



Florida Arbovirus Surveillance Week 52: December 22 - 29, 2012

Arbovirus surveillance in Florida includes endemic mosquito-borne viruses West Nile virus (WNV), Eastern equine encephalitis virus (EEEV), St. Louis encephalitis virus (SLEV), and Highlands J virus (HJV) and exotic viruses such as dengue virus (DENV) and California encephalitis group viruses (CEV). Malaria, a non-viral mosquito-borne disease is also included. During the period of December 22 - 29, 2012 the following arboviral activity was recorded in Florida:

DENV activity: No cases of locally acquired dengue were reported this week. A total of four locally acquired dengue cases have been reported in 2012.

EEEV activity: Three sentinel chickens in Citrus and Walton Counties tested positive this week for antibodies to EEEV. One horse case of EEEV infection was reported this week in Wakulla County. In 2012, positive samples from 1 human, 34 equines, and 95 sentinel chickens have been received from 30 counties.

WNV activity: No human cases of WNV infection were reported this week. No horse cases of WNV infection were reported this week. Twelve sentinel chickens in Flagler, Leon, Orange, St. Johns, and Walton counties tested positive for antibodies to WNV. In 2012, positive samples from 68 humans, 18 horses, 484 sentinel chickens, 4 mosquito pools, and 3 birds have been received from 39 counties.

SLEV activity: Two sentinel chickens in Lee County tested positive this week for antibodies to SLEV. In 2012, positive samples from 84 sentinel chickens, 1 mosquito pool, and 1 bird have been received from 13 counties

HJV activity: Two sentinel chickens in Leon County tested positive for antibodies to HJV this week. In 2012, positive samples from 28 sentinel chickens have been received from 9 counties.

Advisories/Alerts: Duval, Escambia, Holmes, Leon, Miami-Dade, Okaloosa, Santa Rosa, Suwannee and Walton counties are currently under mosquito-borne illness alerts. Alachua, Bay, Gadsden, Hamilton, Hillsborough, Jackson, Jefferson, Nassau, Osceola, Orange, Seminole, St. Johns, Wakulla, and Washington counties are under mosquito-borne illness advisories. No other counties are currently under mosquito-borne illness advisory or alert.

Year to Date Human Case Summary*

EEEV Infection Acquired in Florida: One human case of EEE infection with onset in June was reported in 2012 in a Holmes County resident who spent time in Washington County.

WNV Infection Acquired in Florida: Sixty-eight human cases of WNV infection were acquired in Florida in 2012. Twenty-nine with onset in June (4), July (7), August (11), September (3), and October (4) were reported in Duval County, three of which were presumptive positive blood donors who developed symptoms. Fifteen cases with onset in July (2), August (8), and September (5), and an asymptomatic presumptive positive blood donor were reported in Escambia County. Four cases with onset in September (2), October, and November were reported in Walton County. Three cases with onset in August (2) and September were reported in Santa Rosa County. Three cases with onset in August (2) and one in September were reported in Okaloosa County. Three cases with

onset in October (2) and November were reported in Holmes County. Two cases with onset in August (1) and October (1) were reported in Leon County. Two presumptive positive blood donors in October were reported in Suwannee County. Two cases with onset in September were reported in Jackson County. Two cases with onset in September (1) and October (1) were reported in Washington County. One case each with onset in August was reported in Hillsborough and Gadsden counties, one case each with onset in September was reported in Bay and Hamilton counties, and one case with onset in October was reported in Nassau County. Four Florida residents in Broward, Manatee, Santa Rosa and Volusia counties acquired WNV infection in the U.S. outside Florida. Two human cases of WNV infection in non-Florida residents who traveled to Florida were acquired in Oklahoma and South Carolina.

Dengue Infection Acquired in Florida: Four local cases of dengue have been reported in 2012; Two in Miami-Dade (August, October) and one each in Seminole (September) and Osceola (October) counties.

Imported Dengue: One hundred and thirty-five cases of dengue with onset in 2012 have been reported in individuals with travel history to a dengue endemic country in the two weeks prior to onset. Countries of origin were Brazil, Colombia, Cuba (29), Dominican Republic (17), Ecuador (4), El Salvador (2), Ghana, Guyana (2), Haiti (17), Honduras, India, Jamaica (23), Mexico (2), Nicaragua (2), Panama, Philippines (4), Portugal, Puerto Rico (16), South Africa, Sri Lanka, St. Vincent, Suriname, Trinidad (4), Turks & Caicos, and Virgin Islands. Counties reporting cases were Brevard (3), Broward (22), Collier, Duval (3), Hillsborough (5), Lee (3), Marion, Miami-Dade (49), Okaloosa, Orange (19), Osceola (3), Palm Beach (9), Pinellas (4), Polk (2), Sarasota (2), Seminole (4), St. Johns, St. Lucie, and Volusia (2). Eleven of the cases were reported in non-Florida residents.

