



Florida Arbovirus Surveillance Week 36: September 4-10, 2022

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 September 4-10, 2022, the following arboviral activity was recorded in Florida.

WNV activity: No human cases of WNV infection were reported this week. One horse with WNV infection was reported this week in Manatee County. Twenty-one sentinel chickens tested positive for antibodies to WNV this week in Bay, Duval, Manatee, Palm Beach, Sarasota, St. Johns, and Walton counties. Two mosquito pools tested positive for WNV this week in Lee County. In 2022, positive samples from one human, two horses, 133 sentinel chickens and four mosquito pools have been reported from 19 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 Palm Beach County. In 2022, four positive samples have been reported from four counties.

Flavivirus (WNV or SLEV)* activity: Five sentinel chickens tested positive for antibodies to a flavivirus this week in Bay, Lee, and Sarasota counties. In 2022, positive samples from 16 sentinel chickens have been reported from nine counties.

EEEV activity: No human cases of EEEV infection were reported this week. No horses with EEEV infection were reported this week. Two sentinel chickens tested positive for antibodies to EEEV this week in Leon and Pasco counties. In 2022, positive samples from 57 sentinel chickens and nine horses have been reported from 22 counties.

International Travel-Associated Dengue: Fifty-eight cases of dengue were reported this week in persons that had international travel. In 2022, 371 travel-associated dengue cases have been reported.

Dengue Cases Acquired in Florida: No cases of locally acquired dengue were reported this week. In 2022, 14 cases of locally acquired dengue 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 2022, 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 2022, 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 2022, 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 2022, no cases of locally acquired Zika fever have been reported.

Advisories/Alerts: Miami-Dade County is currently under a mosquito-borne illness alert. Bay, Charlotte, Collier, Lee, Osceola, Pinellas, Sarasota, and Volusia counties are currently under a mosquito-borne illness advisory. No other counties are currently under a mosquito-borne illness advisory or alert.

There are currently multiple travel health notices from the Centers for Disease Control and Prevention related to mosquito-borne diseases.

Dengue			Yellow Fever
Africa and the Middle East	Americas	Asia and the Pacific Islands	Africa and the Middle East
São Tomé and Príncipe	Colombia	Afghanistan	Ghana
	Cuba	Bangladesh	Kenya
	Dominican Republic	India	Nigeria
	El Salvador	Laos	
	Guatemala	Malaysia	
	Honduras	Myanmar (Burma)	
	Nicaragua	Nepal	
	Panama	Pakistan	
	Peru	Philippines	
		Singapore	
		Sri Lanka	
		Vietnam	

Level 1 Travel Health Notice, Level 2 Travel Health Alert: 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.

2022 Human Case Summary

West Nile Virus Illnesses Acquired in Florida: One human case of WNV illness acquired in Florida has been reported in 2022 from Volusia County (July).

International Travel-Associated Dengue Cases: Three hundred and seventy-one cases with onset in 2022 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 (27), Collier, Duval (7), Escambia (2), Hendry, Hernando, Hillsborough (31), Lee (15), Manatee (2), Martin (2), Miami-Dade (236), Monroe (3), Orange (6), Osceola, Palm Beach (13), Pasco, Pinellas (5), Polk (7), Sarasota (2), St. Johns, and St. Lucie (5). Five 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 2022, 320 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	DENV-1/DENV-2	DENV-1/DENV-3	Unknown	Total
Brazil	5						2	7
Caribbean			1					1
Colombia	2							2
Costa Rica	1						1	2
Cuba	29	61	177	20	2	1	45	335
Cuba/Central America	1						1	2
Dominican Republic		2						2
El Salvador	1			1				2
Guatemala	2	1					1	4
Honduras				1			1	2
India		2						2
Maldives		1						1
Mexico	2	2						4
Pakistan	2							2
Panama	1							1
Puerto Rico	1							1
Sri Lanka			1					1
Total	47	69	179	22	2	1	51	371

Dengue Cases Acquired in Florida: In 2022, 14 cases of locally acquired dengue have been reported in Collier and Miami-Dade counties (13), with onsets in June, July (5), and August (8). Eleven of the cases have been serotyped by PCR and were all DENV-3.

