

# NEBRASKA ADULT MOSQUITO SURVEILLANCE REPORT 2020 UPDATE #17 (Final)

Date: 10/5/2020. Please note that routine mosquito surveillance has come to an end for the 2020 season. All data is provisional.

## SUMMARY

Summary Table – Regional CDC Light Trap Data, Season Cumulative Collection Data

Region	Total Mosquito Trap Index (Final)			Culex Mosquito Trap Index (Final)		
	2020 Season Trap Index	5 Year Avg Trap Index	Activity	2020 Season Trap Index	5 Year Avg Trap Index	Activity
West	75.54	235.38	1	21.34	69.19	1
Central	147.09	141.79	2	16.58	36.11	1
East	50.63	177.24	1	13.51	43.10	1
Statewide	90.14	183.25	1	16.92	48.91	1

\*Trap indexes are calculated by taking the number of mosquitoes and dividing it by the number of traps set per night (Trap Index = Mosquitoes collected/# of Traps/# of nights set). The indexes are

\*\*Activity levels are described in relative terms based on historical data from at most the previous 5 years. Activity levels correspond to: **1 = at or below 5 year average**, **2 = counts marginally elevated above average (up to 50% greater than average)**, **3 = counts moderately elevated above average (up to 100% greater than average)**, **4 = counts significantly elevated above average (up to 150% greater than average)**, and **5 = counts extremely elevated above average (>150%)**.

\*\*\*Regional breakdowns (see pg. 2 for map) are as follows: **West** = Panhandle Public Health Department (Box Butte, Dawes, and Garden Counties), Southwest NE Public Health Department (Chase and Red Willow Counties), Scotts Bluff County Health Department (Scotts Bluff County); **Central** = Central District Health Department (Hall County), East Central District Health Department (Platte County), Four Corners Health Department (York County), Loup Basin Public Health Department (Garfield County), North Central District Health Department (Cherry, Holt, and Knox Counties), South Heartland Health Department (Adams and Webster Counties), Two Rivers Public Health Department (Buffalo, Dawson, and Phelps Counties), West Central District Health Department (Lincoln Co.); **East** = Douglas County Health Department (Douglas County), Elkhorn-Logan Valley Public Health Department (Madison County), Lincoln-Lancaster County Health Department (Lancaster County), Northeast NE Public Health Department (Dixon and Wayne Counties), Public Health Solutions (Gage and Jefferson Counties), Sarpy-Cass Health Department (Sarpy County), Southeast District Health Department (Richardson County), Three Rivers Public Health Department (Dodge County).

**State summary:** Total mosquito counts for the 2020 season were below their 5 year historical averages in two (East and West) of three regions this season. Only the Central region showed a marginal elevated 2020 count above their historical average. The 2020 seasonal *Culex* mosquito counts were below 5 year historical norms across all three regions. Regionally, *Aedes vexans* (common floodwater mosquito) was the most collected species from the West, Central, and East regions this season. Looking at WNV vectors, *Culex tarsalis* was the most abundantly collected *Culex* species in the Central and West regions. While *Culex salinarius* was the most abundant WNV vector in the East region. Statewide, *Aedes vexans* was the most collected species this season making up 50.66% of all collections and *Culex tarsalis* was the most abundantly collected WNV vector making up 11.72% of collections.

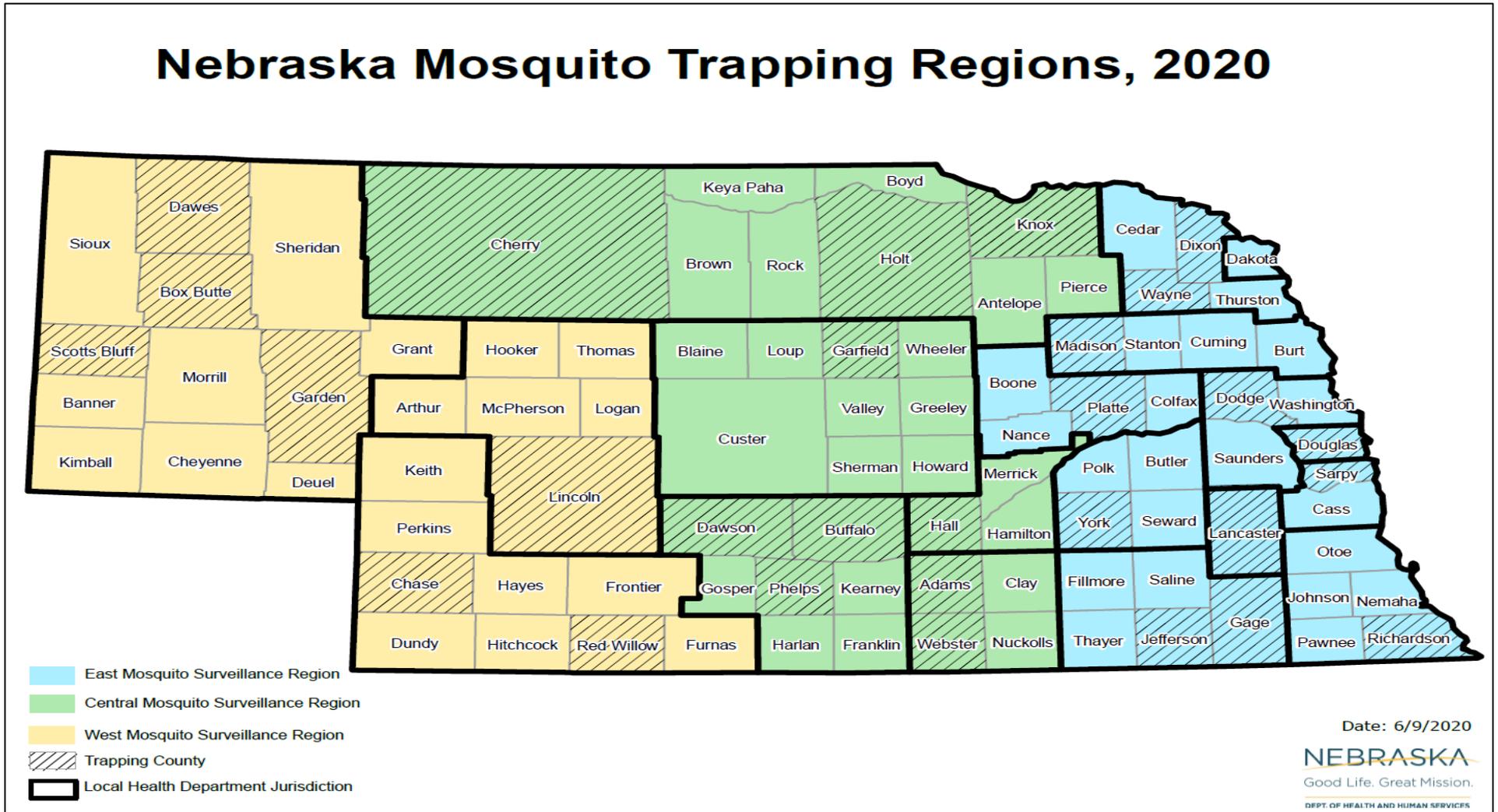


Figure 1. Nebraska Mosquito Light Trap Regions, 2020.

Region Graphs:

