Florida Arbovirus Surveillance
Week 5: January 29-February 4, 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 29-February 4, 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. Four sentinel chickens tested positive for antibodies to WNV this week in Brevard, Hillsborough, and Palm Beach counties. No mosquito pools tested positive for WNV this week. In 2022, positive samples from six humans, five horses, 467 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. One sentinel chicken tested positive for antibodies to EEEV this week in Volusia County. In 2022, positive samples from 72 sentinel chickens and 11 horses have been reported from 24 counties. In 2023, positive samples from four sentinel chickens have been reported from three counties.

International Travel-Associated Dengue: Nineteen cases of dengue were reported this week in persons that had international travel. In 2022, 886 travel-associated dengue cases have been reported. In 2023, 18 travel-associated dengue fever cases have been reported.

Dengue Cases Acquired in Florida: One case of locally acquired dengue was reported this week in Miami-Dade County. In 2022, 68 cases of locally acquired dengue have been reported. In 2023, one case of locally acquired dengue has 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: wwwn.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 eighty-six 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 (57), Charlotte, Collier (12), Duval (8), Escambia (2), Flagler (2), Hendry (3), Hernando (2), Hillsborough (77), Indian River, Lee (30), Leon, Manatee (2), Martin (2), Miami-Dade (594), 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). Eleven cases were reported in non-Florida residents. Eleven 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, 775 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	2
Brazil	7							2	9
Caribbean			1						1
Colombia	2								2
Costa Rica	1							1	2
Cuba	41	90	530	47	2	4	1	96	811
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					1	11
Nicaragua				3				2	5
Pakistan	2		1						3
Panama	1							1	2
Puerto Rico	5							1	6
Sri Lanka			1					1	2
Total	**71**	**107**	**538**	**52**	**2**	**4**	**1**	**111**	**886**

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: Eighteen 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 (4), Miami-Dade (10), and Orange. 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	14		16
India			1		1
Total	**1**	**1**	**15**	**1**	**18**

2023 Dengue Cases Acquired in Florida: In 2023, one case of locally acquired dengue has been reported in Miami-Dade County, with onset in January. The serotype was DENV-3.

2022 International Travel-Associated Malaria Cases: Sixty-three cases of malaria with onset in 2022 have been reported. Countries of origin were: Brazil (3), Cameroon (3), Central African Republic, Côte D'Ivoire, Democratic Republic of the Congo, 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 (8), 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). Nine cases were reported in non-Florida residents.

Thirty-five cases (56%) were diagnosed with *Plasmodium falciparum.* Twenty-five cases (40%) were diagnosed with *Plasmodium vivax*. Three cases (5%) were diagnosed with *Plasmodium malariae.*

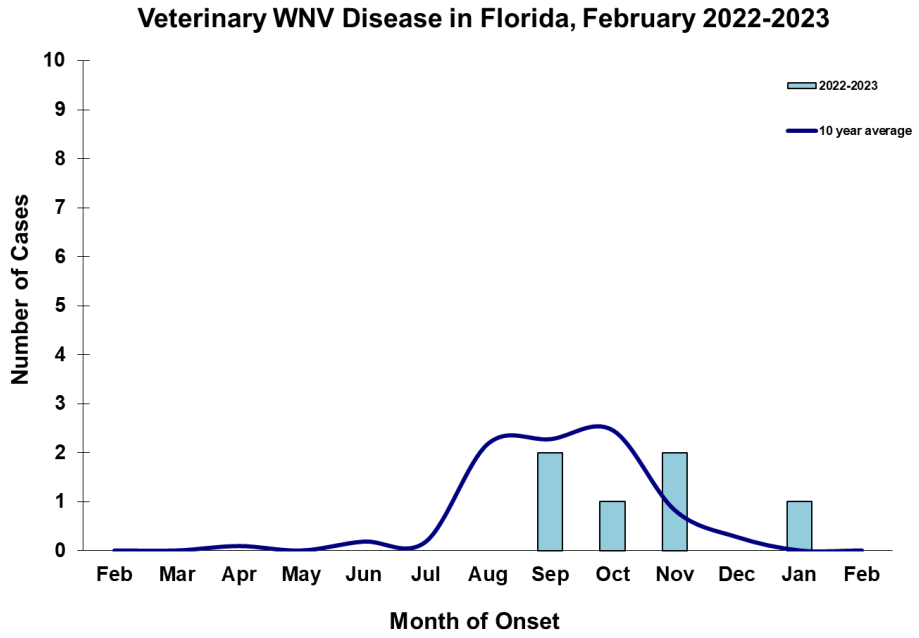
2023 International Travel-Associated Malaria Cases: Three cases of malaria with onset in 2023 have been reported. Countries of origin were: Burundi, Côte D'Ivoire, and Ghana. Counties reporting cases were: Leon, Miami-Dade, and Pinellas. One case was reported in a non-Florida resident.

