



Vector-Borne Disease

Weekly Surveillance Report

Center for Acute Disease Epidemiology | Acute Disease Prevention and Emergency Response & EH | West Nile Virus Website

All data presented in this report are provisional and may change as additional reports are received

Date Issued: November 9, 2017



West Nile Virus (WNV)

WNV is endemic in Iowa and activity usually peaks in late summer and early fall. IDPH works in collaboration with Local Public Health (LPH) and other appropriate partners to investigate all reported cases.

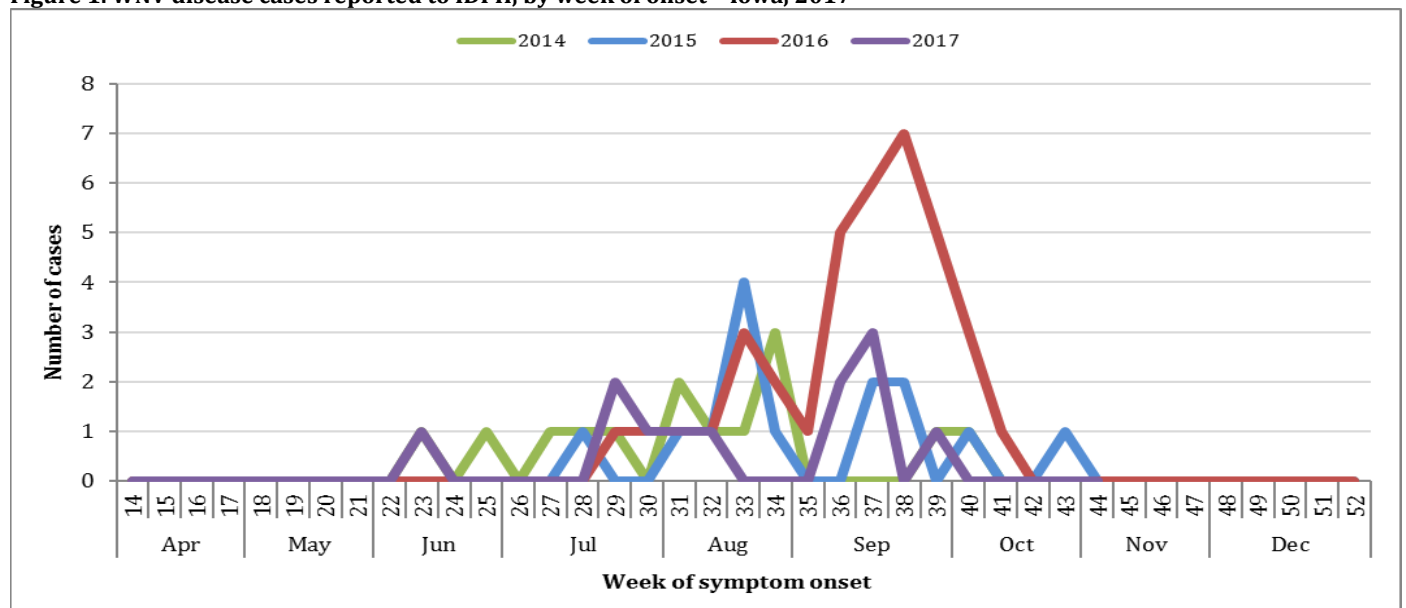
During the 2016 surveillance season, 37 human cases of WNV were reported in 19 Iowa counties. In 2017, 12 human cases of WNV, two WNV-related deaths and five presumptive viremic blood donors have been identified. Two horses, one bird and 88 mosquito samples have also tested positive for WNV [Table 1].

