

MARSH MUCKERS

Grades K - 1

NJCCCS: 5.1, 5.3, 5.4

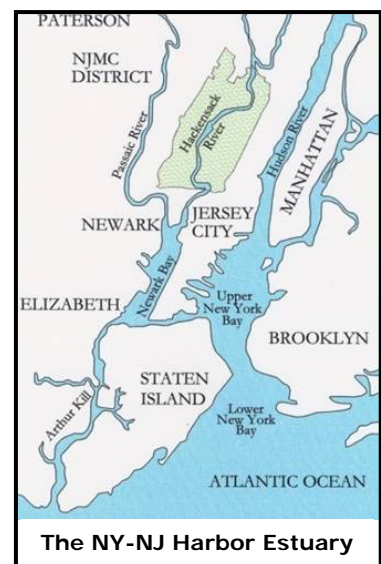
Field Trip Overview:

Upon arrival, students will be introduced to the physical components that define a salt marsh habitat and provide, among other things, sustenance and protection to its animal inhabitants. Students will then have the opportunity to interact directly with a few of these animals, catching then sorting them based on their physical characteristics. After a break for lunch, students will participate in an interactive story telling that introduces them to the salt marsh food chain, a concept which is then reinforced with a take-home craft. Weather permitting this program includes a short field hike to give the students an up-close look at the salt marsh.

Background Information:

Estuaries are areas where two distinct bodies of water meet and mix, one of which is partially enclosed, such as a bay or lagoon. Regions where streams and rivers flow into the Great Lakes of the US Midwest provide an uncommon example of a freshwater estuary. The most familiar type of estuary is a coastal region where freshwater from a river flows into a bay or other similar body of water and eventually into the ocean. Due to its proximity to the ocean this type of estuary is tidal; salt water is drawn into and out of the area on a daily basis.

The New Jersey Meadowlands, a roughly 31 square mile region found within a larger estuary complex known as the New York-New Jersey Harbor Estuary, is an example of this type of estuary. The source of freshwater to the Meadowlands region is the Hackensack River. The water found within the boundaries of this region is predominantly brackish, that is, it contains some measurable amount of salt.



Upon entering an estuary, the importance of the area as wildlife habitat becomes immediately apparent. An incredible diversity of birds, fish, and other wildlife such as turtles and crabs can be found within these areas. In addition, estuaries provide breeding and resting

areas for migrating fish and birds and so play a vital role in the life cycles of these animals. Humans too derive many benefits from estuaries. Since many of the fish and shellfish we eat spend part of their lives in estuaries, they possess considerable economic value. They function in many ways to improve our quality of life; estuaries are a focal point for a variety of recreational activities from ecotourism to fishing; they help to control flooding by absorbing rain water and storm surges; and they filter pollutants out of surface water.

Vocabulary:

Brackish: A mixture of salt and freshwater

Food Chain: The passage of energy (in the form of food) from producers through several levels of consumers and decomposers

Freshwater: Water that contains no measureable amount of salt

Habitat: The environment in which an organism lives that provides the components necessary for survival: food, water, shelter, space, and energy

Salt Marsh: A wetland habitat found within a brackish estuary

Estuary: An area where two distinct bodies of water meet and mix one of which is partially enclosed

References/Resources:

- Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds Environmental Protection Agency. "What is an estuary?" EPA.Gov. Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds, 10 April 2009. Web. 10 September 2012
[EPA: What is an Estuary?](#)
- National Oceanic and Atmospheric Administration. "An estuary is..." NOAA.Gov. The Office of Ocean and Coastal Resource Management, 24 June 2008. Web. 10 September 2012
[NOAA: An Estuary Is...](#)

MARSH MUCKERS

Pre-Trip Activities

STARTING WITH SORTING

Adapted from an Ohio DOE lesson

Students determine the physical attributes of common objects and sort them based on their observations

Grades: K-1

Type: Indoor

Duration: 30-45 minutes

NJCCCS: 5.1, 5.2

Objectives: Students will be able to: 1) identify the attributes of common objects; 2) Group common objects based on their attributes

Skills: Identification, definition, description, listing, summarizing, predicting, association, discussion, analysis, order, connect, arrange

Materials needed:

- lidded containers or zipper seal bags, 1/student pair
- beans, beads, cereal, shells, pasta, buttons, rocks, or other similar objects, 15-20/student pair placed inside containers
- 1 sheet of white paper folded in half widthwise with 2-3" circles drawn on either side of the fold near the center of the paper
- apple and orange or two other similar objects for comparison

Vocabulary: alike, attribute, category, different, observe, organize, sort

Procedure:

1. Introduction

Comparing Apples to Oranges

Display an apple and an orange or two other similar objects and ask the students to make a comparison. Prompt them by asking *How are they alike and different? What attributes do they share and not share?* Use a Venn diagram or a similar method to record student observations.

