



Florida Arbovirus Surveillance

Week 52: December 27, 2015-January 2, 2016

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 27, 2015-January 2, 2016 the following arboviral activity was recorded in Florida.

WNV activity: One human case of WNV infection was reported this week in Marion County. Two sentinel chickens tested positive for antibodies to WNV this week in Hillsborough and Sarasota Counties. In 2015, positive samples from 11 humans, two blood donors, six horses, 11 mosquito pools, and 439 sentinel chickens have been received from 28 counties.

SLEV activity: No human cases of SLEV infection were reported this week. No sentinel chickens tested positive for antibodies to SLEV this week. In 2015, positive samples from nine sentinel chickens have been received from seven counties.

EEEV activity: No human cases of EEEV infection 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 2015, positive samples from 81 sentinel chickens, 22 horses, and one goat have been received from 26 counties.

International Travel-Associated Dengue Fever Cases: Six cases of dengue fever were reported this week in persons that had international travel. In 2015, 82 travel-associated cases have been reported.

Dengue Fever Cases Acquired in Florida: No cases of locally acquired dengue fever were reported this week. In 2015, one case of locally acquired dengue fever has been reported.

International Travel-Associated Chikungunya Fever Cases: Two cases of chikungunya fever were reported this week in persons that had international travel. In 2015, 73 travel-associated cases have been reported.

Chikungunya Fever Cases Acquired in Florida: No cases of locally acquired chikungunya fever were reported this week. In 2015, no cases of locally acquired chikungunya fever have been reported.

Advisories/Alerts: Gadsden, Manatee, and Polk Counties are currently under mosquito-borne illness advisory. Hillsborough County is currently under 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 2013 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, Central and South America, Mexico, Pacific Islands, and Senegal, related to the transmission of chikungunya virus. There are similar CDC Travel Health Notices for dengue virus transmission in Malaysia and Zika virus transmission in Central and South America, Mexico, and Puerto Rico. While a travel health notice has not been issued for the recent locally acquired dengue fever cases in Hawaii, visitors should take appropriate mosquito bite precautions while traveling. Additional information on travel health notices can be found at the following link: <http://wwwnc.cdc.gov/travel/notices>.

2015 Human Case Summary*

West Nile Virus Illnesses Acquired in Florida: A total of eleven human cases of WNV illness acquired in Florida have been reported in 2015; one in Duval County (November), four in Escambia County (July, August, and September), one in Hillsborough County (September), one in Marion County (October), one in Pinellas County (July), one in Volusia County (July), and two in Walton County (June). Two asymptomatic positive blood donors have been reported in 2015; one in Hillsborough County (September) and one in Manatee County (October).

International Travel-Associated Chikungunya Fever Cases: Seventy-three cases of chikungunya with onset in 2015 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: Bolivia, Colombia (13), Dominican Republic, Ecuador, El Salvador (3), Guatemala (4), Haiti (2), Honduras (6), India (2), Jamaica (3), Mexico (11), Nicaragua (19), Puerto Rico (4), Trinidad and Tobago, Venezuela, and Virgin Islands. Counties reporting cases were: Brevard (2), Broward (9), Collier (2), Columbia, Duval (2), Escambia, Hardee, Hillsborough (3), Lake, Lee (2), Levy, Martin, Miami-Dade (27), Monroe, Orange (3), Osceola, Palm Beach (6), Pinellas, Polk, Sarasota, Seminole (3), and Volusia (3). One case was reported in a non-Florida resident.

International Travel-Associated Dengue Fever Cases: Eighty-two cases of dengue with onset in 2015 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, Brazil (5), Colombia, Costa Rica (3), Cuba (26), Dominican Republic (6), El Salvador, Guatemala, Haiti (11), Hawaii (3), Honduras, India (3), Jamaica, Mexico (3), Nicaragua (2), Philippines (4), Puerto Rico, Thailand, Venezuela (7), and Vietnam. Counties reporting cases were: Clay (2), Collier, Duval, Flagler, Hernando, Hillsborough (7), Broward (7), Lee (2), Miami-Dade (39), Monroe (2), Orange (2), Osceola, Palm Beach (7), Pinellas (3), St. Johns, St. Lucie (3), and Seminole (2). Seven cases were reported in non-Florida residents. In 2015, 39 of the 82 cases of dengue reported in Florida have been serotyped by PCR. Additional serotyping and strain typing are being conducted.

	# of cases per serotype – 2015
DENV-1	10
DENV-2	14
DENV-3	8
DENV-4	6
DENV-1 and 3	1
	39

Dengue Fever Cases Acquired in Florida: In 2015, one case of locally acquired dengue fever has been reported in Broward County, with onset in October.

