Baystate Roads Program
Local Technical Assistance Program (LTAP)

Tech Notes

Tech Note #49

WEST NILE VIRUS

West Nile Virus (WNV) is a mosquito-carried virus that can cause illness ranging from a mild fever to more serious disease like encephalitis or meningitis. It was first identified in the United States in 1999.

WNV is most commonly spread to people through the bite of an infected mosquito. More information about different types of mosquitoes that can spread WNV can be found on the Massachusetts Department of Public Health (MDPH) website at:

www.mass.gov/dph/wnv/wnv1.htm

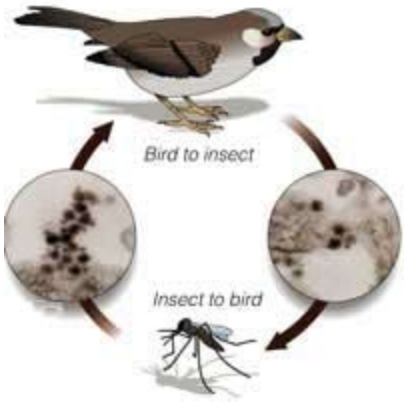
WHY SHOULD DEAD BIRDS BE REPORTED?

When WNV infects birds, it can cause high mortality in certain species, including crows, blue jays and robins. Collecting information about the location of these types of dead birds can help identify areas where WNV may be active in Massachusetts. Call the MDPH Public Health Information Line at 866-MASS-WNV (866-627-7968) for informaton on where to report in your area.

WHAT ARE THE SYMPTOMS OF WNV?

The majority of people who are infected with WNV (approximately 805) will have no symptoms. A smaller number who become infected (~20%) will have symptoms such as fever, headache, body aches, nausea, vomiting, and sometimes swollen lymph glands. They may also develop a skin rash on the chest, stomach or back.

Less than 1% of infected people will develop severe illness, including encephalitis or meningitis. The symptoms of severe illness can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. Persons older than 50 years of age have a higher risk of developing severe illness.



Transmission Cycle of WNV

HOW COMMON IS WNV IN MASSACHUSETTS?

Because most people who are exposed have no symptoms, it is difficult to know exactly how many people have been infected. People who develop severe illness with WNV are most often reported. Between 2000-2006, 54 people were reported with WNV infection in Massachusetts: six of them died. Cases have been identified from around the state.

Patients with severe WNV infections almost always require hospitalizaiton. Their symptoms may last several weeks and neurological effects may be permanent. Approximately 10% of people who develop severe illness will die from the infection.

HOW CAN YOU PROTECT YOURSELF?

Since WNV is most commonly spread by mosquitoes, here are some precautions to reduce your chances of being bitten:

- Schedule outdoor events to avoid the hours from dusk to dawn when mosquitoes are most active
- When outdoors, wear long pants, a long-sleeved shirt and socks
- Use a repellent with DEET (N, N-diethyl-m-toluamide), permerthrin, picaridin (KBR 3023), or oil of lemon eucalyptus [p-methane 3, 8-diol (PMD)] according to the instructions on the product label.

DEET products should not be used on infants under two months of age and should be used in concentrations of 30% or less on older children. Oil of lemon eucalyptus should be be used on children under 3 years of age. Permetrin products are intended for use on items such as clothing, shoes, bed nets, and camping gear and should not be applied directly to the skin. More information on choosing and using repellents safely can be found at:

www.mass.gov/dph/cdc/factsheets/factsheets.htm or 617-983-6800 for a hard copy

- Keep mosquitoes out of buildings by repairing any holes in screens and make sure they are tightly attached to doors and windows

- Remove areas of standing water.

MOSQUITO CONTROL METHODS

Strategies used by municipalities and DEP to suppress mosquito populations and protect public health include:

SURVEILLANCE is a non-chemical inspection method that involves classification of mosquito breeding sites, larval presence and distribution surveys, and adult mosquito biting and trapping surveys, as well as identifying mosquitoes to species.

DITCH MAINTENANCE is a physical method that involves cleaning or removing debris and silt from drainage systems such as ditches to maintain previously ***maintained watercourses to reduce and prevent mosquito-breeding sources or potential habitat.***

OPEN MARSH WATER MANAGEMENT (OMVWM) is both a physical and biological method that uses existing features of a salt marsh to create or enhance ponds, pools, and pans. These serve as reservoirs for mosquito eating fish and habitat for waterfowl and providng access to allow predatory fish to control mosquito larvae.

LARVICIDING is a chemical method that attempts to control the mosquito in its most vulnerable state ***when mosquitoes are confined and localized*** to prevent the insects from becoming adults. Many of the products designed to kill or prevent their emergence are biological materials such as bacteria and insect growth regulators. Also, there are other materials that may be needed such as low impact organophosphates and refined oils that are used to control larvae and pupae.

Ideally, this option is preferred because it can reduce the amounts of adulticides used at a later time and the potential exposure to these materials. This approach may include but not be limited to truck-mounted equipment an/or the use of aerial application equipment when there is evidence of uniform widespread breeding or in those circumstances involving high populations of mosquitoes as well as public health threats.

CATCH BASIN MANAGEMENT is a targeted larviciding treatment using basins and storm drains to control mosquitoes in their aquatic stages and prevent emergence as adult mosquitoes especially the suspected WNV vector Culex that typically breeds in these structures.

ADULTICIDING is a chemical approach to control high mosquito densities and mosquito-borne disease threats. This approach may involve the use of truck-mounted equipment making applications in limited, select areas or aerial application equipment to wider areas especially in the event of public health episodes or emergencies.

BIOLOGICAL CONTROL involves placing live mosquito-eating fish such as Banded Sunfish in ditches and ponds to eat mosquito larvae sometimes referred to as fish seeding programs.

EDUCATION continues as a critical strategy aimed at residents and includes personal protection and source reduction tactics such as cleaning gutters, drilling holes in plastic containers left outside, draining wading pools and birdbaths, and removing tires.

Sources:
MDPH Public Health Fact Sheet on WNV
www.mass.gov/agr/mosquito/districts.htm