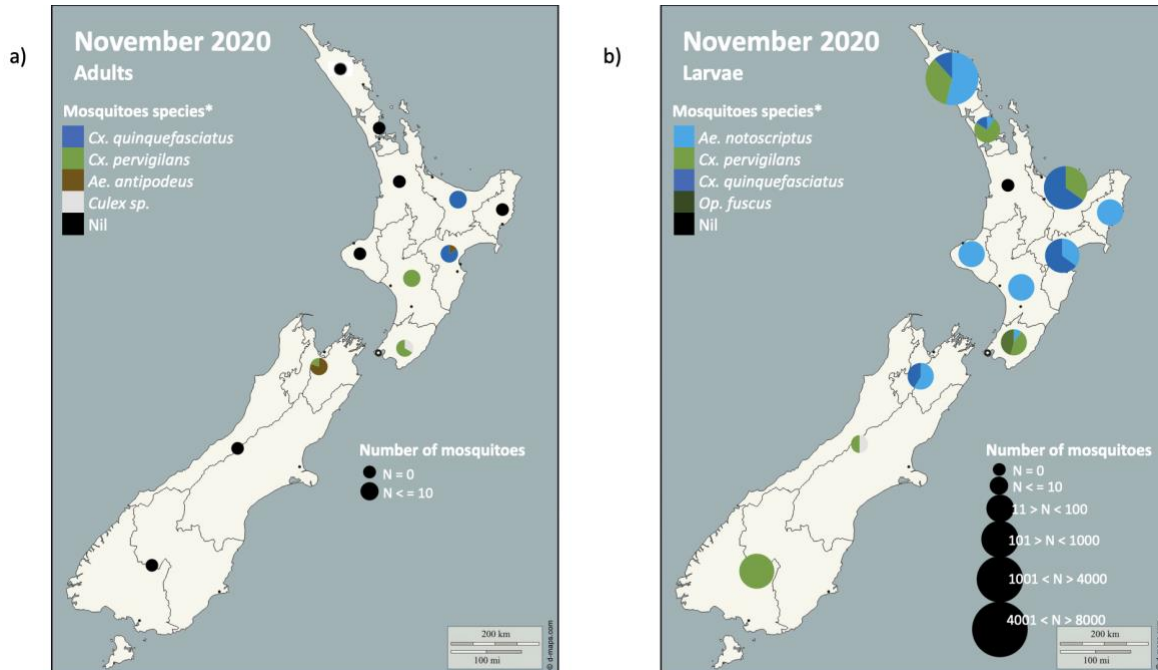


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the November 2020 surveillance period. \* The mosquito species are listed in order from the most abundant to the least abundant. Please note that the markers represent the DHBs and not the specific sites where the samples have been taken.

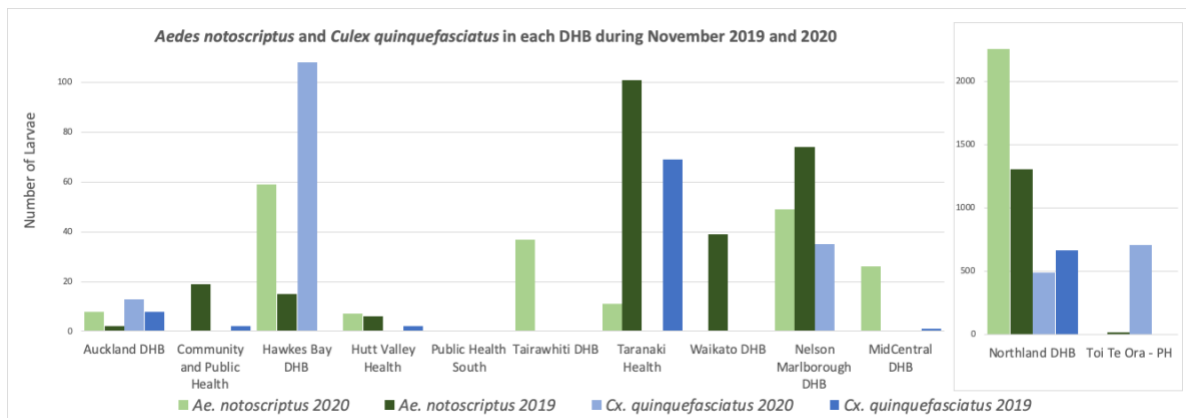


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during November 2019 and 2020. \*Please note the different scale for the number of larvae present in Northland DHB and Toi Te Ora - PH in comparison to the other DHBs.

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

## INCURSIONS AND INTERCEPTIONS

During November two suspected interception have been recorded (Table 2).

