



Florida Arbovirus Surveillance Week 37: September 11-17, 2022

Arbovirus surveillance in Florida includes endemic mosquito-borne viruses such as West Nile virus (WNV), Eastern equine encephalitis virus (EEEV), and St. Louis encephalitis virus (SLEV), as well as exotic viruses such as dengue virus (DENV), chikungunya virus (CHIKV), Zika virus (ZIKV) and California encephalitis group viruses (CEV). Malaria, a parasitic mosquito-borne disease is also included. During the period of September 11-17, 2022, the following arboviral activity was recorded in Florida.

WNV activity: No human cases of WNV infection were reported this week. One horse with WNV infection was reported this week in Sarasota County. Fifty sentinel chickens tested positive for antibodies to WNV this week in Bay, Hillsborough, Lee, Manatee, Nassau, Orange, Pinellas, Sarasota, Volusia, and Walton counties. No mosquito pools tested positive for WNV this week. In 2022, positive samples from one human, three horses, 183 sentinel chickens and four mosquito pools have been reported from 21 counties.

SLEV activity: No human cases of SLEV infection were reported this week. One sentinel chicken tested positive for antibodies to SLEV this week in Volusia County. In 2022, five positive samples have been reported from five counties.

Flavivirus (WNV or SLEV)* activity: Five sentinel chickens tested positive for antibodies to a flavivirus this week in Charlotte, Manatee, Sarasota, and Walton counties. In 2022, positive samples from 19 sentinel chickens have been reported from 10 counties.

EEEV activity: No human cases of EEEV infection were reported this week. Two horses with EEEV infection were reported this week in Hillsborough County. No sentinel chickens tested positive for antibodies to EEEV this week. In 2022, positive samples from 57 sentinel chickens and 11 horses have been reported from 22 counties.

International Travel-Associated Dengue: Fifty-two cases of dengue were reported this week in persons that had international travel. In 2022, 423 travel-associated dengue cases have been reported.

Dengue Cases Acquired in Florida: Five cases of locally acquired dengue were reported this week in Miami-Dade County. In 2022, 19 cases of locally acquired dengue have been reported.

International Travel-Associated Chikungunya Fever Cases: No cases of chikungunya fever were reported this week in persons that had international travel. In 2022, no travel-associated chikungunya fever cases have been reported.

Chikungunya Fever Cases Acquired in Florida: No cases of locally acquired chikungunya fever were reported this week. In 2022, no cases of locally acquired chikungunya fever have been reported.

International Travel-Associated Zika Fever Cases: No cases of Zika fever were reported this week in persons that had international travel. In 2022, no travel-associated Zika fever cases have been reported.

Zika Fever Cases Acquired in Florida: No cases of locally acquired Zika fever were reported this week. In 2022, no cases of locally acquired Zika fever have been reported.

Advisories/Alerts: Miami-Dade County is currently under a mosquito-borne illness alert. Bay, Charlotte, Collier, Hillsborough, Lee, Osceola, Pinellas, Sarasota, and Volusia counties are currently under a mosquito-borne illness advisory. No other counties are currently under a mosquito-borne illness advisory or alert.

There are currently multiple travel health notices from the Centers for Disease Control and Prevention related to mosquito-borne diseases.

| Dengue | | | Yellow Fever |
|----------------------------|--------------------|------------------------------|----------------------------|
| Africa and the Middle East | Americas | Asia and the Pacific Islands | Africa and the Middle East |
| São Tomé and Príncipe | Colombia | Afghanistan | Ghana |
| | Cuba | Bangladesh | Kenya |
| | Dominican Republic | India | Nigeria |
| | El Salvador | Laos | |
| | Guatemala | Malaysia | |
| | Honduras | Myanmar (Burma) | |
| | Nicaragua | Nepal | |
| | Panama | Pakistan | |
| | Peru | Philippines | |
| | | Singapore | |
| | | Sri Lanka | |
| | | Vietnam | |

Level 1 Travel Health Notice, Level 2 Travel Health Alert: wwwnc.cdc.gov/travel/notices.

For a map of arboviral disease activity in the United States visit: www.cdc.gov/arbonet/maps/ADB_Diseases_Map/index.html.

