Florida Arbovirus Surveillance
Week 38: September 20-26, 2015

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 September 20-26, 2015 the following arboviral activity was recorded in Florida.

WNV activity: One human case of WNV infection was reported this week in Escambia County. No horses with WNV infection were reported this week. Thirty sentinel chickens tested positive for antibodies to WNV this week in Brevard, Citrus, Flagler, Hernando, Hillsborough, Manatee, Orange, Pinellas, Sarasota, St. John, and Walton Counties. In 2015, positive samples from seven humans, eight mosquito pools, and 169 sentinel chickens have been received from 21 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 five sentinel chickens have been received from five counties.

EEEV activity: No human cases of EEEV infection were reported this week. One horse with EEEV infection was reported this week in Holmes County. One sentinel chicken tested positive for antibodies to EEEV this week in Walton County. In 2015, positive samples from 66 sentinel chickens, 19 horses, and one goat have been received from 22 counties.

International Travel-Associated Dengue Fever Cases: One case of dengue fever was reported this week in a person that had international travel. In 2015, 35 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, no cases of locally acquired dengue fever have been reported.

International Travel-Associated Chikungunya Fever Cases: Seven cases of chikungunya fever were reported this week in persons that had international travel. In 2015, 58 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: Bay, Gadsden, Hillsborough, Manatee, Orange, Pinellas, Polk, and Volusia Counties are currently under mosquito-borne illness advisory. Escambia and Walton Counties are 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, Mexico, Central and South America, the Pacific Islands, and Senegal, related to the transmission of chikungunya. There are also similar CDC Travel Health Notices for dengue transmission in Brazil and Malaysia. 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 seven human cases of WNV illness acquired in Florida have been reported in 2015; three in Escambia County (July and August), one in Pinellas County (July), one in Volusia County (July), and two in Walton County (June).

International Travel-Associated Chikungunya Fever Cases: Fifty-eight 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), Ecuador, El Salvador (3), Guatemala (2), Haiti (2), Honduras (5), India (2), Jamaica (2), Mexico (7), Nicaragua (14), Puerto Rico (3), Trinidad and Tobago, Venezuela, and Virgin Islands. Counties reporting cases were: Brevard (2), Broward (8), Collier (2), Duval (2), Escambia, Hardee, Hillsborough (3), Lake, Martin, Miami-Dade (21), Monroe, Orange (3), Osceola, Palm Beach (4), Pinellas, Sarasota, Seminole (3), and Volusia (2).

International Travel-Associated Dengue Fever Cases: Thirty-five 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, Cuba (10), Dominican Republic (3), Haiti (3), Honduras, India, Jamaica, Mexico, Philippines (2), Puerto Rico, Thailand, and Venezuela (3). Counties reporting cases were: Clay, Hernando, Hillsborough (3), Broward (5), Lee, Miami-Dade (16), Monroe (2), Orange, Palm Beach, St. Johns, St. Lucie (2), and Seminole. Five cases were reported in non-Florida residents. In 2015, 16 of the 35 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	6
DENV-2	4
DENV-3	3
DENV-4	2
DENV-1 and 3	1
	16

