Florida Arbovirus Surveillance
Week 1: December 31, 2017- January 6, 2018

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) and California encephalitis group viruses (CEV). Malaria, a parasitic mosquito-borne disease is also included. During the period of December 31, 2017-January 6, 2018, the following arboviral activity was recorded in Florida.

There have been no reports in 2018 of arbovirus cases in humans or horses and no antibody positive sentinels. Numbers here are for onsets in the 2017 calendar year unless otherwise noted.

WNV activity: No human cases of WNV infection were reported this week. No horses with WNV infection were reported this week. Eleven sentinel chickens tested positive for antibodies to WNV this week in Citrus, Hillsborough, Manatee, Orange, and Sarasota counties. In 2017, positive samples from four human cases, two blood donors, two hundred twenty-nine sentinel chickens, four horses, one eagle, and two mosquito pools have been reported from twenty-three counties.

SLEV activity: No human cases of SLEV infection were reported this week. No sentinel chickens tested positive for antibodies to SLEV this week. In 2017, positive samples from eleven sentinel chickens have been reported from seven counties.

EEEV activity: No human cases of EEEV infection were reported this week. No horses with EEEV infection were reported this week. No sentinel chickens tested positive for antibodies to EEEV this week. In 2017, positive samples from one human, six horses, one deer, and forty-three sentinel chickens have been reported from fourteen counties.

International Travel-Associated Dengue Fever Cases: One case of dengue fever was reported this week in a person that had international travel. In 2017, 19 travel-associated cases have been reported.

Dengue Fever Cases Acquired in Florida: No cases of locally acquired dengue fever were reported this week. In 2017, no cases of locally acquired dengue fever 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 2017, four travel-associated cases have been reported.

Chikungunya Fever Cases Acquired in Florida: No cases of locally acquired chikungunya fever were reported this week. In 2017, no cases of locally acquired chikungunya fever have been reported.

International Travel-Associated Zika Fever Cases: Two cases of Zika fever were reported this week in persons that had international travel. In 2017, 209 cases have been reported.

Zika Fever Cases Acquired in Florida: No cases of locally acquired Zika fever were reported this week. In 2017, two cases of locally-acquired Zika fever have been reported from two counties. In addition, thirteen cases of locally acquired Zika fever exposed in 2016 and tested in 2017 have been reported.

Advisories/Alerts: Duval, Sarasota, and Volusia counties are currently under a mosquito-borne illness advisory. No other counties are currently under mosquito-borne illness advisory or alert.

There are no areas of ongoing, active Zika transmission in Florida. On June 2nd, CDC removed the cautionary area designation for Miami-Dade County after more than 45 days since the last confirmed local case. For

additional information on current CDC recommendations, please visit https://www.cdc.gov/zika/intheus/florida-update.html. For additional information on Zika virus cases from 2016, please visit https://zikafreefl.org/.

There is a Level 2 (Alert) Travel Health Notice from the CDC for multiple countries in the Caribbean, Central and South America, Mexico, Cape Verde, Southeast Asia, and Pacific Islands related to Zika virus transmission and an association with poor pregnancy outcomes. Pregnant women should consider postponing travel to these areas. There is a Level 1 (Watch) Travel Health Notice from the CDC for Brazil and Italy related to the transmission of chikungunya virus. There is also a Level 1 Travel Health Notice for Sri Lanka and Vietnam related to the transmission of dengue virus. Additional information on travel health notices can be found at the following link: http://wwwnc.cdc.gov/travel/notices.

2017 Human Case Summary*

West Nile Virus Infection Acquired in Florida: A total of four human cases of WNV illness acquired in Florida have been reported in 2017; one in Escambia County (October), one in Santa Rosa County (September), one in Taylor County (October), and one in Volusia County (November). Two asymptomatic positive blood donors were reported from Escambia County (August) and Lee County (November).

EEEV Infection Acquired in Florida: One human case of eastern equine encephalitis has been reported in 2017 in Duval County (September).

International Travel-Associated Chikungunya Fever Cases: Four cases of chikungunya with onset in 2017 have been reported in individuals with travel history to a chikungunya endemic country in the two weeks prior to onset. Countries of origin were: Brazil and India (3). Counties reporting cases were: Broward (2), Hillsborough, and Miami-Dade.

