



## Florida Arbovirus Surveillance Week 41: October 5 - 11, 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 October 5-11, 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. Thirty sentinel chickens tested positive for antibodies to WNV this week in Alachua, Brevard, Charlotte, Citrus, Flagler, Hillsborough, Nassau, Orange, Pinellas, Putnam, Seminole, St. Johns, Sumter, Volusia, and Walton Counties. In 2014, positive samples from 175 sentinel chickens, 5 horses, 10 human cases, and 2 asymptomatic blood donors have been received from 27 counties.

**EEEV activity:** No human cases of EEE were reported this week. No horses with EEEV infection were reported this week. No sentinel chickens tested positive for antibodies to EEEV this week. In 2014, positive samples from 154 sentinel chickens, 2 deer, and 55 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, 64 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 five cases of locally acquired dengue fever have been reported.

**International Travel-Associated Chikungunya Fever Cases:** Twelve cases of chikungunya fever were reported this week in persons that had international travel. In 2014, 272 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, Duval, Jefferson, Leon, Levy, Lafayette, Marion, Pasco, Polk, Putnam, Santa Rosa, St. Johns, Suwannee and Washington Counties are currently under a mosquito-borne illness advisory. 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 August 11, 2014. <http://wwwnc.cdc.gov/travel/notices/watch/chikungunya-caribbean>

### 2014 Human Case Summary\*

**West Nile Virus Illnesses Acquired in Florida:** A total of ten human cases of WNV illness acquired in Florida have been reported in 2014; one in Alachua (August), two in Escambia (July, August), one in Duval (August), one in Leon (August), one in Pasco (August), one in Polk (September) and three 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:** Sixty-four 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 (25), Cuba/Bahamas, Dominican Republic (8), El Salvador (2), Guadeloupe, Guatemala, Haiti, Honduras (4), Mexico (2), Puerto Rico (5), Sri Lanka, Trinidad (2), and Venezuela (2). Counties reporting cases were: Alachua, Brevard (2), Broward (7), Clay, Collier, Highlands, Hillsborough (4), Lee, Manatee (2), Marion, Miami-Dade (29), Orange (3), Osceola (4), Palm Beach (2), Pinellas, Seminole, St. Lucie (2), and Volusia. Six of the cases were reported in non-Florida residents. In 2014, 30 of the 64 cases of dengue reported in Florida have been serotyped by PCR. Additional serotyping and strain typing are being conducted.

	<b># of cases per serotype – 2014</b>
<b>DENV-1</b>	11
<b>DENV-2</b>	11
<b>DENV-3</b>	1
<b>DENV-4</b>	6
<b>DEN-1&amp;2</b>	1
	<b>30</b>

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

**International Travel-Associated Chikungunya Fever Cases:** Two hundred and seventy-two 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, Bequia, Cuba (4), Dominica/Guadalupe, Dominican Republic (80), El Salvador, Grenada, Guyana (7), Haiti (104), Haiti/Dominican Republic, Honduras, Jamaica (9), Martinique (2), Philippines, Puerto Rico (50), Puerto Rico/Dominican Republic (2), South America, St. Lucia, St. Thomas/St. Martin/Bahamas, and Trinidad/Tobago. Counties reporting cases were: Alachua (2), Brevard (3), Broward (45), Charlotte (2), Clay (2), Duval (8), Escambia, Flagler, Hernando (2), Highlands, Hillsborough (19), Indian River, Lake (2), Lee (7), Leon (2), Manatee (2), Marion, Miami-Dade (51), Monroe, Nassau, Okaloosa (2), Orange (32), Osceola (9), Palm Beach (34), Pasco (3), Pinellas (8), Polk (15), Santa Rosa, Sarasota (2), Seminole (6), St. Johns, St. Lucie (3), and Volusia (2). Twenty-one 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:** Forty-eight 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, Ghana/Rwanda, Ghana/Senegal, Ghana/Togo, Guatemala, Guyana, Haiti, Honduras, India (6), Ivory Coast (3), Kenya (2), Nigeria (7), Nigeria/Ethiopia, Papua New Guinea, Peru, Sierra Leone (5), Sudan, Uganda (2), and multiple sub-Saharan African countries (3). Counties reporting cases were: Broward (6), Clay, Duval, Escambia, Hernando, Hillsborough (8), Leon, Miami-Dade (10), Okaloosa (2), Orange (6), Osceola (2), Palm Beach (4), Pasco, Pinellas (2), Santa Rosa, and Seminole. Eleven of the cases were reported in non-Florida residents.