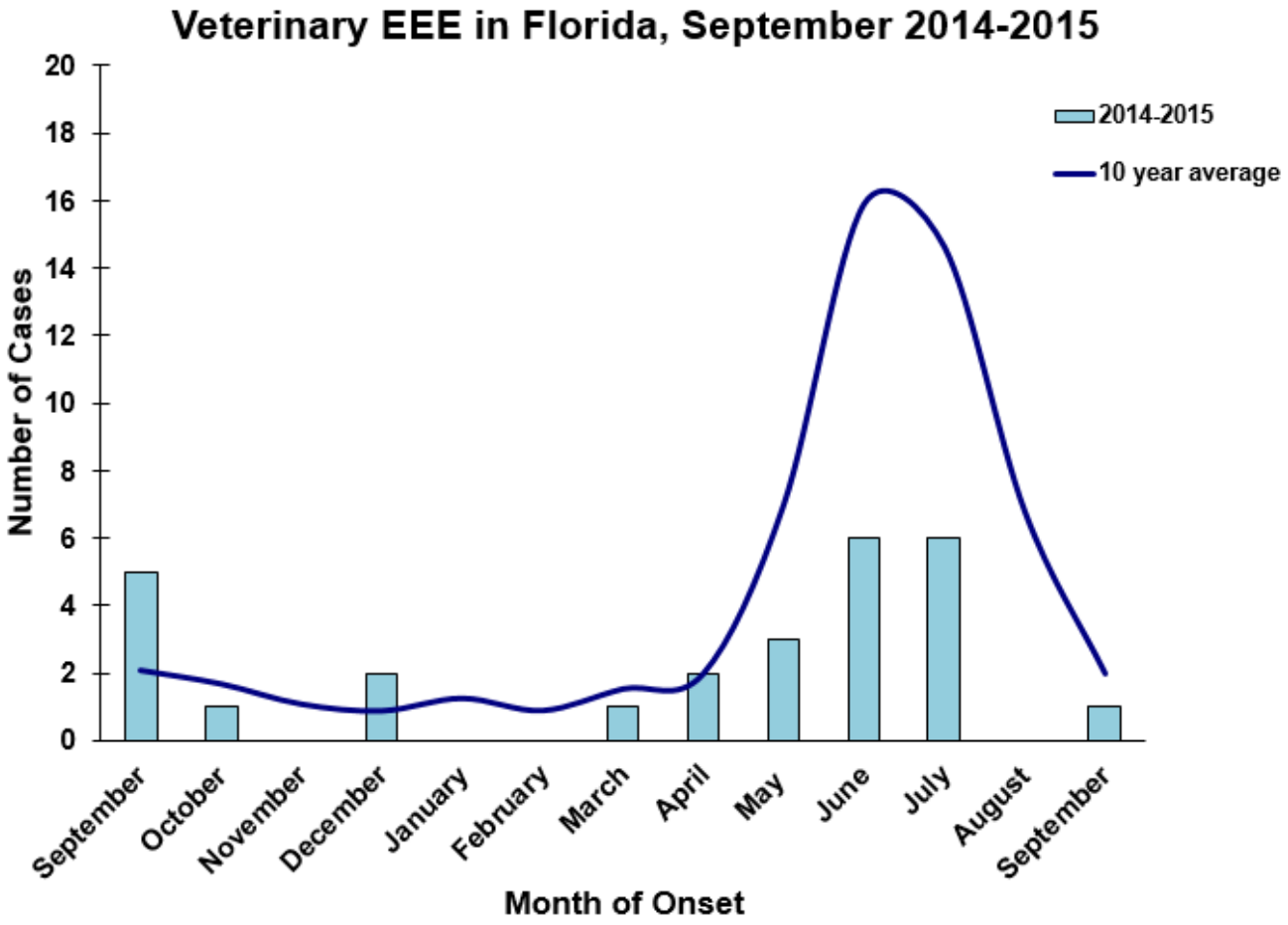
International Travel-Associated Malaria Cases: Thirty-three cases of malaria with onset in 2015 have been reported. Countries of origin were: Angola, Cameroon (3), Dominican Republic (2), Eritrea, Gabon, Ghana (5), Guatemala, Haiti (4), India (4), Malawi, Nigeria (5), South Sudan, Sudan (2), Tanzania, and Uganda. Counties reporting cases were: Broward (7), Charlotte, Collier, Duval, Escambia, Hillsborough (2), Lee, Monroe, Miami-Dade (10), Orange (2), Osceola, Pinellas, Palm Beach (3), and Sarasota. Eight of the cases were reported in non-Florida residents.

