



Florida Arbovirus Surveillance Week 43: October 18-24, 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 18-24, 2020, the following arboviral activity was recorded in Florida.

WNV activity: One human case of WNV infection was reported this week in Broward County. One horse with WNV infection was reported this week in Hendry County. Thirty-one sentinel chickens tested positive for antibodies to WNV this week in Brevard, Charlotte, Citrus, Indian River, Lee, Leon, Palm Beach, Pasco, Pinellas, Polk, St. Lucie, and Walton counties. In 2020, positive samples from 41 humans, 34 asymptomatic blood donors, 11 horses, four crows, 11 blue jays, two ibises, one squirrel, 18 mosquito pools, and 259 sentinel chickens have been reported from 28 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 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. One horse with EEEV infection was reported this week in Hendry County. One deer with EEEV infection was reported this week in Columbia County. One sentinel chicken tested positive for antibodies to EEEV this week in Volusia County. In 2020, positive samples from 41 sentinel chickens, 20 horses, one deer, one duck, two sparrows, and one mosquito pool have been reported from 25 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: No cases of locally acquired dengue fever were reported 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, Hendry, Holmes, Lee, Martin, and St. Lucie 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: Forty-one human cases of WNV illness acquired in Florida have been reported in 2020: 26 in Miami-Dade County (April, June, July, August, September), five in Palm Beach County (June, July, August), four in Broward County (July), four in Collier County (July, August, September), 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: Fourteen 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 (3), Uganda, and Venezuela. Counties reporting cases were: Broward (3), Clay, Duval, Hillsborough, Miami-Dade (2), Orange, Osceola, Palm Beach, Pasco, Pinellas, and Polk. Three cases were reported in non-Florida residents.

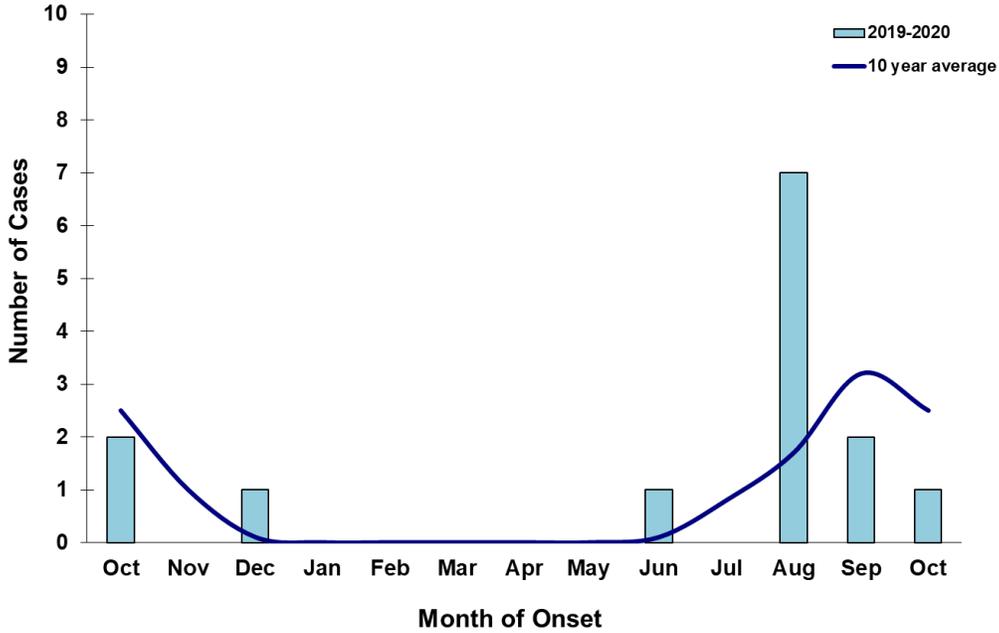
Eight cases (57%) were diagnosed with *Plasmodium falciparum*. Four cases (29%) were diagnosed with *Plasmodium vivax*. One case (7%) was diagnosed with *Plasmodium ovale*. The *Plasmodium* species for one case (7%) was unknown due to low parasitemia.

