



Florida Arbovirus Surveillance Week 49: December 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 December 4-10, 2022, 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. Sixteen sentinel chickens tested positive for antibodies to WNV this week in Bay, Manatee, Palm Beach, Pinellas, St. Johns, and St. Lucie counties. No mosquito pools tested positive for WNV this week. In 2022, positive samples from five humans, five horses, 393 sentinel chickens, and eight mosquito pools have been reported from 26 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 2022, 18 positive samples have been reported from 11 counties.

Flavivirus (WNV or SLEV)* activity: No sentinel chickens tested positive for antibodies to a flavivirus this week. In 2022, positive samples from seven sentinel chickens have been reported from six counties.

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 Nassau County. In 2022, positive samples from 71 sentinel chickens and 11 horses have been reported from 24 counties.

International Travel-Associated Dengue: Twenty-two cases of dengue were reported this week in persons that had international travel. In 2022, 754 travel-associated dengue cases have been reported.

Dengue Cases Acquired in Florida: Six cases of locally acquired dengue were reported this week in Miami-Dade County. In 2022, 55 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: Broward, Miami-Dade, and Volusia Counties are currently under a mosquito-borne illness alert. Bay, Charlotte, Collier, Hillsborough, Lee, Osceola, Palm Beach, Pinellas, Sarasota, St. Johns, and Walton 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
Somalia	Cuba	Bangladesh	Kenya
Sudan	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: Five human cases of WNV illness acquired in Florida have been reported in 2022 from Volusia (July, August), Sarasota (September), Hillsborough (October) and St. Johns (October) counties.

International Travel-Associated Dengue Cases: Seven hundred and fifty-four 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 (48), Collier (10), Duval (7), Escambia (2), Flagler, Hendry (3), Hernando (2), Hillsborough (70), Indian River, Lee (27), Leon, Manatee (2), Martin (2), Miami-Dade (502), Monroe (4), Orange (10), Osceola (3), Palm Beach (24), Pasco (3), Pinellas (7), Polk (8), Santa Rosa, Sarasota (4), St. Johns, St. Lucie (6), Suwannee, and Volusia (2). Nine cases were reported in non-Florida residents. Eight 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, 655 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	DENV-2/ DENV-3	Unknown	Total
Brazil	5							2	7
Caribbean			1						1
Colombia	2								2
Costa Rica	1							1	2
Cuba	40	82	441	36	2	3	1	87	692
Cuba/Central America	1							1	2
Dominican Republic	1	8						1	10
El Salvador	1			1					2
Guatemala	2	1						1	4
Guyana			1						1
Haiti	1								1
Honduras				1				1	2
India		3	1						4
Jamaica			1						1
Maldives		1							1

Mexico	5	2							7
Nicaragua			2					2	4
Pakistan	2							1	3
Panama	1							1	2
Puerto Rico	4								4
Sri Lanka			1					1	2
Total	66	97	446	40	2	3	1	99	754

Dengue Cases Acquired in Florida: In 2022, 55 cases of locally acquired dengue have been reported in Collier, Broward (2), Miami-Dade (51), and Volusia counties, with onsets in June, July (5), August (17), September (10), October (16) and November (6). One case was reported in a non-Florida resident. Fifty-one of the cases have been serotyped by PCR. Serotypes reported were DENV-3 (48), DENV-4 (2), and DENV-2.

