West Nile Virus and Other Mosquito-borne Diseases in Canada

Annual National Surveillance Report - 2017

West Nile Virus

Humans

During the 2017 West Nile virus (WNV) season, six provinces (Québec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia) reported West Nile virus activity to the Public Health Agency of Canada (PHAC) (Figure 1).

In total, 193 human clinical cases (both confirmed and probable) were reported: Québec (26), Ontario (154), Manitoba (4), Saskatchewan (1), Alberta (7), and British Columbia (1). Of these, eighty-six (45%) were classified as WNV Neurological syndrome, seventy-one (37%) as WNV Non-neurological syndrome and thirty-six (19%) as unclassified (Figure 2, Table 1). Eight deaths associated with WNV were reported in the 2017 season. In addition, seven WNV asymptomatic infections were reported by four provinces: Québec (1), Ontario (4), Manitoba (1), and British Columbia (1).

Mosquitoes

In the 2017 season, 17,374 mosquito pools were tested for WNV in four provinces: Québec (1,849), Ontario (14,076), Manitoba (1,028), and Saskatchewan (421). Of these, 544 (3.13%) tested positive for West Nile virus: 84 in Québec (15%), 409 in Ontario (75%), forty-one in Manitoba (8%), and ten in Saskatchewan (2%) (Table 2).

Wild Birds

The Canadian Wildlife Health Cooperative (CWHC) reported a total of 236 dead wild birds that were tested for WNV. Of these, 146 (62%) were positive for WNV: Québec (87), Ontario (46), Manitoba (2), and Saskatchewan (11). Overall, WNV activity was detected in wild birds from June to early December in Canada (Figure 3).

Detections of WNV in wildlife during the 2017 season relied mainly on the CWHC National Scanning Surveillance Program; the detection of WNV in wild birds in Manitoba was done by Manitoba Agriculture, Food and Rural Initiatives. Further details on surveillance data can be accessed via the CWHC website: http://www.cwhc-rcsf.ca/.

Domestic Animals

Fifty-four (54) horses with WNV infection were reported to the Canadian Food Inspection Agency from the following six provinces: Québec (7), Ontario (23), Manitoba (1), Saskatchewan (8), Alberta (11), and British Columbia (4). In addition, cases of WNV in other domestic animals were reported: pheasant (1 case in Québec), alpacas (1 case in Ontario, 1 case in Québec).

Other Mosquito-borne Diseases

During the WNV season, samples collected for testing that were negative for WNV were regularly assessed for other select mosquito-borne diseases that could be locally acquired in Canada. Findings regarding these other mosquito-borne diseases are highlighted below.

Eastern Equine Encephalitis Virus

Humans

In 2016, Canada reported its first locally acquired human case of Eastern Equine Encephalitis (EEE) virus. During 2017, no human cases of EEE were reported to PHAC.

Domestic Animals

During 2017, two horses tested positive for EEE virus in Ontario and were reported by the Canadian Food Inspection Agency based on testing at private animal health laboratories.

California Serogroup Viruses

In 2017, a total of 122 human laboratory confirmed cases/exposures of California serogroup virus were diagnosed by the National Microbiology Laboratory in the following eight provinces: Nova Scotia (2), New Brunswick (4), Québec (100), Ontario (1), Manitoba (1), Saskatchewan (10), Alberta (3), and British Columbia (1). Of these, eighty-nine (89) were further classified as Jamestown Canyon virus and eleven (11) as Snowshoe Hare virus.

Most of the samples were initially collected for testing for West Nile virus; WNV-negative samples were further assayed for non-West Nile virus mosquito-borne agents. During the 2017 season, enhanced surveillance for the detection of California serogroup viruses was carried out in Quebec.

FIGURE 1: Geographic distribution of WNV human clinical cases and asymptomatic infections in Canada, 2017