Sixty-nine of the one hundred and thirty-nine cases of dengue reported in Florida have been serotyped by PCR. Additional serotyping and strain typing are being conducted.

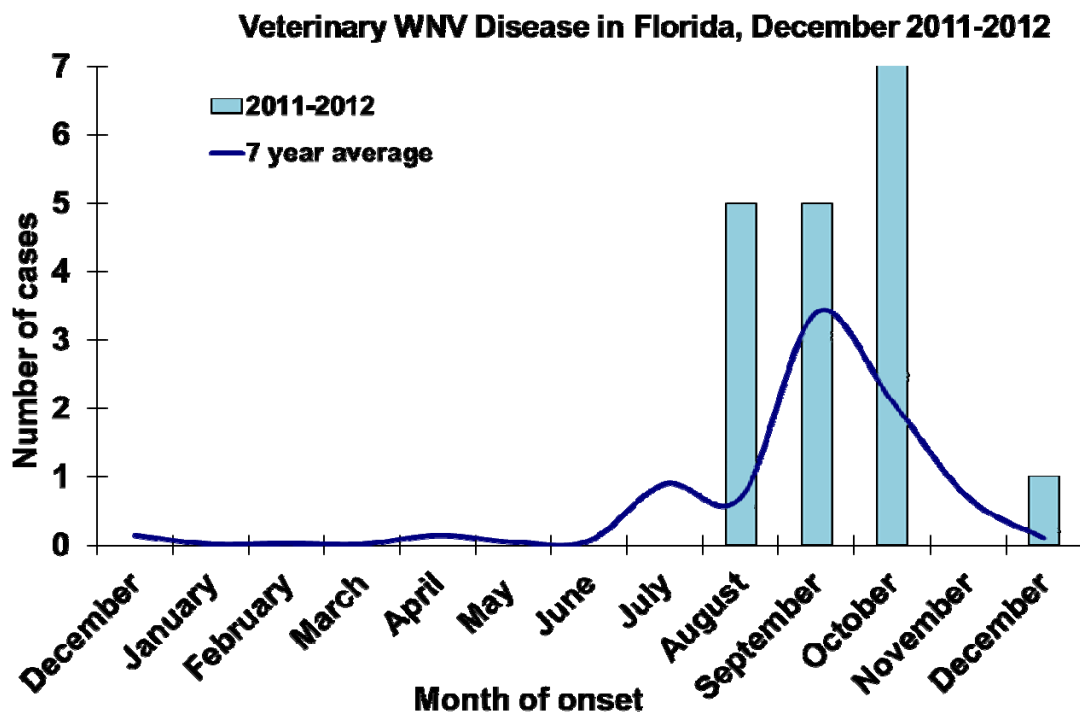
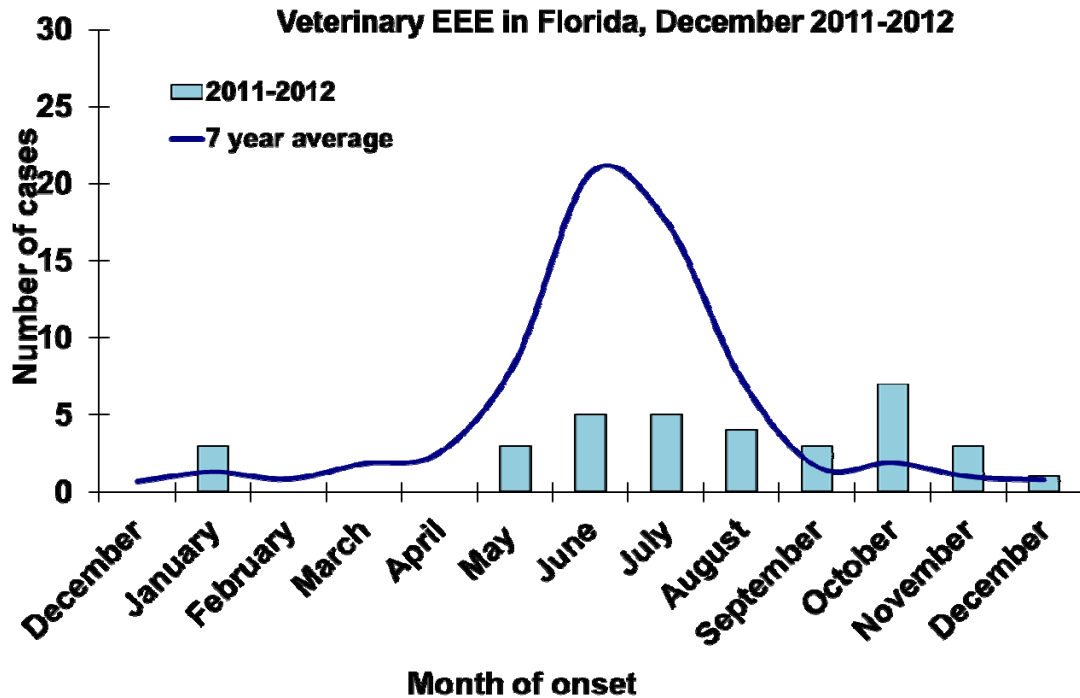
| | # of cases per serotype |
|---------------|--------------------------------|
| DENV-1 | 41 |
| DENV-2 | 5 |
| DENV-3 | 1 |
| DENV-4 | 22 |
| | 69 |