Table 1. Human /Equine/Bird/Mosquito Surveillance, 2017 Positive Samples

County	Human	Blood Donor	Horses*	Birds*	Mosquitoes				
					<i>Culex pipiens</i>	<i>Culex pipiens</i> group	<i>Culex restuans</i>	<i>Culex salinarius</i>	<i>Culex tarsalis</i>
Allamakee	1	0	0	0	0	0	0	0	0
Blackhawk	0	0	0	0	0	0	9	0	0
Buena Vista	1	0	0	0	0	0	0	0	0
Des Moines	0	2	0	0	0	0	0	0	0
Dickinson	0	0	0	0	0	0	0	0	1
Fayette	0	1	0	0	0	0	0	0	0
Ida	1	0	1	0	0	0	0	0	0
Linn	1	0	0	0	0	0	0	0	0
Lyon	2	1	0	0	0	0	0	0	0
Marshall	0	1	0	0	0	0	0	0	0
Monona	0	0	0	0	0	0	2	0	0
O'Brien	0	0	0	0	1	0	1	1	0
Osceola	1	0	0	0	0	0	0	0	0
Polk	1	0	0	0	9	0	18	0	0
Pottawattamie	1	0	0	0	4	3	16	1	0
Poweshiek	1	0	0	0	0	0	0	0	0
Sioux	0	0	0	1	0	0	0	0	0
Story	1	0	0	0	3	0	7	1	0
Woodbury	1	0	0	0	4	0	6	0	1
Worth	0	0	1	0	0	0	0	0	0
Total	12	5	2	1	21	3	59	3	2

*IDPH does not routinely test horses or birds for West Nile virus, but positive horses and birds are reported to IDPH.

Figure 1. WNV disease cases reported to IDPH, by week of onset - Iowa, 2017



For additional information on Iowa West Nile virus activity, visit <http://idph.iowa.gov/cade/disease-information/west-nile-virus>.

National WNV Activity:

As of November 7th, 1,160 counties from 47 states and the District of Columbia have reported WNV activity to ArboNET for 2017, including 46 states and the District of Columbia with reported WNV human infections (i.e., disease cases or viremic blood donors) and one additional state with reported WNV activity in non-human species only (i.e., veterinary cases, mosquito pools, dead birds, or sentinel animals) [Figure 2].

To date, 1,757 human WNV disease cases have been reported from 568 counties in 46 states and the District of Columbia. Of these, 1,164 (66%) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 593 (34%) were classified as non-neuroinvasive disease [Figure 3]. Dates of illness onset for cases ranged from March–October [Figure 4].

In addition, 216 WNV PVDs have been reported from 34 states.

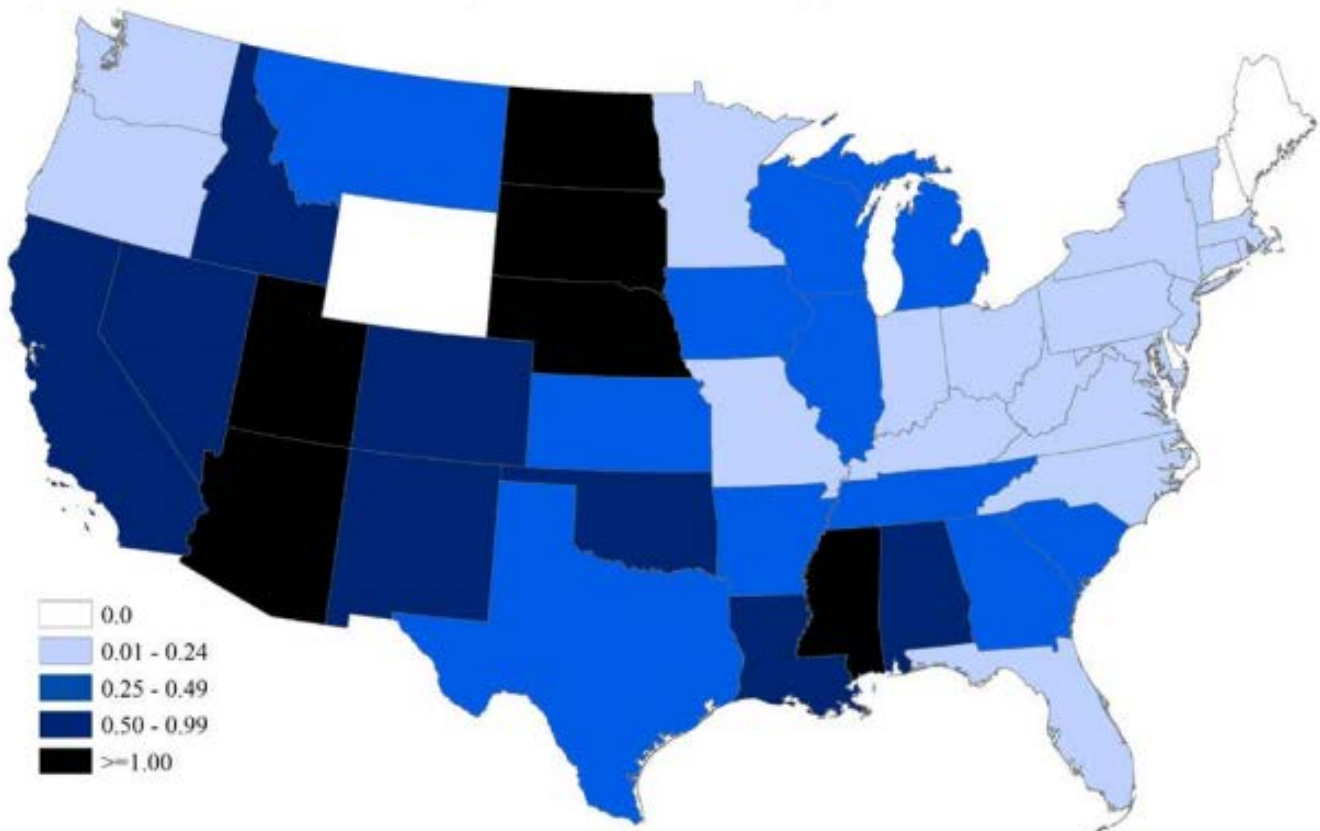
Figure 2. WNV activity reported to ArboNET, by state – United States, 2017 (as of November 7, 2017)



