Vector Borne Disease
2018 Surveillance Report

Summit County Public Health

Report Weeks 19 and 20 (September 30 to October 13, 2018)
CDC/MMWR Weeks 40 and 41

This report will be issued from June through October of each year (or later if West Nile Virus disease is still a concern). Surveillance will include human and veterinary cases and testing of mosquito pools in Summit County. It will also include updates from Ohio and around the nation. It will include vector-borne diseases besides West Nile Virus.

SUMMIT COUNTY SURVEILLANCE

Table 1: West Nile virus (WNV) tests ordered in Summit County hospitals

Week(s)	# of WNV tests ordered this period	# of positive WNV tests this period	Cumulative # of tests ordered this season	Cumulative # of positive tests this season	Percentage of positive tests
Weeks 1 & 2: 5/27 to 6/9	5	0	5	0	0.0%
Weeks 3 & 4: 6/10 to 6/23	2	0	7	0	0.0%
Weeks 5 & 6: 6/24 to 7/7	4	0	11	0	0.0%
Weeks 7 & 8: 7/9 to 7/21	6	0	17	0	0.0%
Weeks 9 & 10: 7/22 to 8/4	8	0	25	0	0.0%
Weeks 11 & 12: 8/5 to 8/18	5	0	30	0	0.0%
Weeks 13 & 14: 8/19 to 9/1	11	0	41	0	0.0%
Weeks 15 & 16: 9/2 to 9/15	8	1	49	1	2.0%
Weeks 17 & 18: 9/16 to 9/29	5	1	54	2	3.7%
Weeks 19 & 20: 9/30 to 10/13	7	0	61	2	3.3%
Weeks 21 & 22: 10/14 to 10/27					

Note: Reporting may not be completed each week. Numbers will be updated when reports are received

West Nile virus testing (Table 1): During surveillance Weeks 19 and 20, there were 7 tests for West Nile virus (or arbovirus panels) ordered by Summit County hospitals, and there were no positive tests for WNV (Table 1).

Lyme Disease testing (Table 2): There were 41 diagnostic test series performed for Lyme disease during Weeks 19 and 20, four of which were positive. The CDC currently recommends a two-step process when testing blood for evidence of antibodies against the Lyme disease bacteria (*Borrelia burgdorferi*). Both steps can be done using the same blood sample. The first step uses a testing procedure called “EIA” (enzyme immunoassay) or rarely, an “IFA” (indirect immunofluorescence assay). If this first step is negative, no further testing of the specimen is recommended. If the first step is positive or indeterminate (sometimes called "equivocal"), then the second step should be performed. The second step uses a test called an immunoblot test, commonly, a “Western blot” test. Results are considered positive only if the EIA/IFA and the immunoblot are both positive. If the Western blot test result is deemed indeterminate, the Lyme disease diagnosis may be based on the doctor’s interpretation of the results and clinical symptoms.

Table 2. Lyme Disease tests ordered in Summit County hospitals					
Week(s)	# of Lyme tests ordered this period	# of positive or indeterminate Lyme tests this period	Cumulative # of tests ordered this season	Cumulative # of positive or indeterminate tests this season	% of positive or indeterminate tests
Weeks 1 & 2: 5/27 to 6/9	63	9	63	9	14.3%
Weeks 3 & 4: 6/10 to 6/23	50	3	113	12	10.7%
Weeks 5 & 6: 6/24 to 7/7	60	5	173	17	9.8%
Weeks 7 & 8: 7/9 to 7/21	43	4	216	21	9.7%
Weeks 9 & 10: 7/22 to 8/4	51	2	267	23	8.6%
Weeks 11 & 12: 8/5 to 8/18	34	2	301	25	8.3%
Weeks 13 & 14: 8/19 to 9/1	36	1	337	26	7.7%
Weeks 15 & 16: 9/2 to 9/15	24	4	361	30	8.3%
Weeks 17 & 18: 9/16 to 9/29	26	0	387	30	7.6%
Weeks 19 & 20: 9/30 to 10/13	41	4	428	34	7.9%
Weeks 21 & 22: 10/14 to 10/27					
Note: Reporting may not be completed each week. Numbers will be updated when reports are received					

Reported Vector-borne diseases in 2018 (Table 3): As of October 13, there were 26 reported cases of Lyme disease, 5 reported cases of Rocky Mountain spotted fever, 1 case of dengue and 4 cases of malaria (dengue and malaria cases were the result of international travel). Two symptomatic cases of West Nile Virus infection were reported in early October. In September, a positive blood screening result for West Nile virus from an asymptomatic blood donor was investigated by SCPH. However, since the donor did not experience symptoms and not meet the case definition, they will not be included in the case counts.

