



BORDER HEALTH NEWSLETTER – MAY 2021

WELCOME!

Kia Ora Koutou,

This month we congratulate Cushla Vanstone for taking the best series of non-mozzie pictures of the month, scroll down to see a couple of chironomids posing for the shot. If you are curious to know how you did in the crossword we featured last month, scroll down and find the right answers and don't forget to check the bite of humour section for a laugh!

This month, in the news, find out about the new guidance issued by the WHO for research on genetically modified mosquitoes. Read about the research that shows how raising a house may prevent their occupants from getting malaria in Africa and how, in Haiti, researchers are fighting malaria by creating sophisticated data models. Following that, read about the outbreak of chikungunya in Cambodia. Finally, learn about the mechanism explaining how mosquito repellents work.

Happy reading!

SURVEILLANCE

During April 1091 samples were collected by staff from 12 DHBs (Figure 1). The samples included 114 positive larval samples and 45 positive adult samples, leading to a total of 362 adults and 2599 larvae identified over the past month (Table 1). As is common over the cooler months, *Aedes notoscriptus* is now the dominant larval species instead of *Culex quinquefasciatus* (Table 1).

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

Species (common name)	Adults		Larvae	
	May 21	May 20	May 21	May 20
<i>Aedes antipodeus</i> (winter mosquito)	4	-	-	-
<i>Ae australis</i> (saltwater mosquito)	-	-	-	2
<i>Ae notoscriptus</i> (striped mosquito)	83	40	1287	1350
<i>Ae subalbirostris</i> (no common name)	-	-	2	6
<i>Culex asteliae</i> (no common name)	-	1	-	-
<i>Cx pervigilans</i> (vigilant mosquito)	11	8	623	433
<i>Cx quinquefasciatus</i> (southern house mosquito)	238	76	555	2240
<i>Culex sp.</i>	25	6	-	-
<i>Opifex fuscus</i> (rock pool mosquito)	1	-	132	42
Total	362	131	2599	4073

In total, six mosquito species have been collected this month (Table 1), that is one more than last month.

Compared to this same month last year, the total number of larvae has shown a 57% decrease and the adults a 64% increase (Table 1).

Compared to last month, mosquito larval numbers and adult numbers have shown a decrease (60% and 7% respectively).

The highest number of larvae sampled this month was obtained in Auckland DHB (1224 larvae) followed by Northland DHB (834 larvae) (Figure 1). 88% of the larvae collected in Auckland DHB were obtained as part of enhanced surveillance conducted on Great Barrier Island, following a historical finding of a female *Aedes albopictus* in 2019.