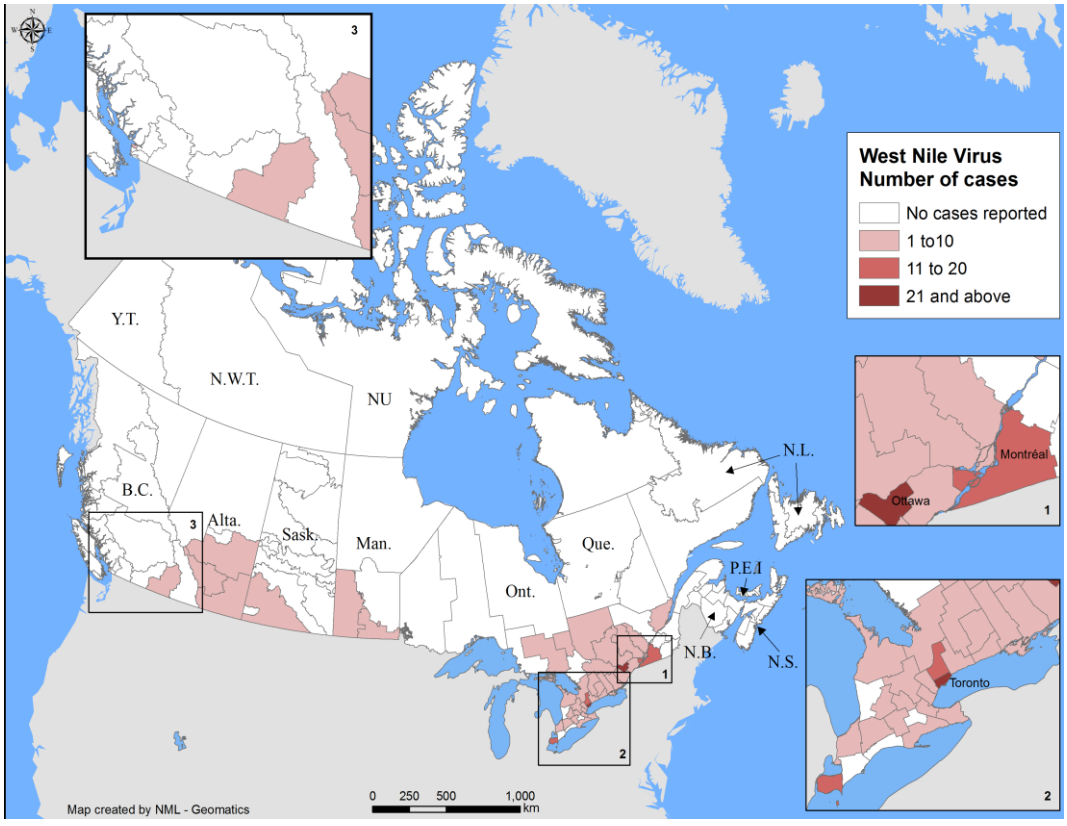
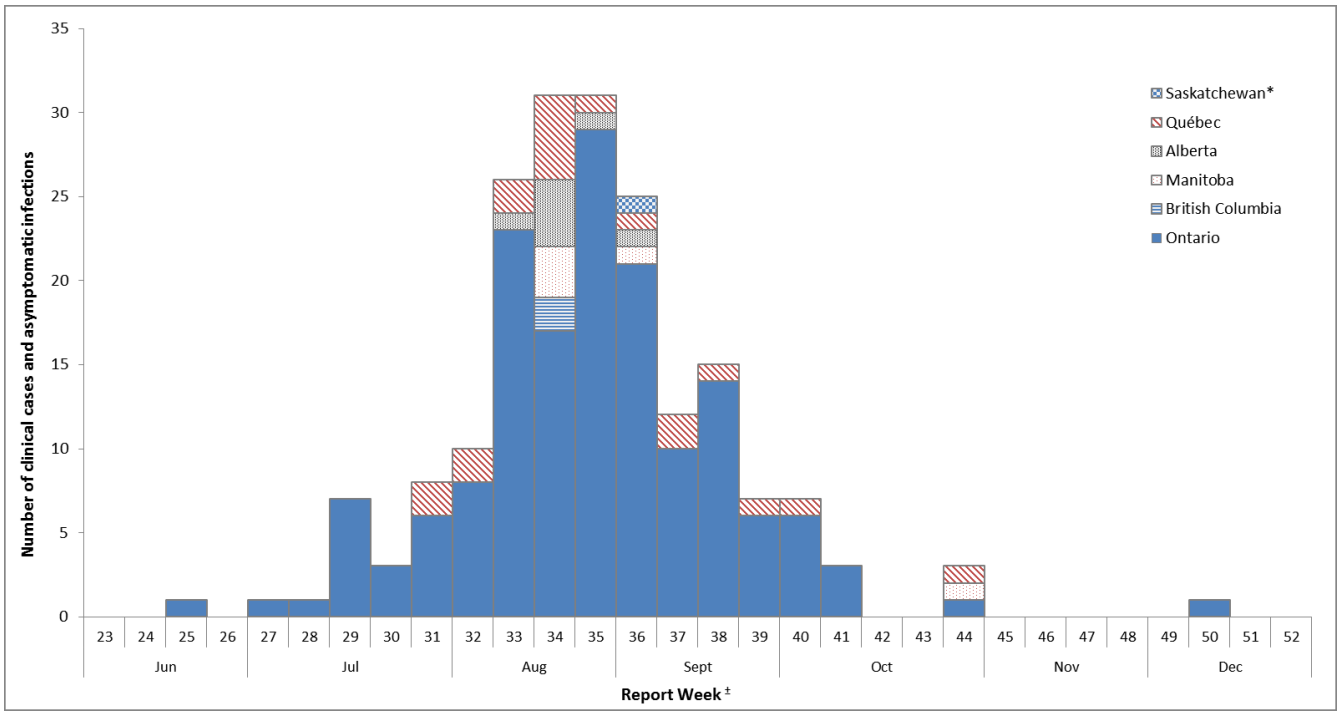


FIGURE 2: WNV human clinical cases and asymptomatic infections in Canada, 2017



± WNV clinical cases and asymptomatic infections are grouped by report week, based on episode date. Episode date could include one of the following: onset date, diagnosis date, lab sample date or reporting date.

* Saskatchewan provides counts of WNV neurological syndrome cases only.

