



To Permit or Not to Permit, That is the Question!

Many of you may have directors that seemed particularly stressed out right now. Recently we approached a Director of a large MAD in Cook Co. regarding a blurb for the newsletter and he replied, "...all my free time at home, work and weekends is now devoted to reviewing and writing the NPDES - EPA commentary due next month which is very URGENT! And then we have to start working on all the support documents we will need for our permit..." This is undoubtedly an important consideration for all MADs in Illinois and we wish them all "GOOD LUCK."

Poetry Corner

MOSQUITOES! MOSQUITOES!

Mosquitoes, mosquitoes, stop torturing me,
Why can't you behave more considerately?
You've bitten me practically down to the bone,
Mosquitoes, mosquitoes, please leave me alone!

Mosquitoes, mosquitoes, you're hard to ignore,
I itch and scratch, I can't stand anymore,
You've bitten my bottom; you've bitten my top,
Mosquitoes, mosquitoes, I'm begging you stop!

Mosquitoes, mosquitoes, I honestly feel,
It's time that you went somewhere else for a meal,
You've bitten me places I can't even see,
Mosquitoes, mosquitoes, stop torturing me!

- Unknown Author

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The content of the articles in the IMVCA Newsletter are brought together by the Newsletter Editor and reviewed by the Executive Board. The comments in the articles do not necessarily reflect the official position of the association, nor of its officers and members.

A Message From The President Remember the V!

Curt Colwell, PhD.

Question: What's the first thing that comes to mind when you think about vector-borne disease in Illinois last year? If your first thought is something like how slow the year was, with relatively low percentages of positive birds and mosquitoes, and very few cases of West Nile disease reported for the entire State – GOTCHA!

While that thought is certainly correct, and fairly remarkable, it focuses on what wasn't rather than what was – the "M" rather than the "V" in IMVCA.

Fact is, our state experienced an increase in vector-borne diseases. In Illinois, cases of Lyme disease and Ehrlichiosis rose to their highest levels – ever. While there were but 5 cases of West Nile disease, there were more than 250 confirmed and probable cases of tick-borne disease. That's more cases than there were cases of West Nile over the past three years combined. From 2002, the initial year of West Nile in Illinois, through 2009, far more Illinois residents have contracted tick-borne diseases than have contracted mosquito-borne diseases.

Still there is good reason for our focus to remain on testing mosquitoes and birds, larviciding, public education, and related programs to help prevent and control West Nile, since the disease has proven its potential to infect and affect the lives of significant numbers of people, given the right circumstances. And as we know, those circumstances can easily come together again just as they did in 2005, for example. Indeed we must be vigilant with respect to the M.

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A Note From Our Secretary/Treasurer Nina Krasavin

First of all, THANK YOU to everyone who sent their membership dues prior to the deadline. Remember if you didn't send them before July 1st, the membership for 2010 is \$20. We are very excited about the annual meeting because it will be in our homeland of Champaign. I hope you will enjoy it! Remember you can visit our website WWW.IMVCA.ORG for more information.

**Mark Your Calendars!!
IMVCA Annual Meeting
November 18-19, 2010
Champaign, IL**

A Brief History of Malaria in Illinois

Robert Berry

Malaria once menaced Illinois from Chicago to Cairo. It stalled construction of the Illinois and Michigan Canal in the 1830s and killed eighty residents (half the population) of Pike County in 1821. Mosquitoes feasted on the early settlers along river lowlands as well as on the occupants of Fort Dearborn with its surrounding marshy shore of Lake Michigan and the now-vanished Lake Mud in the Des Plaines River basin.

