



Florida Arbovirus Surveillance Week 4: January 22-28, 2023

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 January 22-28, 2023, the following arboviral activity was recorded in Florida.

[This report contains information for 2022 and 2023.](#)

WNV activity: No human cases of WNV infection were reported this week. No horses with WNV infection were reported this week. Thirty sentinel chickens tested positive for antibodies to WNV this week in Bay, Brevard, Charlotte, Lee, Leon, Martin, Nassau, Palm Beach, Sarasota, Volusia, and Walton counties. No mosquito pools tested positive for WNV this week. In 2022, positive samples from six humans, five horses, 463 sentinel chickens, and eight mosquito pools have been reported from 27 counties. In 2023, a positive sample from one horse has been reported from one county.

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 six sentinel chickens have been reported from five counties.

EEEV activity: No human cases of EEEV infection were reported this week. No horses with EEEV infection were reported this week. Three sentinel chickens tested positive for antibodies to EEEV this week in Lee, Orange, and Volusia counties. In 2022, positive samples from 72 sentinel chickens and 11 horses have been reported from 24 counties. In 2023, positive samples from three sentinel chickens have been reported from three counties.

International Travel-Associated Dengue: Fourteen cases of dengue were reported this week in persons that had international travel. In 2022, 871 travel-associated dengue cases have been reported. In 2023, 14 travel-associated dengue fever cases have been reported.

Dengue Cases Acquired in Florida: No cases of locally acquired dengue were reported this week. In 2022, 68 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. 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	Japanese Encephalitis
Africa and the Middle East	Americas	Asia and the Pacific Islands	Africa and the Middle East	Oceania
São Tomé and Príncipe	Colombia	Afghanistan	Ghana	Australia
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.

2022-2023 Human Case Summary

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

2022 International Travel-Associated Dengue Cases: Eight 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: Alachua, Brevard (2), Broward (56), Charlotte, Collier (12), Duval (8), Escambia (2), Flagler (2), Hendry (3), Hernando (2), Hillsborough (76), Indian River, Lee (30), Leon, Manatee (2), Martin (2), Miami-Dade (581), Monroe (4), Orange (16), Osceola (4), Palm Beach (28), Pasco (3), Pinellas (7), Polk (8), Santa Rosa, Sarasota (5), St. Johns, St. Lucie (8), Suwannee (2), and Volusia (2). Ten cases were reported in non-Florida residents. Ten 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, 763 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
Bangladesh			1						1
Brazil	7							2	9
Caribbean			1						1
Colombia	2								2
Costa Rica	1							1	2
Cuba	41	89	521	46	2	4	1	95	799
Cuba/Central America	1							1	2
Dominican Republic	1	9						1	11
El Salvador	1			1					2
Guatemala	2	1						1	4

Guyana			1						1
Haiti	1								1
Honduras				1				1	2
India		3	1					1	5
Jamaica			1						1
Maldives		1							1
Mexico	6	3	1						10
Nicaragua				2				2	4
Pakistan	2		1						3
Panama	1							1	2
Puerto Rico	5							1	6
Sri Lanka			1					1	2
Total	71	106	529	50	2	4	1	108	871

2022 Dengue Cases Acquired in Florida: In 2022, 68 cases of locally acquired dengue have been reported in Collier, Broward (2), Miami-Dade (64), and Volusia counties, with onsets in June, July (5), August (18), September (10), October (18), November (11), and December (5). One case was reported in a non-Florida resident. Sixty of the cases have been serotyped by PCR. Serotypes reported were DENV-3 (57), DENV-4 (2), and DENV-2.

