

Name _____

Date _____

Dissolved Oxygen and Photosynthesis

Background: In this experiment, you will find out if plants produce oxygen underwater and be able to understand how this affects the aquatic life in a river or other ecosystem. You already know that plants use oxygen at night, as well as during the day. But during the day, the plants also produce oxygen through photosynthesis. How much overall oxygen do they produce? Does it matter how much light the plants get?

Before you begin:

What type of light do you think will produce the greatest changes in dissolved oxygen levels? Why? _____

You should also include a control-in this case, a jar without plants. Which jar do you think will produce the most oxygen-the jars with or without the plants? Why?

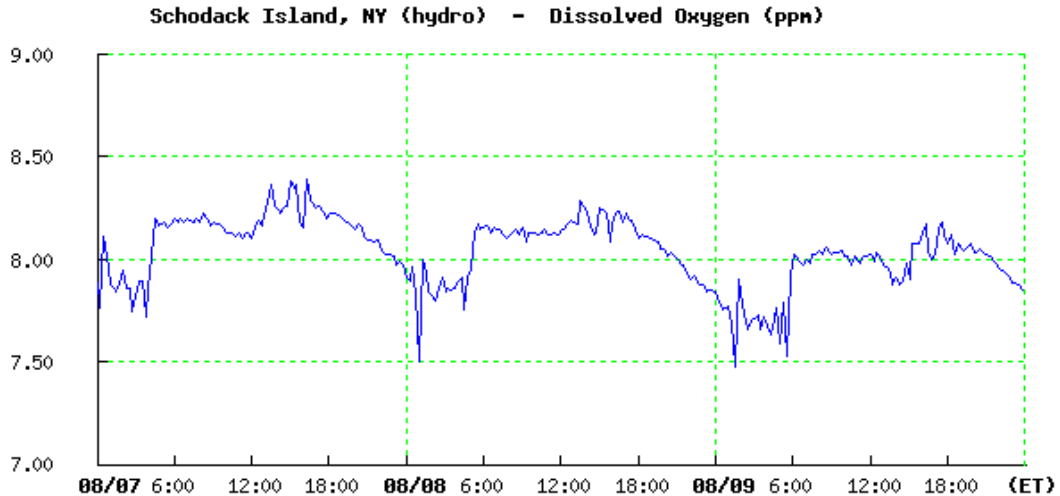
Copy this data table into your lab notebook:

Plants-description of light source	Initial DO	Final DO	Difference	Class average

Discussion questions:

1. Did the light affect the process in the jars without the plants? With the plants? Give evidence to support your answer.
2. What can you conclude about the importance of light to aquatic plants?
3. What do you think happens to plants that cannot get enough light?
4. What do you think would happen if the water was very dirty, with lots of sediment from erosion? How would this affect the growth of aquatic plants?
5. What else might affect the rate of photosynthesis? Think of at least one more variable, and describe an experiment that you could do to test your idea.

6. Use the graph below to answer the question. These data were collected through the Hudson River Environmental Conditions Observing System, or HR-ECOS (www.hrecos.org). Schodack Island is near Albany, NY.



- What happens to the DO levels during the day? Why?
- What happens to the DO levels at night? Why?
- How do these data compare with the data from your experiment?

Bonus: Go to the HR-ECOS website and find another data station in the Hudson River estuary. Compare the dissolved oxygen levels at another time of year with the data found above, and explain how the graph is different.

Modified with permission from "A Light Snack" 1997. *Living in Water*, National Aquarium in Baltimore, Kendall Hunt Publishing, Iowa.