2022 Human Case Summary

West Nile Virus Illnesses Acquired in Florida: One human case of WNV illness acquired in Florida has been reported in 2022 from Volusia County (July).

International Travel-Associated Dengue Cases: Four hundred and twenty-three cases with onset in 2022 have been reported in individuals with travel history to a dengue endemic area in the two weeks prior to onset. Counties reporting cases were: Brevard (2), Broward (29), Collier, Duval (7), Escambia (2), Hendry, Hernando (2), Hillsborough (38), Lee (16), Leon, Manatee (2), Martin (2), Miami-Dade (272), Monroe (3), Orange (6), Osceola, Palm Beach (14), Pasco, Pinellas (6), Polk (8), Sarasota (3), St. Johns, and St. Lucie (5). Five cases were reported in non-Florida residents. Four cases met the criteria for severe dengue (dengue shock syndrome [DSS] or dengue hemorrhagic fever [DHF]). Those at greater risk for DSS and DHF include persons with previous dengue infection, pregnant women, infants, the elderly, and those with co-morbidities. However, severe illness can also occur in those without any of these risk factors. In 2022, 371 cases of dengue reported in Florida have been serotyped by PCR. Please see the table below for a breakdown of case by country of origin and serotype.

| Country of Exposure | DENV-1 | DENV-2 | DENV-3 | DENV-4 | DENV-1/DENV-2 | DENV-1/DENV-3 | Unknown | Total |
|----------------------|-----------|-----------|------------|-----------|---------------|---------------|-----------|------------|
| Brazil | 5 | | | | | | 2 | 7 |
| Caribbean | | | 1 | | | | | 1 |
| Colombia | 2 | | | | | | | 2 |
| Costa Rica | 1 | | | | | | 1 | 2 |
| Cuba | 31 | 67 | 215 | 21 | 2 | 3 | 46 | 385 |
| Cuba/Central America | 1 | | | | | | 1 | 2 |
| Dominican Republic | 1 | 3 | | | | | | 4 |
| El Salvador | 1 | | | 1 | | | | 2 |
| Guatemala | 2 | 1 | | | | | 1 | 4 |
| Honduras | | | | 1 | | | 1 | 2 |
| India | | 2 | | | | | | 2 |
| Maldives | | 1 | | | | | | 1 |
| Mexico | 2 | 2 | | | | | | 4 |
| Pakistan | 2 | | | | | | | 2 |
| Panama | 1 | | | | | | | 1 |
| Puerto Rico | 1 | | | | | | | 1 |
| Sri Lanka | | | 1 | | | | | 1 |
| Total | 50 | 76 | 217 | 23 | 2 | 3 | 52 | 423 |

Dengue Cases Acquired in Florida: In 2022, 19 cases of locally acquired dengue have been reported in Collier and Miami-Dade counties (18), with onsets in June, July (5), and August (13). One case was reported in a non-Florida resident. Sixteen of the cases have been serotyped by PCR and were all DENV-3.

International Travel-Associated Malaria Cases: Thirty-eight cases of malaria with onset in 2022 have been reported. Countries of origin were: Brazil (3), Cameroon (2), Central African Republic, Côte D'Ivoire, Ethiopia, Equatorial Guinea, Ghana (3), Guinea (2), India, Kenya, multiple countries (2), Nicaragua (3), Nigeria (10), Sierra Leone (2), Sudan, Uganda (2), Venezuela, and Zambia. Counties reporting cases were: Brevard, Broward (7), Duval (5), Flagler, Hillsborough (4), Lee (4), Leon, Miami-Dade (2), Orange (5), Palm Beach (3), Pasco, Pinellas (2), Santa Rosa, and St. Johns. Five cases were reported in non-Florida residents.