"The dominant disease as early as 1780 in the Illinois territory and for about seventy years thereafter was some form of malaria. It went by many different names such as the 'ague,' the 'shakes,' the 'chills,' 'bilious fever,' 'intermittent or remittent typhoid and typhus,' 'autumnal fever,' and various combinations of these names." - Isaac D. Rawlings MD., *The Rise and Fall of Disease in Illinois*. [This historical review was published by the Illinois Department of Public Health in 1927, commemorating the department's fiftieth anniversary. It devotes one volume to general health before 1877 and a second volume about the growth of the IDPH in the next fifty years. Dr. Rawlings was the state's health director in 1927. The two volumes were reprinted in 1994.]

Dr. Rawlings quotes Dr. J. Murphy of Peoria: "When I first settled in Peoria some thirty-five years ago (about 1848) the entire prairie was saturated with malaria. In fact, the entire area of central Illinois was a gigantic emporium of malaria."

It was in 1887 that English physician Ronald Ross, conducting research in India, found the malaria parasite in the stomach of an *Anopheles* mosquito. He went on to prove the theory of transmission of malaria parasites to humans. Unlike West Nile virus where humans are a dead-end host, for malaria the hosts included humans. Prior to this time, no one in America made a connection between the abundance of mosquitoes and disease.

Several sources contend most malaria in Illinois was brought in from the south, perhaps spread from importing infected African slaves, and traveled up the Mississippi and Illinois Rivers. However, Europeans with latent infection who settled in the colonies migrated west by way of the Ohio River, and after 1825 the Erie Canal (which has its own history of "ague"). Dr. Rawlings points out there is no evidence that aboriginal Indians had malaria; also, the French-Canadian settlers came from a non-malarial country, although some may have been infected after arriving in Kaskaskia and St. Louis. Immigration to Illinois increased in the late Eighteenth Century. "By the time the British took charge, the mosquitoes had become rather generally infected," according to Dr. Rawlings.

Medical diagnosis and sanitation were not dominant considerations for early settlers. Cisterns and shallow wells were constructed not far from privy vaults. Cholera and typhoid were diseases also prevalent in this period. Doctors often received the title after sixteen weeks of training; however, Greek and Latin were required for admission to medical schools. Most medical students were judged on potential for success rather than academic achievement. Practicing doctors often doubled as druggists. They also competed with the numerous medical quacks as licensing did not begin until after 1877.

Nevertheless, there were doctors throughout Nineteenth Century Illinois, trained in eastern universities, often surgeons,

who performed heroically. These were the physicians who started medical societies and lobbied for state, county, and local public health departments. However, without knowledge of virology and bacteriology the causes of illness had a variety of attributions. Malaria was often attributed to miasma in steamy August heat caused by breaking open the prairie sod. Regarding fevers, medical treatment was for symptoms.

In *The History of Pike County Illinois*, published in 1880, a description of the "Illinois shakes" is detailed: "This disease was a terror to new comers. In the fall of the year everybody was afflicted with it. It was no respecter of persons; everybody shook with it, and it was in every person's system. They all looked pale and yellow as though they were frostbitten. It was not contagious, but was a kind of miasma floating around in the atmosphere and absorbed into the system." After describing the painful details of chills and fever, the author concludes: "You imagined that even the dogs looked at you with a kind of self-complacency. About this time you came to the conclusion that you would not accept the whole State of Illinois as a gift, and if you had the strength and means, you picked up Hannah and the baby and your traps, and went back 'yonder 'to Injianny, Ohio, or old Kaintuck."

Apparently not everyone shared that extreme experience as malaria ebbed some years. Also, some of the early settlers developed immunity to malaria. Dr. Frederick Gerhard's 1857, *Illinois As It Is*, promotes the virtues of the expanding Illinois opportunities for immigrants and offers a brief chapter playing down health problems and diseases. He quotes a Belleville doctor as asserting: "The time in which southern Illinois might with propriety be denounced as the fever country, has long passed by. The prairie is healthy."

And from a physician in Pekin:

"Patients down with intermitting fevers usually suffer but little; they get the fever once or twice, the disease disappearing each time before an adequate dietetical treatment, without any serious consequences.

