



Florida Arbovirus Surveillance Week 45: November 2 - 8, 2014

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) and California encephalitis group viruses (CEV). Malaria, a non-viral mosquito-borne disease is also included. During the period of November 2-8, 2014 the following arboviral activity was recorded in Florida.

WNV activity: No human cases of WNV illness were reported this week. No horses with WNV infection were reported this week. Twenty-three sentinel chickens tested positive for antibodies to WNV this week in Alachua, Brevard, Citrus, Flagler, Hillsborough, Lee, Orange, Pinellas, Putnam, Seminole, St. Johns Counties. In 2014, positive samples from 286 sentinel chickens, 5 horses, 13 human cases, and 2 asymptomatic blood donors have been received from 30 counties.

SLEV activity: No human cases of SLE were reported this week. Four sentinel chickens tested positive for antibodies to SLEV this week in Lee, Manatee, Pinellas, and Polk Counties. In 2014, positive samples from 2 human cases and 98 sentinel chickens have been received from 12 counties.

EEEV activity: No human cases of EEE were reported this week. No horses with EEEV infection were reported this week. Five sentinel chickens tested positive for antibodies to EEEV this week in Alachua, Nassau, and Orange Counties. In 2014, positive samples from 159 sentinel chickens, 2 deer, and 56 horses have been received from 32 counties.

International Travel-Associated Dengue Fever Cases: Two cases of dengue fever were reported this week in persons that had international travel. In 2014, 72 travel-associated cases have been reported.

Dengue Fever Cases Acquired in Florida: No new cases of locally acquired dengue fever were reported this week. In 2014, a total of six cases of locally acquired dengue fever have been reported.

International Travel-Associated Chikungunya Fever Cases: Seventeen cases of chikungunya fever were reported this week in persons that had international travel. In 2014, 350 travel-associated cases have been reported.

Chikungunya Fever Cases Acquired in Florida: No new cases of locally acquired chikungunya fever were reported this week. In 2014, a total of 11 cases of locally acquired chikungunya fever have been reported.

Advisories/Alerts: Alachua, Broward, Clay, Columbia, Flagler, Jefferson, Leon, Levy, Lafayette, Marion, Pasco, Polk, Putnam, Santa Rosa, St. Johns, Suwannee and Washington Counties are currently under a mosquito-borne illness advisory. Duval, Escambia, Miami-Dade, Palm Beach, St. Lucie and Volusia Counties are currently under a mosquito-borne illness alert. No other counties are currently under mosquito-borne illness advisory or alert. A CDC Health Alert Network (HAN) health advisory was issued in December for the Caribbean region announcing the first locally acquired cases of chikungunya fever in the Americas. There is a Level 1 (Watch) Travel Health Notice from the CDC for multiple countries in the Caribbean related to the continued transmission of chikungunya which was updated October 21, 2014. <http://wwwnc.cdc.gov/travel/notices/watch/chikungunya-caribbean>

2014 Human Case Summary*

West Nile Virus Illnesses Acquired in Florida: A total of thirteen human cases of WNV illness acquired in Florida have been reported in 2014; one in Alachua (August), three in Escambia (July, August, September), one in Duval (August), one in Leon (August), one in Marion (October), one in Pasco (August), one in Polk (September) and four in Volusia (August, September) Counties. Two asymptomatic positive blood donors were reported from Santa Rosa (July) and St. Johns (September) Counties.

International Travel-Associated Dengue Fever Cases: Seventy-two cases of dengue with onset in 2014 have been reported in individuals with travel history to a dengue endemic country in the two weeks prior to onset. Countries of origin were: Bangladesh, Bolivia, Brazil (2), Caribbean, Columbia, Costa Rica (3), Cuba (27), Cuba/Bahamas, Dominican Republic (9), El Salvador (2), Guadeloupe, Guatemala, Guyana, Haiti (3), Honduras (5), Jamaica, Mexico (2), Puerto Rico (5), Sri Lanka, Trinidad, and Venezuela (3). Counties reporting cases were: Alachua, Brevard (2), Broward (7), Clay, Collier, Highlands, Hillsborough (5), Lee, Manatee (2), Marion, Miami-Dade (33), Orange (4), Osceola (5), Palm Beach (2), Pinellas, Seminole (2), St. Lucie (2), and Volusia. Six of the cases were reported in non-Florida residents. In 2014, 32 of the 72 cases of dengue reported in Florida have been serotyped by PCR. Additional serotyping and strain typing are being conducted.

	# of cases per serotype – 2014
DENV-1	11
DENV-2	11
DENV-3	2
DENV-4	7
DEN-1&2	1
	32

Dengue Fever Cases Acquired in Florida: In 2014, a total of six cases of locally acquired dengue fever have been reported. Six cases of dengue in Miami-Dade residents with onset in June, August, and September have been reported as acquired in Miami-Dade County.

