New Zealand BioSecure

BORDER HEALTH NEWSLETTER

DECEMBER 2023

NAU MAI, HAERE MAI - WELCOME!

Kia ora koutou katoa,

We hope that everyone has had a fantastic holiday period and a great start to 2024! Now that 2023 is over, take a look below at the annual chart to see which months were the mozziest and what species were collected the most often. Also have a look at part two of "Know Your Bedbug" and find some tips to prevent bringing them home with you.

In the news this month, read about the threat of mosquito-borne diseases on the rise, including dengue fever which has shown a marked increase over the past 20 years, and why this increase has the World Health Organisation concerned as this virus spreads to previously unaffected countries. Have a look at some more theories why some people seem to attract more mosquitoes than others, then why some countries may not be prepared for the growing threat of mosquito and tick borne viruses, and the impact that mosquito borne viruses have had on some Australian families and their campaigns to increase awareness. Finally, the bedbug saga continues with some tips on prevention, and how, even though bedbugs are becoming more widespread, the internet may also be showing exactly how serious the problem may be.

Happy reading!

SURVEILLANCE

During December a total of 1221 routine samples were collected by staff from 12 PHUs (Figure 1). The samples included 153 positive larval samples and 36 positive adult samples, leading to a total of 9509 larvae and 158 adults identified over the past month (Table 1). *Culex quinquefasciatus* is the dominant larval species this month, which is different to both last month and this month last year where *Aedes notoscriptus* was the dominate larval species (Table 1).

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

Compared to this same month last year, the total number of larvae has shown an increase (64%) while adult numbers have shown a decrease (81%) (Table 1).

Compared to the previous month, both larval and adult numbers have shown an increase (34% and 633% respectively).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during December 2022 & 2023

Species (common name)	Adults		Larvae	
	Dec 23	Dec 22	Dec 23	Dec 22
Aedes antipodeus (winter mosquito)	1	43	-	-
Ae notoscriptus (striped mosquito)	32	45	2842	2474
Ae subalbirostris (no common name)	-	1	-	-
Coquillettidia iracunda (no common name)	-	1	-	-
Coq tenuipalpis (no common name)	-	2	-	-
Culex asteliae (no common name)	-	-	78	4
Cx pervigilans (vigilant mosquito)	21	357	2880	1599
Cx quinquefasciatus (southern house mosquito)	98	303	3642	1641
Culex sp.	6	44	-	-
Opifex fuscus (rock pool mosquito)	-	-	67	65
Total	**158**	**796**	**9509**	**5783**

The highest number of larvae sampled this month was obtained in Northland (6735 larvae) followed by Canterbury (539 larvae) (Figure 1).