"The best preservative is cold water. Every morning, after rising, take a cold bath, or if this be inconvenient, wash your whole body with cold water; after which, while still jejune (having an empty stomach) drink a few cups of cold water; if strictly followed, are well calculated to protect you from the fever."

"The best remedy is acid sulphuric Peruvian bark, in doses of from 2 to 4 grains, at intervals, till 10,15, 20 grains are taken. There are many nostrums fabricated and sold at wholesale, whose chief substance, however, consists of Peruvian bark intermixed with arsenic."

Peruvian bark was a popular treatment for ague/malaria. It contains quinine, a treatment for malaria brought to Europe in the 1600s from Peru by Spanish Jesuit missionaries. Quinine is essentially a muscle relaxer and is an anti-malarial medicine. Carl Sandberg refers to it in *Life of Lincoln*, when Tom Lincoln and Sally Bush were treated with "a Peruvian bark and whisky tonic mixture."

Among American physicians, the only issue surrounding quinine was the dosage; western doctors preferred heavy dosages. Eastern doctors preference for low dosage may have been influenced by the price. Quinine cost was as much as five dollars an ounce, according to Lucius Zeuch, M.D., in his 1927, *History of Medical Practice in Illinois*.

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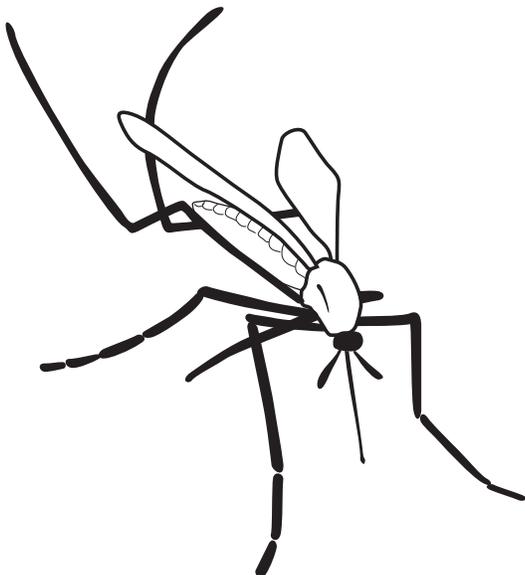
This preparation had its competitors. An 1853 Jacksonville newspaper advertised “Dr. Easterley’s Fever and Ague Killer” to go along with his “compound of Iodine and Sarsaparilla, a great Spring and Summer Medicine.” In St. Louis, one could get “Indian, Oak and Wahoo Bitters – a cure for Ague.” The instructions included: “When the bottle is two-thirds gone, add one-third gin or good whisky or rainwater, and continue as directed.”

Mortality from malaria in Illinois began to decline by the 1880s. It was known that malaria was less of a threat where drainage occurred for agricultural purposes and expansion of cities. When the Illinois and Michigan Canal was completed in 1848 draining the surrounding area to water the canal was followed by reports of fewer malaria cases. The death rate from malaria in 1860 was 66.9 per 100,000 population and dropped to 36.1 in 1880. In 1926, there were 42 deaths from malaria, a rate of 0.58 per 100,000 population. (Rawlings, p. 382)

“No systematic malaria-prevention work (in Illinois) by mosquito eradication was undertaken, however, until 1922,” according to Dr. Rawlings. He notes that just prior to 1922 the Southern Illinois Medical Society passed a resolution to study mosquito breeding places and the types of mosquitoes prevalent in some southern Illinois communities. The studies were conducted by entomologists of the State Natural History Survey.

In 1927, the Illinois Mosquito Abatement Act was adopted and the southern city of Carbondale was among the first to form a district, along with two districts in Cook County. Successful interruption of malaria transmission in the U.S. took place in the 1940s, according to the Morbidity and Mortality Weekly Report, April 17, 2009. The factors were “a combination of improved housing, and socioeconomic conditions, environmental management, vector-control efforts, and case management.” There were an estimated 600,000 U.S. cases in 1914 and 1,505 in 2007. Illinois had a reported 54 cases in 2007. The MMWR report notes that a majority of malaria cases “each year in the U.S. are imported from regions where malaria transmission is known to occur.”

