BORDER HEALTH NEWSLETTER

FEBRUARY 2026

NAU MAI, HAERE MAI - WELCOME!

Kia ora koutou katoa,

Summer has rolled in, and with it comes that familiar soundtrack of warm evenings: the unmistakable whine of mosquitoes auditioning for a role in your personal space. Health Protection Officers around New Zealand are busier than ever and so are we! New in this month issue is a graph to keep track of which introduced species are making the most buzz (pun fully intended).

In the news this month, read about non-native birds playing a crucial role in maintaining and spreading malaria in Hawaii and get an update on the progress of the dengue response in the Cook Islands. Then, discover malaria's evolutionary pressure that shapes human populations and learn about the reason why plant-based mosquito repellents have worked for millennia.

If you want to stay safe and enjoy your summer here or overseas, please make sure to follow our advice on how to protect yourself from mosquito bites.

Happy reading!

SURVEILLANCE

During February a total of 1224 routine and enhanced surveillance, and various survey samples were collected by staff from 12 PHUs (Figure 1). The samples included 237 positive larval samples and 145 positive adult samples, leading to a total of 11754 larvae and 973 adults identified over the past month (Table 1).

Please note that the identification and reporting processes for adult male and female mosquitoes, as well as first and second-instar larvae of *Culex* species found in New Zealand, were adjusted since the start of 2026. To identify males of the *Culex pipiens* complex to species level, the genitalia must be processed — a technique that is highly time-consuming. For this reason, the NZB laboratory identified only a sub-sample of male mosquitoes from each collection to species level. The remaining males in each sample were identified using the palps and classified as either *Culex pipiens* complex sp. or any other endemic *Culex* species (*Culex pervigilans, Culex asteliae*, …). Females were placed in the *Culex pipiens* complex when one or more key identification features were missing (for example a wing, abdominal scales, or the abdomen itself). *Culex* larvae in the first or second instar are not always identifiable to species level; when this happens, these are reported as *Culex* sp. The term *Culex* sp. is also used when specimens are too damaged to be identified beyond the genus level.

Since January 2026, some yearly and monthly comparisons are made using only third and fourth-instar larvae.

Aedes notoscriptus was the dominant larval species this month (5 388 specimens) and *Culex quinquefasciatus* in February last year (10 228 specimens). For adults, *Culex quinquefasciatus* was also the dominant species this month and February 2025 (535 and 656 specimens respectively) (Table 1).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during February 2025 & 2026

Species (common name)	Adults		Larvae	
	Feb 26	Feb 25	Feb 26	Feb 25
Aedes antipodeus (winter mosquito)	20	4	-	-
Ae. australis (saltwater mosquito)	1	2	-	-
Ae. notoscriptus (striped mosquito)	16	47	5 388	4 822
Coquillettidia iracunda (no common name)	2	-	-	-
Culex sp.	67	30	3 789	-
Cx. asteliae (no common name)	1	-	36	-
Cx. pervigilans (vigilant mosquito)	67	21	1 451	1 728
Cx pipiens sp. (common house mosquito)	70	-	62	1
Cx pipiens complex sp.	110	-	66	-
Culex sp. showing mixed features	84	4	60	2
Cx quinquefasciatus (southern house mosquito)	535	656	902	10 228
Opifex fuscus (rock pool mosquito)	-	-	-	248
Total	**973**	**764**	**11 754**	**17 029**

In total, eight mosquito species* have been collected this month (Table 1), which is one less than last month.
**Culex* sp., *Culex* sp. showing mixed features and *Culex pipiens* complex sp. are not included in this count as they are not considered species *per se*.

Compared to the previous month, the total numbers of larvae have shown a decrease (28%) while adults have shown an increase (19%).

Compared to this same month last year, the total numbers of larvae have shown a decrease (31%) and the total numbers of adults have shown an increase (27%) (Table 1).

The highest number of larvae sampled this month (all instars included) was obtained in Northland (3407 larvae) followed by Bay of Plenty (1846 larvae). Considering only third and fourth- instars, the highest number of larvae sampled this month was obtained by Northland followed by Hawke's Bay (Figure 1).