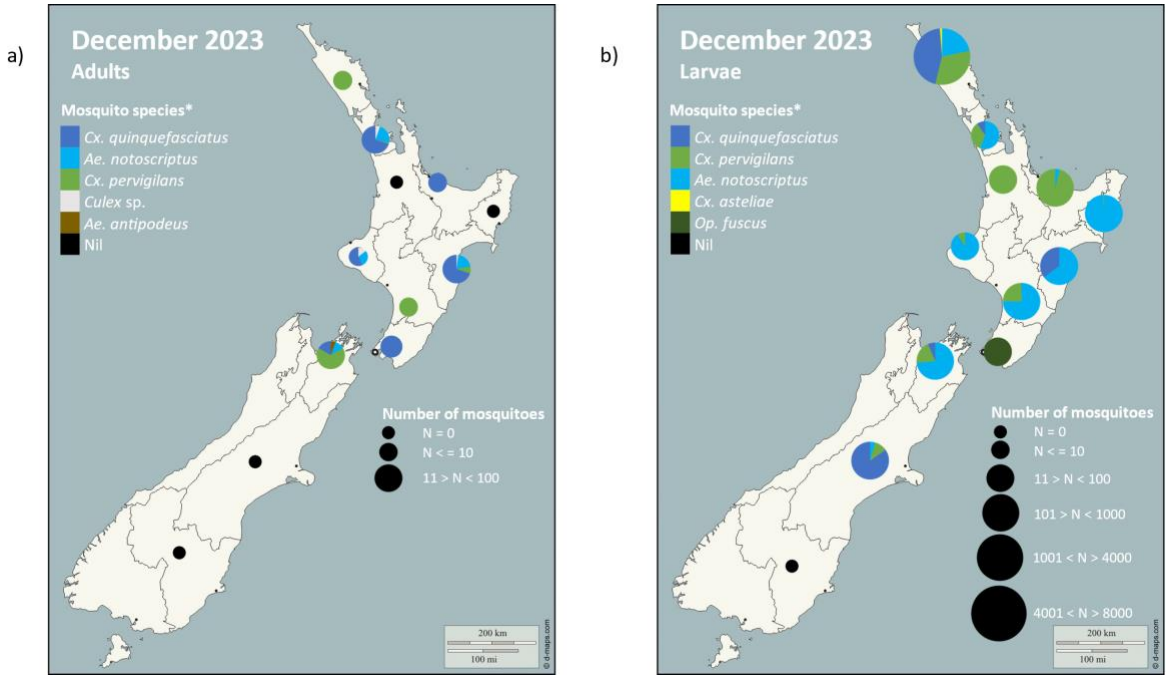


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during December 2023 surveillance period. Please note that the markers represent the PHUs and not the specific sites where the samples have been taken.
* The mosquito species are listed in order from the most abundant to the least abundant.

Aedes notoscriptus larval numbers have shown an increase in five PHUs and a decrease in six 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 Southland (Figure 2).

Culex quinquefasciatus larval numbers have shown an increase in four PHUs and a decrease in four PHUs from this same month last year (Figure 2).

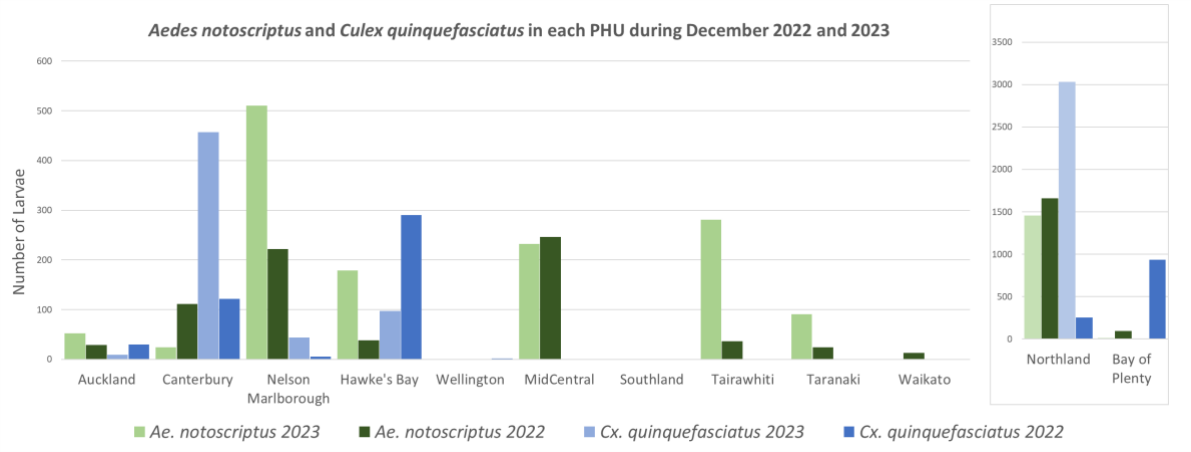


Figure 2. Comparison between introduced mosquito species sampled in each PHS during December 2022 and 2023. *Please note the different scale for the number of larvae present in Northland in comparison to the other PHSs.

MOZZIE NUMBERS FOR THE YEAR 2022

During 2023, a total of 88,155 larvae (Figure 3) and 15,125 adults (Figure 4) were collected by Public Health Units and identified in the NZ BioSecure Entomology Laboratory, that is 15% less larvae and 1% less adults than last year.

A total of 12 locally occurring species of mosquitoes were collected this year (1 more than last year). *Culex quinquefasciatus* the best represented with 48% of the larvae and 64% of the adults, followed by *Aedes notoscriptus* with 32% of the larvae, and *Culex pervigilans* with 15% of the adults. The least represented mosquitoes were the two endemic species *Aedes subalbirostris* with 1 larva and *Coquillettidia tenuipalpis* with 1 adult.