International Travel-Associated Chikungunya Fever Cases: Three hundred and fifty cases of chikungunya with onset in 2014 have been reported in individuals with travel history to a chikungunya endemic country or area experiencing an outbreak in the two weeks prior to onset. Countries of origin were: Antigua (2), Antigua/Barbuda, Barbados, Bequia, Cuba (6), Dominica/Guadalupe, Dominican Republic (82), El Salvador (2), Grenada, Guatemala, Guyana (10), Haiti (104), Haiti/Dominican Republic, Honduras, India, Indonesia, Jamaica (31), Martinique (2), Philippines, Puerto Rico (84), Puerto Rico/Dominican Republic (2), South America, St. Lucia (2), St. Thomas/St. Martin/Bahamas (2), St. Thomas, St. Vincent and the Grenadines, Trinidad, Trinidad/Tobago, Venezuela, and Virgin Islands (4). Counties reporting cases were: Alachua (2), Brevard (4), Broward (67), Charlotte (2), Clay (2), Collier, Duval (8), Escambia (2), Flagler, Hernando (3), Highlands, Hillsborough (28), Indian River, Lake (3), Lee (14), Leon (2), Manatee (2), Marion, Miami-Dade (60), Monroe, Nassau, Okaloosa (2), Orange (40), Osceola (13), Palm Beach (35), Pasco (4), Pinellas (10), Polk (19), Santa Rosa, Sarasota (3), Seminole (8), St. Johns (2), St. Lucie (3), and Volusia (4). Twenty-five of the cases were reported in non-Florida residents.

Chikungunya Fever Cases Acquired in Florida: In 2014, a total of eleven cases of locally acquired chikungunya fever have been reported. One case of chikungunya fever with onset in July was acquired in Broward County. Two cases of chikungunya fever with onset in June were acquired in Miami-Dade County. Four cases of chikungunya fever with onset in July were acquired in Palm Beach County. Four cases of chikungunya fever with onset in July and August were acquired in St. Lucie County.

International Travel-Associated Malaria Cases: Fifty-two cases of malaria with onset in 2014 have been reported. Countries of origin were: Angola (3), Cameroon, Dominican Republic, East Africa, Equatorial Guinea (2), Ghana (2), Ghana/Rwanda, Ghana/Senegal, Ghana/Togo, Guatemala, Guyana,

Haiti, Honduras, India (7), Ivory Coast (3), Kenya (3), Nigeria (7), Nigeria/Ethiopia, Papua New Guinea, Peru, Sierra Leone (5), Sudan, Togo, Uganda (2), and multiple sub-Saharan African countries (3). Counties reporting cases were: Broward (7), Clay, Duval (2), Escambia, Hernando, Hillsborough (8), Leon, Miami-Dade (11), Okaloosa (2), Orange (7), Osceola (2), Palm Beach (4), Pasco, Pinellas (2), Santa Rosa, and Seminole. Twelve of the cases were reported in non-Florida residents.

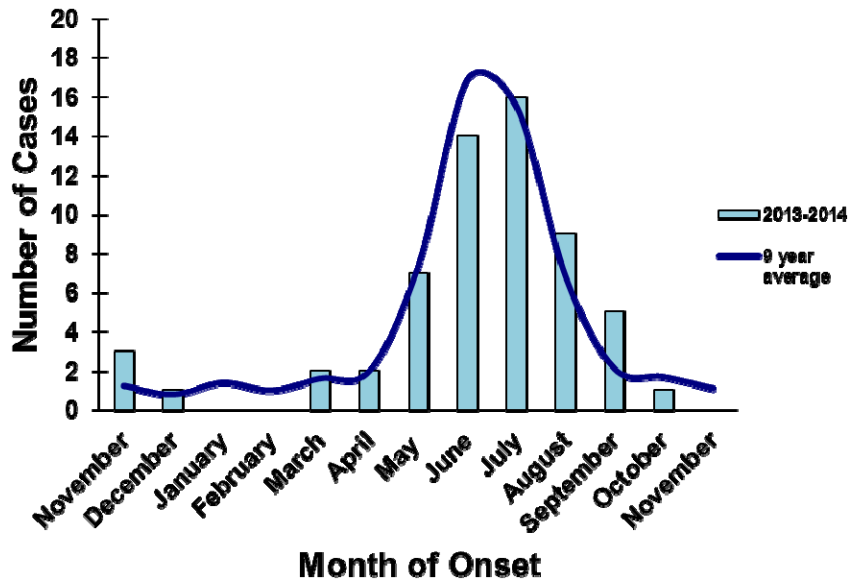
Thirty-seven cases (71%) were diagnosed with *Plasmodium falciparum*. Eleven cases (21%) were diagnosed with *Plasmodium vivax*. Two cases (4%) were diagnosed with *Plasmodium malariae*. Two cases (4%) were diagnosed with *Plasmodium ovale*.