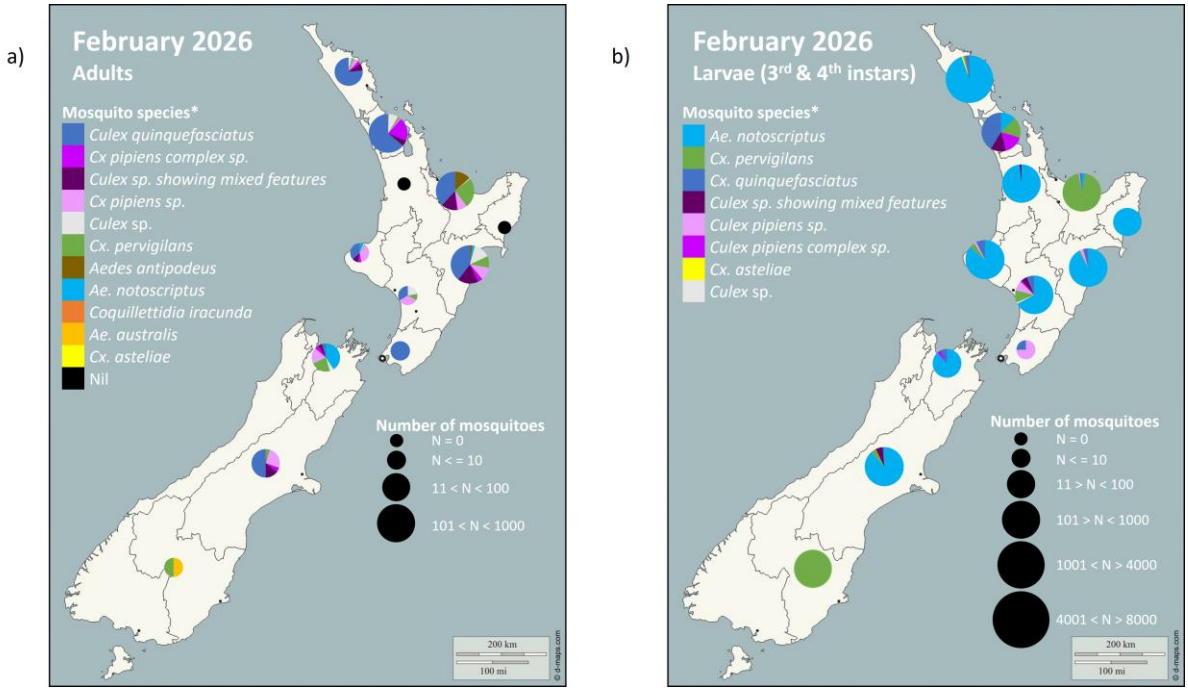

Figure 1. Total mosquito adults (a) and 3rd and 4th instar larvae (b) sampled in New Zealand during February 2026 surveillance period.
Please note that the markers represent the PHUs and not the specific sites where the samples have been taken.
* The mosquito species are listed in order from the most abundant to the least abundant. *Culex* sp. refers to adult or larvae that are damaged or cannot be identified to the species level.

As expected, *Aedes notoscriptus* and the members of the *Culex pipiens* complex have not been recorded this year in Southland (Figure 1).

As the lab wants to keep an eye on introduced species over the years – where they are, if they appear in new locations and in what numbers –, Figure 2 is a new graph for our Newsletter going forward. It displays the 2025-2026 evolution of adult and larval specimens of introduced species collected including *Aedes notoscriptus*, *Aedes australis* and some members of the *Culex pipiens* complex (Figure 2).

The largest increase for *Culex quinquefasciatus* adults was seen in Auckland with an increase of 125 specimens compared to last year. The largest decrease was seen in Taranaki with a decrease of 159 adult specimens. For third and fourth-instars *Culex quinquefasciatus* larvae, a decrease was noted across all locations except Bay of Plenty where the numbers remained the same. The largest decrease occurred in Northland with 648 larval specimens less than February 2025. Though present, no *Culex quinquefasciatus* adults or third and fourth-instars larvae were collected in Tairawhiti in February this year or last year.

An increase of *Culex pipiens* sp., *Culex pipiens* complex sp. and *Culex* sp. showing mixed features adults and larvae has occurred in all locations they have been detected, with the exception of MidCentral (1 less *Culex* sp. showing mixed features adult collected).

The largest increase for *Aedes notoscriptus* adults was seen in Taranaki (2 more specimens compared to last year). The largest decrease was seen in Hawke's Bay with a decrease of 26 specimens. For *Aedes notoscriptus* larvae the largest increase was Northland (847), and largest decrease was Taranaki (733). Though present, no *Aedes notoscriptus* adults were

collected in Tairawhiti in February this year or last year. In February 2025, three *Aedes notoscriptus* larvae were collected in Southland, however none were collected this year. *Aedes australis* adults were collected in Southland in February last year however no specimens of *Aedes australis* have been collected there this year.

