

NEBRASKA ARBOVIRUS SURVEILLANCE REPORT 2019 UPDATE Week #34

Date: 09/04/2019. Please note that mosquito testing data is on samples collected as of 08/24/2019. Human, bird, and equine surveillance data may include more recent data. All date is provisional.

SUMMARY

Summary Table – Regional West Nile Virus Mosquito Testing Data, 11 August through 24 August (CDC Weeks 33 and 34)

Region	West Nile Virus (WNV) Mosquito Testing Data						
	WNV Positive Pools*	WNV Mosquito Minimum Infection Rate (MIR)**	5 yr. Median WNV Mosquito Minimum Infection Rate (MIR)	MIR Activity ****	WNV Vector Index (VI)***	5 Yr. Median WNV Vector Index (VI)	VI Activity ****
*****West	3	0.58	4.81	Low	0.073	0.333	Low
*****North Central	1	0.74	2.66	Low	0.048	0.083	Low
*****South Central	1	1.67	5.43	Low	0.025	0.103	Low
*****East	0	0.00	2.95	Low	0.000	0.139	Low
*****Statewide	5	0.37	3.74	Low	0.021	0.248	Low

*Pools are a collection of *Culex* mosquitoes consisting of between 1-50 adult female mosquitoes. The *Culex* are pooled according site, species, and collection date. For example, if site "A" had 55 *Culex tarsalis* female mosquitoes collected on 6-30-19, then there would be two pools of *Culex tarsalis* consisting of one pool of 50 and another pool of 5.

**WNV mosquito minimum infection rate (MIR) is a calculation used to estimate the proportion of infected mosquitoes in an area. It is calculated by: MIR = WNV positive pools/# of mosquitoes tested x 1,000.

***Vector index (VI) is another estimate of the abundance of infected mosquitoes in an area but incorporates information describing relative abundance and the MIR into a single index. It is calculated by: VI= WNV positive pools/# of mosquitoes tested x trap index of mosquito species being tested.

****Activity levels are described in relative terms based on historical data from at most the previous 5 years. Activity levels correspond to: **Low = 0 to 40th percentile**, **Moderate = 41st to 60th percentile**, **High = 61st to 80th percentile**, **Very High = 81st to 97th percentile**, and **Extremely High = >97th percentile**.

*****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); **North Central** = Loup Basin Public Health Department (Garfield County), North Central District Health Department (Cherry and Holt Counties), West Central District Health Department (Lincoln Co.); **South Central** = Central District Health Department (Hall County), East Central District Health

Department (Platte County), Four Corners Health Department (York and Seward Counties), South Heartland Health Department (Adams and Webster Counties), Two Rivers Public Health Department (Buffalo, Dawson, and Phelps Counties); **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 and Cass Counties), Southeast District Health Department (Richardson County), Three Rivers Public Health Department (Dodge County).

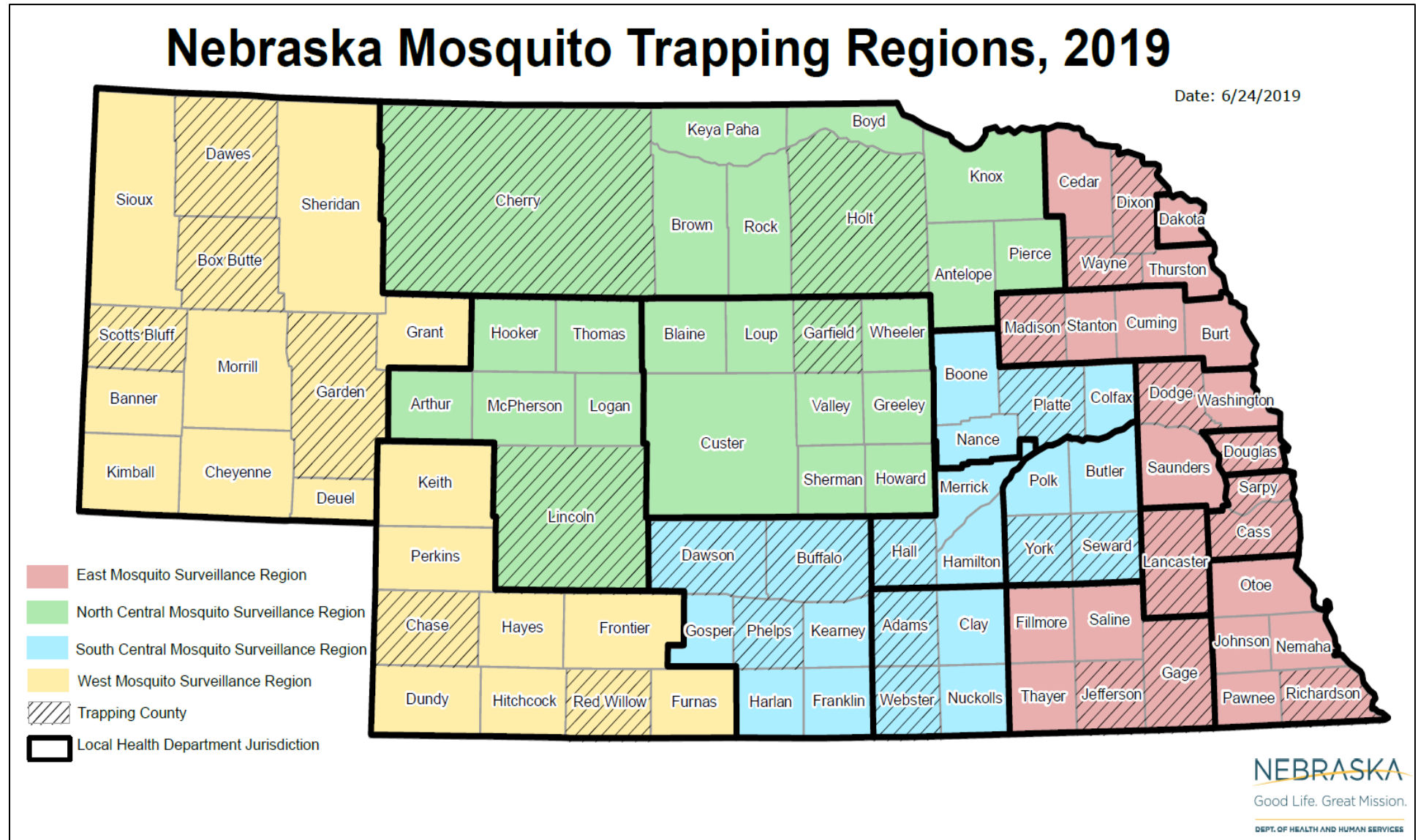


Figure 1. Nebraska Mosquito Light Trap Regions, 2019.

