NEBRASKA ARBOVIRUS SURVEILLANCE AND MOSQUITO MONITORING PROGRAM 2018 UPDATE #17

Date: 10/15/2018. Please note that mosquito collections and dead bird reporting have ceased for the season. All data is provisional and may change.

SUMMARY

- **Climate:** During the surveillance season, precipitation was below normal in the eastern part and above normal of the state during the month of May. June saw rainfall above normal over most of the state, particularly in the east central and northeast portions of Nebraska. During July, below normal precipitation fell in eastern and southeastern areas of the state, while central, north central, and areas of the panhandle experienced above normal rainfall for the month. August and September saw similar rainfall patterns with the eastern portions of Nebraska seeing above normal precipitation while western portions saw below normal rainfall over the two months. Average temperatures during May and June were above normal over eastern Nebraska particularly during the month of May. July and August temperature patterns were different than the early part of the season, with below normal temps seen across most of the state during these two months. September then saw a return of above normal temps over most of the state. Per the United States Drought Monitor, at the end of May, areas of abnormally dry and moderate drought conditions had developed over parts of east central, south central, and southeast Nebraska. June, July, and August continued to see areas of abnormally dry and moderate drought but the total area had decreased overall and most of the area was located in south central and southeastern portions of Nebraska. By the end of September most of the dry and drought conditions had been removed from the state.
- **Three Month Forecast:** For October 2018 to December 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:** Mosquito surveillance has concluded for the season. Individual county collection data can be found on page 44. Floodwater mosquitoes, *Aedes vexans* (inland floodwater mosquito) and *Ochlerotatus trivittatus* (plains floodwater mosquito) counts made up the majority of trap collections (56.0%) in the region during the season while *Culex* mosquito counts made up 34.4% of collections. 180 invasive *Aedes albopictus* (Asian tiger mosquito) were collected from the region during the surveillance season. 179 were from traps in Richardson County that have collected the mosquito historically and one additional specimen was collected from a trap in Douglas County. While this is not the first time *Aedes*

albopictus has been collected in Douglas County (Janousek and et al. 2001), this is the first time it has been collected from Douglas County traps in the Nebraska DHHS trap networks.

- **Mosquito Numbers- Central Nebraska:** Mosquito surveillance has concluded for the season. Individual county collection data can be found on page 44. The common floodwater mosquitoes, *Aedes vexans* made up the majority of trap collections (59.3%) in the region during the season while *Culex* mosquito counts made up 27.00% of collections. No invasive *Aedes albopictus* were collected from the region.
- **Mosquito Numbers- Western Nebraska:** Mosquito surveillance has concluded for the season. Individual county collection data can be found on page 44. The common floodwater mosquitoes, *Aedes vexans* made up the majority of trap collections (61.6%) in the region during the season while *Culex* mosquito counts made up 26.6% of collections. No invasive *Aedes albopictus* were collected from the region.
- **Arboviral Detections:** For the season, 2,577 *Culex* pools have were tested with **122 WNV positives detected** in 25 of the 28 counties in the CDC light trap network. Regionally, the east region reported the most positive WNV pools with 44 followed by the west (41), and the central (37) regions. Taking into consideration the number of trap nights carried out in each region during the season, the average number of positive pools per trap night was well below average in both the central and west regions but well above average in the east (see Table 3). Additionally, the WNV cumulative statewide minimum mosquito infection rate was 2.21/1,000 *Culex* and was above the 10-year median of 1.88/1,000 *Culex*. No positive pools for St. Louis Encephalitis (SLE) or Western Equine Encephalitis (WEE) viruses were detected over the course of the season.
- **Dead Bird Surveillance:** Reporting of dead birds has concluded for the season. A total of 138 birds were reported throughout the surveillance season. Of the 138 birds reported, 12 were corvid birds (bird group most heavily impacted by WNV and includes: blue jays, crows, and magpies). Of the eight birds that met criteria for WNV testing, five were negative, two birds were unsuitable for testing, and one was positive.
- **Equine Surveillance:** Currently two equine cases of WNV have been reported for the season, one each from Cherry and Dakota counties.
- **Human Mosquito-borne Disease Cases: 225 human clinical WNV cases** have currently been reported along with **46 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, **11 deaths related to WNV have also been reported in the state**. A total of six travel-related mosquito-borne disease have occurred in state residents: five malaria cases (all five were acquired in Africa) and one dengue case (acquired in Southeast Asia).

Comment: ***Human clinical (symptomatic) WNV cases continue to be reported and there are now 225 reported in Nebraska residents to date, 110 of which are the more severe neuroinvasive form. This is the most neuroinvasive cases reported in Nebraska since the 2003 outbreak year. Unfortunately, 11 deaths related to WNV have now been reported in the state. This is the second most WNV related deaths reported in a season in Nebraska. Additionally, asymptomatic human blood donors also increased with 46 now reported. Overall human case counts are significantly above what would be expected, especially in the eastern portion of the state. Furthermore, 122 WNV mosquito pools were detected from mosquito samples this season. With the first hard frost of the season occurring in most areas of Nebraska, risk of WNV infection will be near zero. However, an additional, six travel-related mosquito-borne illness cases, five 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 have ceased for the season.

SOURCES:

Janousek T.E., Plagge, J., and Kramer, W.L. 2001. Record of *Aedes albopictus* in Nebraska with notes on its biology. Journal of the American Mosquito Control Association, 17(4): 265-267.

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.

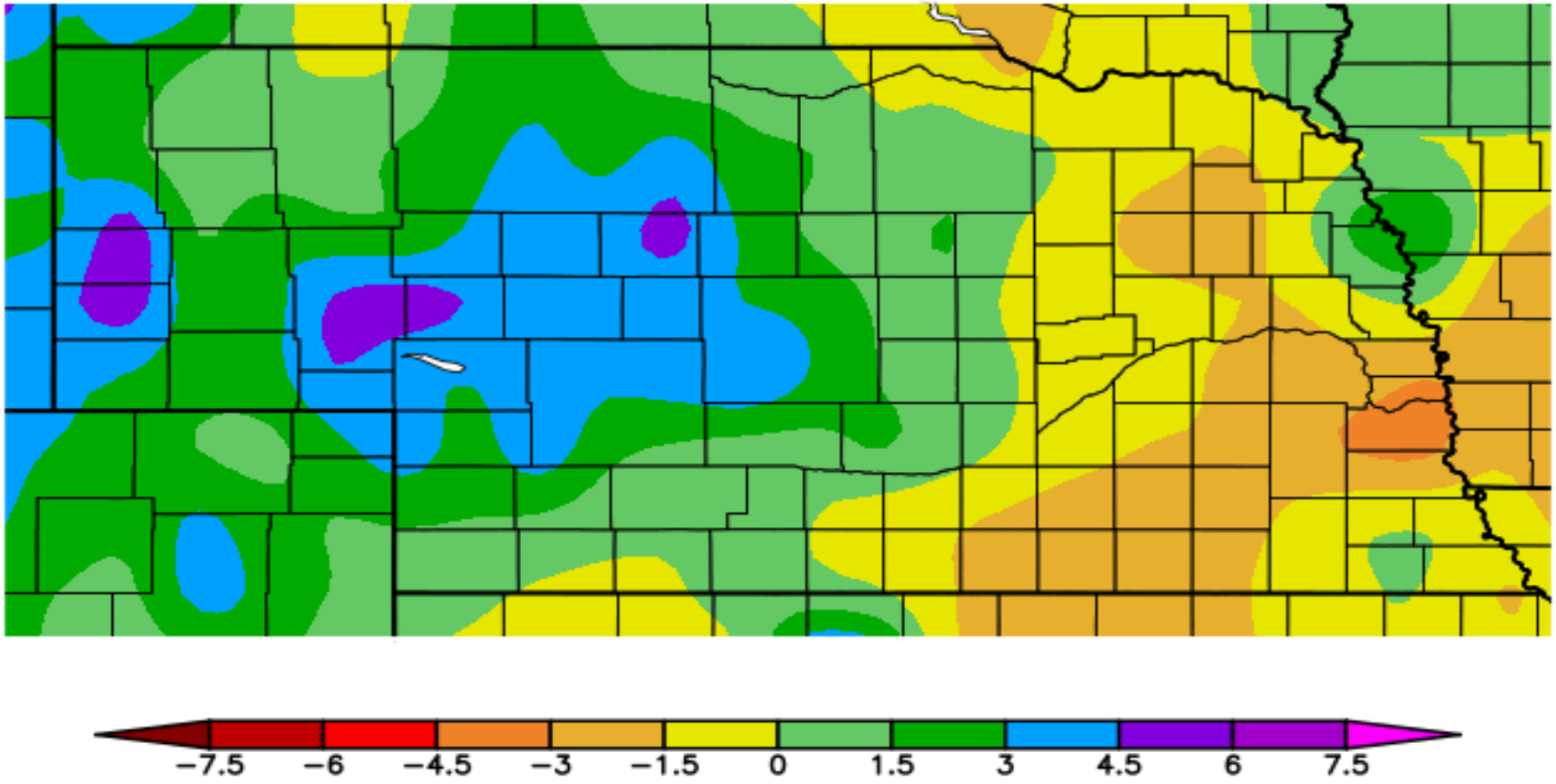
Rainfall and Temperature

During the surveillance season, precipitation was below normal in the eastern part and above normal of the state during the month of May. June saw rainfall above normal over most of the state, particularly in the east central and northeast portions of the state. During July, below normal precipitation fell in eastern and southeastern areas of the state, while central, north central, and areas of the panhandle experienced above normal rainfall for the month. August and September saw similar rainfall patterns with the eastern portions of Nebraska seeing above normal precipitation while western portions saw below normal rainfall over the two months. Average temperatures during May and June were above normal over eastern Nebraska particularly during the month of May. July and August had temperature patterns different than the early part of the season, with below normal temps seen across most of the state during these two months. September then saw a return of above normal temps 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

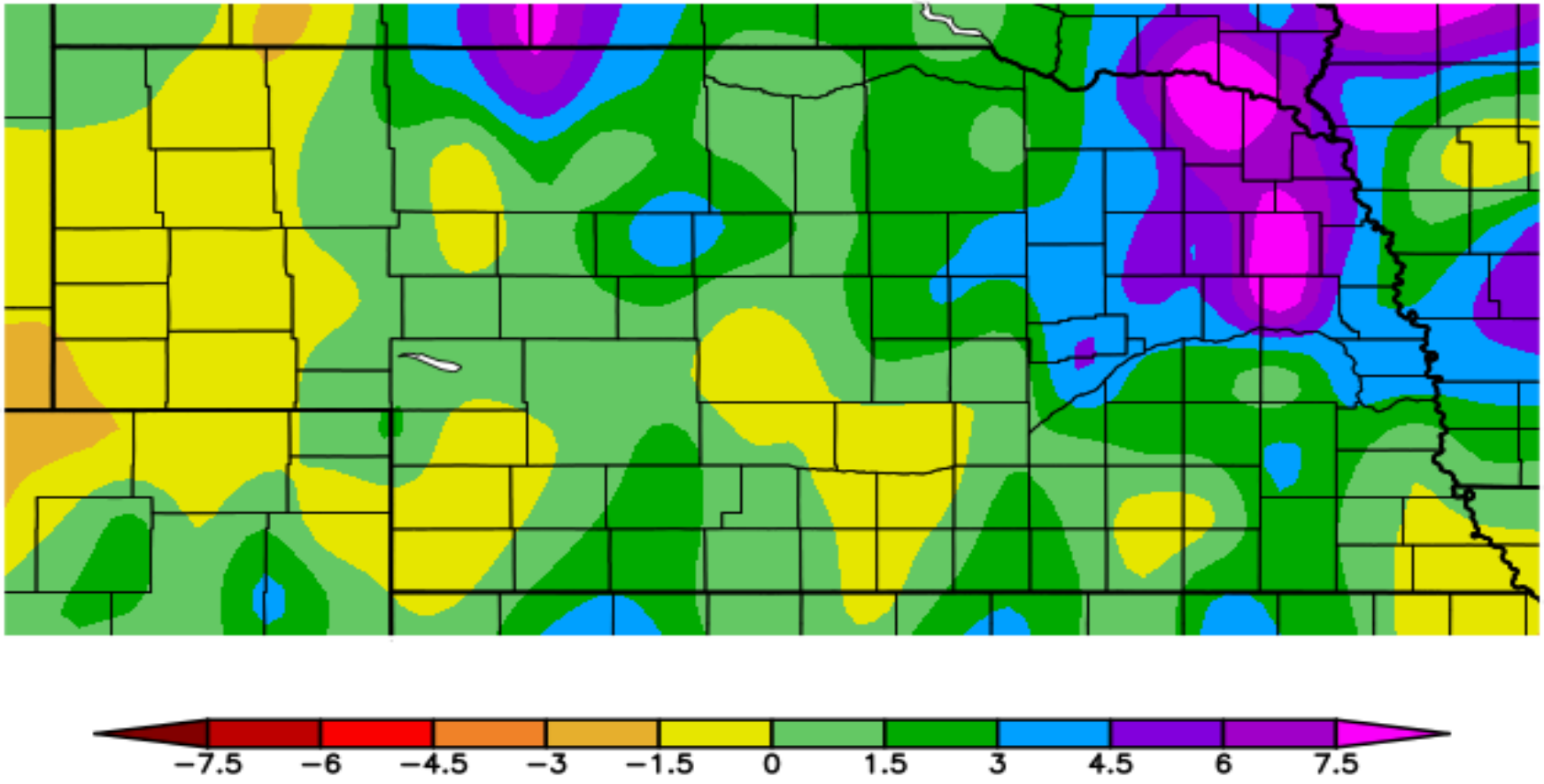
Departure from Normal Precipitation (in)
5/1/2018 – 5/31/2018



Generated 6/10/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

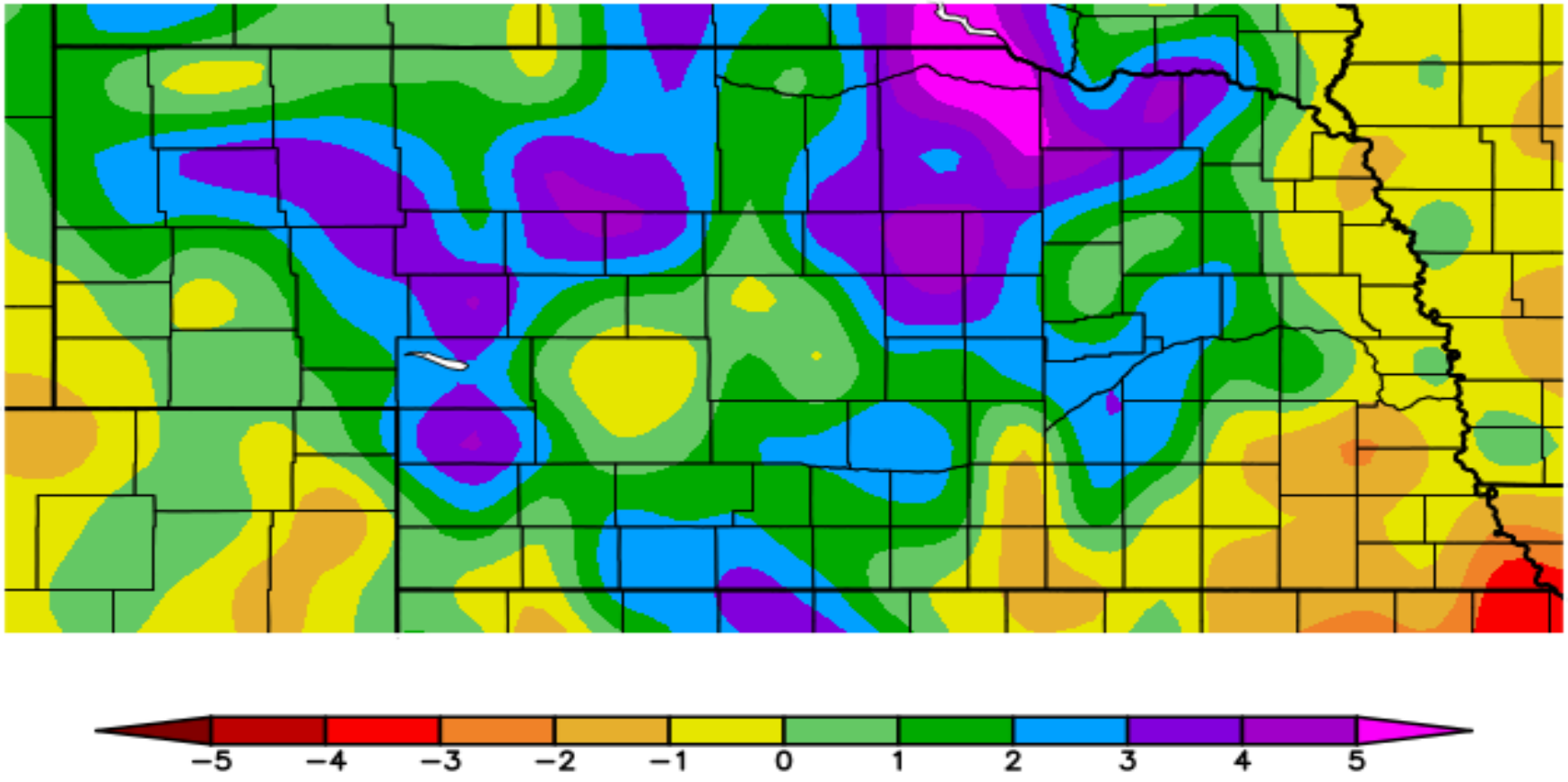
Departure from Normal Precipitation (in)
6/1/2018 – 6/30/2018



