Vector Borne Disease
2018 Surveillance Report

Summit County Public Health

Report Weeks 11 and 12 (August 5 to August 18, 2018)
CDC/MMWR Weeks 32 and 33

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					
Weeks 15 & 16: 9/2 to 9/15					
Weeks 17 & 18: 9/16 to 9/29					
Weeks 19 & 20: 9/30 to 10/13					
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 11 and 12, there were 5 tests for West Nile virus (or arbovirus panels) ordered by Summit County hospitals, and all tests had negative results (Table 1).

Lyme Disease testing (Table 2): There were 34 diagnostic test series performed for Lyme disease during Weeks 11 and 12, two 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					
Weeks 15 & 16: 9/2 to 9/15					
Weeks 17 & 18: 9/16 to 9/29					
Weeks 19 & 20: 9/30 to 10/13					
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 August 18, there were 23 reported cases of Lyme disease, 4 reported cases of Rocky Mountain spotted fever, 1 case of dengue and 3 cases of malaria (dengue and malaria cases were the result of international travel). In Summit County, there were no cases of West Nile virus infection reported, or any other locally transmitted mosquito borne illness.

Table 3: Vector-borne diseases reported in Summit County, 2018 cumulative totals (as of 8/18/2018)			
	Confirmed	**Probable/Suspected**	**Notes**
Tick-borne diseases:			
Babesiosis	0	0	
Ehrlichiosis / anaplasmosis	0	0	
Lyme disease	**6**	**17**	
Rocky Mountain spotted fever	0	**4**	
Mosquito-borne diseases:			
Chikungunya	0	0	
Dengue	**1**	0	Case was imported
Eastern equine encephalitis	0	0	
LaCrosse virus disease	0	0	
Malaria	**3**	0	All cases were Imported
St. Louis encephalitis virus disease	0	0	
Zika virus infection	0	0	
West Nile virus infection	0	0	
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		
Week 15-16: 9-2 to 9-15		
Week 17-18: 9-16 to 9-29		
Week 19-20: 9-30 to 10-13		
Week 21-22: 10-14 to 10-27		
Source: Ohio Disease Reporting System (ODRS)		

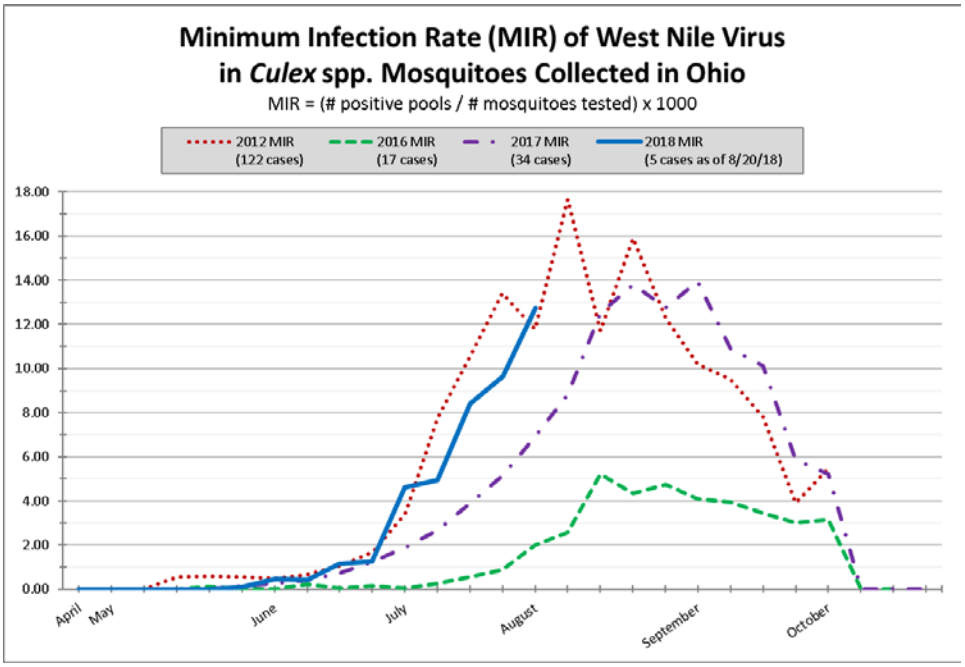
Reported aseptic meningitis cases (Table 4): There were two new cases reported during Weeks 11 and 12, bringing the season total case count to 13 and the 2018 total to 19. Aseptic (viral) meningitis is the most common type of meningitis and occurs predominately in the summer and fall. While most aseptic 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 August 20, 114,307 mosquitoes were collected as 2,831 pooled samples throughout Summit County. 214 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 8/20/2018*)	
Mosquitoes submitted and identified	114,307
Pooled samples tested	2,831
Positive WNV pooled samples	214
Note: All mosquitoes tested for WNV were *Culex sp.*	