International Travel-Associated Malaria Cases: Thirty-eight cases of malaria with onset in 2022 have been reported. Countries of origin were: Brazil (3), Cameroon (2), Central African Republic, Côte D'Ivoire, Ethiopia, Equatorial Guinea, Ghana (3), Guinea (2), India, Kenya, multiple countries (2), Nicaragua (3), Nigeria (10), Sierra Leone (2), Sudan, Uganda (2), Venezuela, and Zambia. Counties reporting cases were: Brevard, Broward (7), Duval (5), Flagler, Hillsborough (4), Lee (4), Leon, Miami-Dade (2), Orange (5), Palm Beach (3), Pasco, Pinellas (2), Santa Rosa, and St. Johns. Five cases were reported in non-Florida residents.

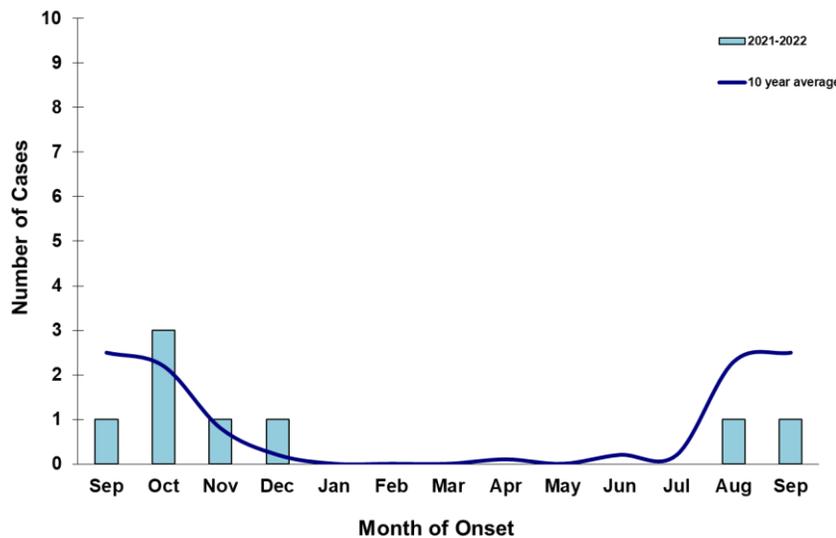
Twenty-three cases (60%) were diagnosed with *Plasmodium falciparum*. Twelve cases (32%) were diagnosed with *Plasmodium vivax*. Three cases (8%) were diagnosed with *Plasmodium malariae*.

Veterinary Cases**

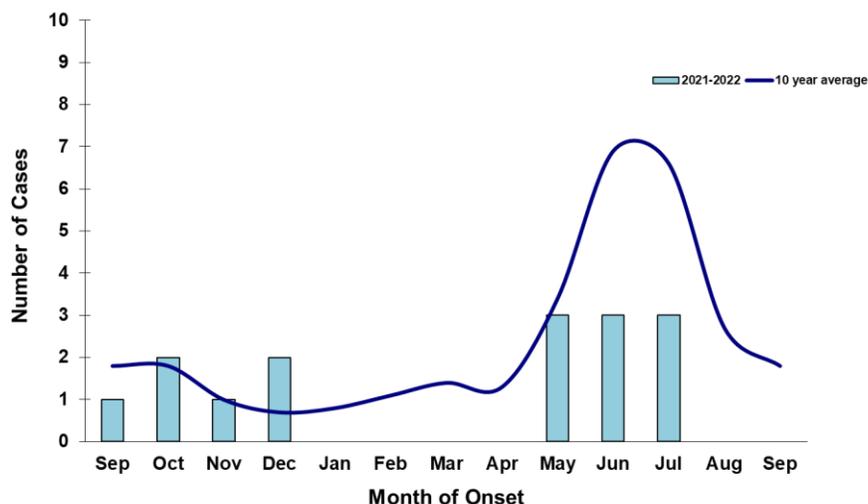
**Veterinary cases are reported by date of onset. Only mammalian veterinary cases are included in the graphs.

