



Vector Borne Disease 2022 Surveillance Report

Summit County Public Health

Report Weeks 9 and 10 (July 18 to July 31, 2022)
MMWR Weeks 29 and 30



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.

*Test ordering numbers (Table 1 & 2) will not be comparable to last year’s reports due to absence of reporting from a facility that made up approximately 20% of the tests submitted in 2021.

SUMMIT COUNTY SURVEILLANCE

West Nile virus testing (Table 1): During surveillance period Weeks 9 and 10, there were 3 tests for West Nile virus ordered by Summit County hospitals, none were positive.

| Table 1: West Nile virus (WNV) tests ordered in Summit County hospitals 2022 | | | | | |
|--|------------------------------------|-------------------------------------|---|--|------------------------------|
| 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 | 5 | 0 | 5 | 0 | 0.0% |
| Weeks 3 & 4: 6/6 to 6/19 | 4 | 1 | 9 | 1 | 11.1% |
| Weeks 5 & 6: 6/20 to 7/3 | 0 | 0 | 9 | 1 | 11.1% |
| Weeks 7 & 8: 7/4 to 7/17 | 5 | 0 | 14 | 1 | 7.1% |
| Weeks 9 & 10: 7/18 to 7/31 | 3 | 0 | 17 | 1 | 5.9% |
| Weeks 11 & 12: 8/1 to 8/14 | - | - | - | - | - |
| Weeks 13 & 14: 8/15 to 8/28 | - | - | - | - | - |
| Weeks 15 & 16: 8/29 to 9/11 | - | - | - | - | - |
| Weeks 17 & 18: 9/12 to 9/25 | - | - | - | - | - |
| Weeks 19 & 20: 9/26 to 10/9 | - | - | - | - | - |
| Weeks 21 & 22: 10/10 to 10/23 | - | - | - | - | - |

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

Lyme Disease testing (Table 2): There were 77 diagnostic test series performed for Lyme disease during Weeks 9 and 10, 10 tests were positive and four were indeterminate. 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: 5/23 to 6/5 | 63 | 7 | 63 | 7 | 11.1% |
| Weeks 3 & 4: 6/6 to 6/19 | 79 | 11 | 142 | 18 | 12.7% |
| Weeks 5 & 6: 6/20 to 7/3 | 61 | 14 | 203 | 32 | 15.8% |
| Weeks 7 & 8: 7/4 to 7/17 | 79 | 14 | 282 | 46 | 16.3% |
| Weeks 9 & 10: 7/18 to 7/31 | 77 | 10 | 359 | 56 | 15.6% |
| Weeks 11 & 12: 8/1 to 8/14 | - | - | - | - | - |
| Weeks 13 & 14: 8/15 to 8/28 | - | - | - | - | - |
| Weeks 15 & 16: 8/29 to 9/11 | - | - | - | - | - |
| Weeks 17 & 18: 9/12 to 9/25 | - | - | - | - | - |
| Weeks 19 & 20: 9/26 to 10/9 | - | - | - | - | - |
| Weeks 21 & 22: 10/10 to 10/23 | - | - | - | - | - |

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

Reported Vector-borne diseases in 2022 (Table 3): As of July 31, there were 49 reported cases of Lyme disease in Summit County; 7 were confirmed and 42 were suspected status. There was also 1 confirmed case of malaria among Summit County residents.

| | Confirmed | Suspected | Notes |
|--------------------------------------|-----------|-----------|---|
| Tick-borne diseases: | | | |
| Babesiosis | 0 | 0 | |
| Ehrlichiosis / anaplasmosis | 0 | 0 | |
| Lyme disease | 7 | 42 | |
| Powassan virus disease | 0 | 0 | |
| Rocky Mountain spotted fever | 0 | 0 | |
| Mosquito-borne diseases: | | | |
| Chikungunya | 0 | 0 | |
| Dengue | 0 | 0 | |
| Eastern equine encephalitis | 0 | 0 | |
| LaCrosse virus disease | 0 | 0 | |
| Malaria | 1 | 0 | |
| St. Louis encephalitis virus disease | 0 | 0 | |
| Zika virus infection | 0 | 0 | |
| West Nile virus infection | 0 | 0 | *Suspected case reported via hospital submission directly through laboratory surveillance. The case was not indicated on the ODRS data extract, it is possible that the case resides outside of Summit County Jurisdiction. |

