



## BORDER HEALTH NEWSLETTER – AUGUST 2021

### WELCOME!

Kia Ora Koutou,

We hope you are keeping safe and mentally healthy during these challenging times. Thank you to all HPOs that are dedicating their efforts to keep kiwis well looked after. A special thanks to those HPOs continuing with routine mosquito surveillance despite the Covid-19 demands on the Public Health Units.

In the news this month read about; a successful experiment to render humans invisible to *Aedes aegypti* mosquitoes, a new approach to protecting young African children from malaria which could reduce deaths and illness by 70%, and how papaya leaves grown in New Zealand will soon be used to treat dengue fever. There’s also news of a new dengue outbreak in Port Vila, Vanuatu, where Wolbachia-treated *Aedes aegypti* were released in the past, scroll down and find out which vector is causing the current dengue outbreak. Finally, delight your senses with the world’s most beautiful mosquito wildlife photo and the story behind the picture.

Also, don’t forget to scroll down to have a fun and relaxing time with the Mosquito Word Search and a Bite of Humour sections.

Happy reading!

### SURVEILLANCE

During August 856 samples were collected by staff from 11 DHBs (Figure 1). The samples included 26 positive larval samples and 4 positive adult samples, leading to a total of 4 adults and 695 larvae identified over the past month (Table 1). As is common over the cooler months, *Aedes notoscriptus* is the dominant larval species (Table 1).

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

Species (common name)	Adults		Larvae	
	Aug 21	Aug 20	Aug 21	Aug 20
<i>Ae notoscriptus</i> (striped mosquito)	-	-	587	1594
<i>Cx pervigilans</i> (vigilant mosquito)	2	3	94	338
<i>Cx quinquefasciatus</i> (southern house mosquito)	2	33	9	86
<i>Culex</i> sp.	-	1	-	-
<i>Opifex fuscus</i> (rock pool mosquito)	-	-	5	24
<b>Total</b>	<b>4</b>	<b>37</b>	<b>695</b>	<b>2042</b>

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

The highest number of larvae sampled this month was obtained in Northland DHB (574 larvae) followed by Regional Public Health (95 larvae) (Figure 1).

Compared to last month, mosquito larval and adult numbers have shown a 56% and 43% decrease respectively.

Compared to this same month last year, the total number of larvae and adults have shown a 66% and 89% decrease respectively (Table 1).

