

# NEBRASKA ARBOVIRUS SURVEILLANCE AND MOSQUITO MONITORING PROGRAM 2018 UPDATE #13

**Date: 09/10/2018.** Please note that mosquito collection data covers dates 08/19/2018 to 09/01/2018 (CDC Weeks 34 and 35). Bird, human, and equine surveillance may include data from beyond these dates. All data is provisional and may change.

## SUMMARY

- **Climate:** Over the past 30 days (dates 08/04/2018 to 09/02/2018), precipitation has been below normal over areas of central, north eastern, and western Nebraska and above average precipitation being seen in eastern, south central, and southeastern portions of the state. Cumulative rainfall during this timeframe ranged from 0.1 to  $\geq 6.5$  inches across the state. The heavier amounts were located primarily in portions of eastern, south central, and southeastern Nebraska. Average temperatures for the last 30 days (date ending 09/02/2018) were below normal over most of the state. Per the United States Drought Monitor, abnormally dry conditions decreased and moderate drought conditions were removed entirely from across areas of south central and southeastern Nebraska.
- **Three Month Forecast:** For September 2018 to November 2018, the NOAA outlook is predicting an elevated probability of above normal temperatures across Nebraska and equal chances of above or below normal precipitation over most of the state.
- **Mosquito Numbers- Eastern Nebraska:** Individual county collections for the reported two weeks of sampling ranged from “low” to “very high” based on historical county data. Overall in the east region, mosquito numbers saw a substantial increase and were “moderate” based on historical data from regional traps. *Culex tarsalis* (primary vector of West Nile virus) counts continued to make up the majority of trap collections (25.3%) in the region. *Culex* mosquito counts increased and were still “high” based upon historical regional data. Individual county *Culex* collections ranged from “low” to “extremely high”. Nine invasive *Aedes albopictus* (Asian tiger mosquito) were collected from the region. All specimens were collected from Richardson County at trap sites that have produced *Aedes albopictus* historically.
- **Mosquito Numbers- Central Nebraska:** Individual county collections for the reported two weeks of collecting ranged from “moderate” to “very high” based on historical data. Overall mosquito numbers increased compared to the previous update and were considered “high”. *Culex tarsalis* was again the most collected mosquito (43.0%) from region traps. *Culex* mosquito counts also continued to increase and were at “very high” levels based upon

historical regional data, with individual counties ranging from “high” to “extremely high” based upon their historical data. No invasive *Aedes albopictus* were collected from the region.

- **Mosquito Numbers- Western Nebraska:** Individual county collections for the reported two weeks ranged from “low” to “high” compared to their historical data. Overall mosquito activity from regional traps decreased and were considered “low”. *Aedes vexans* was the most abundant mosquito collected in CDC light traps (49.2%). *Culex tarsalis*, was second making up 35.7% of mosquito collections. *Culex* mosquito counts decreased substantially and were “moderate” based upon historical regional data. Individual *Culex* counts across counties in the west region ranged from “low” to “extremely high” based upon their historical data. No invasive *Aedes albopictus* were collected from the region.
- **Arboviral Detections:** Over the two weeks of mosquito surveillance covered in this report **44 positive WNV pools have been detected**. However, there are mosquito pools that remain to be tested and results could change. The continued detection of WNV positive mosquito pools demonstrates that WNV is still circulating in the environment. To date 2,067 *Culex* pools have been tested with **109 WNV positives detected** in 23 of the 28 counties in the CDC light trap network. The current WNV cumulative statewide minimum mosquito infection rate increased (2.29/1,000 *Culex*) and is above the 10-year median (1.85/1,000 *Culex*) for this time of year. No positive pools for St. Louis Encephalitis (SLE) or Western Equine Encephalitis (WEE) viruses were detected over the two weeks and zero have been detected for the season.
- **Dead Bird Surveillance:** To date 133 birds have been reported. Of the 133 birds reported, 12 have been a corvid birds (bird group most heavily impacted by WNV and includes: blue jays, crows, and magpies). Of the seven birds reported who have met criteria for WNV testing, four were negative, two birds were unsuitable for testing, and one was positive.
- **Equine Surveillance:** Currently no equine cases of WNV have been reported for the season.
- **Human Mosquito-borne Disease Cases:** **Seventy-nine human clinical WNV cases** have currently been reported along with **34 asymptomatic human blood donors** in Nebraska residents. **Overall human case counts are significantly above what would be expected at this time of the year.** Additionally, **three deaths related to WNV have also been reported in the state.** A total of five travel-related mosquito-borne disease have occurred in state residents: four malaria cases (all four were acquired in sub-Saharan Africa) and one dengue case (acquired in Southeast Asia).

**Comment: Human clinical (symptomatic) WNV cases continue to increase and there are now 79 reported in Nebraska residents to date, 42 of which are the more severe neuroinvasive form. Unfortunately, three deaths related to WNV have now been reported in the state. Additionally, asymptomatic human blood donors also increased with 34 now reported. Overall human case counts are significantly above what would be expected for this time of year, especially in the eastern portion of the state. Furthermore, 109 WNV mosquito pools have been detected from mosquito samples. With Human WNV cases continuing to increase and positive mosquito pools continuing to be detected, Individuals should take proper mosquito prevention activities to reduce mosquito bites. As we go through September risk will gradually decrease, however risk of WNV infection will remain until the first hard frost of the season. Additionally, five travel-related mosquito-borne illness cases, four malaria and one dengue case, have been reported in Nebraska residents returning from overseas travel. Individuals are strongly encouraged to practice proper mosquito prevention anytime mosquitoes are present or likely to be present no matter where they are to decrease their chances of acquiring a mosquito-borne illness.** Statewide, overall mosquito collections from CDC light traps saw an increase in overall mosquito numbers but the statewide average was still “moderate” when compared to historical data, averaging 144.07 total mosquitoes per trap night. The most abundant mosquito collected over the two week sampling period was *Culex tarsalis* (primary vector of West Nile virus in Nebraska), accounting for 34.6% of trap collections. *Culex* mosquito counts statewide decreased slightly but were still considered “high” based on historical data, averaging 76.28 *Culex* per trap night.

## ENVIRONMENTAL CONDITIONS

Environmental and climate conditions can impact mosquito-borne diseases by influencing mosquito numbers and mosquito infection prevalence. For example, drought has been identified as a primary driver of WNV epidemics. This is why rainfall, temperature, and drought conditions are monitored closely during the mosquito surveillance season.

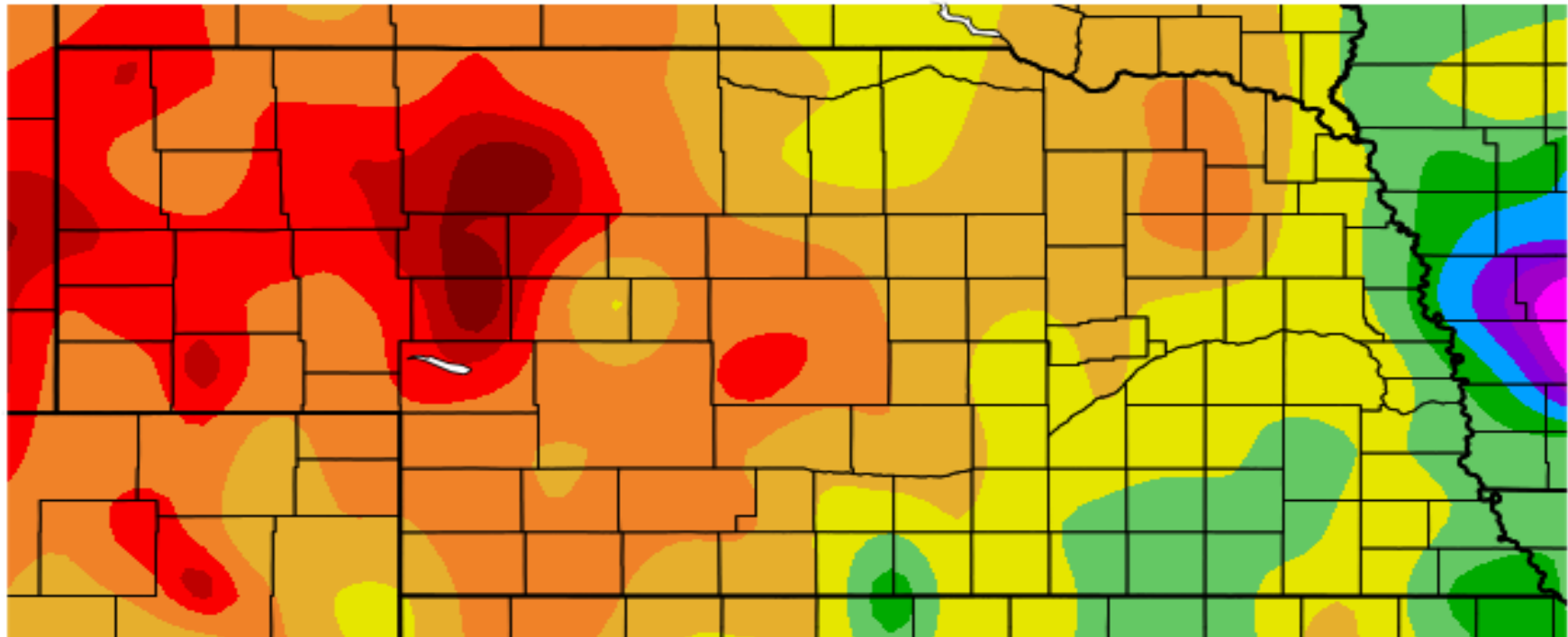
### Rainfall and Temperature

Rainfall across Nebraska over the last 30 days (08/04/2018 to 09/02/2018) ranged from 0.1 to  $\geq 6.5$  inches (pg. 4) across the state. The heavier amounts were located in eastern, south central, and southeastern Nebraska. For the last 30 days (date ending 09/02/2018), rainfall was below normal over areas of central, northeastern, and western Nebraska while areas in eastern, south central, and southeastern Nebraska were above normal (pg.5). Average temperatures (pg. 6) for the last 30 days were below normal over most of the state. The long range outlook as of 09/09/2018 (next 8 to 14 days), is predicting higher chances of above normal temps over the western portion of the state and near normal conditions in eastern Nebraska. Precipitation is also predicted to have a higher probability of being above normal over most of Nebraska. More climate and forecast information can be found at:

High Plains Regional Climate Center at: <https://hprcc.unl.edu/index.php>

National Weather Service 8 to 14 day outlooks: <http://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php>

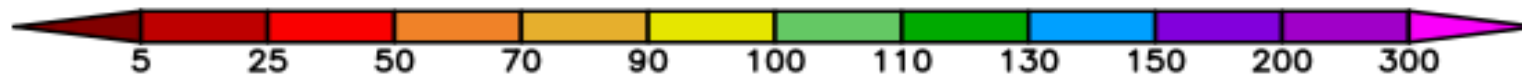
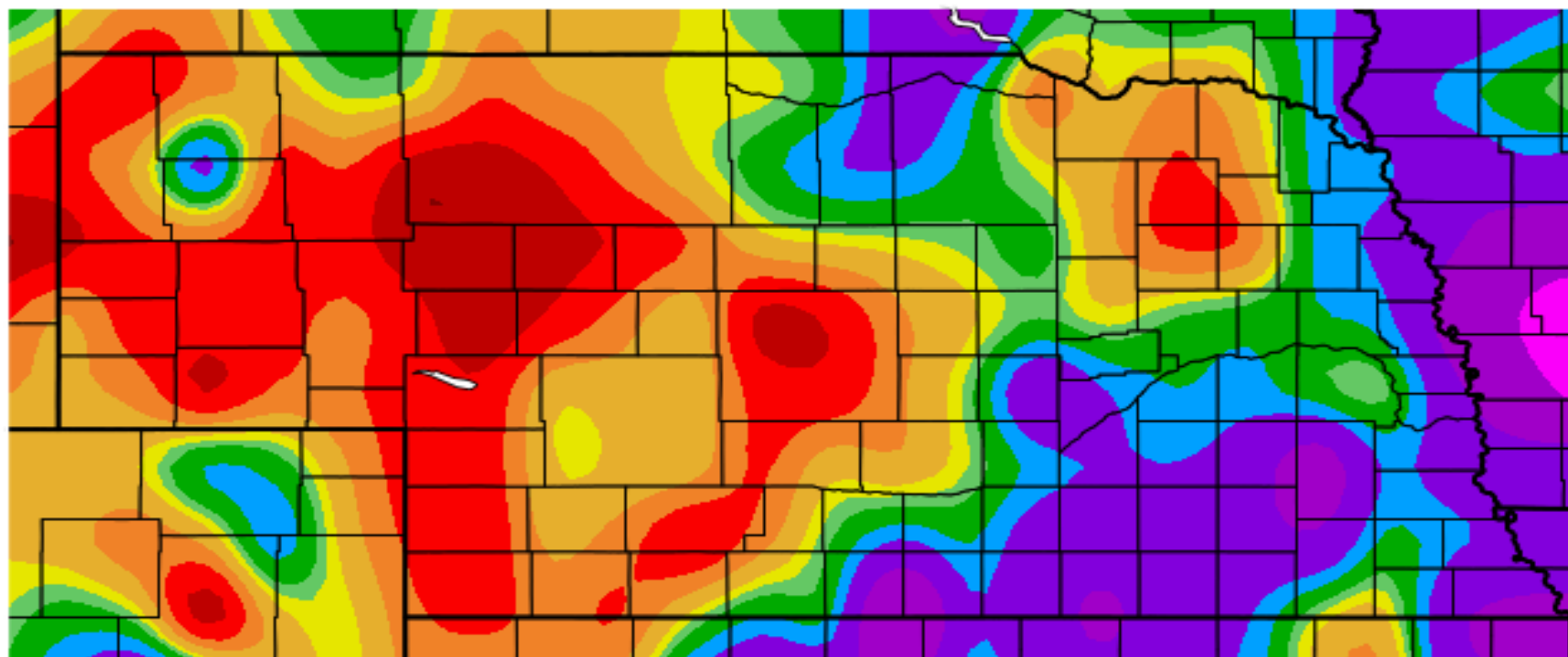
Precipitation (in)  
8/4/2018 – 9/2/2018



