

The West Nile Weekly

SUMMARY: Brown County is estimated to have a high chance (3 in 5) chance of reporting a case. Three to seven counties are estimated to report at least one human case. Yearly estimates have been updated, but 2016 is still just a slightly-above-average year. We recommend continuing early spraying efforts.

How are the mosquitoes?

We have received reports of more WNV-infected mosquitoes from Brookings County. *Culex tarsalis* is increasing in collections - between June 20th and 27th, average collections increased by 60% from 10 to 16 mosquitoes per trap per night on average. *Aedes vexans*, however, continues to dominate most reported collections - at the end of June, statewide, there were on average 100 mosquitoes per trap per night.

How's the weather?

Average daily temperatures have been on a downward trend but are still near average (Figure 1). Temperatures are predicted to rise above average again.

Since it is certainly warm enough to support the development of mosquitoes, we will begin considering the precipitation. Average statewide precipitation in April 2016 was 3.76", or nearly two inches more than the 20th century average (1.95"). May was slightly lower (2.51") than the 20th century average (2.92").

When we look at the whole state from the beginning of 2016, total precipitation is not following any consistent trend that would impact human WNV cases. [Dryness persists](#) in areas of the west and northeast, but the areas where we expect the most cases have received plenty of water to support mosquito habitat.

A series of thunderstorms are predicted in the state over the upcoming week after July 4th (Mon-Thurs), which should enhance human risk in the week beginning July 11th, by creating breeding habitats.

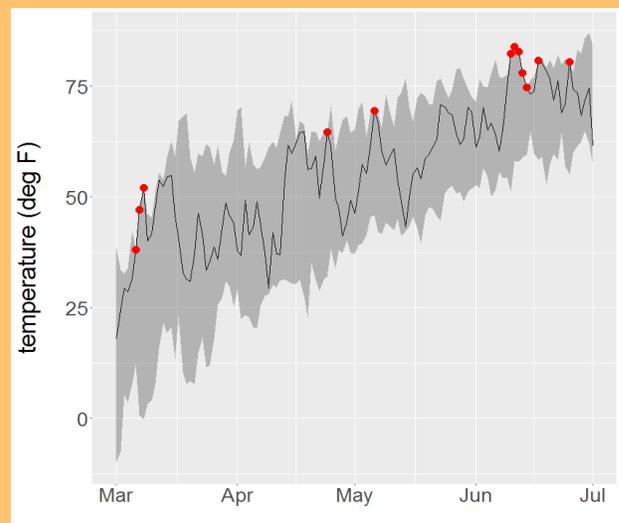


Figure 1: Mean daily temperatures in SD (line) with min/max over 2004-2016 (band). Circles indicate a new record high was set in 2016.

What to expect?

Estimated statewide risk has risen to 6.6% in this week, and we expect three to seven counties to report at least one case. Now that we have received new mosquito information, we are able to update our predictions for the year (Figure 2). Early positive pools and higher temperatures have shifted the season earlier than normal, and we estimate that risk is slightly higher than average (but not especially high) in 2016.

Brown County has an estimated 59.2% (3 in 5, Figure 3) chance of reporting at least one case, and continues to be the county most likely to report at least one human case. The per-person risk map (not shown this

week) is essentially the same as last week, with the higher individual risk in counties east of the Missouri.

We are still early in the WNV season, but around 3-4% of total cases are usually reported in the week of July 11-17th. This begins the period of roughly exponential growth that characterizes many infectious diseases, during which the virus is spreading rapidly through both birds and mosquitoes.

[Spraying adulticides does reduce human cases](#) but it has to be at the right time, which is to say: “WNV remediation efforts would be more effective in limiting illness and death associated with human infection if conducted at the onset of enzootic amplification rather than after occurrence of human cases.”

The entire WNV cycle is fragile in this early period, and control efforts are more effective now, rather than when cases are diagnosed and reported. Some SD counties have already begun spraying, and we urge continued efforts even while human risk is still low.