Generated 7/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

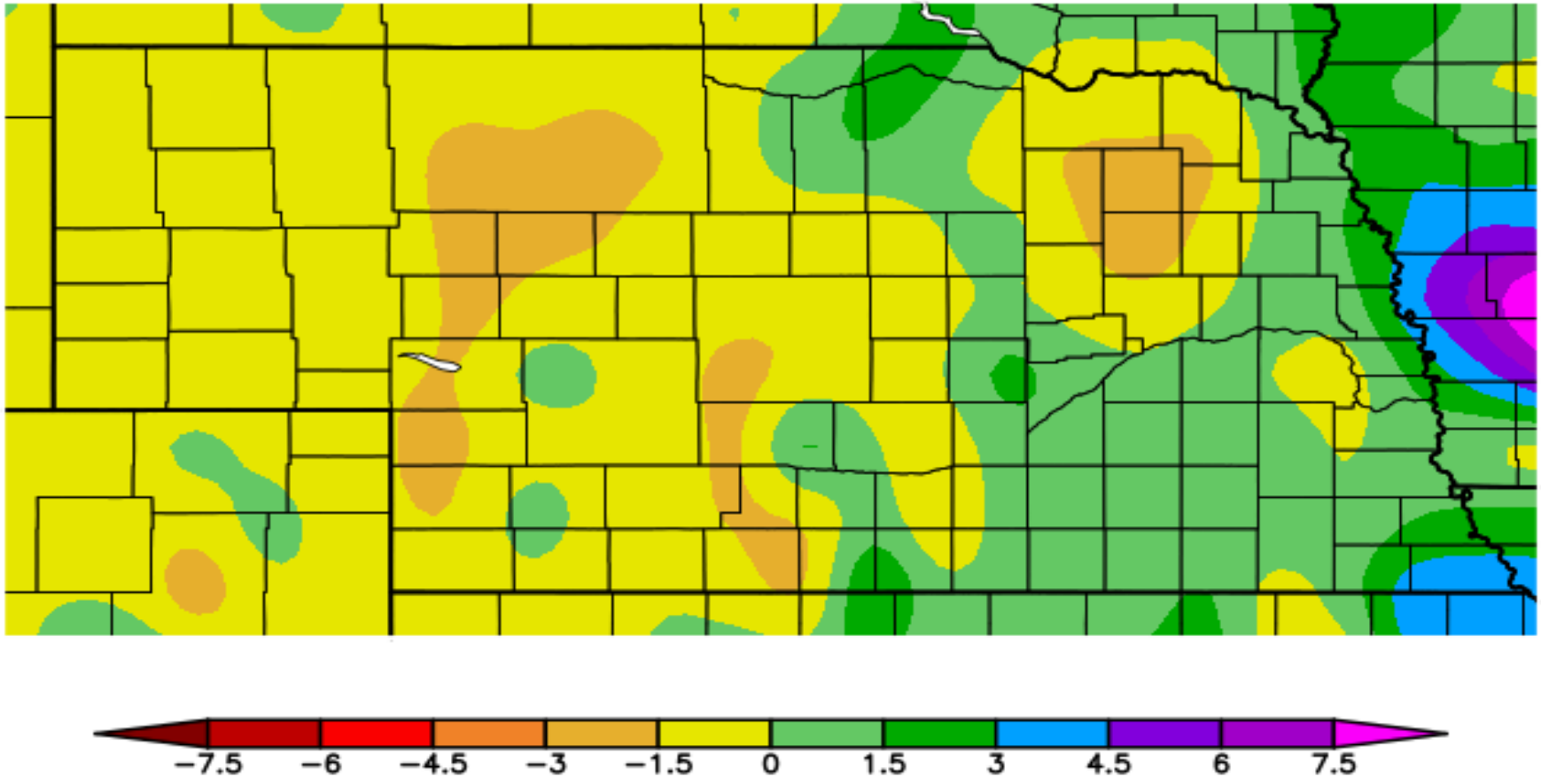
Departure from Normal Precipitation (in)
7/1/2018 – 7/31/2018



Generated 8/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

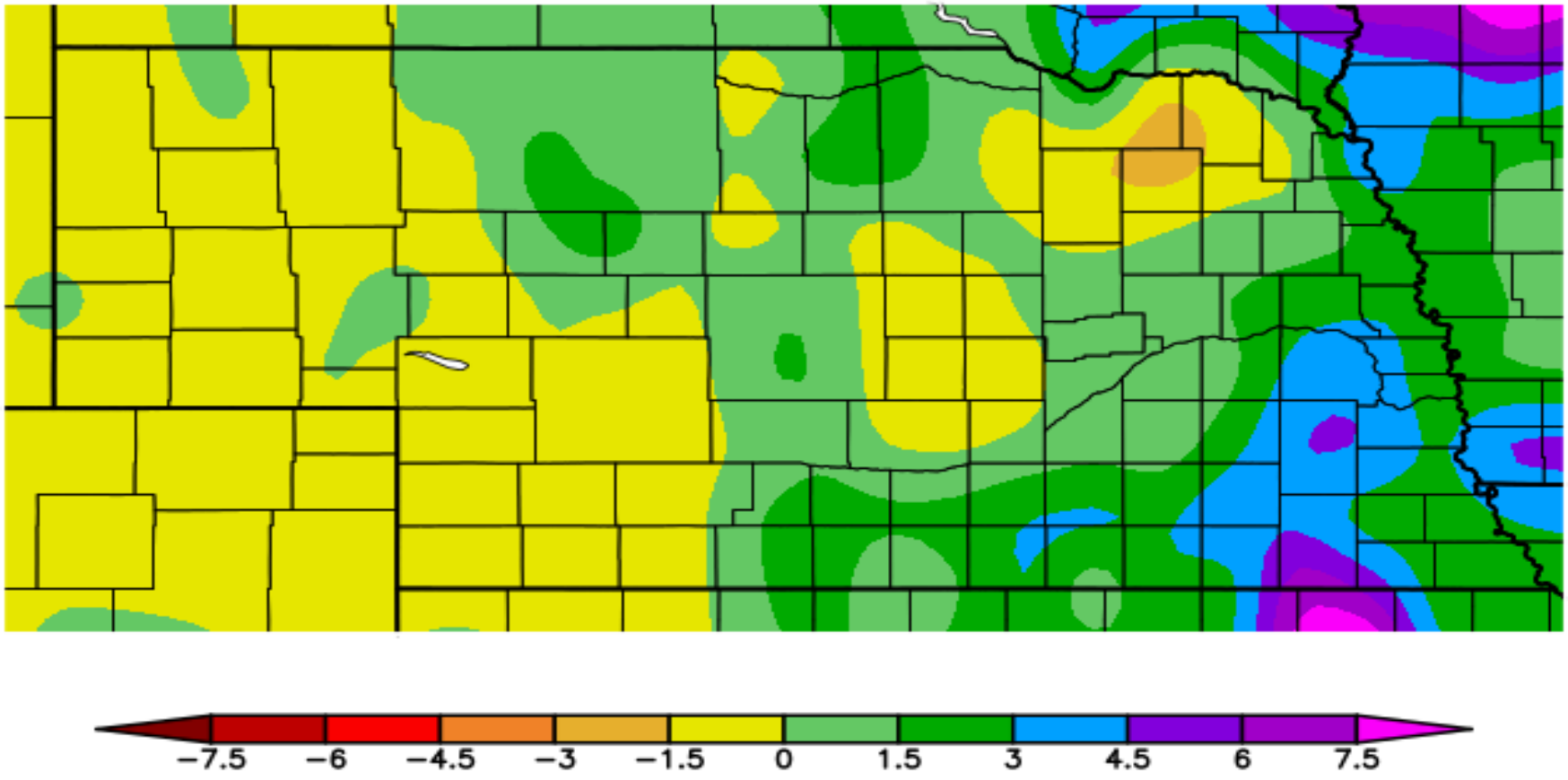
Departure from Normal Precipitation (in)
8/1/2018 – 8/31/2018



Generated 9/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

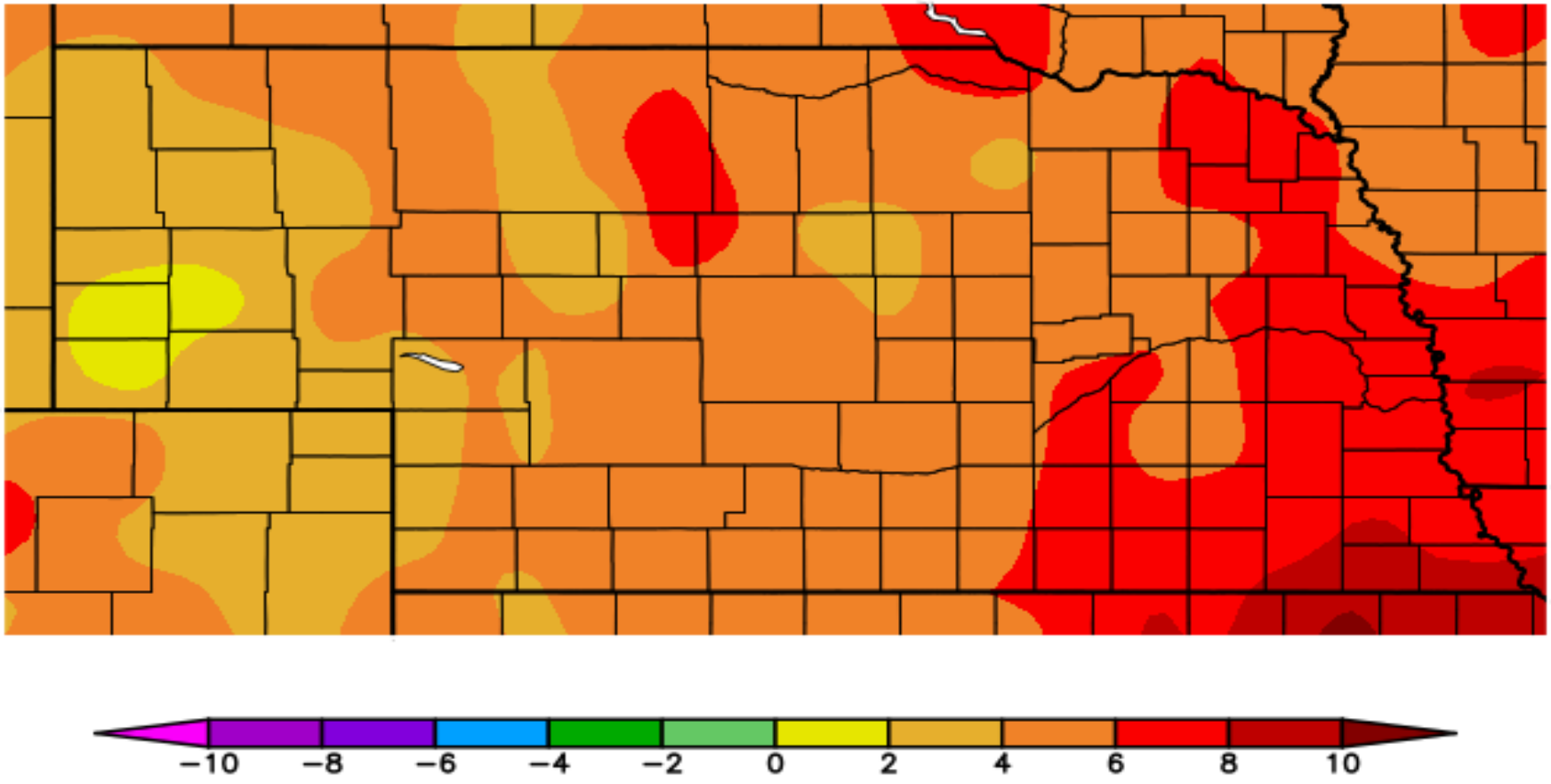
Departure from Normal Precipitation (in)
9/1/2018 – 9/30/2018



Generated 10/10/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

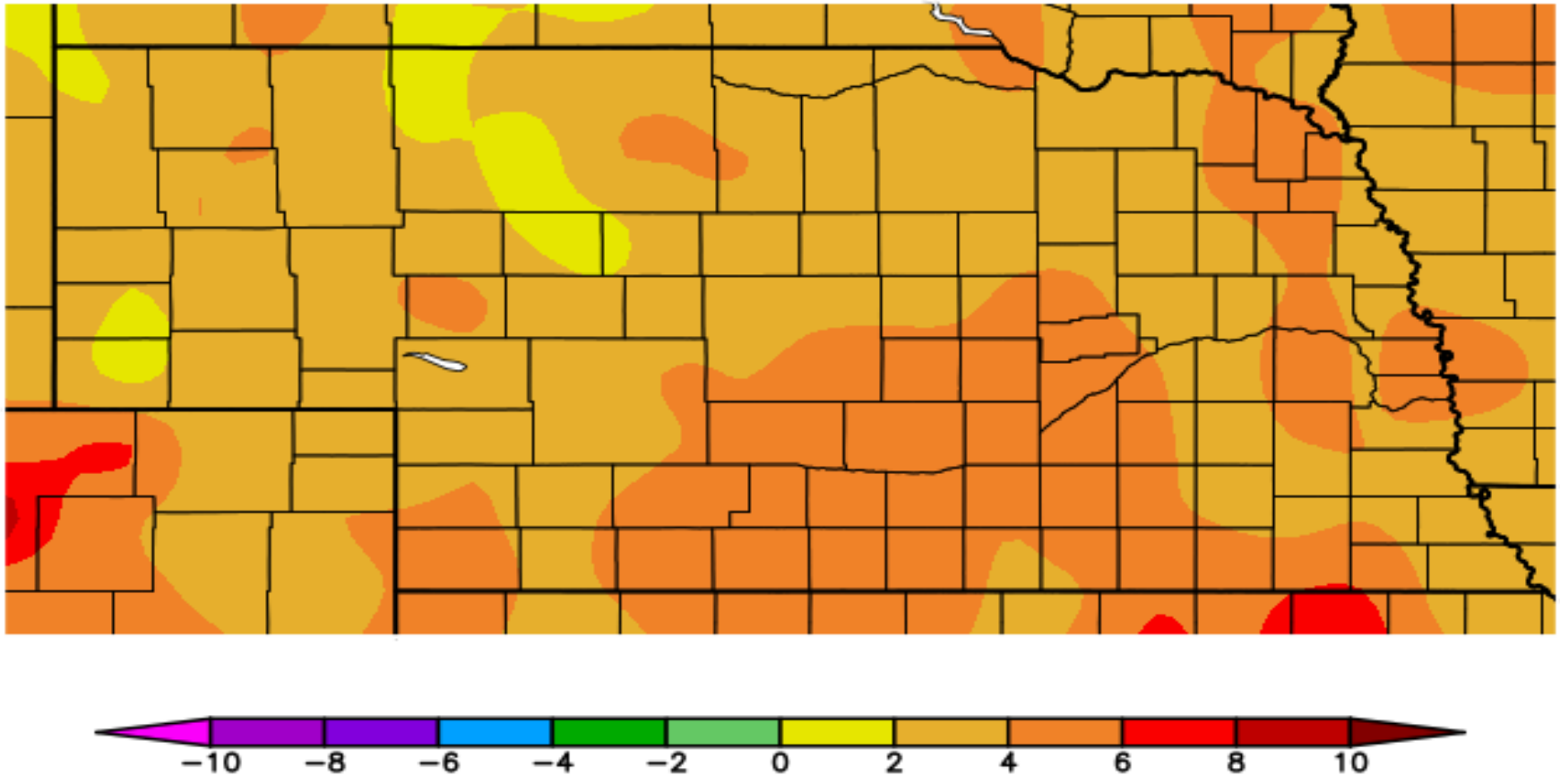
Departure from Normal Temperature (F)
5/1/2018 – 5/31/2018



