



Lake Superior Bloom Bulletin

2023

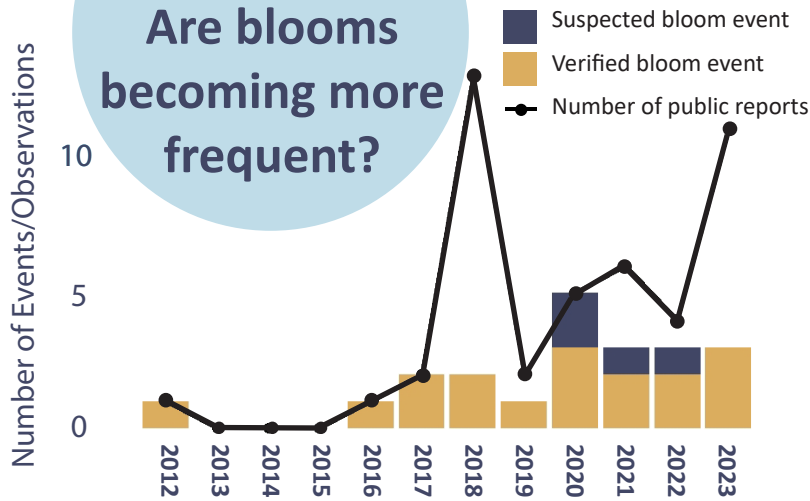
What are Blooms?

- Cyanobacteria, also known as blue-green algae, can grow into accumulations called blooms.
- Cyanobacteria have the potential to make toxins and can degrade environmental health when they grow in high numbers.
- This is an overview of blooms in the Lake Superior basin from 2012-2023.



Blooms cluster around the western arm of Lake Superior. In this map, points indicate all reported blooms on the U.S. side from 2012-2023, regardless of if they were suspected or verified with a microscope or toxin analysis.

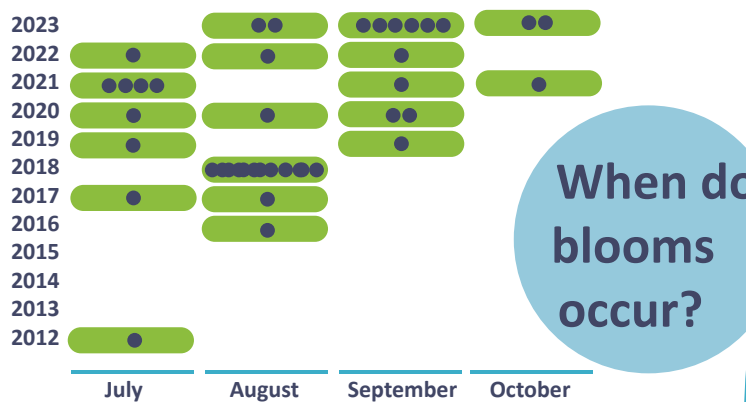
Are blooms becoming more frequent?



Current data indicate that bloom frequency has increased in recent years but this may be due to increased public awareness and management agency attention.

Are Blooms Toxic?

- Only some blooms were tested for toxins and in most cases, toxins were below detection limits.
- Microcystin (liver toxin) has been detected at levels exceeding U.S. EPA swimming advisory of 8 µg/l within the St. Louis River Estuary which exchanges water with Lake Superior.
- Other toxins have been detected at very low levels in blooms.
- Potential toxicity of Lake Superior blooms remains an active area of research.



When do blooms occur?

Black dots represent the number of individual blooms, including verified and suspected bloom observations.

- Since 2012, most bloom events have occurred in late summer when lake temperatures are typically warmest.
- The majority of blooms have been small isolated events.
- Larger events occurred in 2012 and 2018 following large flooding events.