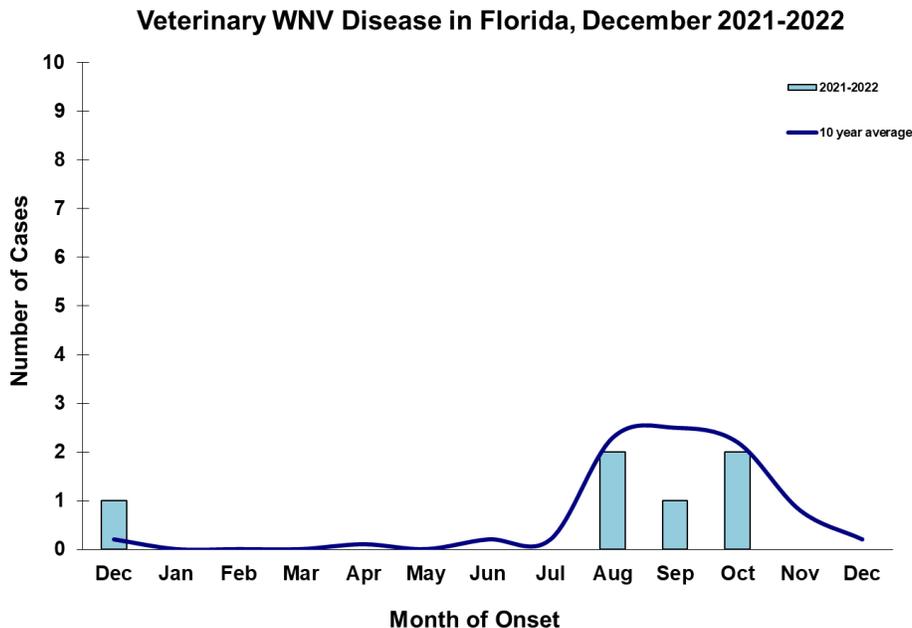
International Travel-Associated Malaria Cases: Fifty-four cases of malaria with onset in 2022 have been reported. Countries of origin were: Brazil (3), Cameroon (3), Central African Republic, Côte D'Ivoire, Ethiopia (3), Equatorial Guinea (2), Ghana (4), Guinea (2), India, Kenya, multiple countries (4), Nicaragua (5), Nigeria (13), Pakistan (2), Sierra Leone (3), Solomon Islands, Sudan, Uganda (2), Venezuela, and Zambia. Counties reporting cases were: Brevard, Broward (7), Duval (6), Flagler (3), Hillsborough (6), Lee (4), Leon, Miami-Dade (9), Nassau, Orange (5), Palm Beach (4), Pasco (2), Pinellas (2), Santa Rosa, and St. Johns (2). Seven cases were reported in non-Florida residents.

Thirty cases (56%) were diagnosed with *Plasmodium falciparum*. Twenty-one cases (39%) were diagnosed with *Plasmodium vivax*. Three cases (5%) were diagnosed with *Plasmodium malariae*.

