

## **Introduction**

West Nile Virus (WNV), a virus transmitted primarily through the bite of infected mosquitoes, was first detected in North America in 1999 where an outbreak was experienced in New York City. WNV has rapidly spread across the continent to other US states and Canadian provinces.

In early spring, the amplification of WNV begins after infected adult mosquitoes overwinter and/or infected migratory birds return to a region. *Culex pipiens* and *Culex restuans*, two mosquito species that feed primarily on birds, are the main vectors for the virus and have been estimated to be responsible for up to 80% of human infections in the north eastern United States, an environment similar to Peel Region<sup>2</sup>. They feed on birds and the virus is transmitted back and forth resulting in an increase in the number of birds and mosquitoes infected. Later on in the season, typically late July, there is a “spill over point” where the virus bridges out of the mosquito-bird cycle via bridge vectors. The bridges are mosquito species that feed on humans and other mammals in addition to birds.

In 2001, WNV was found in birds and mosquitoes in the Region of Peel. This was the first year of WNV activity. Locally acquired human illness of WNV first occurred in the Region of Peel in 2002. Many cases required hospitalization and intensive care. The only two deaths due to WNV infection in the Region of Peel occurred in 2002.

Approximately one in five people (20%) who are bitten by a mosquito infected with WNV will develop symptoms. Most people who are infected have either no symptoms or mild illness such as West Nile fever. In about one per cent of infected individuals, WNV can cause severe illness resulting in hospitalization. Even people with milder illness find that it can take months to feel well again after being infected with WNV. Human cases have been reported since 2002 with the exception of 2004 when no cases were reported.

Ontario Regulation 199/03 (Control of West Nile Virus)<sup>3</sup>, under the Health Protection and Promotion Act, requires that the local Medical Officer of Health (MOH) conduct a risk assessment of the conditions pertaining to WNV in the health unit (Appendix A). The risk assessment relies primarily on surveillance of human, bird and mosquito infections. This guides the MOH with respect to appropriate WNV risk reduction activities, including the need for additional mosquito reduction. Provincial regulation also requires the MOH to record, investigate and report any confirmed, likely adverse or unintended human health effects attributed to mosquito reduction actions and to report any non-human environmental adverse effects to the Ministry of Environment and/or other relevant local or provincial authorities. WNV is both a reportable and communicable disease under Regulations 558/91<sup>4</sup> and 559/91<sup>5</sup>, respectively (Appendix B and C) requiring physicians and laboratories to report human cases to the local MOH.

## 2005 – West Nile Virus in the Region of Peel

Since 2003, the Region of Peel has had a WNV Prevention Plan. The goal of the plan is to minimize the impact of WNV with a regional surveillance program involving humans, birds and mosquitoes. The surveillance program guides the integrated pest management activities which include mosquito larvae reduction and prevention, and the risk communication activities.

This report is the fourth annual report on West Nile Virus activity in the Region of Peel. In this report, 2005 surveillance information is compiled, analysed and compared to previous years' information where appropriate. Larval reduction, public education and community outreach activities are also reviewed. For the first time, this report provides a brief overview of WNV activity in each Regional Ward.