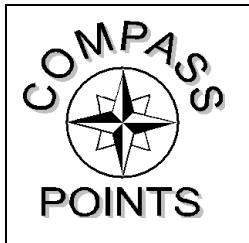




the NORTHEASTER

Newsletter of the Northeastern Mosquito Control Association

February 2000



~ THE PRESIDENTIAL COLUMN ~

by Sarah MacGregor

Happy New Year. Well, life as we know it didn't end on January 1st. No power outages. No computer crashes. No Y2K bugs. I even survived the frenzy of the recent first-in-the-nation presidential primary here in NH. Now that the candidates and the media have left town, I can get on with my life. There's plenty to do in preparation for the upcoming mosquito season. Whether West Nile Virus reemerges and spreads or mysteriously disappears remains to be seen, but no one wants to be caught off guard. It's time to plan for the real Y2K bug -- *mosquitoes*. It's going to be an interesting year.

Don't let this be your last newsletter. I'm sure you don't want to miss all the exciting things going on in mosquito control right now. Our editor will be trimming nearly 200 inactive accounts from the mailing list. If you'd like to continue receiving *The Northeaster*, and you did not attend the 1999 Annual Meeting, then be sure to renew your membership dues soon.

I'd like to thank everyone who helped make our 1999 Annual Meeting a huge success. It takes many devoted people to coordinate a meeting that large. All the committees did a great job and should be commended. Our 45th Annual Meeting was a record breaker in every sense. More delegates, more vendors, more crowded than any annual meeting I've attended. If our delegation continues to grow, we'll have to look at larger hotels while

striving to keep that friendly, family atmosphere we enjoy.

The NMCA annual banquet continues to be a fun filled night with awards, good food and friendship. We enjoyed another great Photo Salon sponsored by Jeff O'Neill and Wellmark. John Kuschke was in attendance to swear in the new Executive Board. We're thrilled to have Walter Montgomery back for a three year term in addition to Wally Terrill as the Industry Rep, a new position on the Board of Directors. I wish to thank Jon Turmel for his service as an officer for three years. Jon always had great ideas making our jobs easier. We'll miss you at the Board meetings. The highlight of my night came when I presented an Honorary Membership to our dear friend and retiring colleague, Bill Zawicki. Bill has helped many of us in mosquito control through the years. I have always appreciated his honesty, hard work and professionalism. I'll miss working with Bill. In fact, I already do.

Plans are well underway for the next NMCA Annual Meeting. This year's meeting will be held December 4-6, 2000, at the Newport Harbor Hotel and Marina in Newport, Rhode Island. Check out their website at www.nhnm.com.

I hope to see you in Atlantic City at the AMCA Annual Meeting. It'll be one last hurrah before we're immersed in the 2000 mosquito season. It's going to be an interesting year. Did you know it's the Year of the Dragon? I find that interesting. Of course, you know I'm fond of dragons.

THIS COULD BE YOUR LAST ISSUE

That's correct...did you receive a round, red sticker next to your address label?? Not to worry..... If you did, then your membership has lapsed....please fill out and return the enclosed membership application with your annual dues. The \$20.00 annual dues entitles you to this newsletter, filled with news and information from the Maine to New Jersey, plus important registration information about each upcoming annual meeting. Please help us and return your membership form with your dues...and remain on our mailing list!! **Please note:** registration at any annual meeting includes your annual dues....so come on out to the annual meetings!!

~ 46TH ANNUAL MEETING ~

The **46th Annual Meeting** of the Northeastern Mosquito Control Association is scheduled for *Monday, December 4 through Wednesday, December 6th, 2000* at the **Newport Harbor Hotel & Marina in Newport, Rhode Island**. Please check their website, <www.nhnm.com> for directions and other information, or call toll free 1-800-955-2558. Hotel costs are **\$79.00** per night plus tax, with an extra charge for a balcony (in December?). The NMCA website will have more information on the Annual Meeting as it is received in the months to come.

