



## Florida Arbovirus Surveillance

### Week 51: December 19 - December 25, 2010

Arbovirus surveillance in Florida includes endemic mosquito-borne viruses West Nile virus (WNV), Eastern equine encephalitis virus (EEEV), St. Louis encephalitis virus (SLEV), and Highlands J virus (HJV) and exotic viruses such as Dengue virus (DENV) and California encephalitis group viruses (CEV). Malaria, a non-viral mosquito-borne disease is also included. During the period December 19 -December 25, 2010, the following arboviral activity was recorded in Florida:

**DENV activity:** No new cases of dengue associated with Key West were reported this week. In 2010, there have been 63 locally-acquired cases in Key West, one in Broward County, and one in Miami-Dade County.

**EEEV activity:** One sentinel chicken in Walton County tested positive for antibodies to EEEV. In 2010, positive samples from five humans, 93 equines, 172 sentinel chickens, 48 live wild birds, and six mosquito pools have been received from 45 of Florida's 67 counties.

**WNV activity:** Six sentinel chickens in Charlotte, Hillsborough and St. Johns counties tested positive for antibodies to WNV. In 2010, positive samples from 13 humans, 25 equines, 1 reptile, 558 sentinel chickens, one mosquito pool, and five live wild birds (flavivirus positive) have been received from 39 counties.

**SLEV activity:** No SLEV activity was reported this week. In 2010, positive samples from five sentinel chickens have been received from one county.

**HJV activity:** One sentinel chicken in Walton County tested positive for antibodies to HJV. In 2010, positive samples from 93 sentinel chickens have been received from 14 counties.

**Advisories/Alerts:** Brevard, Collier, Hillsborough, Monroe, and Orange counties are under mosquito-borne illness alerts. Broward, Clay, De Soto, Duval, Flagler, Glades, Hendry, Highlands, Indian River, Jackson, Lake, Leon, Marion, Martin, Miami-Dade, Osceola, Putnam, St. Lucie, Volusia, Walton, Wakulla, and Washington counties are under mosquito-borne illness advisories.

### Year to Date Human Case Summary

**Eastern Equine Encephalitis Acquired in Florida:** Four human cases of EEE have been reported in 2010 in Hillsborough (2), Wakulla, and Leon counties with onset dates in June and July (3). One incidental infection was reported in Hillsborough County.

**West Nile Virus Infection Acquired in Florida:** Twelve human cases of WNV have been reported in 2010 in Osceola, Orange (2), Collier (2), Broward, Duval, De Soto, Lee, Suwannee, Brevard, and Highlands counties with onset in July (2), August (4), September (3), and October (3). The Suwannee County case had travel outside the county, primarily in Florida. One positive asymptomatic blood donor was reported in Brevard County.

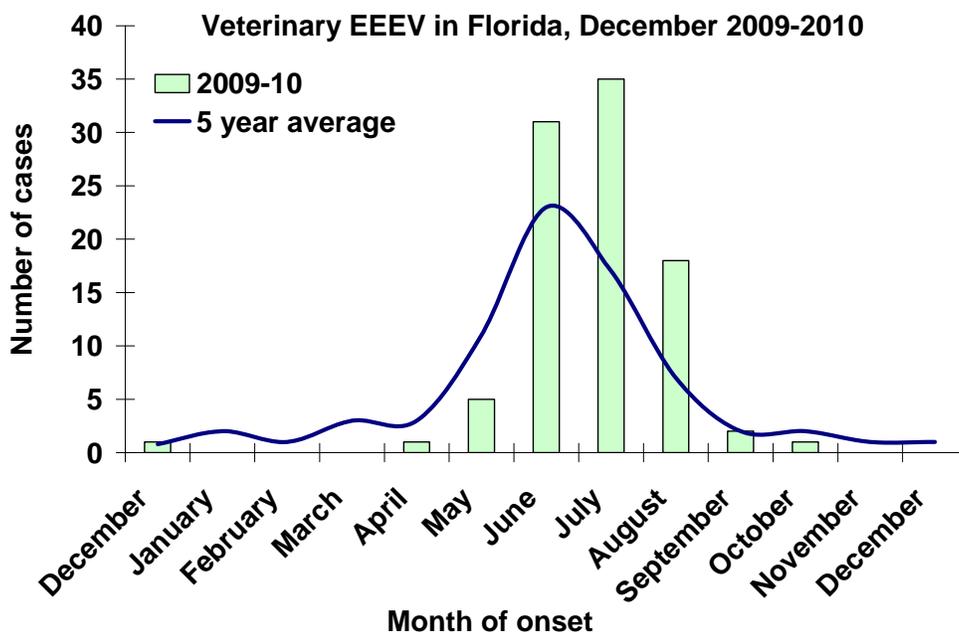
**Dengue Acquired in Florida:** In 2010, 65 cases of locally acquired dengue have been reported in Broward (1), Miami-Dade (1) and Monroe (63-Key West) counties. Of the Key West cases, 54 are Key West residents, eight are residents of other Florida counties, and one resides out of the state. Onset dates ranged from March 17 to November 30, 2010.

