New Zealand BioSecure

BORDER HEALTH NEWSLETTER

JULY 2025

NAU MAI, HAERE MAI - WELCOME!

Kia ora koutou katoa,

Although the weather has been quite miserable around here and it feels like winter is going to stay forever, we can see the daffodils are starting to flower, so spring might not be that far away. So, if you haven't sent your Light Trap and Regulators for a deep clean and calibration, you still have a little bit of time left to do so. Meanwhile, we hope that everyone is keeping warm and safe throughout the country.

It was fantastic to meet everyone on the Border Heath and Ship Sanitation Certification Course that was held in Wellington! We hope you all enjoyed it as much as we did and learnt plenty!

In the news this month celebrate with the South American country of Suriname as they are declared malaria free by WHO! Read about the exploration into biopesticides to overcome insecticide resistance to synthetic insecticides, and how gene editing to increase the prevalence of a naturally occurring variation that prevents the malaria parasites travelling to the salivary gland of the mosquito. Finally, learn about the dengue outbreak that is currently occurring in Samoa and some of the steps that are being taken to help combat it.

In the bite of information section this month, we have a reminder of the requirements for entering the weather information in the online database, then get to know a bit about the lab team in the new segment "Know your entomologist".

Happy reading!

SURVEILLANCE

During July 1010 samples were collected by staff from 12 NPHUs (Figure 1). The samples included 48 positive larval samples and 13 positive adult samples, leading to a total of 1142 larvae and 57 adults identified over the past month (Table 1).

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

In total, five mosquito species have been collected this month (Table 1), same as last month.

Compared to this same month last year, the total number of larvae and adults have increased (9% and 21% respectively) (Table 1).

Compared to the previous month, mosquito larval numbers have shown an increase (8%) and adult numbers have shown a decrease (66%).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during July 2024 & 2025

Species (common name)	Adults		Larvae	
	July 25	July 24	July 25	July 24
Aedes antipodeus (winter mosquito)	2	-	-	-
Ae. australis (saltwater mosquito)	-	-	22	-
Ae. notoscriptus (striped mosquito)	-	13	918	965
Culex pervigilans (vigilant mosquito)	8	1	122	58
Cx. quinquefasciatus (southern house mosquito)	43	32	80	16
Culex sp. (damaged)	4	1	-	-
Opifex fuscus (rock pool mosquito)	-	-	-	10
Total	**57**	**47**	**1142**	**1049**

The highest number of larvae sampled this month was obtained in Northland (1072 larvae) followed by Southland (22 larvae) (Figure 1).

Aedes notoscriptus larval numbers have shown an increase in four NPHUs and a decrease in four NPHUs and remained the same in four NPHUs compared to the same month last year (Figure 2).

Aedes notoscriptus was not recorded in Southland in July of this year or last year (Figure 2).

Culex quinquefasciatus larval numbers have shown an increase in one NPHUs, a decrease in three NPHUs, and remained the same in eight NPHUs compared to the same month last year (Figure 2).

