NEW ZEALAND BIOSECURE

BORDER HEALTH NEWSLETTER - JUNE 2018

WELCOME!

Kia Ora Koutou, as the winter is here our mosquito's numbers have dropped, no further *Culex quinquefasciatus* larvae have been found in Queenstown and interceptions have become really scarce with just one non-mosquito detected.

In the news this month, scientist have discovered how mosquitoes are capable of piercing our skin painlessly and are trying to take advantage of it for medical purposes; Primate research centres found relationships between miscarriages and Zika virus infections in pregnant monkeys; Paraguay has been declared Malaria free; a new approach to malaria vaccines has been developed and more!

Happy reading!

SURVEILLANCE

During June 646 samples were collected by staff from 11 DHBs with just 57 positive samples. This included 16 adult samples and 41 larval samples, leading to a total of 55 adults and 1099 larvae identified over the past month (Table 1).

Table 1. Adult and larvae sampled by the New Zealand surveillance program during June of last year and this year.

Species (common name)	Adults		Larvae	
	June 18	June 17	June 18	June 17
Aedes notoscriptus (striped mosquito)	13	0	808	579
Ae. antipodeus (winter mosquito)	1	1	0	0
Coquillettidia iracunda	1	0	0	0
Culex pervigilans (vigilant mosquito)	13	9	32	61
Cx. quinquefasciatus (southern house mosquito)	27	16	218	355
Cx. asteliae	0	0	0	72
Opifex fuscus (rockpool mosquito)	0	0	41	34
Total	**55**	**26**	**1099**	**1011**

Compared to this same month last year, total adult numbers have doubled (112% increase) and total larvae numbers have shown an insignificant decrease (0.2%, Table 1).

Compared to May, both adult and larvae number have shown a significant decrease (94% and 68% respectively).

In total 6 mosquito species have been collected this month, 2 less than last month. 4 was the maximum number of mosquito species detected this month in Northland, followed by

Auckland DHB and Hutt Valley Health with 3 mosquito species (Figure 1).

Northland is the DHB with the highest number of larvae this month (907, that is 63% less than last month) followed by MidCentral (84, 58% less than last month).

Auckland DHB had the highest adult numbers this month (33, 88% less than last month), followed by Northland DHB (14, 97% less than last month Figure 1).