International Travel-Associated Malaria Cases: Fifty-one cases of malaria with onset in 2015 have been reported. Countries of origin were: Afghanistan, Angola, Cameroon (5), Central/South America (2), Democratic Republic of the Congo/Uganda, Dominican Republic (2), Eritrea, Gabon, Ghana (7), Guatemala (2), Haiti (5), India (4), Kenya, Malawi, Niger, Nigeria (8), Papua New Guinea, South Sudan, Sudan (3), Tanzania (2), and Uganda. Counties reporting cases were: Broward (10), Charlotte, Collier, Duval (2), Escambia, Hillsborough (2), Lake, Lee (2), Manatee (2), Monroe, Miami-Dade (13), Okaloosa, Orange (5), Osceola (2), Pinellas (2), Palm Beach (3), Sarasota, and Volusia. Twelve of the cases were reported in non-Florida residents.

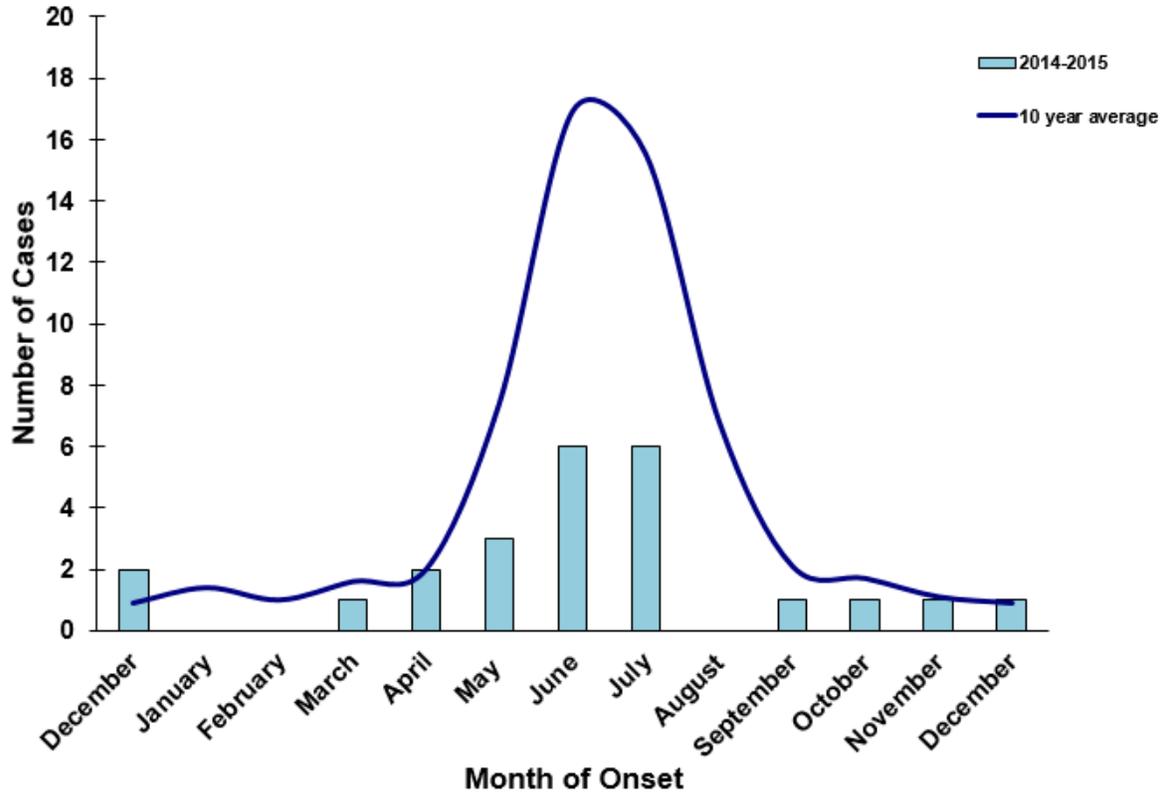
Thirty-eight cases (75%) were diagnosed with *Plasmodium falciparum*. Eleven cases were diagnosed with *Plasmodium vivax* (22%). One case (2%) was diagnosed with *Plasmodium malariae*. One case was diagnosed with *Plasmodium ovale* (2%).

