Florida Arbovirus Surveillance
Week 35: August 25-31, 2019

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 August 25-31, 2019, the following arboviral activity was recorded in Florida.

WNV activity: No human cases of WNV infection were reported this week. No horses with WNV infection were reported this week. Sixty sentinel chickens tested positive for antibodies to WNV this week in Brevard, Citrus, Hernando, Hillsborough, Indian River, Lee, Martin, Nassau, Orange, Palm Beach, Polk, Putnam, Sarasota, Seminole, St. Johns, St. Lucie, and Volusia counties. In 2019, positive samples from one blood donor, one horse, one eagle, and 189 sentinel chickens have been reported from 23 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 2019, no positive samples have been reported.

EEEV activity: No human cases of EEEV infection were reported this week. One horse with EEEV infection was reported this week in Putnam County. Two sentinel chickens tested positive for antibodies to EEEV this week in Alachua and St. Johns counties. In 2019, positive samples from 26 horses, one emu, one eagle, and 98 sentinel chickens have been reported from 29 counties.

International Travel-Associated Dengue Fever Cases: Fifteen cases of dengue fever were reported this week in persons that had international travel. In 2019, 147 travel-associated cases have been reported.

Dengue Fever Cases Acquired in Florida: No cases of locally acquired dengue fever were reported this week. In 2019, three 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 2019, five travel-associated cases have been reported.

Chikungunya Fever Cases Acquired in Florida: No cases of locally acquired chikungunya fever were reported this week. In 2019, no cases of locally acquired chikungunya fever have been reported.

International Travel-Associated Zika Fever Cases: One case of Zika fever was reported this week in a person that had international travel. In 2019, 32 travel-associated cases have been reported.

Zika Fever Cases Acquired in Florida: No cases of locally acquired Zika fever were reported this week. In 2019, no cases of locally acquired Zika fever have been reported.

Advisories/Alerts: Bay, Calhoun, Citrus, DeSoto, Holmes, Indian River, Orange, Polk, Suwannee, and Walton counties are currently under a mosquito-borne illness advisory. Miami-Dade County is currently under a mosquito-borne illness alert. No other counties are currently under mosquito-borne illness advisory or alert.

There are no areas of ongoing, active Zika transmission in Florida. For additional information on current CDC recommendations, please visit www.cdc.gov/zika/intheus/florida-update.html. For additional information on Zika virus cases from 2016–2018, including up-to-date numbers, please visit https://zikafreefl.org/.

There are Level 2 Travel Health Notices for Brazil and Nigeria related to the transmission of yellow fever virus. There are also Level 1 Travel Health Notices for Central and South America, Mexico, the Caribbean, Asia, the

Pacific Islands, Africa, and the Middle East related to the transmission of dengue virus and for Burundi related to Malaria transmission. Additional information on travel health notices can be found at the following link: wwwnc.cdc.gov/travel/notices. For a map of arboviral disease activity in the United States, please visit the following link: wwwn.cdc.gov/arbonet/maps/ADB_Diseases_Map/index.html.

2019 Human Case Summary*

West Nile Virus Illnesses Acquired in Florida: One asymptomatic positive blood donor has been reported in 2019 from Bay County (August).

International Travel-Associated Chikungunya Fever Cases: Five cases of chikungunya fever with onset in 2019 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, Haiti, India, and Thailand (2). Counties reporting cases were: Alachua, Manatee, Marion, Orange, and Palm Beach. Two cases were reported in non-Florida residents.

International Travel-Associated Dengue Fever Cases: One hundred forty-seven cases of dengue fever with onset in 2019 have been reported in individuals with travel history to a dengue endemic country in the two weeks prior to onset. Countries of origin were: Belize (2), Belize/Cuba/Honduras/Mexico, Brazil (3), Cambodia/Thailand/Vietnam, Central America/Mexico, Colombia, Colombia/Venezuela, Costa Rica (2), Cuba (90), Dominican Republic (6), El Salvador, Guatemala (3), Haiti (3), Honduras (9), India (2), India/Malaysia, Jamaica (8), Malaysia/Singapore, Mexico, Nicaragua (4), Philippines, Thailand (2), and Venezuela (3). Counties reporting cases were: Brevard, Broward (12), Charlotte, Duval (2), Hillsborough (10), Lake, Lee (4), Manatee, Miami-Dade (85), Orange (9), Osceola, Palm Beach (11), Pasco (2), Pinellas (2), Polk, Putnam, Sarasota, Seminole, and St. Lucie. Eight cases were reported in non-Florida residents. Two 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 2019, 128 cases of dengue reported in Florida have been serotyped by PCR. Additional serotyping and strain typing are being conducted.

