



# Vector Borne Disease 2021 Surveillance Report

Summit County Public Health



**Public Health**  
Prevent. Promote. Protect.

Report Weeks 21 and 22 (October 10 to October 23, 2021)  
MMWR Weeks 41 and 42

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**

Reporting 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: 5/23 to 6/5	0	0	0	0	--
Weeks 3 & 4: 6/6 to 6/19	4	0	4	0	0.0%
Weeks 5 & 6: 6/20 to 7/3	2	0	6	0	0.0%
Weeks 7 & 8: 7/4 to 7/17	7	0	13	0	0.0%
Weeks 9 & 10: 7/18 to 7/31	9	0	22	0	0.0%
Weeks 11 & 12: 8/1 to 8/14	8	0	30	0	0.0%
Weeks 13 & 14: 8/15 to 8/28	4	0	34	0	0.0%
Weeks 15 & 16: 8/29 to 9/11	15	0	49	0	0.0%
Weeks 17 & 18: 9/12 to 9/25	4	0	53	0	0.0%
Weeks 19 & 20: 9/26 to 10/9	5	0	58	0	0.0%
Weeks 21 & 22: 10/10 to 10/23	3	0	61	0	0.0%

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 21 and 22, there were 3 tests for West Nile virus ordered by Summit County hospitals, none of which were positive.

**Lyme disease testing (Table 2):** There were 60 diagnostic test series performed for Lyme disease during Weeks 21 and 22, 7 tests were positive and none had indeterminate results. 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.

Reporting 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: 5/23 to 6/5	54	3	54	3	5.6%
Weeks 3 & 4: 6/6 to 6/19	84	13	138	16	11.6%
Weeks 5 & 6: 6/20 to 7/3	150	33	288	49	17.0%
Weeks 7 & 8: 7/4 to 7/17	89	23	377	72	19.1%
Weeks 9 & 10: 7/18 to 7/31	97	28	475	100	21.1%
Weeks 11 & 12: 8/1 to 8/14	80	18	555	118	21.3%
Weeks 13 & 14: 8/15 to 8/28	68	9	623	127	20.4%
Weeks 15 & 16: 8/29 to 9/11	58	7	681	134	19.7%
Weeks 17 & 18: 9/12 to 9/25	55	11	736	145	19.7%
Weeks 19 & 20: 9/26 to 10/9	51	3	787	148	19.2%
Weeks 21 & 22: 10/10 to 10/23	60	7	847	155	18.3%

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

**Reported vector-borne diseases in 2021 (Table 3):** As of October 23, there were 77 reported cases of Lyme disease; 21 were confirmed and 56 were suspected status. There were also one probable case of spotted fever rickettsiosis (Rocky Mountain spotted fever), two cases of Lacrosse virus disease (1 confirmed, 1 suspected), one suspected case of ehrlichiosis, one confirmed case of anaplasmosis, one suspected case of babesiosis, and two confirmed cases of malaria, one confirmed case of other arthropod-borne disease, and one probable case of West Nile virus disease among Summit County residents.

	Confirmed or Probable	Suspected	Notes
<b>Tick-borne diseases:</b>			
Babesiosis	0	1	
Ehrlichiosis / anaplasmosis	1	1	
Lyme disease	21	56	
Powassan virus disease	0	0	
Spotted fever rickettsiosis	1	0	
<b>Mosquito-borne diseases:</b>			
Chikungunya	0	0	
Dengue	0	0	
Eastern equine encephalitis	0	0	
LaCrosse virus disease	1	1	
Malaria	2	0	Cases were associated with international travel
Other arthropod-borne disease	1	0	
St. Louis encephalitis virus disease	0	0	
Zika virus infection	0	0	
West Nile virus infection	1	0	Exposure was likely outside of Ohio

Source: Ohio Disease Reporting System (ODRS); only confirmed, probable, and suspected cases are included.

