

# MARSH EXPLORERS

## Grades 2 - 3

**NJCCCS: 5.1, 5.3, 5.4**

### **Field Trip Overview:**

On your field trip, you and your students will explore a salt marsh within an estuary. Following a brief introduction to the habitat, and weather permitting, we will take a field walk to explore the sights, sounds and smells of a salt marsh. Along the way to a collection site, students will make observations about the weather, physical environment, fauna and flora. At the collection site, students will use dip nets to collect and identify the aquatic organisms that inhabit the impoundment of DeKorte Park. Working with the live specimens, students will learn how to make observations of nature and how to record their observations through journaling and sketching. Using what they have learned during their field trip, students will fill in a salt marsh food chain and explain some of the relationships within it. All students will be able to bring their salt marsh journal back to school with them.

### **Background Information:**

An estuary is a partially enclosed body of water where saltwater from the ocean mixes with freshwater from rivers, streams and/or creeks. These areas of transition between land and ocean are driven by gravity (water flowing to the lowest area), the surrounding landforms and the tides. They are inland from the ocean, protecting organisms from the full force of ocean winds, waves and deep waters. Estuaries are generally enclosed in part by the coastline, marshes and wetlands; the seaward border may be barrier islands, reefs and sand or mud flats. Some familiar examples of estuaries are: Newark Bay, Hudson-Raritan Estuary, Hackensack River, Chesapeake Bay, San Francisco Bay, Boston Harbor, Tampa Bay and Puget Sound.

A large number of organisms can be found in estuaries that are specially adapted to the "brackish" estuarine waters. These organisms can tolerate some salt in the water or salt spray in the air. A few examples of such organisms are: plankton, marsh grasses, aquatic turtles, fish, birds, shrimp, muskrats and crabs. Salt marshes that border estuaries are home to many upland plants and animals as well, such as a wide variety of birds, mammals, coniferous/deciduous trees and butterflies.

Estuaries are ecologically and economically important. They are among the most biologically productive ecosystems on the planet and serve as a nursery to a wide range of juvenile aquatic life, providing protection and shelter as they develop into adults. An abundance of bird species utilize estuaries for food, water and shelter either as full-time residents or seasonal migrants (there are hundreds of bird species in the Meadowlands region alone). Estuaries act as filters for terrestrial pollutants and provide protection from flooding. More than two thirds of the fish and shellfish we eat spend some part of their lives in estuaries. Millions of people visit estuaries each year to boat, swim, bird watch and fish. It is clear estuaries are worth protecting and the delicate balance of this environment can be easily destroyed by human activities. A vital step in protecting estuarine environments is to provide educational programs that increase awareness of the importance of these areas to the next generation.

### **Vocabulary:**

Adaptation: Adjustment to environmental conditions; something a plant or animal has that helps it to survive

Brackish: A mixture of salt and fresh water

Consumers: Organisms that get their energy from other living things

Decomposers: Organisms that break down once-living things, releasing the energy stored in them

Detritus: Decaying plant and animal matter that serves as a nutrient-rich food source

Fauna: Animals

Flora: Plants

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

Habitat: The environment in which an organism lives that provides four necessities for survival: food, water, shelter, air, space

Plankton: Free floating plants and animals that range in size from microscopic to large jellyfish. Many microscopic plant-like plankton serve as an important food source for marsh animals.

Salinity: Degree of saltiness in the water.

Salt Marsh: Type of wetland semi-enclosed by land but having partial access to open ocean or river

Temperature: The degree of hotness or coldness of a body or environment

Wetland: An area of land that is intermittently covered with water

### **References / Resources:**

- "Estuaries and Coastal Watersheds." Environmental Protection Agency. Last updated April 30, 2012. Accessed September 6, 2012.  
[EPA: Estuaries and Coastal Watersheds](#)
- "America's Wetlands." Environmental Protection Agency. Last updated March 6, 2012. Accessed September 6, 2012.  
[EPA: America's Wetlands](#)

**MARSH EXPLORERS**  
**Pre-Trip Activities**

## **CREATE A SALT MARSH**

Adapted from *Wading into Wetlands*

**Grades:** 2-3

**Type:** Indoor

**Duration:** 45 minutes

**Subject:** Life Science & Art

**NJCCCS:** 5.3

**Objectives:** Students will be able to identify some of the plants and animals that live in a salt marsh.

**Skills:** Listening, Interpretation, Identification, Creativity, Imagination

**Materials Needed:**

- "A Walk in a Salt Marsh" Story
- Copies of Salt Marsh Organisms page (one per student)
- Crayons or markers
- Scissors
- Glue
- Paper (one per student)
- Pictures of Salt Marshes

**Procedure:**

**1. Introduction:**

Explain what a wetland is and describe some different types of wetlands (swamp, bog, marsh). Tell the students they will be visiting a salt marsh at the Meadowlands Environment Center and show them several pictures of salt marsh habitats. Hand out a copy of the "Salt Marsh Organisms" page to the students, tell them to close their eyes and imagine what it would be like to walk in a salt marsh as you read them the story "A Walk in a Salt Marsh."

