

Salt Marsh in Winter

A Field Study

Theme: Natural History

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Subject Area

Science

Duration

One class period for preparation and pre-trip activities

Half-day field trip to a local salt marsh

This activity could easily be incorporated into an existing trip to the Bayshore/salt marsh.

Setting

Classroom for pre-trip activities, salt marsh for field studies

Skills

Data collection, observation, recording, describing, identifying, interpreting

Charting the Course

Field study is a critical component of any environmental education program. The investigation of the salt marsh community is critical to an understanding and appreciation of this unique ecosystem. The salt marsh is a significant natural feature of the region Down Jersey.

Vocabulary

Salt marsh, wetlands, flora, fauna

Correlation to NJ Core Curriculum Content Standards

Science

5.2 (2, 4)

5.6 (2, 4, 6)

5.7 (1, 4)

5.12 (1, 2, 4, 6)



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■ Objectives

Students will be able to:

1. Identify at least three dominant flora and fauna in the salt marsh.
2. Collect and record pertinent data at different locations in the salt marsh.
3. Develop diagrams of possible food chains in the salt marsh.
4. Describe the attitudes of different area residents toward the salt marsh.
5. Develop a plan for the future conservation of salt marsh areas.

■ Materials

Clipboards

Pencils

Four wooden stakes per group

Ball of string

Construction paper

Trowels

Dip nets

Buckets

50 foot tape

Microscopes

Copies of the worksheet for each group of students

Pictures of salt marshes

(or review the section of the film)

Field guides of salt marsh plants and animals

■ Making Connections

The Down Jersey region is a diverse landscape of a number of significant habitats. The salt marsh, however, is the most critical to the survival of the rest of the estuarine ecosystem since it is the salt marsh that feeds the entire system with nutrients.

■ Background

The booklet included with this kit, *America's Wetlands: Our Vital Link Between Land and Water*, contains pertinent background material on wetlands and salt marshes and their importance to the environment.

Generalizations:

1. The salt marsh is one of the most dynamic units of nature, an ecosystem highly productive in terms of the weight and volume of living materials. In the salt marsh all four major earth components — air, land, living things, and water — are continuously interacting.
2. The salt marsh is a major part of the ecology of the ocean because it produces much of the food of the ocean organisms; is a major factory for fish in nearby waters; is a breeding and rest spot for many different types of waterfowl; and a breeding ground for a variety of other birds, fishes, and crustaceans.
3. The salt marsh should be looked upon as an aesthetically pleasing part of the shore scene — as essential to this area as dunes, beaches, or commercial recreational facilities.
4. Although estuaries, marshes, and river deltas in the United States were once generally regarded as waste lands, of value chiefly as convenient sewers for the dumping of the wastes of an industrial civilization, these wetlands should be prized as indispensable life support areas.

■ Procedure

Warm Up and Pre-Trip Activities

1. Through discussion and the study of resource materials on the Internet or from the library, students may become more familiar with some of the more common plants and animals found in the salt marshes of coastal New Jersey.
2. Discuss the concept of a “food chain” and “food web.” Where do plants fit into this scheme? How do the plants (producers) differ from the animals (consumers)? Do the animals eat only plant matter? Does the animal diet include only one food source or many? Is it bad or wrong for animals to kill each other? (If the answer is yes, ask the class what many of them had for dinner last night? If it was meat, ask them where it came from and what had to happen to it in order that they could eat it.)
3. Take a survey of a number of area residents to **assess** their **attitudes** toward the salt marsh. The following are suggested questions to ask:
 - A. What do you feel the salt marshes are good for?
 - B. Should they be left as they are or should they be further developed?
 - C. If they should be developed, what types of development would you suggest?
 - D. Do you feel that development might damage the salt marsh environment?
 - E. What other uses might the salt marsh provide?



The students could suggest other questions that they think should be asked. It should be pointed out that the people being interviewed should come from different or varying backgrounds or occupations (for example: builders, members of environmental organizations, elected officials, parents, chambers of commerce, planners, service clubs, etc.) This will enable students to get more diversified answers and opinions.

