



Vector Borne Disease 2019 Surveillance Report

Summit County Public Health



Public Health
Prevent. Promote. Protect.

Report Weeks 17 and 18 (September 15 to September 28, 2019)
MMWR Weeks 38 and 39

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 for all reportable diseases that are transmitted insect vectors.

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: 5/26 to 6/8	2	1	2	1	50.0%
Weeks 3 & 4: 6/9 to 6/22	5	0	7	1	14.3%
Weeks 5 & 6: 6/23 to 7/6	4	0	11	1	9.1%
Weeks 7 & 8: 7/7 to 7/20	6	1	17	2	11.8%
Weeks 9 & 10: 7/21 to 8/3	9	1	26	3	11.5%
Weeks 11 & 12: 8/4 to 8/17	10	0	36	3	8.3%
Weeks 13 & 14: 8/18 to 8/30	14	1	50	4	8.0%
Weeks 15 & 16: 9/1 to 9/14	12	1	62	5	8.1%
Weeks 17 & 18: 9/15 to 9/28	14	0	76	5	6.6%
Weeks 19 & 20: 9/29 to 10/12					
Weeks 21 & 22: 10/13 to 10/26					

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

West Nile virus testing (Table 1): During surveillance period Weeks 17 and 18, there were 14 tests for West Nile virus (stand alone or part of an arbovirus panel) ordered by Summit County hospitals. So far this season, there have been 5 positive results, all of which were likely to be indication of immunity due to a past exposure and were not active infections (Table 1).

Lyme disease testing (Table 2): There were 54 diagnostic test series performed for Lyme disease during Weeks 17 and 18, 9 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.

Week(s)	# of Lyme tests ordered this period	# of positive Lyme tests this period	Cumulative # of tests ordered this season	Cumulative # of positive tests this season	Percentage of positive tests
Weeks 1 & 2: 5/26 to 6/8	55	2	55	2	3.6%
Weeks 3 & 4: 6/9 to 6/22	79	10	134	12	9.0%
Weeks 5 & 6: 6/23 to 7/6	59	6	193	18	9.3%
Weeks 7 & 8: 7/7 to 7/20	80	5	273	23	8.4%
Weeks 9 & 10: 7/21 to 8/3	82	12	355	35	9.9%
Weeks 11 & 12: 8/4 to 8/17	69	6	424	41	9.7%
Weeks 13 & 14: 8/18 to 8/30	65	8	489	49	10.0%
Weeks 15 & 16: 9/1 to 9/14	64	5	553	54	9.8%
Weeks 17 & 18: 9/15 to 9/28	54	9	607	63	10.4%
Weeks 19 & 20: 9/29 to 10/12					
Weeks 21 & 22: 10/13 to 10/26					

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

Reported Vector-borne diseases in 2019 (Table 3): As of September 28, there were 23 reported cases of Lyme disease; 8 were confirmed by laboratory testing and 15 were suspected cases. Two confirmed cases of malaria, two cases of Rocky Mountain spotted fever, and two cases of ehrlichiosis were also reported.

	Confirmed or Probable	Suspected	Notes
Tick-borne diseases:			
Babesiosis	0	0	
Ehrlichiosis / anaplasmosis	0	2	
Lyme disease	8	15	
Powassan virus disease	0	0	
Rocky Mountain spotted fever	1	1	
Mosquito-borne diseases:			
Chikungunya	0	0	
Dengue	0	0	
Eastern equine encephalitis	0	0	
LaCrosse virus disease	0	0	
Malaria	2	0	Cases were international travel-related
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.

Species name	Diseases associated	# identified
Mosquito species		
<i>Aedes albopictus</i>	Chikungunya, dengue fever, yellow fever	3
<i>Aedes triseriatus</i>	La Crosse encephalitis	532
Tick species		
<i>Ixodes scapularis</i>	Lyme disease, babesiosis, anaplasmosis	81

Source: Ohio Department of Health (Identification via mailed specimens, emailed photos and iNaturalist observations)

Table 5. Reported Aseptic/viral Meningitis Cases in Summit County (confirmed & probable), as of September 28, 2019