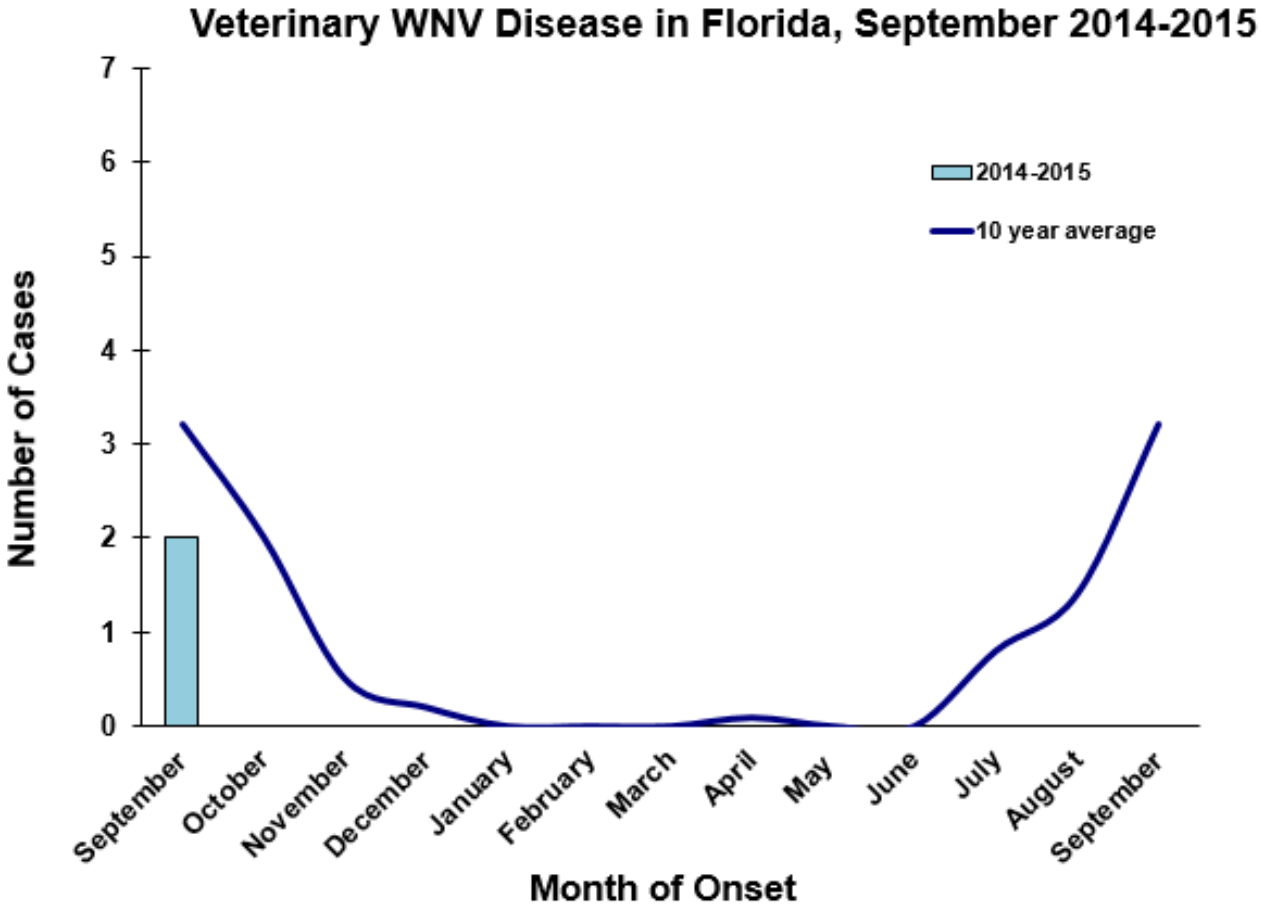
Twenty-six cases (79%) were diagnosed with *Plasmodium falciparum*. Six cases were diagnosed with *Plasmodium vivax* (18%). One case (3%) was diagnosed with *Plasmodium malariae*.

Veterinary Cases*

*Veterinary cases are reported by date of onset

One horse with EEEV infection was reported this week in Holmes County.


Veterinary EEE in Florida, September 2014-2015
Number of Cases
20
18
16
14
12
10
8
6
4
2
0
2014-2015
10 year average
September
October
November
December
January
February
March
April
May
June
July
August
September
Month of Onset


Veterinary WNV Disease in Florida, September 2014-2015
Number of Cases
7
6
5
4
3
2
1
0
2014-2015
10 year average
September
October
November
December
January
February
March
April
May
June
July
August
September
Month of Onset

