

The West Nile Weekly

SUMMARY: There has been a confirmed human case in Minnehaha, and risk is doubling every week. Brown now has a 1 in 2 chance of reporting a human case, and Minnehaha a 1 in 4 chance. We expect two to five counties to report human cases this week.

The first human case in SD in 2016 has been reported in Minnehaha County, according to the SDDOH. [We had estimated](#) a 1 in 6 chance for at least one county to report a human case for June 20th - 26th. Minnehaha was second in estimated risk after Brown. We are not surprised to see an early case in a large county.

How's the weather?

The summer continues to be far warmer than usual, and new record highs are set daily. Unfortunately, we

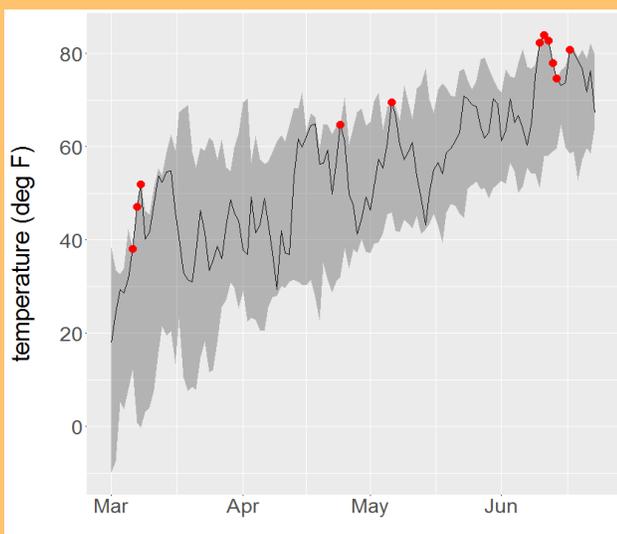


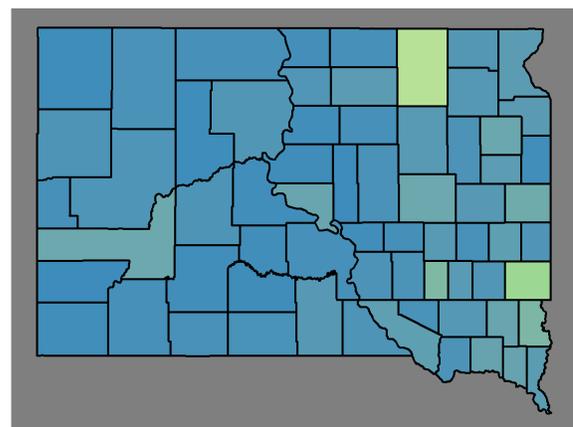
Figure 1: Mean daily temperatures in SD (line) with min/max over 2004-2016 (band). Circles indicate a new record high was set in 2016.



may have to repeat this sentence for the rest of the year. While in the past few days statewide temperatures have fallen closer to historical averages, the weather experts we rely on for predictions now all agree: 2016 is going to be far warmer than usual and will continue to set new record high temperatures.

What to expect?

Estimated statewide risk has risen to 4.8% in the week of July 4th - 10th, so we expect two to five counties to report a human case in this week. Brown County has an estimated 48.2% (approx. 1 in 2) chance of reporting a case, up from 23.4% last week. Minnehaha sits at 25.3% (approx. 1 in 4) chance.



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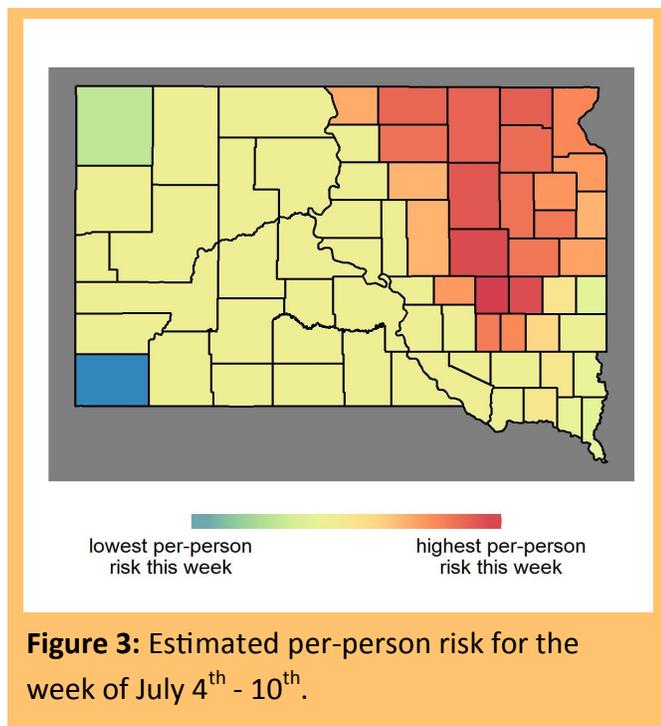
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Figure 2: Estimated per-county risk for the week of July 4th - 10th.

If temperatures had been average this year, Brown County would only have a 29.4% chance (approx. 1 in 3) of a positive case this week; that is, risk has been increased by more than 50% due to temperature.

Brookings, Davison, and Lincoln have more than a 1 in 10 chance of a case. Twenty-two counties have more than a 1 in 20 chance. The estimated probability of seeing at least one case somewhere is 96%; that is, a week without any cases would be surprising.

Still, however, only 4.2% of all cases have ever occurred on or before July 10th, half during this week. Risk is currently doubling every week, and since one case has already been confirmed, it seems reasonable to call this the beginning of the WNV season.



Estimated per-person risk is more evenly distributed this week than in previous weeks (Figure 3). Sanborn County's per-person risk is still the highest in the state, estimated at 2.0 cases per 100,000 people. This rate is still low - no cases are expected there this week - but the per-person risk is doubling every week. Individuals, especially those in the higher-risk eastern counties, should be mindful of, but not frightened by, the possibility of exposure to the vector.

Specifically, outdoor July 4th events will expose individuals to the mosquito. Other upcoming events will also keep participants outside in the evening; e.g. the [Badlands Astronomy Festival](#) and evening theater in

the [Laura Ingalls Wilder pageant](#). We believe that participants in these and similar events should be reminded of the risk of WNV and repellents should be recommended or provided where appropriate.

We are concerned that the public may be fatigued by news of Zika, or may be confident because Zika is not present here, and may ignore a long-standing threat to public health that is actually more problematic. We are, at the same time, concerned with overstating the risk of WNV transmission - while estimated risk is higher now than in the average year, we have no reason to suggest that everyone should remain indoors. We believe that reasonable precautions should suffice for most individuals in most outdoor activities.

What's going on elsewhere?

It is now difficult to keep up with all of the first positive mosquito pools in other states; the virus is where we expect it to be in birds, mosquitoes, and humans. We count 8 human cases in the US as of June 23rd. Spraying has begun in many South Dakota counties and elsewhere.

[CA](#) still reports no human cases, even though there are more than twice as many infected birds reported and 55% more positive mosquito pools than they usually have by this point in the year. By this point in 2015, CA had only reported 1 human case.

Interesting things are going on in the medical world. Although West Nile virus unlike Zika [does not appear to cause permanent complications during pregnancy](#), it can cause persistent neurological problems in those who survive neuroinvasive WNV.

A recent paper examined why more than half of patients who survive difficult WNV symptoms have [memory problems](#): an immune response continues destroying connections among brain cells even after the virus is gone. While the long-term effects of WNV infection have been known for some time, this news may point the way to treatments of memory impairment after infection by WNV and similar viruses.

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