Veterinary Cases*

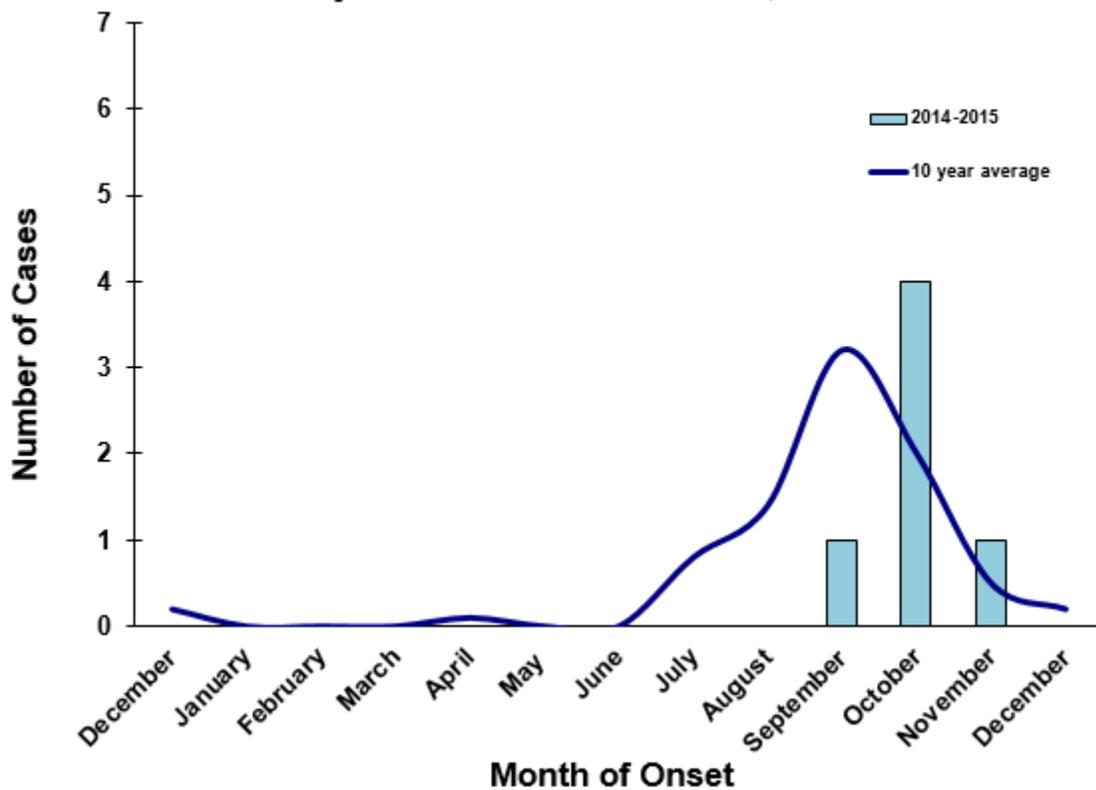
*Veterinary cases are reported by date of onset