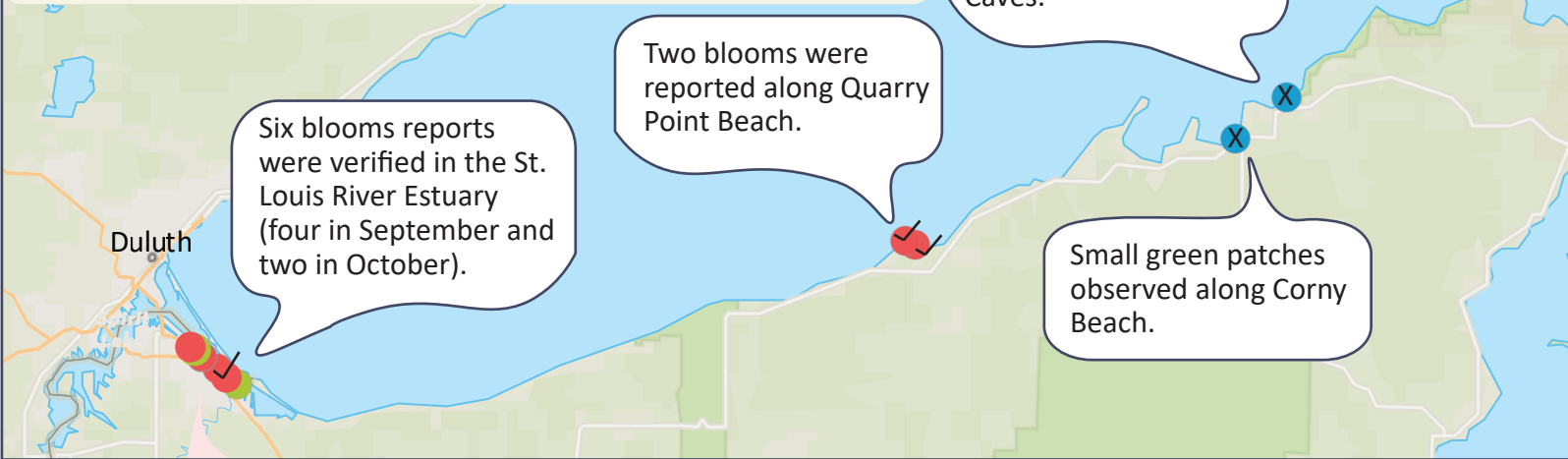


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Where were the 2023 bloom events?

- Several bloom observations were reported from multiple locations along the Lake Superior South Shore, from Superior to Cornucopia.
- The 2023 bloom reports occurred between August and October, possibly due to warmer temperatures and a longer growing season.

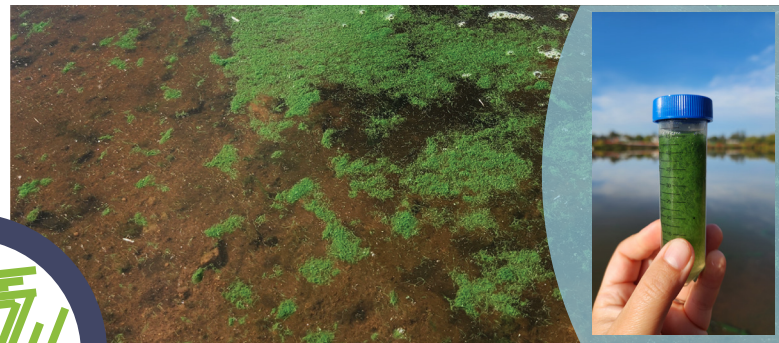


Points indicate blooms that were verified microscopically or by toxin analysis (check mark) and suspected blooms (x).

● August ● September ● October

Which algae grew in 2023?

- Blooms closer to the Apostle Islands were dominated by *Dolichospermum sp.*
- Blooms near the Twin Ports were dominated by *Aphanizomenon sp.*



Picture of a bloom at Barker's Island dominated by *Aphanizomenon sp.* on October 3, 2023.

How can you help?

- To report a bloom in WI waters: email dnrhabs@wisconsin.gov.
- To report a bloom in MN waters, email algae.mpca@state.mn.us or call 651-757-2822 or 800-657-3864.
- To report a bloom in MI waters: email AlgaeBloom@michigan.gov.
- For all Ontario blooms call the Spill Action Center at 1-866-MOE-TIPS (663-8477).

Were the 2023 blooms toxic?

- Toxin samples were not taken from every bloom.
- Microcystin toxin concentrations of 1.9 and 0.21 µg/l were detected in two of the blooms at Barker's Island, which is below the US EPA Swimming Advisory level.

Acknowledgments

Kasey Benesh, Brenda Lafrancois, and Kait Reinl developed this bulletin. The bulletin relies on observations, data, photographs, and insights from a wide range of agency staff and individual members of the public with key input from the Lake Superior Algal Bloom and Nutrient Subgroup collaboration.