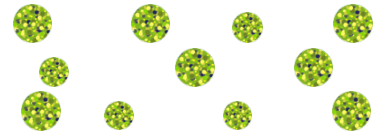
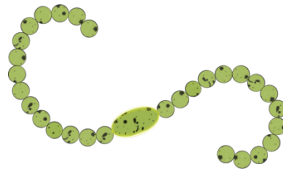
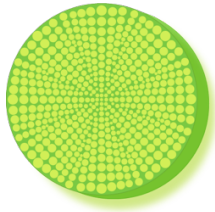


# Phytoplankton in Lake Pontchartrain: How the Bonnet Carré Spillway opening affects populations

1. Identify the following three types of phytoplankton found in Lake Pontchartrain.



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2. During years when the Bonnet Carré remains closed, during which month do the following phytoplankton populations peak:

*Anabaena*

Diatoms

*Microcystis*

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3. During 2018, when the spillway was open (from March 8 – March 30), during which month did the following phytoplankton populations peak:

*Anabaena*

Diatoms

*Microcystis*

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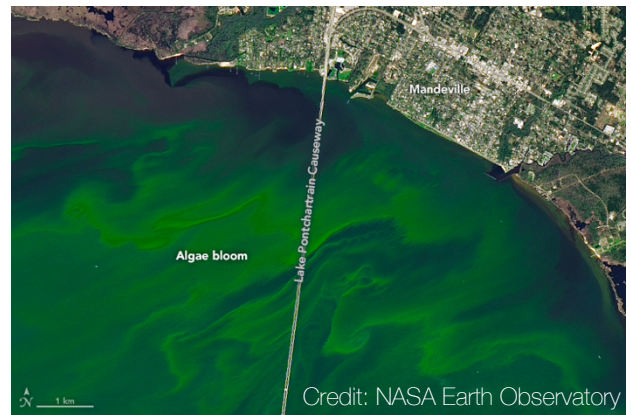
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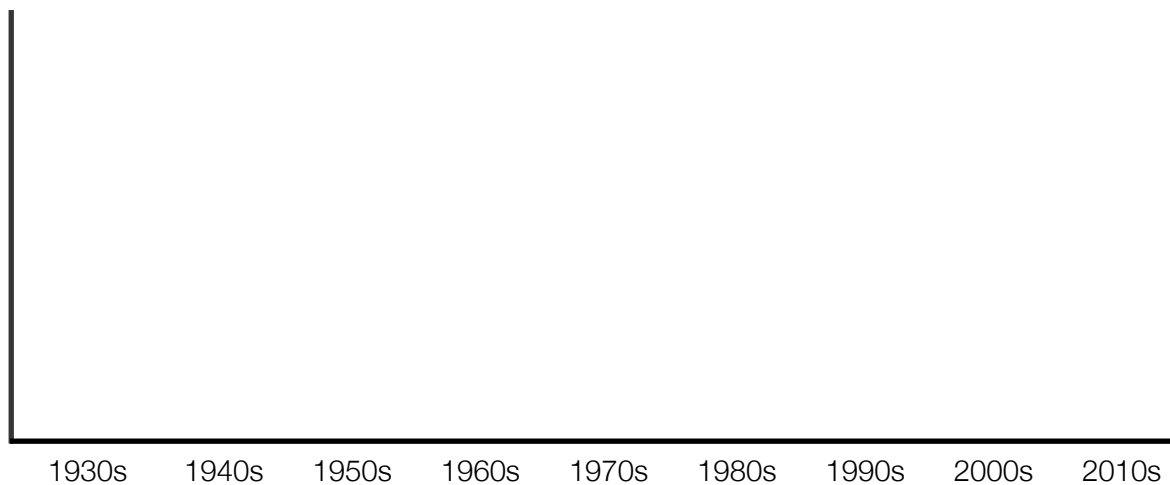
4. Most populations follow a cyclical pattern, but during the years when the spillway is open the cycle is disrupted. What environmental factors are potentially affected by the spillway opening?

5. All of these organisms are phytoplankton (meaning they make their own food). Diatoms are a type of algae, while *Anabaena* and *Microcystis* are types of cyanobacteria. Thinking about photosynthesis, what could the spillway opening introduce that would boost phytoplankton production?

6. Population explosions, called blooms, can be harmful. These types are referred to as Harmful Algal Blooms (HABs). A bloom in the cyanobacteria population is specifically called a cyanoHAB. This image shows a *Microcystis* cyanoHAB in 2018. What warnings were issued to the public that year?



7. Research a few other places where HABs have impacted human health.
8. The Bonnet Carré Spillway opened in the following years: 1937, 1945, 1950, 1973, 1975, 1979, 1983, 1997, 2008, 2011, 2016, 2018, 2019, 2019 (a second time) and 2020. Graph the spillway openings by decade and note any trends:



9. The Bonnet Carré Spillway is only opened when there is risk of severe flooding. The spillway protects lives and properties. Based upon the above graph, is flooding becoming a more or less frequent problem.
10. If 2020 follows a similar pattern to 2018, when could a cyanoHAB be anticipated in Lake Pontchartrain. In 2018, the spillway opened on March 8 and was open for 23 days. This year, the spillway opened on April 3 and was open 29 days.