The Activity

Identify and plan a field trip to an accessible salt marsh area.

The class will be split into smaller groups of about five or six students each. On arrival at the salt marsh, the groups will each select a study area. Care will be taken not to damage the fragile salt marsh. A 10-square-foot area will then be measured off, stakes placed in the corners, and string used to rope off the area. The students will then collect and draw on the worksheet the three most dominant species of vegetation in their quadrat area. Then, using the trowels or heavier tools if the marsh is frozen, they will attempt to find three different types of animal life, which they will also collect and draw in the appropriate spaces on their worksheets. The approximate numbers of plant and animal species located in the quadrat should also be recorded on the worksheets.

Following this, the students, using the dip nets and buckets provided, will attempt to collect some plant and animal life from the water areas of the marsh. These will also be recorded in the appropriate place on the student worksheet.

NOTE: Caution should be emphasized when working on the marsh so that no one will be hurt or have to face the inconvenience of getting soaked. The salt marsh is a very interesting and safe place to explore if simple safety measures are adhered to.

Wrap Up

Students should now begin to identify the plants and animals they have collected using the field guides and microscopes (or hand lenses.) Using construction paper and a bulletin board (or large poster board) a saltmarsh food chain is created using the organisms that they identified. Expand the food chain to include the estuary and ocean in a food web to show the connections and significance of the salt marsh to these ecosystems.

Action

A plan for the future use of the area studied could be developed by the students and presented to the local Planning Board or Environmental Commission. Students should be able to address this group and receive answers as to the feasibility of their plan.

■ **Assessment**

In terms of the behavioral objectives as stated. However, it should be pointed out that objective tests are not the only method of evaluation and assessment. Book reports, verbal presentations, and on-site observations are other means which can be effectively utilized, as well as increased awareness and eco-activism.

■ **Extensions**

1. Students should continue to discuss the importance of the salt marsh, its relationships and interdependence, and how it is used by people.
2. Have the students set up a salt water aquarium to further study the plants and animals in their natural habitat.
3. Students could mount a display using charts, photographs, etc. of the salt marsh and its importance. This could be displayed at a PTA meeting, science fair, a local branch or the school library, or any other appropriate location for the benefit of others not involved in the project.
4. Students should study the sources and destination of different point and non-point source pollutants in the salt marsh area and the surrounding locations. Possible solutions to these pollutants should be suggested.

■ Resources

Sebold, Kimberly R., *From Marsh to Farm: The Landscape Transformation of Coastal New Jersey*, Historic American Buildings Survey/Historic American Engineering Record, New Jersey Coastal Heritage Trail, National Park Service, U.S. Department of the Interior, Washington, D.C. 20013-7127, 1992.

Johns, Will, *Estuaries – America’s Most Valuable Frontier*, National Wildlife Federation, Washington, D.C., 1965.

Hausman, Leon A., *Beginner’s Guide to Seashore Life*, Putnam, New York 1949.

Niering, William A., *The Life of the Marsh*, McGraw-Hill Co., New York, 1949.

Odum, Eugene P., *The Role of Tidal Marshes in Estuarine Production*, New York State Conservation Dept., New York, 1961.

Shusteer, Carl N., *The Nature of a Tidal Marsh*, New York State Conservation dept., New York, 1961.

Teal, John and Mildred, *Life and Death of a Salt Marsh*, Audubon Ballantine Books, 1969.

Vivian, V. Eugene, *Sourcebook for Environmental Education*, C.V. Mosby Co., St. Louis, 1973.

If accessible, visit these sites on the Internet:

University of Delaware: www.ocean.udel.edu

Barnegat Bay National Estuary: <http://207.86.100.195bbep>

Rutgers Institute of Marine and Coastal Sciences:
<http://marine.rutgers.edu/pt/activities/intro.htm>

Barnegat Bay Decoy and Baymen’s Museum:
www.icsglobal.com/baymens-museum

Coastlines on the Web:
<http://www.epa.gov/owow/watershed/w96index.html>