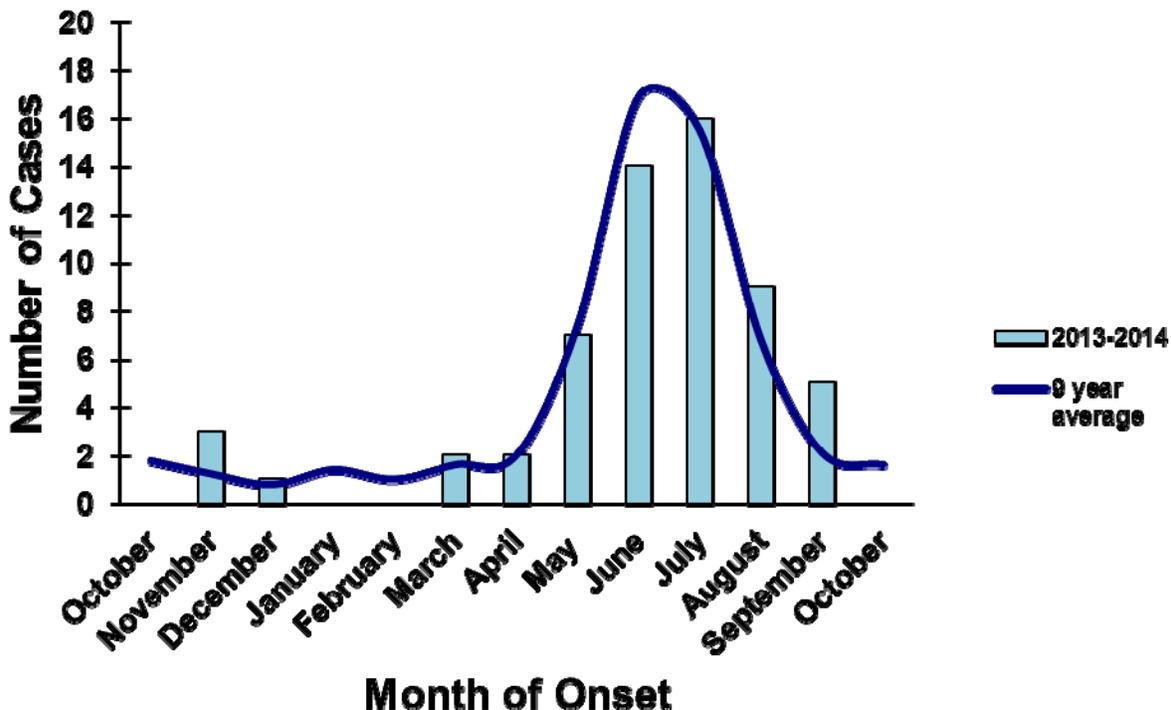
Thirty-four cases (71%) were diagnosed with *Plasmodium falciparum*. Ten cases (21%) were diagnosed with *Plasmodium vivax*. Two cases (4%) were diagnosed with *Plasmodium malariae*. Two cases (4%) were diagnosed with *Plasmodium ovale*.

