



## Florida Arbovirus Surveillance Week 51: December 14 - 20, 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 December 14-20, 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. Thirteen sentinel chickens tested positive for antibodies to WNV this week in Bay, Citrus, Flagler, Orange, Pinellas, Seminole, Sumter, and Volusia Counties. In 2014, positive samples from 338 sentinel chickens, 5 horses, 15 human cases, and 2 asymptomatic blood donors have been received from 31 counties.

**SLEV activity:** No human cases of SLE were reported this week. No sentinel chickens tested positive for antibodies to SLEV this week. In 2014, positive samples from 2 human cases and 106 sentinel chickens have been received from 13 counties.

**EEEV activity:** No human cases of EEE were reported this week. Two horses with EEEV infection were reported this week in Clay and Levy Counties. One sentinel chicken tested positive for antibodies to EEEV this week in Walton County. In 2014, positive samples from 173 sentinel chickens, 2 deer, and 58 horses have been received from 32 counties.

**International Travel-Associated Dengue Fever Cases:** No new cases of dengue fever were reported this week in persons that had international travel. In 2014, 80 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:** Five cases of chikungunya fever were reported this week in persons that had international travel. In 2014, 428 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:** Columbia, Flagler, Levy, Lafayette, Marion, Polk, St. Johns, Suwannee and Washington Counties are currently under a mosquito-borne illness advisory. 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 fifteen human cases of WNV illness acquired in Florida have been reported in 2014; one in Alachua (August), one in Clay (October), three in Escambia (July, August, September), two in Duval (August, September), 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:** Eighty 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 (5), Cuba (27), Cuba/Bahamas, Dominican Republic (9), El Salvador (2), Guadeloupe, Guatemala, Guyana, Haiti (4), Honduras (7), Jamaica (2), Mexico (3), Puerto Rico (6), 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 (37), Orange (4), Osceola (6), Palm Beach (5), Pinellas, Seminole (2), St. Lucie (2), and Volusia. Seven of the cases were reported in non-Florida residents. In 2014, 35 of the 80 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>	12
<b>DENV-2</b>	12
<b>DENV-3</b>	3
<b>DENV-4</b>	7
<b>DEN-1&amp;2</b>	1
	<b>35</b>

**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:** Four hundred and twenty-eight 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, Colombia (3), Cuba (7), Dominica/Guadeloupe, Dominican Republic (87), El Salvador (6), Grenada, Guatemala, Guyana (10), Haiti (107), Haiti/Dominican Republic, Honduras (2), India, Indonesia, Jamaica (58), Martinique (2), Nicaragua, Philippines, Puerto Rico (113), Puerto Rico/Dominican Republic (2), South America, St. Lucia (2), St. Thomas/St. Martin/Bahamas (2), St. Vincent and the Grenadines, Trinidad (2), Trinidad/Tobago (2), Venezuela (3), and Virgin Islands (5). Counties reporting cases were: Alachua (2), Brevard (4), Broward (78), Charlotte (3), Clay (2), Collier (2), Duval (10), Escambia (2), Flagler, Hernando (3), Highlands, Hillsborough (36), Indian River (2), Lake (5), Lee (16), Leon (2), Manatee (3), Marion, Miami-Dade (77), Monroe, Nassau, Okaloosa (2), Orange (52), Osceola (18), Palm Beach (43), Pasco (4), Pinellas (11), Polk (23), Santa Rosa, Sarasota (3), Seminole (9), St. Johns (2), St. Lucie (3), Volusia (4), and Walton. Thirty-two 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:** Sixty cases of malaria with onset in 2014 have been reported. Countries of origin were: Angola (3), Cameroon, Dominican Republic, East Africa, Equatorial