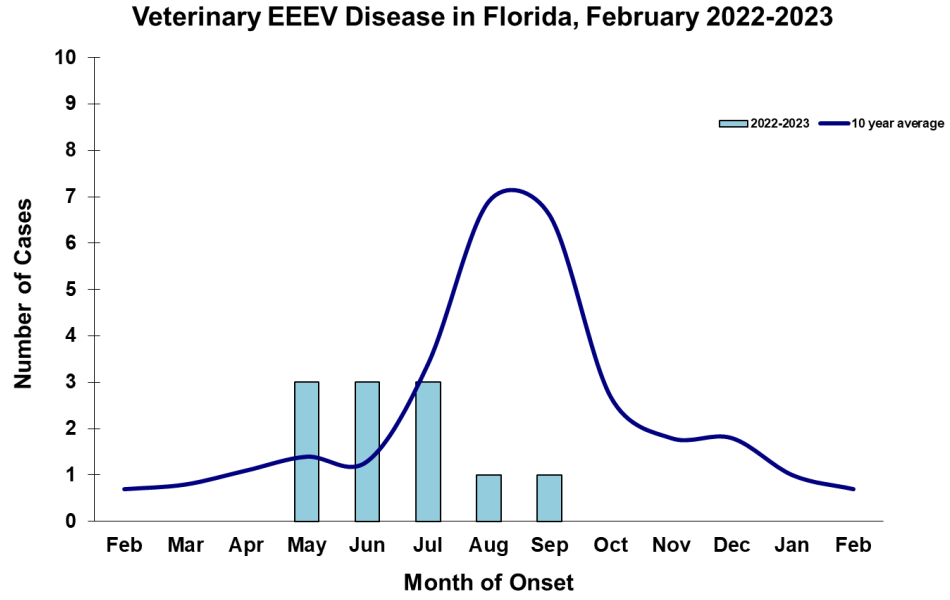
Three cases (100%) were diagnosed with *Plasmodium falciparum*.

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.





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.