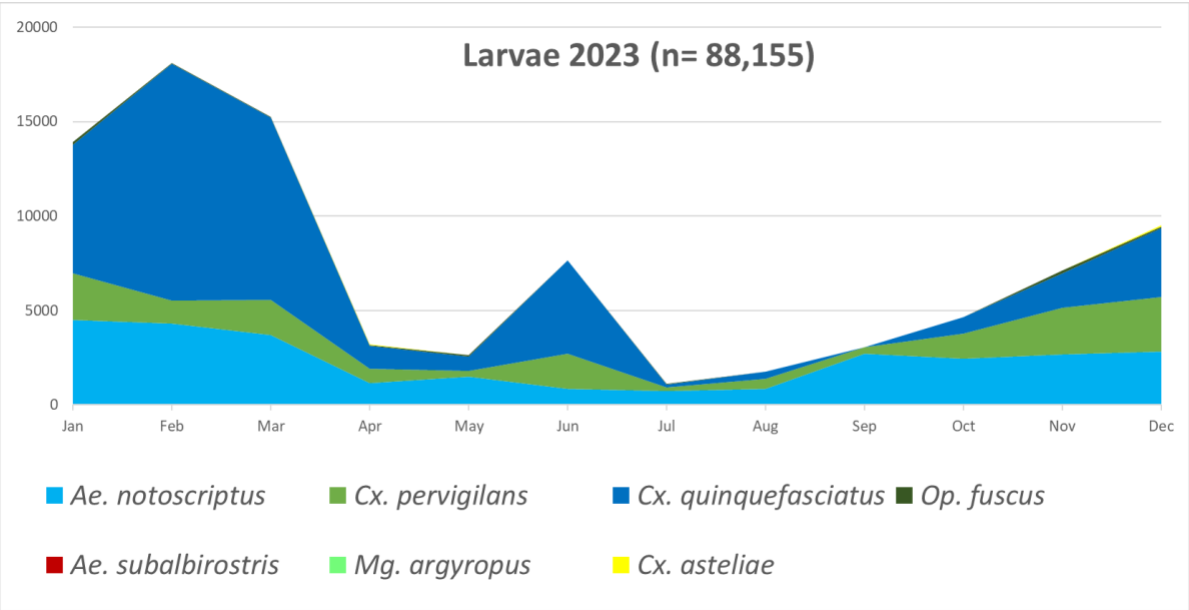


Figure 3. Variation in total mosquito larvae numbers throughout 2023.

The highest number of mosquitoes collected (larvae plus adults) in 2023 was in March (23,115) followed by February (21,412) while in 2022 the highest number was in February (33,861) followed by January (24,341). For 2023 the highest number of species was recorded in January (10 species) and the least was recorded in August (4 species, that is one less than last year on the same month).

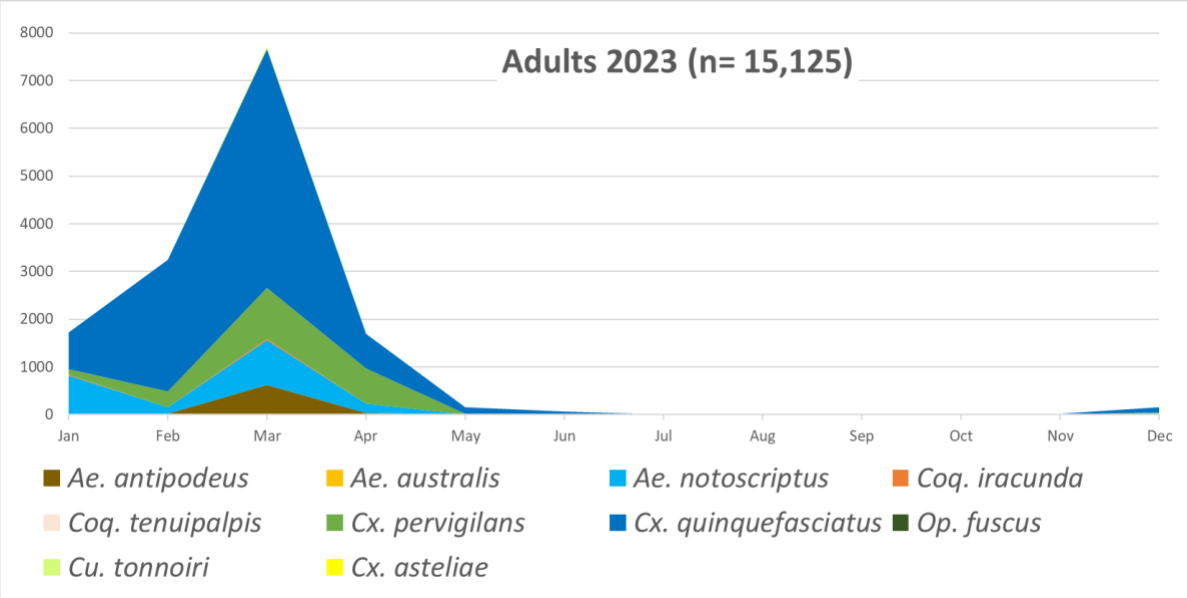


Figure 4. Variation in total mosquito adult numbers throughout 2023.