State summary: Five positive WNV mosquito pool was detected from *Culex* mosquitoes tested during this sampling period. To date, a total of 19 positive pools have been detected from nine counties in four regions during the 2019 season. WNV MIR activity over weeks 33/34 in mosquitoes was low and below the five year median in all regions. The statewide cumulative MIR (pg. 13) through week 34 was also below the five year median. VI activity for this period was low and below the five year median in all regions. Cumulatively, the statewide VI through week 34 remains below the five year median (pg. 14). An additional, **St. Louis Encephalitis (SLE) virus pool has been detected from a mosquitoes collected in Box Butte County.** A total of two positive SLE pools have been detected this season both from the West region. This virus is closely related to WNV and is vectored by the same *Culex* mosquitoes that can also vector WNV. SLE has been detected in Nebraska historically but since WNV emerged in the state it is rarely detected in mosquito samples. The virus can cause similar symptoms to WNV in people, and like WNV no specific treatment currently exists for SLE. Avoiding mosquito bites is the only way to assure that an individual does not become infected with WNV or SLE. **Low or no activity does not mean NO RISK.** Mosquitoes do not advertise if they are infected with a virus and it only takes one bite from a mosquito for a person to become ill. Therefore, proper mosquito prevention should always be practiced when individuals will be outside during the mosquito season. **Two additional human WNV cases was reported bringing the total number of human WNV cases identified in Nebraska to 12. Of these, six (50.0%) of the cases have been identified with the more severe neuroinvasive form with one death reported. Furthermore, one positive viremic blood donor has been reported in the state this season.**

Mosquito Testing Protocol: Nebraska Department of Health and Human Services (NDHHS) tests *Culex* mosquito pools (NDHHS partners with local public health departments to collect mosquitoes as part of a mosquito and arboviral surveillance network) through the Nebraska Public Health Laboratory (NPHL). NPHL uses a multiplex RT-PCR panel to test *Culex* pools for West Nile Virus (WNV), St. Louis Encephalitis Virus (SLE), and Western Equine Encephalitis Virus (WEE). All three viruses are endemic in Nebraska with *Culex* mosquitoes being the primary vectors. Additionally, NDHHS tests (via NPHL) any collected invasive *Aedes* (*Aedes aegypti* and *Aedes albopictus*) for Chikungunya Virus (ChikV), Dengue Virus (DENV), Zika Virus (Zika), and La Crosse Encephalitis Virus (LACV) through another multiplex RT-PCR panel. No historical transmission of ChikV, DENV, and Zika has ever been reported in Nebraska, but residents traveling abroad have the potential to bring back the viruses from endemic areas in the world. Finally, starting this season, NDHHS will also test (via NPHL's ChikV, DENV, Zika, and LACV multiplex RT-PCR) collected *Ochlerotatus (Aedes) triseriatus* (primary vector), *Ochlerotatus (Aedes) atropalpus*, and *Ochlerotatus (Aedes) japonicus* (potential secondary vectors) primarily for the presence of La Crosse Encephalitis Virus (LACV). LACV is an endemic virus to the United States with most human cases occurring in the upper Midwest, mid-Atlantic, and southeastern state. While Nebraska has never reported a case, states surrounding Nebraska have reported human cases including: Iowa, Kansas, and Missouri.

Nebraska CDC Light Trap Network Mosquito Surveillance, 2019

Date: Sep. 4, 2019

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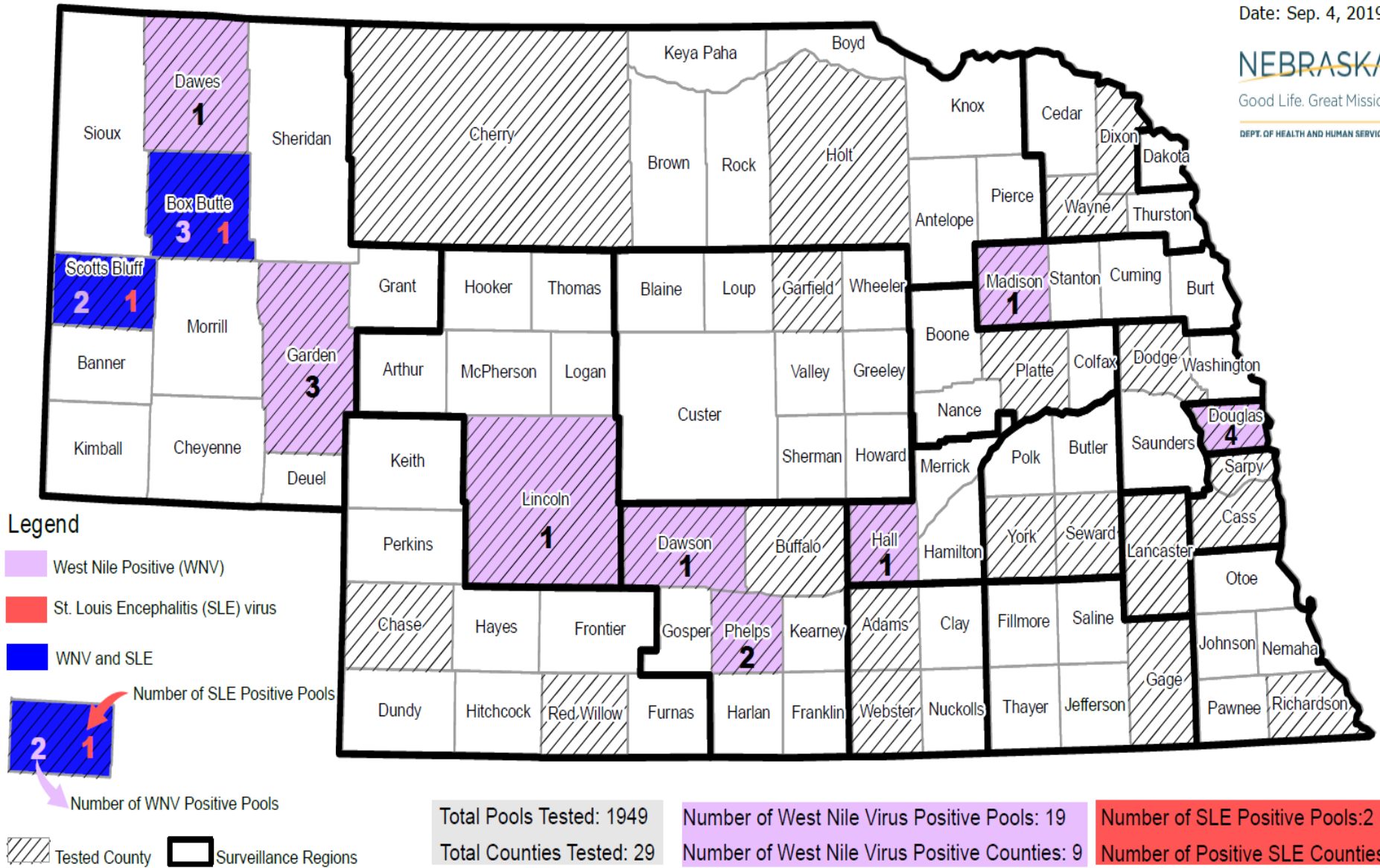


Figure 2. WNV Positive Mosquito Pools by County in the Nebraska CDC Light trap Network, 2019.

Table 1. Cumulative *Culex* Mosquito Pools Submitted and Tested for WNV through 24 August 2019:

Region	County	Pools Tested	# of <i>Culex</i> Mosquitoes Tested	WNV Positives	Mosquito WNV Minimum Infection Rate (MIR)	WNV Vector Index (VI)	WNV Percent of Pools Positive (%)
West	Box Butte	191	8556	3	0.35	0.071	1.57
West	Chase	35	550	0	0.00	0.000	0.00
West	Dawes	91	3158	1	0.32	0.025	1.10
West	Garden	89	3288	3	0.91	0.079	3.37
West	Red Willow	41	816	0	0.00	0.000	0.00
West	Scotts Bluff	104	3860	2	0.52	0.057	1.92
West Region Total		551	20228	9	0.44	0.040	1.63
South Central	Adams	24	435	0	0.00	0.000	0.00
South Central	Buffalo	130	5066	0	0.00	0.000	0.00
South Central	Dawson	73	2147	1	0.47	0.030	1.37
South Central	Hall	76	1278	1	0.78	0.024	1.32
South Central	Phelps	84	2642	2	0.76	0.067	2.38
South Central	Platte	61	1612	0	0.00	0.000	0.00
South Central	Seward	10	252	0	0.00	0.000	0.00
South Central	Webster	74	1598	0	0.00	0.000	0.00
South Central	York	28	669	0	0.00	0.000	0.00
South Central Region Total		560	15699	4	0.25	0.016	0.71
North Central	Cherry	76	2630	0	0.00	0.000	0.00
North Central	Garfield	81	1834	0	0.00	0.000	0.00
North Central	Holt	58	1214	0	0.00	0.000	0.00
North Central	Lincoln	48	786	1	1.27	0.028	2.08
North Central Region Total		263	6464	1	0.15	0.007	0.38
East	Cass	10	53	0	0.00	0.000	0.00
East	Dixon	34	927	0	0.00	0.000	0.00
East	Dodge	83	1552	0	0.00	0.000	0.00
East	Douglas	103	1007	4	3.97	0.095	3.88
East	Gage	19	185	0	0.00	0.000	0.00
East	Lancaster	86	1387	0	0.00	0.000	0.00
East	Madison	46	490	1	2.04	0.024	2.17
East	Richardson	126	2295	0	0.00	0.000	0.00
East	Sarpy	34	369	0	0.00	0.000	0.00
East	Wayne	34	738	0	0.00	0.000	0.00