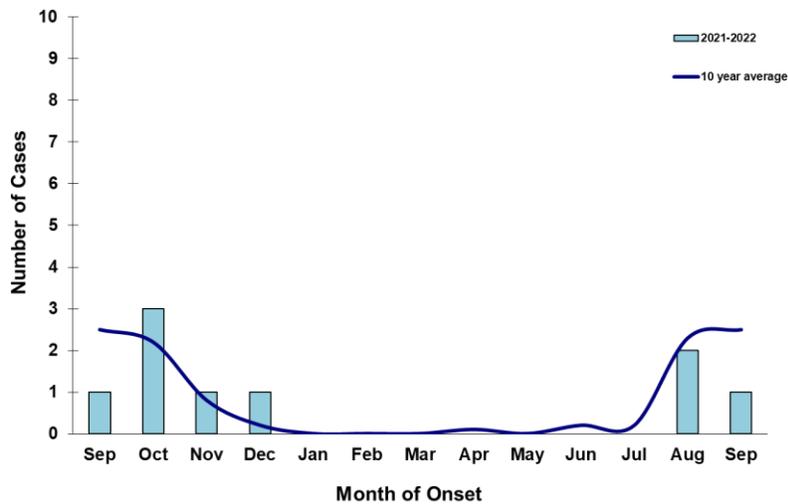
Twenty-three cases (60%) were diagnosed with *Plasmodium falciparum*. Twelve cases (32%) were diagnosed with *Plasmodium vivax*. Three cases (8%) were diagnosed with *Plasmodium malariae*.

Veterinary Cases**

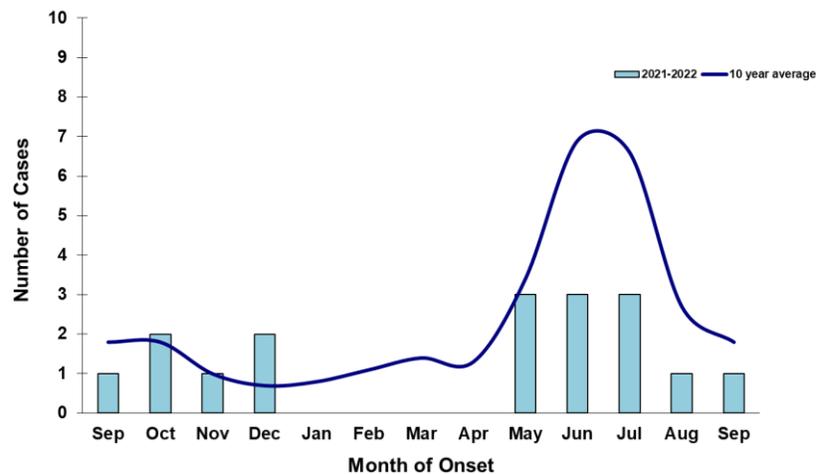
**Veterinary cases are reported by date of onset. Only mammalian veterinary cases are included in the graphs.

One horse with WNV infection was reported this week in Sarasota County. Two horses with EEEV infection were reported this week in Hillsborough County.

