



Florida Arbovirus Surveillance Week 51: December 19-25, 2021

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 December 19-25, 2021, 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. Three sentinel chickens tested positive for antibodies to WNV this week in Palm Beach and Sarasota counties. In 2021, positive samples from five humans, two asymptomatic blood donors, four horses, 144 sentinel chickens, and eight mosquito pools have been reported from 27 counties.

SLEV activity: No human cases of SLEV infection were reported this week. One sentinel chicken tested positive for antibodies to SLEV this week in Lee County. In 2021, positive samples from 24 sentinel chickens and one mosquito pool have been reported from 13 counties.

Flavivirus (WNV or SLEV)* activity: One sentinel chicken tested positive for antibodies to a flavivirus this week in Citrus County. In 2021, positive samples from 102 sentinel chickens have been reported from 19 counties.

EEEV activity: No human cases of EEEV infection were reported this week. One horse with EEEV infection was reported this week in Liberty County. No sentinel chickens tested positive for antibodies to EEEV this week. In 2021, positive samples from 20 horses, 184 sentinel chickens, and one emu have been reported from 32 counties.

International Travel-Associated Dengue Fever: Four cases of dengue fever were reported this week in persons that had international travel. In 2021, 25 travel-associated dengue fever cases have been reported.

Dengue Fever Cases Acquired in Florida: No cases of locally acquired dengue fever were reported this week. In 2021, 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 2021, one travel-associated chikungunya fever case has been reported.

Chikungunya Fever Cases Acquired in Florida: No cases of locally acquired chikungunya fever were reported this week. In 2021, 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 2021, 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 2021, no cases of locally acquired Zika fever have been reported.

Advisories/Alerts: Bay, Columbia, Palm Beach, and Walton counties are currently under a mosquito-borne illness advisory. Collier County is 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 Burundi related to malaria transmission and for Chad related to Leishmaniasis. A Level 2 Travel Health Alert has been issued for Nigeria related to the transmission of yellow fever virus, Ghana related to the transmission of yellow fever virus, and Uttar Pradesh, India related to the transmission of Zika virus. 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/arbovet/maps/ADB_Diseases_Map/index.html.

2021 Human Case Summary

West Nile Virus Illnesses Acquired in Florida: Five human cases of WNV illness acquired in Florida have been reported in 2021: four in Collier County (August, September) and one in Miami-Dade County (July). Two asymptomatic positive blood donors have been reported in 2021: one in Columbia County (October) and one in Escambia County (November).

International Travel-Associated Chikungunya Fever Cases: One case of chikungunya fever with onset in 2021 has been reported in an individual with travel history to a chikungunya endemic country in the two weeks prior to onset. Country of origin was: Brazil. County reporting the case was: Broward.

International Travel-Associated Dengue Fever Cases: Twenty-five cases with onset in 2021 have been reported in individuals with travel history to a dengue endemic area in the two weeks prior to onset. Counties reporting cases were: Broward (3), Hernando (2), Hillsborough, Miami-Dade (11), Monroe, Orange, Palm Beach (4), Sarasota, and St. Lucie: Four cases were reported in non-Florida residents. In 2021, 17 cases of dengue reported in Florida have been serotyped by PCR. Please see the table below for a breakdown of case by country of origin and serotype.

Country of Exposure	DENV-1	DENV-2	DENV-3	DENV-4	Unknown Serotype	Total
Bangladesh			1			1
Brazil					1	1
Colombia			1		2	3
Cuba	5	2			4	11
Dominican Republic		1				1
Ecuador	2					2
Guatemala				1		1
Honduras					1	1
Mexico/Caribbean		1				1
Mexico	1					1
Pakistan		1				1
Saint Barts	1					1
Total	9	5	2	1	8	25

International Travel-Associated Malaria Cases: Thirty-nine cases of malaria with onset in 2021 have been reported. Countries of origin were: Cameroon (5), Côte D'Ivoire (2), Ethiopia, Ghana (6), Kenya, Liberia (3), Mali (2), Mozambique, Nigeria (7), Papua New Guinea, Sierra Leone (5), Tanzania, Togo, Uganda (2) and Venezuela. Counties reporting cases were: Alachua (2), Brevard (2), Broward (6), Collier, Duval (5), Miami-Dade (5), Orange (2), Osceola (3), Palm Beach (3), Pinellas (2), Polk (3), Seminole (3), St. Johns, and Volusia. Five cases were reported in non-Florida residents.