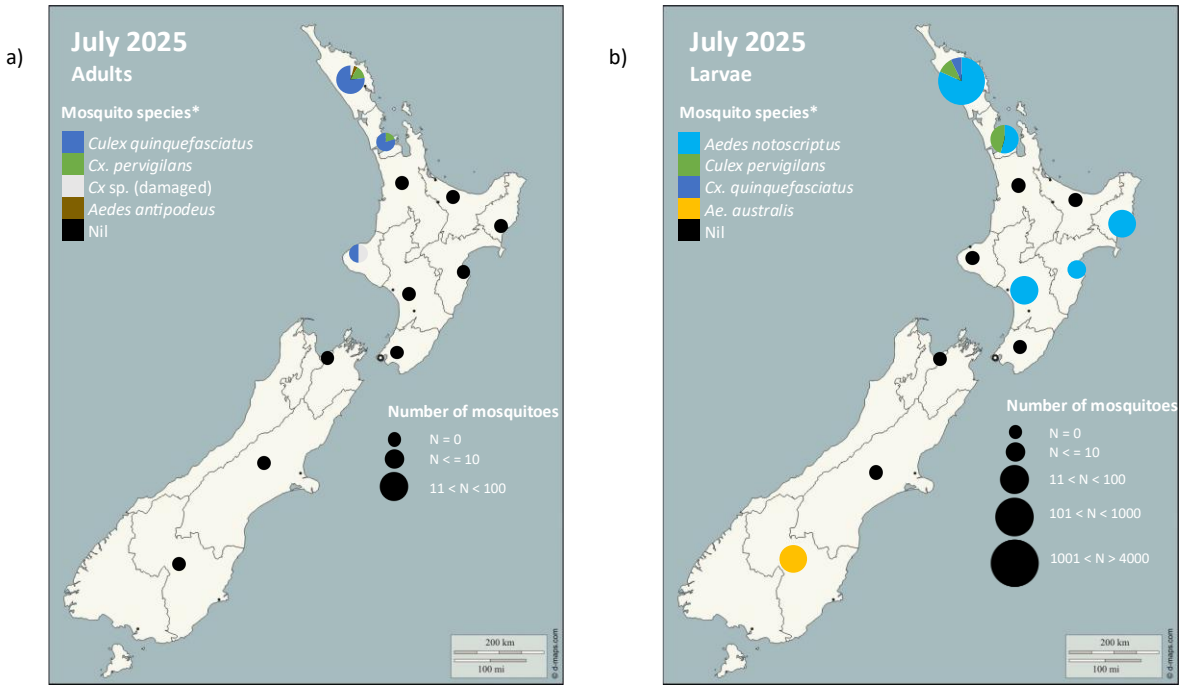


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during July 2025 surveillance period.
Please note that the markers represent the NPHUs and not the specific sites where the samples have been taken.
* The mosquito species are listed in order from the most abundant to the least abundant.
Culex sp. (damaged) refer to mosquitoes that are damaged and cannot be identified to the species level.

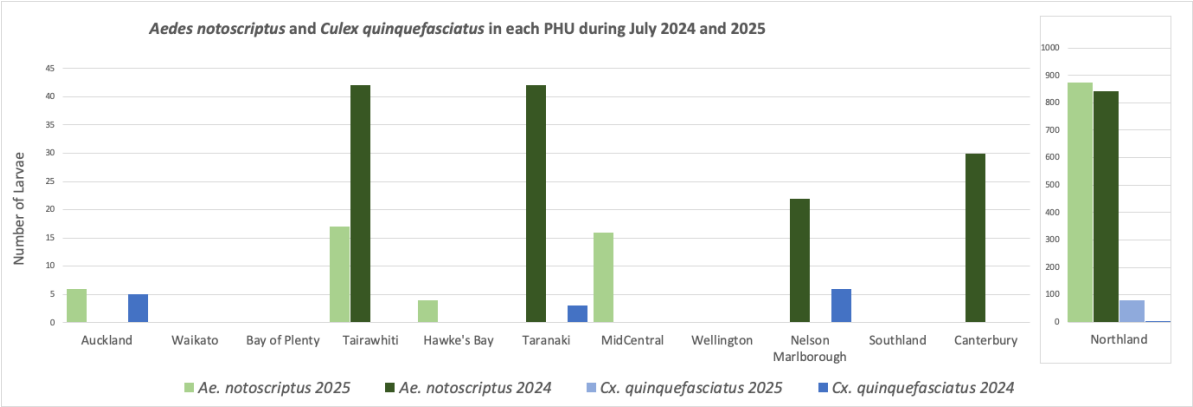


Figure 2. Comparison between introduced mosquito species sampled in each NPHU during July 2024 and 2025.
*Please note the different scale for the number of larvae present in Northland in comparison to the other NPHUs.

INCURSIONS AND INTERCEPTIONS

During July, HPOs responded to three suspected interceptions (Table 2), including various non-mosquitoes and a mosquito specimen that was lost before handover could occur.

Table 2. Suspected interception during July 2025

Date	Species	Location	Circumstances
16.07.2025	2 chironomids and a small fly	The Freight Station, Transitional Facility, Auckland	Found alive with various other biosecurity risks (beetles and small insects) in a shipment of lentils and chickpeas. The products were shrink-wrapped around 4 sides with the underside open. Container arrived and was unloaded on 11/7/25 and was inspected on the 16/7/25.

22.07.2025	1 unidentified mosquito*, other various non-mosquitoes (including beetles)	Fulton Hogan, Transitional Facility, Auckland	Found dead inside a container of steel building structures. *Sample was lost at the facility before handover could happen. Not identifiable via preliminary pictures.
25.07.2025	2 non-mosquitoes	Port of Tauranga, Berth 8	Found on a ship (Kultus Cove) at Berth 8 at Port of Tauranga. Berth is approx. 280m to a CO_2 baited light trap, tyre and GAT trap, 550m to a BG trap. Ship had a pest management plan and there were no issues on board – no standing water, or items which could hold water etc.

CULEX PIPIENS AND MIXED FEATURES UPDATES

During July, no *Culex pipiens* sp. or *Culex* sp. showing mixed features were detected.