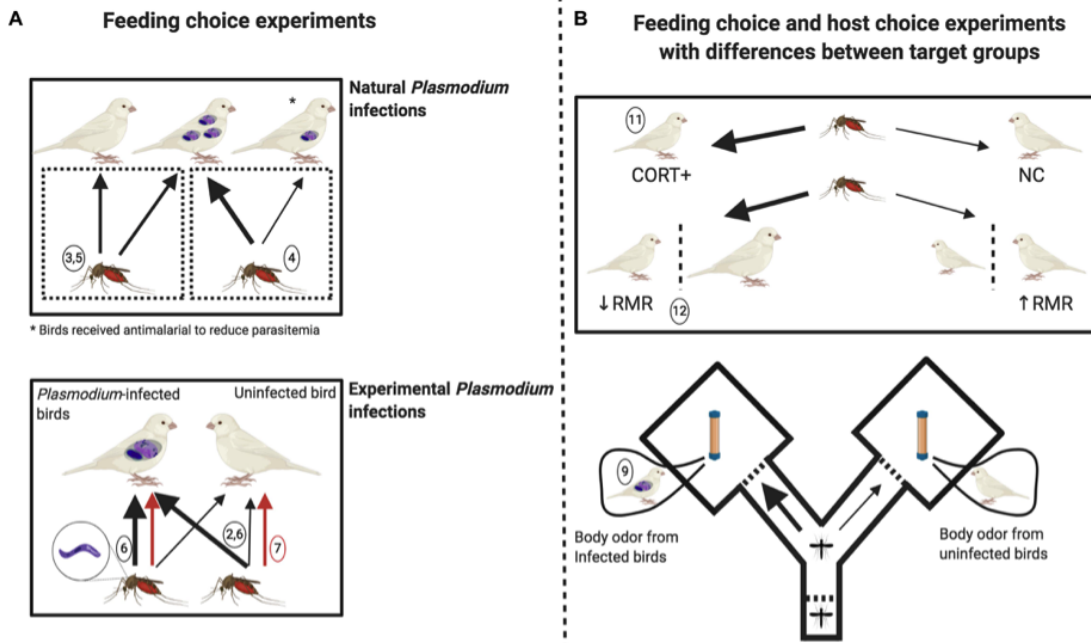
Table 2. Suspected interceptions during November 2020.

Date	Species	Location	Circumstances
10.11.2020	1 Female <i>Culex pervigilans</i>	Sorted Logistics, Hornby, Christchurch	Found alive in a container of Kmart goods from China
12.11.2020	1 Crane fly 1 Chironomidae	New Plymouth port	Found dead by HPO in a barrel with chemicals during a ship sanitation inspection on the Magellan Endeavour vessel



## NEWS ARTICLES FROM AROUND THE WORLD

### Does *Plasmodium* Infection Affect Mosquito Attraction?



A pair of researchers from the Instituto de Ecología in Mexico and the Smithsonian Conservation Biology Institute in the USA have put together a review paper looking at studies on vector-host interactions and how they affect the transmission of vector borne disease, focusing on malaria. They found that the results of many studies varied in whether infected individuals were more attractive and hypothesised that it is likely due to the experimental approaches being highly variable. This was predominantly seen in studies on avian malaria, while in human and mice malaria most studies found that infected hosts were more attractive to vectors. They also noted there were very few studies looking at how the parasite changes the mosquitoes' behaviours. [Read more.](#)

### Study finds ticks choose humans over dogs when temperature rises



The study, presented at the annual meeting of the American Society of Tropical Medicine and Hygiene (ASTMH), observed whether the ticks, which use smell to seek out a host upon



whose blood to feed, scuttled along a plastic tube towards the dog or the human. When the temperature in the laboratory was raised from 23.3C to 37.8C, one type of “brown dog” tick, known as the tropical lineage tick, was particularly prone to shifting its preference from the box containing the dog to the box containing the person. When the temperature in the laboratory was raised from 23.3C to 37.8C, one type of “brown dog” tick, known as the tropical lineage tick, was particularly prone to shifting its preference from the box containing the dog to the box containing the person. [Read more.](#)

## **Incursion and establishment of the Old World arbovirus vector *Aedes (Fredwardsius) vittatus* (Bigot, 1861) in the Americas**