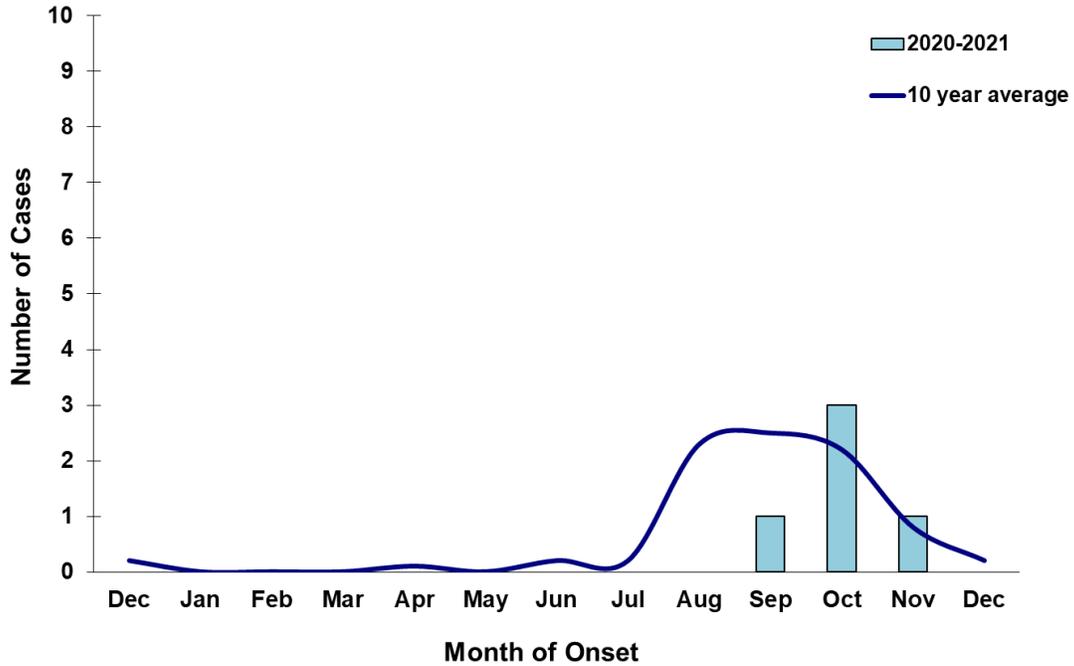
Thirty-five cases (89%) were diagnosed with *Plasmodium falciparum*. One case (3%) was diagnosed with *Plasmodium malariae*. One case (3%) was diagnosed with *Plasmodium ovale*. Two cases (5%) were diagnosed with *Plasmodium vivax*.

Veterinary Cases**

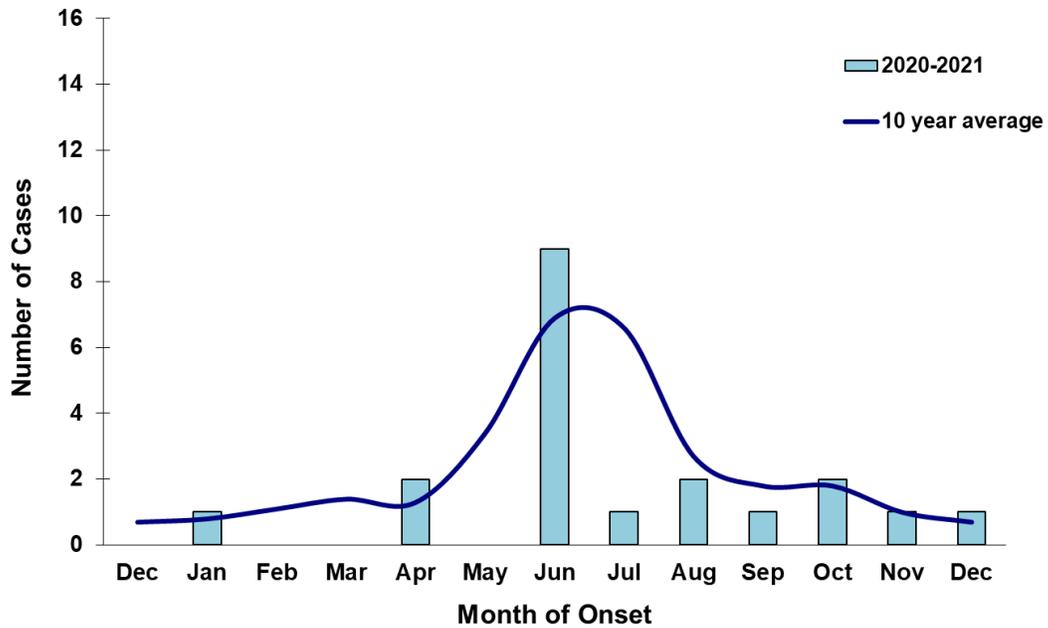
**Veterinary cases are reported by date of onset. Only mammalian veterinary cases are included in the graphs.