Species name	Diseases associated	Summit County	Ohio
<b>Mosquito species</b>			
<i>Aedes albopictus</i>	Chikungunya, dengue fever, yellow fever	6	4,232
<i>Aedes triseriatus</i>	La Crosse encephalitis	632	2,626
<i>Coquilleltidia perturbans</i>	Eastern equine encephalitis, West Nile virus	1001	2,992
<b>Tick species</b>			
<i>Amblyomma americanum</i>	Ehrlichiosis, tularemia, red meat allergy	0	564
<i>Dermacentor variabilis</i>	Rocky Mountain spotted fever, tularemia	31	1398
<i>Ixodes scapularis</i>	Lyme disease, babesiosis, anaplasmosis	1	315
<i>Haemaphysalis longicornis</i>	New invasive species, livestock infestations	0	5

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

Reporting Week(s)	Cases reported this period	Cumulative cases for the season
<b>Aseptic meningitis cases reported prior to season (1/1 to 5/22/2021)</b>	<b>4</b>	<b>-</b>
<b>Weeks 1 &amp; 2: 5/23 to 6/5</b>	<b>0</b>	<b>0</b>
<b>Weeks 3 &amp; 4: 6/6 to 6/19</b>	<b>0</b>	<b>0</b>
<b>Weeks 5 &amp; 6: 6/20 to 7/3</b>	<b>0</b>	<b>0</b>
<b>Weeks 7 &amp; 8: 7/4 to 7/17</b>	<b>0</b>	<b>0</b>
<b>Weeks 9 &amp; 10: 7/18 to 7/31</b>	<b>1</b>	<b>1</b>
<b>Weeks 11 &amp; 12: 8/1 to 8/14</b>	<b>0</b>	<b>1</b>
<b>Weeks 13 &amp; 14: 8/15 to 8/28</b>	<b>0</b>	<b>1</b>
<b>Weeks 15 &amp; 16: 8/29 to 9/11</b>	<b>0</b>	<b>1</b>
<b>Weeks 17 &amp; 18: 9/12 to 9/25</b>	<b>0</b>	<b>1</b>
<b>Weeks 19 &amp; 20: 9/26 to 10/9</b>	<b>0</b>	<b>1</b>
<b>Weeks 21 &amp; 22: 10/10 to 10/23</b>	<b>1</b>	<b>2</b>

Source: Ohio Disease Reporting System (ODRS)

**Reported aseptic/viral meningitis cases (Table 5):** Prior to the reporting season, there were 4 reported cases of aseptic meningitis. One case was reported during Weeks 21 and 22, increasing the season total to two cases. 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.

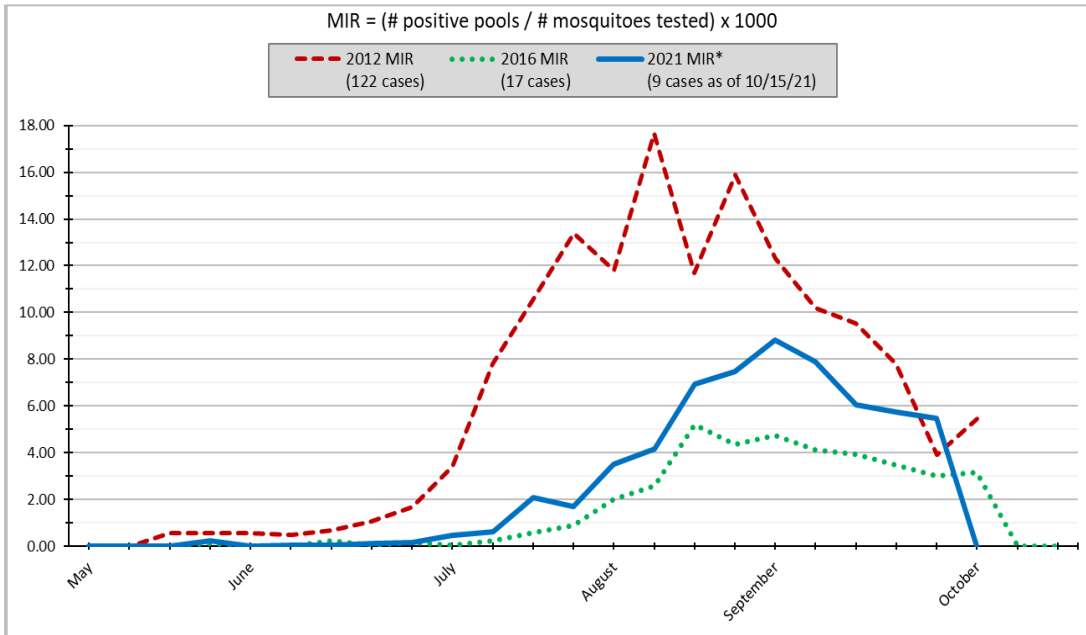
**Mosquito testing by the Ohio Department of Health (Table 6):** ODH mosquito testing was completed by October 15, 2021, 55,031 mosquitoes were collected in 2021 throughout Summit County. These mosquitos were identified, and 42,759 *Culex spp.* mosquitos were submitted for testing to ODH as 1,462 pooled samples. 35 pools were positive for the West Nile virus, and no pooled samples are pending.