Routine biosurveillance efforts at the Naval Station Guantanamo Bay, Cuba, on 18 June 2019, detected two unusual mosquitos in a CO<sub>2</sub>-baited CDC light trap. Morphological and molecular analysis confirmed the presence of *Aedes (Fredwardsius) vittatus* (Bigot, 1861) – the first record of the Old-World dengue, chikungunya, Zika and yellow fever virus vector into the Americas – and provides evidence for its establishment in Cuba. Newly submitted GenBank sequences from Dominican Republic further evidence its establishment in the Caribbean, and a median-joining network analysis using mitochondrial *COI* gene sequences clearly supports multiple introductions of *Ae. vittatus* into the Caribbean from the Indian subcontinent. It was determined that many *Ae. vittatus* *COI* barcode sequences in GenBank are currently misidentified as *Aedes (Fredwardsius) cogilli* Edwards, 1922. [Read more.](#)

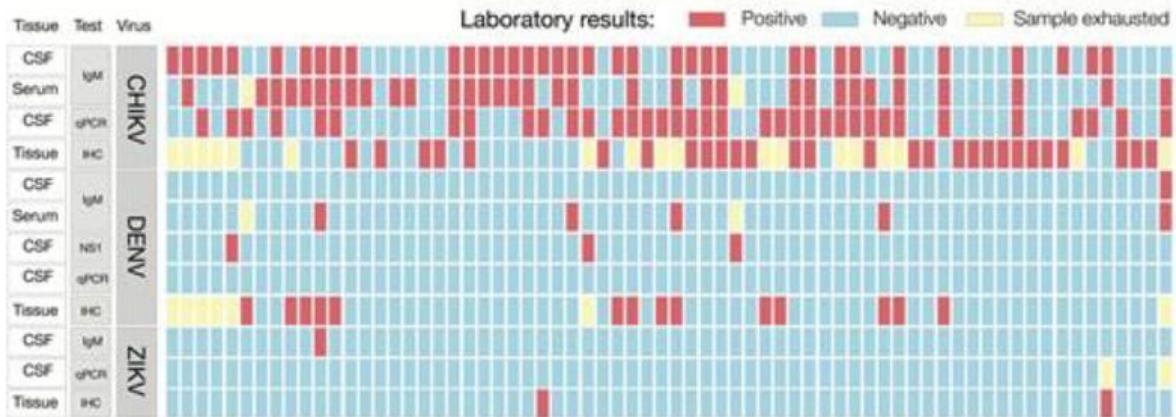
## **School children with no malaria symptoms could be super-spreaders of the disease**

Researchers from Radboud University Medical Center in the Netherlands conducted a two-year study in Uganda on school aged children (between five and 15 years old) to study how Malaria persists in populations, and how asymptomatic super spreaders can sustain transmission. The study looked at transmission of Malaria among children who showed symptoms vs children who were asymptomatic in an area which has ongoing malaria control measures including insecticides, treated bed nets, and access to effective malaria drugs. [Read more.](#)



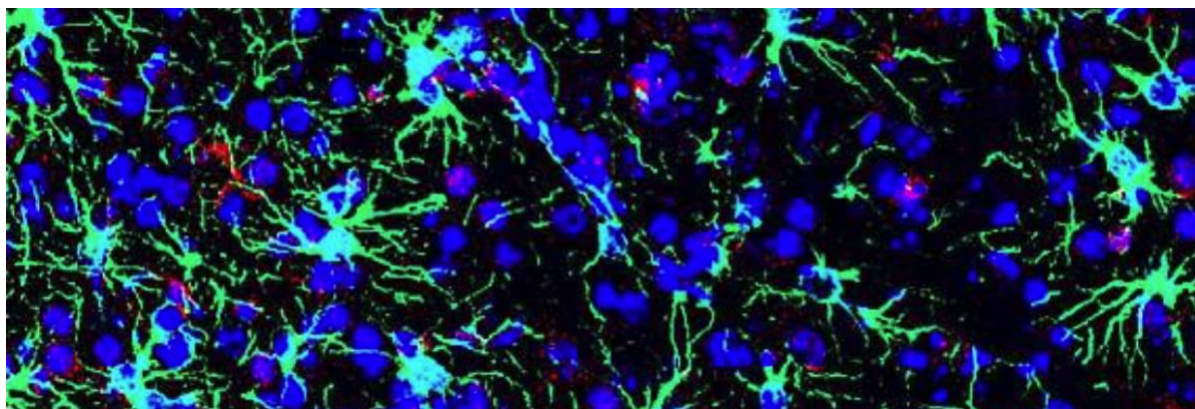
## Chikungunya can infect central nervous system and impair cognitive, motor functions