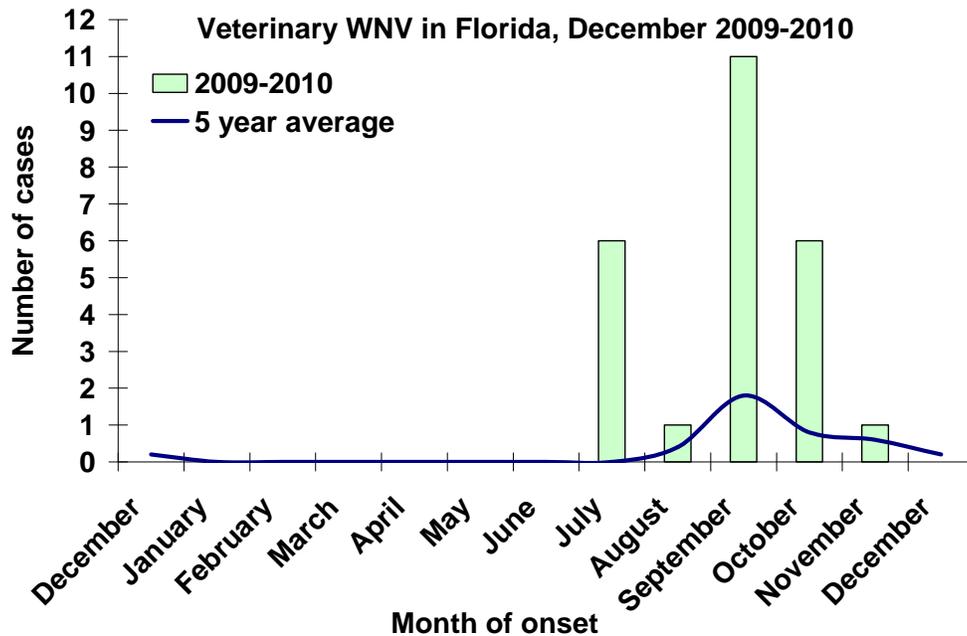
**Imported Dengue:** One hundred and thirty one cases of dengue with onset in 2010 have been reported in individuals with travel history to a dengue endemic country in the two weeks prior to onset. Countries of origin were: Bangladesh, Brazil, Cayman Islands, Colombia (8), Costa Rica (4), Cuba, Dominican Republic (13), Ecuador, El Salvador, Ghana, Grenada (4), Guatemala (2), Haiti (5), Honduras (6), Jamaica (5), Martinique (2), Maldives, Mexico, Nicaragua (12), Pakistan, Philippines, Puerto Rico (36), Thailand, Trinidad, Venezuela (16), Virgin Islands (3), Malaysia/Dubai/Bangladesh, and Panama/Venezuela (slash indicates travel to more than one country). Counties reporting cases were Alachua (3), Broward (20), Collier (2), Duval (3), Escambia, Flagler, Hendry, Hillsborough (7), Lake, Lee, Manatee, Marion, Miami-Dade (50), Monroe, Orange (9), Osceola (6), Palm Beach (10), Pasco, Pinellas, Polk (2), Sarasota, Seminole (3), St. Lucie (2), and Volusia (3).

**Imported Malaria:** One case of imported malaria was reported this week. One case of malaria with cryptic origin (possibly Florida acquired) was reported in Duval County during November 2010. One hundred and twenty-three imported cases of malaria with onset in 2010 have been reported. Countries of origin were: Angola, Cameroon, Dominican Republic, Eritrea, Ghana (4), Guinea, Guyana, Haiti (72), Honduras (4), India (8), Indonesia, Ivory Coast (2), Kenya, Malawi (2), Nigeria (7), Pakistan (2), Peru, Philippines, Sierra Leone, South Africa, Togo, Uganda, Venezuela, West Africa (2), Zambia/South Africa, Africa (2), and unknown (2). Counties reporting cases were: Alachua, Brevard (3), Broward (19), Charlotte, Citrus (2), Collier (4), Duval (5), Escambia (3), Hillsborough (5), Lake, Lee, Leon, Miami-Dade (30), Manatee (2), Orange (16), Osceola (3), Palm Beach (16), Pasco, Pinellas, Polk (2), Sarasota, Seminole, St. Lucie, Volusia (2), and Wakulla.

**Veterinary Cases**

No positive horses were reported this week. In 2010, 25 WNV positive horses, one WNV positive reptile, and 93 EEEV positive horses have been reported.