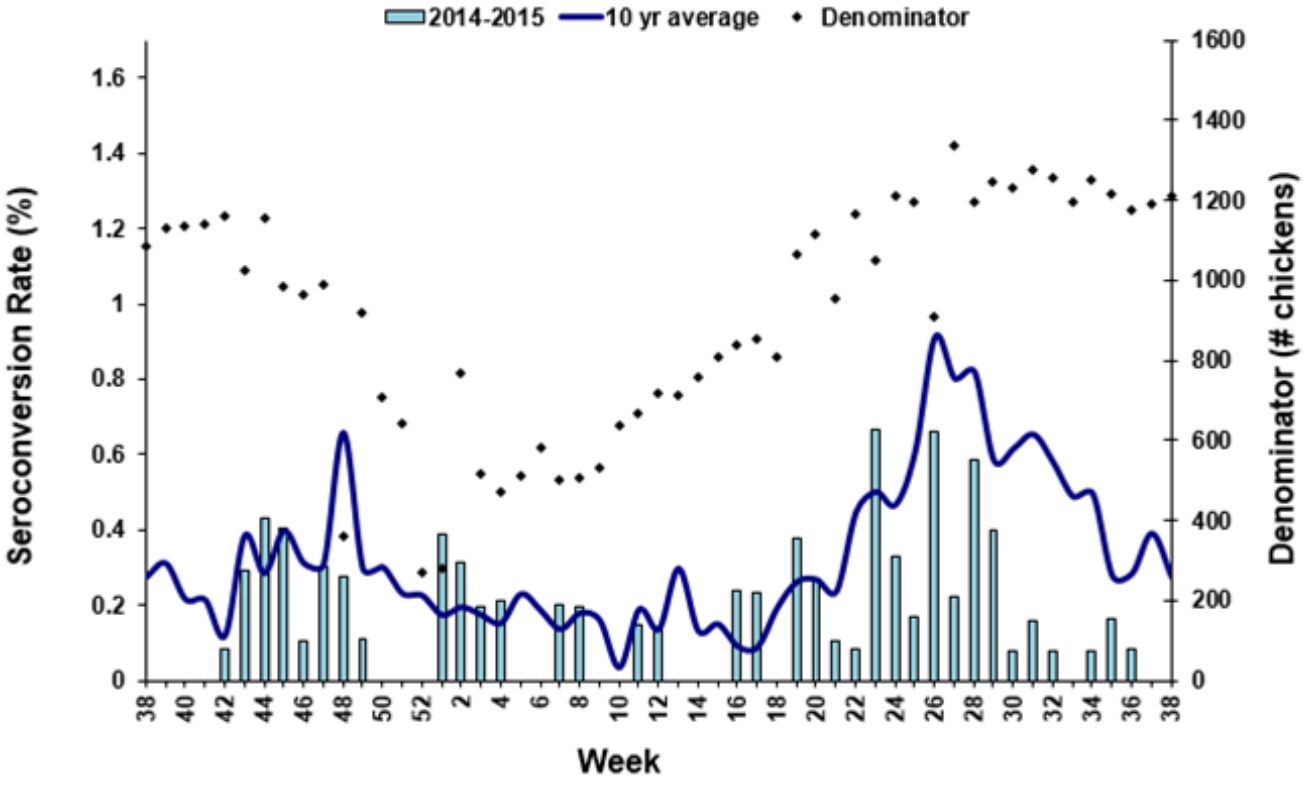
Sentinel Chickens*

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.

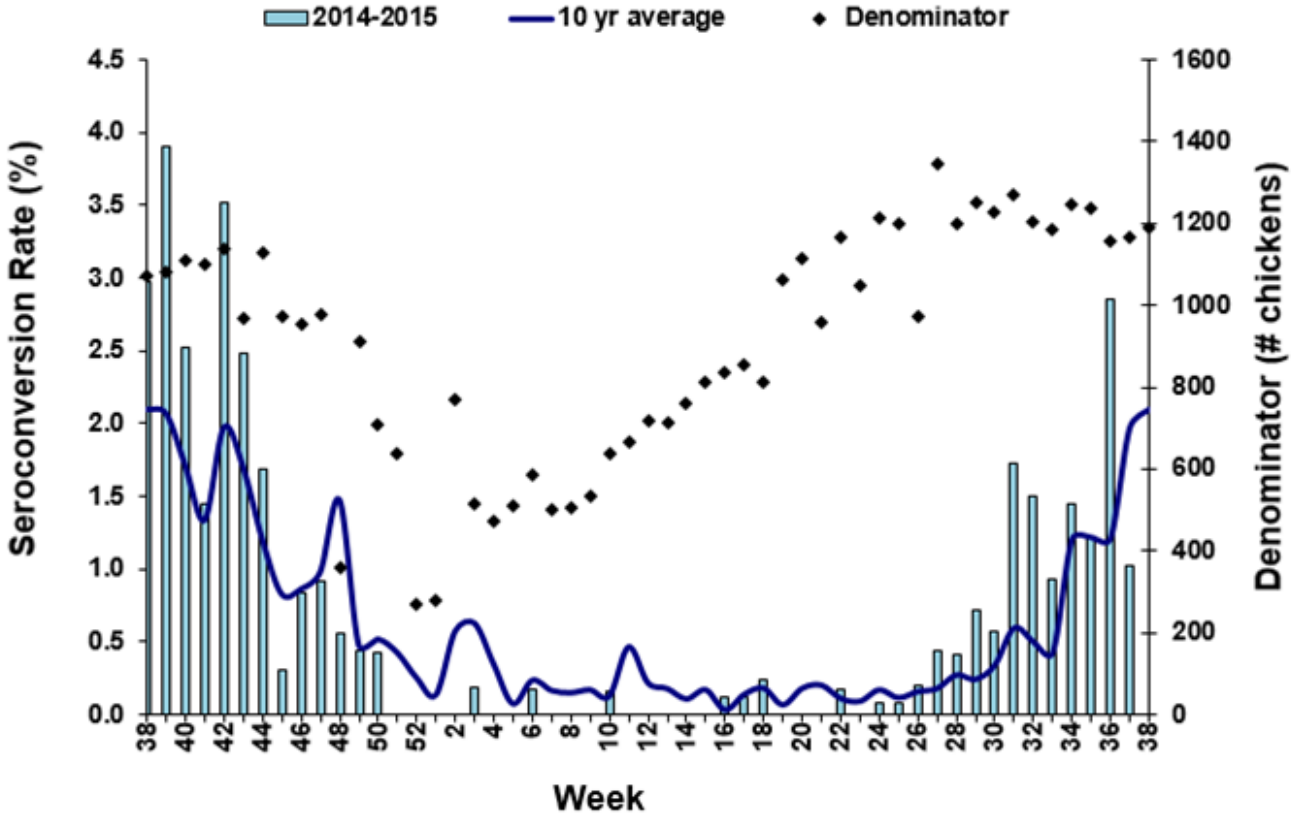
Thirty sentinel chickens tested positive for antibodies to WNV this week in Brevard, Citrus, Flagler, Hernando, Hillsborough, Manatee, Orange, Pinellas, Sarasota, St. John, and Walton Counties. One sentinel chicken tested positive for antibodies to EEEV this week in Walton County. Three sentinel chickens tested positive for antibodies to HJV this week in Volusia and Walton Counties.