## Veterinary Cases\*

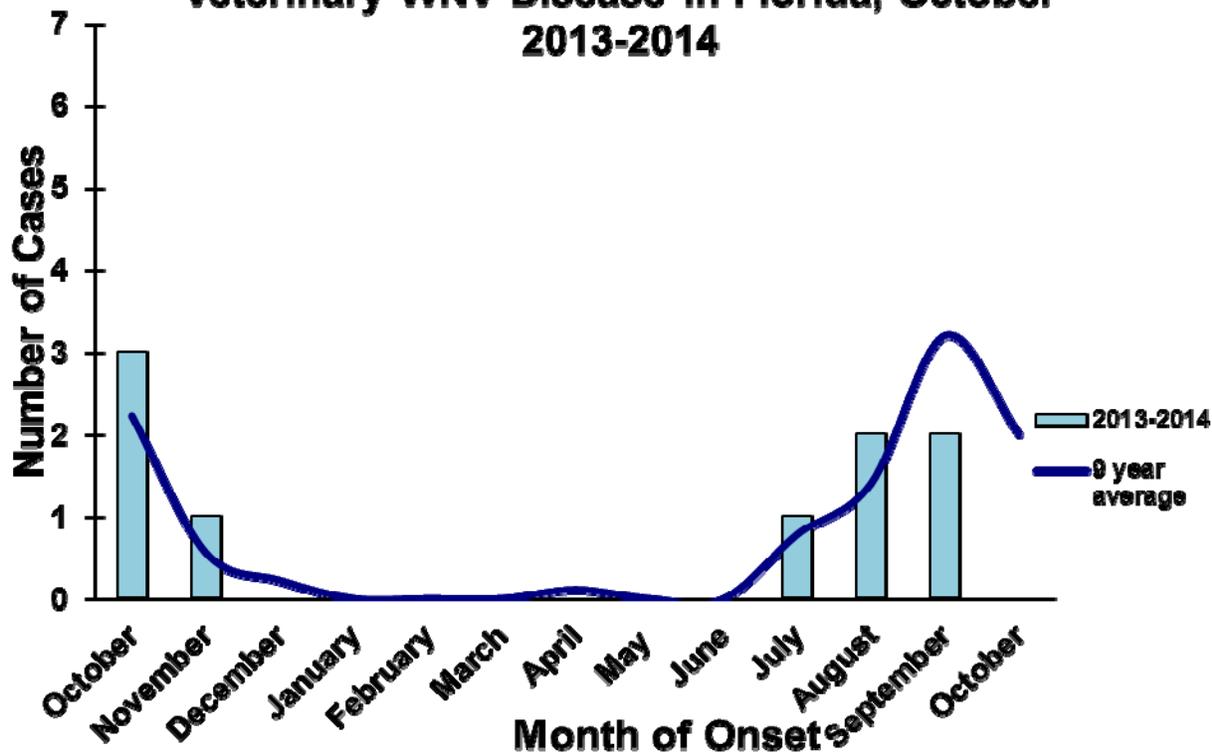
\*Veterinary cases are reported by date of onset