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

Veterinary EEE in Florida, December 2014-2015



Veterinary WNV Disease in Florida, December 2014-2015



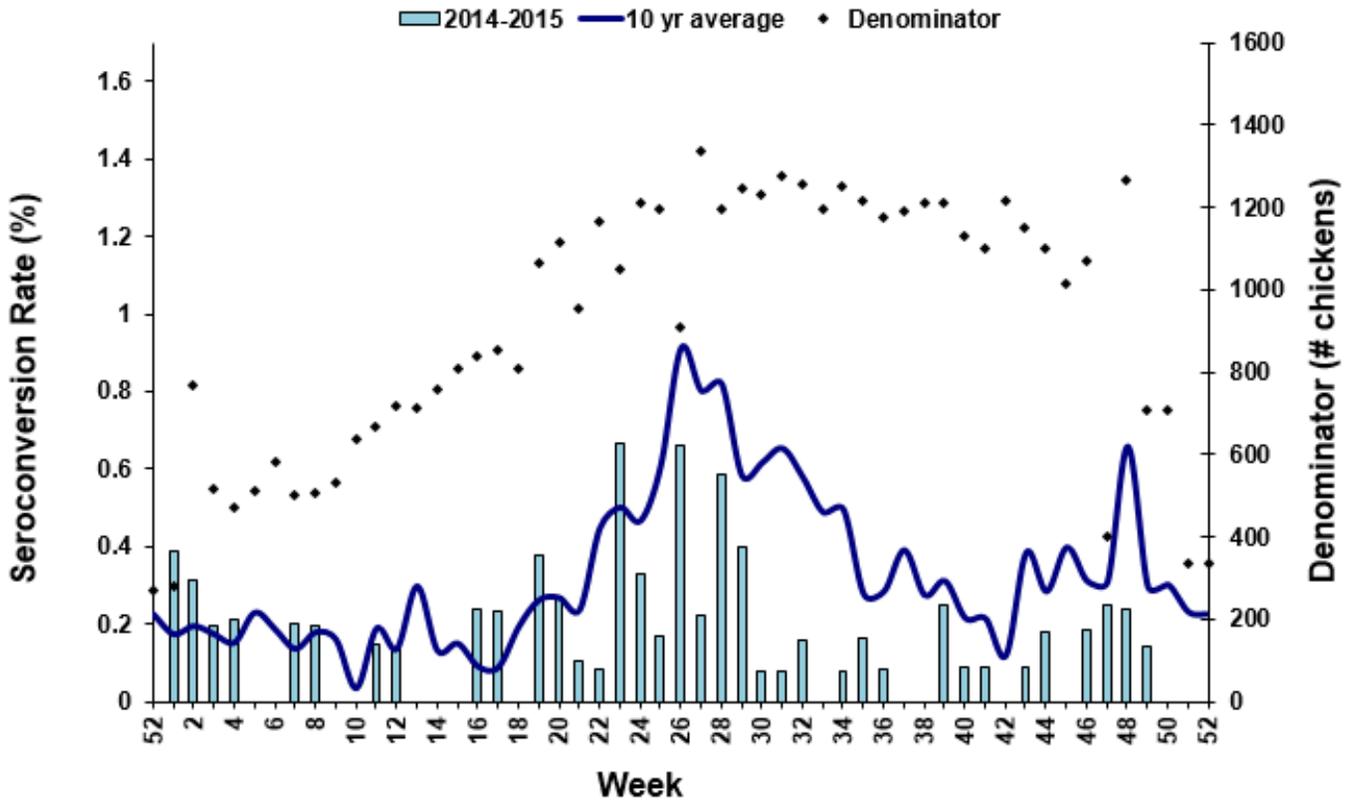
Sentinel Chickens*

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.

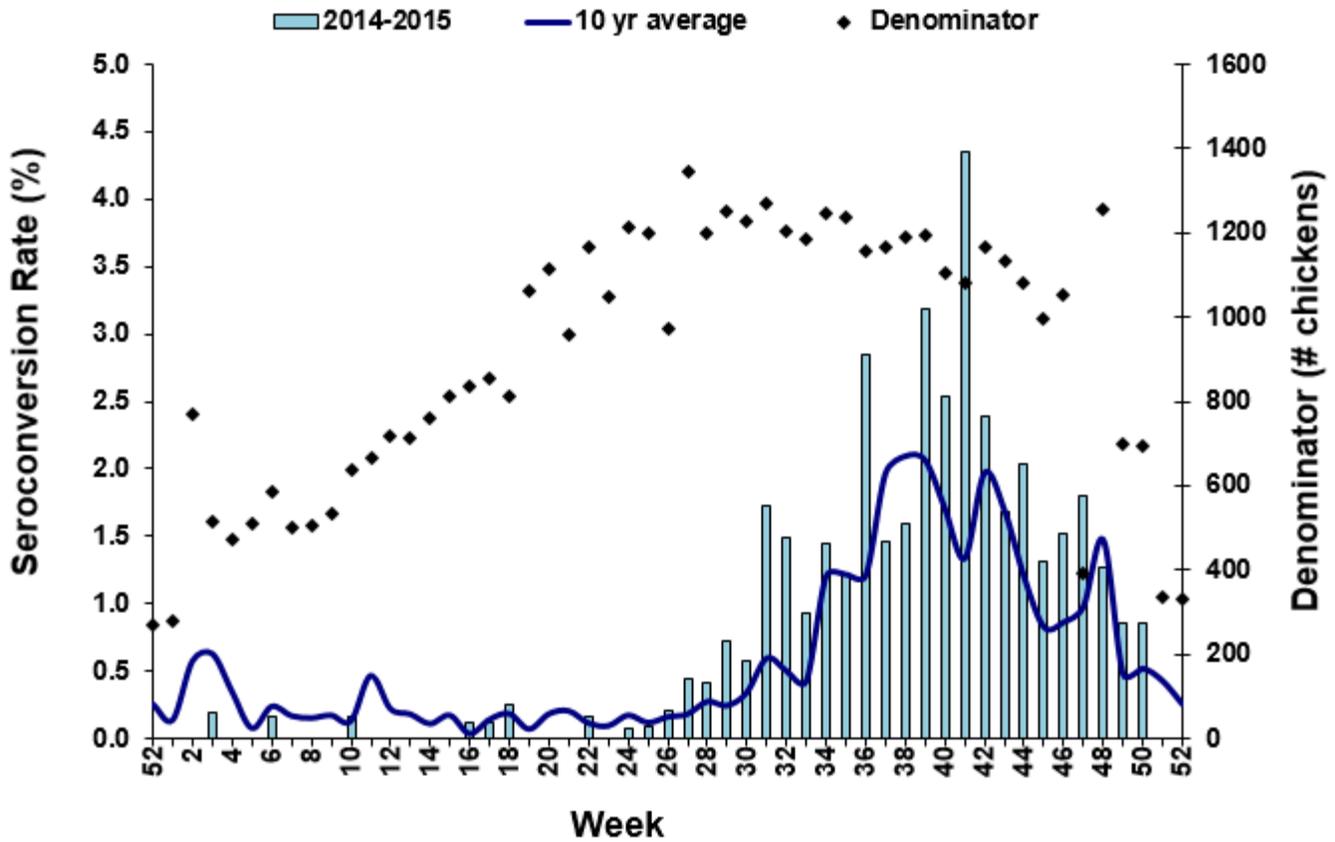
Two sentinel chickens tested positive for antibodies to WNV this week in Hillsborough and Sarasota Counties.

