



Harmful Algal Blooms (HABs) Newsletter



EPA Updates!

HABs News, Research, Resources, and Tools

In this issue

EPA Updates P.1

News P.2

HABs Advisories P.3

Useful Resources P.4

Upcoming Events P.4

Recent Published Articles P.4

Mention of trade names, products, or services in this newsletter does not convey and should not be interpreted as conveying official EPA endorsement, approval, or recommendation for use.

More HABs information is available on EPA's [CyanoHABs in Water Bodies website](#)

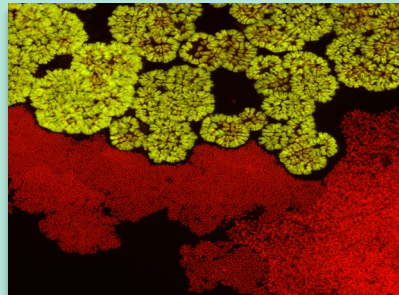


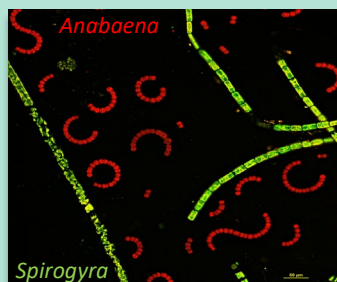
Image by Robert Zucker and Emma Brentjens, EPA.

Use of Fluorescent Microscopy to Differentiate Phytoplankton Composition

Discovery Lake, NC. Cyanobacteria (*Microcystis*) in red, algae in green. December 10th, 2021

The Center for Public Health and Environmental Assessment at EPA's Office of Research and Development is using fluorescent microscopy to identify and differentiate between green algae and cyanobacteria. Samples collected from Discovery Lake and Lake Betz in Research Triangle Park, North Carolina were photographed using a fluorescent microscope. Algae and cyanobacteria in the samples absorb light at different wavelengths and thus fluoresce with different intensity after excitation. Algae can absorb blue light better while cyanobacteria absorb green light better resulting in a two-colored image representing the two different species: algae appears green, and cyanobacteria appears red --- for the

Holiday Season!



To learn more about fluorescent microscopy please contact Dr. Robert Zucker at zucker.robert@epa.gov

Lake Betz, NC. December 10th, 2021. Image by Robert Zucker and Emma Brentjens, EPA.

11TH U.S. SYMPOSIUM ON HARMFUL ALGAE CALL FOR ABSTRACTS IS NOW OPEN!

We are pleased to announce that the 11th U.S. Symposium on Harmful Algae will be held on October 23-28, 2022, in Albany, New York, at the Hilton Albany. Local coordination is being led by the NEIWPCC, the New York State Department of Environmental Conservation, and the U.S. Geological Survey with support from the U.S. National Office for Harmful Algal Blooms at the Woods Hole Oceanographic Institution.

The Call for Abstracts is Now Open! Please **submit your abstracts** by **May 6, 2022** to be considered for a presentation at the symposium. Poster abstracts will continue to be accepted as space permits through **July 2022**.

The theme for the upcoming symposium is "**Science to Support Solutions from Shore to Shore**". From freshwater to marine systems, the prevalence of HABs is a national environmental challenge, and solutions are needed. Celebrating this event in New York - the only state with Great Lake shorelines, marine coasts, and the diverse range of ecosystems between these extremes - creates an ideal setting to discuss progress in understanding algal bloom ecology and the solutions necessary to prevent and reduce HABs.

Topic Areas:

- For Training Sessions or Workshops
- Mitigation and Control
- Monitoring
- Bloom Dynamics and Drivers
- Cellular and Molecular Technology
- Method Validation and Reference Materials
- Microbial Interactions
- Climate Change and Resiliency
- Food Web Dynamics and Ecosystem Function
- Biochemistry and Ecophysiology
- Predictive Models and Forecasting
- GIS and Remote Sensing Applications
- Nutrients and Biogeochemistry
- Toxin Biosynthesis, Pathways and Effects
- Toxin Detection
- Taxonomy and Genomics
- Engaging Communities and Stakeholders
- Public Health
- Socioeconomic Impacts
- Fish and Shellfish-Killing Species
- Impacts to Wildlife and Domestic Animals
- Multi-stressor Research Studies
- HABs Across the Freshwater-to-Marine Continuum

Interested in sharing your creativity with the HAB community? Send your logo contest submission to mdugan@neiwpc.org by **January 12, 2022**.

For more details, visit <https://neiwpc.org/events/ushab11/>.