Veterinary Cases*

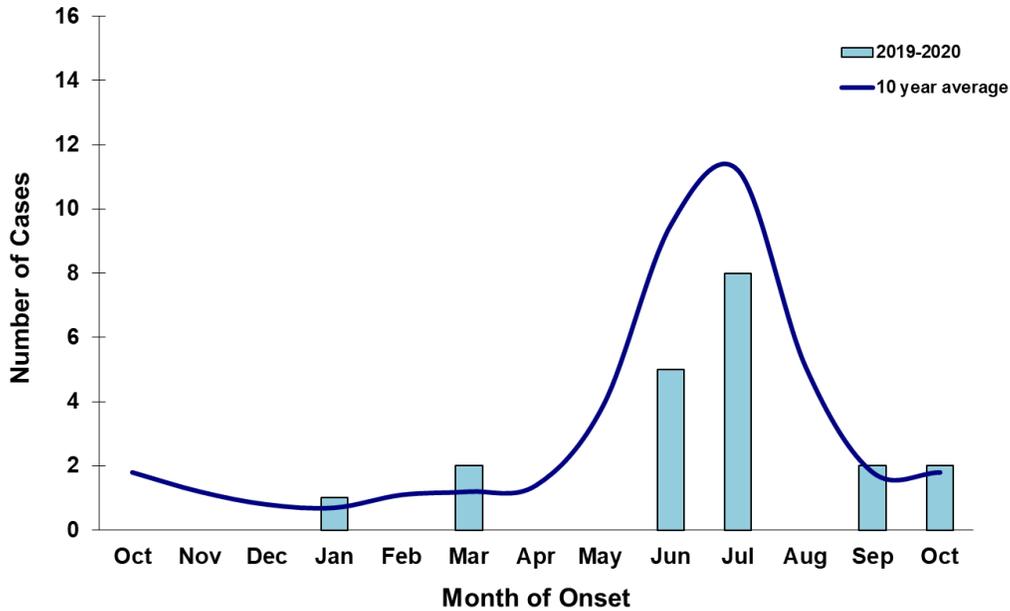
*Veterinary cases are reported by date of onset. Only mammalian veterinary cases are included in the graphs.

One horse with WNV infection was reported this week in Hendry County. One horse with EEEV infection was reported this week in Hendry County.

Veterinary WNV Disease in Florida, October 2019-2020



Veterinary EEEV Disease in Florida, October 2019-2020



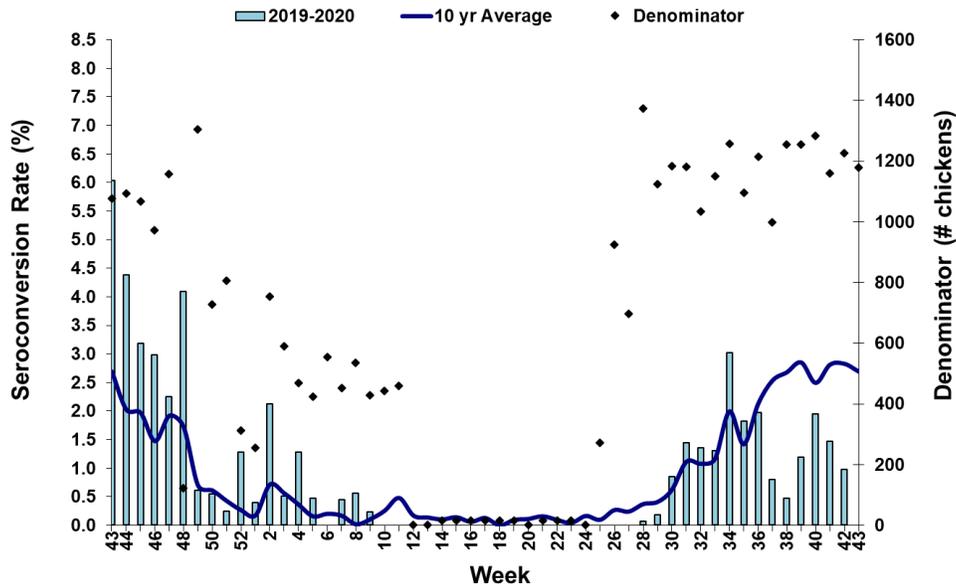
Sentinel Chickens*

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.