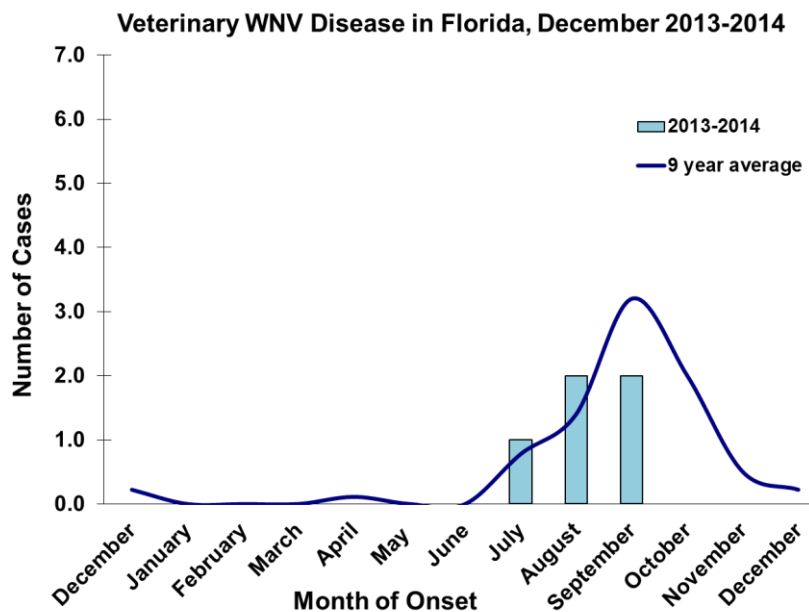
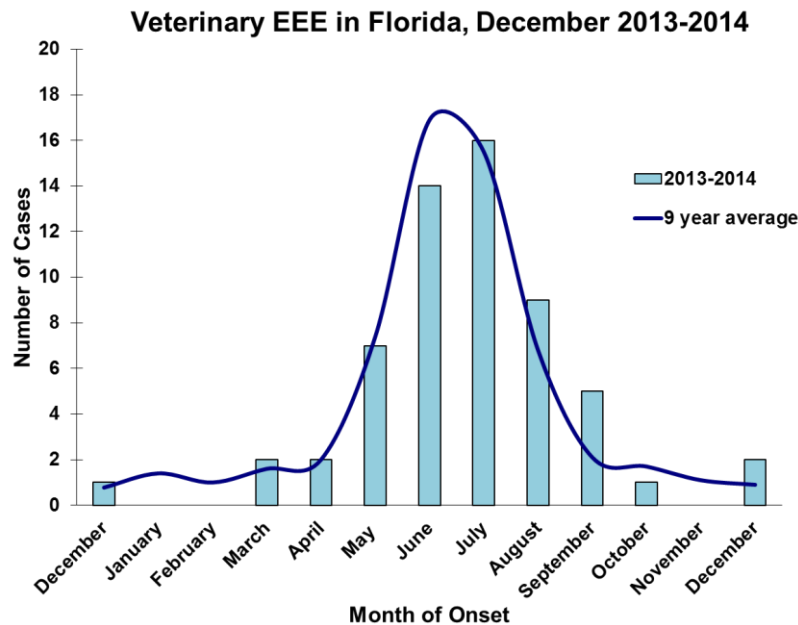
Guinea (2), Ghana (3), Ghana/Rwanda, Ghana/Senegal, Ghana/Togo, Guatemala, Guyana, Haiti, Honduras, India (9), Ivory Coast (3), Kenya (3), Liberia, Nigeria (10), Nigeria/Ethiopia, Papua New Guinea, Peru (2), Sierra Leone (5), Sudan, Togo, Uganda (2), and multiple sub-Saharan African countries (3). Counties reporting cases were: Broward (8), Clay, Duval (3), Escambia, Hernando, Hillsborough (10), Leon, Miami-Dade (13), Okaloosa (2), Orange (7), Osceola (2), Palm Beach (5), Pasco, Pinellas (3), Santa Rosa, and Seminole. Sixteen of the cases were reported in non-Florida residents.

Forty-two cases (70%) were diagnosed with *Plasmodium falciparum*. Thirteen cases (22%) were diagnosed with *Plasmodium vivax*. Two cases (3%) were diagnosed with *Plasmodium malariae*. Three cases (5%) were diagnosed with *Plasmodium ovale*.

**Veterinary Cases\***

\*Veterinary cases are reported by date of onset

Two horses with EEEV infection were reported this week in Clay and Levy Counties.