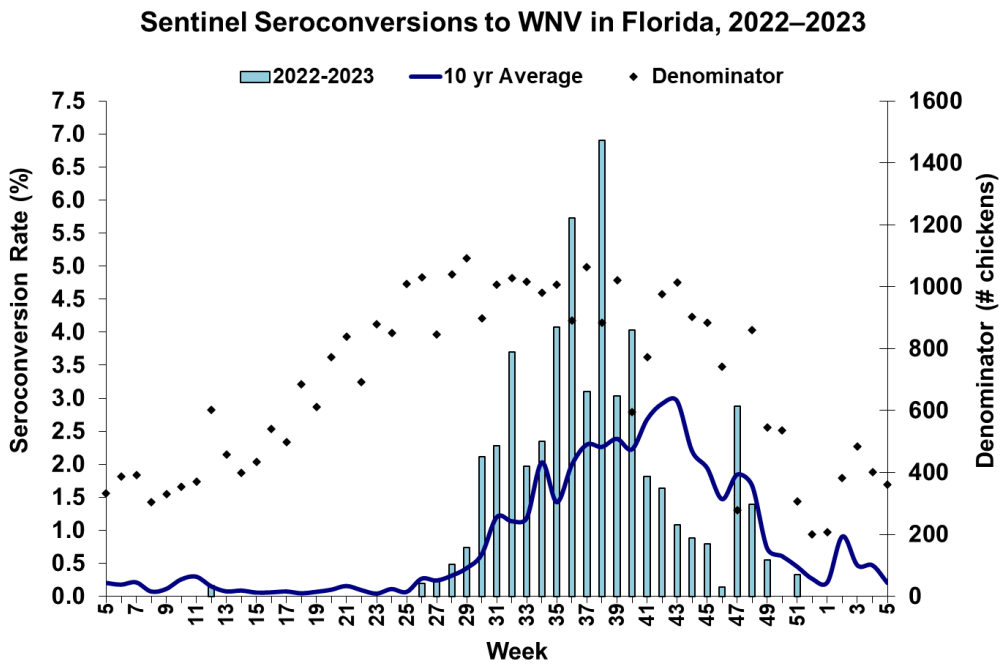
Four sentinel chickens tested positive for antibodies to WNV this week in Brevard, Hillsborough, and Palm Beach counties. One sentinel chicken tested positive for antibodies to EEEV this week in Volusia County.

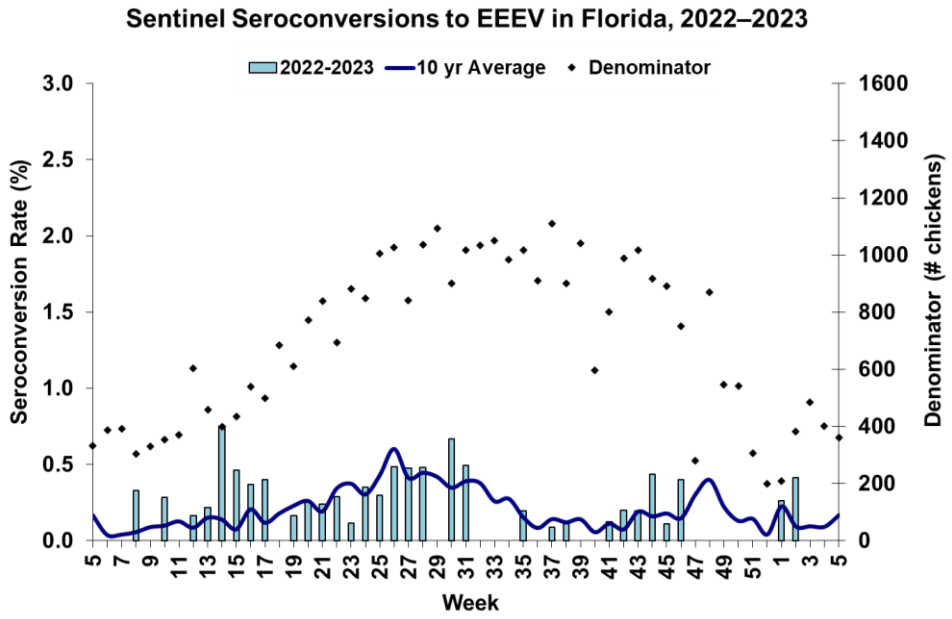
2022

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Brevard	12/20/2022	3.70		3.70				1 WNV	4 WNV, 2 EEEV
Hillsborough	10/26/2022	6.45		3.23				1 WNV, 1 SLEV	16 WNV, 1 EEEV, 1 SLEV
Palm Beach	10/24/2022-10/25/2022	7.14		7.14				2 WNV	26 WNV, 1 SLEV