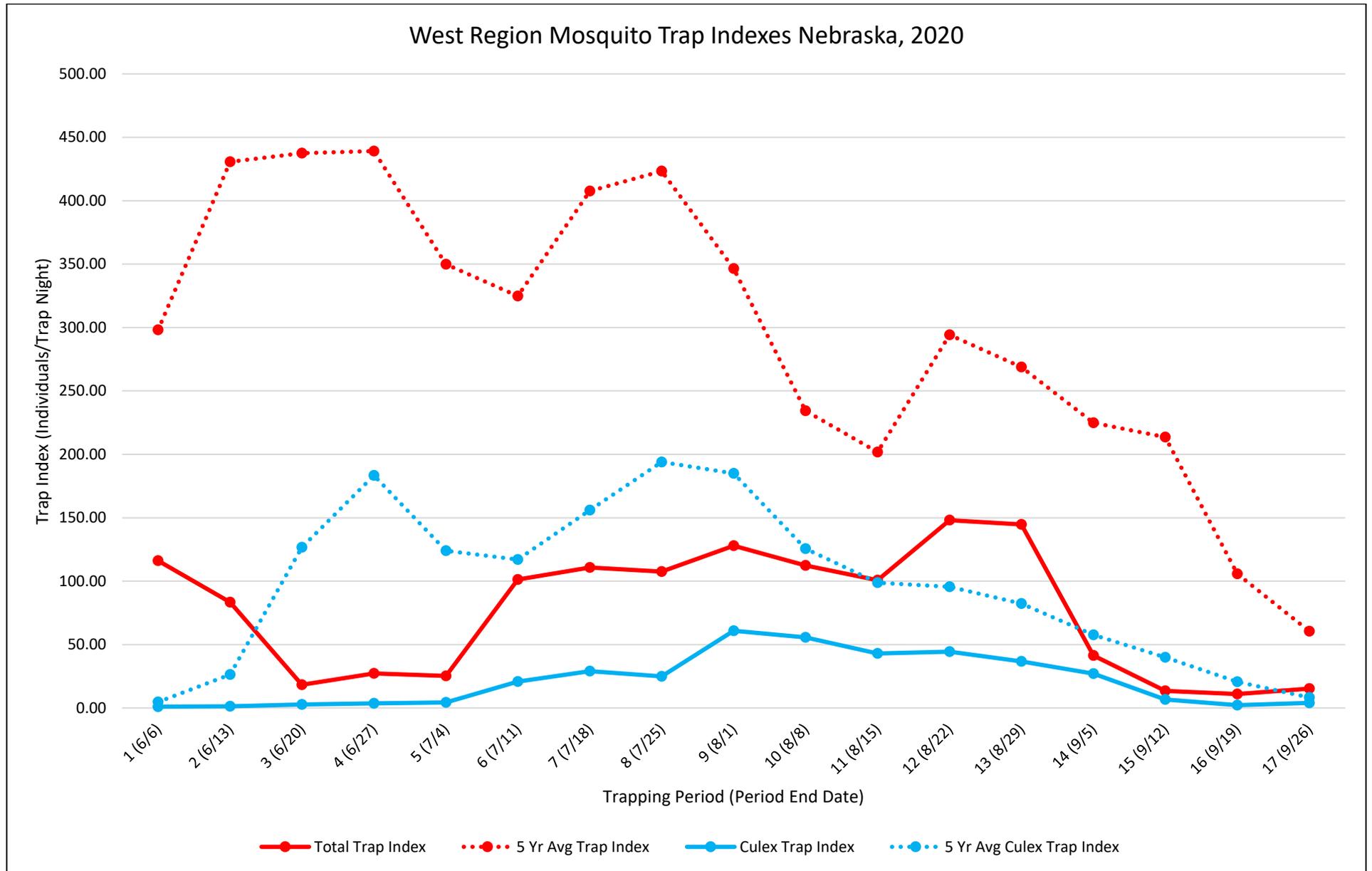
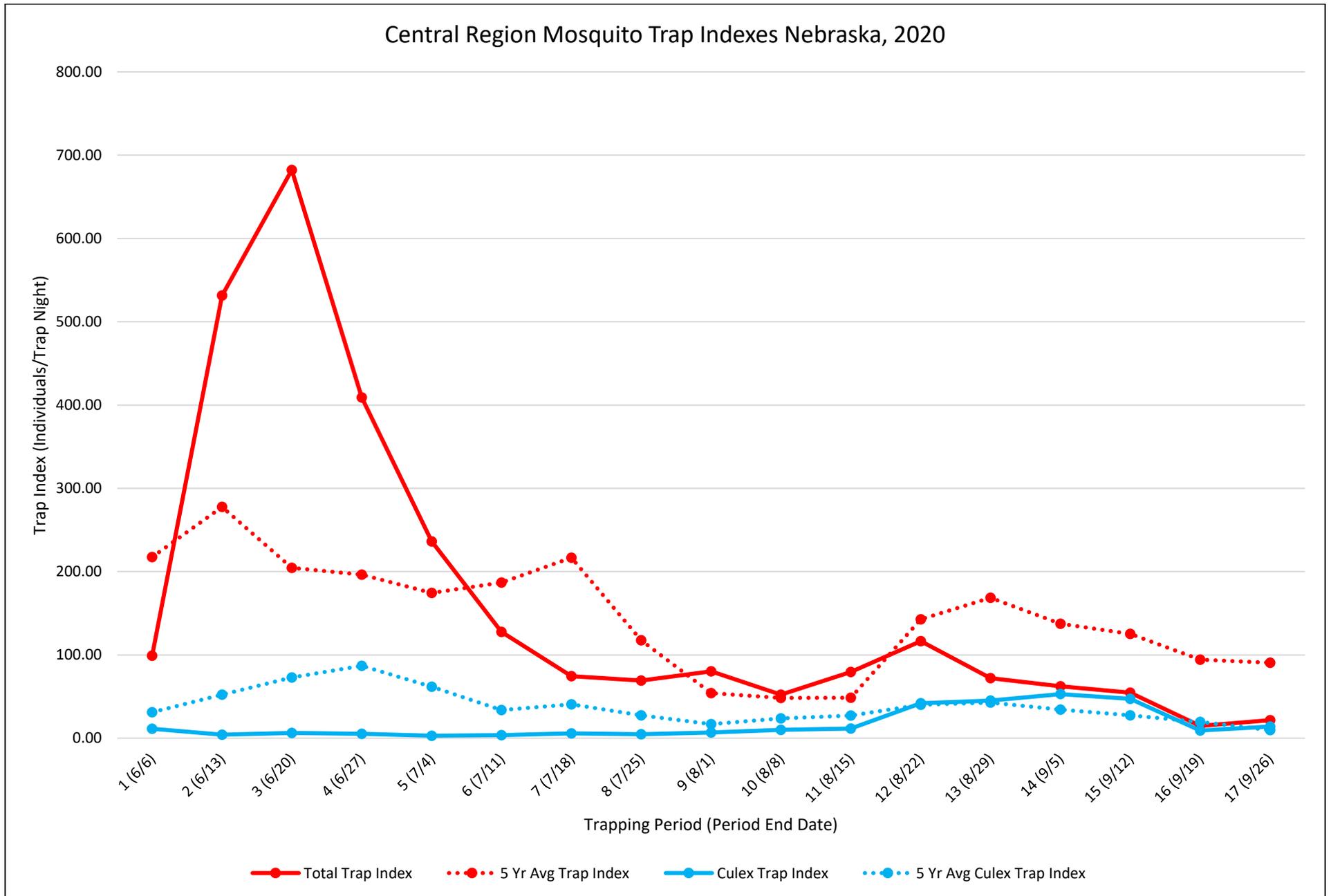
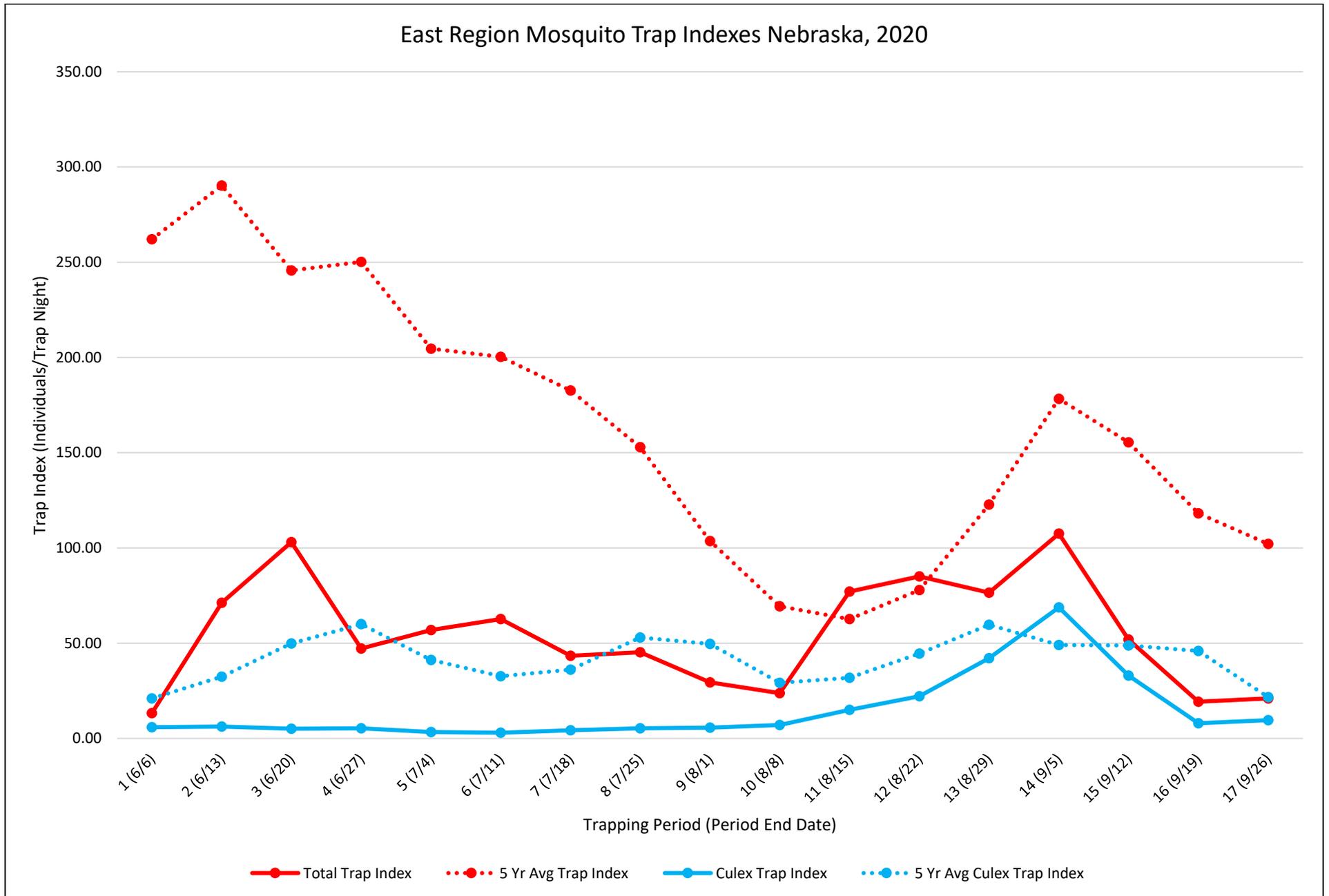