Despite modern control efforts, mosquitoes in Illinois are still a potential threat to health; witness the outbreaks of St. Louis encephalitis in 1975 and West Nile virus in 2002.



Yet this might also be a good time to give respect to the V, those “other” vectors, primarily ticks responsible for a rising tide of tick-borne disease not only in Illinois but throughout the United States. Whether the numbers are a product of improved detection, recognition, reporting, from expanding vector populations, and/or other factors, we cannot afford to ignore them.

But can we afford not to ignore them? That is, can we afford to combat tick-borne disease with research, surveillance, control, education, etc., to the same degree we have West Nile, given the budget cutbacks many of us are experiencing? It’s true; West Nile funding has been cut, whereas funds for fighting ticks and tick-borne diseases have not been cut. Why haven’t tick-borne disease funds been cut? Because there aren’t any to cut! Well, not many, by comparison.

That’s why we’re grateful for the work of local researchers including Dr. Nohra Mateus-Pinilla, Jennifer Ryzewski, Dr. Jeff Nelson, and others who continue to provide Illinois with essential information on tick-borne disease, tick identification, behavior, distribution, prevention and control.

So as we go forth, battling mosquito-borne disease with one hand and the budget with the other, let’s somehow remember the V! And may the funds be with you.



Tom Velat of the Forest Preserve District of DuPage County, “dragging” for ticks. Photo/Curt Colwell

West Nile Virus Update: 2010

(*Weren't we supposed to have jet packs, flying cars and robots by 2010?*)

Contributions by C. P. Larva, pre-imago reporter for the IMVCA, edited by Richard Lampman for spelling and vetted by Jack Swanson for psychologically disturbing content.

With the high level of MAD and public health surveillance for mosquitoes and dead birds in Cook County (including the City of Chicago), you'd expect them to be among the first sites reporting positive West Nile virus samples. However if you made that assumption, you would be wrong.

Since 2002 the counties with the earliest positive mosquito samples have been DuPage (6 out of 8 years), Cook and Tazewell (2 times out of 8 years, each), and Woodford and Lake counties (once each out of 8 years). Remarkably, the earliest detections of positive dead birds have been from all over the state, including LaSalle (2009); Winnebago (2008); Cook, DuPage, and Sangamon (2007); Dewitt (2006); McLean (2005); Adams and Champaign (2004); Henderson (2003); and Kane (2002). In contrast, the first human case in Illinois is often from counties with high population densities (such as, Cook and DuPage), although early human cases also occurred in counties with moderate to low human density per square mile (such as Kane, Champaign, and Jo Daviess).

So how does this year compare so far?

The first WNV-positive mosquitoes in 2010 were from Tazewell County and the first positive birds were from Carroll and St. Clair counties. As of mid-June, 10 counties reported either WNV positive mosquitoes or birds, including Carroll, Gallatin, Greene, Jo Daviess, McLean, Mercer, Rock Island, St. Clair, Stephenson and Tazewell counties. Notably absent in this group of mosquito and bird "firsts" are DuPage County and Cook County.

So what does that mean?

I don't think anyone knows the exact answer to this, but you certainly can draw some tentative conclusions and develop some potentially predictive hypotheses.

First, the distribution of WNV positives indicates enzootic transmission is occurring over a broad geographic area in a wide range of habitats and within counties ranging from moderate to low human density. These counties vary from about 5,700 people in Gallatin to 263,600 in St. Clair and the number of housing units per square mile, about 9.8 and 174.0, respectively, which indicates considerable disparity in their urban/rural composition. These observations tend to argue against any suggestion that you need some specific urban mixture of *Culex* species and American robins, house sparrows, or other urban birds in order to initiate transmission cycles. However, conditions that promote epidemic transmission are a different thing entirely.