Because it takes 1-3 weeks for a human case to develop symptoms after a bite and time for diagnosis and reporting after that, spraying when human cases are reported can be nearly a month late. To emphasize: spraying is more likely to prevent human cases if applied now, while the virus is still expanding through the growing vector populations.

What’s going on elsewhere?

[ND](#) reported its first human case on July 1st. A case in [AZ](#) was associated with paralysis. [VT](#), [PA](#) have reported unusually early cases. [CA](#) still reports no human cases, but still reporting around twice as many positive mosquito pools and sentinel chickens as the typical year.

In the medical world, a [study](#) came out concerning persistent WNV symptoms. It may not be necessary to have apparent neuroinvasive illness to have neuropsychiatric symptoms after infection. Those who “only” have rash, fever, etc. may not have avoided the worst consequences, and should be evaluated for lingering difficulties. This finding highlights the long-term health risks of WNV infection and emphasizes the importance of prevention and control activities.

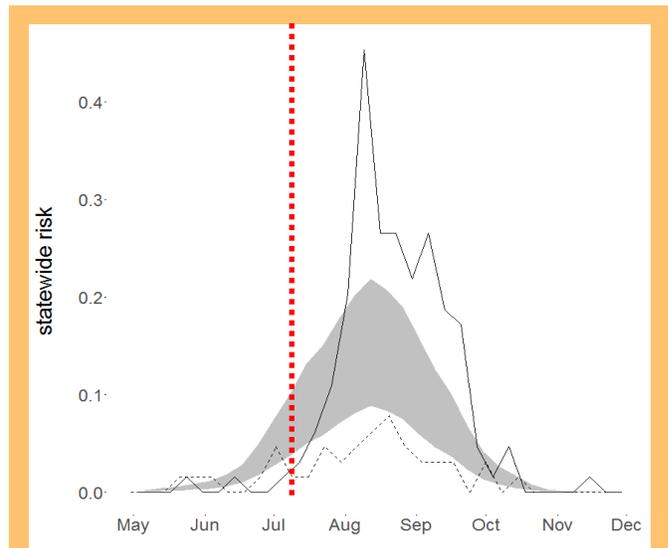


Figure 2: Estimated statewide risk (band), with actual risk in 2012 (solid), 2015 (dashed), and the week of July 11th (vertical, dashed).

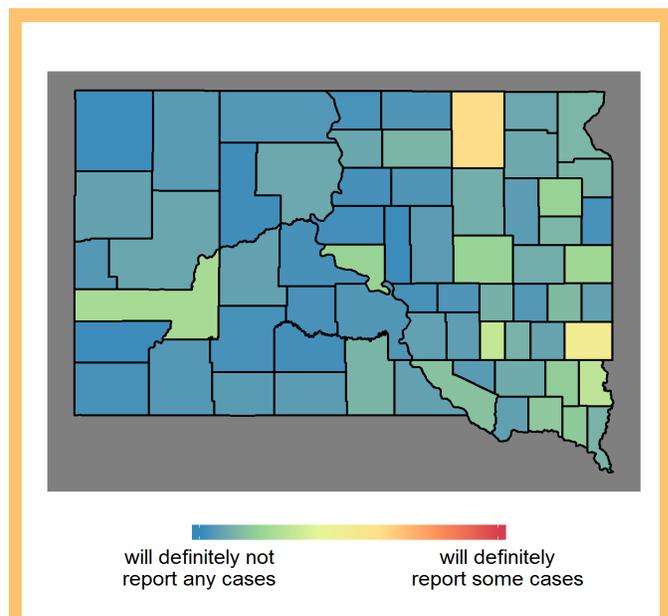


Figure 3: Estimated per-county risk for the week of July 11th - 17th. Brown County continues to have the highest risk of any cases.

For more info, visit mosquito.sdstate.edu, or write to michael.wimberly@sdstate.edu or michael.hildreth@sdstate.edu.