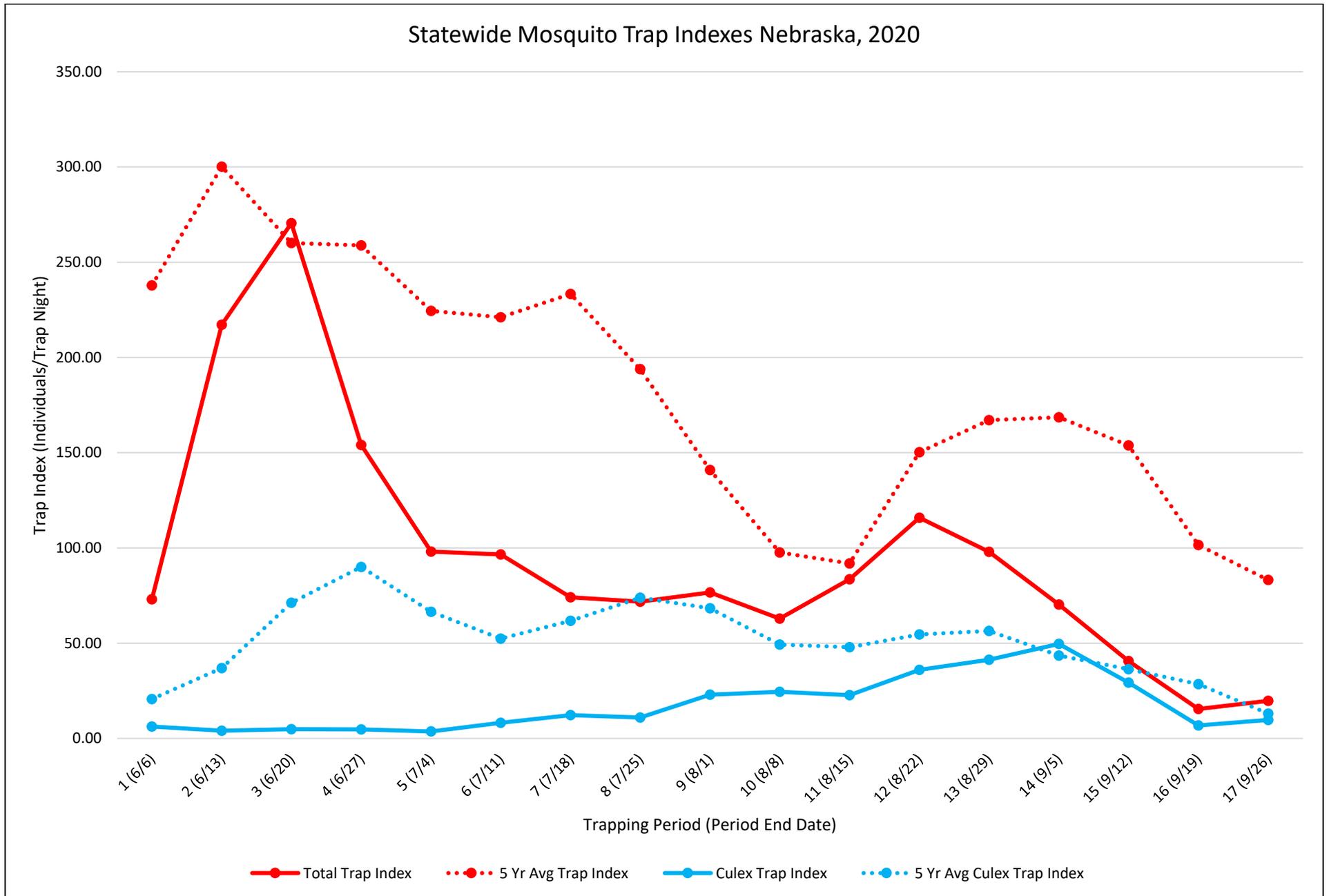
Figure 2. West Region Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2020.