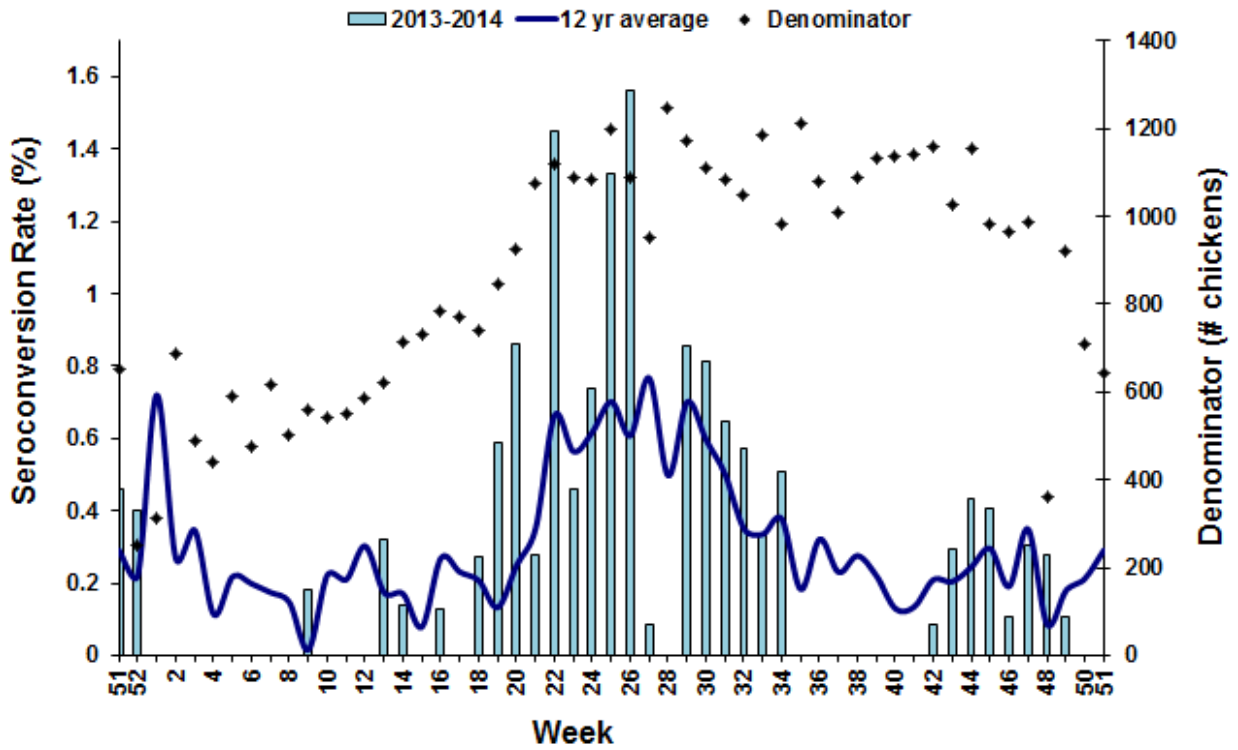
## Sentinel Chickens

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.

