



Florida Arbovirus Surveillance Week 41: October 4-10, 2020

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 October 4-10, 2020, the following arboviral activity was recorded in Florida.

WNV activity: Two human cases of WNV infection were reported this week in Charlotte and Miami-Dade counties. No horses with WNV infection were reported this week. Forty-one sentinel chickens tested positive for antibodies to WNV this week in Duval, Lee, Manatee, Martin, Nassau, Palm Beach, and Walton counties. Four mosquito pools tested positive for WNV this week in Collier, Miami-Dade, and Sarasota counties. One squirrel tested positive for WNV this week in Bay County. In 2020, positive samples from 34 humans, 34 asymptomatic blood donors, 10 horses, four crows, 11 blue jays, two ibises, one squirrel, 18 mosquito pools, and 219 sentinel chickens have been reported from 26 counties.

SLEV activity: No human cases of SLEV infection were reported this week. Two sentinel chickens tested positive for antibodies to SLEV this week in Lee County. In 2020, positive samples from two sentinel chickens have been reported from one county.

EEEV activity: No human cases of EEEV infection were reported this week. No horses with EEEV infection were reported this week. One sentinel chicken tested positive for antibodies to EEEV this week in Pasco County. In 2020, positive samples from 40 sentinel chickens, 18 horses, one duck, two sparrows, and one mosquito pool have been reported from 23 counties.

International Travel-Associated Dengue Fever Cases: No cases of dengue fever were reported this week in persons that had international travel. In 2020, 35 travel-associated cases have been reported.

Dengue Fever Cases Acquired in Florida: Four cases of locally acquired dengue fever were reported this week in Miami-Dade and Monroe counties. The Monroe County cases were identified through retrospective case finding efforts to better characterize activity early in the outbreak. Two mosquito pools tested positive for DENV in Miami-Dade County this week. In 2020, positive samples from 70 humans and seven mosquito pools have been reported from two counties.

International Travel-Associated Chikungunya Fever Cases: No cases of chikungunya fever were reported this week in persons that had international travel. In 2020, 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 2020, 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 2020, 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 2020, no cases of locally acquired Zika fever have been reported.

Advisories/Alerts: Bay, Bradford, Charlotte, Holmes, Lee, and Martin counties are currently under a mosquito-borne illness advisory. Broward, Collier, Miami-Dade, Monroe, and Palm Beach counties are

currently under a mosquito-borne illness alert. No other counties are currently under mosquito-borne illness advisory or alert.

A Level 1 Travel Health Notice has been issued for Central and South America, Mexico, the Caribbean, Asia, the Pacific Islands, Africa, and the Middle East related to the transmission of dengue virus, for Chad and Ethiopia related to chikungunya virus transmission, and for Burundi related to malaria transmission. Additional information on travel health notices can be found at: 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.

2020 Human Case Summary*

West Nile Virus Illnesses Acquired in Florida: Thirty-four human cases of WNV illness acquired in Florida have been reported in 2020: 23 in Miami-Dade County (June, July, August), four in Palm Beach County (July, August), three in Broward County (July), two in Collier County (July, August), one in Bay County (August), and one in Charlotte County (September). Thirty-four asymptomatic positive blood donors have been reported in 2020: 33 in Miami-Dade County (May, June, July, and August) and one in Broward County (August).

International Travel-Associated Dengue Fever Cases: Thirty-five cases of dengue fever with onset in 2020 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 (5), Clay, Collier, Duval, Franklin, Hillsborough (3), Miami-Dade (15), Orange (2), Palm Beach, Sarasota, Seminole, and St. Lucie. Five cases were reported in non-Florida residents. In 2020, 24 cases of dengue reported in Florida have been serotyped by PCR. Please see the table below for a breakdown of cases by country of origin and serotype.