Veterinary WNV Disease in Florida, September 2021-2022



Veterinary EEEV Disease in Florida, September 2021-2022



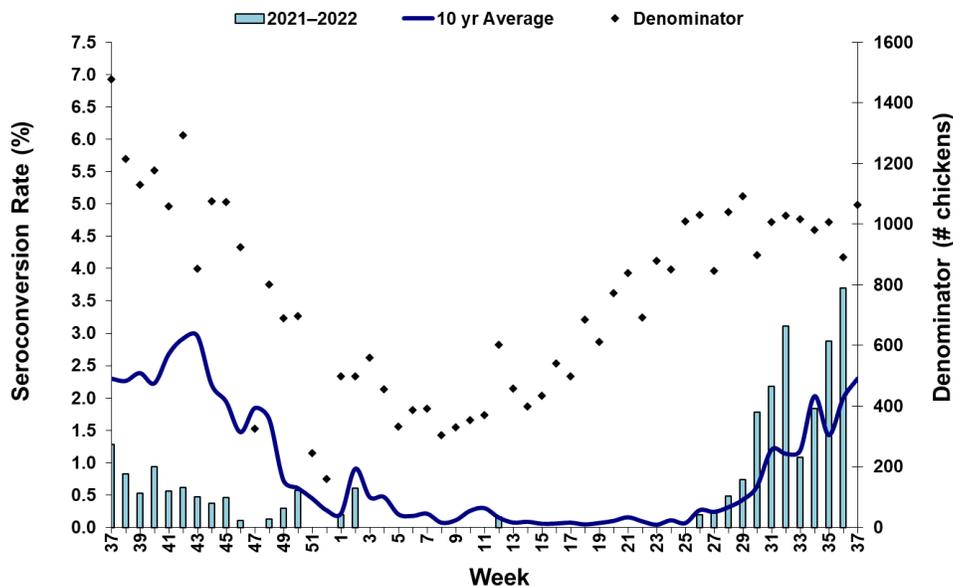
Sentinel Chickens

The table below is for the reporting of confirmatory laboratory results from this week. Some of the samples were collected at earlier dates. The date of collection is recorded for samples collected on that day along with the total number of positives and the corresponding seroconversion rate for the week the sample was collected.

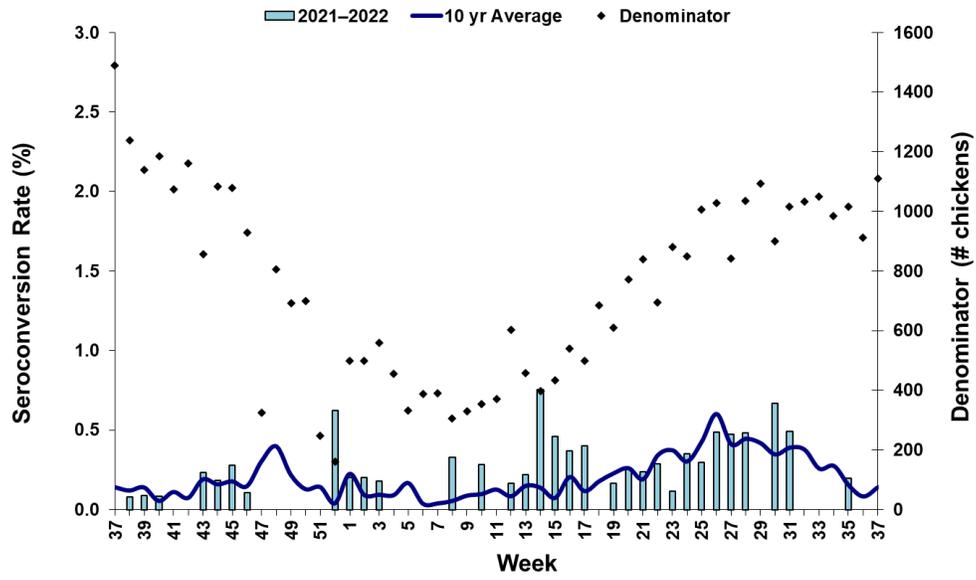
Fifty sentinel chickens tested positive for antibodies to WNV this week in Bay, Hillsborough, Lee, Manatee, Nassau, Orange, Pinellas, Sarasota, Volusia, and Walton counties. One sentinel chicken tested positive for antibodies to SLEV this week in Volusia County. Five sentinel chickens tested positive for antibodies to a flavivirus this week in Charlotte, Manatee, Sarasota, and Walton counties.

