



Vector-Borne Disease

2018 Surveillance Report

Center for Acute Disease Epidemiology | Acute Disease Prevention and Emergency Response & EH | [West Nile Virus Website](http://WestNileVirusWebsite)

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

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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.

In 2018, Iowa experienced an increase in WNV activity. To date, 103 cases have been identified. This is the highest number since 2003.

Five WNV-related deaths and eight presumptive viremic blood donors have also been identified. Eighteen horses and 102 mosquito samples have tested positive for WNV [Table 1].

Table 1. Human/Equine/Mosquito Surveillance, 2018 Positive Samples

County	Human	Blood Donor	Horse	Mosquitoes				
				<i>Culex pipiens</i>	<i>Culex pipiens</i> group	<i>Culex restuans</i>	<i>Culex tarsalis</i>	<i>Culex territans</i>
Adams	1	0	0	0	0	0	0	0
Audubon	1	0	0	0	0	0	0	0
Black Hawk	0	0	0	1	5	0	0	0
Boone	1	0	0	0	0	0	0	0
Bremer	3	0	1	0	0	0	0	0
Buchanan	0	0	2	0	0	0	0	0
Butler	1	0	1	0	0	0	0	0
Calhoun	2	0	0	0	0	0	0	0
Chickasaw	1	0	0	0	0	0	0	0
Clarke	1	0	0	0	0	0	0	0
Clay	0	0	1	0	0	0	0	0
Clinton	0	0	1	0	0	0	0	0
Dallas	1	0	0	0	0	0	0	0
Des Moines	2	0	0	0	0	0	0	0
Dubuque	0	1	0	0	0	0	0	0
Emmet	1	0	0	0	0	0	0	0
Fayette	1	0	0	0	0	0	0	0
Floyd	1	0	0	0	0	0	0	0
Franklin	1	0	0	0	0	0	0	0
Greene	1	0	0	0	0	0	0	0
Harrison	3	0	0	0	0	0	0	0
Henry	1	0	0	0	0	0	0	0
Howard	0	0	1	0	0	0	0	0
Humboldt	2	0	0	0	0	0	0	0
Ida	1	0	0	0	0	0	0	0
Jasper	1	0	0	0	0	0	0	0
Johnson	2	0	0	0	0	0	0	0
Kossuth	1	0	0	0	0	0	0	0
Lyon	8	0	0	0	0	0	0	0
Mahaska	0	1	1	0	0	0	0	0
Marion	1	0	0	0	0	0	0	0
Marshall	0	0	1	0	0	0	0	0
Mills	3	0	0	0	0	0	0	0
Mitchell	1	0	1	0	0	0	0	0
Monona	1	0	0	4	2	0	0	0
Monroe	1	0	0	0	0	0	0	0
Montgomery	1	0	0	0	0	0	0	0
O'Brien	1	0	0	0	0	0	0	0
Page	1	0	0	0	0	0	0	0
Palo Alto	1	0	0	0	0	0	0	0
Plymouth	2	0	0	0	0	0	0	0
Polk	11	0	3	26	20	31	0	1
Pottawattamie	11	2	0	0	0	0	0	0
Poweshiek	1	0	1	0	0	0	0	0
Sac	0	1	0	0	0	0	1	0
Scott	1	0	0	0	0	0	0	0
Shelby	1	0	0	0	0	0	0	0
Sioux	9	1	0	0	0	0	0	0
Story	4	1	0	2	2	1	0	0
Union	0	0	1	0	0	0	0	0
Van Buren	1	0	2	0	0	0	0	0
Wapello	0	0	1	0	0	0	0	0
Warren	3	0	0	0	0	0	0	0
Washington	1	0	0	0	0	0	0	0
Wayne	1	0	0	0	0	0	0	0
Woodbury	8	1	0	1	4	1	0	0
Total	103	8	18	34	33	33	1	1

Figure 1. 2018 West Nile virus case count and incidence rate by county of residence.