2023 International Travel-Associated Dengue Cases: Fourteen cases with onset in 2023 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, Duval, Hendry, Hillsborough (3), and Miami-Dade (8). In 2023, thirteen 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	Unknown	Total
Brazil				1	1
Cuba	1	1	10		12
India			1		1
Total	1	1	11	1	14

2022 International Travel-Associated Malaria Cases: Sixty-two 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 (5), Guinea (2), Guyana, India, Kenya, multiple countries (6), Nicaragua (6), Nigeria (14), Pakistan (2), Sierra Leone (4), Solomon Islands, Sudan, Uganda (3), Venezuela, and Zambia. Counties reporting cases were: Brevard, Broward (7), Duval (6), Flagler (3), Hillsborough (7), Lake, Lee (4), Leon, Manatee, Miami-Dade (10), Nassau, Orange (5), Palm Beach (6), Pasco (2), Pinellas (2), Sarasota (2), Santa Rosa, and St. Johns (2). Seven cases were reported in non-Florida residents.

Thirty-four cases (55%) were diagnosed with *Plasmodium falciparum*. Twenty-five cases (40%) were diagnosed with *Plasmodium vivax*. Three cases (5%) were diagnosed with *Plasmodium malariae*.

2023 International Travel-Associated Malaria Cases: One case of malaria with onset in 2023 has been reported. Country of origin was: Ghana. County reporting case was: Leon.

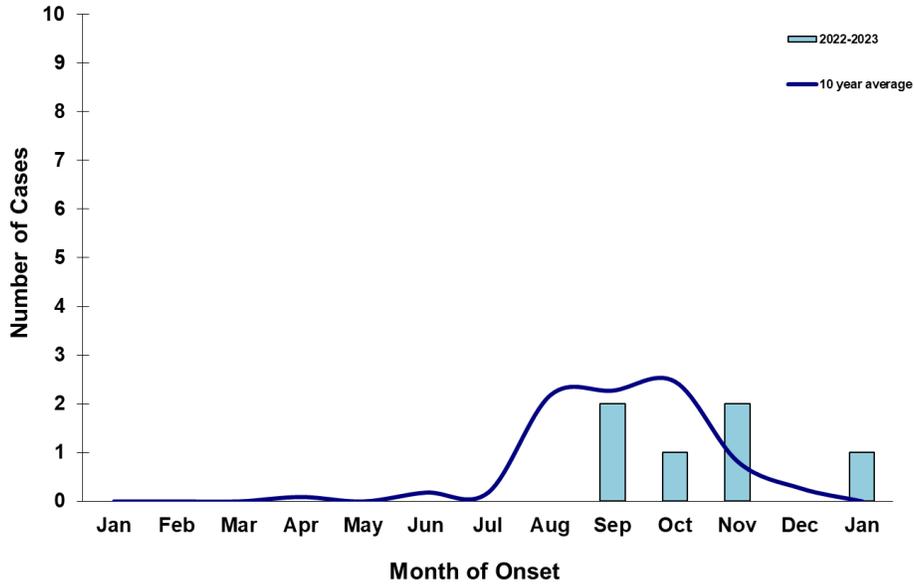
One case (100%) was diagnosed with *Plasmodium falciparum*.

Veterinary Cases**

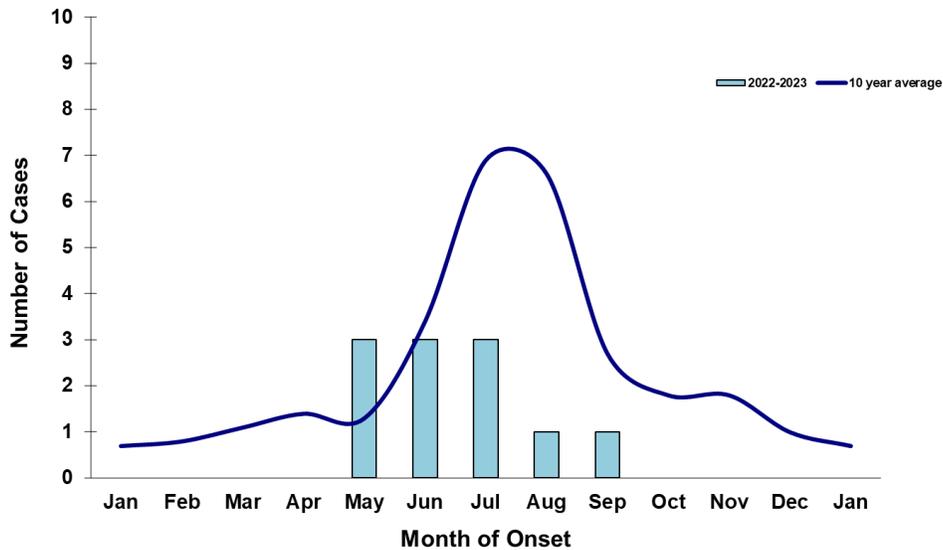
**Veterinary cases are reported by date of onset. Only mammalian veterinary cases are included in the graphs.