Table 3: Vector-borne diseases reported in Summit County, 2018 cumulative totals (as of 10/13/2018)			
	Confirmed	Probable/Suspected	Notes
Tick-borne diseases:			
Babesiosis	0	0	
Ehrlichiosis / anaplasmosis	0	0	
Lyme disease	**8**	**18**	
Rocky Mountain spotted fever	0	**5**	
Mosquito-borne diseases:			
Chikungunya	0	0	
Dengue	**1**	0	Case was imported
Eastern equine encephalitis	0	0	
LaCrosse virus disease	0	0	
Malaria	**4**	0	All cases were Imported
St. Louis encephalitis virus disease	0	0	
Zika virus infection	0	0	
West Nile virus infection	0	**2**	
Source: Ohio Disease Reporting System (ODRS); only confirmed, probable, and suspected cases are included. Case counts may updated as case status changes.			

Table 4: Reported aseptic meningitis cases in Summit County (confirmed & probable)		
Week(s)	**Cases reported this period**	**Cumulative cases for the season**
Aseptic meningitis cases reported prior to season (1/1 to 5/26/2018)	**6**	**-**
Week 1-2: 5-27 to 6-9	**2**	**2**
Week 3-4: 6-10 to 6-23	**0**	**2**
Week 5-6: 6-24 to 7-7	**2**	**4**
Week 7-8: 7-8 to 7-21	**5**	**9**
Week 9-10: 7-22 to 8-4	**2**	**11**
Week 11-12: 8-5 to 8-18	**2**	**13**
Week 13-14: 8-19 to 9-1	**2**	**15**
Week 15-16: 9-2 to 9-15	**0**	**15**
Week 17-18: 9-16 to 9-29	**6**	**21**
Week 19-20: 9-30 to 10-13	**0**	**21**
Week 21-22: 10-14 to 10-27		
Source: Ohio Disease Reporting System (ODRS)		

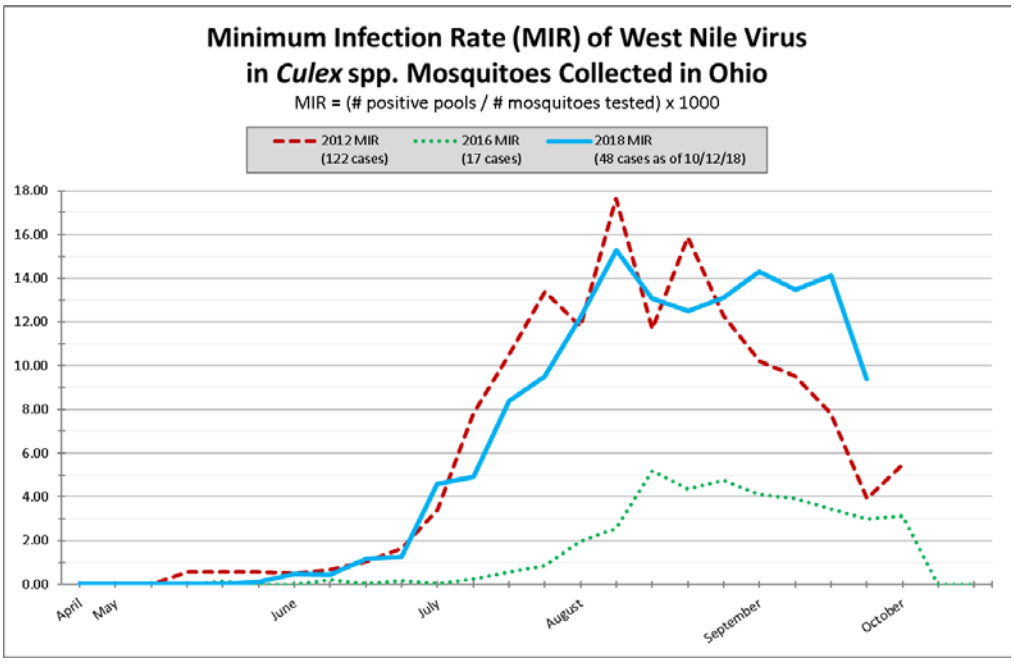
Reported aseptic meningitis cases (Table 4): There were no new cases reported during Weeks 19 and 20, keeping the season total case count at 21 and the 2018 YTD total at 27. Aseptic (viral) meningitis is the most common type of meningitis and occurs predominately in the summer and fall. While most aseptic meningitis cases are due to gastrointestinal or respiratory viruses, similar symptoms may be present with arthropod-borne diseases.

