

The West Nile Weekly

SUMMARY: Mosquitoes in SD are positive for the virus, and the first report was early this year. There is an increasing chance (1 in 4) that the most populated counties will report cases. Although outdoor activities during the July 4th holiday increase risk, the holiday is not responsible for large spikes in human cases.

How are the mosquitoes?

The major news this week comes from the SD Department of Health, Minnehaha, and Brown County, where WNV-positive pools of *Culex tarsalis* mosquitoes were collected on June 10th and 13th; these detections demonstrate that the virus is circulating. Early detections are roughly associated with more human cases, and this is the second earliest year on record:

First detected	Year	Human cases
June 1	2010	20
June 10	2016	
June 12	2013	175
June 18	2012	245
June 28	2015	42
July 1	2014	57
July 29	2011	2

To summarize pool testing, we estimate the *minimum infection rate (MIR)*, the number of positive pools per 1,000 mosquitoes tested. This gives some idea of the prevalence of the virus in the vector (and probably also the avian hosts). For June 2016 the statewide MIR is currently estimated at 1.3 positive pools per 1,000 mosquitoes tested (Figure 1). This number is higher for June than most years and almost identical to the MIR in June 2012 (1.5). This number is not

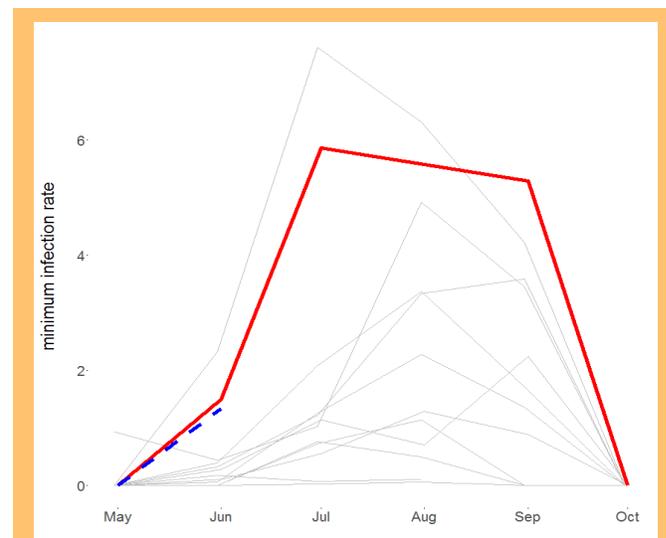


Figure 1: Statewide MIR in 2012 (red), 2016 (blue, dashed), other years (grey).

final; we do not have pool testing data for any county beyond the 17th. Nevertheless, we believe the MIR for June will remain high compared to the average year.

The vector species *Culex tarsalis* is appearing in traps (around 7-8 per night on average), but collections are still dominated by the floodwater *Aedes vexans*. This nuisance mosquito is appearing in large numbers (3,000+ per trap night in some locations) due primarily to recent, large precipitation events.



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

How's the weather?

After a few moderate weeks, temperatures in SD have again begun setting new record highs (Figure 2). In the week ending June 17th, temperatures in all of SD exceeded daily averages by at least 2°F and in the west by 5°F. If we measure by temperature rather than date, we are somewhere in early-to-mid July. Western counties are also [drier than usual](#), but any irrigation will make the environment more mosquito-friendly. The entire US is [significantly warmer than usual](#).