<b>Mosquitoes identified</b>	55,031
<b>Pooled samples tested</b>	1,462
<b>Positive WNV pooled samples</b>	35

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

# OHIO SURVEILLANCE

Figure 1. Minimum infection rate (MIR) of West Nile Virus in *Culex spp.* collected in Ohio in 2021



The final seasonal average for the West Nile virus minimum infection rate was 2.36 (Figure 1). As of October 15, 1,286 mosquito pools in Ohio tested positive for West Nile virus, including 35 pools in Summit County. In 2020, Summit County had 2 mosquito pools that tested positive for West Nile virus.

## Ohio Mosquito-borne diseases (as of October 15, 2021)

**544,582** *Culex spp.* from **60** agencies in **49** counties

Pooled into **15,561** samples!

**1,286** West Nile Virus Positive Mosquito Samples

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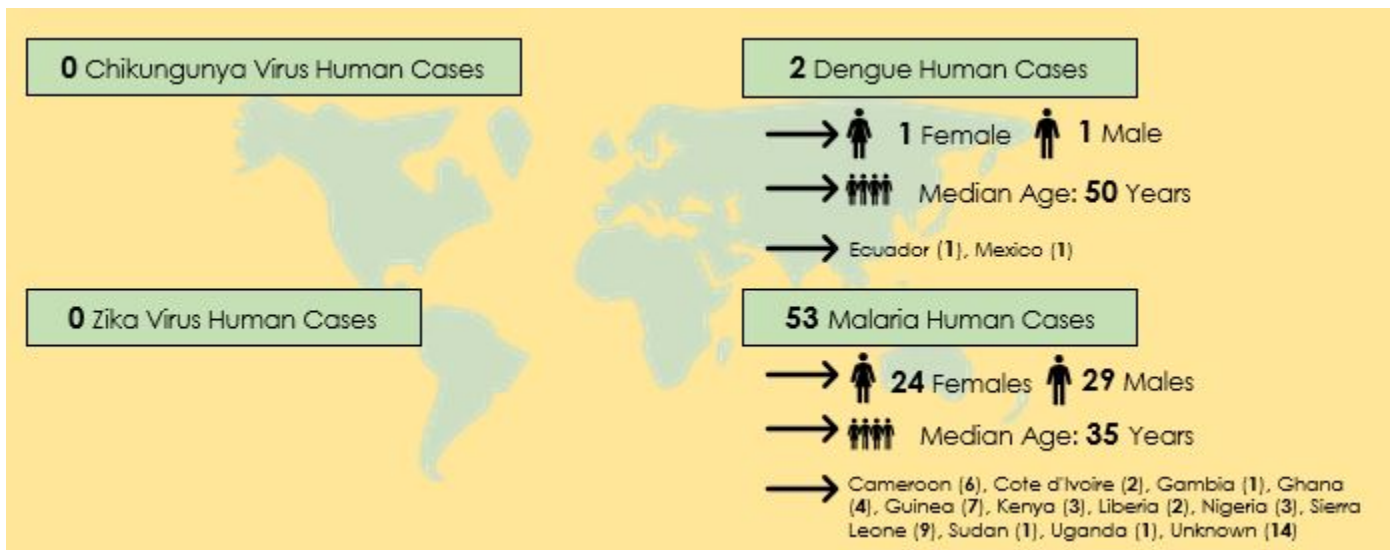
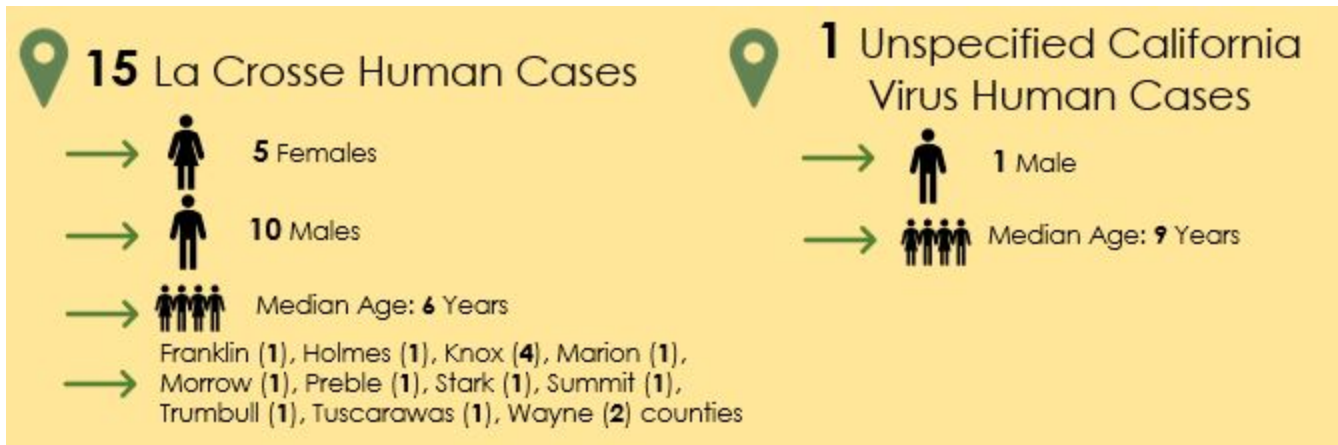
**9** West Nile Virus Human Cases