2. Activity

- a. Group students into pairs and distribute objects in containers, one to each pair. Instruct the students to *observe* the objects and discuss their *attributes* with their partners. Listen to the students to assess their understanding of the term attribute and determine their ability to observe effectively.
- b. Elicit from the class the attributes they observed and create a list.
- c. Assign a number to each student, either 1 or 2. Instruct the 1s to unfold the sheet of paper, laying it out flat, then to sort the objects on the paper, placing each group in one of the circles, based on a single attribute. Finally, have the 2s guess which attribute their partners used to categorize the objects. Have the students switch roles.
- d. Have the students continue to sort the objects based other attributes, drawing additional "sorting circles" as needed.

Variation: Distribute a variety of objects to the student pairs rather than a single object. Pass them through the class so each pair sorts each group of objects. Discuss the results as a class and consider the variety of attributes observed about different objects,

References / Resources:

Adapted from an Ohio DOE lesson available at the following website:
[Ohio DOE Lesson Plan](#)

MARSH MUCKERS

Pre-Trip Activities

IT'S IN THE BAG

Adapted from: WOW!, The Wonder of Wetlands

Students learn about the importance of wetlands by investigating "biofacts" using their sense of touch

Grades: K-1

Type: Indoor or Outdoor

Duration: 10-60 minutes

NJCCCS: 5.1, 5.2

Objectives: Students will be able to: 1) Identify common living and non-living components of a wetland habitat; 2) List and describe ways that wetlands are important to wildlife

Skills: Identification, description, listing, summarizing, discussion, arrange

Materials needed:

- bandana or strip of cloth to be used as a blindfold
- cloth bag (pillow case or cloth shopping bag)
- goose feathers
- crab shell or claw
- turtle shell
- dried fish scales
- small piece of real or faux animal fur
- snake skin
- Phragmites (common reed) seed head
- several ounces of mud in a plastic jar
- several ounces of water in a plastic jar
- flower of a wetland plant, e.g., marsh hibiscus
- bird nest
- mussel shell
- barnacle shell

Note: Many of these objects can be obtained for little or no charge at seafood markets, science supply companies, nature centers, craft stores, or companies or government agencies that work with natural

resources. If items are found be sure to receive prior permission from the property owner.

Vocabulary: Adaptation, covering, skin, texture, wetland

Procedure:

1. Introduction

Prior to covering the topic of wetlands in class, read the background information provided about wetlands and use pictures to discuss this habitat with students.

2. Activity

- a. Call a volunteer to the front of the room and blindfold him. Instruct him to reach into the bag and take out one item.
- b. Direct the student to investigate the object tactilely or by smelling it, whichever will likely aid the student in identifying it, and then describe what he is experiencing. Have him hold the object up so everyone in the class can see it.
- c. Ask the student to attempt to identify the object. If he has difficulty doing this, have him ask yes or no questions of his classmates or have the rest of the class provide descriptive words or other clues assist him.
- d. Remove the blindfold and reveal the object to the student.
- e. Discuss each object and the role it plays in a wetland.
- f. Repeat with other volunteers

Note: The importance of wetlands as nurseries for particular animals (e.g., fish and birds) should be emphasized when appropriate. For example, when a student picks the bird nest from the bag, extend the discussion by asking the class what finding the nest in the wetland indicates about that habitat's role in the life cycle of the animal.

References / Resources:

Kesselheim, Alan S., Britt Eckhardt. Slattery, Susan Higgins, and Mark R. Schilling. *WOW!: The Wonders of Wetlands*. St. Michael's, MD: Environmental Concern, 1995. 78-79. Print.

A free poster illustrating a brackish estuary and the animals that inhabit it is available through the Environmental Protection Agency:

[EPA: Free Estuary Poster](#)

MARSH MUCKERS
Post-trip Activities

ANIMALS OF ALL SORTS

Students investigate salt marsh animals and use a table in their classroom to group and regroup them

Grades: K-1

Type: Indoor or Outdoor

Duration: 20-30 minutes

NJCCCS: 5.1, 5.2

Objectives: Students will be able to: 1) List several attributes that can be used to classify animals; 2) Group salt marsh animals based on several attributes

Skills: Identification, sorting, description, listing, association, discussion, analysis

Materials needed:

Pictures of salt marsh animals introduced to students on MEC field trip
Short biography of a common salt marsh animal written in the first person

Classroom Set up: Draw *Animal Attributes* table on the board shown at end of lesson plan.

