# NOAA Offers Hatcheries Training and Help with Monitoring Harmful Algal Blooms
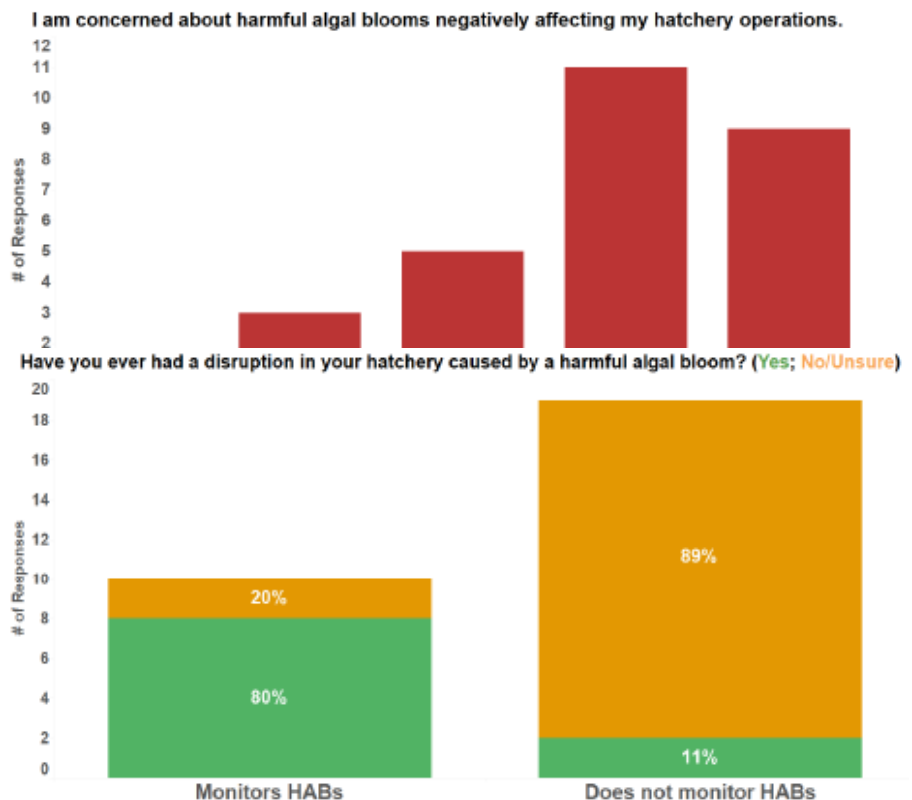
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If you work at a shellfish hatchery, you likely received a survey about Harmful Algal Blooms (HABs) last year. In August 2020, the NOAA Milford Laboratory sent out a survey to U.S.

shellfish hatcheries with help from the East Coast Shellfish Growers Association and industry partners. The survey captured awareness of and experiences with HABs. Twenty-nine hatcheries responded from the New England/Mid-Atlantic (59%), Southeast (34%), and West Coast (7%) regions. The responding hatcheries cultivate a total of 15 bivalve species, with eastern oysters and northern quahogs being the most common. Over half of the responses came from small facilities with annual production totaling <300 million mature larvae or <10 million post-set seed.

Hatchery locations of survey respondents
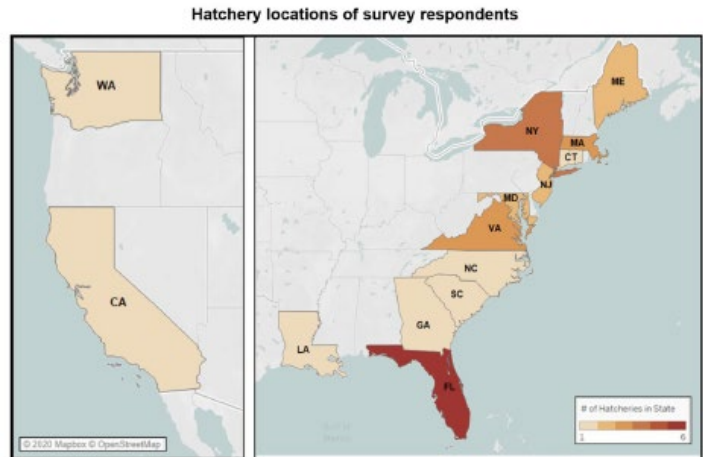
The survey revealed very high awareness of HABs and potential effects on hatcheries, with 97% responding that they know what HABs are, and 90% responding that they know about the negative effects HABs can have on hatcheries. 69% of hatcheries indicated that they are concerned about HABs negatively affecting their operations.

When it comes to firsthand experience, nearly half of the New England/Mid-Atlantic hatcheries responded that they have

I am concerned about harmful algal blooms negatively affecting my hatchery operations.