Generated 9/3/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

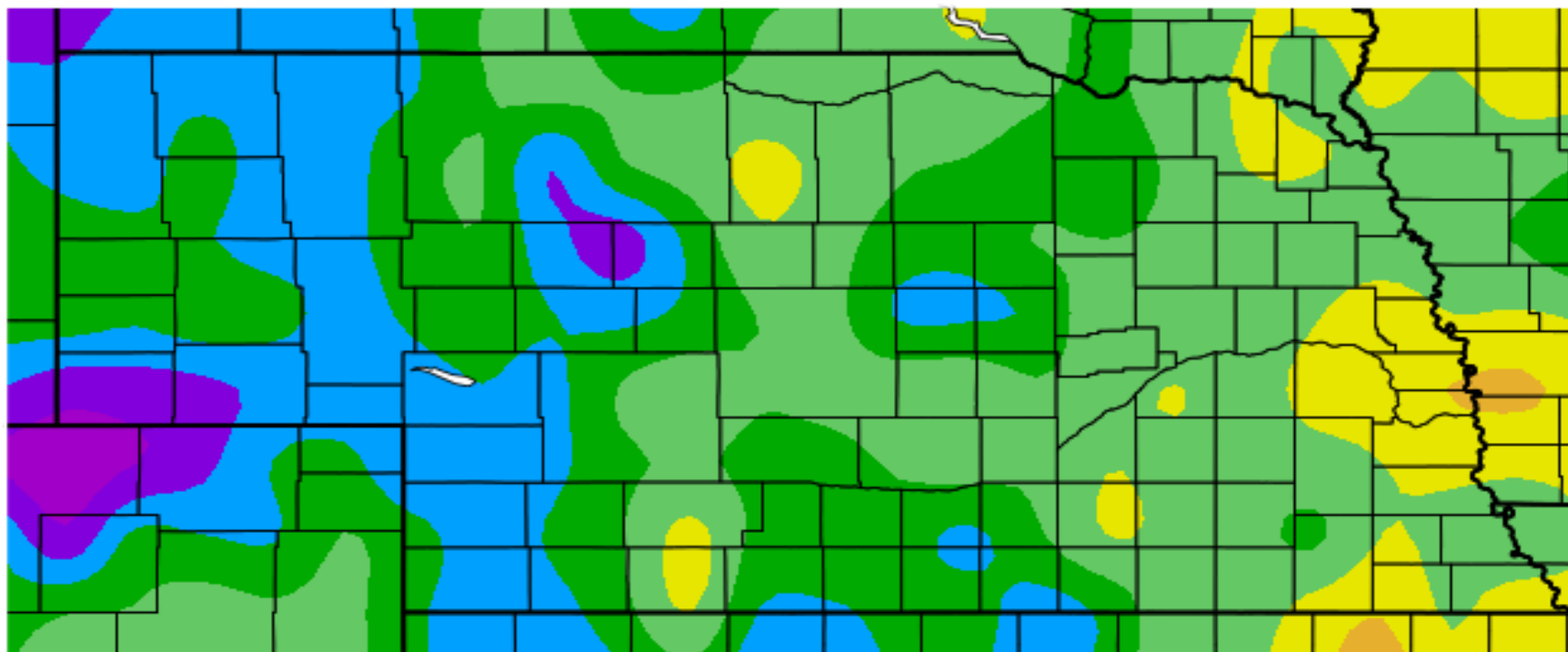
Percent of Normal Precipitation (%)  
8/4/2018 – 9/2/2018



Generated 9/3/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Temperature (F)  
8/4/2018 – 9/2/2018



Generated 9/3/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

## Three Month Temperature and Rainfall Forecast

For August 2018 to October 2018, forecast predictions for Nebraska are for an elevated probability of above normal temperature over most of the state and equal chances for above and below normal precipitation. Links for the pages containing graphics of the long-term outlook can be found here:

[http://www.cpc.ncep.noaa.gov/products/predictions/long\\_range/seasonal.php?lead=1](http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1) (Temperature and Rainfall Outlook).

## Drought Outlook

The current drought monitor on page eight (through 09/06/2018) showed improvements in abnormally dry and moderate drought conditions in portions of south central and southeast Nebraska. Approximately 99.67% of the state is being reported with no drought or abnormally dry conditions, and increase from last week. Currently the land area in the state encompassing abnormal dryness is approximately 0.33% (decrease) and moderate drought has been completely eliminated from the state. Last year at this time, 62.11% of the state area reported no drought or abnormally dry conditions per the drought monitor. The current monthly drought outlook for September can be found on page nine. For more information please visit the links below:

<http://droughtmonitor.unl.edu/> (U.S. Drought Monitor).

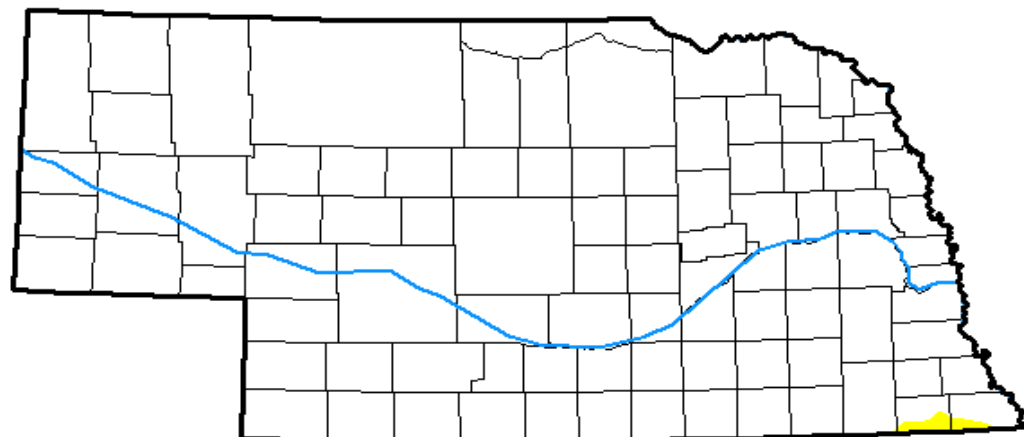
[http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/mdo\\_summary.php](http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.php) (U.S. Monthly Drought Outlook).

# U.S. Drought Monitor Nebraska

**September 4, 2018**  
(Released Thursday, Sep. 6, 2018)  
Valid 8 a.m. EDT

*Drought Conditions (Percent Area)*

|  | None  | D0    | D1   | D2   | D3   | D4   |
|--|-------|-------|------|------|------|------|
| <b>Current</b>                                     | 99.67 | 0.33  | 0.00 | 0.00 | 0.00 | 0.00 |
| <b>Last Week</b><br><i>08-28-2018</i>              | 96.33 | 3.33  | 0.34 | 0.00 | 0.00 | 0.00 |
| <b>3 Months Ago</b><br><i>06-05-2018</i>           | 81.90 | 12.73 | 5.37 | 0.00 | 0.00 | 0.00 |
| <b>Start of Calendar Year</b><br><i>01-02-2018</i> | 9.32  | 88.65 | 2.03 | 0.00 | 0.00 | 0.00 |
| <b>Start of Water Year</b><br><i>09-26-2017</i>    | 82.67 | 13.32 | 4.01 | 0.00 | 0.00 | 0.00 |
| <b>One Year Ago</b><br><i>09-05-2017</i>           | 62.11 | 31.41 | 6.47 | 0.00 | 0.00 | 0.00 |



## Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

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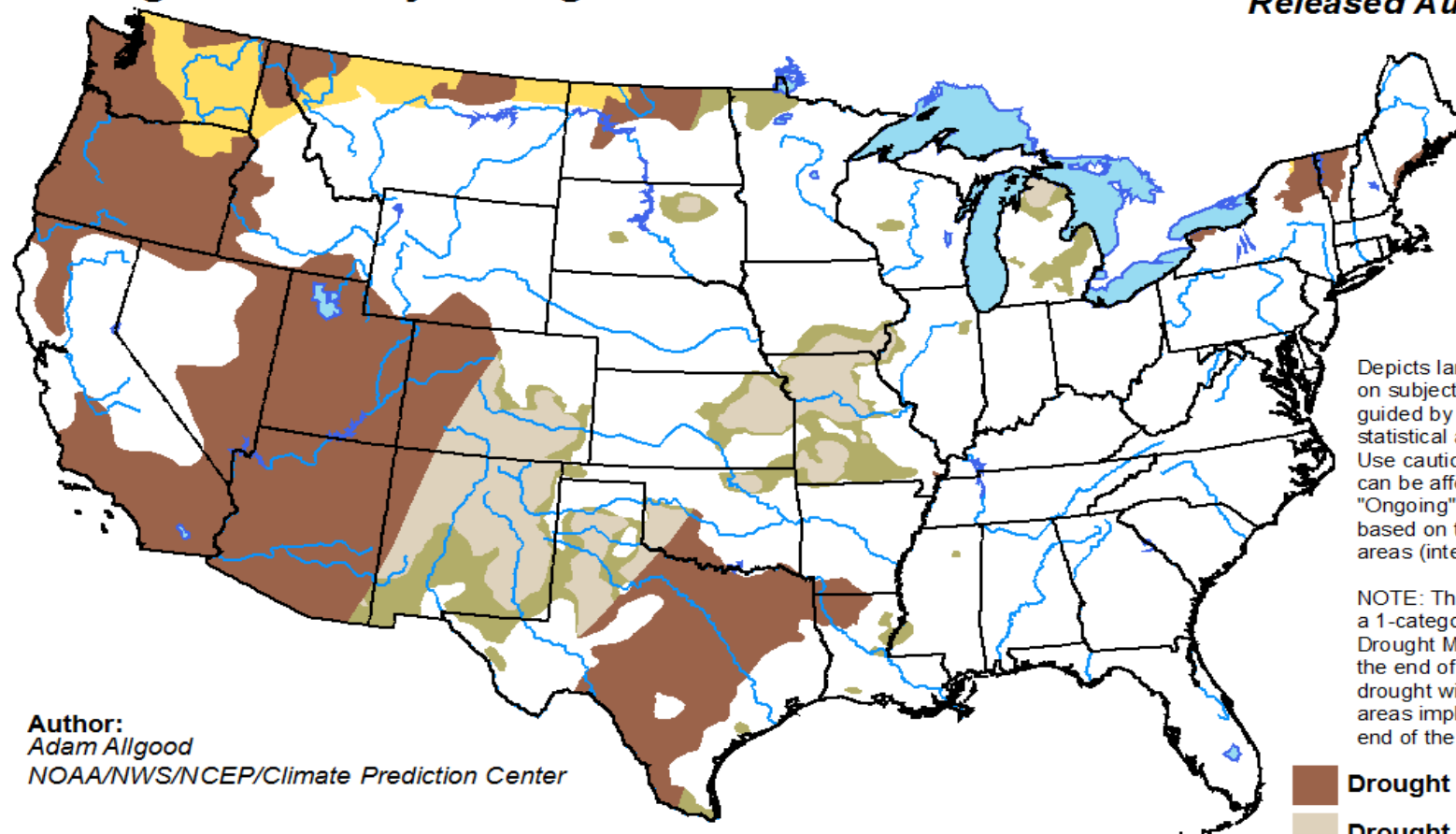
<http://droughtmonitor.unl.edu/>



# U.S. Monthly Drought Outlook

## Drought Tendency During the Valid Period





Valid for September 2018  
Released August 31, 2018

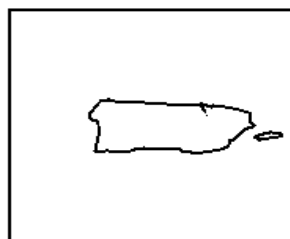
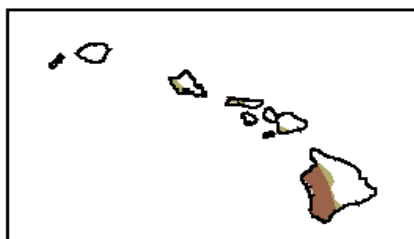
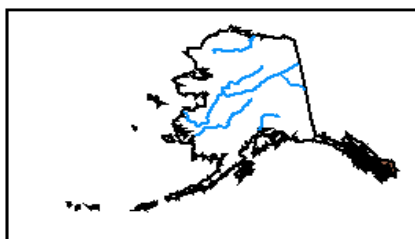


**Author:**  
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Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZGd>

## ARBOVIRAL DETECTIONS

To date, there has been 109 positive arbovirus positive mosquito pools detected in 23 different counties. All 109 positive pools have been WNV, no SLE or WEE has been detected to date in mosquito pools. The statewide WNV cumulative mosquito minimum infection rate (MIR) per 1,000 *Culex* increased to 2.29 which is above the 10-year median of 1.85 for this time of year. However, there are mosquito pools that remain to be tested and these results could change.