Week(s)	Cases reported this period	Cumulative cases for the season
Aseptic meningitis cases reported prior to season (1/1 to 5/25/2019)	3	-
Weeks 1 & 2: 5/26 to 6/8	1	1
Weeks 3 & 4: 6/9 to 6/22	2	3
Weeks 5 & 6: 6/23 to 7/6	2	5
Weeks 7 & 8: 7/7 to 7/20	3	8
Weeks 9 & 10: 7/21 to 8/3	2	10
Weeks 11 & 12: 8/4 to 8/17	3	13
Weeks 13 & 14: 8/18 to 8/30	0	13
Weeks 15 & 16: 9/1 to 9/14	0	13
Weeks 17 & 18: 9/15 to 9/28	2	15
Weeks 19 & 20: 9/29 to 10/12		
Weeks 21 & 22: 10/13 to 10/26		

Source: Ohio Disease Reporting System (ODRS)

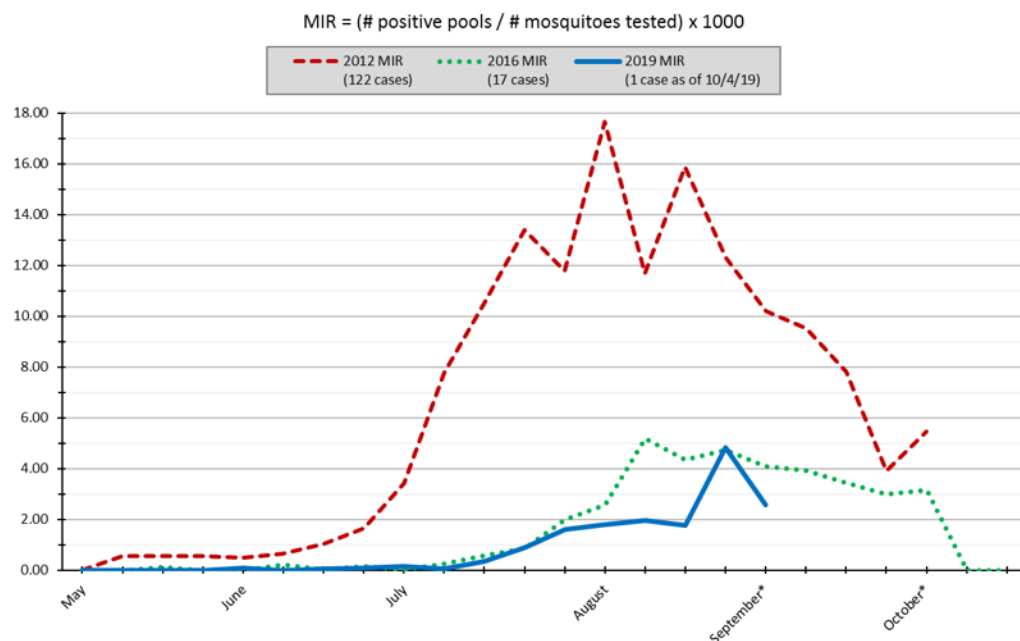
Reported aseptic/viral meningitis cases (Table 5): Prior to the reporting season, there were 3 reported cases of aseptic meningitis, and two cases were reported during Weeks 17 and 18, increasing the season total to 15. Aseptic/viral meningitis is the most common type of meningitis and occurs predominately in the summer and fall. While most aseptic/viral meningitis cases are due to gastrointestinal or respiratory viruses, similar symptoms may be present with arthropod-borne diseases.

Mosquito testing (Table 6): Based on the ODH mosquito testing summary released on October 4, over 91,468 mosquitoes were collected as 2,317 pooled samples throughout Summit County. 36 of the pooled samples tested positive for West Nile virus.

Mosquitoes identified	91,468
Pooled samples tested	2,317
Positive WNV pooled samples	36
Note: All mosquitoes pools tested were <i>Culex sp.</i>	

