

BORDER HEALTH NEWSLETTER – FEBRUARY 2021

WELCOME!

Kia Ora Koutou,

This month the NZB Lab have received a number of excellent mozzie pictures, so we have prepared a multi-artist exhibition of some of our favourites for you to enjoy. Also presented is the 2020 annual chart, showing the variation of mosquito numbers over the past year and highlighting the mozziest month!

In the news this month we celebrate with El Salvador being certified malaria free! Learn and read about yet another unwanted guest that has made Florida its new home, the promising results obtained after a trial of a new device that targets *Aedes aegypti* in Mexico, and the development of a model based on environmental data which predicts *Aedes aegypti* gene flow. Lastly we look across the ditch to see how the increasing mosquito numbers in Australia is affecting the transmission of Ross River Virus.

Happy reading!

SURVEILLANCE

During February 1279 samples were collected by staff from 12 DHBs (Figure 1). The samples included 270 positive larval samples and 136 positive adult samples, leading to a total of 2830 adults and 40301 larvae identified over the past month (Table 1). The dominant larval species this month and last month is *Culex quinquefasciatus*.

Compared to this same month last year, the total number of larvae and adults has shown an increase (23% and 79% respectively) (Table 1).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during February 2020 & 2021

Species (common name)	Adults		Larvae	
	Feb 21	Feb 20	Feb 21	Feb 20
<i>Aedes notoscriptus</i> (striped mosquito)	536	7	2689	5790
<i>Ae antipodeus</i> (winter mosquito)	2	2	-	24
<i>Ae australis</i> (saltwater mosquito)	-	-	-	1
<i>Ae subalbirostris</i> (no common name)	-	-	-	11
<i>Coquillettidia iracunda</i> (no common name)	11	-	-	-
<i>Culex pervigilans</i> (vigilant mosquito)	194	57	2450	2604
<i>Cx quinquefasciatus</i> (southern house mosquito)	1977	520	35127	22382
<i>Culex sp.</i>	96	30	4	1
<i>Opifex fuscus</i> (rock pool mosquito)	14	-	31	30
Total	2830	616	40301	30843

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

Compared to last month, mosquito larval numbers have shown a 57% increase while adult numbers have shown a 57% decrease (Table 1).

The highest number of larvae sampled this month was obtained in Community and Public Health DHB (13792 larvae) followed by Nelson Marlborough DHB (10151 larvae) (Figure 1).

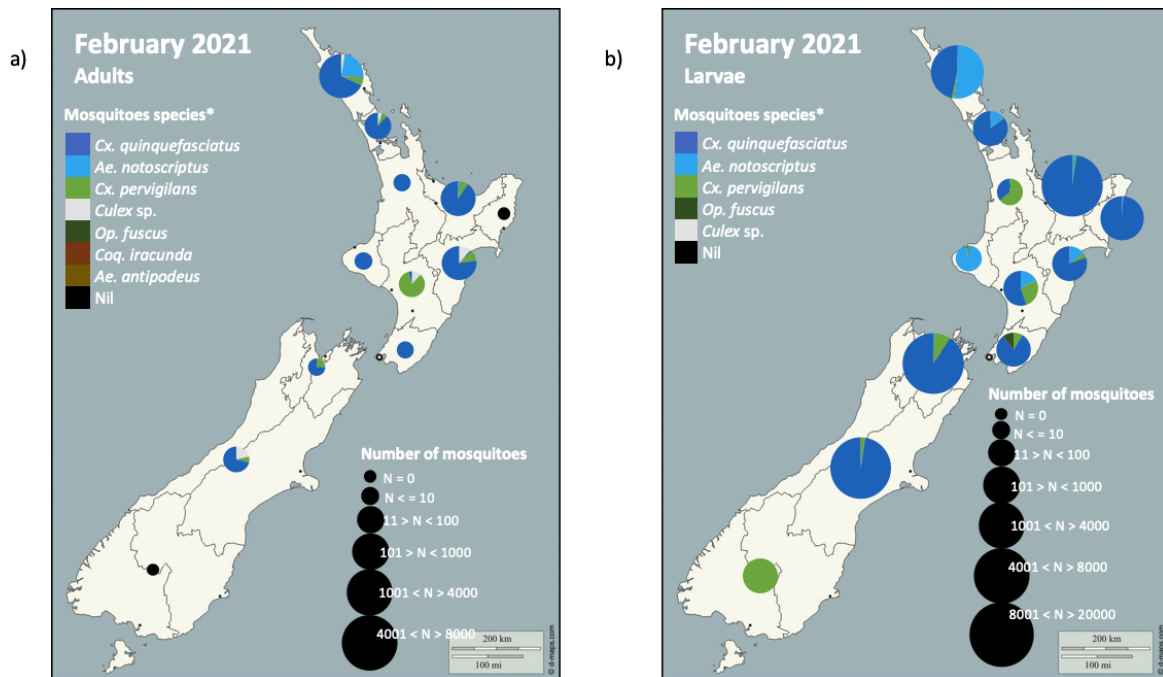


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the February 2021 surveillance period.