International Travel-Associated Dengue Fever Cases: Nineteen cases of dengue with onset in 2017 have been reported in individuals with travel history to a dengue endemic country in the two weeks prior to onset. Countries of origin were: Bhutan/India, Brazil, Cuba (6), Cuba/Mexico, Guatemala, India (3), Indonesia, Jamaica (2), Nigeria, Pakistan, and Philippines. Counties reporting cases were: Brevard, Broward (4), Manatee, Miami-Dade (9), Osceola, Palm Beach (2), and Sumter. Two cases were reported in non-Florida residents. In 2017, 17 of the 19 cases of dengue reported in Florida have been serotyped by PCR. Additional serotyping and strain typing are being conducted.

	# of cases per serotype – 2017
DENV-1	2
DENV-2	11
DENV-3	4
Total	**17**

International Travel-Associated Zika Fever Cases: In 2017, two hundred nine cases of Zika fever have been reported in individuals with travel history to a country or area experiencing Zika virus activity. Countries of origin were: Barbados (2), Barbados/Virgin Islands, Bolivia, Cayman Islands/St. Martin, Colombia (2), Costa Rica, Cuba (81), Curacao (3), Dominican Republic (10), Dominican Republic/Haiti, Dominican Republic/Puerto Rico, Ecuador (3), El Salvador (2), Guatemala (2), Haiti (39), Honduras (6), Jamaica (8), Mexico (5), Mexico/Thailand, Nicaragua, Panama, Philippines, Puerto Rico (6), Saint Kitts and Nevis, Sri Lanka, Trinidad and Tobago, Venezuela (17), and multiple countries/regions (7). Counties reporting cases were: Broward (31), Collier (11), Duval, Flagler, Franklin, Hillsborough (9), Indian River (2), Manatee, Marion, Miami-Dade (110), Monroe (2), Orange (17), Palm Beach (9), Pinellas (2), Polk (3), Seminole (4), St. Johns (2), Volusia, and Walton. Eighteen cases were reported in non-Florida residents. One Hillsborough County, one Miami-Dade County, and one Pinellas County case were acquired through sexual transmission. Florida is monitoring a total of 125 pregnant women in 2017.

Zika Virus Infections Acquired in Florida: In 2017, two cases have been identified with exposure in 2017; one in Manatee County and one in Miami-Dade County. Thirteen locally acquired Zika virus infection cases

with exposure in 2016 and testing in 2017 have been reported by Miami-Dade County. In addition, thirty-two individuals reported travel in 2016 to both Miami-Dade and countries with areas of active Zika virus transmission and exposure location could not definitively be determined.