NEWS ARTICLES FROM AROUND THE WORLD

Targeting mosquitoes with eco-friendly biopesticides

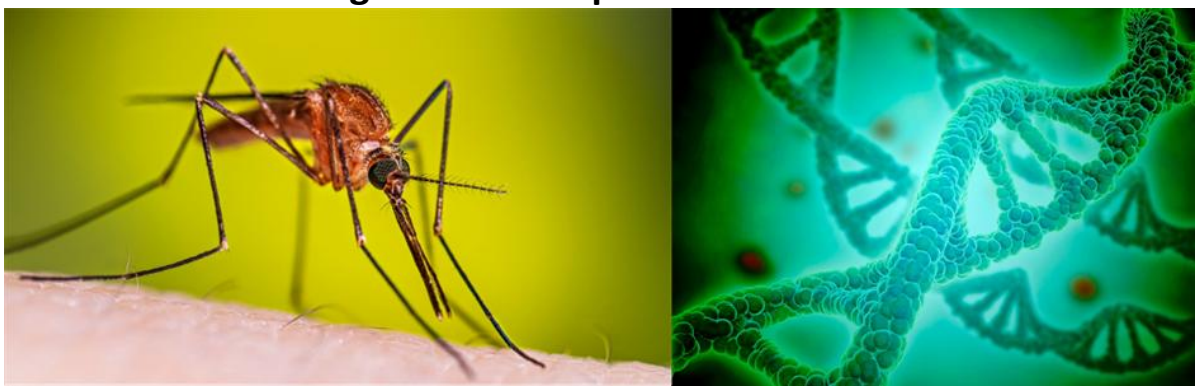
As mosquitoes become increasingly resistant to synthetic insecticides, there is a need for urgent exploration of safer alternatives. In a recent study published in Applied and Environmental Microbiology, researchers identified bacterial isolates from the island of Crete that are lethal to *Culex pipiens molestus*. Some bacterial extracts killed 100% of mosquito larvae within 24 hours by releasing insecticidal metabolites, not by infecting the insects—highlighting a promising path toward biopesticides that are environmentally friendly and targeted. Read the full article here or discover the scientific article here.

Suriname achieves malaria-free status amid mosquito challenges in the Amazon

Suriname has become the first malaria-free country in the Amazon region, a milestone hailed by health experts as a powerful example for neighbouring nations battling mosquito-borne malaria amid illegal mining and high migration. Certified by the World Health Organization after nearly 70 years of effort, Suriname's success highlights the possibility of overcoming difficult conditions—dense rainforests, remote indigenous populations, and mobile mining camps that serve as breeding grounds for *Anopheles* mosquitoes. The country tackled these challenges through strategies like community outreach, training locals to diagnose and treat malaria, and switching to more effective artemisinin-based medicines. Experts emphasize the need for continued surveillance, political commitment, and region-wide collaboration to

sustain progress and inspire similar achievements across the Americas. Read the full article here or discover more here.

Genetic breakthrough turns mosquitoes into malaria blockers



Scientists from University of California San Diego, Johns Hopkins University, UC Berkeley, and the University of São Paulo have engineered a powerful CRIPST-based gene-editing system that changes a single molecule within mosquitoes, a minuscule but effective change that stops the malaria-parasite transmission process. By altering just one amino acid in mosquitoes, the team could effectively block two different types of malarial parasites from reaching the salivary glands of *Anopheles stephensi*, thereby preventing infection. As this small change is already naturally occurring, it does not affect the insects' growth or reproduction and is therefore more likely to be transmitted to the next generation, offering a promising and sustainable alternative to chemical control. Read full article here or discover the scientific article here.

Samoa battles severe dengue outbreak with regional and international support

Samoa is battling a severe dengue fever outbreak, with over 5,600 cases and several deaths reported since April 2025. The mosquito-borne virus, spread by *Aedes* mosquitoes, is also surging across other Pacific nations like Fiji, Tonga, and Nauru, driven by factors such as climate change, increased urbanization, poor waste management, and regional travel. Samoa has launched nationwide fumigation and community clean-up efforts, while regional experts stress the need for tailored, long-term solutions like targeted insecticide use. In support, New Zealand has pledged medical aid, including sending clinical specialists to Apia and providing $300,000 worth of medical supplies, affirming its close ties with Samoa and

readiness to offer further assistance if needed. Discover more here or here. Read Winston Peter's (Minister of Foreign Affairs) declaration here.

KNOW YOUR ENTOMOLOGIST

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A BITE OF INFORMATION

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

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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.

Communicable disease threats report - European Centre for Disease Prevention and Control