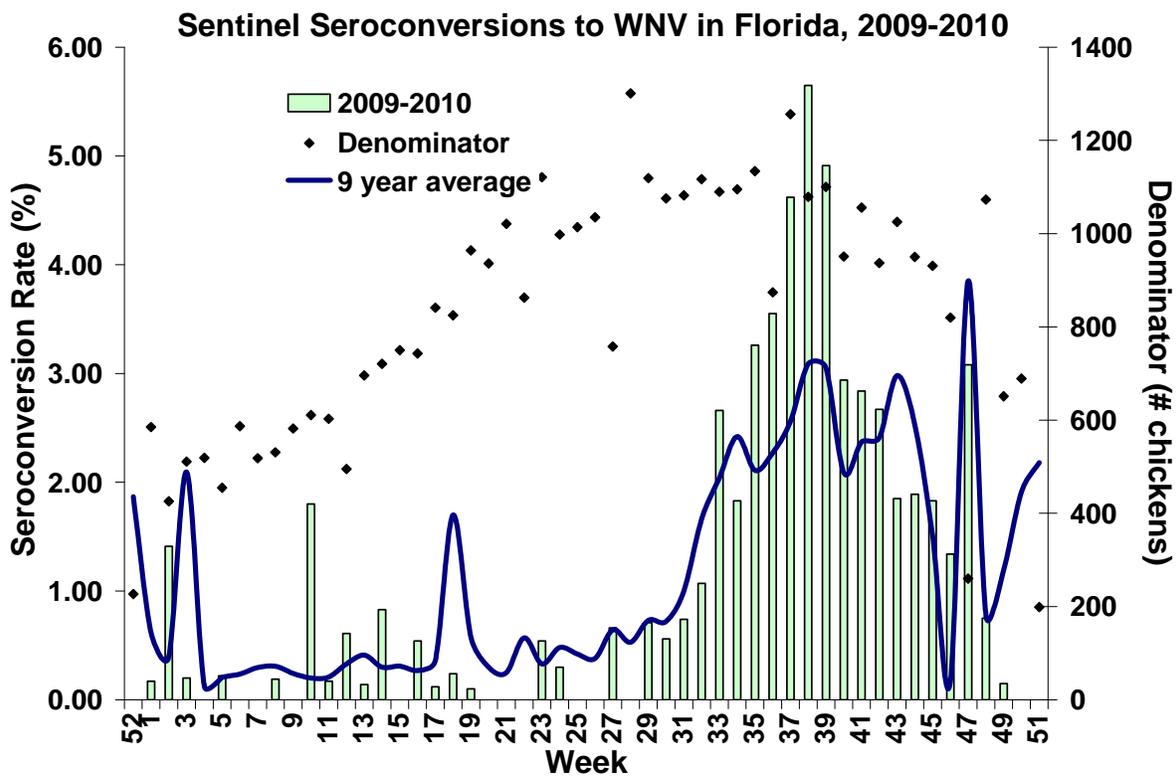
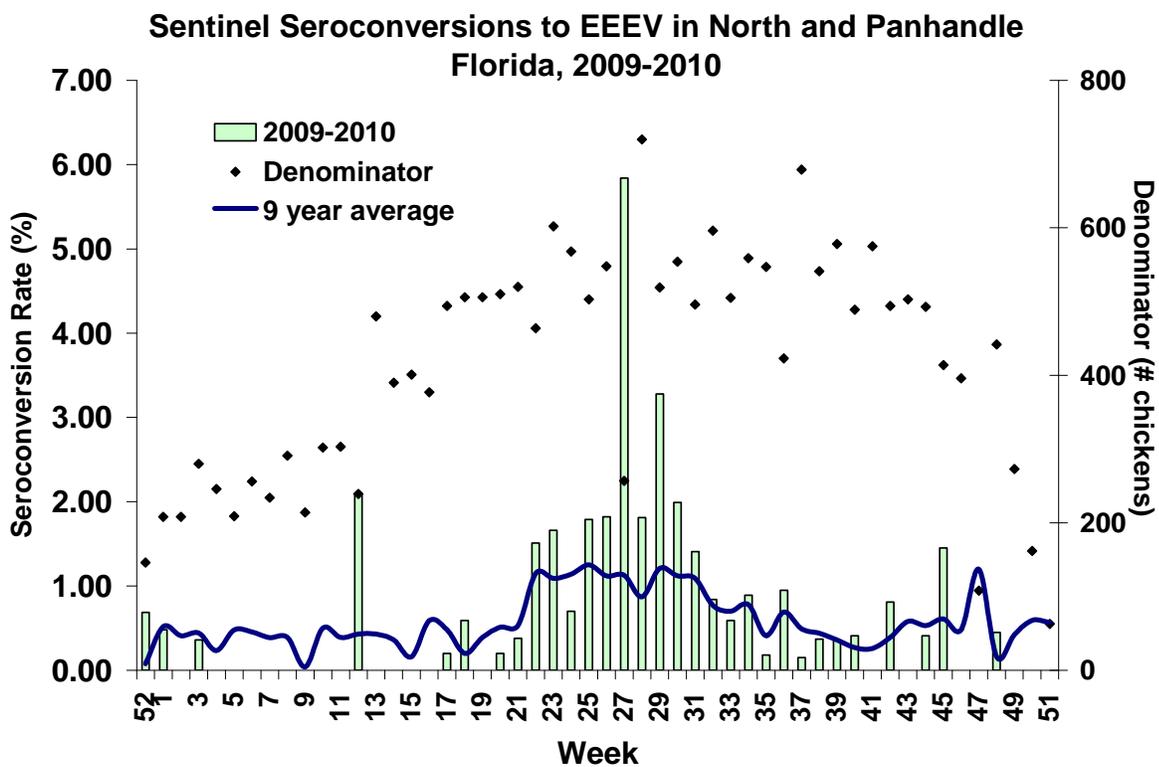