Country of Exposure	DENV-1	DENV-2	DENV-3	DENV-4	Unknown	Total
Bolivia	2				2	4
Cuba	2	1			1	4
Jamaica			3		1	4
Puerto Rico	1				2	3
Colombia	2					2
Dominican Republic	2					2
Indonesia					2	2
Paraguay				2		2
US Virgin Islands		1			1	2
Antigua and Barbuda			1			1
Bahamas	1					1
Brazil		1				1
French Polynesia		1				1
Mexico					1	1
Nicaragua		1				1
Puerto Rico/US Virgin Islands	1					1
St. Martin	1					1
St. Martin/St. Barts	1					1
Thailand					1	1
Total	13	5	4	2	11	35

Dengue Fever Cases Acquired in Florida: In 2020, 70 cases of locally acquired dengue fever have been reported in Miami-Dade (3) and Monroe (67) counties, with onsets in February, March, April, May, June, July, and August. One case was reported in a non-Florida resident.

International Travel-Associated Malaria Cases: Twelve cases of malaria with onset in 2020 have been reported. Countries of origin were: Cameroon, Côte d'Ivoire, Dominican Republic, India (2), Kenya (2), Nicaragua, Nigeria, Sierra Leone, Uganda, and Venezuela. Counties reporting cases were: Broward (3), Clay, Duval, Hillsborough, Miami-Dade (2), Orange, Osceola, Palm Beach, and Polk. Three cases were reported in non-Florida residents.

Six cases (50%) were diagnosed with *Plasmodium falciparum*. Four cases (33%) were diagnosed with

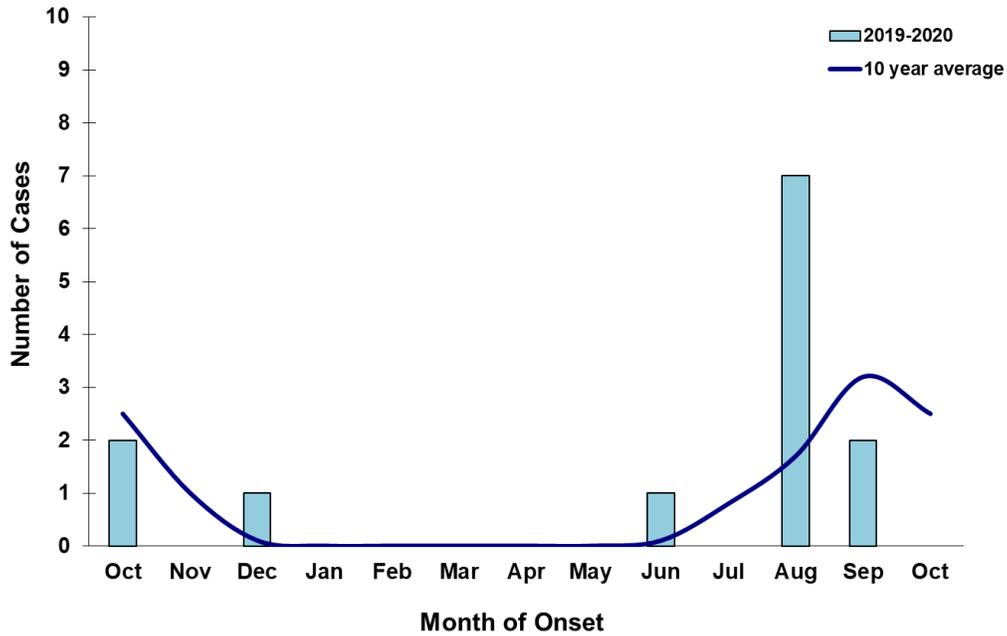
Plasmodium vivax. One case (8%) was diagnosed with *Plasmodium ovale*. The *Plasmodium* species for one case (8%) was unknown due to low parasitemia.