### C. Laboratory results CHIKV-deaths



In a study published by Oxford University Press, an international group of researchers have retrospectively analysed various tissue and fluid samples, as well as clinical and epidemiological data, from patients who died in the outbreak of chikungunya virus in Ceará, Brazil in 2017. They found that in most cases where the suspected cause of death was from chikungunya, the infection was also affecting the central nervous system. They also found that a higher number of deaths occurred in younger age groups without comorbidities than previously thought, with 23.5% of deaths in the study occurring in the age range of 18-40. [Read more. Access original article.](#)

## Commonly used antibiotic shows promise for combating Zika infections

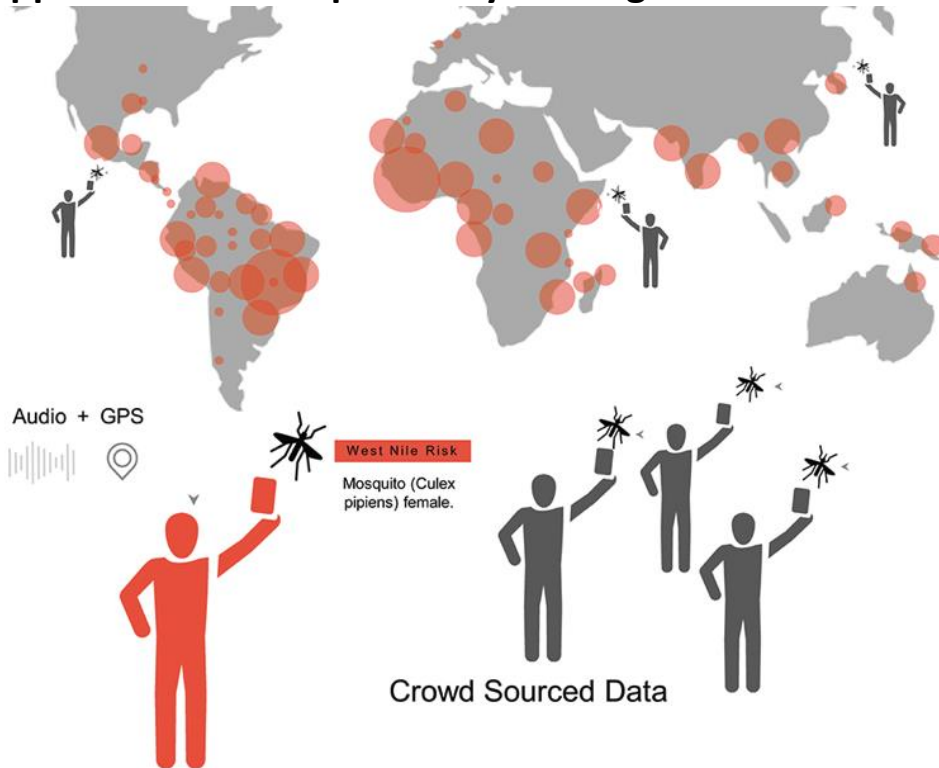


In a collaboration between scientists at the National Center for Advancing Translational Sciences and Georgetown University Medical Center, scientists have found that a commonly used class of antibiotic drugs may help prevent neurological problems associated with Zika infections. Screening of 2000 compounds using mice infected with the virus found that tetracycline-based drugs helped block a protease which is an important part of the replication process of Zika Virus. [Read more.](#)





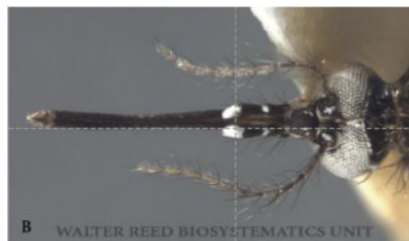
## New App Identifies Mosquitoes by Buzzing Sound



After approximately four years in the making, a free app will be available in the next couple of months that is able to identify species of mosquito by the high-pitched whine they make while flying. The project was originally started by a researcher as a graduate student and is now close to release. The app uses the microphone record a small clip of the mosquito which it compares against a database to determine what species it is most likely to be. [Read more.](#) [Learn more about the app.](#) [Click here to sign up to be informed when the app is launched.](#)

## KNOW YOUR MOSQUITO

### *Aedes (Fredwardsius) vittatus*



*Aedes vittatus* is a voracious biter of humans and a proven vector of chikungunya, Zika, dengue and yellow fever viruses.

It is predominantly a rock-hole breeder, it can breed in a variety of natural and artificial containers.

This species is found throughout tropical Asia, Africa and the Mediterranean region of Europe.

The first record of the incursion and establishment of this species in the Americas via multiple introductions into the Caribbean from the Indian subcontinent have recently been confirmed.

Is the only species representing the subgenus *Fredwardsius*.



NEW ZEALAND BioSECURE



---

## 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

---

## 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

---