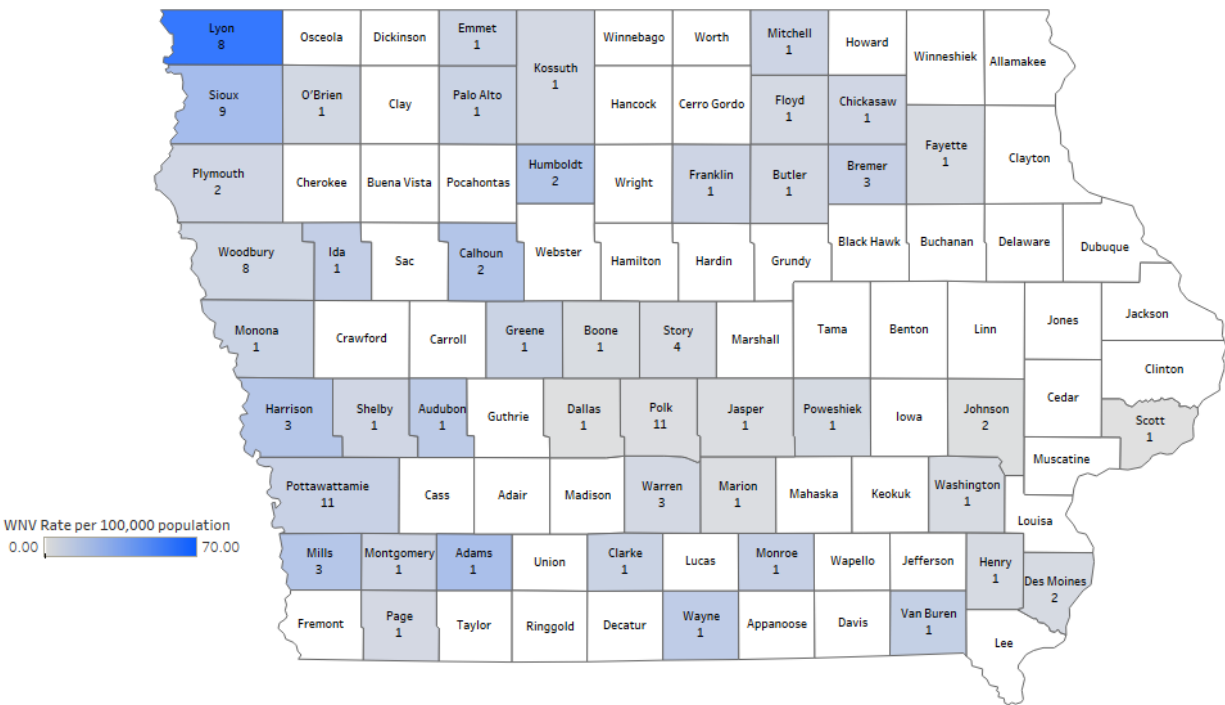
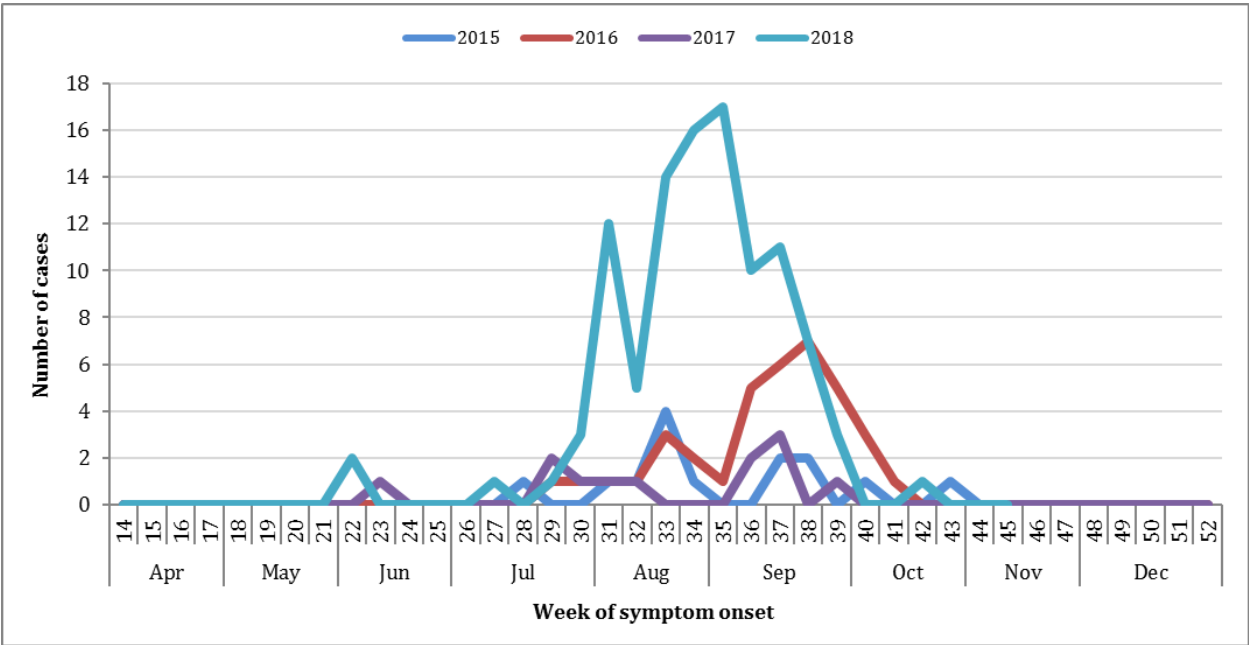