Generated 6/10/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

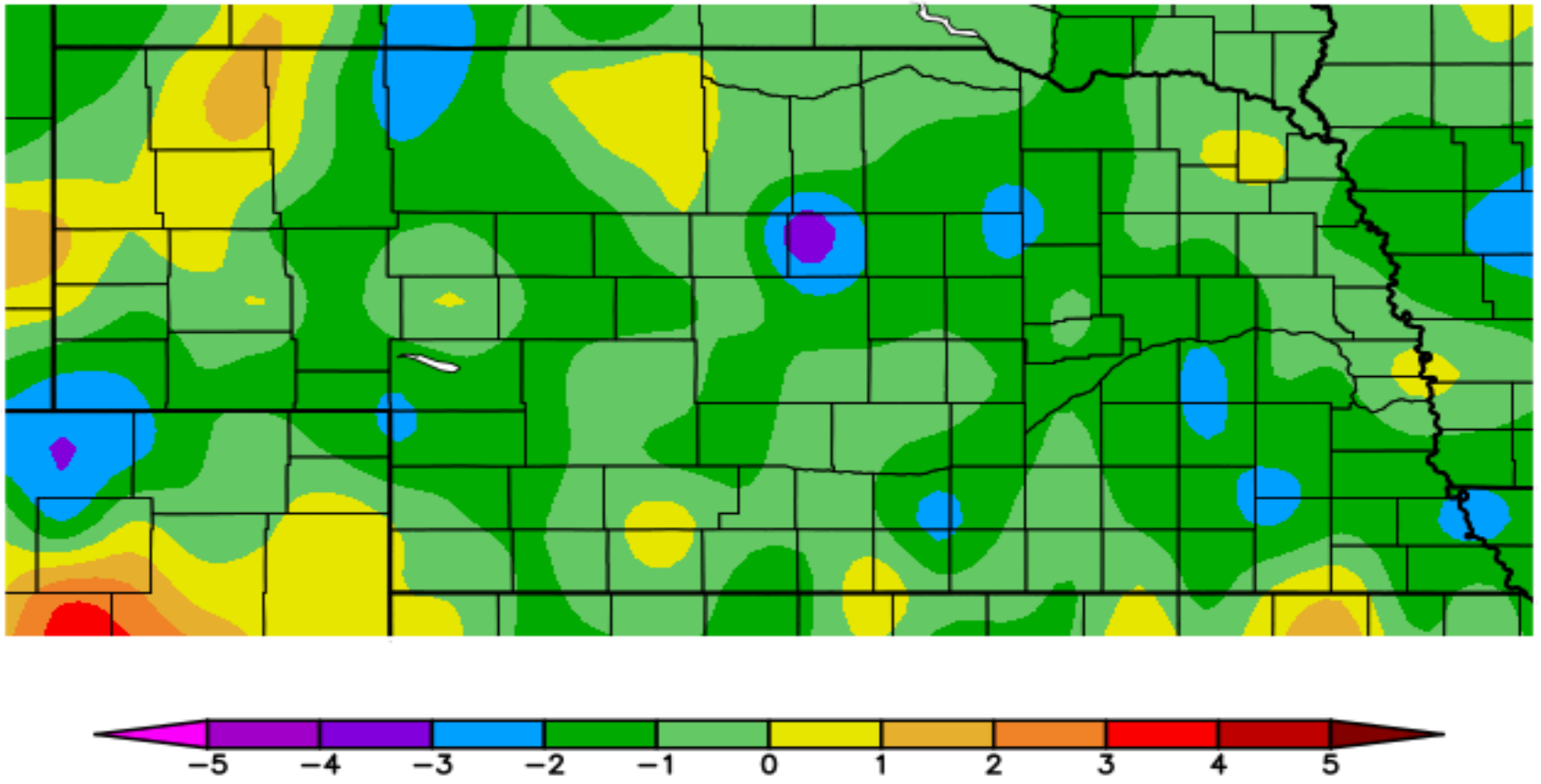
Departure from Normal Temperature (F)
6/1/2018 – 6/30/2018



Generated 7/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

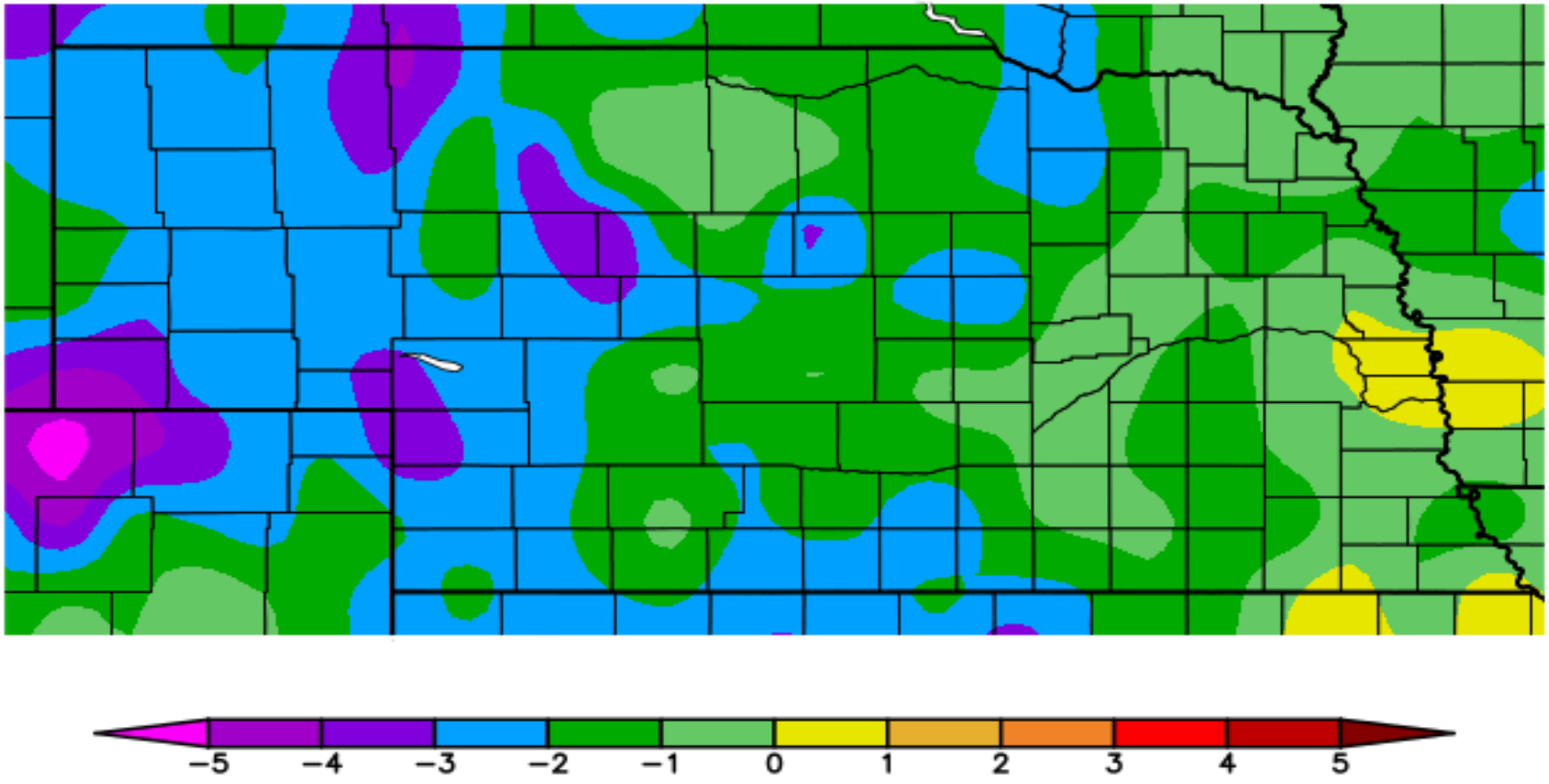
Departure from Normal Temperature (F)
7/1/2018 – 7/31/2018



Generated 8/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

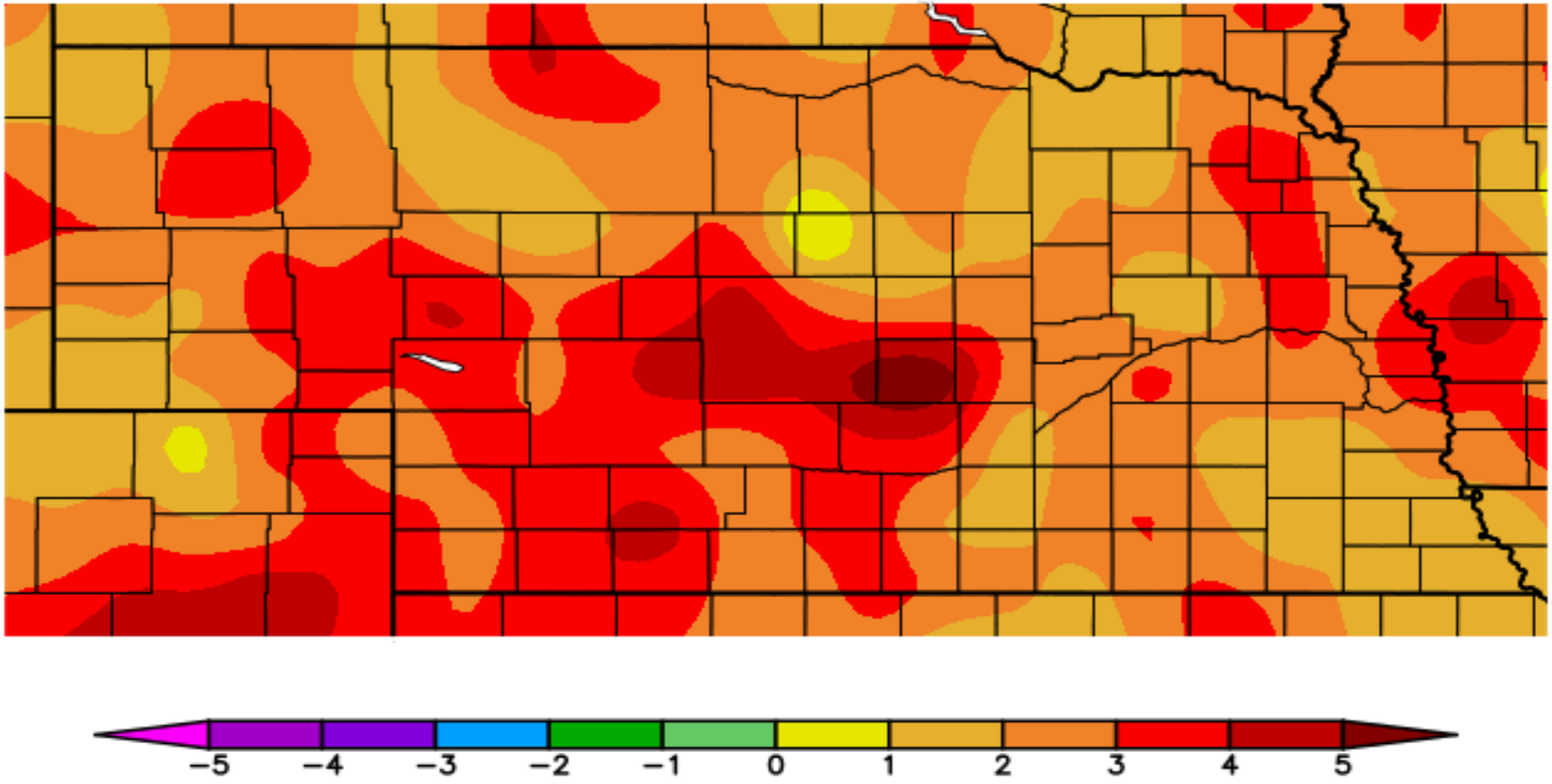
Departure from Normal Temperature (F)
8/1/2018 – 8/31/2018



Generated 9/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Temperature (F)
9/1/2018 – 9/30/2018



Generated 10/10/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

Three Month Temperature and Rainfall Forecast

For October 2018 to December 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 (Temperature and Rainfall Outlook).

Drought Outlook

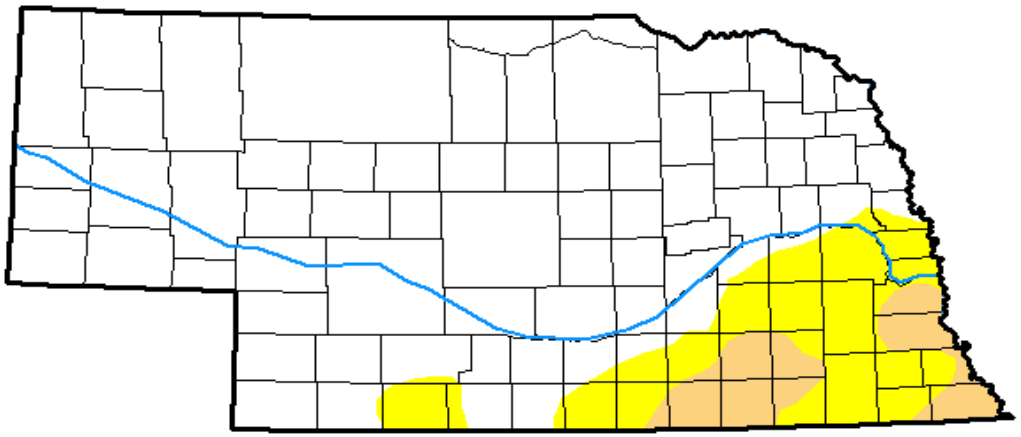
Per the United States Drought Monitor, at the end of May (pg. 15), areas of abnormally dry and moderate drought conditions had developed over parts of east central, south central, and southeast Nebraska. June, July, and August (pgs. 16-18) still saw areas of abnormally dry and moderate drought but the total area had decreased and most of the dry areas were located in south central and southeastern portions of the state. By the end of September (pg. 19) most of the dry and drought conditions had been removed from the state. 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 (U.S. Monthly Drought Outlook).

U.S. Drought Monitor

Nebraska



May 29, 2018

(Released Thursday, May. 31, 2018)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	81.90	12.73	5.37	0.00	0.00	0.00
Last Week *05-22-2018*	81.66	14.65	3.69	0.00	0.00	0.00
3 Months Ago *02-27-2018*	74.66	25.14	0.20	0.00	0.00	0.00
Start of Calendar Year *01-02-2018*	9.32	88.65	2.03	0.00	0.00	0.00
Start of Water Year *09-26-2017*	82.67	13.32	4.01	0.00	0.00	0.00
One Year Ago *05-30-2017*	100.00	0.00	0.00	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.

Author:
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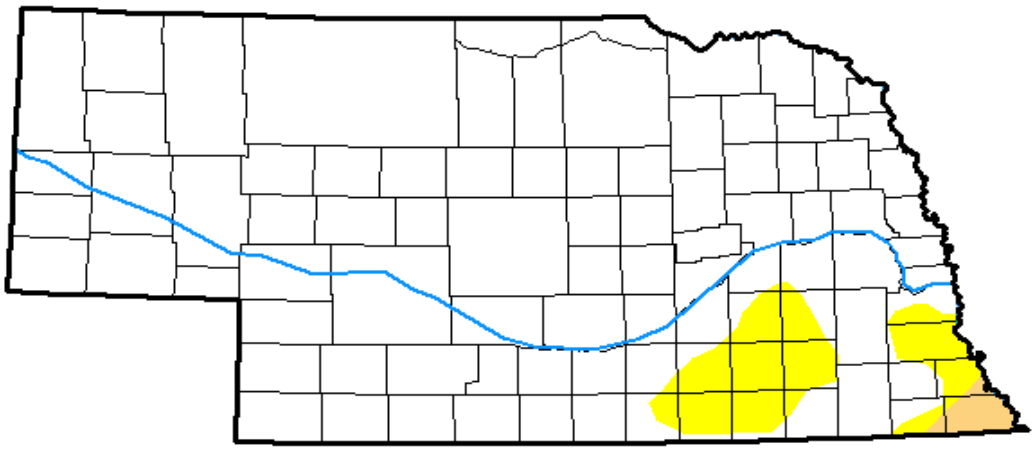
http://droughtmonitor.unl.edu/

U.S. Drought Monitor
Nebraska



June 26, 2018

(Released Thursday, Jun. 28, 2018)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	92.75	6.40	0.84	0.00	0.00	0.00
Last Week *06-19-2018*	84.60	7.98	7.42	0.00	0.00	0.00
3 Months Ago *03-27-2018*	81.17	17.82	1.00	0.00	0.00	0.00
Start of Calendar Year *01-02-2018*	9.32	88.65	2.03	0.00	0.00	0.00
Start of Water Year *09-26-2017*	82.67	13.32	4.01	0.00	0.00	0.00
One Year Ago *06-27-2017*	32.04	67.96	0.00	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.

Author:

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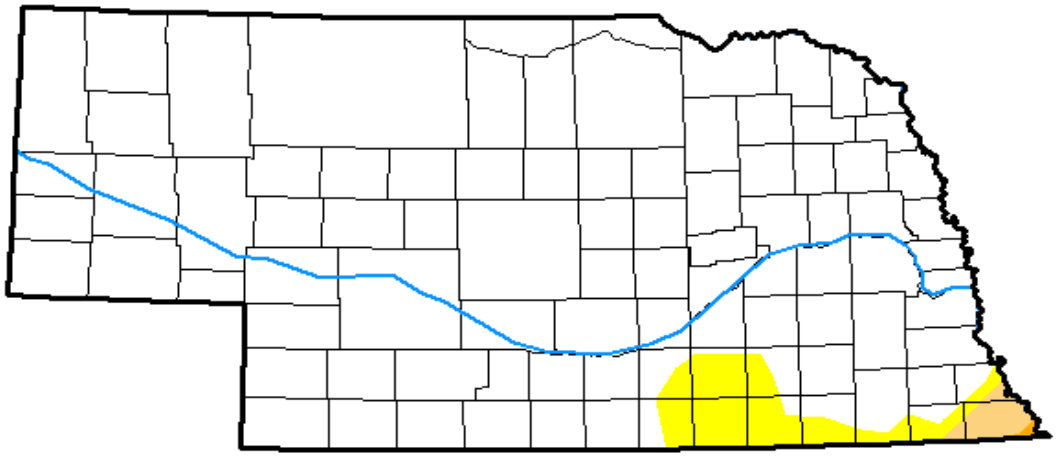
http://droughtmonitor.unl.edu/

U.S. Drought Monitor

Nebraska



July 31, 2018

(Released Thursday, Aug. 2, 2018)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	95.00	4.13	0.79	0.08	0.00	0.00
Last Week *07-24-2018*	94.88	4.27	0.84	0.00	0.00	0.00
3 Months Ago *05-01-2018*	72.17	25.57	2.26	0.00	0.00	0.00
Start of Calendar Year *01-02-2018*	9.32	88.65	2.03	0.00	0.00	0.00
Start of Water Year *09-26-2017*	82.67	13.32	4.01	0.00	0.00	0.00
One Year Ago *08-01-2017*	14.32	43.78	35.46	6.44	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.