*WNV human disease cases or presumptive viremic blood donors. Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed.

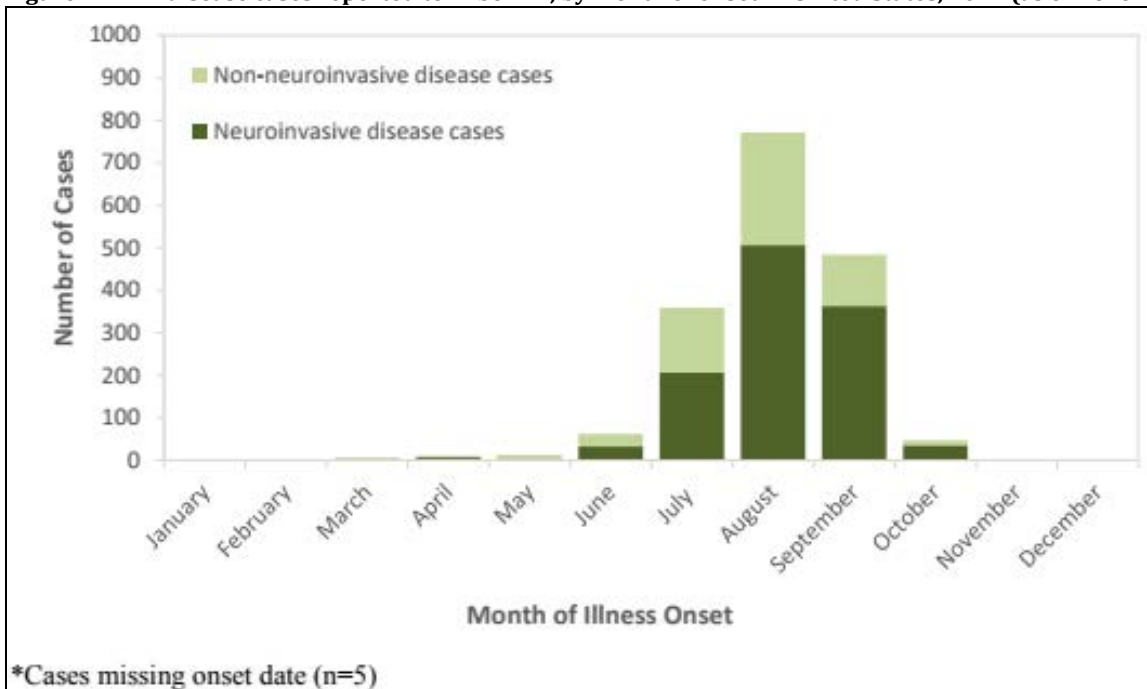
†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Figure 3. WNV neuroinvasive disease incidence* reported to ArboNET, by state–United States, 2017 (as of November 7, 2017)



*Incidence per 100,000 population

Figure 4. WNV disease cases reported to ArboNET, by month of onset* - United States, 2017 (as of November 7, 2017)



*Cases missing onset date (n=5)

La Crosse encephalitis (LACV)

La Crosse encephalitis virus (LACV) is passed to humans through the bite of an infected *Aedes triseriatus* mosquito. These mosquitoes are most active during the daytime, especially in or near infested woods.

