



## BORDER HEALTH NEWSLETTER – August 2014

### WELCOME!

Welcome back after the ship sanitation course to the daily business of the public health. The Mosquito numbers are still low and most of you have been very busy because of the EBOLA outbreak. It is horrible what happens in West Africa and although it is the biggest EBOLA outbreak in history it is a relief that the risk of spreading to other continents is low.



### INCURSIONS/INTERCEPTIONS

During August we had two interceptions of many different non-mosquito species. 4 specimens were found in a container with plastic trays from the UK travelling via Malaysia and Australia. Those turned out to be Miridae (plant bugs), Empididae (dance flies) and Dixidae (meniscus gnats). And a specimen found with 25kg bags of lime from China unveiled as an Anisopodidae (window gnat).

### SAMPLES

During August 423 samples were collected by staff from 12 District Health Boards with 46 positive. The number of the adults decreased whereas the larvae increased, especially *A. notoscriptus*. This mirrors the numbers of the same months last year. However *Cx. pervigilans* were very rare this month.

Species	Adults		Larvae	
	Aug 2014	Aug 2013	Aug 2014	Aug 2013
<b>New Zealand Mozzies</b>				
<i>Aedes antipodeus</i> (winter mosquito)	Nil	Nil	Nil	Nil
<i>Ae. australis</i> (saltwater mosquito)	Nil	Nil	Nil	Nil
<i>Ae. subalborostris</i>	Nil	Nil	Nil	Nil
<i>Ae. notoscriptus</i> (striped mosquito)	Nil	Nil	1029	1060
<i>Culex astilae</i>	Nil	Nil	Nil	Nil
<i>Cx. pervigilans</i> (vigilant mosquito)	6	2	3	176
<i>Cx. quinquefasciatus</i> (southern house mosquito)	9	4	57	16
<i>Opifex fuscus</i> (saltpool mosquito)	Nil	Nil	24	5
<b>Total</b>	<b>15</b>	<b>6</b>	<b>1122</b>	<b>1257</b>



NEWS OF THE MONTH -EBOLA



**Ivory Coast is closing its borders with Guinea and Liberia, two countries dealing with an Ebola outbreak.**

(CNN) -- Ivory Coast announced Saturday that it's closing its borders in response to the Ebola outbreak in West Africa. Prime Minister Daniel Duncan signed the order that closes the land borders Ivory Coast shares with Guinea and Liberia.

The borders will remain closed until further notice in an effort to prevent the Ebola virus from spreading into its territory, according to the government statement. Ebola is one of the world's most virulent diseases, according to the World Health Organization.

The virus is introduced to human populations through the human handling of infected animals -- like fruit bats, gorillas and monkeys, to name a few -- found sick or dying in the rainforest.

The infection is then transmitted among humans through direct contact with the blood and bodily fluid of infected people. WHO's maps of confirmed cases show the Ebola outbreak is limited to four



West African nations -- Liberia, Sierra Leone, Guinea and Nigeria. So far, nearly 2,500 suspected cases have been reported in what the WHO says is the worst known outbreak of the disease.

However, the WHO's website says the survival rate for people with Ebola in this outbreak has been 47%, which is a substantial improvement over the disease's survival rate, historically.

**A member of Doctors Without Borders (MSF) prior to entering a high-risk area of an Ebola treatment center.**

*By Leslie Holland, CNN August 25, 2014 -- Updated 1517 GMT (2317 HKT)  
04 Aug 2014*



### **Outbreak of Ebola in West Africa: ECDC assesses the risk**

Following an upsurge in the number of cases of Ebola Virus Disease (EVD) in Guinea, Liberia and Sierra Leone in the last weeks, ECDC evaluates the risk of importation of the disease to the EU, the risk of spreading, as well as the risk to EU travellers and residents in the affected areas in West Africa. Overall, the risk of becoming infected remains very low if basic precautions are strictly followed as transmission of EVD requires direct contact with blood, secretions, organs or other bodily fluids of dead or living infected persons or animals. Unlike influenza, the virus is not transmitted by air or droplets. While people infected with EVD may travel to EU from the affected countries, the risk of secondary transmission to direct close contacts (family or relatives) or in healthcare settings is still considered very low, if prevention measures are implemented, concludes the risk assessment. Such prevention measures can include information and sensitisation of returning travellers and healthcare providers.