Veterinary Cases*

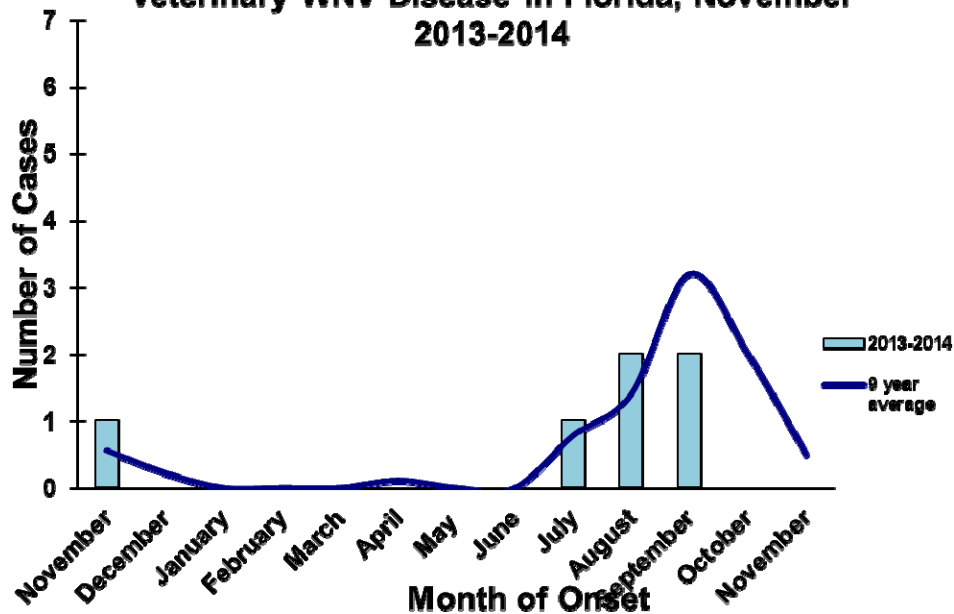
*Veterinary cases are reported by date of onset

No horses with EEEV or WNV infection were reported this week.

Veterinary EEE in Florida, November 2013-2014



Veterinary WNV Disease in Florida, November 2013-2014



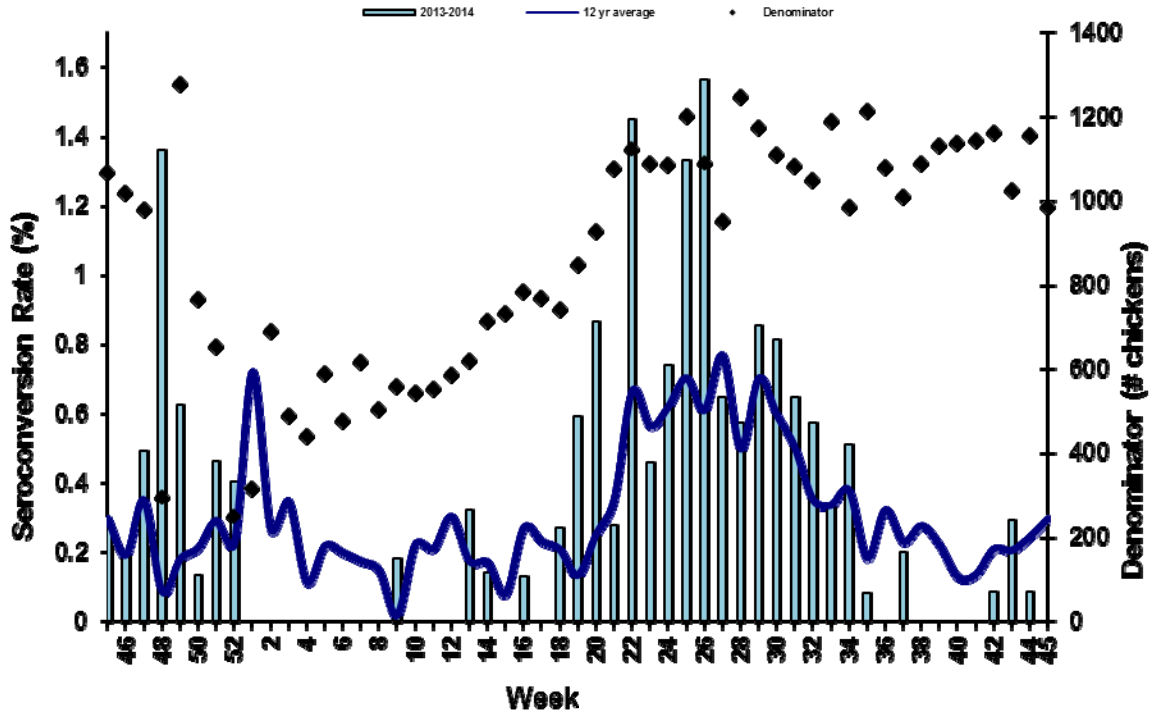
Sentinel Chickens

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.