No veterinary cases were reported this week.

Veterinary WNV Disease in Florida, January 2022-2023



Veterinary EEEV Disease in Florida, January 2022-2023



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.

Thirty sentinel chickens tested positive for antibodies to WNV this week in Bay, Brevard, Charlotte, Lee, Leon, Martin, Nassau, Palm Beach, Sarasota, Volusia, and Walton counties. Three sentinel chickens tested positive for antibodies to EEEV this week in Lee, Orange, and Volusia counties.

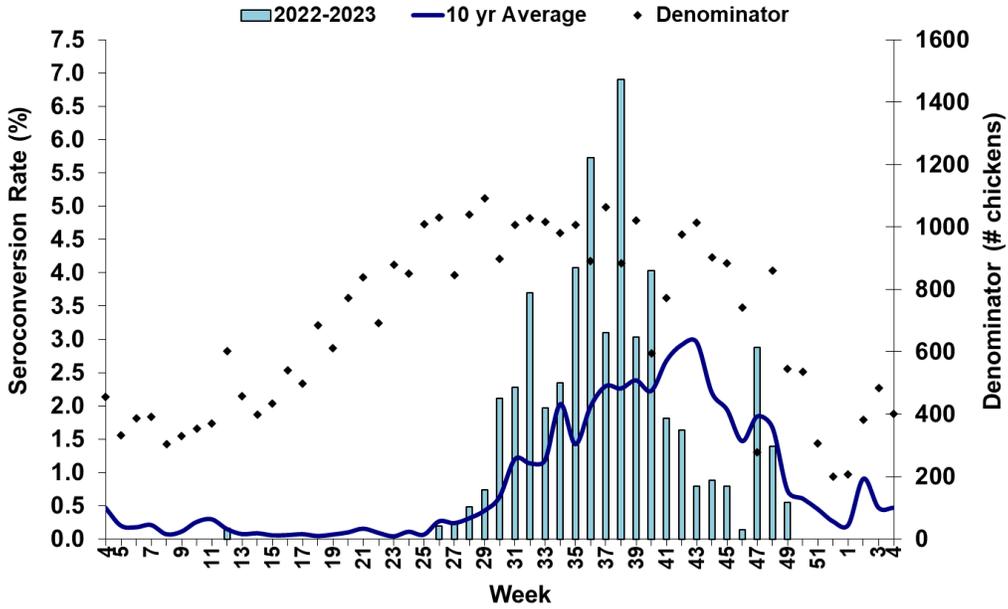
2022

County	Collection Date	Seroconversion Rates (%)						Collection Week	County Totals
		Flavi	SLEV	WNV	Alpha	EEEV	HJV		YTD
Bay	12/5/2022	7.14		7.14				1 WNV	36 WNV, 1 EEEV, 1 SLEV
Brevard	10/5/2022	2.94		2.94				1 WNV	3 WNV, 2 EEEV
	10/17/2022	2.78		2.78				1 WNV	
Charlotte	12/2/2022	25.00		25.00				3 WNV	27 WNV
Lee	11/28/2022	2.15		2.15				2 WNV	74 WNV, 1 EEEV