~ SCHOLARSHIP ~

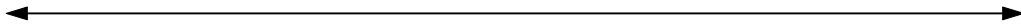
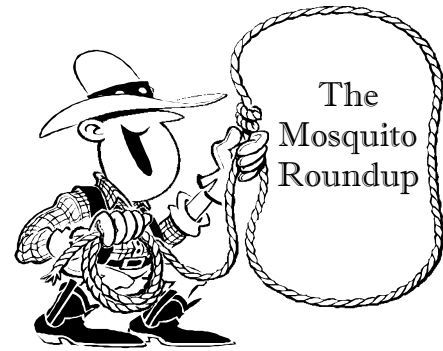
The NMCA Executive Board wants to remind everyone it's never too early to consider candidates for the various scholarships, grants and awards that the NMCA offers to the membership each year - application forms will be included in subsequent issues.

- **The Bob Armstrong Award:** is given to a NMCA member for meritorious service to NMCA and mosquito control
- **The McColgan Grant-in-Aid:** will go to an individual whose work is directly related to the advancement of operational mosquito control.
- **The Jobbins Scholarship:** will go to a student whose work is in an area relevant to mosquito or biting-fly control in the Northeast.
- **The Dave Scott Memorial Award:** This award is dedicated to the recognition of the fact that many advancements in our work come from the rank-and-file.

For more information on these awards, please contact **John J. Smith**, Scholarship/Awards Chairman for more details at **(781) 762-3681**, or check the website at <www.nmca.org>, on the Annual Meeting page.

In this column, you will find **mosquito** and **arbovirus news** from the membership, from New England to New Jersey. Haven't submitted anything for this issue? Look for the contact information in this newsletter and submit news from your organization next time. A paragraph or two is all that's needed. Give it some thought.

- Ed.



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Bristol County MCP - Just a few words on our Link-Belt 1600 excavator with an extended boom and Wain-Roy swinger attachment. This machine is probably the best piece of digging equipment the Project has ever owned. It will out-dig any of our prior tractors which includes an International 500 series, a Dresser and a Smalley. It is much faster and much more powerful in its digging ability. The extended boom and

swinger attachment make digging and bank grading much easier. Although the Link-Belt is heavier as far as ground pressure is concerned, its performance is unequalled compared to some of the other machines that are available with lighter ground pressure.

- Alan DeCastro, Supt.

RI Office of Mosquito Abatement Coordination - We are busy making preparations for the unwelcome appearance of WNV in Rhode Island, should it arrive in 2000. The Mosquito Abatement Coordination Office, the state Department of Health, the state veterinarian, and other DEM staff are collaborating on several initiatives. These include a public awareness campaign, increasing state support and encouragement to communities for their mosquito control programs, a bird surveillance program, and modifying the EEE surveillance trapping. We may also begin studies of numerous topics regarding stormwater catchment basins. Unfortunately, these efforts are slowing the progress of saltmarsh water management projects.

- Al Gettman

Northeast Mass. Mosquito Control & Wetlands Management District - We've all heard the old saying, if you don't like the weather in New England, wait a minute. Well, how about going from open ground conditions, to the deepest frost in several years, in just three days! With the mild winter, we have been catching up on a backlog of

wetland projects; that came to an abrupt halt with the arrival of the coldest temperatures we have seen in several years. We had snow on Thursday, January 13th and temperatures started to drop. We left work on Friday, January 14th with two machines out on marsh sites. There was a light snow cover, and the ground was open. We returned to work Tuesday, January 18th to sub-zero temperatures, wind chills in the double digits, and two machines stranded in the ice.

We have sent out an advisory to Boards of Health in our District regarding the West Nile Virus situation, and are reviewing our control strategies to evaluate effectiveness in the event of an outbreak. Preliminarily we are planning to reinstate light trap surveillance, increase catch basin treatments in urban areas, and take some old Leco's out of mothballs.