### Sentinel Chickens

There was one seroconversion to EEEV in a sentinel chicken from Walton County and there were six seroconversions to WNV in Charlotte, Hillsborough and St. Johns counties this week. One sentinel chicken in Walton County tested positive for antibodies to HJV. Seroconversion rates are calculated by week and include previously reported results.

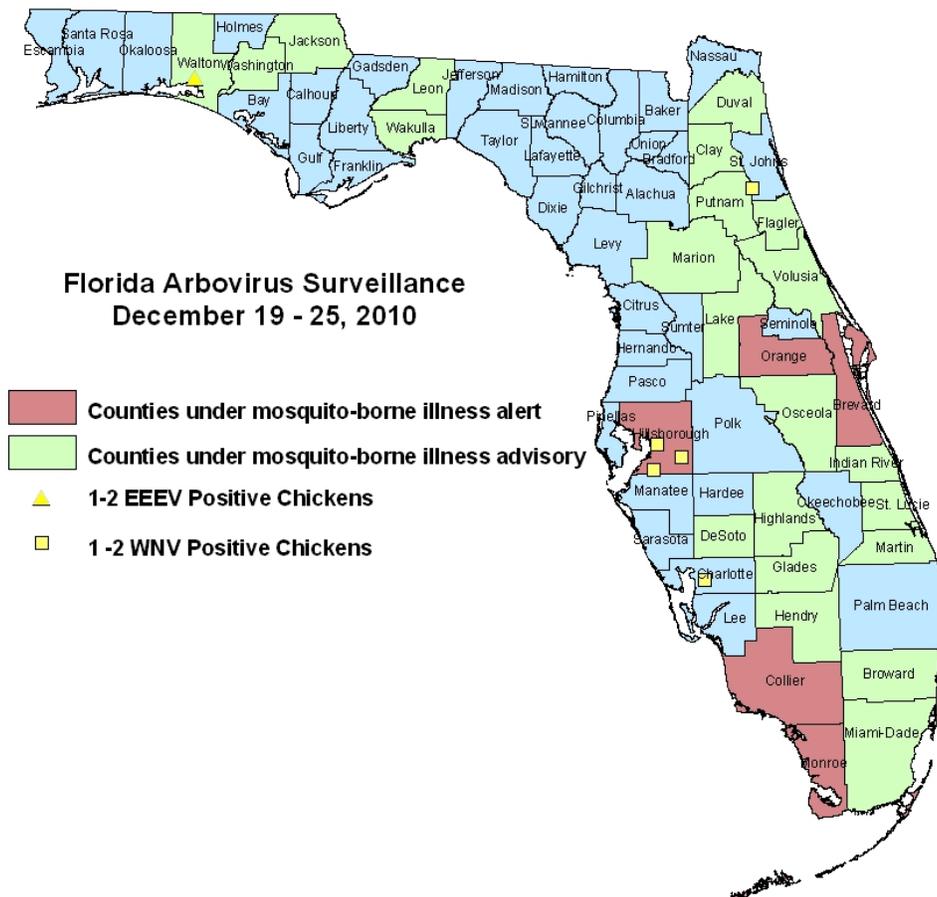
County	Collection Date	Seroconversion Rates (%)				County Totals	
		SLEV	WNV	EEEV	HJV	Week	YTD
Charlotte	11/19/10		5.00			1 WNV	4 WNV
Hillsborough	11/30/10		7.61			7 WNV	37 WNV, 2 EEEV, 1 HJV
St Johns	11/22/10		8.77			5 WNV	34 WNV, 3 EEEV, 3 HJV
Walton (North)	11/29/10			3.45		1EEE	51 WNV, 35 EEEV, 17 HJV
Walton (South)	11/29/10				1.79	1 HJV	3 WNV, 21 EEEV, 12 HJV