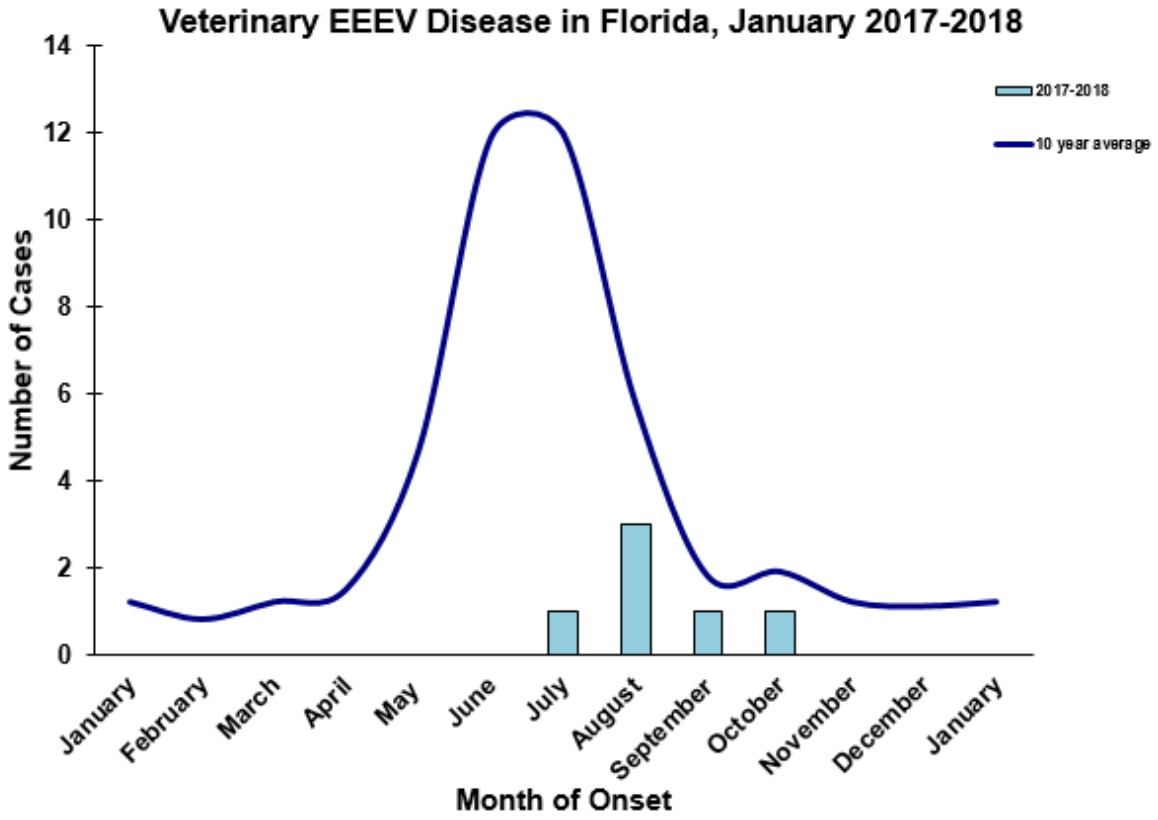
International Travel-Associated Malaria Cases: Seventy-one cases of malaria with onset in 2017 have been reported. Countries of origin were Afghanistan, Africa, Angola, Brazil (3), Cameroon (5), Central African Republic (2), Ethiopia/Malawi, Ghana (5), Ghana/Liberia, Guatemala, Guinea/Sierra Leone, Guyana, Haiti (6), India (6), Indonesia, Kenya (2), Kenya/South Africa/Tanzania, Liberia, Mexico, Mozambique, Mozambique/South Africa, Niger, Nigeria (13), Pakistan, Sierra Leone (2), South Africa, Togo, Uganda (5), Venezuela (3), and Zambia. Counties reporting cases were Alachua (3), Bay, Brevard (3), Broward (6), Collier, Clay, Desoto, Duval (3), Escambia (2), Hillsborough (7), Lee (4), Leon (7), Marion, Miami-Dade (9), Monroe (2), Okaloosa, Orange (3), Osceola (4), Palm Beach (5), Pasco, Polk, Santa Rosa, Seminole, St. Johns, St. Lucie, and Volusia. Thirteen cases were reported in non-Florida residents.

