Florida Arbovirus Surveillance
Week 46: November 13-19, 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 November 13-19, 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. Seven sentinel chickens tested positive for antibodies to WNV this week in Bay, Nassau, St. Johns, St. Lucie, and Walton counties. No mosquito pools tested positive for WNV this week. In 2022, positive samples from four humans, five horses, 353 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 13 sentinel chickens have been reported from 10 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 Nassau County. In 2022, positive samples from 68 sentinel chickens and 11 horses have been reported from 24 counties.

International Travel-Associated Dengue: Twenty-three cases of dengue were reported this week in persons that had international travel. In 2022, 702 travel-associated dengue cases have been reported.

Dengue Cases Acquired in Florida: Seven cases of locally acquired dengue were reported this week in Miami-Dade County. In 2022, 48 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, Martin, 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
	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: wwwn.cdc.gov/arbonet/maps/ADB_Diseases_Map/index.html.

2022 Human Case Summary

West Nile Virus Illnesses Acquired in Florida: Four human cases of WNV illness acquired in Florida have been reported in 2022 from Volusia (July, August), Sarasota (September), and St. Johns (October) counties.

International Travel-Associated Dengue Cases: Seven hundred and two 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 (42), Collier (9), Duval (7), Escambia (2), Flagler, Hendry (2), Hernando (2), Hillsborough (68), Indian River, Lee (26), Leon, Manatee (2), Martin (2), Miami-Dade (469), Monroe (3), Orange (7), Osceola (2), Palm Beach (21), Pasco (3), Pinellas (7), Polk (8), Santa Rosa, Sarasota (4), St. Johns, St. Lucie (6), Suwannee, and Volusia (2). Eight 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, 616 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	38	80	413	33	2	3	1	76	646
Cuba/Central America	1							1	2
Dominican Republic	1	7						1	9
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	4	2							6

Nicaragua				2				1	3
Pakistan	2								2
Panama	1							1	2
Puerto Rico	2								2
Sri Lanka			1					1	2
Total	**61**	**94**	**418**	**37**	**2**	**3**	**1**	**86**	**702**

Dengue Cases Acquired in Florida: In 2022, 48 cases of locally acquired dengue have been reported in Collier, Broward (2), Miami-Dade (44), and Volusia counties, with onsets in June, July (5), August (17), September (9), October (15) and November. One case was reported in a non-Florida resident. Forty-four of the cases have been serotyped by PCR. Serotypes reported were DENV-3 (41), DENV-4 (2), and DENV-2.

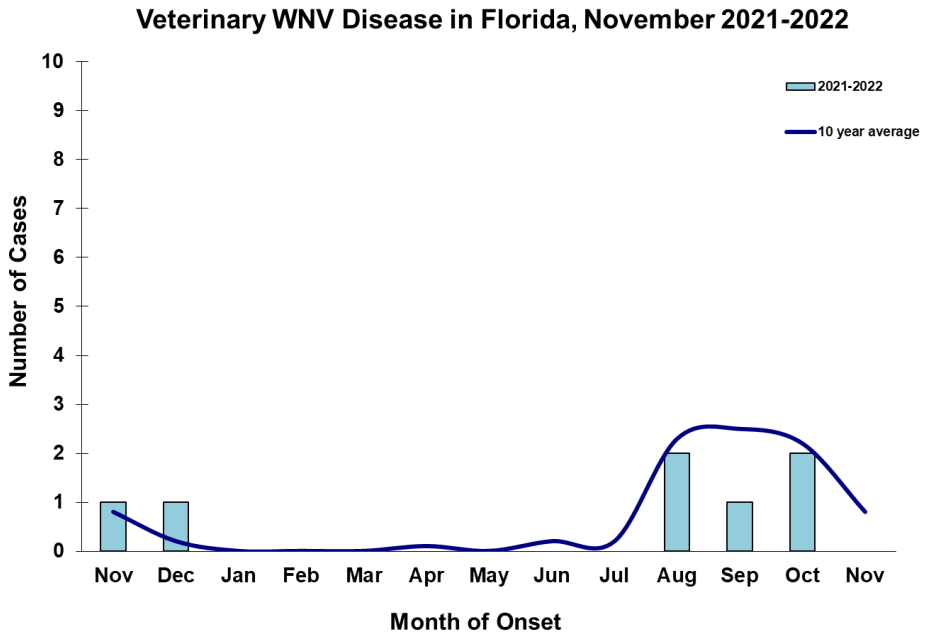
International Travel-Associated Malaria Cases: Fifty cases of malaria with onset in 2022 have been reported. Countries of origin were: Brazil (3), Cameroon (3), Central African Republic, Côte D'Ivoire, Ethiopia (2), Equatorial Guinea (2), Ghana (4), Guinea (2), India, Kenya, multiple countries (4), Nicaragua (4), Nigeria (12), Pakistan (2), Sierra Leone (3), Sudan, Uganda (2), Venezuela, and Zambia. Counties reporting cases were: Brevard, Broward (7), Duval (5), Flagler (3), Hillsborough (4), Lee (4), Leon, Miami-Dade (9), Orange (5), Palm Beach (4), Pasco (2), Pinellas (2), Santa Rosa, and St. Johns (2). Seven cases were reported in non-Florida residents.

