NEW ZEALAND BIOSECURE

BORDER HEALTH NEWSLETTER – September 2014

WELCOME!

We hope everyone is enjoying the arrival of spring. It is still not warm enough for high numbers of mosquitoes but it is probably nice out there checking the traps. Most of you have completed the mosquito surveillance equipment stocktake. For those who have not done it yet, please remember to fill out the forms. As soon as we have the complete set of lists we can make recommendations. An additional map of the trap-locations would be useful as well. We look forward to seeing some of you at the Advanced Vector course in Snells Beach and at the training in our lab.

INCURSIONS/INTERCEPTIONS

We had only one interception event this month but this was an exciting case.

One non-mosquito and one dead mosquito found in Auckland at Turners & Growers in an container with bananas from Ecuador, was identified as *Coquillettidia nigricans* (Coquillett, 1904) probably picked up at Balboa - Panama Port. Little is known about this species, but it seems it plays a minor role as a vector of Venezuelan Equine Encephalitis. It is definitely a man biter and most active in the evening hours (5-9 pm) (crepuscular/nocturnal), most abundant in July (in Panama) and in forests.

SAMPLES

During September 592 samples were collected by staff from 12 District Health Boards with 61 positive. The numbers of adults are very similar to last month but there were more adult *Culex pervigilans* and less *Cx. quincefasciatus* than at the same time last year. The number of the larvae increased strongly due to the many specimens of *Ae. notoscriptus* found this month.

Species	Adults		Larvae	
New Zealand Mozzies	**Sep 2014**	**Sep 2013**	**Sep 2014**	**Sep 2013**
Aedes antipodeus (winter mosquito)	Nil	2	Nil	Nil
Ae. australis (saltwater mosquito)	Nil	Nil	1	Nil
Ae. subalborostris	Nil	Nil	Nil	1
Ae. notoscriptus (striped mosquito)	Nil	2	1931	718
Culex astilae	Nil	Nil	Nil	Nil
Cx pervigilans (vigilant mosquito)	7	Nil	168	195
Cx. quinquefasciatus (southern house mosquito)	4	17	31	Nil
Opifex fuscus (saltpool mosquito)	Nil	Nil	8	10
Total	**11**	**19**	**2139**	**924**

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WEBSITE

We have added more information to the website lately. Including some general information about Lice - http://www.smsl.co.nz/Pests/What+About+Lice.html). And two fact sheets (Zika and Chikungunya) to the Laboratory's Virus section. (http://www.smsl.co.nz/Services/New+Zealand+BioSecure/Viruses.html). We are planning on adding more fact sheets and general information on pests of public health significance.

NEWS OF THE MONTH

The Kochi Corporation is planning to acquire advanced Russian technology to end the city's mosquito menace. The Corporation is currently negotiating the price of the 'Electro-frog' machine, which has been developed using Russian technology, as almost everything else has failed to solve the mosquito problem in the city.

The company claims that the machine would attract mosquitoes as a human body would do. "The machine, which is being used widely in Russia, is capable of killing mosquitoes present in a range of 50 meters," said the company officials.

The machine costs `123,500 in the market. The Corporation is trying to purchase it at a cheaper price, and is awaiting clearance from the Health Department. This is not the first time the Corporation is trying something that is different from mass fogging to eradicate mosquitos. Kochi's struggles to end the mosquito menace, which becomes severe in November and December, are well known. In 1996, in order to 'tackle the menace on a war-footing', the court had planned a large-scale fogging programme, and had even mobilised men and materials for it. However, the initiative had to be stopped soon.

Russian machine to fog out mosquitoes in Kochi

DC CORRESPONDENT October 06, 2014

Even as public protest is mounting over the City Corporation's failure in implementing mosquito eradication projects, the civic body has now come up with a Russian-made electro fogging machine

to address the issue of increasing mosquito population.

Mayor Tony Chammany, during the demonstration of the machine, announced that the local body would consider buying the Russian electro fogging machine, worth US$2000, if the health department approved the proposal. Meanwhile, the corporation health wing had failed to respond to the RTI queries filed by Adv. D B Binu, state general secretary of Kerala Human Rights Defense Forum, in May 2012 on mosquito eradication projects and the amount spent. Later, based on the complaint submitted by him, the State Information Commission conducted a sitting in which corporation health officials stated that details regarding mosquito eradication measures were not available.

The officials added that fogging and chemical spraying were being conducted regularly. However, saline water spraying in drains had to be stopped due to an audit objection raised by the Accountant General office. The AG's office objected to saline water flushing as the corporation had spent Rs. 69.92 lakh on it without adequate documents and the authority of accounts could not be ensured. "While saline water flushing is the most effective method to resolve mosquito menace, civic officials are resorting to expensive methods like chemical fogging to get funds from agencies supplying chemicals," alleged Binu.