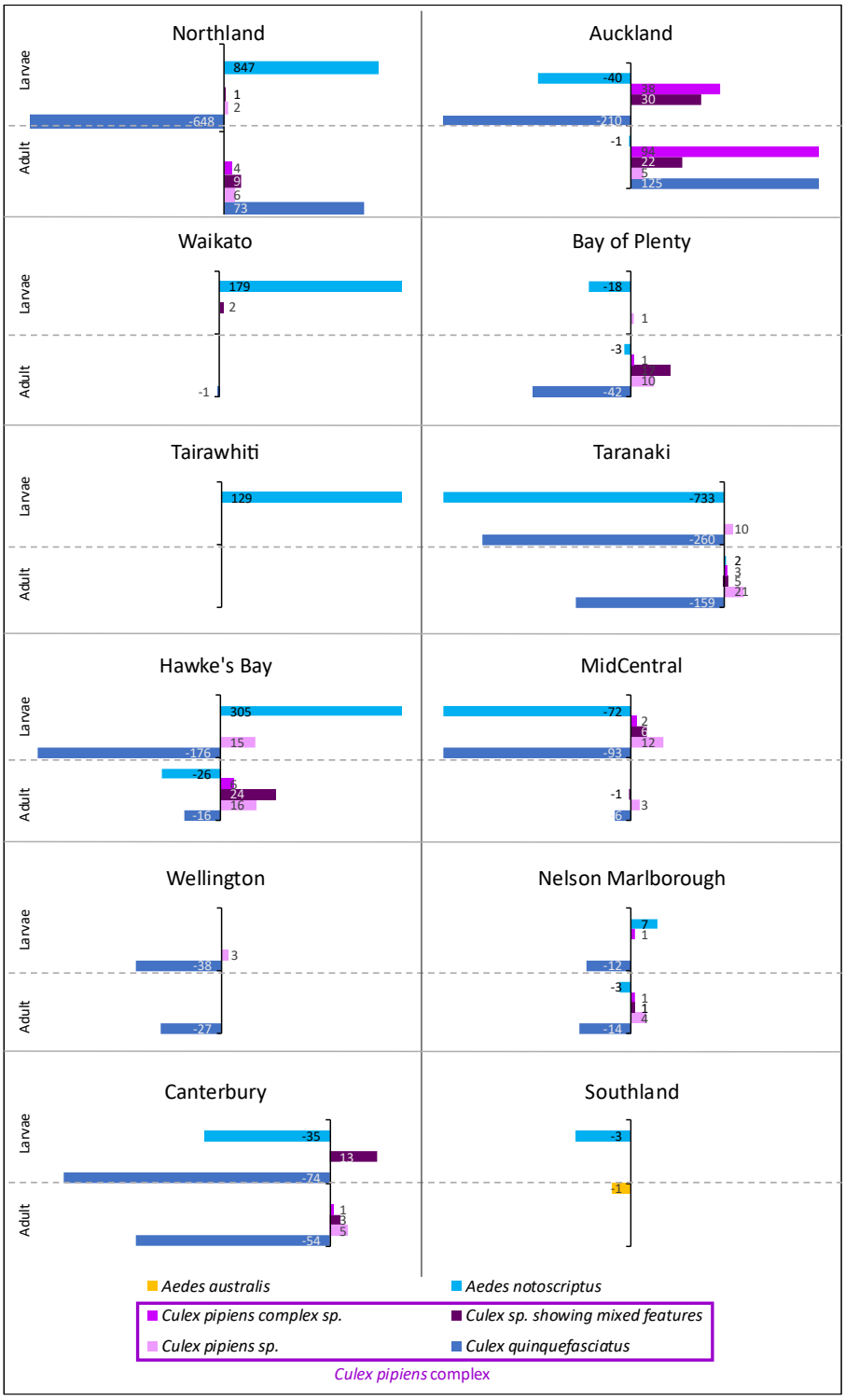

Figure 2. Comparison between the number of introduced mosquito species sampled in each PHU during February 2025 and 2026.

*Please note the different scale is different for each PHU. Species in the purple box are all members of the *Culex pipiens* complex. Larval ID is based on third and fourth instar only for species in the *Culex pipiens* complex while *Aedes notoscriptus* and *Aedes australis* are all larval stages.

INCURSIONS AND INTERCEPTIONS

During February, HPOs responded to five suspected interceptions (Table 2), including three locally occurring mosquito species (in black), one exotic mosquito species (in blue) and one non-mosquito.