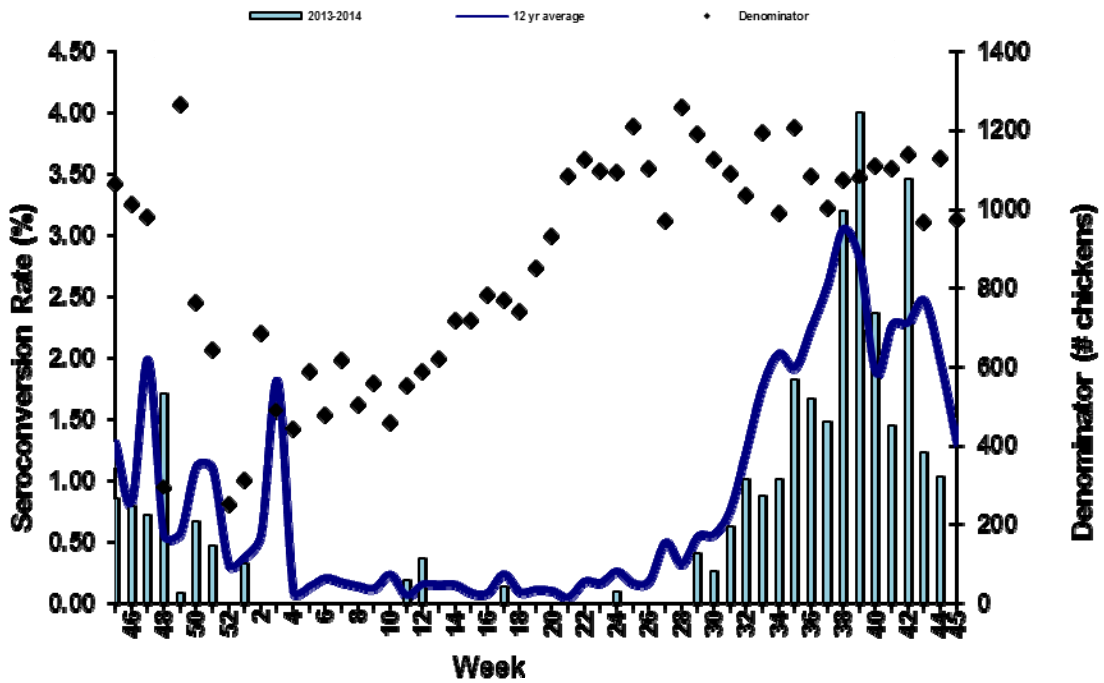
Twenty-three sentinel chickens tested positive for antibodies to WNV this week in Alachua, Brevard, Citrus, Flagler, Hillsborough, Lee, Orange, Pinellas, Putnam, Seminole, St. Johns Counties. Four sentinel chickens tested positive for antibodies to SLEV this week in Lee, Manatee, Pinellas, and Polk Counties (state total of 98 positives for 2014). Five sentinel chickens tested positive for antibodies to EEEV this week in Alachua, Nassau, and Orange Counties. Two sentinel chickens tested positive for antibodies to HJV this week in Alachua and Citrus Counties (state total of 64 positives for 2014).

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Alachua	10/13/14			6.67				1 WNV	
	10/20/14				15.56	6.25	6.25	1 EEEV, 1 HJV	11 EEEV, 2 HJV, 11 WNV
Brevard	10/10/14			15.56				1 WNV	27 WNV
Citrus	10/20/14						1.43	1 HJV, 2 WNV	
	10/27/14			1.61				1 WNV	16 EEEV, 8 HJV, 18 WNV
Flagler	10/27/14			11.11				1 WNV	11 EEEV, 6 HJV, 15 WNV
Hillsborough	10/28/14			1.22				1 WNV	2 EEEV, 14 SLEV, 11 WNV
Lee	10/27/14	4.23	1.41	2.82				1 SLEV, 2 WNV	8 SLEV, 2 WNV
Manatee	10/28/14		1.75					1 SLEV	21 SLEV, 1 WNV
Nassau	10/20/14					2.78		1 EEEV	14 EEEV, 4 HJV, 14 WNV, 5 SLEV
Orange	10/13;								
	10/16/14			6.96		0.84		8 WNV, 1 EEEV	
	10/20/14					0.88		1 EEEV, 4 WNV	
	10/27/14			0.94		0.90		1 EEEV, 1 WNV	21 EEEV, 4 HJV, 32 WNV, 1 SLEV
Pinellas	10/13/14		3.85					2 SLEV	
	10/27/14			1.79				1 WNV	32 SLEV, 1 HJV, 6 WNV
Polk	10/27/14		11.11					1 SLEV	5 EEEV, 2 SLEV, 2 WNV
Putnam	10/14/14			33.33				4 WNV, 1 HJV	
	10/28/14			13.33				1 WNV	7 EEEV, 23 WNV, 8 HJV
Seminole	10/13/14			21.74				5 WNV	
	10/27/14			5.56				1 WNV	17 WNV
St. Johns	10/13/14			14.89				7 WNV	20 EEEV, 7 HJV, 45 WNV