East Region Total	575	9003	5	0.56	0.019	0.87
Statewide Total	1949	51394	19	0.37	0.021	0.97

Table 2. Cumulative *Culex* Mosquito Pools Submitted and Tested for SLE through 24 August 2019:

Region	County	Pools Tested	# of <i>Culex</i> Mosquitoes Tested	SLE Positives	Mosquito SLE Minimum Infection Rate (MIR)	SLE Vector Index (VI)	SLE Percent of Pools Positive (%)
West	Box Butte	191	8556	1	0.12	0.024	0.52
West	Chase	35	550	0	0.00	0.000	0.00
West	Dawes	91	3158	0	0.00	0.000	0.00
West	Garden	89	3288	0	0.00	0.000	0.00
West	Red Willow	41	816	0	0.00	0.000	0.00
West	Scotts Bluff	104	3860	1	0.26	0.029	0.96
West Region Total		551	20228	2	0.10	0.009	0.36
South Central	Adams	24	435	0	0.00	0.000	0.00
South Central	Buffalo	130	5066	0	0.00	0.000	0.00
South Central	Dawson	73	2147	0	0.00	0.000	0.00
South Central	Hall	76	1278	0	0.00	0.000	0.00
South Central	Phelps	84	2642	0	0.00	0.000	0.00
South Central	Platte	61	1612	0	0.00	0.000	0.00
South Central	Seward	10	252	0	0.00	0.000	0.00
South Central	Webster	74	1598	0	0.00	0.000	0.00
South Central	York	28	669	0	0.00	0.000	0.00
South Central Region Total		560	15699	0	0.00	0.000	0.00
North Central	Cherry	76	2630	0	0.00	0.000	0.00
North Central	Garfield	81	1834	0	0.00	0.000	0.00
North Central	Holt	58	1214	0	0.00	0.000	0.00
North Central	Lincoln	48	786	0	0.00	0.000	0.00
North Central Region Total		263	6464	0	0.00	0.000	0.00
East	Cass	10	53	0	0.00	0.000	0.00
East	Dixon	34	927	0	0.00	0.000	0.00
East	Dodge	83	1552	0	0.00	0.000	0.00
East	Douglas	103	1007	0	0.00	0.000	0.00
East	Gage	19	185	0	0.00	0.000	0.00

East	Lancaster	86	1387	0	0.00	0.000	0.00
East	Madison	46	490	0	0.00	0.000	0.00
East	Richardson	126	2295	0	0.00	0.000	0.00
East	Sarpy	34	369	0	0.00	0.000	0.00
East	Wayne	34	738	0	0.00	0.000	0.00
East Region Total		575	9003	0	0.00	0.000	0.00
Statewide Total		1949	51394	2	0.04	0.001	0.10

Table 3. Cumulative *Culex* Mosquito Pools Submitted and Tested for WEE through 24 August 2019:

Region	County	Pools Tested	# of <i>Culex</i> Mosquitoes Tested	WEE Positives	Mosquito WEE Minimum Infection Rate (MIR)	WEE Vector Index (VI)	WEE Percent of Pools Positive (%)
West	Box Butte	191	8556	0	0.00	0.000	0.00
West	Chase	35	550	0	0.00	0.000	0.00
West	Dawes	91	3158	0	0.00	0.000	0.00
West	Garden	89	3288	0	0.00	0.000	0.00
West	Red Willow	41	816	0	0.00	0.000	0.00
West	Scotts Bluff	104	3860	0	0.00	0.000	0.00
West Region Total		551	20228	0	0.00	0.000	0.00
South Central	Adams	24	435	0	0.00	0.000	0.00
South Central	Buffalo	130	5066	0	0.00	0.000	0.00
South Central	Dawson	73	2147	0	0.00	0.000	0.00
South Central	Hall	76	1278	0	0.00	0.000	0.00
South Central	Phelps	84	2642	0	0.00	0.000	0.00
South Central	Platte	61	1612	0	0.00	0.000	0.00
South Central	Seward	10	252	0	0.00	0.000	0.00
South Central	Webster	74	1598	0	0.00	0.000	0.00
South Central	York	28	669	0	0.00	0.000	0.00
South Central Region Total		560	15699	0	0.00	0.000	0.00
North Central	Cherry	76	2630	0	0.00	0.000	0.00
North Central	Garfield	81	1834	0	0.00	0.000	0.00
North Central	Holt	58	1214	0	0.00	0.000	0.00
North Central	Lincoln	48	786	0	0.00	0.000	0.00
North Central Region Total		263	6464	0	0.00	0.000	0.00

East	Cass	10	53	0	0.00	0.000	0.00
East	Dixon	34	927	0	0.00	0.000	0.00
East	Dodge	83	1552	0	0.00	0.000	0.00
East	Douglas	103	1007	0	0.00	0.000	0.00
East	Gage	19	185	0	0.00	0.000	0.00
East	Lancaster	86	1387	0	0.00	0.000	0.00
East	Madison	46	490	0	0.00	0.000	0.00
East	Richardson	126	2295	0	0.00	0.000	0.00
East	Sarpy	34	369	0	0.00	0.000	0.00
East	Wayne	34	738	0	0.00	0.000	0.00
East Region Total		575	9003	0	0.00	0.000	0.00
Statewide Total		1949	51394	0	0.00	0.000	0.00

Table 4. Cumulative Invasive *Aedes albopictus* and *Ochlerotatus (Aedes)* Mosquito Pools Submitted and Tested for ChikV through 24 August 2019:

Region	County	Pools Tested	# of <i>Aedes</i> Mosquitoes Tested	ChikV Positives	Mosquito ChikV Minimum Infection Rate (MIR)	ChikV Vector Index (VI)	ChikV Percent of Pools Positive (%)
West	Box Butte	2	2	0	0.00	0.000	0.00
West	Chase	2	3	0	0.00	0.000	0.00
West	Dawes	2	4	0	0.00	0.000	0.00
West	Garden	9	20	0	0.00	0.000	0.00
West	Red Willow	4	5	0	0.00	0.000	0.00
West	Scotts Bluff	2	6	0	0.00	0.000	0.00
West Region Total		21	40	0	0.00	0.000	0.00
South Central	Adams	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Buffalo	9	9	0	0.00	0.000	0.00
South Central	Dawson	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Hall	6	11	0	0.00	0.000	0.00
South Central	Phelps	2	2	0	0.00	0.000	0.00
South Central	Platte	2	2	0	0.00	0.000	0.00
South Central	Seward	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Webster	22	61	0	0.00	0.000	0.00
South Central	York	1	1	0	0.00	0.000	0.00
South Central Region Total		42	86	0	0.00	0.000	0.00
North Central	Cherry	0	0	0	#DIV/0!	0.000	#DIV/0!