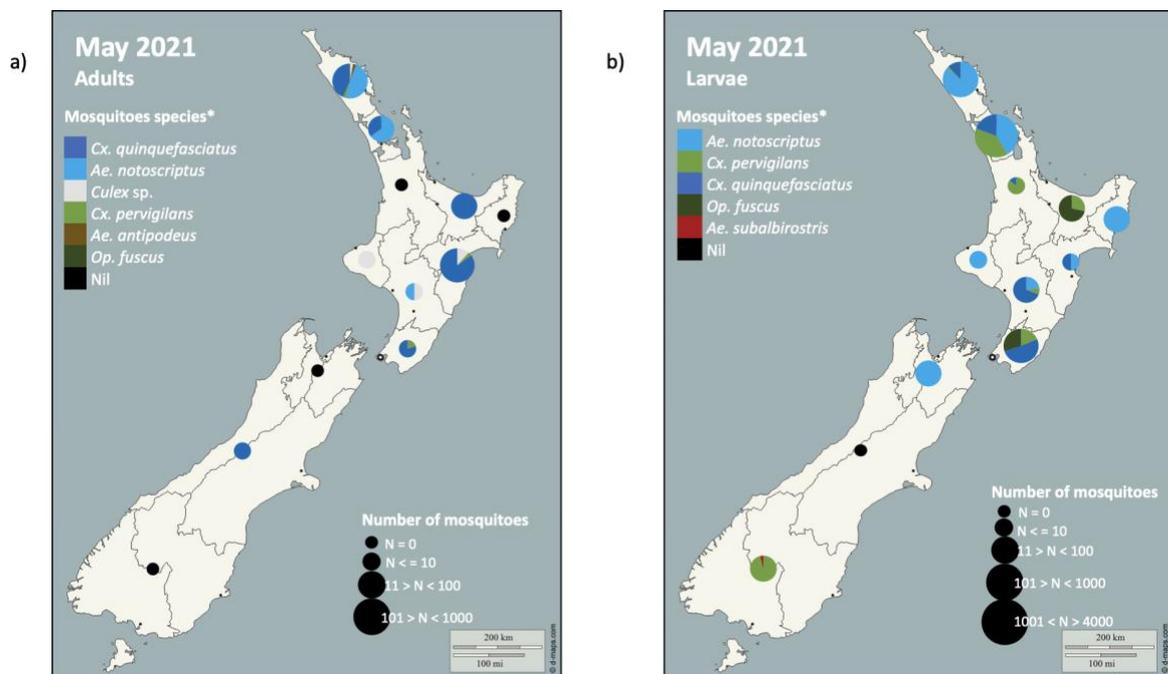


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the May 2021 surveillance period.

* 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.

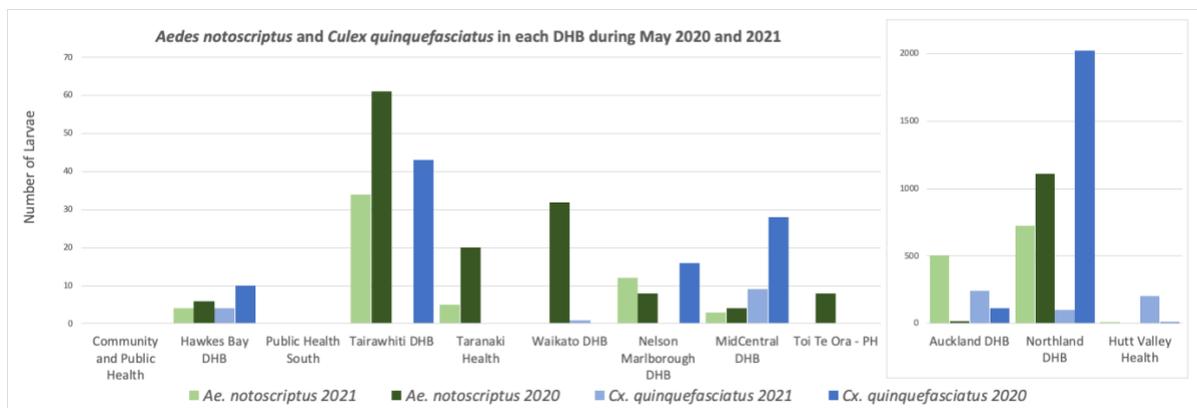


Figure 2. Comparison between introduced mosquitoes sampled in each DHB during May 2020 and 2021.

*Please note the different scale for the number of larvae present in Auckland DHB, Northland DHB and Hutt Valley Health, in comparison to the other DHBs.

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

Aedes notoscriptus larval numbers have shown an increase in three DHBs from this same month last year and a decrease in seven 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.

INCURSIONS AND INTERCEPTIONS

During May, HPOs responded to six suspected interceptions (Table 2).

Table 2. Suspected interceptions during May 2021.

Date	Species	Location	Circumstances
05.05.2021	1 Male <i>Culex quinquefasciatus</i>	Sorted Logistics, Hornby, Christchurch	Found alive in container of general wooden products from China for Kmart
19.05.2021	2 non-mosquitoes (Chironomidae)	Tauranga Port	Found dead during a ship sanitation inspection on board the Thor Niramit
21.05.2021	1 Female <i>Culex quinquefasciatus</i>	Sorted Logistics, Hornby, Christchurch	Found dead during devanning of a container of clothing and household items for Kmart ex India
21.05.2021	2 Male <i>Culex quinquefasciatus</i>	Sorted Logistics, Hornby, Christchurch	Found dead during devanning of a container ex India of clothing and other material-based goods
23.05.2021	1 Female <i>Culex quinquefasciatus</i>	Wellington International Airport	Mosquito found alive by MPI officer at hallway between Avsec & MPI office
28.05.2021	1 Male <i>Culex quinquefasciatus</i>	Sorted Logistics, Hornby, Christchurch	Fund alive while sweeping a container of manufactured wooden products ex Hong