OHIO ARBOVIRUS SURVEILLANCE

Figure 1. Ohio West Nile virus activity in 2012, 2016 and 2018 (as of 8/20/2018)



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 2012 (an active WNV year), the mosquito MIR in Ohio reached a maximum value of nearly 18.0, with a total of 122 human WNV cases. In 2016, the maximum MIR was approximately 5.0 with a 17 human WNV cases. Last year, the maximum MIR was about 14.0 and there were 34 WNV cases. As of 8/20/2018, the MIR in 2018 continues to be similar to the MIR's seen in the higher activity years 2012 and 2017.

Ohio Mosquito-borne Disease 2018 Numbers At-A-Glance
As of August 20, 2018 12:00 pm

West Nile virus (WNV)		Notes
401,740	**Mosquitoes tested**	Collected by 81 agencies in 68 counties, pooled into 12,860 samples
1,984	**WNV positive mosquito samples**	Adams (6), Ashland (1), Ashtabula (2), Athens (13), Belmont (1), Brown (5), Butler (3), Clark (7), Clermont (10), Coshocton (1), Cuyahoga (34), Delaware (4), Fairfield (3), Franklin (763), Greene (2), Guernsey (2), Hamilton (7), Hancock (10), Henry (12), Hocking (5), Huron (8), Jefferson (1), Lake (52), Licking (60), Lorain (24), Lucas (231), Mahoning (9), Medina (1), Meigs (1), Miami (3), Montgomery (37), Morgan (2), Noble (1), Ottawa (20), Pickaway (1), Portage (80), Richland (10), Ross (6), Scioto (14), Seneca (16), Stark (42), Summit (378), Trumbull (2), Tuscarawas (24), Vinton (1), Warren (29), Washington (12), Williams (5), Wood (22) and Wyandot (1) counties
1	**WNV veterinary cases**	1 equine in Holmes County, onset of symptoms 08/06/2018
2	**WNV asymptomatic viremic blood donors**	2 males ranging in age 30-53 years in Franklin County
5	**WNV human cases**	1 female, 4 males ranging in age 52-81 years (median 65 years) in Cuyahoga, Fulton, Lake, Ross and Stark counties, onset of symptoms 06/23/2018-08/07/2018
52	**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
6	**La Crosse human cases**	3 females, 3 males ranging in age 3-16 years (median 7.5 years) in Fairfield, Licking, Morgan and Stark counties, onset of symptoms 06/20/2018-07/21/2018
2	**Unspecified California virus human cases**	2 males ranging in age 11-16 years in Franklin and Morrow counties, onset of symptoms 07/06/2018-07/21/2018

Travel-associated mosquito-borne disease cases		Notes
0	**Chikungunya virus human cases***	
3	**Dengue human cases***	2 females, 1 male ranging in age 18-45 years (median 39 years) with travel to Haiti (2) and Mexico, onset of symptoms 04/07/2018-07/31/2018
0	**Zika virus human cases***	
32	**Malaria human cases**	11 females, 21 males ranging in age 9 months-72 years (median 37 years) with travel to several African countries and Peru

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.

Table 6. Reported Vector Borne disease in Ohio, 2018

Disease	2018 (as of 8/18) cumulative
Babesiosis	0
Chikungunya	0
Dengue (includes dengue-like illness)	3
Eastern equine encephalitis	0
Ehrlichiosis / anaplasmosis	13
LaCrosse virus disease	8
Lyme Disease	305
Malaria	33
Spotted fever rickettsiosis	47
St. Louis encephalitis virus disease	0
West Nile virus infection	3
Zika virus infection, non-congenital	0