Leon	9/26/2022	14.29		14.29				3 WNV	6 WNV, 5 EEEV
Martin	10/14/2022	8.11		8.11				3 WNV	13 WNV, 4 SLEV
	10/7/2022	8.33		5.56				2 WNV, 1 Flavivirus	32 WNV, 5 EEEV, 1 Flavivirus
Nassau	11/25/2022-11/26/2022	18.75		18.75				6 WNV	
	12/2/2022-12/3/2022	15.63		15.63				5 WNV	
Palm Beach	9/26/2022	25.00		25.00				4 WNV	24 WNV, 1 SLEV
	10/3/2022	18.75		18.75				3 WNV	
	11/29/2022	3.70		3.70				1 WNV	
Sarasota	9/20/2022	10.00		10.00				5 WNV	51 WNV, 3 SLEV, 1 Flavivirus
	11/22/2022	1.96		1.96				1 WNV	
Volusia	10/3/2022	8.00		8.00				4 WNV	21 WNV, 3 EEEV, 1 SLEV, 2 HJV
Walton	10/17/2022	5.49		5.49				5 WNV, 1 EEEV	44 WNV, 14 EEEV, 1 SLEV, 3 HJV, 2 Flavivirus

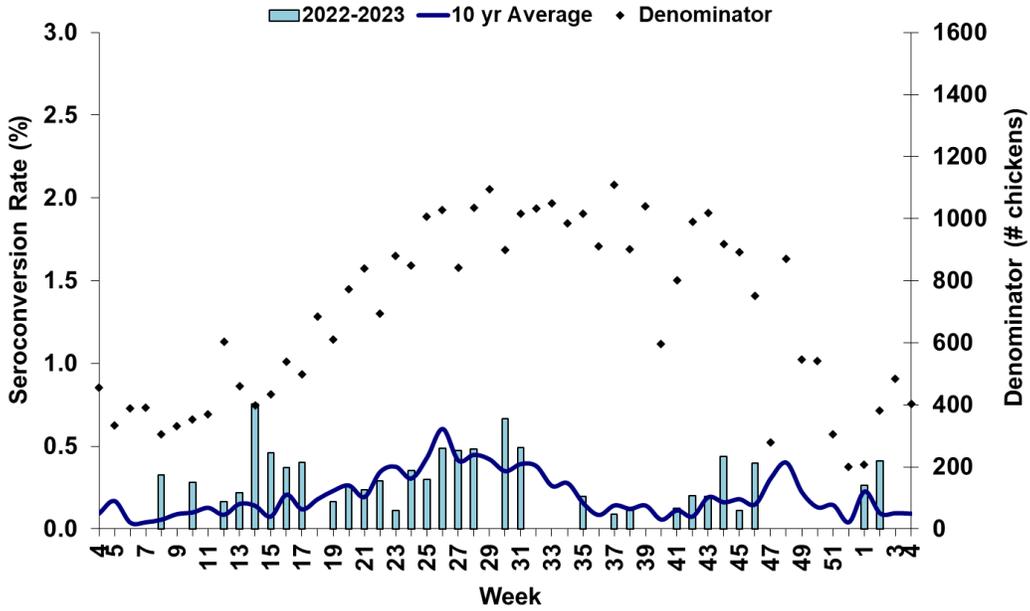
2023

County	Collection Date	Seroconversion Rates (%)						Collection Week	County Totals
		Flavi	SLEV	WNV	Alpha	EEEV	HJV		YTD
Lee	1/9/2023				1.23	1.23		1 EEEV	1 EEEV
Orange	1/17/2023				1.56	1.56		1 EEEV	1 EEEV
Volusia	1/17/2023				2.08	2.08		1 EEEV	1 EEEV