With the consensus of the NMCA Executive Board, I will be sending

out letters to mosquito control associations on the East Coast to see if there is an interest in forming an alliance or focus group to address coastal mosquito control issues.

On Friday, April 7, 2000 beginning at 10:00 AM at the Plum Island Airport in Newbury, Massachusetts, we will be hosting a demonstration of ditch digging by helicopter. Yes, by helicopter. Ray Newcomb of JBI Helicopter (the contractor who does our aerial applications) has a clamshell rig they use on cranberry bogs and would like to demonstrate its use in mosquito control applications. Also, our Smalley 808D, rebuilt by Quality Industries (now called the Qualley 808D) will be there for your inspection.

- Walter Montgomery, Supt.

Central Mass. MCP - Well, the 1999 season ended with a bang, and has left us to wonder what the first mosquito season of the new millennium will bring (I know, the new millennium doesn't start until 2001). La Niña weather patterns have brought us a dry, relatively warm winter thus far (with the exception of the recent cold snap). Will the spring be relatively dry again? Will West Nile virus be back? It's anyone's guess at this point. But our goal is to be prepared for the emergence of WNV, and tailor our control strategies to reduce its effect. Some revised strategies under discussion include: our catch basin program will be expanded to intensify efforts in our urban areas; CDC light traps will be employed to sample prevalent species and show efficacy of adulticide efforts; gravid mosquito traps will be utilized in areas where NJ light traps are not as effective; and we'll also step up our public relations campaign. With the promising results from Ellen Orrell's preliminary research on *Cq. perturbans* control with *Bs. sphaericus* at Plymouth County MCP, discussion is also underway at the Project to discuss control efforts to reduce the nuisance problem and vector potential from this species. Also, field trials of Aqua-Reslin®, scheduled for last season but canceled due to extremely low adult populations, are on tap again for this year. All in all, it's shaping up to be another exciting year here in the central part of the state. **Write this date**

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down: the annual *Clarke Mosquito Seminar* held at Project headquarters in Northborough is scheduled to be **April 4th** this year, beginning at 9:00 AM. Information regarding this meeting is to be mailed soon. Hope to see you all there!!

- **Tim Deschamps, Asst. Supt.**

Norfolk County MCP - After a balmy start to the winter season, the field crew is getting cabin fever now that winter has set in. The ditches and culverts have been frozen for the most part making field work tough to near impossible. We accomplished quite a bit of Integrated Marsh Management work on the Quincy salt marsh while the weather cooperated, but now all the tractors are in for maintenance. We have one new employee in our field crew, who has yet to really experience 'field' work. Hopefully the weather will moderate soon to allow us out.

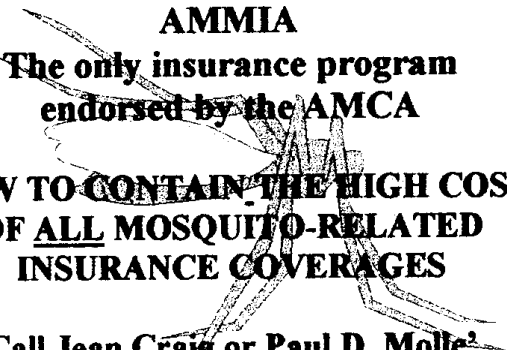
- **Dave Lawson, Asst. Supt.**

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Cape Cod MCP - We are focusing our winter work on the salt/brackish areas that harbored large mosquito populations last summer. Brushing and ditch maintenance at these sites, including places within Cape Cod National seashore, will continue until the treating season begins. Our project to

use native fish in mosquito control continues to progress. This winter we are working with students in the Environmental Technology Program at the Upper Cape Regional Technical School. Experts at the Marine Biological Laboratory have offered their assistance and we are all working towards a large fish culture program. Finally, the Biting Fly Workshop will be held on Cape Cod this summer July 17-20. Anyone with an interest in attending should contact Dr. Jeffrey Freeman at (802) 468-5095 or e-mail him at freemanf@juno.com.