2023

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Volusia	1/23/2023				2.08	2.08		1 EEEV	2 EEEV





Mosquito Pools

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

County	Collection Date	Result	Species	County YTD

Dead Birds

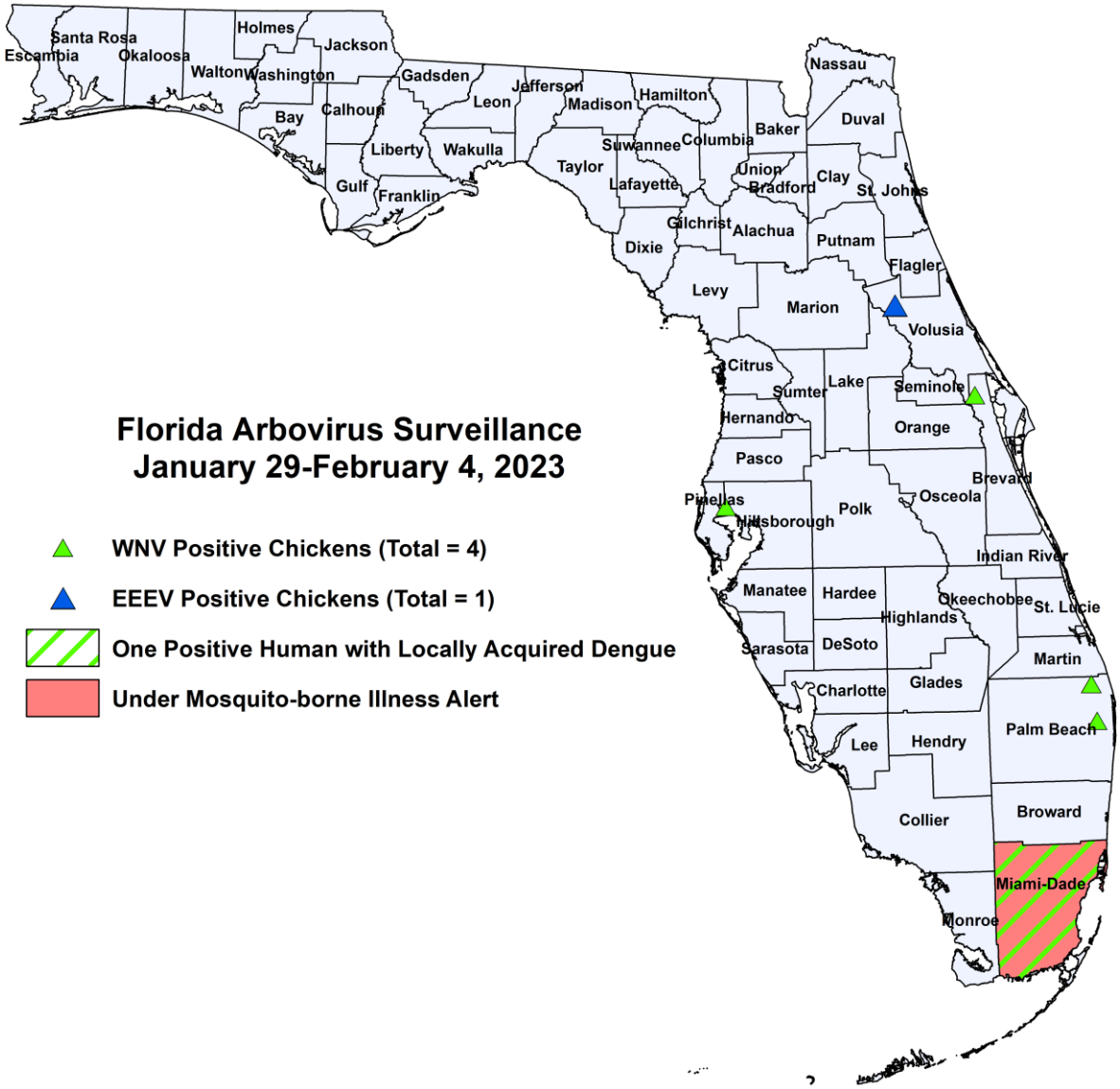
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 18 reports representing a total of 28 dead birds, including one jay, five raptors, and one dove, were received from 12 counties.