County	Collection Date	Seroconversion Rates (%)					County Totals		
		Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Hillsborough	12/17/15	4.05		4.05				3 WNV	115 WNV, 2 EEEV
Sarasota	12/18/15	1.37		1.37				1 WNV	8 WNV

Sentinel Seroconversions to EEEV in Florida, 2014-2015



Sentinel Seroconversions to WNV in Florida, 2014-2015



Mosquito Pools

No mosquito pools tested positive for EEEV or WNV 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, 14 reports representing 104 dead birds, including 1 raptor were received from 7 counties.

In 2015, 392 reports representing a total of 1178 dead birds (64 crows, 24 jay, 97 raptors, and 36 doves) were received from 49 of Florida's 67 counties. In 2016, 1 report representing a total of 1 dead bird (0 crows, 0 jays, 1 raptor, 0 dove) was received from 1 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/.

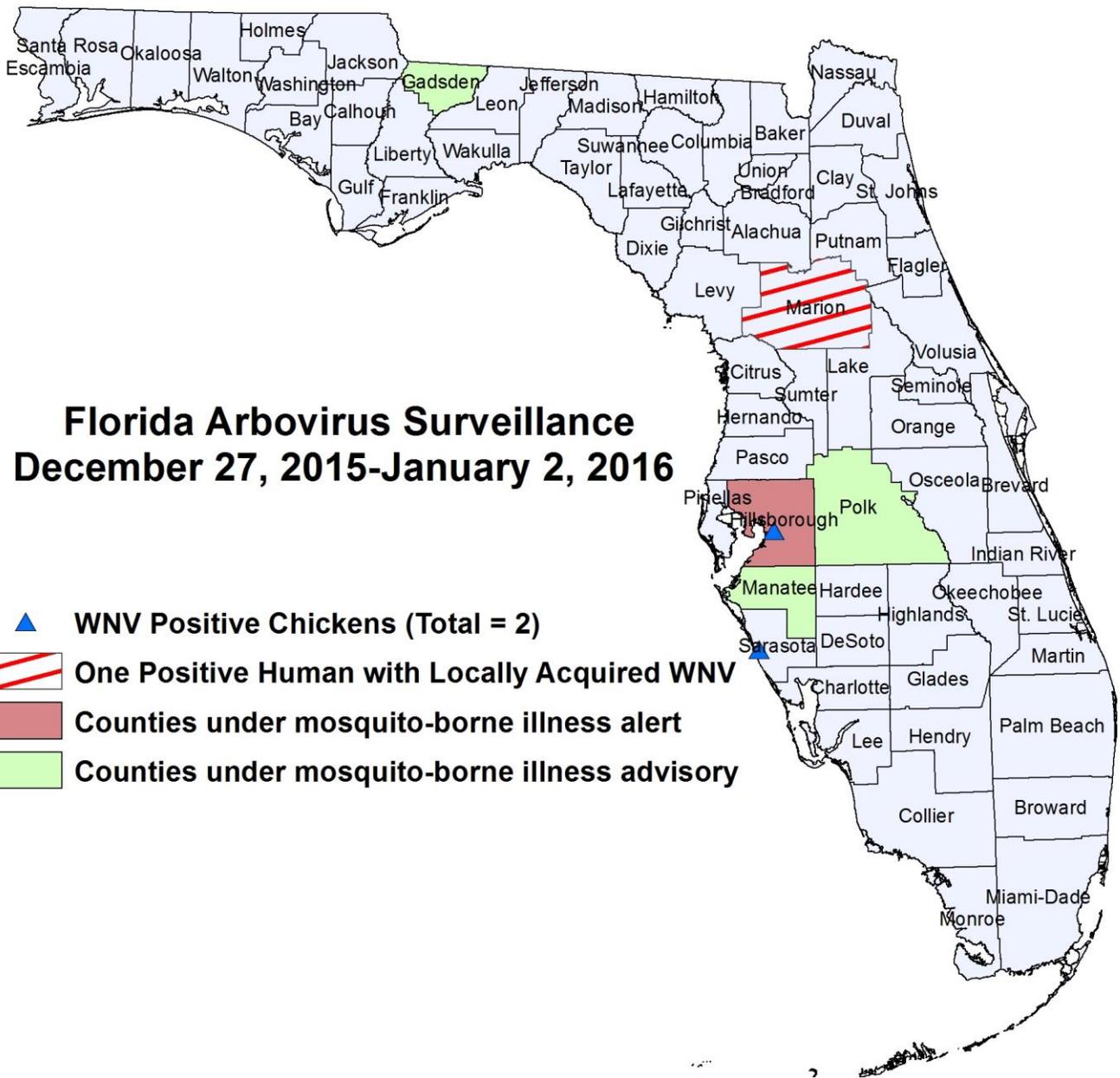
2015

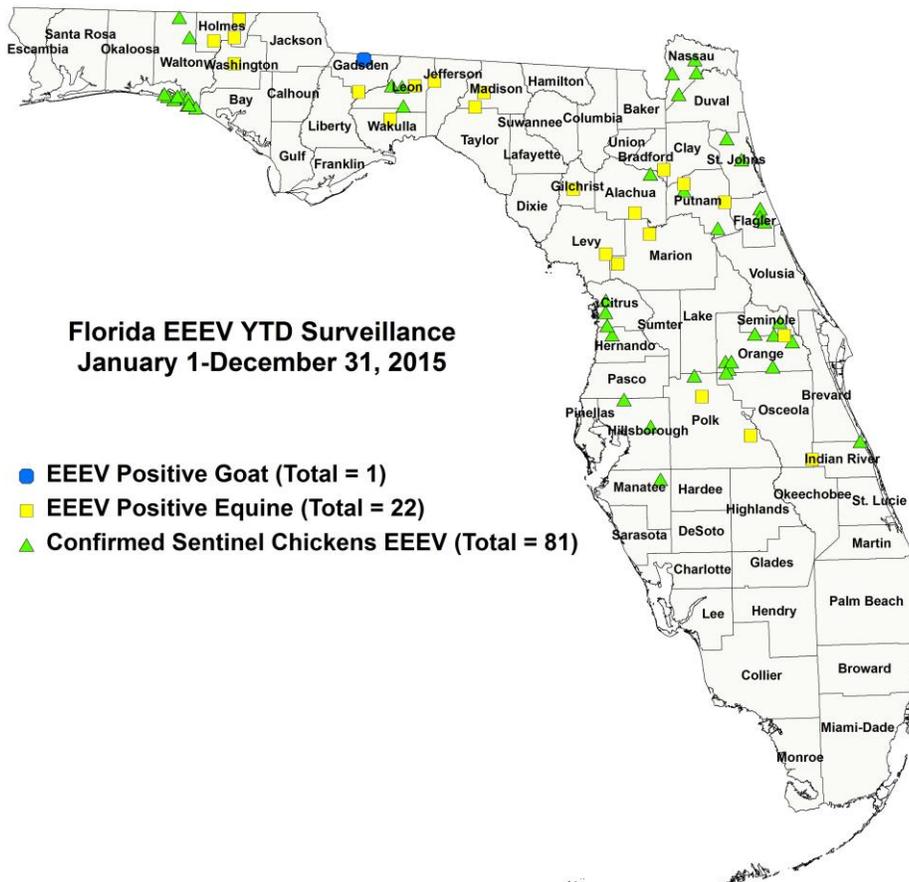
County	Total Dead Birds	Crows	Jays	Raptors	Dove
Brevard	7	0	0	0	0
Broward	4	0	0	0	0
Franklin	4	0	0	0	0
Gulf	70	0	0	0	0
Hillsborough	12	0	0	0	0
Pasco	6	0	0	0	0