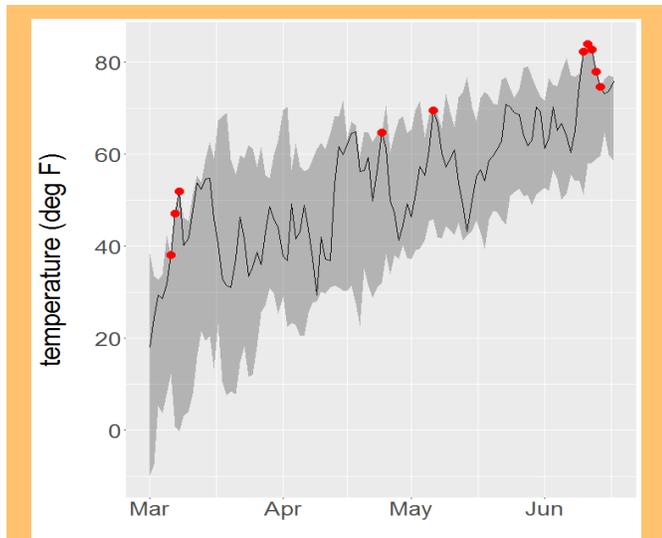


Figure 2: Mean daily temperatures in SD (line) with min/max over 2004-2016 (band). Circles indicate a new record high was set in 2016.

What's going on elsewhere?

Human cases have been confirmed in [CO](#), [OK](#). Infected bird and sentinel chicken counts in [CA](#) are ahead of last year due to rain and high heat, although [no human cases](#) had been reported there. [MS](#) has risen to three cases. WNV-infected birds have been found in [ND](#). There are positive *Culex pipiens* pools in [NY](#).

Most state health agencies are using similar language: this WNV season, however we choose to measure it, is arriving faster than usual. The focus almost everywhere is on Zika, but some propose that [WNV will still be more of a threat to public health in the US](#), and compare 2016 to 2012 with its many human cases.

Currently, we see no reason to disagree; in most places, the warmer weather alone will worsen the season.

What to expect?

Estimated statewide risk has risen to 2.9% in the week of June 27th - July 4th, so we expect one to three counties to report a human case in this week. Brown County has an estimated 23.4% (approx. 1 in 4) chance of reporting a case, up from 12.4% last week. This increase is due not only to increasing temperatures, but also to early positive mosquito pools.

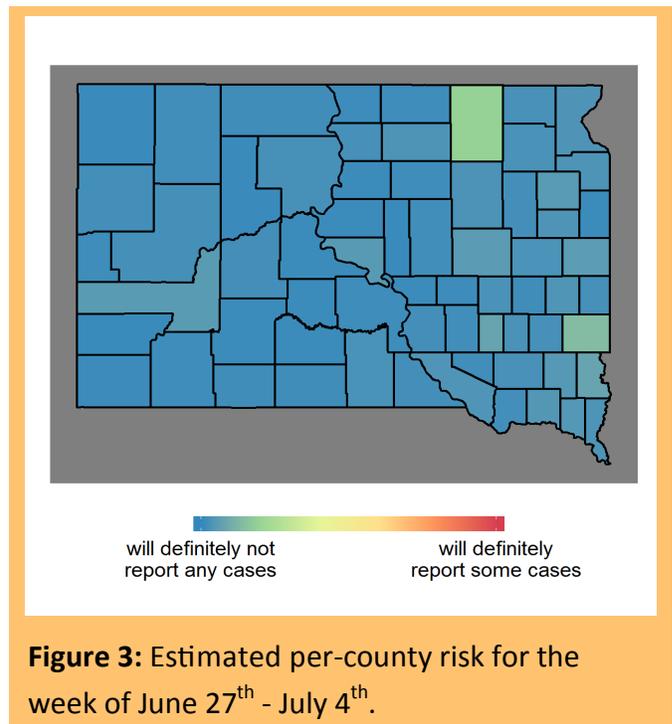


Figure 3: Estimated per-county risk for the week of June 27th - July 4th.

What about the holiday?

There should not be many cases in the week leading up to the July 4th holiday; only 2.4% of total cases occur on or before that date. However, outdoor activities will increase exposure to the vector; firework shows after dusk are especially noteworthy.

Because it takes [3 to 14 days](#) after being bitten to show symptoms, infections contracted on the holiday may become symptomatic between July 7th and 18th, and only 5% of all symptomatic cases have been diagnosed during this period.

We have still not entered the most dangerous time of the year, but individual cases may be able to trace their exposures back to events during the holiday. The holiday is significant from a public health perspective, especially considering heat-related illness, but is not responsible for large numbers of WNV cases.