Mosquito testing (Table 5): Based on the ODH mosquito testing summary released on October 1, 127,730 mosquitoes were collected as 3,557 pooled samples throughout Summit County. 646 of the pooled samples tested positive for West Nile virus so far this season.

Table 5. Mosquito testing in Summit County (*samples processed by noon on 10/12/2018*)	
Mosquitoes submitted and identified	127,730
Pooled samples tested	3,557
Positive WNV pooled samples	646
Note: All mosquitoes tested for WNV were *Culex sp.*	

OHIO AND UNITED STATES ARBOVIRUS SURVEILLANCE

Figure 1. Ohio West Nile virus activity in 2012, 2016 and 2018 (as of 10/12/2018)



Source: Ohio Department of Health, Zoonotic Disease Program

The minimum infection rate (MIR) functions as an indicator of seasonal West Nile virus (WNV) activity. A high MIR in mosquitos is commonly associated with higher WNV case counts in humans. In 2018, the MIR remained elevated throughout September, except for a decrease during the last week, when the MIR dropped from 14.11 to 9.40. This decreased MIR is still 2 to 3 times higher than the rates seen at the same time in 2012 and 2016.

Ohio Mosquito-borne Disease 2018 Numbers At-A-Glance
As of October 15, 2018 12:00 pm

West Nile virus (WNV)		Notes
500,400	**Mosquitoes tested**	Collected by 82 agencies in 69 counties, pooled into 16,850 samples
3,264	**WNV positive mosquito samples**	Adams (6), Ashland (4), Ashtabula (5), Athens (22), Belmont (1), Brown (5), Butler (8), Clark (9), Clermont (12), Columbiana (2), Coshocton (1), Cuyahoga (34), Delaware (7), Fairfield (4), Franklin (1,324), Geauga (1), Greene (5), Guernsey (2), Hamilton (9), Hancock (11), Henry (12), Hocking (13), Huron (8), Jefferson (2), Lake (98), Licking (75), Lorain (26), Lucas (293), Mahoning (10), Medina (1), Meigs (1), Miami (6), Montgomery (71), Morgan (2), Morrow (7), Noble (1), Ottawa (20), Pickaway (42), Portage (88), Richland (39), Ross (10), Scioto (28), Seneca (16), Stark (103), Summit (646), Trumbull (3), Tuscarawas (29), Union (5), Vinton (4), Warren (78), Washington (13), Williams (5), Wood (34) and Wyandot (3) counties
43	**WNV veterinary cases**	43 equines in Ashtabula (3), Champaign (1), Coshocton (2), Geauga (3), Holmes (19), Knox (1), Lorain (2), Medina (1), Pickaway (1), Seneca (1), Stark (1), Trumbull (2), Tuscarawas (1) and Wayne (5) counties, onset of symptoms 08/06/2018-09/29/2018
8	**WNV asymptomatic viremic blood donors**	2 females, 6 males ranging in age 30-69 years (median 55.5 years) in Carroll (1), Cuyahoga (1), Darke (1), Franklin (2), Henry (1) Lucas (1) and Summit (1) counties
49	**WNV human cases**	22 females, 27 males ranging in age 23-85 years (median 60 years) in Auglaize (2), Clark (1), Cuyahoga (7), Defiance (1), Erie (1), Franklin (2), Fulton (1), Guernsey (1), Hamilton (5), Hardin (1), Holmes (1), Lake (1), Lucas (2), Medina (1), Montgomery (2), Paulding (1), Preble (1), Ross (2), Stark (6), Summit (2), Trumbull (4), Wayne (2), Williams (1) and Wyandot (1) counties, onset of symptoms 06/23/2018-09/20/2018
67	**Ohio counties with WNV activity reported**	Includes counties with WNV positive mosquitoes, equine WNV cases, human WNV cases and human WNV asymptomatic viremic blood donors