Imported Malaria: Fifty-nine imported cases of malaria with onset in 2012 have been reported. Countries of origin were: Afghanistan (2), Cameroon, Central African Republic, Colombia, Congo, Costa Rica, Ethiopia (2), Ghana (6), Guyana (2), Haiti (9), Honduras (3), India (2), Ivory Coast (3), Kenya, Liberia (2), Nigeria (9), Pakistan, Peru, Sierra Leone (2), South Africa, Sub Saharan Africa, Sudan, Togo, Uganda, Zambia, and multiple or unspecified African countries (3). Counties reporting cases were: Alachua (2), Brevard, Broward (8), Charlotte, Duval (7), Hillsborough (7), Lake (2), Leon, Manatee, Marion, Martin, Miami-Dade (8), Orange (6), Osceola (2), Palm Beach (4), Pinellas (3), Polk, Seminole, and Volusia (2). Six of the cases were reported in non-Florida residents.

Veterinary Cases

One horse was reported as testing positive for EEEV in Wakulla County.

| County | Onset Date | Species | Virus | Status | County YTD |
|---------|------------|---------|-------|--------|------------|
| Wakulla | 12/15/12 | Equine | EEEV | Died | 4 EEEV |



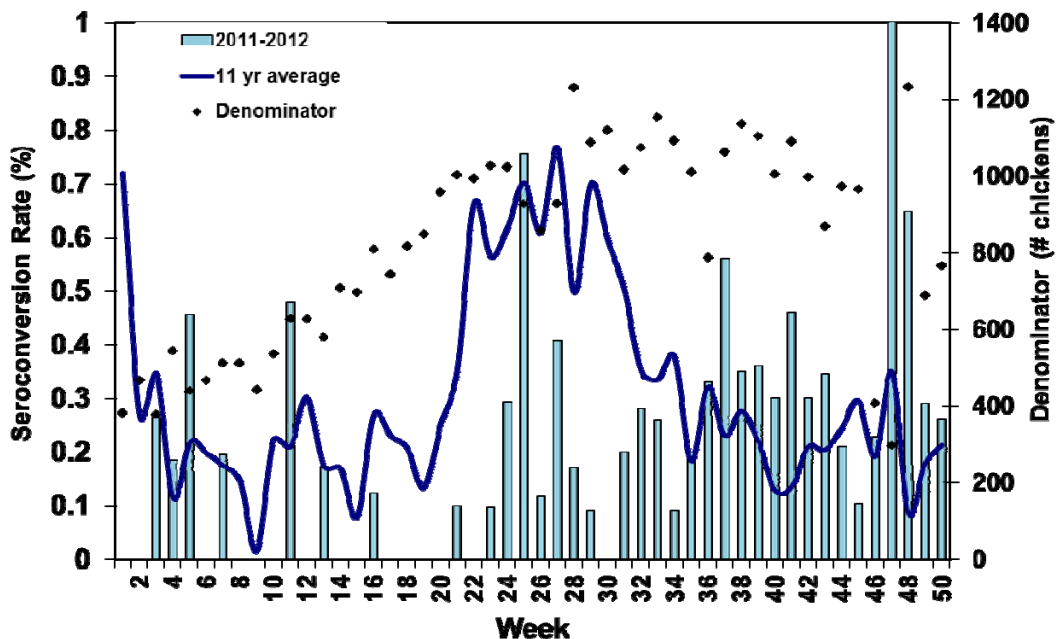
Sentinel Chickens

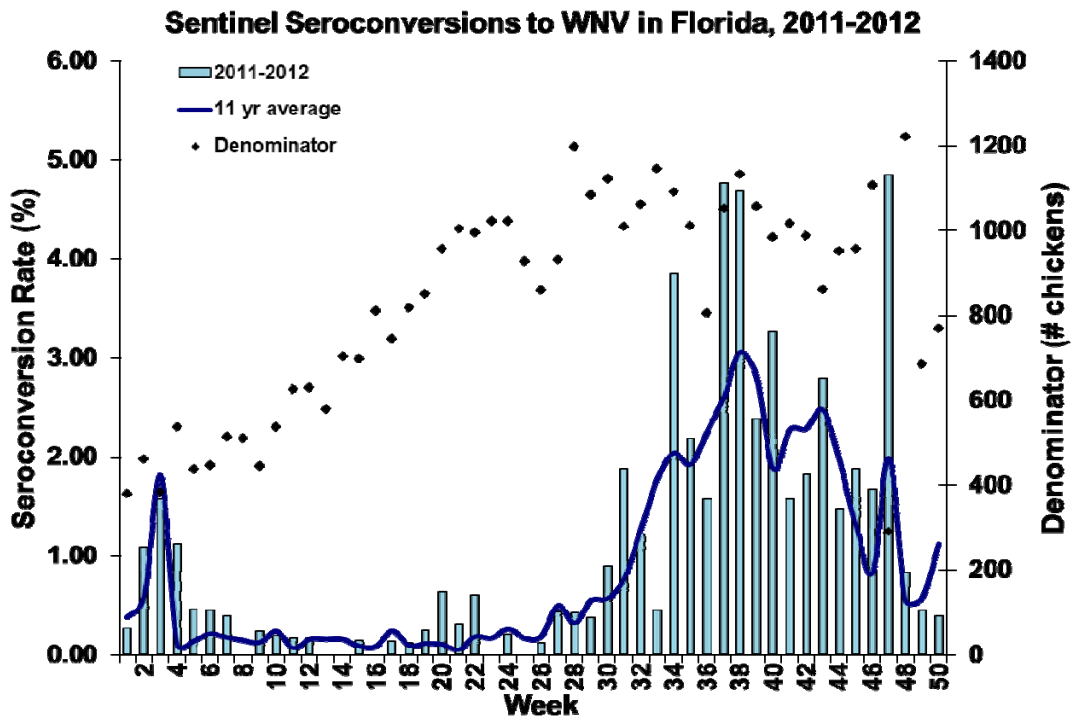
The table below is for the reporting of confirmatory laboratory results from this week. Some of the samples were collected at earlier dates. The date of collection is recorded for samples collected on that day along with the total number of positives and the corresponding seroconversion rate for the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