**Table 1. Arboviral Detections**

| Date Collected | County       | Mosquito Species        | Virus |
|----------------|--------------|-------------------------|-------|
| 8/29/2018      | Phelps       | <i>Culex tarsalis</i>   | WNV   |
| 8/29/2018      | Red Willow   | <i>Culex tarsalis</i>   | WNV   |
| 8/29/2018      | Red Willow   | <i>Culex salinarius</i> | WNV   |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | WNV   |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | WNV   |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | WNV   |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | WNV   |
| 8/28/2018      | Adams        | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Cherry       | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Dawes        | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Dixon        | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Holt         | <i>Culex pipiens</i>    | WNV   |
| 8/28/2018      | Scotts Bluff | <i>Culex pipiens</i>    | WNV   |
| 8/28/2018      | Scotts Bluff | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Wayne        | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Wayne        | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Wayne        | <i>Culex tarsalis</i>   | WNV   |
| 8/28/2018      | Wayne        | <i>Culex pipiens</i>    | WNV   |

|           |            |                       |     |
|-----------|------------|-----------------------|-----|
| 8/28/2018 | Wayne      | <i>Culex pipiens</i>  | WNV |
| 8/22/2018 | Gage       | <i>Culex pipiens</i>  | WNV |
| 8/22/2018 | Garfield   | <i>Culex pipiens</i>  | WNV |
| 8/22/2018 | Garfield   | <i>Culex pipiens</i>  | WNV |
| 8/22/2018 | Garfield   | <i>Culex tarsalis</i> | WNV |
| 8/22/2018 | Garfield   | <i>Culex pipiens</i>  | WNV |
| 8/22/2018 | Hall       | <i>Culex tarsalis</i> | WNV |
| 8/22/2018 | Hall       | <i>Culex tarsalis</i> | WNV |
| 8/22/2018 | Madison    | <i>Culex tarsalis</i> | WNV |
| 8/22/2018 | Richardson | <i>Culex tarsalis</i> | WNV |
| 8/22/2018 | Richardson | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Box Butte  | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Dawson     | <i>Culex pipiens</i>  | WNV |
| 8/21/2018 | Dawson     | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Dawson     | <i>Culex pipiens</i>  | WNV |
| 8/21/2018 | Douglas    | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Douglas    | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Douglas    | <i>Culex pipiens</i>  | WNV |
| 8/21/2018 | Douglas    | <i>Culex pipiens</i>  | WNV |
| 8/21/2018 | Garden     | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Garden     | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Garden     | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Garden     | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Lincoln    | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Lincoln    | <i>Culex tarsalis</i> | WNV |
| 8/21/2018 | Webster    | <i>Culex pipiens</i>  | WNV |
| 8/15/2018 | Phelps     | <i>Culex pipiens</i>  | WNV |
| 8/15/2018 | Phelps     | <i>Culex tarsalis</i> | WNV |
| 8/15/2018 | Red Willow | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Cherry     | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Dawes      | <i>Culex tarsalis</i> | WNV |

|           |              |                       |     |
|-----------|--------------|-----------------------|-----|
| 8/14/2018 | Dawes        | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Dixon        | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Holt         | <i>Culex pipiens</i>  | WNV |
| 8/14/2018 | Scotts Bluff | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Scotts Bluff | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Scotts Bluff | <i>Culex tarsalis</i> | WNV |
| 8/14/2018 | Scotts Bluff | <i>Culex pipiens</i>  | WNV |
| 8/14/2018 | York         | <i>Culex pipiens</i>  | WNV |
| 8/8/2018  | Garfield     | <i>Culex tarsalis</i> | WNV |
| 8/8/2018  | Garfield     | <i>Culex pipiens</i>  | WNV |
| 8/8/2018  | Madison      | <i>Culex tarsalis</i> | WNV |
| 8/7/2018  | Box Butte    | <i>Culex tarsalis</i> | WNV |
| 8/7/2018  | Box Butte    | <i>Culex tarsalis</i> | WNV |
| 8/7/2018  | Box Butte    | <i>Culex tarsalis</i> | WNV |
| 8/7/2018  | Chase        | <i>Culex tarsalis</i> | WNV |
| 8/7/2018  | Douglas      | <i>Culex tarsalis</i> | WNV |
| 8/7/2018  | Garden       | <i>Culex tarsalis</i> | WNV |
| 8/7/2018  | Lincoln      | <i>Culex pipiens</i>  | WNV |
| 8/1/2018  | Red Willow   | <i>Culex tarsalis</i> | WNV |
| 8/1/2018  | Red Willow   | <i>Culex tarsalis</i> | WNV |
| 8/1/2018  | Red Willow   | <i>Culex tarsalis</i> | WNV |
| 7/31/2018 | Dawes        | <i>Culex tarsalis</i> | WNV |
| 7/31/2018 | Holt         | <i>Culex tarsalis</i> | WNV |
| 7/31/2018 | Holt         | <i>Culex pipiens</i>  | WNV |
| 7/31/2018 | Holt         | <i>Culex pipiens</i>  | WNV |
| 7/31/2018 | Holt         | <i>Culex unknown</i>  | WNV |



**Table 2. Arboviral Detections Summary Table.**

|                |              |                         | Virus |     |     |       |
|----------------|--------------|-------------------------|-------|-----|-----|-------|
| Date Collected | County       | Mosquito Species        | WNV   | SLE | WEE | Total |
| 8/29/2018      | Phelps       | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/29/2018      | Red Willow   | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/29/2018      | Red Willow   | <i>Culex salinarius</i> | 1     | 0   | 0   | 1     |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/28/2018      | Adams        | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/28/2018      | Adams        | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Cherry       | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Dawes        | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Dixon        | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Holt         | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/28/2018      | Scotts Bluff | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/28/2018      | Scotts Bluff | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Wayne        | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Wayne        | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Wayne        | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/28/2018      | Wayne        | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/28/2018      | Wayne        | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/22/2018      | Gage         | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/22/2018      | Garfield     | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/22/2018      | Garfield     | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/22/2018      | Garfield     | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/22/2018      | Garfield     | <i>Culex pipiens</i>    | 1     | 0   | 0   | 1     |
| 8/22/2018      | Hall         | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/22/2018      | Hall         | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/22/2018      | Madison      | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |
| 8/22/2018      | Richardson   | <i>Culex tarsalis</i>   | 1     | 0   | 0   | 1     |

|           |              |                       |   |   |   |   |
|-----------|--------------|-----------------------|---|---|---|---|
| 8/22/2018 | Richardson   | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Box Butte    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Dawson       | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/21/2018 | Dawson       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Dawson       | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/21/2018 | Douglas      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Douglas      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Douglas      | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/21/2018 | Douglas      | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/21/2018 | Garden       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Garden       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Garden       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Garden       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Lincoln      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Lincoln      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/21/2018 | Webster      | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/15/2018 | Phelps       | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/15/2018 | Phelps       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/15/2018 | Red Willow   | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Cherry       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Dawes        | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Dawes        | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Dixon        | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Holt         | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Holt         | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/14/2018 | Scotts Bluff | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Scotts Bluff | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Scotts Bluff | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/14/2018 | Scotts Bluff | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |

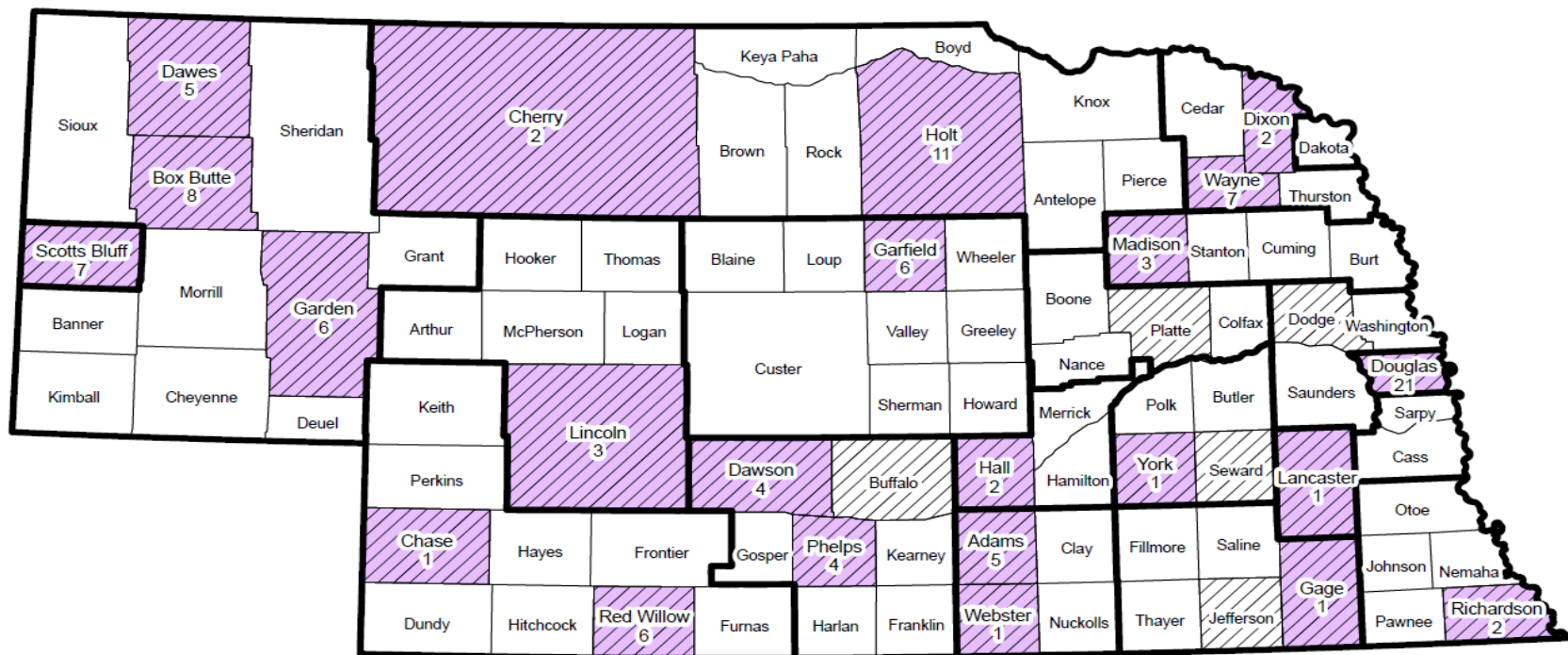
|           |            |                       |   |   |   |   |
|-----------|------------|-----------------------|---|---|---|---|
| 8/14/2018 | York       | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/8/2018  | Garfield   | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/8/2018  | Garfield   | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/8/2018  | Madison    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/7/2018  | Box Butte  | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/7/2018  | Box Butte  | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/7/2018  | Box Butte  | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/7/2018  | Chase      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/7/2018  | Douglas    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/7/2018  | Garden     | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/7/2018  | Lincoln    | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 8/1/2018  | Red Willow | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/1/2018  | Red Willow | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 8/1/2018  | Red Willow | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/31/2018 | Dawes      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/31/2018 | Holt       | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/31/2018 | Holt       | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 7/31/2018 | Holt       | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 7/31/2018 | Holt       | <i>Culex unknown</i>  | 1 | 0 | 0 | 1 |
| 7/31/2018 | Wayne      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/25/2018 | Dawes      | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Box Butte  | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Box Butte  | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Box Butte  | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Dawson     | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex pipiens</i>  | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |
| 7/24/2018 | Douglas    | <i>Culex tarsalis</i> | 1 | 0 | 0 | 1 |






|              |              |                       |            |          |          |            |
|--------------|--------------|-----------------------|------------|----------|----------|------------|
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Douglas      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/24/2018    | Madison      | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/17/2018    | Garden       | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/17/2018    | Scotts Bluff | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/17/2018    | Wayne        | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 7/10/2018    | Box Butte    | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| 6/7/2018     | Lancaster    | <i>Culex pipiens</i>  | 1          | 0        | 0        | 1          |
| 6/6/2018     | Phelps       | <i>Culex tarsalis</i> | 1          | 0        | 0        | 1          |
| <b>Total</b> |              |                       | <b>109</b> | <b>0</b> | <b>0</b> | <b>109</b> |