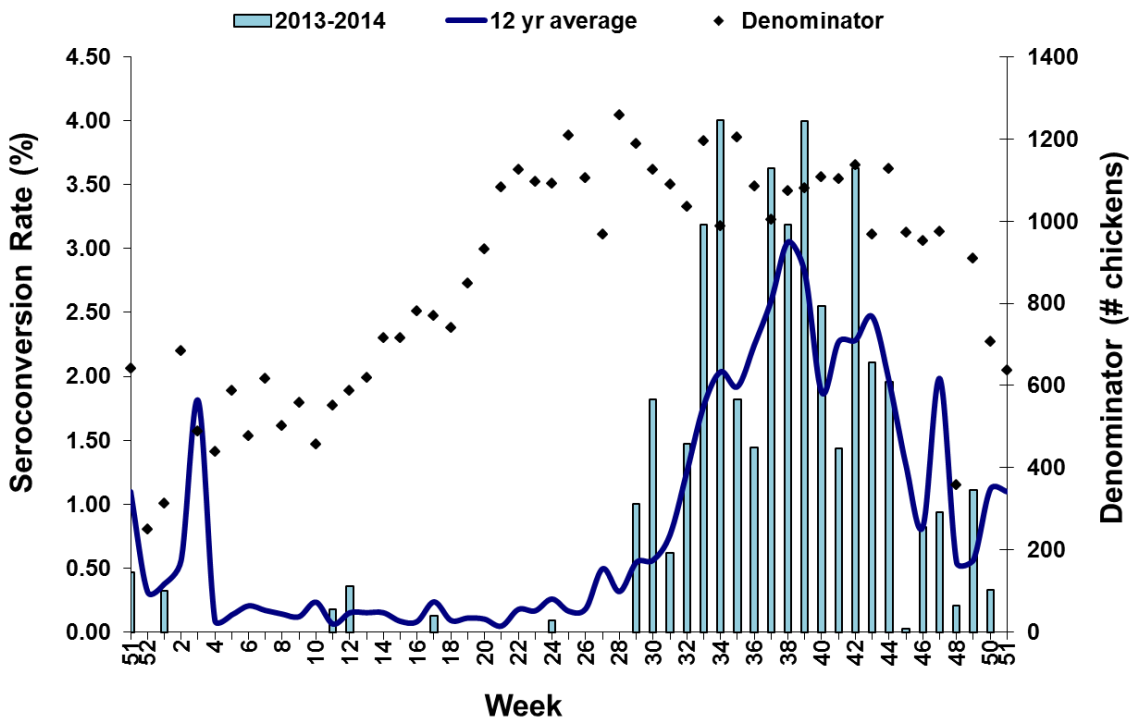
Thirteen sentinel chickens tested positive for antibodies to WNV this week in Bay, Citrus, Flagler, Orange, Pinellas, Seminole, Sumter, and Volusia Counties. One sentinel chicken tested positive for antibodies to EEEV this week in Walton County.

County	Collection Date	Seroconversion Rates (%)					County Totals		
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Bay	11/21/14	33.33		33.33				4 WNV	6 EEEV, 1 HJV, 18 WNV
Citrus	12/08/14	1.52		1.52				1 WNV	16 EEEV, 9 HJV, 20 WNV
Flagler	11/24/14	9.09		9.09				1 WNV	11 EEEV, 6 HJV, 17 WNV
Orange	12/04/14	2.08		2.08				1 WNV	30 EEEV, 5 HJV, 41 WNV, 1 SLEV
Pinellas	12/08/14	1.79		1.79				1 WNV	32 SLEV, 1 HJV, 8 WNV
Seminole	11/24/14	4.55		4.55				1 WNV	
	12/01/14	4.55		4.55				1 WNV	20 WNV
Sumter	12/09/14	3.03		3.03				1 WNV	8 WNV
Volusia	11/21/14	2.08		2.08				1 WNV	
	12/01/14	2.13		2.13				1 WNV	3 EEEV, 1 HJV, 30 WNV, 2 SLEV
Walton	12/02/14				0.93	0.93		1 EEEV	38 EEEV, 18 HJV, 8 WNV, 1 SLEV