		Seroconversion Rates (%)						County Totals	
County	Collection Date	Flavi	SLEV	WNV	Alpha	EEEV	HJV	Collection Week	YTD
Brevard	09/10/15	1.67		1.67				1 WNV	10 WNV
Citrus	09/14/15	1.39		1.39				1 WNV	2 EEEV, 1 HJV, 1 WNV
Flagler	09/08/15	10.00		10.00				1 WNV	6 EEEV, 3 WNV
	09/09/15	0.88		0.88				1 WNV	
Hernando	09/08/15	8.00		8.00				2 WNV	
	09/14/15	4.00		4.00				1 WNV	3 WNV
Hillsborough	09/08/15	9.33		9.33				7 WNV	56 WNV, 2 EEEV
	09/15/15	6.49		6.49				5 WNV	
Manatee	09/09/15	5.26		5.26				4 WNV	6 WNV
Orange	09/09/15	1.75		1.75				2 WNV	15 EEEV, 2 HJV, 10 WNV
Pinellas	09/08/15	5.56		5.56				2 WNV	33 WNV
	09/14/15	3.70		3.70				2 WNV	
Sarasota	09/11/15	1.41		1.41				1 WNV	1 SLEV, 2 WNV
St. Johns	09/14/15	1.79		1.79				1 WNV	3 EEEV, 5 WNV
Volusia	09/08/15				2.13		2.13	1 HJV	4 WNV, 1 SLEV, 1 HJV
Walton	09/08/15	6.14		5.26	2.63	0.88	1.75	1 SLEV, 2HJV, 6 WNV, 1 EEEV	21 EEEV, 5 HJV, 11 WNV, 1 SLEV
	09/14/15	0.92		0.92				1 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

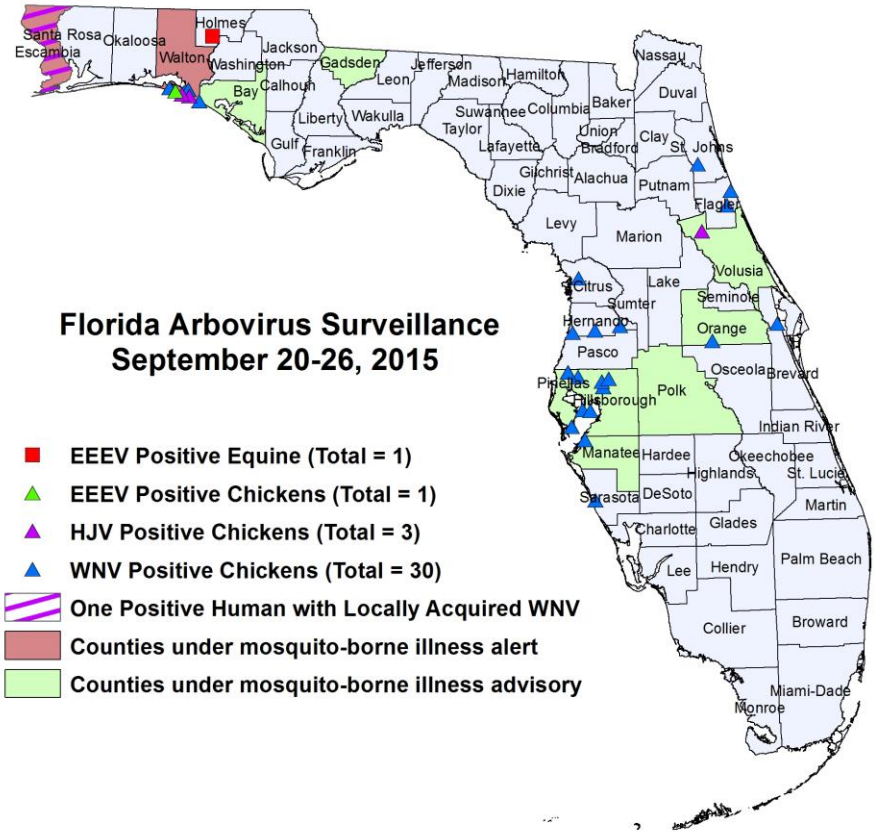
The Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. This week, 8 reports representing 13 dead birds, including 4 raptors were received from 6 counties.