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

Veterinary WNV Disease in Florida, December 2020-2021



Veterinary EEEV Disease in Florida, December 2020-2021



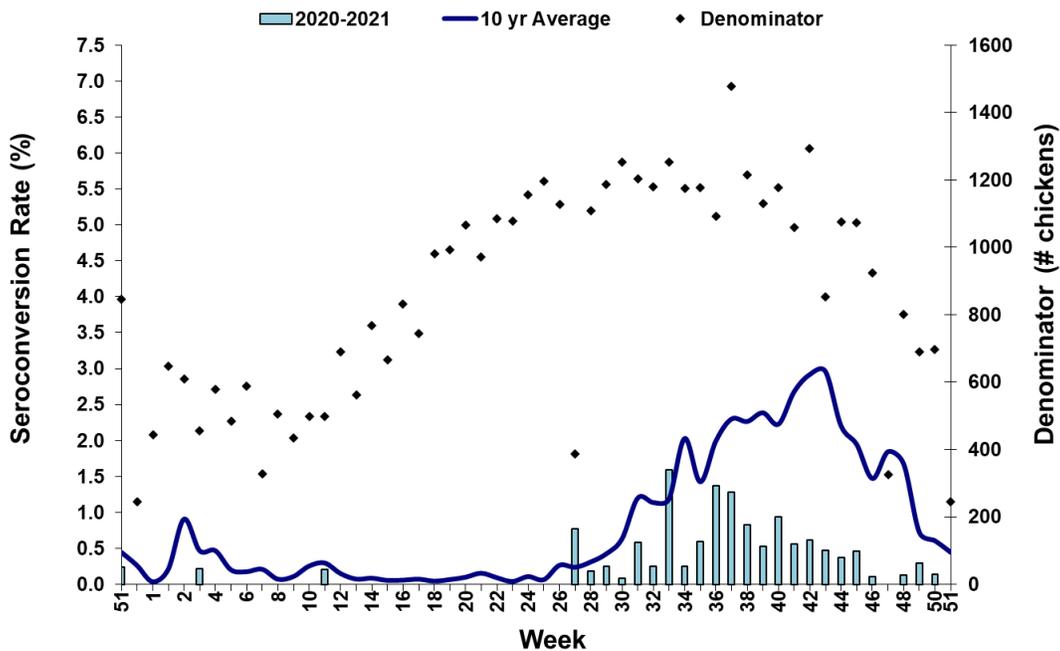
Sentinel Chickens

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.

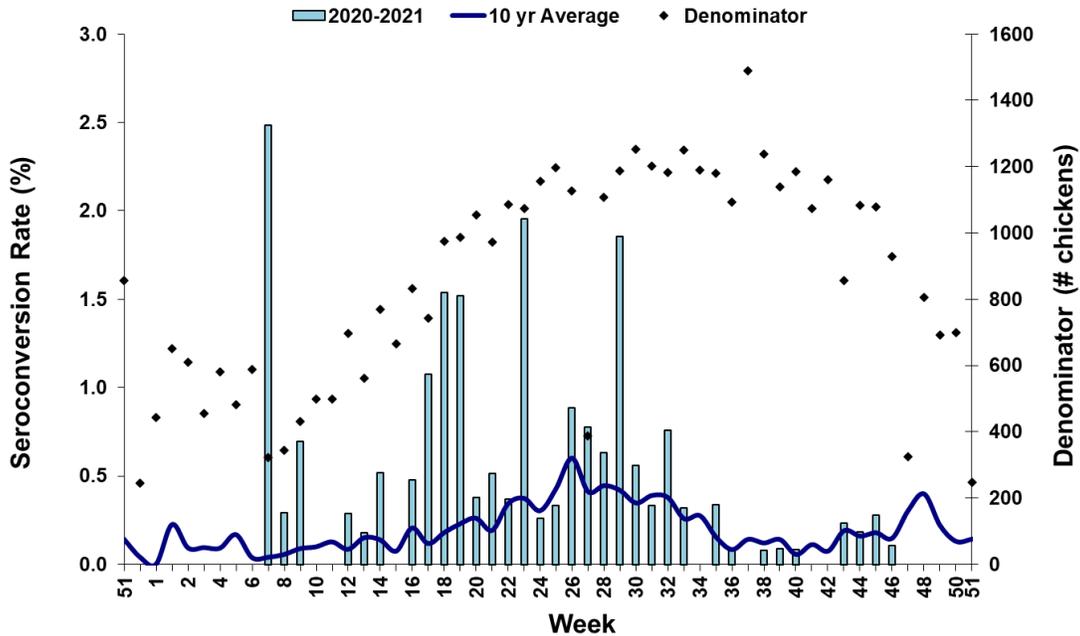
Three sentinel chickens tested positive for antibodies to WNV this week in Palm Beach and Sarasota counties. One sentinel chicken tested positive for antibodies to SLEV this week in Lee County. One sentinel chicken tested positive for antibodies to a flavivirus this week in Citrus County.

