New Zealand BioSecure

BORDER HEALTH NEWSLETTER

October 2024

NAU MAI, HAERE MAI - WELCOME!

Kia ora koutou katoa,

It's been a busy month here in the lab with several interceptions and the number of mosquitoes collected across the country starting to increase as the weather starts to warm. Take a look below to see the numbers for this month and check out the interception table to see the hard work that PHS staff have done throughout the month.

Once again, we would like to remind everyone to enter their samples promptly, on the day that they were taken. This is to ensure that the lab know what samples to expect and allows us to follow up samples that may be missing.

In the news this month, read about Egypt being malaria-free for the first time since Tutankhamun, get an update on the 'triple E' virus in North America, learn about the dengue situation in France, and discover the new non-invasive method to detect malaria.

This month's Know Your Mosquito is *Culiseta annulata*, a species that was recently collected from an air can as part of Northern region – Auckland's ongoing response at Auckland International Airport.

Happy reading!

SURVEILLANCE

During October a total of 1553 routine and enhanced surveillance and various survey samples were collected by staff from 12 PHUs (Figure 1). The samples included 74 positive larval samples and 35 positive adult samples, leading to a total of 2133 larvae and 24 adults identified over the past month (Table 1).

Aedes notoscriptus is the dominant larval species this month, which is the same as last month and this month last year (Table 1).

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

Compared to this same month last year, the total number of larvae and adults have shown a decrease (54% and 4% respectively) (Table 1).

Compared to the previous month, the total numbers of larvae and adults have shown an increase (12% and 41% respectively).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during October 2023 & 2024

Species (common name)	Adults		Larvae	
	Oct 24	Oct 23	Oct 24	Oct 23
Aedes antipodeus (winter mosquito)	1	7	-	-
Ae notoscriptus (striped mosquito)	5	3	1469	2434
Culex pervigilans (vigilant mosquito)	7	5	610	1331
Cx quinquefasciatus (southern house mosquito)	7	9	27	875
Culex sp.	4	1	-	-
Opifex fuscus (rock pool mosquito)	-	-	27	15
Total	**24**	**25**	**2133**	**4655**

The highest number of larvae sampled this month was obtained in Northland (1184 larvae) followed by Canterbury (559 larvae) (Figure 1).

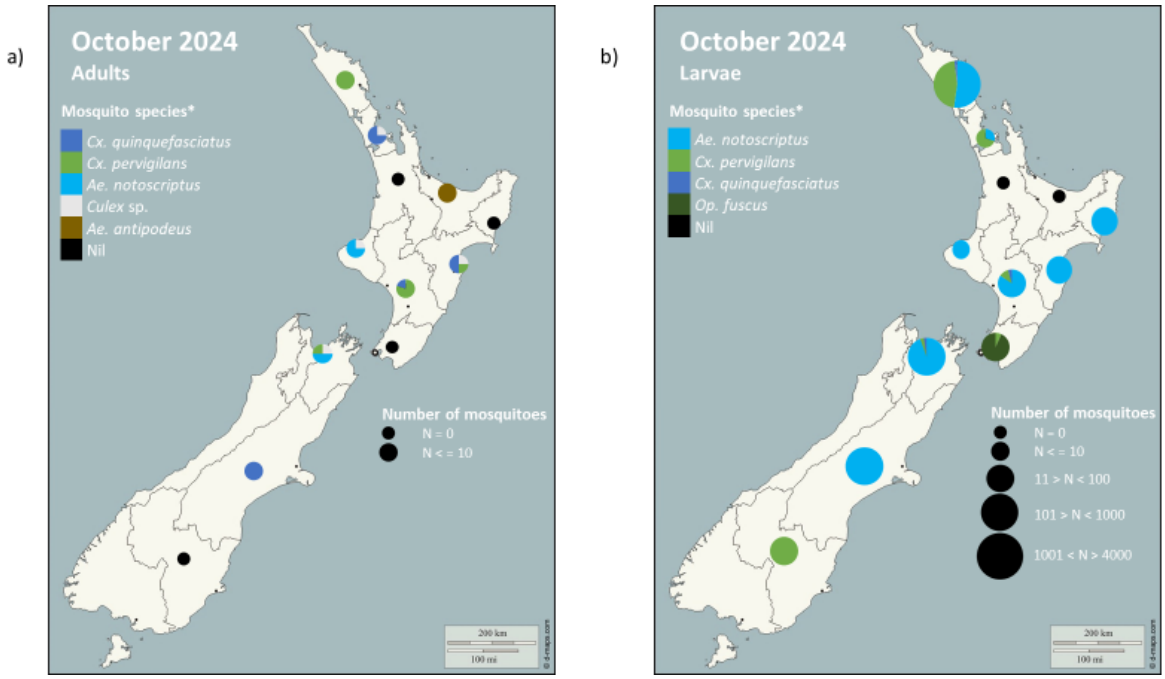


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during October 2024 surveillance period. Please note that the markers represent the PHUs and not the specific sites where the samples have been taken.
* The mosquito species are listed in order from the most abundant to the least abundant.