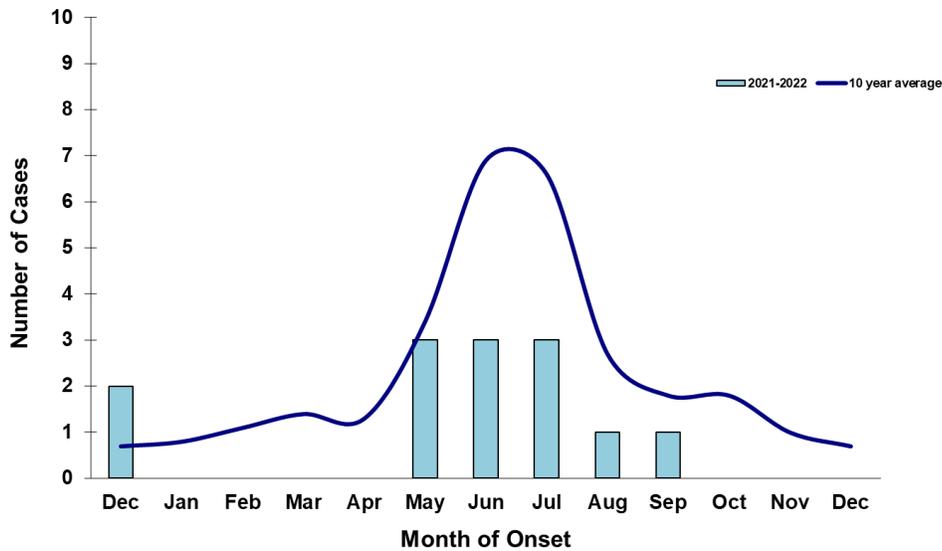
Veterinary Cases**

**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 EEEV Disease in Florida, December 2021-2022



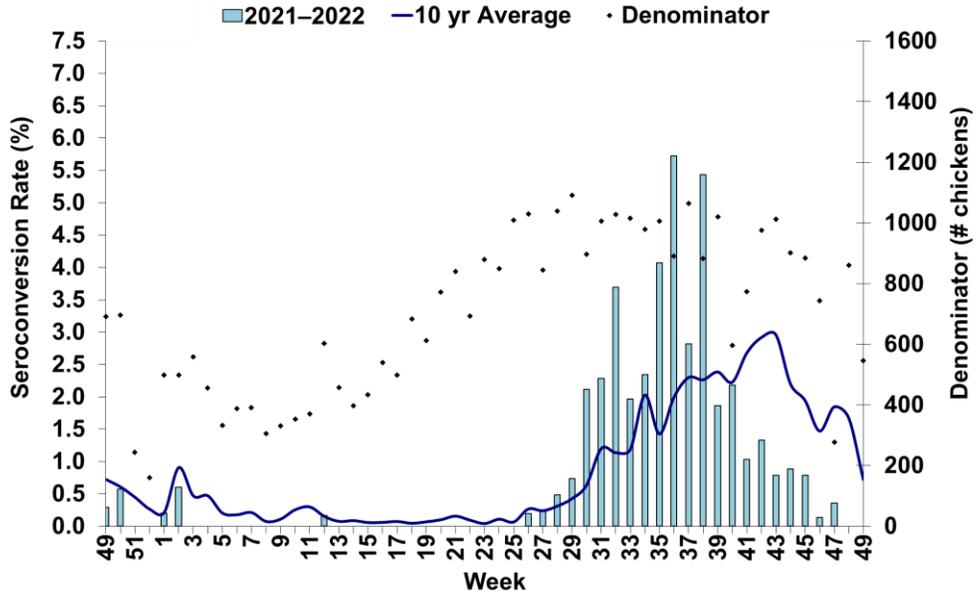
Sentinel Chickens

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.

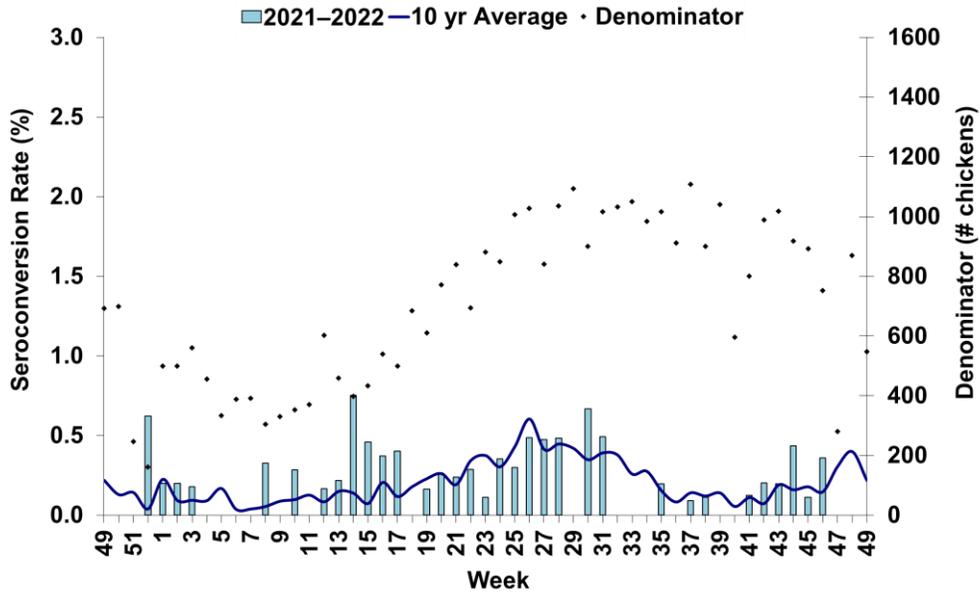
Sixteen sentinel chickens tested positive for antibodies to WNV this week in Bay, Manatee, Palm Beach, Pinellas, St. Johns, and St. Lucie counties. One sentinel chicken tested positive for antibodies to EEEV this week in Nassau County. One sentinel chicken tested positive for antibodies to HJV this week in Walton County.