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

### Veterinary EEE in Florida, October 2013-2014



### Veterinary WNV Disease in Florida, October 2013-2014



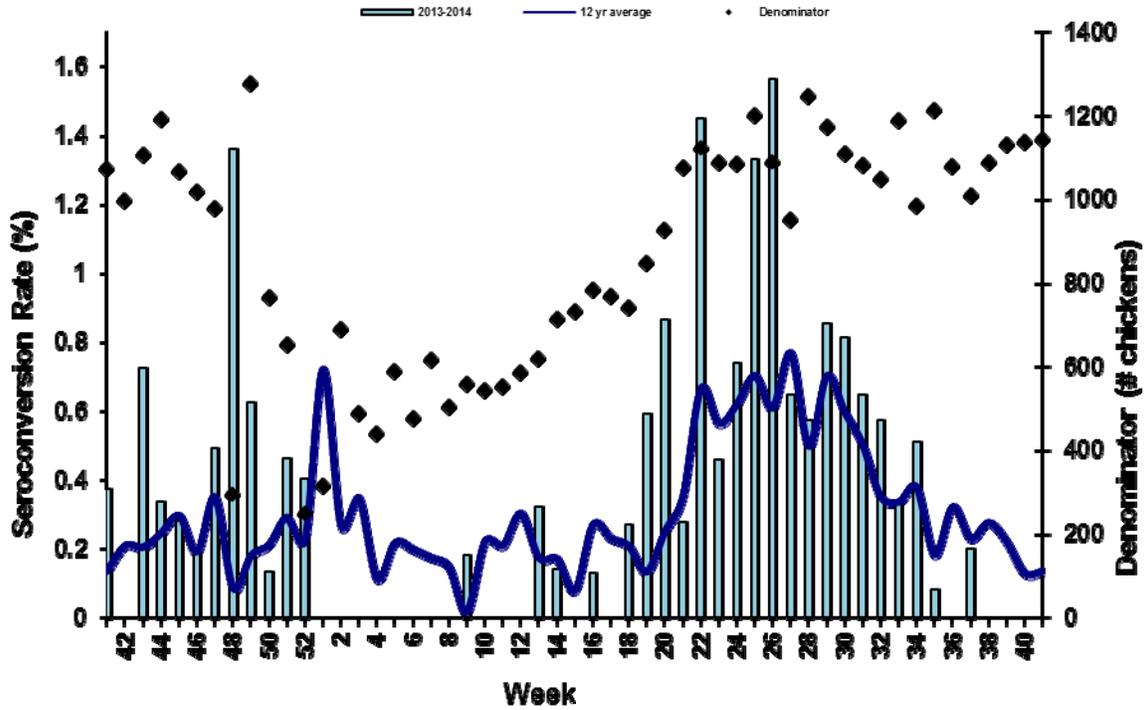
## Sentinel Chickens

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.

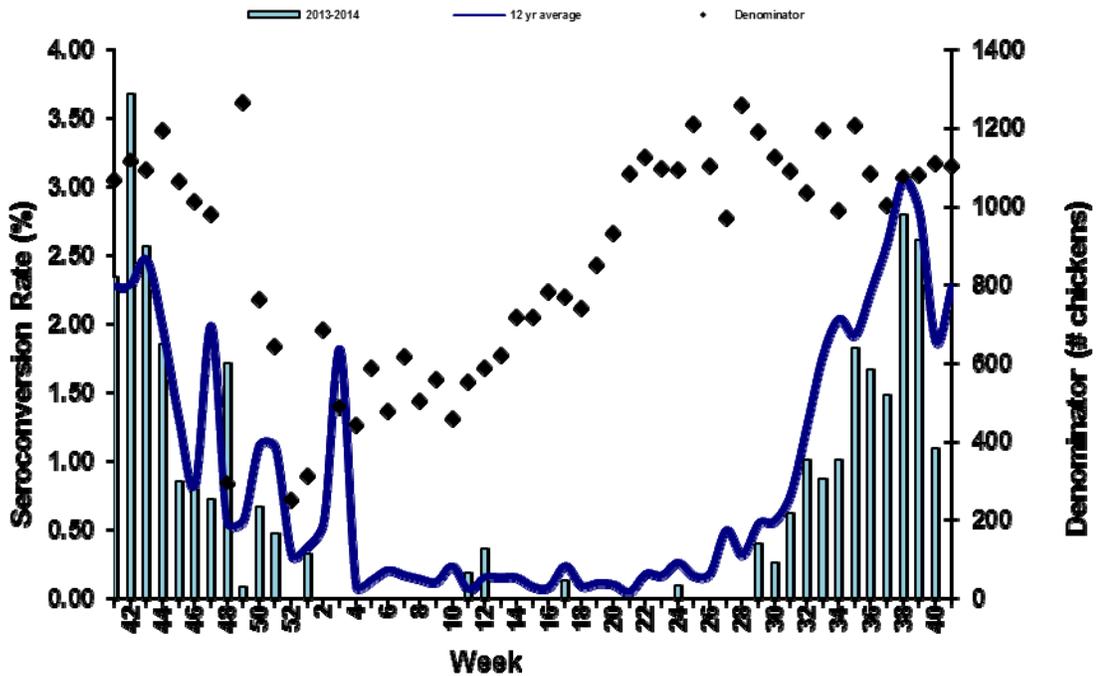
Thirty sentinel chickens tested positive for antibodies to WNV this week in Alachua, Brevard, Charlotte, Citrus, Flagler, Hillsborough, Nassau, Orange, Pinellas, Putnam, Seminole, St. Johns, Sumter, Volusia, and Walton Counties. Eleven sentinel chickens tested positive for antibodies to SLEV this week in Hillsborough, Manatee, Pinellas, Sarasota and Walton Counties (state total of 76 positives for 2014). One sentinel chicken tested positive for antibodies to HJV this week in Putnam County (state total of 59 for 2014).