Veterinary Cases*

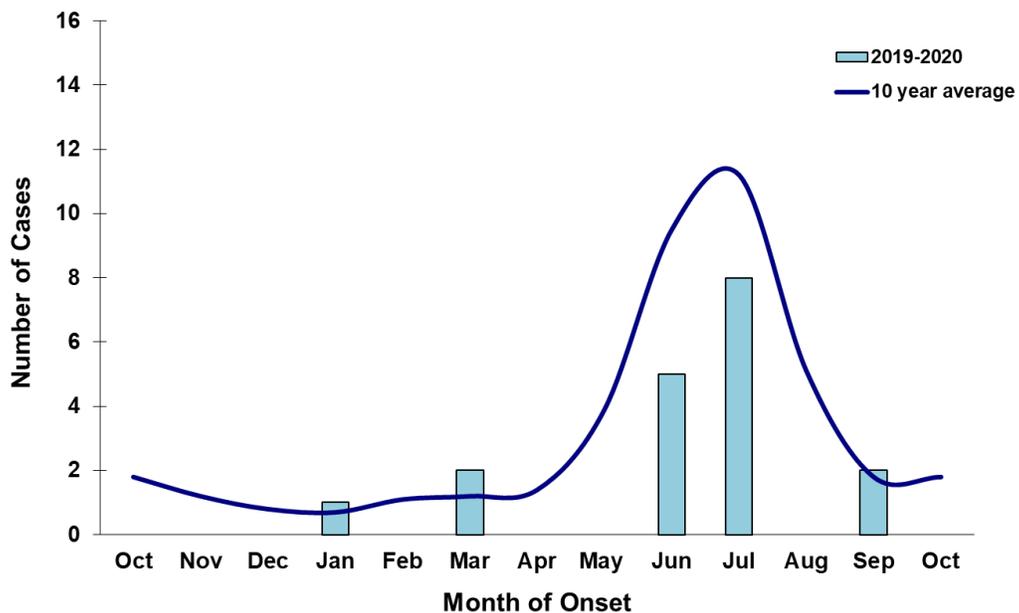
*Veterinary cases are reported by date of onset. Only mammalian veterinary cases are included in the graphs.

No veterinary cases were reported this week.

Veterinary WNV Disease in Florida, October 2019-2020



Veterinary EEEV Disease in Florida, October 2019-2020



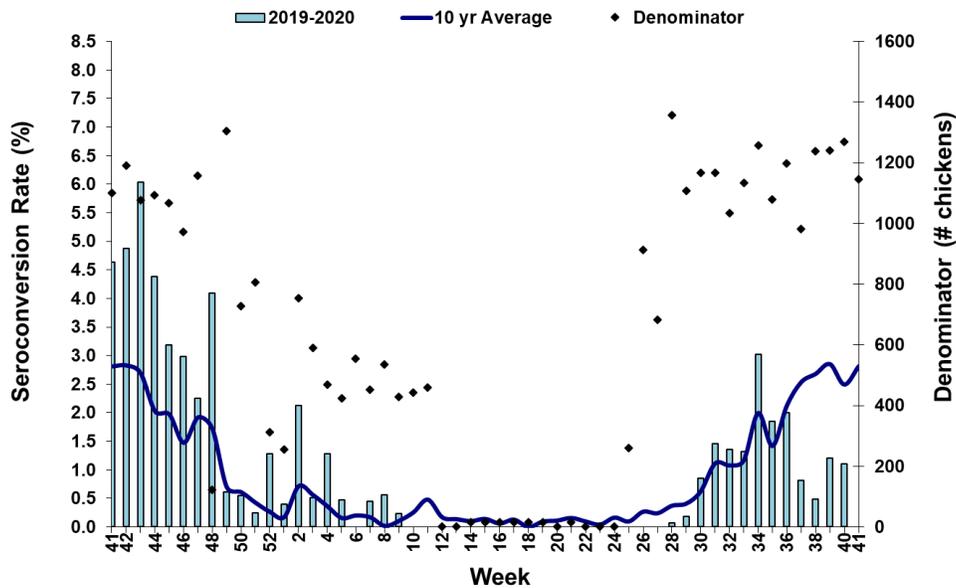
Sentinel Chickens*

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.