North Central	Garfield	15	108	0	0.00	0.000	0.00
North Central	Holt	2	2	0	0.00	0.000	0.00
North Central	Lincoln	5	25	0	0.00	0.000	0.00
North Central Region Total		22	135	0	0.00	0.000	0.00
East	Cass	1	3	0	0.00	0.000	0.00
East	Dixon	1	1	0	0.00	0.000	0.00
East	Dodge	1	1	0	0.00	0.000	0.00
East	Douglas	48	234	0	0.00	0.000	0.00
East	Gage	3	10	0	0.00	0.000	0.00
East	Lancaster	20	64	0	0.00	0.000	0.00
East	Madison	9	48	0	0.00	0.000	0.00
East	Richardson	56	318	0	0.00	0.000	0.00
East	Sarpy	7	8	0	0.00	0.000	0.00
East	Wayne	2	2	0	0.00	0.000	0.00
East Region Total		148	689	0	0.00	0.000	0.00
Statewide Total		233	950	0	0.00	0.000	0.00

Table 5. Cumulative Invasive *Aedes albopictus* and *Ochlerotatus (Aedes)* Mosquito Pools Submitted and Tested for DENV through 24 August 2019:

Region	County	Pools Tested	# of <i>Aedes</i> Mosquitoes Tested	DENV Positives	Mosquito DENV Minimum Infection Rate (MIR)	DENV Vector Index (VI)	DENV Percent of Pools Positive (%)
West	Box Butte	2	2	0	0.00	0.000	0.00
West	Chase	2	3	0	0.00	0.000	0.00
West	Dawes	2	4	0	0.00	0.000	0.00
West	Garden	9	20	0	0.00	0.000	0.00
West	Red Willow	4	5	0	0.00	0.000	0.00
West	Scotts Bluff	2	6	0	0.00	0.000	0.00
West Region Total		21	40	0	0.00	0.000	0.00
South Central	Adams	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Buffalo	9	9	0	0.00	0.000	0.00
South Central	Dawson	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Hall	6	11	0	0.00	0.000	0.00
South Central	Phelps	2	2	0	0.00	0.000	0.00
South Central	Platte	2	2	0	0.00	0.000	0.00
South Central	Seward	0	0	0	#DIV/0!	0.000	#DIV/0!

South Central	Webster	22	61	0	0.00	0.000	0.00
South Central	York	1	1	0	0.00	0.000	0.00
South Central Region Total		42	86	0	0.00	0.000	0.00
North Central	Cherry	0	0	0	#DIV/0!	0.000	#DIV/0!
North Central	Garfield	15	108	0	0.00	0.000	0.00
North Central	Holt	2	2	0	0.00	0.000	0.00
North Central	Lincoln	5	25	0	0.00	0.000	0.00
North Central Region Total		22	135	0	0.00	0.000	0.00
East	Cass	1	3	0	0.00	0.000	0.00
East	Dixon	1	1	0	0.00	0.000	0.00
East	Dodge	1	1	0	0.00	0.000	0.00
East	Douglas	48	234	0	0.00	0.000	0.00
East	Gage	3	10	0	0.00	0.000	0.00
East	Lancaster	20	64	0	0.00	0.000	0.00
East	Madison	9	48	0	0.00	0.000	0.00
East	Richardson	56	318	0	0.00	0.000	0.00
East	Sarpy	7	8	0	0.00	0.000	0.00
East	Wayne	2	2	0	0.00	0.000	0.00
East Region Total		148	689	0	0.00	0.000	0.00
Statewide Total		233	950	0	0.00	0.000	0.00

Table 6. Cumulative Invasive *Aedes albopictus* and *Ochlerotatus (Aedes)* Mosquito Pools Submitted and Tested for Zika Virus through 24 August 2019:

Region	County	Pools Tested	# of <i>Aedes</i> Mosquitoes Tested	Zika Positives	Mosquito Zika Minimum Infection Rate (MIR)	Zika Vector Index (VI)	Zika Percent of Pools Positive (%)
West	Box Butte	2	2	0	0.00	0.000	0.00
West	Chase	2	3	0	0.00	0.000	0.00
West	Dawes	2	4	0	0.00	0.000	0.00
West	Garden	9	20	0	0.00	0.000	0.00
West	Red Willow	4	5	0	0.00	0.000	0.00
West	Scotts Bluff	2	6	0	0.00	0.000	0.00
West Region Total		21	40	0	0.00	0.000	0.00
South Central	Adams	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Buffalo	9	9	0	0.00	0.000	0.00
South Central	Dawson	0	0	0	#DIV/0!	0.000	#DIV/0!

South Central	Hall	6	11	0	0.00	0.000	0.00
South Central	Phelps	2	2	0	0.00	0.000	0.00
South Central	Platte	2	2	0	0.00	0.000	0.00
South Central	Seward	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Webster	22	61	0	0.00	0.000	0.00
South Central	York	1	1	0	0.00	0.000	0.00
South Central Region Total		42	86	0	0.00	0.000	0.00
North Central	Cherry	0	0	0	#DIV/0!	0.000	#DIV/0!
North Central	Garfield	15	108	0	0.00	0.000	0.00
North Central	Holt	2	2	0	0.00	0.000	0.00
North Central	Lincoln	5	25	0	0.00	0.000	0.00
North Central Region Total		22	135	0	0.00	0.000	0.00
East	Cass	1	3	0	0.00	0.000	0.00
East	Dixon	1	1	0	0.00	0.000	0.00
East	Dodge	1	1	0	0.00	0.000	0.00
East	Douglas	48	234	0	0.00	0.000	0.00
East	Gage	3	10	0	0.00	0.000	0.00
East	Lancaster	20	64	0	0.00	0.000	0.00
East	Madison	9	48	0	0.00	0.000	0.00
East	Richardson	56	318	0	0.00	0.000	0.00
East	Sarpy	7	8	0	0.00	0.000	0.00
East	Wayne	2	2	0	0.00	0.000	0.00
East Region Total		148	689	0	0.00	0.000	0.00
Statewide Total		233	950	0	0.00	0.000	0.00

Table 7. Cumulative Invasive *Aedes albopictus* and *Ochlerotatus (Aedes)* Mosquito Pools Submitted and Tested for LACV through 24 August 2019:

Region	County	Pools Tested	# of <i>Aedes</i> Mosquitoes Tested	LACV Positives	Mosquito LACV Minimum Infection Rate (MIR)	LACV Vector Index (VI)	LACV Percent of Pools Positive (%)
West	Box Butte	2	2	0	0	0.000	0
West	Chase	2	3	0	0	0.000	0
West	Dawes	2	4	0	0	0.000	0
West	Garden	9	20	0	0	0.000	0
West	Red Willow	4	5	0	0	0.000	0

West	Scotts Bluff	2	6	0	0	0.000	0
West Region Total		21	40	0	0.000		0.000
South Central	Adams	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Buffalo	9	9	0	0	0.000	0
South Central	Dawson	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Hall	6	11	0	0	0.000	0
South Central	Phelps	2	2	0	0	0.000	0
South Central	Platte	2	2	0	0	0.000	0
South Central	Seward	0	0	0	#DIV/0!	0.000	#DIV/0!
South Central	Webster	22	61	0	0	0.000	0
South Central	York	1	1	0	0	0.000	0
South Central Region Total		42	86	0	0.000		0.000
North Central	Cherry	0	0	0	#DIV/0!	0.000	#DIV/0!
North Central	Garfield	15	108	0	0	0.000	0
North Central	Holt	2	2	0	0	0.000	0
North Central	Lincoln	5	25	0	0	0.000	0
North Central Region Total		22	135	0	0.000		0.000
East	Cass	1	3	0	0	0.000	0
East	Dixon	1	1	0	0	0.000	0
East	Dodge	1	1	0	0	0.000	0
East	Douglas	48	234	0	0	0.000	0
East	Gage	3	10	0	0	0.000	0
East	Lancaster	20	64	0	0	0.000	0
East	Madison	9	48	0	0	0.000	0
East	Richardson	56	318	0	0	0.000	0
East	Sarpy	7	8	0	0	0.000	0
East	Wayne	2	2	0	0	0.000	0
East Region Total		148	689	0	0.000		0.000
Statewide Total		233	950	0	0.00	0.000	0.00