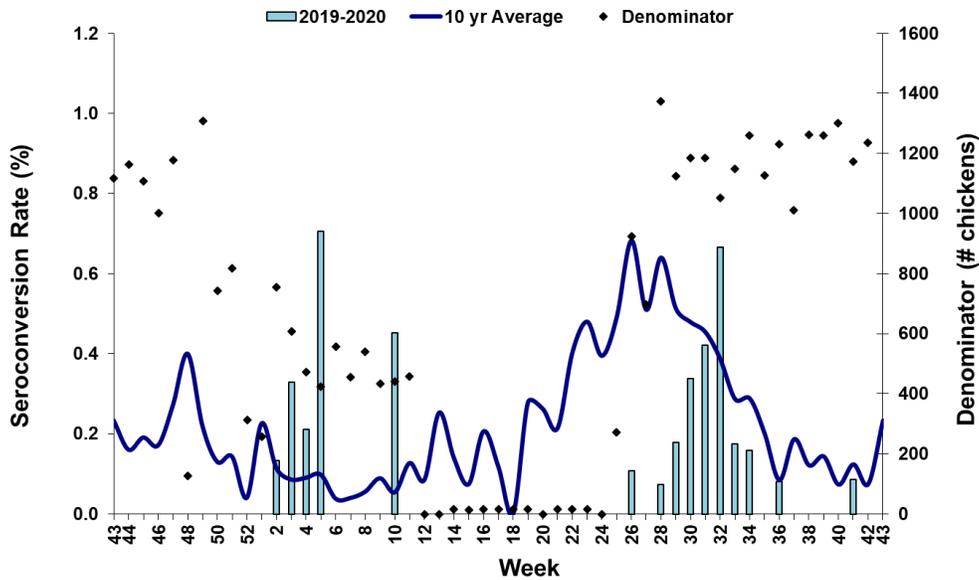
Thirty-one sentinel chickens tested positive for antibodies to WNV this week in Brevard, Charlotte, Citrus, Indian River, Lee, Leon, Palm Beach, Pasco, Pinellas, Polk, St. Lucie, and Walton counties. One sentinel chicken tested positive for antibodies to EEEV this week in Volusia County.

County	Collection Date	Seroconversion Rates (%)					County Totals		
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Brevard	10/8/2020	3.45		3.45				2 WNV	5 WNV, 3 EEEV
Charlotte	10/9/2020	21.05		21.05				4 WNV	5 WNV
Citrus	10/13/2020	1.39		1.39				1 WNV	10 WNV, 2 EEEV
Indian River	10/9/2020	2.08		2.08				1 WNV	4 WNV
Lee	10/5/2020	15.79		15.79				6 WNV	117 WNV, 2 SLEV
	10/12/2020-10/13/2020	5.80		5.80				4 WNV	
Leon	10/12/2020	2.22		2.22				1 WNV	3 WNV, 5 EEEV
Palm Beach	10/13/2020	4.76		4.76				1 WNV	19 WNV, 1 EEEV
Pasco	10/13/2020	1.92		1.92				1 WNV	3 WNV, 1 EEEV
Pinellas	10/12/2020	2.78		2.78				1 WNV	2 WNV
Polk	10/2/2020	2.44		2.44				1 WNV	2 WNV
	10/9/2020	2.44		2.44				1 WNV	
St. Lucie	10/1/2020	16.67		16.67				5 WNV	12 WNV
Volusia	10/5/2020				2.08	2.08		1 EEEV	1 WNV, 5 EEEV
Walton	10/12/2020	2.50		2.50				3 WNV	10 WNV, 8 EEEV