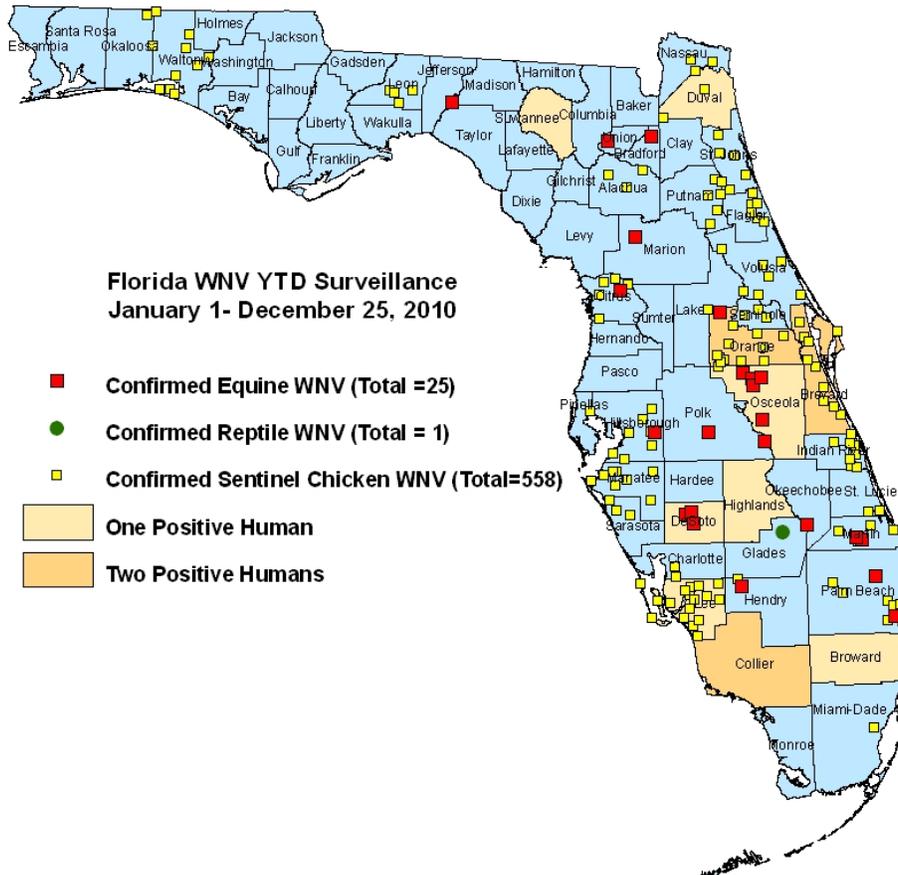
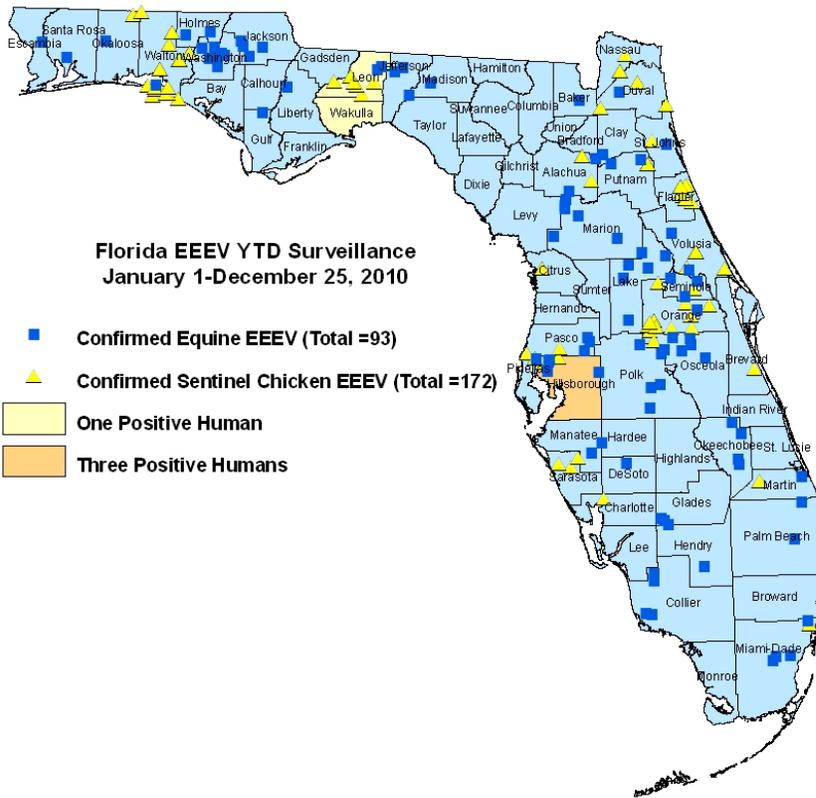