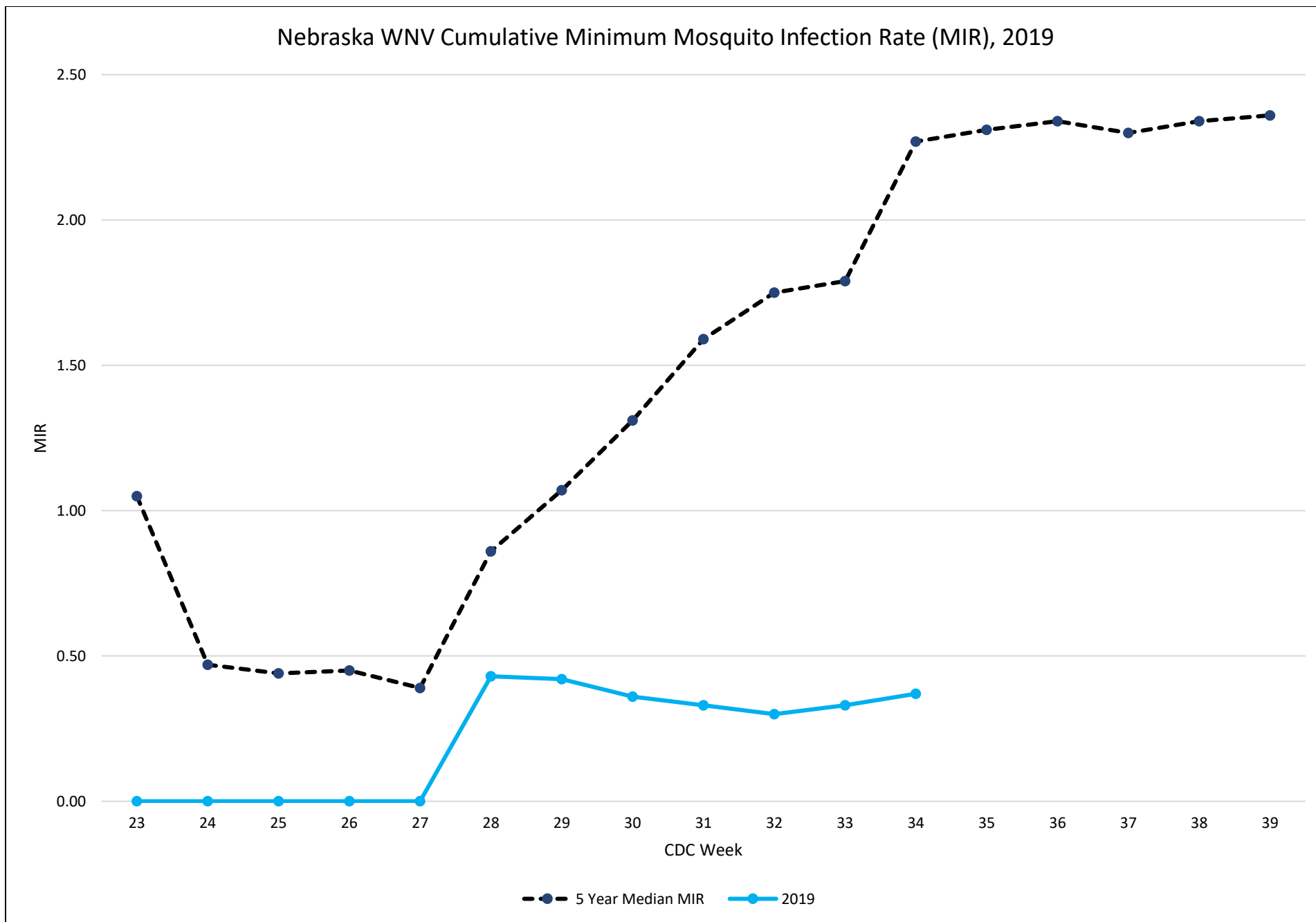


Figure 3. Cumulative WNV Minimum Mosquito Infection Rate (MIR) Nebraska, 2019.

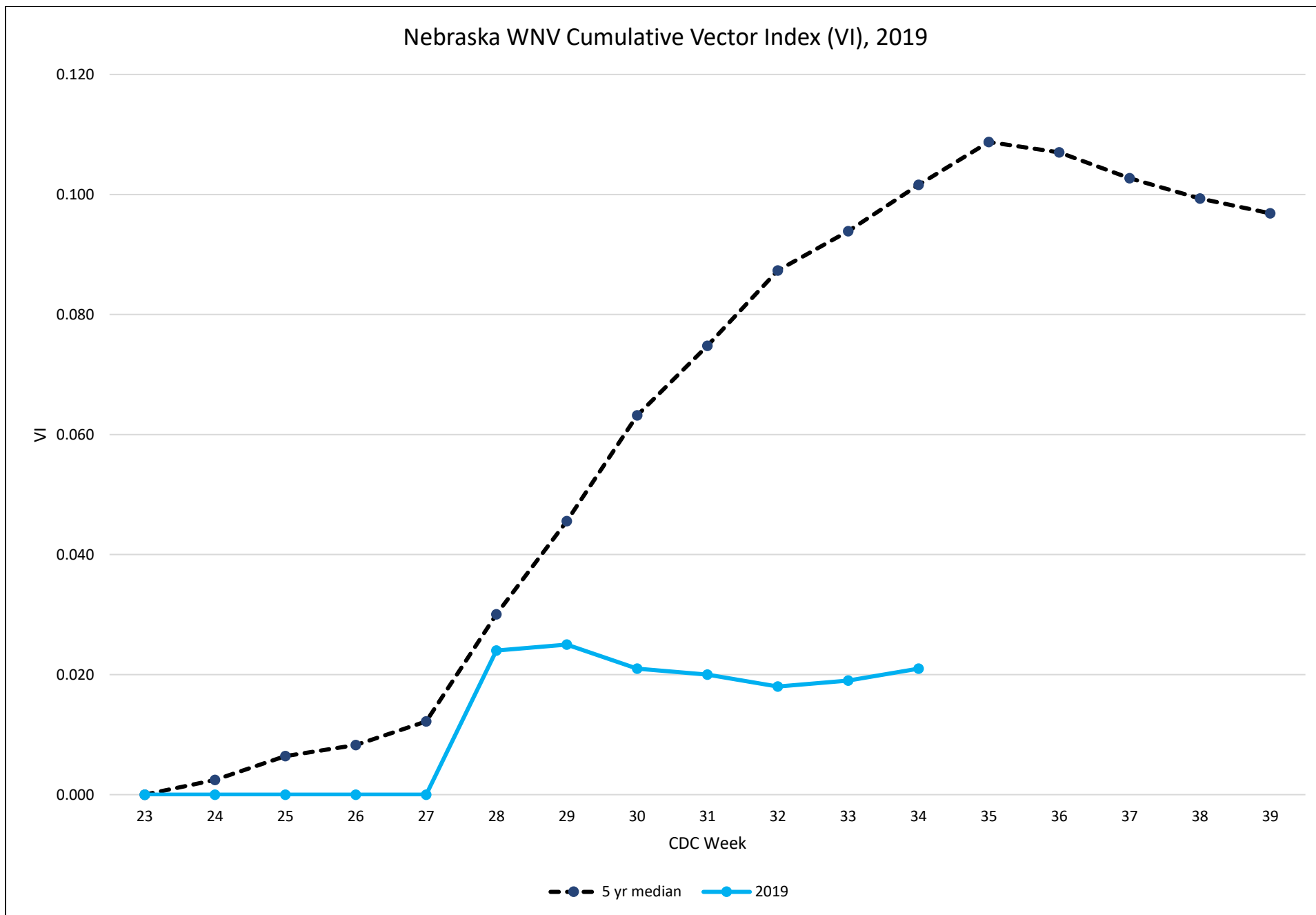


Figure 4. Cumulative WNV Mosquito Vector Index (VI) Nebraska, 2019.