Second, the absence of positive samples from high surveillance areas like Cook and DuPage would suggest that even the early stages of transmission are low in this region. The obvious question is why? The unsatisfying answer is simply there are so many possibilities; it is not easy to say which the major factors are. It could be weather (rainfall amounts, frequency, temperature, wind, and humidity), low vector-host interactions (reduction in bird or mosquito numbers by disease or mosquito control actions, for example), or a change in the virulence of the virus. And the worst thing of all---it is probably a combination of factors.

Third, the early detection of WNV in mosquitoes seems to implicate *Cx. restuans*. We did a high intensity collection in 2007 and got our first positive from *Cx. restuans* in May, over a month before positives in *Cx. pipiens* began. Perhaps the "two-spotted" mosquito is critical for overwintering or initiating enzootic cycles in the Midwest.

Fourth, the distribution of bird cases appears broad across the State of Illinois, but a close inspection suggests a western county bias with numerous positive counties adjacent to the Mississippi or Illinois Rivers. A survey of the states surrounding IL suggests WNV activity is greater in Illinois. Positive mosquitoes have been reported from the northeastern states of Pennsylvania and West Virginia.

Fifth, it seems that this would be THE appropriate time to stabilize our present space-time continuum, in order to avoid a catastrophic phase shift in anti-.... Oops! Started day-dreaming about Star Trek for second.....

Anyway, fifth, by the time you read this, the whole distribution of positive samples could be different. So far down here in central Illinois it's been wet and hot. The positive samples started early and seem to be increasing. Fortunately, I've learned to never make such predictions until after the season is over. So far, I've been 100% correct retrospectively. Please see the link from the IDPH website for the most recent map.

http://www.idph.state.il.us/envhealth/wnvsurveillance_data_10_map.htm

RAMP TEST OBSERVATIONS

Richard Lampman

There is no doubt in my mind from talking with various mosquito professionals in Illinois, that in-house commercial tests for WNV detection (that is, RAMP, VecTest, and whatever else may come along) are extremely valuable for making operational decisions. Their sensitivity (lack of detection, due to concentration, or "false negatives"), specificity (inaccurate pathogen identification or "false positives"), and simplicity all appear acceptable. BUT, that does not mean everything is perfect. In fact, a search of the internet revealed that many states treat RAMP results differently, primarily modifying the cut-off value for classifying a sample as unambiguously positive. Below is a summary from www.mosquito-va.org/.../14%20RAMP%20Testing%20in%20VA%202009.pdf

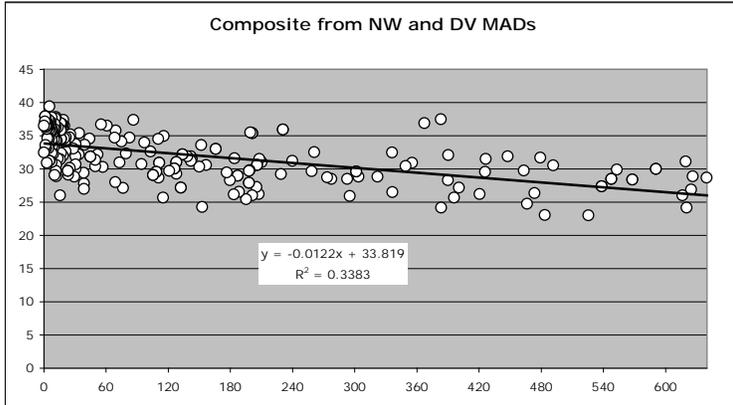
"The States of Arizona, Idaho and Washington only accept RAMP test results as positive if they are of greater than or equal to (\geq) 300 RAMP Units (RU). All RAMP positives below 300 RU must be confirmed by PCR to be counted in state statistics or reported to the media. The State of Pennsylvania only accepts RAMP tests as positive if they are \geq 200 RU. Pools testing below this level must be confirmed by PCR testing to be counted. The State of Illinois requires that RAMP positives be \geq 100 RU to be counted. The State of New Jersey recommends the use of RAMP testing for local operational decisions only..... Based on communications with other states, VDH [Virginia Department of Health] decided to recommend that RAMP tests be counted as positive only if they are \geq 300 RU. Tests below 300 RU should be

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confirmed by PCR testing to count.”