NEWS ARTICLES FROM AROUND THE WORLD

Researchers develop sophisticated data modelling to help eradicate malaria in Haiti



Researchers from Telethon Kids Institute and Curtin University in Perth and Tulane University in New Orleans have developed sophisticated data modelling that could help eradicate malaria in Haiti. Haiti is the poorest country in the Caribbean - beset by natural disasters -



and is one of the few countries in the region that have not mostly wiped out the mosquito-borne disease. [Read more.](#)

House design can decrease the force of malaria infection



There is growing evidence that house design can decrease the force of malaria infection. Whilst we think of the home as a sanctuary, in Africa, around 80% of the malaria bites occur indoors at night. Preventing mosquitoes from getting indoors is a simple way of protecting people from this often lethal disease. As most mosquitoes fly low to the ground, a team of researchers led by Durham University wondered whether if, by raising a house, malaria mosquitoes would struggle to find the occupants. [Read more.](#) [Access original article.](#)

WHO issues new guidance for research on genetically modified mosquitoes to fight malaria and other vector-borne diseases



New guidance from the World Health Organization (WHO) sets essential standards to inform future research and development on genetically modified mosquitoes, particularly in addressing issues relating to ethics, safety, affordability and effectiveness. The guidance framework for testing genetically modified mosquitoes, developed in partnership with TDR, the Special Programme for Research and Training in Tropical Diseases, and the GeneConvene Global Collaborative, an initiative of the Foundation for the National Institutes of Health, describes best practices to ensure that the study and evaluation of genetically modified mosquitoes as public health tools is safe, ethical and rigorous. [Read more.](#) [Access the guidance framework for testing genetically modified mosquitoes.](#)

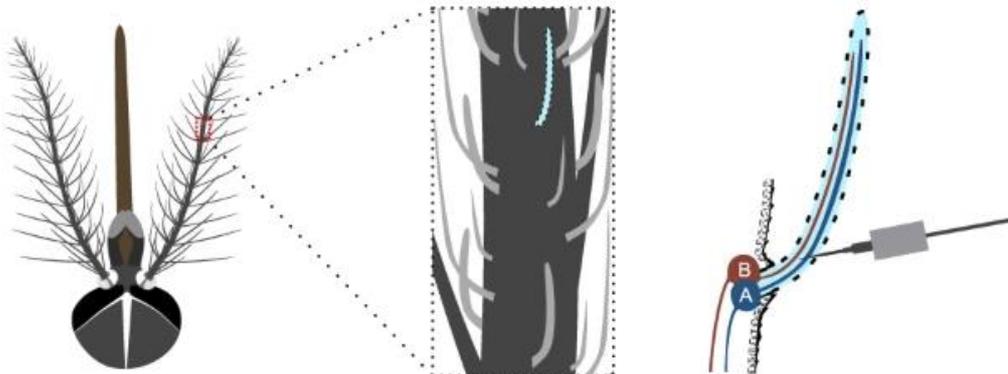


Ratanakkiri to contain spread of chikungunya



The Ratanakkiri Provincial Department of Health is planning to launch a campaign to eradicate mosquito larvae and prevent *Aedes aegypti* mosquitoes from breeding after dozens of chikungunya cases were reported in the province. As of May 25, a total of 230 suspected cases of chikungunya were reported in 11 provinces across Cambodia, according to information from the National Dengue Surveillance System at the National Centre for Parasitology, Entomology and Malaria Control. More than 90 per cent of the cases were found in Ratanakkiri, Kampong Chhnang and Prey Veng provinces. [Read more.](#)