	# of cases per serotype – 2019
DENV-1	17
DENV-2	98
DENV-3	12
DENV-2 & 3	1
Total	**128**

Dengue Fever Cases Acquired in Florida: In 2019, three cases of locally acquired dengue fever have been reported in Miami-Dade County, with onsets in March and July (2).

International Travel-Associated Zika Fever Cases: In 2019, 32 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: Brazil, Colombia (1), Cuba (5), Guatemala (5), Haiti (9), Honduras (4), Jamaica, Nicaragua, Philippines, Puerto Rico, and Venezuela (2). Counties reporting cases were: Broward (5), Collier (2), Duval, Hillsborough (2), Indian River, Lee, Miami-Dade (14), Orange (4), Palm Beach, and Sarasota. Three cases were reported in non-Florida residents. Florida is monitoring a total of 19 pregnant women in 2019.

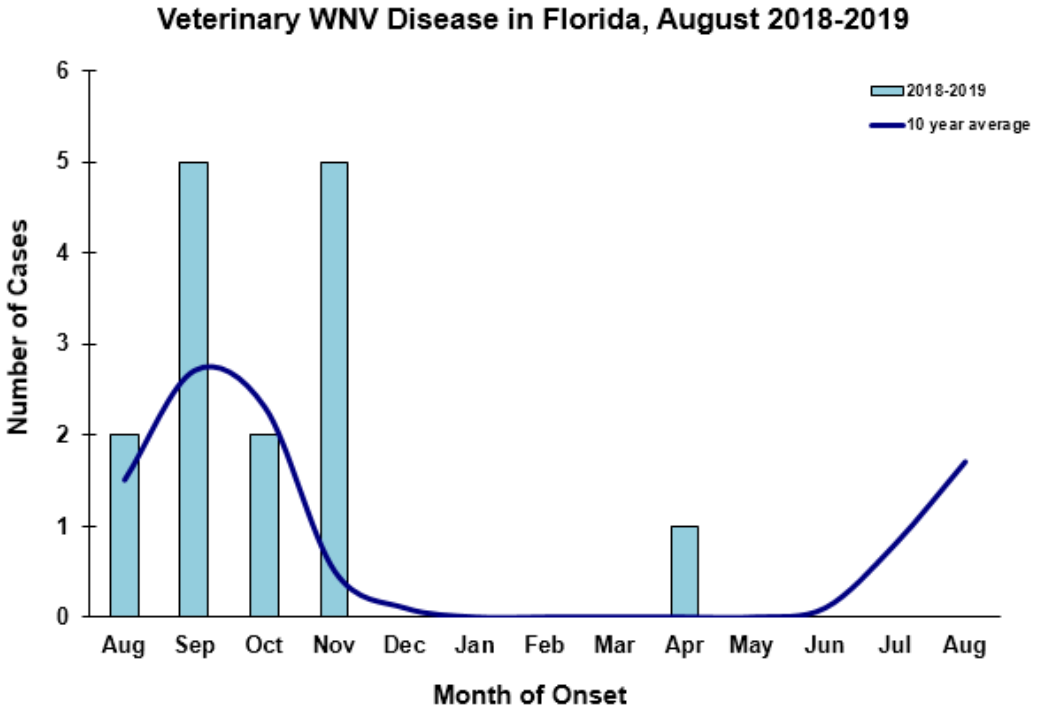
International Travel-Associated Malaria Cases: Forty-three cases of malaria with onset in 2019 have been reported. Countries of origin were: Angola (2), Congo, Democratic Republic of the Congo (4), Ghana (6), Guyana, India, Ivory Coast (5), Kenya (3), Liberia (2), Nigeria (12), Papua New Guinea, Sudan, Uganda, and Zambia (3). Counties reporting cases were: Brevard, Broward (3), Duval (8), Hillsborough (4), Lake (2), Miami-Dade (5), Orange (6), Pasco (3), Pinellas (5), Polk (2), Seminole (3), and Volusia. Ten cases were reported in non-Florida residents.