BIRD AND EQUINE SURVEILLANCE

Dead bird reporting and testing: As of 9/04/2019, 62 total dead birds have been reported to the NDHHS dead bird database. Presently, six of these have met criteria for WNV testing. Four have been negative, one was unsuitable for testing, and the **first positive bird of the season has been identified at this time**. This was detected in a blue jay reported from Lancaster County.

Equine WNV surveillance: The Nebraska Department of Agriculture (NDA) reports equine cases of WNV to NDHHS. As of 9/04/2019, no equine WNV cases have been reported by NDA.

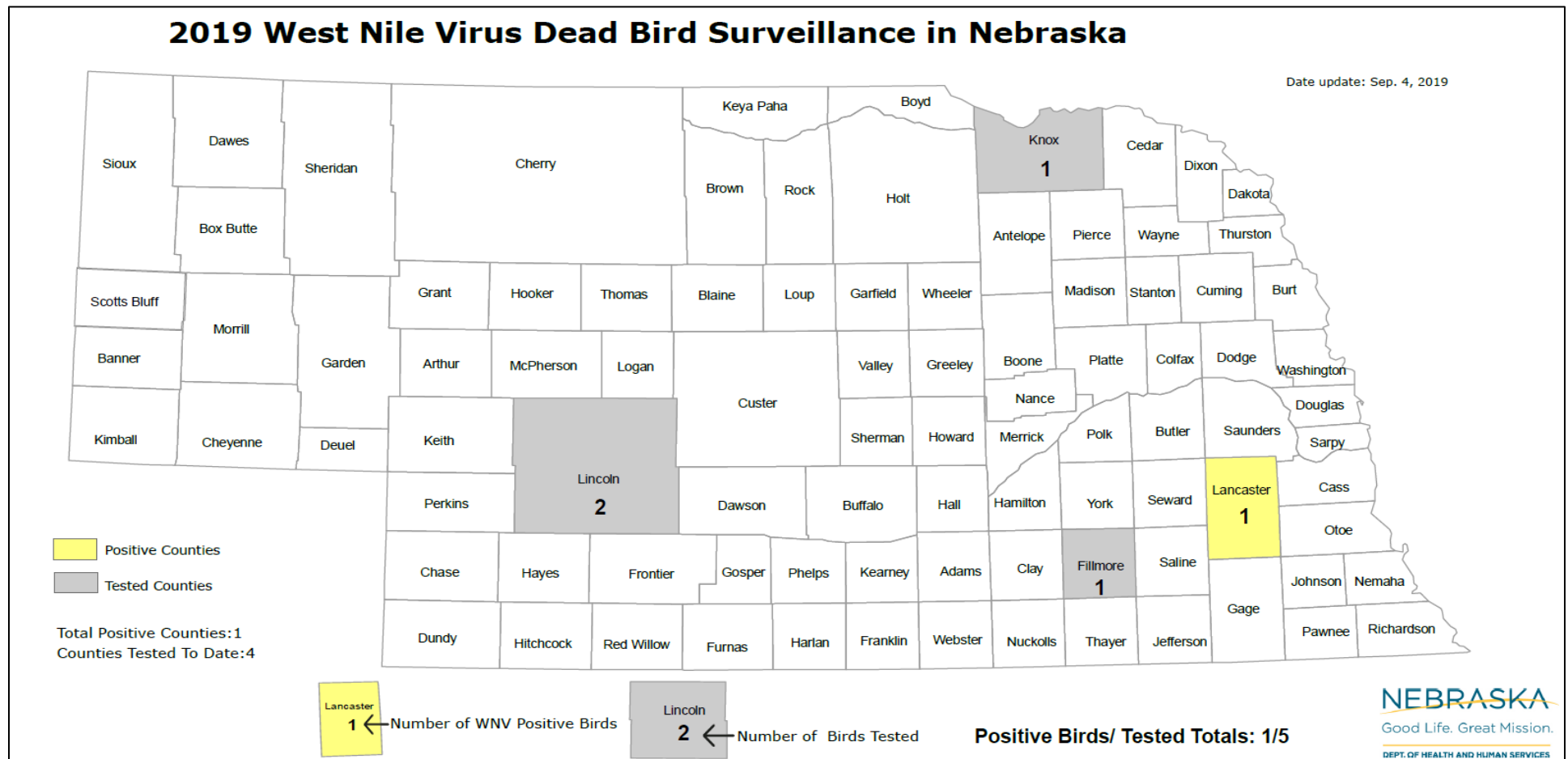


Figure 5. WNV Positive Birds by County in the Nebraska, 2019.

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. It includes human infections of WNV, SLE, WEE, ChikV, 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 2019. All data is preliminary and may change as more information is received.

Remarks: To date Nebraska has reported 12 human WNV clinical case (and one death). The first human WNV blood donors has also been reported in the state this year. Several travel related mosquito-borne disease cases have been reported this year and include one chikungunya, one dengue, six malaria, and one Zika case. Overall a total of 22 mosquito-borne human disease cases have been reported in Nebraska residents this year.

Table 8. Mosquito-Borne Disease Cases in Nebraska Residents by Report Week, 2019

CDC Week	Week Ending Date	WNV^ (Clinical Cases)	WNV^ (Asymptomatic Blood Donors)	SLE^	WEE^	CHIKV*	DENV*	ZIKA*	Malaria*	Total
1	5-Jan-19	0	0	0	0	0	0	0	0	0
2	12-Jan-19	0	0	0	0	0	0	0	0	0
3	19-Jan-19	0	0	0	0	0	0	0	0	0
4	26-Jan-19	0	0	0	0	0	0	0	0	0
5	2-Feb-19	0	0	0	0	0	0	0	0	0
6	9-Feb-19	0	0	0	0	0	0	0	0	0
7	16-Feb-19	0	0	0	0	0	0	0	0	0
8	23-Feb-19	0	0	0	0	0	0	0	0	0
9	2-Mar-19	0	0	0	0	0	0	0	0	0
10	9-Mar-19	0	0	0	0	0	0	0	0	0
11	16-Mar-19	0	0	0	0	0	0	0	0	0
12	23-Mar-19	0	0	0	0	0	0	0	0	0
13	30-Mar-19	0	0	0	0	0	0	1	0	1