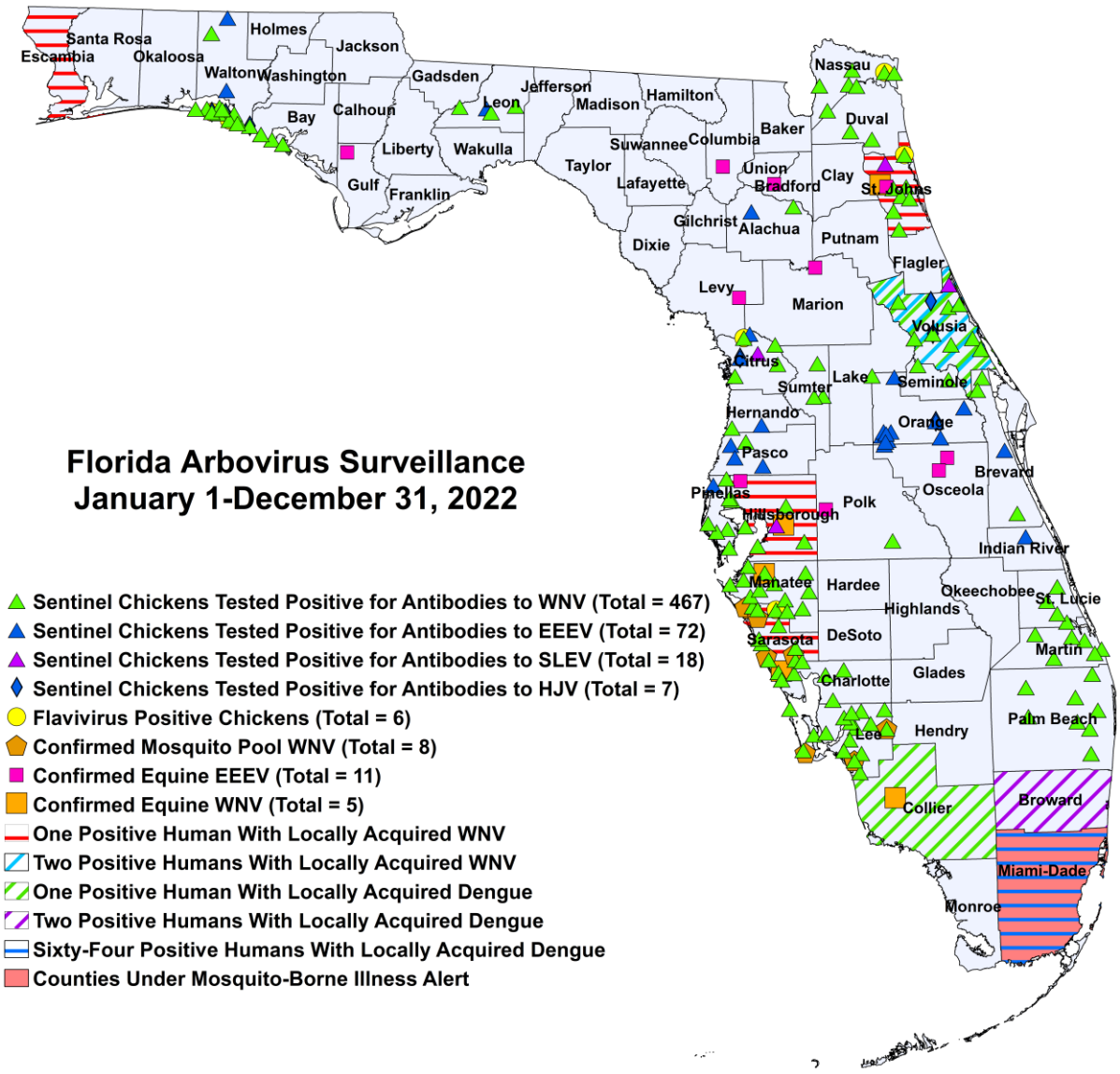
In 2023, 108 reports representing a total of 251 dead birds (1 crow, 2 jays, 14 raptors, 2 doves) were received from 34 of Florida's 67 counties.