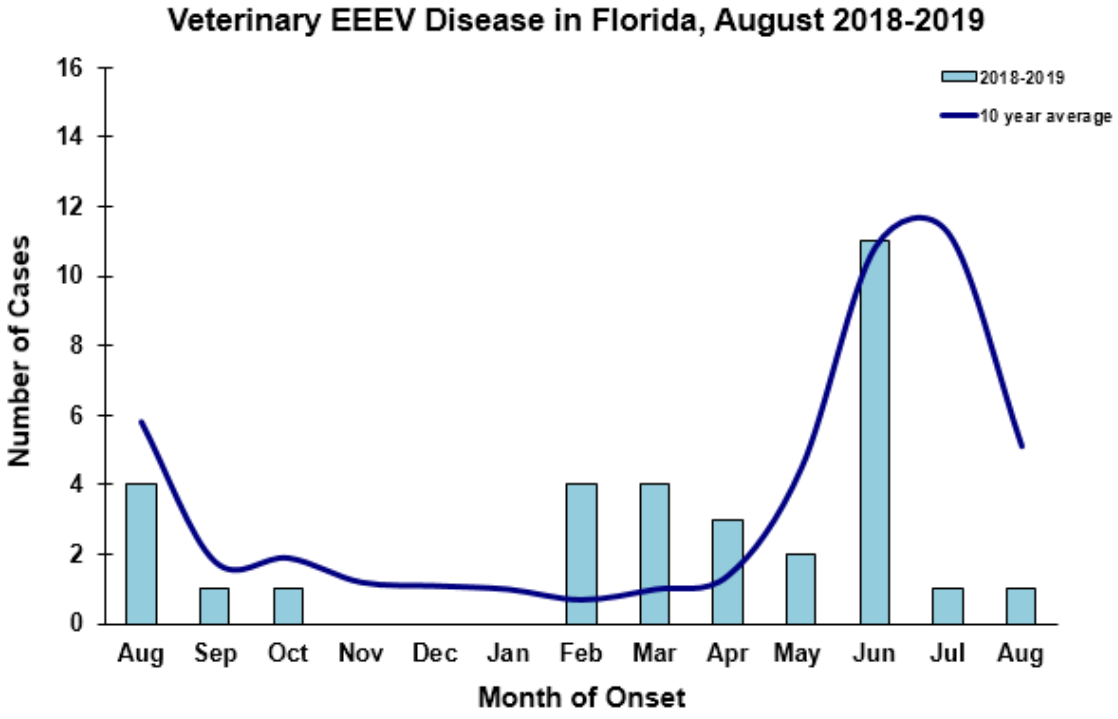
Thirty-nine cases (91%) were diagnosed with *Plasmodium falciparum*. Three cases (7%) was diagnosed with *Plasmodium vivax*. One case (2%) was diagnosed with *Plasmodium ovale*.