* 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.

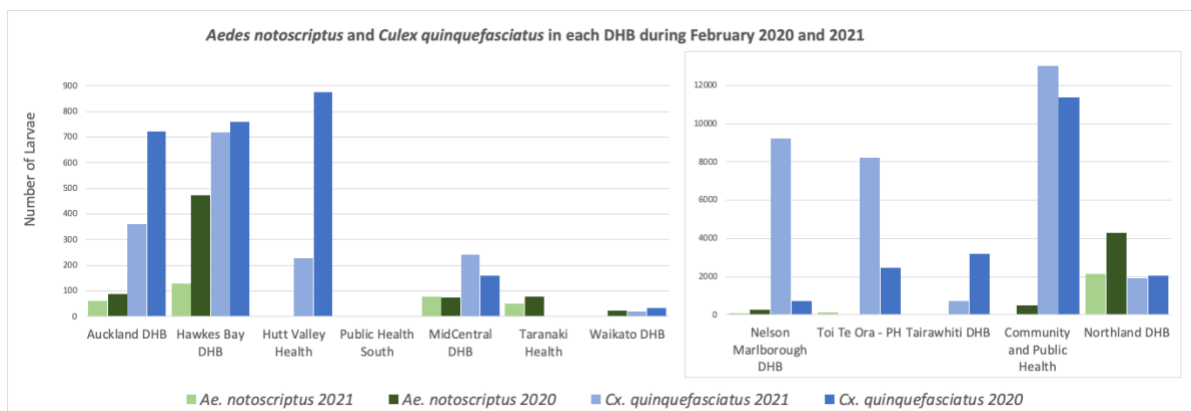


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during February 2020 and 2021.

*Please note the different scale for the number of larvae present in Nelson Marlborough DHB, Toi Te Ora – PH, Community and Public Health, and Northland DHB in comparison to the other DHBs.

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

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

MOZZIE NUMBERS FOR THE YEAR 2020

During 2020, a total of 99422 larvae (Figure 3) and 4778 adults (Figure 4) were collected by Public Health Units and identified in the NZBioSecure Entomology Laboratory, that is 2% less larvae and 59% less adults than last year. The decrease in adults collected is likely due a decrease in adult sampling in some locations due to the COVID 19 response along with a reduced number of adult samples collected in Northland.

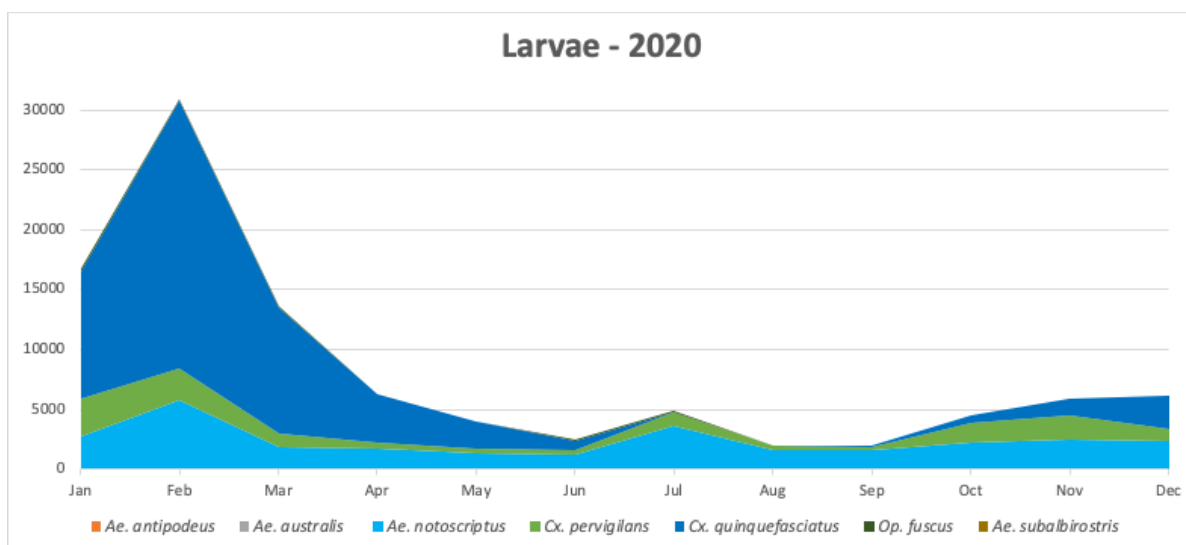


Figure 3. Variation in total mosquito larvae numbers throughout 2020.