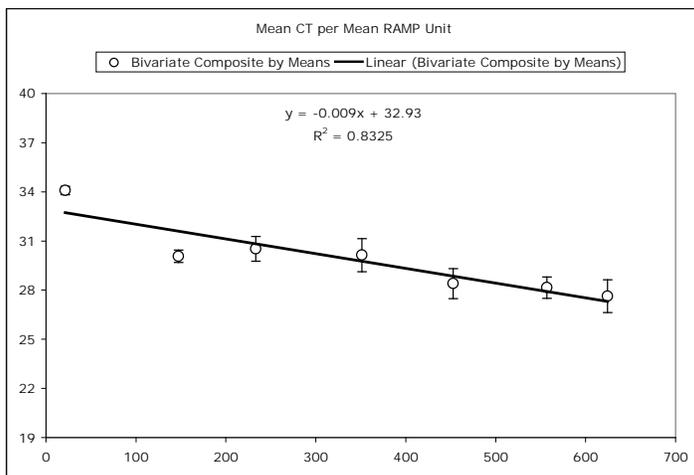
At the AMCA meeting in Lexington, KY, Krasavin, Lampman, Montgomery and Alto from INHS presented preliminary results from RAMP-PCR comparisons in Illinois. Let me summarize some of the findings----

1. RAMP correlates significantly to RT-PCR TaqMan, but there is a lot of variation in the RAMP units relative to Taqman cycle thresholds (CT). That is, if you graph all the points, they definitely show a pattern, but they form a broad cloud around the central line.



This is actually a very good result for real-world data with very little control between RAMP operators.

2. A bivariate plot of mean RAMP values and mean CT for every 100 RAMP units generates a line with a high degree of correspondence between the two detection methods. Basically, this means that RAMP units do indeed reflect amount of virus, although the standard deviation of the mean RAMP values was relatively large. This implies that undescribed factors are causing variation in the test results.



3. The sensitivity and specificity differed considerably based on the RAMP cutoff value used. The higher the RAMP value, the more specific it became, but the sensitivity decreased. False positives did occur in Illinois, unlike a similar study in NJ. Although this could have a negative impact on management, most MADs and PHDs in Illinois understand that early detection is not always predictive of epidemic transmission (hence early positive birds and mosquitoes are often detected in municipalities that later have few if any human cases). What most use the RAMP results for is the change in rate of positives or some mnemonic

like “two positive samples in a row from the same site”.

4. The degree of agreement between RAMP unit and CT value differs significantly (but by a small percentage) for different mosquito abatement districts in Illinois. This suggests that operator handling can influence results, but the operational impact also appears low.

Illinois is cooperating with Banugopan Kesavaraju of Salt Lake City MAD and several other MADs, PHDs, and the CDC in reviewing regional variation in RAMP-RT-PCR results. The preliminary data suggests that some variation in the quantification of RAMP values by PCR may be related to the RT-PCR TaqMan specific primer and probe set used.

Surge in Florida EEE Cases in Horses

From ProMed

State officials recently warned horse owners to have their animals vaccinated against eastern equine encephalitis EEE. This follows a surge of reported cases, especially in areas where the disease is less common. There have been 16 confirmed cases statewide this year (2010), which is a normal number, but officials say seven of those were reported on June 23, 2010.