Figure 2. WNV disease cases reported to IDPH, by week of onset-Iowa, 2018



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

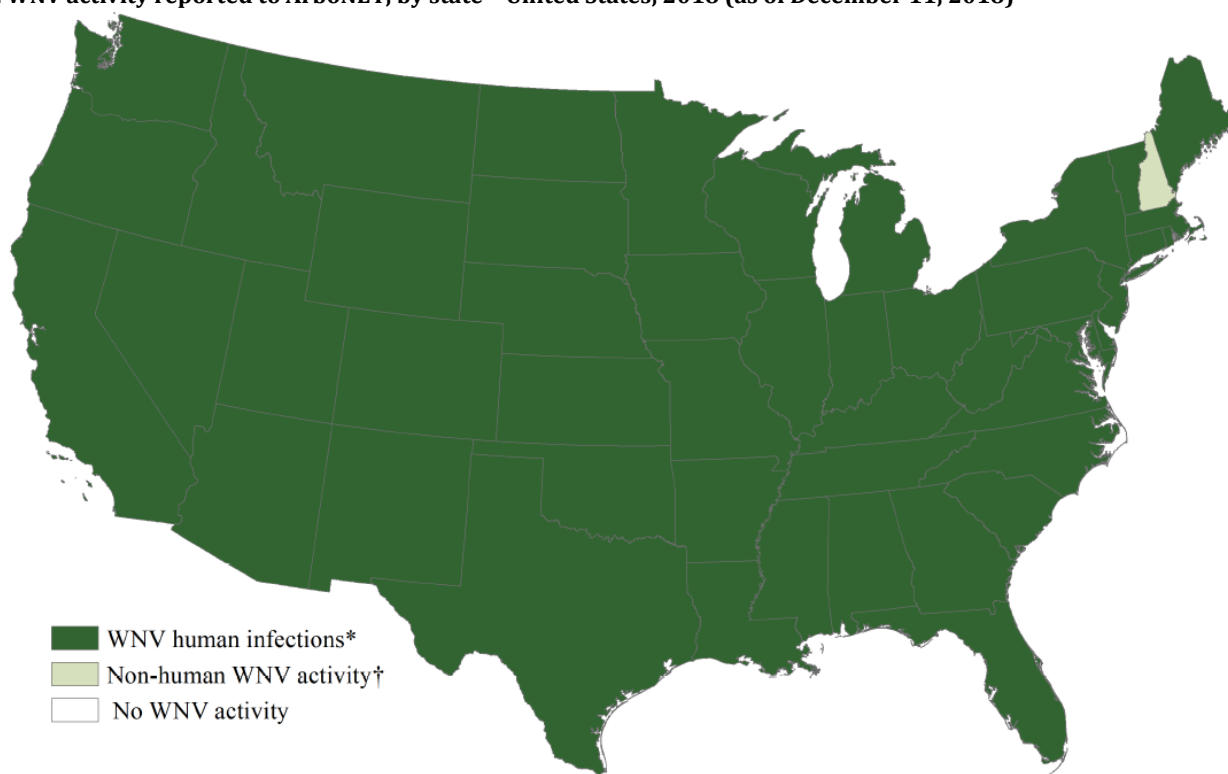
National WNV Activity:

As of December 11th, 1,321 counties from 49 states and the District of Columbia have reported WNV activity to ArboNET for 2018, including 48 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 3].

To date, 2,475 human WNV disease cases have been reported from 741 counties in 48 states and the District of Columbia. Of the 2,475 reported cases, 1,542 (62%) were classified as neuroinvasive disease (e.g., meningitis or encephalitis) and 933 (38%) were classified as non-neuroinvasive disease [Figure 4]. Dates of illness onset for cases ranged from January-November [Figure 5].