Three sentinel chickens in Citrus and Walton Counties tested positive this week for antibodies to EEEV, Twelve sentinel chickens in Flagler, Leon, Orange, St. Johns, and Walton counties tested positive for antibodies to WNV. Two sentinel chickens in Lee County tested positive this week for antibodies to SLEV, Two sentinel chickens in Leon County tested positive for antibodies to HJV this week. Three chickens in Flagler and Walton Counties tested positive this week for antibodies to a Flavivirus (WNV or SLEV).

| County | Collection Date | Seroconversion Rates (%) | | | | Collection Week | County Totals |
|-----------|-----------------|--------------------------|-------|------|------|-----------------------|-----------------------------------|
| | | SLEV | WNV | EEEV | HJV | | YTD |
| Citrus | 12/17/12 | | | 1.39 | | 1 EEEV | 16 WNV, 4 EEEV, 1 HJV |
| Flagler | 12/3/12 | | 10.00 | | | 1 WNV, 1 Flavi | 11 WNV, 2 EEEV, 2 HJV, 1 Flavi* |
| Lee | 12/3, 12/4/12 | 6.06 | | | | 2 SLEV, 1 Flavi | 6 WNV, 30 SLEV, 1 Flavi* |
| Leon | 11/19/12 | | 2.70 | | | 2 WNV | |
| Leon | 12/10/12 | | | | 5.00 | 2 HJV | 37 WNV, 10 EEEV, 6 HJV |
| Orange | 12/3/12 | | 0.88 | | | 1 WNV, 1 EEV | 18 WNV, 27 EEEV, 3 SLEV |
| St. Johns | 11/19/12 | | 6.54 | | | 7 WNV | 61 WNV, 7 EEEV, 2 HJV |
| Walton | 11/19/12 | | 4.05 | | | 1 EEEV, 3 WNV | |
| Walton | 11/26/12 | | 5.41 | | | 1 EEE, 4 WNV, 2 Flavi | |
| Walton | 12/4/12 | | | 1.54 | | 1 EEEV, 1 WNV | |
| Walton | 12/17/12 | | | 1.10 | | 1 EEEV | 128 WNV, 21 EEEV, 7 HJV, 2 Flavi* |