14	6-Apr-19	0	0	0	0	0	0	0	0	0
15	13-Apr-19	1	0	0	0	0	0	0	0	1
16	20-Apr-19	0	0	0	0	0	0	0	0	0
17	27-Apr-19	0	0	0	0	0	0	0	0	0
18	4-May-19	0	0	0	0	0	0	0	0	0
19	11-May-19	0	0	0	0	0	0	0	0	0
20	18-May-19	0	0	0	0	0	0	0	1	1
21	25-May-19	0	0	0	0	0	0	0	0	0
22	1-Jun-19	0	0	0	0	0	0	0	0	0
23	8-Jun-19	0	0	0	0	0	0	0	0	0
24	15-Jun-19	0	0	0	0	0	0	0	0	0
25	22-Jun-19	0	0	0	0	0	0	0	0	0
26	29-Jun-19	0	0	0	0	0	0	0	1	1
27	6-Jul-19	0	0	0	0	0	0	0	0	0
28	13-Jul-19	0	0	0	0	0	0	0	0	0
29	20-Jul-19	0	0	0	0	0	0	0	0	0
30	27-Jul-19	3	0	0	0	0	0	0	0	3
31	3-Aug-19	2	0	0	0	0	0	0	1	3
32	10-Aug-19	0	1	0	0	0	1	0	1	3
33	17-Aug-19	1	0	0	0	1	0	0	2	4
34	24-Aug-19	3	0	0	0	0	0	0	0	3
35	31-Aug-19	2	0	0	0	0	0	0	0	2
Total		12	1	0	0	1	1	1	6	22

^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 9. Human WNV Clinical Case Information, Nebraska 2019

Age Range	Number
0 to 10	1
11 to 20	1
21 to 30	0
31 to 40	5
41 to 50	1
51 to 60	3
61 to 70	1
71+	0
Gender	
Male	6
Female	6
Diagnosis	
WNV Neuroinvasive Disease	6
WNV Non-Neuroinvasive Disease	6
Hospitalized	3
Death	1

2019 Human Clinical Positives for West Nile Virus in Nebraska

Date update: Sep.4 ,2019

Number of cases:

- 0 - 2
- 3 - 6

Local public health departments and number of cases:

Local public health department	Number of cases
North Central	1
Panhandle	1
Scotts Bluff County	1
West Central	1
Loup Basin	0
Elkhorn Logan Valley	1
East Central	0
Three Rivers	2
Douglas	2
Sarpy/Cass	0
Lincoln/Lancaster	1
Central District	0
Four Corners	0
Southwest	1
Two Rivers	0
South Heartland	0
Public Health Solutions	1
Southeast	0

Legend:

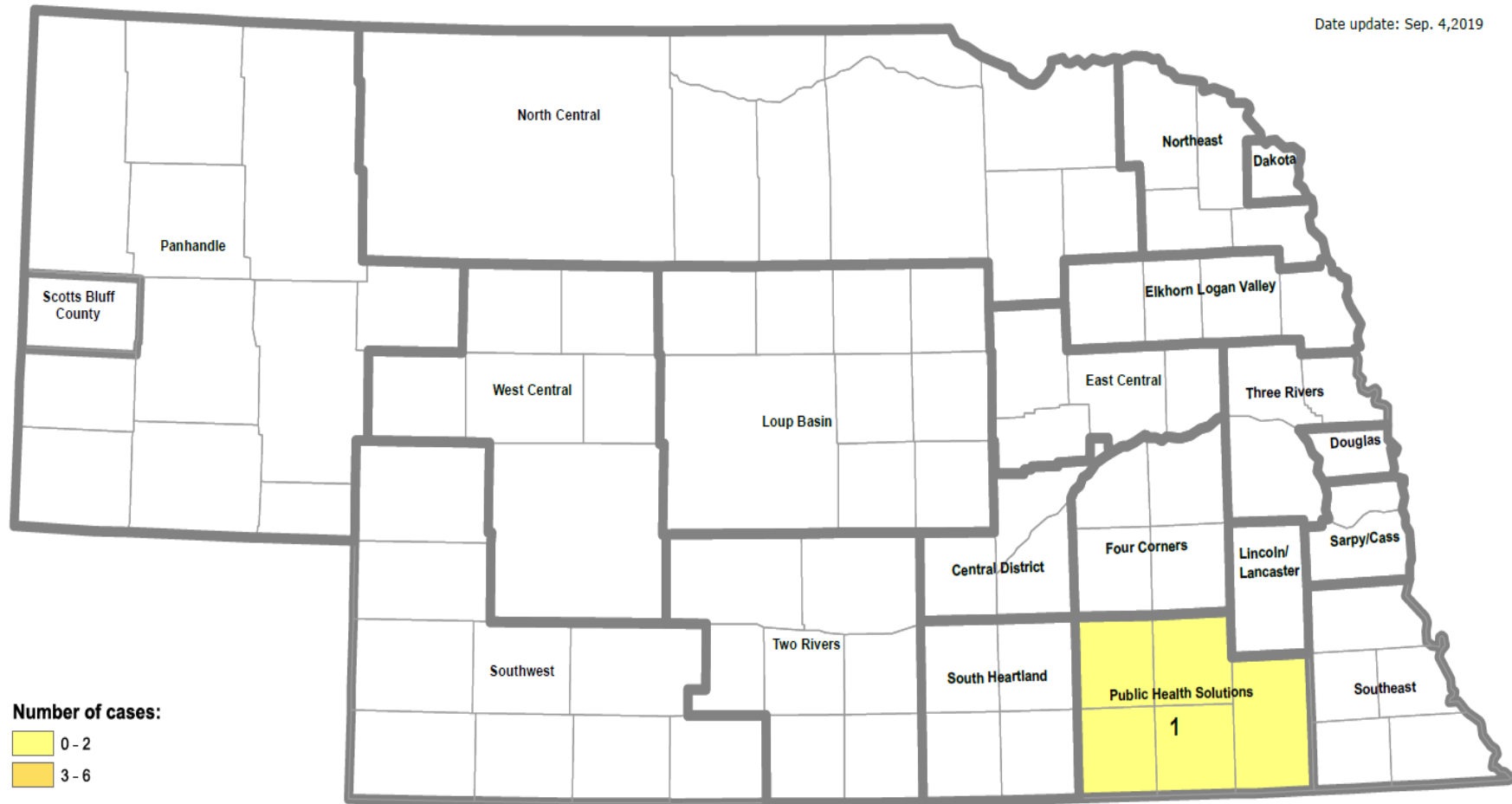
- North Central ← Local public health department
- 1 ← Number of cases

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Figure 6. 2019 Nebraska Human Clinical Cases by Local Health Department Jurisdiction.

2019 Human Blood Donor Positives for West Nile Virus in Nebraska

Date update: Sep. 4, 2019



Number of cases:

0 - 2

3 - 6

Public Health Solutions ← Local public health department

1 ← Number of cases

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Figure 7. 2019 Nebraska Human Blood Donor Positive Cases by Local Health Department Jurisdiction.