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Bay	9/12/2022	25.00		25.00				3 WNV	35 WNV, 1 EEEV, 1 SLEV
	9/19/2022	30.77		30.77				4 WNV	
Manatee	9/13/2022	8.16		8.16				4 WNV	35 WNV, 1 EEEV
Nassau	11/19/2022				3.13	3.13		1 EEEV	15 WNV, 5 EEEV, 1 Flavivirus
Palm Beach	9/12/2022-9/13/2022	29.17		29.17				7 WNV	19 WNV, 1 SLEV
Pinellas	9/19/2022	17.14		17.14				6 WNV	23 WNV, 1 EEEV
	11/21/2022	1.85		1.85				1 WNV	
St. Johns	9/19/2022	6.52		6.52				3 WNV	17 WNV, 2 SLEV, 1 Flavivirus
St. Lucie	11/17/2022	3.03		3.03				1 WNV	6 WNV, 1 Flavivirus
Walton	9/26/2022				1.19		1.19	1 HJV	39 WNV, 14 EEEV, 1 SLEV, 3 HJV, 2 Flavivirus

Sentinel Seroconversions to WNV in Florida, 2021–2022



Sentinel Seroconversions to EEEV in Florida, 2021–2022



Mosquito Pools

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

County	Collection Date	Result	Species	County YTD

Dead Birds

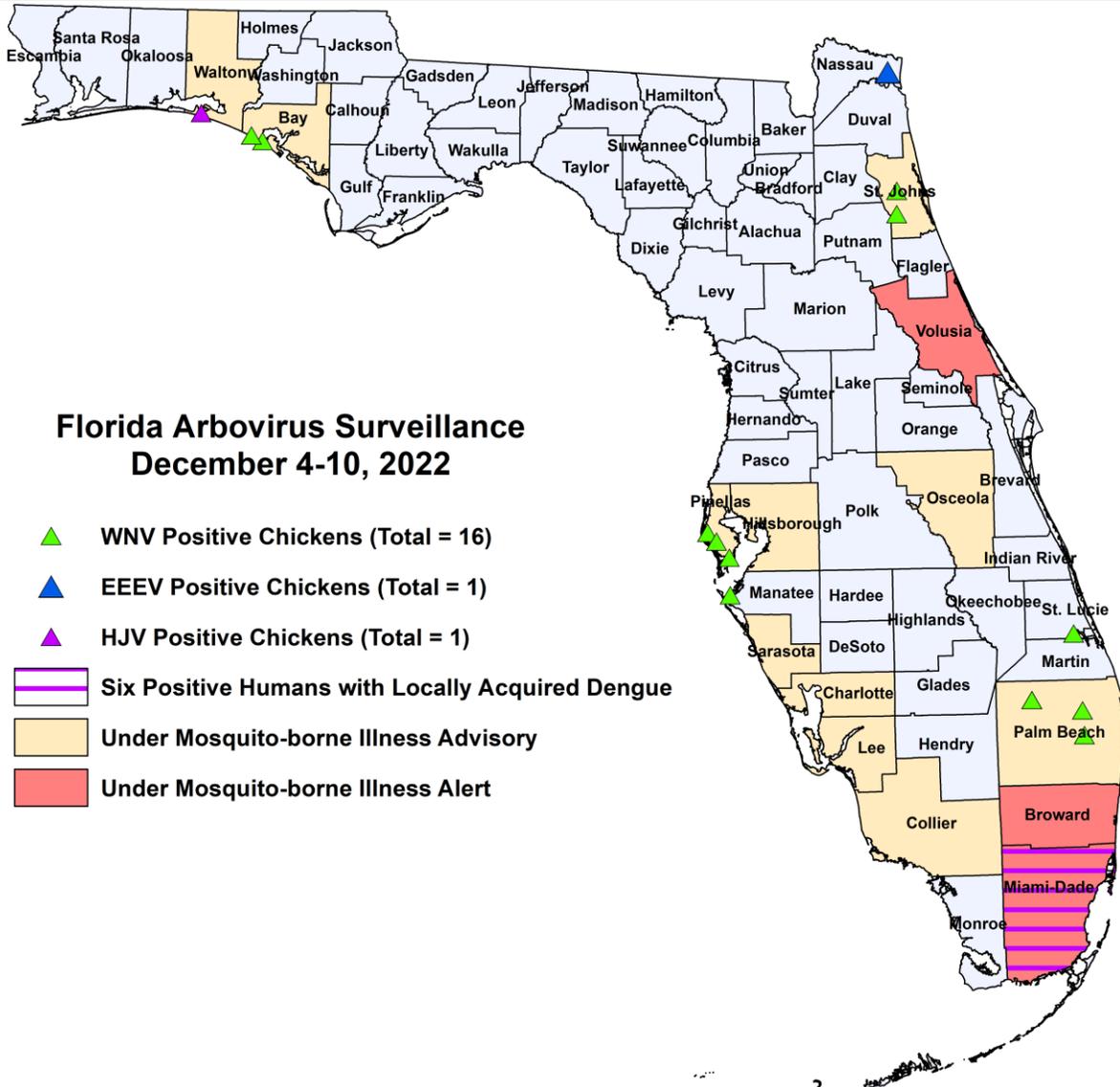
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 15 reports representing a total of 40 dead birds, including one crow and one raptor, were received from 10 counties.