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



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



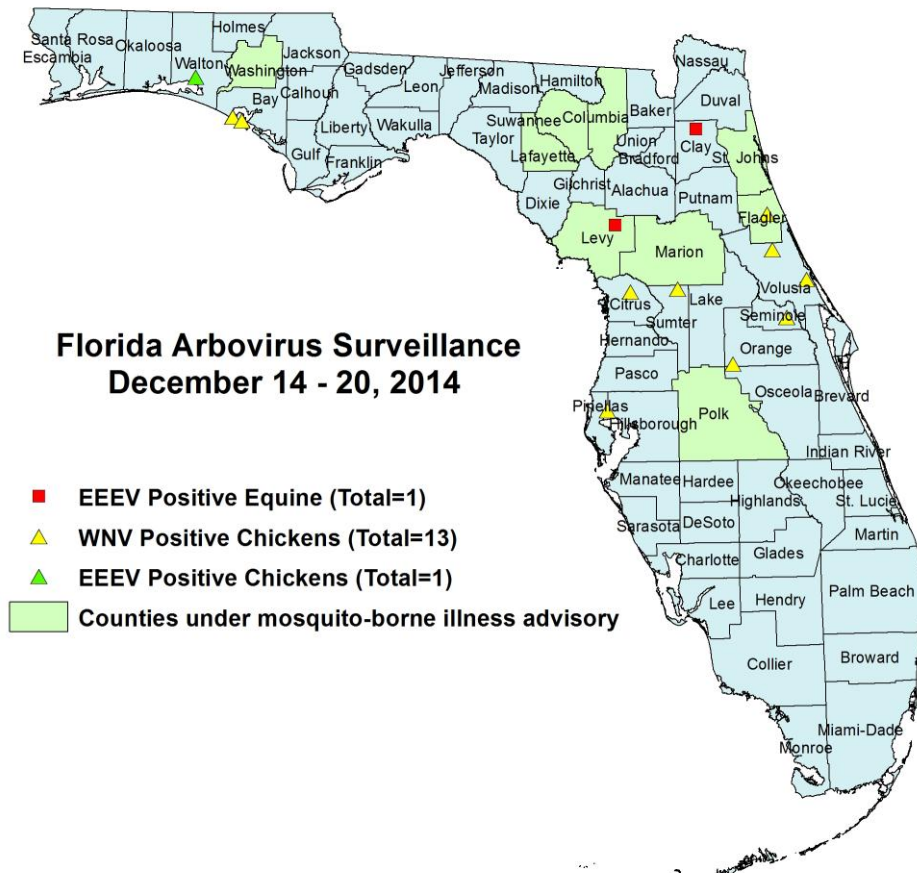
## Dead Birds

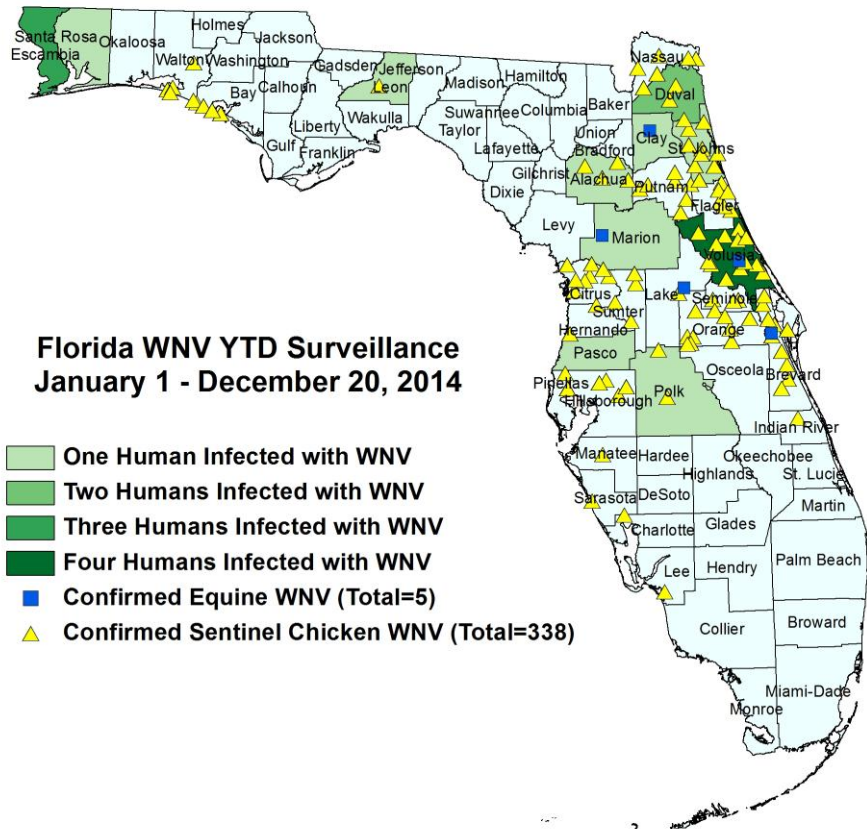