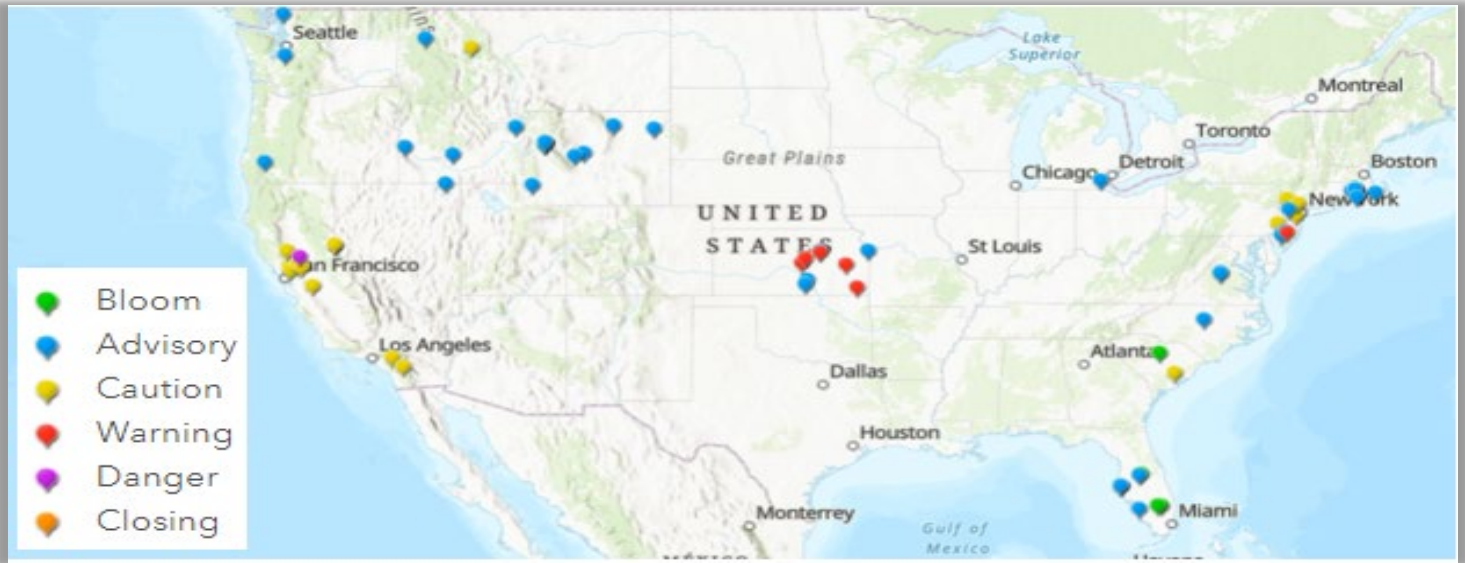
Great Lakes HABs Collaborative NEWSLETTER



Reported Blooms, Beach Closures, and Health Advisories* - December 1-17, 2021

**Includes blooms, cautions, warnings, public health advisories, closings, and detections over state thresholds due to the presence of algae and or/toxins. This is not a comprehensive list; not all blooms have been reported and/or not all lakes are actively monitored.*

Go to EPA’s interactive [Tracking CyanoHABs Story Map](#) to access the data points underlying the map and for more information.

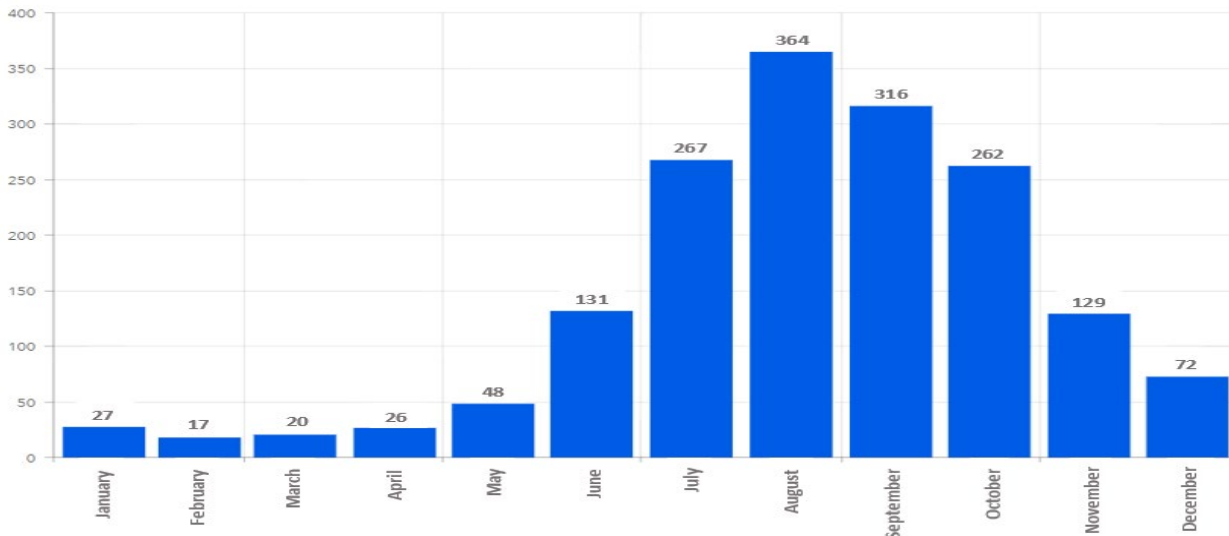


Click the state name to see the reported blooms for the month of December 2021:

