



BORDER HEALTH NEWSLETTER – MARCH 2014

WELCOME!

Welcome everybody! Easter is nearly here & we hope you all have a great break. Activity will begin to slow down as we move into the cooler months, though we still need to remain vigilant as there have been a lot of adults kicking around. While March was abnormally dry for much of NZ, some areas experienced high rainfall (Riccarton endured its wettest March on record, records began 1863, with most of it falling with the flooding event on 4 March) and Coromandel 149% above normal with the effects of ex-tropical cyclone Lusi). Temperatures were average across much of the country.

If you would like to see NIWAs full outlook for your area you will find it here:

<http://www.niwa.co.nz/node/110036>

INCURSIONS/INTERCEPTIONS

There was only one interception event during March, involving a non-mosquito (Crane fly).

SAMPLES

During March, 993 samples were collected by staff from 12 District Health Boards, with 271 positive. Samples collected were very similar to both last month and this time last year. Of the positive samples found, larval numbers were the similar to last month, and this time last year. Adults were significantly higher than both last month and this time last year. The specimens received were as follows:

Species	Adults	Larvae
NZ Mozzies		
<i>Ae antipodeus</i>	3	0
<i>Ae. notoscriptus</i>	1990	1379
<i>Culex pervigilans</i>	7	1468
<i>Cx. quinquefasciatus</i>	957	1595
<i>Cq iracunda</i>	21	0
<i>Opifex fuscus</i>	4	59
<i>Ae australis</i>		56
TOTAL MOSQUITOES	2982	4557

WEBSITE

We have two new Entomologists Dr Julia Kasper and Matthew Chaplin at the NZBEL. Julia has been working on other species profiles and information sections for nuisance pests and vector organisms including insects and ticks and mites. Keep an eye out for new biological profiles and information as they come online. The SMS training pages have also been updated including

the Border Health and Ships Sanitation July course with updates to the background reading available for download.

We have got "Tanglefoot" range back in stock, Tanglefoot is a great option for sticky traps.

Don't forget newsletters and reports are all able to be downloaded from the website and if you can't find something please let us know. We hope you are finding this on-line service useful and are always happy to address any enquiries or matters you may wish to discuss. Please send Us an email (enquiries@smsl.co.nz or taxonomy@nzbiosecure.net.nz) with your interest in any resources or products we may be able to assist you with.

INSECT-BORNE DISEASES

LYME DISEASE - USA (02): (WISCONSIN) INCREASED INCIDENCE

With a record 3609 cases of Lyme disease in 2011, this tickborne illness has become Wisconsin's 3rd most reported ailment, behind only chlamydia (24 254) and gonorrhoea (4761). The CDC says that the number of confirmed Lyme disease cases reported in Wisconsin peaked at 2505 in the year 2010, then fell to 2408 in 2011, and fell again to 1368 in 2012

Diep "Zip" Hoang Johnson, said Wisconsin recorded more than 18 000 Lyme disease cases between 2002 and 2011 -- more than triple the 5716 cases reported between 1990 and 2001.



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[The CDC says that there were almost 15 000 confirmed Lyme disease cases reported in Wisconsin between 2003 and 2011 - from 740 in 2003 to 2408 in 2011 (http://www.cdc.gov/lyme/stats/chartstables/reportedcases_statelocality.html)>].

One reason is the tick responsible for Lyme disease has expanded its range. In surveys from 1981 through 2007, the black-legged tick [*Ixodes scapularis*] -- commonly called deer tick -- was most common in western Wisconsin.

The DHS' Division of Public Health and University of Wisconsin detected the tick's eastward expansion in 2008 while inspecting nearly 800 hunter-killed deer in eastern Wisconsin. They found the tick in 18 of the 21 counties they checked. Their research was published in the May 2013 issue of the Journal of Medical Entomology. "The results indicate that range expansion of (black-legged ticks) is continuing and the risk of tick exposure is increasing, especially in the eastern one-third of the state," the article reported. [Lee X, Hardy K, Johnson DH, Paskewitz Johnson also warned that Lyme disease isn't Wisconsin's only tickborne disease. While the 1906 cases reported so far from 2012 represent 75 percent of the year's tick-related diseases, Wisconsin also had 586 cases of anaplasmosis/ehrlichiosis (2 similar diseases), which accounted for 23 percent of the cases.

Black-legged ticks spread all 3 diseases. These ticks are smaller than the common wood tick or dog tick, which is the most commonly identified species responsible for transmitting *Rickettsia rickettsii*, which causes Rocky Mountain spotted fever in humans, and can also transmit *Francisella tularensis*, the cause of tularemia. The Rocky Mountain wood tick (*Dermacentor andersoni*) can also transmit Rocky Mountain spotted fever and tularemia to humans.

