

Theme: Maritime History

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with excerpts from the Oystering Lesson from The Delaware Bay Schooner Project Curriculum Writing Group

Subject Areas

Language Arts, Art, Science, Social Studies

Duration

One or two class periods

Setting

Indoors/Classroom

Skills

Creative writing, inferring, grouping and categorizing, developing, presenting

Charting the Course

Many of the people from Down Jersey have a connection to the oyster either past or present. The abundance of the oyster and the favorable conditions found within the Delaware Bay have made it the single most important individual species that shaped the region's unique history. Many other species of wildlife and resources were (and are) harvested and had tremendous impacts and consequences as well. None is as significant as the Eastern Oyster which touches every main theme area presented in this packet and in the film **Down Jersey**.

Vocabulary

Spat, staple, prosperity, substrate, seed beds, harvest, dredge

New Jersey Core Curriculum Content Standards

Language Art	Art
3.3 (1, 2, 4, 9)	1.1 (2)
3.5 (1, 2, 3, 6, 7, 11, 13, 14, 15)	1.3 (1, 2)

 Social Studies
 Science

 6.3 (1)
 5.6 (2,4,5)

 6.4 (1)
 5.7 (1,4)

 6.5 (4,5)
 5.12 6.6 (2,3,4,5)
 (1,2,3,4,5)

 6.9 (1,2,3)
 (1,2,3,4,5)





Objectives

- 1. Identify and describe a number of biological, cultural and historical facts about the oyster and oyster harvesting.
- 2. Illustrate a particular feature, event or issue surrounding the oyster industry as it relates to the Delaware Bay Shore of Southern New Jersey.

Materials

Photocopies of the interesting facts included — make copies of the fact pages, cut into strips, and have ready to distribute (Suggestion: You may want to laminate the facts for durability)

A variety of art materials; examples of comic strips or advertisements and/or fliers.

Making Connections

The importance of the oyster industry to the historical development, prosperity, and way of life for the Down Jersey area is profound. The mere fact that oysters lived in the Delaware Bay and people wanted (and needed) to harvest and consume them is the main reason for the development of entire towns. Entire towns grew around the oyster, the common denominator among Bivalve, Shellpile, Maurice River, and Port Norris. The film Down Jersey captures some of the impact of the interconnections that formed among the people, the resource, and the region. Realizing the importance and value of a balance among the

uses of natural resources and our dependence on them is a lesson to be learned for sustainability. Perhaps the story and history of the oystering industry can provide us insight into the intricacies and fragility of the environment.

Background

See other oyster activities for background information included in this packet. *Historic Themes and Resources* book 46-51 and Oyster Fact Sheet.



Procedure

Warm Up

Bring in some oysters or oyster shells to show the class.

If possible:

Demonstrate how to "shuck" an oyster and explain why it requires a lot of skill and practice to be a worthy employee of a "shucking house" where time was money. (Perhaps a parent or grandparent or an oysterman could be invited in to class to assist.)

Bring in a can of oysters and allow students to taste them. Ask students why they think oysters were so popular? Ask students to describe what they know about oysters. Are any family members associated with the oyster industry? Who? When? How?

Make a recipe that uses oysters — oyster stew, oysters Rockefeller, others from students' families, etc.

The Activity

- 1. Share some of the background information with the class. Read some of the interesting oyster facts. Has anyone ever eaten oysters? Does anybody have a family member who works in the oyster industry, or used to?
- 2. Tell the students that they are going to be creating comic strips or fliers that illustrate some very interesting things about oysters.
- 3. Distribute the interesting facts to the students (each student gets a different fact.) As an additional activity, have students research and make their own fact cards.
- 4. Each student should read his or her fact to the class in a "round-robin" format. As a class, partners should be chosen to form a group activity with the statements that seem to fit together or are related. This may require the teacher or designated student to use the blackboard to record the students with a particular topic. Examples of categories for this grouping could be: Oyster Biology, Oyster Industry, People and Oysters, Oyster Problems, etc.



There really is no "right" way to divide the cards to form the groups. It may be an interesting adaptation to allow it to occur randomly.

5. Once the groups are formed, they are assigned to collectively design and produce an informational poster, a comic strip, a flier or brochure, a story, a poem, etc. Let their imaginations dictate their project choice, or at the teacher's discretion.

Wrap Up

Have each team present its project to the class and explain, describe, and demonstrate what was learned about the oyster.

Action

Share the projects produced with the school and community.

Assessment

Evaluate the completed projects for evidence of the facts to determine that objectives have been met.

Extensions

Have students design an original oyster can label.

Choose an oyster topic and research it thoroughly. Prepare a report.

Invite someone into class to talk about the oyster industry. Prepare a series of questions for them ahead of time if possible.

See related activity... Operation Oyster — Significant Events in the History of Oystering

Visit the...

Delaware Bay Schooner Project's Museum to see oystering artifacts and tools of the industry.

Better yet, go oystering on the AJ Meerwald!

ShellPile Restaurant has a large collection of oyster cans.

Rutgers University, Haskins Shellfish Research Laboratory, 6959 Miller Avenue, Port Norris.

Resources

Living Resources of the Delaware Estuary. Produced by The Delaware Estuary Program. Ford, S.E., Haskin, H.H., and Kraeuter, J.N. 1995 Eastern Oyster. Pages 105-111 in L.E. Dove and R.M. Nyman, eds.

The Delaware Bay Oyster and the MSX Problem, Christopher Dyckman, Editor, College of Marine Studies, University of Delaware, Newark Delaware.