OHIO SURVEILLANCE

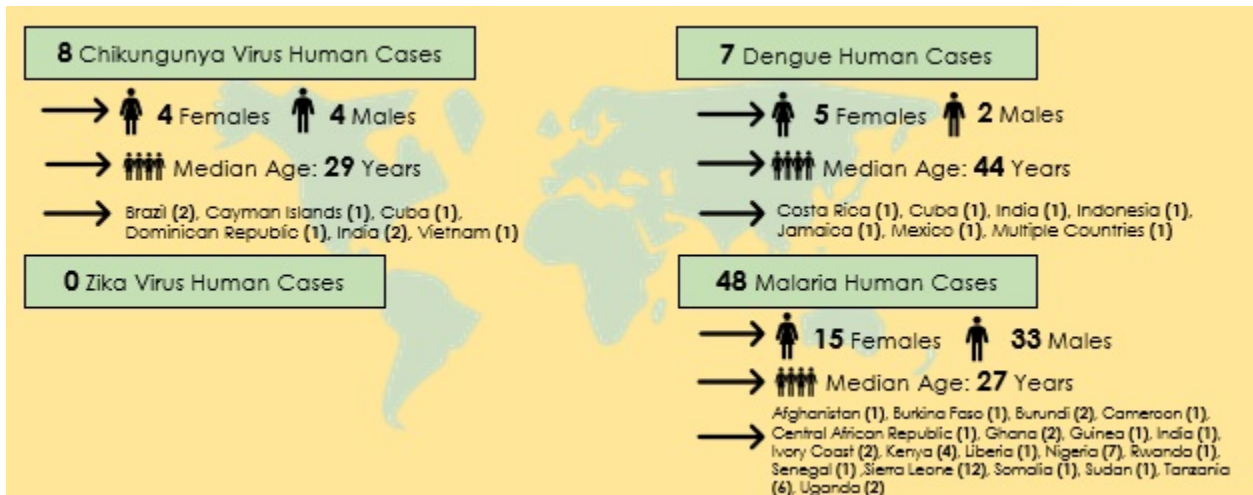
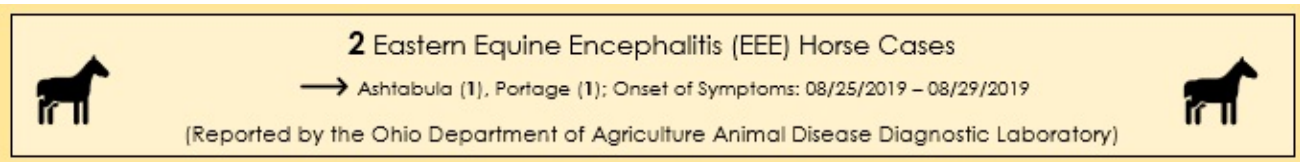
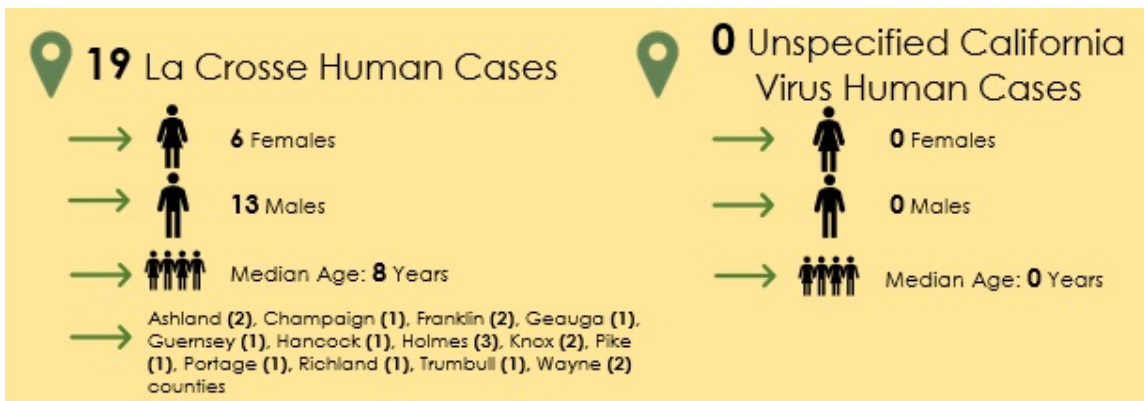
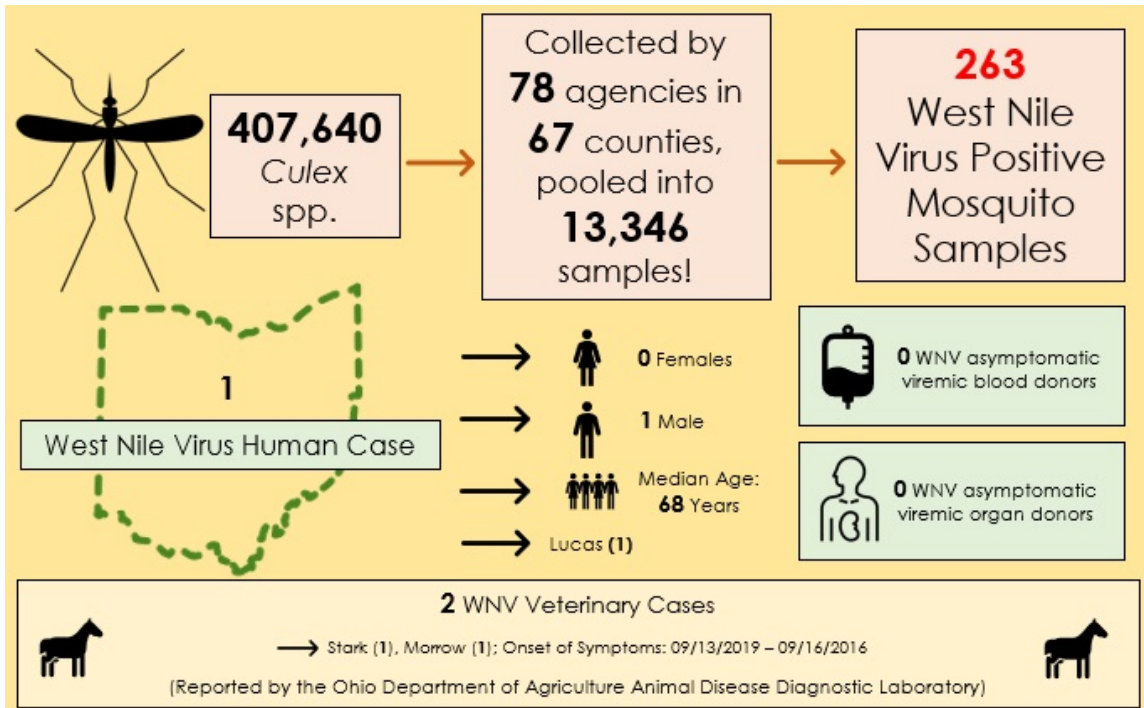
Figure 1. Minimum infection rate (MIR) of West Nile Virus in *Culex spp.* collected in Ohio as of 10/4/2019