## **2. Activity**

- a.** Ask the students if they can identify any of the organisms on the "Salt Marsh Organisms" page. Do these organisms have any special adaptations to help them live in this environment?
- b.** Pass out a blank sheet of paper and have the students draw a salt marsh background scene. Then have them cut out their salt marsh organisms and glue them down to their background scene to create a salt marsh picture. They may also draw in other salt marsh organisms.

### **References/Resources:**

"Create a salt Marsh" Wading into Wetlands. National Wildlife Federation. McGraw-Hill, Inc. 1997.

## A Walk in a Salt Marsh

As you walk downhill to the low-lying land, you can see a wide open area up ahead. It looks like a grassy meadow that has never been mowed. Off in the distance you can see a patch of open water. Grasses and other plants are growing along the edge and in the open water.

As you walk toward the water, you feel the warmth of the sun beating down on your head and back. There is a nice breeze coming off the water and the smell reminds you of the beach, but you know it's not the ocean because it is many miles from here. The plants are sharp and scratchy as they brush against your skin. Gradually you feel something cool seep into your sneakers. Looking down, you see that your feet are getting soaked.

Squish. Squoosh. Slosh. Sloosh. The ground becomes less firm and the water is now almost up to your ankles. It's a good thing you tied your sneakers tight because you can feel the mud squeezing your shoes on every step! You notice a strange, marshy, rotten egg smell as you slog through the goey mud. At first you don't like the smell but then you realize that none of the animals seem to mind and that the mud should smell like that.

Suddenly you see a small bird, blue on the back and white on the belly, quickly fly by, swooping around to eat **midges**. The midges look somewhat like mosquitoes but don't bite. Eventually, that blue and white bird, a **tree swallow**, perches on a wooden nesting box that was placed in the salt marsh for it to live. Now you can really see the blue feathers on the tree swallow's back. It only stays at the nesting box for a moment or two and then flies off to find more small insects to eat.

A small black bird then darts by, flashing its bright red shoulder patches at you and squawking Ok-ra-lee! It's a **red-winged blackbird**. Are you too close to its nest? It lands on one of the tall marsh grasses with a big fluffy seed-head, **phragmites** (frag-mite-eez) and makes another call. As quietly as possible you slosh away and continue toward the open water.

The ground is now oozy and the water is deeper. As you bend over to roll up your pant legs, you hear something. Plop! Was it a **muskrat**? Yes, you see brown, furry mammal with a long, slender tail (looks kind of a rat tail!), swimming away in the shallow water.

Up ahead, you spy several **ducks** paddling silently across the water. As you creep up to get a better look, you realize the water is almost up to your knees and the mud is getting so goopy you feel like you're starting to sink. You decide it's time to turn around and head back to dry land.

As you retrace your steps, you notice the water level is now a little higher than it was before. The tide must be coming in from the ocean and slowly raising the water level in the salt marsh. You see several white **gulls** flying over the water and a large, soaring, **osprey** hunting for fish. An **egret** gracefully flies by. It has white feathers and a slender, S-shaped neck. Its long, skinny, black legs trail behind it like the tail of a kite. The egret lands on the opposite edge of the water near a section of the shorter, thinner marsh grass, **spartina** (spar-tine-ah). It wades easily through the water, stretching its neck out as it searches for **killifish**.

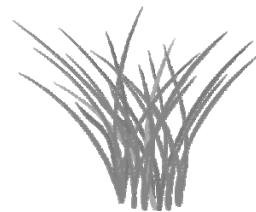
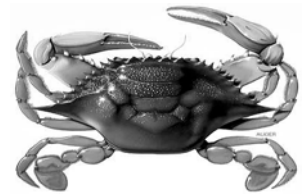
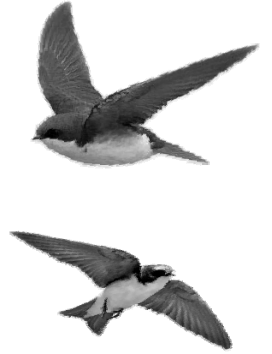
Because the water level is still fairly low, you can see the mud at the bottom. You notice something stirring up some mud. As you look a little closer - Watch Out! A **blue crab**! It has a hard shell, two sharp claws and eight other legs to help it walk, climb and swim in the salt marsh. It may be eating some of the mud or a somewhat see-through **grass shrimp**. You don't want to take your chances of getting pinched by the blue crab, so you continue to make your way back to dry land.

You notice a fallen tree on the edge of the salt marsh and then see a large, oval rock balanced on it. As you look closer you see that it's not a rock, but a **diamondback terrapin**, a turtle that lives in a salt marsh! It's basking in the sunlight to help it stay warm.

Finally you're back on dry land. As you think about everything you saw and felt, you realize the marsh is a very special place.

