ALGAL BLOOMS THINGS TO KNOW

Algae are photosynthetic organisms naturally found in aquatic environments. Under certain conditions, they multiply to high concentrations called blooms. Some blooms are blue-green algae capable of producing toxins that can cause skin irritation, illness or in rare instances death in pets, livestock and people. These blooms are known as harmful algal blooms or HABs.

HABs appear to be on the rise in North Carolina's Chowan River and Albemarle Sound. This has caused concern for communities and prompted researchers, managers and citizens to improve detection of HABs, and focus on better understanding their impacts and causes.

What causes an algal bloom?

Calm water paired with increased temperatures and nutrients provides favorable conditions for blue-green algae, also known as cyanobacteria, to grow rapidly and form large, visible mats (blooms). Freshwater algal blooms are increasing around the globe.

Photo credit: Lucy Daniels

Cyanobacteria blooms are known to be patchy like this one in the Chowan River.

How can I spot a bloom?

Blooms may be bright green or blue-green, and can change to a milky-blue as they begin to decay. They can collect at the water's surface and are moved by wind and wave action, which can rapidly change the bloom's appearance. But blooms may not always be readily visible since cyanobacteria can move vertically in the water column.

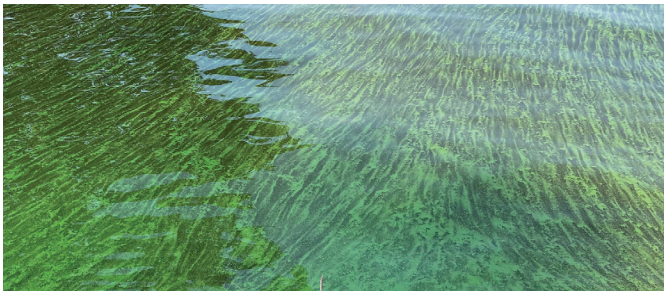


Photo credit: Colleen Karl

Algal blooms can be in parallel streaks, like this one in the Chowan River.

Why are some blooms harmful?

Some species of cyanobacteria produce toxins that may accumulate in high concentrations during blooms. Several types of toxins may be produced depending on the type of cyanobacteria present. One toxin of concern, microcystin can cause skin rashes and gastrointestinal issues, as well as damage to the liver, kidneys and nervous system. Children, elderly adults and people with weakened immune systems may be more susceptible to the effects. In the summer of 2019, some N.C. blooms contained up to 620 ug/L of microcystin toxin, which is over 30 times what the World Health Organization considers to be a moderate health risk for swimming.

Toxins can also be fatal to pets, livestock and wildlife that drink or come into contact with contaminated water. Additionally, large blooms may cause low-oxygen waters, which can lead to fish kills.

Photo credit: Colleen Karl

A decaying bloom, Chowan River.

How can I keep my family safe?

You cannot tell if a bloom is toxic just by looking at it.

Stay safe:

- Avoid water that is discolored, smells bad, or has foam, scum, algal mats, or paint-like streaks on the surface.
- If you see dead fish or animals in the water or along the shore, stay away.
- Keep children and pets out of affected water.
- If anyone comes into contact with affected water, thoroughly wash them off using clean water and soap.
- See a healthcare provider if you experience symptoms such as confusion, difficulty breathing, vomiting or diarrhea. Symptoms can appear as soon as a few hours after exposure or can take up to a week to show up.
- Never drink or cook with affected water. Boiling will not remove the toxins if present.
- Avoid boating through a bloom; breathing in airborne droplets can be dangerous.

Can I eat fish taken from affected waters?

Fish and shellfish exposed to affected waters can absorb toxins into their bodies. While no one has reported getting sick from eating fish caught during a cyanobacteria bloom, the health risks are still unknown and being studied. The U.S. Food and Drug Administration recommends trimming the skin, fat and internal organs – areas where toxins are most likely to accumulate – before cooking fish. Also, avoid eating the "mustard" or hepatopancreas of blue crab, as it can accumulate significant levels of toxins. The World Health Organization recommends moderation in eating fish exposed to blue-green algae.

How can I help scientists and managers?