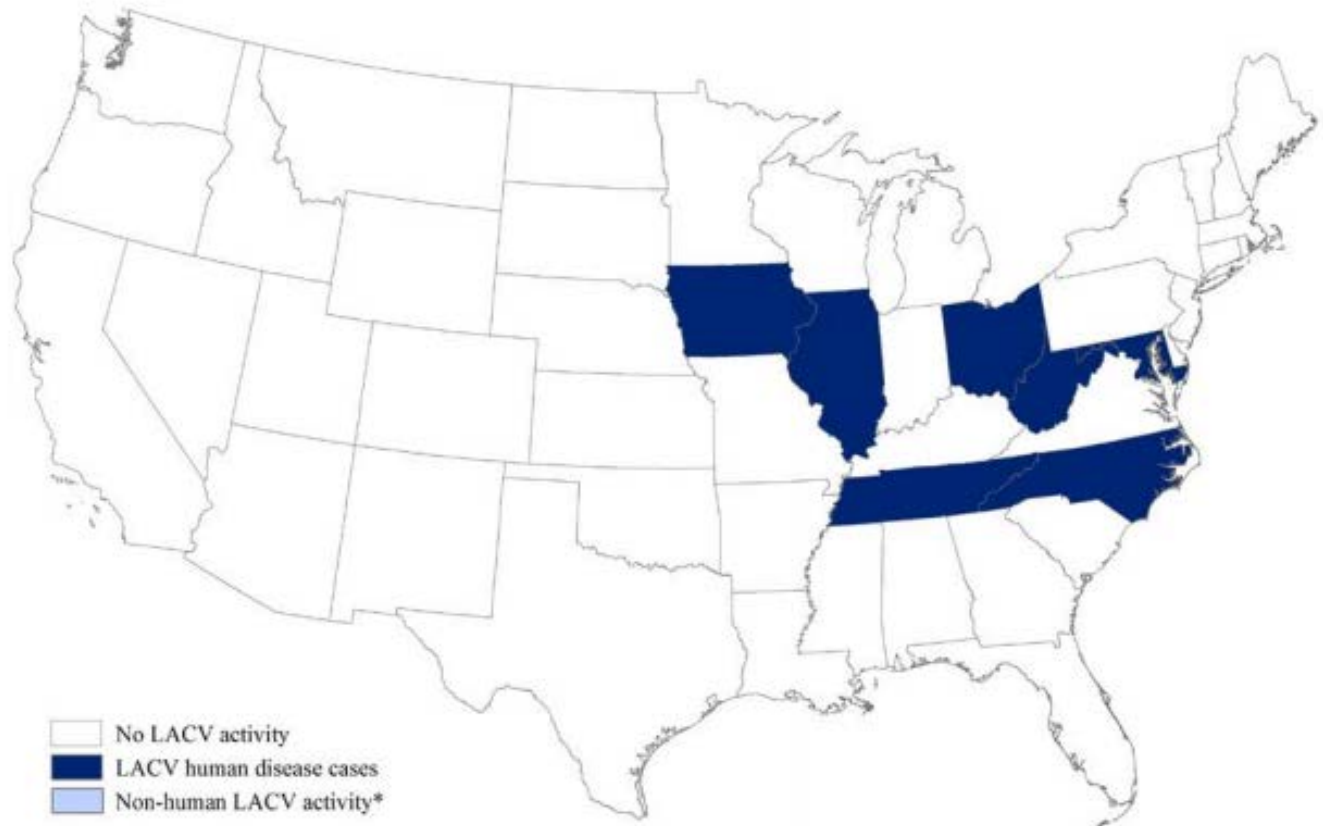
In 2017, one case of LACV has been reported in Iowa. The last case of LACV identified in the Iowa was in 2007.

National LACV Activity:

As of November 7th, 24 counties in seven states have reported human cases of LACV to ArboNET for 2017 [Figure 5].