County	Collection Date	Seroconversion Rates (%)						Collection Week	County Totals
		Flavi	SLEV	WNV	Alpha	EEEV	HJV		YTD
Citrus	12/10/2021	2.82						1 SLEV, 1 Flavivirus	5 WNV, 8 EEEV, 2 SLEV, 6 Flavivirus
Lee	12/13/2021	1.14	1.14					1 SLEV	30 WNV, 1 EEEV, 4 SLEV, 15 Flavivirus
Palm Beach	12/13/2021	3.57		3.57				1 WNV	1 WNV, 3 SLEV, 5 Flavivirus
Sarasota	12/10/2021	2.82		2.82				2 WNV	6 WNV, 6 EEEV, 1 SLEV, 8 Flavivirus

Sentinel Seroconversions to WNV in Florida, 2020-2021



Sentinel Seroconversions to EEEV in Florida, 2020-2021



Mosquito Pools

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

County	Collection Date	Result	Species	County YTD

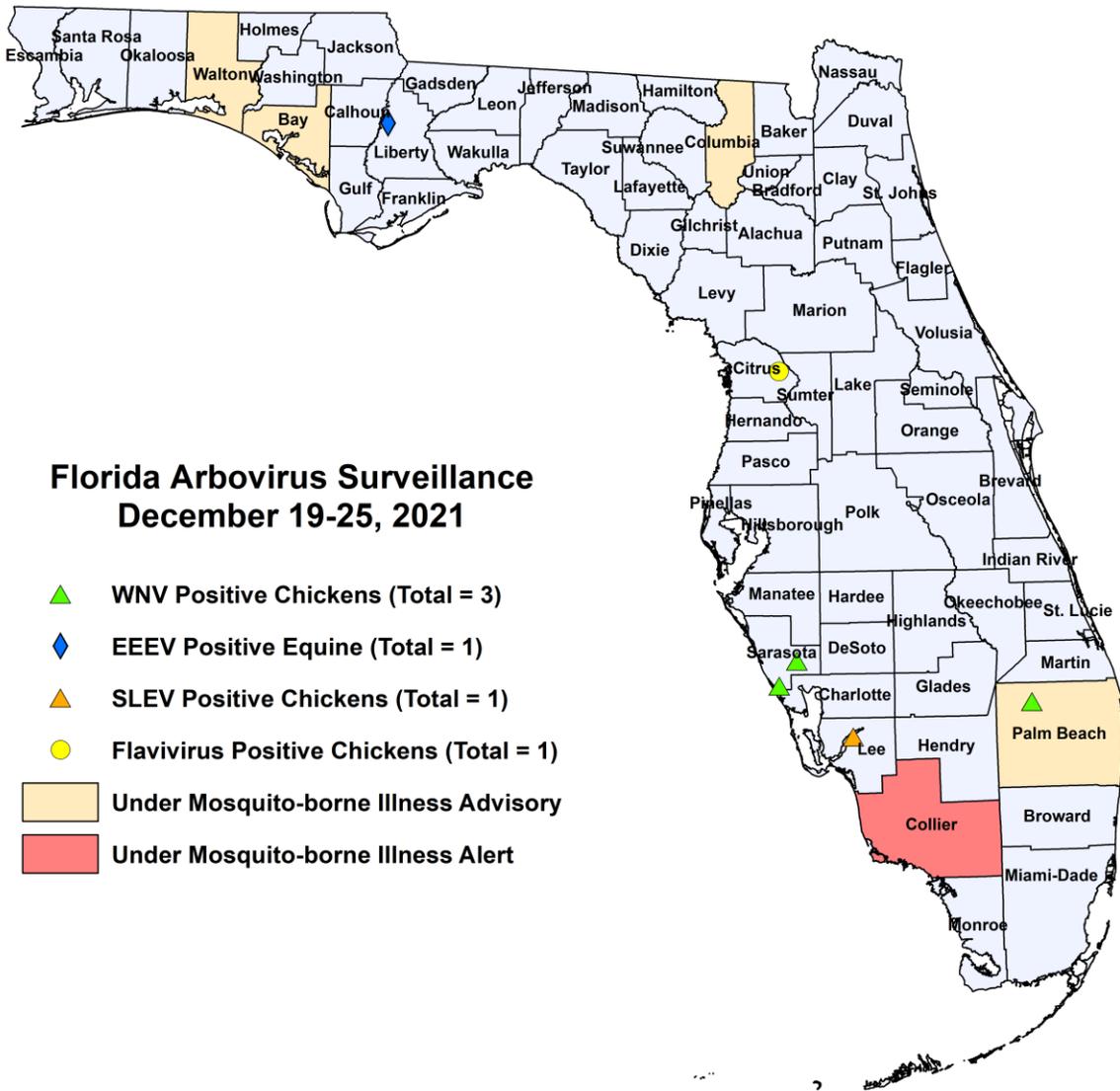
Dead Birds

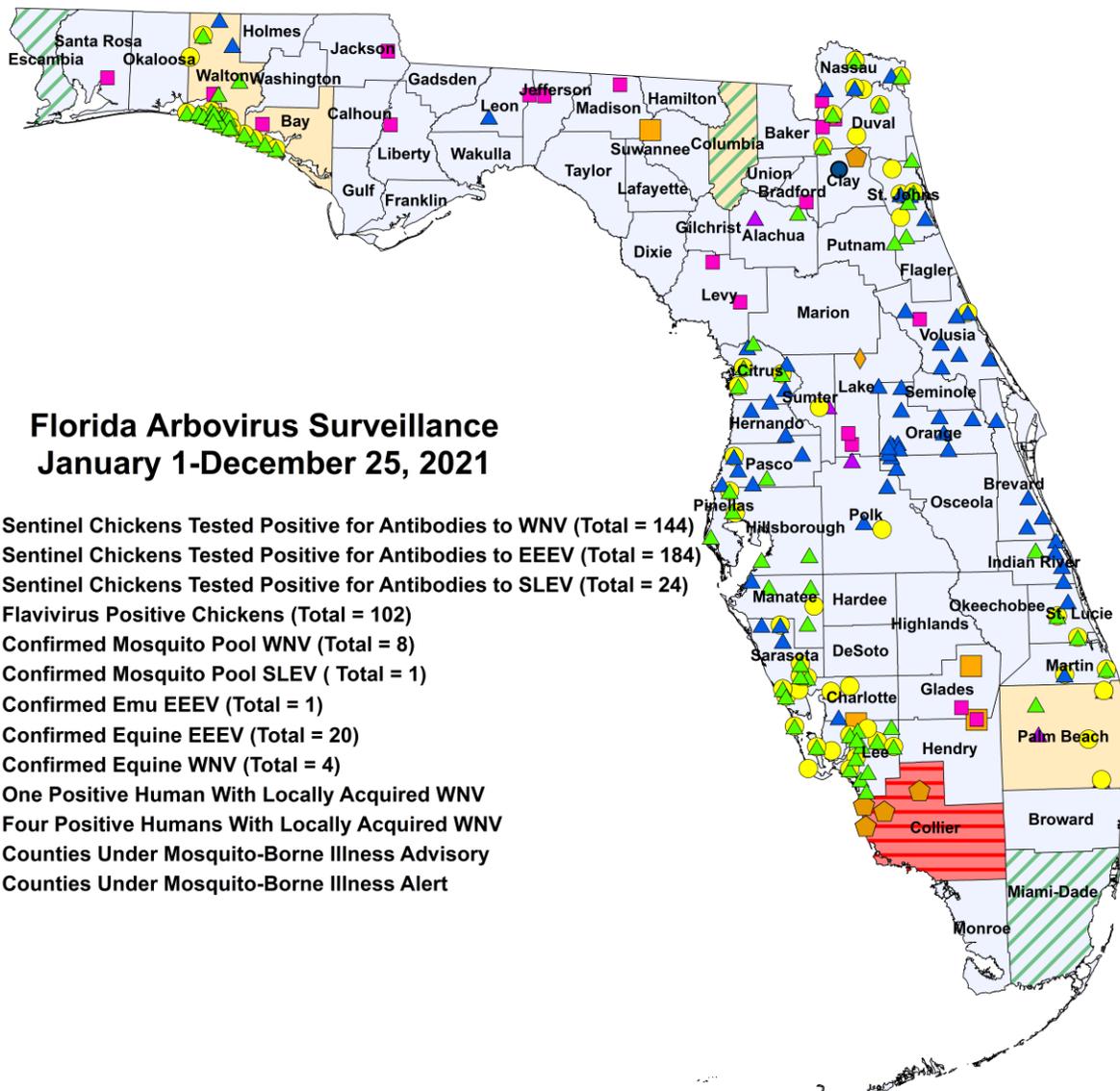
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, nine reports representing a total of 19 dead birds were received from three counties.

