

Cloudy Water

About This Lesson

Time Frame: One class period

Grade Level: 6-12

Academic Question: How does sediment disruption effect water quality?

Objective: To see how disturbed bottom sediments alter food resources, habitat, and water quality within a Texas bay system.

Application: This short experiment demonstrates how dredging can affect water quality and can also redistribute species throughout the bay.

Background:

Nueces Bay is located close to Corpus Christi, Texas. It is primarily an oyster reef driven system with fresh water input provided by the nearby Nueces River. Although showing relatively high productivity, it has been affected by dredging and industrial pollution. Dredging and limited fresh water input has caused the redistribution of sediments and species throughout the bay. Due to these environmental changes and increased turbidity, many of the species have adapted to alternate food sources.

Getting Started

Materials:

- Disposable foil bread pan
- Gallon of milk
- Instant chocolate milk powder
- Bag of M&M candy
- Plastic spoons

Process:

1. Develop an interrupted case study scenario appropriate to your region, based on the background information provided above.
2. Begin with a brief discussion of Texas Bays and Estuaries and lead the students into a discussion of bottom dwelling bay organisms (shrimp, crabs, oysters etc.). Also discuss fish found in the bay and what they use as a food source. Emphasize that most fish are predators and need to see their prey.
3. Present the case study to the students.
4. Pass out the materials to the assigned groups.

5. Have the students fill the bottom of their pans with the dry powder (this will simulate bay sediment).
6. Then have the students distribute the M&M's on top of the sediment (the M&M's represent oyster reefs)
7. Next, have the students (or teacher) slowly pour the milk slowly over a spoon to reduce splashing in to the container until the M&M's are under the milk.
8. Have the students observe the color of the milk (it should have a slight darkening). This represents an "undisturbed" bay.
9. Now to simulate dredging, have the students zig zag a spoon slowly across the bottom of the pan down the length of the pan. Note the color change.
10. Repeat several times observing the changes occurring in the "bay water".

Evaluation/Extension:

- Have the students describe how a fish would react to the changes in water quality after dredging.
- Have the students list potential environmental problems associated with dredging.
- Have the students research dredging along the Texas Coast.

This module was originally developed as part of the "Hurricane Recovery Workshops for Students", held in Corpus Christi in 2017.