| County | Collection Date | Seroconversion Rates (%) | | | | | | County Totals | |
|--------------|--------------------|--------------------------|------|-------|-------|------|-----|---------------------|--|
| | | Flavi | SLEV | WNV | Alpha | EEEV | HJV | Collection Week | YTD |
| Bay | 9/6/2022 | 14.29 | | 14.29 | | | | 2 WNV | 21 WNV, 1 EEEV, 1 Flavivirus |
| Charlotte | 9/1/2022 | 10.00 | | | | | | 1 Flavivirus | 12 WNV, 3 Flavivirus |
| Hillsborough | 9/7/2022 | 11.11 | | 11.11 | | | | 3 WNV | 6 WNV, 1 EEEV |
| Lee | 8/23/2022 | 8.75 | | 7.50 | | | | 6 WNV, 1 Flavivirus | 42 WNV, 1 Flavivirus |
| | 8/29/2022 | 4.55 | | 4.55 | | | | 4 WNV | |
| | 9/5/2022-9/6/2022 | 10.23 | | 10.23 | | | | 9 WNV | |
| Manatee | 9/6/2022 | 12.07 | | 12.07 | | | | 7 WNV | 14 WNV, 1 EEEV, 1 Flavivirus |
| | 9/13/2022 | 2.04 | | | | | | 1 Flavivirus | |
| Nassau | 9/2/2022 | 8.33 | | 8.33 | | | | 3 WNV | 3 WNV, 2 EEEV |
| Orange | 9/6/2022 | 0.94 | | 0.94 | | | | 1 WNV | 1 WNV, 16 EEEV, 1 HJV |
| Pinellas | 9/6/2022 | 3.23 | | 3.23 | | | | 1 WNV | 7 WNV, 1 EEEV |
| Sarasota | 8/30/2022-9/2/2022 | 9.38 | | 9.38 | | | | 6 WNV | 28 WNV, 1 SLEV, 5 Flavivirus |
| | 9/7/2022 | 3.64 | | | | | | 2 Flavivirus | |
| Volusia | 9/6/2022 | 10.00 | 2.00 | 8.00 | | | | 4 WNV, 1 SLEV | 9 WNV, 2 EEEV, 1 SLEV, 1 HJV, 1 Flavivirus |
| Walton | 8/22/2022 | 13.95 | | 11.63 | | | | 5 WNV, 1 Flavivirus | 23 WNV, 12 EEEV, 1 SLEV, 2 HJV, 3 Flavivirus |
| | 8/31/2022 | 7.87 | | 7.87 | | | | 7 WNV | |
| | 9/6/2022 | 7.14 | | 7.14 | | | | 6 WNV | |
| | 9/12/2022 | 1.28 | | | | | | 1 Flavivirus | |

Sentinel Seroconversions to WNV in Florida, 2021–2022



Sentinel Seroconversions to EEEV in Florida, 2021–2022



Mosquito Pools

No mosquito pools tested positive for WNV or EEEV this week.

| County | Collection Date | Result | Species | County YTD |
|--------|-----------------|--------|---------|------------|
| | | | | |

Dead Birds

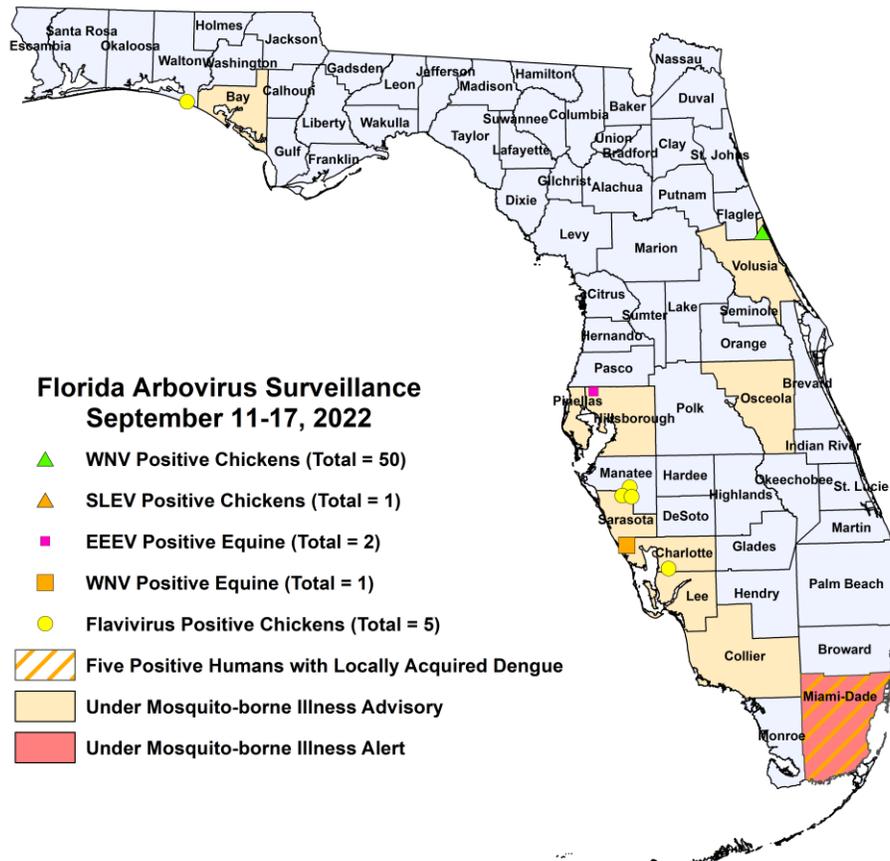
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 29 reports representing a total of 133 dead birds, including 2 raptors and 3 doves, were received from 14 counties.