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

| Species name | Diseases associated | Summit County | Ohio |
|--------------------------------|--|---------------|-------|
| Mosquito species | | | |
| <i>Aedes albopictus</i> | Chikungunya, dengue fever, yellow fever | 6 | 1,865 |
| <i>Aedes triseriatus</i> | La Crosse encephalitis | 503 | 1,856 |
| <i>Coquillettia perturbans</i> | Eastern equine encephalitis, West Nile virus | 735 | 2,991 |
| Tick species | | | |
| <i>Amblyomma americanum</i> | Ehrlichiosis, tularemia, red meat allergy | 0 | 249 |
| <i>Dermacentor variabilis</i> | Rocky Mountain spotted fever, tularemia | 18 | 1,005 |
| <i>Ixodes scapularis</i> | Lyme disease, babesiosis, anaplasmosis | 11 | 441 |

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 |
|---|----------------------------|---------------------------------|
| Aseptic meningitis cases reported prior to season (1/1 to 5/22/2022) | 4 | - |
| Weeks 1 & 2: 5/23 to 6/5 | 0 | 0 |
| Weeks 3 & 4: 6/6 to 6/19 | 0 | 0 |
| Weeks 5 & 6: 6/20 to 7/3 | 1 | 1 |
| Weeks 7 & 8: 7/4 to 7/17 | 0 | 1 |
| Weeks 9 & 10: 7/18 to 7/31 | 3 | 4 |
| Weeks 11 & 12: 8/1 to 8/14 | - | - |
| Weeks 13 & 14: 8/15 to 8/28 | - | - |
| Weeks 15 & 16: 8/29 to 9/11 | - | - |
| Weeks 17 & 18: 9/12 to 9/25 | - | - |
| Weeks 19 & 20: 9/26 to 10/9 | - | - |
| Weeks 21 & 22: 10/10 to 10/23 | - | - |

Source: Ohio Disease Reporting System (ODRS)

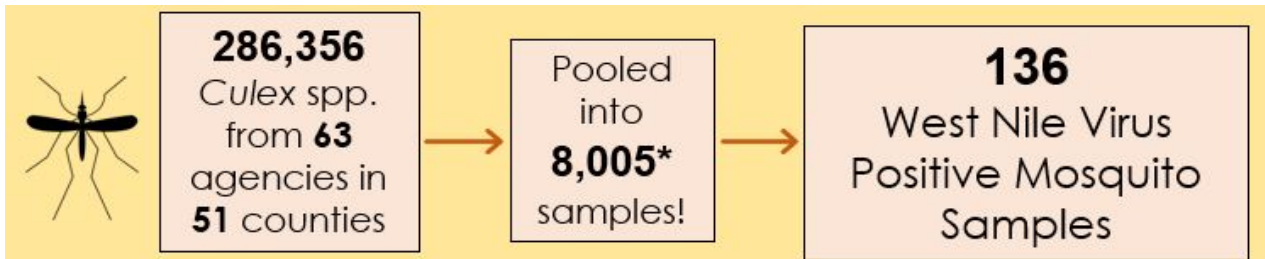
Reported aseptic/viral meningitis cases (Table 5): Prior to the reporting season, there were 4 reported cases of aseptic meningitis, and 1 case was reported during week 5 and 6. There were 3 new cases reported during week 9 and 10. Aseptic/viral meningitis is the most common type of meningitis and occurs 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: Based on the ODH mosquito testing summary released on 8/4/2022, 42,336 mosquitoes were collected as 1,009 pooled samples throughout Summit County. 5 of the pooled samples were positive for West Nile Virus during weeks 9 and 10.

| | |
|------------------------------------|--------|
| Mosquitoes identified | 42,336 |
| Pooled samples tested | 1,009 |
| Positive WNV pooled samples | 5 |

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

OHIO SURVEILLANCE



| *Testing Agency | Assay Used | # of Pools Reported |
|----------------------------------|------------|---------------------|
| Ohio Department of Health | RT-PCR | 6,220 |
| Franklin County Public Health | RAMP | 810 |
| Columbus Public Health | VecTOR | 555 |
| | RAMP | 325 |
| Licking County Health Department | RAMP | 95 |

0

West Nile Virus Human Cases

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)

