

## *As rivers run low, worries run high - Correction Appended*

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 **Correction Appended**

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**Highlight:** The enduring drought spells growing trouble for the waterways of Minnesota.

### **Body**

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Parts of the St. Croix River are nearly impassable to boaters as water levels have fallen below launches and landings, exposing boulders, sandbars and other hazards. So much of the riverbed has been revealed during the drought that the National Park Service is warning people not to take or disturb historic artifacts, such as old logging tools, that may become visible for the first time in a century.

"We don't know of anything that has been found yet," said Julie Galonska, superintendent of the St. Croix National Scenic Riverway. "But we know from past years that there are many different things found in a river, some from 100 years ago, and we have to leave them in place."

The water in rivers and lakes throughout Minnesota continued to fall in July as the drought worsened and spread. Extreme drought, defined as causing major crop losses and widespread water restrictions, has engulfed nearly 20% of the state. Much of the rest of Minnesota has fallen into severe drought, meaning crop losses and water restrictions are likely.

The National Oceanic and Atmospheric Administration (NOAA) predicts the state has little chance of climbing out of the drought any time soon. Most of Minnesota would need 8 to 10 inches of rain to recover. Given long-term forecasts, the chances of that happening by November range from less than one-tenth of a percent in northwestern Minnesota to just below 4% in the southwestern corner of the state, according to NOAA.

Meanwhile, a portion of the popular Gooseberry Falls along the North Shore has dried up, and there is a chance the entire falls could slow to a trickle within the next month. Smaller creeks and tributaries have gone dry throughout the state. Water levels along the Mississippi River are creeping toward historic lows after nearly a decade of record highs.

"What's odd is how quickly we've gone from a Top 10 flood year to a Top 10 drought year," said Daniel Fasching, engineer for the Army Corps of Engineers. "Usually the swings from highs to lows stretch across multiple decades, but, you know, it's a brave new world."

The Army Corps built much of the lock and dam system on the Mississippi in the 1930s and has kept detailed daily readings of water levels since then, measured by the force of the river flowing in cubic feet per second.

The river flows at an average rate of 13,000 cubic feet per second in July at the lock and dam near Hibbing, Minn. This year, the flow was down to 2,400 cubic feet per second - less than 20% the normal rate. At this time in 2019,

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the river was at one of the highest levels ever recorded, pumping out tens of thousands of cubic feet of water per second.

## Dangers exposed

That drop in the water level makes it more dangerous for boating and barge traffic, exposing hazards such as boulders and sandbars. It also makes the river more stagnant and lake-like, Fasching said.

"All the particles within the water, all of that sediment and those suspended solids, get a chance to settle out and build up on the bottom of the river," he said.

While the drought is significant, the river almost certainly will remain high enough to keep barge traffic moving, Fasching said.

The system was designed to keep the river open through even the most extreme droughts, and it could theoretically remain navigable unless the flow of water stopped, he said. But more dredging likely will be needed in the years to come.

Drought and flood cycles are natural. In some ways, the fluctuation is good for rivers, giving them a break from the runoff, erosion and phosphorus loading that happens during high flows, said Lee Ganske, who oversees the long-term river monitoring program for the Minnesota Pollution Control Agency. Low cycles also allow native plants to take root and grow in exposed flood plains.

But warm, stagnant water also causes problems, Ganske said.

"This can cause oxygen levels to go down, which harms fish, mussels and other aquatic life," he said. "When rivers behave more like lakes, you start to see more harmful algae and algae blooms."

And while water levels have always fluctuated, extreme swings in recent years are worrisome, Ganske said.

"There is reason to believe that some fluctuations are exacerbated by climate change, both on the high-flow side and on the low-flow side," he said.

## It's complicated

Kenny Blumenfeld, the state's senior climatologist, said any influence of climate change in Minnesota's current drought is complicated.

"The predominant trend in Minnesota has been toward wetter conditions and less drought," he said. "So in that sense, this looks like an exception."

But in a broader look, the western United States is trending toward more extreme dry spells and heat waves. The bridge of high pressure over the West has become so enormous that it has taken over much of the country, Blumenfeld said.

"So changes in the weather don't really match the trends we associate here with climate change, but they are part of a significant climate change trend in the West, which has been affecting the behavior of our weather patterns here," he said.

It's anyone's guess as to what will happen next or how long the drought may last.

The changing climate hasn't only made weather more extreme, but also more unpredictable, Blumenfeld said.

"We will get out of it, that's for sure," he said. "We just don't know when."

## Correction

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This story misidentified the location of a lock and dam. It is near Hastings.

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