West Nile virus infection rates peaked at 4.81 in late August, but remained below average in Ohio (Figure 1). Routine testing of mosquitoes in Ohio officially ended on September 7, but mosquitos suspected of being positive will be tested until the end of the season. 263 mosquito pools in Ohio tested positive for West Nile virus, including 36 pools in Summit County. At this time in 2018, Summit County had 646 mosquito pools that tested positive for West Nile virus.

Source: Ohio Department of Health

Ohio Mosquito-borne diseases (as of 10/3/2019):

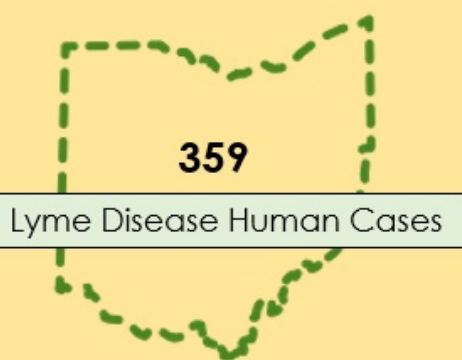


Ohio Tick-borne diseases (as of 10/3/2019):



438
Blacklegged
Ticks, *Ixodes*
scapularis,
Identified*

Identified from **42** counties: Ashland (14), Ashtabula (7), Belmont (60), Butler (1), Clark (2), Columbiana (27), Coshocton (1), Cuyahoga (2), Erie (2), Fayette (2), Franklin (1), Gallia (3), Geauga (1), Greene (1), Highland (3), Hocking (2), Holmes (1), Huron (2), Jefferson (52), Knox (12), Lake (2), Lawrence (9), Licking (2), Lucas (2), Madison (1), Medina (6), Monroe (9), Morgan (30), Muskingum (7), Noble (1), Perry (14), Pike (18), Portage (5), Richland (8), Ross (1), Scioto (6), Stark (34), Summit (81), Trumbull (1), Warren (1), Washington (1), Wood (2), Unknown (1) counties



→ 146 Females 213 Males

→ Median Age: 36 Years

→ Adams (2), Ashland (3), Ashtabula (1), Athens (1), Belmont (25), Butler (3), Carroll (11), Clermont (2), Columbiana (11), Coshocton (10), Cuyahoga (13), Delaware (4), Erie (2), Fairfield (4), Fayette (1), Franklin (12), Gallia (8), Geauga (2), Guernsey (22), Hamilton (10), Hancock (2), Harrison (17), Highland (1), Hocking (1), Holmes (19), Huron (2), Jefferson (31), Knox (11), Lake (2), Licking (15), Lorain (1), Lucas (2), Madison (1), Mahoning (5), Medina (4), Miami (1), Montgomery (4), Muskingum (7), Noble (2), Perry (1), Pike (2), Portage (10), Richland (1), Ross (4), Sandusky (1), Scioto (5), Seneca (3), Stark (15), Summit (7), Trumbull (5), Tuscarawas (18), Union (1), Van Wert (1), Vinton (1), Warren (2), Washington (2), Wayne (3), Wood (2) counties