Beneath the Shell, NJDEP,

Office of Environmental Planning. An activity guide that addresses the shellfish of New Jersey and the impacts of environmental disturbance, especially nonpoint source pollution.

The Awesome Oyster,

by Penny Parekian, Mystic Seaport Museum, Inc. Greenmanville Avenue, Mystic, Connecticut 06355

Oyster Cans, Jim and Vivian Karsnitz, Shiffer Publishing Ltd., 77 Lower Valley Road, Atglen, PA 19310. Details the history of oyster canning with numerous photographic examples included.





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Student Worksheet

Interesting Oyster Fact Sheet

(Copy and cut into individual sections)

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The oyster can clean the water it lives in! The oyster feeds by pumping water through its body and filtering out its food (mostly algae and detritus — decaying plant material). A healthy market-size (3" or larger) oyster can filter 50 or more gallons of water a day. (How long would it take to filter the entire Delaware Bay?)	Oysters can change sexes. Usually, they are male first, turning female as they get older. If they're bigger than 3", they're probably female. (Why do you suppose they do this?) (Not known for sure, you can speculate on the possible evolutionary advantages, i.e., eggs are bigger than sperm so it takes a bigger oyster to produce as many eggs as a smaller oyster can produce sperm.)
At one time, oysters were the number one fishery product in the United States. New Jersey was the biggest producer.	There are more than 400 species of oysters around the world (the ones we catch in the Delaware Bay and along most of the East and Gulf Coasts are "Eastern" or "American" oysters, <i>Crassostrea virginica</i>).
In some places, oysters grow on trees. (Where the trees are below the high tide line.)	The world record (according to Guinness) for eating oysters around the world is held by Tommy "Muskrat" Greene of Deale, Maryland, who ate 288 oysters (24 dozen, or six pounds of meat) in one minute, 33 seconds. (Mr. Greene is reportedly also the holder of the world snail-eating record.)

Yes, you can find pearls in your local oysters. But they will probably be small, irregular, and not worth any money.	Oysters were a staple part of the region's diet. You could even buy them from street vendors in Philadelphia, the same way we buy pretzels or hot dogs today! It may be difficult today to appreciate the demand for oysters that allowed the industry to reach such heights. In the early 1900's, the oyster was the United State's chief fishery product and the most extensively eaten of all shellfish. It was treated as a staple, not a delicacy.
Only one in 1,145,000 spat survives to adulthood. Crabs, snails (oyster drills), and other predators kill large numbers of newly set spat.	Local folklore has it that through the prosperity of the oyster industry, there were more millionaires per square mile in Port Norris than any other place in New Jersey.
Oysters have been farmed since ancient Roman times. Native Americans ate them 6,000-8,000 years ago, often smoking them over campfires.	Seed oysters from the Chesapeake Bay were transplanted during the 1950's. Because of this added stock, Delaware waters produced up to four million pounds of oyster meat per year during the 1950's.
Oysters can extract gold, mercury, lead, arsenic, and other toxic metals from the water.	Oysters require a substrate on which to grow and mature. When oystermen began returning oyster shells to the bay, they provided the necessary point of attachment for the spat to grow. (Spat are larval oysters.)

Oysters are best in the winter months, so the harvesting season began in the The Lenape Indians used Fall and lasted until early Spring. oyster shells to make It is said that oysters are only harvested cutting and scraping tools. in months with an "r" in them (i.e., September through April). Oysters obtain their food by filtering microscopic plankton from the water and in doing so are capable of removing and Oyster meat provided struggling concentrating many materials in their European and British settlers tissues, including toxins and human with an important source of protein. pathogens such as viruses and bacteria. Thus, oysters can be used as living indicators of water quality. Oyster larvae have weak swimming Once established, pioneers used abilities and are transported mainly oyster shells to help pave their by tides and currents. At two to three first roads. Shells were also weeks old, the larvae settle to routinely ground and pulverized the bottom and attach (cement) to produce lime — a needed themselves to a clean, hard surface agricultural soil conditioner. (returned, empty oyster shells). It may take between two and three years Oystering has many similarities for an oyster to reach three inches to agriculture in that "seeds" are (marketable size) in the lower bay. planted in "beds" and allowed to In the upper seed beds, it may take from grow until they are harvested. five to six years to achieve this size.

When the railroad arrived to the
Maurice River in 1876, the oyster industry
boomed. The first year, an average
of ten railroad cars per week were
shipped out; a decade later, an average
of ninety cars per week departed Bivalve.
At the same time, more than
300 dredgeboats and 3,000 men were
involved with Delaware Bay oystering.During
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to about 25 degrees C (77 degrees F), usually by early July, but sometimes not until August. Eggs and sperm are discharged into the water where fertilization occurs. Shelled larvae develop in 24-48 hours. The larvae are transported by wind, currents, and tides. In two to three weeks, the larvae settle to the bottom and cement themselves to a clean, hard surface (called cultching). During the peak of the post-MSX recovery (1971-1984), a total of 5.2 million bushels of seed was taken from the natural beds by New Jersey and Delaware planters — an average of about 375,000 bushels each year. About one bushel of market oysters was harvested for every bushel of seed planted (Haskin and Ford, 1983). At the current market value of about \$30/bushel, this would be worth \$11 million annually.

The NJDEP regularly surveys shellfishgrowing areas in the state and classifies them according to the presence and abundance of coliform bacteria and significant sources of potential contamination. Leased grounds and most of the seed beds fall into the "Approved Growing Water" category, which means that oysters can be harvested for immediate human consumption at any time.