# Mosquito Surveillance Nebraska CDC Light Trap Network, 2018

As of September 7



### Legend

-  West Nile Positive (WNV)
-  Routine Trapping Sites (28)
-  Surveillance Regions

### SLE Positive / Tested Totals

Mosquito Pools: 0 / 2067

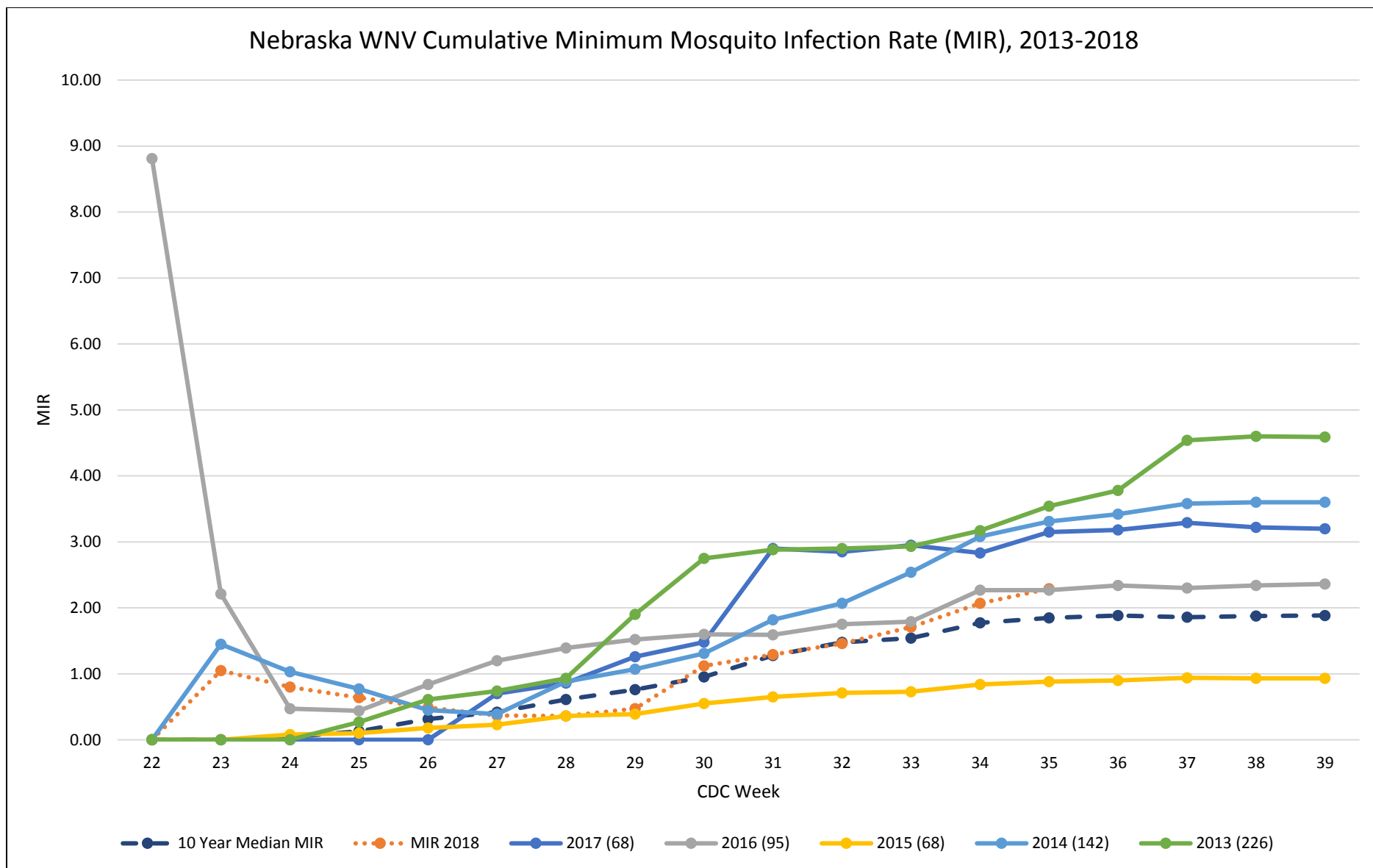
Counties: 0 / 28

### WNV Positive / Tested Totals

Mosquito Pools: 109 / 2067

Counties: 23 / 28

**Figure 1.** Positive mosquito pools in the Nebraska CDC light trap network, 2018.



**Figure 2.** Weekly Nebraska WNV Mosquito Cumulative Mosquito Minimum Infection Rate, 2013-2018. At the state level, the calculated statewide MIR is strongly correlated with the number of human clinical WNV cases. As such, comparisons during the season of the weekly cumulative MIR with previous seasons' cumulative MIRs may give an indication as to how severe a WNV season might be. Please note 2018 data is shown as a dotted line and the 10-year median as a dashed line. Numbers in parentheses next to years indicate the number of human WNV clinical cases reported that year.

## HUMAN MOSQUITO-BORNE DISEASE CASES

Weekly reported cases (confirmed and probable) of human clinical mosquito-borne disease infections in Nebraska residents is summarized in the table below (pg. 13 and 14). It includes human infections of West Nile virus (WNV), St. Louis Encephalitis virus (SLE), Western Equine Encephalitis virus (WEE), chikungunya (CHIKV), dengue (DENV), Zika, and malaria. Please note that cases are by earliest report date of infection not necessarily by date of onset. Table only includes reported cases that had exposure or onset of disease in 2018. All data is preliminary and may change as more information is received.

**Table 3. Reports of Mosquito-Borne Disease in Nebraska, 2018**

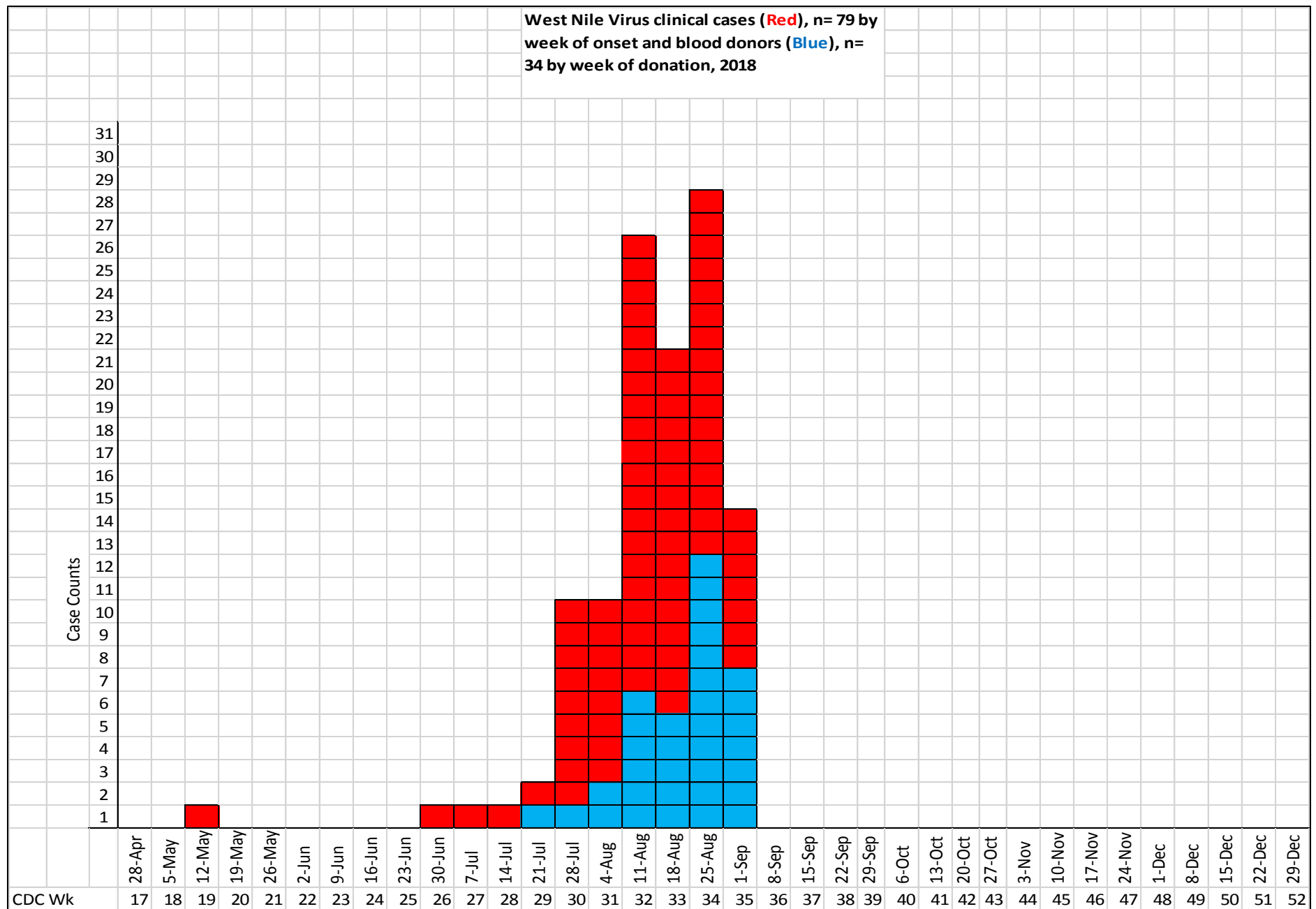
| CDC Week | Week Ending Date | WNV^<br>(Clinical Cases) | WNV^<br>(Asymptomatic Blood Donors) | SLE^ | WEE^ | CHIKV* | DENV* | ZIKA* | Malaria* | Total |
|----------|------------------|--------------------------|-------------------------------------|------|------|--------|-------|-------|----------|-------|
| 1        | 6-Jan-18         | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 2        | 13-Jan-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 3        | 20-Jan-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 4        | 27-Jan-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 5        | 3-Feb-18         | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 1        | 1     |
| 6        | 10-Feb-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 7        | 17-Feb-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 8        | 24-Feb-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 9        | 3-Mar-18         | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 10       | 10-Mar-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 11       | 17-Mar-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 12       | 24-Mar-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 13       | 31-Mar-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |
| 14       | 7-Apr-18         | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 1        | 1     |
| 15       | 14-Apr-18        | 0                        | 0                                   | 0    | 0    | 0      | 0     | 0     | 0        | 0     |

|    |              |           |           |          |          |          |          |          |          |            |
|----|--------------|-----------|-----------|----------|----------|----------|----------|----------|----------|------------|
| 16 | 21-Apr-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 17 | 28-Apr-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 18 | 5-May-18     | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 19 | 12-May-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 20 | 19-May-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 21 | 26-May-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 22 | 2-Jun-18     | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 23 | 9-Jun-18     | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 24 | 16-Jun-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 1        | 1          |
| 25 | 23-Jun-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 26 | 30-Jun-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 27 | 7-Jul-18     | 1         | 0         | 0        | 0        | 0        | 1        | 0        | 0        | 2          |
| 28 | 14-Jul-18    | 1         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 1          |
| 29 | 21-Jul-18    | 1         | 1         | 0        | 0        | 0        | 0        | 0        | 0        | 2          |
| 30 | 28-Jul-18    | 0         | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0          |
| 31 | 4-Aug-18     | 2         | 1         | 0        | 0        | 0        | 0        | 0        | 0        | 3          |
| 32 | 11-Aug-18    | 10        | 3         | 0        | 0        | 0        | 0        | 0        | 1        | 14         |
| 33 | 18-Aug-18    | 11        | 7         | 0        | 0        | 0        | 0        | 0        | 0        | 18         |
| 34 | 25-Aug-18    | 23        | 10        | 0        | 0        | 0        | 0        | 0        | 0        | 33         |
| 35 | 1-Sep-18     | 23        | 8         | 0        | 0        | 0        | 0        | 0        | 0        | 31         |
| 36 | 8-Sep-18     | 7         | 4         | 0        | 0        | 0        | 0        | 0        | 0        | 11         |
|    | <b>Total</b> | <b>79</b> | <b>34</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>1</b> | <b>0</b> | <b>4</b> | <b>118</b> |