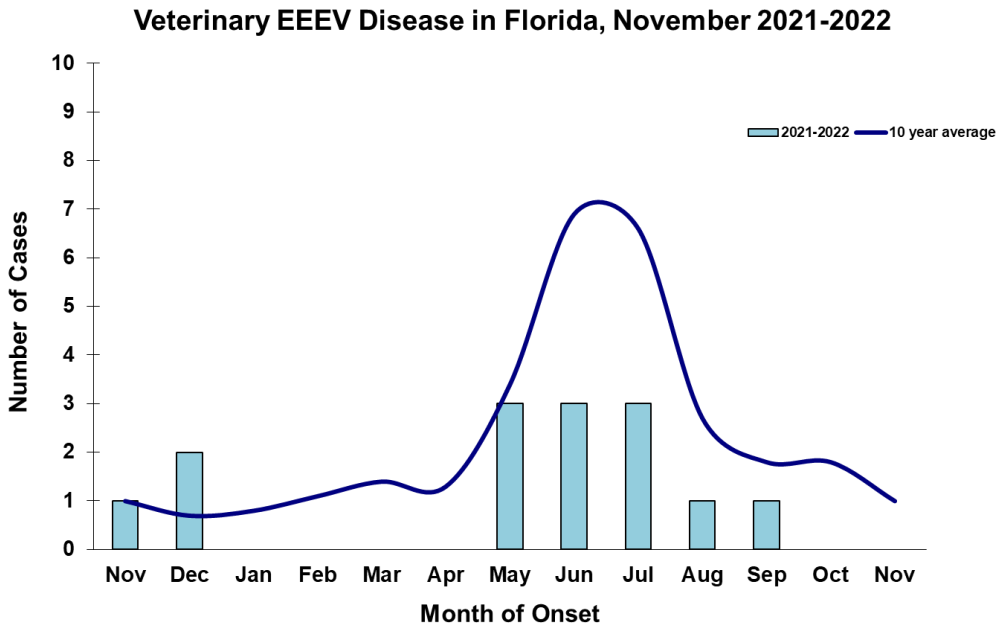
Twenty-nine cases (58%) were diagnosed with *Plasmodium falciparum.* Eighteen cases (36%) were diagnosed with *Plasmodium vivax*. Three cases (6%) were diagnosed with *Plasmodium malariae.*

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.