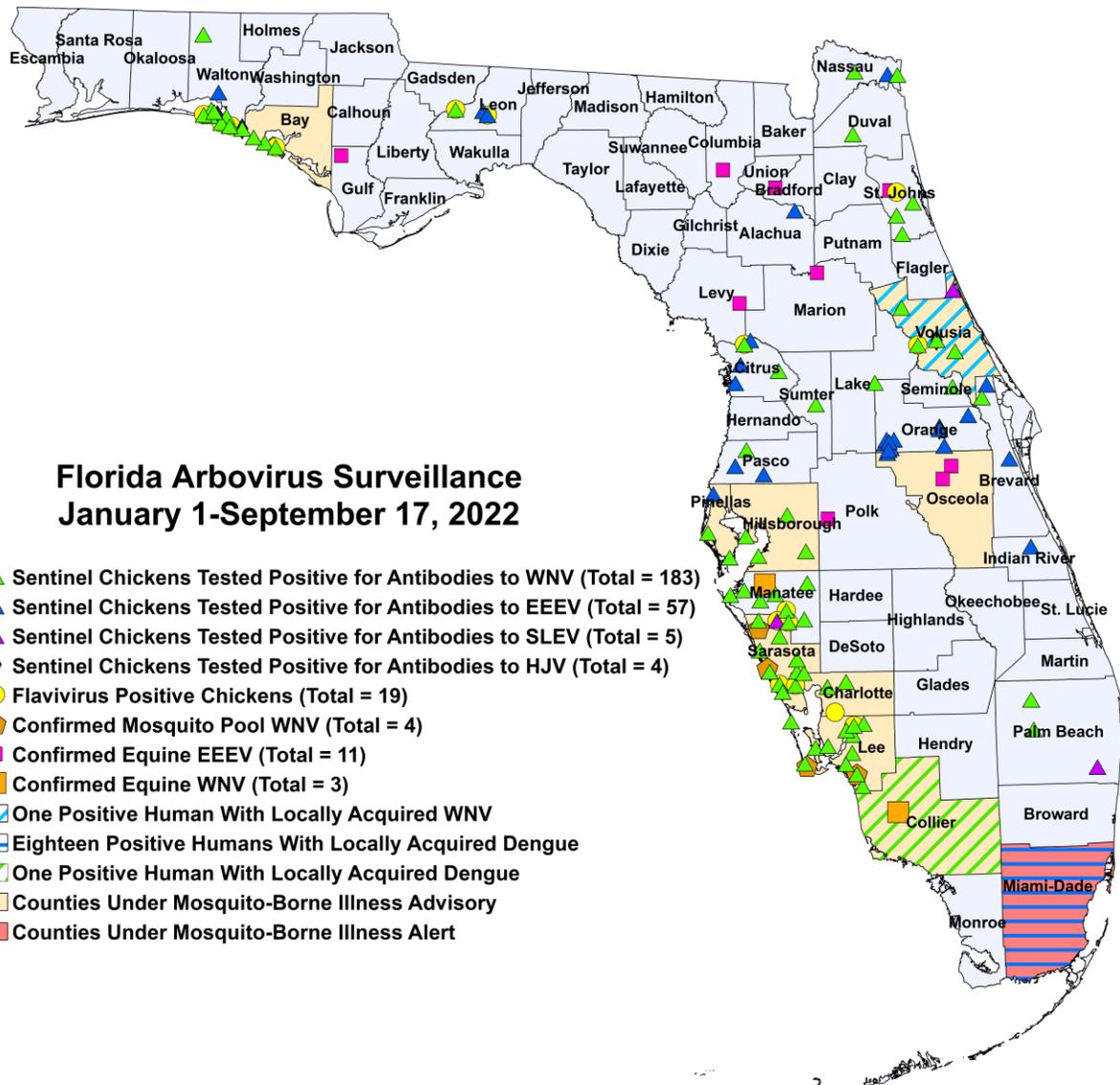
In 2022, 1208 reports representing a total of 3313 dead birds (110 crows, 34 jays, 181 raptors, 155 doves) were received from 56 of Florida's 67 counties.