To date, 35 human La Crosse encephalitis virus disease cases have been reported in 2017. Of these, all 35 were classified as neuroinvasive disease.

Figure 5. LACV activity reported to ArboNET, by state - United States, 2017 (as of November 7, 2017)



*LACV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Dengue Fever

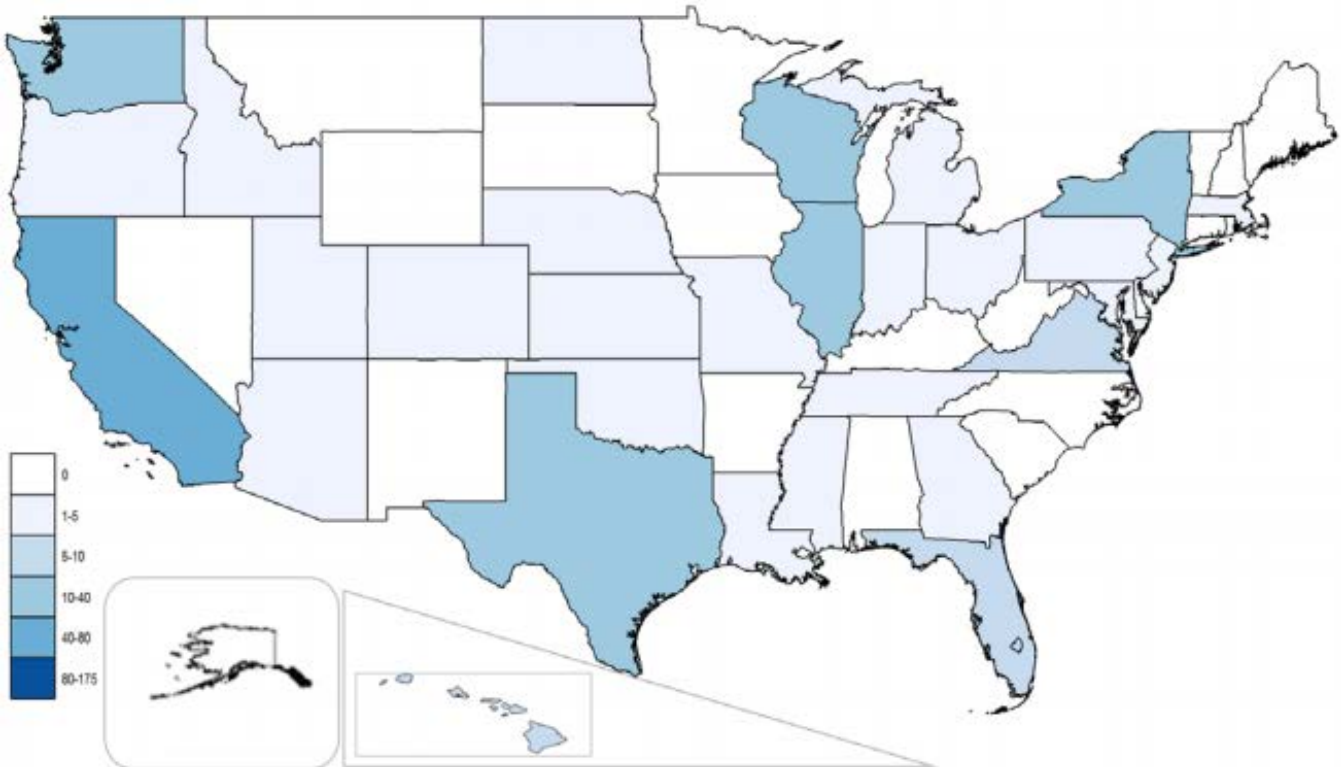
Dengue is a disease caused by any one of four related viruses, which are passed by the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito. Infection with one of the four viruses does not protect against the others and consecutive infections put people at greater risk of developing dengue hemorrhagic fever (DHF).

Dengue is not found in Iowa. Cases are in travelers and immigrants returning from parts of the world where dengue transmission occurs. Three cases of Dengue fever have been reported in Iowa, thus far in 2017. In 2016, eight cases of Dengue fever were reported to IDPH.

National Dengue Activity:

As of October 13th, 33 states and three territories have reported dengue cases to ArboNET for 2017 [Figure 6].

