

## WEST NILE VIRUS (WNV)

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WNV is an arbovirus (i.e., **arthropod-borne virus**) that is primarily transmitted by mosquitoes and can cause illness and sometimes a fatal encephalitis (i.e., inflammation of the brain) in humans and horses. Mosquitoes, largely bird-feeding species, are the principle vectors (transmitters) of WNV during outbreaks. Ticks may also play a role in transmission of the virus, but little is known about this means of transmission. Wild birds are considered the principle host (reservoir) species of WNV. High and long term viremias in some wild bird species are sufficient to infect vector mosquitoes which, in turn, feed on other birds and sometimes humans, horses and other mammals infecting them. Migratory birds and mosquitoes are instrumental in maintaining disease outbreaks as well as spreading the virus to areas through what is known as the "mosquito-bird transmission cycle." Infected humans, horses and other mammals are not considered important in the transmission cycle of WNV because the viremias are extremely short and blood levels are not sufficient to infect mosquitoes. They are, therefore, considered to be "incidental" hosts only.

WNV was first identified in the West Nile District of Uganda in 1937 and has been found in other parts of Africa, Europe, western Asia and the Middle East. The ecology of the virus was studied in an outbreak in Egypt in the 1950s. The virus was recognized as a cause of human encephalitis in Israel in 1957. Equine disease related to WNV was first noted in Egypt and France in the early 1960s. Recent outbreaks (1996-1999) of WNV associated with humans and horses have occurred in western Europe and the Middle East. WNV appeared for the first time in the Western Hemisphere in the early fall of 1999. The disease outbreak caused illness and death in both humans and horses in New York. Initial cases were diagnosed as St. Louis encephalitis but later determined to be WNV. Between August 26, 1999 and October 18, 1999 more than 60 people and two dozen horses were sickened or died as a result of the virus. There were seven human deaths reported. Eight horses died or were euthanized. The deaths of large numbers of crows and other wild birds coincided with, and in most cases preceded, cases in humans and horses.

Verification that the virus survived the winter came when it was found that WNV infected mosquitoes overwintered in New York City storm drains and other protected areas. A short time later the virus was found in dead birds, especially crows in the area. The virus spread rapidly in mosquito and wild bird populations and has now been found in four other adjoining states - Connecticut, Delaware, Maryland and Rhode Island. New York City has experienced

three human cases of WNV this summer, with no deaths. There have been no cases reported in horses so far this year.

A multi agency task force is working together on a national level to learn more about WNV, how to prevent its spread and develop strategies for effective disease surveillance and control. The Centers for Disease Control and Prevention (CDC) is the lead agency and has made more than 2.9 million dollars available to states along the eastern seaboard and the Gulf Coast for enhancement of State public health agencies educational, surveillance and disease control strategies. Additionally, a web-based communication board has been established to keep public health officials, scientists and regulatory agencies apprised of current information and updates regarding the disease.

Because WNV can be carried by migratory birds, increased WNV surveillance has continued in the affected states and those states along the eastern seaboard to monitor for possible spread of the virus. Because Florida has a great deal of experience in dealing with two other commonly occurring arboviral diseases (i.e., eastern equine encephalomyelitis and St. Louis encephalitis) which can cause encephalitis in humans and horses, it has one of the best arbovirus surveillance systems in place in the nation. The Florida Department of Health has now included WNV in its surveillance activities and has developed, in cooperation with the Florida Department of Agriculture and Consumer Services and the Fish and Wildlife Conservation Commission, a very strong interagency response plan to deal with WNV should it invade the state.