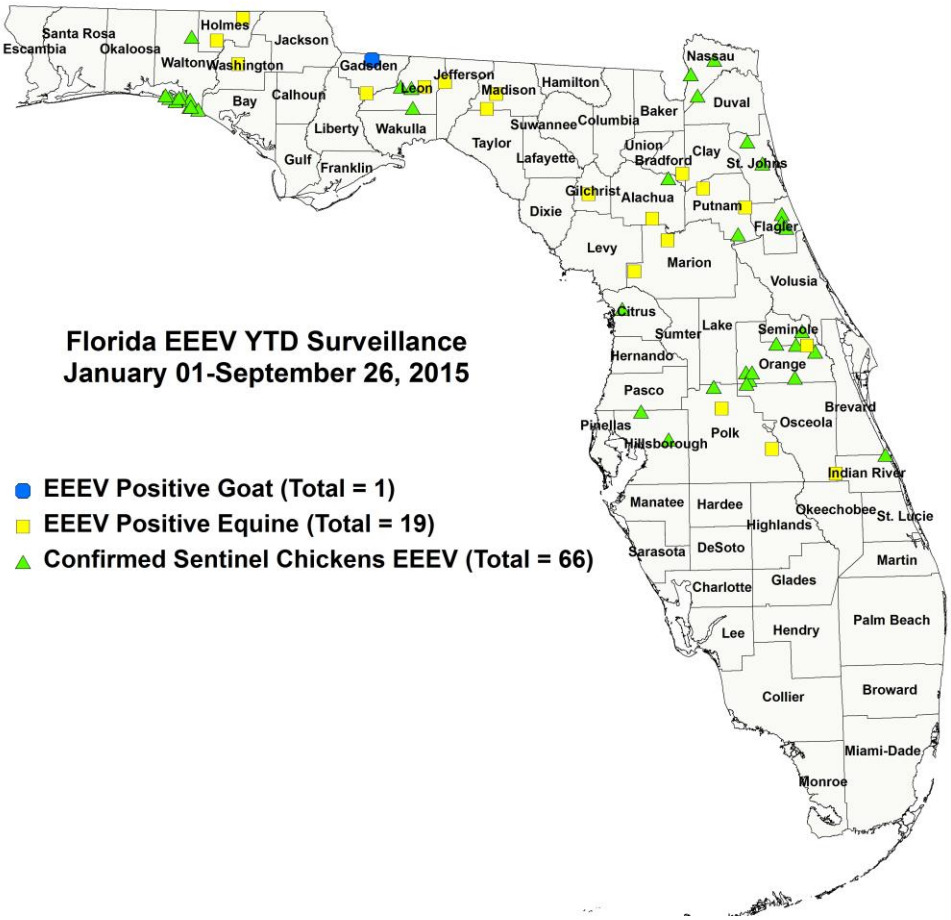
In 2015, 289 reports representing a total of 769 dead birds (42 crows, 20 jay, 63 raptors, and 28 doves) were received from 46 of Florida's 67 counties. Please note that FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to www.myfwc.com/bird/.