INCURSIONS AND INTERCEPTIONS

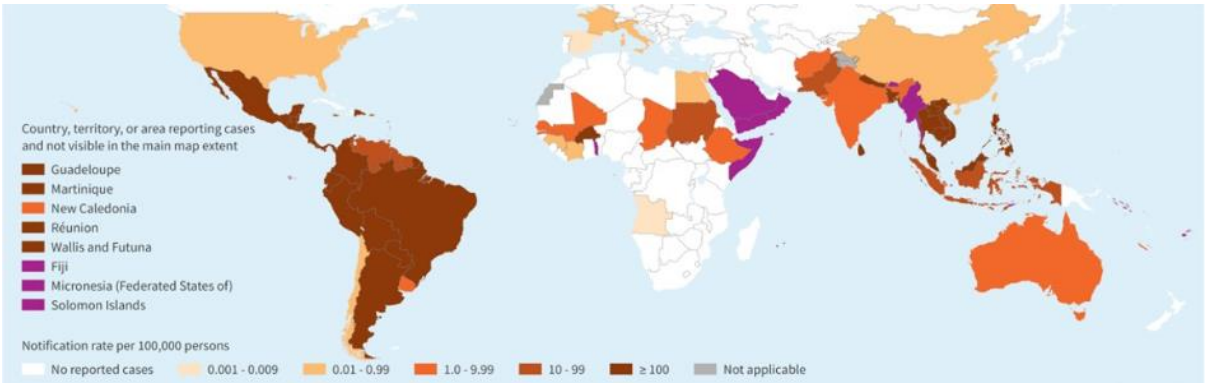
During December, HPO's responded to one suspected interception.

Table 2. Suspected interception during December 2023

Date	Species	Location	Circumstances
27.12.2023	1 Non-mosquito (Sciaridae)	Porirua, Wellington	Dead suspected mosquito found inside imported soft toy.

NEWS ARTICLES FROM AROUND THE WORLD

Dengue - Global Situation (21 December 2023)



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The global incidence of dengue has markedly increased over the past two decades, posing a substantial public health challenge. From 2000 to 2019, the World Health Organization (WHO) documented a ten-fold surge in reported cases worldwide increasing from 500 000 to 5.2 million. The year 2019 marked an unprecedented peak, with reported instances spreading across 129 countries. After a slight decline of cases between the year 2020-2022 due to the COVID-19 pandemic and lower reporting rate, in 2023, an upsurge in dengue cases have been observed globally, characterized by a significant increase in the number, scale, and simultaneous occurrence of multiple outbreaks, spreading into regions previously unaffected by dengue. Read about it here, and here.

This is why mosquitoes love some people more than others

There's always that one unlucky person at a BBQ who goes home covered in mozzie bites while the rest of the party is practically immune. For decades scientists have been trying to work out what exactly makes some people irresistible to mosquitoes over others. Some research said people with Blood Types O and B are more attractive to mozzies than people with Blood Type A. More recently a study has found people who are exceptionally attractive to mosquitoes secrete more carboxylic acids from their skin. Read about it here.

Why the threat of mosquito-borne diseases is on the rise

For many people in the United States, mosquitoes are merely a summertime nuisance. But around the world, mosquitoes and the diseases they carry are a growing public health concern. Ali Rogin speaks with Stephanie Nolen, a global health reporter for The New York Times, to learn more. Click on the picture to watch the video or click here.

BORDER HEALTH NEWSLETTER

Dengue spike fuels concerns of public health threat in previously untouched countries: WHO

Dengue is the most common viral infection transmitted to humans bitten by infected mosquitoes. It is mostly found in urban areas within tropical and sub-tropical climates. The rise in the number of reported cases of dengue in more countries is explained by the fact that infected mosquitoes now thrive in more countries because of global warming associated with rising emissions. “Climate change has an impact in dengue transmission because it increases rainfall, humidity and temperature,” said Dr. Alvarez. “These mosquitoes are very sensitive to temperature.” Although four billion people are at risk from dengue, most of those infected are symptom-free and usually recover within one to two weeks. Read more here.

Mosquito virus warning as families call for greater awareness and vaccine campaigns

Dylan had always thought of himself as a typical young Albury man: training to become a diesel mechanic, hanging with friends, and finding peace through fishing the nearby Murray River. But a camping trip in March at Rutherglen, in northern Victoria, has shaken his world after he was bitten by mosquitoes. He soon began to feel ill, started to vomit uncontrollably and passed out at work. Continue reading here.

