



Vector Borne Disease 2019 Surveillance Report

Summit County Public Health

Report Weeks 7 and 8 (July 7 to July 20, 2019)
MMWR Weeks 28 and 29



Public Health
Prevent. Promote. Protect.

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: 5/26 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					
Weeks 11 & 12: 8/4 to 8/17					
Weeks 13 & 14: 8/18 to 8/30					
Weeks 15 & 16: 9/1 to 9/14					
Weeks 17 & 18: 9/15 to 9/28					
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 7 and 8, there were 6 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 two positive results, both of which were likely to be due to a past exposure and were not current infections (Table 1).

Lyme disease testing (Table 2): There were 80 diagnostic test series performed for Lyme disease during Weeks 7 and 8, five 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					
Weeks 11 & 12: 8/4 to 8/17					
Weeks 13 & 14: 8/18 to 8/30					
Weeks 15 & 16: 9/1 to 9/14					
Weeks 17 & 18: 9/15 to 9/28					
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 July 20, there were 12 reported cases of Lyme disease; 5 were confirmed by laboratory testing and 7 were suspected cases. Two confirmed cases of malaria have been reported, and one suspected case of Rocky Mountain spotted fever. There was also one suspected case of Powassan virus disease, but CDC testing results were negative for the virus.

	Confirmed	Suspected	Notes
Tick-borne diseases:			
Babesiosis	0	0	
Ehrlichiosis / anaplasmosis	0	0	
Lyme disease	5	7	
Powassan virus disease	0	0	
Rocky Mountain spotted fever	0	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	0
<i>Aedes triseriatus</i>	La Crosse encephalitis	292
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 July 20, 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		
Weeks 11 & 12: 8/4 to 8/17		
Weeks 13 & 14: 8/18 to 8/30		
Weeks 15 & 16: 9/1 to 9/14		
Weeks 17 & 18: 9/15 to 9/28		
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 3 cases were reported during Weeks 7 and 8. 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 July 25, over 60,210 mosquitoes were collected as 1,353 pooled samples throughout Summit County. Three of the pooled samples tested positive for West Nile virus.

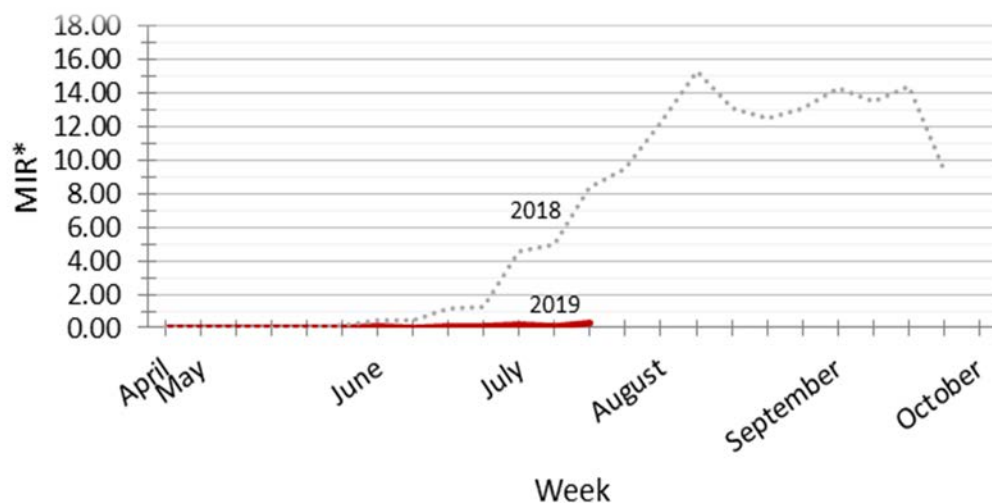
Table 6. Mosquito Testing in Summit County (samples processed by noon on 7/25/2019)

Mosquitoes identified	60,210
Pooled samples tested	1,353
Positive WNV pooled samples	3