- **Gabrielle Sakolsky, Entomologist**

Plymouth County MCP - This winter PCMCP has been busy with a number of projects and events. We completed our first OMWM job in ten years. We are now looking forward to the summer when we can see how well our changes have worked. Two new foremen have been hired, bringing us up to five foremen in all. Our new foremen are now busy taking pesticide exams and learning their area. We have been busy developing strategies for controlling container breeding mosquitoes and WNV. Also our staff entomologist Ellen Orrell has been learning .html and developing a web page. Late January, we accepted delivery on our new low ground pressure Link Belt 1600 Quantum Excavator. This excavator replaces our aging Smalley and will be used on our salt marsh sites. The cleats are 32in wide and the tracks have been extended to a total length of 166in. We estimate the ground pressure to be 2.0psi. Hopefully, this new excavator will provide us with many years of good service.

- **Ray Zucker & Ellen Orrell**

NJ Office of Mosq. Con. Coordination - We are all trying to fortify our programs in anticipation of what may, or may not, occur this spring with WNV. Most of our counties are reporting some increases in their budgets. The state budget will increase as well. There is a significant budget for expanded surveillance, statewide and control as well. A special conference on the subject will be held this March sponsored by the State Environmental Health Association. The biggest news at the level of county government is that Hunterdon County, which NEVER had an operating mosquito control program ever, now does. The Board of Chosen Freeholders there established a program in their Health Dept., just prior to the end of 1999. It will be fully integrated, including full-time staff and equipment. This means that all 21 counties in NJ have some kind of mosquito control program in place. This is supplemented by 15 or 16 municipal and private programs which operate by permit granted by the state DEP. The State Mosquito Control Commission supports each of these operations, as needed. The state Departments of Health and Agriculture are also expanding their laboratory services and surveillance. Included is a new Bio-Hazard Safety Level III laboratory for virus testing and identification. Finally, we are still pursuing vendors and builders who may be interested in the construction and sale of Smalley-like excavators. By March or April there may be something to talk about on that subject.

- Bob Kent

Suffolk County (NY) Div. of Vector Control - Suffolk County was heavily involved in the response to West Nile Virus (WNV) in 1999, assisting in New York City and responding to virus activity at home. The County is working closely with the State Department of Health (DOH) and Department of Environmental Conservation (DEC) in planning the surveillance, prevention and response in 2000, as well as putting its own programs in place. Control is handled by the Division of Vector Control in the Department of Public Works, under the direction of Superintendent Dominick Ninivaggi. Surveillance is run by Dr. Scott Campbell, Entomologist from the County Department of Health Services. Dr. Campbell has been active in the DOH workgroup for Surveillance, while Ninivaggi has worked with the Prevention, Control and Response Workgroup. These Workgroups are assembling action plans that will guide a coordinated response involving State, City, County and other local governments. The Suffolk representatives assembled the working drafts of their Workgroup reports, and have therefore played a major role in this effort. DOH is hiring staff to upgrade its viral surveillance program, and will help coordinate a general expansion of mosquito control efforts, along with DEC. New York City and several upstate counties are starting mosquito control programs of one sort or another. In Suffolk County, Health Services plans to hire 3 staff and acquire new equipment to substantially upgrade the Vector-Borne Disease