Sentinel Seroconversions to EEEV In Florida, 2013-2014



Sentinel Seroconversions to WNV In Florida, 2013-2014



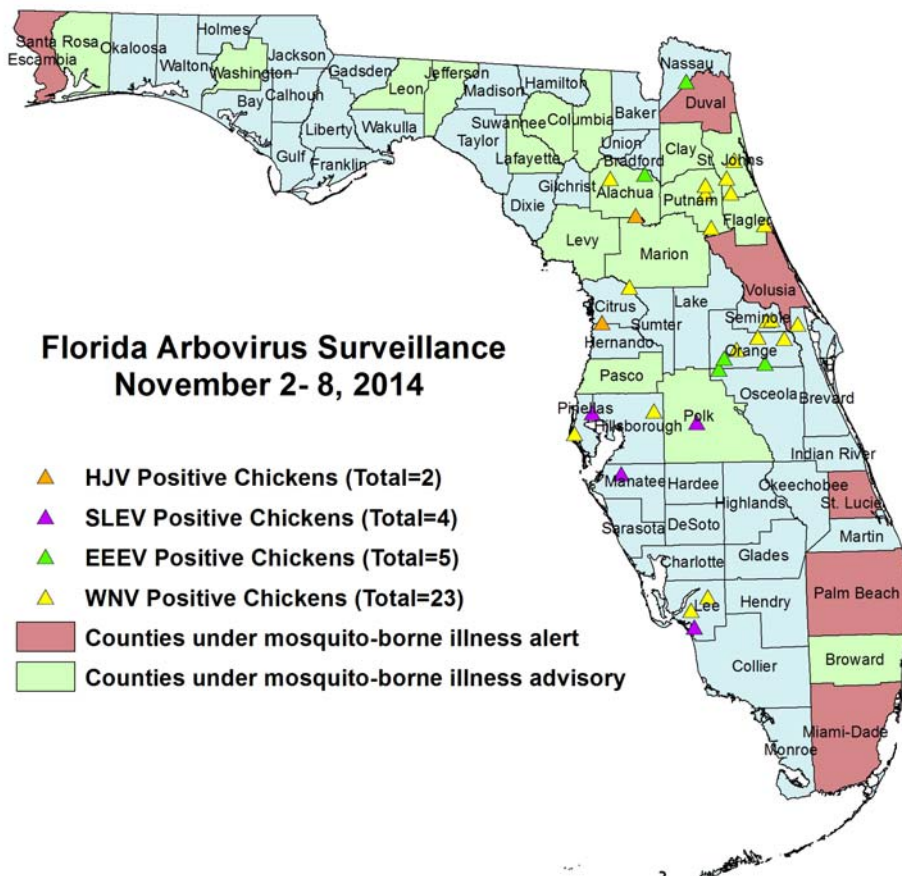
Dead Birds

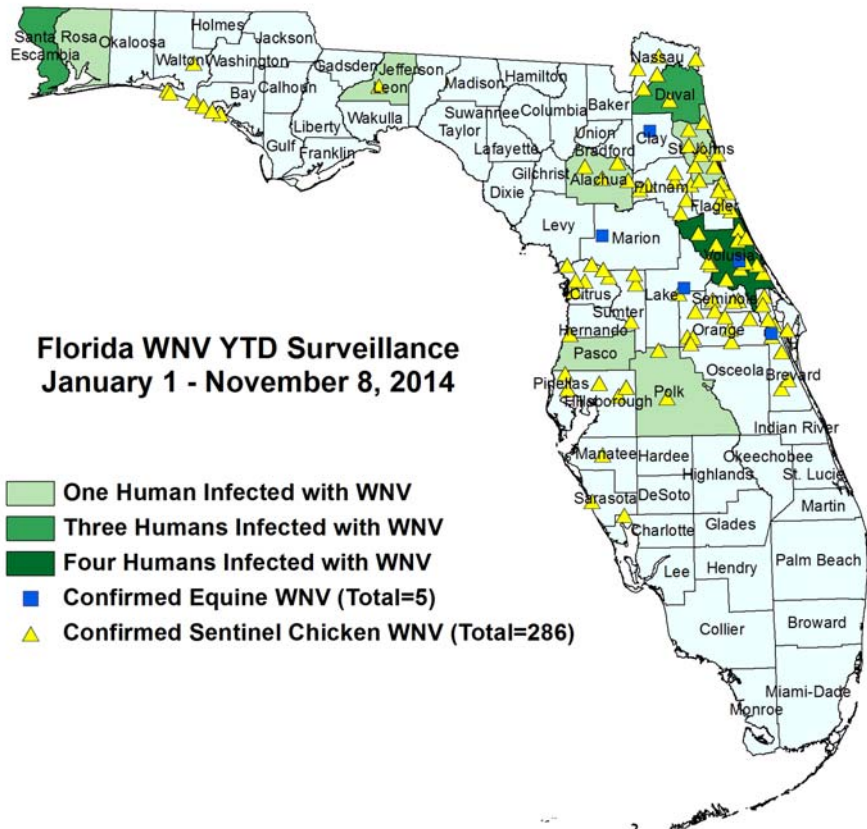
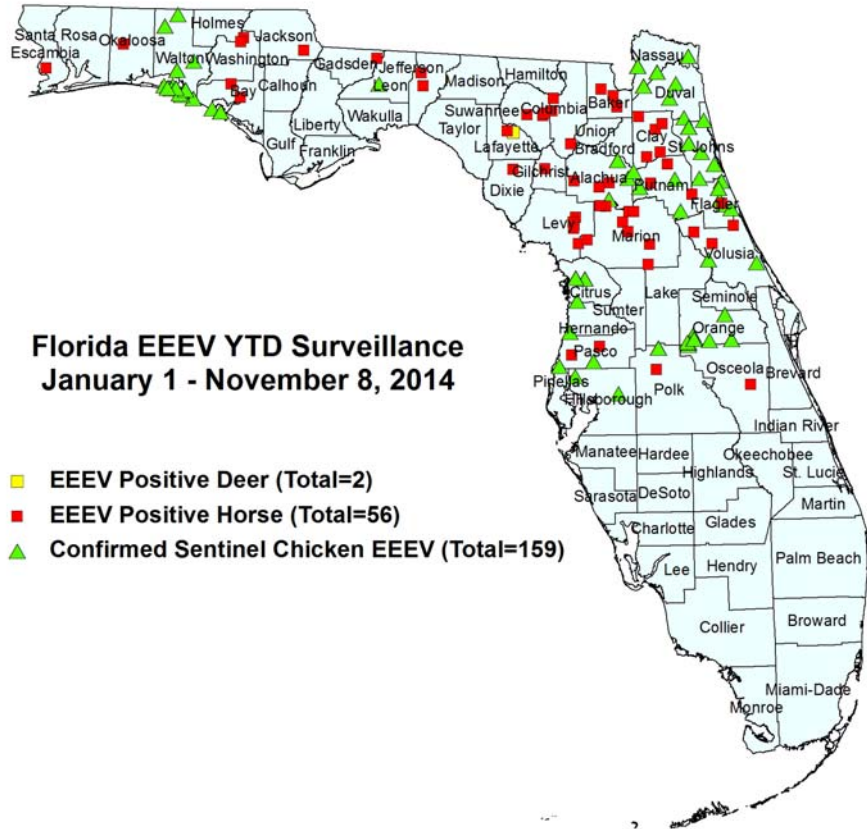
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 3 reports representing 11 dead birds including 1 dove were received from 3 counties.