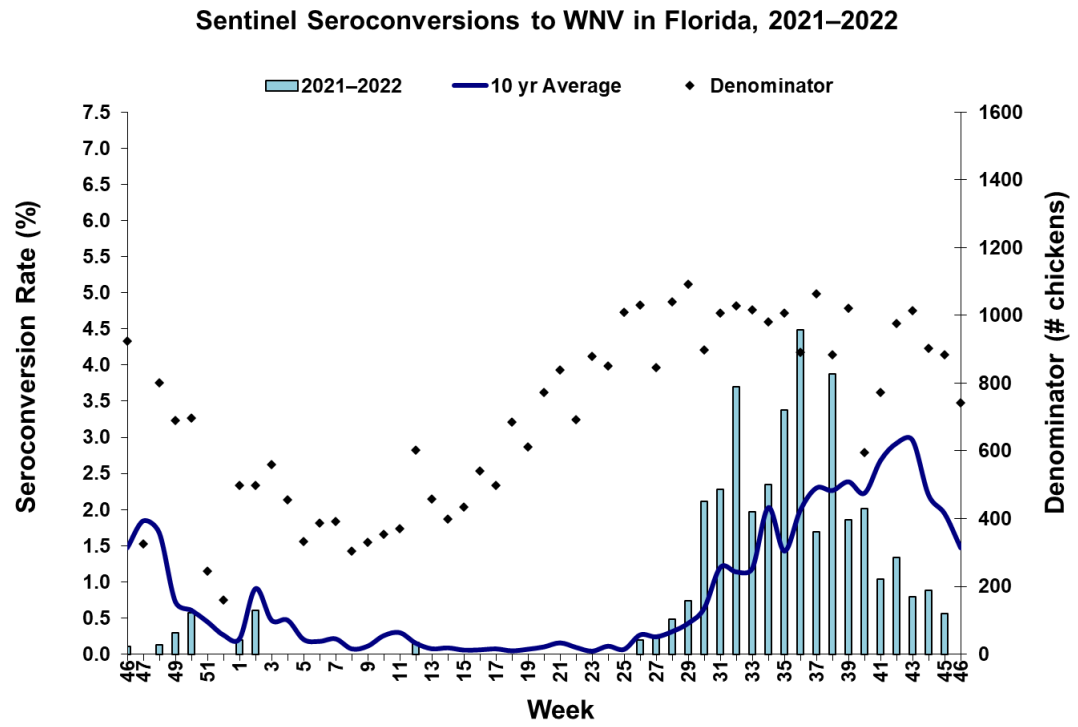


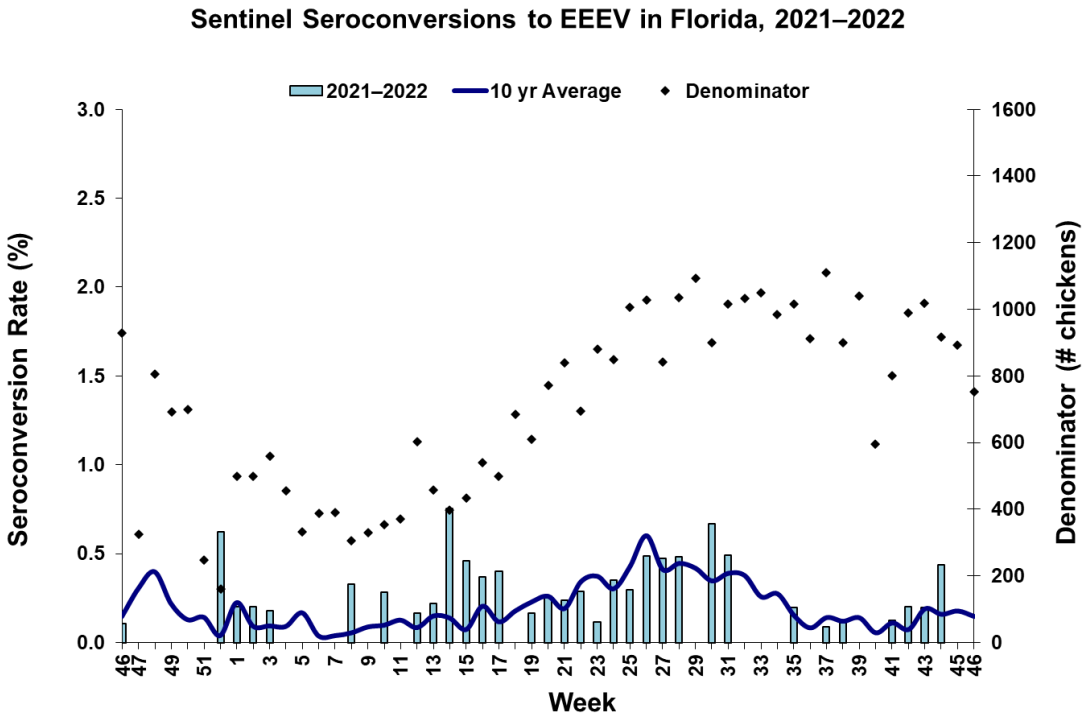
Sentinel Chickens

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.

Seven sentinel chickens tested positive for antibodies to WNV this week in Bay, Nassau, St. Johns, St. Lucie, and Walton counties. Two sentinel chickens tested positive for antibodies to EEEV this week in Nassau County.