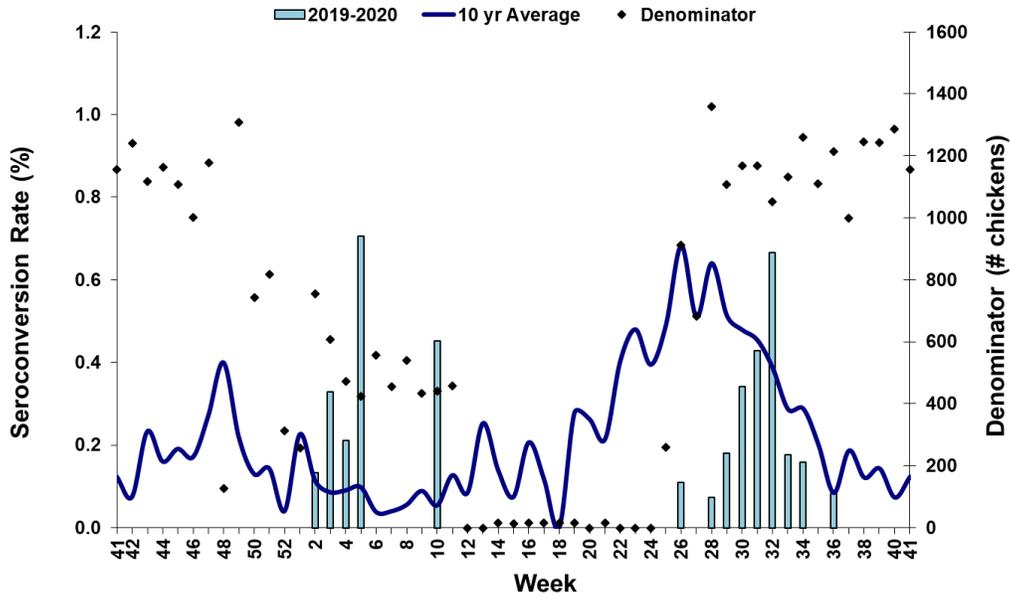
Forty-one sentinel chickens tested positive for antibodies to WNV this week in Duval, Lee, Manatee, Martin, Nassau, Palm Beach, and Walton counties. Two sentinel chickens tested positive for antibodies to SLEV this week in Lee County. One sentinel chicken tested positive for antibodies to EEEV this week in Pasco County.

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Duval	8/10/2020	3.57		3.57				1 WNV	3 WNV
	8/31/2020	3.57		3.57				1 WNV	
Lee	8/10/2020-8/11/2020	14.52		14.52				9 WNV	106 WNV, 2 SLEV
	8/17/2020	30.65		30.65				19 WNV	
	8/31/2020-9/1/2020	29.27		29.27				12 WNV	
Manatee	9/28/2020-9/29/2020	24.56	3.51	21.05				12 WNV, 2 SLEV	
	8/12/2020	1.64		1.64				1 WNV	8 WNV
	9/30/2020	1.92		1.92				1 WNV	
Martin	8/7/2020	15.38		15.38				6 WNV	11 WNV
	8/28/2020	2.78		2.78				1 WNV	
Nassau	8/15/2020	6.06		6.06				2 WNV	7 WNV, 2 EEEV
	8/29/2020	8.57		8.57				3 WNV	
Palm Beach	8/17/2020	41.18		41.18				7 WNV	17 WNV, 1 EEEV
	8/31/2020	26.92		26.92				7 WNV	
Pasco	8/31/2020				1.85	1.85		1 EEEV	1 EEEV
Walton	9/28/2020	0.79		0.79				1 WNV	7 WNV, 8 EEEV

Sentinel Seroconversions to WNV in Florida, 2019-2020



Sentinel Seroconversions to EEEV in Florida, 2019-2020



Mosquito Pools

Four mosquito pools tested positive for WNV this week in Collier, Miami-Dade, and Sarasota counties. Two mosquito pools tested positive for DENV this week in Miami-Dade County.

County	Collection Date	Result	Species	County YTD
Collier	9/15/2020	WNV	<i>Cx. nigripalpus</i>	4 WNV
Collier	9/15/2020	WNV	<i>Cx. nigripalpus</i>	
Miami-Dade	8/20/2020	WNV	<i>Cx. nigripalpus</i>	13 WNV, 1
Miami-Dade	8/28/2020	DENV-2	<i>Ae. aegypti</i>	EEEV, 4 DENV
Miami-Dade	8/28/2020	DENV-2	<i>Ae. aegypti</i>	
Sarasota	9/22/2020	WNV	<i>Cx. quinquefasciatus</i>	1 WNV