#### *Very low infection risk for tourists or residents in affected areas*


For tourists, visitors or residents in affected areas, the risk of infection is considered very low if elementary precautions are followed: avoiding contact with symptomatic patients or dead bodies and their bodily fluids, as well as avoiding unprotected sexual contact with a patient that has recently recovered from the disease.

The highest risk for EU residents and visitors in the affected countries is within the health care system: the risk of exposure in healthcare facilities is related to the implementation of effective measures for infection transmission control.

The risk assessment suggests the following preventive measures: for prevention of infection while travelling and residing in the affected areas, prevention in healthcare facilities, prevention of importation of cases to EU and prevention of spread of the disease in the EU.

The outbreak in Guinea, Liberia and Sierra Leone is the largest EVD outbreak ever reported, both in terms of cases and the geographical spread, it is also the first time EVD has spread to large cities.



**Read the full  Rapid Risk Assessment Outbreak of Ebola virus disease in West Africa <http://www.ecdc.europa.eu/en/publications/Publications/ebola-outbreak-west-africa-1-august-2014.pdf>**

## **VECTOR-BORNE DISEASES**

### **Recent Local News**

**343 Cases Of Chikungunya Fever Confirmed In Am. Samoa** PAGO PAGO, American Samoa (The Samoa News, August 5, 2014) – It's official, the American Samoa Department of Health and the LBJ hospital have confirmed that Chikungunya "Chik" fever is the cause of the outbreak on Tutuila with symptoms of fever, rash and joint pains. According to the Health Alert issued yesterday morning, there have been 343 recorded cases with six patients hospitalized and no deaths as of July 1, 2014. According to the alert, if you develop "fever, body aches— with or without rash— check with a nurse or doctor and apply ice packs to your painful joints. Get as much rest as



possible, it says. "Stay indoors in air-con, behind screens or under bed nets while you are ill, because if you get bitten by mosquitoes while you are ill they will spread the disease to your family and neighbors." For travelers, the DOH urges those who are ill not to travel off island, including to Manu'a. "If you travel and become ill when you arrive, tell the doctor who sees you that you may have been exposed to the Chik virus." According to the health alert, only the "Aedes mosquito spreads the Chik virus", and all aedes mosquitoes breed in places such as uncovered rain barrels, buckets, junk tires," and discarded appliances such as "refrigerators, washing machines, boats, equipment and plastic tapes." DOH urges the public to prevent your family from getting the Chik virus by covering rain barrels with a screen or cloth and eliminating these other items where mosquitoes breed within 100 yards of your home. Also, wear long pants, socks, long sleeve shirts when going outdoors, and use mosquito repellent. Samoa News reported last week there was one case of Chik virus that had been clinically diagnosed. To date it's unclear if a death mentioned in earlier health alerts was from the Chik virus and questions sent to DOH Director Motusa Tuileama Nua on this particular issue were not answered as of press time.

*Sanitoa calls on DPW to clear drainage areas*

In the meantime, Tualauta faipule Larry Sanitoa pointed out that due to the spread of the virus by mosquitoes in the territory, he's calling on Department of Public Works regarding the need for the vacuum truck crew to clean certain locations where debris and water are backed up. He pointed out that he understands the DPW crew will be busy this week, however, "we do... urgently need your help with the vacuum truck crew at the following locations for cleaning: Drainage at Fagaima road in Fagaima; Ottoville Lake by the LDS church; Hope House drainage; Tradewinds drainage by the State Department Housing near John Suisala's home; Two drainage areas on the Happy Valley Road going toward the Baptist School and Pavaiai Rd. drainage by the Elementary School. Sanitoa notes that his grave concern is the recent announcement by Department of Health on a possible outbreak of the Chikungunya virus. "DPW assistance in cleaning these problem drainage areas is most favorable for the community and will be greatly appreciated." In addition, over the past weekend several residents have been constantly calling requesting help from a backhoe or crater to help with their roads, he said. Two roads in Kokoland (1) next to Seiuli Roy Willis's home and (2) the route by Francis Leasiolagi's house. Iliili Road in the back of the golf course by Speaker Savali Talavou Ale's home. Sanitoa said, "I will be doing site visits throughout the district today so will let you know if there are other roads where we will need your help" and thanked DPW for the earliest possible assistance.

