Public Health Ontario
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West Nile Virus surveillance glossary and data caveats

Glossary

Average Infection Rate per 1000 Mosquitoes: Average Infection Rate of Culex pipiens/restuans by health unit. Note: The Average Infection Rate per health unit is calculated by grouping all pools of Culex pipiens/restuans collected in a given health unit and a given week as one set of data, and by performing the Maximum Likelihood Estimation (MLE) or the Minimum Infection Rate (MIR) of each set.

Average Number of Culex pipiens/restuans: Average number of Culex pipiens/restuans per pool per week by health region and/or health unit. Note: Sites with zero Culex pipiens/restuans are not taken into account in the average.

Average Number of Mosquito Species: Average number of adult mosquitoes per trap per night by health region and/or health unit.

Average Vector Index: Estimate of the average number of infected Culex pipiens/restuans caught per trap per night by health unit. Note: The average health unit Vector Index is calculated by multiplying the infection rate by the average catch of Culex pipiens/restuans for all sites in the health unit where Culex pipiens/restuans was found. Individual site Vector Indices will provide the most accurate information regarding infection at that locale. Note: All tables with “Average Number of Mosquitoes” are calculated from an identified subsample.

Culex pipiens/restuans Mosquitoes Tested: Total number of mosquitoes in tested pools of Culex pipiens/restuans per health region and health unit.

HU: Health units.

MOH regions: Ministry of Health regions.

Pool: A pool is a group of female mosquitoes belonging to the same species. The number of mosquitoes in a pool can be anywhere between 1 and 50.

Pools tested: Number of pools of adult mosquitoes tested by Reverse Transcription Polymerase Chain Reaction (RT-PCR).

Positive pools: Number of mosquito pools that test positive for West Nile Virus.

Sites: A site is defined as the location in a given jurisdiction where an adult mosquito trap is set out.

Week: Centre for Disease Control (CDC) epidemiological week.

Data caveats

Human West Nile Virus cases data

Human West Nile Virus cases data is retrieved from the Ontario Ministry of Health and Long-Term Care's integrated Public Health Information System (iPHIS) database. It is extracted by Public Health Ontario every Tuesday by noon of the current week. iPHIS is a dynamic disease reporting system which allows ongoing updates to data previously entered. As a result, data extracted from iPHIS represent a snapshot at the time of extraction and may differ from previous or subsequent reports. The data only represent cases reported to public health units and recorded in iPHIS. Counts are subject to varying degrees of underreporting depending on the disease.

Year-to-date total: counts of reported confirmed and probable cases of WNV illness with an episode date in iPHIS between weeks 1 and the current week presented.

Yearly total: counts of reported confirmed and probable cases of WNV illness with an episode date in iPHIS between January 1 and December 31 of each year. The yearly total cells for current year are not comparable to previous years because data for the full year are unavailable.

Cases are reported based on "episode date". The episode date is an estimate of the onset date of disease for a case. In order to determine this date, the following hierarchy is in place in iPHIS: Onset Date > Specimen Collection Date > Lab Test Date > Reported Date.

Mosquito data

Mosquito data is downloaded from health unit data, via The Mosquito Database, every Monday by noon. Health unit data that is not reported by then is not included in the report. Human cases are from Ontario Ministry of Health and Long-Term Care's integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario. Health unit site codes are available in the Definitions document.

Degree day data

A degree day is a unit of measurement for temperature. Degree days are the amount of heat required for an organism to develop within certain life stages. Degree days are typically used in agriculture to determine when insect pests will become a problem. They are also used as growing degree days to determine how much heat it will take for a crop to develop. A degree day is one day (24 hrs) with which the temperature is above or below a fixed reference temperature; in the case of the vector report, this temperature is 18.3 °C for Cx. pipiens/restuans (F. Hunter, personal communication). Therefore, if the temperature remained at 18.3 °C for 24 hours, then one degree day would be accumulated.