## Dead Birds

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, three reports representing 16 dead birds were received from three counties. Two were identified as raptors; none were identified as crows or jays. In 2010, 338 reports representing a total of 1107 dead birds (49 crows, 16 jays, 54 raptors and 988 others) have been reported 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/)

## Maps





## YTD Arbovirus Activity by County

County	Arbovirus Activity
<b>Alachua</b>	WNV: 13 sentinels (8/2, 8/16, 9/7, 9/13, 9/20, 9/27, 10/18, 11/8) EEE: 1 horse (7/21); 4 sentinels (7/16, 7/19, 8/2, 9/28) HJV: 1 sentinel (9/20)
<b>Baker</b>	EEE: 1 horse (7/26)
<b>Bradford</b>	WNV: 1 horse (10/06) EEE: 1 horse (6/16)
<b>Brevard</b>	WNV: 2 humans (1 case in October, 1 positive blood donor); 57 sentinels (7/7, 7/21, 8/4, 8/11, 8/18, 8/20, 9/1, 9/3, 9/8, 9/17, 9/22, 9/23, 9/24, 10/1, 10/6, 10/7, 10/8, 10/18, 10/20, 10/27, 11/3, 11/4, 11/10, 11/12, 11) EEE: 1 sentinel (6/2)
<b>Broward</b>	DENV: 3 humans (1 acquired in Broward, 2 acquired in Key West) WNV: 1 human (August)
<b>Charlotte</b>	WNV: 4 sentinels (8/27, 9/10, 10/8, 11/19)
<b>Citrus</b>	WNV: 2 horses (10/3); 15 sentinels (9/20, 9/27, 10/4, 10/11, 10/18, 10/25, 11/8, 11/15) EEE: 5 sentinels (5/24, 6/7, 6/28, 7/12, 7/19) HJV: 3 sentinels (5/17, 5/24, 8/9)
<b>Clay</b>	EEE: 1 horse (6/16)
<b>Collier</b>	WNV: 2 humans (August) EEE: 4 horses (6/9, 6/22, 6/29, 7/9)
<b>De Soto</b>	WNV: 1 human (September); 3 horses (9/6, 9/10, 9/21) EEE: 1 horse (8/23)
<b>Duval</b>	WNV: 1 human (September); 5 sentinels (9/13, 9/27, 10/11, 10/18) EEE: 1 horse (8/18); 5 sentinels (6/21, 7/8, 7/21)
<b>Escambia</b>	EEE: 1 horse (8/16)
<b>Flagler</b>	WNV: 10 sentinels (9/13, 9/27, 10/4, 10/18, 10/25, 11/1, 11/15) EEE: 19 sentinels (3/22, 4/26, 5/3, 6/7, 6/21, 7/12, 7/19, 7/26, 8/2, 8/9, 9/27, 10/4); 3 mosquito pools ( <i>Culiseta melanura</i> 4/27, 5/11, 6/15) HJV: 5 sentinels (6/14, 6/28, 8/16, 9/20, 10/18)
<b>Glades</b>	WNV : 1 alligator (10/1), 1 horse (10/25) EEE : 3 horses (6/20, 6/24, 7/26)
<b>Gulf</b>	EEE : 1 horse (9/5)
<b>Hardee</b>	EEE : 1 horse (8/22)
<b>Hendry</b>	WNV : 1 horse (9/15) ; 13 sentinels (8/18, 8/31, 9/13, 10/13, 11/09) EEE : 1 horse (7/21)
<b>Hernando</b>	WNV : 3 sentinels (9/27, 10/12)
<b>Highlands</b>	WNV : 1 human (October)
<b>Hillsborough</b>	WNV : 1 horse (9/3) ; 37 sentinels (1/12, 1/19, 2/22, 3/9, 3/22, 4/20, 5/11, 6/15, 9/20, 10/6, 10/12, 10/18, 10/26, 11/2, 11/9, 11/16, 11/30) ; 1 mosquito pool (11/23) EEE: 2 humans (June, July, 1; one incidental infection) ; 5 horses (5/29, 6/11, 7/8, 7/17); 2 sentinels (5/4, 5/18) HJV : 1 sentinel (6/28)
<b>Holmes</b>	EEE: 2 horses (7/23, 8/9)
<b>Indian River</b>	WNV: 50 sentinels (7/22, 8/12, 8/19, 9/2, 9/9, 9/16, 9/23, 9/29, 9/30, 10/7, 10/14, 10/21, 10/26, 11/4, 11/09) HJV: 1 sentinel (10/14)
<b>Jackson</b>	EEE: 4 horses (6/14, 6/28, 7/10, 8/1)
<b>Jefferson</b>	WNV: 1 horse (7/4) EEE: 3 horses (7/20, 8/1, 8/25)
<b>Lake</b>	EEE: 6 horses (5/20, 6/29, 7/4, 7/9, 7/15, 7/17)
<b>Lee</b>	WNV: 1 human (October); 53 sentinels (3/30, 4/20, 8/2, 8/9, 8/16, 8/24, 8/30, 9/7, 9/13, 9/14, 9/20, 9/27, 9/28, 10/4, 10/11)
<b>Leon</b>	DENV: 2 humans (acquired in Key West) WNV: 6 sentinels (9/20, 9/28, 10/25) EEE: 1 human (July); 2 horses (6/29, 8/5); 11 sentinels (6/1, 6/21, 8/2, 8/9, 8/16, 9/7, 9/20, 10/18, 11/1) HJV: 4 sentinels (8/16, 8/23, 10/4, 10/11)
<b>Liberty</b>	EEE: 1 horse (7/11)
<b>Madison</b>	EEE: 2 horses (6/21, 7/3)
<b>Manatee</b>	WNV: 19 sentinels (8/30, 9/7, 9/13, 9/20, 9/27, 10/4, 10/11, 10/18, 10/25, 11/8, 11/29, 12/6) EEE: 1 horse (7/21)
<b>Marion</b>	WNV: 1 horse (10/1)