Sentinel Seroconversions to EEEV in Florida, 2011-2012



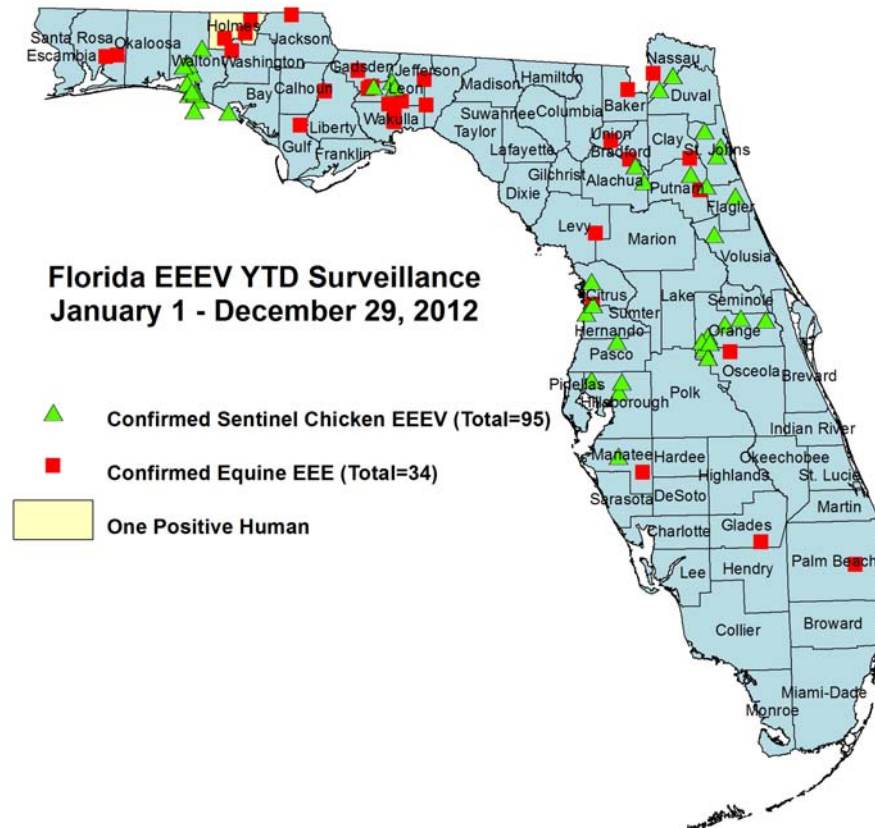
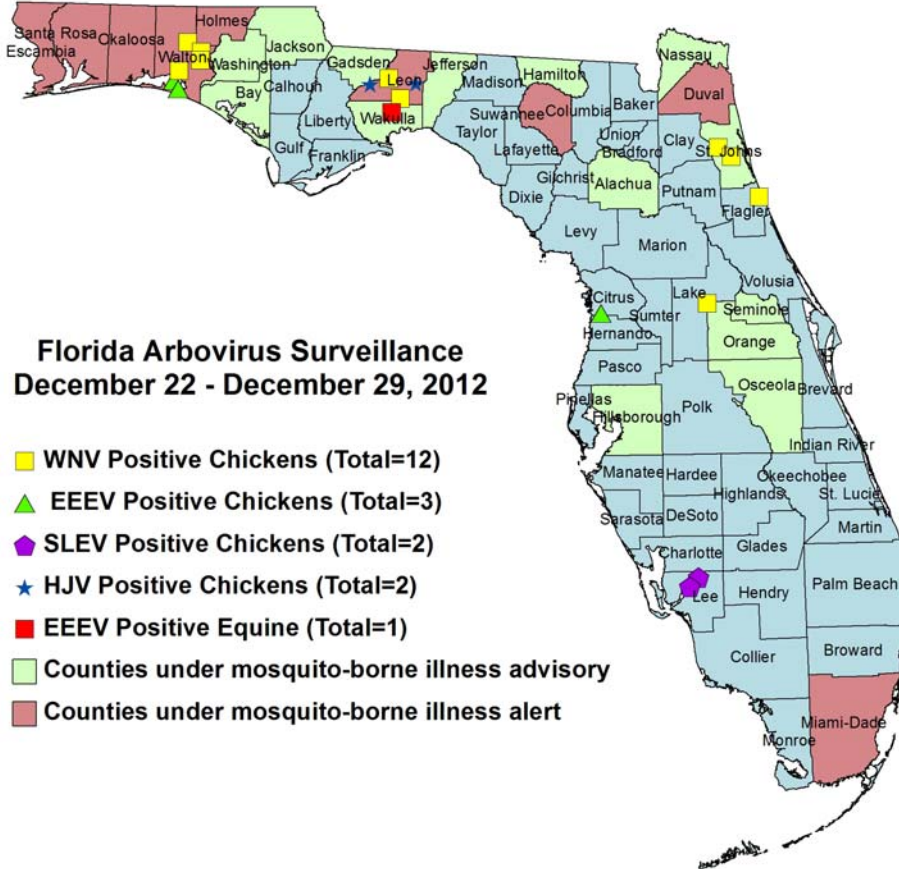