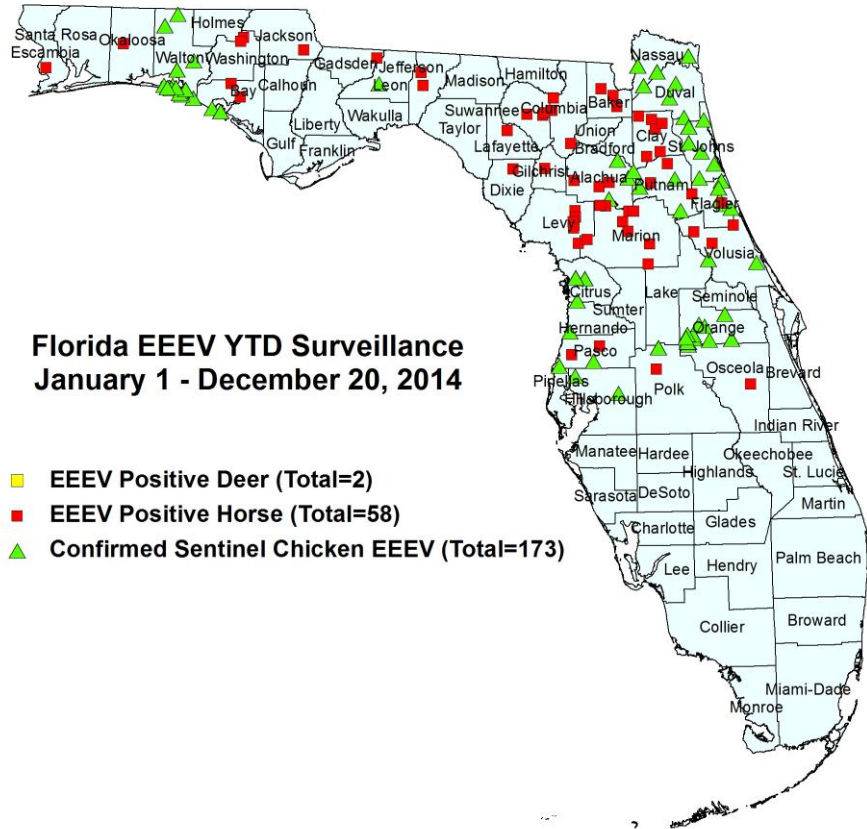
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 6 reports representing 9 dead birds including 3 crows and 1 raptor were received from 6 counties.