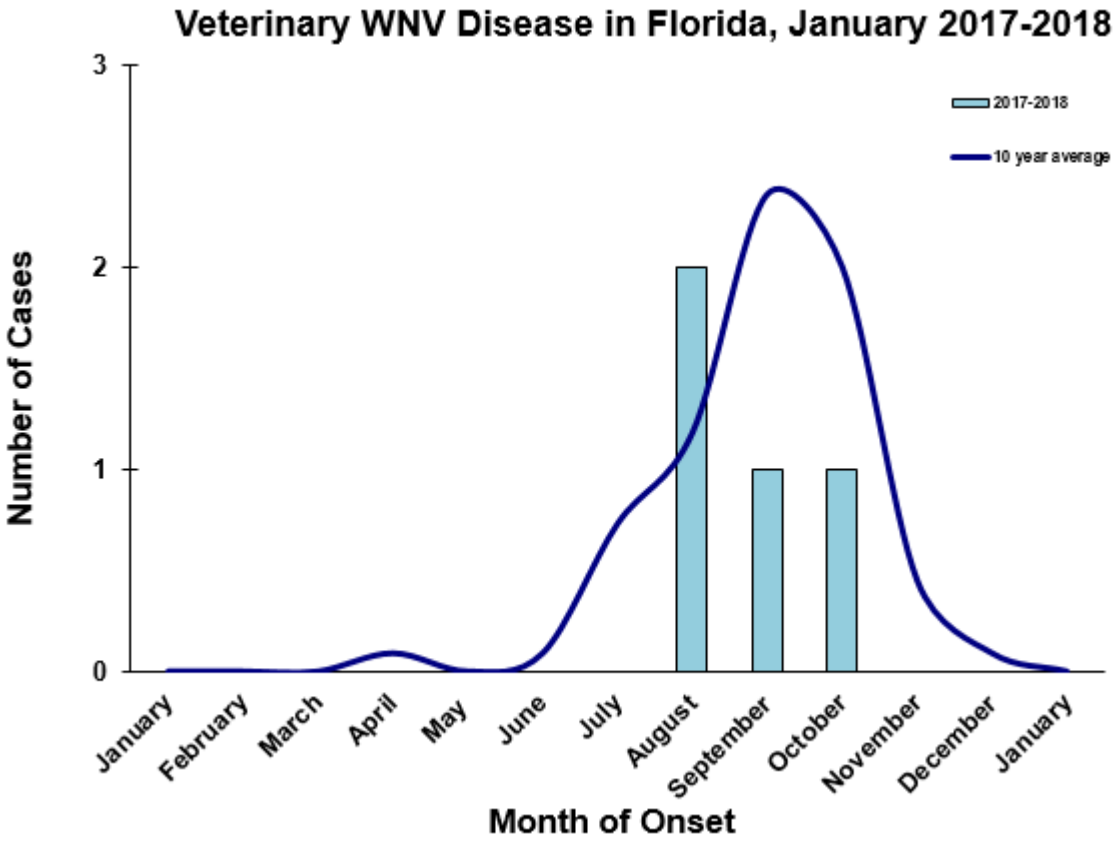
Forty-eight cases (68%) were diagnosed with *Plasmodium falciparum*. Nineteen cases (27%) were diagnosed with *Plasmodium vivax*. Two cases (3%) were diagnosed with *Plasmodium malariae*. One case (1%) was diagnosed with *Plasmodium ovale*. One case (1%) was diagnosed with both *Plasmodium malariae* and *Plasmodium ovale*.

Veterinary Cases*

*Veterinary cases are reported by date of onset

No horses with EEEV or WNV infection were reported this week.



