GARDENER'S ALERT

West Nile Virus

What you need to know to stay safe in the garden this summer.

BY RITA PELCZAR

THE BUZZ of insects and chirping of birds confirm that another gardening season is underway. But their music delivers another, more ominous message as well: West Nile disease season is back, and it's likely to be even worse than last year. Gardeners and all those who spend time outdoors need to take precautions to reduce mosquito infestations and risk of infection.

Above: A blood-engorged female mosquito feeds on a human finger. This specimen is a member of *Culex quinquefasciatus*, a proven vector for the transmission of the West Nile virus.

JAMES GATHANY/COURTESY OF CDC

A VIRUS ON THE MOVE

West Nile virus (WNV) is causing serious illness in an increasing number of individuals in the United States. Identified in Uganda in 1937, it first appeared in the Western Hemisphere in August 1999, in the New York City vicinity. Of the 62 people with confirmed WNV infections in 1999, seven died.

Since then, the virus has continued to spread rapidly. In 2000, it was reported in 12 states along the East Coast; by 2001, it had moved south and west and was positively identified in 16 additional states. From 1999 through 2001, there were 149 confirmed human cases of the virus in the United States, resulting in 18 deaths.

Last year, the virus was identified, either in humans, mosquitos, or birds, in all but four of the 48 contiguous states. Confirmed human infections in 2002 increased alarmingly to 4,161, with 277 fatalities. There were corresponding increases in animal infections.

Experts confirm the virus has become established in North America. "Where West Nile has been, it stays," says Lyle Petersen, deputy director of the Center for Disease Control and Prevention (CDC), based in Atlanta, Georgia. The CDC anticipates the virus's continued spread and even greater numbers of infection in 2003.

CONTRACTING THE VIRUS

This virus is not particularly discriminating about who or what it infects; but not all those infected become ill. The National Wildlife Health Center (NWHC) is striving to monitor WNV infection in wildlife by testing for antibodies in the blood of dead animals. WNV-specific antibodies are produced by a host in response to the virus's presence in the blood. "It seems that just about all species of wildlife that has been tested in large enough numbers to date have shown WNV antibody," says NWHC researcher Robert Dusek.

The virus's primary hosts are birds—over 160 species according to Dusek (see Project FeederWatch, opposite page). Humans are secondary or incidental hosts, as are many animals—both domestic and wild. Although mosquitos are by far the most common method of transmission, last year WNV transmission by blood transfusions and organ transplants was confirmed. And in one case it was passed from an infected mother to her baby in breast milk.

VARIABLE RESPONSES

Most people infected by the virus display no noticeable symptoms. About 20 percent of those infected develop flulike symptoms: headache, fever, and occasionally a skin rash and swollen lymph nodes. After a few days, they recover. Most of these relatively benign infections probably go undiagnosed.

Only about one in 150 infected individuals become acutely ill, developing encephalitis or meningitis (inflammation of the brain or of the membrane surrounding the brain and spinal cord).

PROJECT FEEDERWATCH

The impact of West Nile virus (WNV) on North American bird populations is being monitored by more than 16,000 "citizen-scientists" in the United States and Canada. From November through early April, bird watchers record the numbers and kinds of birds that visit their feeders and submit the data to the Cornell Laboratory of Ornithology for analysis.

Birds are the primary host of the virus, so tracking changes in bird populations may help to determine its effect on various species. "With 16 years of data, we have a solid baseline of information against which we can compare future counts," says project leader David Bonter.

Although preliminary analysis of the data received thus far shows no widespread population declines, monitoring continues. "We will be conducting more thorough analyses in the coming months," explains Bonter. "The more data that we receive, the more confidently we can track the impact of an event—be it West Nile or any other factor that may impact populations."

For more information on Project FeederWatch, including how you can get involved, visit its Web site: *http://birds.cornell.edu/pfw/.* —R.P.

Symptoms include high fever, disorientation, convulsions, coma, and can result in permanent neurological damage or death. The risk of a serious reaction significantly increases with age over 50. Presently, the only treatment for WNV infection is supportive care.

FIGHTING BACK

The best methods to reduce the spread of WNV and prevent infection focus on controlling and avoiding its vector. Reducing the mosquito population starts in your own yard.

■ Eliminate potential breeding sites. At least twice a week, empty water from flowerpots, bird baths, pool covers, splash pools—any place water collects. Keep gutters clean. Dispose of old tires—if you have a tire swing, drill holes in the bottom so that water drains out.

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Larvacides to control mosquitos in garden ponds are available in floating disk form.

■ Consider using larvacides. These are growth-regulating chemicals or biological controls that are aimed at the larval stage of the mosquito and are effective in garden ponds and rain barrels (see "Resources and Sources").

■ Use insect repellents, and reapply as needed. The CDC recommends repellents containing DEET (N, N-diethyl-meta-toluamide), which are particularly effective against biting insects, and are longer lasting than many other types of repellents. These should be used whenever you spend time outdoors and can be applied to skin and clothing.

A higher percentage of DEET in a product does not improve protection, but does increase the length of time it is effective. For children ages two to 12, the American Academy of Pediatrics recommends using products with no greater than a 10 percent concentration of DEET. Never apply repellents near the eyes or on children's hands, which often find their way to their eyes or mouth. For children under two, consult your doctor, and always follow the label instructions.

■ Wear loose-fitting, protective clothing. Wear long-sleeve shirts and long pants whenever possible outdoors. Hats fitted with mosquito netting can be used to protect the face and neck.

■ Use screens and netting. Cover baby strollers and playpens located outdoors with mosquito netting, and be sure the window screens in your home are in good repair.

■ Avoid being outdoors during certain times of day in areas where mosquito populations are high. Mosquitos tend to congregate near their breeding grounds, so limit your time around wetlands or untreated ponds. Because mosquitos are most active at dawn, dusk, and early evening, try scheduling outdoor activities at other times.

Municipalities nationwide have developed programs to monitor and reduce the further spread of WNV by focusing on mosquito control (see "Resources and Sources"). A vaccine is being developed and tested. Pending results, it may be ready for use in 2006.

Rita Pelczar is an associate editor for The American Gardener.

Resources

American Mosquito Control Association
www.mosquito.org/mosquito.html

Center for Disease Control and Prevention (State and local West Nile virus related Web sites):
www.cdc.gov/ncidod/dvbid/westnile/city_states.htm

National Wildlife Health Center West Nile Virus Project
www.nwhc.usgs.gov/research/west_nile/west_nile.html

Sources

MosquitoSafe
www.mosquitosafe.com/website/
■ Mosquito protection gear, repellents

Safety Central, 1370 Highway 10 West, Livingston, MT 59047. (406) 222-3171
http://store.yahoo.com/safetycentral/mosnetrepbug.html
■ Mosquito hats, netting, repellents, larvacides