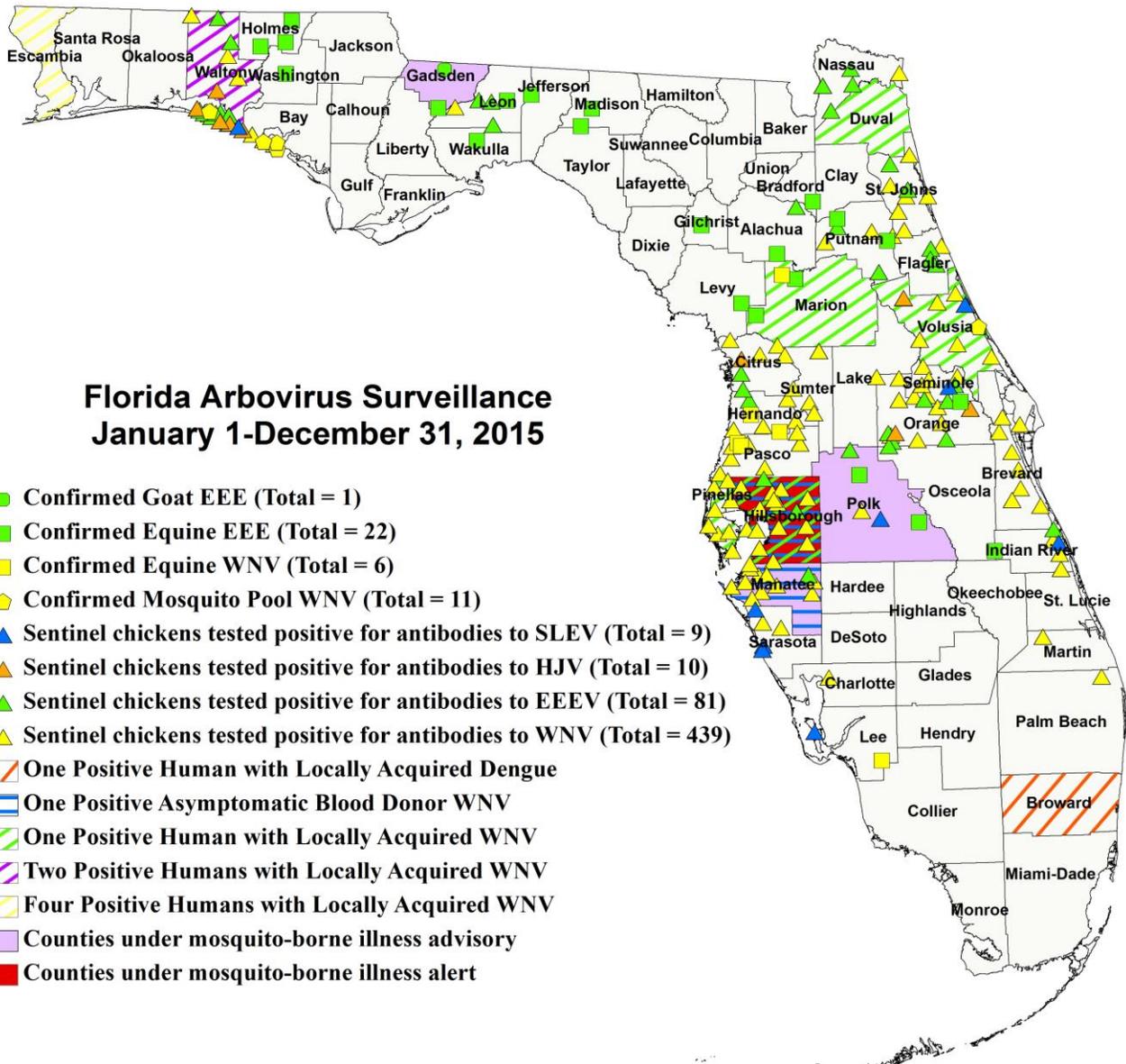
2016

County	Total Dead Birds	Crows	Jays	Raptors	Dove
Leon	1	0	0	1	0

Maps







2015 Arbovirus Activity by County	
County	Arbovirus Activity
Alachua	EEEV: 1 horse (6/16); 3 sentinels (7/13, 9/28)
Bay	WNV: 7 mosquito pools (7/29, 8/12); 12 sentinels (7/27, 8/4, 8/11, 8/14, 8/25, 9/1, 10/12, 11/9)
Brevard	WNV: 10 sentinels (6/24, 8/21, 8/26, 9/10, 9/23, 9/24, 10/14, 11/19)
Bradford	EEEV: 1 horse (4/23)
Broward	Dengue: 1 human (October)
Charlotte	WNV: 1 sentinel (8/21)
Citrus	EEEV: 7 sentinels (5/12, 11/2, 11/30, 12/7) HJV: 1 sentinel (7/6) WNV: 6 sentinels (9/14, 10/19, 11/2, 11/16, 11/30, 12/7)
Duval	WNV: 1 human (November)
Escambia	WNV: 4 humans (July, August, September)
Flagler	EEEV: 7 sentinels (4/27, 6/1, 6/29, 7/20, 8/10, 10/26) WNV: 4 sentinels (7/20, 9/8, 9/14, 11/9)
Gadsden	EEEV: 1 goat (6/16); 1 horse (6/21)
Gilchrist	EEEV: 1 horse (4/18)
Hernando	WNV: 2 horses (10/30, 11/7); 16 sentinels (9/8, 9/14, 10/5, 10/12, 10/19, 10/26, 11/2, 11/9, 11/17) EEEV: 1 sentinel (11/23)