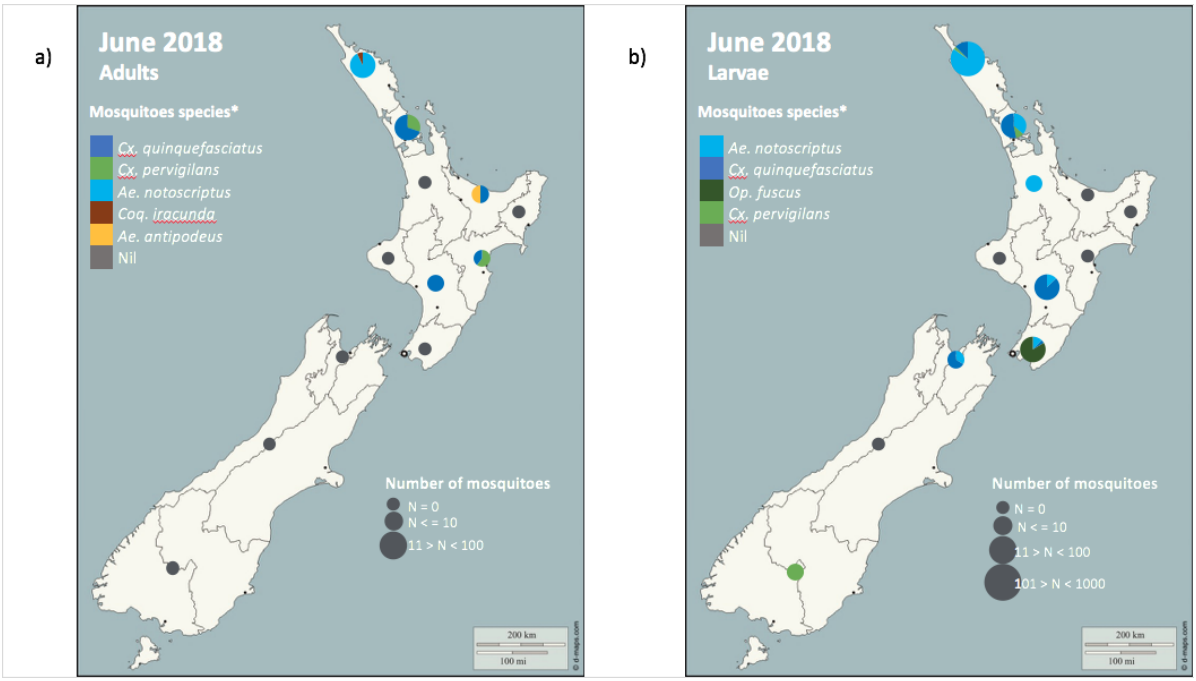


Figure 1. Total mosquito adults (a) and larvae (b) sampled in New Zealand during the June 2018 surveillance period.
* The mosquito species are listed in order from the most abundant to the least abundant.
Please note that the markers represent the DHBs and not the specific sites where the samples have been taken.

Two of the introduced species, *Aedes notosciptus* and *Culex quinquefasciatus* have been found this month (Table 1, Figure 1), nil *Aedes australis* have been recorded this month in comparison to last month.

As expected *Aedes notoscriptus* have not been recorded this month, this year and last year in Public Health South. Nil *Culex quinquefasciatus* larvae have been recorded in Queenstown this moth (Figure 2).

Aedes notoscriptus larval numbers have shown an increase in 4 DHBs from this same month last year (Auckland, MidCentral and Northland), and shown a decrease in 3 DHBs (Waikato, Taranaki Health and Hawkes Bay DHB, Figure 2).

Culex quinquefasciatus larval numbers have shown an increase in 3 DHBs from this same month last year (Hutt Valley, Nelson Marlborough and MidCentral), and shown a decrease

in 4 DHBs (Auckland, Waikato, Toi Te Ora and Northland, Figure 2). Nil *Cx. quinquefasciatus* have been registered in Taranaki, Hawkes Bay, Community and Public Health or Public Health South this month or this same month last year (Figure 2).

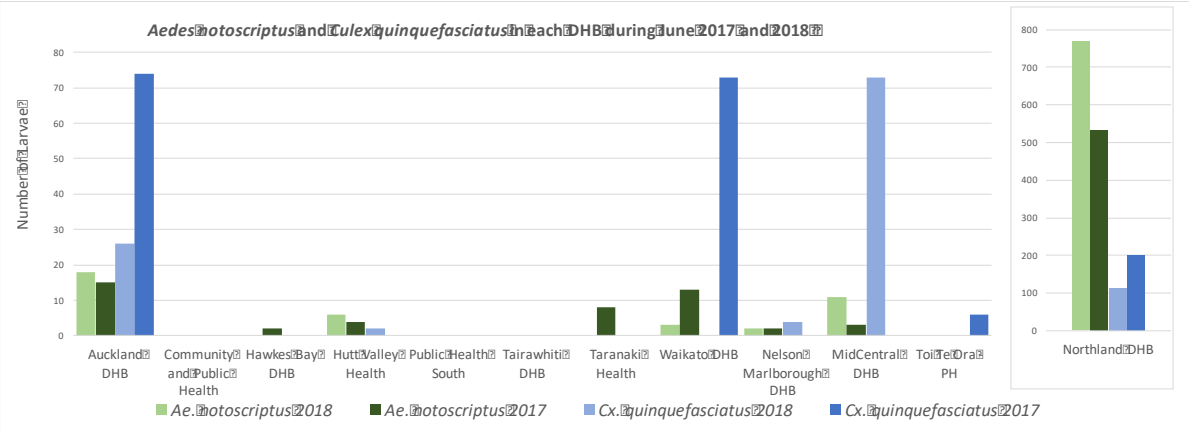


Figure 2. Comparison between introduced mosquitoes sampled in each DHB New Zealand during May 2017 and 2018.
* Please note the different scale for the number of larvae present in Northland in comparison to the other DHBs.