Author:
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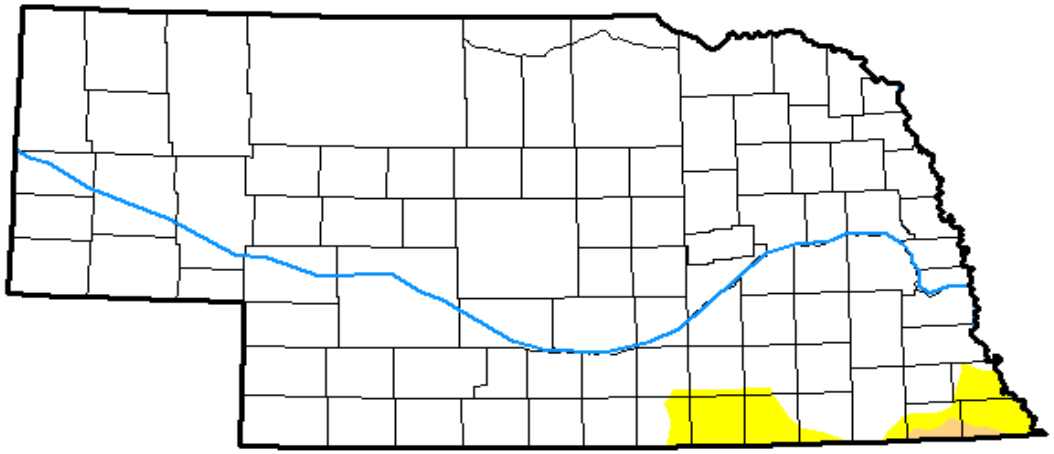
U.S. Drought Monitor

Nebraska



August 28, 2018

(Released Thursday, Aug. 30, 2018)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	96.33	3.33	0.34	0.00	0.00	0.00
Last Week *08-21-2018*	96.33	2.99	0.65	0.03	0.00	0.00
3 Months Ago *05-29-2018*	81.90	12.73	5.37	0.00	0.00	0.00
Start of Calendar Year *01-02-2018*	9.32	88.65	2.03	0.00	0.00	0.00
Start of Water Year *09-26-2017*	82.67	13.32	4.01	0.00	0.00	0.00
One Year Ago *08-29-2017*	42.43	45.10	12.46	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.

Author:
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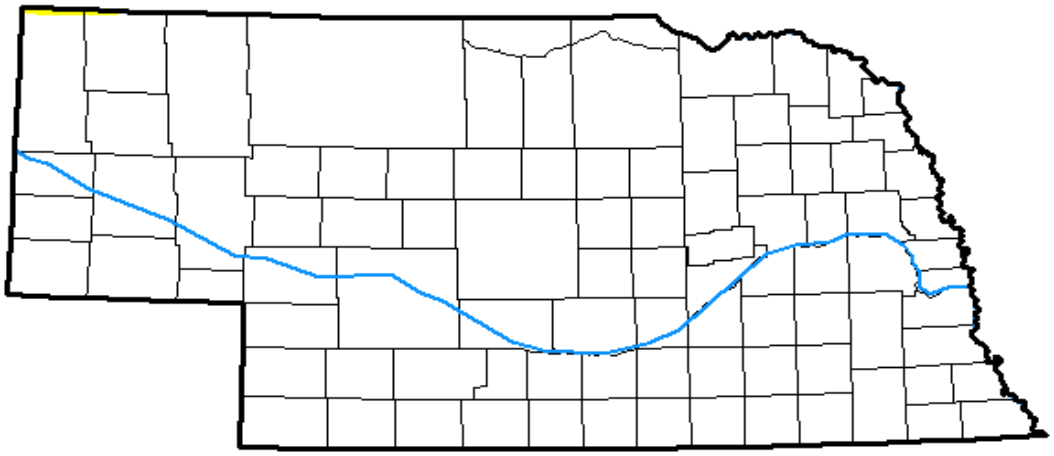
http://droughtmonitor.unl.edu/

U.S. Drought Monitor
Nebraska



September 25, 2018
(Released Thursday, Sep. 27, 2018)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	99.83	0.17	0.00	0.00	0.00	0.00
Last Week *09-18-2018*	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago *06-26-2018*	92.75	6.40	0.84	0.00	0.00	0.00
Start of Calendar Year *01-02-2018*	9.32	88.65	2.03	0.00	0.00	0.00
Start of Water Year *09-26-2017*	82.67	13.32	4.01	0.00	0.00	0.00
One Year Ago *09-26-2017*	82.67	13.32	4.01	0.00	0.00	0.00

Intensity:

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

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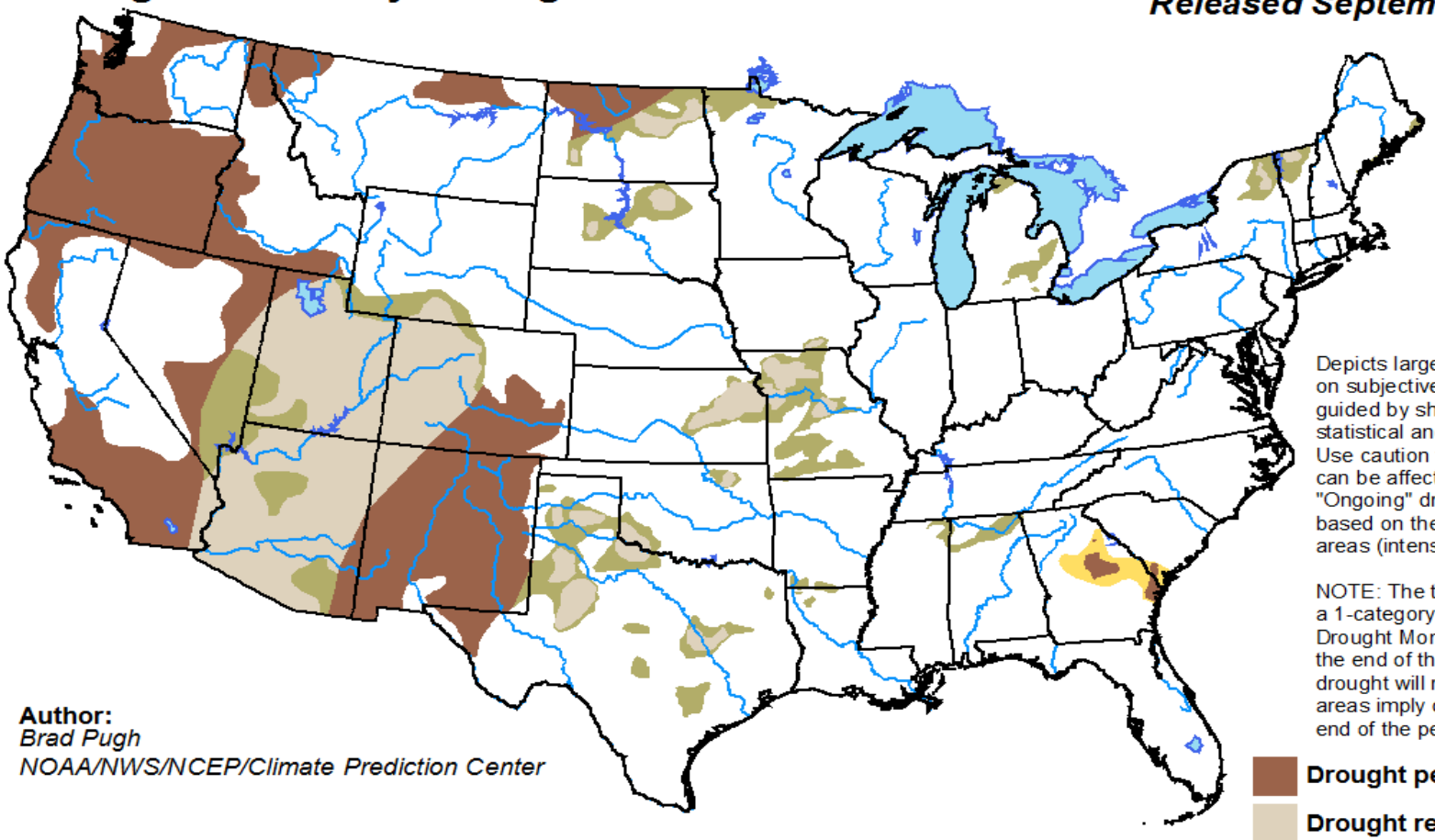
http://droughtmonitor.unl.edu/

U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for October 2018
Released September 30, 2018



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

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

ARBOVIRAL DETECTIONS

For the season, there was 122 positive arbovirus positive mosquito pools detected in 25 different counties. All 122 positive pools were WNV, no SLE or WEE were detected in the tested mosquito pools. The statewide WNV cumulative mosquito minimum infection rate (MIR) per 1,000 *Culex* decreased slightly to 2.21 which is above the 10-year median of 1.88.

Table 1. Arboviral Detections

Date Collected	County	Mosquito Species	Virus
9/26/2018	Phelps	*Culex pipiens*	WNV
9/18/2018	Douglas	*Culex pipiens*	WNV
9/18/2018	Garden	*Culex pipiens*	WNV
9/18/2018	Garden	*Culex tarsalis*	WNV
9/12/2018	Phelps	*Culex tarsalis*	WNV
9/11/2018	Dodge	*Culex salinarius*	WNV
9/6/2018	Platte	*Culex tarsalis*	WNV
9/6/2018	Platte	*Culex pipiens*	WNV
9/5/2018	Dawson	*Culex pipiens*	WNV
9/5/2018	Garden	*Culex tarsalis*	WNV
9/5/2018	Hall	*Culex pipiens*	WNV
8/29/2018	Dodge	*Culex tarsalis*	WNV
8/29/2018	Lancaster	*Culex tarsalis*	WNV
8/29/2018	Phelps	*Culex tarsalis*	WNV
8/29/2018	Red Willow	*Culex tarsalis*	WNV
8/29/2018	Red Willow	*Culex salinarius*	WNV
8/28/2018	Adams	*Culex pipiens*	WNV
8/28/2018	Adams	*Culex pipiens*	WNV
8/28/2018	Adams	*Culex pipiens*	WNV

8/28/2018	Adams	*Culex pipiens*	WNV
8/28/2018	Adams	*Culex tarsalis*	WNV
8/28/2018	Cherry	*Culex tarsalis*	WNV
8/28/2018	Dawes	*Culex tarsalis*	WNV
8/28/2018	Dixon	*Culex tarsalis*	WNV
8/28/2018	Holt	*Culex pipiens*	WNV
8/28/2018	Scotts Bluff	*Culex pipiens*	WNV
8/28/2018	Scotts Bluff	*Culex tarsalis*	WNV
8/28/2018	Wayne	*Culex tarsalis*	WNV
8/28/2018	Wayne	*Culex tarsalis*	WNV
8/28/2018	Wayne	*Culex tarsalis*	WNV
8/28/2018	Wayne	*Culex pipiens*	WNV
8/28/2018	Wayne	*Culex pipiens*	WNV
8/22/2018	Gage	*Culex pipiens*	WNV
8/22/2018	Garfield	*Culex pipiens*	WNV
8/22/2018	Garfield	*Culex pipiens*	WNV
8/22/2018	Garfield	*Culex tarsalis*	WNV
8/22/2018	Garfield	*Culex pipiens*	WNV
8/22/2018	Hall	*Culex tarsalis*	WNV
8/22/2018	Hall	*Culex tarsalis*	WNV
8/22/2018	Madison	*Culex tarsalis*	WNV
8/22/2018	Richardson	*Culex tarsalis*	WNV
8/22/2018	Richardson	*Culex tarsalis*	WNV
8/21/2018	Box Butte	*Culex tarsalis*	WNV
8/21/2018	Dawson	*Culex pipiens*	WNV
8/21/2018	Dawson	*Culex tarsalis*	WNV
8/21/2018	Dawson	*Culex pipiens*	WNV
8/21/2018	Douglas	*Culex tarsalis*	WNV
8/21/2018	Douglas	*Culex tarsalis*	WNV
8/21/2018	Douglas	*Culex pipiens*	WNV
8/21/2018	Douglas	*Culex pipiens*	WNV
8/21/2018	Garden	*Culex tarsalis*	WNV
8/21/2018	Garden	*Culex tarsalis*	WNV

8/21/2018	Garden	*Culex tarsalis*	WNV
8/21/2018	Garden	*Culex tarsalis*	WNV
8/21/2018	Lincoln	*Culex tarsalis*	WNV
8/21/2018	Lincoln	*Culex tarsalis*	WNV
8/21/2018	Webster	*Culex pipiens*	WNV
8/15/2018	Phelps	*Culex pipiens*	WNV
8/15/2018	Phelps	*Culex tarsalis*	WNV
8/15/2018	Red Willow	*Culex tarsalis*	WNV
8/14/2018	Cherry	*Culex tarsalis*	WNV
8/14/2018	Dawes	*Culex tarsalis*	WNV
8/14/2018	Dawes	*Culex tarsalis*	WNV
8/14/2018	Dixon	*Culex tarsalis*	WNV
8/14/2018	Holt	*Culex tarsalis*	WNV
8/14/2018	Holt	*Culex tarsalis*	WNV
8/14/2018	Holt	*Culex tarsalis*	WNV
8/14/2018	Holt	*Culex tarsalis*	WNV
8/14/2018	Holt	*Culex tarsalis*	WNV
8/14/2018	Holt	*Culex pipiens*	WNV
8/14/2018	Scotts Bluff	*Culex tarsalis*	WNV
8/14/2018	Scotts Bluff	*Culex tarsalis*	WNV
8/14/2018	Scotts Bluff	*Culex tarsalis*	WNV
8/14/2018	Scotts Bluff	*Culex pipiens*	WNV
8/14/2018	York	*Culex pipiens*	WNV
8/8/2018	Garfield	*Culex tarsalis*	WNV
8/8/2018	Garfield	*Culex pipiens*	WNV
8/8/2018	Madison	*Culex tarsalis*	WNV
8/7/2018	Box Butte	*Culex tarsalis*	WNV
8/7/2018	Box Butte	*Culex tarsalis*	WNV
8/7/2018	Box Butte	*Culex tarsalis*	WNV
8/7/2018	Chase	*Culex tarsalis*	WNV
8/7/2018	Douglas	*Culex tarsalis*	WNV
8/7/2018	Garden	*Culex tarsalis*	WNV
8/7/2018	Lincoln	*Culex pipiens*	WNV

8/1/2018	Red Willow	*Culex tarsalis*	WNV
8/1/2018	Red Willow	*Culex tarsalis*	WNV
8/1/2018	Red Willow	*Culex tarsalis*	WNV
7/31/2018	Dawes	*Culex tarsalis*	WNV
7/31/2018	Holt	*Culex tarsalis*	WNV
7/31/2018	Holt	*Culex pipiens*	WNV
7/31/2018	Holt	*Culex pipiens*	WNV
7/31/2018	Holt	*Culex sp.*	WNV
7/31/2018	Wayne	*Culex tarsalis*	WNV
7/25/2018	Dawes	*Culex tarsalis*	WNV
7/24/2018	Box Butte	*Culex tarsalis*	WNV
7/24/2018	Box Butte	*Culex tarsalis*	WNV
7/24/2018	Box Butte	*Culex tarsalis*	WNV
7/24/2018	Dawson	*Culex pipiens*	WNV
7/24/2018	Douglas	*Culex pipiens*	WNV
7/24/2018	Douglas	*Culex pipiens*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Douglas	*Culex tarsalis*	WNV
7/24/2018	Madison	*Culex tarsalis*	WNV
7/17/2018	Garden	*Culex tarsalis*	WNV
7/17/2018	Scotts Bluff	*Culex tarsalis*	WNV

7/17/2018	Wayne	*Culex tarsalis*	WNV
7/10/2018	Box Butte	*Culex tarsalis*	WNV
6/7/2018	Lancaster	*Culex pipiens*	WNV
6/6/2018	Phelps	*Culex tarsalis*	WNV

Table 2. Arboviral Detections Summary Table.