A total of 11 species of mosquitoes were collected this year (that is 1 less than last year) with *Culex quinquefasciatus* the best represented with 56% of the larvae and 60% of the adults, followed by *Aedes notoscriptus* with 29% of the larvae and 24% of the adults. The least represented mosquitoes were the endemic *Culex asteliae* (2 adults and 6 larvae) and *Culiseta tonnoiri* (1 adult).

The highest number of mosquitoes collected (larvae plus adults) in 2020 was in February (31459) followed by January (17299) while in 2019 the highest number was in February (28489) followed by March (25884). For 2020 the highest number of species was recorded

in January and March (9 species) and the least number was recorded in July, August, and September (5 species).

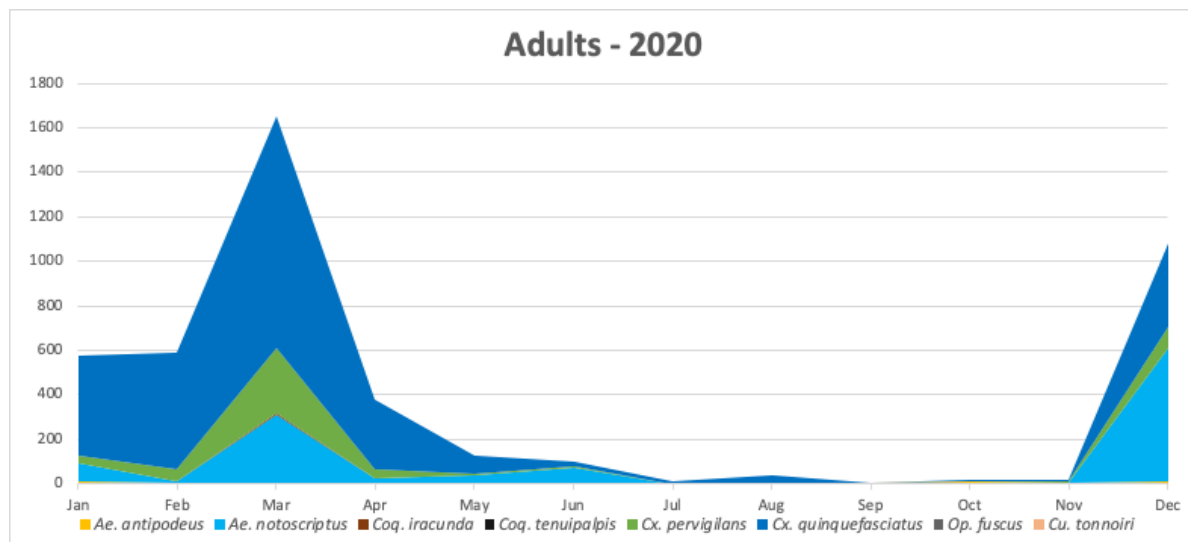


Figure 4. Variation in total mosquito adult numbers thought 2020.

INCURSIONS AND INTERCEPTIONS

During February HPOs responded to seven suspected interceptions including the discovery of an unwanted mosquito caught in a routine trap at Auckland International Airport (highlighted in red). Enhanced surveillance was conducted for three consecutive weeks after the initial discovery with no further *Aedes aegypti* found (Table 2).

Table 2. Suspected interceptions during February 2021.