2022

| County | Total Dead Birds | Crows | Jays | Raptors | Doves |
|--------------|------------------|-------|------|---------|-------|
| Alachua | 1 | 0 | 0 | 0 | 1 |
| Bay | 12 | 0 | 0 | 0 | 0 |
| Brevard | 1 | 0 | 0 | 0 | 0 |
| Broward | 5 | 0 | 0 | 1 | 0 |
| Charlotte | 1 | 0 | 0 | 0 | 0 |
| Citrus | 3 | 0 | 0 | 0 | 0 |
| Collier | 3 | 0 | 0 | 0 | 0 |
| Hillsborough | 2 | 0 | 0 | 0 | 0 |
| Lee | 2 | 0 | 0 | 0 | 1 |
| Orange | 2 | 0 | 0 | 0 | 1 |
| Palm Beach | 95 | 0 | 0 | 0 | 0 |
| Pinellas | 4 | 0 | 0 | 0 | 0 |
| St. Johns | 1 | 0 | 0 | 0 | 0 |
| Walton | 1 | 0 | 0 | 1 | 0 |

Maps





2022 Arbovirus Activity by County

| County | Humans | Equines | Sentinel Chickens | Other |
|-----------|-----------------|---------------|--|-------|
| Alachua | | | 1 EEEV (5/31) | |
| Bay | | | 21 WNV (3/21, 7/5, 7/18, 7/25, 8/1, 8/8, 8/30, 9/6) 1 EEEV (7/25) 1 Flavivirus (8/30) | |
| Bradford | | 1 EEEV (6/22) | | |
| Brevard | | | 1 WNV (8/5) 2 EEEV (4/7, 7/1) | |
| Charlotte | | | 12 WNV (7/1, 7/15, 7/29, 8/5, 8/19) 3 Flavivirus (8/12, 8/19, 9/1) | |
| Citrus | | | 5 WNV (1/4, 1/11, 7/19) 11 EEEV (1/11, 1/18, 4/19, 5/17, 5/23, 6/1, 6/14, 6/21, 6/28, 7/6) 1 Flavivirus (1/25) | |
| Collier | 1 dengue (July) | 1 WNV (8/21) | | |
| Columbia | | 1 EEEV (5/9) | | |