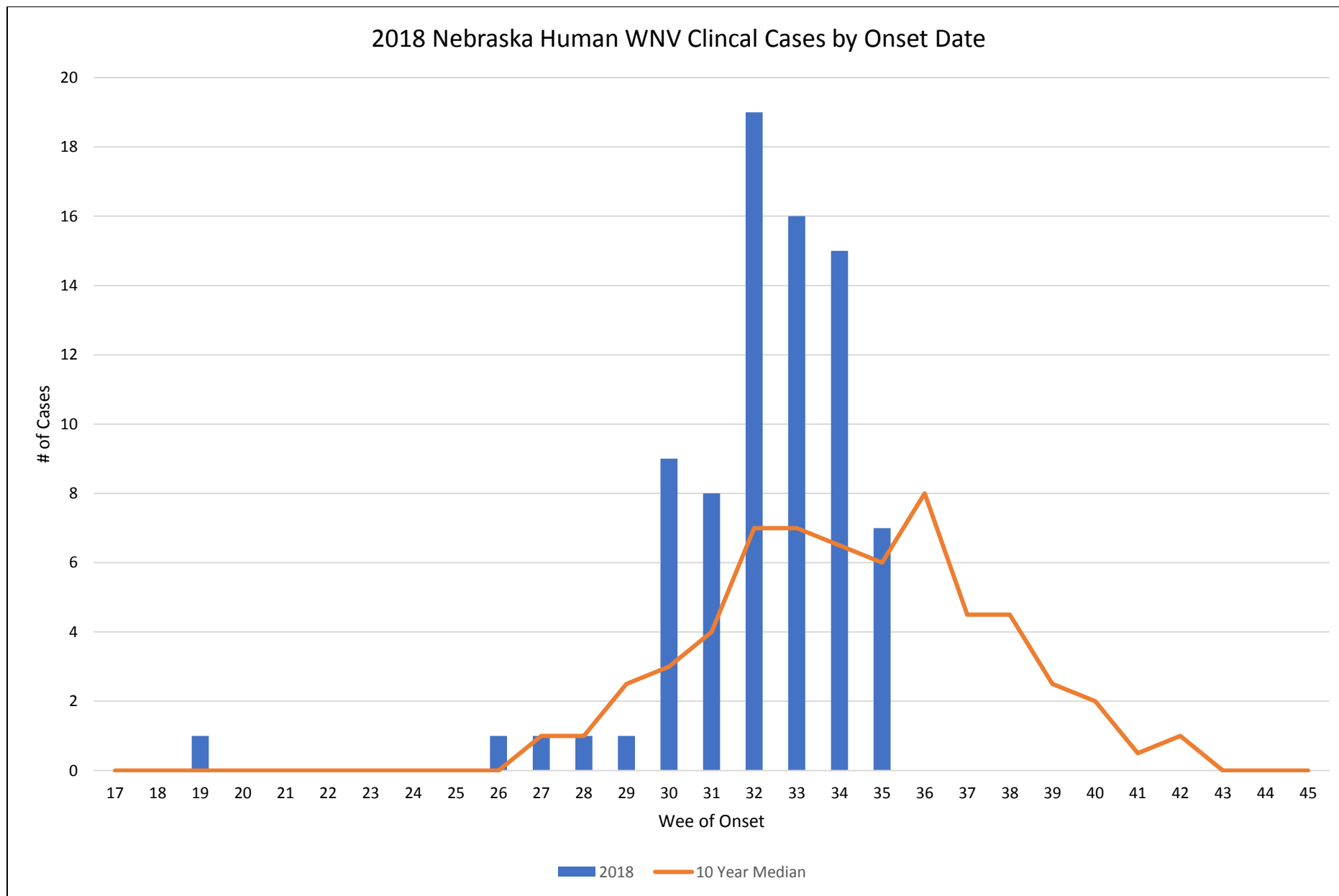
^These are endemic viruses that have been historically transmitted by mosquitoes in Nebraska and maybe acquired within the state. It should be noted that reports are for Nebraska residents and that infection may have been acquired elsewhere. \*These diseases are typically acquired via travel overseas to areas where the virus or parasite is endemic. Currently, Nebraska does not have local transmission via mosquitoes of these organisms and the probability of local transmission by local mosquitoes is thought to be very low and not expected. However, to further lower and prevent the chance of local transmission of these “travel-related” diseases, returning travelers or visitors from these areas should prevent mosquito bites for at least three weeks upon arrival to Nebraska. Additionally, although cases of CHIKV, DENV, and ZIKA are most often acquired via overseas travel, small areas of transmission and small, local outbreaks within the U.S. have occurred and may occur in the future. Examples of states that have seen local transmission include: Florida, (DENV, CHIKV, and ZIKA), Hawaii (DENV), and Texas (DENV, CHIKV, and ZIKA).

**Table 4. Human WNV Clinical Case Information, Nebraska 2018**

| <b>Age Range</b>              | <b>Number</b> |
|-------------------------------|---------------|
| 0 to 10                       | 0             |
| 11 to 20                      | 4             |
| 21 to 30                      | 7             |
| 31 to 40                      | 14            |
| 41 to 50                      | 13            |
| 51 to 60                      | 17            |
| 61 to 70                      | 9             |
| 71+                           | 15            |
| <b>Gender</b>                 |               |
| Male                          | 49            |
| Female                        | 30            |
| <b>Diagnosis</b>              |               |
| WNV Neuroinvasive Disease     | 42            |
| WNV Non-Neuroinvasive Disease | 37            |
| Hospitalized                  | 38            |
| Death                         | 3             |