Date	Species	Location	Circumstances
01.02.2021	1 Female <i>Culex quinquefasciatus</i>	The Warehouse Distribution Centre Rolleston, 12-36 Izone Drive, Christchurch	Found alive while inspecting a container of boxed furniture from China.
02.02.2021	1 non mosquito (Chironomidae)	Fresh Direct, Mt Wellington, Auckland	Found dead in imported roses from Columbia.
05.02.2021	1 Female <i>Culex quinquefasciatus</i>	Sorted Logistics, Hornby, Christchurch	Found alive in a container halfway through devanning goods from Bangladesh.
08.02.2021	1 Female <i>Aedes aegypti</i>	Auckland International Airport	Caught in a BG trap (BG7) during routine surveillance in the Breezeway at AIAL.
25.02.2021	1 Male <i>Culex pervigilans</i>	The Warehouse Distribution Centre Rolleston, 12-36 Izone Drive, Christchurch	Found alive during devanning of stacked boxes from China.
25.02.2021	2 Female <i>Culex quinquefasciatus</i> 1 wing attached to a piece of thorax	Sorted Logistics, Hornby, Christchurch	Found dead while MPI was devanning a container. No further information has been provided.
28.02.2021	1 Male <i>Culex quinquefasciatus</i>	Auckland International Airport	Found alive at AIAL near the x-ray machine.



NEWS ARTICLES FROM AROUND THE WORLD

El Salvador certified as malaria-free by WHO



El Salvador today became the first country in Central America to be awarded a certification of malaria elimination by the World Health Organization (WHO). The certification follows more than 50 years of commitment by the Salvadoran government and people to ending the disease in a country with dense population and geography hospitable to malaria.

“Malaria has afflicted humankind for millennia, but countries like El Salvador are living proof and inspiration for all countries that we can dare to dream of a malaria-free future,” said Dr. Tedros Adhanom Ghebreyesus, WHO Director-General. [Read more.](#)

Trial Gives Hope For Better Control Of Mosquito-borne Disease Outbreaks



An international study, led by QIMR Berghofer researchers, has shown that a new device that targets *Aedes aegypti* mosquitos could be extremely useful in the fight against mosquito-borne diseases such as dengue, chikungunya and Zika. The randomised field trial used small, insecticide-treated, plastic mesh devices called “emanators” to target *Aedes aegypti* mosquitos in homes in the state of Yucatan in Mexico. [Read more. Access the original article.](#)

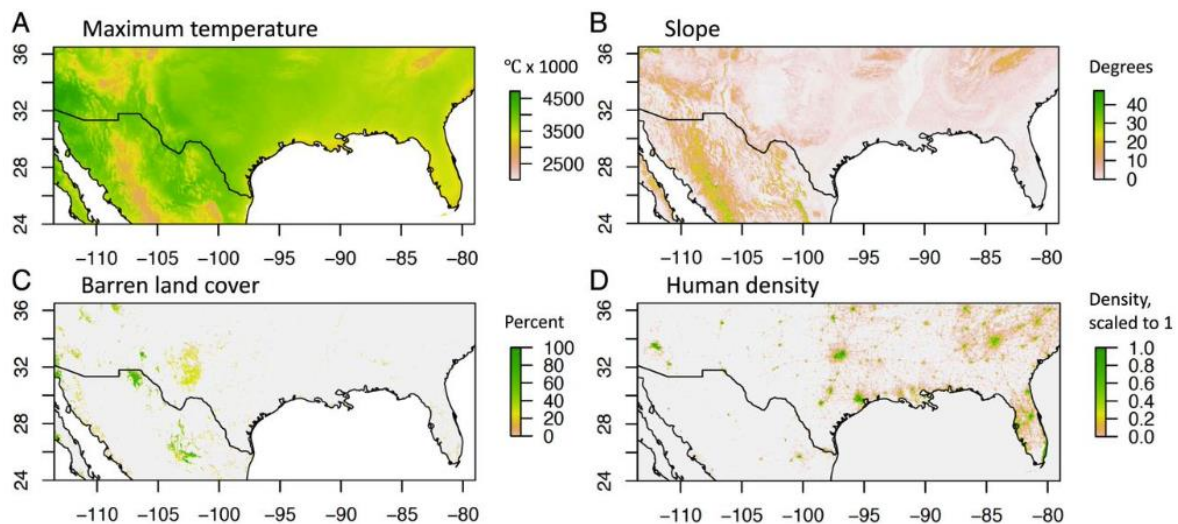


Ross River virus cases are surging in La Niña conditions and mosquito control needs a silver bullet



Australia's wet, humid summer is leading to a surge in both mosquito populations and the number of Ross River virus cases in humans. For insect sprayer Dave Ross, he is close to both the problem and the solution. His sister Michelle caught the virus months ago and has been struck by "excruciating" pain. Mr Ross has since been working with councils and homeowners to help reduce mosquito numbers and the risk of anyone else getting the virus. [Read more.](#)

A machine-learning approach to track how yellow fever mosquito moves through the environment