In 2021, 507 reports representing a total of 1,218 dead birds (65 crows, 28 jays, 95 raptors, 141 doves) were received from 50 of Florida's 67 counties.

2021

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Charlotte	2	0	0	0	0
Lee	16	0	0	0	0
Palm Beach	1	0	0	0	0





2021 Arbovirus Activity by County

County	Humans	Equines	Sentinel Chickens	Other
Alachua			2 WNV (10/13) 1 EEEV (7/6) 1 SLEV (11/9)	
Bay		1 EEEV (6/28)	13 WNV (8/16, 8/23, 9/7, 9/13, 9/20, 11/8) 3 EEEV (6/21, 7/19, 8/9) 1 SLEV (12/6) 6 Flavivirus (9/27, 10/4, 11/1, 11/8, 11/15)	
Bradford		1 EEEV (9/18)		
Brevard			6 EEEV (4/2, 6/9, 6/16, 7/14, 9/1, 10/6)	
Charlotte			3 WNV (9/17, 9/24, 11/5) 1 EEEV (6/18) 1 SLEV (10/1) 6 Flavivirus (9/24, 10/1, 10/8, 11/19)	

County	Humans	Equines	Sentinel Chickens	Other
Citrus			5 WNV (3/16, 9/21, 11/8, 11/30) 8 EEEV (3/2, 4/20, 5/3, 5/25, 8/10) 2 SLEV (10/26, 12/7) 6 Flavivirus (11/2, 11/16, 11/22, 12/10)	
Clay				1 WNV mosquito pool (Cx. <i>quinquefasciatus</i> [9/21]) 1 SLEV mosquito pool (Cx. <i>quinquefasciatus</i> [9/8])
Collier	4 WNV (August, September)			7 WNV mosquito pools (Cx. <i>nigripalpus</i> [7/13, 8/24, 8/27], Cx. <i>quinquefasciatus</i> [8/6, 8/20, 8/27])
Columbia	1 WNV asymptomatic blood donor (October)			
Duval		1 EEEV (8/6)	3 WNV (9/7, 9/27, 10/18) 1 EEEV (11/1) 5 Flavivirus (9/27, 10/4)	
Escambia	1 WNV asymptomatic blood donor (November)			
Glades		1 WNV (11/3) 1 EEEV (10/9)		
Hendry		1 WNV (10/9) 1 EEEV (11/8)		
Hernando			3 EEEV (6/7)	
Hillsborough			2 WNV (10/4, 11/16) 1 EEEV (8/10) 1 SLEV (10/12) 1 Flavivirus (9/21)	
Indian River			1 WNV (10/21) 8 EEEV (4/8, 4/22, 5/7, 5/20, 7/22, 8/13)	
Jackson		1 EEEV (6/16)		
Jefferson		2 EEEV (6/22, 6/27)		
Lake		2 EEEV (6/3, 10/18)		1 EEEV emu (9/29)
Lee		1 WNV (9/2),	30 WNV (7/7, 7/13, 7/19, 7/26, 8/2, 8/3, 8/16, 8/17, 9/6, 9/7, 9/27, 10/5, 10/12, 10/26) 1 EEEV (6/1) 4 SLEV (10/12, 10/18, 12/7, 12/13) 15 Flavivirus (9/27, 10/5, 10/18, 10/25, 11/9, 11/29, 12/7)	
Leon		1 EEEV (6/6)	2 EEEV (8/10)	
Levy		2 EEEV (4/18, 6/7)		
Liberty		1 EEEV (12/14)		
Madison		1 EEEV (6/17)		