			Virus			
Date Collected	**County**	**Mosquito Species**	**WNV**	**SLE**	**WEE**	**Total**
9/26/2018	Phelps	*Culex pipiens*	1	0	0	1
9/18/2018	Douglas	*Culex pipiens*	1	0	0	1
9/18/2018	Garden	*Culex pipiens*	1	0	0	1
9/18/2018	Garden	*Culex tarsalis*	1	0	0	1
9/12/2018	Phelps	*Culex tarsalis*	1	0	0	1
9/11/2018	Dodge	*Culex salinarius*	1	0	0	1
9/6/2018	Platte	*Culex tarsalis*	1	0	0	1
9/6/2018	Platte	*Culex pipiens*	1	0	0	1
9/5/2018	Dawson	*Culex pipiens*	1	0	0	1
9/5/2018	Garden	*Culex tarsalis*	1	0	0	1
9/5/2018	Hall	*Culex pipiens*	1	0	0	1
8/29/2018	Dodge	*Culex tarsalis*	1	0	0	1
8/29/2018	Lancaster	*Culex tarsalis*	1	0	0	1
8/29/2018	Phelps	*Culex tarsalis*	1	0	0	1
8/29/2018	Red Willow	*Culex tarsalis*	1	0	0	1
8/29/2018	Red Willow	*Culex salinarius*	1	0	0	1
8/28/2018	Adams	*Culex pipiens*	1	0	0	1
8/28/2018	Adams	*Culex pipiens*	1	0	0	1
8/28/2018	Adams	*Culex pipiens*	1	0	0	1
8/28/2018	Adams	*Culex pipiens*	1	0	0	1
8/28/2018	Adams	*Culex tarsalis*	1	0	0	1
8/28/2018	Cherry	*Culex tarsalis*	1	0	0	1
8/28/2018	Dawes	*Culex tarsalis*	1	0	0	1

8/28/2018	Dixon	*Culex tarsalis*	1	0	0	1
8/28/2018	Holt	*Culex pipiens*	1	0	0	1
8/28/2018	Scotts Bluff	*Culex pipiens*	1	0	0	1
8/28/2018	Scotts Bluff	*Culex tarsalis*	1	0	0	1
8/28/2018	Wayne	*Culex tarsalis*	1	0	0	1
8/28/2018	Wayne	*Culex tarsalis*	1	0	0	1
8/28/2018	Wayne	*Culex tarsalis*	1	0	0	1
8/28/2018	Wayne	*Culex pipiens*	1	0	0	1
8/28/2018	Wayne	*Culex pipiens*	1	0	0	1
8/22/2018	Gage	*Culex pipiens*	1	0	0	1
8/22/2018	Garfield	*Culex pipiens*	1	0	0	1
8/22/2018	Garfield	*Culex pipiens*	1	0	0	1
8/22/2018	Garfield	*Culex tarsalis*	1	0	0	1
8/22/2018	Garfield	*Culex pipiens*	1	0	0	1
8/22/2018	Hall	*Culex tarsalis*	1	0	0	1
8/22/2018	Hall	*Culex tarsalis*	1	0	0	1
8/22/2018	Madison	*Culex tarsalis*	1	0	0	1
8/22/2018	Richardson	*Culex tarsalis*	1	0	0	1
8/22/2018	Richardson	*Culex tarsalis*	1	0	0	1
8/21/2018	Box Butte	*Culex tarsalis*	1	0	0	1
8/21/2018	Dawson	*Culex pipiens*	1	0	0	1
8/21/2018	Dawson	*Culex tarsalis*	1	0	0	1
8/21/2018	Dawson	*Culex pipiens*	1	0	0	1
8/21/2018	Douglas	*Culex tarsalis*	1	0	0	1
8/21/2018	Douglas	*Culex tarsalis*	1	0	0	1
8/21/2018	Douglas	*Culex pipiens*	1	0	0	1
8/21/2018	Douglas	*Culex pipiens*	1	0	0	1
8/21/2018	Garden	*Culex tarsalis*	1	0	0	1
8/21/2018	Garden	*Culex tarsalis*	1	0	0	1
8/21/2018	Garden	*Culex tarsalis*	1	0	0	1
8/21/2018	Garden	*Culex tarsalis*	1	0	0	1
8/21/2018	Lincoln	*Culex tarsalis*	1	0	0	1
8/21/2018	Lincoln	*Culex tarsalis*	1	0	0	1
8/21/2018	Webster	*Culex pipiens*	1	0	0	1

8/15/2018	Phelps	*Culex pipiens*	1	0	0	1
8/15/2018	Phelps	*Culex tarsalis*	1	0	0	1
8/15/2018	Red Willow	*Culex tarsalis*	1	0	0	1
8/14/2018	Cherry	*Culex tarsalis*	1	0	0	1
8/14/2018	Dawes	*Culex tarsalis*	1	0	0	1
8/14/2018	Dawes	*Culex tarsalis*	1	0	0	1
8/14/2018	Dixon	*Culex tarsalis*	1	0	0	1
8/14/2018	Holt	*Culex tarsalis*	1	0	0	1
8/14/2018	Holt	*Culex tarsalis*	1	0	0	1
8/14/2018	Holt	*Culex tarsalis*	1	0	0	1
8/14/2018	Holt	*Culex tarsalis*	1	0	0	1
8/14/2018	Holt	*Culex tarsalis*	1	0	0	1
8/14/2018	Holt	*Culex pipiens*	1	0	0	1
8/14/2018	Scotts Bluff	*Culex tarsalis*	1	0	0	1
8/14/2018	Scotts Bluff	*Culex tarsalis*	1	0	0	1
8/14/2018	Scotts Bluff	*Culex tarsalis*	1	0	0	1
8/14/2018	Scotts Bluff	*Culex pipiens*	1	0	0	1
8/14/2018	York	*Culex pipiens*	1	0	0	1
8/8/2018	Garfield	*Culex tarsalis*	1	0	0	1
8/8/2018	Garfield	*Culex pipiens*	1	0	0	1
8/8/2018	Madison	*Culex tarsalis*	1	0	0	1
8/7/2018	Box Butte	*Culex tarsalis*	1	0	0	1
8/7/2018	Box Butte	*Culex tarsalis*	1	0	0	1
8/7/2018	Box Butte	*Culex tarsalis*	1	0	0	1
8/7/2018	Chase	*Culex tarsalis*	1	0	0	1
8/7/2018	Douglas	*Culex tarsalis*	1	0	0	1
8/7/2018	Garden	*Culex tarsalis*	1	0	0	1
8/7/2018	Lincoln	*Culex pipiens*	1	0	0	1
8/1/2018	Red Willow	*Culex tarsalis*	1	0	0	1
8/1/2018	Red Willow	*Culex tarsalis*	1	0	0	1
8/1/2018	Red Willow	*Culex tarsalis*	1	0	0	1
7/31/2018	Dawes	*Culex tarsalis*	1	0	0	1
7/31/2018	Holt	*Culex tarsalis*	1	0	0	1
7/31/2018	Holt	*Culex pipiens*	1	0	0	1

7/31/2018	Holt	*Culex pipiens*	1	0	0	1
7/31/2018	Holt	*Culex sp.*	1	0	0	1
7/31/2018	Wayne	*Culex tarsalis*	1	0	0	1
7/25/2018	Dawes	*Culex tarsalis*	1	0	0	1
7/24/2018	Box Butte	*Culex tarsalis*	1	0	0	1
7/24/2018	Box Butte	*Culex tarsalis*	1	0	0	1
7/24/2018	Box Butte	*Culex tarsalis*	1	0	0	1
7/24/2018	Dawson	*Culex pipiens*	1	0	0	1
7/24/2018	Douglas	*Culex pipiens*	1	0	0	1
7/24/2018	Douglas	*Culex pipiens*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Douglas	*Culex tarsalis*	1	0	0	1
7/24/2018	Madison	*Culex tarsalis*	1	0	0	1
7/17/2018	Garden	*Culex tarsalis*	1	0	0	1
7/17/2018	Scotts Bluff	*Culex tarsalis*	1	0	0	1
7/17/2018	Wayne	*Culex tarsalis*	1	0	0	1
7/10/2018	Box Butte	*Culex tarsalis*	1	0	0	1
6/7/2018	Lancaster	*Culex pipiens*	1	0	0	1
6/6/2018	Phelps	*Culex tarsalis*	1	0	0	1
		Total	**122**	**0**	**0**	**122**

Table 3. WNV Positive Mosquito Pool Detections and 10 Year Averages, Nebraska 2018.

Region	# of WNV+ Pools Detected in 2018	10 Yr. Avg (#) of WNV+ Pools	Avg (#) of WNV+ Pools per Trap Night in 2018	10 Yr. Avg (#) of WNV+ Pools Per Trap Night
Central	37	39	0.099	0.110
East	44	26.9	0.102	0.072
West	41	72.6	0.097	0.181
Statewide	**122**	**138.5**	**0.099**	**0.123**

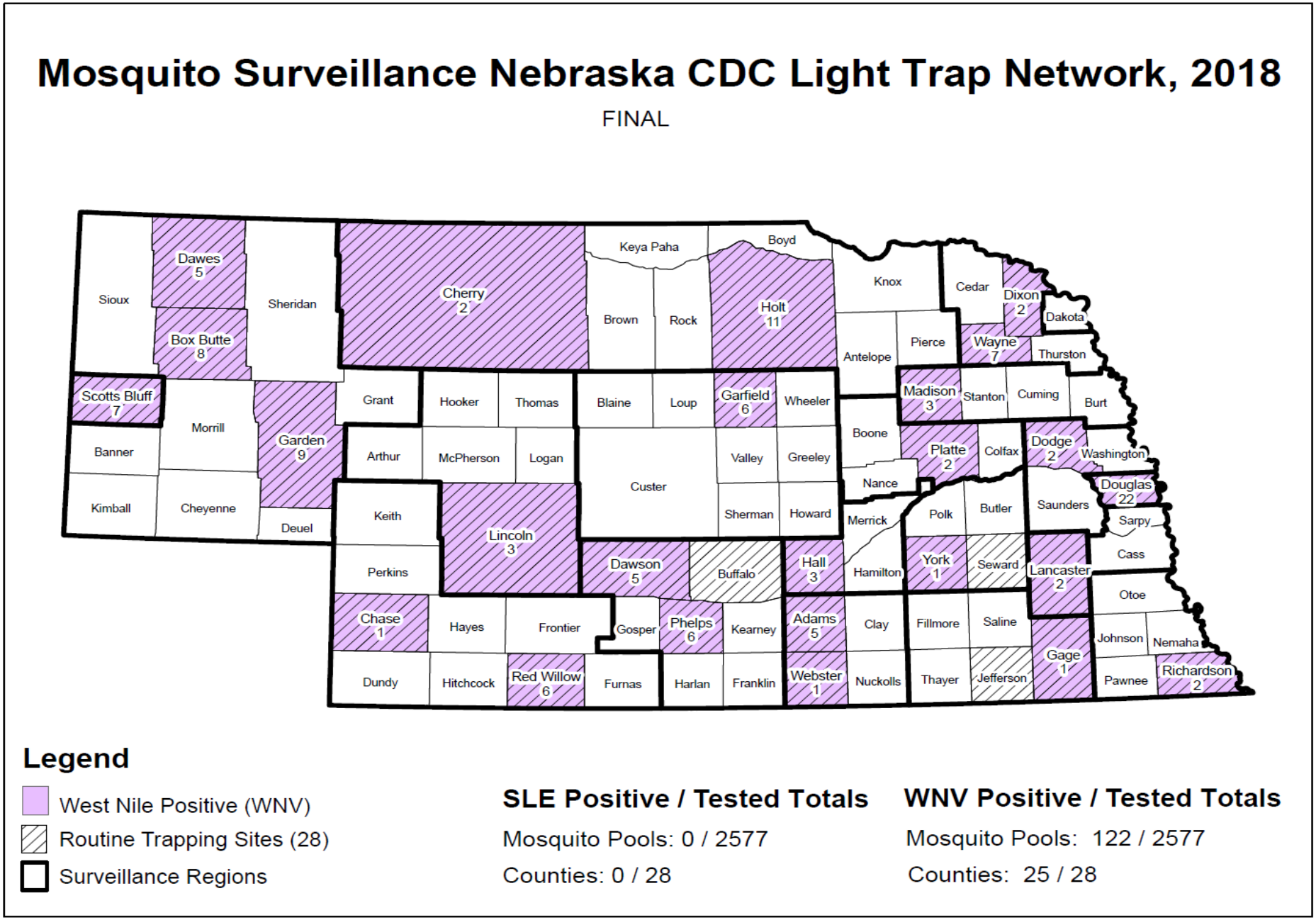

Figure 1. Positive mosquito pools in the Nebraska CDC light trap network, 2018**.**

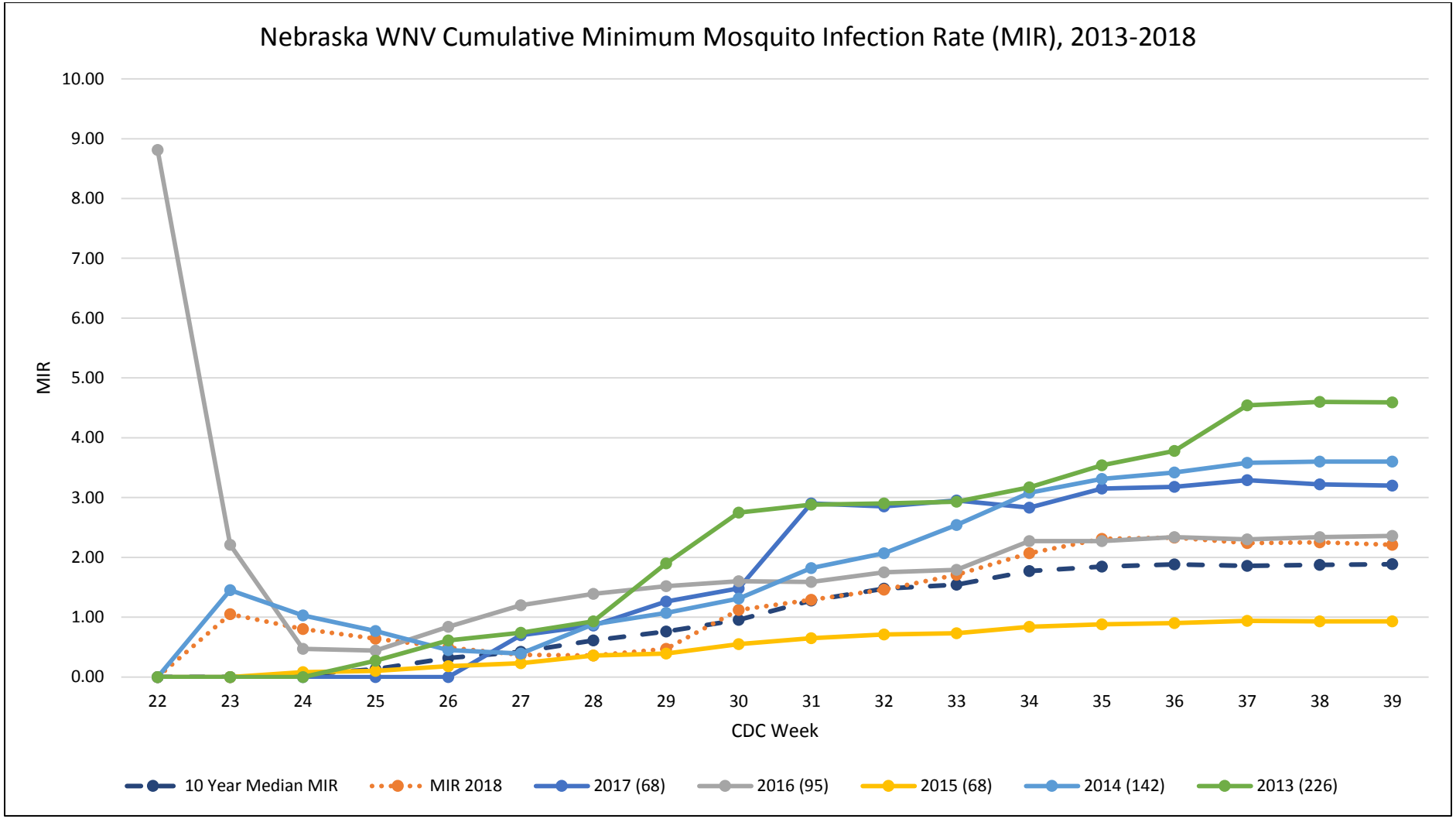

Figure 2. Weekly Nebraska WNV Mosquito Cumulative Mosquito Minimum Infection Rate, 2013-2018. At the state level, the calculated statewide MIR is strongly correlated with the number of human clinical WNV cases. As such, comparisons during the season of the weekly cumulative MIR with previous seasons' 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 (pgs. 32-34). 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 4. Reports of Mosquito-Borne Disease in Nebraska, 2018

CDC Week	Week Ending Date	WNV^ (Clinical Cases)	WNV^ (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	1	3
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	14	7	0	0	0	0	0	0	21
34	25-Aug-18	24	10	0	0	0	0	0	0	34
35	1-Sep-18	38	8	0	0	0	0	0	0	46
36	8-Sep-18	35	5	0	0	0	0	0	0	40
37	15-Sep-18	32	3	0	0	0	0	0	0	35
38	22-Sep-18	32	3	0	0	0	0	0	0	35
39	29-Sep-18	21	2	0	0	0	0	0	0	23

40	**6-Oct-18**	**12**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**13**
41	**13-Oct-18**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
	Total	**225**	**46**	**0**	**0**	**0**	**1**	**0**	**5**	**273**

^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 5. Human WNV Clinical Case Information, Nebraska 2018

Age Range	Number
0 to 10	1
11 to 20	6
21 to 30	14
31 to 40	39
41 to 50	38
51 to 60	47
61 to 70	40
71+	40
Gender	
Male	128
Female	97
Diagnosis	
WNV Neuroinvasive Disease	110
WNV Non-Neuroinvasive Disease	115
Hospitalized	102
Death	11

