



## WASHTENAW COUNTY WEST NILE VIRUS SURVEILLANCE AND CONTROL 2005 EXECUTIVE SUMMARY

West Nile virus (WNV) is a mosquito-borne virus that can cause mild illness (West Nile fever) or severe symptoms (encephalitis or meningitis) in humans and other animals. Mosquitoes become infected with West Nile virus when they feed on infected birds that carry the virus in their blood. People are primarily exposed to West Nile from the bite of a mosquito that is infected with the virus.

Michigan first experienced WNV activity in 2001, when 65 positive birds were identified in 10 counties in the Lower Peninsula. No human or equine cases were detected in Michigan in 2001.

In 2002, the United States saw a dramatic increase in WNV activity in birds, equines, and humans, with 4,156 human cases and 284 deaths. Michigan suffered the second highest number of WNV human cases in the nation with 614 laboratory positive cases, and 51 deaths. One unconfirmed human case occurred in Washtenaw County, with no deaths.

In 2003, WNV continued to spread throughout the country, resulting in 9,862 human cases and 264 human deaths. Colorado, Nebraska, and South Dakota were the hardest hit, comprising over 60% of all human cases in the United States. In Michigan, there were 19 human cases and 2 human deaths. Washtenaw County experienced no WNV-related human cases or deaths that year.

West Nile virus continued its westward-spreading trend in 2004, resulting in 2,539 human cases with 100 human deaths in the United States. California and Arizona were the hardest hit, reporting nearly half of all human cases nationwide. In contrast, many northeastern states experienced no human cases. Michigan experienced 16 human cases and no deaths, and Washtenaw County experienced no WNV-related human cases or deaths.

In 2005, the United States experienced 2,949 human cases, with 116 deaths. Most of the cases were in California, although Illinois accounted for a high percentage of cases. Michigan experienced 62 human cases with 4 deaths, with most of the cases occurring in Wayne and Kent Counties. Washtenaw County accounted for 3 of the human cases, with no deaths.

Michigan experienced an increase in WNV activity in 2005 compared to recent years. We are discovering that the more that is learned about WNV, the more complex the disease cycle is found to be. However, there are several recurring WNV themes:

- Corvid species of birds (crows, ravens, and blue jays) are sensitive indicators of viral presence in a particular area
- *Culex* species of mosquitoes are important in the transmission of WNV to humans
- Hot, dry weather conditions are favorable for amplification of the virus cycle in birds and mosquitoes, particularly in urban/suburban areas.

Considering these factors, WNV will likely remain an issue in Michigan, causing the need for annual prevention efforts.

Washtenaw County's activities regarding WNV are a partnership involving the Washtenaw County Departments of Planning and Environment and Public Health, Michigan State University Extension, the University of Michigan, and volunteer entomologists. These units comprise the Washtenaw County West Nile Virus Task Force. The Task Force's approach to prevention focuses on communication, education, outreach activities, surveillance, personal protection and mosquito control recommendations.

### **Hotline – (734) 544-6750**

A local Hotline was established for answering WNV-related questions and accepting reports of dead birds. The Hotline went live in mid-April and was open through the end of October. Call volume peaked in mid-June, at approximately 15-20 calls per day.

### **Dead Bird Surveillance and Testing**

The reporting of dead birds and testing of corvids was coordinated through the local Hotline, and through the State of Michigan West Nile Virus website. Washtenaw County had a total number of 91 corvids, as well as 332 dead birds of other species, reported for the 2005 season. Bird testing was conducted by swabbing the throats of corvids and sending those samples to the State of Michigan Laboratory in Lansing. A total of 10 birds from Washtenaw County were tested, with 7 of the birds testing positive for WNV infection. The first positive bird was found in May (Ann Arbor – 48103 zip code); the next five positive birds were found in August (Ann Arbor – 48104, 48108, and two in 48109; Northfield Township – 48178); and the last positive bird was found in September (Ypsilanti – 48197).

### **Human Surveillance**

Three human cases of WNV infection were reported in Washtenaw County in 2005. The first case was a woman from Ann Arbor who was exposed in late August, and was categorized as having meningo-encephalitis. The other two cases occurred in a male and female from Ann Arbor who were exposed over Labor Day weekend, and were categorized as having West Nile fever. All three cases were in the 50 – 65 age range, and all three have since recovered.

### **Equine Surveillance**

Horses have proven uniquely susceptible to WNV infection. In 2002 in Michigan, there were 341 positive horses in 48 counties. Fortunately, a WNV vaccine was approved for use in horses in 2003, resulting in only 10 positive horses in 9 counties that year. In 2004, there were 21 positive horses in Michigan, with 3 of the positive horses from Salem Township in Washtenaw County. All three horses were unvaccinated, and one of the horses died. In 2005, there were 13 positive horses in Michigan, with no positive horses in Washtenaw County.

### **Mapping**

Studies have shown that the peak of dead bird reports has tended to precede the first human cases of WNV by approximately two weeks. Because of this, dead bird surveillance is considered a critical activity due to its predictive value. Washtenaw County conducted community-based surveillance of dead birds again in 2005, requesting that residents report dead birds to the local Hotline or the State of Michigan WNV website. All dead bird surveillance data was entered into a database and locations of dead corvids were mapped. The maps are used to identify any linkages between dead corvid density and human cases.

### **Mosquito Control**

Municipalities were recommended to apply larvicide to storm water catch basins and other standing water sites again in 2005. Many municipalities, including universities, participated in larvicide efforts, but others did not due to lack of funding, absence of storm drains, or large township areas. The municipalities that chose to larvicide primarily used Altosid XR 150-day briquettes (methoprene insect growth regulator) or Vectolex WSP (*Bacillus sphaericus*).

The Michigan Department of Environmental Quality again required permits from individuals or groups applying larvicides to surface waters. Permits were not required for applying larvicides to storm water catch basins as long as the larvicides were bacterial strains or methoprene, the district MDEQ Water Bureau was notified, and stated procedures and products were utilized.

Most municipalities did not participate in adult mosquito spraying. While we have not experienced a large number of human cases in Washtenaw County, it is important for communities to be prepared in the event that an outbreak was to occur.

*The Washtenaw County West Nile Virus Task Force recommends following the Centers for Disease Control and Prevention's (CDC's) Epidemic/Epizootic West Nile Virus in the United States: Guidelines for Surveillance, Prevention, and Control and the Suggested Guidelines for Phased Response to West Nile Virus Surveillance Data.*