County	Collection Date	Seroconversion Rates (%)						County Totals	
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Alachua	09/16/14	16.67		16.67				2 WNV	10 EEEV, 1 HJV, 8 WNV
Brevard	09/11/14	6.00		6.00				3 WNV	
	09/26/14	2.17		2.17				1 WNV	15 WNV
Charlotte	09/12/14	4.76		4.76				1 WNV	1 WNV
Citrus	09/29/14	3.08		3.08				2 WNV	16 EEEV, 6 HJV, 10 WNV
Flagler	09/29/14	33.33		33.33				3 WNV	11 EEEV, 5 HJV, 9 WNV
Hillsborough	09/16/14	3.95		2.63				2 WNV, 1 SLEV	
	09/30/14	4.82	4.82					4 SLEV	2 EEEV, 10 SLEV, 6 WNV
Manatee	09/16/14	6.85	6.85					5 SLEV	
	09/30/14	3.13	3.13					2 SLEV	13 SLEV
Nassau	09/15/14	6.06		6.06				2 WNV	
	09/27/14	2.86		2.86				1 WNV	13 EEEV, 4 HJV, 10 WNV, 2 SLEV
Orange	09/29/14	1.80		1.80				2 WNV	18 EEEV, 4 HJV, 12 WNV, 1 SLEV
Pinellas	09/15/14	9.62	5.77					3 SLEV, 2 WNV	
	09/29/14	3.57		3.57				2 WNV	29 SLEV, 1 HJV, 4 WNV
Putnam	09/16/14	37.50		37.50				3 WNV	
	09/23/14				9.09		9.09	1 HJV, 6 WNV	7 EEEV, 16 WNV, 7 HJV
Sarasota	09/29/14	2.50	2.50					2 SLEV	9 SLEV, 1 WNV
Seminole	09/15/14	16.67		16.67				4 WNV	
	09/29/14	4.55		4.55				1 WNV	9 WNV
St. Johns	09/15/14	4.76		4.76				2 WNV	
	09/29/14	4.17		4.17				2 WNV	20 EEEV, 7 HJV, 28 WNV
Sumter	09/29/14	3.03		3.03				1 WNV	2 WNV
Volusia	09/29/14	8.82		8.82				3 WNV	3 EEEV, 1 HJV, 22 WNV, 2 SLEV
Walton	09/15/14	0.93		0.93				1 WNV	
	09/23/14	0.89	0.89					1 SLEV	34 EEEV, 15 HJV, 4 WNV, 1 SLEV