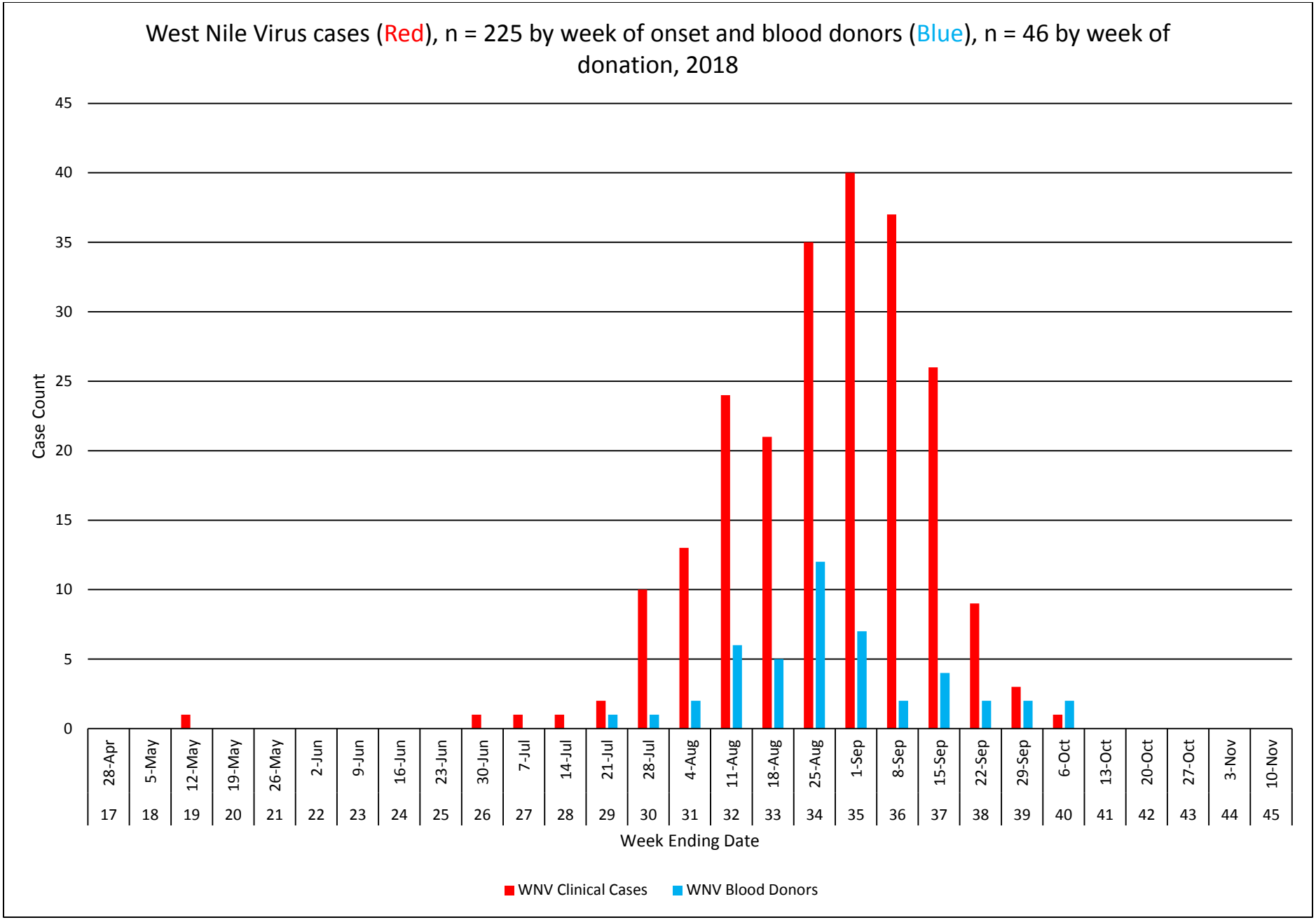

Figure 3. Epi-curve of human WNV infections (clinical and asymptomatic blood donors) by onset date, Nebraska 2018.

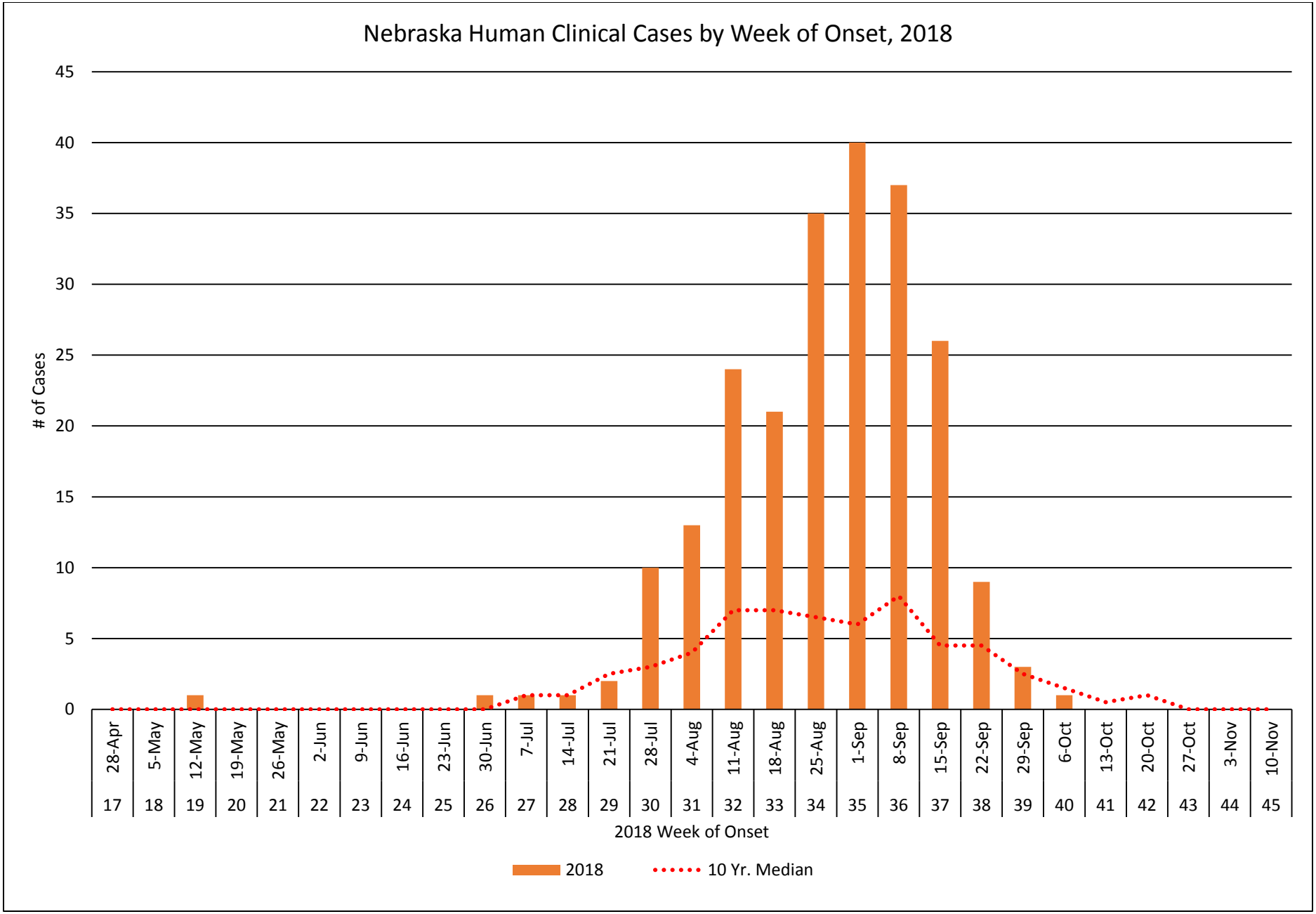

Figure 4. Epi-curve of human WNV clinical cases and 10 yr. median by onset date, Nebraska 2018.

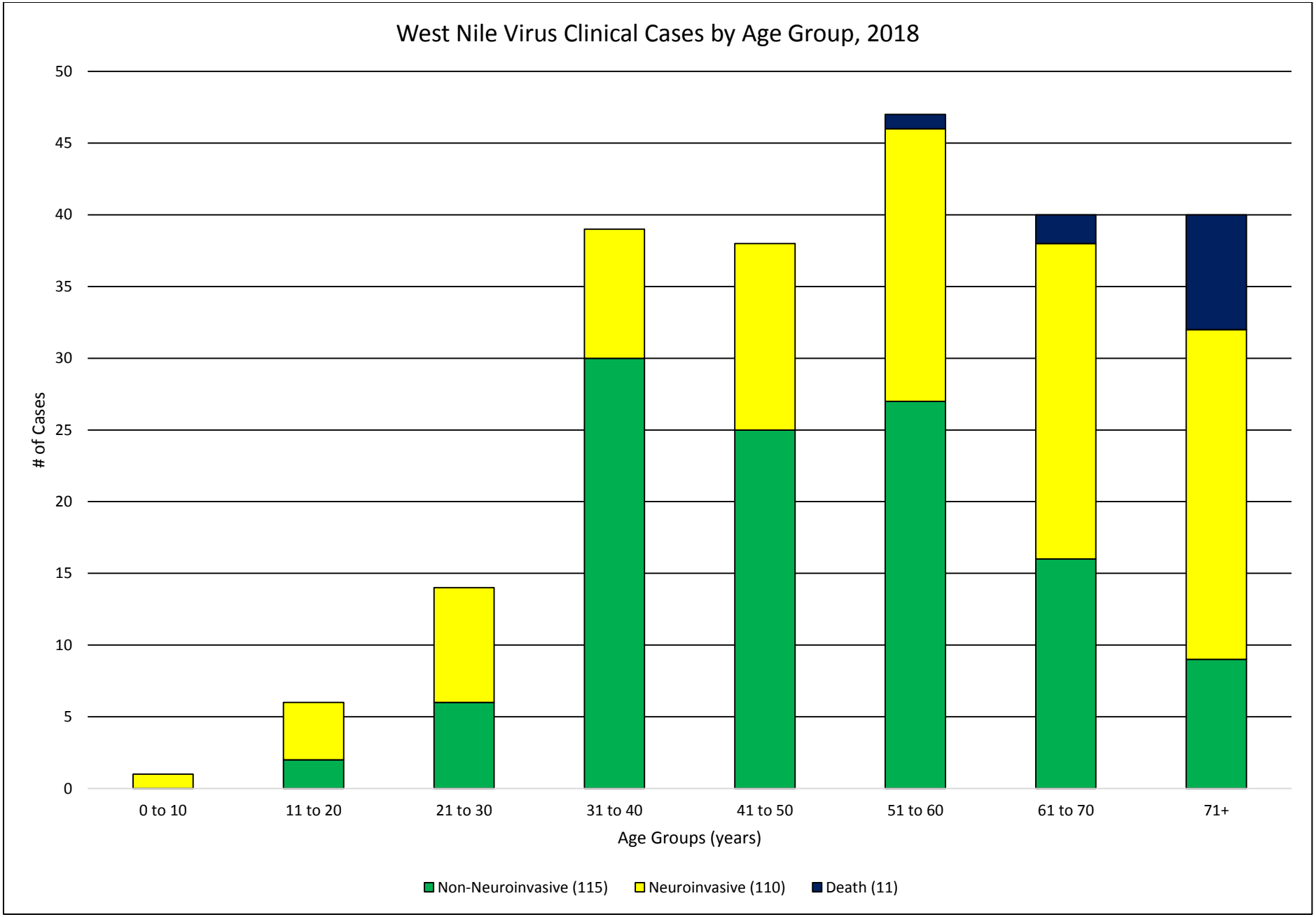

Figure 5. WNV human clinical cases by 10 year age groups, 2018.

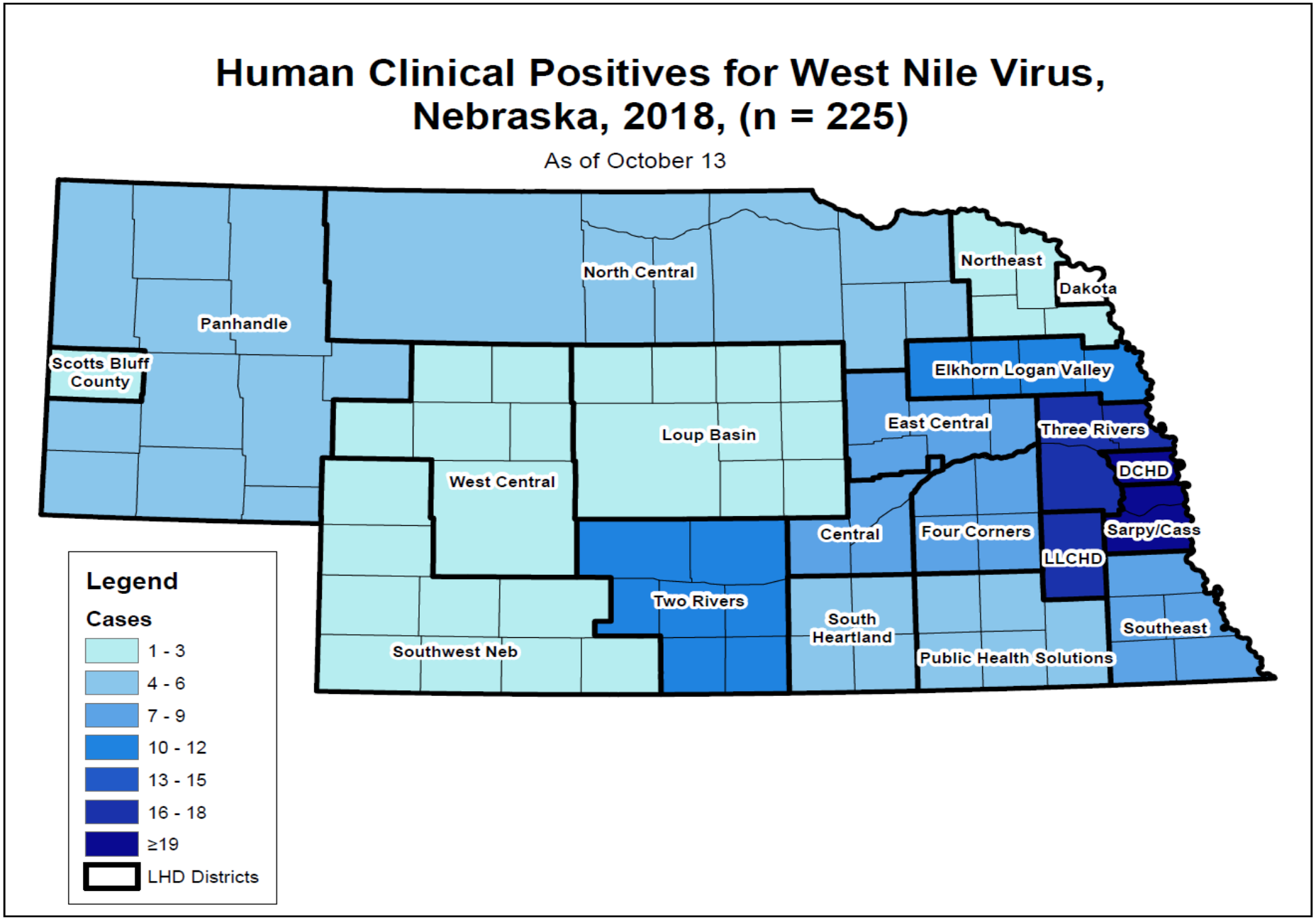

Figure 6. Nebraska human clinical WNV cases by local health jurisdiction, 2018.

Table 6. Number of Human WNV Clinical Cases by Onset Week and Nebraska Local Health Jurisdiction, 2018

CDC Wk. Reported	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
Local Health Dept.																										**Total**
Central District	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	4	0	1	0	0	0	8
Dakota County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Douglas County	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	12	9	15	11	6	7	2	1	0	0	67
East Central District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4	2	1	0	0	0	9
Elkhorn-Logan Valley	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	3	1	2	0	1	0	0	10
Four Corners	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	3	1	0	0	0	0	7
Lincoln-Lancaster	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2	1	3	5	2	0	0	0	0	16
Loup Basin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
North Central	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	1	0	0	0	0	0	5
Northeast Nebraska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Panhandle	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	2	0	0	0	0	0	0	5
Public Health Solutions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	0	1	0	0	6
Sarpy-Cass	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	6	3	6	9	3	4	4	0	1	0	42
Scotts Bluff	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
South Heartland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	4
Southeast	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3	1	1	0	0	0	8
Southwest Nebraska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Three Rivers	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	2	3	4	3	1	0	0	0	0	18
Two Rivers	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	4	1	1	1	0	0	0	0	10
West Central	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	3
Statewide Total	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**2**	**10**	**13**	**24**	**21**	**35**	**40**	**37**	**26**	**9**	**3**	**1**	**0**	**225**

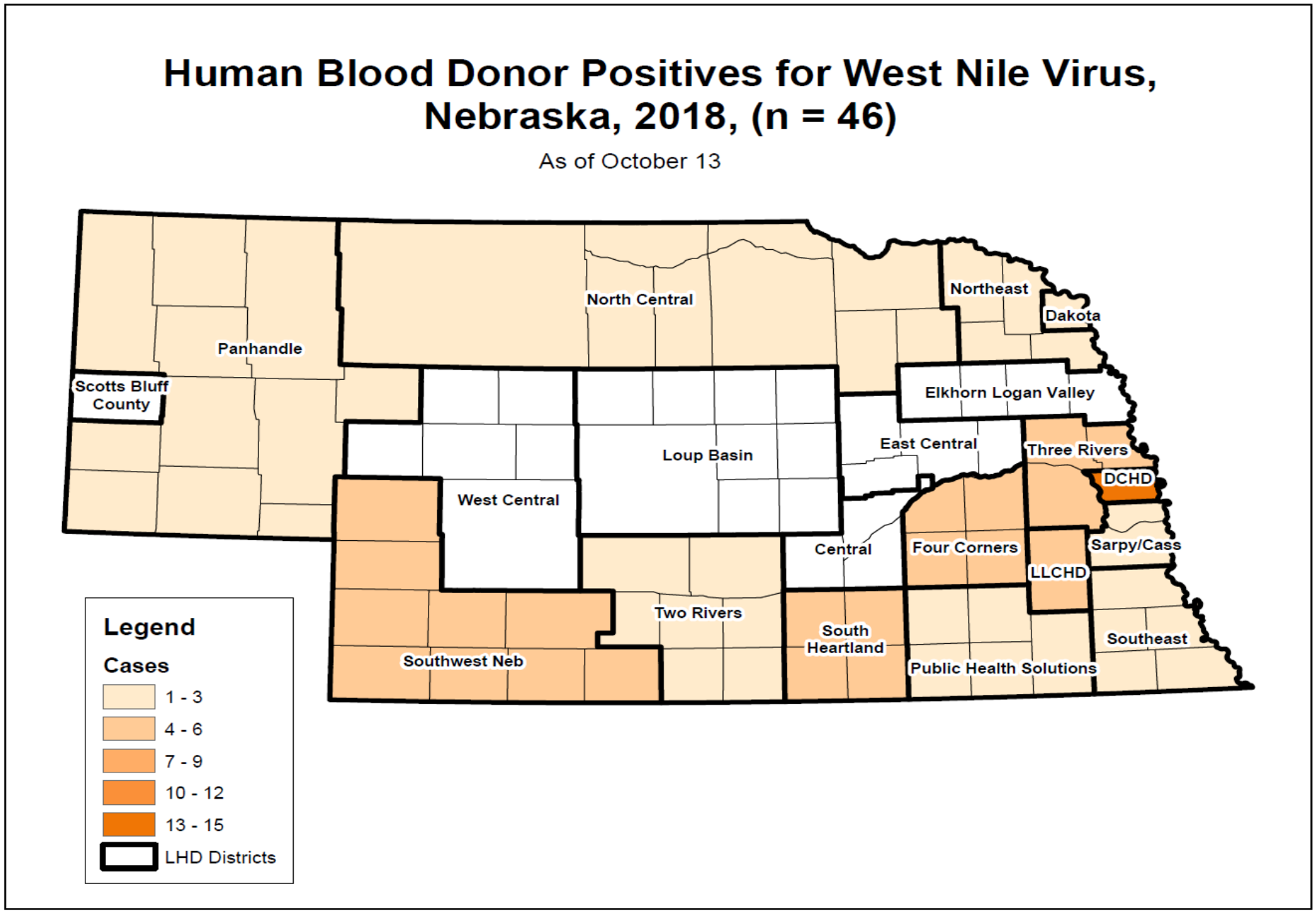

Figure 7. Nebraska asymptomatic WNV blood donors by local health jurisdiction, 2018.