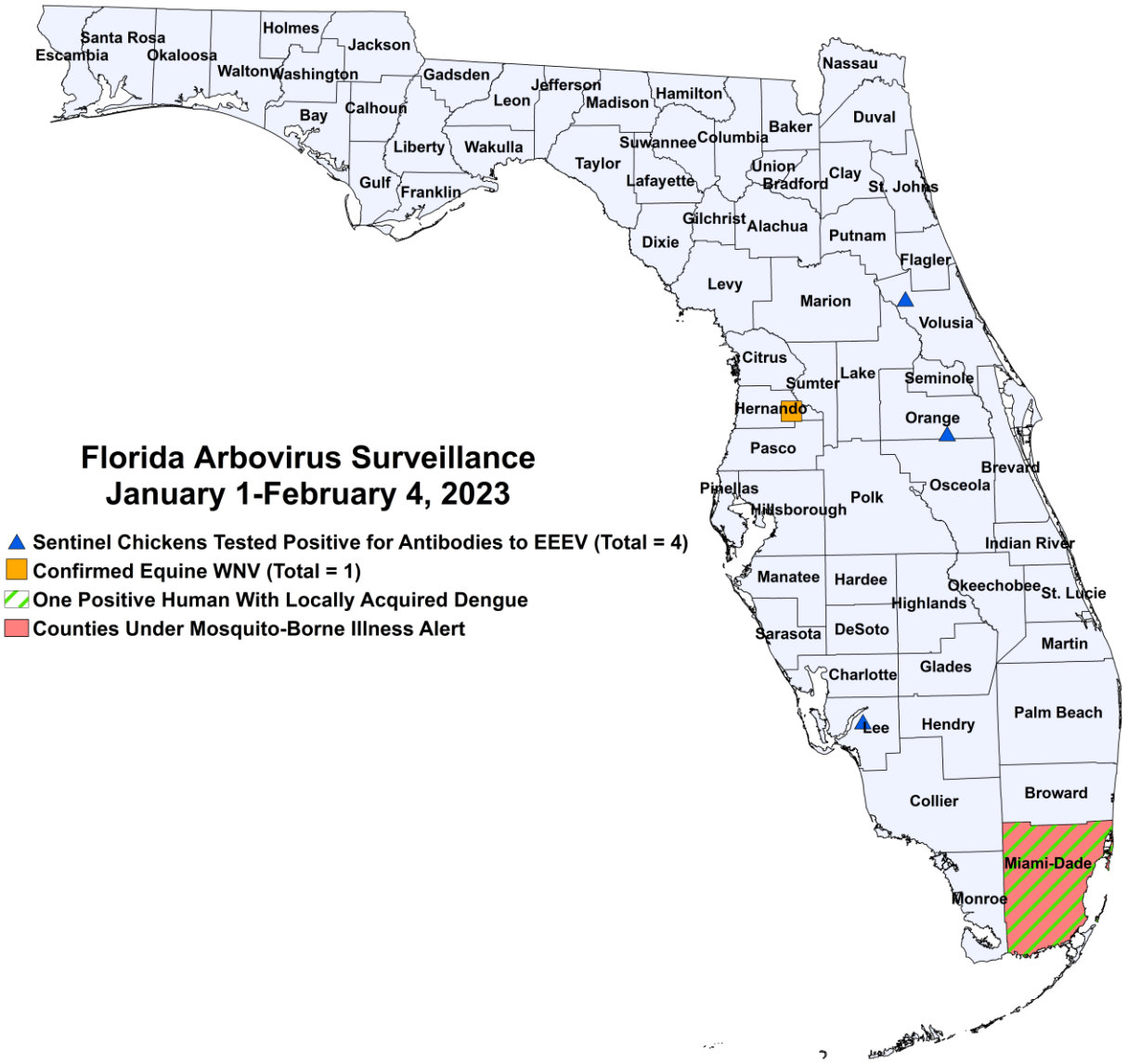
2023

County	Total Dead Birds	Crows	Jays	Raptors	Doves
Brevard	7	0	0	0	0
Broward	1	0	0	0	0
Charlotte	1	0	0	1	0
Citrus	2	0	0	0	0
Clay	2	0	0	1	1
Duval	5	0	1	0	0
Hernando	1	0	0	0	0
Hillsborough	1	0	0	0	0
Manatee	1	0	0	0	0
Palm Beach	3	0	0	0	0
St. Johns	1	0	0	0	0
Wakulla	3	0	0	3	0

Maps


Florida Arbovirus Surveillance
January 29-February 4, 2023
WNV Positive Chickens (Total = 4)
EEEV Positive Chickens (Total = 1)
One Positive Human with Locally Acquired Dengue
Under Mosquito-borne Illness Alert
Escambia
Santa Rosa
Okaloosa
Walton
Holmes
Washington
Jackson
Bay
Calhoun
Gulf
Liberty
Franklin
Gadsden
Wakulla
Leon
Jefferson
Madison
Taylor
Hamilton
Suwannee
Lafayette
Columbia
Baker
Nassau
Duval
Union
Bradford
Clay
St. Johns
Gilchrist
Alachua
Putnam
Flagler
Dixie
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


Florida Arbovirus Surveillance
January 1-December 31, 2022
Sentinel Chickens Tested Positive for Antibodies to WNV (Total = 467)
Sentinel Chickens Tested Positive for Antibodies to EEEV (Total = 72)
Sentinel Chickens Tested Positive for Antibodies to SLEV (Total = 18)
Sentinel Chickens Tested Positive for Antibodies to HJV (Total = 7)
Flavivirus Positive Chickens (Total = 6)
Confirmed Mosquito Pool WNV (Total = 8)