Aedes notoscriptus larval numbers have shown an increase in one PHU, a decrease in nine and remained the same in two compared to the 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 a decrease in six PHUs, an increase in one PHU and stayed the same in five compared to the same month last year (Figure 2).

As expected, *Culex quinquefasciatus* larvae have not been recorded this year in Southland (Figures 1 and 2).

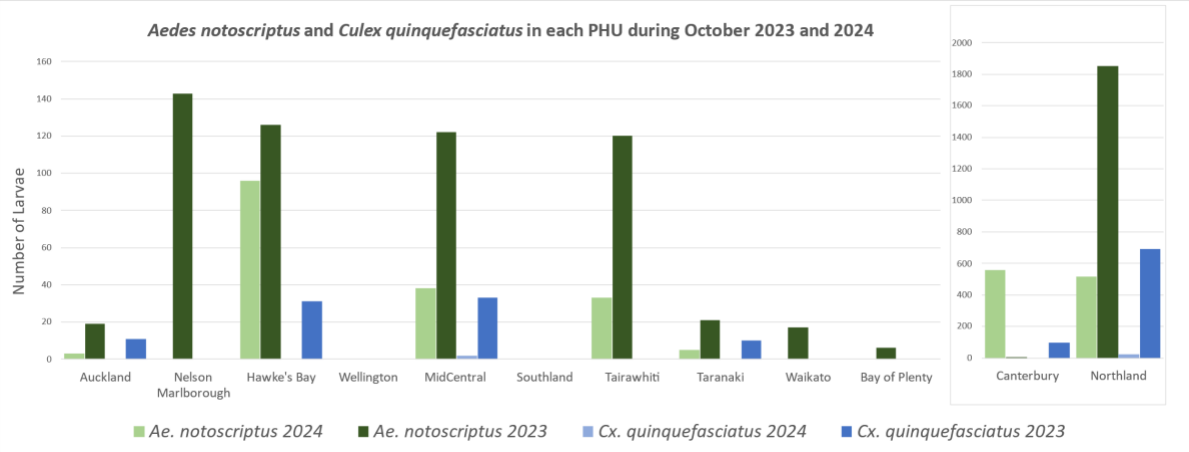


Figure 2. Comparison between introduced mosquito species sampled in each PHU during October 2023 and 2024. *Please note the different scale for the number of larvae present in Canterbury & Northland in comparison to the other PHUs.

INCURSIONS AND INTERCEPTIONS

During October, HPOs responded to nine suspected interceptions (Table 2) and included one species on the unwanted list which is shown in red below.
Northern Region – Auckland have also continued to respond to mosquitoes collected in air cans at Auckland International Airport, with a total of 9 samples; 7 *Culex pipiens* sp, 3 *Culex quinquefasciatus*, 2 *Culex* sp (too damaged for ID), 1 *Culiseta annulata* and 1 non mosquito.
Nelson Marlborough HPOs continue their response following the *Culex pipiens* f. *molestus* found in a routine sample at Nelson Port in May. No further exotic specimens were collected during October.

Table 2. Suspected interception during October 2024

Date	Species	Location	Circumstances
02.10.2024	2 non mosquitoes (crane fly and chironomid)	Port Otago TF "Dunedin Depot" - 13 Strathallan St, South Dunedin	One live insect inside found in an empty container and another was found on the outside of a different container in the same consignment. Consignment came from Sydney, Australia and containers were not treated prior to devanning.
04.10.2024	1 female and 1 male *Culex quinquefasciatus*	Hellmann Worldwide Logistics - 2 Landing Drive, Mangere, Auckland	Found dead mosquitoes in pellet of mangoes from Brisbane, Australia. Consignment was irradiated and shrink wrapped prior to arrival