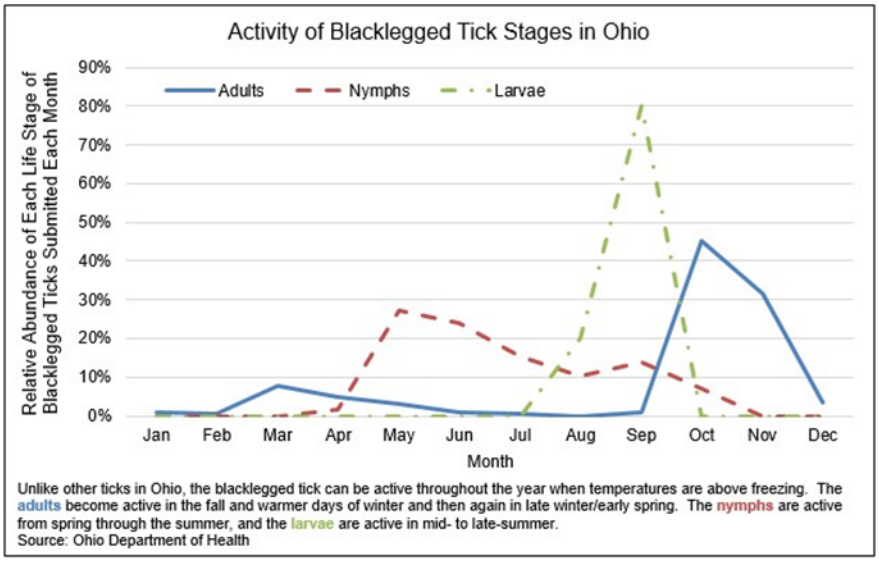
Other locally-acquired mosquito-borne cases		Notes
26	**La Crosse human cases**	15 females, 11 males ranging in age 3-17 years (median 7 years) in Coshocton (1), Crawford (1), Fairfield (1), Hocking (2), Holmes (1), Knox (2), Licking (5), Lorain (1), Miami (1), Morgan (1), Morrow (2), Muskingum (1), Perry (1), Richland (1), Stark (4) and Union (1) counties, onset of symptoms 06/20/2018-09/17/2018
3	**Unspecified California virus human cases**	1 female, 2 males ranging in age 11-16 years (median 11 years) in Franklin (1), Medina (1) and Morrow (1) counties, onset of symptoms 07/06/2018-08/06/2018

Travel-associated mosquito-borne disease cases		Notes
1	**Chikungunya virus human cases***	1 female aged 22 years with travel to Peru, onset of symptoms 08/26/2018
4	**Dengue human cases***	3 females, 1 male ranging in age 6-45 years (median 28.5 years) with travel to Haiti (2), Mexico (1) and Venezuela (1), onset of symptoms 04/07/2018-08/01/2018
0	**Zika virus human cases***	
45	**Malaria human cases**	17 females, 28 males ranging in age 9 months-72 years (median 36 years) with travel to several African countries, Peru and Thailand

Source: https://www.odh.ohio.gov/arboupdate

Special note for travelers: Ohioans traveling to areas where local transmission is occurring should be aware of the ongoing situation and make every effort to avoid mosquito bites. Additional information can be found from the Centers for Disease Control and Prevention (CDC)'s Travelers' Health and Pan-American Health Organization websites.

VECTOR BORNE DISEASE NEWS



Tick Season is Year Round

Unless there is another warm spell, mosquito season is nearly finished for 2018. Ticks are another story: As shown in the graph to the left, the blacklegged ticks are active most of the year, and adults are most active from September to December. Although they will lay low during the winter months, blacklegged ticks can be active when temperatures are above freezing. Be sure to take precautions when outdoors year round, and provide protection for pets that spend time outside.