Veterinary Cases*

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

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





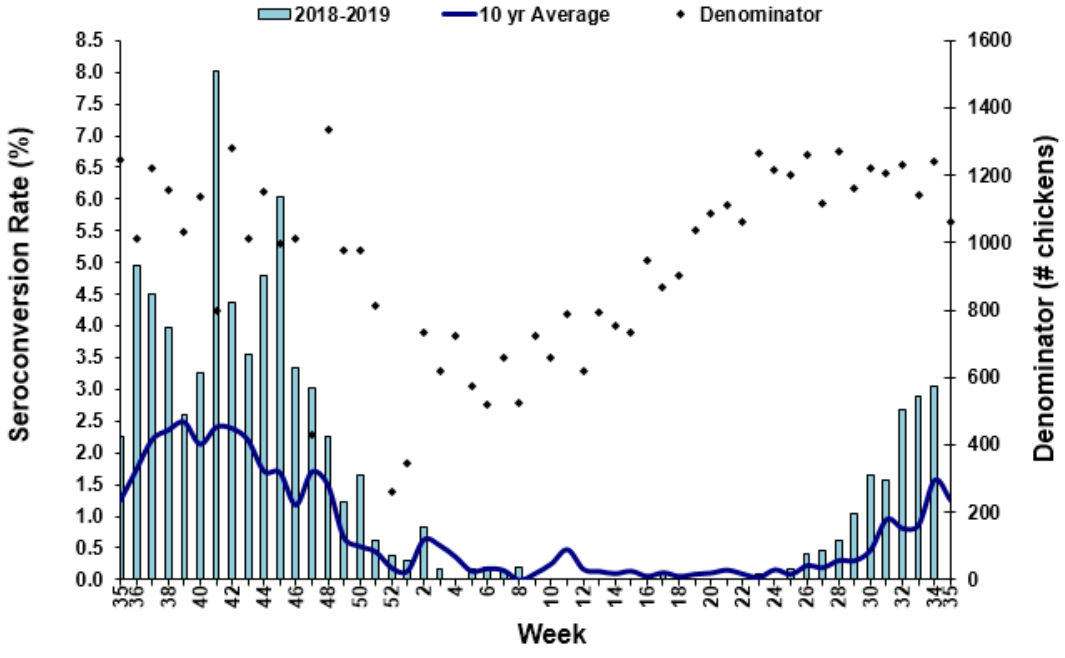
Sentinel Chickens*

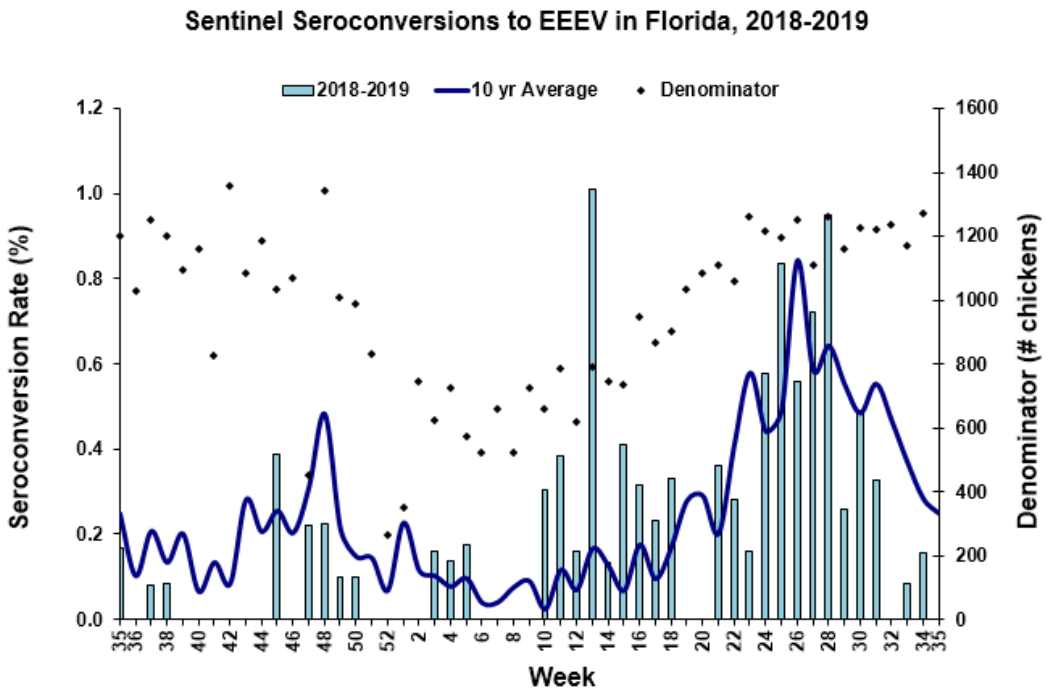
The table below is for the reporting of confirmatory laboratory results from this week. Some of the samples were collected at earlier dates. The date of collection is recorded for samples collected on that day along with the total number of positives and the corresponding seroconversion rate for the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

Sixty sentinel chickens tested positive for antibodies to WNV this week in Brevard, Citrus, Hernando, Hillsborough, Indian River, Lee, Martin, Nassau, Orange, Palm Beach, Polk, Putnam, Sarasota, Seminole, St. Johns, St. Lucie, and Volusia counties. Two sentinel chickens tested positive for antibodies to EEEV this week in Alachua and St. Johns counties.