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

Veterinary WNV Disease in Florida, September 2021-2022



Veterinary EEEV Disease in Florida, September 2021-2022



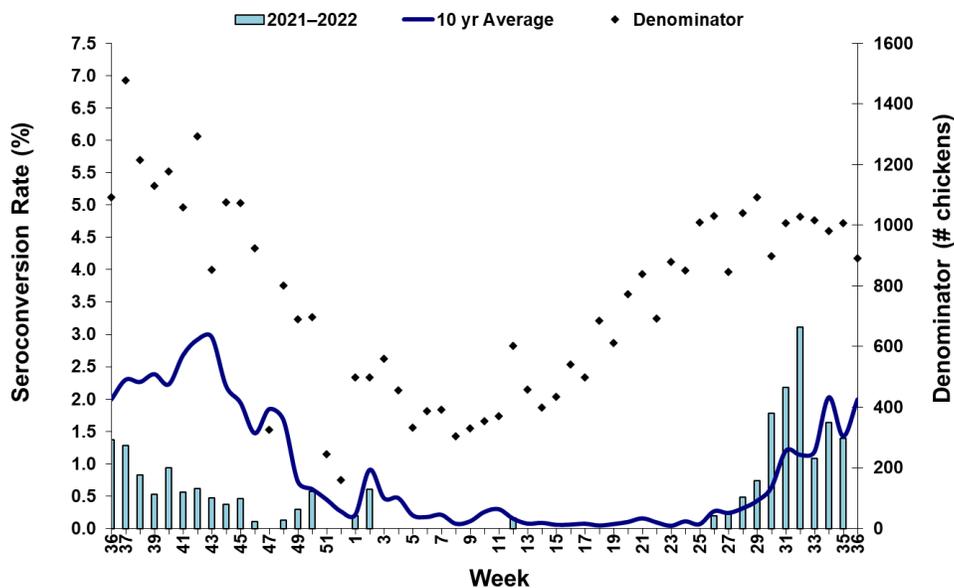
Sentinel Chickens

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.

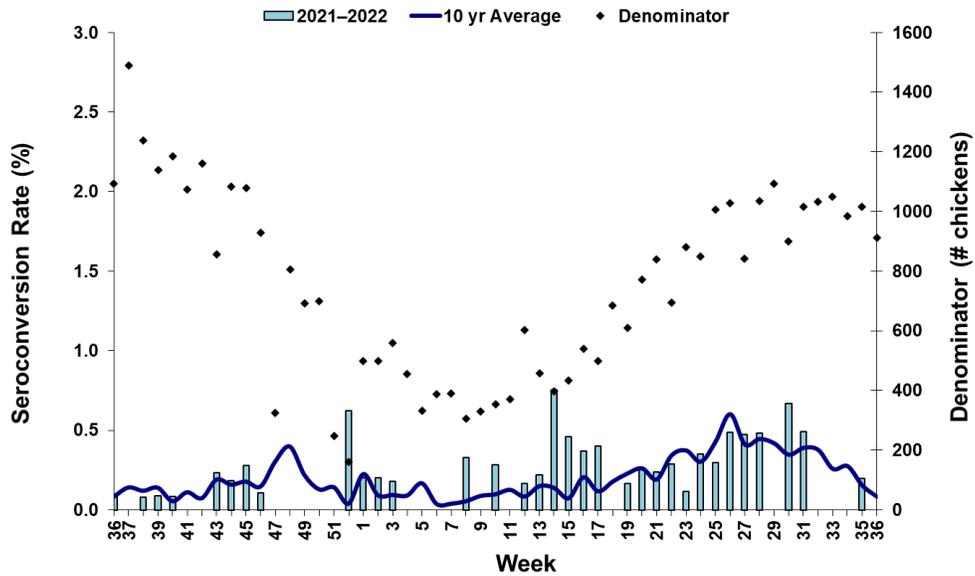
Twenty-one sentinel chickens tested positive for antibodies to WNV this week in Bay, Duval, Manatee, Palm Beach, Sarasota, St. Johns, and Walton counties. One sentinel chicken tested positive for antibodies to SLEV this week in Palm Beach County. Two sentinel chickens tested positive for antibodies to EEEV this week in Leon and Pasco counties. Five sentinel chickens tested positive for antibodies to a flavivirus this week in Bay, Lee, and Sarasota counties.

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Bay	8/30/2022	22.22		16.67				3 WNV, 1 Flavivirus	19 WNV, 1 EEEV, 1 Flavivirus
Duval	8/29/2022	3.13		3.13				1 WNV	1 WNV
Lee	8/22/2022-8/23/2022	8.75						5 WNV, 2 Flavivirus	28 WNV, 2 Flavivirus
Leon	8/29/2022				7.14	7.14		1 EEEV	1 WNV, 4 EEEV, 2 Flavivirus
Manatee	8/30/2022	1.72		1.72				1 WNV	7 WNV, 1 EEEV
Palm Beach	8/29/2022	12.90	3.23	9.68				3 WNV, 1 SLEV	3 WNV, 1 SLEV
Pasco	8/29/2022				1.92	1.92		1 EEEV	1 WNV, 2 EEEV
Sarasota	8/19/2022	11.54		11.54				6 WNV	22 WNV, 1 SLEV, 3 Flavivirus
	8/26/2022	6.25		3.13				2 WNV, 2 Flavivirus	
St. Johns	8/29/2022	1.92		1.92				1 WNV	3 WNV, 1 Flavivirus
Walton	8/29/2022	5.62		5.62				5 WNV	14 WNV, 12 EEEV, 1 SLEV, 2 HJV, 3 Flavivirus