| County | Humans | Equines | Sentinel Chickens | Other |
|--------------|---|---------------------|---|--|
| Duval | | | 1 WNV (8/29) | |
| Gulf | | 1 EEEV (7/25) | | |
| Hillsborough | | 2 EEEV (8/28, 9/2) | 6 WNV (8/10, 8/24, 9/7) 1 EEEV (3/23) | |
| Indian River | | | 1 EEEV (4/28) | |
| Lee | | | 42 WNV (6/27, 7/5, 7/11, 7/18, 7/25, 7/26, 8/8, 8/9, 8/15, 8/16, 8/22, 8/23, 8/29, 9/5, 9/6) 1 Flavivirus (8/22) | 2 WNV mosquito pools (Cx. <i>nigripalpus</i> [8/2,8/9]) |
| Leon | | | 1 WNV (7/27) 4 EEEV (7/27, 8/1, 8/29) 2 Flavivirus (8/23) | |
| Levy | | 1 EEEV (6/16) | | |
| Manatee | | 1 WNV (9/1) | 14 WNV (7/26, 8/9, 8/24, 8/30, 9/6) 1 EEEV (7/13) 1 Flavivirus (9/13) | |
| Marion | | 1 EEEV (7/7) | | |
| Miami-Dade | 13 dengue (June, July (4), August (8)) | | | |
| Nassau | | | 3 WNV (9/2) 2 EEEV (7/29, 8/6) | |
| Orange | | | 1 WNV (9/6) 16 EEEV (1/3, 3/28, 4/11, 4/25, 5/16, 5/31, 6/6, 6/20, 6/27, 7/5, 7/11, 7/25, 8/1) 1 HJV (5/31) | |
| Osceola | | 2 EEEV (5/24, 5/26) | | |
| Palm Beach | | | 3 WNV (8/29) 1 SLEV (8/29) | |
| Pasco | | | 1 WNV (7/25) 2 EEEV (4/11, 8/29) | |
| Pinellas | | | 7 WNV (7/25, 8/1, 8/8, 9/6) 1 EEEV (3/7) | |
| Polk | | 1 EEEV (6/19) | | |
| Sarasota | | 1 WNV (8/28) | 28 WNV (7/15, 7/22, 8/2, 8/5, 8/9, 8/15, 8/19, 8/26, 8/30, 9/2) 1 SLEV (7/26) 5 Flavivirus (6/7, 8/26, 9/7) | 2 WNV mosquito pools (Cx. <i>quinquefasciatus</i> [7/20, 7/27]) |
| Seminole | | | 1 WNV (8/22) 1 SLEV (8/22) | |
| St. Johns | | 1 EEEV (7/5) | 3 WNV (7/25, 8/15, 8/29) 1 Flavivirus (8/15) | |
| Sumter | | | 1 WNV (8/8) | |
| Volusia | 1 WNV (July) | | 9 WNV (7/11, 7/25, 8/8, 9/6) 2 EEEV (2/21, 6/27) 1 SLEV (9/6) 1 HJV (5/23) 1 Flavivirus (8/15) | |
| Walton | | | 23 WNV (7/25, 8/8, 8/15, 8/22, 8/29, 8/31, 9/6) 12 EEEV (4/4, 5/9, 6/13, 6/20, 6/27, 7/5, 7/11, 7/13, 7/25, 8/1) 1 SLEV (3/21) 2 HJV (6/20, 7/25) 3 Flavivirus (3/21, 8/22, 9/12) | |

*Nineteen chickens in 2022 have tested positive for flavivirus antibodies and require additional specialized testing to distinguish between WNV and SLEV antibodies. Testing is currently delayed due to supply chain issues. The final determination of these birds will be updated as more information becomes available. In Florida, both WNV and SLEV have similar disease vectors and epidemiology. Seroconversion rates for flavivirus are included in the table.

Acknowledgements and Data Sources

Contributors: Andrea Morrison, PhD, MSPH, Rebecca Zimler, PhD, MPH, and Danielle Stanek, DVM, DOH Bureau of Epidemiology; Lea Heberlein-Larson, DrPH; Alexis LaCrue, PhD, MS; Maribel Castaneda, and Amanda Davis, BS; DOH Bureau of Public Health Laboratories; Carina Blackmore, DVM, PhD, DOH Division of Disease Control and Health Protection.

For more surveillance information, please see the DOH website at: www.floridahealth.gov/diseases-and-conditions/mosquito-borne-diseases/surveillance.html

For arbovirus surveillance information for the United States, please see the Centers for Disease Control and Prevention website at: www.cdc.gov/ncidod/dvbid/westnile/surv&control.htm

Case tallies included in the weekly Florida arbovirus surveillance report include confirmed and probable cases for EEE, WNV infection, SLE, dengue, chikungunya, and malaria by date of onset. Suspect cases are not included. Activity is mapped by county of exposure rather than county of residence. Case definitions being used in Florida are consistent with national criteria provided by the Council of State and Territorial Epidemiologists (CSTE) and may be viewed at: www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/index.html. Case tallies reported by CDC do not include suspect cases and cases are reported by patient state of residence rather than where the exposure occurred. Data is provided by county health departments, Department of Health Bureau of Public Health Laboratories, Department of Agriculture and Consumer Services, mosquito control agencies, Florida Fish and Wildlife Conservation Commission, medical providers and veterinarians. Equine cases are provided by the Department of Agriculture and Consumer Services.