However, most Lyme-disease victims get infected when bitten by black-legged ticks in spring and summer during their nymph stage, when they look like poppy seeds. June and July produce the year's most Lyme disease cases,

typically accounting for 60 percent of them. When including cases from May and August, the 4-month period accounts for 80 percent of annual cases.

Because black-legged tick nymphs are so small, many people never know they've been bitten. Further, about 20 percent of victims never develop Lyme disease's brand: a red bull's-eye skin rash. Only when experiencing fevers, fatigue, and headaches do they realize they might have Lyme disease.

To reduce risks when outdoors, Johnson recommends using permethrin or DEET of 20 percent concentrations on light-colored clothing. Also, wear long-sleeve shirts and tuck pants inside boots when venturing off beaten paths into brush, tall grasses, and other vegetation. Ticks don't jump or fly. They simply climb aboard as we push through vegetation they inhabit.

When returning indoors, thoroughly check for ticks. Next, take a shower and scrub vigorously to wash away unseen ticks. "A shower reduces your risk by about 95 percent," Johnson said. Don't panic if you find a blacklegged tick. Even if it's a nymph, 78 percent don't carry the Lyme bacteria. [An average of 22 percent of blacklegged tick (*I. scapularis*) nymphs in Wisconsin have been reported to be infected with *Borrelia burgdorferi*, the cause of Lyme disease

Further, they must stay attached at least 24 to 48 hours to transmit the bacteria.

Because Lyme disease is endemic in Wisconsin, the US Centers for Disease Control considers a tick-caused rash larger than 5 centimeters [2 in] a confirmed case of Lyme, even without a laboratory test. [The CDC defines erythema migrans, for purposes of surveillance, as "a skin lesion that typically begins as a red macule or papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach greater than or equal to 5 cm



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[2 in] in size across its largest diameter."

Lyme disease affects all age groups, but is most prevalent in children 5 to 14, and adults 55 to 74. It's least common in 25- to 29-year-olds and people 85 and older. Johnson thinks youngsters pick it up more often because they often roll in grass and play in brushy areas, while older people tend to spend more time outdoors gardening and landscaping.

Antibiotics are effective if used early. Adults and children 8 and older are usually cured by taking 100 mg doses of doxycycline twice daily for 2 weeks. In fact, Lyme disease can usually be prevented if adults take one 200 mg dose of doxycycline within 72 hours of removing a tick.

However, if you have no symptoms or no evidence of a tick bite, it's a waste of money to insist on a laboratory test. "Screening tests do you no good," Johnson said. "They're a waste of time."

Once cured, there's no lasting immunity against Lyme disease. People can get infected more than once. [Reinfection has been well-documented only after successfully treated early infection (nearly always erythema migrans) and not after late manifestations of Lyme disease

Also, no vaccines for humans have been available since 2002. The 1st and only licensed vaccine against Lyme, LYMERix, was effective but expensive, and required a 3-dose series. When many patients didn't get the follow-up doses, and insurance companies didn't cover it, the manufacturer ceased production.

If you find a tick attached to your skin, remove it with a tweezers or tissue pinched between your fingers. Pull it straight out, not at an angle, and flush it down the toilet. Finally, cleanse the wound in alcohol and wash with soap and water.

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[Lyme disease, caused by the spirochete *Borrelia burgdorferi*, is distributed focally within the United States: it is considered endemic in 8 northeastern states (Connecticut, Delaware, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Rhode Island) and 2 upper Midwestern states (Wisconsin and Minnesota). These regions of the US correspond with the known geographic distribution of the Lyme disease vector *Ixodes scapularis*, the blacklegged or deer tick.

Climate change, growth of suburban neighborhoods into surrounding wooded areas, and enlarging populations of deer as well as of the white-footed mouse and other small rodents (the primary reservoirs for Lyme disease) are thought to be responsible for the spread of the disease

Both *Ehrlichia chaffeensis*, which infects blood monocytes, and *Ehrlichia ewingii*, which infects granulocytes, cause human ehrlichiosis in the US, although the majority of reported cases are due to *E. chaffeensis*. *E. chaffeensis* is most common in the south central and southeastern states, which correspond with the known geographic distribution of the lone star tick (*Amblyomma americanum*). The lone star tick transmits both *E. chaffeensis* and *E. ewingii*. *Anaplasma phagocytophilum*, a bacterium closely related to the ehrlichiae, causes human granulocytic anaplasmosis. However unlike *E. chaffeensis* and *E. ewingii*, *A. phagocytophilum* (as well as *Borrelia burgdorferi* and *Babesia microti*) are transmitted in the US by the ticks *I. scapularis* and *Ixodes pacificus*.