Overall, 311 WNV PVDs have been reported from 35 states.

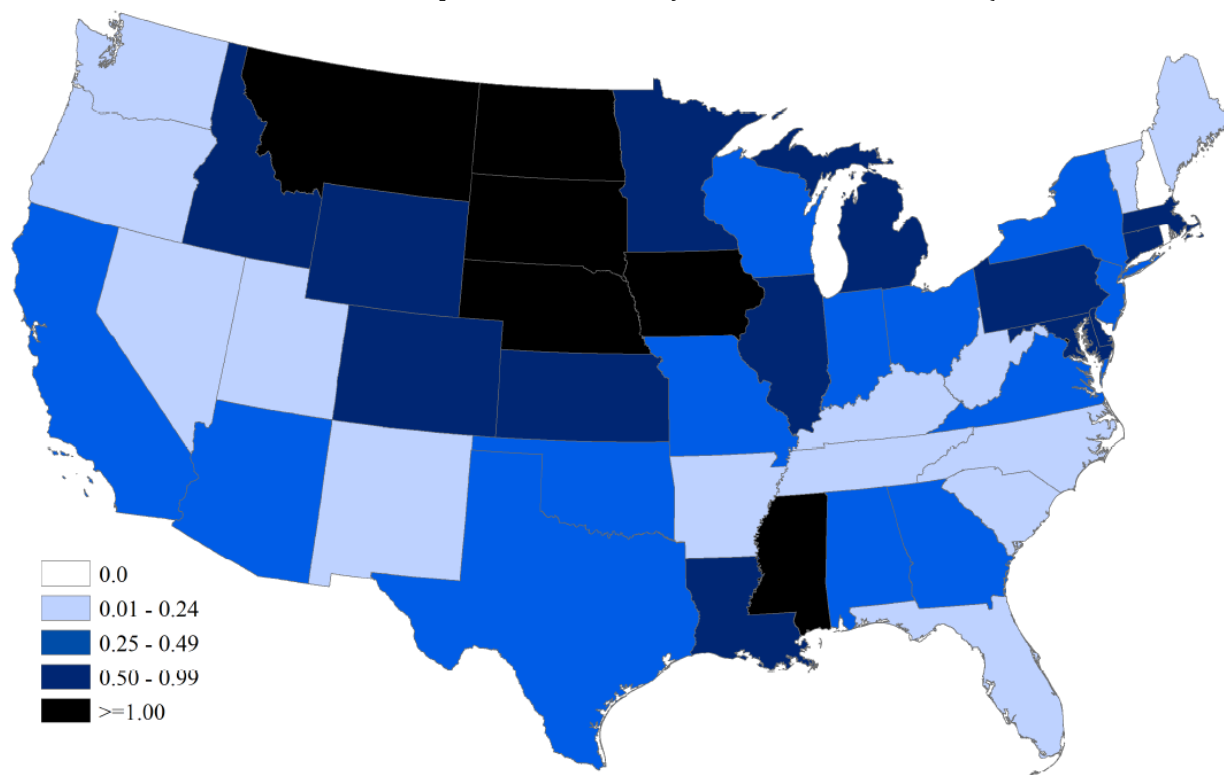
Figure 3. WNV activity reported to ArboNET, by state – United States, 2018 (as of December 11, 2018)