Sentinel Seroconversions to WNV in Florida, 2021–2022



Sentinel Seroconversions to EEEV in Florida, 2021–2022



Mosquito Pools

Two mosquito pools tested positive for WNV this week in Lee County.

County	Collection Date	Result	Species	County YTD
Lee	8/2/2022	1 WNV	<i>Culex nigripalpus</i>	2 WNV
	8/9/2022	1 WNV	<i>Culex nigripalpus</i>	

Dead Birds

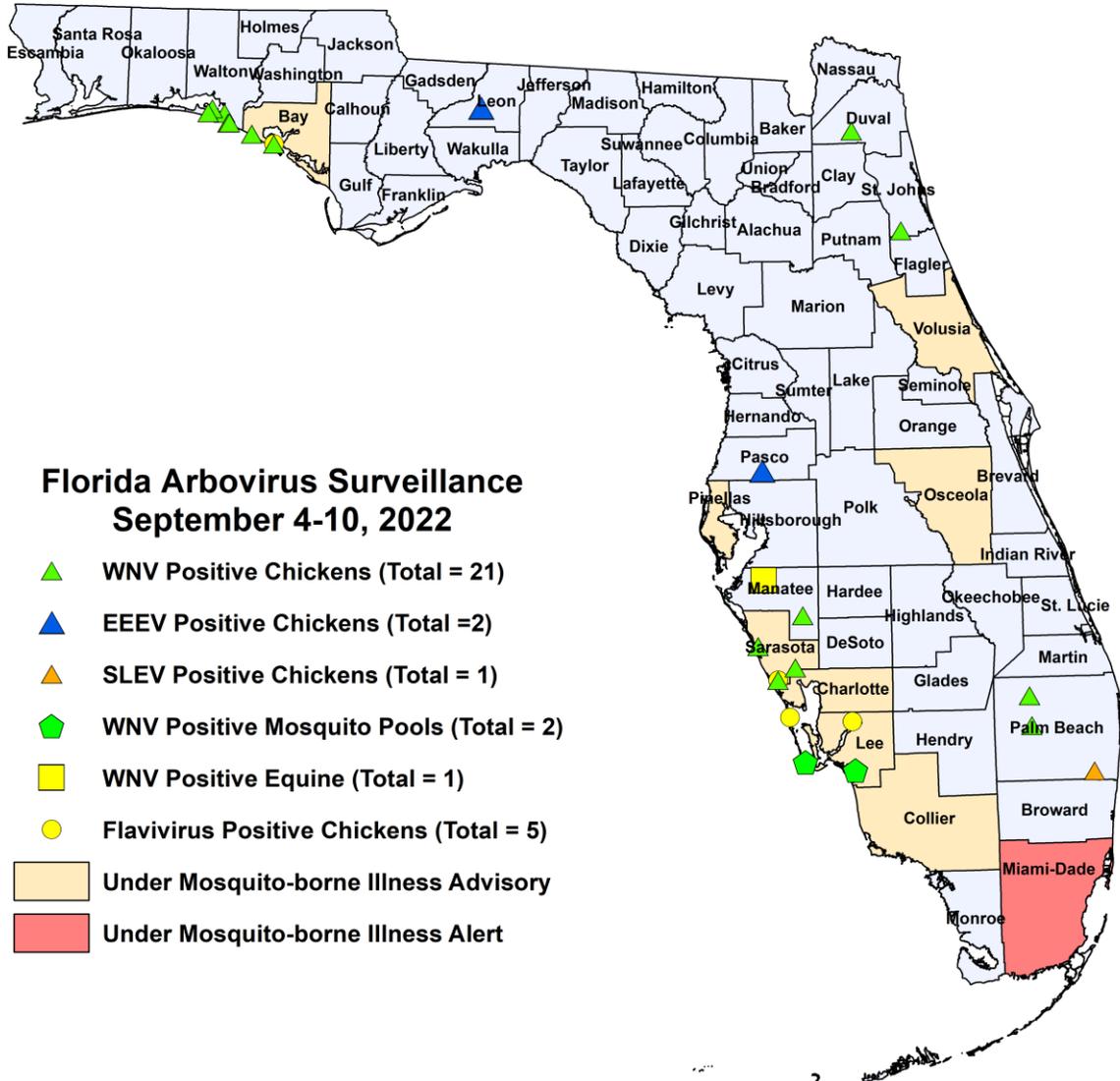
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 16 reports representing a total of 46 dead birds, including 2 raptors, and 1 dove, were received from 9 counties.