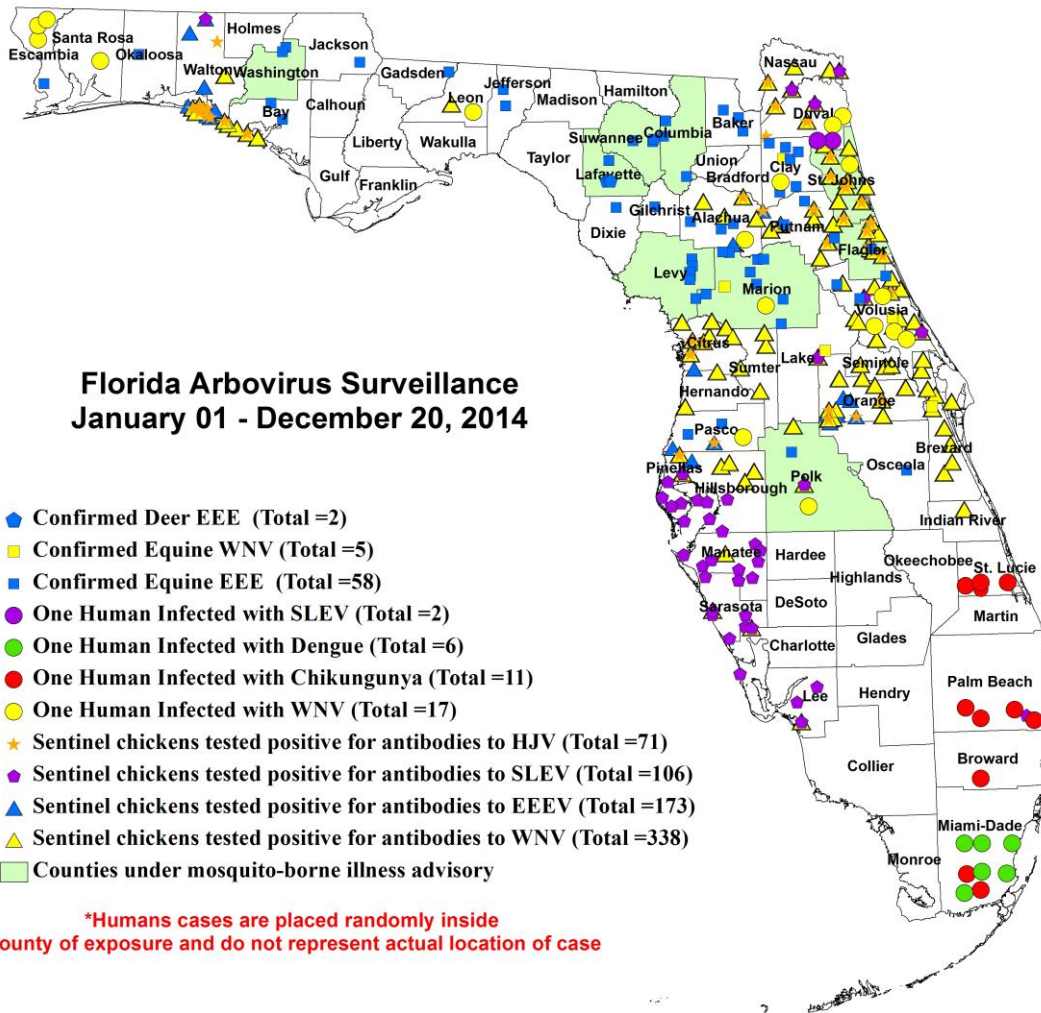
In 2014, 375 reports representing a total of 1024 dead birds (32 crows, 7 jay, 82 raptors, and 34 doves) were received from 48 of Florida's 67 counties. Please note that FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to [www.myfwc.com/bird/](http://www.myfwc.com/bird/)

County	Total Dead Birds	Crows	Jays	Raptors	Dove
Bay	1	0	0	0	0
Dade	1	0	0	0	0
Hardee	4	3	0	0	0
Okaloosa	1	0	0	0	0
Palm Beach	1	0	0	0	0
Pinellas	1	0	0	1	0

## Maps







### 2014 Arbovirus Activity by County

County	Arbovirus Activity
<b>Alachua</b>	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); 15 sentinels (8/12, 8/18, 8/25, 9/16, 9/22, 9/29, 10/13, 10/20, 11/3, 11/10)
<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: 18 sentinels (8/19, 8/26, 9/2, 9/9, 9/16, 9/23, 11/21)
<b>Brevard</b>	WNV: 1 horse (8/1); 31 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, 10/15, 10/16, 10/22, 10/31)
<b>Broward</b>	Chikungunya: 1 human (July)
<b>Charlotte</b>	WNV: 1 sentinel (9/12) SLEV: 2 sentinels (9/26, 10/24)
<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: 9 sentinels (2/17, 2/24, 8/11, 8/18, 9/29, 10/20, 12/1) WNV: 20 sentinels (1/2, 9/2, 9/15, 9/22, 9/29, 10/13, 10/20, 10/27, 11/10, 12/8)
<b>Clay</b>	EEEV: 6 horses (5/2, 7/16, 7/19, 7/20, 8/2, 12/2) WNV: 1 human (October); 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: 2 humans (August, September); 3 sentinels (9/15, 10/20, 10/23) SLEV: 2 humans (August); 1 sentinel (9/2)
<b>Escambia</b>	EEEV: 1 horse (7/16) WNV: 3 humans (July, August, September)