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Alachua	8/19/19				5.56	5.56		1 EEEV	2 EEEV
Brevard	8/14-16/19	15.09		15.09				8 WNV	21 WNV, 1 EEEV
Citrus	8/20/19	2.70		2.70				2 WNV	10 WNV, 4 EEEV
Hernando	8/19/19	4.00		4.00				1 WNV	1 WNV, 1 EEEV
Hillsborough	8/20/19	1.82		1.82				1 WNV	1 WNV
Indian River	8/15-16/19	11.36		11.36				5 WNV	19 WNV
Lee	8/19-20/19	5.62		5.62				5 WNV	10 WNV
Martin	8/16/19	2.38		2.38				1 WNV	1 WNV
Nassau	8/17/19	6.25		6.25				2 WNV	4 WNV, 7 EEEV
Orange	8/19/19	7.92		7.92				8 WNV	27 WNV, 6 EEEV
Palm Beach	8/19/19	4.76		4.76				1 WNV	6 WNV
Polk	8/16/19 8/19/19	16.13 11.54		16.13 11.54				3 WNV 3 WNV	16 WNV, 5 EEEV
Putnam	8/16/19	3.03		3.03				1 WNV	7 WNV, 3 EEEV
Sarasota	8/19/19	1.85		1.85				1 WNV	5 WNV
Seminole	8/20/19	11.90		11.90				5 WNV	8 WNV, 1 EEEV
St. Johns	8/19/19	11.32		11.32	1.79	1.79		6 WNV, 1 EEEV	18 WNV, 8 EEEV
St. Lucie	8/15/19	3.45		3.45				1 WNV	3 WNV
Volusia	8/12/19 8/19/19	11.90 11.90		11.90 11.90				1 WNV 5 WNV	25 WNV, 5 EEEV