**Figure 3.** Central Region Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2020.

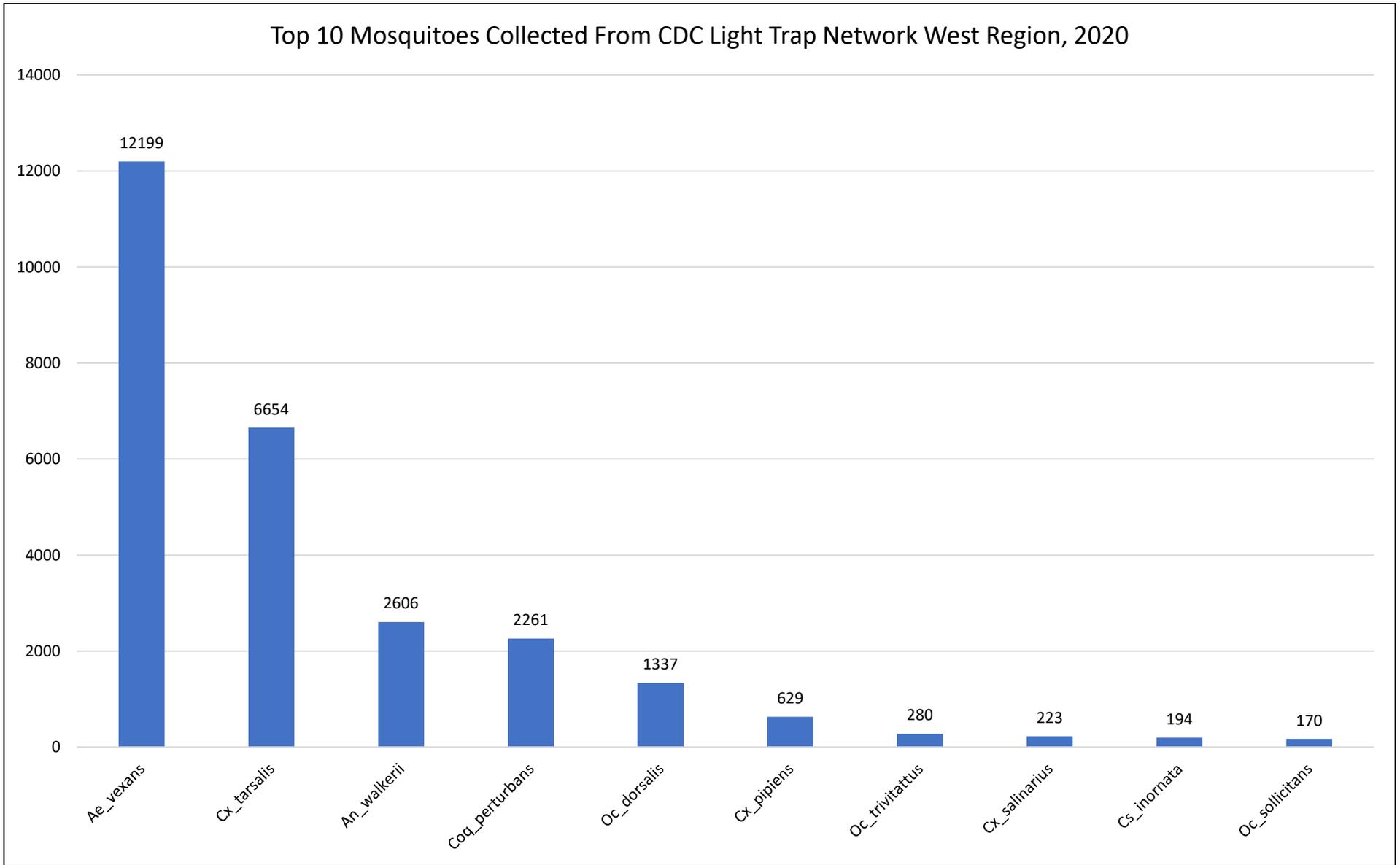


**Figure 4.** East Region Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2020.

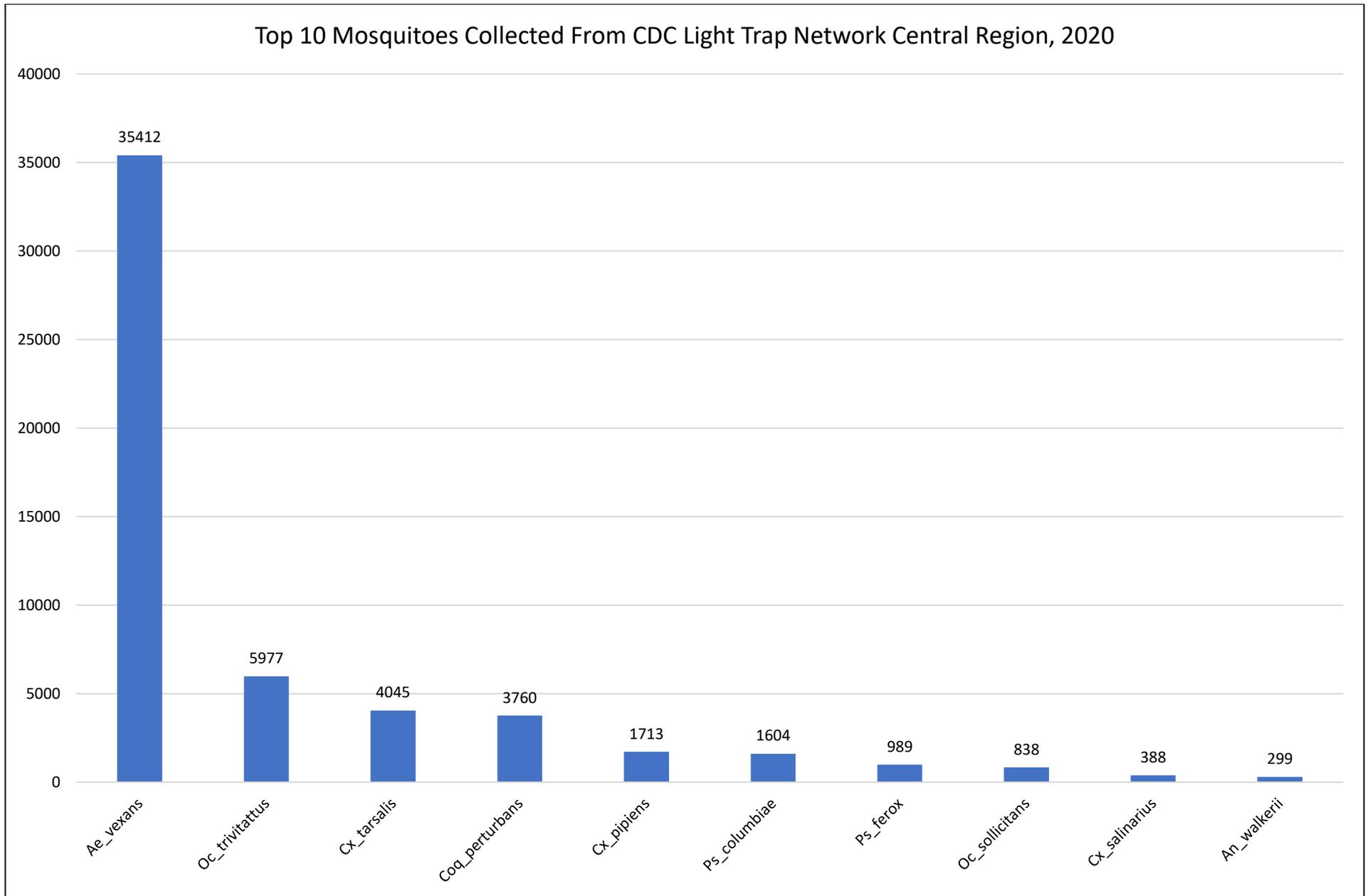


**Figure 5.** Statewide Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2020.

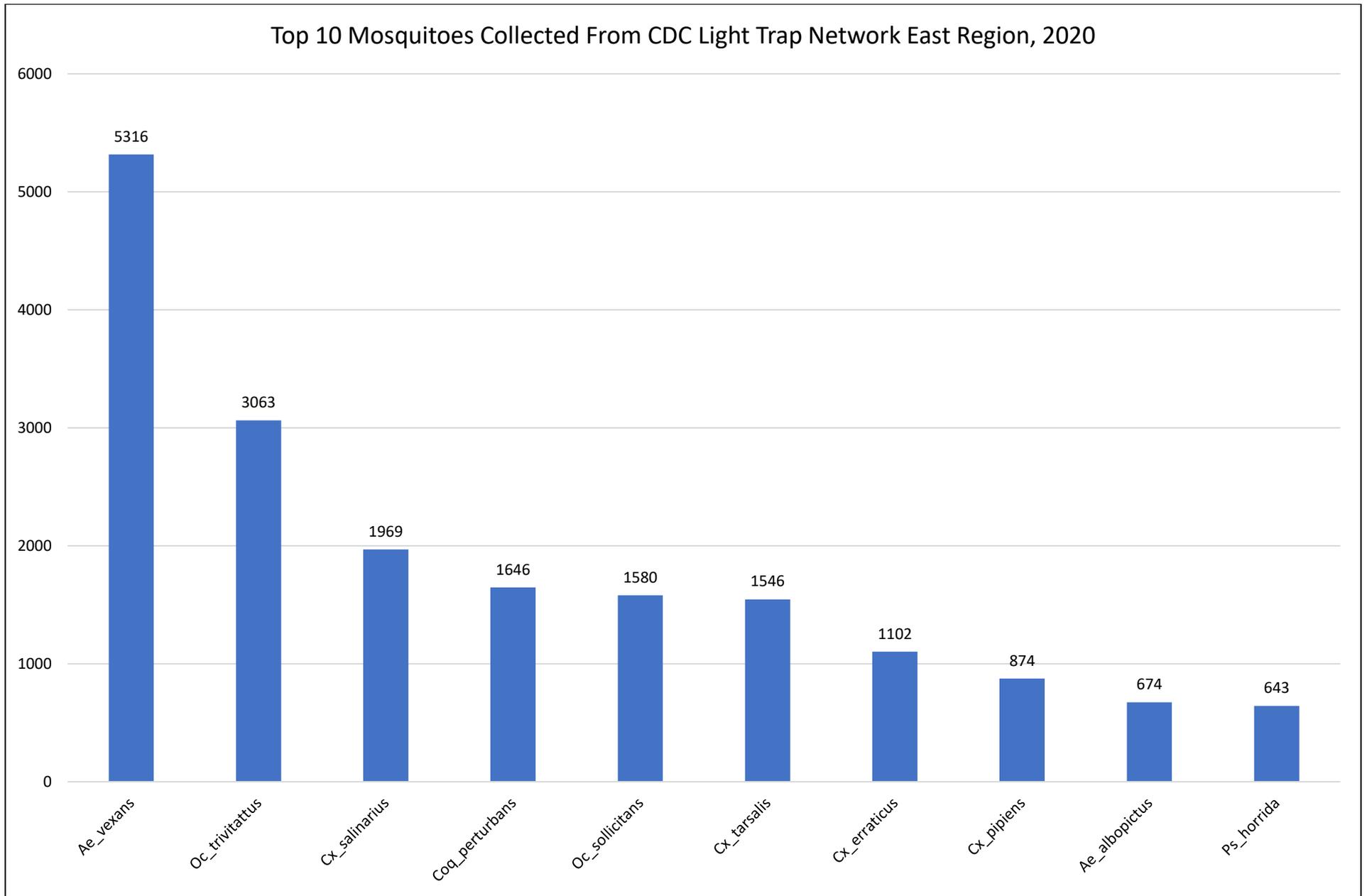
**Top Mosquitoes per Region (cumulative counts):**



