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Division of Water Resources
Algal Bloom Report
August 14, 2018

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

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

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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

<table>
<thead>
<tr>
<th>Location</th>
<th>Time</th>
<th>Cond (µS/cm)</th>
<th>Temp (°C)</th>
<th>DO (mg/L)</th>
<th>pH (su)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M390000C</td>
<td>12:10 PM</td>
<td>5365</td>
<td>30.1</td>
<td>9.8 (131%)</td>
<td>8.8</td>
</tr>
<tr>
<td>M610000C</td>
<td>12:40 PM</td>
<td>3653</td>
<td>30.4</td>
<td>9.9 (133%)</td>
<td>8.8</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Location</th>
<th>Dominant Algae</th>
<th>Cell density (cells/ml)</th>
<th>Unit density (units/ml)</th>
<th>Biovolume (mm³/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M390000C</td>
<td><em>Cylindrospermopsis</em></td>
<td>1,624,400</td>
<td>136,500</td>
<td>8,300</td>
</tr>
<tr>
<td>M610000C</td>
<td><em>Cylindrospermopsis</em></td>
<td>793,200</td>
<td>79,100</td>
<td>5,300</td>
</tr>
</tbody>
</table>

Figure 2: *Cylindrospermopsis*

Figure 3: *Microcystis*

Figure 4: *Pseudanabaena*

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