*The Samoa News Copyright © 2014. The Samoa News. All Rights Reserved By Joyetter Feagaimaalii-Luamanu*

**Excerpts from ESR's monthly report:**

*Chikungunya fever:* One probable case of chikungunya fever was notified in July 2014. The case was a female in the 30–39 years age group from Waitemata DHB. The case was in Tonga during the incubation period.

*Ross River virus infection:* One confirmed case of Ross River virus infection was notified in July 2014. The case was a female in the 60–69 years age group from Canterbury DHB. The case visited Australia, New Caledonia and Vanuatu during the incubation period.

*Taeniasis:* Two confirmed cases of taeniasis were notified in July 2014. Both cases were female in the 20–29 years and the 50–59 years age groups. The cases were from Counties Manukau and Canterbury DHBs. One case was in Ethiopia and the other in Laos during the incubation period.



**Pacific syndromic surveillance report - Week 33 ending 17th August, 2014:**

*Dengue*

There are several dengue outbreaks occurring in the Pacific including French Polynesia, Tuvalu, Solomon Islands, Tonga, New Caledonia and Fiji.

Nauru is currently experiencing a dengue serotype-3 outbreak. As of 4 August 2014 there have been 251 suspected dengue cases of which 91 tested IgM ELISA and/or rapid test with NS1/IgM positive, since early March this year. There were 3 suspected cases in Epi week 31; of which one was NS1 and IgM positive. The number of cases continues to decrease.

Tonga: Dengue serotype-3 has been confirmed in samples sent to the Institut Louis Malarde, French Polynesia. Of the 13 samples sent; three were positive for dengue serotype-3; three were positive for chikungunya and the remaining seven tested negative for chikungunya, dengue and zika virus

*Chikungunya*

As of 18 August 2014 there are 548 cases of Chikungunya in American Samoa since 15 June 2014; including 9 hospitalisations. There have been no deaths reported. A recent suspected death from Chikungunya was confirmed by CDC laboratory as a positive leptospirosis case.

Samoa: Chikungunya outbreak continues and the number of cases is increasing. As of 15 August 2014 there have been 196 cases since 24 July 2014. There have been two deaths. Routine surveillance is enhanced and strengthened with mass gathering surveillance implemented in preparation for the third International Conference on Small Island Developing States which will be held from 1-4 September 2014 in Apia, Samoa.

Tokelau: As of 18 August 2014 there have been 124 suspected Chikungunya cases since 12 July 2014. Samples have been collected and sent to the Institut Louis Malarde, French Polynesia for confirmatory testing.

*Ebola Virus Disease (EVD)*

The current outbreak of EVD is the largest in history and the first in West Africa affecting Guinea, Liberia, Nigeria and Sierra Leone. The current epidemic trend is worsening with 2473 cases and 1350 deaths as of 18 August 2014 since December 2013. For details on preparation and planning in the unlikely event of Ebola importation into the Pacific please refer to Dr Eric Nilles PacNet posting on 20 August 2014.

**Europe**

**First case of West Nile fever reported in EU this season 15 Aug 2014**

The first case of West Nile fever inside the European Union for the 2014 transmission season has been reported this week. The case, confirmed by the Greek Centre for Disease Control and Prevention (KEELPNO), was detected in an elderly resident in the East Attica region of the country. The case has no recent travel history. While this is the first case inside the EU, cases have been reported in neighbouring countries. Two cases that occurred in July have been reported by Israel this week. In previous weeks, Russia, Serbia and Bosnia and Herzegovina have reported 25 probable and confirmed cases.