Date	Species	Location	Circumstances
			in Auckland, therefore the specimens were likely form Australia.
09.10.2024	1female *Aedes albopictus*	Eco-Tech Solutions 2.D/60 Leon Leicester Avenue, Mt Wellington	Found dead between the layers of shrink-wrapping of pallet of dishwasher tablets from Italy.
15.10.2024	1 non mosquito (likely a crane fly)	Ports of Auckland	Found alive in an imported used car from Japan approximately 10 minutes into the inspection.
16.10.2024	7 female and 12 male *Culex quinquefasciatus* 1 male *Culex* sp. 2 non mosquito	GVI Logistics – 3/23 Timberley Rd, Mangere	Found in a box of mangos from that had been loaded in Brisbane onto a China Airlines flight departed from Taipei, China. The mangos were irradiated and shrink wrapped before departure with the specimens found inside the packaging.
21.10.2024	1 non mosquito (crane fly)	MG Marketing, 801 - 803 Great South Rd, Penrose, Auckland	MPI have captured a suspected mosquito in the inspection room during inspecting Philippines imported bananas (not associated with the consignment itself).
23.10.2024	2 female *Culex quinquefasciatus*	Hellmann Worldwide Logistics - 2 Landing Drive, Mangere, Auckland	Found dead in a box of mangoes from Australia. Mangoes were irradiated and shrink-wrapped. No other insects found.
23.10.2024	1 non mosquito (gnat)	Nelson Port QuayPack (MPI Inspection)	Found dead on top of a bag of organic soya bean meal from India.
28.10.2024	1 female and 2 male *Culex quinquefasciatus*	Simple Freight Service, 65 Tidal Road, Mangere, Auckland	MPI caught 3 mosquitoes alive in an air can carrying turmeric and okara. The consignment was sprayed on opening and was wrapped in shrink – wrap.

NEWS ARTICLES FROM AROUND THE WORLD

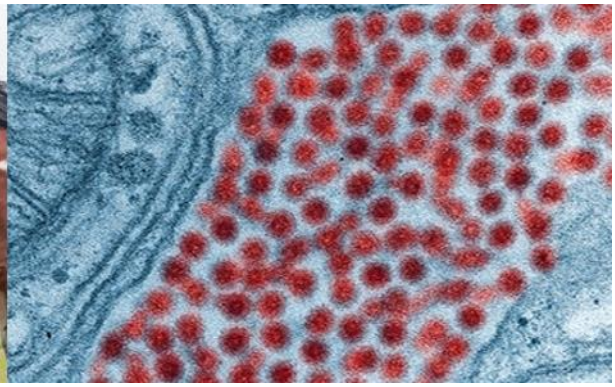
Egypt's commitment pays off as W.H.O certifies the nation malaria-free.

Malaria has been prevalent in Egypt for millennia's, with genetic evidence that Tutankhamun and more than 220 mummies were affected by the disease (Mitchell 2024). Early efforts in reducing the spread of malaria began in the early 1920's, and a malaria control station focused on diagnosis, treatment and surveillance was initiated in the 1930's.

After almost a century of battling malaria, Egypt has come out victorious. Achieving at least three consecutive years of zero indigenous cases, officially eliminating malaria as a public health threat, certified by the World Health Organisation. Read the full WHO article here and

about potential future challenges here. Learn more about ancient Egypt's parasites in this article.

Eastern Equine Encephalitis.

Another month goes by, and an additional three cases of Eastern of Equine Encephalitis (EEE) have been reported in the United States of America. Cases were reported in Wisconsin, Massachusetts, New Jersey, New Hampshire, and Vermont, to New York, Rhode Island, and North Carolina.

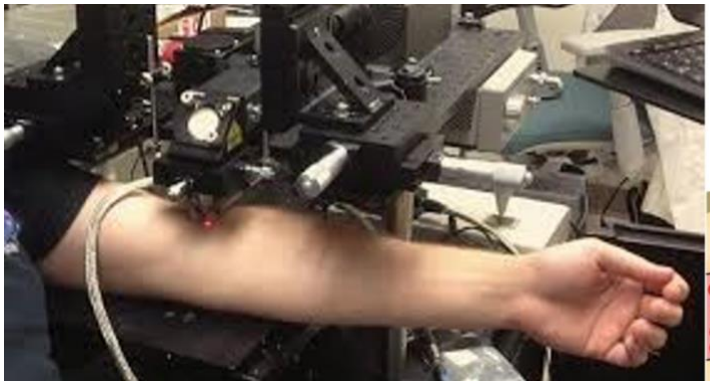
On October 21, a 13-year-old pony mare in Haldimand County, Ontario, Canada, tested positive for EEE. The pony, who was unvaccinated, developed clinical signs on October 9, including fever, recumbency, and seizures. She was euthanized. This has been the 24th confirmed case of equine EEE in Ontario this year. Read more on the spread of EEE in the USA here. Read more about the Ontario case here.

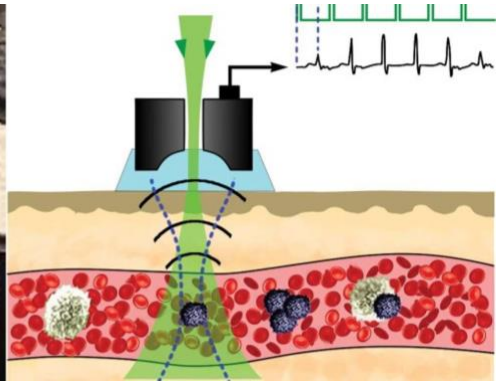
France, mosquitoes still biting well into autumn.