Sentinel Seroconversions to WNV in Florida, 2018-2019





Mosquito Pools

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

County	Collection Date	Result	Species	County YTD

Dead Birds

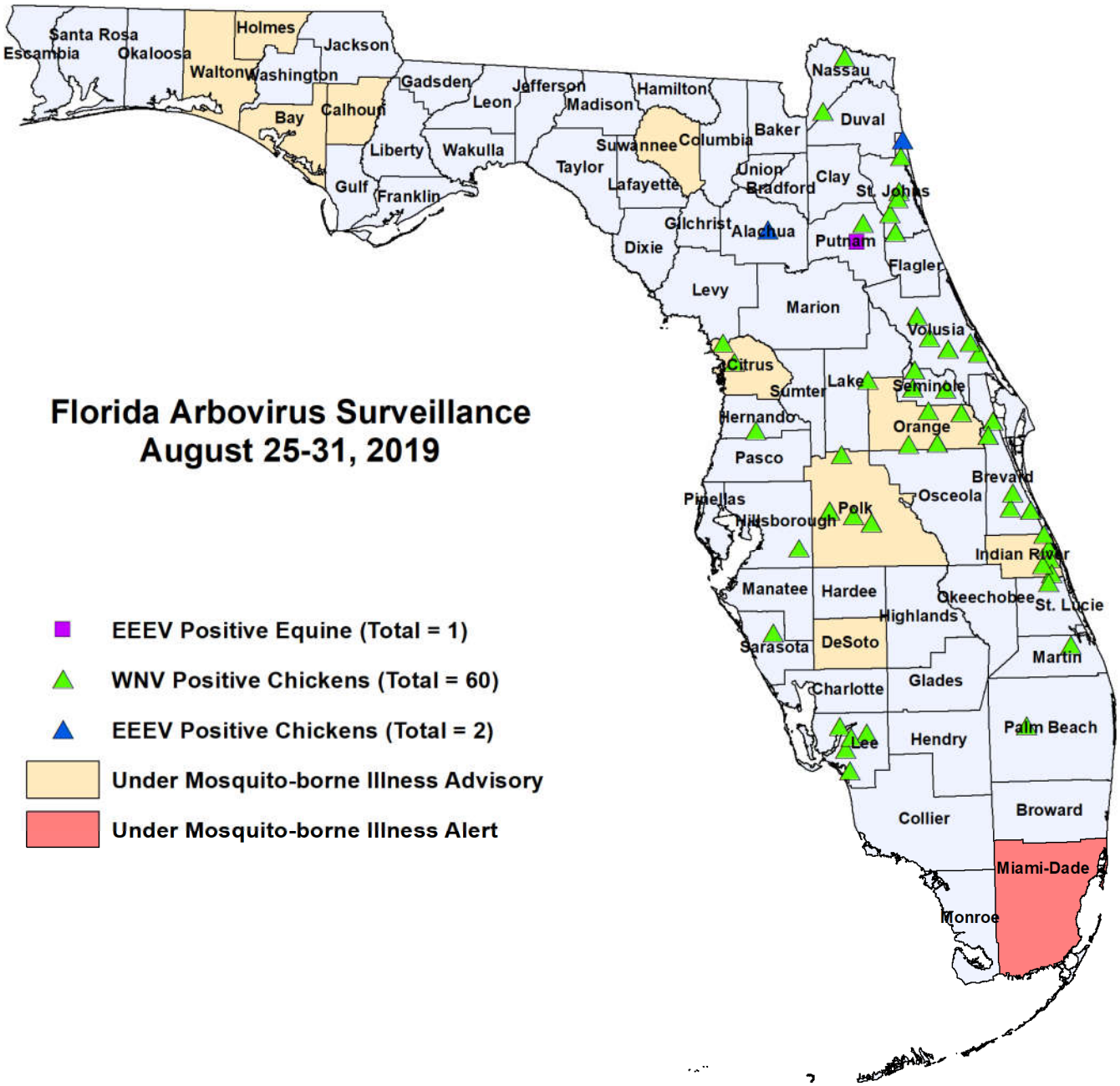
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, nine reports representing a total of 23 dead birds, including six raptors, were received from seven counties.