Individuals and groups can:

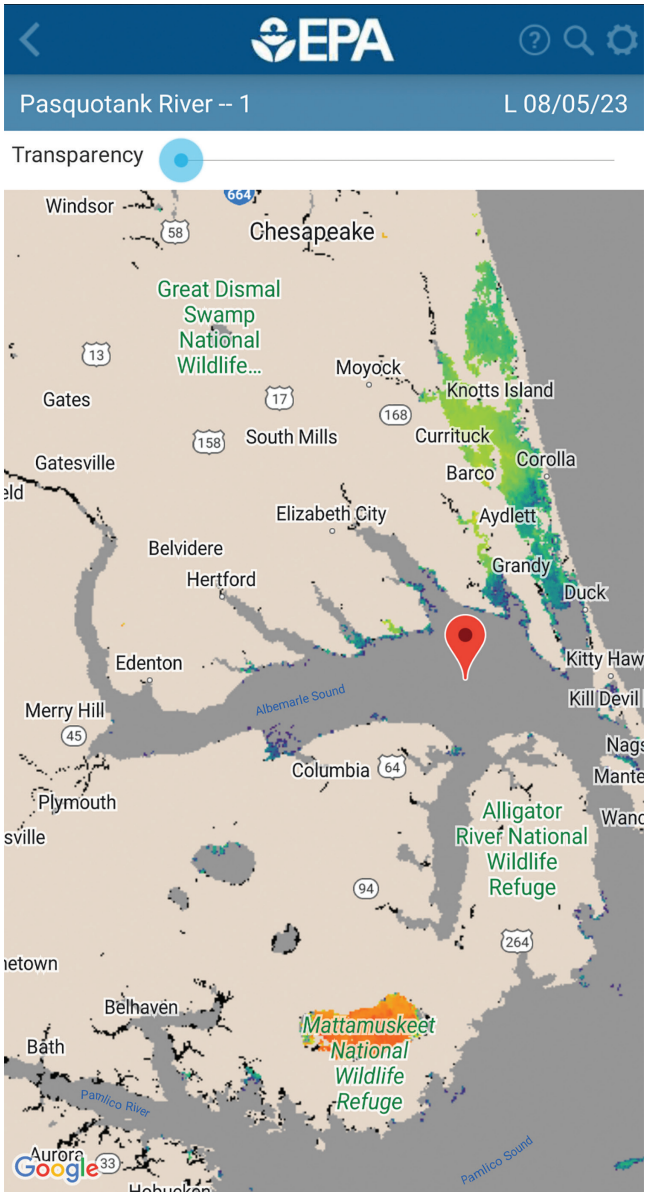
- **Report and Track Blooms and Fish Kills**
  Let the N.C. Division of Water Resources know when you see a bloom using their reporting system at: go.ncsu.edu/reportahab
- **Monitor for Algae**
  Join NOAA's Phytoplankton Monitoring Network. Contact jennifer.maucher@noaa.gov to get involved.
- **Share this Factsheet:** go.ncsu.edu/algal-blooms
- **Document Possible Health Impacts**
  If exposure to an algal bloom gives you a rash, cough or other condition that sends you to the doctor, ask them to record the ailment with a new medical code designated to track problems related to toxic algae. The code is Z77.121. It is part of the International Classification of Diseases – Tenth Edition (ICD-10).

How can I help prevent harmful algal blooms?

Blue-green algae thrive on nutrients such as nitrogen and phosphorus. Help reduce nutrient loads in waterways:

- Limit use of fertilizers and follow application directions.
- Minimize and control storm water leaving your property.
- Maintain or restore native plants along shorelines.
- Pick up and dispose of pet waste.
- Maintain septic systems. Pump and inspect every three to four years.
- Prevent surface runoff from agricultural and livestock areas.
- Prevent erosion at construction and logging sites.

Local, state and national organizations are studying algal blooms as they increase across the country. In North Carolina, work is focused on understanding cyanobacteria toxins and their impacts, the environmental conditions that promote HABs, and improving our capability of detecting HABs from satellite imagery. Managers continue to identify strategies to improve water quality and to communicate regularly with the public about health risks associated with blooms.



The EPA's CyAN app provides users with a map of where high cyanobacteria concentrations are occurring. The CyAN app is free to access via smartphone or laptop: go.ncsu.edu/epa-cyan-app

Learn more about HABs

Chowan Edenton Environmental Group: facebook.com/CEEG2007

N.C. Division of Water Resources: HABs monitoring and information: algae.nc.gov

N.C. Department of Health and Human Services: epi.publichealth.nc.gov/oee/a_z/algae.html

NC State University, Astrid Schnetzer's Cyanotoxin Research: sites.google.com/a/ncsu.edu/schnetzerlab/home

National Oceanic and Atmospheric Administration: oceanservice.noaa.gov/hazards/hab/

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