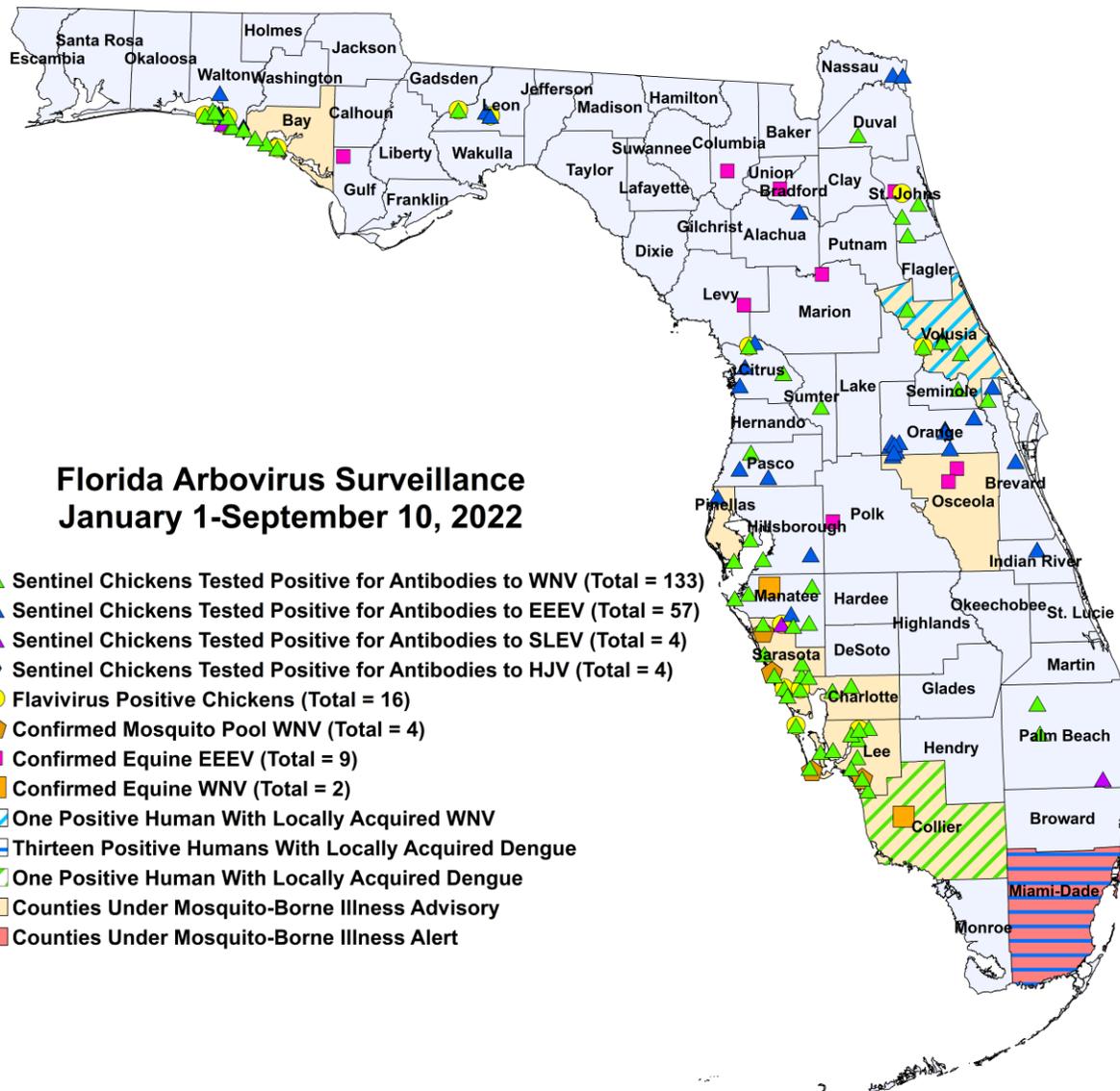
In 2022, 1179 reports representing a total of 3180 dead birds (110 crows, 34 jays, 179 raptors, 152 doves) were received from 56 of Florida’s 67 counties.