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Laboratory. The exact form of this upgrade will depend on guidelines set out by CDC and DOH, but will eventually involve testing many of our own samples. WNV surveillance must be done in addition to our existing EEE surveillance. For control, DPW has been given 17 new positions plus funding for vehicles and equipment. These positions will eventually result in a doubling of our ground larviciding effort from 7 to 14 field crews. This will allow us to have field crews throughout the County, rather than only in areas with high nuisance or EEE problems. We are concerned not only about *Culex pipiens*, but also species that transmit in the lab, such as *Aedes sollicitans* and *Aedes japonicus*. We are the only county to have horse deaths from WNV, so we are concerned about possible rural transmission cycles involving vectors other than *Culex*. We have not neglected water management, despite the cold winter, and plan a major (200+ acres) OMWM project at the National Park Services William Floyd Estate. We have a wide-track Kobelco excavator on order and are going to bid on an amphibious excavator and additional amphibious ditcher. Ironically, if not for WNV, 1999 would have been the quietest year in a long, long time. Salt marsh mosquitoes were almost non-existent, thanks to our aerial larvicide, and it was dry. Instead, this has been the busiest winter in many years here.

- **Dominick Ninivaggi, Supt.**

East Middlesex MCP: This winter has marked a step forward for our wetlands management program. After first introducing the use of an excavator to our cities and towns in FY 1995 thanks to a cooperative agreement with the Northeast Mass Mosquito Control & Wetlands Management District, the Project is now leasing a Link-Belt 1600 excavator that is being operated by our field staff. The Project has also reorganized its staff and hired Mike Bryant to be the Assistant Superintendent who will manage field operations and Doug Bidlack to be the Entomologist.

- **David Henley, Superintendent**

Mass. Dept. of Public Health - State Lab. Institute - The West Nile Virus outbreak that occurred in New York City during the late summer and fall of 1999 resulted in 61 human cases, including seven deaths. Epizootic transmission as evidenced by multiple bird deaths was observed in New York City and surrounding counties, as well as Connecticut, New Jersey and Maryland. Although the American crow was the most significantly affected species, at least 17 other avian species were confirmed as having tested positive for WNV. In addition, multiple equine cases of WNV were reported in Suffolk County, NY.

West Nile Virus is a flavivirus of the Japanese encephalitis antigenic complex. It is the most widespread of the flaviviruses with geographic distribution including Africa and Eurasia. Wild birds are the principal hosts of the virus and migratory birds are thought to be instrumental in the introduction of the virus. WNV has been isolated from 43 mosquito species. Ornithophilic mosquitoes, particularly *Culex* species, are the principal vectors of the virus.

The introduction of WNV to the northeastern United States points to the need for increased arbovirus surveillance to detect early evidence of WNV in the environment so that effective prevention and control options can be utilized. The Centers for Disease Control (CDC) has formulated guidelines for WNV surveillance, laboratory

diagnosis, prevention, and control (MMWR, January 21, 2000). The CDC recommendations include increased surveillance of birds, mosquitoes, and other animals, particularly horses, as well as increased human disease surveillance in states along the Atlantic and Gulf coasts. They also include the development of specialized diagnostic testing for WNV infection and the strengthening of the informational and data sharing network between federal, state and local health, agricultural and wildlife agencies. Under these guidelines regional mosquito abatement programs are considered to be the most economical and effective way to control mosquitoes. Mosquito control programs may also be utilized as the first line of emergency response for disease control if WNV is detected.

It is unknown whether WNV will persist over the winter months or whether it will spread to new geographic locations. Thus, in preparation for the upcoming season, the Massachusetts Department of Public Health (DPH) has developed draft surveillance and response guidelines as well as WNV informational materials. DPH has also scheduled the first of several meetings with state and regional mosquito control officials, as well as state and federal wildlife and agricultural agencies, to discuss these documents and how best to coordinate and enhance statewide arbovirus surveillance. In addition, an application has been submitted to CDC for funding to assist with the WNV surveillance, laboratory testing, prevention and control efforts.