		Seroconversion Rates (%)						County Totals	
County	**Collection Date**	**Flavi**	**SLEV**	**WNV**	**Alpha**	**EEEV**	**HJV**	**Collection Week**	**YTD**
Bay	11/7/2022	11.76		11.76				2 WNV	30 WNV, 1 EEEV, 1 SLEV, 1 Flavivirus
Nassau	11/4/2022	3.85		3.85	8.00	8.00		1 WNV, 2 EEEV	13 WNV, 4 EEEV, 1 Flavivirus
St. Johns	11/7/2022	2.78		2.78				1 WNV	12 WNV, 2 SLEV, 3 Flavivirus
St. Lucie	11/2/2022	3.03		3.03				1 WNV	4 WNV, 1 Flavivirus
Walton	11/7/2022	2.33		2.33				2 WNV	39 WNV, 14 EEEV, 1 SLEV, 2 HJV, 2 Flavivirus





Mosquito Pools

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

County	Collection Date	Result	Species	County YTD

Dead Birds

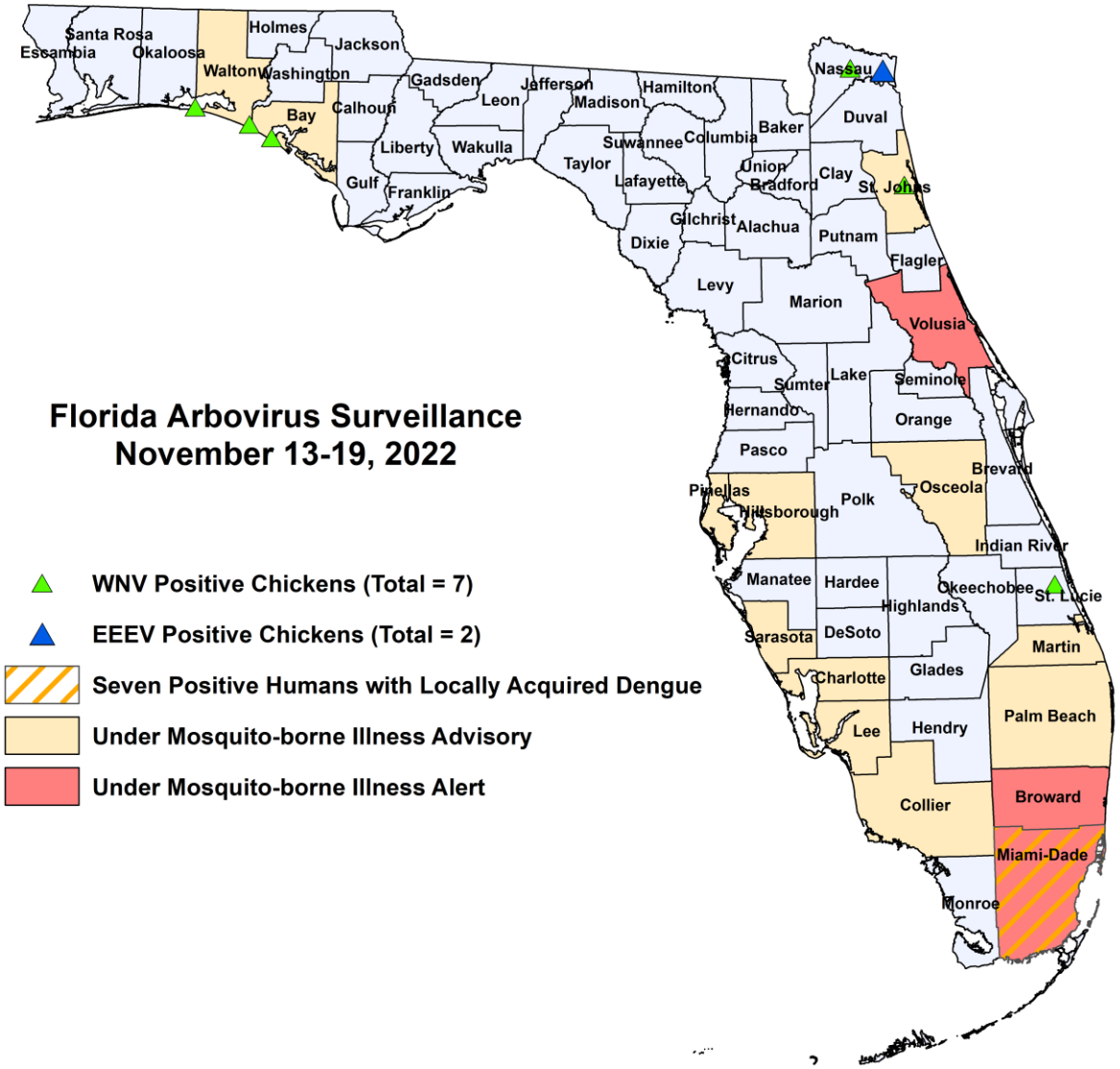
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 35 reports representing a total of 276 dead birds, including one crow, one jay, four raptors, and 10 doves, were received from 18 counties.