Hillsborough	WNV: 1 human (September); 1 asymptomatic blood donor (September); 115 sentinels (3/10, 4/22, 5/5, 6/2, 7/7, 7/14, 7/21, 7/28, 8/4, 8/12, 8/18, 8/26, 9/1, 9/8, 9/15, 9/22, 9/29, 10/6, 10/14, 10/20, 10/28, 11/4, 11/9, 11/17, 11/23, 12/1, 12/8, 12/15, 12/17) EEEV: 2 sentinels (8/26, 9/1)
Holmes	EEEV: 3 horses (7/16, 9/8, 11/8)
Indian River	EEEV: 1 sentinel (4/30) WNV: 6 sentinels (8/20, 9/18, 10/15, 12/2) SLEV: 1 sentinel (10/28)
Jefferson	EEEV: 1 horse (7/25)
Lee	SLEV: 1 sentinel (1/12) WNV: 1 horse (10/10)
Leon	EEEV: 1 horse (5/20); 3 sentinels (6/8, 7/13, 8/11) WNV: 2 sentinels (8/21, 8/28)
Levy	EEEV: 1 horse (12/7)
Madison	EEEV: 2 horses (6/24, 7/19)
Manatee	WNV: 1 asymptomatic blood donor (October); 35 sentinels (8/5, 8/25, 9/9, 9/23, 9/30, 10/7, 10/14, 10/20, 10/27, 11/4, 11/18, 11/20) EEEV: 1 sentinel (11/20)
Marion	EEEV: 2 horses (6/14, 7/16) WNV: 1 human (October); 1 horse (9/28)
Martin	WNV: 2 sentinels (10/9, 10/16)
Nassau	EEEV: 7 sentinels (5/29, 7/3, 7/10, 7/13, 9/28, 10/2, 10/16) WNV: 1 sentinel (11/23)
Orange	EEEV: 1 horse (5/30); 15 sentinels (1/20, 1/29, 2/16, 2/23, 3/16, 4/20, 4/23, 5/18, 6/11, 6/29, 7/8, 7/13, 7/30) HJV: 2 sentinels (5/15, 8/25) WNV: 28 sentinels (8/3, 8/10, 8/25, 8/31, 9/9, 9/28, 10/12, 10/19, 10/26, 11/2, 11/5, 11/9, 12/7)
Osceola	EEEV: 1 horse (5/3)
Palm Beach	WNV: 1 sentinel (4/27)
Pasco	WNV: 2 horses (10/12, 10/26); 32 sentinels (9/1, 9/22, 9/28, 10/6, 10/13, 10/20, 10/27, 11/4, 11/18, 11/23)
Pinellas	WNV: 1 human (July); 53 sentinels (6/29, 7/6, 7/20, 7/27, 8/3, 8/10, 8/17, 8/24, 8/31, 9/8, 9/14, 9/21, 9/14, 9/28, 10/5, 10/19, 10/26, 11/2, 11/9, 11/16)
Polk	EEEV: 2 horses (6/30, 7/6); 2 sentinels (6/22) WNV: 3 sentinels (9/29, 10/12, 10/19) SLEV: 1 sentinel (11/9)
Putnam	EEEV: 2 horses (3/16, 6/30); 2 sentinels (7/21, 10/6) WNV: 9 sentinels (7/21, 9/15, 9/22, 10/6, 10/20)
Sarasota	SLEV: 3 sentinels (7/13, 11/6) WNV: 8 sentinels (9/4, 9/11, 9/18, 10/9, 10/19, 12/18)
St. Johns	EEEV: 3 sentinels (6/8, 6/15, 7/6) WNV: 17 sentinels (7/27, 9/8, 9/14, 9/21, 9/28, 10/19, 10/26, 11/2, 11/16)
Seminole	EEEV: 4 sentinels (6/8, 6/29, 7/20, 8/31) WNV: 15 sentinels (8/10, 8/31, 9/8, 9/21, 9/28, 10/12, 10/26, 11/2, 11/30, 12/7) SLEV: 1 sentinel (9/8)
Sumter	WNV: 11 sentinels (1/20, 9/29, 10/13, 10/27, 12/1, 12/15)
Volusia	WNV: 1 human (July); 3 mosquito pools (6/2,8/18); 16 sentinels (6/15, 7/13, 9/8, 9/21, 9/28, 11/2, 11/9, 11/16, 11/23, 11/30) SLEV: 1 sentinel (8/31) HJV: 1 sentinel (9/8)
Wakulla	EEEV: 1 horse (10/9)
Walton	EEEV: 23 sentinels (1/5, 1/13, 3/23, 5/11, 5/18, 6/8, 6/15, 6/29, 7/14, 7/20, 8/4, 9/8, 11/16, 11/30) HJV: 6 sentinels (1/13, 5/18, 6/8, 9/8, 11/3) WNV: 2 humans (June); 1 mosquito pool (7/27); 36 sentinels (2/9, 6/1, 6/29, 7/6, 7/20, 8/3, 8/10, 9/8, 9/14, 9/21, 10/5, 10/13, 10/19, 11/9, 11/10, 11/16, 11/30, 12/9) SLEV: 1 sentinel (9/8)
Washington	EEEV: 1 horse (7/3)

Acknowledgements and Data Sources

Contributors: Andrea Bingham, PhD, MSPH, Shaiasia Itwaru-Womack, MPH, Katherine Kendrick, MPH, and Danielle Stanek, DVM, DOH Bureau of Epidemiology; Lea Heberlein-Larson, Lylah Seaton, and Valerie Mock, DOH Bureau of Public Health Laboratories; Carina Blackmore, DVM, PhD, DOH Division of Disease Control and Health Protection.

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, 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: <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.