NEBRASKA ADULT MOSQUITO SURVEILLANCE REPORT 2020 UPDATE #4
(Trapping Period 5)

Date: 07/06/2020. Please note that mosquito collection data covers dates 06/21/2020 to 07/04/2020 (CDC Weeks 26 and 27). All data is provisional.

### SUMMARY

Summary Table – Regional CDC Light Trap Data, 21 June through 04 July (CDC Weeks 26 and 27)

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Mosquito Trap Index (CDC Wks 25/26)</th>
<th>Culex Mosquito Trap Index (CDC Wks 25/26)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Trap Index</td>
<td>5 Year Avg Trap Index</td>
</tr>
<tr>
<td>West</td>
<td>28.43</td>
<td>349.81</td>
</tr>
<tr>
<td>Central</td>
<td>236.22</td>
<td>174.39</td>
</tr>
<tr>
<td>East</td>
<td>56.90</td>
<td>204.57</td>
</tr>
<tr>
<td>Statewide</td>
<td>101.66</td>
<td>224.52</td>
</tr>
</tbody>
</table>

*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 were again below their 5 year historical averages in two of the three regions. Dry conditions are contributing to low collections in the West and East Regions. In the Central Region counts have decline and are now only marginally elevated compared to the historical values. Several counties are still seeing moderate to extremely elevated counts (Garfield, Hall, and Holt). Culex mosquito counts continue to be well below their 5 year averages in all regions. The common floodwater species, *Aedes vexans* was the most collected mosquito in two (West and Central) regions while another floodwater species, *Ochlerotatus sollicitans* was the most frequently collected mosquito in the East. Overall during this trap period, *Aedes vexans* was the most collected species statewide making up 89.4% of all collections. The primary WNV vector, *Culex tarsalis* was the sixth most collected mosquito in this trapping period making up 2.2% of collections.

Figure 1. Nebraska Mosquito Light Trap Regions, 2019.
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):

<table>
<thead>
<tr>
<th>Mosquito Species</th>
<th>Cumulative Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ae_venae</td>
<td>4664</td>
</tr>
<tr>
<td>Oc_dorsalis</td>
<td>715</td>
</tr>
<tr>
<td>Cx_tarsalis</td>
<td>323</td>
</tr>
<tr>
<td>Cs_perturbans</td>
<td>161</td>
</tr>
<tr>
<td>Oc_solidans</td>
<td>117</td>
</tr>
<tr>
<td>Cs_norina</td>
<td>113</td>
</tr>
<tr>
<td>An_walkeri</td>
<td>53</td>
</tr>
<tr>
<td>Oc_trivittatus</td>
<td>36</td>
</tr>
<tr>
<td>Unid’d Ae Oc</td>
<td>24</td>
</tr>
<tr>
<td>Ae_junctipennis</td>
<td>16</td>
</tr>
</tbody>
</table>

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, Oc= Occhlerotatus, 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= Culex, 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 container that holds 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 were an effort 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 in Mexico, Central and South America, the Caribbean, and Asia. All collected invasive *Aedes* mosquitoes are tested for dengue, chikungunya, and Zika.

During this sampling period, 14 invasive *Aedes* (all *Aedes albopictus*) were collected. A total of 31 invasive *Aedes* mosquitoes have been collected so far this season, all from Richardson County.

<table>
<thead>
<tr>
<th>County</th>
<th>Trap Type</th>
<th>Total Mosquitoes</th>
<th>Total <em>Ae_albopictus</em></th>
<th>Total <em>Ae_aegypti</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas</td>
<td>CDC Light</td>
<td>1670</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>BG Sentinel 2</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Douglas Co. Overall Total</td>
<td></td>
<td>1677</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lancaster</td>
<td>CDC Light</td>
<td>2286</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>BG Sentinel 2</td>
<td>68</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Lancaster Co. Overall Total</td>
<td></td>
<td>2354</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Richardson</td>
<td>CDC Light</td>
<td>266</td>
<td>31</td>
<td>0</td>
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<tr>
<td>Richardson Co. Overall Total</td>
<td></td>
<td>266</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>York</td>
<td>CDC Light</td>
<td>343</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>York Co. Overall Total</td>
<td></td>
<td>343</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overall Total</td>
<td></td>
<td>4640</td>
<td>31</td>
<td>0</td>
</tr>
</tbody>
</table>
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 5/15/2020 to 6/13/2020 across the state. More climate and forecast information can be found at:

- High Plains Regional Climate Center at: [https://hprcc.unl.edu/index.php](https://hprcc.unl.edu/index.php)
Precipitation (in)
Three Month Temperature and Rainfall Forecast

Links for pages containing graphics of the long-term temperature and rainfall outlook can be found here:


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).

U.S. Drought Monitor
Nebraska

June 30, 2020
(Released Thursday, Jul. 2, 2020)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>64.15</td>
<td>35.85</td>
<td>5.57</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Last Week 06-23-2020</td>
<td>78.33</td>
<td>23.67</td>
<td>4.45</td>
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<tr>
<td>3 Months Ago 03-31-2020</td>
<td>95.88</td>
<td>4.12</td>
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</tr>
<tr>
<td>Start of Calendar Year 12-31-2019</td>
<td>97.47</td>
<td>2.53</td>
<td>0.00</td>
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<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Start of Water Year 10-01-2019</td>
<td>100.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>One Year Ago 07-02-2019</td>
<td>100.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Intensity:
- None
- D2 Severe Drought
- D0 Abnormally Dry
- D3 Extreme Drought
- D1 Moderate 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

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NOAA/NWS/NCEP/CPC

droughtmonitor.unl.edu
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).


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