Dead Birds

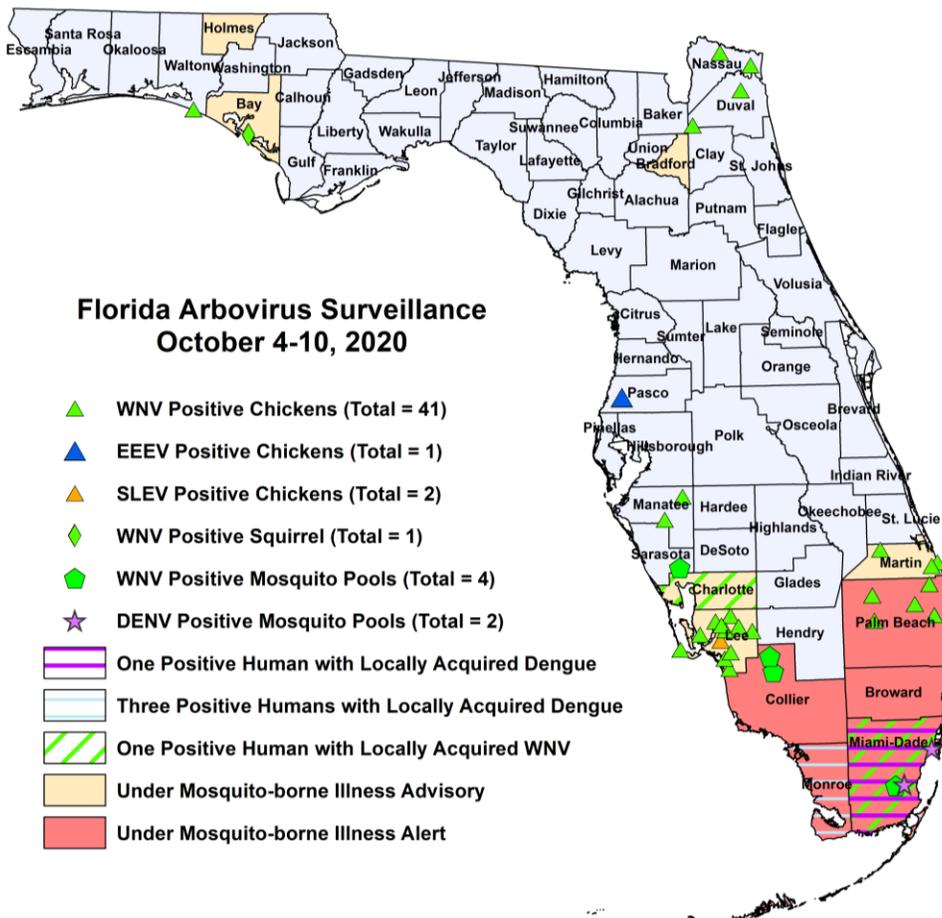
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. Over the past two weeks, 19 reports representing a total of 57 dead birds, including two raptors, were received from 13 counties.