Sentinel Seroconversions to WNV in Florida, 2022–2023



Sentinel Seroconversions to EEEV in Florida, 2022–2023



Mosquito Pools

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

County	Collection Date	Result	Species	County YTD

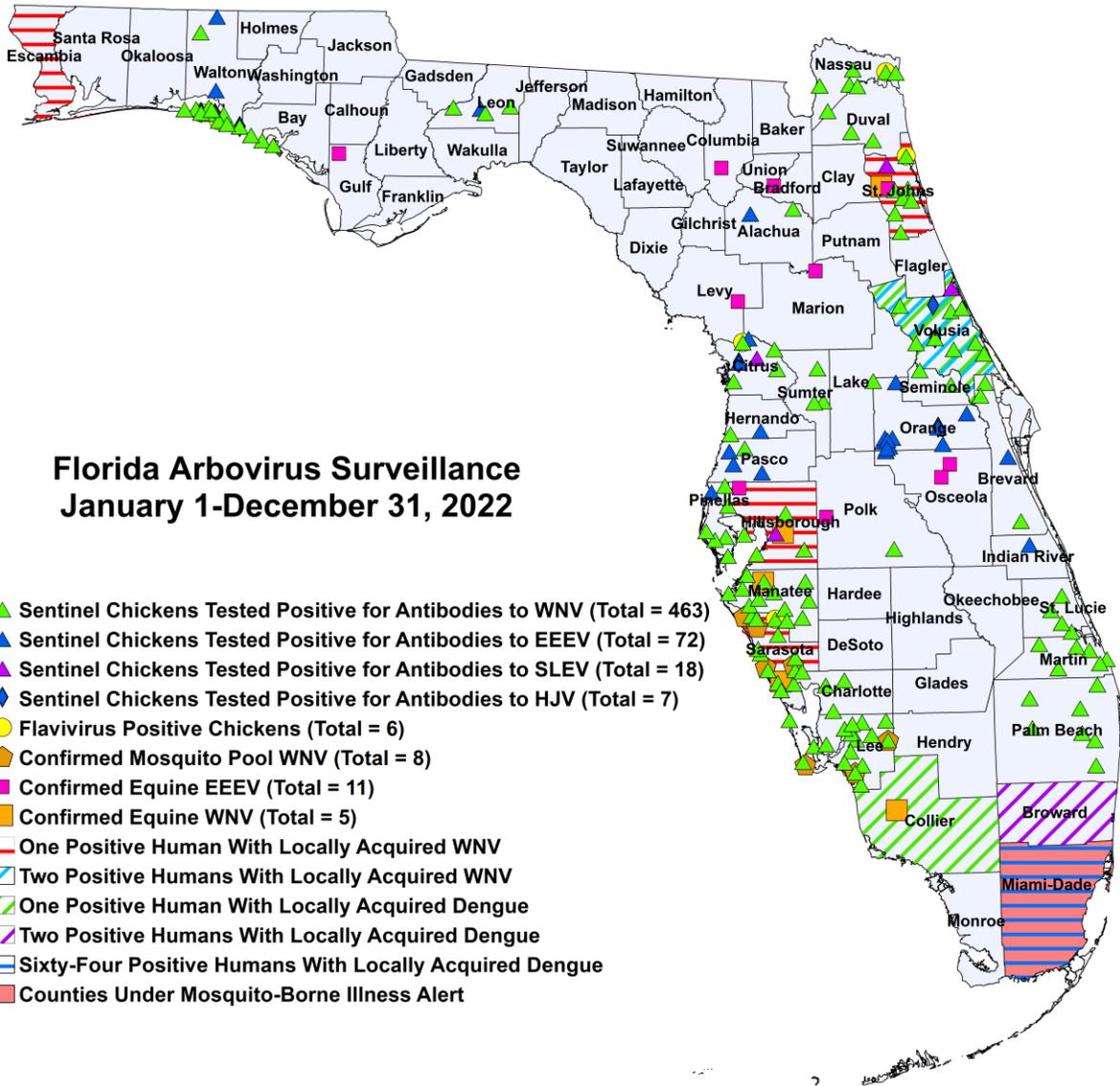
Dead Birds

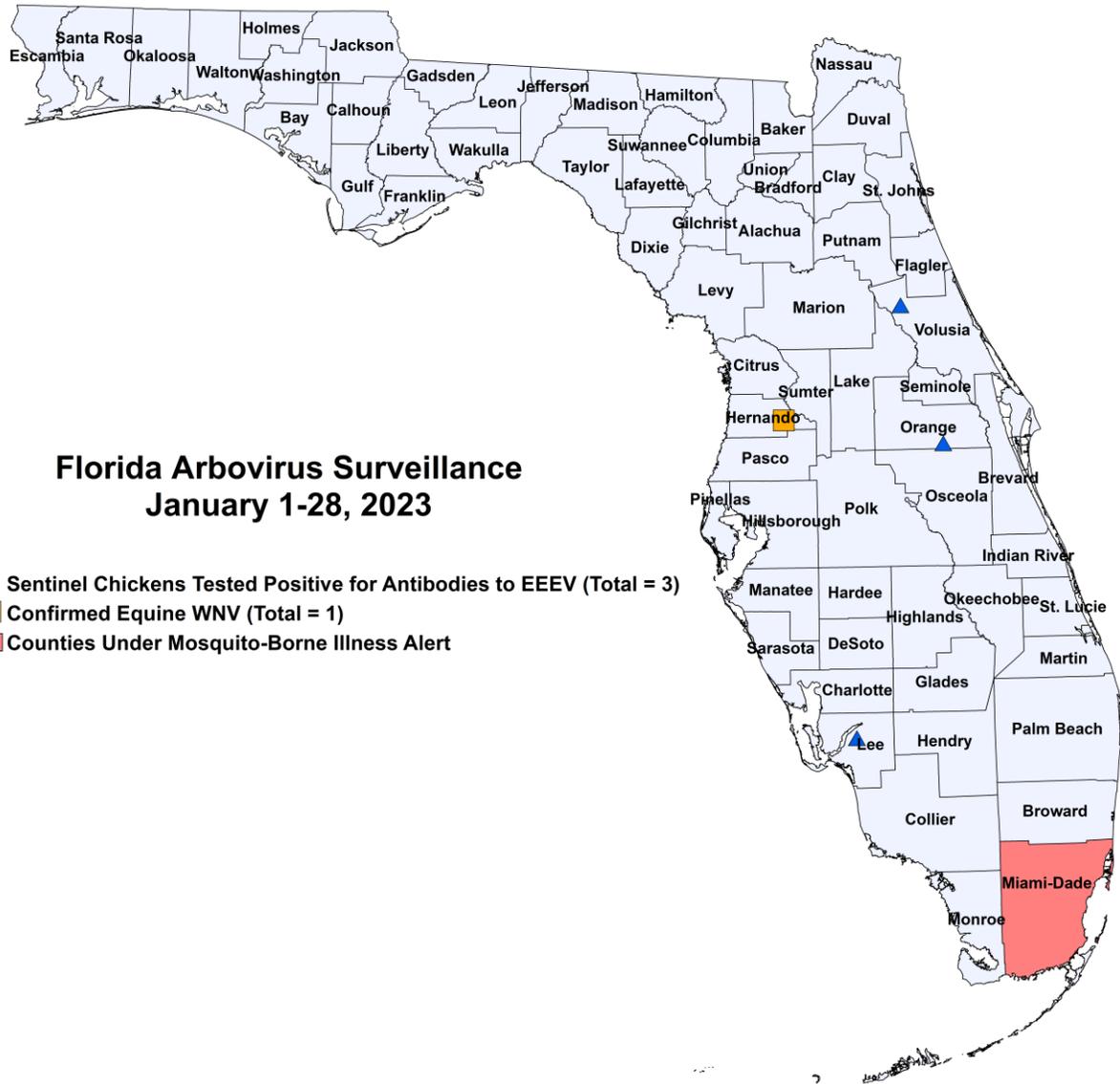
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 30 reports representing a total of 64 dead birds, including one crow, one jay, one raptor, and one dove, were received from 16 counties.

In 2023, 90 reports representing a total of 223 dead birds (1 crow, 1 jay, 9 raptors, 1 dove) were received from 31 of Florida's 67 counties.