County	Humans	Equines	Sentinel Chickens	Other
Manatee			3 WNV (1/20, 8/10, 10/5) 4 EEEV (3/24, 4/7, 5/12, 5/19) 1 Flavivirus (10/5)	
Martin			1 WNV (10/15) 2 EEEV (5/28, 7/23) 3 Flavivirus (10/1, 10/22, 10/29)	
Miami-Dade	1 WNV (July)			
Nassau		2 EEEV (4/22, 6/8)	5 WNV (8/14, 9/4, 10/2, 10/16, 10/23) 12 EEEV (6/26, 7/10, 7/17, 7/24, 7/31, 8/7, 8/14, 9/4) 1 SLEV (10/30) 7 Flavivirus (10/2, 10/9, 10/16, 10/30, 11/6)	
Orange			33 EEEV (2/15, 2/22, 3/1, 3/22, 5/10, 5/17, 6/7, 6/28, 7/6, 7/12, 7/19, 7/26, 8/16, 10/25, 11/8)	
Palm Beach			1 WNV (12/13) 3 SLEV (4/19, 4/20, 10/26) 5 Flavivirus (10/4)	
Pasco			1 WNV (11/1) 8 EEEV (5/10, 6/6, 6/14, 6/21, 7/26) 1 Flavivirus (9/19)	
Pinellas			4 WNV (8/2, 11/1, 11/8) 1 Flavivirus (10/4)	
Polk			3 EEEV (5/14, 5/28, 7/23) 1 SLEV (11/12) 1 Flavivirus (10/29)	
Putnam			1 WNV (9/20)	
Santa Rosa		1 EEEV (8/1)		
Sarasota			6 WNV (8/13, 9/24, 10/1, 10/28, 12/10) 6 EEEV (5/4, 5/18, 6/11) 1 SLEV (12/3) 8 Flavivirus (9/17, 9/21, 9/24, 10/1, 10/8)	
St. Johns			4 WNV (10/4, 10/25) 9 EEEV (4/26, 5/3, 6/1, 6/28, 9/20) 4 Flavivirus (9/27, 10/4, 10/11, 10/25)	
St. Lucie			2 WNV (9/9, 10/21) 2 EEEV (5/26) 2 Flavivirus (10/21, 11/17)	
Sumter			1 SLEV (12/6) 2 Flavivirus (10/12, 10/21)	
Suwannee		1 WNV (10/3)		
Volusia		1 EEEV (1/11)	10 EEEV (2/15, 4/19, 4/26, 5/3, 6/1, 6/7, 8/16, 8/30) 1 Flavivirus (11/29)	
Walton		1 EEEV (7/25)	57 WNV (8/2, 8/17, 8/23, 8/24, 8/30, 9/7, 9/13, 9/14, 9/20, 9/28, 10/5, 10/18, 10/25) 60 EEEV (4/5, 4/26, 5/3, 5/4, 5/10, 6/7, 6/21, 6/28, 6/30, 7/12, 7/19, 7/20, 7/26, 8/2, 8/3, 8/9, 8/30, 9/7, 9/28, 11/1, 11/8, 11/15) 7 SLEV (9/27, 10/11, 11/30) 27 Flavivirus (8/30, 9/20, 9/27, 9/28, 10/5, 10/11, 10/19, 11/1, 11/17, 11/29)	

*One hundred two chickens have tested positive for flavivirus antibodies and require additional specialized testing to distinguish between WNV and SLEV antibodies. Testing is currently delayed due to supply chain

issues. The final determination of these birds will be updated as more information becomes available. In Florida, both WNV and SLEV have similar disease vectors and epidemiology. Seroconversion rates for flavivirus are included in the table.

Acknowledgements and Data Sources

Contributors: Andrea Morrison, PhD, MSPH, Rebecca Zimler, PhD, MPH, 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.