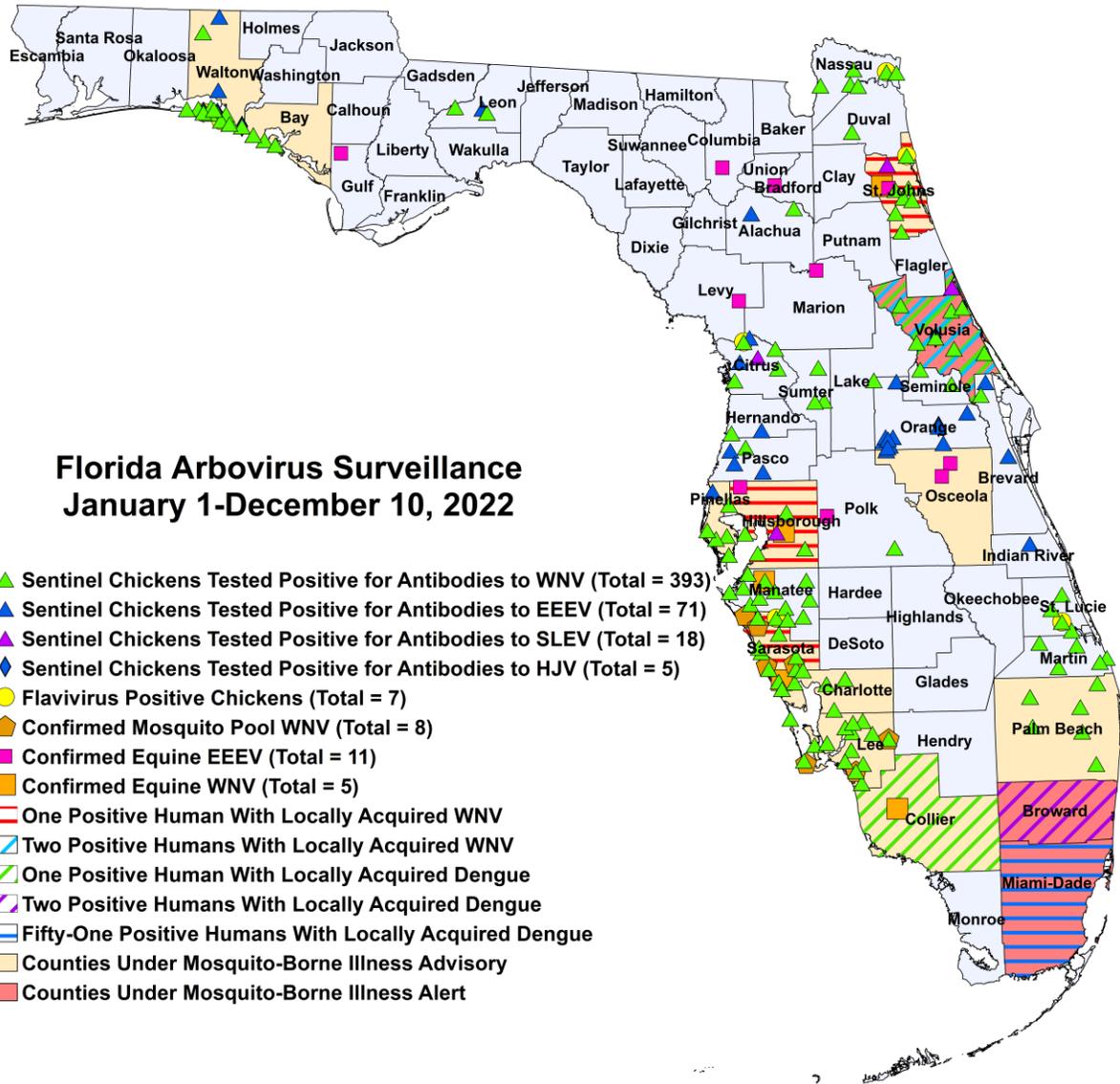
In 2022, 1514 reports representing a total of 5129 dead birds (117 crows, 39 jays, 207 raptors, 171 doves) were received from 59 of Florida's 67 counties.