2022

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Alachua	7	0	0	0	0
Bay	7	0	0	0	0
Brevard	1	0	0	0	0
Charlotte	2	0	0	0	0
Collier	5	0	0	0	1
Palm Beach	12	0	0	0	0
Sarasota	10	0	0	0	0
St. Johns	1	0	0	1	0
St. Lucie	1	0	0	1	0

Maps





2022 Arbovirus Activity by County

County	Humans	Equines	Sentinel Chickens	Other
Alachua			1 EEEV (5/31)	
Bay			19 WNV (3/21, 7/5, 7/18, 7/25, 8/1, 8/8, 8/30) 1 EEEV (7/25) 1 Flavivirus (8/30)	
Bradford		1 EEEV (6/22)		
Brevard			1 WNV (8/5) 2 EEEV (4/7, 7/1)	
Charlotte			12 WNV (7/1, 7/15, 7/29, 8/5, 8/19) 2 Flavivirus (8/12, 8/19)	
Citrus			5 WNV (1/4, 1/11, 7/19) 11 EEEV (1/11, 1/18, 4/19, 5/17, 5/23, 6/1, 6/14, 6/21, 6/28, 7/6) 1 Flavivirus (1/25)	
Collier	1 dengue (July)	1 WNV (8/21)		
Columbia		1 EEEV (5/9)		

County	Humans	Equines	Sentinel Chickens	Other
Duval			1 WNV (8/29)	
Gulf		1 EEEV (7/25)		
Hillsborough			3 WNV (8/10, 8/24) 1 EEEV (3/23)	
Indian River			1 EEEV (4/28)	
Lee			28 WNV (6/27, 7/5, 7/11, 7/18, 7/25, 7/26, 8/8, 8/9, 8/15, 8/16, 8/22, 8/23) 2 Flavivirus (8/22, 8/23)	2 WNV mosquito pools (Cx. <i>nigripalpus</i> [8/2,8/9])
Leon			1 WNV (7/27) 4 EEEV (7/27, 8/1, 8/29) 2 Flavivirus (8/23)	
Levy		1 EEEV (6/16)		
Manatee		1 WNV (9/1)	7 WNV (7/26, 8/9, 8/24, 8/30) 1 EEEV (7/13)	
Marion		1 EEEV (7/7)		
Miami-Dade	13 dengue (June, July (4), August (8))			
Nassau			2 EEEV (7/29, 8/6)	
Orange			16 EEEV (1/3, 3/28, 4/11, 4/25, 5/16, 5/31, 6/6, 6/20, 6/27, 7/5, 7/11, 7/25, 8/1) 1 HJV (5/31)	
Osceola		2 EEEV (5/24, 5/26)		
Palm Beach			3 WNV (8/29) 1 SLEV (8/29)	
Pasco			1 WNV (7/25) 2 EEEV (4/11, 8/29)	
Pinellas			6 WNV (7/25, 8/1, 8/8) 1 EEEV (3/7)	
Polk		1 EEEV (6/19)		
Sarasota			22 WNV (7/15, 7/22, 8/2, 8/5, 8/9, 8/15, 8/19, 8/26) 1 SLEV (7/26) 3 Flavivirus (6/7, 8/26)	2 WNV mosquito pools (Cx. <i>quinquefasciatus</i> [7/20, 7/27])
Seminole			1 WNV (8/22) 1 SLEV (8/22)	
St. Johns		1 EEEV (7/5)	3 WNV (7/25, 8/15, 8/29) 1 Flavivirus (8/15)	
Sumter			1 WNV (8/8)	
Volusia	1 WNV (July)		5 WNV (7/11, 7/25, 8/8) 2 EEEV (2/21, 6/27) 1 HJV (5/23) 1 Flavivirus (8/15)	
Walton			14 WNV (7/25, 8/8, 8/15, 8/22, 8/29) 12 EEEV (4/4, 5/9, 6/13, 6/20, 6/27, 7/5, 7/11, 7/13, 7/25, 8/1) 1 SLEV (3/21) 2 HJV (6/20, 7/25) 3 Flavivirus (3/21, 8/22)	

*Sixteen chickens in 2022 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 Amanda Davis, 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.