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Wildlife Diseases
FACTSHEET

West Nile Virus Surveillance

Introduction

West Nile virus, carried by mosquitoes, causes illness and death in birds and sometimes horses, humans and other mammals. Prior to 1999 it was not known to exist in North America. Following an outbreak that centered in New York City, surveillance programs were established across Canada and the US to monitor the virus' movement. Though it is felt that it will not become a serious problem in Newfoundland and Labrador, action is being taken to monitor the situation here as well. This factsheet summarizes the status of this disease.

The Virus

West Nile virus is in a group of viruses (arboviruses) that are spread by mosquitoes. Prior to 1999 it was only reported in Europe, Africa and Asia.

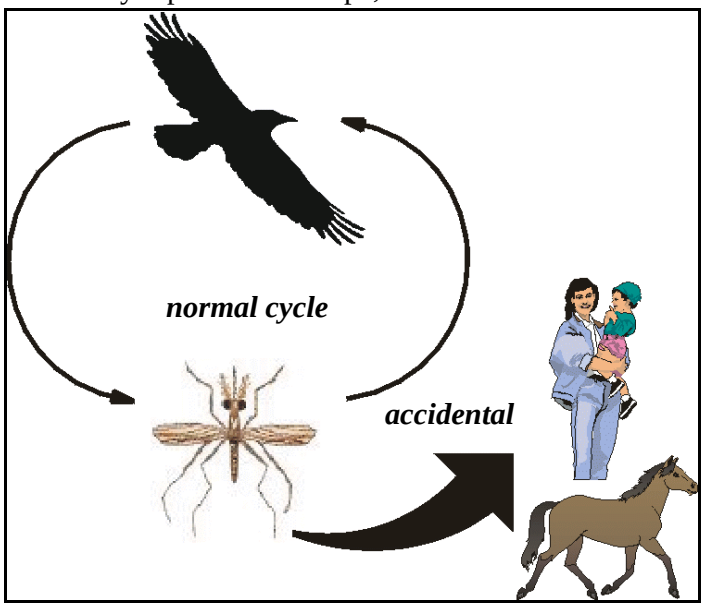

Figure 1: *Normal & accidental hosts for WNV infection*

The normal cycle of the disease is between mosquitoes and wild birds. Horses and people are considered to be accidental hosts (Figure 1). Infected mosquitoes carry the virus in their salivary glands which is released into a bird's bloodstream during a bloodmeal. Transmission back to new mosquitoes would occur once the virus has multiplied in the bird and, while circulating in the bird's bloodstream in high concentrations, is picked up when a new mosquito takes a bloodmeal.

Bird Hosts

Hundreds of different bird species have been found with this virus however the most important for surveillance is the common crow (Figure 2). This bird, and other members of the crow family (such as the raven, blue jay and gray jay) get sick very quickly and may die in large numbers in affected areas. The signs of illness include convulsions, tremors, head tilt, wing droop, paralysis, loss of balance and circling. General signs such as weakness and lying on the chest may be seen as well.

Figure 2: *Two crows on a common perch*

Other bird species may show only mild symptoms or none at all. Those that do not get sick may be important for spread of the disease, particularly if they are migratory and

can maintain the virus in their blood for long periods of time. Susceptible birds usually die within a week of becoming infected.

Mosquitoes

Though as many as 40 species of mosquitoes are potential hosts and 14 different species were identified as carriers of the virus in the US in 2000, the primary species involved are *Culex pipiens* and *Aedes vexans*. Neither of these are reported in Newfoundland. However ongoing research with Memorial University has identified the presence of some *Culex* species mosquitoes in the province that are able to transmit this disease. Further research is underway to better understand our risks.

Infection in humans

Approximately 80% of people who become infected with this virus do not develop any symptoms. The majority of the remaining people will show a fever while a small percentage may get very ill with signs of encephalitis that can progress to death.

Complete details on human symptoms, means to minimize risks and surveillance statistics in Canada and the US can be found on the websites identified below.

Domestic animals

The domestic animal most commonly reported with WNV infection is the horse. In these animals the disease is seen as an encephalitis, or inflammation of the brain. Even though the percentage of horses affected in an area may be small the impact on the individual animal may be high ranging from mild fever to permanent nervous damage or death.

A vaccine is available for use in horses. Your local veterinarian can advise on its use in your area.

Geographic Progression of the Disease

From 1999 to 2003 the virus spread from New York throughout most of the US and southern Canada (Figure 3). The more northern areas of the continent may not provide the appropriate habitat for this disease so further spread may be limited. It is considered that eradication of this disease in North America is not possible.

Details of the Newfoundland Surveillance Program

Anyone finding sick or dead crows, ravens, blue jays, or gray jays is asked to contact their local Natural Resources office (Conservation Officers or Regional Veterinarians), their local Government Services Centre (Environmental Health Officers), or other cooperating agencies (Canadian Wildlife Services, Canadian Food Inspection Agency, Parks Canada).

If warranted, carcasses will be collected and tested. Though there is no direct risk of getting West Nile virus infection from carcasses, the public is asked not to handle suspect birds. As birds may die for other reasons, which in some cases may cause human illness, it is best to leave this responsibility to public officials.

Research is being carried out across the province in cooperation with Memorial University, to further study the mosquito species that survive here.

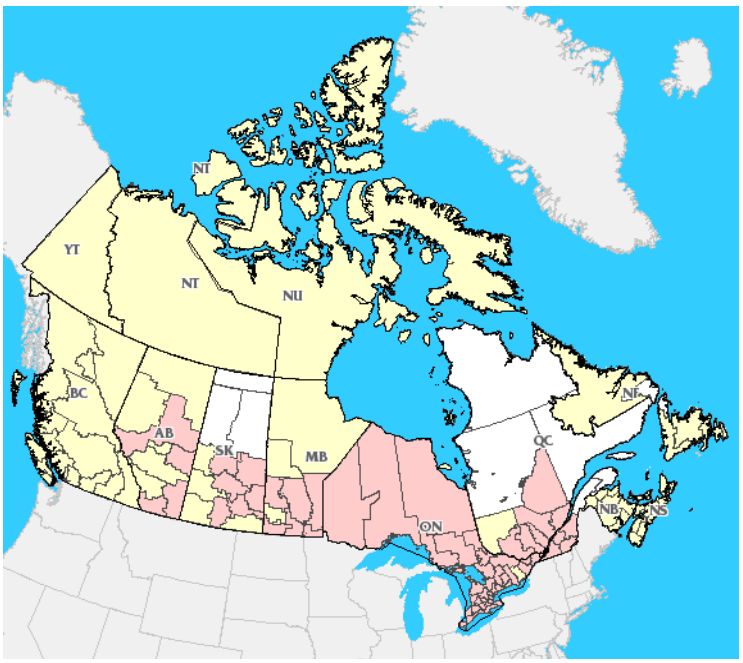

Figure 3: *Pink areas show WNV activity in 2004 (source: Public Health Agency of Canada)*

Further information

Specific questions on animal health can be directed to the author. Questions on human health should be directed to your local Community Health officials. For general information on West Nile virus in Canada please see:

1. **Public Health Agency of Canada**: www.phac-aspc.gc.ca/wn-no/index_e.html
2. **Canadian Cooperative Wildlife Health Centre**: wildlife1.usask.ca

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