### Sentinel Seroconversions to EEEV In Florida, 2013-2014



### Sentinel Seroconversions to WNV In Florida, 2013-2014



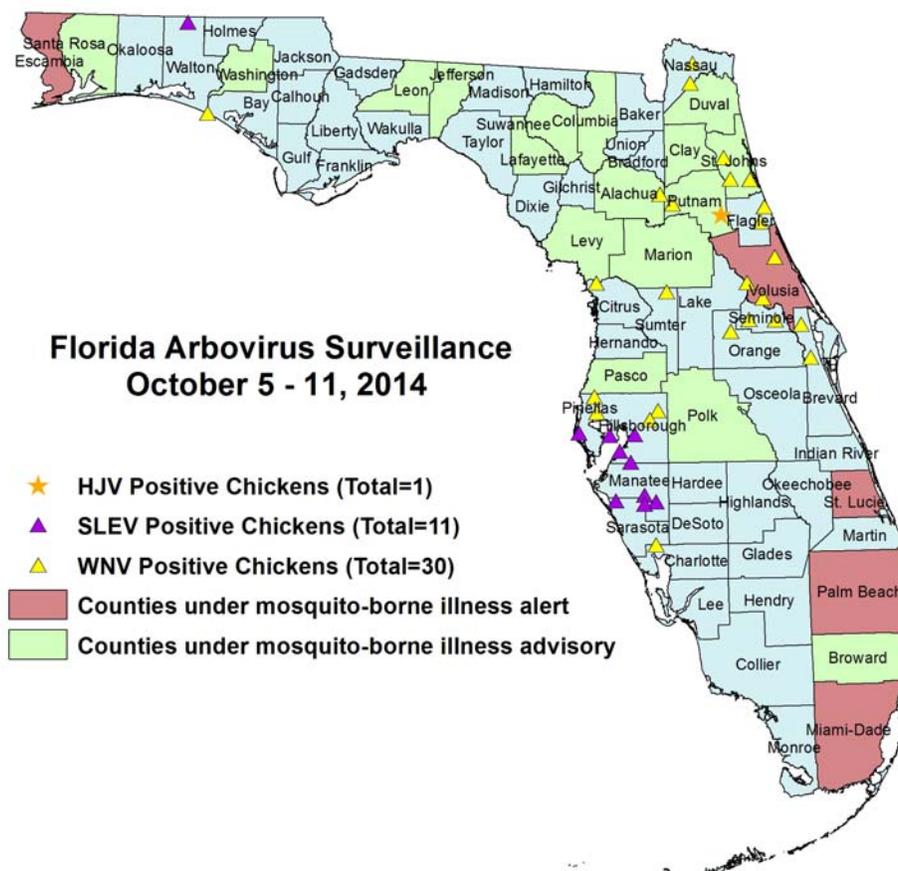
## Dead Birds

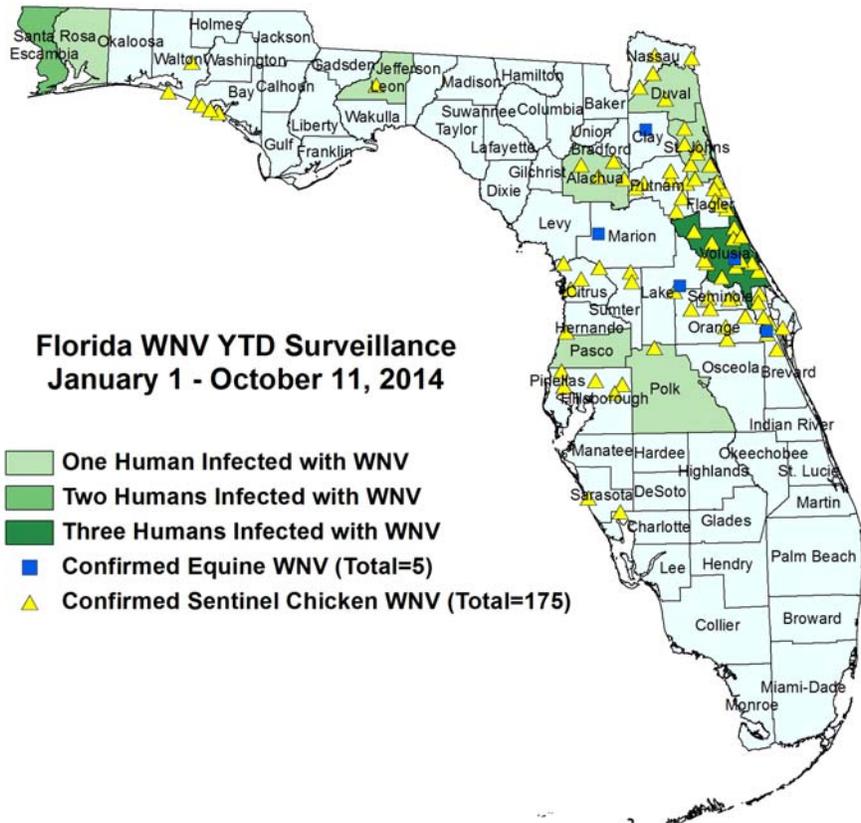