“Most of the cases have been in the central and north central part of the state which is normal. But we are also seeing increased EEE and West Nile virus activity in sentinel chickens in the southern part of the state, including Martin County which has not had EEE detected in 30 years,” state ag commissioner Charles Bronson said in a news release. He also noted a confirmed case in Collier County.

Special Thanks!

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Thanks for your generosity!

South Cook County MAD Aids State Agencies With Illegal Dump in Markham

Barbara O'Meara

South Cook County MAD provided larval control for what the Illinois EPA described as possibly the largest illegal dump site ever uncovered in Illinois. The twelve acre site, perhaps forty years in the making, required Illinois EPA removal of more than 26,000 tires and 4,321 tons of waste.

What started out as an out of control tire fire in April this year turned into a public health concern because of the threat of mosquito-borne disease. NBC Channel 5 started the ball rolling with a report on an illegal dump in Markham after the tire fire alerted area residents to the problem. Once the expose' aired on Channel 5 news the Illinois EPA received complaints about the area and in turn they contacted IDPH personnel. IDPH was able to coordinate with IEPA, Cook County Public Health Department, South Cook County MAD and the village of Markham to all meet and do a site visit the last week of April.

The cleanup has been ongoing. On June 22nd the Illinois Attorney General's office filed a complaint in Cook County Circuit Court holding Markham responsible for participation in the cleanup. Part of that complaint was based on the threat of mosquito-borne disease. A press release by the Illinois EPA said "inspections revealed discarded mobile homes, automobile parts, boats, tires, drums and totes of unknown liquids and solids, other containers with residue of construction materials, unidentified gas cylinders, unknown liquid and solid spills on the ground, swimming pool chemicals and various construction and demolition debris."

South Cook County MAD treated the area immediately with larvicides to try and suppress the mosquito numbers at this location. SCCMAD will also be conducting ongoing inspections on this property and assisting in the continuation of mosquito abatement efforts while the cleanup continues.

See Illinois EPA photos on Flickr: <http://www.flickr.com/photos/illinoisepa/sets/72157624290456758/>



Tires at the illegal dump site in Markham. Photo/ IEPA.

WNV in the News

As of June 23, 2010

There seemed to be widespread early transmission of WNV, including a human case in Mississippi and two in Georgia. If only we could predict the weather.

Connecticut

Hartford, CT - The first positive mosquitoes were detected in Stamford on June 14, 2010 by the Connecticut Agricultural Experiment Station (CAES).

"The detection of infected mosquitoes in mid-June is unusual and suggests early amplification of virus activity.....," said Theodore G. Andreadis, Ph.D., Chief Medical Entomologist, CAES. The CAES has a network of 91 mosquito-trapping stations in 72 municipalities. Mosquito traps are set Monday through Thursday nights and conducted at each site every ten days on a rotating basis.

Georgia

Georgia's first 2010 WNV case in a 53-year old man was confirmed by the Georgia Department of Community Health/Division of Public Health Acute Disease Epidemiology Section. "Georgia saw West Nile roughly two months earlier than usual."

Pennsylvania

The West Nile Virus Program is reporting 4 positive samples from Delaware County. These samples contained a total of 5 positive pools.

Sampling is ongoing and will be used to determine the extent of the infected area. DEP and County West Nile Virus program staff will begin catch basin treatments in these and surrounding municipalities as soon as possible.

Washington State

2010's 1st West Nile virus found in Grant County mosquitoes. "Last year was the busiest so far in our state for West Nile virus," said Gregg Grunenfelder, environmental health division assistant secretary for the state Department of Health. "We had more human cases, positive mosquito samples, horse cases, and dead birds than ever last year. Dozens of people were infected and one died in Washington in 2009, so it's clear that West Nile virus can be very serious. Avoiding mosquito bites is the key to preventing infection."

California

The state is showing early signs of amplifying transmission. There have been 27 positive dead birds from 8 counties and 6 mosquito samples from 2 counties, plus a squirrel from one county.