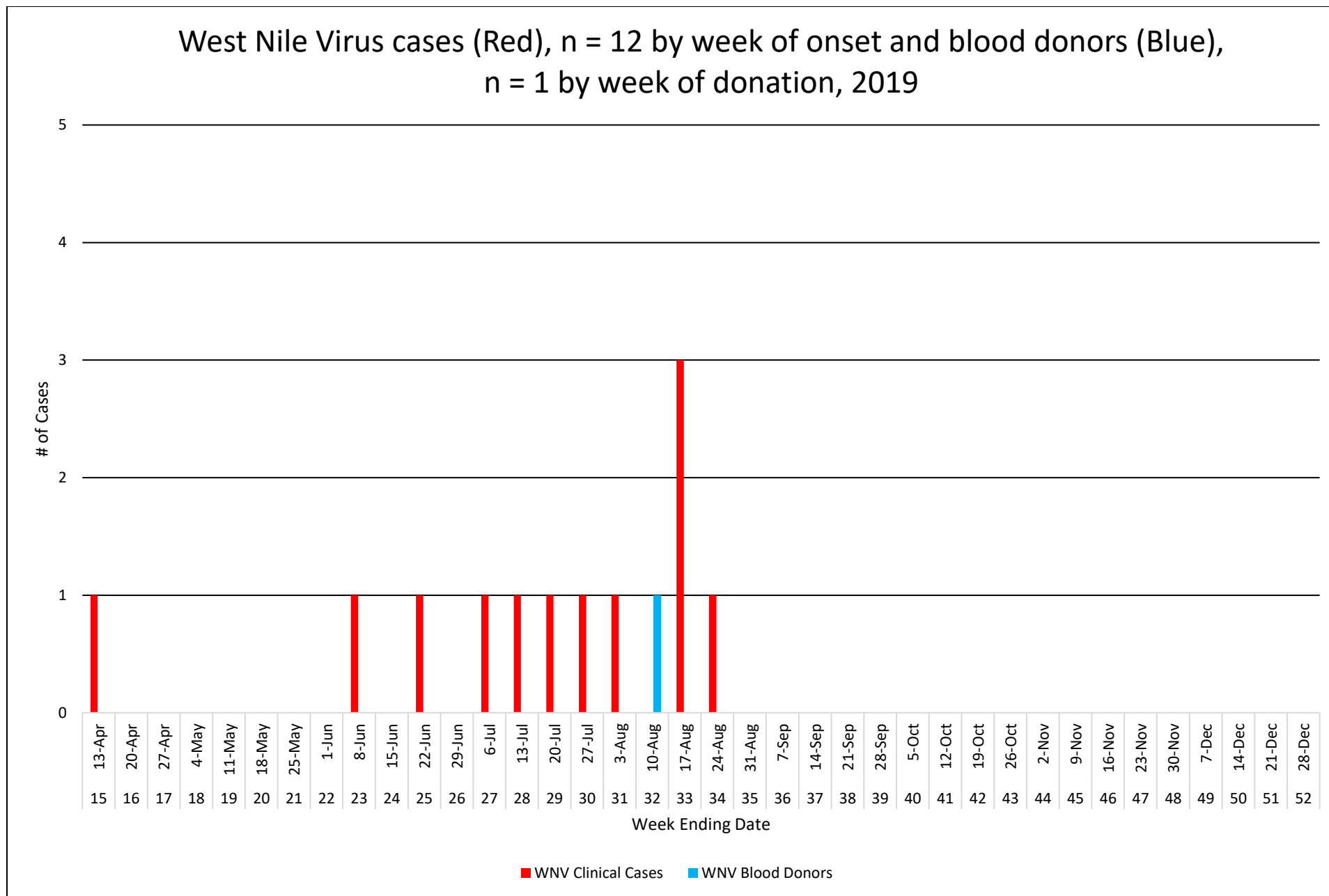


Figure 8. Epi-curve of human WNV infections (clinical and asymptomatic blood donors) by onset week (clinical) and week of donation (blood donor), Nebraska 2019.

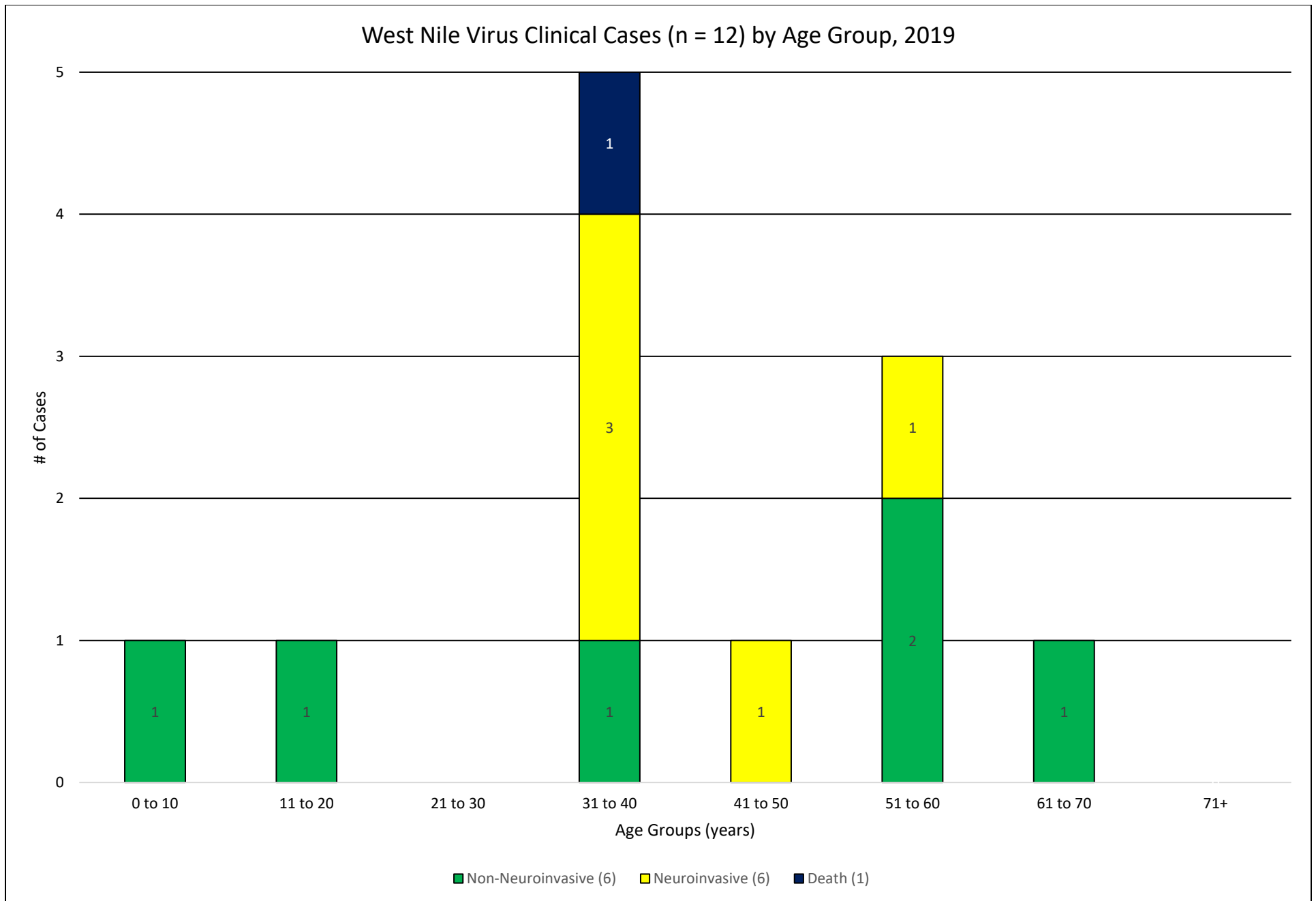


Figure 9. WNV human clinical cases by 10 year age groups, 2019.

Table 10. Number of Human WNV Clinical Cases by Onset Week and Nebraska Local Health Jurisdiction, 2019

CDC Wk.	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
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	0
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	0
Douglas County Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
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	0
Elkhorn-Logan Valley Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Four Corners Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lincoln-Lancaster County Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
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	0
North Central District Health Dept.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	0	1
Public Health Solutions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Sarpy-Cass Dept. of Health and Wellness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scotts Bluff County Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	1	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	0	0	0	0	0
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	0
Southwest Nebraska Public Health Dept.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1

Three Rivers Public Health Dept.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
Two Rivers Public Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Central District Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Statewide Total	1	0	0	0	0	0	0	0	0	1	0	1	0	1	1	1	1	0	1	3	1	0	12

Table 11. Number of Human WNV Blood Donors by Week of Donation and Nebraska Local Health Jurisdiction, 2019

CDC Wk.	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
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	0
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	0
Douglas County Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	0
Four Corners Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lincoln-Lancaster County Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0
North 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	0
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	0

Panhandle Public Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public Health Solutions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Sarpy-Cass Dept. of Health and Wellness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0
South Heartland District Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0
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	0	0
Three Rivers Public Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Two Rivers Public Health Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0
Statewide Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1

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/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/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)



Fight the Bite!!