The U.S. is unprepared for the growing threat of mosquito- and tick-borne viruses

In the 1970's and '80's, Aedes albopictus mosquitoes came to the U.S. through the used tire trade. These stowaway insects, also known as Asian tiger mosquitoes, can carry viruses like dengue, Zika and chikungunya. They quickly adapted to city life in the southern, eastern and

western U.S. Since then, due to globalization and climate change, insects and the diseases they carry are spreading more widely around the world.
At a two-day workshop this week at the National Academies of Science, Engineering and Medicine in Washington, D.C., global public health experts warned that countries like the U.S. are not ready for this looming threat. Read more here.

Bed bugs can be an unfortunate part of the international travel experience – so how do you stop the tiny, unwelcome insects from hitching a ride home with you?

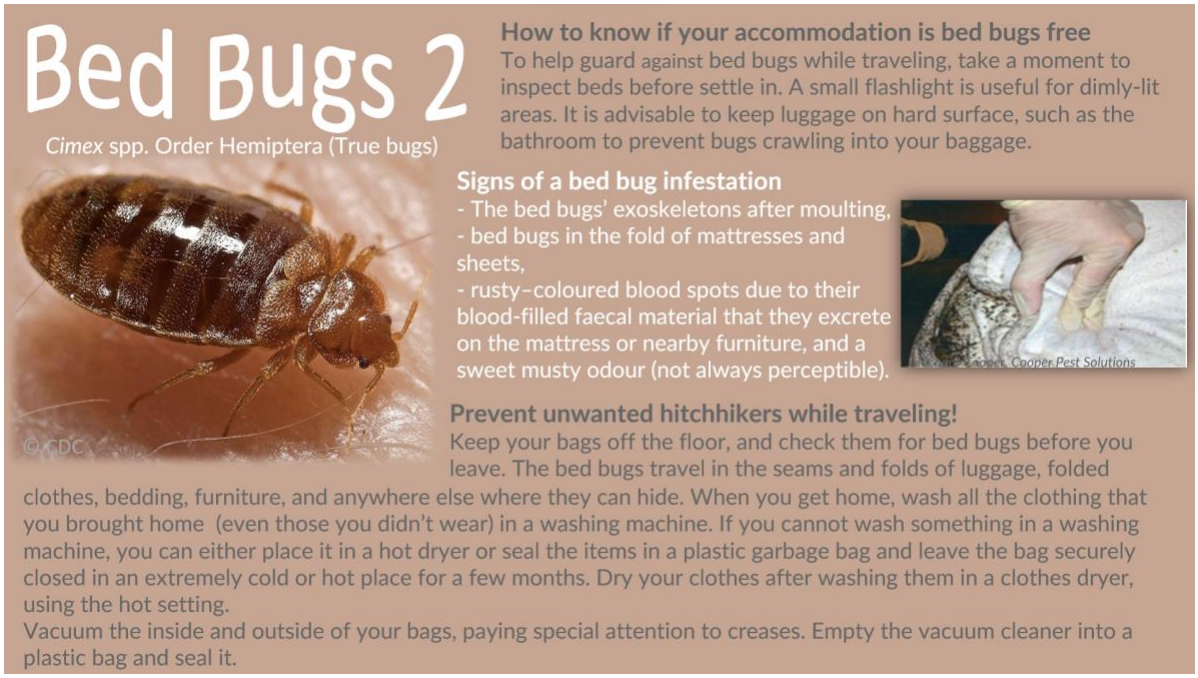
Bed bugs have been co-existing with us for a long, long time but have been the focus of several headlines in recent months. First, there were the skin-crawling revelations of a bed bug infestation in Paris. Then came the stories closer to home, with **cases of bed bugs** reportedly linked to a cruise ship that docked in Auckland between August and October. The reality is bed bugs are a potential danger wherever you're travelling to. Here's how to identify if your hotel room or cruise cabin is infested with bed bugs – and how to stop them infiltrating your luggage before the journey home. Read more here.

Bed bug panic in Paris – Internet psychosis or actual crisis?

Until last month, bed bugs were likely the least probable thought to pop into the mind of any tourist fresh off the gates of Charles de Gaulle airport and on their way to visit la Ville Lumière. Now that the Bed bugs panic has spread like wildfire on internet and social media, causing as much hilarity as fear, these insects are probably a tourists' primary concern, topping classics like losing your passport or getting lost in an unfamiliar neighbourhood. Unlike what the mountain of Paris bed bug-related content on the Internet might have led us to assume, bed bugs aren't exclusive to Paris or the protagonist of a recent outbreak, as they have been having what experts call 'a resurgence' during the past two

decades on a global level. The effects of climate change might also be altering the way insects behave, with unusual weather patterns significantly influencing the phenology of adult insects and insect pests seeming to have larger populations under climate change. Read more here.

KNOW YOUR BED BUG – PART TWO



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