NEW ZEALAND BIOSECURE

BORDER HEALTH NEWSLETTER – SEPTEMBER 2019

WELCOME!

Kia Ora Koutou,

Thank you very much to all of you who sent your Mosquito Surveillance Equipment list for the 2019 Stocktake.

Starting next month in Tauranga, NZB will visit points of entry in turn to provide assistance implementing the suggestions provided during the 2019 Surveillance Review, including supporting PHUs in the update of SOPs for Interception response and Surveillance programmes.

We hope you enjoy the section "Know your Mosquito trap" and "A bite of information". The later dedicated to keeping New Zealand Public Health Officers Up To Date.

In the news, this month read about the discovery of a new mosquito-borne parasite that causes symptoms similar to leishmaniasis. Learn about a 2nd generation Zika vaccine that is being trialled in Austria and also how mosquitoes are more likely to acquire dengue in places where iron deficiency is common.

SURVEILLANCE

During September, 796 samples were collected by staff from 12 DHBs with 47 positive larval samples and nil adult samples, leading to a total of 0 adults and 1587 larvae identified over the past month (Table 1). The dominant larval species this month, and this month last year was *Aedes notoscriptus.*

Table 1. Adult and larvae sampled by the New Zealand surveillance program during September 2018 & 2019

Species (common name)	Adults		Larvae	
	Sep 19	Sep 18	Sep 19	Sep 18
Aedes notoscriptus (striped mosquito)	-	-	1489	1975
Aedes subalbirostris (no common name)	-	-	-	1
Ae. australis (saltwater mosquito)	-	-	-	1
Culex pervigilans (vigilant mosquito)	-	3	62	40
Cx. quinquefasciatus (southern house mosquito)	-	6	25	12
Culex sp. (missing their abdomens, likely to be *quinquefasciatus* or *pervigilans*)	-	3	-	-
Opifex fuscus (rock pool mosquito)	-	-	11	35
Total	**0**	**12**	**1587**	**2064**

Compared to this same month last year, the total number of larvae and adult mosquitoes have shown a decrease (30% and 100% respectively) (Table 1).

In total, four mosquito species have been collected this month (Table 1), that is the same number than last month. Once again this month Hutt Valley Health detected the highest number of mosquito species, which was 4, followed by Auckland DHB and Northland DHB with 3 (Figure 1).

Compared to last month larvae and adult mosquitoes have shown a decrease (23% and 100% respectively).

Northland DHB had the highest number of larvae this month (456), followed by Nelson Marlborough DHB (164) (Figure 1).