0 La Crosse Human Cases

0 Unspecified California Virus Human Cases

0 Chikungunya Virus Human Cases

2 Dengue Human Cases
 → **1** Female **1** Male
 → Median Age: **18** Years
 → El Salvador (1), Guatemala (1)

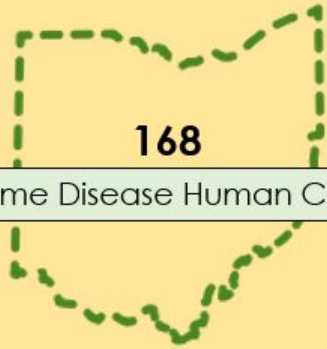
0 Zika Virus Human Cases

36 Malaria Human Cases
 → **18** Females **18** Males
 → Median Age: **37** Years
 → Cameroon (2), Cote d'Ivoire (2), Democratic Republic of the Congo (2), Ghana (2), Guinea (2), Liberia (1), Nigeria (2), Senegal (1), Sierra Leone (13), Tanzania (1), Uganda (4), Unknown (4)



441
Blacklegged
Ticks, *Ixodes*
scapularis,
Identified

Submitted from **43** counties: Allen (1), Ashland (1), Ashtabula (13), Athens (19), Belmont (2), Carroll (5), Clermont (3), Columbiana (111), Coshocton (106), Cuyahoga (9), Erie (4), Franklin (6), Gallia (64), Geauga (5), Greene (1), Guernsey (1), Hamilton (5), Highland (2), Hocking (3), Holmes (4), Jackson (2), Jefferson (3), Knox (3), Lake (5), Licking (4), Lucas (1), Mahoning (1), Medina (3), Meigs (2), Montgomery (1), Morrow (1), Noble (1), Ottawa (1), Portage (7), Richland (1), Ross (12), Scioto (1), Stark (3), Summit (11), Tuscarawas (1), Washington (1), Wayne (9), Williams (2) counties



168
Lyme Disease Human Cases

→ **57** Females

→ **111** Males

→ Median Age: **15** Years

→ Athens (1), Belmont (19), Butler (2), Carroll (2), Clermont (8), Columbiana (9), Coshocton (8), Cuyahoga (10), Delaware (3), Fairfield (8), Franklin (12), Gallia (2), Geauga (2), Guernsey (4), Hamilton (4), Hancock (1), Harrison (2), Highland (1), Holmes (5), Jackson (5), Jefferson (6), Knox (3), Lake (1), Licking (3), Mahoning (3), Marion (1), Medina (2), Monroe (1), Morrow (1), Muskingum (6), Noble (2), Richland (1), Ross (4), Scioto (1), Stark (6), Summit (4), Trumbull (7), Tuscarawas (6), Warren (2) counties

▶ **4** Anaplasmosis Human Cases

→ **2** Females

→ **2** Males

→ Median Age: **65** Years

→ Jackson (2), Warren (2) counties

▶ **3** Babesiosis Human Cases

→ **1** Female

→ **2** Males

→ Median Age: **56** Years

→ Hamilton (1), Montgomery (1), Stark (1) counties

1,005
American Dog Ticks,
Dermacentor variabilis,
Identified



▶ **14** Rocky Mountain Spotted
Fever Human Cases

→ **9** Females

→ **5** Males

→ Median Age: **44** Years

→ Butler (1), Clermont (1), Gallia (2), Jackson (3), Lucas (1), Montgomery (1), Pike (2), Ross (1), Stark (1), Warren (1) counties

249
Lone Star Ticks,
Amblyomma americanum,
Identified



▶ **5** Ehrlichiosis Human Cases

→ **1** Female

→ **4** Males

→ Median Age: **67** Years

→ Athens (1), Hocking (1), Meigs (1), Ross (1), Stark (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](https://www.cdc.gov/travel) and [Pan-American Health Organization](https://www.paho.org) websites.