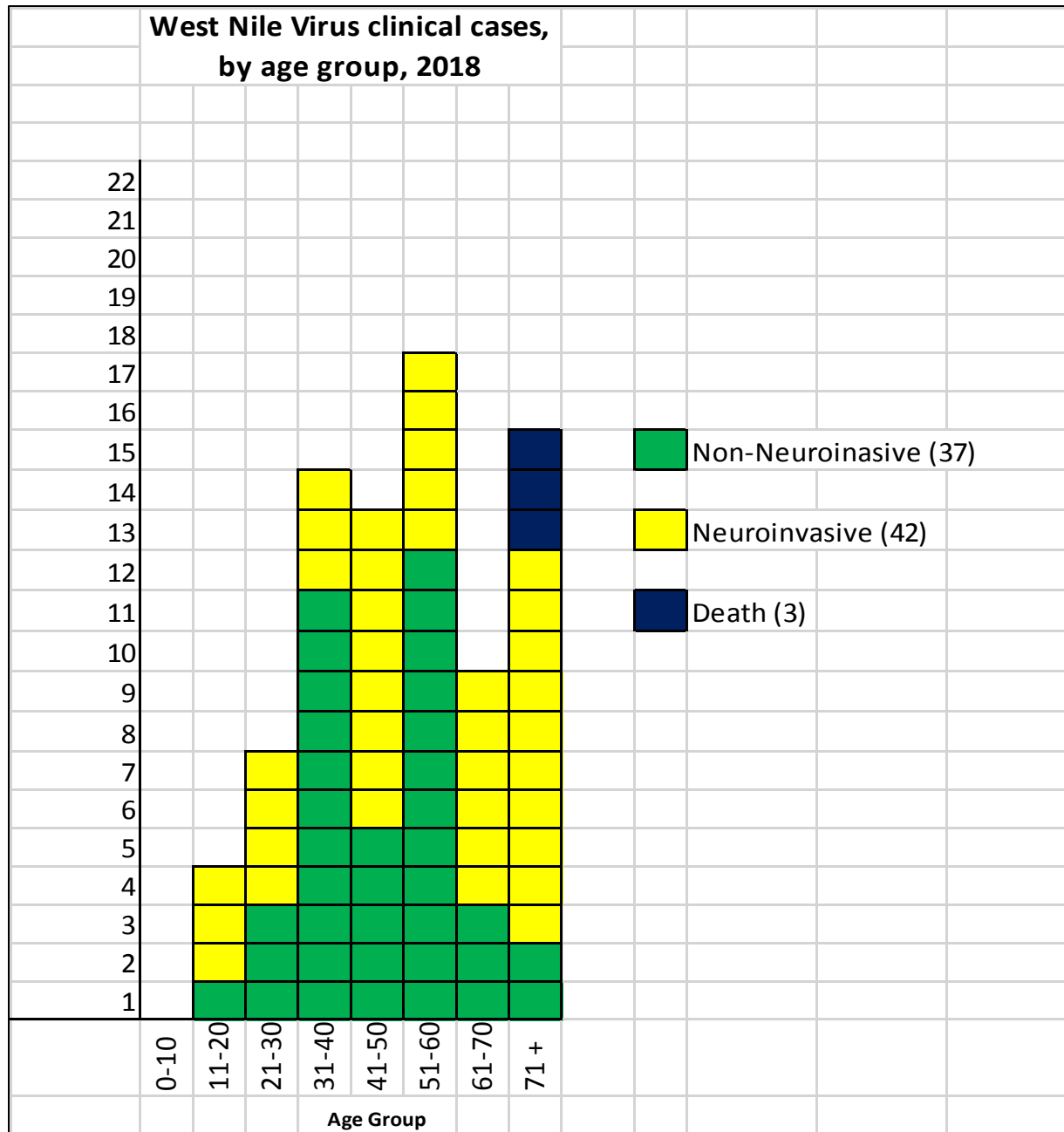


**Figure 3.** Epi-curve of human WNV infections (clinical and asymptomatic blood donors) by onset date, Nebraska 2018.



**Figure 4.** Epi-curve of human WNV clinical cases and 10 yr. median by onset date, Nebraska 2018.

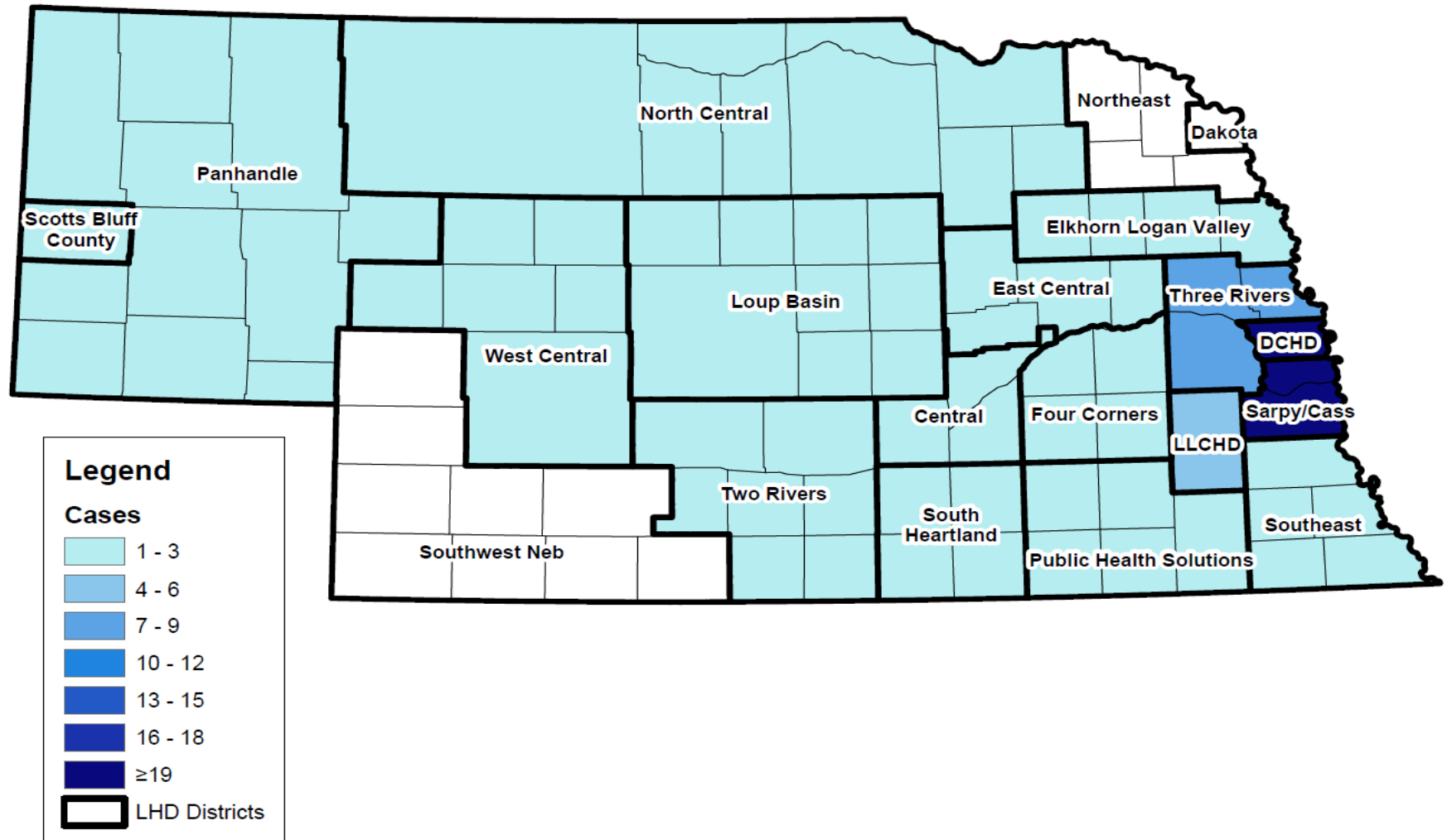




**Figure 5.** WNV human clinical cases by 10 year age groups, 2018.

# Human Clinical Positives for West Nile Virus, Nebraska, 2018, (n = 79)

As of September 7



**Figure 6.** Nebraska human clinical WNV cases by local health jurisdiction, 2018.

**Table 5. Number of Human WNV Clinical Cases by Onset Week and Nebraska Local Health Jurisdiction, 2018**

| CDC Wk.                                 | 17       | 18       | 19       | 20       | 21       | 22       | 23       | 24       | 25       | 26       | 27       | 28       | 29       | 30       | 31       | 32        | 33        | 34        | 35       | 36       |           |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|----------|----------|-----------|
| Local Health Dept. Jurisdiction         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |           |           |           |          |          | Total     |
| Central District Health Dept.           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 0        | 0        | 0        | 0        | 0         | 1         | 0         | 0        | 0        | 2         |
| Dakota County Health Dept.              | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0         | 0         | 0        | 0        | 0         |
| Douglas County Health Dept.             | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 2        | 1        | 9         | 7         | 4         | 2        | 0        | 25        |
| East Central District Health Dept.      | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 1         | 0         | 1        | 0        | 2         |
| Elkhorn-Logan Valley Health Dept.       | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 0        | 0         | 0         | 1         | 0        | 0        | 2         |
| Four Corners Health Dept.               | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0         | 0         | 0         | 0        | 0        | 1         |
| Lincoln-Lancaster County Health Dept.   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 0        | 0        | 1        | 1         | 2         | 1         | 0        | 0        | 6         |
| Loup Basin Public Health Dept.          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1         | 0         | 0         | 0        | 0        | 1         |
| North Central Distirct Health Dept.     | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 1         | 0         | 0         | 0        | 0        | 2         |
| Northeast Nebraska Public Health Dept.  | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0         | 0         | 0        | 0        | 0         |
| Panhandle Public Health Dept.           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 0         | 0         | 0         | 0        | 0        | 1         |
| Public Health Solutions                 | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0         | 1         | 0        | 0        | 1         |
| Sarpy-Cass Dept. of Health and Wellness | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 2        | 3        | 6         | 2         | 4         | 4        | 0        | 21        |
| Scotts Bluff County Health Dept.        | 0        | 0        | 1        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0         | 0         | 0        | 0        | 1         |
| South Heartland District Health Dept.   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0         | 1         | 0        | 0        | 1         |
| Southeast District Health Dept.         | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 1         | 0         | 0        | 0        | 1         |
| Southwest Nebraska Public Health Dept.  | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0         | 0         | 0        | 0        | 0         |
| Three Rivers Public Health Dept.        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 2        | 1        | 0         | 2         | 2         | 0        | 0        | 7         |
| Two Rivers Public Health Dept.          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 1        | 0        | 0         | 0         | 1         | 0        | 0        | 3         |
| West Central District Health Dept.      | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 1         | 0         | 0         | 0        | 0        | 2         |
| <b>Statewide Total</b>                  | <b>0</b> | <b>0</b> | <b>1</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>9</b> | <b>8</b> | <b>19</b> | <b>16</b> | <b>15</b> | <b>7</b> | <b>0</b> | <b>79</b> |

# Human Blood Donor Positives for West Nile Virus, Nebraska, 2018, (n = 34)

As of September 7

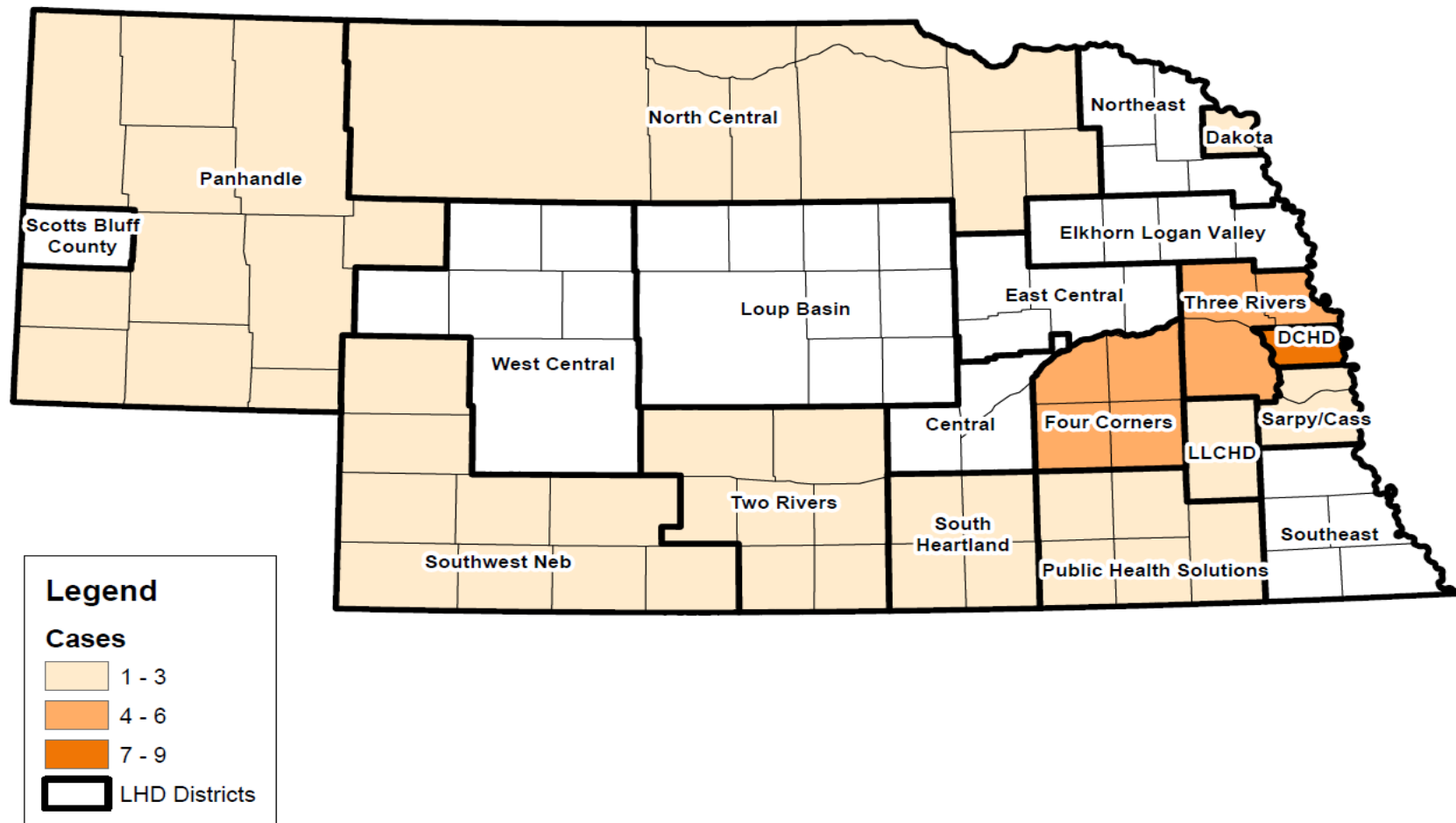


Figure 7. Nebraska asymptomatic WNV blood donors by local health jurisdiction, 2018.

**Table 6. Number of Human WNV Blood Donors by Week Reported and Nebraska Local Health Jurisdiction, 2018**

| CDC Wk.                                 | 17       | 18       | 19       | 20       | 21       | 22       | 23       | 24       | 25       | 26       | 27       | 28       | 29       | 30       | 31       | 32       | 33       | 34        | 35       | 36       |           |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|----------|-----------|
| Local Health Dept. Jurisdiction         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |           |          |          | Total     |
| Central District Health Dept.           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| Dakota County Health Dept.              | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0         | 0        | 0        | 1         |
| Douglas County Health Dept.             | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 2        | 2        | 0         | 4        | 1        | 9         |
| East Central District Health Dept.      | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| Elkhorn-Logan Valley Health Dept.       | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| Four Corners Health Dept.               | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 4         | 0        | 0        | 4         |
| Lincoln-Lancaster County Health Dept.   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 1         | 0        | 0        | 2         |
| Loup Basin Public Health Dept.          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| North Central District Health Dept.     | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0         | 0        | 0        | 1         |
| Northeast Nebraska Public Health Dept.  | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| Panhandle Public Health Dept.           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 1        | 0        | 1         |
| Public Health Solutions                 | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 0         | 0        | 1        | 2         |
| Sarpy-Cass Dept. of Health and Wellness | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 2        | 0         | 0        | 0        | 2         |
| Scotts Bluff County Health Dept.        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| South Heartland District Health Dept.   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1         | 1        | 1        | 3         |
| Southeast District Health Dept.         | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| Southwest Nebraska Public Health Dept.  | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1        | 0        | 1        | 0        | 0        | 0         | 0        | 1        | 3         |
| Three Rivers Public Health Dept.        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 3         | 2        | 0        | 5         |
| Two Rivers Public Health Dept.          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1         | 0        | 0        | 1         |
| West Central District Health Dept.      | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0         |
| <b>Statewide Total</b>                  | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>1</b> | <b>0</b> | <b>1</b> | <b>3</b> | <b>7</b> | <b>10</b> | <b>8</b> | <b>4</b> | <b>34</b> |

**Comment:** WNV is the most widespread, locally acquired mosquito-borne disease in Nebraska. The state has one of the highest incidences of WNV in the U.S. and the virus is highly endemic to the state. **Fifty-seven human clinical cases have been reported in Nebraska residents to date along with 30 positive asymptomatic human blood donors.** Additionally, **67 positive WNV mosquito pools have been detected indicating WNV continues to circulate in the environment.** Overall WNV risk is typically highest during the month of August and will begin to decline as we go through the month of September. However, there will still be some risk to becoming infected with WNV until the first hard frost of the season takes care of the mosquito activity. It is important to note that there are many factors that come into play in determining an individual person's risk of acquiring WNV and other mosquito-borne diseases. **Low WNV activity or no WNV activity detected DOES NOT mean NO RISK!** For travel related mosquito-borne diseases (confirmed and probable cases), three cases of malaria (South Sudan= 1 and Togo= 2) and one case of dengue (Thailand= 1) have been reported this year. Anytime mosquitoes are active there is always the possibility of acquiring WNV or another mosquito-borne disease and proper mosquito prevention methods should be utilized both here at home and when traveling abroad. Examples include:

- Applying an EPA approved mosquito repellent (DEET, picaridin, oil of lemon eucalyptus, or IR3535).
- Limiting exposure when outdoors by wearing long sleeve shirts and pants.
- Limiting time spent outdoors when mosquitoes are most active, typically dusk to midnight.
- Getting rid of standing water that mosquitoes may breed in at least once a week. Remember to change water in outdoor pet watering dishes along with bird baths and dump out water in flower pots, garden containers, or other objects that may hold water.

For more information on mosquito-borne diseases and prevention information please visit the following websites:

<http://dhhs.ne.gov/wnv> (Nebraska Department of Health and Human Services WNV Surveillance Program web site).

<http://dhhs.ne.gov/publichealth/EPI/Pages/Mosquito-borne.aspx> (Nebraska Department of Health and Human Services Mosquito-Borne Disease web site and links to downloadable educational pamphlets).

<https://www.cdc.gov/westnile/> (CDC West Nile Virus web site).

<https://www.cdc.gov/sle/> (CDC St. Louis Encephalitis Virus web site).

<https://www.cdc.gov/chikungunya/index.html> (CDC Chikungunya Virus web site).

<https://www.cdc.gov/dengue/index.html> (CDC Dengue Virus web site).

<https://www.cdc.gov/zika/index.html> (CDC Zika Virus web site).

<https://www.cdc.gov/parasites/malaria/index.html> (CDC Malaria web site).

<https://www.cdc.gov/features/stopmosquitoes/index.html> (CDC Avoid Mosquito Bites web site).

## MOSQUITO RESULTS

The Nebraska CDC light trap network consists of 143 traps set across the state to monitor mosquito populations and test for the presence of arboviruses circulating in the state's mosquito populations.

Total mosquito and *Culex* mosquito counts from CDC light traps are described in relative terms based on individual historical county data and are depicted in the tables below:

| 0 to 40th percentile | 41st to 60th percentile | 61st to 80th percentile | 81st to 97th percentile | >97th percentile |
|----------------------|-------------------------|-------------------------|-------------------------|------------------|
| Low                  | Mod.                    | High                    | Very High               | Extremely High   |

The individual county mosquito trapping data for the final trap period can be found on pg. 23-24.