Vocabulary: Bones, classify, diet, exoskeleton, fur, scales, skeleton

Procedure:

1. Introduction

Who Am I?

Explain to the class that you are going to read a short biography of one of the animals they learned about during their field trip to the Meadowlands Environment Center. Their challenge is to guess the identity of the animal based on the information you provide in the biography. Students may be permitted to raise their hands as soon as they know the answer but not to call out.

2. Activity

- a. Pose the question *What makes this animal different from some of the others we learned about on our field trip?*
- b. Display pictures of several salt marsh animals and provide the students with prompts that will assist them in classifying the animals based different attributes or behaviors, for example, diet, body covering, movement, and form of protection.
- c. Using the *Animal Attributes* table, review one attribute at a time and have the students come to the board and place the animal picture in the correct column. Consider different attributes, changing the heading of the table then calling students to the board to move the pictures accordingly.

Assessment Opportunity: Students' understanding of animal classification can be assessed anecdotally throughout the activity.

References / Resources:

The websites below provide good photos of the salt marsh animals listed:

Diamondback terrapin: [Diamondback Terrapin Photos](#)

Great egret: [Great Egret Photos](#)

Grass shrimp: [Grass Shrimp Photos](#)

Blue crab: [Blue Crab Photos](#)

Killifish: [Killifish Photos](#)

Animal Attributes

Diet

(Diet, Body Covering / Movement / Protection...)

Plants	Meat	Plants and Meat
ANIMAL PICTURE	ANIMAL PICTURE	ANIMAL PICTURE
ANIMAL PICTURE	ANIMAL PICTURE	ANIMAL PICTURE
ANIMAL PICTURE	ANIMAL PICTURE	ANIMAL PICTURE

MARSH MUCKERS
Post-Trip Activities

SALT MARSH ANIMAL SWITCHEROO

Students put different animal parts together to create crazy new animals

Grades: K-1

Type: Indoor

Duration: 45 minutes

NJCCCS: 5.1, 5.2

Objectives: Students will be able to describe how different physical attributes function to help animals survive in their habitat

Skills: Identification, description, listing, association, discussion, analysis

Materials needed:

- Pictures of salt marsh animals introduced to students on MEC field trip, 1 of each animal per student
- Scissors
- Glue sticks
- Drawing paper or a 6-8' sheet of white butcher paper

Vocabulary: adaptation, beak, claws, exoskeleton, gills

Procedure:

1. Introduction

Amazing Animal Parts

Display a picture of one of the animals introduced to your class on your trip to the Meadowlands Environment Center. Ask the students to name one of the animal's physical attributes and describe how that attribute helps the animal survive in the salt marsh.

2. Activity

- a. Explain to the class that they will be creating new salt marsh animals combining parts from several other animals.
- b. Model the activity for the class. Display a completed project showing your animal with the head, body, legs, and tail of four

different animals. Tell the class the animal's name and lead a discussion on how each of the animal's body parts helps it survive in the salt marsh.

- c. Distribute groups of salt marsh animal pictures and scissors to students
- d. Instruct students to first choose a body from one of the salt marsh animals, cut it out and glue it to the center of the drawing paper.
- e. Have the students complete their new animal by selecting a head, legs, and tail from three other animals and gluing these in the appropriate places on their animal's body.
- f. Once students' animals are completed have them illustrate the salt marsh habitat in the blank space around their animal.
- g. Choose volunteers to present their animals as modeled earlier.

Variations: Rather than illustrating the salt marsh on their drawing paper select several students to create a mural of the salt marsh ahead of time; or, project an image of a salt marsh using an overhead projector or interactive whiteboard and have the students place their animals in an appropriate place.

Assessment Opportunity: Students' understanding of how physical attributes function and contribute to the survival of animals can be assessed through direct observation during their presentations.

References / Resources:

The Switcheroo Zoo website provides several on-line activities for students including Switch Zoo which allows them to create new animals by combing body, head, legs, and tail of several different animals: [Switcheroo Zoo](#)

The websites below provide good photos of the salt marsh animals listed:

Diamondback terrapin: [Diamondback Terrapin Photos](#)

Great egret: [Great Egret Photos](#)

Grass shrimp: [Grass Shrimp Photos](#)

Blue crab: [Blue Crab Photos](#)

Killifish: [Killifish Photos](#)

A good image of a salt marsh at low tide for use in the variation described above is available at the following website: [Salt Marsh Low Tide Image](#)