

# Chesapeake Bay Explorations

Pre- and Post- Visit Activities  
Grades 4-6





This booklet was prepared by the Conservation Education Department at The National Aquarium in Baltimore.

Nancy Hotchkiss, Director  
Dianne Wilkes, Administrative Assistant  
Susi Ridenour, Librarian

Staff:

Marjorie Bollinger  
Beth Burgess  
David Christopher  
Melanie Clark  
Vicki Fabiyi  
Joe Harber  
Julie Petrella  
Mei Len Sanchez  
Wendy Shepard  
Kathy Siegfried  
Jennifer Sillitti

Illustrations by: Cindi Belcher

The educational goals of The National Aquarium in Baltimore are supported by funding from the Jacob and Hilda Blaustein Aquatic Education Endowment Fund.

Any teacher, school or school district may reproduce this for education purposes.

September, 2004

# Chesapeake Bay Explorations

A 45-minute program for Grades 4-6 at the National Aquarium in Baltimore

## Program Description

Students investigate the salinity and turbidity of water samples representative of four different locations in the Chesapeake Bay. Based on their data, students make recommendations about which location is most suitable to oysters.

## Planning for the Program

This Chesapeake Bay Explorations program fits into a unit on the Chesapeake Bay. Including your visit to the National Aquarium in Baltimore, this lesson should be covered in three days.

### Day 1

The day before your visit to the Aquarium read the Teacher Background information and share this information with your students. Complete Activity 1- The Oyster Reef.

### Day 2

At the Aquarium attend the Chesapeake Bay Explorations program in a classroom lab. Then look for various Chesapeake Bay exhibits located on Level 2 in the Main Aquarium building.

### Day 3

The day after your visit complete Activity 2- Rescue the Oysters.

## Teacher Background

From *The Changing Chesapeake: an introduction to the natural history and cultural history of the Chesapeake Bay* (Chase, 1991)

“Oysters are related to clams and mussels. They have two rough, heavy shells which they add to as their soft bodies grow. They need to live on a firm bottom so that they do not get buried in mud. Male and female oysters release eggs and sperm into the water. The eggs become drifting larvae, which must find a place to settle as they grow. They grow into baby oysters, called spat, which settle on the bottom, generally on old oyster shells. Oysters make millions of eggs, but only a few survive to become adults.

## AAAS Benchmarks

1B-3-5#1: Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere.

12D-3-5#3: Use numerical data in describing and comparing objects and events.

## MD Science Content Standards

Science-Skills and Processes.  
Grades 4-5, #2: Ask questions that can be answered through scientific investigation.

Grades 4-5, #4: Recognize well-designed procedures that identify important variables within an investigation.

Oysters feed by filtering phytoplankton (tiny algae) from the water. They also trap tiny bits of dirt or sediment in the water, which are the same size as the algae. They make pellets of their waste products and the sediment, which they deposit on the bottom. Hence, oysters clean the water by removing both algae and sediment.”

## Resources

Maryland Sea Grant’s *Oysters and the Chesapeake in the Classroom* web site. [www.mdsg.umd.edu/oysters](http://www.mdsg.umd.edu/oysters)

*Life in the Chesapeake Bay* is an excellent resource book about the plants and animals of the Chesapeake Bay.

**Life in the Chesapeake Bay**  
by Alice Jane and Robert L. Lippson.  
ISBN# 0-8018-5475-X

*Living Waters of the Chesapeake* CD-ROM is loaded with interactive learning activities for teachers and students about the Bay.

**Living Waters of the Chesapeake**  
CD-ROM, National Aquarium in  
Baltimore (included with this  
booklet)

# Activity 1- The Oyster Reef

## Description

In this activity, students will read an article about oyster reefs. Students will use the information to complete several activities.

## Procedure

1. Discuss oysters with students. Draw a K-W-L chart on the blackboard and discuss with your students what they:

- **K**now about oysters
- **W**ant to know about oysters
- **L**earned about oysters (after the activity).

2. Distribute the article and worksheets to the students.

3. Have the students read the article carefully.

4. Once finished, students will complete the worksheets.

5. Discuss the answers as a class.

## Activity 1 – The Oyster Reef

Directions to students:

Step A. Read the following article.

### *The Oyster*

Oysters are related to clams and mussels. They belong to a group of animals called mollusks. Mollusk means “soft bodied”. Two shells protect the oyster’s soft body. A powerful muscle connects the two shells.

The oyster’s shells open and close like a book. When the oyster is hungry it opens its shell. Gills pull water inside the shell through a siphon. The oyster filters drifting food and dirt from the water. One oyster can filter up to 60 gallons of water in a day.

Oysters live in brackish water in the Chesapeake Bay. Brackish water is salt water mixed with freshwater. The water in the Chesapeake Bay is very salty near the Atlantic Ocean. The amount of salt in the water is called salinity. Some scientists use a salinometer to measure salt in the water. Salinity is measured in parts per thousand (ppt). Water with a salinity between 10 and 14 ppt is best for oysters.

Rivers carry dirt into the Bay. Too much dirt can kill young oysters. Dirt also blocks sunlight so underwater plants can’t grow. Oysters are important to the Chesapeake Bay because they filter the water and get rid of dirt and other materials. The amount of dirt and other materials suspended in the water is called turbidity. Some scientists measure turbidity using a turbidimeter.

Oysters live stuck together on an oyster reef. The reef provides habitat for many other animals in the Bay like crabs, worms, fish, snails, and shrimp.

Step B.

List three facts you learned about oysters from the Oyster article you read.

FACT No. 1:

---

---

FACT No. 2:

---

---

FACT No. 3:

---

---

Step C.

What does salinity mean? What tool is used to measure salinity?

---

---

---

Step D.

What does turbidity mean? What tool is used to measure turbidity?

---

---

---

## Activity 2 – Rescue the Oysters

### Materials

Copy of Student pages, Crayons, markers or colored pencils

### Procedure

1. Review with your students what they learned about salinity, turbidity and oysters.
2. Distribute the Student Pages for activity 2.
3. Have the students read the article.
4. Have the students draw their solutions to the problem.
5. Students will write an explanation in the space provided.
6. Students will present their solutions to the class.
7. The water line has been drawn so that you may post the drawing to appear as a continuous bayside in your classroom.

## Activity 2- Rescue the Oysters

### Step A.

Read the following article.

“An oyster reef in the Chesapeake Bay needs your help.

When it rains, freshwater runs off the land and enters the Bay near the reef. The salinity of the water around the reef changes. It becomes less salty. The oysters become sick when the salinity is too low.

Rainwater sometimes carries dirt into the Bay, too. The dirt sinks to the bottom and covers the baby oysters, called spat. Dirty water makes it hard for adult oysters to catch food. The oysters do not grow very fast.

We can help the oysters living on the reef. By planting trees, grasses and bushes, we help slow down rain water entering the Bay. The salinity of the water around the reef doesn't become too low. The oysters stay healthy.

The plants' roots help hold the soil on the land. When it rains, less dirt runs-off into the Bay. The water around the oyster reef stays cleaner. The spat and adults find food easily and grow quickly.”

Step B. The drawing shows where a group of oysters live on an oyster reef in the Chesapeake Bay. The oysters live close to land. When it rains hard, dirt washes off the land and into the Bay. The dirt settles on top of the oysters. Draw how you would change the land to help solve this problem. When you are finished drawing, write about your solution in the space provided.