Last year, the civic body had purchased four big high-tech fogging machines and 20 small hand-held sprayers at a cost of Rs. 1 lakh per big machine and Rs. 30, 000 per small sprayer. But it proved to be failure as the machines, with less smoke, were ineffective in eradicating mosquitoes. CPM councillor P.S Prakash alleged that the civic body had miserably failed to resolve the mosquito menace. "For the last few years, the mosquito eradication drive has been a failure with no saline water flushing of drains and fogging. Even the health committee chairman admitted that the drive has been hit due to audit objection," he said.

PICTURE OF THE MONTH

Russian Artist

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VECTOR-BORNE DISEASES

Recent Local News

Pacific syndromic surveillance report - Week 33 Sepptember 2014:
Chikungunya outbreaks are on-going in American Samoa, Samoa and Tokelau.
As of 28 September 2014 there were 940 cases since 7 July 2014 in American Samoa.
As of 21 September 2014 there have been 1,090 cases since 24 July 2014 in Samoa.
Dengue serotype-3 outbreak is on-going in Tonga.
Dengue serotype-1 outbreak continues in French Polynesia with 41 confirmed cases in Week ending 7 September 2014.

Americas

New mosquito-borne virus spreads in Latin America
Published: Saturday, Sept. 27, 2014
By BEN FOX and EZEQUIEL ABIU LOPE - The Associated Press

SANTO DOMINGO, Dominican Republic – An excruciating mosquito-borne illness that arrived less than a year ago in the Americas is raging across the region, leaping from the Caribbean to the Central and South American mainland, and infecting more than 1 million people. Some cases already have emerged in the United States.

While the disease, called chikungunya, usually is not fatal, the epidemic has overwhelmed hospitals, cut economic productivity and caused its sufferers days of pain and misery. And the count of victims is soaring.
In El Salvador, health officials report nearly 30,000 suspected cases, up from 2,300 at the beginning of August, and hospitals are filled with people with the telltale signs of the illness, including joint pain so severe it can be hard to walk.
"The pain is unbelievable," said Catalino Castillo, a 39-year-old seeking treatment at a San Salvador hospital. "It's been 10 days and it won't let up."
Venezuelan officials reported at least 1,700 cases as of Friday, and the number is expected to rise. Neighboring Colombia has around 4,800 cases but the health ministry projects there will be nearly 700,000 by early 2015. Brazil has now recorded its first locally transmitted cases, which are distinct from those involving people who contracted the virus while traveling in an infected area.
Hardest hit has been the Dominican Republic, with half the cases reported in the Americas. According to the Pan American Health Organization, chikungunya has spread to at least two dozen countries and territories across the Western Hemisphere since the first case was registered in French St. Martin in late 2013.

There have been a few locally transmitted cases in the U.S., all in Florida, and it has the potential to spread farther, experts say, but Central and South America are particularly vulnerable. The chief factors are the prevalence of the main vector for the virus, the aedes aegypti mosquito, and the lack of immunity in a population that hasn't been hit with chikungunya in modern medical history, said Scott C. Weaver, director of the Institute for Human Infections and Immunity at the University of Texas Medical Branch.

"There are going to be some very large populations at risk down there, much larger than the Caribbean," Weaver said.

There have been only 113 deaths linked to the region's outbreak, according to the most recent data, but chikungunya can be crippling.

Herman Slater, a 60-year-old gardener in Jamaica's capital of Kingston, said he was laid out for almost two weeks this month with unimaginable joint pain, hammer-pounding headaches and fevers that came in waves.

"I tell you, I was surprised by how painful it was. It was taking me five minutes to get out of bed, and then I could hardly even walk," Slater said. "My hands were so bad I couldn't open a bottle, couldn't comb my hair. Every night I was wet from sweat."

In acute cases, pain can last for months. Joanna Rivas, who works as a maid in the Dominican capital of Santo Domingo, said she has had joint pain since May, and her 12-year-old daughter's case is so severe the girl can't hold her pen at school. Both have been taking the pain reliever acetaminophen, the main treatment for chikungunya, which has no cure or vaccine.

Besides the suffering, chikungunya has caused economic damage with the cost of providing treatment and controlling mosquitoes and by absenteeism from work. A study by the Universidad Eugenio Maria de Hostos in the Dominican Republic found nearly 13 percent of businesses said they had people miss work because of chikungunya in June.

Authorities throughout the region have been spraying pesticide and encouraging people to remove water containers where mosquitoes can breed. Oxitec, a British company that has tested genetically modified *Aedys aegypti* to combat dengue in Brazil, Cayman Islands and Panama, says it has received a surge of interest since the start of the outbreak.

Chikungunya, which has been known for decades in parts of Africa and Asia, is transmitted when a mosquito bites an infected person and then feeds on someone else. It may have found fertile ground in Latin America and the Caribbean because many people are outside in the daytime, when *Aedes aegypti* bite, or lack adequate screens on their windows.

