

Collector(s): Estuarine Monitoring Team (WaRO)

Locations and Date: Chowan River near Colerain and on Chowan Bay, 6/22/2017

Reason Collected: Discolored water/suspected bloom

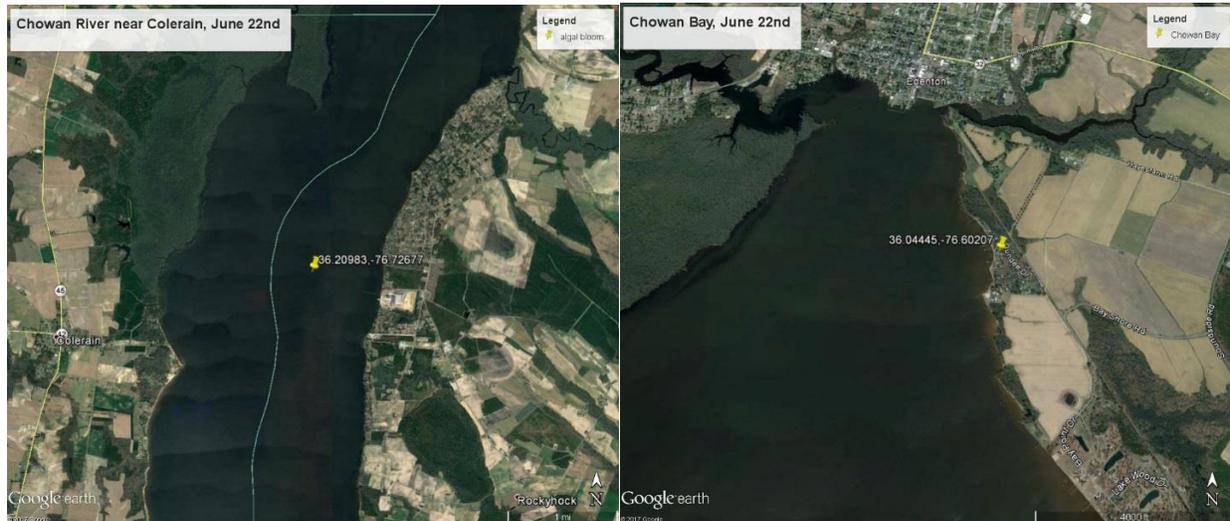


Figure 1: Locations where samples were collected in and near Chowan River

Sample Information: Green and blue waters with a strong smell were observed in the Chowan River on June 22nd. The Estuarine Monitoring Team (EMT) collected samples for algal analysis at two locations—a regular monitoring station near Colerain (D8950000) and at Chowan Bay near Edenton (Figure 1).

Results of Analysis: The algae forming the blooms was the filamentous bluegreen *Dolichospermum* (formerly called *Anabaena*, Figures 2 and 3). These algae were also dominant in the algal samples collected by the EMT on June 12th.

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 two sites investigated by the EMT confirm blooms were in progress (Tables 1 and 2).

Ecological Significance: The blue color and smell observed in some areas of the river indicate decomposing bluegreen algal blooms (Figure 4). The Chowan River and Albemarle Sound also experienced bluegreen blooms during the summers of 2015 and 2016. *Dolichospermum*, like most filamentous bluegreens, can grow quickly in summer when the daylight is more intense and temperatures are higher. Bluegreen algae are known to form blooms that discolor water and may cause taste and odor problems. Some bluegreens, such as *Dolichospermum*, may produce cyanotoxins. These blooms are commonly referred to as potential harmful algal blooms (pHABs)

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 pHABs in NC.

Table 1. Physical parameters of Chowan Bay and D8950000 locations

Location	Time	Cond ($\mu\text{S}/\text{cm}$)	Temp ($^{\circ}\text{C}$)	DO (mg/L)	pH (su)
Chowan Bay	11:40 AM	153	27.3	12.2 (153%)	9.3
D8950000	12:40 PM	80	27.8	10.9 (138%)	8.5

Table 2. Algal densities and biovolume of Chowan Bay and D8950000 samples

Location	Dominant Algae	Cell density (cells/ml)	Unit density (units/ml)	Biovolume (mm^3/m^3)
Chowan Bay	<i>Dolichospermum</i>	480,300	16,400	41,400
D8950000	<i>Dolichospermum</i>	561,300	18,000	54,100

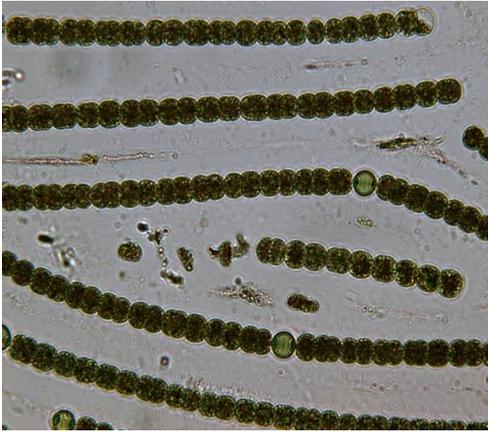


Figure 2: *Dolichospermum planktonicum*



Figure 3: *Dolichospermum spiroides*



Figure 4: Decomposing *Dolichospermum* bloom, 6/22/17

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Chowan River 170622