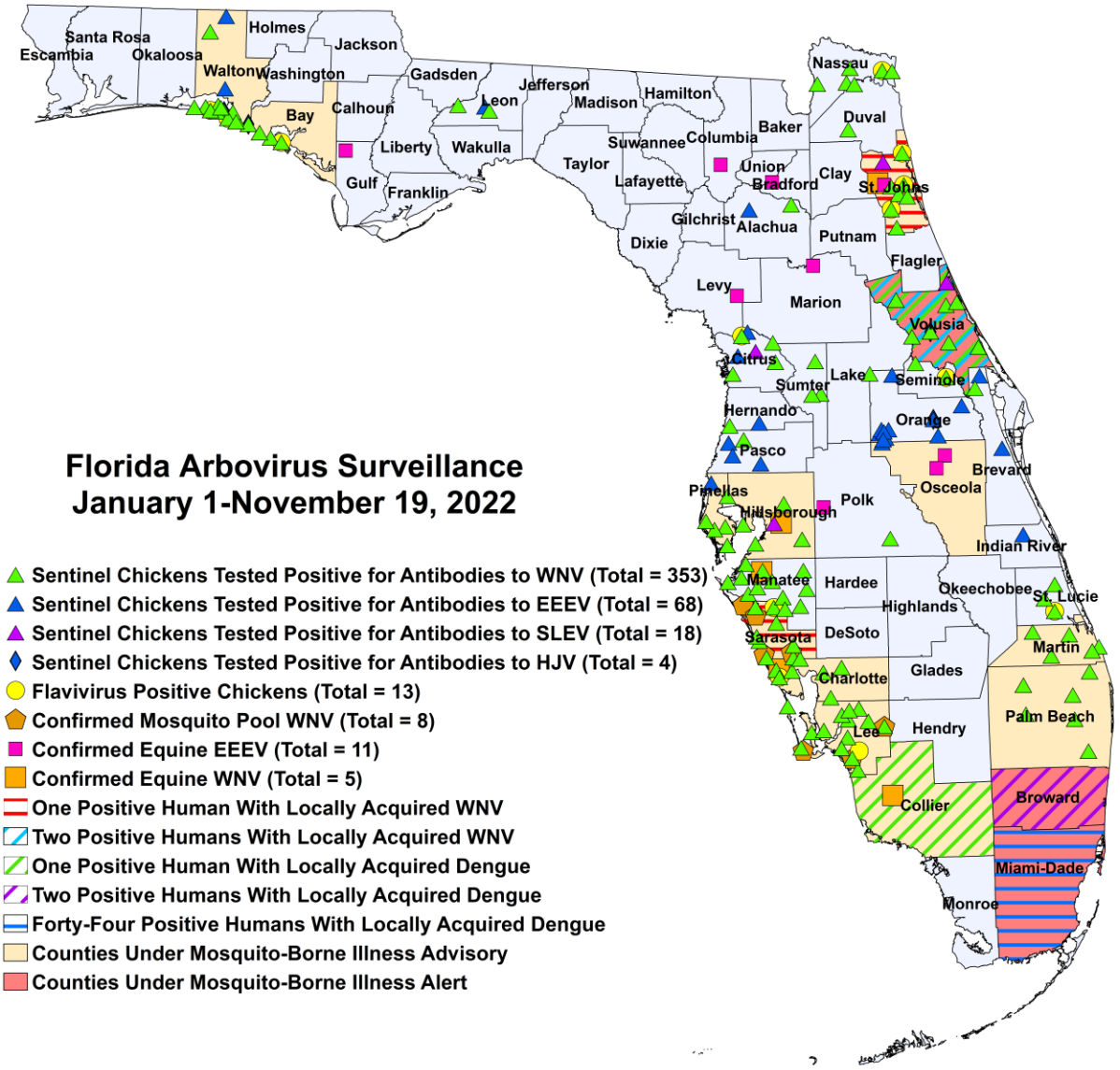
In 2022, 1477 reports representing a total of 4920 dead birds (113 crows, 38 jays, 198 raptors, 166 doves) were received from 59 of Florida's 67 counties.