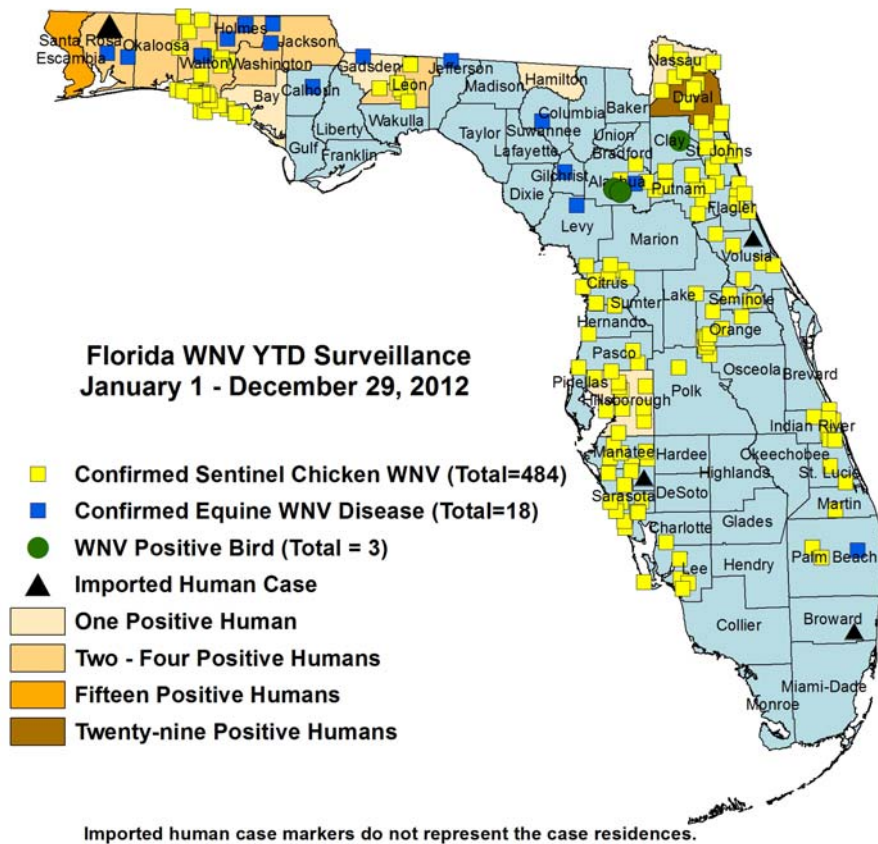
Dead Birds

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, 26 reports representing 41 dead birds, including 1 raptor were received from 14 counties. In 2012, 530 reports representing a total of 1392 dead birds (70 crows, 41 jays, 75 raptors, 61 dove) were received from 56 of Florida's 67 counties. Please note that FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to www.myfwc.com/bird/

| County | Total Dead Birds | Crows | Jays | Raptors |
|--------------|------------------|-------|------|---------|
| Charlotte | 1 | 0 | 0 | 0 |
| Collier | 3 | 0 | 0 | 0 |
| Duval | 1 | 0 | 0 | 0 |
| Franklin | 2 | 0 | 0 | 0 |
| Hillsborough | 1 | 0 | 0 | 0 |
| Lee | 3 | 0 | 0 | 0 |
| Manatee | 7 | 0 | 0 | 0 |
| Marion | 1 | 0 | 0 | 1 |
| Okaloosa | 2 | 0 | 0 | 0 |
| Palm Beach | 2 | 0 | 0 | 0 |
| Pasco | 1 | 0 | 0 | 0 |
| Pinellas | 10 | 0 | 0 | 0 |
| St. Johns | 6 | 0 | 0 | 0 |
| Volusia | 1 | 0 | 0 | 0 |

Maps





Arbovirus Activity by County

| County | Arbovirus Activity |
|------------------|--|
| Alachua | EEEV : 1 horse (7/27) ; 3 sentinels (7/9, 9/18, 10/8) WNV : 1 horse (9/11) ; 5 sentinels (9/17, 9/18, 10/8, 10/15), 2 wild birds (10/7) HJV : 2 sentinels (9/18, 10/8) |
| Bay | EEEV : 1 sentinel (7/10) WNV : 1 human (September) ; 24 sentinels (7/24, 7/31, 8/7, 8/14, 8/21, 9/4, 9/11, 9/18, 10/2, 10/23, 10/30, 11/14, 11/27) ; 2 mosquito pools (9/6, 9/11) HJV : 1 sentinel (5/29) SLEV : 1 mosquito pool (10/2) |
| Baker | EEEV : 1 horse (6/21) |
| Brevard | SLEV : 1 sentinel (8/29) |
| Calhoun | WNV : 1 horse (12/8) |
| Charlotte | WNV : 4 sentinels (9/7, 9/14, 9/28) SLEV : 3 sentinels (10/19, 11/2) |
| Citrus | EEEV : 4 sentinels (1/30, 10/8, 11/26, 12/17), 1 horse (11/5) WNV: 16 sentinels (5/29, 8/27, 9/17, 9/24, 10/15, 10/22, 11/13, 11/26, 12/10) HJV: 1 sentinel (1/3) |
| Clay | EEEV: 1 horse (10/14) WNV: 1 goose |
| DeSoto | SLEV: 1 pigeon |
| Duval | WNV: 29 humans (4 June, 7 July, 11 August, 3 September, 4 October); 29 sentinels (7/30, 8/3, 8/13, 8/20, 8/23, 8/28, 9/10, 9/13, 9/17, 10/1, 10/18, 10/22, 11/5, 11/7, 11/13); 2 mosquito pools (8/7, 8/8) |
| Escambia | WNV: 15 humans (2 July, 8 August, 5 September) |