Table 7. Number of Human WNV Blood Donors by Week Reported and Nebraska Local Health Jurisdiction, 2018

CDC Wk. Reported	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
Local Health Dept.																										**Total**
Central District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dakota County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Douglas County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4	1	1	2	0	0	1	13
East Central District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elkhorn-Logan Valley	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Four Corners	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4
Lincoln-Lancaster	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	4
Loup Basin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Central	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Northeast Nebraska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Panhandle	0	0	0	0	0	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	1	0	0	0	1	0	0	0	0	0	2
Sarpy-Cass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	3
Scotts Bluff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Heartland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	4
Southeast	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Southwest Nebraska	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	2	0	0	0	0	5
Three Rivers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	5
Two Rivers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
West Central	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Statewide Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**3**	**7**	**10**	**8**	**5**	**3**	**3**	**2**	**1**	**2**	**46**

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. **225 human clinical cases have been reported in Nebraska residents to date along with 46 positive asymptomatic human blood donors.** Additionally, **122 positive WNV mosquito pools were detected** during the season. Overall WNV risk is typically highest during the month of August but with recent hard freezes across most of Nebraska, overall risk should now be near zero. 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), five cases of malaria and on case of dengue 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 repellant (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 Biweekly CDC Light Trap Network Mosquito Results, 2018

	CDC Weeks 22/23		CDC Weeks 24/25		CDC Weeks 26/27		CDC Weeks 28/29		CDC Weeks 30/31		CDC Weeks 32/33		CDC Weeks 34/35		CDC Weeks 36/37		CDC Weeks 38/39	
Region/County	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex
West Region	**304.87**	**29.54**	**167.14**	**10.51**	**188.92**	**24.04**	**311.59**	**64.15**	**365.63**	**172.22**	**195.02**	**70.79**	**133.10**	**55.10**	**39.71**	**12.71**	**35.27**	**5.71**
Box Butte	102.00	0.00	52.40	13.40	38.67	6.67	294.33	108.33	1257.00	859.00	152.83	75.33	77.33	59.33	5.67	2.00	9.83	6.17
Chase	31.17	2.17	3.17	1.67	1.33	0.67	67.40	5.00	20.33	4.17	23.83	17.00	8.67	7.67	29.17	23.17	0.67	0.33
Cherry	526.83	216.17	24.50	15.17	632.83	71.67	171.50	60.17	209.00	75.83	148.50	113.67	57.83	21.50	10.00	3.17	8.17	0.83
Dawes	698.33	2.50	73.67	6.17	235.33	48.17	ND	ND	184.17	135.00	239.00	59.83	137.67	4.50	33.50	14.33	6.00	0.00
Garden	49.40	1.40	203.33	29.33	61.83	18.17	315.33	46.33	851.33	258.17	55.67	41.00	316.17	188.50	91.67	29.17	176.17	26.83
Lincoln	102.80	4.20	417.83	11.33	86.67	6.83	919.50	13.83	297.33	7.33	549.50	57.50	337.50	90.50	86.83	4.50	31.83	2.50
Red Willow	13.50	0.50	6.00	0.00	6.75	2.88	52.33	30.33	57.83	21.00	110.33	19.50	43.00	26.67	16.00	2.50	6.83	1.17
Scotts Bluff	838.67	0.50	429.67	0.50	447.67	36.33	320.00	175.17	259.67	62.17	280.50	182.50	86.67	42.17	44.83	22.83	42.67	7.83

	CDC Weeks 22/23		CDC Weeks 24/25		CDC Weeks 26/27		CDC Weeks 28/29		CDC Weeks 30/31		CDC Weeks 32/33		CDC Weeks 34/35		CDC Weeks 36/37		CDC Weeks 38/39	
Region/County	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex
Central Region	**88.12**	**3.33**	**61.45**	**4.66**	**114.39**	**14.95**	**369.25**	**21.24**	**46.02**	**23.84**	**98.77**	**61.82**	**165.86**	**114.22**	**65.72**	**45.49**	**67.32**	**23.27**
Adams	38.00	3.67	26.33	2.00	172.33	13.67	7.00	5.67	15.67	15.67	44.33	43.00	415.33	395.67	249.00	236.67	145.33	66.00
Buffalo	57.33	3.50	48.00	4.33	158.83	1.17	4.00	1.00	2.83	2.67	10.67	5.83	ND	ND	ND	ND	ND	ND
Dawson	ND	ND	2.33	0.50	14.40	12.40	142.83	35.17	22.00	19.33	44.50	40.00	147.33	146.50	4.00	2.50	51.50	24.50
Garfield	229.50	1.33	174.67	9.17	99.17	8.50	269.33	8.83	72.00	13.67	189.33	76.50	157.33	117.00	57.67	12.67	63.67	4.83
Hall	39.33	1.67	50.33	1.67	39.83	1.67	154.50	15.50	4.67	1.83	6.67	6.17	89.67	77.83	43.17	23.52	43.83	6.17
Holt	ND	ND	83.00	14.67	164.50	68.00	1226.17	55.58	199.17	120.33	396.33	263.50	330.00	99.83	31.00	3.17	5.50	0.25
Phelps	134.17	9.17	69.50	2.50	270.33	12.17	1.17	0.83	2.83	2.67	38.67	35.33	102.50	79.25	129.83	111.33	87.83	67.00
Webster	5.33	0.83	11.60	0.40	8.00	1.00	111.00	4.67	33.83	10.50	19.20	5.40	22.50	12.50	37.00	24.17	92.00	7.83

	CDC Weeks 22/23		CDC Weeks 24/25		CDC Weeks 26/27		CDC Weeks 28/29		CDC Weeks 30/31		CDC Weeks 32/33		CDC Weeks 34/35		CDC Weeks 36/37		CDC Weeks 38/39	
Region/County	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex	Total Mosquito	Total Culex
East Region	**55.13**	**8.96**	**64.61**	**11.61**	**164.39**	**11.24**	**204.83**	**76.74**	**136.96**	**115.06**	**134.04**	**69.96**	**137.98**	**67.87**	**198.40**	**48.66**	**202.11**	**32.56**
Dixon	11.33	9.67	46.67	26.33	813.33	35.00	266.33	125.33	110.00	106.00	120.00	102.00	201.00	173.67	44.33	24.00	2.50	1.00
Dodge	36.80	7.20	66.00	7.20	40.56	7.67	64.60	35.20	34.60	27.20	36.20	28.80	31.60	19.40	86.40	28.80	36.80	5.20
Douglas	69.44	2.56	42.11	5.22	6.25	0.25	329.50	16.50	665.33	607.33	58.83	37.67	44.00	35.83	1070.00	128.00	428.00	95.17
Gage	71.50	6.00	25.00	3.00	1.00	0.00	50.50	4.50	74.50	9.50	111.50	44.00	37.00	21.00	35.00	17.00	226.00	21.00
Jefferson	35.67	3.67	31.50	2.25	368.25	3.00	97.50	29.25	34.75	28.25	145.50	111.25	401.25	172.50	127.75	50.75	708.50	112.50
Lancaster	95.17	14.33	17.50	7.33	182.67	14.67	57.33	9.17	57.67	36.17	44.17	17.33	211.67	65.83	72.17	28.50	99.50	20.83
Madison	92.00	5.00	35.50	5.17	63.83	7.00	393.83	163.00	81.50	63.67	468.67	133.50	88.00	18.17	50.33	28.17	259.17	9.50
Platte	52.00	6.80	56.20	16.40	58.20	12.00	87.40	40.40	83.60	53.40	54.80	36.60	107.00	72.20	32.40	23.00	136.20	7.40
Richardson	25.60	18.20	56.50	30.67	24.00	11.83	38.00	6.17	22.50	18.17	57.33	31.17	78.83	73.67	119.67	92.17	30.17	23.00
Seward	5.00	3.00	ND	ND	209.00	15.00	ND	ND	5.00	5.00	58.00	58.00	ND	ND	2.00	2.00	ND	ND
Wayne	39.00	23.33	408.00	7.33	453.00	35.33	820.00	493.67	151.67	138.67	165.33	151.00	279.00	83.33	47.33	18.67	12.67	5.67
York	12.00	10.00	45.00	9.00	39.00	4.00	ND	ND	10.00	6.00	264.00	241.00	ND	ND	ND	ND	ND	ND

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

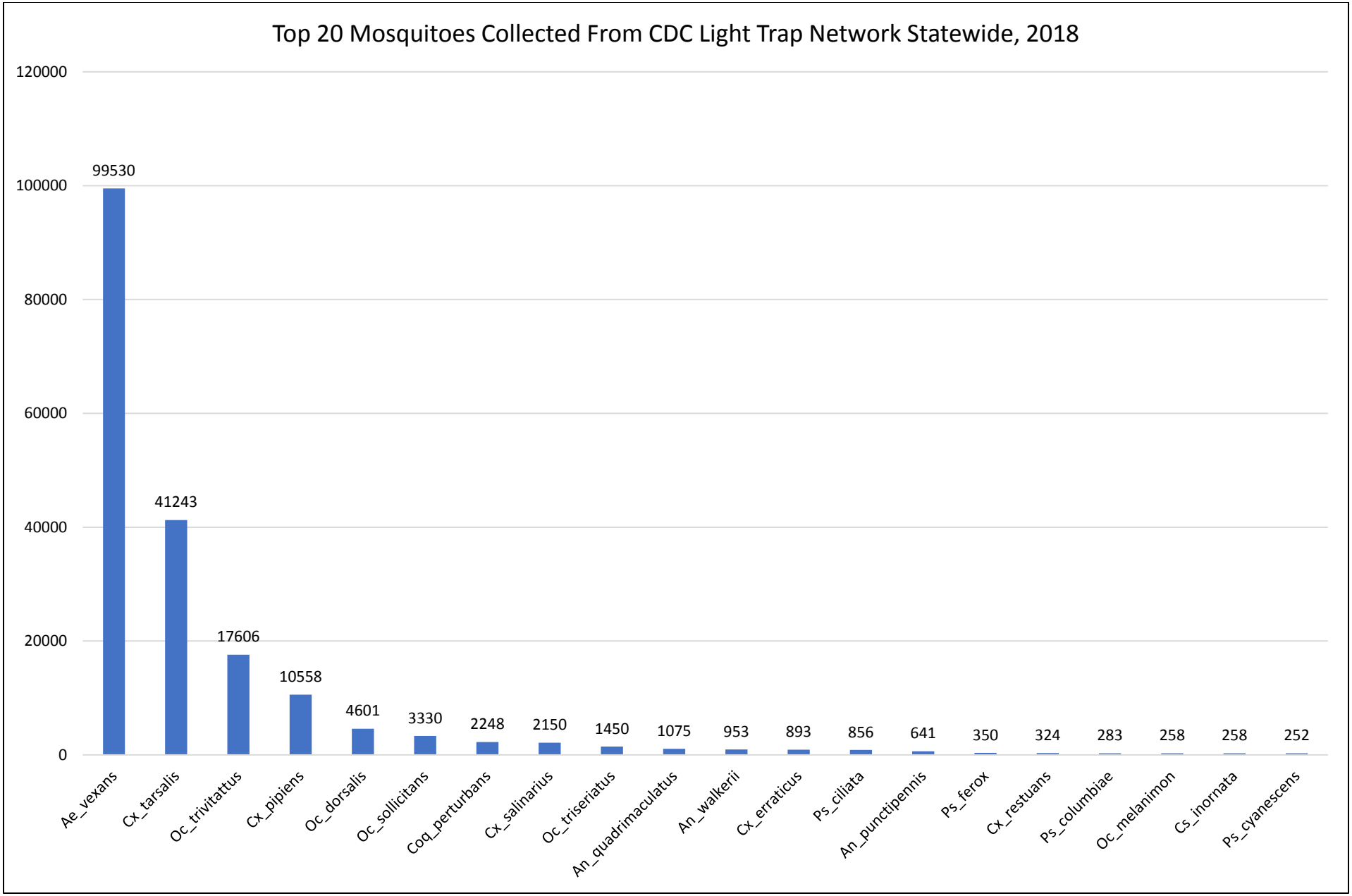

Figure 8. Top 20 cumulative mosquitoes collected statewide from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.

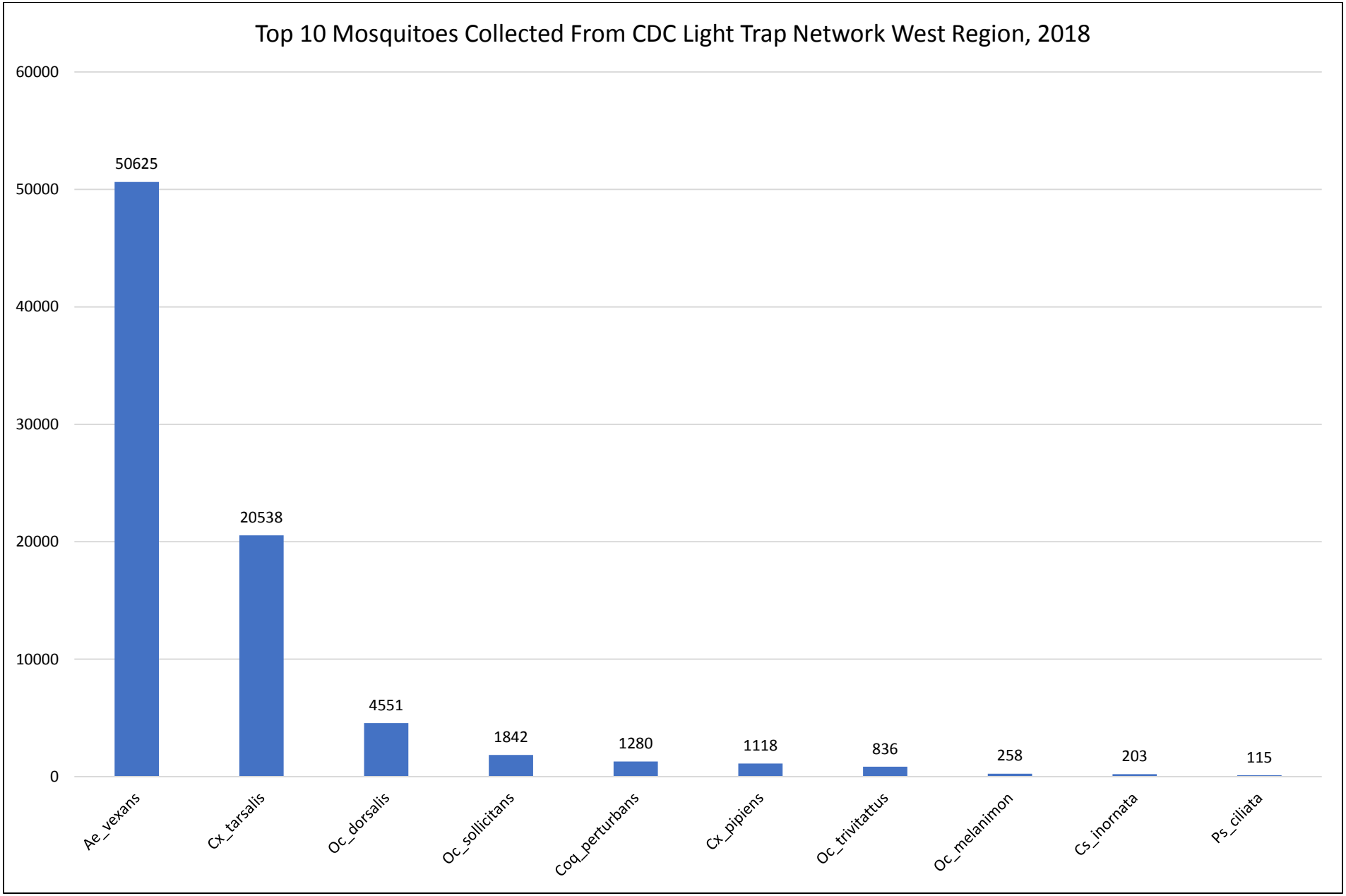

Figure 9. Top 10 cumulative mosquitoes collected in West region of the state from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, and Unid'd= Unidentified.