- 5 Females
- 4 Males
- Median Age: **58** Years
- Clark (2), Cuyahoga (1), Hardin (1), Jefferson (1), Mahoning (1), Montgomery (1), Summit (1), Wood(1) counties

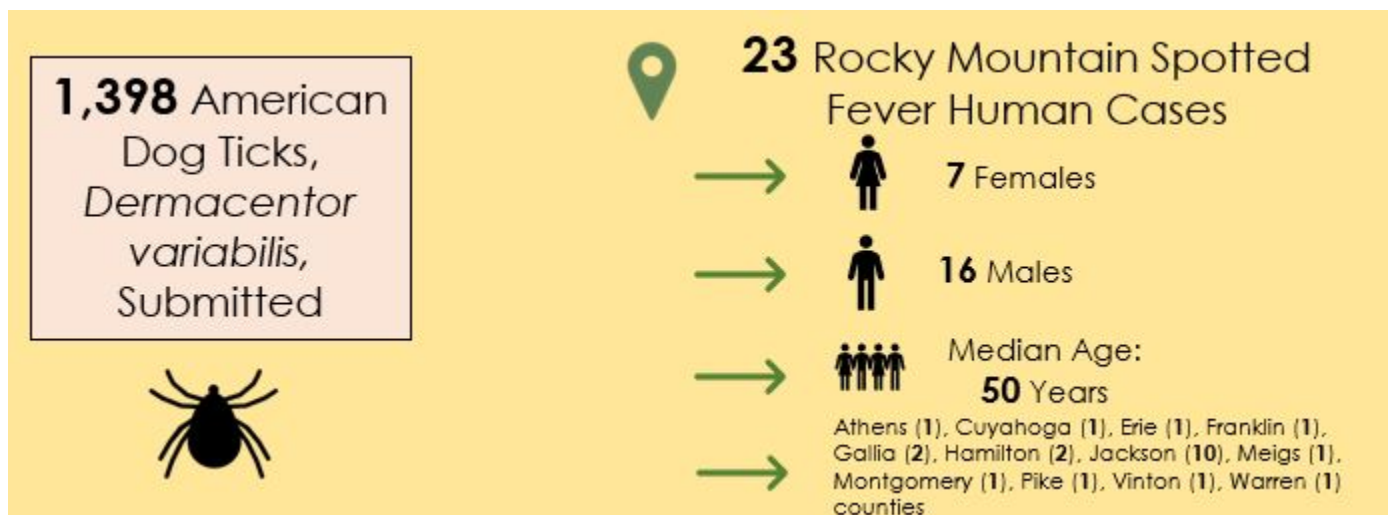
**0** WNV asymptomatic viremic blood donors

**0** WNV asymptomatic viremic organ donors

**0** WNV Veterinary Cases  
(Reported by the Ohio Department of Agriculture Animal Disease Diagnostic Laboratory)



**Ohio Tick-borne diseases (as of October 15, 2021):**



**564** Lone Star Ticks,  
*Amblyomma americanum*,  
Submitted



**8** Ehrlichiosis Human Cases

- **5** Females
- **3** Males
- Median Age: **54** Years
- Athens (1), Butler (1), Clermont (1), Franklin (1), Gallia (1), Hamilton (1), Jackson (2) counties