| County | Arbovirus Activity |
|---------------------|---|
| Flagler | EEEV: 2 sentinels (8/6, 9/24) WNV: 11 sentinels (9/4, 10/1, 10/9, 10/22, 10/29, 11/13, 11/19, 11/26, 12/3) HJV: 2 sentinels (7/30, 8/27) Flavi: 1 Sentinel (12/3) |
| Gadsden | WNV: 1 human (August); 1 horse (10/14) EEEV: 1 horse (10/31) |
| Gilchrist | WNV: 1 horse (10/12) |
| Glades | EEEV: 2 horses (6/25, 7/14) |
| Gulf | EEEV: 1 horse (8/21) |
| Hamilton | WNV: 1 human (September) |
| Hernando | EEEV: 2 sentinels (10/1, 10/22) WNV: 2 sentinels (1/23, 9/17) |
| Hillsborough | EEEV : 4 sentinels (2/14, 3/13, 4/17) WNV: 1 human (August); 20 sentinels (1/3, 1/17, 1/24, 1/31, 2/14, 3/6, 6/12, 8/28, 9/18, 9/25, 10/30, 12/11) SLEV: 11 sentinels (1/3, 8/28, 10/9, 10/16, 10/30, 11/6) |
| Holmes | EEEV : 1 human (June); 3 horses (5/21, 6/25, 11/2) WNV : 3 human (2 October, November) ; 3 horses (8/11, 8/23, 9/26) |
| Indian River | WNV: 17 sentinels (5/24, 8/9, 8/30, 9/13, 9/20, 9/27, 11/8, 11/15) |
| Jackson | EEEV: 1 horse (9/9) WNV: 2 human (September), 1 horse (10/9) |
| Jefferson | EEEV: 1 horse (8/6) WNV: 1 horse (10/25) |
| Lee | WNV: 6 sentinels (1/24, 9/17, 9/18, 10/9, 10/23, 11/5) SLEV: 30 sentinels (3/7, 8/30, 9/4, 9/10, 9/17, 9/18, 10/1, 10/2, 10/8, 10/9, 10/15, 10/22, 10/23, 10/29, 10/30, 11/5, 11/12, 11/20, 12/3, 12/4) Flavi: 1 sentinel (12/4) |
| Leon | EEEV : 5 horses (8/21, 8/30, 9/3, 9/4, 10/4), 10 sentinels (8/13, 8/28, 9/22, 10/22, 10/29, 11/5, 11/13, 11/26) WNV : 2 humans (August, October), 37 sentinels (9/17, 9/22, 10/2, 10/15, 10/22, 10/29, 11/5, 11/13, 11/19) HJV : 6 sentinels (8/28, 9/4, 9/11, 10/2, 12/10) |
| Levy | EEEV: 2 horses (1/2) WNV : 1 horse (9/3) |
| Liberty | EEEV: 1 horse (10/19) |
| Manatee | EEEV: 1 horse (6/14); 1 sentinel (9/11) WNV: 8 sentinels (2/1, 3/14, 5/30, 8/15, 9/19, 9/25, 10/10) SLEV: 4 sentinels (9/19, 9/25, 10/1, 10/16) |
| Martin | WNV: 1 sentinel (9/14) SLEV: 4 sentinels (9/28, 10/5, 10/18) |
| Miami-Dade | Dengue: 2 humans (August, October) |
| Nassau | EEEV : 1 horse (7/18) ; 9 sentinels (6/16, 6/23, 9/8, 9/14, 9/28, 10/15) WNV : 1 human (October) ; 36 sentinels (8/6, 8/25, 8/31, 9/8, 9/10, 9/14, 9/20, 9/28, 10/1) HJV : 6 sentinels (7/13, 8/18, 8/31, 9/14, 9/28) |
| Okaloosa | WNV : 3 humans (2 August, 1 September) |
| Orange | EEEV : 27 sentinels (1/5, 1/9, 1/19, 1/23, 2/6, 3/15, 3/29, 5/21, 6/14, 7/2, 8/8, 8/13, 8/20, 9/10, 9/27, 10/1, 10/4, 10/8, 10/25, 11/15, 11/20, 11/26, 11/29, 12/6) WNV: 18 sentinels (1/9, 1/12, 1/19, 1/25, 3/1, 7/26, 9/13, 9/17, 9/19, 10/22, 10/29, 11/29, 12/3) SLEV: 3 sentinels (10/1) |
| Osceola | EEEV : 1 horse (7/25) Dengue : 1 human (October) |
| Palm Beach | EEEV : 1 horse (6/20) WNV : 1 horse (8/29), 3 sentinels (8/27, 9/17, 10/15) SLEV : 11 sentinels (7/23, 8/20, 8/27, 9/17, 10/22) |
| Pasco | WNV : 2 sentinels (5/29, 9/19) |