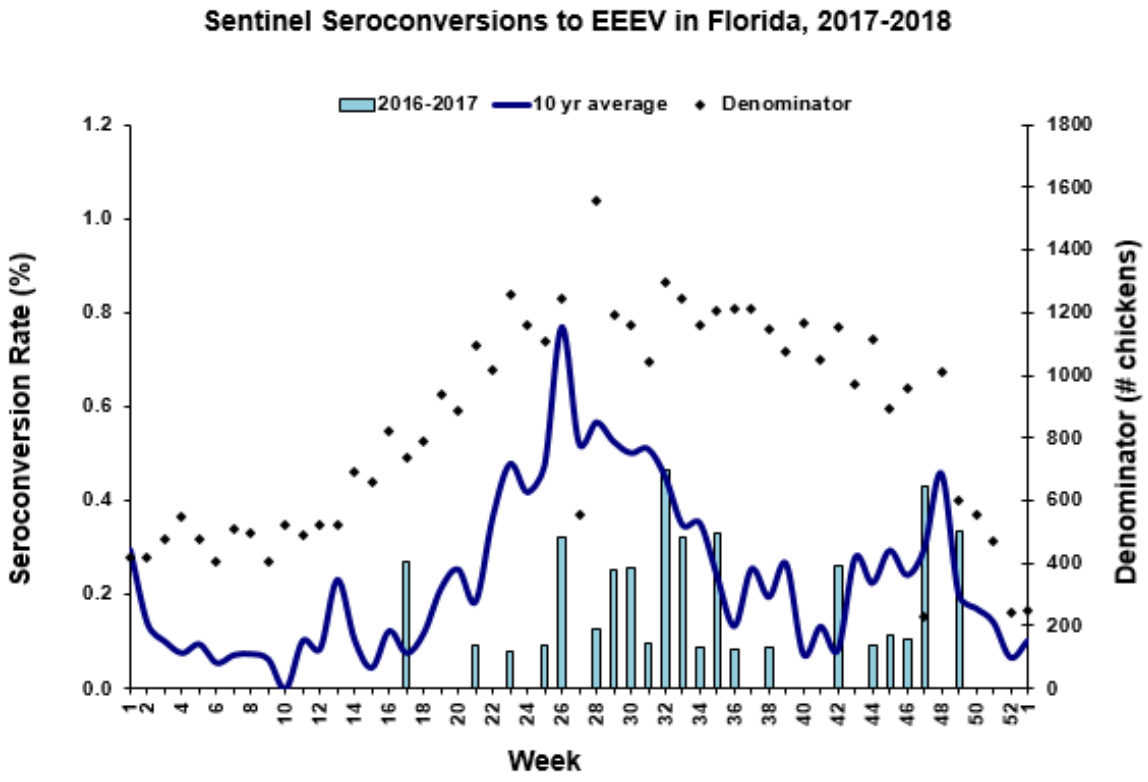


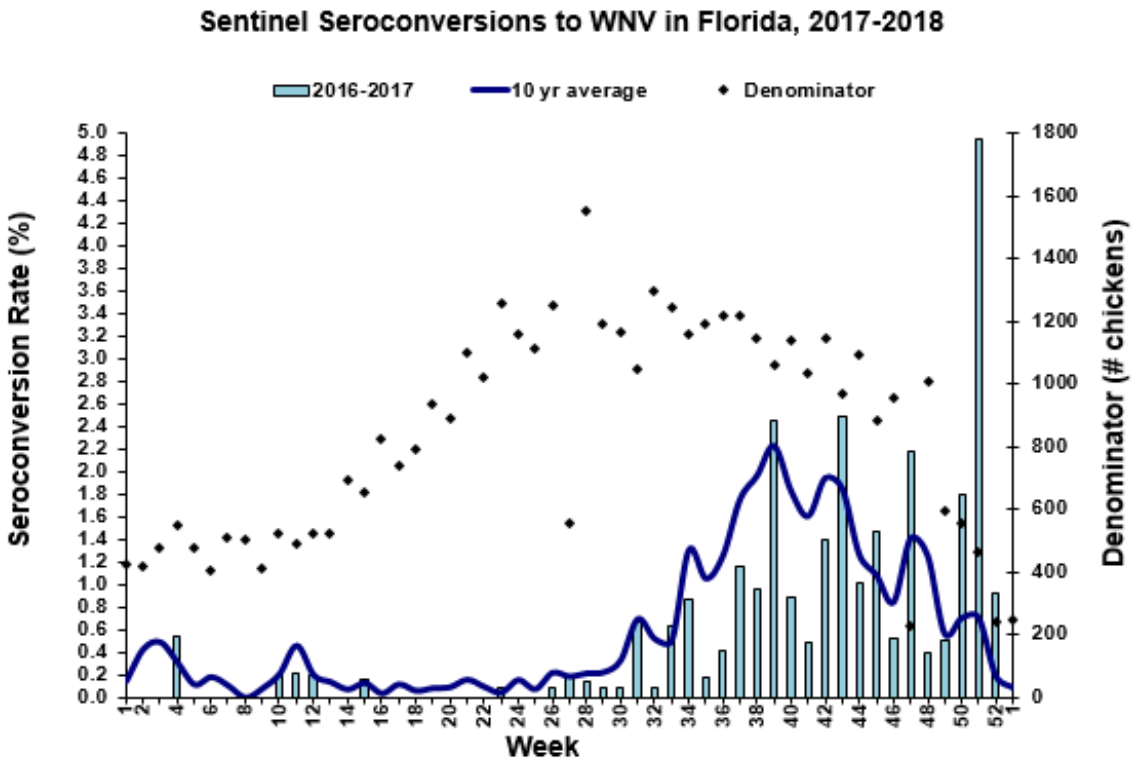
Sentinel Chickens*

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.

Eleven sentinel chickens tested positive for antibodies to WNV this week in Citrus, Hillsborough, Manatee, Orange, and Sarasota counties.