In an article in the New England Journal of Medicine, Dr. Erin Staples of the U.S. Centers for Disease Control and Prevention said access to air conditioning to keep mosquitoes at bay might also be a factor. During an outbreak of mosquito-borne dengue in 1999 along the Texas-Mexico border, *Aedes aegypti* were three times as abundant on the U.S. side but the number of people infected with dengue was twice as high on the Mexican side.

Conditions vary widely in the region. Haiti, where many people live in flimsy shacks with little protection from mosquitoes, has been hit hard. In Venezuela, air conditioning is widespread but the country has a shortage of insect repellent and pesticide sprayers due to the country's economic problems.

Staples said past outbreaks have been known to affect around 30 percent of a population, so there is room for the epidemic to grow, although it's too early to accurately project how many will get sick or whether chikungunya will become endemic to the region like dengue.

The good news is that people seem to acquire immunity to all major strains.

"We do believe currently that if someone is unfortunate enough to get infected, they should not be infected again," Staples said.

Europe

Border controls set up to catch deadly mosquitoes

Public health experts have set up port controls to detect mosquitoes entering the country from France that it is feared could be carrying deadly dengue fever

By Gregory Walton 18 Sep 2014

Public health experts have ramped-up efforts to detect mosquitoes capable of carrying potentially lethal diseases as they enter the country.
Officials have responded to the looming threat of the arrival of blood-feeding species that transmit Dengue fever and West Nile virus by building detection stations at ferry ports.
An outbreak of dengue fever in Britain would be unprecedented. In severe cases, infection can lead to a sudden drop in blood pressure, bleeding and organ damage.
Academics from the University of Liverpool warned earlier this year that disease-carrying mosquitoes could become commonplace in Britain within 15 years as the nation's climate changes.
Public Health England has placed ports in Southern England, including Dover, under surveillance to detect the arrival of two potentially killer species.
One is the Asian tiger mosquito, which can spread dengue fever.
The other is the *Culex modestus,* which can spread West Nile virus, a flu-like virus which can be deadly to humans.
Asian tiger mosquitoes originally came to Europe in car tyres imported from the Far East. Mosquitoes lay their eggs in the rubber and can remain dormant for up to 18 months before hatching.
The species has raised concerns because of its signature aggression, relative size and the fact that it is most active during daytime. The UK's 34 Indigenous species only strike at dusk and dawn.
Medics are fearful that increasingly mild conditions in northern France and Kent are attracting the potentially harmful species to England's shores.
Detection stations are black pots half filled with water, half with polystyrene onto which mosquitoes lay their eggs. The pots, located at Kent's sea ports and seven service stations near the coast, are inspected roughly every fortnight.
The expert responsible for the scheme, Dr Jolyon Medlock, said: "Given the continued spread of invasive mosquitoes in continental Europe, Public Health England continue to conduct surveillance at ports of entry and some motorways service stations, and provide an identification service for nuisance mosquitoes. So far no invasive mosquitoes have been detected in the UK."
"Mosquito levels tend to peak in July and August particularly in hot and wet summers. Some species will take advantage of the warm weather and water-filled habitats, like water butts or paddling pools to breed, particularly those without covers that collect leaves.
"We encourage good 'garden husbandry' in the summer months, by reducing the number of container habitats around the garden. This includes turning upside down buckets, emptying paddling pools that aren't being used, unblocking drains, and putting lids on water butts."
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WORLD OF MOSQUITO-SCIENCE

A fungus loaded with a chemical found in scorpion venom. *Metarhizium anisopliae* is a parasitic fungus that infects a wide variety of insects, including the mosquitoes that spread malaria. Their spores germinate upon contact and the fungus invades the insect's body, slowly killing it.

DID YOU KNOW?

'Why are mosquitoes so hard to swat?' - Mosquitoes think and act 100 times faster than you can

Mosquitoes fly at about two kilometres per hour (1.2mph), which sounds slow, but at their size it's like you flying over a hundred times faster. You can't catch them for a few reasons. One, they see you coming. Their eyes are big and round and multifaceted, so they are quite capable of seeing above and behind themselves. You can't sneak up on a mosquito easily. Second, your hand moves slower than they fly and has more distance to cover. The mosquito doesn't need to move far to get away, while your big and slow hand has to travel all the way to your head. Lastly, the mosquito makes decisions faster than you. When you decide to hit a fly, a signal goes from your brain to your spinal cord to your arm muscles to start the hand in motion. The time it takes is a few milliseconds. But once the mosquito sees motion, a signal from its brain goes to its nerve cord to its wing muscles, and the time ends up being a fraction of a nanosecond. They think and act 100 times faster than you can. Your hand never really had a chance! Air pressure from your hand also serves to blow the extremely light mosquito out from under it prior to impact, aiding in escape. This is why fly swatters are made of mesh, not a solid panel.

The Independent MATAN SHELOMI Saturday 04 October 2014