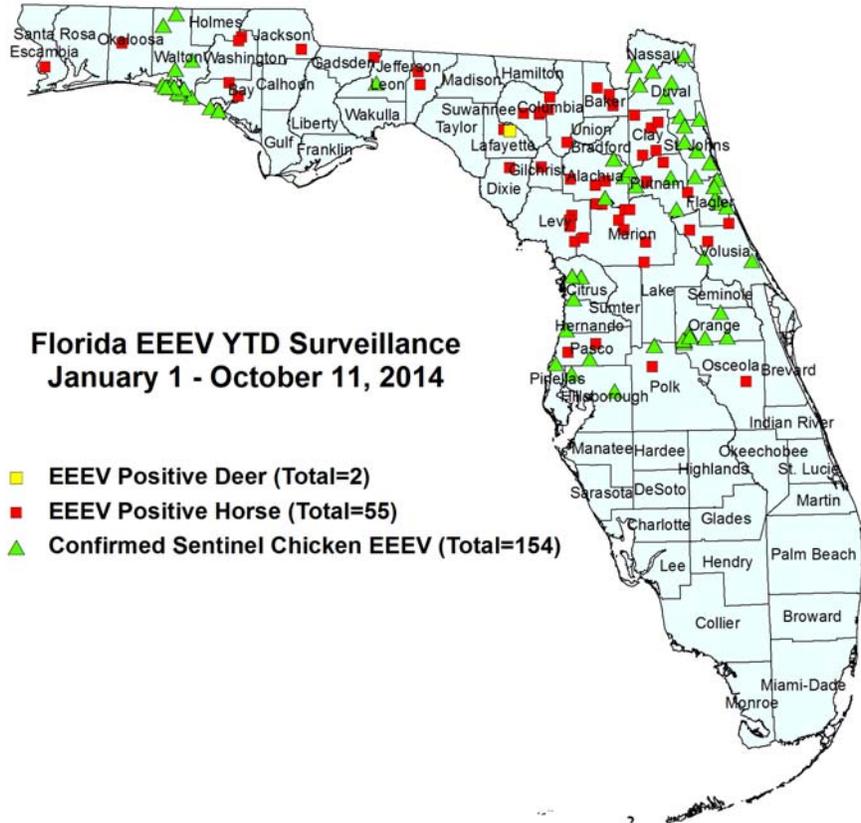
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 9 reports representing 14 dead birds including 1 raptor and 1 dove were received from 5 counties.