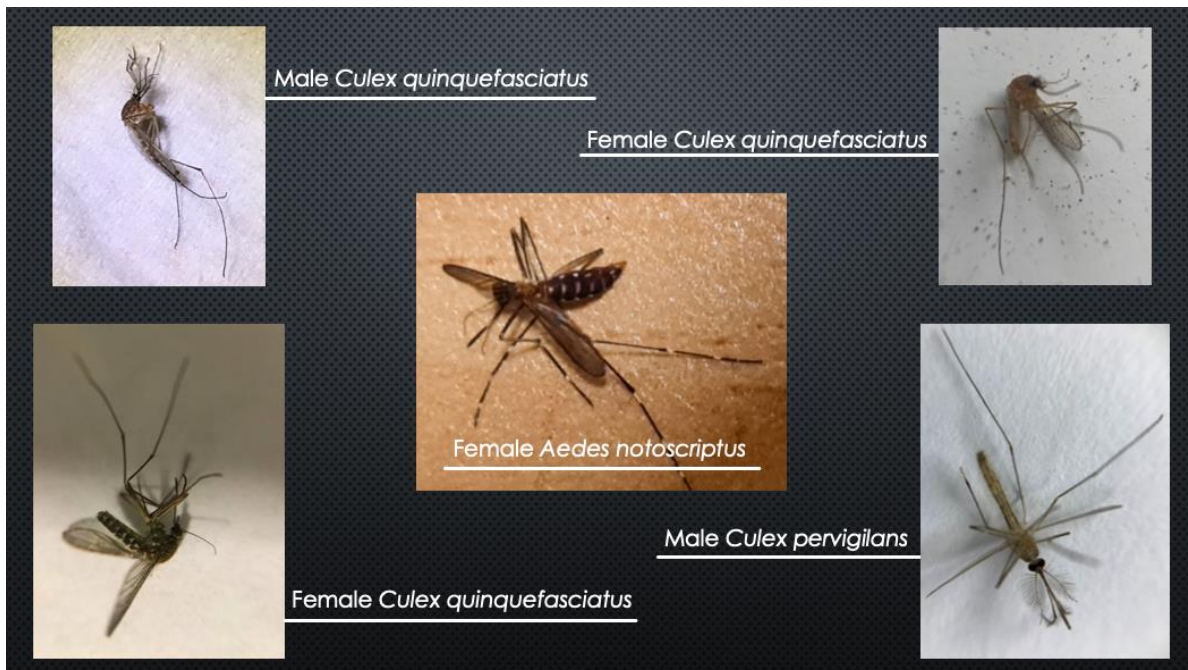
In a study recently published in Proceedings of the National Academy of Sciences, a Yale-led research team developed a new method to track how *Ae. aegypti* move through the environment. By combining genetic data from the mosquitoes and environmental data from satellites, the authors mapped "landscape connectivity" -- defined as how a landscape facilitates the movements of organisms and their genes across large areas. In particular, the researchers developed a new workflow that more effectively models how *Ae. aegypti* are moving through the landscape in the southern U.S. [Read more.](#) [Access original article](#)



New mosquito species found in South Florida. It's an aggressive biter, of course

South Florida appears to be home to yet another new invasive species—this one a mosquito that was last officially documented in the Florida Keys 75 years ago. The *Aedes scapularis* has been confirmed in Miami-Dade and Broward counties, according to a new study published in the Journal of Medical Entomology by Miami-Dade Mosquito Control Division, Broward Mosquito Control Section and Lawrence Reeves, an entomologist at the University of Florida. [Read more.](#)

THE BEST MOZZIE PICTURE OF THE MONTH – EXHIBITION



Top left - Male *Culex quinquefasciatus*: This was taken by Jess Le Grice during the enhanced surveillance at AIAL following the interception of an *Aedes aegypti*.

Top right - Female *Culex quinquefasciatus*: This was taken by Lauren Woollard of Taranaki DHB to practice using their new macro lens.

Bottom left - Female *Culex quinquefasciatus*: This was taken by George Poole from Community and Public Health following a suspected interception.

Bottom right - Male *Culex pervigilans*: This was also taken in Community and Public Health following a suspected interception by the responding HPO.

Centre - Female *Aedes notoscriptus*: Taken by a member of the public after contacting the lab through the 0800 MOZZIE line after being bitten.

Characteristics of a good series of Mozzie pictures:

- Different pictures are in focus in different mosquito/non-mosquito body parts.
- The light allows the viewer to interpret different colours.
- All body parts are distinguishable.



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