TABLE 1: WNV human clinical cases and asymptomatic infections in Canada, 2017 season

Province	WNV Clinical Cases[1]				Travel-related cases[2]	Asymptomatic infections[3]
	Neurological syndrome	Non-neurological syndrome	Unclassified/ Unspecified	Total Clinical Cases[1]		
Québec	24	2	0	**26**	0	1
Ontario	55	63	36	**154**	31	4
Manitoba	3	1	0	**4**	0	1
Saskatchewan[4]	1	-	-	**-**	-	-
Alberta	2	5	0	**7**	2	0
British Columbia	1	0	0	**1**	0	1
Total	**86**	**71**	**36**	**193**	**33**	**7**

[1] Total clinical cases are the sum of confirmed and probable: WNV neurological and non-neurological syndromes, along with any unclassified or unspecified cases.

[2] Likely related to travel outside the Province/Territory. These cases are included in either the total clinical cases or WNV asymptomatic infections.

[3] Satisfies WNV diagnostic test criteria in the absence of clinical criteria. This category could include asymptomatic blood donors whose blood is screened using a nucleic acid amplification test, by blood operators (i.e. Canadian Blood Services or Hema-Quebec) and is subsequently brought to the attention of public health officials. Blood operators in Canada perform a supplementary WNV specific nucleic acid amplification test following any positive donor screen test result.

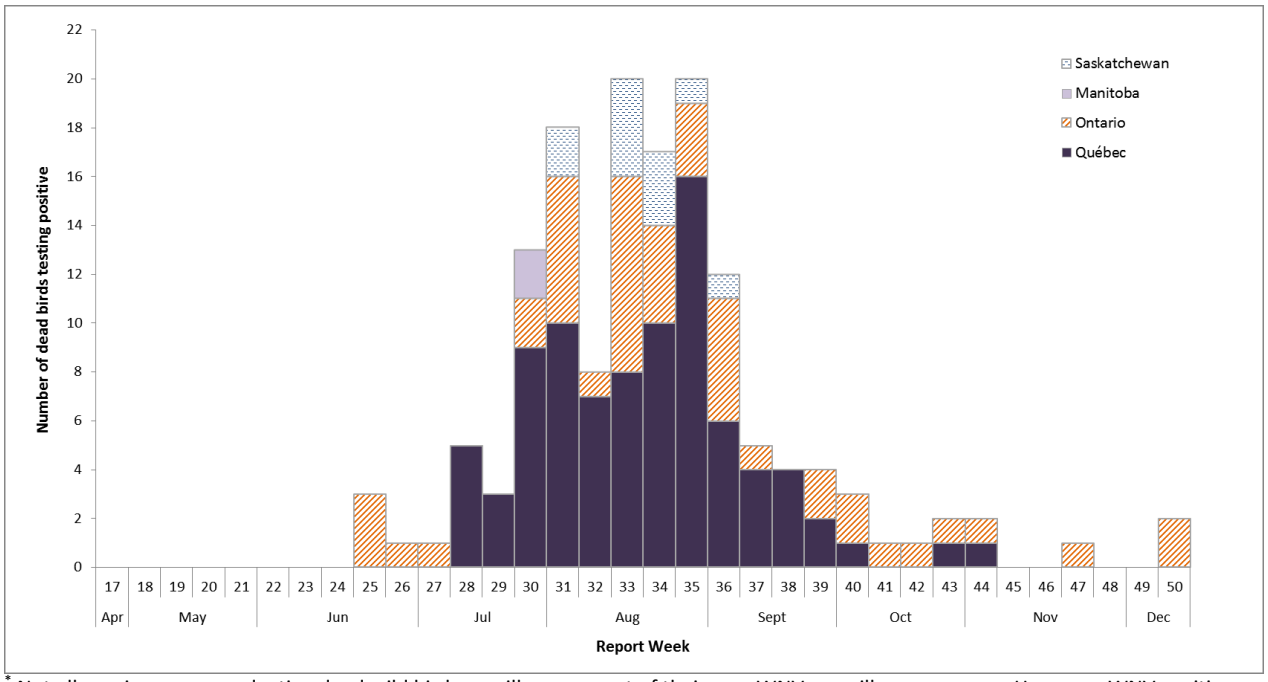
[4] Saskatchewan provides counts of WNV neurological syndrome cases only.

TABLE 2: Number of mosquito pools tested for WNV and number of positive mosquito pools in Canada, 2017 season

Province	2017 West Nile virus season*		
	Number of positive mosquito pools	Number of mosquito pools tested	Percentage of positive mosquito pools (%)
Québec	84	1,849	4.54
Ontario	409	14,076	2.91
Manitoba	41	1,028	3.99
Saskatchewan	10	421	2.38
Total	**544**	**17,374**	**3.13**

* In 2017, mosquito surveillance was conducted by the following four provinces: Quebec, Ontario, Manitoba, and Saskatchewan.

FIGURE 3: Reported number of dead wild birds tested positive for WNV in Canada, by report week, 2017 season*



* Not all provinces are conducting dead wild bird surveillance as part of their own WNV surveillance program. However, WNV positive dead wild birds may be identified through the National Wildlife Disease Surveillance Program of the CWHC.