Note: All mosquitoes pools tested were *Culex sp.*

OHIO SURVEILLANCE

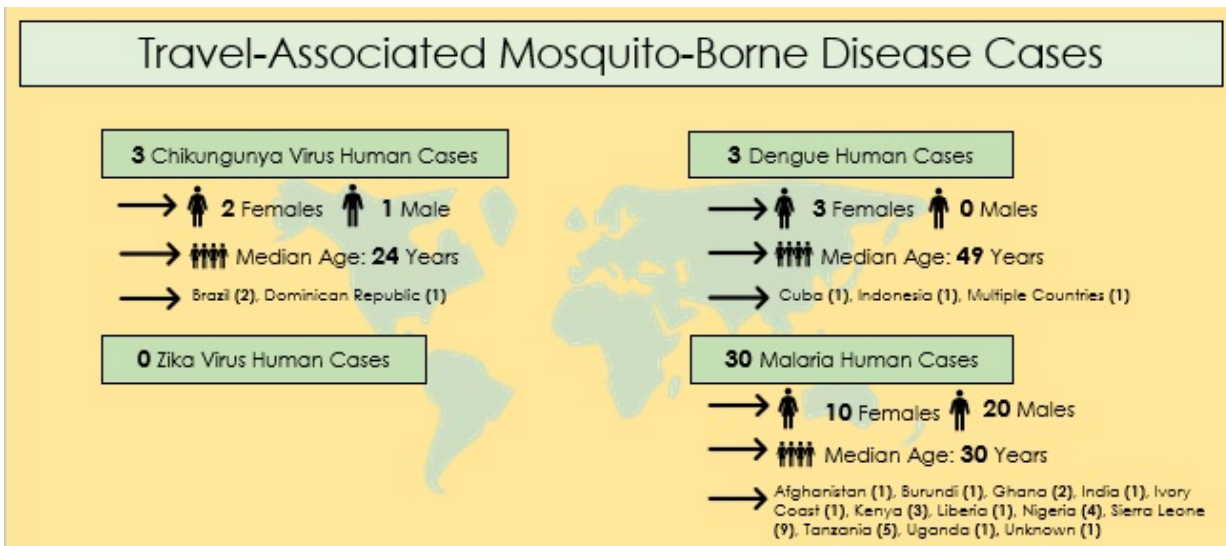
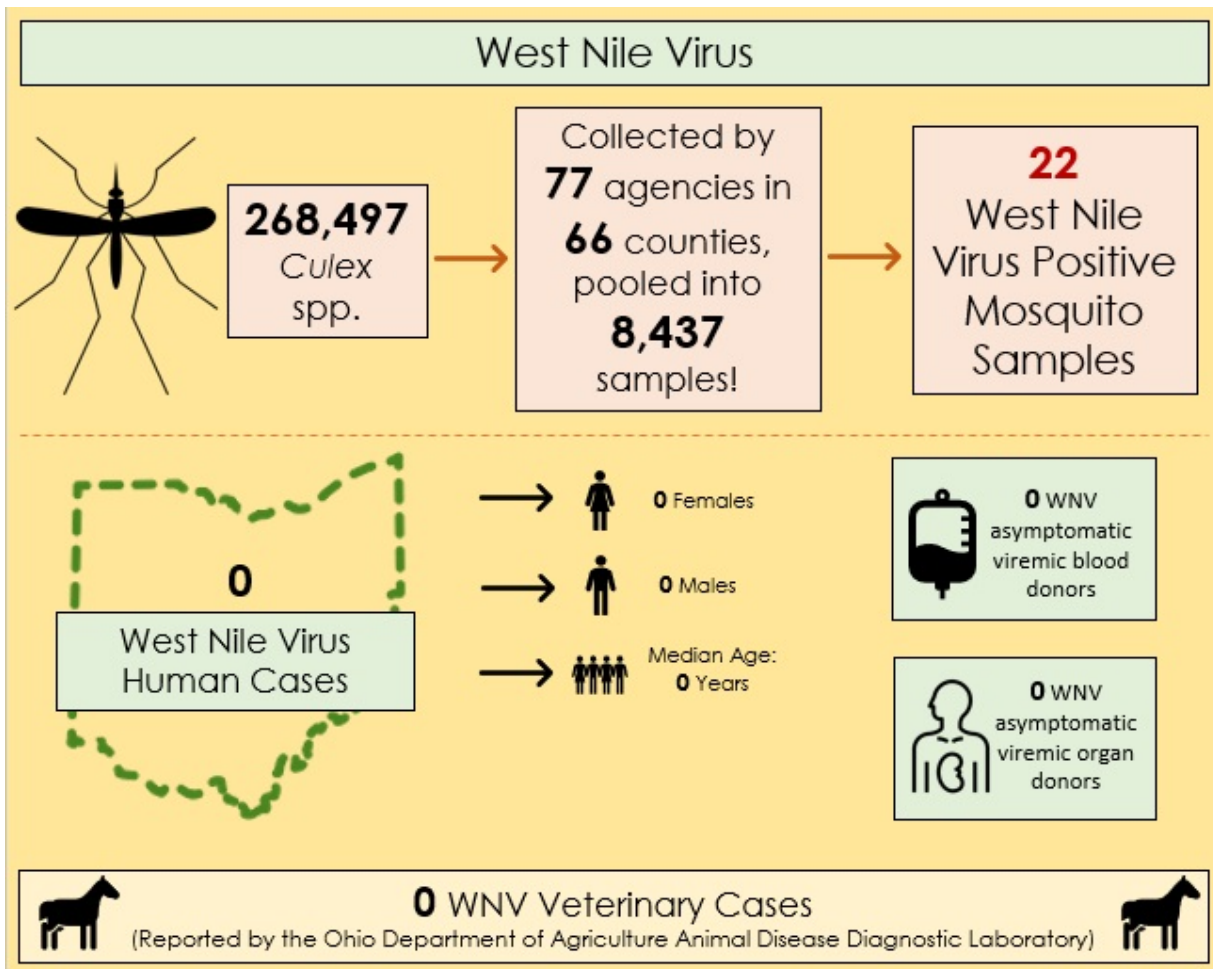
Figure 1. Minimum infection rate (MIR) of West Nile Virus in *Culex spp.* collected in Ohio as of 7/25/2019