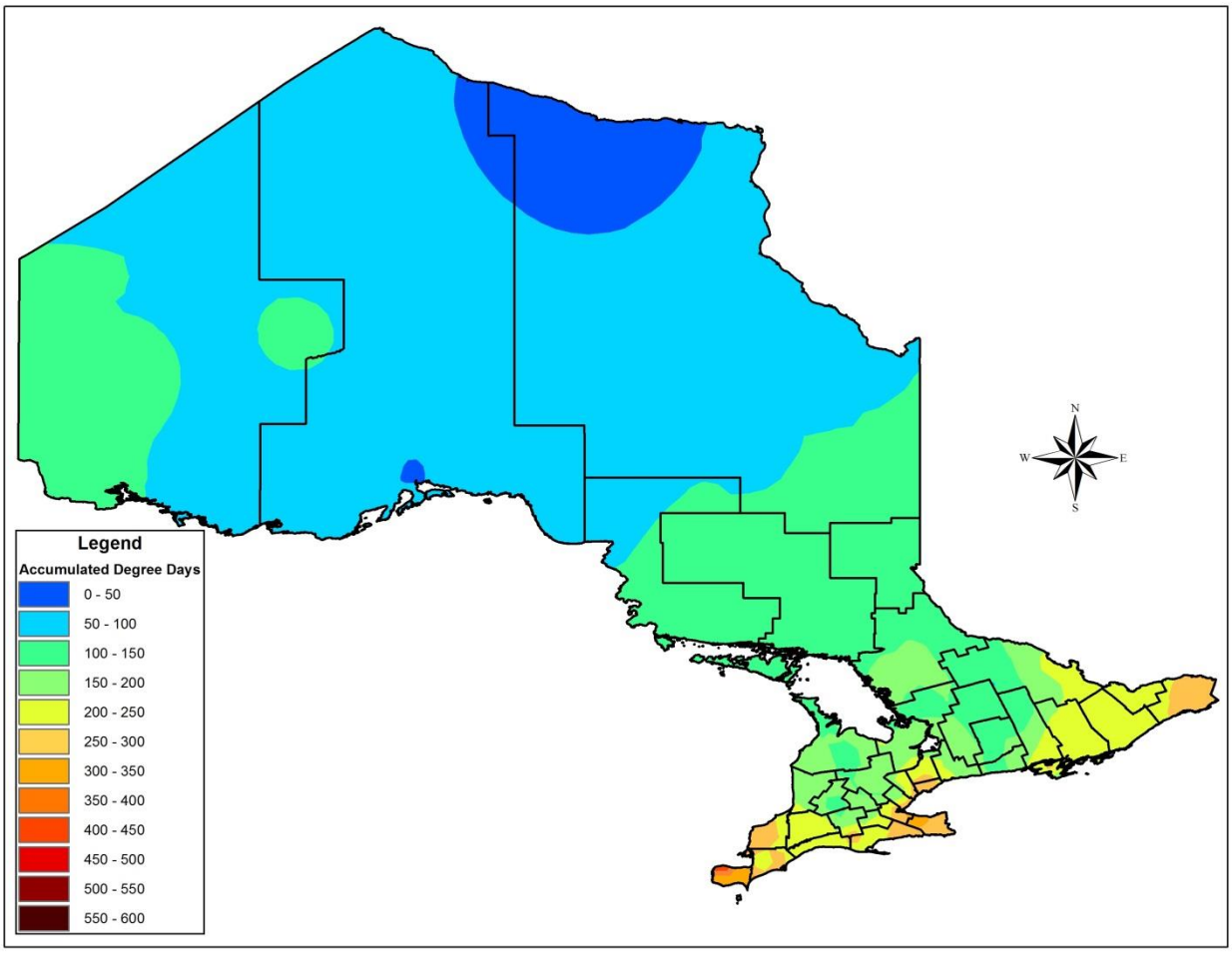
Accumulated degree days are the continuous addition of consecutive degree days from a set starting point.

Example

It takes 10 accumulated degree days for an insect to molt to an adult with a reference temperature is 2 °C. If the next five days have an average temperature of 4 °C (+2 degree days), it would take five days for the insect to molt. If the day's temperature was 12 °C (+10 degree days), then it would only take one day to molt. Lower temperatures can also slow the development time (a day at 0 °C would be -2 degree days). In the table below, using 2 °C as the temperature threshold, we can see that after 20 days the accumulated degree days would be 125, and that our example insect would have molted around day 7.

Day	Temperature (24 hours)	Degree day	Accumulated degree day
1	0	-2	-2
2	2	0	-2
3	2	0	-2
4	4	2	0
5	5	3	3
6	6	4	7
7	6	4	11
8	9	7	18
9	9	7	25
10	11	9	36
11	15	13	49
12	10	8	57
13	10	8	65
14	12	10	75
15	12	10	85
16	11	9	94
17	11	9	103
18	9	7	110
19	9	7	117
20	10	8	125

Accumulated degree days can be recorded from specific weather stations and mapped out to give a visual of what areas within Ontario are of a set number of degree days (see example below).



Public Health Unit codes

Health Unit Code	Health Unit	Health Unit Code	Health Unit
ALG	Algoma District	MSL	Middlesex-London
BRN	Brant County	NIA	Niagara Regional Area
CHK	Chatham-Kent	NPS	North Bay Parry Sound District
HAM	Hamilton	NWR	Northwestern
OTT	Ottawa	OXF	Oxford County
TOR	Toronto	PEE	Peel Regional
DUR	Durham Regional	PDH	Perth District
EOH	Eastern Ontario	PTC	Peterborough County-City
ELG	Elgin-St. Thomas	PQP	Porcupine
GBO	Grey Bruce	REN	Renfrew County and District
HDN	Haldimand-Norfolk	SMD	Simcoe Muskoka District
HKP	Haliburton-Kawartha-Pine Ridge District	SUD	Sudbury and District
HAL	Halton Regional	THB	Thunder Bay District
HPE	Hastings and Prince Edward Counties	TSK	Timiskaming
HUR	Huron County	WAT	Waterloo
KFL	Kingston-Frontenac and Lennox and Addington	WDG	Wellington-Dufferin-Guelph
LAM	Lambton	WEC	Windsor-Essex County
LGL	Leeds-Grenville and Lanark District	YRK	York Regional

Public Health Ontario

Public Health Ontario is a Crown corporation dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, frontline health workers and researchers to the best scientific intelligence and knowledge from around the world.

Public Health Ontario provides expert scientific and technical support to government, Public Health Units and health care providers relating to the following:

- communicable and infectious diseases
- infection prevention and control
- environmental and occupational health
- emergency preparedness
- health promotion, chronic disease and injury prevention
- public health laboratory services

Public Health Ontario's work also includes surveillance, epidemiology, research, professional development and knowledge services. For more information, visit www.publichealthontario.ca

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