| County | Arbovirus Activity |
|-------------------|--|
| Polk | WNV : 4 sentinels (9/5, 9/18, 10/2) |
| Putnam | EEEV : 1 horse (1/1) ; 3 sentinels (7/20, 8/3, 10/9) WNV : 19 sentinels (9/18, 9/25, 10/2 10/9, 10/16, 10/23) SLEV : 1 sentinel (10/2) |
| Santa Rosa | EEEV : 2 horses (5/11, 11/1) WNV : 3 humans (2 August, 1 September) ; 2 horses (8/23, 8/29) |
| Sarasota | WNV: 23 sentinels (1/9, 2/6, 3/19, 5/7, 5/14, 7/9, 7/16, 7/27, 8/3, 8/24, 8/31, 9/14, 9/17, 9/24, 10/19, 11/9) SLEV: 13 sentinels (7/2, 9/7, 10/1, 10/19, 10/26, 11/2, 11/9, 11/16) HJV: 1 sentinel (9/7) Flavi: 1 sentinel (8/31) |
| Seminole | WNV : 3 sentinels (8/7, 9/25) Dengue: 1 human (September) |
| St. Johns | EEEV : 7 sentinels (9/2, 9/11, 9/18, 10/8, 10/29, 11/27) WNV : 61 sentinels (5/14, 5/22, 5/29, 8/5, 8/20, 8/27, 9/2, 9/11, 9/18, 9/28, 10/8, 10/15, 10/22, 11/5, 11/13, 11/19, 12/10) HJV : 2 sentinels (4/30, 7/3) |
| St. Lucie | WNV : 2 sentinels (9/14, 10/8) SLEV : 3 sentinels (10/8, 10/22) |
| Suwannee | WNV : 2 asymptomatic blood donors (October) 2 horses (10/15, 10/18) |
| Union | EEEV : 1 horse (5/12) |
| Volusia | WNV : 5 sentinels (5/29, 6/25, 9/17, 11/5, 11/19) EEEV : 1 sentinel (11/19) |
| Wakulla | EEEV : 4 horses (10/9, 10/21, 10/22, 12/15) |
| Walton | WNV : 4 humans (2 September, October, November) ; 2 horses (9/29, 10/16); 128 sentinels (4/9, 4/23, 4/30, 7/2, 7/3, 7/9, 7/10, 7/16, 7/23, 7/30, 8/7, 8/13, 8/21, 9/6, 9/10, 9/17, 9/18, 9/24, 10/1, 10/8, 10/15, 10/22, 10/29, 11/5, 11/19 11/26, 12/4) EEEV : 21 sentinels (6/4, 6/18, 6/25, 7/2, 7/30, 9/6, 9/10, 10/15, 11/19, 11/26, 12/4, 12/10, 12/17) HJV : 7 sentinels (5/14, 6/11, 6/18, 7/16, 7/23, 9/6, 10/1) Flavi : 2 sentinels (11/26) |
| Washington | EEEV : 1 horse (7/1) WNV : 2 human (September, October), 1 horse (9/19) |

Acknowledgements and Data Sources

Contributors: Stephanie Moody-Geissler, MPH, Shaiasia Itwaru-Womack, Danielle Stanek, DVM, and Carina Blackmore, DVM, Ph.D., DOH Bureau of Epidemiology; Holly Hughes, Ph.D. and Valerie Mock, DOH Bureau of Laboratories.

For more surveillance information, please see the DOH website at:

<http://www.doh.state.fl.us/Environment/medicine/arboviral/index.html>

For arbovirus surveillance information for the United States, please see the Centers for Disease Control and Prevention website at:

<http://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, and malaria. In addition, dengue and malaria tallies may also include suspect cases. 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:

http://www.doh.state.fl.us/Disease_ctrl/epi/surv/CaseDefinitions/2012CaseDef_FINAL.pdf

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 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.