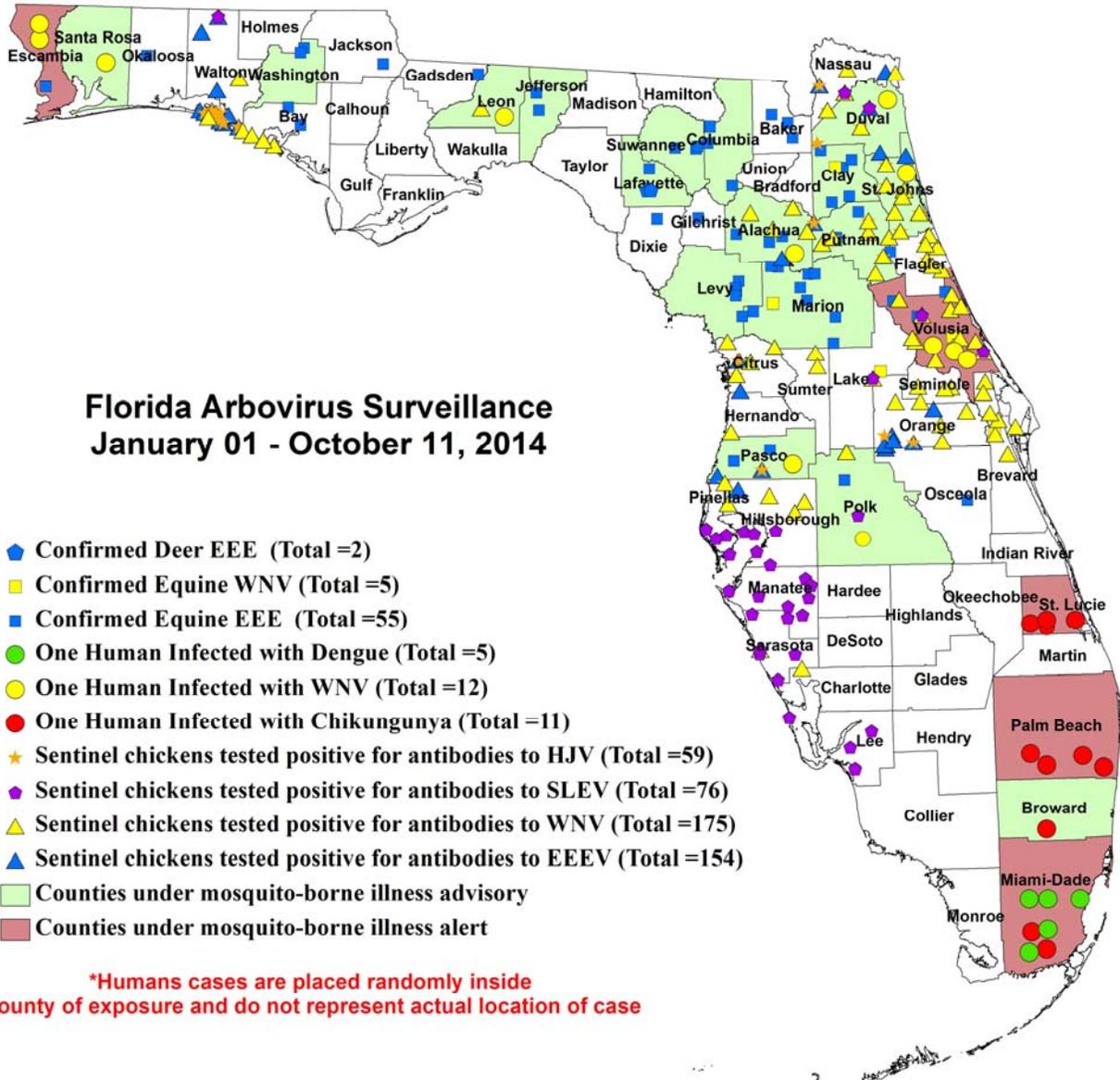
In 2014, 327 reports representing a total of 909 dead birds (27 crows, 6 jay, 68 raptors, and 33 doves) were received from 44 of Florida's 67 counties. Please note that FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to [www.myfwc.com/bird/](http://www.myfwc.com/bird/)

County	Total Dead Birds	Crows	Jays	Raptors	Dove
Alachua	2	0	0	0	1
Brevard	1	0	0	0	0
Broward	8	0	0	1	0
Hillsborough	1	0	0	0	0
Pinellas	2	0	0	0	0

## Maps







### 2014 Arbovirus Activity by County

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

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

	9/2, 9/8, 9/15, 9/22)
<b>St. Lucie</b>	Chikungunya: 4 humans (July, August)
<b>Sumter</b>	WNV: 2 sentinels (9/8, 9/29)
<b>Suwannee</b>	EEEV: 3 horses (8/5, 8/13, 8/15)
<b>Volusia</b>	EEEV: 3 horses (3/19, 5/19, 5/24); 3 sentinels (5/27, 6/9) HJV: 1 sentinel (8/18) WNV: 3 humans (August, September); 1 horse (7/15); 22 sentinels (7/14, 7/21, 7/28, 8/4, 8/5, 8/12, 8/18, 8/25, 9/1, 9/8, 9/22, 9/29) SLEV: 2 sentinels (9/15)
<b>Walton</b>	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: 4 sentinels (3/10, 3/17, 6/9, 9/15) SLEV: 1 sentinel (9/23)
<b>Washington</b>	EEEV: 2 horses (7/15, 7/22)

### Acknowledgements and Data Sources

Contributors: 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.