UNITED STATES SURVEILLANCE

Table 7. Reported Vector Borne disease in the United States, 2022

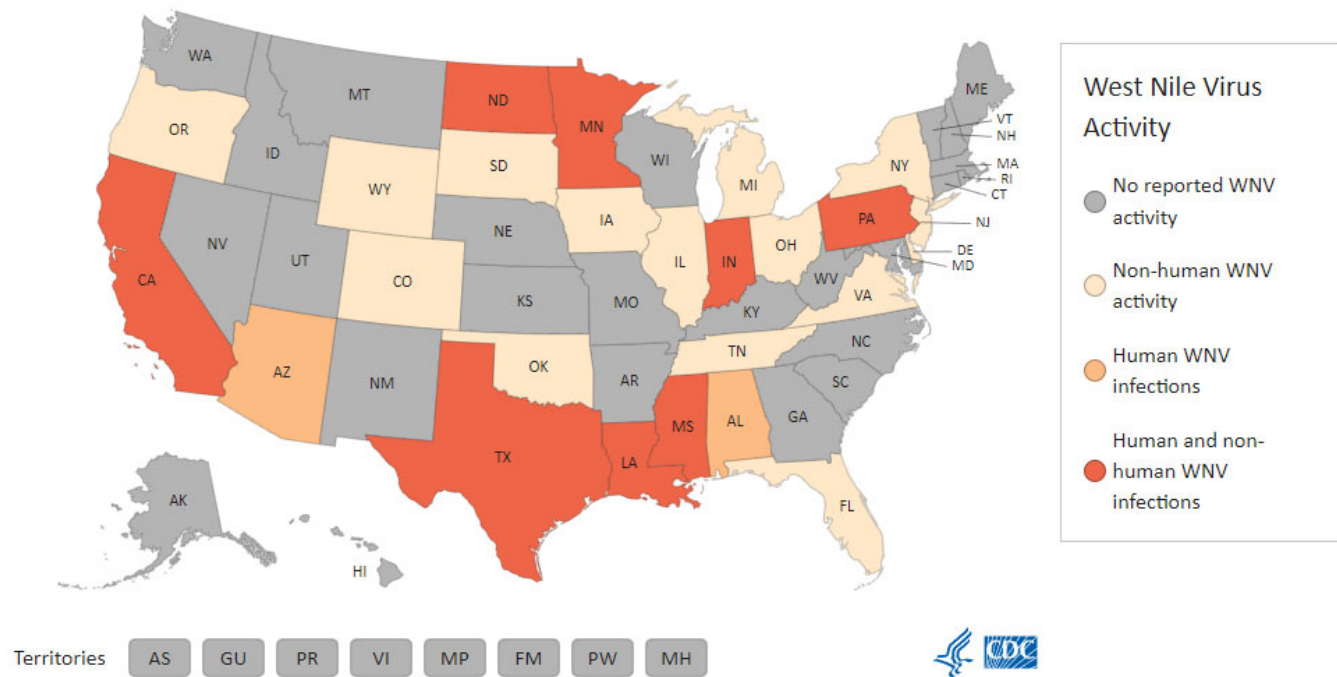
| Disease | Week 9 and 10 (7/18 to 7/31/2022) | 2022 Cumulative (as of 7/16) |
|---------------------------------------|-----------------------------------|------------------------------|
| Babesiosis | 114 | 632 |
| Chikungunya | 0 | 0 |
| Dengue (includes dengue-like illness) | 15 | 187 |
| Eastern equine encephalitis | 0 | 0 |
| Ehrlichiosis / anaplasmosis | 263 | 3,589 |
| Jamestown Canyon virus disease | 0 | 0 |
| LaCrosse virus disease | 0 | 0 |
| Lyme Disease | Not reported weekly by CDC | |
| Malaria | 8 | 562 |
| Powassan virus disease | 0 | 0 |
| Spotted fever rickettsiosis | Not reported weekly by CDC | |
| St. Louis encephalitis virus disease | 0 | 0 |
| West Nile virus infection | Not Available | 30 |
| Zika virus infection, non-congenital | 0 | 0 |

Note: Data is provisional and subject to change

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

<https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2022/index.html#:~:text=As%20of%20June%2014%2C%202022,classified%20as%20non%2Dneuroinvasive%20disease.>

Figure 1. West Nile virus activity by state – United States, 2022 (as of July 26, 2022)



Source: <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2022/activitybystate2022.html>