**315**  
Blacklegged Ticks, *Ixodes scapularis*,  
Submitted

Submitted from **39** counties: Ashland (1), Ashtabula (5), Athens (3), Belmont (1), Butler (1), Champaign (1), Clark (2), Clermont (1), Columbiana (5), Coshocton (214), Cuyahoga (3), Erie (2), Fayette (1), Franklin (4), Gallia (1), Geauga (3), Guernsey (2), Hamilton (3), Highland (1), Hocking (3), Jackson (1), Jefferson (1), Lake (2), Licking (2), Lorain (2), Madison (9), Medina (4), Meigs (1), Mercer (2), Monroe (13), Muskingum (1), Ottawa (1), Portage (5), Ross (1), Stark (5), Summit (1), Trumbull (3), Tuscarawas (2), Wayne (2) counties

**398**  
Lyme Disease Human Cases

- **159** Females
- **239** Males
- Median Age: **40** Years
- Belmont (29), Carroll (3), Clark (3), Clermont (7), Columbiana (4), Coshocton (10), Cuyahoga (20), Delaware (6), Erie (1), Fairfield (5), Franklin (16), Gallia (2), Geauga (1), Guernsey (3), Hamilton (5), Hardin (1), Harrison (18), Henry (1), Hocking (3), Holmes (9), Jackson (8), Jefferson (22), Knox (20), Lake (2), Lawrence (1), Licking (25), Lorain (1), Lucas (2), Madison (1), Mahoning (7), Mercer (2), Monroe (3), Montgomery (6), Muskingum (11), Noble (8), Ottawa (2), Paulding (1), Perry (1), Pickaway (1), Pike (2), Portage (9), Richland (5), Ross (5), Sandusky (1), Scioto (1), Seneca (1), Stark (33), Summit (18), Trumbull (11), Tuscarawas (32), Union (1), Warren (3), Wayne (4), Wood (1) counties

**1** Anaplasmosis Human Cases

- **0** Females
- **1** Male
- Median Age: **52** Years

**3** Babesiosis Human Cases

- **3** Females
- **0** Males
- Median Age: **63** Years
- Cuyahoga (1), Medina (1), Scioto (1) counties

**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.

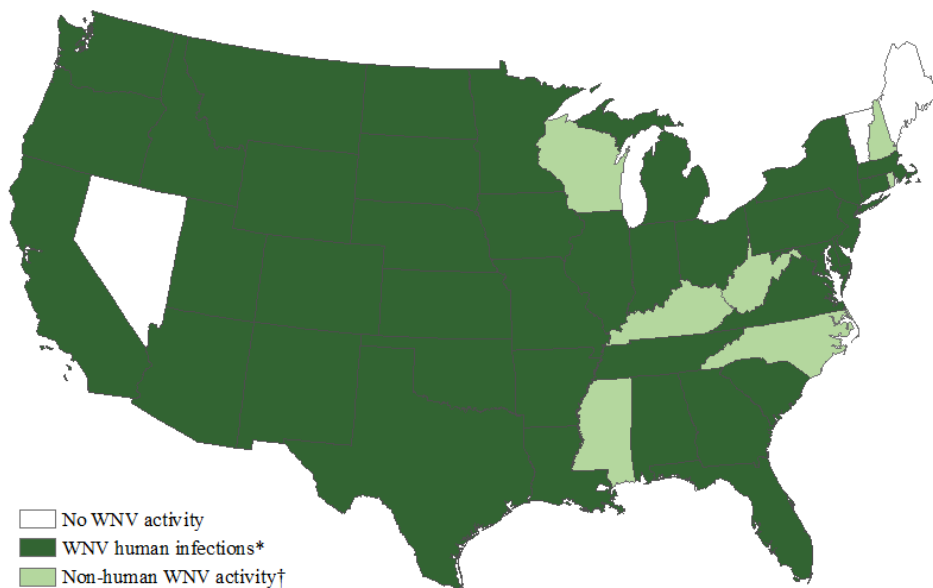
## UNITED STATES SURVEILLANCE

**Table 7. Reported Vector Borne disease in the United States, 2021**

Disease	Weeks 21 and 22 (10/10 to 10/23/2021)	2021 (as of 10/23) Cumulative
Babesiosis	18	2063
Chikungunya	0	15
Dengue (includes dengue-like illness)	1	56
Eastern equine encephalitis	0	1
Erlchiosis / anaplasmosis	61	5665
Jamestown Canyon virus disease	0	13
LaCrosse virus disease	0	33
Lyme Disease	Not reported weekly by CDC	
Malaria	12	936
Powassan virus disease	0	18
Spotted fever rickettsiosis	Not reported weekly by CDC	
St. Louis encephalitis virus disease	0	2
West Nile virus infection	32	1128
Zika virus infection, non congenital	0	2
<b>Note:</b> Data is provisional and subject to change		

Source: [https://wonder.cdc.gov/nndss/ndss\\_weekly\\_tables\\_menu.asp](https://wonder.cdc.gov/nndss/ndss_weekly_tables_menu.asp)

**Figure 2. West Nile virus activity by state – United States, 2021 (as of October 19, 2021)**



WNV infections in mosquitoes, birds, sentinel animals, or veterinary animals have been reported to CDC ArboNET from every state in 2021 except: Maine, Nevada, and Vermont.