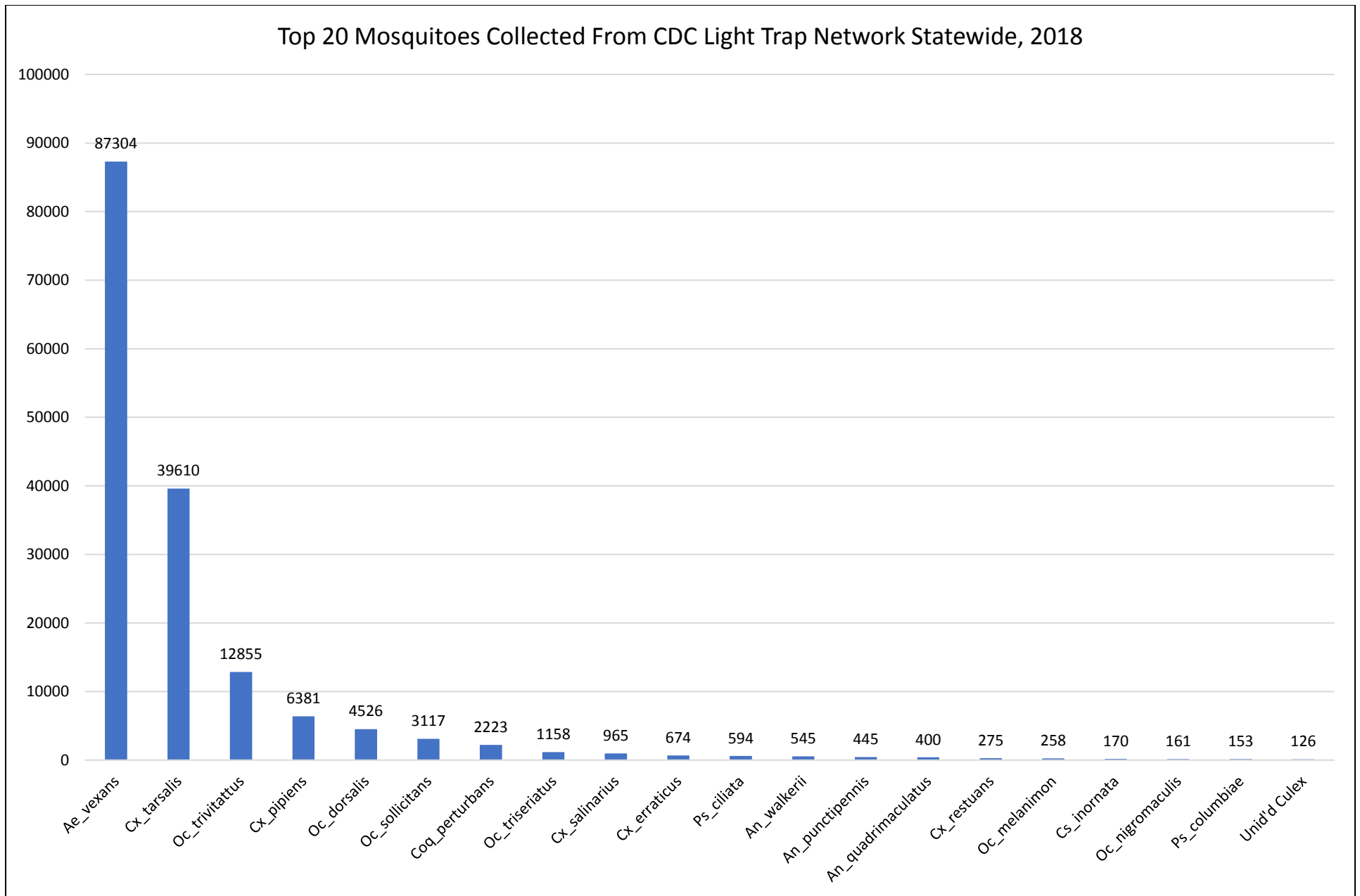
**Table 7. Nebraska CDC Light Trap Network Mosquito Results, 2018**

|                       | CDC Weeks 34/35 |               |
|-----------------------|-----------------|---------------|
| Region/County         | Total Mosquito  | Total Culex   |
| <b>West Region</b>    | <b>133.10</b>   | <b>55.10</b>  |
| Box Butte             | 77.33           | 59.33         |
| Chase                 | 8.67            | 7.67          |
| Cherry                | 57.83           | 21.50         |
| Dawes                 | 137.67          | 4.50          |
| Garden                | 316.17          | 188.50        |
| Lincoln               | 337.50          | 90.50         |
| Red Willow            | 43.00           | 26.67         |
| Scotts Bluff          | 86.67           | 42.17         |
|                       |                 |               |
|                       | CDC Weeks 34/35 |               |
| Region/County         | Total Mosquito  | Total Culex   |
| <b>Central Region</b> | <b>165.86</b>   | <b>114.22</b> |

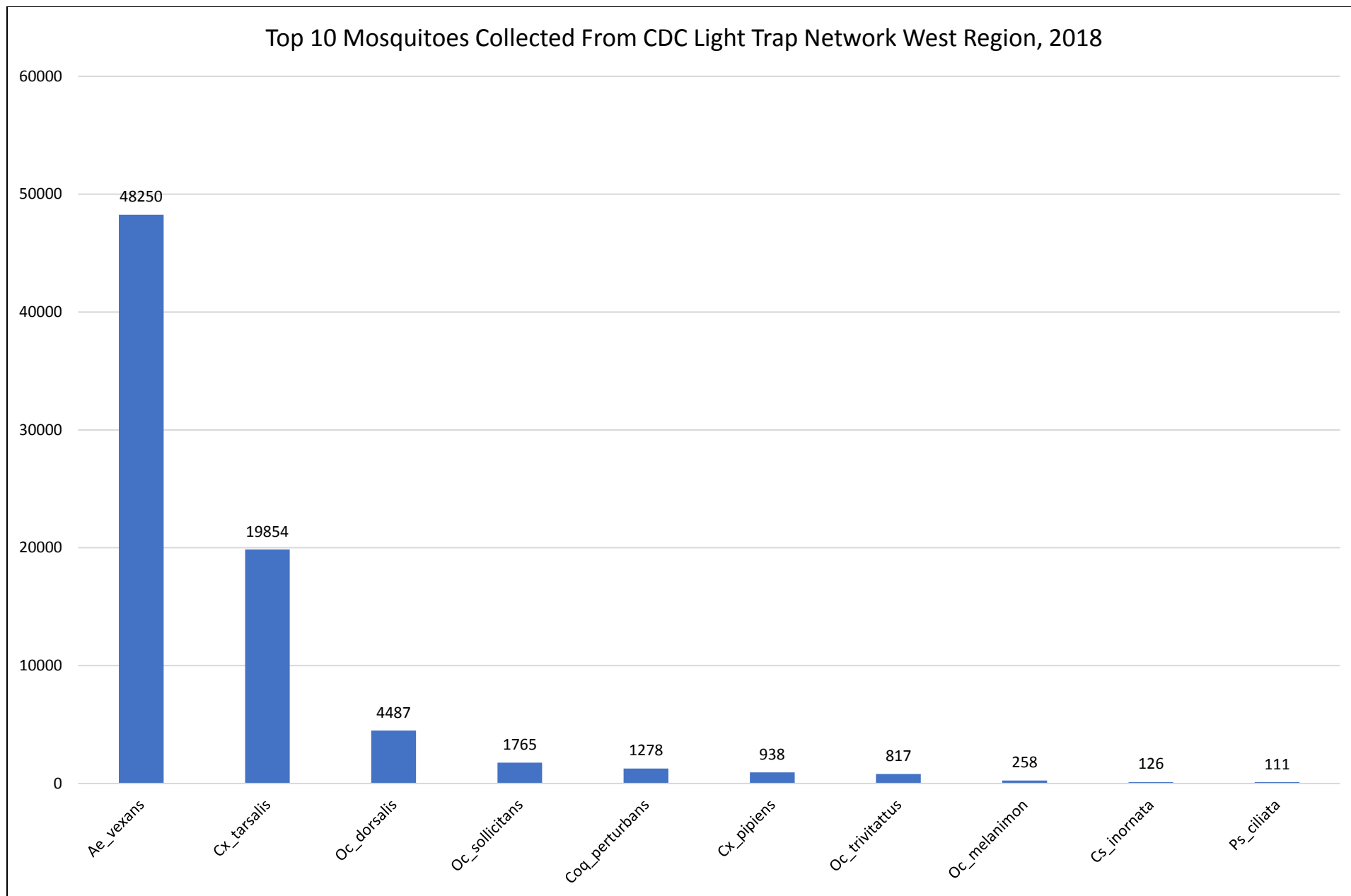
|                      |                       |                    |
|----------------------|-----------------------|--------------------|
| Adams                | 415.33                | 395.67             |
| Buffalo              | ND                    | ND                 |
| Dawson               | 147.33                | 146.50             |
| Garfield             | 157.33                | 117.00             |
| Hall                 | 89.67                 | 77.83              |
| Holt                 | 330.00                | 99.83              |
| Phelps               | 102.50                | 79.25              |
| Webster              | 22.50                 | 12.50              |
|                      |                       |                    |
|                      | CDC Weeks 34/35       |                    |
| <b>Region/County</b> | <b>Total Mosquito</b> | <b>Total Culex</b> |
| <b>East Region</b>   | <b>137.98</b>         | <b>67.87</b>       |
| Dixon                | 201.00                | 173.67             |
| Dodge                | 31.60                 | 19.40              |
| Douglas              | 44.00                 | 35.83              |
| Gage                 | 37.00                 | 21.00              |
| Jefferson            | 401.25                | 172.50             |
| Lancaster            | 211.67                | 65.83              |
| Madison              | 88.00                 | 18.17              |
| Platte               | 107.00                | 72.20              |
| Richardson           | 78.83                 | 73.67              |
| Seward               | ND                    | ND                 |
| Wayne                | 279.00                | 83.33              |
| York                 | ND                    | ND                 |

Each county or region represents the average for all CDC light trapping sites in that county or region. ND= No Data.