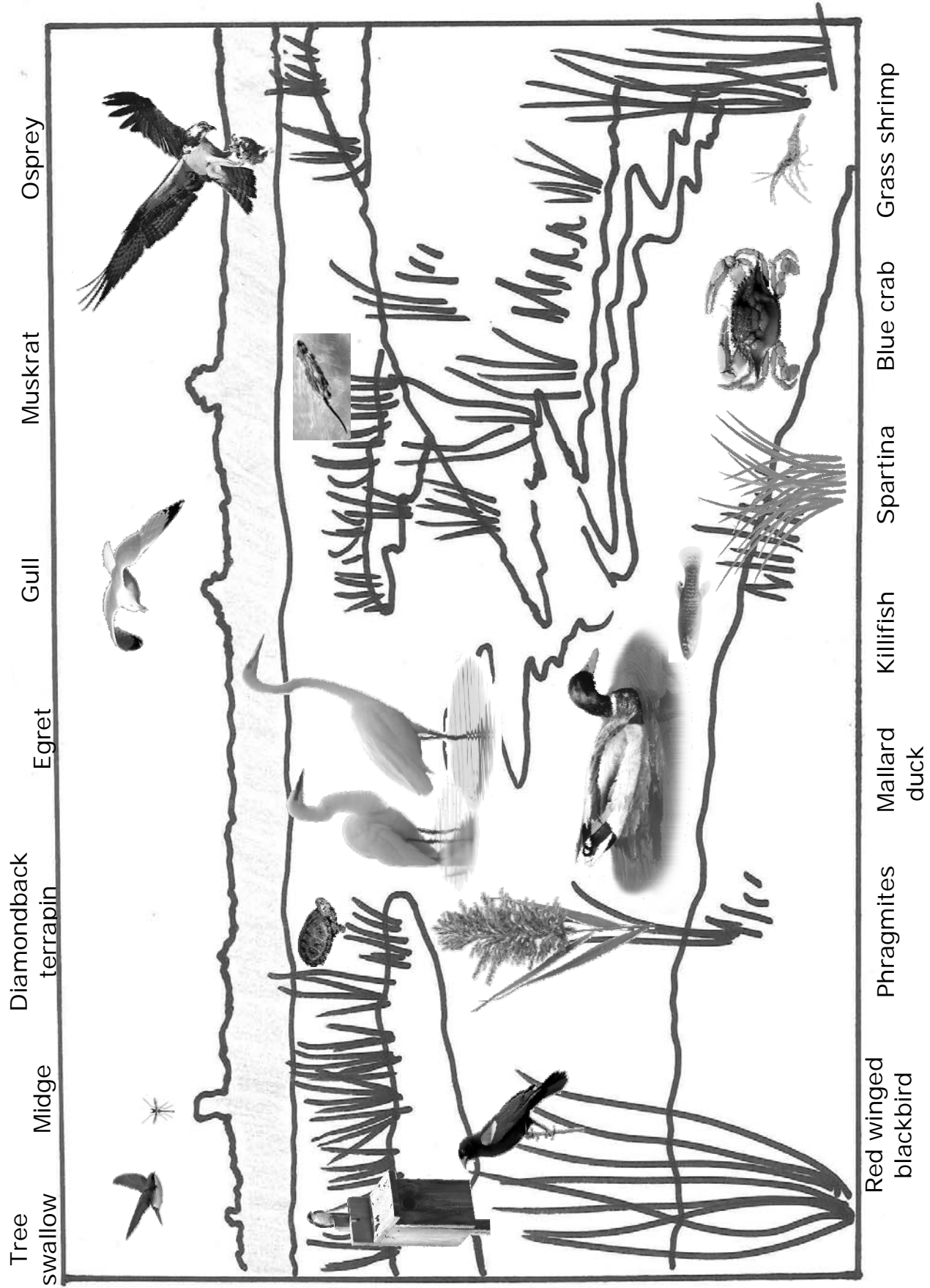
# Salt Marsh Organisms

(not to scale)





# Sample Background Scene with Salt Marsh Organisms



MARSH EXPLORERS  
**Pre-Trip Activities**

**WONDERFUL, WATERFUL WETLANDS**

From US EPA's Water Sourcebook

In this teacher led table-top model, students will be introduced to the characteristics and functions of a wetland.

"Wonderful, Waterful Wetlands." US EPA.

[EPA: Wonderful, Waterful Wetlands](#)

Pages 1-5

**References / Resources:**

[EPA: Wetland in a Pan](#)

**Estuary Explorers  
Post-Trip Activity**

**WRITE YOUR OWN SALT MARSH STORY**

Review the concepts discussed during the students' field trip to the Meadowlands Environment Center. Using the student journal as a reference, have the students write a short story about their experience in a salt marsh, including all the organisms they saw and learned about. Ask them which organism was their favorite and have them do some more research on it so they can include more detail about that particular organism in their short story.