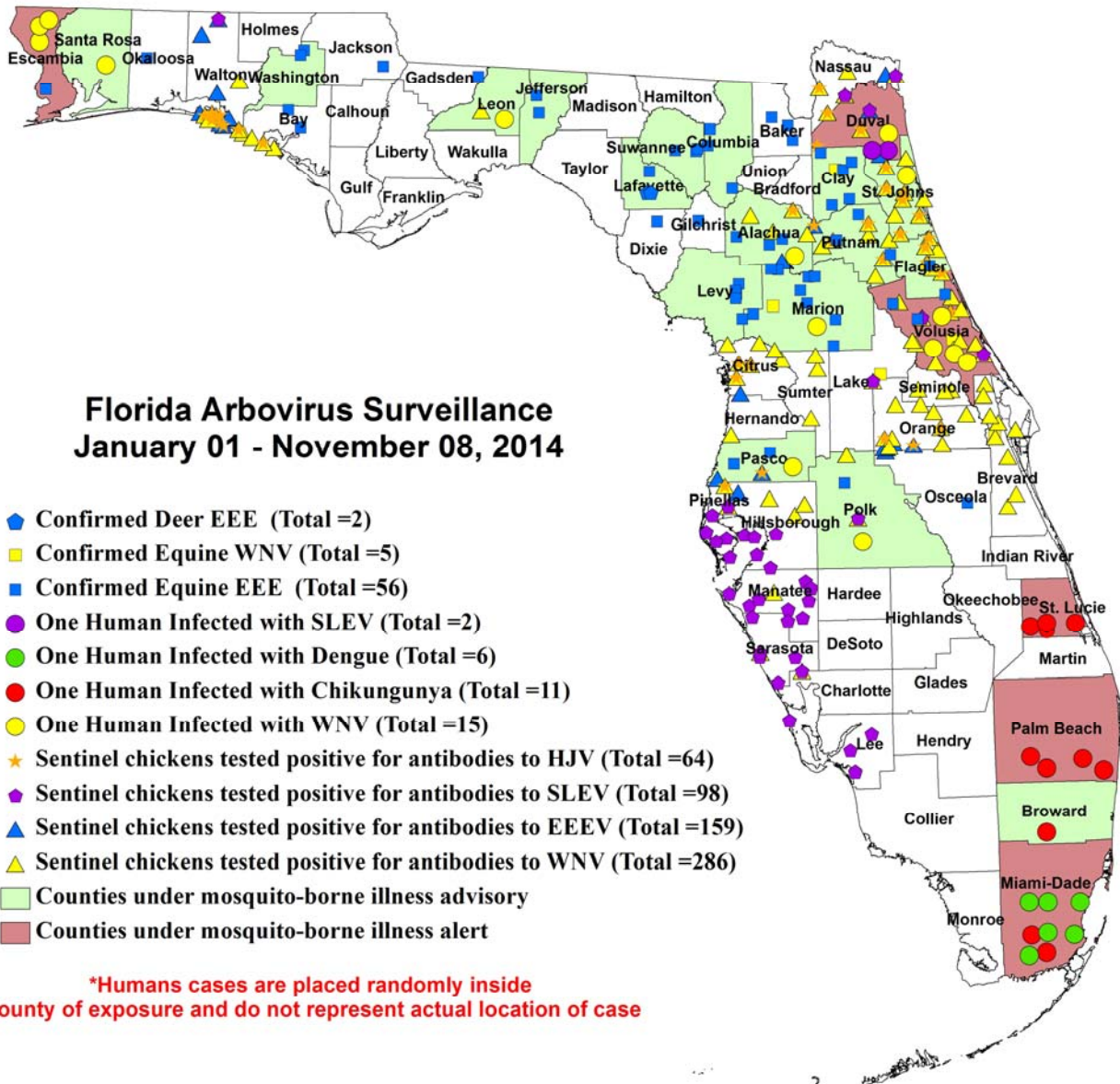
In 2014, 351 reports representing a total of 979 dead birds (28 crows, 7 jay, 72 raptors, and 34 doves) were received from 47 of Florida's 67 counties. Please note that FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to www.myfwc.com/bird/