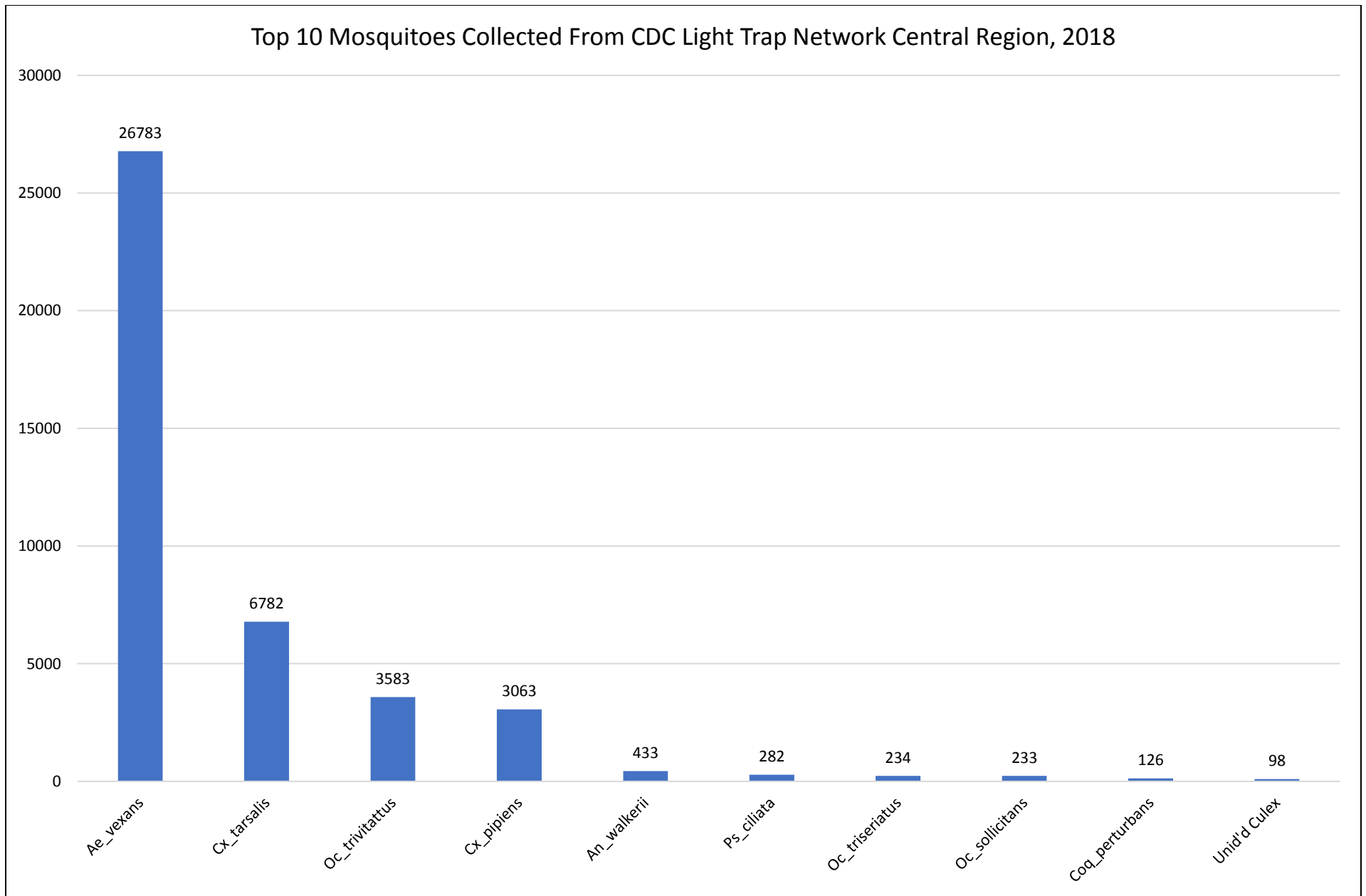




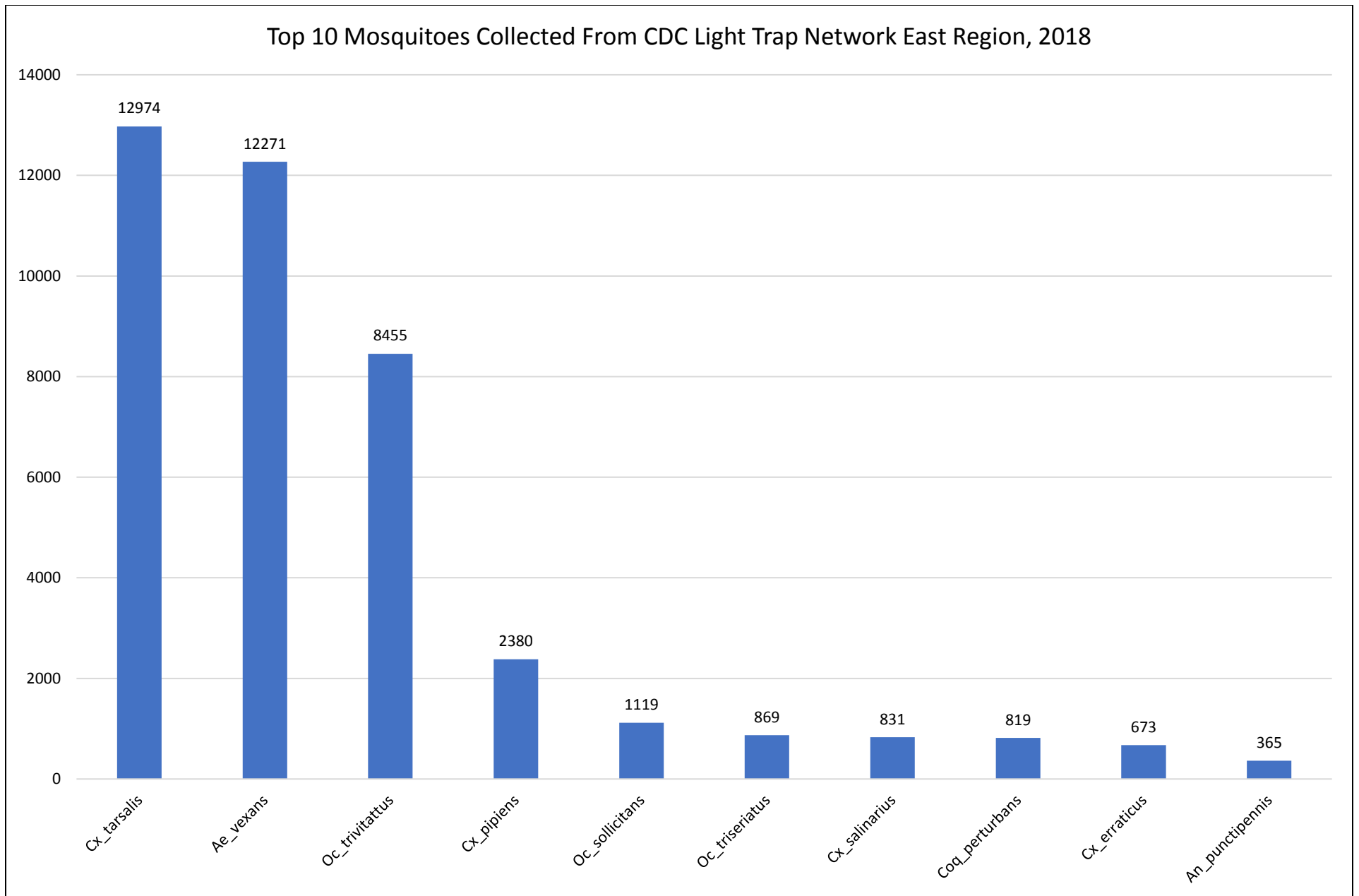
**Figure 8.** Top 20 cumulative mosquitoes collected statewide from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culex*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.



**Figure 9.** Top 10 cumulative mosquitoes collected in West region of the state from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culex*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, and Unid'd= Unidentified.



**Figure 10.** Top 10 cumulative mosquitoes collected in Central region of the state from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culex*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, and Unid'd= Unidentified.



**Figure 11.** Top 10 cumulative mosquitoes collected in East region of the state from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culex*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, and Unid'd= Unidentified.

The Nebraska BG Sentinel 2 trap network was established to better survey areas of eastern and southeastern Nebraska for the presence of the invasive *Aedes albopictus* (Asian tiger) mosquito. During the season, four local health departments will participate in this trap network including: Douglas County Health Dept., Lincoln-Lancaster Health Dept., Sarpy-Cass Health Dept., and Southeast District Health Dept. For the season, counting all trap sites and types (CDC light and BG sentinel 2) from across the state, a total of 164,201 mosquitoes were captured with 162 (0.099%) *Aedes albopictus* collected.

**Table 8. Cumulative Trap Collections in Counties Performing BG Sentinel 2 Trapping, 2018.**

| County                              | Trap Type     | Total Mosquitoes | Total Culex | Total Ae_albopictus |
|-------------------------------------|---------------|------------------|-------------|---------------------|
| Cass                                | CDC Light     | NA               | NA          | NA                  |
|                                     | BG Sentinel 2 | 3                | 2           | 0                   |
| <b>Cass Co. Overall Total</b>       |               | <b>3</b>         | <b>2</b>    | <b>0</b>            |
|                                     |               |                  |             |                     |
| Douglas                             | CDC Light     | 7616             | 4255        | 0                   |
|                                     | BG Sentinel 2 | 1086             | 360         | 0                   |
| <b>Douglas Co. Overall Total</b>    |               | <b>8702</b>      | <b>4615</b> | <b>0</b>            |
|                                     |               |                  |             |                     |
| Lancaster                           | CDC Light     | 2727             | 594         | 0                   |
|                                     | BG Sentinel 2 | 201              | 92          | 0                   |
| <b>Lancaster Co. Overall Total</b>  |               | <b>2928</b>      | <b>686</b>  | <b>0</b>            |
|                                     |               |                  |             |                     |
| Nemaha                              | CDC Light     | NA               | NA          | NA                  |
|                                     | BG Sentinel 2 | 8                | 7           | 0                   |
| <b>Nemaha Co. Overall Total</b>     |               | <b>8</b>         | <b>7</b>    | <b>0</b>            |
|                                     |               |                  |             |                     |
| Otoe                                | CDC Light     | NA               | NA          | NA                  |
|                                     | BG Sentinel 2 | 1                | 0           | 0                   |
| <b>Otoe Co. Overall Total</b>       |               | <b>1</b>         | <b>0</b>    | <b>0</b>            |
|                                     |               |                  |             |                     |
| Richardson                          | CDC Light     | 1791             | 1121        | 104                 |
|                                     | BG Sentinel 2 | 153              | 83          | 58                  |
| <b>Richardson Co. Overall Total</b> |               | <b>1944</b>      | <b>1204</b> | <b>162</b>          |
|                                     |               |                  |             |                     |
| Sarpy                               | CDC Light     | NA               | NA          | NA                  |
|                                     | BG Sentinel 2 | 89               | 79          | 0                   |
| <b>Sarpy Co. Overall Total</b>      |               | <b>89</b>        | <b>79</b>   | <b>0</b>            |
|                                     |               |                  |             |                     |

|                      |  |              |             |            |
|----------------------|--|--------------|-------------|------------|
| <b>Overall Total</b> |  | <b>13675</b> | <b>6593</b> | <b>162</b> |
|----------------------|--|--------------|-------------|------------|

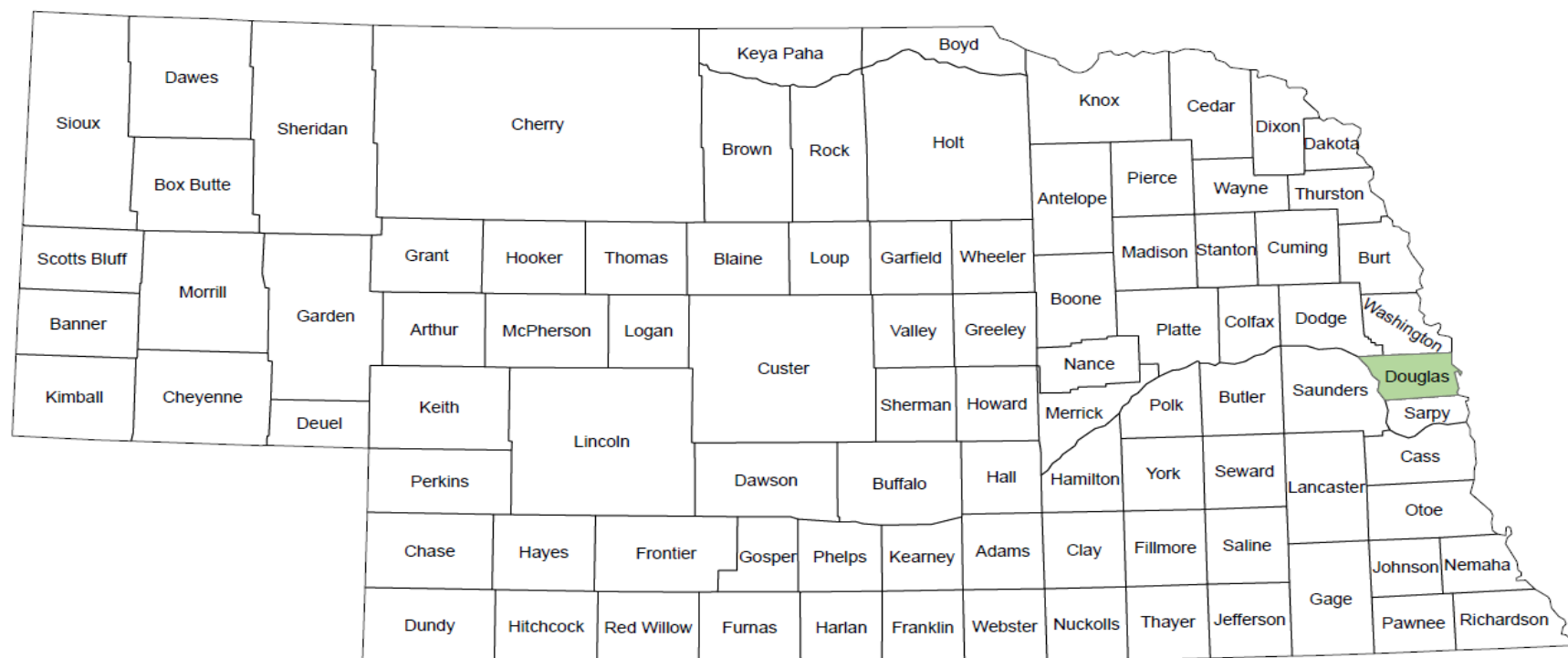
Note: ND= No data, NA = Not applicable.

## Bird and Equine Surveillance

**Dead bird reporting:** For the season, 130 dead birds have been reported to the Nebraska DHHS dead bird database. Of these, seven have met the established criteria for WNV testing. One WNV positive has been reported from Douglas County (see Figure 12 below). Additionally, four have been negative and two were unsuitable for testing.

# West Nile Virus Dead Bird Surveillance 2017

As of September 7



## Legend

Positive

## Positive / Tested Totals

Birds: 1 / 7

Figure 12. Positive WNV birds detected in the Nebraska, 2018.

**Equine surveillance:** For the season no equine WNV case has been reported to the Nebraska DHHS.



**Fight the Bite!!**