- **Mary Tobin, Arbovirus Surveillance Coordinator**

Synopsis of the Outbreak of West Nile-Like Viral Encephalitis New York, 1999

*summarized from the CDC MMWR Weekly, October 01, 1999 /48(38);845-9
<<http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4838a1.htm>>*

An outbreak of arboviral encephalitis was first recognized in New York City in late August and has since been identified in neighboring counties in New York state. Although initially attributed to St. Louis encephalitis (SLE) virus, the cause of the outbreak has been confirmed as a West Nile-like virus based on the identification of virus in human, avian, and mosquito samples. On August 23, 1999, an infectious disease physician from a hospital in northern Queens contacted the New York City Department of Health (NYCDOH) to report two patients with encephalitis. On investigation, NYCDOH initially identified a cluster of six patients with encephalitis, five of

whom had profound muscle weakness. Testing of these initial was positive for SLE virus on September 3 at CDC. Eight of the earliest case-patients were residents of a 2-by-2-mile area in northern Queens. On the basis of these findings, aerial and ground applications of mosquito adulticides and larvacides were instituted in northern Queens and South Bronx on September 3.

To define the geographic extent of the outbreak, NYCDOH initiated active surveillance on August 30, and the Westchester County Department of Health and the Nassau County Department of Health initiated active surveillance on September 3.

Before and concurrent with this outbreak, local health officials observed increased fatalities among New York City birds, especially crows. During September 7-9, officials of the Bronx Zoo noted the deaths of a cormorant, two captive-bred Chilean flamingoes, and an Asian pheasant. Tissue specimens from these birds and a crow with pathologic evidence of encephalitis from New York state were sent to the U.S. Department of Agriculture National Veterinary Services Laboratories (NVSL) in Ames, Iowa, on September 10 to be tested for common avian pathogens and the equine encephalitis viruses; all tests were negative. NVSL isolated viruses from the birds' tissues and forwarded them to CDC on September 20 for identification and characterization.

Testing at CDC on September 23 by polymerase chain reaction (PCR) and DNA sequencing of these isolates indicated that they were closely related to West Nile virus (WNV), which has never been isolated in the western hemisphere. Concurrently, specimens of brain tissue from three human encephalitis cases, forwarded by the New York State Department of Health to the University of California, Irvine, were reported as positive for West Nile-like virus sequence by genomic analysis. As of September 28, a total of 17 confirmed and 20 probable human cases (1) and four deaths have been reported from New York City (25 cases) and the surrounding counties of Westchester (eight) and Nassau (four). The four deaths occurred among persons aged greater than or equal to 68 years. One case-patient with onset in late August reported a history of travel to Africa completed in June 1999; none of the remaining case-patients had traveled during the incubation period to

areas where WNV is known to be endemic. Two of the Westchester County case-patients had no reported travel history to New York City or other areas in which WNV previously had been detected.

Onset dates ranged from August 5 to September 16, although no cases had onset in New York City after control measures were extended to the entire city on September 11. The median age of case-patients was 71 years (range: 15-87 years), with the most severe clinical cases and all fatalities occurring among older persons.

Vector control measures initiated in northern Queens and South Bronx on September 3 were followed by a city-wide pesticide application after laboratory confirmation of encephalitis in a Brooklyn resident with no travel history to Queens and confirmation of an additional two cases in South Bronx. According to the latest ongoing population estimates from a city-wide mosquito surveillance program, the host-seeking adult *Culex pipiens* mosquito population has been reduced substantially by the control operation. Following the confirmation of human cases in Westchester and Nassau counties and detection of virus in adult *Culex pipiens* and *Aedes vexans* mosquitoes and in a deceased bird from a nearby area in Connecticut, insecticide application has been initiated in these areas to reduce the mosquito population. Surveillance of wild birds and/or sentinel chickens was instituted to assess WNV distribution in the region.