<b>Flagler</b>	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: 17 sentinels (7/14, 8/18, 9/2, 9/8, 9/15, 9/22, 9/29, 10/6, 10/20, 10/27, 11/24)
<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: 5 sentinels (8/25, 10/6, 10/13, 10/20)
<b>Hillsborough</b>	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: 13 sentinels (3/18, 9/2, 9/16, 9/30, 10/14, 10/21, 10/28, 11/18)
<b>Indian River</b>	WNV: 1 sentinel (11/19)
<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: 8 sentinels (1/13, 1/14, 2/11, 3/25, 9/16, 10/27) WNV: 3 sentinels (10/27, 11/10)
<b>Leon</b>	EEEV: 1 sentinel (7/14) WNV: 1 human (August), 1 sentinel (8/19)
<b>Levy</b>	EEEV: 6 horses (6/7, 6/21, 6/27, 6/28, 8/17, 12/3)
<b>Manatee</b>	SLEV: 24 sentinels (7/29, 9/2, 9/16, 9/23, 9/30, 10/15, 10/20, 10/28, 11/4, 12/2) WNV: 1 sentinel (10/7)
<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 human (October); 1 horse (9/5)
<b>Miami-Dade</b>	Chikungunya: 2 humans (June) Dengue: 6 humans (June, August, September)
<b>Nassau</b>	EEEV: 15 sentinels (5/27, 5/31, 6/13, 6/20, 6/23, 6/27, 7/11, 7/19, 8/22, 10/20, 11/10) HJV: 4 sentinels (7/25, 8/18, 8/22) WNV: 16 sentinels (8/8, 8/18, 8/22, 8/25, 9/2, 9/12, 9/15, 9/19, 9/27, 10/18, 10/20, 11/10) SLEV: 6 sentinels (8/29, 9/12, 10/13, 10/18, 10/25)
<b>Okaloosa</b>	EEEV: 1 horse (8/15)
<b>Orange</b>	EEEV: 30 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, 10/30, 11/3, 11/6, 11/17, 11/26) HJV: 5 sentinels (1/2, 2/17, 8/25, 11/26) WNV: 41 sentinels (8/4, 8/25, 9/2, 9/8, 9/22, 9/29, 10/9, 10/13, 10/16, 10/20, 10/27, 10/30, 11/17, 12/4) SLEV: 1 sentinel (9/15)
<b>Osceola</b>	EEEV: 1 horse (7/30)
<b>Palm Beach</b>	Chikungunya: 4 humans (July) SLEV: 1 sentinel (11/3)
<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: 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: 8 sentinels (9/15, 9/22, 9/29, 10/27, 11/10, 12/8)
<b>Polk</b>	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)
<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: 25 sentinels (8/5, 8/12, 8/26, 9/9, 9/16, 9/23, 10/14, 10/21, 10/28) HJV: 10 sentinels (8/26, 9/23, 10/14, 10/28)
<b>Sarasota</b>	SLEV: 12 sentinels (2/6, 2/14, 2/28, 7/28, 9/2, 9/22, 9/29, 10/31, 11/3) WNV: 1 sentinel (4/25)
<b>Santa Rosa</b>	WNV: 1 asymptomatic blood donor (July)
<b>Seminole</b>	WNV: 20 sentinels (7/30, 8/5, 9/15, 9/22, 9/29, 10/6, 10/13, 10/20, 10/27, 11/3, 11/24, 12/1)
<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); 49 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, 10/20, 10/27, 11/3, 11/10)

<b>St. Lucie</b>	Chikungunya: 4 humans (July, August)
<b>Sumter</b>	WNV: 8 sentinels (9/8, 9/29, 10/14, 10/20, 11/18, 12/2, 12/9)
<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: 4 humans (August, September); 1 horse (7/15); 30 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, 11/10, 11/21, 12/1) SLEV: 2 sentinels (9/15)
<b>Walton</b>	EEEV: 38 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, 10/28, 11/17, 12/2) HJV: 18 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, 10/21, 10/28, 11/17) WNV: 8 sentinels (3/10, 3/17, 6/9, 9/15, 9/22, 10/13, 10/27) SLEV: 1 sentinel (9/23)
<b>Washington</b>	EEEV: 2 horses (7/15, 7/22)

### Acknowledgements and Data Sources

Contributors: Andrea Bingham, PhD, MSPH, 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.