Sentinel Seroconversions to WNV in Florida, 2019-2020



Sentinel Seroconversions to EEEV in Florida, 2019-2020



Mosquito Pools

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

County	Collection Date	Result	Species	County YTD

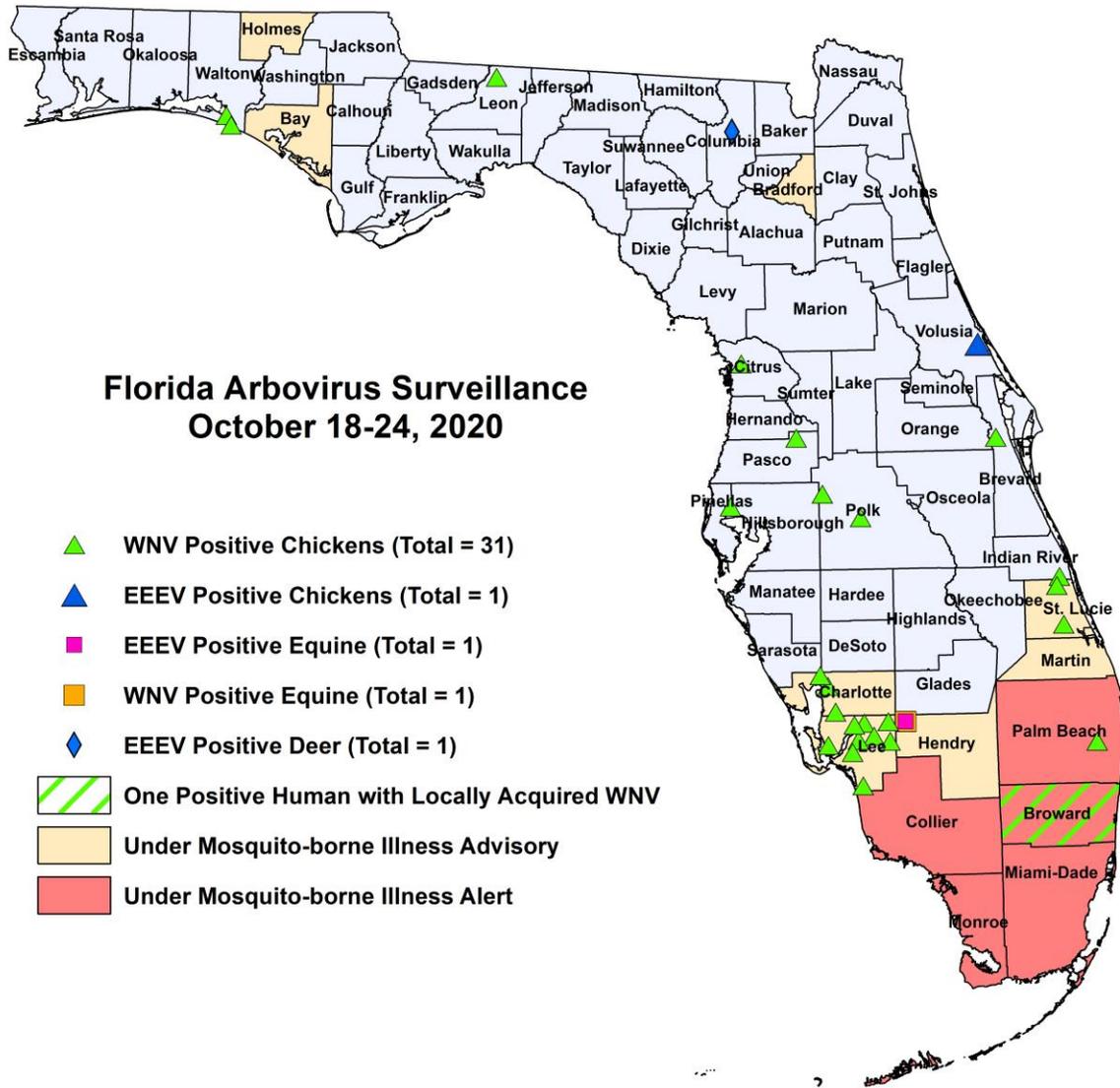
Dead Birds

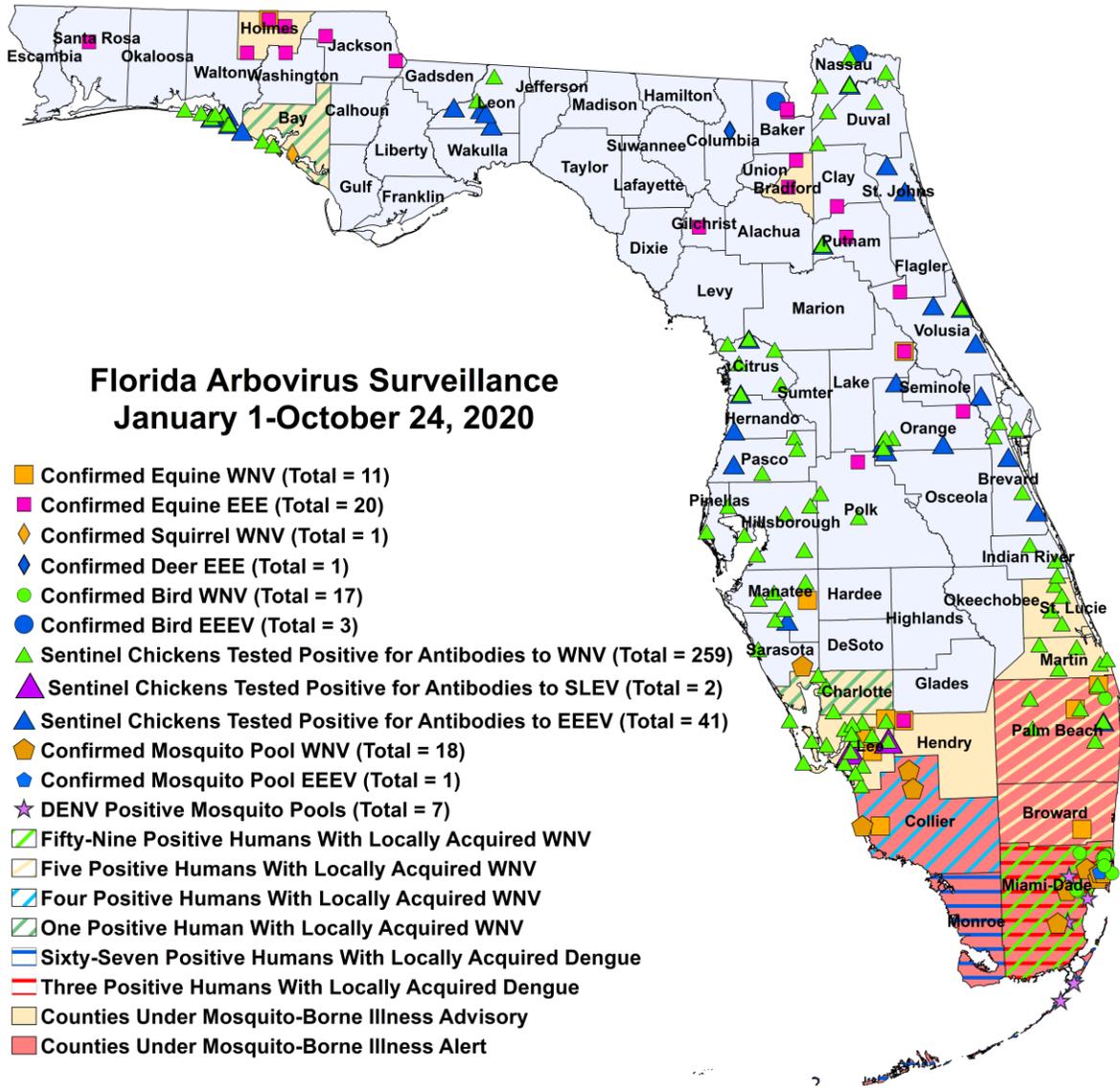
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 13 reports representing a total of 18 dead birds, including one jay and three raptors, were received from eight counties.

