

Collector(s): Environmental Monitoring Team (NC DWR)

Locations and Date: Albemarle Sound (M390000C--Frog Island and M610000C—Harvey and Mill Points), 8/6/2018

Reason Collected: Discolored water/suspected blooms



Figure 1: Stations M390000C and M610000C

Sample Information: The Estuarine Monitoring Team discovered green water and algal blooms at Stations M390000C and M610000C during routine sampling (Figure 1). Samples were collected and sent to the Water Sciences Section for analysis.

Results of Analysis: The algae forming the blooms were the cyanobacteria *Cylindrospermopsis*, *Pseudanabaena*, and *Microcystis* (Figures 2-4).

Physical data and algal results from the sites can be found in Tables 1 and 2. DWR definitions of an algal bloom include dissolved oxygen concentrations at or above 9 mg/L (110% saturation), pH higher than 8. Additional DWR definitions of algal blooms include algal concentrations at or above 10,000 units/ml (unit density) or 5,000 mm³/m³ (biovolume). Physical data and algal results at the site investigated by the EMT confirm a bloom was in progress (Tables 1 and 2).

Ecological Significance: The algae seen in the Albemarle Sound sample are common in the state's freshwaters during summer. The Albemarle Sound also experienced cyanobacteria blooms during the summers of 2015-2017. Cyanobacteria can grow quickly in summer when the daylight is more intense and temperatures are higher. Cyanobacteria are known to form blooms

that discolor water and may cause taste and odor problems. Some cyanobacteria, such as *Cylindrospermopsis* and *Microcystis*, may produce cyanotoxins. These blooms are commonly referred to as harmful algal blooms (HABs) and can cause illnesses in humans and have been attributed to the death of pets and livestock. Fortunately, no human or animal illnesses have been attributed to HABs in NC.

Table 1. Physical parameters of Station M390000C and M610000C

Location	Time	Cond ($\mu\text{S}/\text{cm}$)	Temp ($^{\circ}\text{C}$)	DO (mg/L)	pH (su)
M390000C	12:10 PM	5365	30.1	9.8 (131%)	8.8
M610000C	12:40 PM	3653	30.4	9.9 (133%)	8.8

Table 2. Algal densities and biovolume of Station M390000C and M610000C

Location	Dominant Algae	Cell density (cells/ml)	Unit density (units/ml)	Biovolume (mm^3/m^3)
M390000C	<i>Cylindrospermopsis</i>	1,624,400	136,500	8,300
M610000C	<i>Cylindrospermopsis</i>	793,200	79,100	5,300



Figure 2: *Cylindrospermopsis*

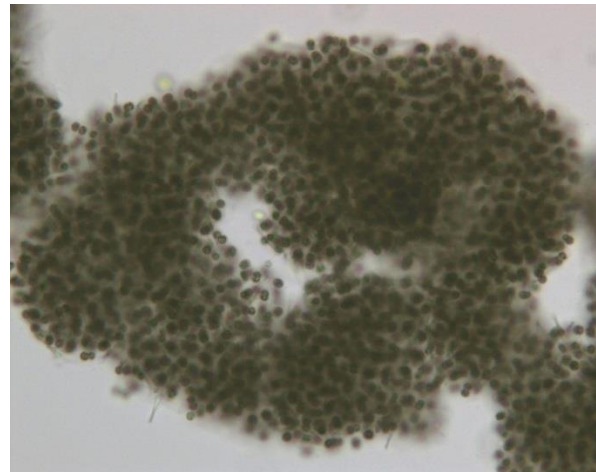


Figure 3: *Microcystis*

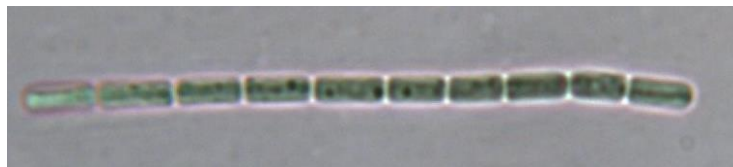


Figure 4: *Pseudanabaena*

Report prepared by:

Elizabeth Fensin, Algal Ecologist, NC DWR
 Contact: (919) 743-8421, elizabeth.fensin@ncdenr.gov