Although the recent high amounts of rainfall have resulted in increased mosquito breeding, West Nile virus infection rates remain minimal in Ohio (Figure 1). 22 mosquito pools in Ohio tested positive for West Nile virus, including 3 pools in Summit County. At this time in 2018, Summit County had 38 mosquito pools that were positive for West Nile virus.

Source: <https://u.osu.edu/zika/category/mosquitos/>

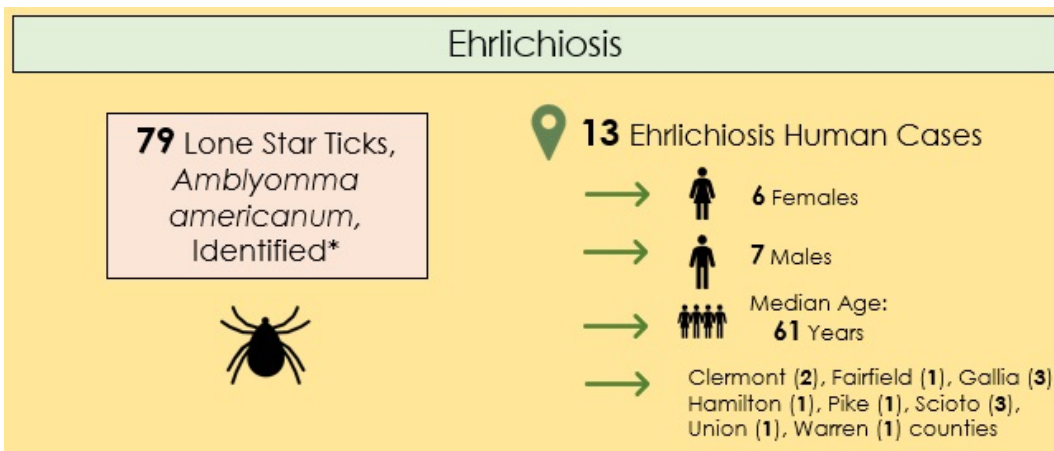
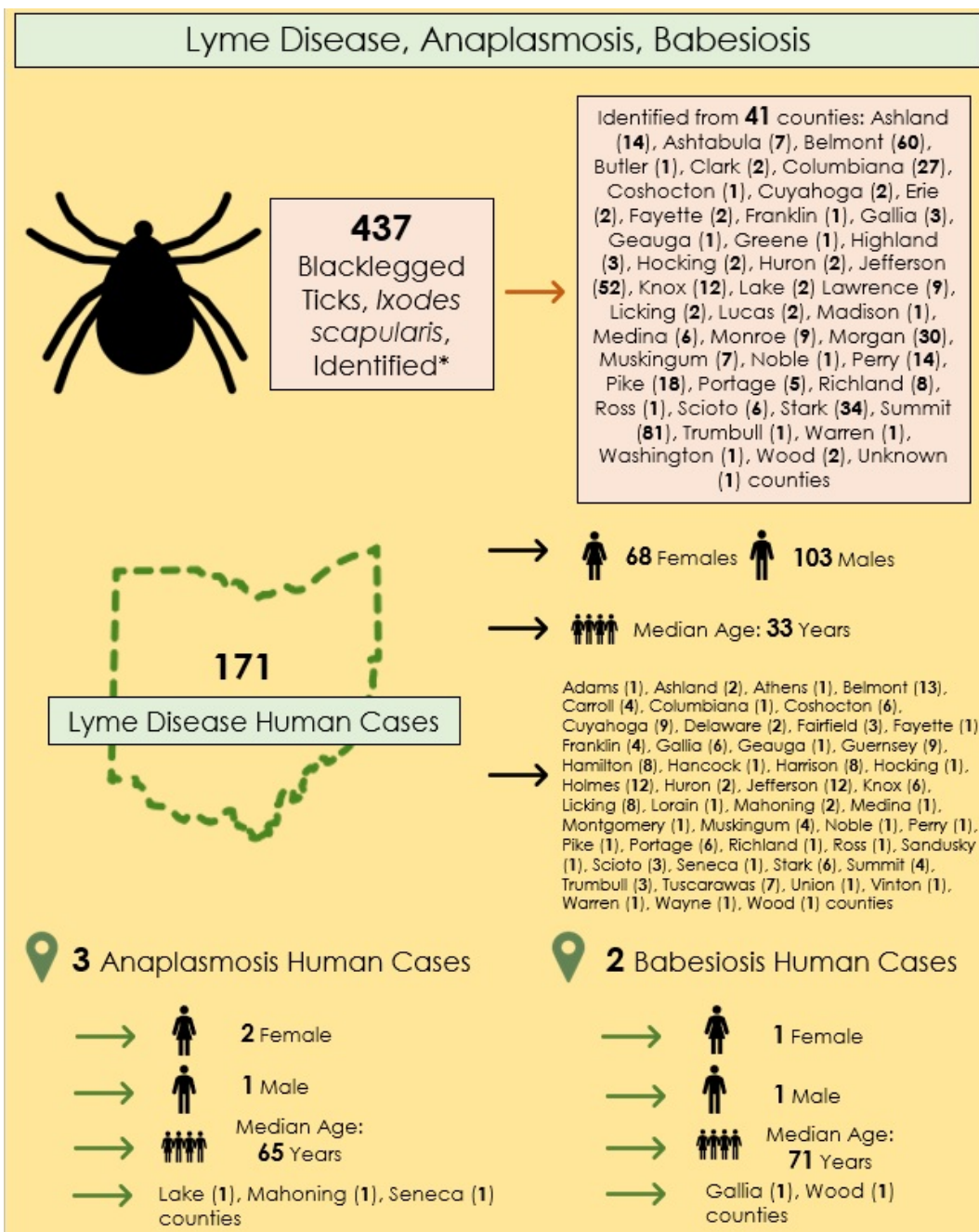
Ohio Mosquito-borne diseases (as of 7/25/2019):



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 Tick-borne diseases (as of 7/25/2019):



Rocky Mountain Spotted Fever

292 American Dog Ticks, *Dermacentor variabilis*, Identified*



17 Rocky Mountain Spotted Fever Human Cases

→ **4** Females

→ **13** Males

→ Median Age: **53** Years

→ Adams (1), Ashland (1), Clermont (1), Cuyahoga (1), Fayette (1), Franklin (2), Gallia (1), Hamilton (4), Highland (1), Lawrence (1), Ross (2), Scioto (1) counties