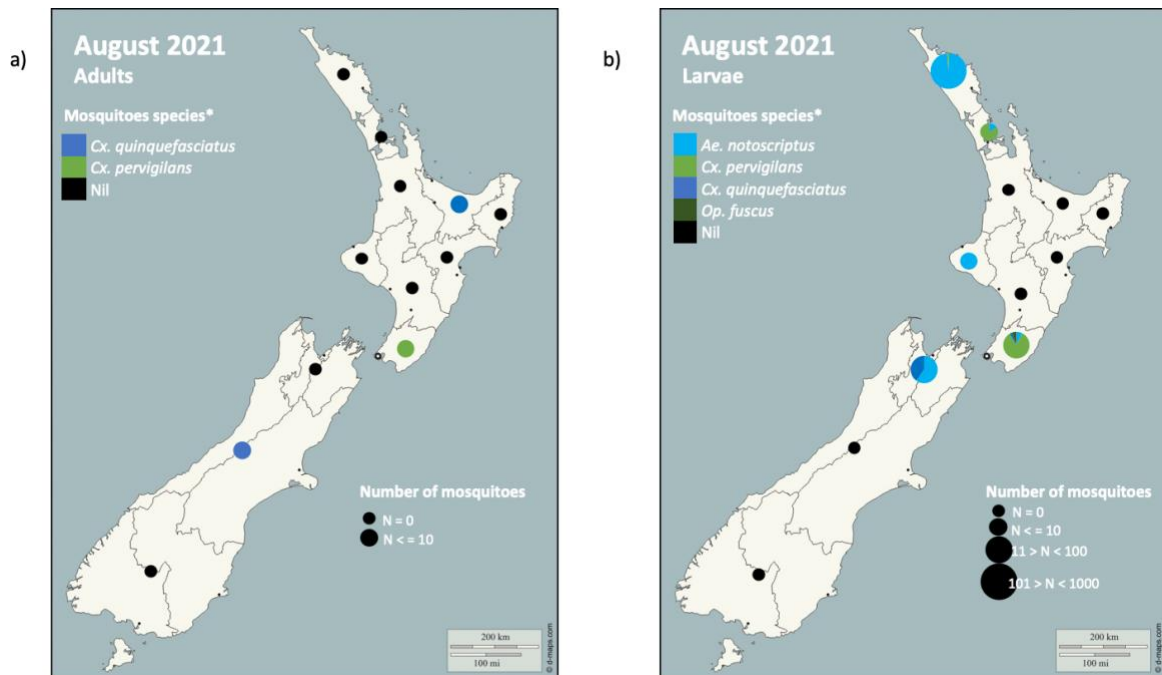


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the August 2021 surveillance period.

\* 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.

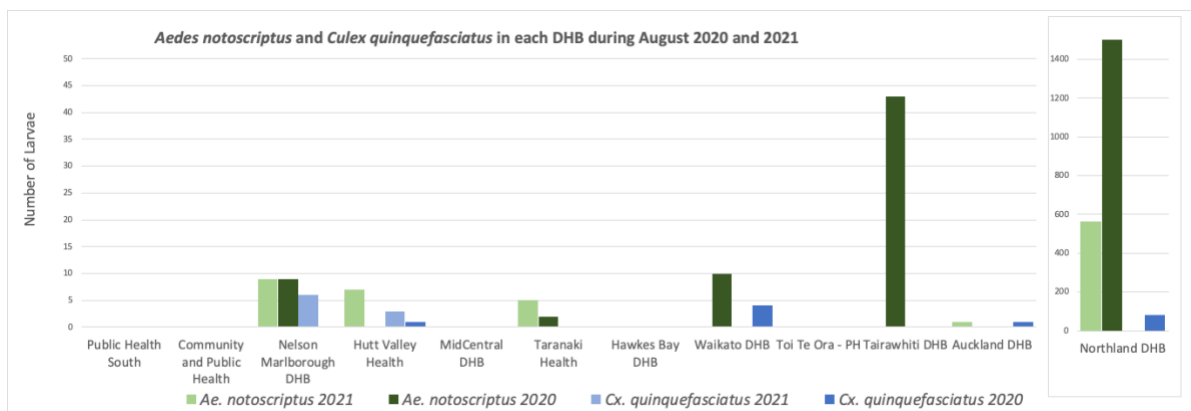


Figure 2. Comparison between introduced mosquitoes sampled in each DHB during August 2020 and 2021.

\*Please note the different scale for the number of larvae present in Northland DHB in comparison to the other DHBs.



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

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

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## INCURSIONS AND INTERCEPTIONS

During August, there were no suspected interceptions.

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## NEWS ARTICLES FROM AROUND THE WORLD

### Wildlife photo: Is this the world's most beautiful mosquito?



This flashy *Sabethes* species from central and South America has been dubbed by the BBC as the “world’s most beautiful mosquito” - highlighting the amazing diversity that can be seen in the disease vectors and the challenges and risks faced when trying to photograph them. The image was captured by entomologist and photographer Gil Wizen, who notes that "the mosquito responds to the tiniest of movements and to changes in light intensity... This means you must stay very still while attempting to photograph it, and also be prepared for the



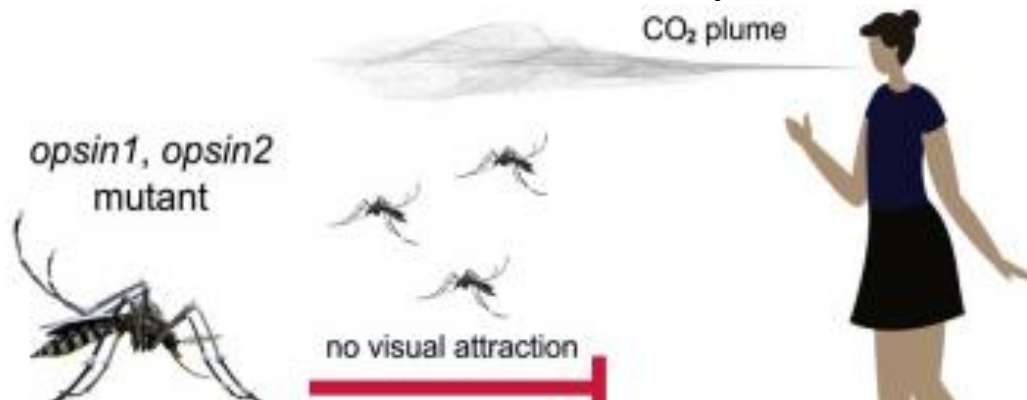
mosquito's escape if using a flash." "These mosquitoes are important vectors of several tropical diseases, such as yellow fever and dengue fever. While taking the photo, I was bitten by this mosquito and several others, increasing the risk of contracting a vector-borne tropical disease. But I am still alive!" [Read more.](#)