How one of the oldest natural insecticides keeps mosquitoes away



With mosquito season beguiling at the Northern Hemisphere, people are stocking up on repellents to prevent itchy bites. Bug repellents are important because they don't just protect against the buzzing, blood-sucking little pests -- they also safeguard against the diseases they carry, which kill some 700,000 people worldwide each year. Surprisingly, despite widespread use, no one understood exactly how most mosquito repellents keep the insects away. Now researchers are starting to uncover the first pieces of the puzzle. A new study has identified a scent receptor in mosquitoes that helps them sniff out and avoid trace amounts of pyrethrum, a plant extract used for centuries to repel biting insects. [Read more.](#)
[Access original article.](#)



THE BEST NON-MOZZIE PICTURE OF THE MONTH



About the photographer:

Cushla Vanstone is a Trainee Health Protection Officer for Toi Te Ora – Public Health

These non-biting midges (Family Chironomidae) were found dead during a ship sanitation inspection on board the vessel Thor Niramit at Tauranga Port.

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.

CROSSWORDS ANSWERS

DOWN

1. Sample labels are filled out in **PENCIL**
2. GAT stands for Gravid **AEDES** Trap
3. A **DELIMITING** survey is completed following the interception of an exotic mosquito
4. *Aedes albopictus* mosquitoes are a species of **CONTAINER** breeders
5. If there are mosquitoes in a trap, then the sample is **POSITIVE**
6. Only the **FEMALE** mosquitoes bite
7. Tyre traps should have **ONE** dip in the online database

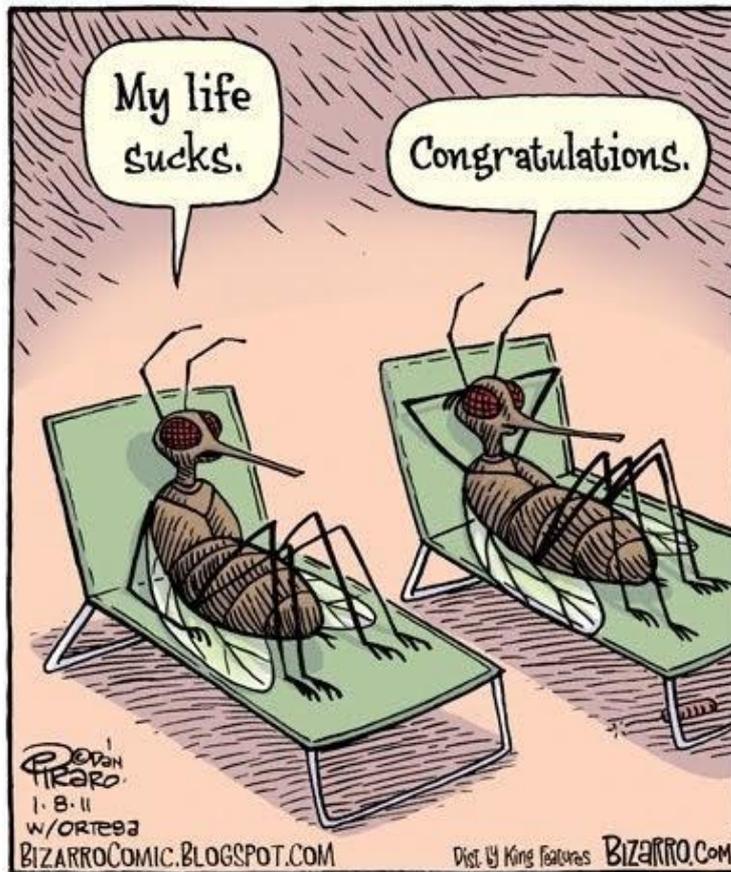
ACROSS

1. **GRAVID** is the term for female mosquitoes looking to lay eggs
2. When traps are set up after an interception it is called **ENHANCED** surveillance
3. A **BG** is a trap designed to specifically catch **AEDES AEGYPTI**
4. The common name for the endemic species *Opifex fuscus* is the **ROCK POOL** mosquito
5. A GAT is a trap to catch **ADULT** mosquitoes
6. **ANOPHELES** mosquitos carry malaria
7. Male mosquitoes feed on **NECTAR**

Illustration by Ana Kova



A BITE OF HUMOUR



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