Figure 6. Laboratory-positive travel-associated and locally-acquired dengue cases from the 50 states— United States, 2017 (as of October 13, 2017)



Chikungunya

Chikungunya is a viral disease that is spread to people by the bite of an infected *Aedes aegypti* and *Aedes albopictus* mosquito. Mosquitoes become infected when they feed on a person already infected with this virus. These species of mosquitoes are not sustained in Iowa.

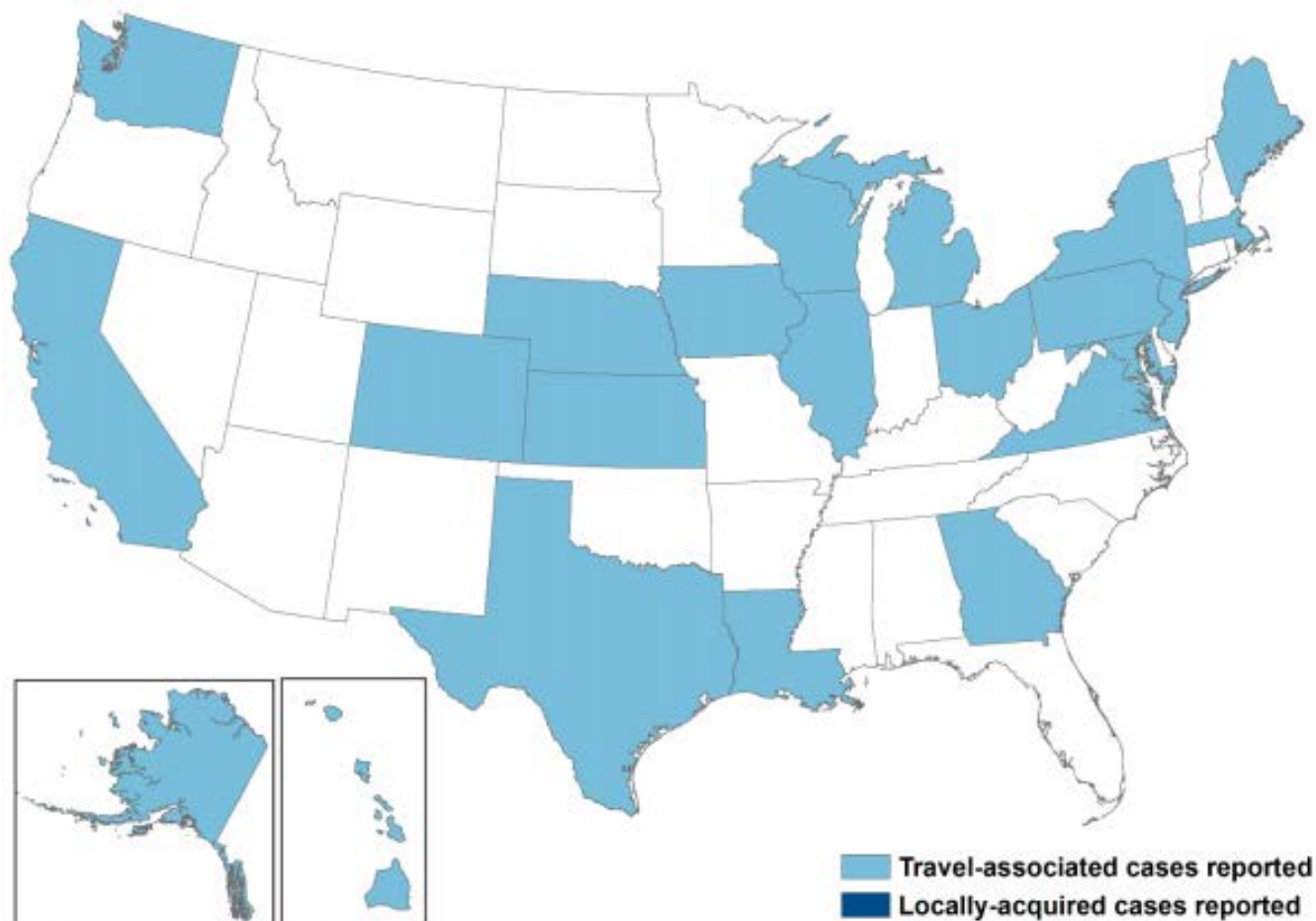
In 2016, two imported cases of chikungunya virus disease were reported in Iowa. Cases occurring in Iowa are in travelers returning from parts of the world where Chikungunya transmission occurs. One case of chikungunya has been reported in Iowa, thus far in 2017.