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

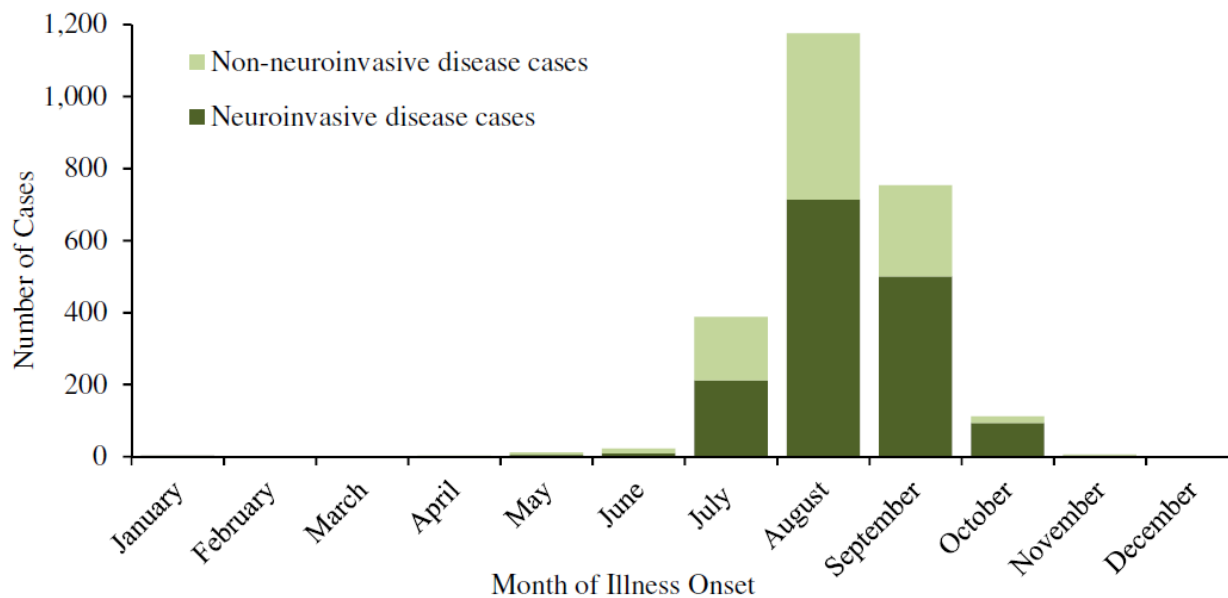
†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Figure 4. WNV neuroinvasive disease incidence* reported to ArboNET, by state – United States, 2018 (as of December 11, 2018)



*Incidence per 100,000 population

Figure 5. WNV disease cases reported to ArboNET, by month of onset– United States, 2018 (as of December 11, 2018)



*Cases missing onset date (n=2)

Dengue Fever

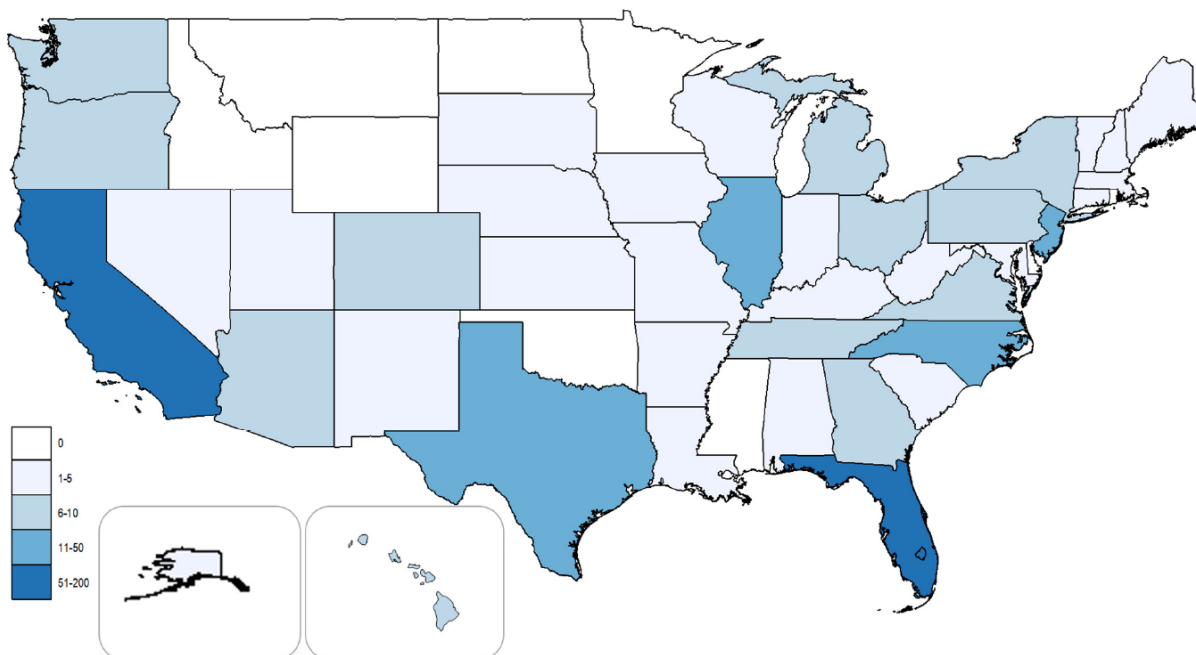
Dengue is a disease caused by any one of four related viruses, which are passed by the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito. Infection with one of the four viruses does not protect against the others and consecutive infections put people at greater risk of developing dengue 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. Five cases of dengue fever has been reported in Iowa, thus far in 2018. In 2017, four cases of dengue fever were reported to IDPH.