		Seroconversion Rates (%)						County Totals	
County	Collection Date	Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Citrus	12/18/17	1.41		1.41				1 WNV	6 WNV
Hillsborough	12/27/17	3.77		3.77				2 WNV	23 WNV, 2 SLEV
Manatee	10/20/17	17.65		17.65				9 WNV	47 WNV
Orange	12/20/17	2.08		2.08				1 WNV	3 WNV, 1 EEEV
Sarasota	12/18/17, 12/21/17	14.89		14.89				7 WNV	43 WNV, 4 SLEV


Sentinel Seroconversions to EEEV in Florida, 2017-2018
2016-2017
10 yr average
Denominator
Seroconversion Rate (%)
Denominator (# chickens)
Week


Sentinel Seroconversions to WNV in Florida, 2017-2018
2016-2017
10 yr average
Denominator
Seroconversion Rate (%)
Denominator (# chickens)
Week

Mosquito Pools

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

County	Collection Week	Result	Species	County YTD

Dead Birds

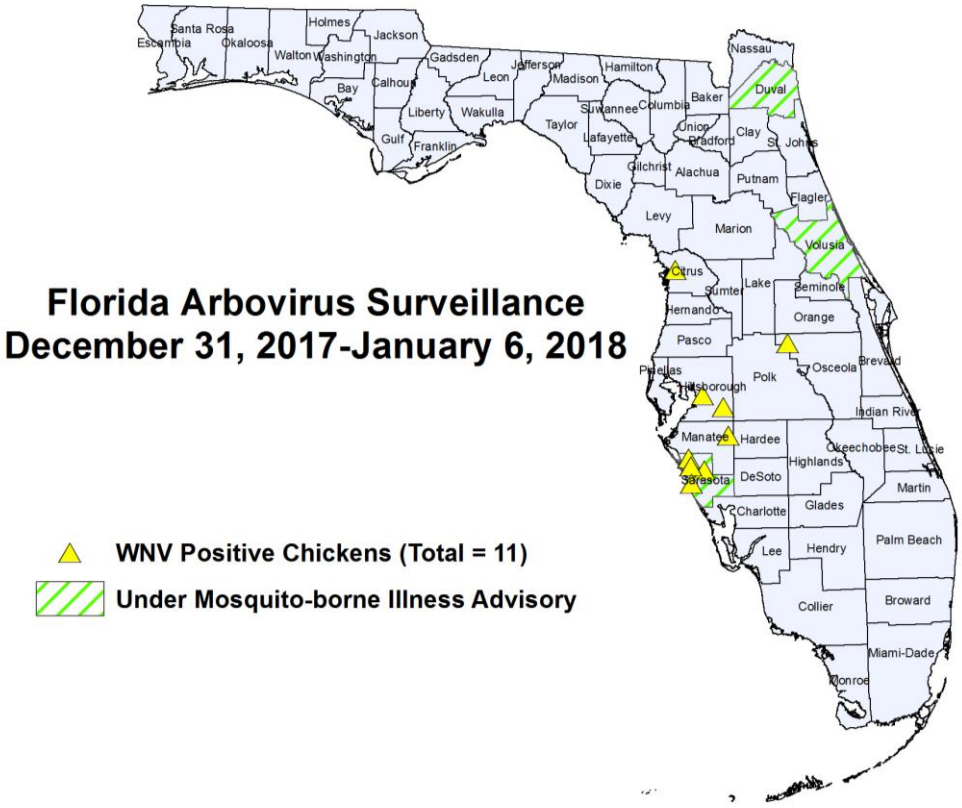
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, five reports representing a total of six dead birds including one raptor were received from four counties.