2022

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Broward	1	0	0	0	0
Clay	3	0	0	0	0
Collier	5	0	0	1	0
Duval	22	0	0	0	0
Indian River	1	1	0	0	0
Palm Beach	2	0	0	0	0
Pasco	1	0	0	0	0
Pinellas	3	0	0	0	0
St. Johns	1	0	0	0	0
Volusia	1	0	0	0	0

Maps





2022 Arbovirus Activity by County

County	Humans	Equines	Sentinel Chickens	Other
Alachua			1 WNV (9/13) 3 EEEV (5/31, 9/13, 11/8)	
Bay			35 WNV (3/21, 7/5, 7/18, 7/25, 8/1, 8/8, 8/22, 8/30, 9/6, 9/12, 9/19, 9/26, 11/7) 1 EEEV (7/25) 1 SLEV (10/24)	
Bradford		1 EEEV (6/22)		
Brevard			1 WNV (8/5) 2 EEEV (4/7, 7/1)	
Broward	2 dengue (October)			
Charlotte			21 WNV (7/1, 7/15, 7/29, 8/5, 8/12, 8/19, 9/1, 9/9, 10/28)	

County	Humans	Equines	Sentinel Chickens	Other
Citrus			9 WNV (1/4, 1/11, 7/19, 8/30, 9/6, 10/18, 11/9) 11 EEEV (1/11, 1/18, 4/19, 5/17, 5/23, 6/1, 6/14, 6/21, 6/28, 7/6) 2 SLEV (9/6, 10/24) 1 Flavivirus (1/25)	
Collier	1 dengue (July)	1 WNV (8/21)		
Columbia		1 EEEV (5/9)		
Duval			4 WNV (8/29, 9/12, 9/19, 10/4)	
Gulf		1 EEEV (7/25)		
Hernando			2 WNV (8/15) 1 EEEV (10/24)	
Hillsborough	1 WNV (October)	1 WNV (10/23) 2 EEEV (8/28, 9/2)	13 WNV (8/2, 8/10, 8/24, 9/7, 9/13, 9/21) 1 EEEV (3/23) 1 SLEV (10/26)	
Indian River			1 EEEV (4/28)	
Lee			63 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, 8/29, 8/30, 9/5, 9/6, 9/12, 9/13, 9/19, 9/20, 10/3, 10/10, 10/17, 10/31) 1 EEEV (10/31)	3 WNV mosquito pools (<i>Cx. nigripalpus</i> [8/2, 8/9, 9/5])
Leon			3 WNV (7/27, 8/8, 8/15) 5 EEEV (7/27, 8/1, 8/29, 9/20)	
Levy		1 EEEV (6/16)		
Manatee		1 WNV (9/1)	35 WNV (7/26, 8/9, 8/24, 8/30, 9/6, 9/13, 9/21, 9/26, 10/5, 10/19) 1 EEEV (7/13)	
Marion		1 EEEV (7/7)		
Martin			10 WNV (9/23, 10/7, 10/14, 10/28) 4 SLEV (10/21)	
Miami-Dade	51 dengue (June, July (4), August (17), September (9), October (14), November (6))			