TRENDS IN VECTOR BORNE DISEASE IN SUMMIT COUNTY, 2013 - 2021

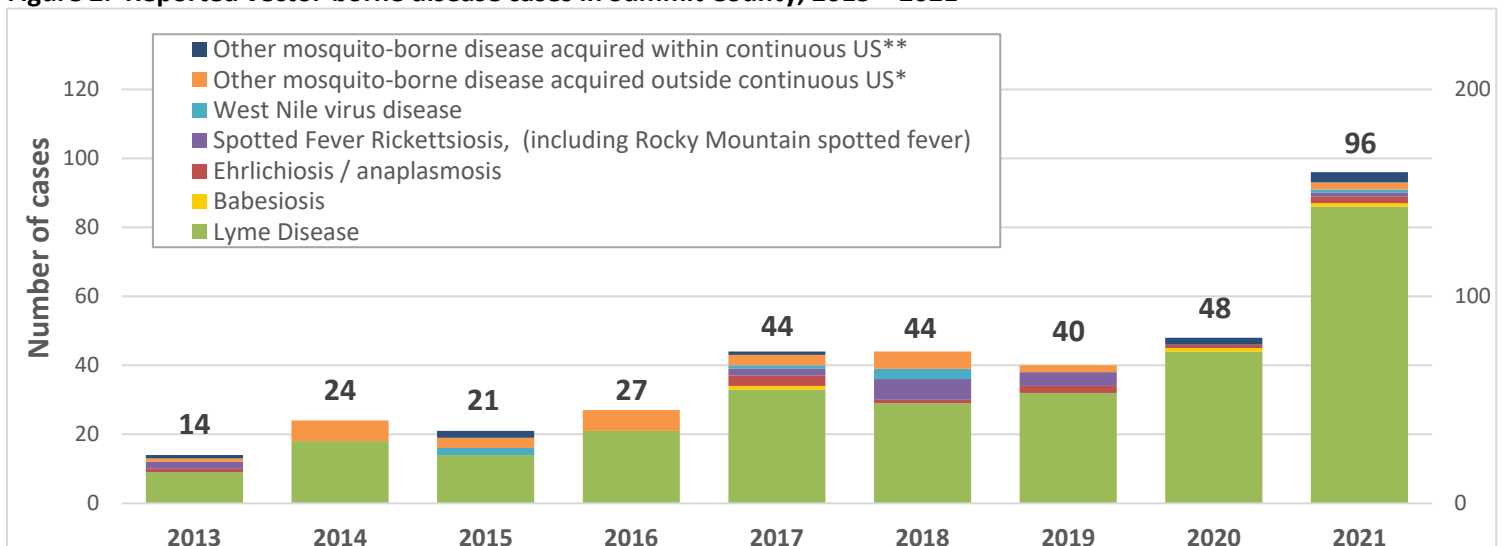
Table 8 provides data on the vector borne disease that were reported in Summit County from 2013 to 2021. As indicated in Table 8 and Figure 2, the number of vector borne disease cases increased from 48 to 96 cases from 2020 to 2021. The majority of these cases were transmitted by ticks. The vector for Lyme disease, the blacklegged tick (*Ixodes scapularis*), was first identified in Ohio in 1989, but populations did not begin to increase dramatically until 2009. The blacklegged tick is now established throughout eastern and southern Ohio, and has been collected in all of Ohio's 88 counties.

Other notable events in vector borne disease surveillance were the increase in Chikungunya cases in 2014 (reported as other arthropod-borne diseases) and the Zika virus disease epidemic of 2016. Increases in ehrlichiosis and spotted fever rickettsiosis were observed from 2017 to 2019. The incidence of other vector-borne diseases, including West Nile virus disease and other tick-borne illness have remained consistently low.

Table 8. Reported vector-borne disease cases in Summit County, 1/1/2013 - 12/31/2021

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Babesiosis | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Ehrlichiosis / anaplasmosis | 1 | 0 | 0 | 0 | 3 | 1 | 2 | 1 | 2 |
| Lyme Disease | 9 | 18 | 14 | 21 | 33 | 29 | 32 | 44 | 86 |
| Spotted Fever Rickettsiosis, (including Rocky Mountain spotted fever) | 2 | 0 | 0 | 0 | 2 | 6 | 4 | 0 | 1 |
| West Nile virus disease | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 0 | 1 |
| Other mosquito-borne disease acquired outside continuous US* | 1 | 6 | 3 | 6 | 3 | 5 | 2 | 0 | 2 |
| Other mosquito-borne disease acquired within continuous US** | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 2 | 3 |
| | 14 | 24 | 21 | 27 | 44 | 44 | 40 | 48 | 96 |

Figure 2. Reported vector-borne disease cases in Summit County, 2013 – 2021



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

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

Data Source: Ohio Disease Reporting System

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 Julie Zidones (JZidones@sched.org) or the Summit County Public Health Communicable Disease Unit (330-375-2662). This report was issued on **August 8, 2022.**