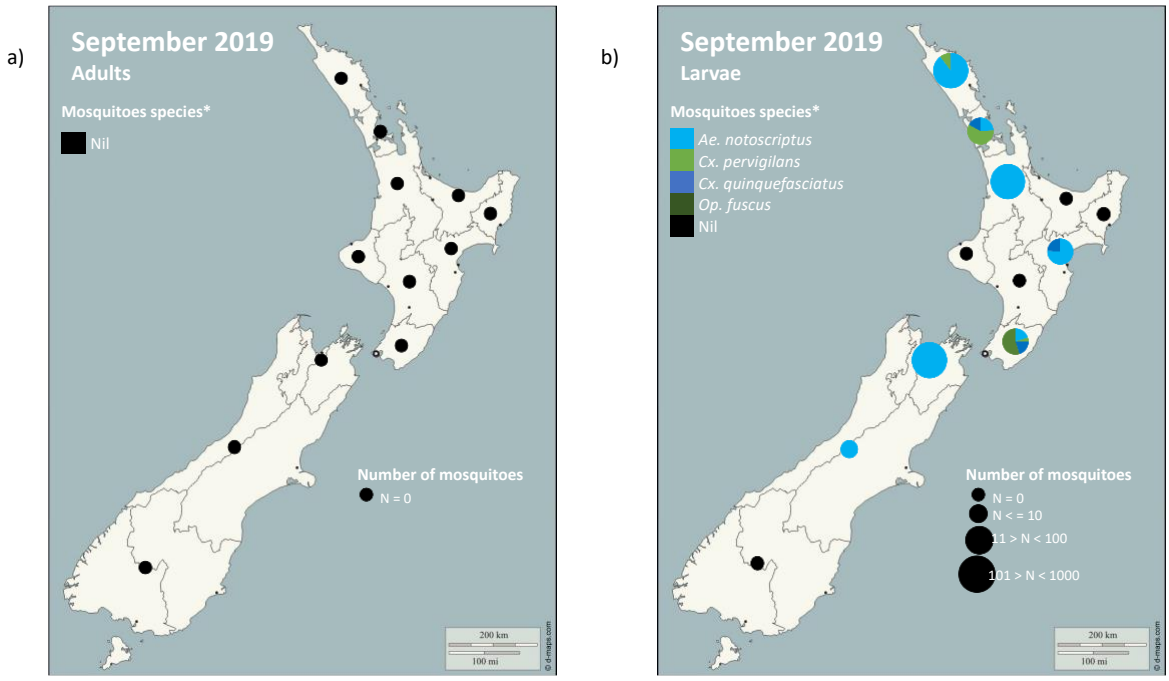


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the September 2019 surveillance period.
* The mosquito species are listed in order from the most abundant to the least abundant.
Please note that the markers represent the DHBs and not the specific sites where the samples have been taken.

As expected *Aedes notoscriptus* has not been recorded this month, this year or last year in Public Health South (Figure 2).

Aedes notoscriptus larval numbers have shown an increase in five DHBs from this same month last year and a decrease in Auckland DHB and Northland DHB (Figure 2).

Culex quinquefasciatus larval numbers have shown an increase in Hawkes Bay DHB from this same month last year and a decrease in Northland DHB (Figure 2).

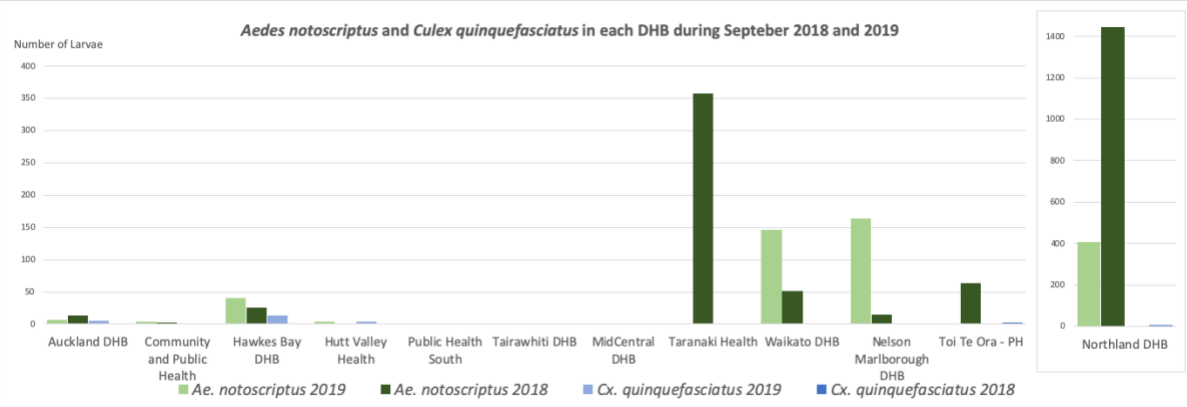


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during September 2018 and 2019.
*Please note the different scale for the number of larvae present in Northland in comparison to the other DHBs.

Disclaimer: Note that all comparisons made have not been statistically tested and can be due to sampling effort.

INCURSIONS AND INTERCEPTIONS

During September two suspected interceptions have been recorded. (Table 2).

Table 2. Suspected interceptions during September 2019

Date	Species	Location	Circumstances
19-09-2019	1 non-mosquito	Mitre 10 Mega store, Auckland	Found alive in a container.
13-09-2019	1 non-mosquito	CFR line limited 270 Neilson St, Onehunga.	Found alive in container of a caravan and new tyres.

NEWS ARTICLES FROM AROUND THE WORLD

Brain-infecting virus has spread across the US at record rates this year

Health officials have announced over the weekend that more people have been infected with or died from the Eastern Equine Encephalitis (EEE) virus, making 2019 the worst year yet for recorded cases. The Center for Disease Control and Prevention (CDC) says the country typically sees an average of seven severe cases per year and that 2019 has been one of the worst years for recorded cases in decades. Read more. Read even more

2nd Generation Zika Vaccine Receives $5.4 Million Dollars Funding

An Austrian company and the ZIKAVAX Consortium announced the initiation of a Phase 1 clinical trial of a 2nd generation Zika vaccine, MV-ZIKA-RSP. This Zika vaccine candidate is based on Themis Bioscience's proprietary measles vector platform, which includes exclusively licensed technology from Institut Pasteur. Announced on October 1, 2019, the observer-blinded, randomized clinical trial will investigate the safety and tolerability of the novel MV-ZIKA-RSP Zika vaccine formulation in 48 healthy volunteers. The vaccine will be administered by intramuscular injection in 2-dose levels. Read more.