2023

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Bay	1	0	0	0	0
Brevard	1	0	0	0	0
Citrus	1	0	0	0	0
Duval	1	0	0	0	0
Hendry	2	0	0	0	0
Hillsborough	11	0	0	1	1
Lee	1	0	0	0	0
Marion	1	0	0	0	0
Miami-Dade	30	0	0	0	0
Monroe	1	0	0	0	0
Okaloosa	3	0	0	0	0
Palm Beach	1	0	0	0	0
Pasco	2	1	0	0	0
Pinellas	1	0	0	0	0
Polk	1	0	1	0	0
St. Johns	6	0	0	0	0





Florida Arbovirus Surveillance January 1-28, 2023

- ▲ Sentinel Chickens Tested Positive for Antibodies to EEEV (Total = 3)
- Confirmed Equine WNV (Total = 1)
- Counties Under Mosquito-Borne Illness Alert

2022 Arbovirus Activity by County

County	Humans	Equines	Sentinel Chickens	Other
Alachua			1 WNV (9/13) 4 EEEV (5/31, 9/13, 11/8, 11/15)	
Bay			36 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, 12/5) 1 EEEV (7/25) 1 SLEV (10/24)	
Bradford		1 EEEV (6/22)		
Brevard			3 WNV (8/5, 10/5, 10/17) 2 EEEV (4/7, 7/1)	
Broward	2 dengue (October)			
Charlotte			27 WNV (7/1, 7/15, 7/29, 8/5, 8/12, 8/19, 9/1, 9/9, 9/16, 9/23, 10/28, 12/2)	

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 HJV (10/31) 1 Flavivirus (1/25)	
Collier	1 dengue (July)	1 WNV (8/21)		
Columbia		1 EEEV (5/9)		
Duval			5 WNV (8/29, 9/12, 9/19, 10/4, 10/10)	
Escambia	1 WNV (November)			
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)	15 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			74 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, 10/4, 10/10, 10/17, 10/31, 11/28) 1 EEEV (10/31)	3 WNV mosquito pools (<i>Cx. nigripalpus</i> [8/2, 8/9, 9/5])
Leon			5 WNV (7/27, 8/8, 8/15, 9/26) 5 EEEV (7/27, 8/1, 8/29, 9/20)	
Levy		1 EEEV (6/16)		
Manatee		1 WNV (9/1)	36 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			13 WNV (9/23, 10/7, 10/14, 10/28, 12/2) 4 SLEV (10/21)	
Miami-Dade	64 dengue (June, July (4), August (18), September (9), October (16), November (11), December (5))			
Nassau			32 WNV (8/11, 9/2, 9/8, 9/23, 9/24, 10/1, 10/7, 10/8, 10/28, 11/4, 11/25, 11/26, 12/2, 12/3) 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			24 WNV (8/15, 8/29, 9/12, 9/13, 9/20, 9/26, 10/3, 11/29) 1 SLEV (8/29)	

County	Humans	Equines	Sentinel Chickens	Other
Pasco			1 WNV (7/25) 3 EEEV (4/11, 8/29, 10/23)	
Pinellas			28 WNV (7/25, 8/1, 8/8, 9/6, 9/12, 9/19, 9/26, 10/17, 10/31, 11/21, 12/5) 1 EEEV (3/7)	
Polk		1 EEEV (6/19)	1 WNV (9/26)	
Sarasota	1 WNV (September)	1 WNV (8/28)	51 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, 11/22) 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			8 WNV (9/22, 9/27, 10/5, 10/7, 10/26, 11/17)	
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)		21 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) 2 HJV (5/23, 11/7)	
Walton			44 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)	

*Six 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.

2023 Arbovirus Activity by County

County	Humans	Equines	Sentinel Chickens	Other
Hernando		1 WNV (1/6)		
Lee			1 EEEV (1/9)	
Orange			1 EEEV (1/17)	
Volusia			1 EEEV (1/17)	

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.