	EEE: 6 horses (5/7, 7/22, 8/3, 9/24, 10/11)
<b>Martin</b>	WNV: 2 horses (9/11, 9/16); 14 sentinels (8/13, 8/27, 9/10, 9/16, 9/23, 10/1, 10/15, 10/29) EEE: 1 horse (8/4); 2 sentinels (5/28)
<b>Miami-Dade</b>	DENV: 2 humans (acquired in Miami-Dade, 1 acquired in Key West) SLEV: 5 sentinels (8/23, 9/7, 9/20, 9/27) WNV: 1 sentinel (10/25) EEE: 4 horses (6/7, 6/17, 7/4); 2 sentinels (6/14)
<b>Monroe</b>	DENV: 63 humans (acquired in Key West)
<b>Nassau</b>	WNV: 5 sentinels (9/6, 9/20) EEE: 6 sentinels (6/28, 7/13, 7/19, 8/9, 8/16, 8/31) HJV: 9 sentinels (6/28, 7/13, 7/19, 7/26, 8/16, 8/23, 9/20)
<b>Okaloosa</b>	WNV: 5 live wild birds (flavivirus positive, 4 blue jays 6/14, 11/1, 11/8, 1 cardinal 11/29) EEE: 1 horse (7/25); 18 live wild birds (1 house sparrow 1/4, 13 blue jays 1/27, 4/19, 4/21, 4/26, 7/5, 7/26, 9/16, 11/1, 11/3, 11/8, 11/23, 3 cardinals 7/5, 7/22, 8/5; 2 northern mockingbird 10/4, 11/15)
<b>Okeechobee</b>	EEE: 4 horses (6/14, 7/1, 7/7, 7/17)
<b>Orange</b>	WNV: 2 humans (1 July, 1 August); 43 sentinels (6/14, 7/6, 7/19, 7/26, 8/2, 8/16, 8/23, 8/30, 9/2, 9/7, 9/16, 9/23, 9/27, 10/4, 10/11, 10/14, 10/18, 10/21, 10/28, 11/18); 1 horse (11/22). EEE: 1 horse (7/16); 23 sentinels (1/7, 5/3, 5/17, 6/7, 6/10, 6/14, 6/21, 7/6, 7/12, 7/19, 7/22, 7/29, 9/7, 9/13) HJV: 23 sentinels (5/17, 6/7, 6/10, 6/14, 6/24, 7/6, 7/8, 7/15, 7/19, 7/22, 8/5, 8/16, 8/19, 10/11)
<b>Osceola</b>	WNV: 1 human (July); 6 horses (7/14, 7/15, 7/20, 7/24, 7/26, 8/30) EEE: 7 horses (5/15 (donkey), 6/8, 6/10, 6/13, 7/9)
<b>Palm Beach</b>	WNV: 2 horses (9/9, 9/21); 55 sentinels (3/15, 8/2, 8/9, 8/17, 8/23, 8/30, 9/7, 9/13, 9/17, 9/20, 9/27, 10/4, 10/11, 10/18, 10/25, 11/1) EEE: 2 horses (6/22, 8/31)
<b>Pasco</b>	EEE: 3 horses (6/11, 7/16, 8/7); 3 sentinels (7/6, 7/12) HJV: 3 sentinels (6/28, 7/6, 8/16)
<b>Pinellas</b>	DENV: 1 human (acquired in Key West) WNV: 3 sentinels (9/27, 10/18, 11/15) EEE: 3 sentinels (5/24, 7/19) HJV: 2 sentinels (4/26, 7/6)
<b>Polk</b>	WNV: 2 horses (9/1, 9/10) EEE: 4 horses (4/28, 6/25, 6/28, 8/19)
<b>Putnam</b>	WNV: 13 sentinels (8/27, 9/9, 9/17, 9/24, 10/1, 10/22) EEE: 2 horses (7/26, 8/8); 7 sentinels (6/4, 7/23, 7/30, 8/6, 9/9, 9/24) HJV: 4 sentinels (5/14, 8/6, 10/1)
<b>St. Johns</b>	WNV: 34 sentinels (8/16, 8/23, 8/30, 9/7, 9/13, 9/20, 9/27, 10/18, 11/1, 11/8, 11/22) EEE: 1 horse (6/18); 3 sentinels (6/1, 7/12, 7/26) HJV: 3 sentinels (4/26, 5/3, 7/12)
<b>St. Lucie</b>	WNV: 8 sentinels (9/10, 9/17, 9/24, 10/1, 10/8)