Have you ever had a disruption in your hatchery caused by a harmful algal bloom? (Yes; No/Unsure)

experienced HABs, compared with only about 20% of the Southeast hatcheries (the small

sample size from the West Coast region makes it difficult to draw conclusions). Ten hatcheries currently monitor for HABs, and eight of those reported experiencing a disruption to their hatchery caused by a HAB event.

Overall, 59% of all hatcheries responded that they would like help monitoring for HABs. This need was consistent across all three regions. While there will likely be additional opportunities to strengthen collaboration on HABs, hatcheries can proactively increase their HAB monitoring capacity by joining NOAA's [National Phytoplankton Monitoring Network](#).


This volunteer-based network is currently recruiting shellfish hatcheries and aquaculture farms. Formed in 2001, the network enhances the U.S.'s ability to respond to and manage the growing threat posed by HABs by collecting important data, including phytoplankton species distribution, as well as local environmental conditions. Hatcheries and growers can receive training on methods to collect and identify local phytoplankton and potential HAB species. Training is usually done online using video conferencing and takes approximately three hours.

The network has adapted its protocols to specifically monitor for species known to have adverse effects on shellfish and finfish aquaculture. NOAA supplies each network member with plankton nets, thermometers, salt refractometers and digital microscopes free of charge. Most participants say that monitoring and reporting takes less than one hour per week. Groups

monitor sites either weekly or biweekly and report their observations to NOAA using an online database or a smartphone application called *Phyto*.

Phyto is a free smartphone app that is available on both iOS and Android platforms. The app includes a guide to identification using cell shapes, a photo library of important phytoplankton species, pronunciations of scientific names, links to harmful algal bloom news, and an identification game. A demonstration of some of the features in the *Phyto* app for IOS is available at: https://youtu.be/rV8Z3MDpBIM. Participation in the Phytoplankton Monitoring Network is not required to use the app; it is a free download available for anyone.
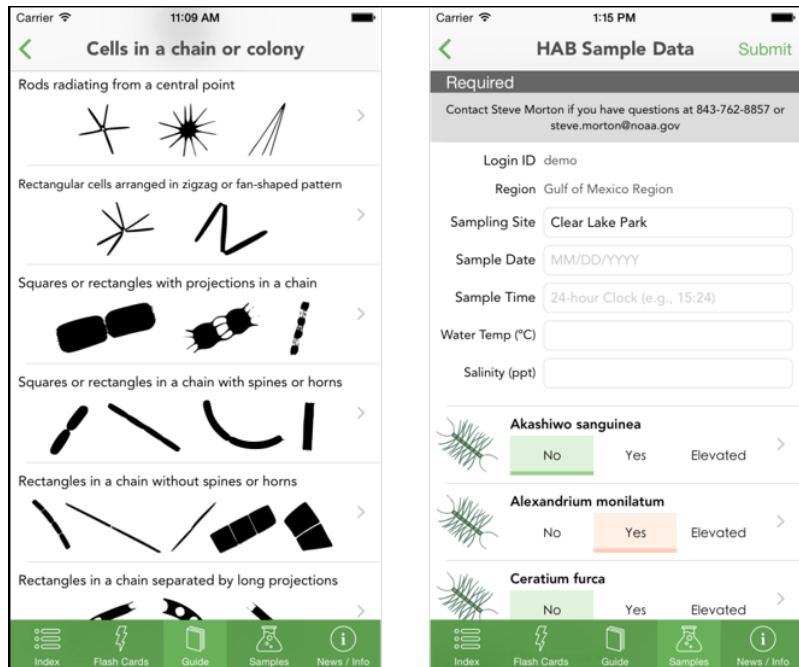
Members of the network send their preserved samples to the Phytoplankton Monitoring Network office for confirmation using digital microscopy for data quality assurance and quality control. Since the program's inception, hundreds of blooms have been identified by citizen scientists, including over 500 potentially harmful blooms, and 480,000 observations have been recorded, which are available through Data.gov, the federal government clearinghouse for environmental data collections. This dataset is critically important because HABs have been observed in every U.S. state, resulting in over $1 billion in economic losses to coastal communities over the last several decades. Both the shellfish and finfish aquaculture industries have experienced direct, adverse effects of harmful algal blooms from both toxin-producing species and non-toxin-producing species. Hatcheries and growers may benefit from participating in the network by receiving an early warning about possible local HABs.

For more information about training and participating in the Phytoplankton Monitoring Network, please contact Steve Morton at steve.morton@noaa.gov.

Figure 1: Hatchery locations of survey respondents
Figure 2: Number of respondents concerned about harmful algal blooms negatively affecting hatchery operations.
Figure 3: Number of respondents that have had a disruption in their hatchery caused by a harmful algal blooms that monitor HABs and do not monitor HABs.
        Credit for Figures 1-3: Meghana Parikh

Photo 1: Brown Tide in Chincoteague Bay, MD
Photo Credit: George Boniello, Coastal Carolina University

Photo 2: The *Phyto* smartphone app.
Photo Credit: Steve Morton NOAA