## Trial suggests malaria sickness could be cut by 70%



A new approach to protecting young African children from malaria could reduce deaths and illness from the disease by 70%, a study published in the New England Journal of Medicine suggests. Over three years, the trial found three doses of the vaccine and drugs before the worst malaria season, followed by a booster dose before subsequent rainy seasons, controlled infections much better than vaccines or drugs alone - and, the researchers said, could save millions of young lives in the African Sahel. [Read more. Access original article.](#)

## What If You Could Become Invisible to Mosquitoes?



For the first time, scientists have used the gene-editing tool Crispr-Cas9 to render humans effectively invisible in the eyes of *Aedes aegypti* mosquitoes, according to a paper recently published in the journal Current Biology. Mosquitoes use a combination of senses to detect potential hosts – seeking out the odour of CO<sub>2</sub> and using high-contrast visual cues to hone in on targets. By mutating the genes responsible for the vision-guided attraction, researchers disrupted the ability of the mosquitoes to recognise visual targets and sense dark colours. [Read more \(New York Time subscription may be required to access this\). Access original article.](#)





## NZ-grown papaya leaf extract to be used in supplements to treat dengue



Supplements containing New Zealand grown papaya leaf extract will soon be produced in Malaysia as a treatment for dengue fever and age-related illnesses like Alzheimer's disease and dementia. Studies have shown that carpaine found in papaya leaves has an anti-thrombocytopenic effect; sustaining or increasing platelet counts which form clots to stop bleeding and has long been used in traditional herbal remedies in tropical areas to treat dengue fever. A variety of papaya grown in Kerikeri has shown to contain active compounds that were up to 10 percent higher than that in papaya plants grown in other countries, and a new extraction technique developed with Callaghan Innovation has shown to yield 12 times more carpaine from the leaves. Further research looks to explore how the extract interacts with human cells, identify further uses, and commercialise papaya leaf extract products.

[Read more.](#)