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

OHIO AND UNITED STATES SURVEILLANCE

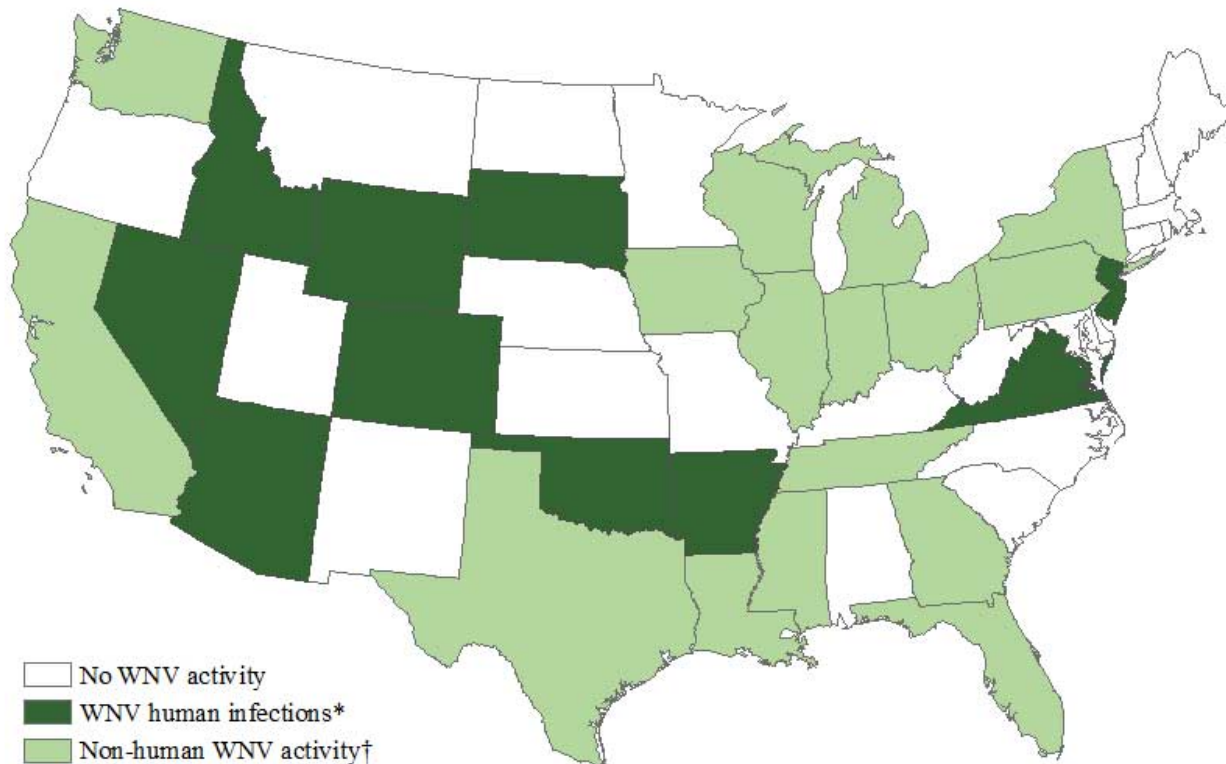
Table 7. Reported Vector Borne disease in Ohio and the United States, 2019

Disease	OHIO	UNITED STATES	
	2019 (as of 7/20) cumulative	Weeks 7 and 8 (7/7 to 7/20)	2019 (as of 7/20) Cumulative
Babesiosis	7	64	437
Chikungunya	6	0	28
Dengue (includes dengue-like illness)	4	0	133
Eastern equine encephalitis	0	0	0
Erlchiosis / anaplasmosis	23	405	2867
Jamestown Canyon virus disease	0	0	0
LaCrosse virus disease	0	0	0
Lyme Disease	429	Not reported weekly by CDC	
Malaria	30	40	649
Powassan virus disease	0	0	0
Spotted fever rickettsiosis	35	117	1710
St. Louis encephalitis virus disease	0	0	0
West Nile virus infection	0	0	7
Zika virus infection, non congenital	0	0	2

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 (map as of July 9, 2019; data as of July 23, 2019)



*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.

