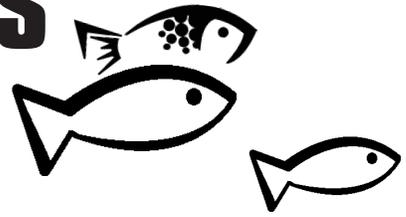


SC Reel Kids

ACTIVITY SHEET



How low can you go? Secchi Disks and Water Clarity

Objectives:

- Make a Secchi disk and measure the depth and clarity of your local water body.
- Understand degree of visibility and its importance
- Understand turbidity and its causes

Background:

A Secchi disk is an 8-inch (20 cm) disk with alternating black and white quadrants. It is lowered into the water of a lake until the observer can no longer see it. This measures the degree of visibility (or transparency) of the water. The degree of visibility is directly related to the turbidity of the body of water.

Turbidity provides a measure of the clarity of the water. As water becomes murkier, turbidity increases. Turbidity is caused by inputs of suspended and dissolved solids in the water, which decreases the amount of light penetration. Sources contributing to turbidity include:

- Soil erosion
- Runoff from urban and agricultural areas
- Wastewater and stormwater inputs
- Algae and plant materials
- Abundant bottom feeders stirring up sediment

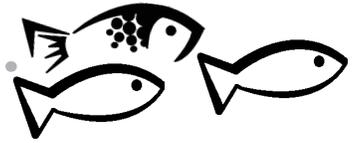
Turbidity can interfere with the growth of aquatic organisms by decreasing light levels needed for photosynthesis; and contributing to decreased oxygen concentrations and increased water temperature, which may stress aquatic organisms. Materials causing turbidity may also be responsible for clogging fish gills, reducing available habitat, interfering with egg and larvae development, smothering fish eggs and aquatic insects larvae, and suffocating newly-hatched insect larvae.

Turbidity caused by plankton may not be harmful to fish. This type of turbidity gives evidence of primary producers in an aquatic food web. Secchi disk visibility is often used in pond management as an indicator for productivity. It can also indicate the need for additional fertilization.



DNR





Materials:

Paint can lid (or other metal disk), eyebolt, nuts, metal washers, fishing weight heavy string, black paint, white paint, permanent marker

Directions:

1. Drill or punch a hole in the center of the paint can lid for an eyebolt.
2. Place a metal washer and nut on the eyebolt on both sides of the disk and tighten. More washers may be added, if extra weight is needed. This is important, especially if you are collecting data in fast-moving water.
3. Attach fishing weight to bottom of disk with string.
4. Paint disk black and white for contrast. These are standard colors for conventional disks.
5. Attach heavy string to eyebolt and mark it at 1-foot intervals.
6. To find the limit of visibility:
Lower the disk into a water body until it disappears and take a depth reading at this point. Let disk sink a few feet lower, then raise it slowly until it becomes visible. Take a depth reading at this point. The average of these two readings is the limit of visibility.

Activities and questions:

- Take readings in different bodies of water. Describe the differences among the bodies of water.
- Compare your readings to values known for that body of water.
- What is the degree of visibility?
- What is meant by turbidity? Name at least two causes.
- Is visibility affected by the surface action of a body of water? Are there any other factors that affect visibility?
- Why would the degree of visibility be important to fish and other aquatic animals?
- Could a fish benefit from a low degree of visibility? If so, how?