## Vanuatu hospital reports 18 dengue cases

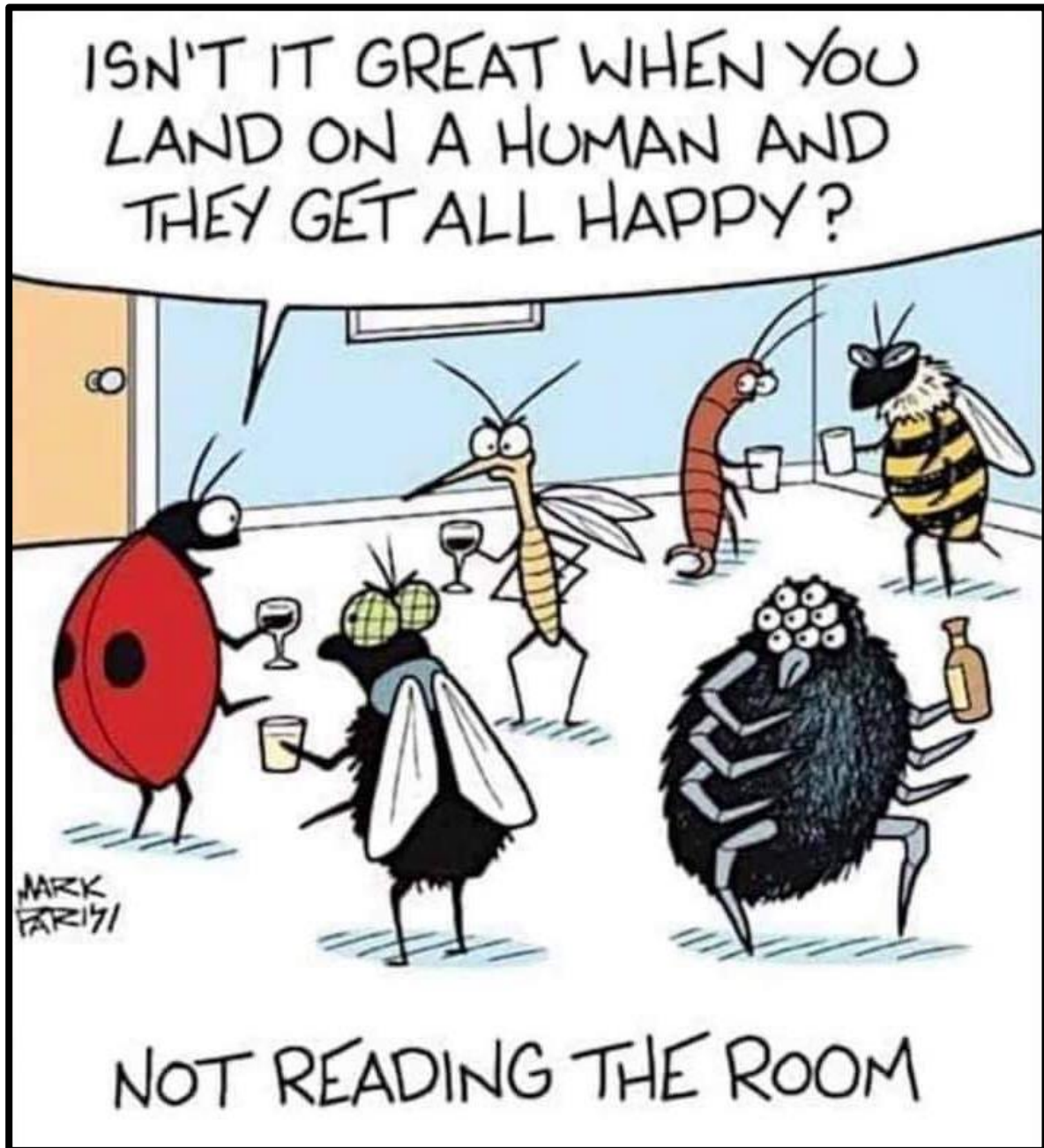


Authorities in Vanuatu report 18 dengue cases at Port Vila Central Hospital since the middle of April and are asking people to take action to reduce risks for more transmission by using protective measures like repellents and mosquito nets and by eliminating standing water. The Wolbachia World Mosquito Program has previously targeted dengue-transmitting *Aedes* mosquitoes in Port Vila using Wolbachia – a bacteria which infects the mosquitoes and makes it harder for viruses to reproduce within them, subsequently reducing the likelihood of arbovirus transmission to humans. Follow-up testing of *Aedes aegypti* mosquitoes across Port Vila has shown that Wolbachia is now common in them



and therefore dengue transmission would be reduced; the Vanuatu Ministry of Health said it was possible a different mosquito species, *Aedes albopictus*, was involved in the current dengue transmission. [Read more.](#)

## A BITE OF HUMOUR







## MOSQUITO WORD SEARCH

R O T C E V S J Y C T F A R G G E  
 X P E R O L I F N R P D H S Y G Q  
 E D F E I G C W Y A Z E N U G B Z  
 L A H D A D S A E D E S O T P I A  
 U Z E E Z L O E A E U W I A A F N  
 C X A E P T B N A A G D T I R E A  
 S C D R R S O V J I N A I C T B U  
 Q Q I B R P R R A V E R S S T R T  
 J Z C R H A P X M U D B O A H S O  
 J O I E L I M I O X J O P F G C G  
 L U L N K A C C S E O V I E I R E  
 Q E U I L K U P Q Z V I V U L S N  
 S Q C A D L A T U Q L R O Q E H O  
 T D R T I L Y B I P G U J N F R U  
 C I R N I R M H T F A S B I K M S  
 A Z A O E C A D O G Z E M U Y Y T  
 K E T C U U M P E C H O L Q S V Y

AEDES	ANAUTOGENOUS	ANOPHELES	ARBOVIRUS
CONTAINER BREEDER	CULEX	CULICIDAE	DENGUE
EGG RAFT	EXUVIA	LARVAE	LIGHT TRAP
MALARIA	MOSQUITO	OVIPOSITION	PROBOSCIS
PUPAE	QUINQUEFASCIATUS	TYRE	VECTOR

## 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