National Dengue Activity:

As of December 31st, 42 states and three territories have reported dengue cases to ArboNET for 2018 [Figure 6].

Figure 6. Laboratory-positive travel-associated and locally-acquired dengue cases from the 50 states— United States, 2018 (as of December 31, 2018)



Mosquito Surveillance

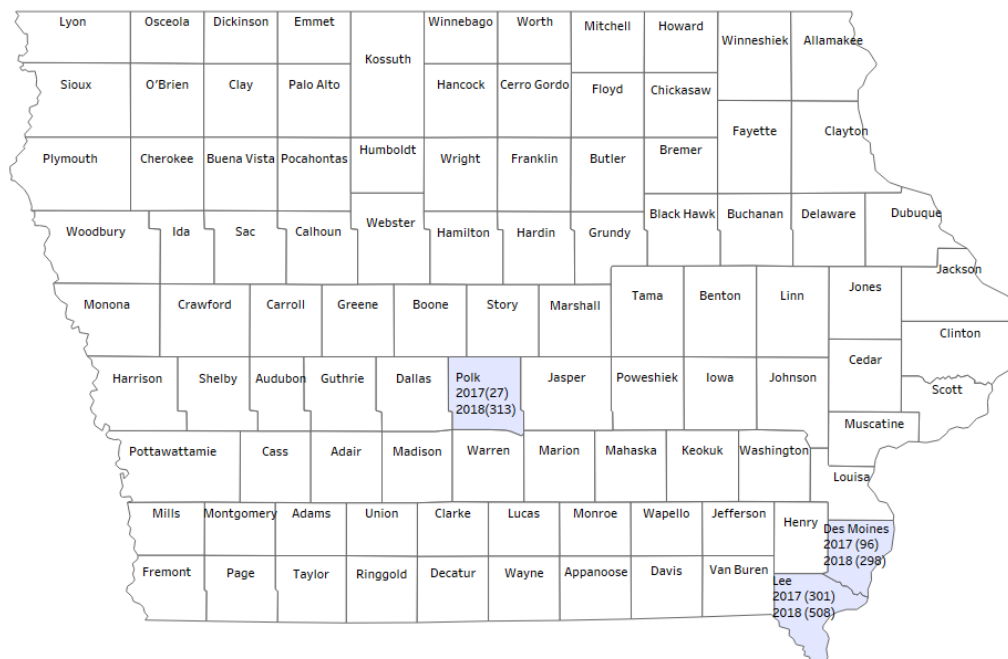
IDPH in collaboration with the State Hygienic Laboratory (SHL), Iowa State University (ISU), and local public environmental health partners conducts ecological surveillance in 17 counties across the state by monitoring mosquitoes and testing for WNV infected populations.

Table 2. 2018 mosquitoes tested for West Nile virus

Species	# of Samples Tested	WNV Negative	WNV Positive
<i>Cx. pipiens</i>	330	296	34
<i>Cx. pipiens group</i>	324	291	33
<i>Cx. tarsalis</i>	94	93	1
<i>Cx. restuans</i>	580	547	33
<i>Cx. territans</i>	40	39	1
<i>Cx. erraticus</i>	0	0	0
<i>Cx. salinarius</i>	50	50	0
<i>Ae. japonicus</i>	0	0	0
<i>An. punctipennis</i>	0	0	0
<i>Ae. atropalpus</i>	0	0	0
<i>Ae. sticticus</i>	0	0	0
<i>Ae. triseriatus</i>	1	1	0
Total	1419	1317	102

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. The figure [Figure 7] below shows where and when *Aedes albopictus* mosquitoes were detected in 2017 and 2018.

Figure 7. *Aedes albopictus* identified in Iowa, 2017-2018



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.

Twenty-two 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 2017, 19 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.

Twenty-two cases of RMSF have been reported in Iowa. In 2017, 17 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-six cases of ehrlichiosis/anaplasmosis have been reported in Iowa. In 2017, 24 cases of ehrlichiosis/anaplasmosis were 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 January 4th, 271 confirmed and probable cases of Lyme disease have been reported in Iowa [Figure 8]. In 2017, 255 cases of Lyme disease were reported to IDPH.

Figure 8. 2018 Lyme disease case count and incidence rate by county of residence.