## USA

### **YORK, Maine - A mosquito pool in York has tested positive for Eastern Equine Encephalitis, according to the Maine Centers for Disease Control and Prevention.**

The positive test result came back Friday evening. The test sample, which contains between one and 50 mosquitoes, was taken on Aug. 27 in the town of York, the CDC said.

In 2013, EEE was found in three horses, one emu, one pheasant flock and 26 mosquito pools in Maine. Maine also had three mosquito pools test positive for West Nile virus in 2013, according to the CDC. Maine has never had a human case of EEE and has only had one human case of West Nile virus, which was reported in 2012, the CDC said.

The CDC recommends that people use a repellent when outdoors, especially at dawn and dusk. Officials also recommend that people wear protective clothing, including long sleeve shirts, pants and socks and that they should avoid being outdoors at dawn and dusk when mosquitoes are most active. The CDC also recommends that people drain all artificial sources of standing water.

Regionally, multiple cases of EEE and WNV have been reported in 2014. Massachusetts has identified EEE in deer and mosquitoes and WNV in a human and mosquitoes. In New Hampshire, EEE has been found in both humans and mosquitoes. Vermont has identified EEE and WNV in mosquitoes.

## WORLD OF MOSQUITO-SCIENCE

### **Oxitec produces genetically-modified mosquitoes to fight dengue, a deadly tropical disease**

Oxitec's new factory in the Brazilian city of Campinas, outside Sao Paulo, is the first in the world to launch production of genetically-modified (GM) mosquitoes to target dengue. "This is the perfect environment for the *Aedes aegypti* mosquito, the main vector for dengue, to grow and reproduce," says Portuguese biologist Sofia Pinto, 32, as she leads a tour of the sweltering labs.



The production supervisor of biotech company Oxitec, Sofia Bastos Pinto, looking at transgenic *Aedes aegypti* mosquito's kept in a container at the lab in Campinas.

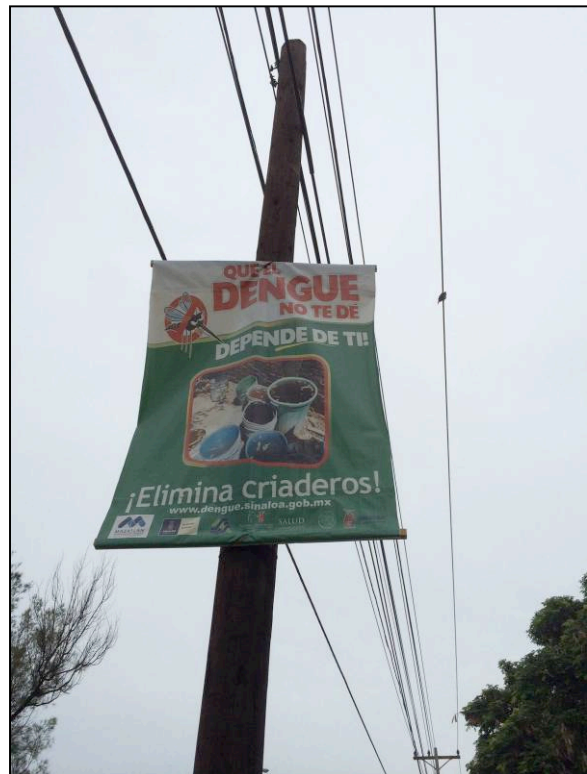


The British biotech firm has altered the DNA of the *Aedes aegypti* mosquito to prevent it from spreading the potentially deadly virus, which has hit Brazil harder than any other country this year. In one room, females mate with a handful of males in cages. In another, larvae grow on dozens of trays. In a third, bottles full of GM males await release into the wild.

The mosquitoes, which Oxitec has dubbed OX513A, have been bred to carry a sort of genetic self-destruct mechanism that causes their offspring to die before they reach sexual maturity, preventing them from reproducing. The company says if sufficient numbers of GM males are released into the wild, they will mate with females on a large enough scale to significantly reduce or even wipe out the dengue-carrying population.