West Nile virus infections in humans have been reported to CDC ArboNET from the following states: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, and Wyoming.

Source: <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2020/activitybystate2020.html>

## VECTOR BORNE DISEASE 2021 SEASON SUMMARY

**Table 8. Reported vector-borne disease cases in Summit County, 1/1/2012 - 10/23/2021**

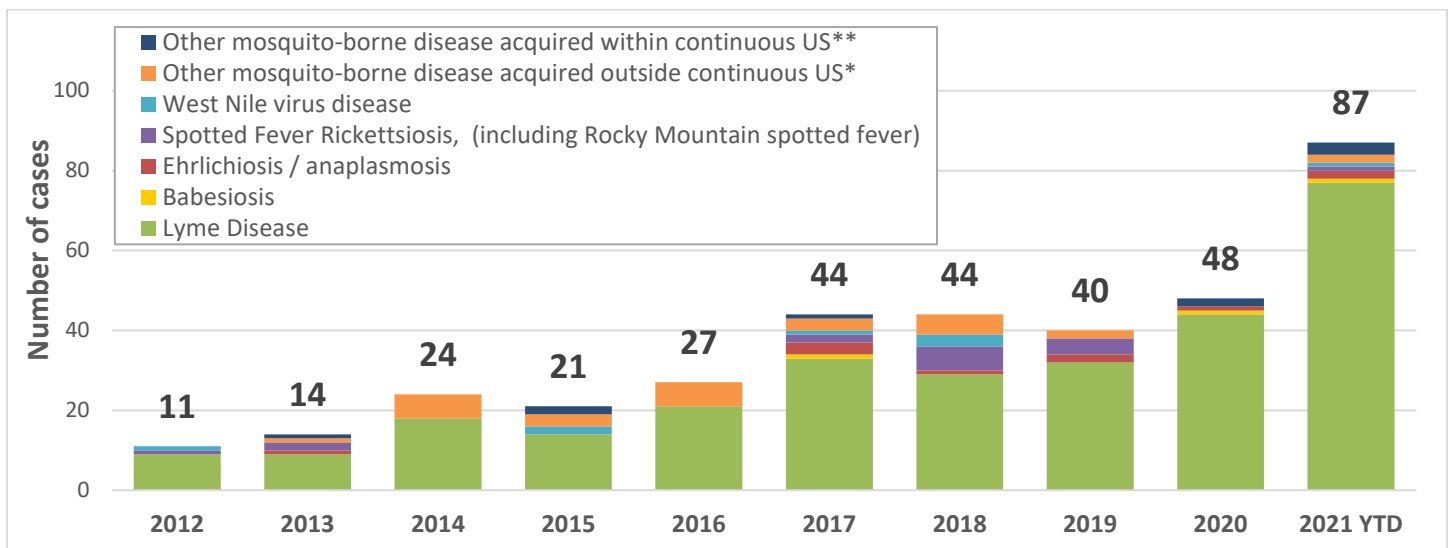
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 YTD
Babesiosis	0	0	0	0	0	1	0	0	1	1
Ehrlichiosis / anaplasmosis	0	1	0	0	0	3	1	2	1	2
Lyme Disease	9	9	18	14	21	33	29	32	44	77
Spotted Fever Rickettsiosis, (including Rocky Mountain spotted fever)	1	2	0	0	0	2	6	4	0	1
West Nile virus disease	1	0	0	2	0	1	3	0	0	1
Other mosquito-borne disease acquired outside continuous US*	0	1	6	3	6	3	5	2	0	2
Other mosquito-borne disease acquired within continuous US**	0	1	0	2	0	1	0	0	2	3
<b>Total Cases</b>	<b>11</b>	<b>14</b>	<b>24</b>	<b>21</b>	<b>27</b>	<b>44</b>	<b>44</b>	<b>40</b>	<b>48</b>	<b>87</b>

Notes: \* Includes imported cases of malaria, chikungunya, dengue, and Zika virus infection

\*\* Includes LaCrosse virus disease and St. Louis encephalitis virus disease

Source: Ohio Disease Reporting System (ODRS)