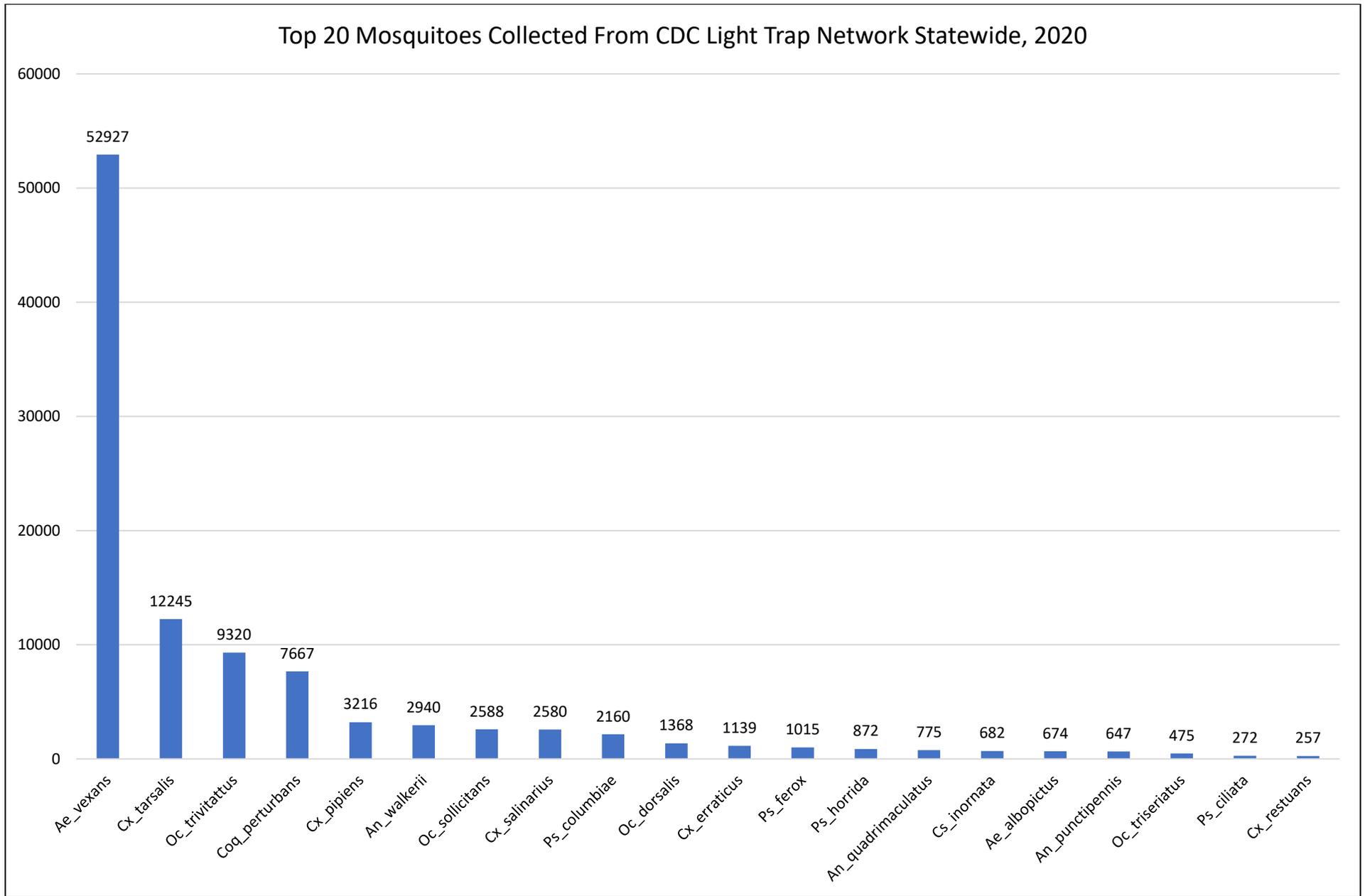
**Figure 6.** Top 10 mosquito species collected from CDC Light Trap Network West Region Nebraska, 2020. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culex*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.



**Figure 7.** Top 10 mosquito species collected from CDC Light Trap Network Central Region Nebraska, 2020. 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 8.** Top 10 mosquito species collected from CDC Light Trap Network East Region Nebraska, 2020. 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 20 mosquito species collected from CDC Light Trap Network Statewide Nebraska, 2019. 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.

**Invasive *Aedes* Mosquito Surveillance:** Two invasive (non-native) mosquito species are the main targets of this surveillance. They are *Aedes aegypti* (the yellow fever mosquito) and *Aedes albopictus* (the Asian tiger mosquito). Unlike most native mosquito species, *Aedes aegypti* and *Aedes albopictus* bite primarily during the day. Both species are small black mosquitoes with white stripes on their back and on their legs. They can lay eggs in any small artificial or natural containers that hold water. Historically, only *Aedes albopictus* had been detected in Nebraska. In 2019, *Aedes aegypti* was detected for the first time in the state in York, Nebraska. This detection prompted a coordinated response, between both the local health department (Four Corners Health Department) and the Nebraska Department of Health and Human Services. Response activities included efforts to identify the area of infestation, determine population size, eliminate larval habitat, and try to determine where/how these mosquitoes became established. Surveillance for *Aedes aegypti* will continue in York this season.

*Aedes aegypti* and *Aedes albopictus* have the potential to transmit several viruses, including dengue, chikungunya, Zika, and yellow fever. However, none of these viruses are known to be transmitted within Nebraska, but people are infected with these viruses in other parts of the world, including Mexico, Central and South America, the Caribbean, and Asia. All collected invasive *Aedes* mosquitoes are tested for dengue, chikungunya, and Zika.

*Aedes aegypti* was detected for the second consecutive season in Nebraska. A single *Aedes aegypti* female was collected in a routine CDC light trap in Jefferson County on 9/22/2020. The detection this year was in a different county than the first documented detection (York County) in the state last season. Follow up surveillance at present has revealed no additional collections of *Aedes aegypti* from the affected area. As colder weather begins to move in, winter temperatures should take care of any remaining adults and eggs in the area. However, surveillance will continue to be implemented next mosquito season in the detection area. During the 2020 season, a total of 675 invasive *Aedes* mosquitoes (*Aedes albopictus*, n = 674 and *Aedes aegypti*, n = 1) were collected.

County	Trap Type	Total Mosquitoes	Total Ae_albopictus	Total Ae_aegypti
Douglas	CDC Light	3996	1	0
	BG Sentinel 2	228	0	0
<b>Douglas Co. Overall Total</b>		<b>4224</b>	<b>1</b>	<b>0</b>
Jefferson	CDC Light	5602	0	1
	BG Sentinel 2	121	0	0
<b>Jefferson Co. Overall Total</b>		<b>5723</b>	<b>0</b>	<b>1</b>
Lancaster	CDC Light	3867	0	0
	BG Sentinel 2	452	0	0
<b>Lancaster Co. Overall Total</b>		<b>4319</b>	<b>0</b>	<b>0</b>
Richardson	CDC Light	1671	673	0
<b>Richardson Co. Overall Total</b>		<b>1671</b>	<b>673</b>	<b>0</b>
York	CDC Light	617	0	0
York	BG Sentinel 2	32	0	0
<b>York Co. Overall Total</b>		<b>649</b>	<b>0</b>	<b>0</b>

<b>Overall Total</b>		<b>16586</b>	<b>674</b>	<b>1</b>
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## 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

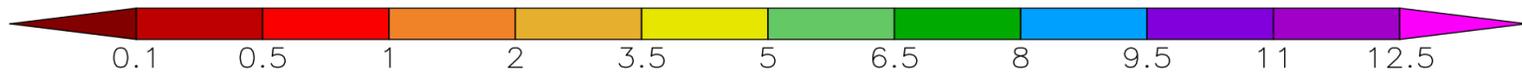
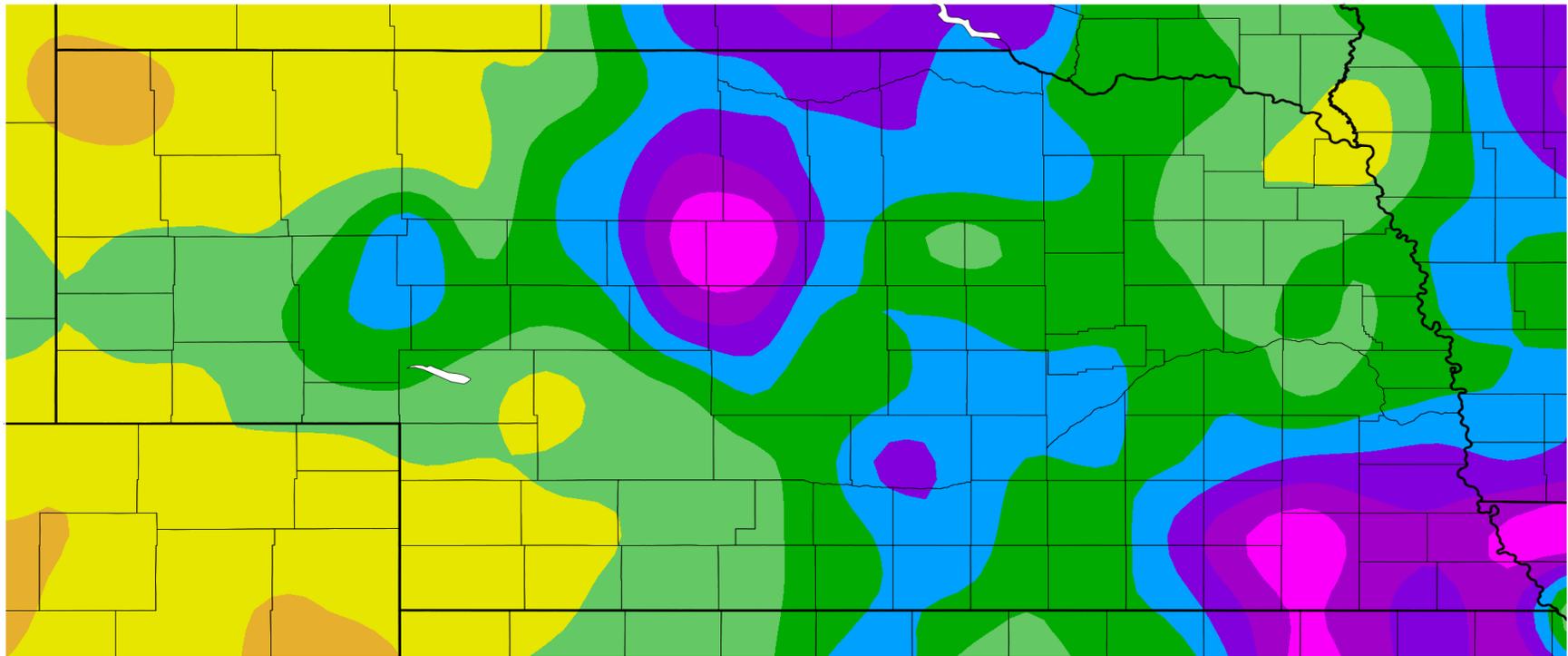
The following figures show precipitation and temperature data from the 2020 season across the state. More climate and forecast information can be found at:

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)

4/1/2020 – 6/30/2020

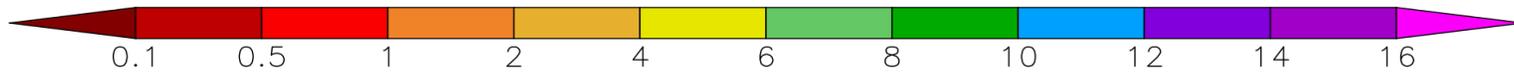
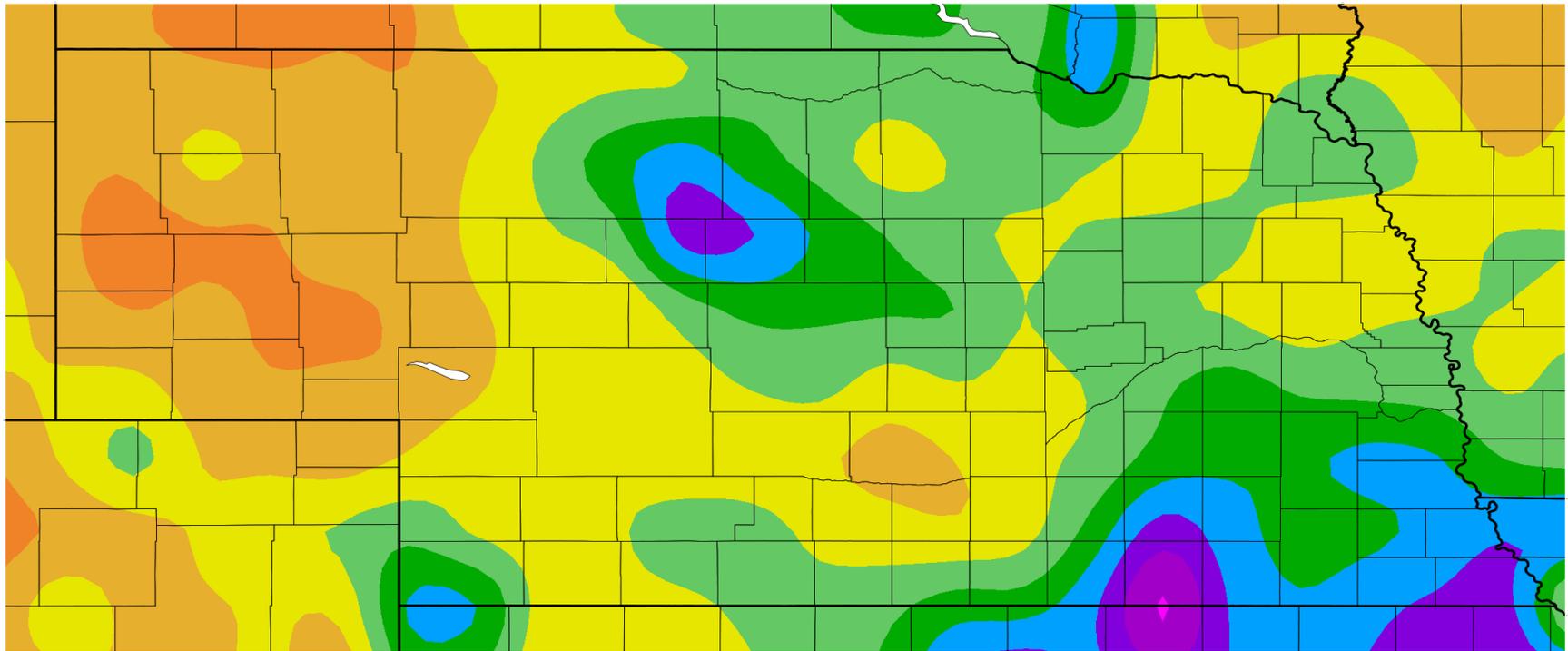


Generated 7/20/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

# Precipitation (in)

7/1/2020 – 9/30/2020

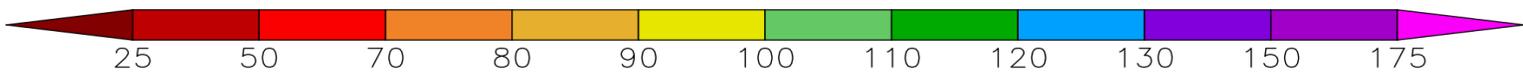
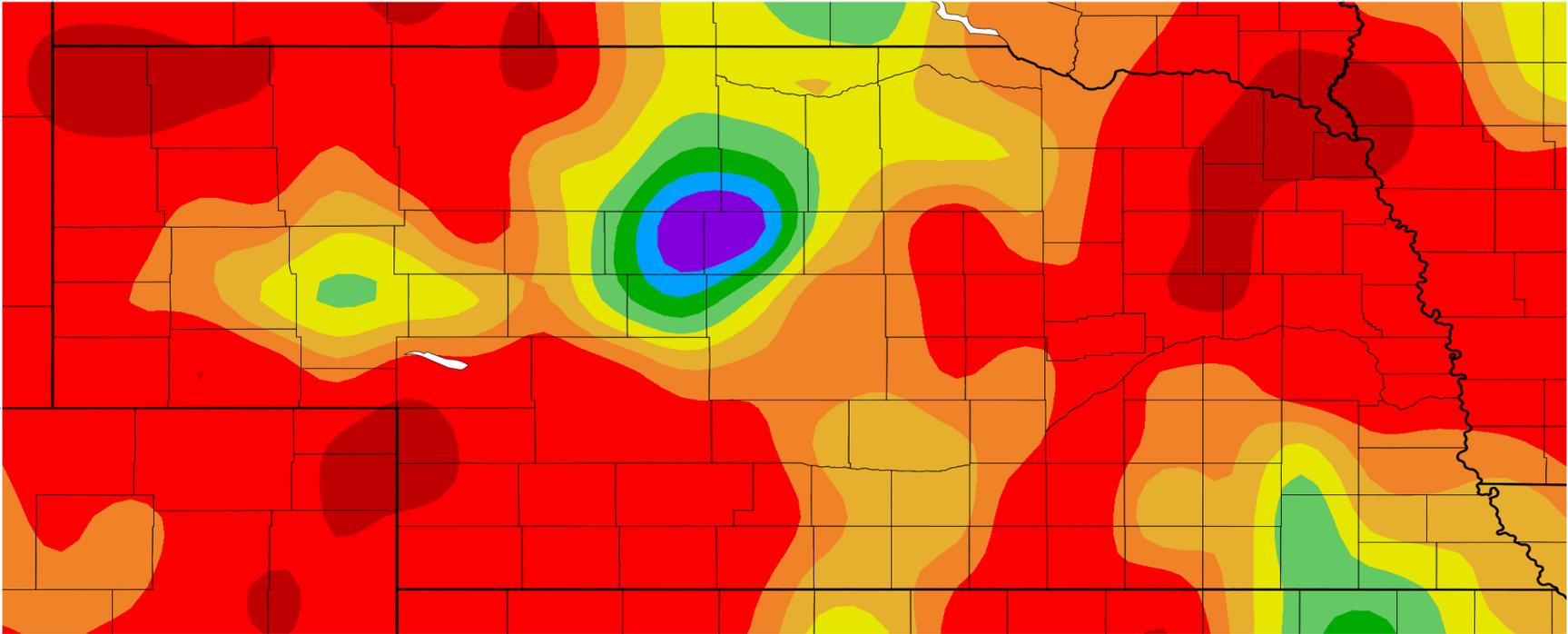