2022

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Bay	1	0	0	0	0
Broward	4	0	0	1	0
Calhoun	6	0	0	0	0
Clay	1	0	0	0	0
Columbia	1	0	0	0	0
Duval	79	0	0	0	0
Hillsborough	1	0	0	0	0
Jackson	80	0	0	0	0
Marion	51	1	0	0	0
Miami-Dade	6	0	1	0	4
Orange	2	0	0	2	0
Palm Beach	9	0	0	0	0
Pasco	15	0	0	0	6
Pinellas	4	0	0	1	0
Sarasota	1	0	0	0	0
Seminole	5	0	0	0	0
St. Johns	1	0	0	0	0
Wakulla	9	0	0	0	0

Maps


Florida Arbovirus Surveillance
November 13-19, 2022
WNV Positive Chickens (Total = 7)
EEEV Positive Chickens (Total = 2)
Seven Positive Humans with Locally Acquired Dengue
Under Mosquito-borne Illness Advisory
Under Mosquito-borne Illness Alert
Santa Rosa
Escambia
Okaloosa
Holmes
Jackson
Walton
Washington
Bay
Calhoun
Gadsden
Liberty
Gulf
Franklin
Wakulla
Leon
Jefferson
Madison
Taylor
Hamilton
Suwannee
Lafayette
Columbia
Baker
Nassau
Duval
Union
Bradford
Clay
St. Johns
Gilchrist
Alachua
Dixie
Putnam
Flagler
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
Palm Beach
Lee
Hendry
Collier
Broward
Miami-Dade
Monroe



2022 Arbovirus Activity by County

County	Humans	Equines	Sentinel Chickens	Other
Alachua			1 WNV (9/13) 2 EEEV (5/31, 9/13)	
Bay			30 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) 1 Flavivirus (9/6)	
Bradford		1 EEEV (6/22)		
Brevard			1 WNV (8/5) 2 EEEV (4/7, 7/1)	
Broward	2 dengue (October)			
Charlotte			17 WNV (7/1, 7/15, 7/29, 8/5, 8/12, 8/19, 9/9, 10/28) 1 Flavivirus (9/9)	

County	Humans	Equines	Sentinel Chickens	Other
Citrus			7 WNV (1/4, 1/11, 7/19, 8/30, 10/18) 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			3 WNV (8/29, 9/19, 10/4)	
Gulf		1 EEEV (7/25)		
Hernando			2 WNV (8/15) 1 EEEV (10/24)	
Hillsborough		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			60 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, 9/5, 9/6, 9/12, 9/13, 9/19, 9/20, 10/3, 10/10, 10/17, 10/31) 1 EEEV (10/31) 1 Flavivirus (9/13)	3 WNV mosquito pools (*Cx. nigripalpus* [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)	33 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	44 dengue (June, July (4), August (17), September (8), October (13), November)			
Nassau			13 WNV (8/11, 9/2, 9/23, 9/24, 10/1, 10/28, 11/4) 4 EEEV (7/29, 8/6, 11/4) 1 Flavivirus (10/8)	
Orange			1 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			13 WNV (8/15, 8/29, 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			20 WNV (7/25, 8/1, 8/8, 9/6, 9/12, 9/19, 9/26, 10/17, 10/31) 1 EEEV (3/7)	

County	Humans	Equines	Sentinel Chickens	Other
Polk		1 EEEV (6/19)	1 WNV (9/26)	
Sarasota	1 WNV (September)	1 WNV (8/28)	44 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			2 WNV (8/22, 9/19) 1 SLEV (8/22) 1 Flavivirus (9/6)	
St. Johns	1 WNV (October)	1 EEEV (7/5) 1 WNV (10/25)	12 WNV (7/25, 8/8, 8/15, 8/29, 9/6, 9/19, 10/17, 11/7) 2 SLEV (10/24) 3 Flavivirus (9/6, 9/12)	
St. Lucie			4 WNV (9/27, 10/5, 10/26) 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) 2 EEEV (2/21, 6/27) 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) 2 HJV (6/20, 7/25) 2 Flavivirus (3/21, 8/22)	

*Thirteen 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

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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.