<b>Santa Rosa</b>	EEE: 1 horse (6/29); 20 live wild birds (11 blue jays 2/2, 3/22, 4/13, 4/19, 5/11, 5/18, 7/13, 8/31, 9/14, 7 cardinals 6/22, 7/13, 7/27, 8/3, 8/31, 11/2, 11/9, 1 red-winged blackbird 10/26, 1 house sparrow 11/16)
<b>Sarasota</b>	DENV: 2 humans (acquired in Key West) WNV: 9 sentinels (1/8, 10/8, 10/15, 10/25, 11/1, 11/8) EEE: 3 sentinels (1/5, 1/11, 6/1)
<b>Seminole</b>	WNV: 11 sentinels (9/2, 9/16, 9/23, 10/7, 10/14, 10/26, 10/28, 11/4) EEE: 3 horses (6/26, 7/15, 8/14); 1 sentinel (7/2) HJV: 1 sentinel (7/27)
<b>Suwannee</b>	WNV: 1 human (September)
<b>Union</b>	WNV: 1 horse (10/13)
<b>Volusia</b>	WNV: 23 sentinels (7/19, 8/9, 8/16, 8/30, 9/7, 9/13, 9/20, 9/27, 10/4, 10/11, 11/15, 11/22) EEE: 2 horses (5/7, 7/1); 16 sentinels (5/24, 6/1, 6/7, 6/14, 6/21, 6/28, 7/6, 7/12, 7/26, 8/9); 3 mosquito pools ( <i>Culiseta melanura</i> 6/15, 6/22, 6/29) HJV: 4 sentinels (5/17, 7/12, 9/7, 10/4)
<b>Wakulla</b>	EEE: 1 human (July)
<b>Walton</b>	WNV: 54 sentinels (1/14, 2/4, 3/8, 3/12, 3/22, 4/7, 4/8, 4/23, 4/30, 5/5, 5/20, 6/7, 6/11, 7/8, 7/9, 7/22, 7/30, 8/12, 8/19, 8/20, 9/2, 10/12) EEE: 1 horse (8/5); 56 sentinels (1/19, 3/22, 5/3, 6/8, 6/21, 7/6, 6/28, 6/30, 7/6, 7/12, 7/15, 7/18, 7/19, 7/20, 7/26, 7/28, 8/2, 8/3, 8/9, 8/23, 8/27, 9/7, 10/4, 10/18, 11/1, 11/8, 11/9, 11/29); 10 live wild birds (9 cardinals 6/24, 7/16, 7/22, 10/29, 11/19, 1 blue jay 6/24) HJV: 29 sentinels (3/22, 5/17, 6/23, 7/19, 8/2, 9/2, 9/13, 9/16, 9/20, 9/23, 9/27, 10/18, 10/25, 11/4, 11/8, 11/29)
<b>Washington</b>	EEE: 7 horses (6/17, 6/22, 6/25, 6/28, 7/4, 7/16, 7/20)

## Acknowledgements and Data Sources

Contributors: Leena Anil, Ph.D., Danielle Stanek, DVM, and Carina Blackmore, DVM, Ph.D., DOH Bureau of Environmental Public Health Medicine; Lillian Stark, Ph.D. and Valerie Mock, DOH Bureau of Laboratories.

**For more surveillance information, please see the DOH website at:**  
**<http://www.doh.state.fl.us/Environment/medicine/arboviral/index.html>**

Data is provided by county health departments, Department of Health Laboratories, Department of Agriculture and Consumer Services, mosquito control agencies, Florida Fish and Wildlife Conservation Commission, medical providers and veterinarians. Equine cases are determined by the Department of Agriculture and Consumer Services. Wild captured bird information is provided by the John A. Mulrennan Public Health Entomology Research and Education Center.