County	Total Dead Birds	Crows	Jays	Raptors	Dove
Brevard	1	0	0	0	0
Volusia	1	0	0	0	1
Okaloosa	9	0	0	0	0

Maps







Florida Arbovirus Surveillance January 01 - November 08, 2014

- ◆ Confirmed Deer EEE (Total =2)
- Confirmed Equine WNV (Total =5)
- Confirmed Equine EEE (Total =56)
- One Human Infected with SLEV (Total =2)
- One Human Infected with Dengue (Total =6)
- One Human Infected with Chikungunya (Total =11)
- One Human Infected with WNV (Total =15)
- ★ Sentinel chickens tested positive for antibodies to HJV (Total =64)
- ★ Sentinel chickens tested positive for antibodies to SLEV (Total =98)
- ▲ Sentinel chickens tested positive for antibodies to EEEV (Total =159)
- ▲ Sentinel chickens tested positive for antibodies to WNV (Total =286)
- Counties under mosquito-borne illness advisory
- Counties under mosquito-borne illness alert

*Humans cases are placed randomly inside
county of exposure and do not represent actual location of case

2014 Arbovirus Activity by County

County	Arbovirus Activity
Alachua	EEEV: 3 horses (6/17, 6/20, 7/4); 11 sentinels (6/9, 6/30, 7/7, 7/14, 7/21, 7/28, 10/20) HJV: 2 sentinels (8/4, 10/20) WNV: 1 human (August); 11 sentinels (8/12, 8/18, 8/25, 9/16, 9/22, 9/29, 10/13)
Baker	EEEV: 3 horses (3/13, 7/10, 7/16)
Bay	EEEV: 2 horses (6/15, 9/22); 6 sentinels (4/28, 5/6, 5/13, 5/22, 5/30) HJV: 1 sentinel (2/18) WNV: 14 sentinels (8/19, 8/26, 9/2, 9/9, 9/16, 9/23)
Brevard	WNV: 1 horse (8/1); 27 sentinels (7/17, 8/8, 8/15, 8/20, 8/29, 9/5, 9/11, 9/12, 9/17, 9/18, 9/19, 9/26, 10/2, 10/8, 10/9, 10/10, 10/16)
Broward	Chikungunya: 1 human (July)
Charlotte	WNV: 1 sentinel (9/12) SLEV: 1 sentinel (9/26)
Citrus	EEEV: 16 sentinels (3/24, 3/31, 5/12, 5/26, 6/2, 6/30, 7/7, 7/14, 7/21, 8/4, 8/11, 9/8) HJV: 8 sentinels (2/17, 2/24, 8/11, 8/18, 9/29, 10/20) WNV: 18 sentinels (1/2, 9/2, 9/15, 9/22, 9/29, 10/13, 10/20, 10/27)
Clay	EEEV: 5 horses (5/2, 7/16, 7/19, 7/20, 8/2)