Emergency telephone hotlines were established to address public inquiries about the encephalitis outbreak and pesticide application. As of September 28, approximately 130,000 calls have been received by


the New York City hotline and 12,000 by the WCDH hotline. Approximately 300,000 cans of DEET-based mosquito repellent were distributed citywide through local firehouses, and 750,000 public health leaflets were distributed with information about personal protection against mosquito bites. Recurring public messages were announced on radio, television, on the New York City and WCDH World-Wide Web sites, and in newspapers, urging personal protection against mosquito bites, including limiting outdoor activity during peak hours of mosquito activity, wearing long-sleeved shirts and long pants, using DEET-based insect repellents, and eliminating any potential mosquito breeding niches. Spraying

schedules also were publicized with recommendations for persons to remain indoors while spraying occurred to reduce pesticide exposure. Mosquito surveillance will continue until the first frost in New York City; Westchester, Nassau, Rockland, and Suffolk counties; and Connecticut. Surveillance for new human WNV cases will be conducted until several weeks after the first frost, when mosquito activity is expected to subside.

For the full text of this report, please check the CDC website at <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4838a1.htm>

A Note on WNV & New York....WNV is a flavivirus belonging taxonomically to the Japanese encephalitis subgroup that includes the serologically closely related SLE virus, Kunjin virus, Murray Valley encephalitis virus, and others. WNV was first isolated in the West Nile Province of Uganda in 1937 (2). The first recorded epidemics occurred in Israel during 1950-1954 and in 1957. Epidemics have been reported in Europe in the Rhone delta of France in 1962 and in Romania in 1996 (3-5). The largest recorded epidemic occurred in South Africa in 1974 (6). It is unclear whether the virus that caused this outbreak is a previously identified strain of WNV or a new variant.

The genomic sequences identified to date from a human brain, virus isolates from zoo birds, and viruses isolated from a dead crow and two mosquito pools from Connecticut appear identical. Based on preliminary serologic testing, this outbreak was originally believed to be caused by the SLE virus. SLE and West Nile viruses are antigenically related, and cross reactions are observed with some serologic tests. Results of PCR-based sequencing that identified WNV prompted more specific testing. The IgM-capture ELISA used in testing serum/CSF samples in this outbreak is rapid, sensitive, and quantitative. The limitations of some serologic assays emphasize the importance of isolating the flavivirus from entomologic, clinical, or veterinary material. The availability of virus isolates and genomic sequences from birds and human brain tissue permitted the discovery of this West Nile-like virus in



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North America. Although it is not known when and how a West Nile-like virus was introduced into North America, international travel of infected persons to New York or transport by imported infected birds may have played a role.

WNV can infect a wide range of vertebrates, but in humans it usually produces either asymptomatic infection or mild febrile disease. Within its normal geographic distribution of Africa, the Middle East, western Asia, and Europe, WNV has not been documented to cause epizootics in birds; crows with antibodies to WNV are common, suggesting that asymptomatic or mild infection usually occurs among crows in those regions. Similarly, substantial bird virulence of SLE virus has not been reported. Therefore, an epizootic producing high mortality in crows and other bird species is unusual for either WNV or SLE virus and may represent introduction to a native bird population or a new virulent strain. For both viruses, migratory birds may play an important role in the natural transmission cycles.

Like SLE virus, WNV is transmitted principally by *Culex* species mosquitoes, but also can be transmitted by *Aedes*, *Anopheles*, and other species. The predominance of urban *Culex* mosquitoes trapped during this outbreak suggests an important role for this species. Enhanced monitoring through surveillance for early detection of this virus outside of the affected area will be crucial to guide extension of control measures.

For the full text including references, please check the website noted in the previous article.


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a 15 week course (1 day/week) beginning the week of Feb. 28, 2000, offered through the Office of Continuing Professional Education, Cook College, New Brunswick, NJ

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The first several sessions will be broadly oriented towards basic Culicidology. Laboratories will stress larval and adult identification skills, as well as techniques critical for delineating nuisance and vector populations. Finally, the latter portion of the course will include field trips to various mosquito breeding and resting sites to reinforce the habitat recognition skills, surveillance techniques, and

control decisions of the participants. To register by phone, please call (732) 932-9271, ext. 628, 8:30 AM - 4:00 PM, Monday through Friday.



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