

Harmful Algae Bloom Sample Collection Protocol for Virginia

SITE INSPECTION:

- Record observations for each sample taken (location in body of water, color of bloom, presence of odor, scum, dead fish, proximity to culverts, docks, recreational beaches, ect.) Photos of conditions at the site are useful.
- Record environmental parameters including water temperature, water color, salinity, pH, dissolved oxygen, conductivity, and secchi depth).
- Record site name, latitude and longitude of sample location, and position of sample taken (ie: scum layer, sub surface layer (-.3 m), bottom).
- For each event, take two sub surface (-.3 m) samples (one untreated (live) and one preserved with Lugol's) from the area of the bloom. When there is a scum present, take a second collection by skimming the water's surface. The cells present at the surface exposed to air and sun are often degraded and not well suited for taxonomic enumeration, but can be informative to describe the bloom stage and conditions on site. When there is solid material present on the surface, suspended in the water column, or on the benthos, collect some in addition to the water samples.

PHYTOPLANKTON WATER SAMPLE COLLECTION:

Preserved samples are for taxonomic enumerations. Untreated samples are for toxin analysis and are useful for further taxonomic inquiries.

- For the preserved sample, collect 500 mL in a plastic bottle or cubitainer and administer Lugol's iodine solution at a ratio of 1:100. To achieve a ratio of 1:100, add approximately 1 mL of Lugol's to 100 mL of sample (5 mL for a 500 mL bottle) so that the final preserved sample color resembles weak tea.
- For the untreated sample, collect 250 mL in an Amber glass bottle. *Do not* add fixative.
- In tidal/shellfish waters or the mainstem, two 500mL cubitainers may take the place of the bottles described above, one untreated (live) and one fixed with Lugol's.
- Label each bottle clearly with location name, sampling site (ie: boat landing, scum or dock, -.3m), date, treatment (ie: preserved or live).

PHYTOPLANKTON SCUM and SOLID MATERIAL COLLECTION:

Some planktonic algae blooms form visible scums on the water surface. Solid material can include benthic mats on the substrate, some of which may break off and float on the surface, or algal masses floating suspended within the water column.

- For the scum sample, collect one 500 mL (preserved) in a plastic bottle or cubitainer and administer Lugol's iodine solution at a ratio of 1:100 and one 250mL (untreated/live) Amber glass bottle from the air-water interface. These samples should be accompanied by phytoplankton water samples collected at or nearby the same location.
- For the solid material sample, collect approx. 500 mL of material in tightly sealed ziplock bags or wide mouth bottles. *Do not* add fixative. These samples should be accompanied by phytoplankton water samples collected at or nearby the same location.
- Label each sample clearly.

SHIPPING:

Shipping containers should be packed to prevent leakage or breakage and expedited overnight for delivery within 24 hours of sampling.

- Samples should be kept cool with freezer packs, and the bottles protected from freezing by wrapping in newspaper or another barrier.
- All shipping containers should be lined with a garbage bag to avoid leakage and packed to avoid breakage.



Woodstock Pond, 2017
Microcystis bloom
Frenz (DCR)

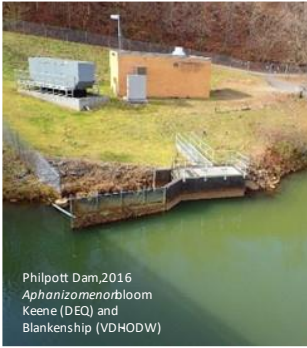


ALGAE BLOOMS IN VA

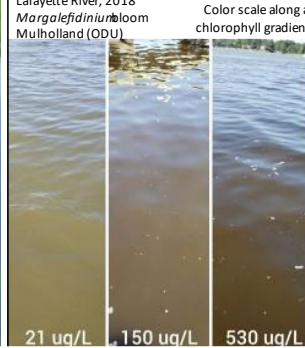
Lake Matthews, 2017
Anabaena/Dolichospermum
Harlan (DEQ)



James River MMBT, 2017
Alexandrium monilatum bloom
Reece and Wolf (VIMS)



Philpott Dam, 2016
Aphanizomenon bloom
Keene (DEQ) and Blankenship (VDHODW)



Lafayette River, 2018
Margalefidinium bloom
Mulholland (ODU)

Color scale along a chlorophyll gradient

21 ug/L, 150 ug/L, 530 ug/L



Flannagan, 2017
Aph. flos & *R. sp.*
Keene (DEQ) and Blankenship (VDH-ODW)



Lake Gaston, 2020
Microseira
Baumen (NC ext)



Twin Lakes SP, 2019
Dolichospermum
Frenz (DCR)

SHIPPING ADDRESS

Phytoplankton Analysis Laboratory
Old Dominion University
244/248 Oceanography and Physical Sciences Building
Norfolk, VA 23529-0266
Telephone: 757-683-4994



Updated March, 2021