Human ehrlichiosis was thought to be very rare or absent in Minnesota and Wisconsin, because the northern range for *A. americanum* is not thought to extend into Wisconsin and Minnesota. In fact, in a 2009 study, of the 1518 blood specimens obtained from patients with suspected ehrlichiosis in Wisconsin and

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Minnesota residents, none were positive for *E. chaffeensis* or *E. ewingii*, although 163 (10.7 percent) were positive for *A. phagocytophilum* (35 from Wisconsin and 128 from Minnesota). In addition, infection by a new species of *Ehrlichia* carried by the deer tick *I. scapularis* was found in 4 patients (3 from Wisconsin, 1 from Minnesota). The unique nucleotide sequence of this new species was similar to that of *Ehrlichia muris*, a species not previously identified in North America. -

DENGUE FEVER CASES RISE

More travellers are returning to New Zealand with dengue fever with the mosquito-borne disease spreading in the region, health authorities say.

There have been 35 cases in Auckland so far this year, with 24 cases from Fiji alone.

Health services have advised people travelling to the Pacific to take steps to avoid mosquito bites.

Since October 2013, Fiji has recorded more than 10,000 cases of dengue fever, with 11 deaths.

Dengue fever has also emerged in French Polynesia, Vanuatu and New Caledonia.

The zika virus, which is similar to dengue, is widespread in French Polynesia, with cases also in New Caledonia and the Cook Islands, while another similar virus, chikungunya, has recently appeared in Papua New Guinea.

Anyone travelling to these countries is urged to exercise caution, Auckland Medical Officer of Health Dr Simon Baker said.

"Dengue fever can be a severe illness," he said.

"Those who travel to the Pacific frequently are at risk of repeat infections with different strains of the dengue virus. This can lead to dengue haemorrhagic fever, which can be fatal.

"This is heightened by the fact that, for the first time in 20 years, the dengue-three strain is active in the region."

Dengue fever symptoms begin with a high fever and severe headache. Nausea and vomiting are common, as are joint and muscle pain. The illness can last up to 10 days, although people can feel tired and depressed for weeks.

Zika and chikungunya cause similar, but often milder illnesses.

There was no vaccine for dengue fever, zika or chikungunya. The only way to prevent infection, Baker said, was to avoid being bitten by mosquitoes.

"Although the commonest time for bites is early morning and late afternoon, dengue-carrying mosquitoes also bite all through the day," he said.

The best protection from mosquito bites included wearing lightly-coloured clothing that covers your arms and legs, and a hat and shoes, applying insect repellent containing 40 per cent diethyltoluamide (DEET), to skin and clothing, and staying in accommodation that was air-conditioned, or had screens on doors and windows.

Anyone returning from overseas with dengue symptoms, or feeling generally unwell, should contact their GP or Healthline and let them know where they travelled, Baker said. Paracetamol was recommended rather than aspirin, because aspirin could increase the risk of bleeding.

New Zealand mosquitoes do not carry dengue

Source: Stuff

ZIKA VIRUS - PACIFIC (10): AUSTRALIA ex COOK ISLANDS

A female patient in Townsville, Queensland, Australia has been diagnosed with Zika virus infection following a recent trip to the Cook Islands, where the virus is currently circulating. A serum sample collected in March 2014 was positive by 2 separate Zika virus TaqMan real-time RT-PCRs and a pan-Flavivirus RT-PCR. Nucleotide sequencing and phylogenetics revealed 99.1 per cent homology with a previous Cambodia 2010 sequence within the Asian



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lineage. Flavivirus IgG and IgM antibodies were also detected in the serum sample.

This is the 1st known imported case of Zika virus infection into northern Queensland, where the potential mosquito vector *Aedes aegypti* is present, and only the 2nd such case diagnosed within Australia.

As of 25 Mar 2014, there were 49 confirmed cases of Zika virus infection in the Cook Islands, the source of the virus in the case above. Concern for Zika virus introduction into northern Queensland where vector mosquitoes are present is a serious concern. Transport of this virus by viremic individuals has been the mechanism for its introduction into several Pacific islands. Dengue viruses have been introduced into Townsville, northern Queensland, by infected individuals and started small outbreaks there. Since that has happened with dengue viruses, it can happen with Zika virus as well.

Source: ProMED, Alyssa Pyke 01 April 2014

Photo of the Month



Fossilised mosquito.
Reputedly a 110 mya mosquito from Brazil. Source: MCS