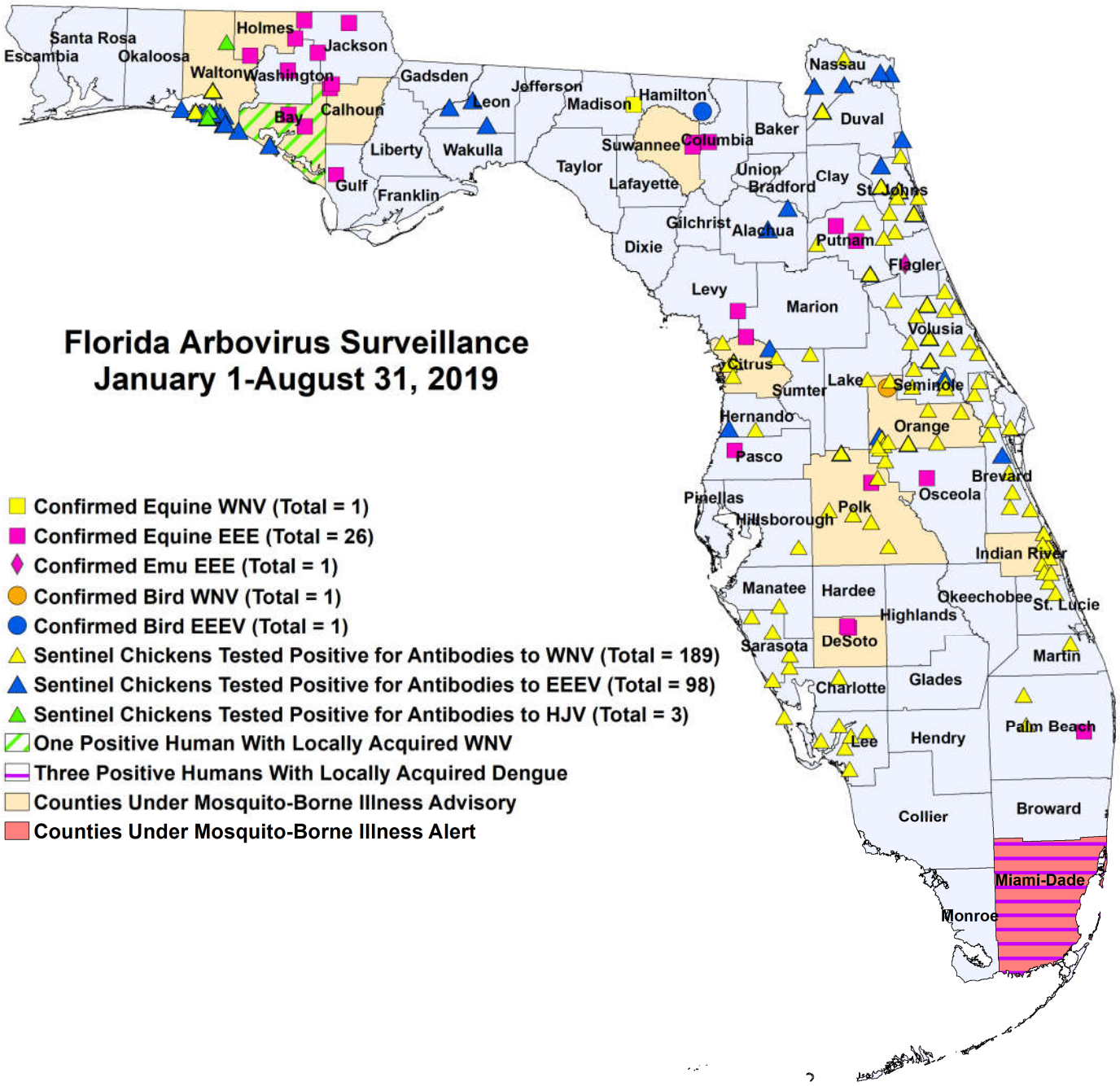
In 2019, 277 reports representing a total of 530 dead birds (14 crows, 11 jays, 73 raptors, and 34 doves) were received from 40 of Florida's 67 counties. Please note that FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to www.myfwc.com/bird/.

2019

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Bay	1	0	0	0	0
Collier	11	0	0	0	0
Manatee	1	0	0	0	0
Nassau	2	0	0	0	0
Polk	6	0	0	6	0
Sarasota	1	0	0	0	0
Volusia	1	0	0	0	0

Maps


Florida Arbovirus Surveillance
August 25-31, 2019
EEEV Positive Equine (Total = 1)
WNV Positive Chickens (Total = 60)
EEEV Positive Chickens (Total = 2)
Under Mosquito-borne Illness Advisory
Under Mosquito-borne Illness Alert
Santa Rosa
Escambia
Okaloosa
Holmes
Walton
Washington
Jackson
Bay
Calhoun
Gadsden
Liberty
Gulf
Franklin
Leon
Wakulla
Jefferson
Taylor
Madison
Hamilton
Suwannee
Lafayette
Columbia
Baker
Nassau
Duval
Union
Bradford
Clay
St. Johns
Gilchrist
Alachua
Putnam
Flagler
Dixie
Levy
Marion
Volusia
Citrus
Sumter
Lake
Seminole
Hernando
Orange
Pasco
Brevard
Pinellas
Hillsborough
Polk
Osceola
Indian River
Manatee
Hardee
Okeechobee
St. Lucie
Highlands
Sarasota
DeSoto
Martin
Charlotte
Glades
Lee
Hendry
Palm Beach
Collier
Broward
Miami-Dade
Monroe



2019 Arbovirus Activity by County	
County	**Arbovirus Activity**
Alachua	EEEV: 2 sentinels (7/8, 8/19)
Bay	WNV: 1 asymptomatic blood donor (August) EEEV: 2 horses (2/24, 2/26), 9 sentinels (4/29, 7/1)
Brevard	WNV: 21 sentinels (1/3, 7/18, 7/19, 7/25, 7/26, 7/31, 8/1, 8/8, 8/14, 8/15, 8/16) EEEV: 1 sentinel (7/18)
Calhoun	EEEV: 3 horses (3/3, 3/22)
Charlotte	WNV: 3 sentinels (7/23, 8/5)
Columbia	EEEV: 1 horse (3/30)
Citrus	WNV: 10 sentinels (1/8, 1/29, 7/23, 8/6, 8/20) EEEV: 1 horse (5/11), 4 sentinels (4/26, 6/18, 7/30)
DeSoto	EEEV: 2 horses (6/23, 7/2)
Flagler	EEEV: 1 emu (3/17)