Unfortunately, CDC did not update the state activity map since the previous report, but the following WNV activities were listed on the website:

WNV infections in mosquitoes, birds, sentinel animals, or veterinary animals have been reported to CDC ArboNET from the following states: Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Iowa, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Mississippi, North Dakota, Nebraska, New Jersey, Nevada, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming.

West Nile virus infections in humans have been reported to CDC ArboNET from the following states: Arizona, Arkansas, California, Colorado, Iowa, Kentucky, Maryland, Missouri, Nebraska, Nevada, New Jersey, North Dakota, Oklahoma, South Dakota, Virginia, and Wyoming.

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

The Meat-Allergy Tick Also Carries a Mystery Killer Virus:

A tick best known for making people allergic to red meat can also infect its victims with the deadly Bourbon virus.

As indicated in [this recent article in Wired](#), emerging diseases are not limited to remote locations on the other side of the world. The Bourbon virus, a type of thogotovirus, was first identified in Kansas in 2014. Fewer than ten confirmed cases have been reported in the central United States since then, but at least two Bourbon virus infections have resulted in death. The lone star tick (*Amblyomma americanum*), was identified as a vector for Bourbon virus, in addition to ehrlichiosis, Heartland virus, tularemia and STARI (southern tick-associated rash illness). This tick species causes further trouble by causing red meat allergies in some of its human hosts, which appears to be the result of an allergic response to proteins in the tick's saliva. As seen in Figure 4, Ohio is part of the estimated range of the lone star tick- although it may not be found in every county.



Figure 3. Lone star tick

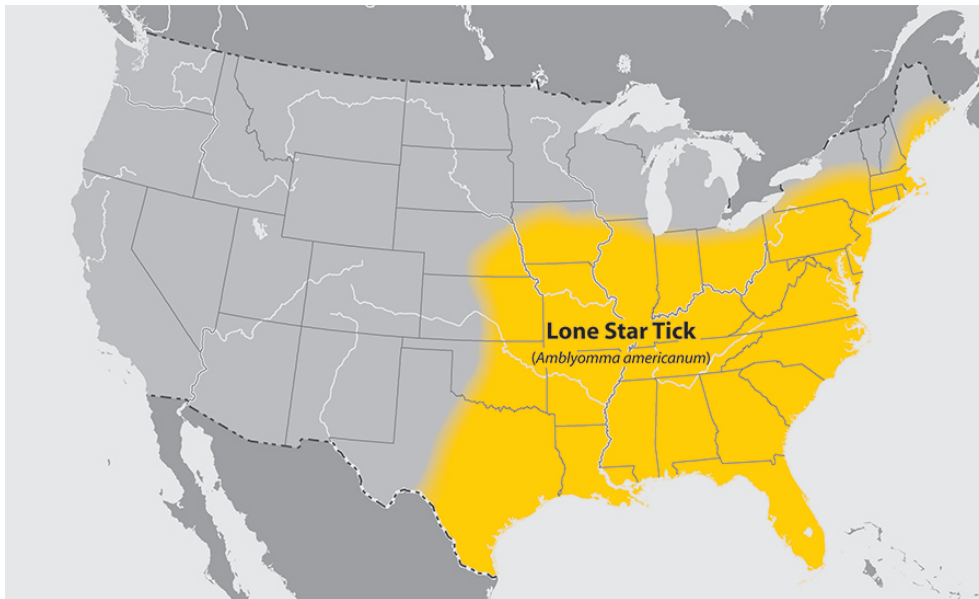


Figure 4. Estimated range map for Lone star tick (*Amblyomma americanum*)

The CDC describes this tick species as: “A very aggressive tick that bites humans. The adult female is distinguished by a white dot or ‘lone star’ on her back. Lone star tick saliva can be irritating; redness and discomfort at a bite site does not necessarily indicate an infection. The nymph and adult females most frequently bite humans and transmit disease.” Women spending time outdoors should especially keep an eye out for this tick species, as recent research indicated that **lone star ticks appear to prefer females to males as human hosts.**

Sources: <https://www.wired.com/story/the-meat-allergy-tick-also-carries-a-mystery-killer-virus/?verso=true>
<http://www.cidrap.umn.edu/news-perspective/2019/01/news-scan-jan-14-2019>
<https://www.cdc.gov/ncezid/dvbd/bourbon/index.html#where>

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 **July 29, 2019**.