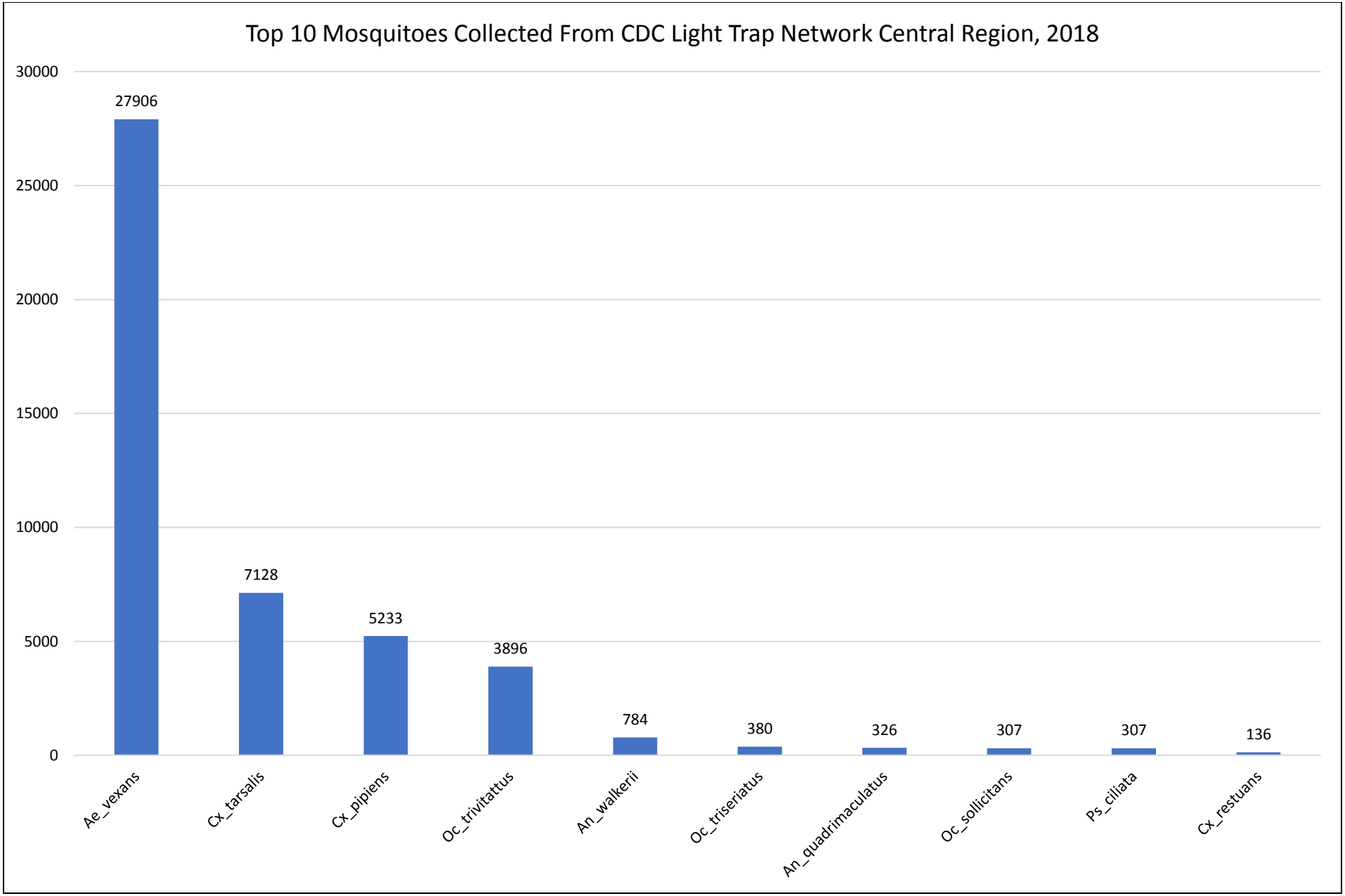

Figure 10. Top 10 cumulative mosquitoes collected in Central region of the state from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, and Unid'd=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

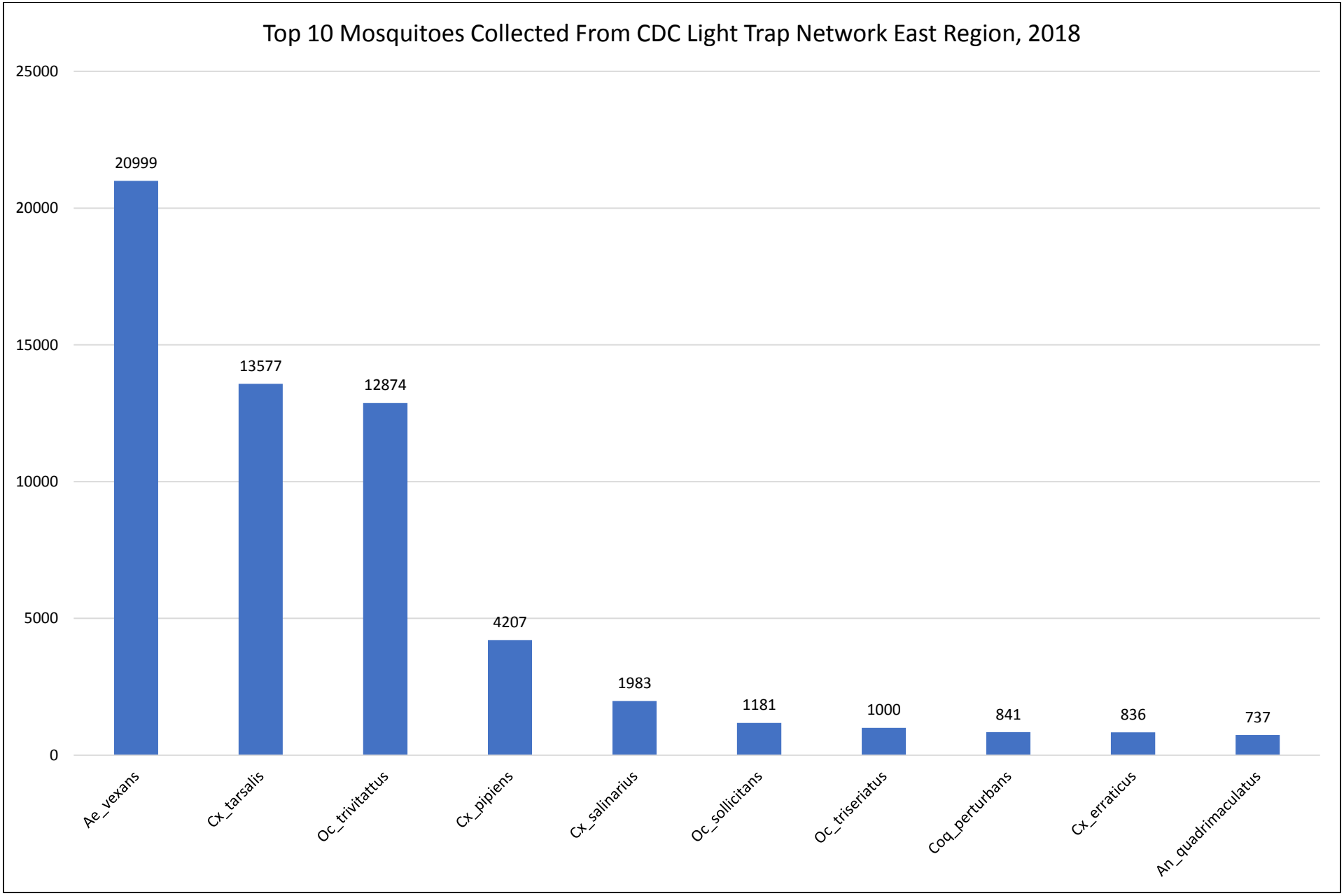

Figure 11. Top 10 cumulative mosquitoes collected in East region of the state from CDC light trap network, 2018. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, and Unid'd= Unidentified.

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 Depart., 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 192,790 mosquitoes were captured with 180 (0.093%) *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	35	10	0
Cass Co. Overall Total		**35**	**10**	**0**
Douglas	CDC Light	17281	6010	1
	BG Sentinel 2	1518	436	0
Douglas Co. Overall Total		**18799**	**6446**	**1**
Lancaster	CDC Light	5027	1285	0
	BG Sentinel 2	462	116	0
Lancaster Co. Overall Total		**5489**	**1401**	**0**
Nemaha	CDC Light	NA	NA	NA
	BG Sentinel 2	8	7	0
Nemaha Co. Overall Total		**8**	**7**	**0**
Otoe	CDC Light	NA	NA	NA
	BG Sentinel 2	8	2	0
Otoe Co. Overall Total		**8**	**2**	**0**
Richardson	CDC Light	2690	1812	106
	BG Sentinel 2	253	111	73
Richardson Co. Overall Total		**2943**	**1923**	**179**
Sarpy	CDC Light	NA	NA	NA
	BG Sentinel 2	110	91	0
Sarpy Co. Overall Total		**110**	**91**	**0**

Overall Total		**27392**	**9878**	**180**

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

Bird and Equine Surveillance

Dead bird reporting: For the season, 138 dead birds have been reported to the Nebraska DHHS dead bird database. Of these, eight met the established criteria for WNV testing. One WNV positive has been reported from Douglas County (see Figure 12 below). Additionally, five have been negative and two were unsuitable for testing.

Equine surveillance: For the season two equine WNV cases (see Figure 13 below) has been reported to the Nebraska DHHS from Cherry County (1) and Dakota County (1).

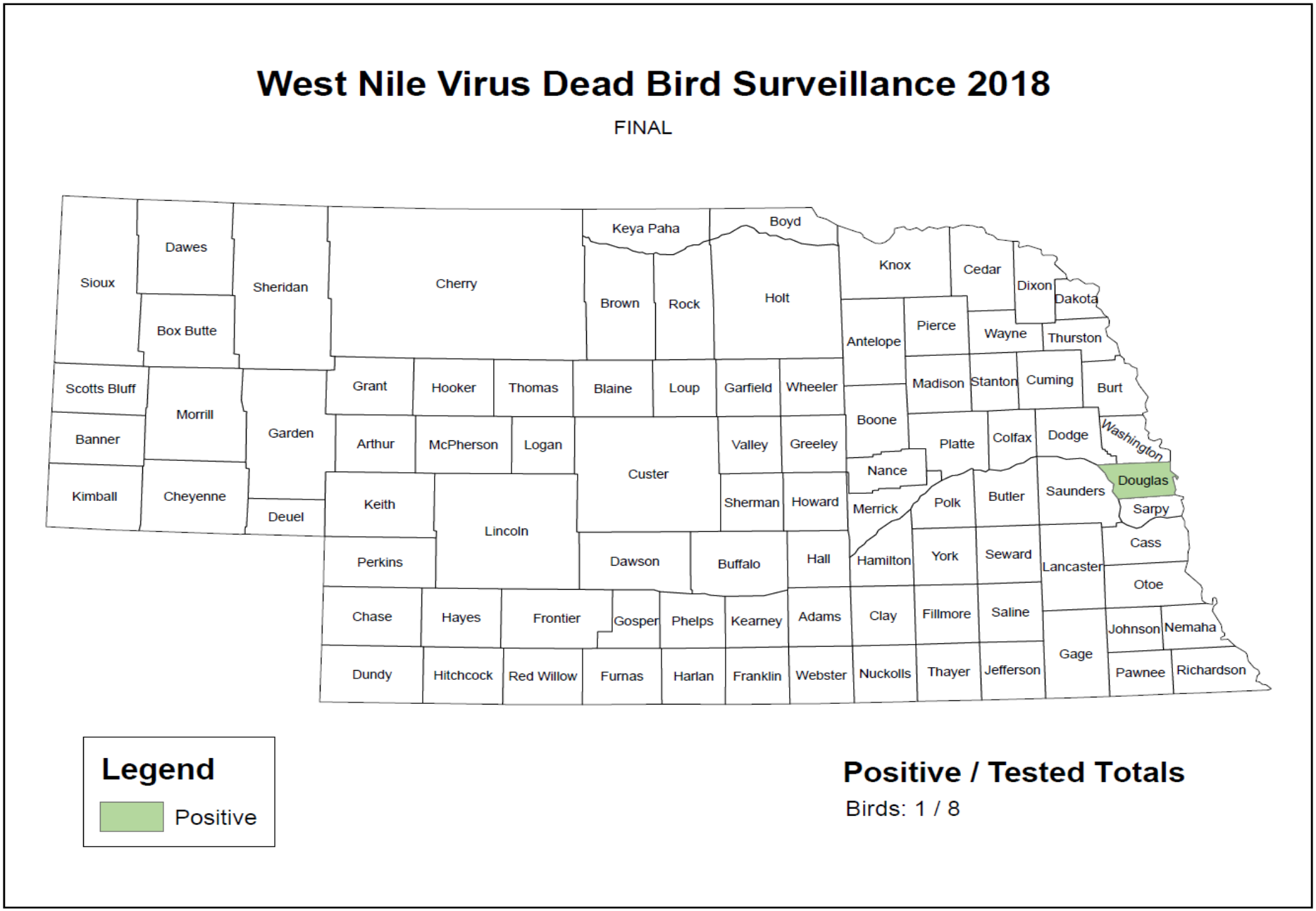

Figure 12. Positive WNV birds detected in the Nebraska, 2018.

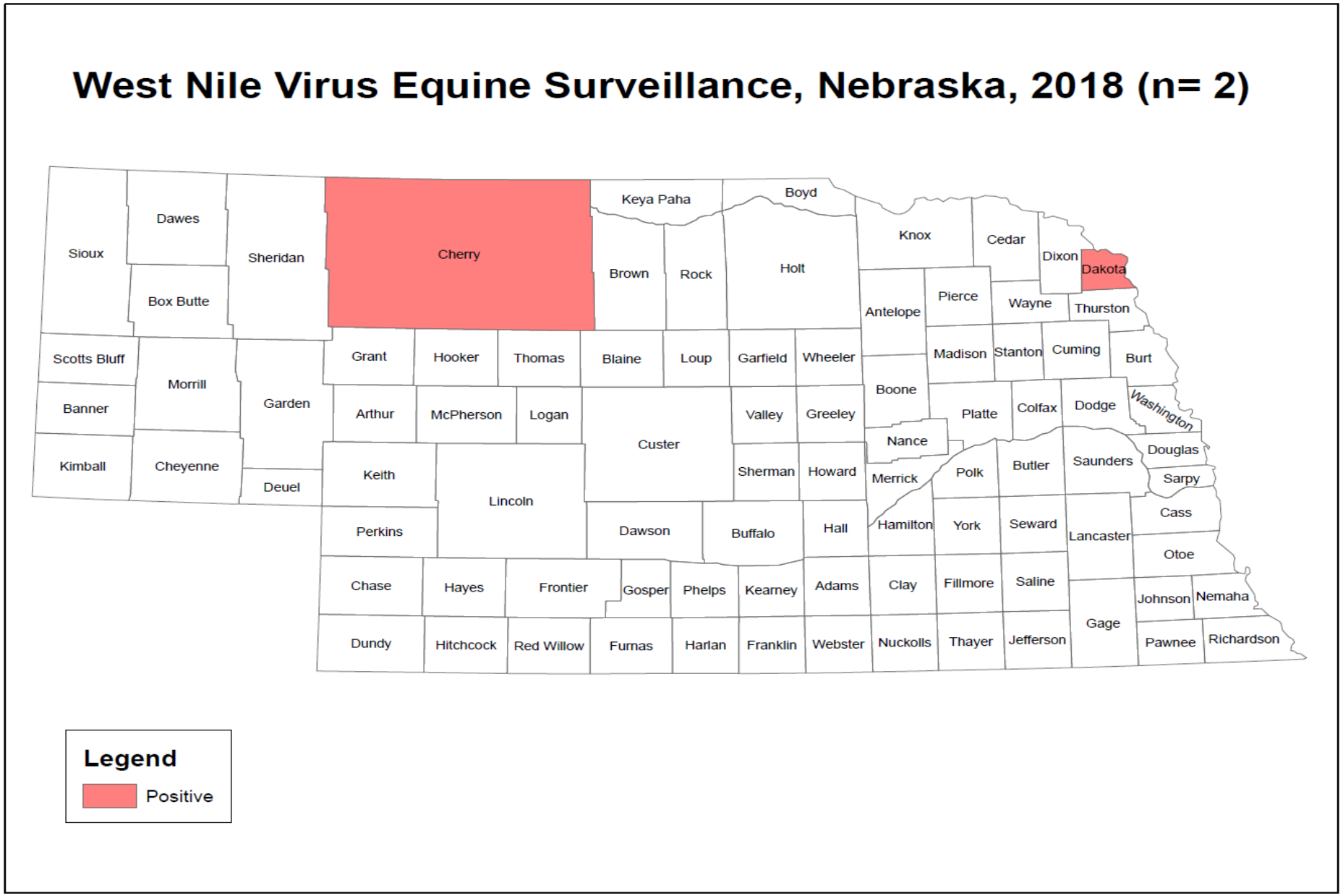

Figure 13. Positive WNV equines detected in Nebraska, 2018.

Fight the Bite!!