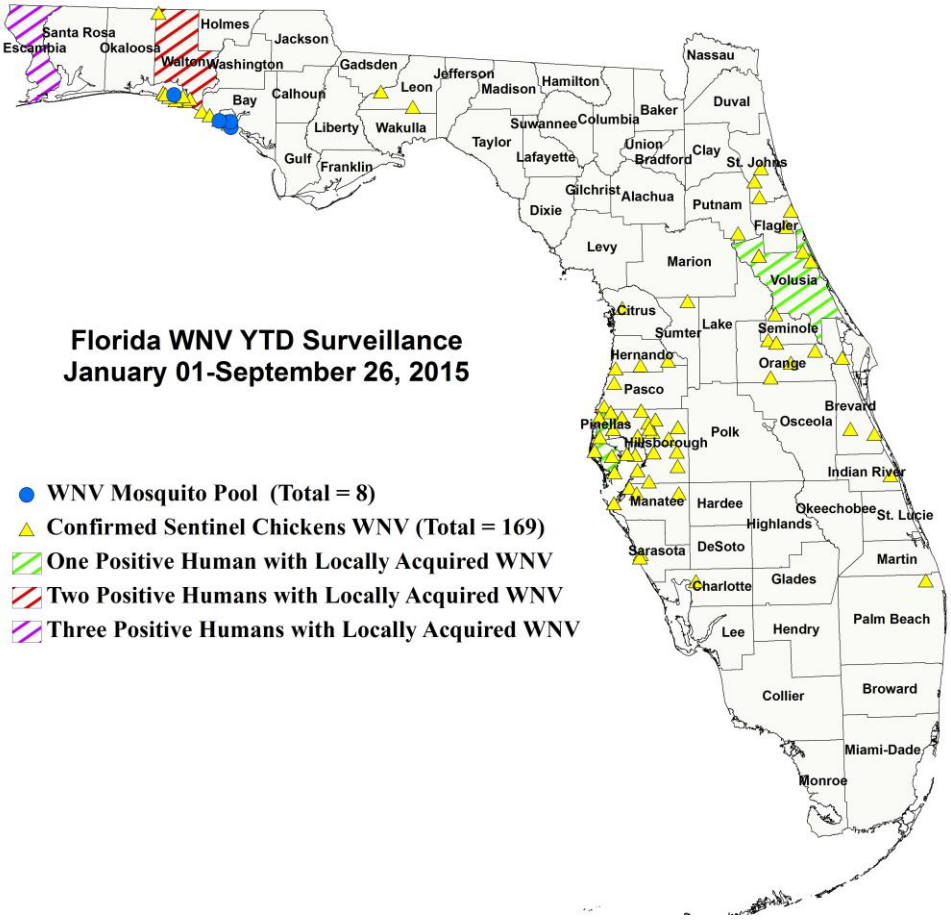
2015

County	Total Dead Birds	Crows	Jays	Raptors	Dove
Hillsborough	1	0	0	0	0
Jackson	1	0	0	0	0
Lee	3	0	0	1	0
Manatee	1	0	0	1	0
Osceola	5	0	0	0	0
Pinellas	2	0	0	2	0

Maps




Florida EEEV YTD Surveillance
January 01-September 26, 2015
EEEV Positive Goat (Total = 1)
EEEV Positive Equine (Total = 19)
Confirmed Sentinel Chickens EEEV (Total = 66)
Santa Rosa
Escambia
Okaloosa
Walton
Holmes
Washington
Jackson
Bay
Calhoun
Gadsden
Leon
Jefferson
Madison
Hamilton
Liberty
Wakulla
Gulf
Franklin
Taylor
Suwannee
Columbia
Lafayette
Baker
Nassau
Duval
Union
Bradford
Clay
St. Johns
Gilchrist
Alachua
Putnam
Dixie
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


Florida WNV YTD Surveillance
January 01-September 26, 2015
WNV Mosquito Pool (Total = 8)
Confirmed Sentinel Chickens WNV (Total = 169)
One Positive Human with Locally Acquired WNV
Two Positive Humans with Locally Acquired WNV
Three Positive Humans with Locally Acquired WNV
Santa Rosa
Escambia
Okaloosa
Walton
Holmes
Washington
Jackson
Bay
Calhoun
Gadsden
Leon
Jefferson
Madison
Hamilton
Liberty
Wakulla
Gulf
Franklin
Taylor
Suwannee
Columbia
Lafayette
Baker
Nassau
Duval
Union
Bradford
Clay
St. Johns
Gilchrist
Alachua
Putnam
Dixie
Flagler
Levy
Marion
Volusia
Citrus
Sumter
Lake
Seminole
Hernando
Orange
Pasco
Brevard
Pinellas
Hillsborough
Polk
Osceola
Indian River
Manatee
Hardee
Okeechobee
St. Lucie
Highlands
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Martin
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Lee
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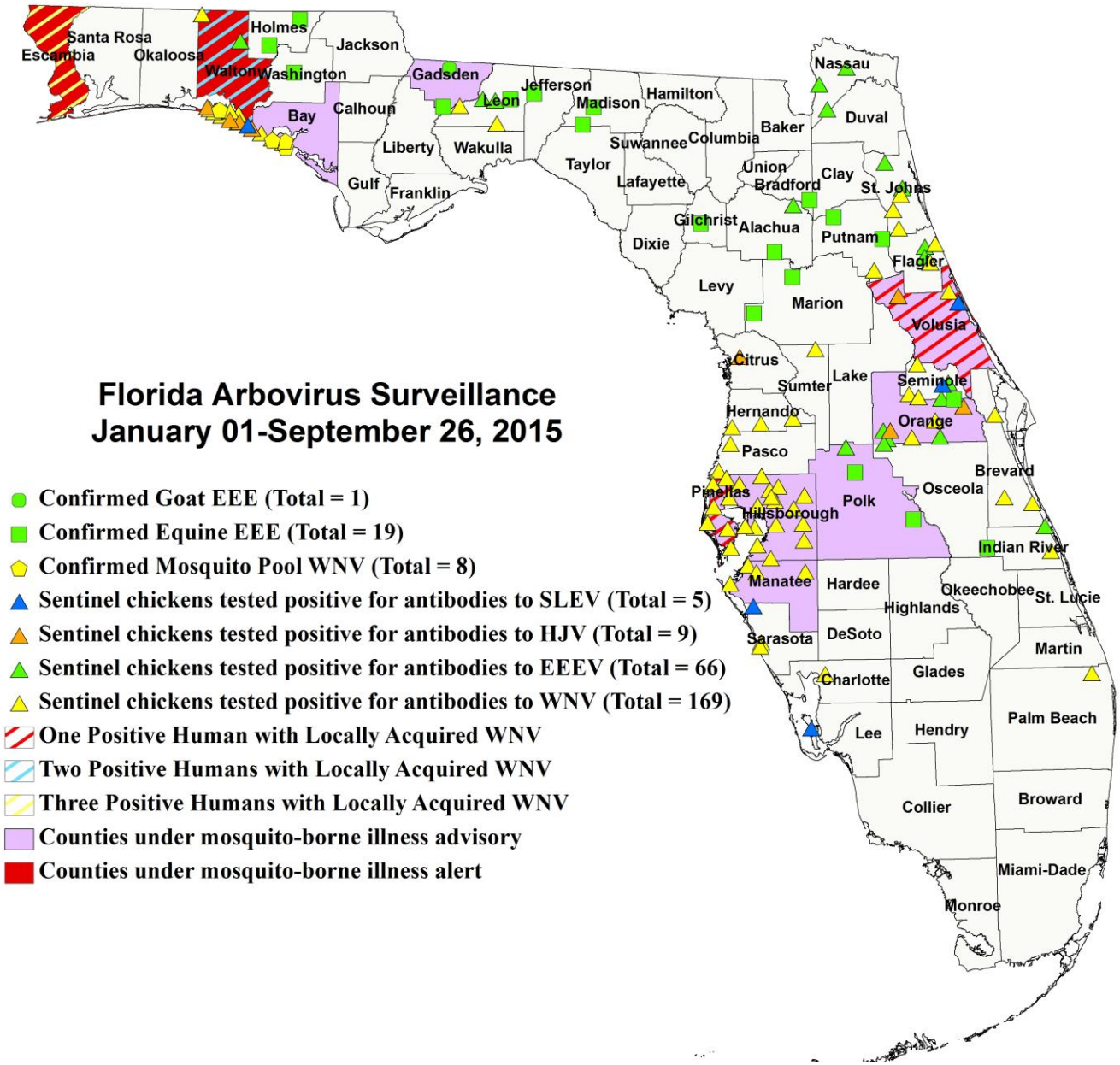
Palm Beach
Collier
Broward
Miami-Dade
Monroe