"Once they're released, the mosquitoes look for wild females to copulate and reproduce. But thanks to this genetic modification, which is transmitted, all their offspring die before reaching adulthood, so they can neither bite nor transmit the dengue virus," Pinto told AFP.

Brazilian authorities have not yet given the go-ahead to sell the mosquitoes. And genetic engineering sceptics have raised questions about the impact they could have on the ecosystem. Pinto downplayed those concerns, saying the *Aedes aegypti* is an invasive species that originated in Africa and was only introduced to Brazil in the modern era. "It's an extremely urban mosquito and eliminating it from this environment will not have a major impact. It's not a pollinator nor a specific food source for other insects or animals," she said. Developed in 2002, the mosquitoes have been tested in pilot projects in the Cayman Islands, the US and Malaysia, as well as in the northeastern Brazilian state of Bahia. But Brazil would be the first



country to use them large-scale or to allow commercial sales. PHOTO Mazatlan Mexico by Monica Singe

02:06 Thu Aug 28 2014AAP

### Disputed islands

In 2005, the genome sequence of a mosquito enabled researchers to take a close look at how speciation might occur among populations that can still interbreed. They discovered that two populations of the mosquito that might be separating into separate species had just a few DNA differences, which they called "genomic islands of speciation." This set off a stampede of other researchers looking for—and finding—genomic islands in other species on the verge of splitting. But other work suggested these islands were statistical artifacts, leading one of the creators of the island concept to renounce the idea. Still, recent work in crows, sunflowers, and stick insects continues to build the case for these islands.

*Science* 8 August 2014: Vol. 345 no. 6197 pp. 611-613 Elizabeth Pennisi



## DID YOU KNOW? – VECTOR HISTORY

### Tropical Diseases and the Construction of the Panama Canal, 1904–1914

The Hay–Bunau–Varilla Treaty of 1903 created the Panama Canal Zone and allowed the US government to begin building its 51–mile waterway through the Isthmus of Panama in May 1904. In constructing the Panama Canal, American planners and builders faced challenges that went far beyond politics and engineering. The deadly endemic diseases of yellow fever and malaria were dangerous obstacles that had already defeated French efforts to construct a Panama Canal in the 1880s. The crippling effects of these diseases, which incapacitated many workers and caused at least 20,000 to die, led the French to abandon their goal in 1889.

For the later American effort, William Crawford Gorgas was appointed chief sanitary officer. His task was to prevent yellow fever and malaria infection among the laborers—a task that proved critical to American success.

The successful completion of the Panama Canal was a tribute to its organizers and specialists, among them Gorgas, whose highly effective sanitation measures eliminated the lethal or debilitating effects of yellow fever and malaria among workers.

#### *Epidemiology of Yellow Fever and Malaria*

By 1904, medical researchers had established that yellow fever and malaria were mosquito-borne diseases.

#### *The Results of Gorgas's Sanitation Measures*

Gorgas's success in Panama was as dramatic as in Cuba: by 1906, he eradicated yellow fever and contained malaria during the canal's 10-year construction period. Gorgas's sanitary workers drained, or covered with kerosene, all sources of standing water to prevent mosquitoes from laying their eggs and larvae from developing; fumigated areas infested with adult mosquitoes; isolated disease-stricken patients with screening and netting; and constructed quarantine facilities. In major urban centers, new domestic water systems provided running water to residents, thereby eliminating the need for collecting rain water in barrels, which had provided perfect breeding sites for mosquitoes carrying yellow fever. The US government's \$20 million investment in the sanitation program also provided free medical care and burial services to thousands of employees. In addition, Gorgas's sanitation department dispensed approximately one ton of prophylactic quinine each year at 21 dispensaries along the Panama Canal route and added hospital cars to trains that crossed the Isthmus. Each year, hospitals treated approximately 32,000 workers, and 6,000 were treated in sick camps.

<http://ocp.hul.harvard.edu/contagion/panamacanal.html>