	WNV: 1 horse (9/3)
Columbia	EEEV: 3 horses (6/25, 7/18, 8/1)
Dixie	EEEV: 1 horse (5/22)
Duval	EEEV: 3 sentinels (6/16, 6/19, 6/30) HJV: 6 sentinels (8/18, 8/21, 8/25) WNV: 1 human (August); 1 sentinel (9/15) SLEV: 2 humans (August); 1 sentinel (9/2)
Escambia	EEEV: 1 horse (7/16) WNV: 3 humans (July, August, September)
Flagler	EEEV: 2 horses (4/21, 10/24); 11 sentinels (4/14, 4/28, 5/5, 5/27, 6/2, 6/16, 6/23, 6/30, 7/7) HJV: 6 sentinels (7/21, 8/18, 8/25, 9/29) WNV: 15 sentinels (7/14, 8/18, 9/2, 9/8, 9/15, 9/22, 9/29, 10/6, 10/20, 10/27)
Gadsden	EEEV: 1 horse (9/16)
Gilchrist	EEEV: 2 horses (5/18, 6/23)
Hernando	EEEV: 2 sentinels (6/9, 7/9) WNV: 5 sentinels (8/25, 10/6, 10/13, 10/20)
Hillsborough	EEEV: 2 sentinels (5/13, 7/1) SLEV: 14 sentinels (1/7, 2/18, 9/2, 9/9, 9/16, 9/30, 10/14) WNV: 11 sentinels (3/18, 9/2, 9/16, 9/30, 10/14, 10/21, 10/28)
Jackson	EEEV: 1 horse (9/3)
Jefferson	EEEV: 2 horses (7/7, 8/25)
Lafayette	EEEV: 2 deer (6/24); 1 horse (9/18)
Lake	WNV: 1 horse (8/19)
Lee	SLEV: 8 sentinels (1/13, 1/14, 2/11, 3/25, 9/16, 10/27) WNV: 2 sentinels (10/27)
Leon	EEEV: 1 sentinel (7/14) WNV: 1 human (August), 1 sentinel (8/19)
Levy	EEEV: 5 horses (6/7, 6/21, 6/27, 6/28, 8/17)
Manatee	SLEV: 21 sentinels (7/29, 9/2, 9/16, 9/23, 9/30, 10/15, 10/20, 10/28) WNV: 1 sentinel (10/7)
Marion	EEEV: 9 horses (4/12, 5/31, 6/19, 6/26, 6/29, 7/4, 7/14, 7/30, 9/10) WNV: 1 human (October); 1 horse (9/5)
Miami-Dade	Chikungunya: 2 humans (June) Dengue: 6 humans (June, August, September)
Nassau	EEEV: 14 sentinels (5/27, 5/31, 6/13, 6/20, 6/23, 6/27, 7/11, 7/19, 8/22, 10/20) HJV: 4 sentinels (7/25, 8/18, 8/22) WNV: 14 sentinels (8/8, 8/18, 8/22, 8/25, 9/2, 9/12, 9/15, 9/19, 9/27, 10/18) SLEV: 5 sentinels (8/29, 9/12, 10/13, 10/18)
Okaloosa	EEEV: 1 horse (8/15)
Orange	EEEV: 21 sentinels (5/29, 6/5, 6/16, 6/19, 6/23, 6/25, 6/26, 7/7, 7/10, 7/21, 7/31, 8/7, 8/18, 10/16, 10/20, 10/27) HJV: 4 sentinels (1/2, 2/17, 8/25) WNV: 32 sentinels (8/4, 8/25, 9/2, 9/8, 9/22, 9/29, 10/9, 10/13, 10/16, 10/20, 10/27) SLEV: 1 sentinel (9/15)
Osceola	EEEV: 1 horse (7/30)
Palm Beach	Chikungunya: 4 humans (July)
Pasco	EEEV: 2 horses (5/31, 6/25); 4 sentinels (5/27, 6/10, 7/15) HJV: 1 sentinel (7/22) WNV: 1 human (August)
Pinellas	SLEV: 32 sentinels (7/21, 7/25, 7/28, 8/4, 8/11, 8/18, 8/25, 9/2, 9/8, 9/15, 10/6, 10/13) HJV: 1 sentinel (8/25) WNV: 6 sentinels (9/15, 9/22, 9/29, 10/27)
Polk	EEEV: 5 sentinels (6/23, 6/30, 7/7); 1 horse (8/3) SLEV: 2 sentinels (8/25, 10/27) WNV: 1 human (September); 2 sentinels (9/2, 9/22)
Putnam	EEEV: 2 horses (6/17, 7/28); 7 sentinels (5/27, 6/17, 6/24, 7/8, 7/15, 7/22, 8/5) WNV: 23 sentinels (8/5, 8/12, 8/26, 9/9, 9/16, 9/23, 10/14, 10/21, 10/28) HJV: 8 sentinels (8/26, 9/23, 10/14)
Sarasota	SLEV: 10 sentinels (2/6, 2/14, 2/28, 7/28, 9/2, 9/22, 9/29) WNV: 1 sentinel (4/25)

Santa Rosa	WNV: 1 asymptomatic blood donor (July)
Seminole	WNV: 17 sentinels (7/30, 8/5, 9/15, 9/22, 9/29, 10/6, 10/13, 10/20, 10/27)
St. Johns	EEEV: 20 sentinels (5/5, 5/12, 5/27, 6/16, 6/23, 6/30, 7/21, 7/28, 9/9) HJV: 7 sentinels (7/28, 8/18, 8/25) WNV: 1 asymptomatic blood donor (September); 45 sentinels (7/21, 7/28, 8/4, 8/11, 8/18, 8/25, 9/2, 9/8, 9/15, 9/22, 9/29, 10/6, 10/13, 10/16, 10/20, 10/13)
St. Lucie	Chikungunya: 4 humans (July, August)
Sumter	WNV: 5 sentinels (9/8, 9/29, 10/14, 10/20)
Suwannee	EEEV: 3 horses (8/5, 8/13, 8/15)
Volusia	EEEV: 3 horses (3/19, 5/19, 5/24); 3 sentinels (5/27, 6/9) HJV: 1 sentinel (8/18) WNV: 4 humans (August, September); 1 horse (7/15); 27 sentinels (7/14, 7/21, 7/28, 8/4, 8/5, 8/12, 8/18, 8/25, 9/1, 9/8, 9/15, 9/22, 9/29, 10/20) SLEV: 2 sentinels (9/15)
Walton	EEEV: 34 sentinels (2/24, 5/12, 5/19, 5/27, 6/3, 6/9, 6/16, 6/23, 6/30, 7/7, 7/14, 7/15, 7/21, 7/28, 8/4, 8/11, 8/12, 8/18, 8/26) HJV: 15 sentinels (3/10, 3/24, 5/12, 5/19, 6/16, 6/30, 7/15, 8/4, 8/11, 8/18, 8/25, 9/2) WNV: 7 sentinels (3/10, 3/17, 6/9, 9/15, 9/22, 10/13) SLEV: 1 sentinel (9/23)
Washington	EEEV: 2 horses (7/15, 7/22)

Acknowledgements and Data Sources

Contributors: Andrea Bingham, PhD, MPH, Shaiasia Itwaru-Womack, Katherine Kendrick, MPH, Danielle Stanek, DVM, and Carina Blackmore, DVM, Ph.D., DOH Bureau of Epidemiology; Lea Heberlein-Larson and Valerie Mock, DOH Bureau of Public Health Laboratories.

For more surveillance information, please see the DOH website at:

<http://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: <http://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, 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: <http://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.