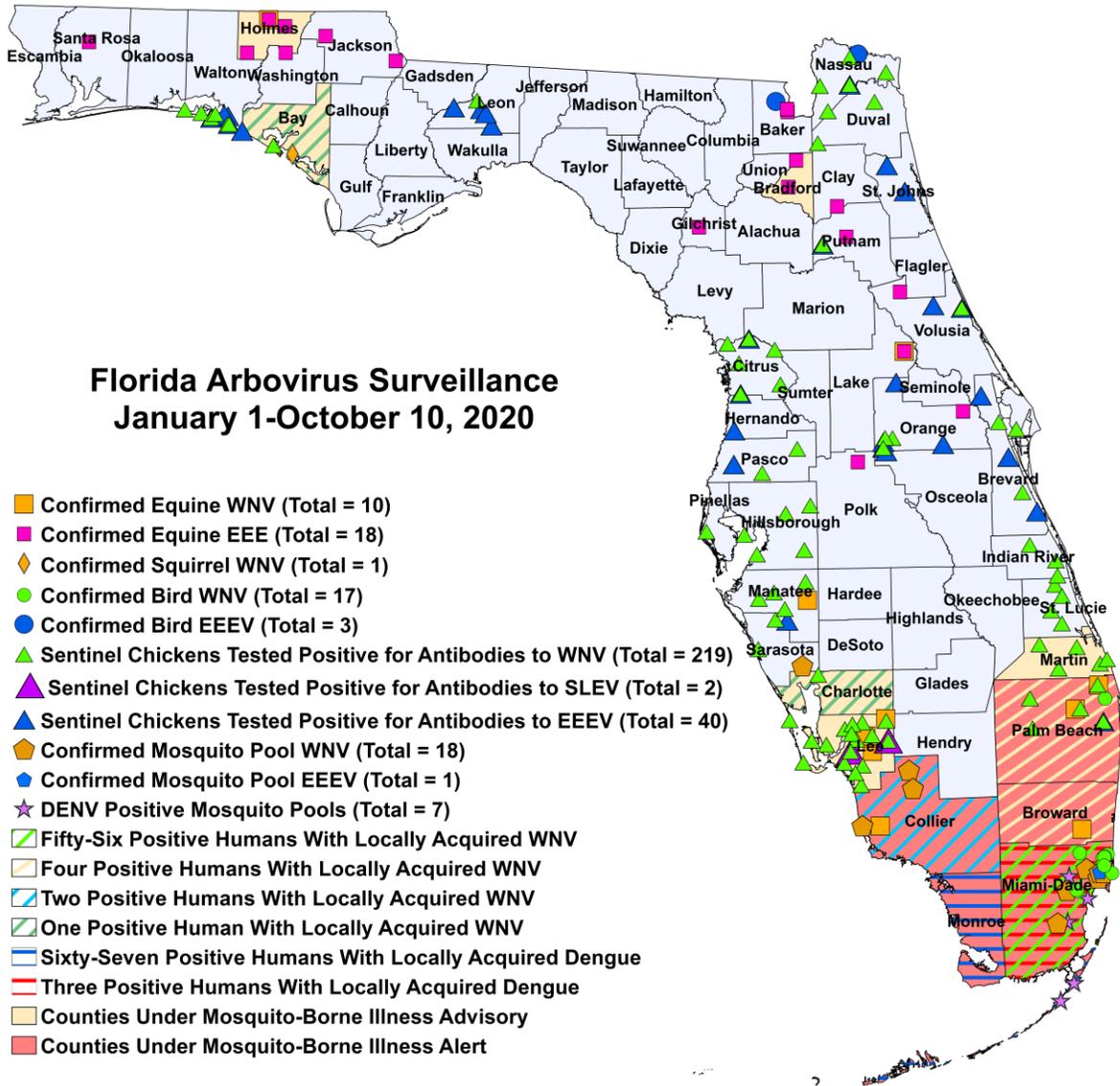
In 2020, 352 reports representing a total of 927 dead birds (41 crows, 41 jays, 76 raptors, 37 doves) were received from 41 of Florida's 67 counties.

2020

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Bay	1	0	0	0	0
Brevard	2	0	0	0	0
Broward	1	0	0	0	0
Charlotte	15	0	0	0	0
Citrus	2	0	0	0	0
Collier	8	0	0	0	0
Duval	1	0	0	1	0
Flagler	1	0	0	1	0
Gulf	2	0	0	0	0
Lee	11	0	0	0	0
Monroe	4	0	0	0	0
Sarasota	1	0	0	0	0
St. Johns	8	0	0	0	0

Maps





2020 Arbovirus Activity by County	
County	Arbovirus Activity
Baker	EEEV: 2 horses (6/17, 7/5), 1 bird (5/7)
Bay	WNV: 1 human (August), 6 sentinels (8/17), 1 squirrel (9/18)
Bradford	EEEV: 2 horses (7/18, 7/19)
Brevard	WNV: 3 sentinels (1/23, 1/24, 9/2) EEEV: 3 sentinels (7/15, 7/16, 7/31)
Broward	WNV: 3 humans (July), 1 asymptomatic blood donor (August), 1 horse (8/13)
Charlotte	WNV: 1 human (September), 1 sentinel (9/11)
Citrus	WNV: 9 sentinels (1/8, 1/14, 1/21, 7/14) EEEV: 2 sentinels (1/8, 3/2)
Clay	EEEV: 1 horse (7/11)
Collier	WNV: 2 humans (July, August), 1 horse (8/23), 4 mosquito pools (8/5, 9/1, 9/15)
Duval	WNV: 3 sentinels (8/10, 8/31, 9/14)
Gilchrist	EEEV: 1 horse (7/6)
Hernando	EEEV: 1 sentinel (1/21)
Hillsborough	WNV: 17 sentinels (1/6, 1/21, 1/29, 2/11, 2/18, 2/25, 9/8, 9/23)
Holmes	WNV: 1 horse (6/7) EEEV: 4 horses (6/3, 6/7, 6/9, 7/13)