5 Anaplasmosis Human Cases

→ 3 Females

→ 2 Males

→ Median Age: 65 Years

→ Clermont (1), Lake (1), Mahoning (1), Montgomery (1), Seneca (1) counties

4 Babesiosis Human Cases

→ 2 Females

→ 2 Males

→ Median Age: 63 Years

→ Delaware (1), Gallia (1), Lake (1), Wood (1) counties

80 Lone Star Ticks,
Amblyomma
americanum,
Identified*



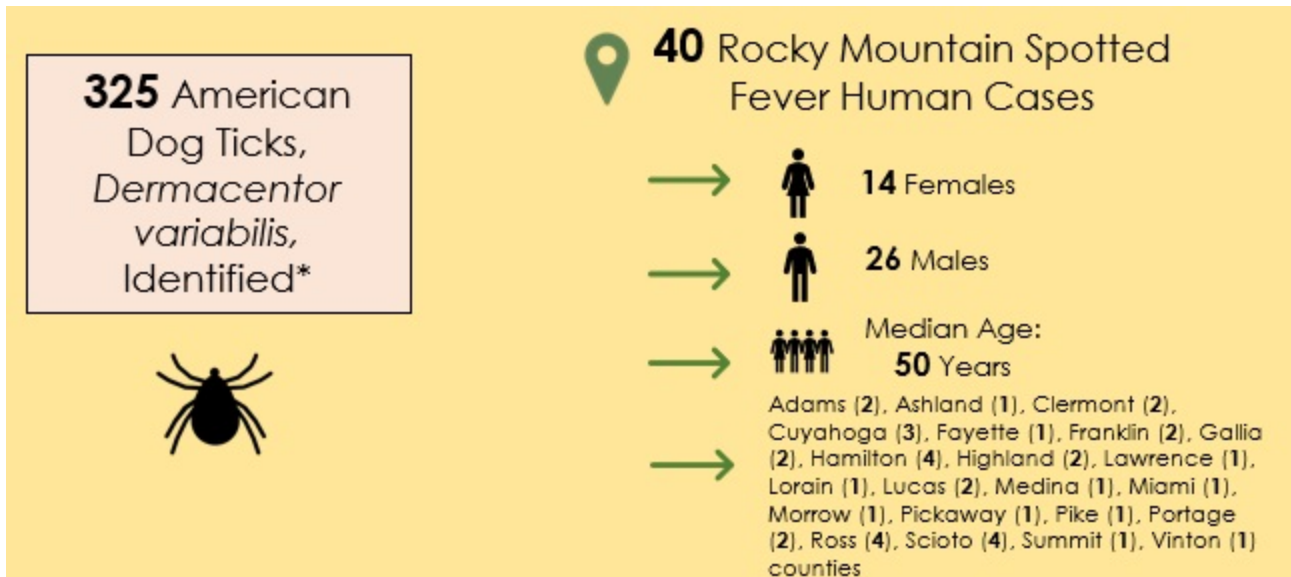
19 Ehrlichiosis Human Cases

→ 9 Females

→ 10 Males

→ Median Age: 57 Years

→ Adams (2), Clermont (2), Fairfield (1), Gallia (3), Medina (1), Montgomery (1), Pike (1), Ross (1), Scioto (5), Union (1), Warren (1) counties



Source: [Ohio Department of Health Vector Borne Disease Updates](#)

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 and tick bites. Additional information can be found from the [Centers for Disease Control and Prevention \(CDC\)'s Travelers' Health](#) and [Pan-American Health Organization](#) websites.