Source:https://www.odh.ohio.gov/en/odhprograms/bid/zdp/diseases/tickborne/ticks

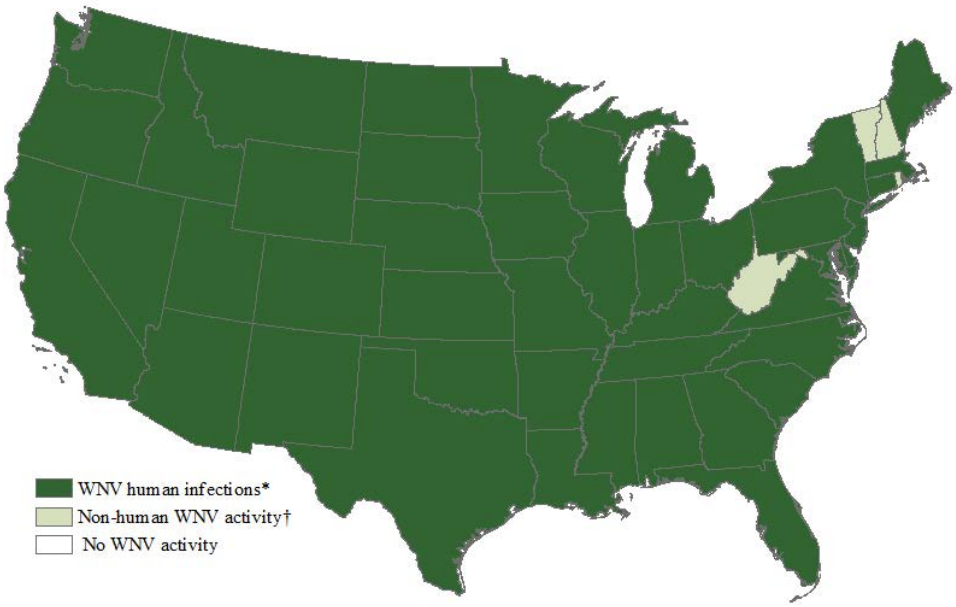
Table 6. Reported Vector Borne disease in Ohio and the United States, 2018

	OHIO		UNITED STATES	
Disease	2018 (as of 10/13) Cumulative		Weeks 19 and 20 (9/30 to 10/13)	2018 (as of 10/13) Cumulative
Babesiosis	2		11	1372
Chikungunya	1		0	66
Dengue (includes dengue-like illness)	4		2	203
Eastern equine encephalitis	0		0	5
Erlichiosis / anaplasmosis	23		56	3984
LaCrosse virus disease	27		0	49
Lyme Disease	298		Not reported weekly by CDC	
Malaria	46		19	1058
Spotted fever rickettsiosis	55		39	3857
St. Louis encephalitis virus disease	0		0	3
West Nile virus infection	48		5	3667
Neuroinvasive			5	1159
Non neuroinvasive			0	842
Zika virus infection, non congenital	0		0	52

Note: Data is provisional and subject to change

Source: Ohio Disease Reporting System (ODRS), MMWR weekly reports
https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp

Figure 2. West Nile virus activity by state – United States, 2018 (as of October 16, 2018)



There have been no changes in West Nile Virus reporting by state since the previous report. In addition to Ohio, human WNV cases have been reported in all but 3 of the 48 contiguous states and the District of Columbia. Three states, West Virginia, New Hampshire, and Vermont, reported non-human WNV activity only.

Source:https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2018/activitybystate2018.html

About this report: *Reporting agencies include Summit County hospital laboratories and the Ohio Department of Health. Vector-borne disease case data for Summit County are obtained from the Ohio Disease Reporting System.*

Many thanks to all agencies who report vector-borne disease data weekly.

Reporting from participants may not be complete each week. Numbers may change as updated reports are received. For questions, please contact Joan Hall (jhall@schd.org) or Tracy Rodriguez (trodriguez@schd.org), Summit County Public Health Communicable Disease Unit (330-375-2662). This report was issued on **October 19, 2018**.