National Chikungunya Activity:

As of November 7th, a total of 85 chikungunya virus disease cases with illness onset in 2017 have been reported to ArboNET from 22 U.S. states [Figure 7]. All reported cases occurred in travelers returning from affected areas. No locally-transmitted cases have been reported from U.S. states.

To date, 32 locally-acquired chikungunya virus disease cases with illness onset in 2017 have been reported to ArboNET from Puerto Rico.

Figure 7. Chikungunya virus disease cases reported by state - United States, 2017 (as of November 7, 2017)



Mosquito Surveillance

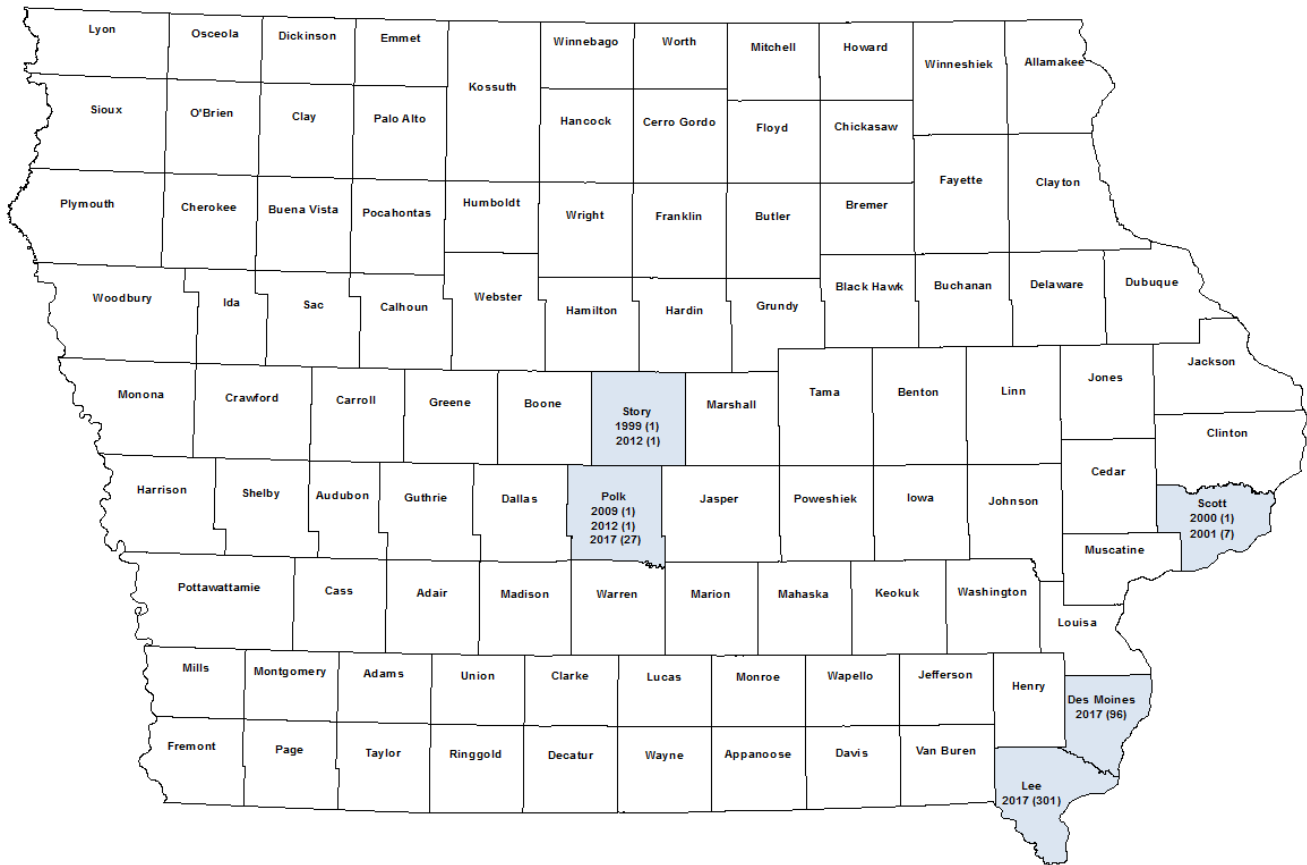
IDPH in collaboration with the State Hygienic Laboratory (SHL), Iowa State University (ISU), and local public environmental health partners conducts ecological surveillance in twenty five counties across the state by monitoring mosquitoes and testing for WNV infected populations.