[Massachusetts \(1\)](#); [Rhode Island \(10\)](#); [New Jersey \(8\)](#); [Virginia \(1\)](#); [Florida \(8\)](#); [North Carolina \(1\)](#); [South Carolina \(2\)](#); [Michigan \(1\)](#); [Kansas \(9\)](#); [Montana \(2\)](#); [Wyoming \(9\)](#); [California \(11\)](#); [Idaho \(4\)](#); [Oregon \(1\)](#); [Washington \(2\)](#)

[Summary of HABs-Related Advisories from January through December 2021](#)

The graph below summarizes the monthly state reports of blooms, cautions, warnings, public health advisories, and closings postings due to the presence of algae, toxins, or both from January 2021 through December 17, 2021. Blooms and advisories for each month are published on EPA’s CyanoHABs Freshwater Newsletters [webpage](#) and summarized on EPA’s interactive [Tracking CyanoHABs Story Map](#).



* Special THANKS to Adrienne Keel, ORISE Research Participant, Office of Science and Technology, for her valuable contributions to this Newsletter.

Recently Published Articles*

[A review of algal toxin exposures on reserved federal lands and among trust species in the United States](#)

Zachary R. Laughrey, Victoria G. Christensen, Robert J. Dusek, Sarena Senegal, Julia S. Lankton, Tracy A. Ziegler, Lee C. Jones, Daniel K. Jones, Brianna M. Williams, Stephanie Gordon, Gerald A. Clyde, Erich B. Emery & Keith A. Loftin. Critical Reviews in Environmental Science and Technology, 2021.

[State of knowledge on early warning tools for cyanobacteria detection](#)

Husein Almuhtaram, Faith A. Kibuye, Suraj Ajjampur, Caitlin M. Glover, Ron Hofmann, Virginie Gaget, Christine Owen, Eric C. Wert, Arash Zamyadi, Ecological Indicators, Volume 133, 2021, 108442.

[Harmful algae in aquaculture systems in Ngerengere Catchment, Morogoro, Tanzania: Descriptive community structure and environmental concerns](#)

Offoro N. Kimambo, Jabulani R. Gumbo, Titus A.M. Msagati, Hector Chikoore, Physics and Chemistry of the Earth, Parts A/B/C, Volume 125, 2022, 103103.

[Chapter 12 - Comparative genomics for understanding intraspecific diversity: a case study of the cyanobacterium *Raphidiopsis raciborskii*](#)

Anusuya Willis, Jason N. Woodhouse, Brett A. Neilan, Michele A. Burford, Editor(s): Lesley A. Clementson, Ruth S. Eriksen, Anusuya Willis, Advances in Phytoplankton Ecology, Elsevier, 2022, Pages 415-434.

[Continuous and Synoptic Assessment of Indian Inland Waters for Harmful Algae Blooms](#)

Harmful Algae Chintan B. Maniyar, Abhishek Kumar, Deepak R. Mishra, Volume 111, 2022, 102160.

[Chapter 10 - Current applications and technological advances in quantitative real-time PCR \(qPCR\): a versatile tool for the study of phytoplankton ecology](#)

Kathryn J. Coyne, Yanfei Wang, Susanna A. Wood, Peter D. Countway, Sydney M. Greenlee, Editor(s): Lesley A. Clementson, Ruth S. Eriksen, Anusuya Willis, Advances in Phytoplankton Ecology, Elsevier, 2022, Pages 303-351

[Modelling of threats that affect Cyano-HABs in an eutrophicated reservoir: First phase towards water security and environmental governance in watersheds](#)

Carolina Acuña-Alonso, Xana Álvarez, Enrique Valero, Fernando António Leal Pacheco, Science of The Total Environment, Volume 809, 2022.

*Articles are retrieved monthly from Science Direct research database searching for the following key words: cyanobacteria, cyanotoxins, harmful algal blooms, and HAB(s).

Upcoming Virtual Events

[2nd Annual Virtual Harmful Algal Bloom Symposium](#)

January 6-7, 2022

Emerging Research & Case Studies

[12th International Conference on Toxic Cyanobacteria](#)

May 22-27, 2022, Toledo, Ohio

Abstract Deadline: January 15th, 2022

Early Registration: March 1st, 2022

[Pathogens and Natural Toxins e-Conference](#)

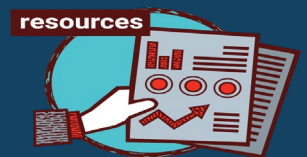
July 1st to August 31st, 2022

[U.S. Symposium on Harmful Algae](#)

October 23-28, 2022, Albany, New York

Abstract Deadline: May 6th, 2022

Additional
Useful



December 7, 2021 Benthic HABs

Discussion Webinar:

[Presentations](#)

[Webinar Recording](#)

For more information visit the [EPA's Benthics Discussion Group webpage](#)



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