OHIO AND UNITED STATES SURVEILLANCE

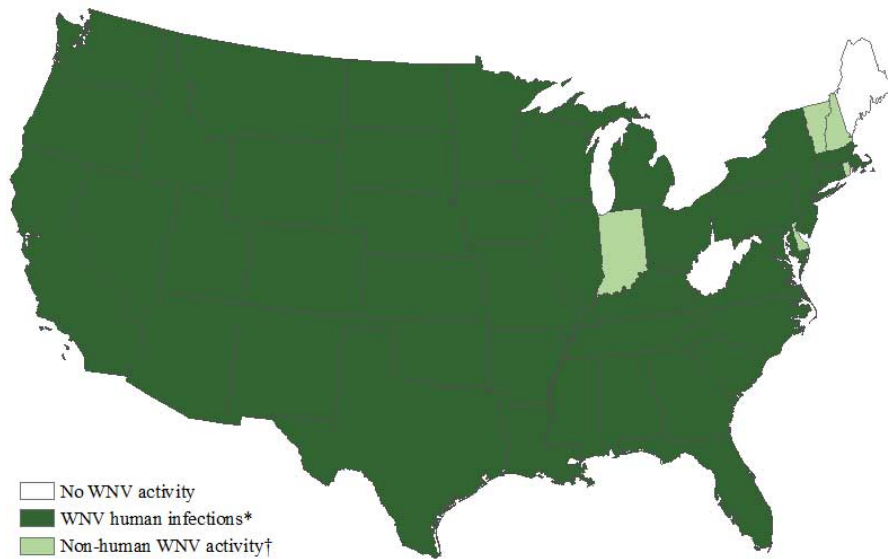
Table 7. Reported Vector Borne disease in Ohio and the United States, 2019

Disease	OHIO	UNITED STATES	
	2019 (as of 9/28) cumulative	Weeks 17 and 18 (9/15 to 9/28)	2019 (as of 9/28) Cumulative
Babesiosis	5	19	1769
Chikungunya	10	1	70
Dengue (includes dengue-like illness)	8	15	627
Eastern equine encephalitis	0	2	31
Erlchiosis / anaplasmosis	30	92	5342
Jamestown Canyon virus disease	0	0	14
LaCrosse virus disease	17	0	30
Lyme Disease	437	Not reported weekly by CDC	
Malaria	49	37	1161
Powassan virus disease	0	0	24
Spotted fever rickettsiosis	53	79	3200
St. Louis encephalitis virus disease	0	0	11
West Nile virus infection	1	7	391
Zika virus infection, non-congenital	0	0	10

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, 2019 (as of October 1, 2019)



WNV infections in mosquitoes, birds, sentinel animals, or veterinary animals have been reported to CDC ArboNET from all 48 contiguous states except: Maine and West Virginia.

West Nile virus infections in humans have been reported to CDC ArboNET from all 48 contiguous states except: Delaware, Indiana, Maine, New Hampshire, Rhode Island, Vermont, and West Virginia.

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

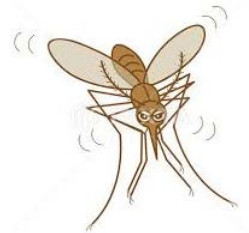
†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals.

Source: <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2019/activitybystate2019.html>

VECTOR BORNE DISEASE NEWS

Study details first evidence of windborne mosquito migration in Africa

A study to probe why malaria persists in parts of Africa that are dry for 3 to 8 months of the year revealed the first evidence of windborne migration of some mosquito species that can spread the disease. Researchers from Mali, the United Kingdom, and the United States described their findings yesterday in a letter to *Nature*.



The investigators used aerial sampling to explore mosquito movements in the Sahel area of Mali, which has a long dry season and where mosquito populations surge much faster than expected after the rains return. Aerial sampling involved suspending sticky nets tied to helium balloons at different altitudes at night. Sampling took place at four villages for 10 consecutive nights over 22 to 32 months. The team found ten species, including the primary malaria vector *Anopheles coluzzii*, among 235 anopheline captured during 617 aerial collections. Females made up 80% of the collected mosquitoes, and, of those, 90% had taken a blood meal before migration, hinting that malaria parasites are probably transported over long distances by migrating females. However, they did not find the parasite in any of the sampled mosquitoes, possibly owing to the small sample size.

Also, the researchers found that the likelihood of capturing *Anopheles* species increased with altitude and wet season, with little variation between years and locations. Trajectory simulations of mosquito flights suggest nightly displacements of 300 kilometers (186 miles) for 9-hour flight durations. The group concluded that successful elimination of malaria may hinge on identifying and controlling the sources of migrant mosquito vectors.

Oct 2 *Nature* [study](#)

Oct 2 *Nature* [news story](#)

Source: <http://www.cidrap.umn.edu/news-perspective/2019/10/news-scan-oct-03-2019>

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@sched.org) or Tracy Rodriguez (trodriguez@sched.org), Summit County Public Health Communicable Disease Unit (330-375-2662). This report was issued on **October 4, 2019**.