France is already in the middle of autumn, but mosquitoes seem to still be a nuisance in most of the country due to the favourable weather conditions. Reinforced surveillance, previously only in place during summer, had to be extended until end of November. Warmer temperatures and abundant rains allow mosquitoes to easily find breeding habitats and some adults were still present in the no-frost mild winter month of December last year. The elongated activity period leads to an increased risk of mosquito-borne disease transmission, such as dengue. Even though dengue is present in some French territories like Martinique and Guadeloupe, 80 non-travel related cases of dengue have been reported in mainland France since May 2024. According to ANSES, the French Agency for Food, Environmental and Occupational Health & Safety, the risk of an epidemy of dengue in France is at its highest (6-7 on a scale of 9). Considering the first autochthonous dengue cases detected in October

2023 near Paris, the agency was particularly worried during the 2024 Olympic and Paralympic Games but has not dropped their vigilance yet. Read more here or here (please note these are in French). For a recap on the 2023 dengue cases, read this article.

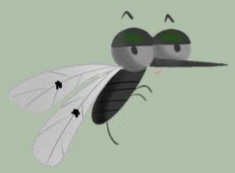
A New Era in Malaria Testing with the Non-invasive Cytophone



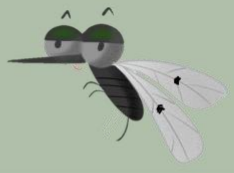


A recent study from Yale School of Public Health introduces a groundbreaking non-invasive test for malaria using a device called the Cytophone, which detects malaria-infected cells without the need for blood samples. Led by Dr. Sunil Parikh and his team, the research highlights the Cytophone's ability to identify infections with 90% sensitivity and 69% specificity in symptomatic patients. This innovative technology relies on targeted lasers and ultrasound to detect hemozoin, a by-product of malaria parasites in red blood cells. The Cytophone not only provides rapid results but also shows promise in low- and middle-income countries where malaria remains a significant health threat. The study emphasizes the importance of collaborative efforts, especially from Cameroonian partners, in advancing malaria diagnostics and supporting global health initiatives. Read more about this new method here.

KNOW YOUR MOSQUITO



Culiseta annulata
(banded house mosquito)



- This species is widely distributed throughout Europe, but it is more common in the north than in the south. It can also be found in north Africa, Asia Minor and southwest Asia.
- *Cs. annulata* is a cold adapted species able to overwinter as adults, emerging in spring when the temperature is warm enough.
- It breeds in natural and artificial waters, sunlit or shaded areas, and fresh or brackish water with a preference for water with a high nitrogen content.
- Feed on a wide variety of vertebrate hosts including humans. Occasionally they may take their blood meal from birds. They are a common nuisance in northern Europe.
- Adults feed both indoors and outdoors.
- Potential vector of Tahyna virus, Plasmodia of birds, Equine arboviruses, Myxomatosis virus, West Nile Virus

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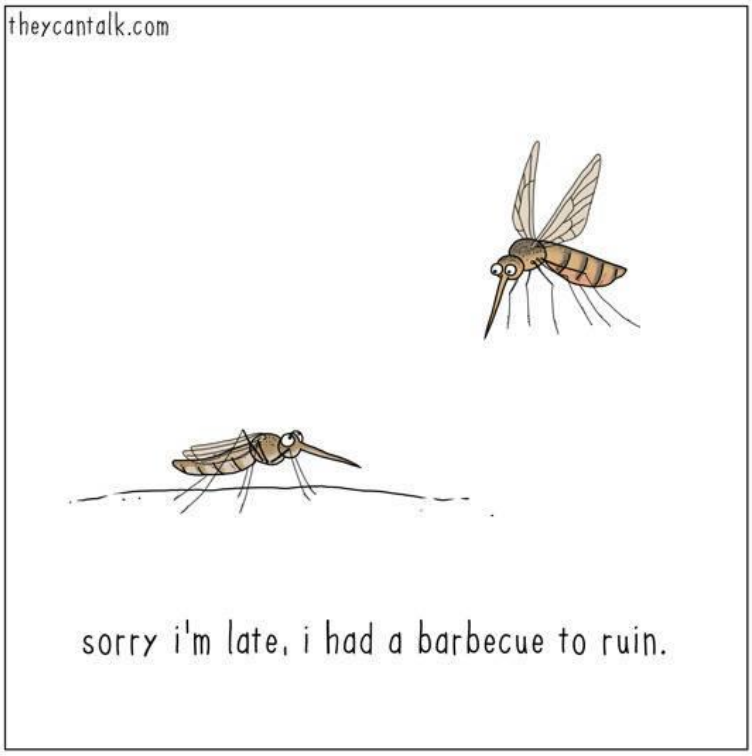
A BITE OF HUMOUR



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