Note: Data is provisional and subject to change

Source: Ohio Disease Reporting System (ODRS), MMWR weekly reports

UNITED STATES SURVEILLANCE

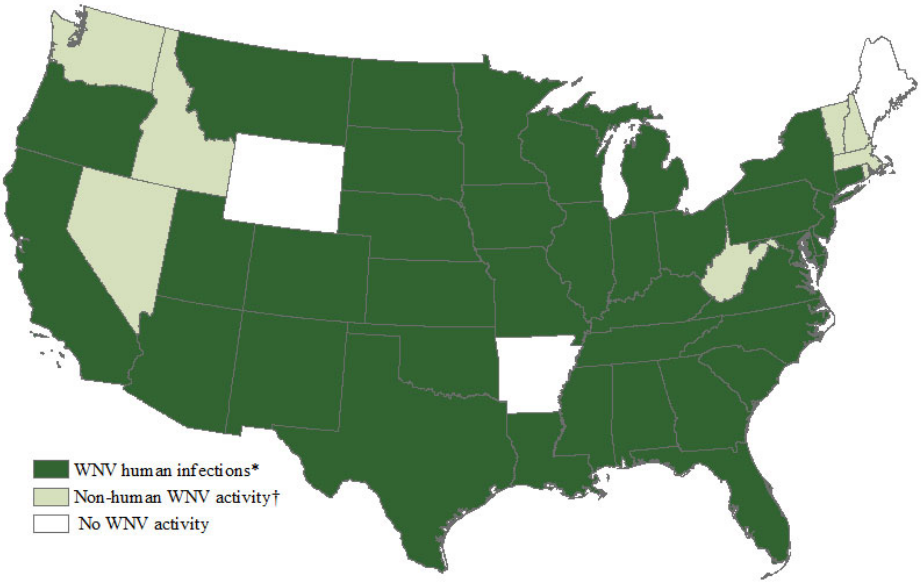
Table 7. Reported vector borne disease in the United States, 2018

Disease	Week s 11 & 12 (8/5 to 8/18)	2018 (as of 8/18) Cumulative
Babesiosis	67	895
Chikungunya	1	37
Dengue (includes dengue-like illness)	0	107
Eastern equine encephalitis	1	3
Ehrlichiosis / anaplasmosis	111	2964
LaCrosse virus disease	1	17
St. Louis encephalitis virus disease	0	7
Malaria	36	760
Spotted fever rickettsiosis	85	2738
West Nile virus infection		
Neuroinvasive	6	135
Non neuroinvasive	0	106
Zika virus infection, non-congenital	0	44

Note: Data is provisional and subject to change

Source: https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp

Figure 2. West Nile virus activity by state – United States, 2018 (as of August 21, 2018)



*WNV human disease cases or presumptive viremic blood donors. Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed.

†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals.

In addition to Ohio, human WNV cases have been reported in 36 states and the District of Columbia. Seven additional states reported non-human WNV activity. Only Wyoming, Maine and Arkansas have not yet reported WNV activity in 2018.

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

VECTOR BORNE DISEASE NEWS

Disease Spotlight: Rocky Mountain spotted fever

The American dog tick, *Dermacentor variabilis*, is the principal vector of Rocky Mountain spotted fever in Ohio.

Rocky Mountain spotted fever (RMSF) is a tick borne disease caused by the bacteria *Rickettsia ricketsii***.** The principle vector is the American dog tick, and many RMSF patients report being exposed to the tick in their yard or from their pets. The initial symptoms of RMSF are a fever, headache, nausea/ vomiting, and a rash that appears 2-4 days after the fever starts. Deoxycyclone is the recommended and most effective antibiotic treatment for RMSF, and it is essential to start treatment within 5 days of developing symptoms.

Although rare, an untreated RMSF infection can lead to death in 20-25% of patients and devastating injuries to those who survive. If you have been bitten by a tick, or have spent time in an area with ticks, be sure to seek medical attention should you develop a fever or other acute RMSF symptoms. The incubation period for this disease is usually within 3 to 14 days. Tick bites can be prevented by using repellent effective for ticks, wearing light-colored clothing and tucking in layers when outside, checking family and pets for ticks daily, and landscaping the yard to reduce tick populations.

For more information about Rocky Mountain spotted fever, treatment, and prevention, please refer to:
https://www.odh.ohio.gov/rmsf
https://www.cdc.gov/rmsf/index.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 **August 24, 2018**.