Table 2. 2017 mosquitoes tested for West Nile virus

Species	# of Samples Tested	WNV Negative	WNV Positive
<i>Cx. pipiens</i>	322	301	21
<i>Cx. pipiens</i> group	170	167	3
<i>Cx. tarsalis</i>	94	92	2
<i>Cx. restuans</i>	569	510	59
<i>Cx. territans</i>	10	10	0
<i>Cx. erraticus</i>	53	53	0
<i>Cx. salinarius</i>	113	110	3
<i>Ae. japonicus</i>	120	120	0
<i>An. punctipennis</i>	0	0	0
<i>Ae. atropalpus</i>	0	0	0
<i>Ae. sticticus</i>	1	1	0
<i>Ae. triseriatus</i>	1	1	0
Total	1453	1365	88

In addition to viral testing for WNV, the population of mosquitoes in Iowa is monitored through trapping activities. All trapped mosquitoes are sorted by species. One species that has rarely been found in Iowa is *Aedes albopictus*. The figure [Figure 8] below shows where and when each detection occurred.

Figure 8. *Aedes albopictus* identified in Iowa



Malaria

Malaria is a serious and sometimes fatal disease caused by a parasite that commonly infects *Anopheles* mosquitoes. Malaria is spread to humans by the bite of the infected female mosquito. Only *Anopheles* mosquitoes can transmit malaria and they must have been infected through a previous blood meal taken from an infected person.

Seventeen cases of malaria have been reported in Iowa. Cases are in travelers and immigrants returning from parts of the world where malaria transmission occurs. In 2016, 22 cases of malaria were reported to IDPH.

Rocky Mountain spotted fever (RMSF)

American dog ticks are carriers of *Rickettsia rickettsii*, the bacteria that causes RMSF. The American dog tick is the most common species of tick in Iowa and can be found in every county in the state. The tick is most active late March through August.

Twelve cases of RMSF have been reported in Iowa. In 2016, 11 cases of RMSF were reported to IDPH.

Ehrlichiosis/Anaplasmosis

There are at least three species of bacteria responsible for ehrlichiosis/anaplasmosis in the United States: *Ehrlichia chaffeensis*, *Ehrlichia ewingii*, and *Anaplasma phagocytophilum*. Ehrlichiae are transmitted by the bite of an infected lone star tick (*Amblyomma americanum*) which is found in Iowa. *A. phagocytophilum* is transmitted by the bite of an infected blacklegged tick (or deer tick, *Ixodes scapularis*) in Iowa. The clinical signs and symptoms of these infections are similar.

Twenty-two cases of ehrlichiosis/anaplasmosis have been reported in Iowa. In 2016, 14 cases of ehrlichiosis/anaplasmosis were reported to IDPH.

Babesiosis

Babesiosis is caused by microscopic parasites that infect red blood cells. Most human cases in the United States are caused by the parasite *Babesia microti*. *Babesia microti* is spread by the blacklegged tick (or deer tick, *Ixodes scapularis*). The parasite typically is spread by the young nymph stage of the tick. They are most common during the warm months of spring and summer in areas with woods, brush, or grass.

Two cases of Babesiosis have been reported in Iowa. In 2016, one case of Babesiosis was reported to IDPH.

Lyme

Lyme disease is caused by *Borrelia burgdorferi* and in Iowa is transmitted to humans by the bite of an infected tick, the blacklegged tick (or deer tick, *Ixodes scapularis*). Ticks are most likely to spread the Lyme disease bacterium during their pre-adult stage (nymph). They are most common between May and July and found in tall grasses and brush of wooded areas.

As of November 9th, 234 confirmed and probable cases of Lyme have been reported in Iowa. In 2016, 232 cases of Lyme disease were reported to IDPH.