Concerns over GM mosquitoes released in Brazil

A team of researchers at Yale University and collaborators in Brazil have said a field experiment that released genetically modified mosquitoes to control natural populations of the insect may have had unintended consequences. According to a genetic analysis the team conducted in the area, the modified mosquitoes have bred with wild mosquitoes and produced viable, hybrid insects. Read more. To read the original article, click here.

New leishmaniasis look-alike parasitic infection reported

This is a female *Anopheles albimanus* mosquito taking a blood meal. Some *Crithidia* parasites are known to parasitize anopheline mosquitoes. Image Credit: CDC/James Gathany.

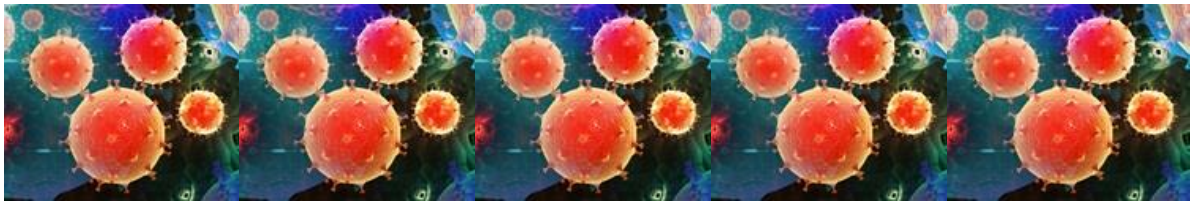
A new study published online in the journal Emerging Infectious Diseases describes the appearance of a new protozoan infection carried by insects which causes symptoms that

mimic the disease called visceral leishmaniasis, caused by a different parasite. Read more.
To read the original article, click here.

Eradicating malaria by 2050 would be 'an achievement of historic proportions', say experts

According to a major report by 41 leading scientists, health-policy experts and economists, the world could be free of malaria by 2050. The report says the idea is no longer a distant dream, but that eradicating one of history's oldest and deadliest diseases will take "ambition, commitment and partnership like never before." Read more.

Dengue fever is endemic in places where iron deficiency is more common



Mosquitoes are more likely to acquire the dengue virus when they feed on blood with low levels of iron, researchers report in the 16 September issue of *Nature Microbiology*. Supplementing people's diets with iron in places where both iron deficiency anemia and dengue fever are a problem could potentially limit transmission of the disease, but there are risks. Read more.

KNOW YOUR MOSQUITO TRAP

BG Trap

What mosquito does it attract?

- Especially attractive for *Aedes aegypti* and *Aedes albopictus*. Will also attract other species of mosquito such as *Culex quinquefasciatus*.

What does it require to run?

- Requires either a mains power source or battery to run the fan. A BG lure can also be used to increase its attractiveness.

Where should this trap be set?

Outdoor use:

- Ideal location for trap is close to resting areas of the mosquito such as bushes, shrubs, hedges and close to breeding sites. The trap should be positioned sheltered from the wind, heavy rainfall and direct sunlight. Trap should be visible.

Indoor use:

- Make sure that the trap is out of the way of operations and will not be disturbed (kicked, moved, unplugged). The trap should be visible and placed on the ground or as close to ground as possible. Choose a location where there is a lot of people as this is an attractant to the mosquito.

A BITE OF INFORMATION

In this chart, find the information that needs to be entered in the Online National Mosquito Surveillance Database according to the trap selected.

Trap examples				
TRAP NAME	GAT Trap	BG Trap	CO2 Baited Light Trap	Tyre Trap
TOTAL NUMBER OF DIPS	nil	nil	nil	1
HABITAT CATEGORY	Trap Option	Trap Option	Trap Option	Trap Option
SAMPLE TYPE	Adult	Adult	Adult	Larvae
ATTRACTANTS	Water	BG lure Or nil	CO2 and Light	Water

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

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).

World Health Organization – 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