Table 2. Suspected interceptions during February 2026

Date	Species	Location	Circumstances
05.02.2026	1x Female *Culex quinquefasciatus*	Auckland International Airport (AIAL)	Found alive by an MPI officer at AIAL MPI Risk assessment area.
12.02.2026	1x Female *Culex perexiguus*	Tauranga Port	Found dead on windowsill in officer's mess during ship sanitation inspection.
13.02.2026	1x Tipulidae indet. (Cranefly)	Seaview Marina, Lower Hutt	Found alive flying out of a container of chair frames from Italy during inspection.
20.02.2026	1x Female *Culex pipiens* sp. x *quinquefasciatus*	AIAL	Caught alive by an MPI officer in the MPI Lab at AIAL. The mosquito had no direct link with any passengers, luggage, or flights.
20.02.2026	1x Female *Culex pipiens* sp.	The Warehouse Distribution Centre (Transitional Facility)	Found alive in a container of clothing from China following the container being completely devanned.

NEWS ARTICLES FROM AROUND THE WORLD

Non-native birds found to sustain spread of avian malaria in Hawaii

New research reveals that both native and introduced bird species are contributing to the ongoing spread of avian malaria in Hawaii, a disease that has already driven more than a dozen native bird species to extinction. Scientists found that even birds carrying very low parasite levels can effectively transmit the disease to mosquitoes, helping explain why malaria is present across nearly all surveyed sites — even in areas without native birds. The study highlights the role of non-native species such as the House Finch in sustaining transmission and underscores the urgency of mosquito control and conservation efforts to protect Hawaii's remaining forest birds.

Read more on this topic here. Access to the full scientific article here.

Signs of progress in the Cook Islands dengue response

Dengue cases in the Cook Islands are gradually declining following the activation of Operation Namu26, which was launched in response to a recent surge in infections and the country's first dengue-related death. Since its launch, Rarotonga has recorded 121 positive cases over the past 14 days. Although case numbers have fluctuated, Secretary of Health Bob Williams said the overall trend indicates that infections are decreasing. The operation includes intensified spraying, surveillance, and community clean-up efforts aimed at reducing mosquito populations and limiting further spread.
Read more about this topic here.

Study finds rapid malaria adaptation in Sudanese Copts

A study published in Proceedings of the National Academy of Sciences reports that Sudanese Copts* acquired a malaria-protective genetic variant within just 1,500 years after mixing with sub-Saharan populations. Analysis of 125 genomes revealed over one million previously undocumented variants, including 1,500 that may affect disease risk. The rapid rise of the Duffy-null genotype — which blocks infection by *Plasmodium vivax* — highlights how strong evolutionary pressure from malaria can quickly shape human populations.
*a Christian ethnoreligious group native to Northeast Africa who have primarily inhabited the area of modern Egypt since antiquity.
Read more on this topic here. Access the full scientific article here.

Scientists identify mosquito "repellent receptor," unlocking next-gen protection

A new study reveals how mosquitoes detect and avoid natural repellents like borneol, a compound found in camphor tree oils. Researchers discovered that a single odorant receptor, OR49, activates a dedicated neural pathway that overrides attraction to humans, causing mosquitoes to steer clear. Using genetic engineering, brain imaging, and behavioural experiments, the team confirmed that disrupting OR49 removes this avoidance, explaining why plant-based repellents have worked for millennia. The findings offer a blueprint for designing safer, more targeted mosquito repellents and shed light on the sensory mechanisms that shape mosquito behaviour.

Read more on this topic here. Access the full scientific article here.

A BITE OF ADVICE

NZBEL POST

Protect yourself from those pesky mosquito bites this summer

Use a repellent!

- Check the label to make sure they contain DEET, picaridin, oil of lemon eucalyptus (OLE), or IR3535 (and remember, always use as directed)
  - Insect repellents containing DEET, picaridin, and IR3535 are safe for pregnant and breastfeeding women and children older than 2 months when used according to the product label. Oil of lemon eucalyptus products should not be used on children under 3 years of age.

While you sleep!

- Use bed nets to protect your sleeping area
- If staying in a tent, use a zip-up screen
- Stay and sleep in screened-in or air-conditioned rooms

What you wear matters!

- Use clothing (such as boots, pants, & socks) that has been treated with permethrin
  - Gear such as tents can also be treated!
- Wear light-coloured long-sleeved shirts and long pants

Treat the area around you!

- Use insecticide spray (as directed) to get rid of mosquitoes
- Remove or treat breeding sites to lower the numbers of mosquitoes around

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