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

INCURSIONS AND INTERCEPTIONS

During June, 1 suspected interceptions has been recorded (Table 2).

Table 2. Suspected interceptions during June 2018

Date	Species	Location	Circumstances
19.06.18	1 Non-mosquito (Crane fly)	Transitional Facility, Christchurch	Found alive in relation to a container carrying Steel from Taiwan

NEWS ARTICLES FROM AROUND THE WORLD

First human Keystone virus infection reported

Another deadly virus called the Keystone virus that could cause serious brain infection and is transmitted by mosquito bites has been found for the first time to be infecting humans. Until now the virus was noted to infect only animals. Read more.

Undetected Zika infections may be cause of stillbirths and miscarriages

A collaborative study between six of the National Primate Research Centers shows pregnancy loss due to Zika A infections that don't cause women any symptoms may be a common but unrecognized cause of miscarriages and stillbirths. Read more. Original article.

Learning from nature's design of mosquito to create painless microneedles

Researchers at The Ohio State University believe we can learn from nature's design of the mosquito to create a painless microneedle for medical purposes. In a recently published paper, Bhushan and his colleagues reported on their detailed analysis of the mosquito's proboscis – the part that feeds on us. They identified four keys to how the insects pierce us without pain: use of a numbing agent; a serrated design to the "needle"; vibration during the piercing; and a combination of soft and hard parts on the proboscis. Read more.

NASA is seeking help from citizens in tracking mosquito-borne disease outbreaks (NASA)

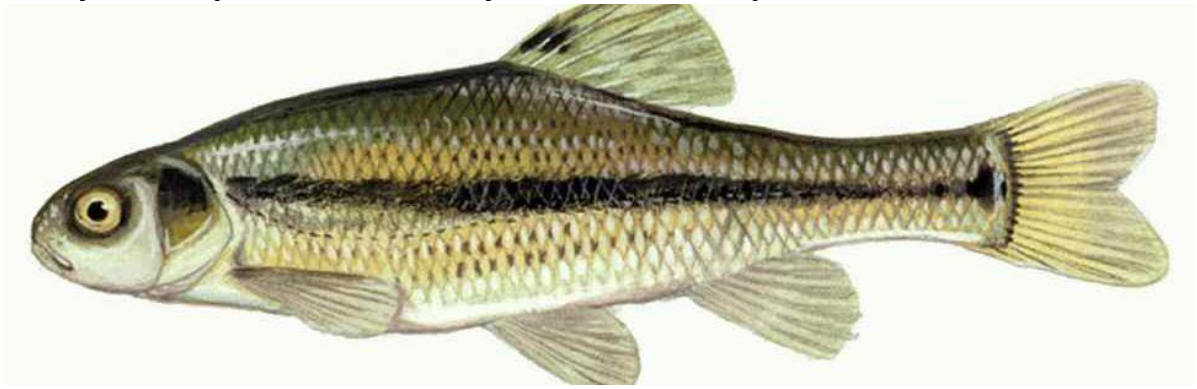
Watch video

Paraguay declared free of malaria by WHO

WHO Director-General Dr Tedros Adhanom Ghebreyesus. Watch video message.

The World Health Organization (WHO) has certified that Paraguay has eliminated malaria, being the first country in the Americas to have done so since Cuba was given this status in 1973. Read more.

Study finds a pesticide-free way to combat mosquitos and West Nile



The study by Waterloo University confirmed that introducing hungry minnows into bodies of water where mosquitoes breed results in the minnows feeding on mosquito larvae, which dramatically decreases the number of adult mosquitoes capable of carrying the disease. Read more.

Combining different malaria vaccines could reduce cases by 91 per cent

Experimental vaccines, which independently achieve 48% and 68% reductions in malaria cases, can achieve 91% reduction when combined. Read more.

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. Choose a country to display the current distribution of Malaria.

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.

A BITE OF HUMOUR