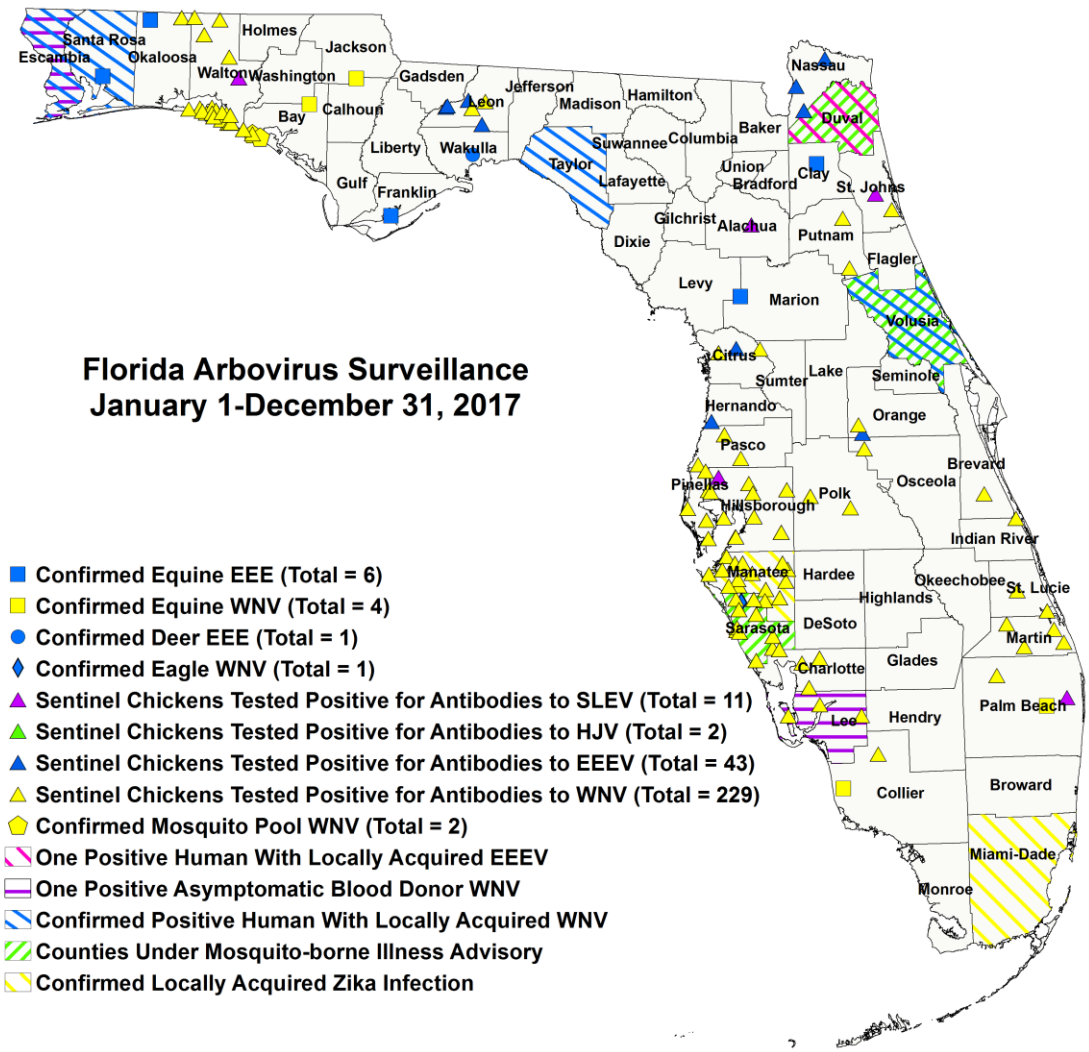
In 2018, five reports representing a total of six dead birds (one raptor) were received from four of Florida's sixty-seven counties. Please note that FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to www.myfwc.com/bird/.

2018

County	Total Dead Birds	Crows	Jays	Raptors	Dove
Bay	1	0	0	0	0
Lee	2	0	0	0	0
Palm Beach	1	0	0	0	0
Pinellas	2	0	0	1	0