West Virginia

Health officials with the Kanawha-Charleston Health Department report at least one mosquito pool tested positive for the West Nile virus.

ARTICLES TO LOOK UP

“Google” or “search whatever you like best” them!

The Journal of Infectious Diseases 2010;201:2–4. Persistent Infection with West Nile Virus Years after Initial Infection, Murray, et al. West Nile virus (WNV) RNA was demonstrated in 5 (20%) of 25 urine samples collected from convalescent patients 573–2452 days (1.6–6.7 years) after WNV infection. Four of the 5 amplicons sequenced showed >99% homology to the WNV NY99 strain. These findings show that individuals with chronic symptoms after WNV infecti...

Field-Based Estimates of Avian Mortality from West Nile Virus Infection. Michael P. Ward, Tara A. Beveroth, Richard Lampman, Arlo Raim, David Enstrom, Robert Novak. Vector-Borne and Zoonotic Diseases. -Not available-, ahead of print. <http://www.liebertonline.com/doi/abs/10.1089/vbz.2008.0198>

Local impact of temperature and precipitation on West Nile virus infection in Culex species mosquitoes in northeast Illinois, USA. MO Ruiz, LF Chaves, GL Hamer, T Sun, WM ... - Parasites & ..., 2010 - biomedcentral.com

Test of Recrudescence Hypothesis for Overwintering of West Nile Virus in Gray Catbirds, JC Owen, FR Moore, AJ Williams, MP Ward, TA ... - Journal of Medical ..., 2010

Multi-year evolutionary dynamics of West Nile virus in suburban Chicago, USA, 2005–2007, G Amore, L Bertolotti, GL Hamer, ... - ... of the Royal ..., 2010 - rstb.royalsocietypublishing.org

Evolutionary characterization of the West Nile Virus complete genome, RR Gray, NMC Veras, LA Santos, M Salemi - Molecular Phylogenetics and ..., 2010 - Elsevier

CDC: 5-Fold Decline in West Nile Virus Neuroinvasive Disease E Hitt - MMWR Surveill Summ, 2010 - <http://www.cdc.gov/MMWR/preview/mmwrhtml/ss5902a1.htm>

Avian Communal Roosts as Amplification Foci for West Nile Virus in Urban Areas in Northeastern United States. MA Diuk-Wasser, G Molaei, JE Simpson, CM ... - The American journal of ..., 2010 - ASTMH

Host-Feeding Habits of Culex pipiens and Aedes albopictus (Diptera: Culicidae) Collected at the Urban and Suburban Residential Areas of Japan, K Sawabe, H Isawa, K Hoshino, T Sasaki, S ... - Journal of Medical ..., 2010 - BioOne

La Crosse Virus in Aedes albopictus Mosquitoes, Texas, USA, 2009, cdc.gov. AJ Lambert, CD Blair, M D'Anton, W Ewing, ... - Emerging infectious ..., 2010 - origin.cdc.gov

Landscape Epidemiology of Vector-Borne Diseases, WK Reisen - Annual review of entomology, 2010 - Annual Reviews

Ecological determinants of American crow mortality due to West Nile virus during its North American sweep, WD Koenig, WM Hochachka, B Zuckerberg, JL ... - Oecologia, 2010 - Springer

West Nile virus may have hitched a ride across the Western United States on Culex tarsalis mosquitoes. TL GOLDBERG, TK ANDERSON, GL ... - Molecular ..., 2010 - interscience.wiley.com

Evidence of Vertical Transmission of West Nile Virus in Field-Collected Mosquitoes, I Unlu, AJ Mackay, A Roy, MM Yates, LD Foil - Journal of Vector Ecology, 2010 – BioOne

The use of Early Summer Mosquito Surveillance to Predict Late Summer West Nile Virus Activity, HS Ginsberg, I Rochlin, SR Campbell - Journal of Vector Ecology, 2010 – BioOne



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