Confirmed Equine EEEV (Total = 11)
Confirmed Equine WNV (Total = 5)
One Positive Human With Locally Acquired WNV
Two Positive Humans With Locally Acquired WNV
One Positive Human With Locally Acquired Dengue
Two Positive Humans With Locally Acquired Dengue
Sixty-Four Positive Humans With Locally Acquired Dengue
Counties Under Mosquito-Borne Illness Alert
Escambia
Santa Rosa
Okaloosa
Walton
Holmes
Washington
Jackson
Bay
Calhoun
Gulf
Franklin
Gadsden
Liberty
Wakulla
Leon
Jefferson
Madison
Taylor
Hamilton
Suwannee
Lafayette
Columbia
Dixie
Gilchrist
Alachua
Baker
Union
Bradford
Nassau
Duval
Clay
St. Johns
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
Lee
Hendry
Palm Beach
Collier
Broward
Miami-Dade
Monroe



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			4 WNV (8/5, 10/5, 10/17, 12/20) 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)	16 WNV (8/2, 8/10, 8/24, 9/7, 9/13, 9/21, 10/26) 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 (*Cx. nigripalpus* [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			26 WNV (8/15, 8/29, 9/12, 9/13, 9/20, 9/26, 10/3, 10/24, 10/25, 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)	
Miami-Dade	1 dengue (January)			
Orange			1 EEEV (1/17)	
Volusia			2 EEEV (1/17, 1/23)	

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.