Nassau			15 WNV (8/11, 9/2, 9/8, 9/23, 9/24, 10/1, 10/28, 11/4) 5 EEEV (7/29, 8/6, 11/4, 11/19) 1 Flavivirus (10/8)	
Orange			2 WNV (9/6) 18 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, 10/17, 10/31) 1 HJV (5/31)	
Osceola		2 EEEV (5/24, 5/26)		
Palm Beach			19 WNV (8/15, 8/29, 9/12, 9/13, 9/20, 9/26, 10/3) 1 SLEV (8/29)	
Pasco			1 WNV (7/25) 3 EEEV (4/11, 8/29, 10/23)	
Pinellas			23 WNV (7/25, 8/1, 8/8, 9/6, 9/12, 9/19, 9/26, 10/17, 10/31, 11/21) 1 EEEV (3/7)	
Polk		1 EEEV (6/19)	1 WNV (9/26)	

County	Humans	Equines	Sentinel Chickens	Other
Sarasota	1 WNV (September)	1 WNV (8/28)	47 WNV (7/15, 7/22, 7/26, 7/29, 8/2, 8/5, 8/9, 8/15, 8/16, 8/19, 8/26, 8/30, 9/2, 9/7, 9/9, 9/13, 9/16, 9/20, 9/23, 10/17) 3 SLEV (8/26, 9/9, 10/21) 1 Flavivirus (6/7)	5 WNV mosquito pools (Cx. quinquefasciatus [7/20, 7/27, 9/8, 9/12])
Seminole			3 WNV (8/22, 8/29, 9/19) 1 SLEV (8/22)	
St. Johns	1 WNV (October)	1 EEEV (7/5) 1 WNV (10/25)	17 WNV (7/25, 8/8, 8/15, 8/29, 9/6, 9/12, 9/19, 10/17, 11/7) 2 SLEV (10/24) 1 Flavivirus (9/6)	
St. Lucie			6 WNV (9/27, 10/5, 10/7, 10/26, 11/17) 1 Flavivirus (10/7)	
Sumter			4 WNV (8/8, 8/15, 9/12, 10/24, 11/2) 1 SLEV (9/6)	
Volusia	2 WNV (July, August) 1 dengue (September)		19 WNV (7/11, 7/25, 8/8, 8/15, 9/6, 9/12, 9/26, 10/3, 10/10, 10/17) 3 EEEV (2/21, 6/27, 11/14) 1 SLEV (9/6) 1 HJV (5/23)	
Walton			39 WNV (7/25, 8/8, 8/15, 8/22, 8/29, 8/31, 9/6, 9/12, 9/19, 10/10, 10/17, 10/24, 10/31, 11/7) 14 EEEV (4/4, 5/9, 6/13, 6/20, 6/27, 7/5, 7/11, 7/13, 7/25, 8/1, 10/10, 10/18) 1 SLEV (3/21) 3 HJV (6/20, 7/25, 9/26) 2 Flavivirus (3/21, 8/22)	

*Seven 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 Staneck, 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.