Generated 10/4/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

# Percent of Normal Precipitation (%)

4/1/2020 – 6/30/2020

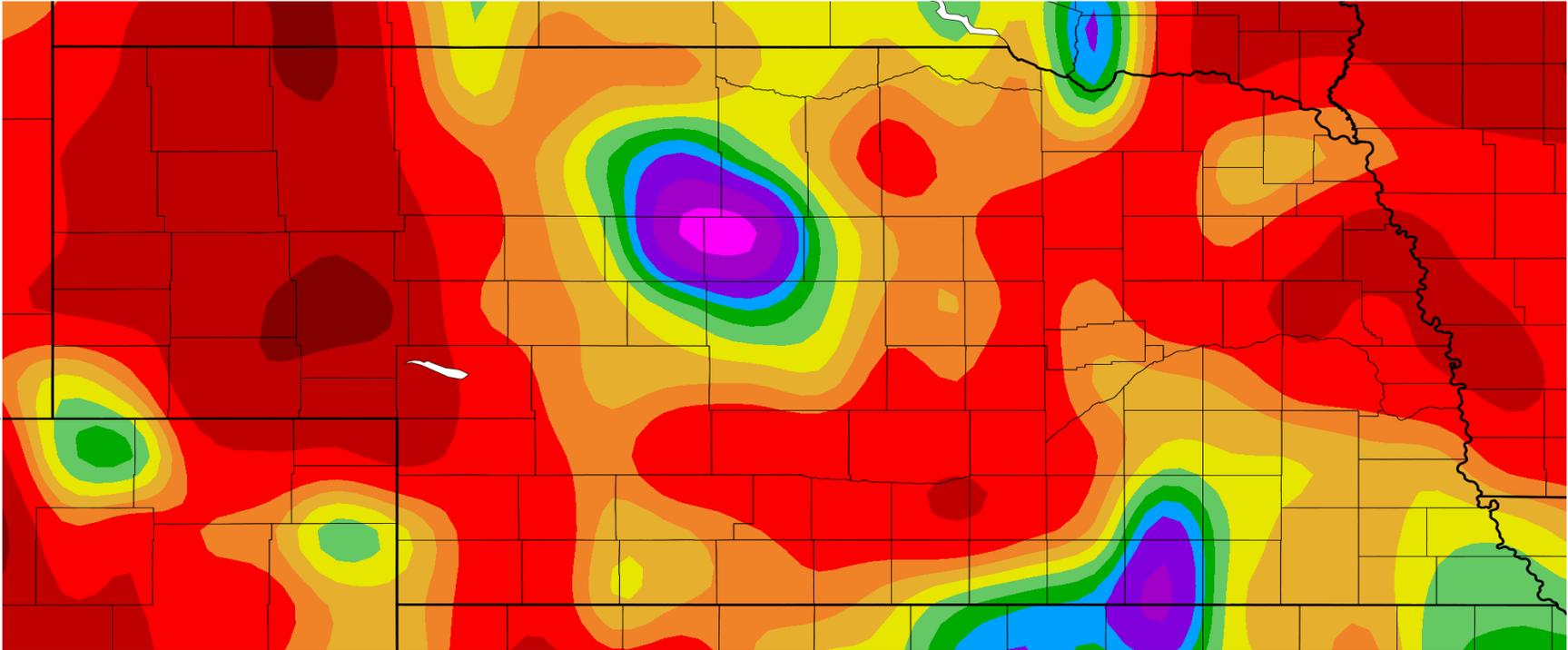


Generated 7/20/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

# Percent of Normal Precipitation (%)

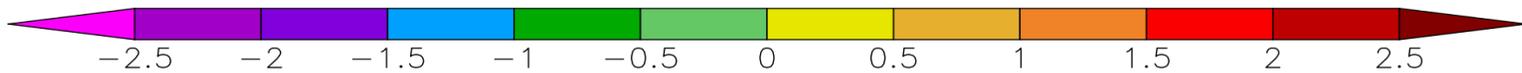
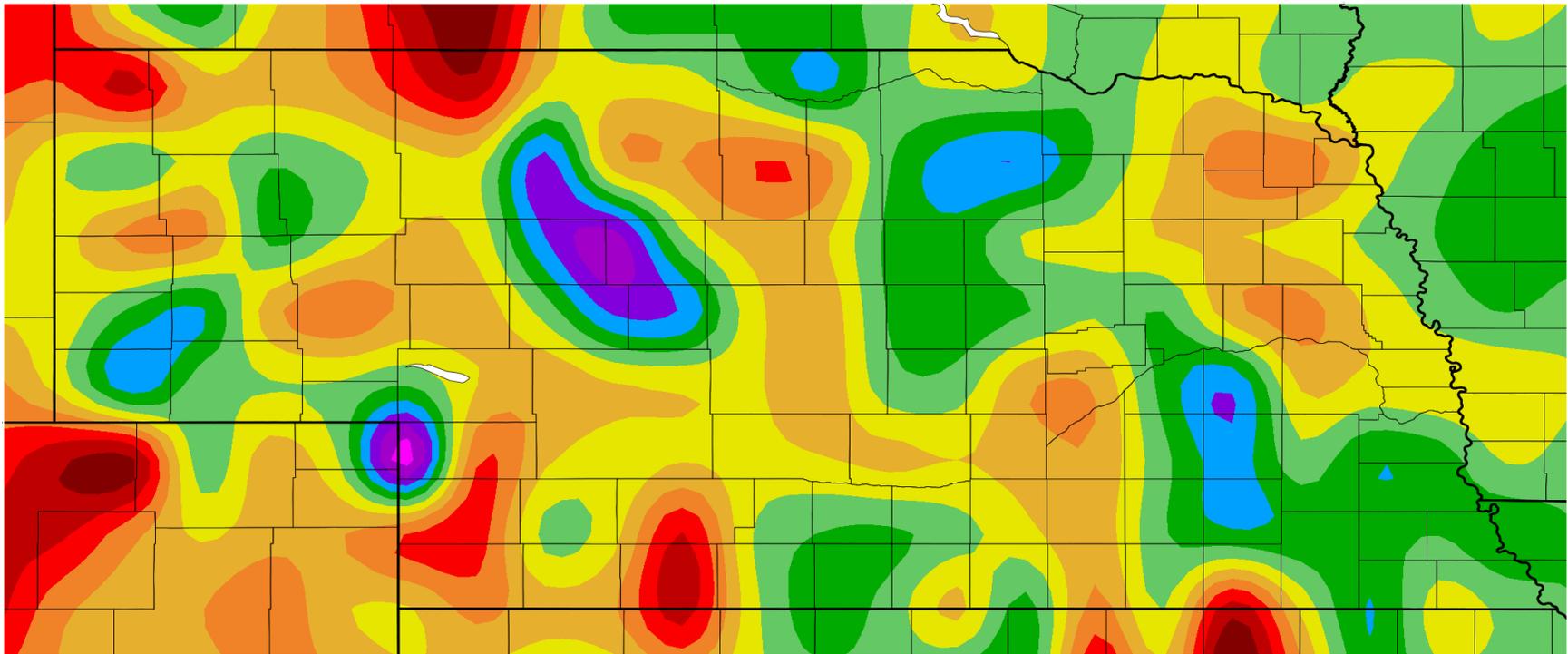
7/1/2020 – 9/30/2020



Generated 10/4/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

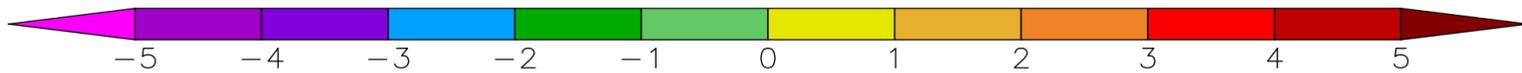
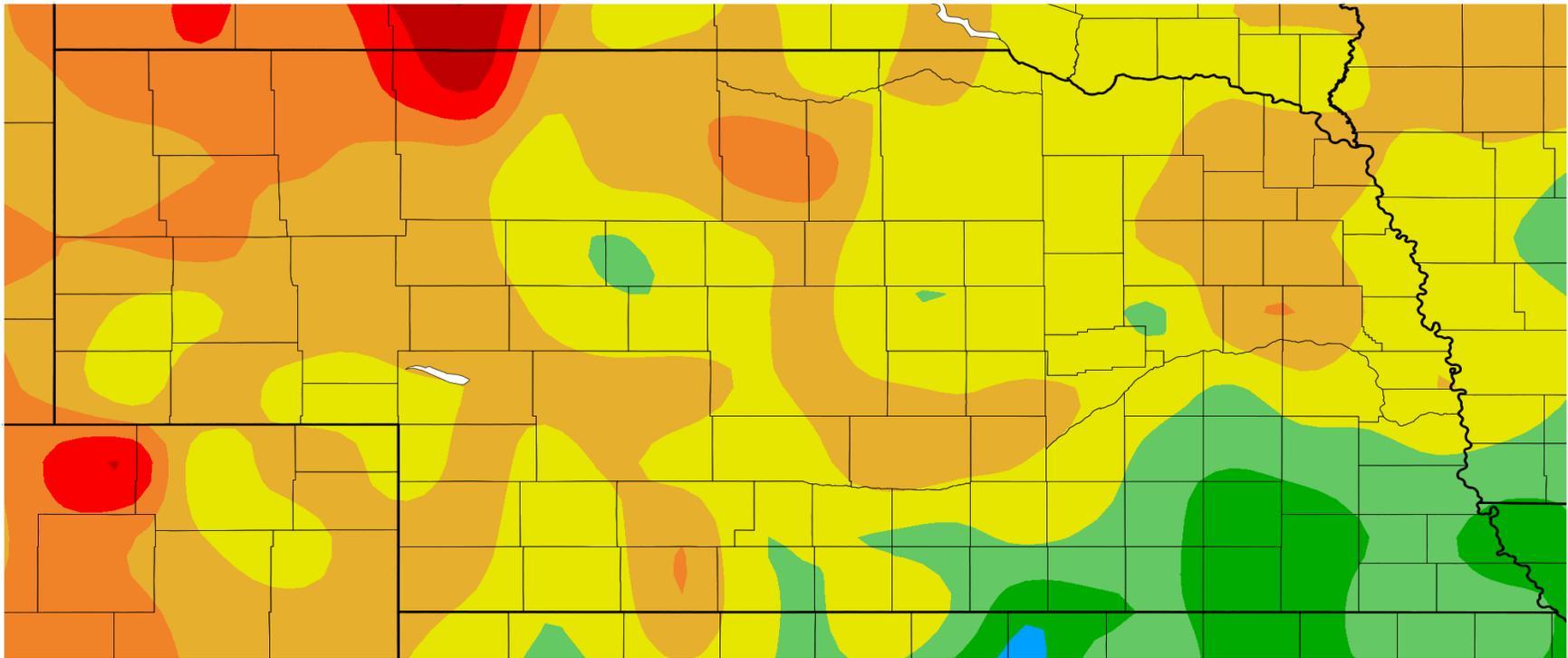
# Departure from Normal Temperature (F) 4/1/2020 – 6/30/2020