In 2020, 373 reports representing a total of 969 dead birds (41 crows, 42 jays, 80 raptors, 37 doves) were received from 41 of Florida's 67 counties.

2020

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Collier	8	0	0	0	0
Flagler	3	0	0	0	0
Hillsborough	1	0	1	0	0
Indian River	1	0	0	0	0
Leon	1	0	0	0	0
Martin	2	0	0	2	0
Monroe	1	0	0	1	0
Nassau	1	0	0	0	0





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), 7 sentinels (8/17, 9/28), 1 squirrel (9/18)
Bradford	EEEV: 2 horses (7/18, 7/19)
Brevard	WNV: 5 sentinels (1/23, 1/24, 9/2, 10/8) EEEV: 3 sentinels (7/15, 7/16, 7/31)
Broward	WNV: 4 humans (July), 1 asymptomatic blood donor (August), 1 horse (8/13)
Charlotte	WNV: 1 human (September), 5 sentinels (9/11, 10/9)
Citrus	WNV: 10 sentinels (1/8, 1/14, 1/21, 7/14, 10/13) EEEV: 2 sentinels (1/8, 3/2)
Clay	EEEV: 1 horse (7/11)
Collier	WNV: 4 humans (July, August, September), 1 horse (8/23), 4 mosquito pools (8/5, 9/1, 9/15)
Columbia	EEEV: 1 deer (6/24)
Duval	WNV: 5 sentinels (8/10, 8/31, 9/14, 10/5)
Gilchrist	EEEV: 1 horse (7/6)
Hendry	WNV: 1 horse (10/8) EEEV: 2 horses (10/4, 10/8)
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: 4 sentinels (1/2, 1/9, 1/10, 10/9)
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), 117 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, 10/5, 10/12, 10/13) SLEV: 2 sentinels (9/28)
Leon	WNV: 3 sentinels (9/21, 10/12) 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: 26 humans (April, June, July, August, September), 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: 10 sentinels (7/25, 8/15, 8/22, 8/29, 10/3) 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: 5 humans (June, July, August), 2 horses (8/4, 9/5), 19 sentinels (1/20, 8/3, 8/17, 8/24, 8/31, 10/5, 10/13), 2 birds (6/19) EEEV: 1 sentinel (8/3)
Pasco	WNV: 3 sentinels (1/7, 10/13) EEEV: 1 sentinel (8/31)
Pinellas	WNV: 1 sentinel (8/24)
Polk	WNV: 2 sentinels (10/2, 10/9) 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: 12 sentinels (7/23, 8/6, 8/13, 8/27, 10/1)
Volusia	WNV: 1 sentinel (5/4) EEEV: 1 horse (1/24), 5 sentinels (2/24, 3/30, 5/18, 5/30, 10/5)
Walton	WNV: 10 sentinels (7/27, 8/17, 8/24, 8/31, 9/14, 9/28, 10/12) 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.