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

Hillsborough	WNV: 56 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) EEEV: 2 sentinels (8/26, 9/1)
Holmes	EEEV: 2 horses (7/16, 9/8)
Indian River	EEEV: 1 sentinel (4/30) WNV: 1 sentinel (8/20)
Jefferson	EEEV: 1 horse (7/25)
Lee	SLEV: 1 sentinel (1/12)
Leon	EEEV: 1 horse (5/20); 3 sentinels (6/8, 7/13, 8/11) WNV: 2 sentinels (8/21, 8/28)
Madison	EEEV: 2 horses (6/24, 7/19)
Manatee	WNV: 6 sentinels (8/5, 8/25, 9/9)
Marion	EEEV: 2 horses (6/14, 7/16)
Nassau	EEEV: 4 sentinels (5/29, 7/3, 7/10, 7/13)
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: 10 sentinels (8/3, 8/10, 8/25, 8/31, 9/9)
Osceola	EEEV: 1 horse (5/3)
Palm Beach	WNV: 1 sentinel (4/27)
Pasco	WNV: 2 sentinels (9/1)
Pinellas	WNV: 1 human (July); 32 sentinels (6/29, 7/6, 7/20, 7/27, 8/3, 8/10, 8/17, 8/24, 8/31, 9/8, 9/14)
Polk	EEEV: 2 horses (6/30, 7/6); 2 sentinels (6/22)
Putnam	EEEV: 2 horses (3/16, 6/30); 1 sentinel (7/21) WNV: 1 sentinel (7/21)
Sarasota	SLEV: 1 sentinel (7/13) WNV: 2 sentinels (9/4, 9/11)
St. Johns	EEEV: 3 sentinels (6/8, 6/15, 7/6) WNV: 5 sentinels (7/27, 9/8, 9/14)
Seminole	EEEV: 4 sentinels (6/8, 6/29, 7/20, 8/31) WNV: 3 sentinels (8/10, 8/31, 9/8) SLEV: 1 sentinel (9/8)
Sumter	WNV: 1 sentinel (1/20)
Volusia	WNV: 1 human (July); 4 sentinels (6/15, 7/13, 9/8) SLEV: 1 sentinel (8/31) HJV: 1 sentinel (9/8)
Walton	EEEV: 20 sentinels (1/5, 1/13, 3/23, 5/11, 5/18, 6/8, 6/15, 6/29, 7/14, 7/20, 8/4) HJV: 5 sentinels (1/13, 5/18, 6/8, 9/8) WNV: 2 humans (June); 1 mosquito pool (8/12); 19 sentinels (2/9, 6/1, 6/29, 7/6, 7/20, 8/3, 8/10, 9/8, 9/14) 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.