Gulf	EEEV: 1 horse (2/27)
Hamilton	EEEV: 1 eagle (3/21)
Hernando	WNV: 1 sentinel (8/19) EEEV: 1 sentinel (3/4)
Hillsborough	WNV: 1 sentinel (8/20)
Holmes	EEEV: 3 horses (6/1, 6/5, 6/20)
Indian River	WNV: 19 sentinels (1/10, 7/3, 7/5, 7/12, 719, 7/26, 8/2, 8/8, 8/9, 8/15, 8/16)
Jackson	EEEV: 1 horse (6/19)
Lee	WNV: 10 sentinels (7/9, 8/5, 8/6, 8/12, 8/19, 8/20)
Leon	EEEV: 4 sentinels (5/28, 6/10)
Levy	EEEV: 1 horse (6/19)
Madison	WNV: 1 horse (4/1) EEEV: 1 horse (4/1)
Manatee	WNV: 1 sentinel (2/5)
Martin	WNV: 1 sentinel (8/16)
Miami-Dade	Dengue: 3 humans (March, July (2))
Nassau	WNV: 4 sentinels (8/3, 8/17) EEEV: 7 sentinels (6/21, 7/13, 7/27, 8/3)
Orange	WNV: 1 eagle (6/22), 27 sentinels (1/7, 1/10, 1/14, 6/27, 6/20, 6/24, 7/1, 7/11, 7/22, 8/1, 8/8, 8/19) EEEV: 6 sentinels (6/17, 7/11, 7/18, 7/25)
Osceola	EEEV: 1 horse (6/10)
Palm Beach	WNV: 6 sentinels (7/8, 7/22, 8/5, 8/19) EEEV: 1 horse (2/25)
Pasco	EEEV: 1 horse (6/20)
Polk	WNV: 16 sentinels (7/8, 7/15, 7/22, 7/29, 8/5, 8/12, 8/16, 8/19) EEEV: 1 horse (4/24), 5 sentinels (5/21, 5/24, 5/31, 6/21, 6/28)
Putnam	WNV: 7 sentinels (6/24, 7/17, 7/24, 8/2, 8/7, 8/8, 8/16) EEEV: 2 horses (4/28, 8/17), 3 sentinels (5/29, 6/12, 7/24)
Sarasota	WNV: 5 sentinels (2/15, 2/22, 7/29, 8/9, 8/19)
Seminole	WNV: 8 sentinels (6/3, 7/15, 7/29, 8/20) EEEV: 1 sentinel (4/8)
St. Johns	WNV: 18 sentinels (7/1, 7/19, 7/29, 8/5, 8/12, 8/19) EEEV: 8 sentinels (4/8, 4/15, 6/3, 6/24, 7/8, 7/29, 8/12, 8/19)
St. Lucie	WNV: 3 sentinels (8/1, 8/8, 8/15)
Sumter	WNV: 1 sentinel (1/8)
Suwannee	EEEV: 2 horses (6/4, 6/7)
Volusia	WNV: 25 sentinels (6/17, 6/24, 7/1, 7/15, 7/22, 7/29, 8/5, 8/12, 8/12, 8/19) EEEV: 5 sentinels (1/14, 1/22, 1/28, 7/1, 7/15)
Walton	WNV: 2 sentinels (4/23, 8/5) EEEV: 42 sentinels (3/5, 3/11, 3/12, 3/18, 3/25, 3/26, 4/1, 4/9, 4/15, 4/23, 5/20, 6/3, 6/10, 6/17, 6/24, 7/1, 7/8, 7/22, 7/23) HJV: 3 sentinels (6/3, 7/9, 7/29)
Washington	EEEV: 2 horses (5/28)

Acknowledgements and Data Sources

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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.