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Commissioner

STATE OF CONNECTICUT  
DEPARTMENT OF AGRICULTURE  
Bureau of Aquaculture & Laboratory Services



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**Phytoplankton Volunteer Network Standard Operating Procedure (SOP)**

**Overview.** In addition to completing all of the required testing for shellfish sanitation, the Department of Agriculture Bureau of Aquaculture (DABA) monitors phytoplankton along Connecticut's 250-mile shoreline. Phytoplankton monitoring is a critical component of our program because it provides staff with an early warning about the presence and abundance of harmful algal bloom (HAB) species, which have the potential to impact or even close shellfish growing areas. Some HAB species produce toxins, which can accumulate in shellfish tissues, and make consumers sick or result in death when present in high enough concentrations. While Connecticut historically has only had a few HAB closures, isolated to Groton, HABs are increasing in frequency and intensity around the world and U.S., including neighboring New York and Rhode Island waters, and some HAB species are expanding their distributions. With such a large coastline and robust shellfish program, DABA staff would like to increase the number of phytoplankton samples analyzed annually. Your contribution to our program is greatly appreciated and will help ensure the safety of your town's shellfish products and Connecticut's high-standing reputation.

**Procedure: Whole-water grab samples (applicable for sampling areas equal to or less than 6.5ft depth)**

**Equipment (provided by DABA):**

- 500mL sample bottles (non-sterile)
- Water sample grab stick
- Lugol's iodine (fixative, contains acid – handle with caution!)
- Sampling sheets
- 100mL sample bottles (non-sterile)

**Procedure:**

- Every town participating in the monitoring program has a set station(s) by the DABA to collect phytoplankton samples at. Record the water monitoring station number on the side of one (1) 500mL bottle. Phytoplankton bottles do not need to be sterile, but it is critical that the bottles are not cracked or damaged in any way that will compromise the sample integrity.
- Wade into the water if collecting from shore, or ensure you are at a depth equal to or less than 6.5ft if sampling by boat. When sampling from shore, allow any debris disturbed by wading in to settle. When sampling from a boat with an automatic bilge pump, collect sample as far away from the bilge pump discharge as possible and avoid boat wash.
- Place the sample bottle in the sampling tool clamp with the bottle opening facing up. Remove the cap. Place the 500mL bottle approximately 1ft below the surface and allow the bottle to fill while you bring it back to the surface – you want to collect a composite water sample from 1ft subsurface to the surface. Fill the bottle up to the top, but leave a slight amount of air space to

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mix the sample. Please avoid aerating the sample (i.e. do not allow the water to “bubble” into the container).

- Add ~30 drops of Lugol’s iodine to fix the 500mL sample. The fixed sample should be tea-colored. It is better to underfix a sample (e.g. add 25 drops if you are concerned about overfixing the sample).
- Place the cap back on, seal the bottle completely and **gently** invert the bottle to thoroughly mix the fixative into the sample. **DO NOT** shake the sample vigorously – some phytoplankton are fragile and cells will be stressed or lost if not handled appropriately. The 500mL fixed sample will be used for quantitative analysis of the phytoplankton community.
- If you observe discolored water or an animal kill, you can also collect a 100mL grab sample, but do not fix it (this is a complementary “live” phytoplankton sample). You do not need to use sterile 100mL bottles for phytoplankton collection.
- Both the live and fixed samples need to be kept cool – they can be stored on ice with other water samples for the lab. Please avoid light exposure as much as possible.
- If you are collecting the phytoplankton sample on a routine water sample run, simply record “phyto” with the station number and the collection time on your sheet. The laboratory will complete the phytoplankton monitoring collection form upon arrival.
- If possible, please provide environmental information like weather conditions, water temperature and salinity, as they are very useful parameters for phytoplankton monitoring.
- The DABA will clean the return the 500mL sample bottles to each town when they deliver the next set of samples.

**Whole-water grab samples should be collected in any available container if you notice discolored water**, potentially indicative of a phytoplankton bloom. While the bloom may not be toxic, avoid direct contact with the discolored water and thoroughly wash your equipment (e.g. sampling stick, waders if applicable, etc.) with bleach and freshwater at the completion of sampling. **DO NOT** use sampling equipment that may have come in contact with a bloom at a later location, as it is best to avoid spreading a potentially toxic species.

**In the event of a bloom or if you have questions, please contact the following DABA staff:**

***During normal business hours (Monday-Friday, 8-5): (203)-874-0696***

Emily Marquis, Fisheries Biologist I & HAB Specialist, Emily.Marquis@ct.gov, ext. 124

Alissa Dragan, Supervising Environmental Analyst & Growing Area Lead, Alissa.Dragan@ct.gov, ext. 119

***Outside of normal business hours/weekends and holidays:***

Emily Marquis – (860)-929-6414

Alissa Dragan – (860)-818-7034