Indian River	WNV: 3 sentinels (1/2, 1/9, 1/10)
Jackson	EEEV: 2 horses (6/27, 7/13)
Lake	WNV: 1 horse (9/14) EEEV: 1 horse (9/1)
Lee	WNV: 3 horses (8/9, 8/14, 8/18), 106 sentinels (7/6, 7/20, 7/21, 7/27, 7/28, 8/3, 8/4, 8/10, 8/17, 8/18, 8/24, 8/25, 8/31, 9/1, 9/7, 9/8, 9/15, 9/21, 9/22, 9/28, 9/29) SLEV: 2 sentinels (9/28)
Leon	WNV: 2 sentinels (9/21) EEEV: 5 sentinels (7/20, 7/27, 8/4)
Manatee	WNV: 1 horse (8/10), 8 sentinels (1/8, 8/4, 8/12, 9/2, 9/30)
Martin	WNV: 11 sentinels (7/17, 7/24, 8/7, 8/21, 8/28)
Miami-Dade	WNV: 23 humans (June, July, August), 33 asymptomatic blood donors (May, June, July, August), 15 birds (5/20, 6/15, 6/18, 6/24, 6/25, 6/26, 7/10, 7/11, 7/12, 7/13, 7/20), 13 mosquito pools (6/9, 6/16, 6/23, 6/30, 7/14, 8/20) EEEV: 1 mosquito pool (1/7) Dengue: 3 humans (March, August), 4 mosquito pools (7/30, 8/28)
Monroe	Dengue: 67 humans** (February, March, April, May, June, July, August), 3 mosquito pools (6/23, 6/27, 7/29)
Nassau	WNV: 7 sentinels (7/25, 8/15, 8/22, 8/29) EEEV: 2 birds (6/16, 7/4), 2 sentinels (7/25)
Orange	WNV: 4 sentinels (1/6, 8/17) EEEV: 1 horse (3/25), 9 sentinels (1/13, 1/27, 1/28, 2/24, 3/2, 8/3)
Palm Beach	WNV: 4 humans (July, August), 2 horses (8/4, 9/5), 17 sentinels (1/20, 8/3, 8/17, 8/24, 8/31), 2 birds (6/19) EEEV: 1 sentinel (8/3)
Pasco	WNV: 2 sentinels (1/7) EEEV: 1 sentinel (8/31)
Pinellas	WNV: 1 sentinel (8/24)
Polk	EEEV: 1 horse (3/29)
Putnam	WNV: 2 sentinels (7/21, 8/17) EEEV: 1 horse (9/17), 1 sentinel (8/17)
Santa Rosa	EEEV: 1 horse (7/20)
Sarasota	WNV: 2 sentinels (8/14, 9/15), 1 mosquito pool (9/22) EEEV: 1 sentinel (7/28)
St. Johns	EEEV: 2 sentinels (8/4, 8/10)
St. Lucie	WNV: 7 sentinels (7/23, 8/6, 8/13, 8/27)
Volusia	WNV: 1 sentinel (5/4) EEEV: 1 horse (1/24), 4 sentinels (2/24, 3/30, 5/18)
Walton	WNV: 7 sentinels (7/27, 8/17, 8/24, 8/31, 9/14, 9/28) EEEV: 8 sentinels (6/22, 7/6, 7/27, 8/3, 8/10, 8/17)

Acknowledgements and Data Sources

Contributors: Andrea Morrison, PhD, MSPH, Devin Rowe, MS, Catherine McDermott, MPH, MHS, and Danielle Stanek, DVM, DOH Bureau of Epidemiology; Lea Heberlein-Larson, DrPH; Alexis LaCrue, PhD, MS; Maribel Castaneda, and Valerie Mock, 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.

**Multiple cases were identified through retrospective antibody testing. Although these persons reported a dengue-like illness, dengue fever symptoms are non-specific and some infections may be asymptomatic. Therefore, we cannot be certain that the reported illness was definitively when dengue infection occurred. Per CDC, dengue fever IgM antibodies may be detected for approximately 12 weeks after infection but may persist longer.