**Figure 3. Reported vector-borne disease cases in Summit County, 1/1/2011 - 10/23/2021**



Notes: Confirmed, probable and suspected cases; numbers are case totals per year

Source: <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/zoonotic-disease-program/news-and-events/vectorborne-disease-update>

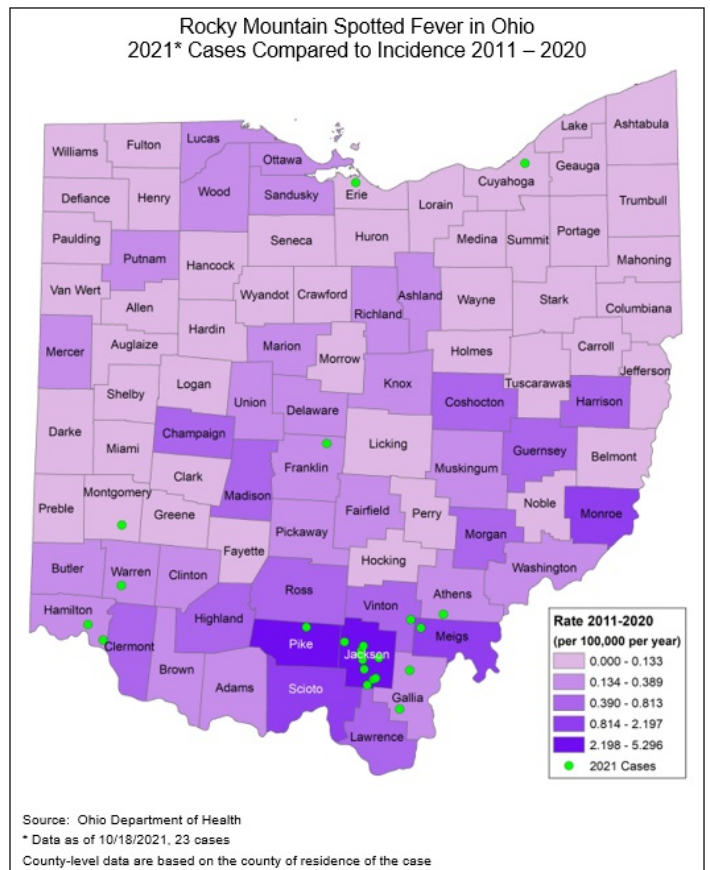
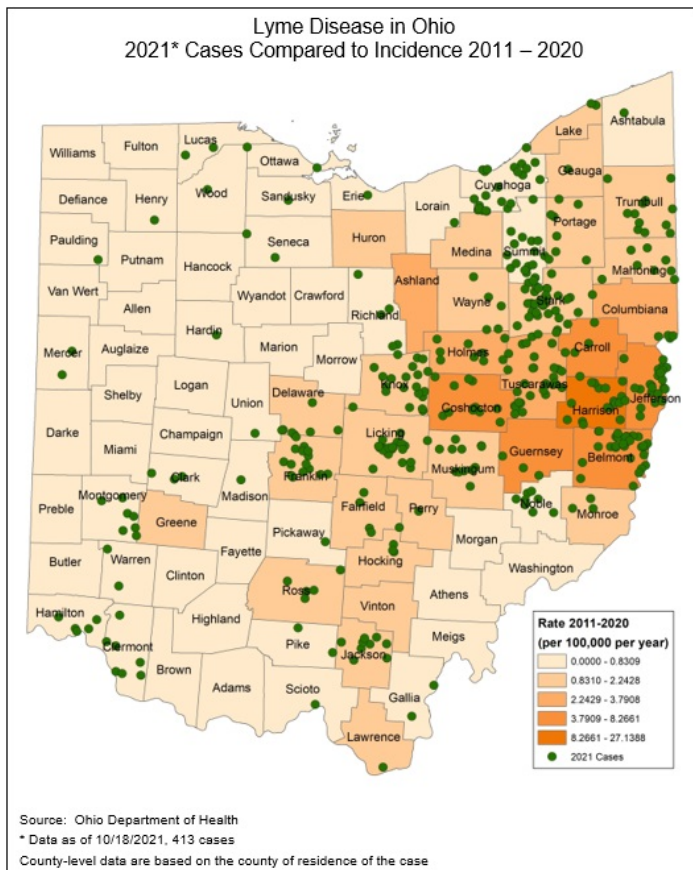
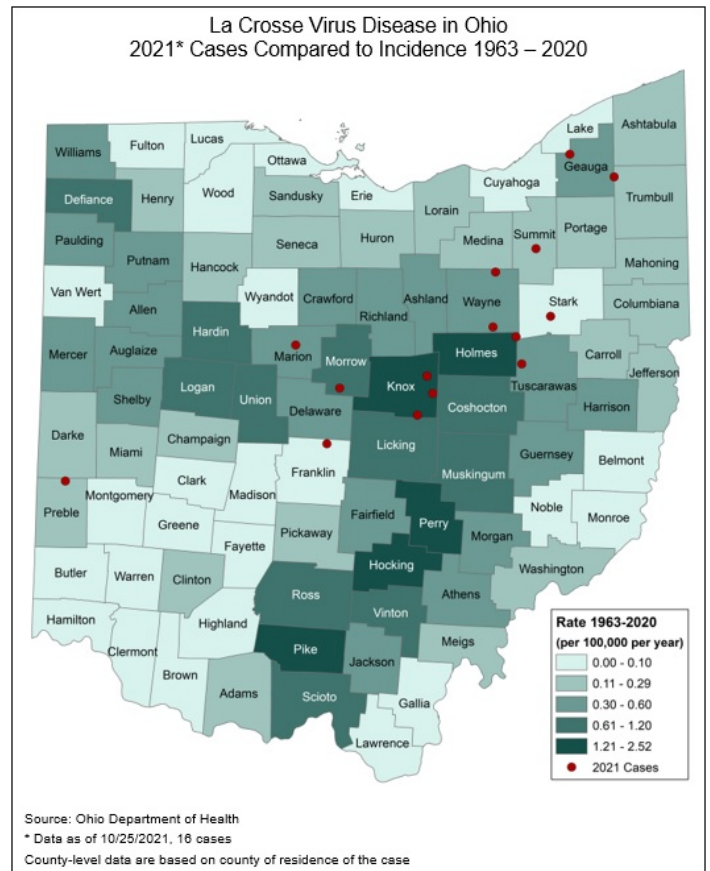
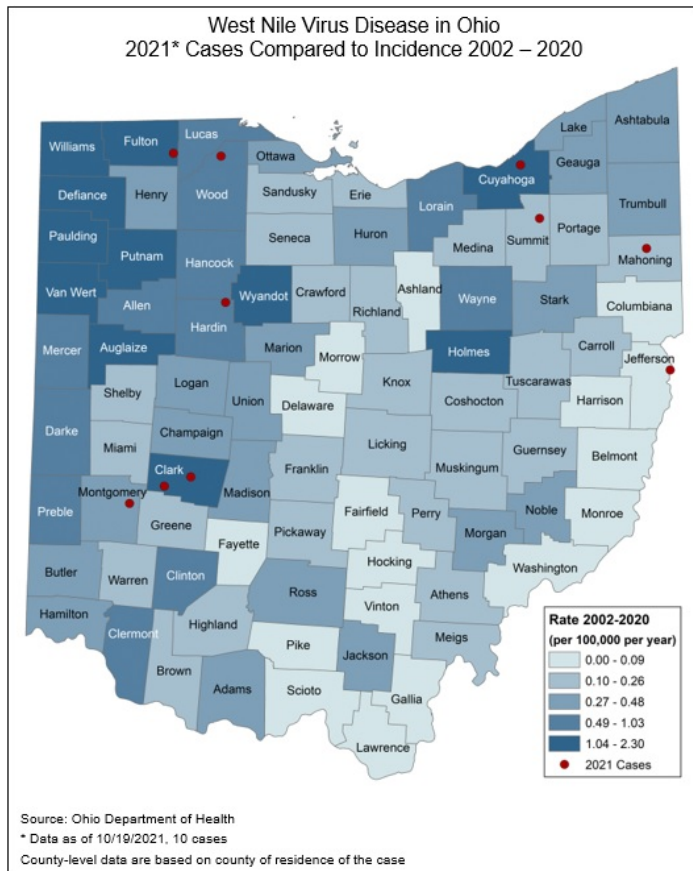
**About this report:** Reporting agencies include Summit County hospital laboratories and the Ohio Department of Health. Vector-borne disease case data for Summit County are obtained from the Ohio Disease Reporting System.

**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 the SCPH Communicable Disease Unit (330-375-2662). This report was issued on **October 30, 2021**.



**Figures 4 - 7. Selected Ohio vector-borne disease case maps (confirmed case status)**



Source: <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/zoontic-disease-program/news-and-events/vectorborne-disease-update>