Maps





2018 Arbovirus Activity by County	
County	**Arbovirus Activity**
Alachua	SLEV: 1 sentinel (5/30)
Bay	WNV: 1 horse (8/28), 2 mosquito pools (7/26, 8/3), 1 sentinel (8/28)
Brevard	WNV: 1 sentinel (11/1)
Charlotte	WNV: 9 sentinels (8/4, 9/22, 9/29, 10/20, 12/15)
Citrus	WNV: 6 sentinels (11/7, 11/14, 11/20, 11/27, 12/18) EEEV: 1 sentinel (8/8)
Clay	EEEV: 1 horse (10/6)
Collier	WNV: 1 horse (9/22)
Duval	EEEV: 1 human (September)
Escambia	WNV: 1 asymptomatic blood donor (August), 1 human (October)
Franklin	EEEV: 1 horse (7/17)
Hernando	EEEV: 1 sentinel (5/22)
Hillsborough	WNV: 23 sentinels (1/24, 7/26, 8/1, 8/15, 8/23, 9/6, 9/13, 9/26/, 10/3, 11/6, 11/7, 12/27) SLEV: 2 sentinels (6/28, 8/1)
Indian River	WNV: 1 sentinel (10/5)
Jackson	WNV: 1 horse (8/30) EEEV: 1 horse (8/30)
Lee	WNV: 1 asymptomatic blood donor (November), 5 sentinels (8/21, 10/16, 10/30, 12/11)
Leon	WNV: 3 sentinels (9/27) EEEV: 10 sentinels (7/17, 8/7, 8/14, 8/28, 9/5) SLEV: 1 sentinel (8/22)

Levy	EEEV: 1 horse (9/20)
Manatee	WNV: 47 sentinels (6/27, 7/5, 7/11, 7/18, 7/30, 8/22, 8/31, 9/13, 9/21, 9/28, 10/5, 10/11, 10/20, 10/11, 10/20, 10/26, 11/6, 12/19) ZIKV: 1 human (September)
Martin	WNV: 7 sentinels (10/6, 10/27, 11/3, 12/15)
Miami-Dade	ZIKV: 1 human (September)
Nassau	EEEV: 4 sentinels (7/20, 9/21, 10/20, 11/2)
Okaloosa	EEEV: 1 horse (8/7)
Orange	WNV: 3 sentinels (11/16, 12/14, 12/20) EEEV: 1 sentinel (12/7)
Palm Beach	WNV: 1 horse (10/25), 1 sentinel (12/11) SLEV: 1 sentinel (10/25)
Pasco	WNV: 5 sentinels (8/1, 8/22, 9/27, 10/24)
Pinellas	WNV: 22 sentinels (8/14, 8/21, 9/5, 9/13, 9/25, 10/2, 10/16, 10/23, 11/6, 11/13, 11/20, 11/27)
Polk	WNV: 4 sentinels (9/18, 9/25, 11/6)
Putnam	WNV: 2 sentinels (9/27, 11/9)
Santa Rosa	WNV: 1 human (September) EEEV: 1 horse (8/27)
Sarasota	WNV: 1 eagle (June), 43 sentinels (1/23, 8/7, 8/18, 9/5, 9/8, 9/12, 9/22, 9/25, 10/23, 10/27, 10/30, 11/3, 12/8, 12/15, 12/18, 12/21) SLEV: 4 sentinels (1/20, 8/7, 9/18, 10/20)
St. Lucie	WNV: 1 sentinel (10/27
St. Johns	WNV: 1 sentinel (11/27) SLEV: 1 sentinel (6/26)
Taylor	WNV: 1 human (October)
Volusia	WNV: 1 human (November)
Wakulla	EEEV: 1 deer (7/24)
Walton	WNV: 44 sentinels (3/7, 3/14, 3/20, 4/13, 6/5, 7/10, 7/31, 8/21, 9/12, 9/20, 9/27, 10/2, 10/9, 10/17, 10/24, 10/31, 11/6, 11/20, 11/28, 12/5, 12/18) EEEV: 26 sentinels (4/24, 6/5, 6/19, 6/26, 7/10, 7/17, 7/24, 7/26, 7/31, 8/7, 8/9, 8/14, 8/21, 8/28, 8/29, 10/16, 10/17, 11/6, 11/14, 11/20) SLEV: 1 sentinel (6/21) HJV: 2 sentinels (8/21)

Acknowledgements and Data Sources

Contributors: Andrea Morrison, PhD, MSPH, Dana Giandomenico, MPH, and Danielle Stanek, DVM, DOH Bureau of Epidemiology; Lea Heberlein-Larson, Maribel Castaneda, and Valerie Mock, 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: http://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: 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, 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: http://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.