Generated 7/20/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

# Departure from Normal Temperature (F) 7/1/2020 – 9/30/2020



Generated 10/4/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

## Three Month Temperature and Rainfall Forecast

Links for pages containing graphics of the long-term temperature and rainfall 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 following figures show the current Drought Monitor report on drought conditions in Nebraska along with the monthly U.S. drought outlook. 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

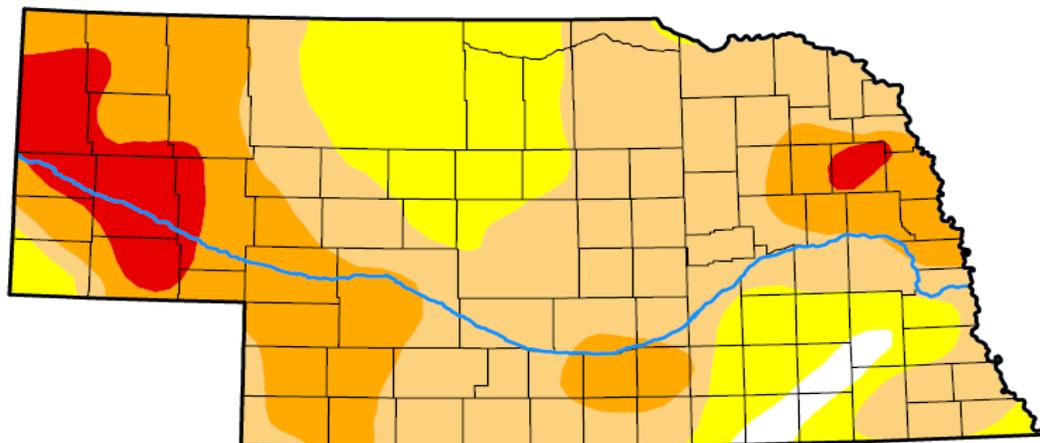
**September 29, 2020**

*(Released Thursday, Oct. 1, 2020)*

Valid 8 a.m. EDT

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	1.64	98.36	77.26	32.68	7.56	0.00
<b>Last Week</b> <i>09-22-2020</i>	12.36	87.64	57.35	28.94	6.20	0.00
<b>3 Months Ago</b> <i>06-30-2020</i>	64.15	35.85	5.57	0.00	0.00	0.00
<b>Start of Calendar Year</b> <i>12-31-2019</i>	97.47	2.53	0.00	0.00	0.00	0.00
<b>Start of Water Year</b> <i>10-01-2019</i>	100.00	0.00	0.00	0.00	0.00	0.00
<b>One Year Ago</b> <i>10-01-2019</i>	100.00	0.00	0.00	0.00	0.00	0.00



Intensity:

- None
- 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. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>*

Author:

Brad Rippey  
U.S. Department of Agriculture

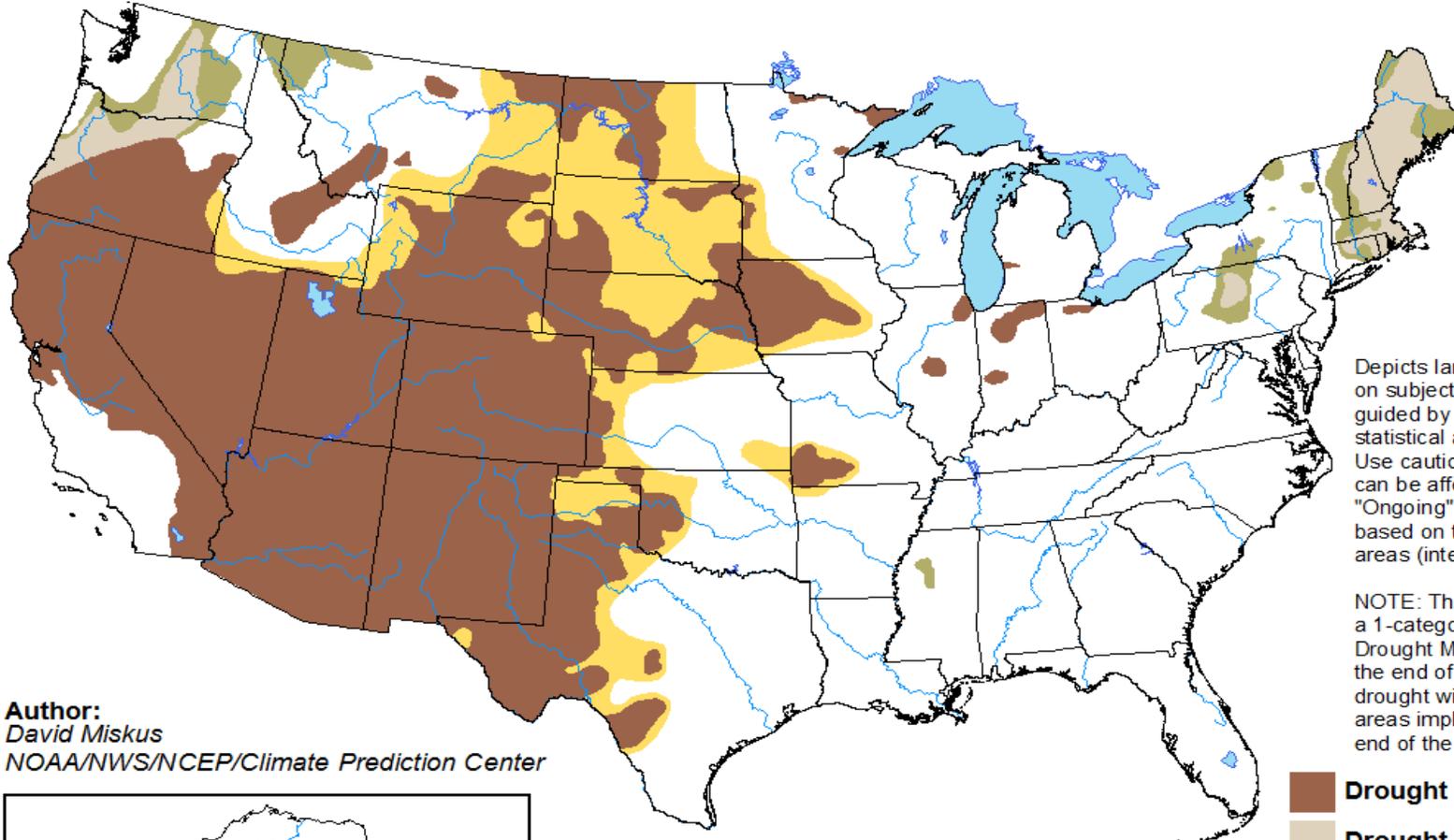


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

# U.S. Monthly Drought Outlook

## Drought Tendency During the Valid Period

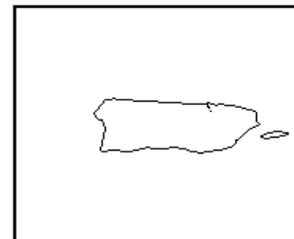
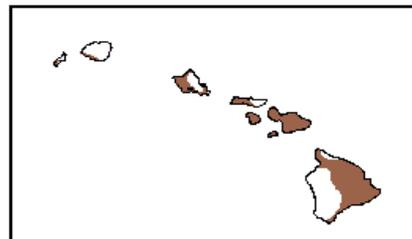
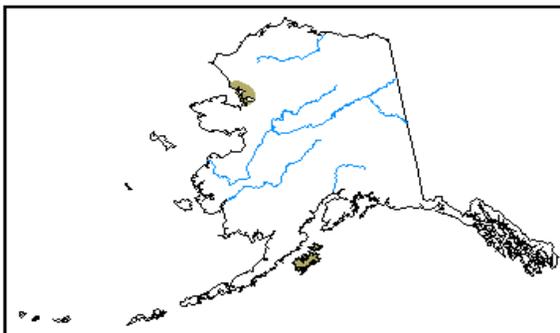
Valid for October 2020  
Released September 30, 2020



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).

**Author:**  
David Miskus  
NOAA/NWS/NCEP/Climate Prediction Center



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



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

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/Pages/West-Nile-Virus-Education.aspx> (Nebraska Department of Health and Human Services Mosquito-Borne Disease web site and links to downloadable educational pamphlets).

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



**Fight the Bite!!**