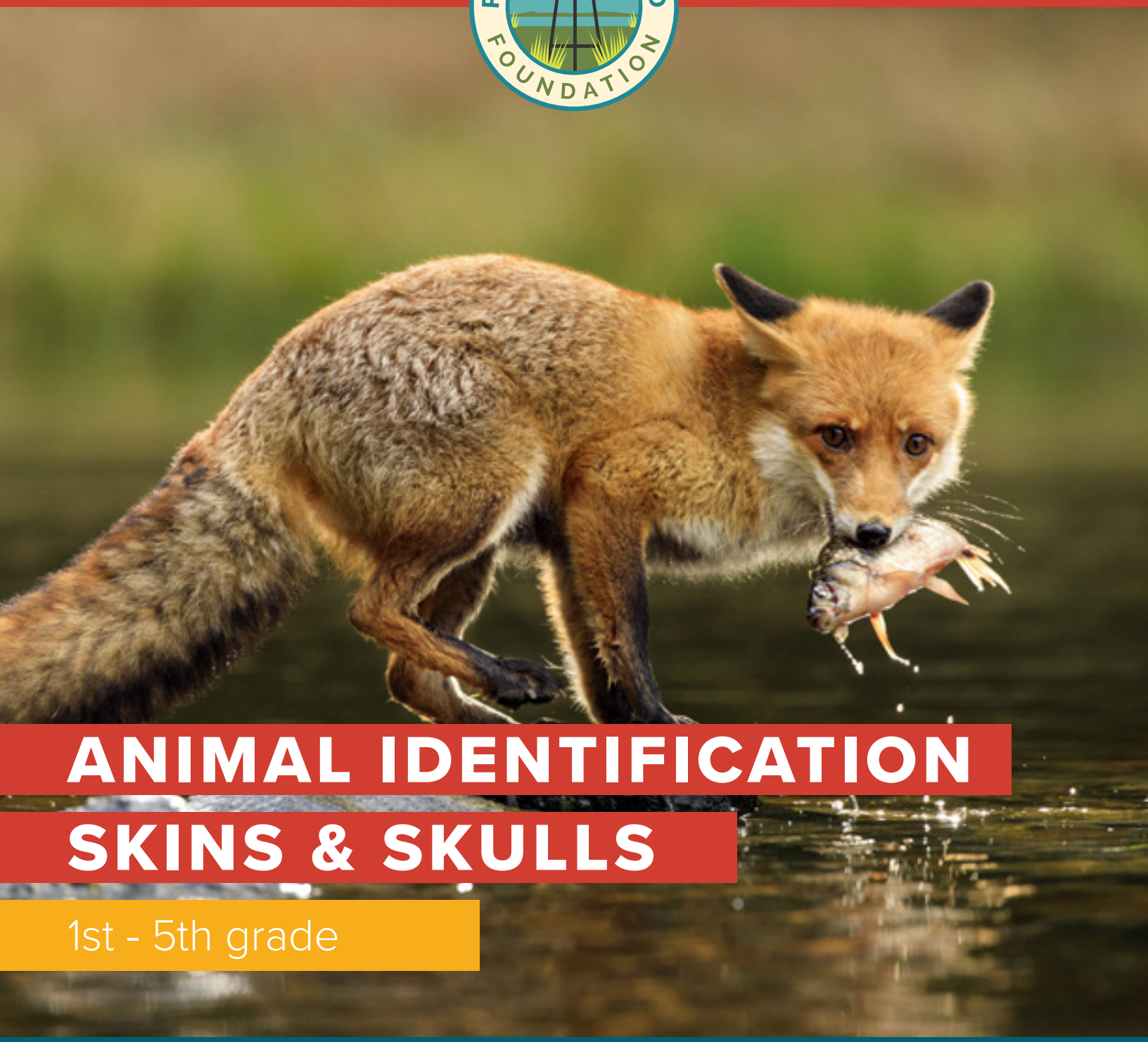

ANIMAL IDENTIFICATION SKINS & SKULLS

1st - 5th grade

PORT ROYAL SOUND FOUNDATION
ANIMAL IDENTIFICATION

"IN EVERY WALK WITH NATURE, ONE RECEIVES FAR MORE THAN HE SEEKS."

–John Muir

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DETAILS

Program Overview

Students explore animal identification by observing animals from the Maritime Center's collection of animal artifacts, including furs, skins, skulls, models and live animals. They describe, compare and contrast the special characteristics each sample presents. Students discover connections between the animals themselves, their habitats and with humans.

Lesson Description

Students work in groups to engage in an inquiry exercise in the Maritime Center Classroom. They observe animal artifacts such as furs, skins, skulls, models and live animals, with four out of their five senses (NOT taste.) They must handle artifacts gently, with safety in mind, and according to the guidelines outlined by the PRSF instructor. Students complete data sheets by recording details and coloring/embellishing drawings of the animals.

The lesson is designed for 12 to 15 students at a time and is expected to take about 45 minutes. It is usually one of several in a rotation of activities during a class visit to the Maritime Center.

What to Wear and Bring

Closed toed shoes that can get muddy (bag to put muddy shoes in), extra shoes, a reusable water bottle, hat, sunglasses, sunscreen, bugspray, pencil or pen and lunch/snack.

Reservation and Program Information

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Naturalist
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Maritime Center
(843) 645 - 7774 ext. 203

Differentiation of Instruction

Please inform us at the time of your reservation of any special needs, disabilities, allergies, or language barriers your students have so that we may better enhance your experience and make any changes necessary.

Location

The Port Royal Sound Foundation Maritime Center is located at 310 Okatie Hwy, Okatie, SC, 29909, underneath the Lemon Island bridge.

If you are coming from Bluffton please exit to the right of the Lemon Island bridge and drive under the bridge. DO NOT TURN LEFT and cross highway.

If you are coming from Beaufort you will exit to the right, and when departing will drive under the bridge and exit on the opposite side. DO NOT TURN LEFT and cross highway.

Facilities

Restrooms and water fountain are available at the Maritime Center. The maximum number of children per field trip is 60 kids. Per Beaufort County schoold district policy there will be a 10 to 1 chaperone ratio, chaperones and teachers are free of charge but we encourage as many adults as possible. We will provide a lunch space with trash and recycling cans but clean-up falls onto the school and schools will be charged if deemed necessary.

Expectations for Student Conduct on Site

"In every walk with nature, one receives far more than he seeks." - John Muir

In order for students to gain the most knowledge from their experience here at the Maritime Center, please remind them of the expectations for the trip and for their behavior on site. We suggest the following T.R.I.P. guidelines:

T Together. Stay with the group and with the adult in charge.

R Respect. Be considerate of your surroundings and the people around you. Only touch what you have been told you may touch.

I Interest, Show your interest by paying attention to the guide and listen well. Ask thoughtful questions.

P Polite. Use your best manners and thank your guide.

SOUTH CAROLINA LEARNING STANDARDS

Grade One Earth's Natural Resources

Standards

1.E.4: The student will demonstrate an understanding of the properties and uses of Earth's natural resources.

Conceptual Understanding

1.E.4A. Earth is made of different materials, including rocks, sand,soil, and water. An Earth material is a resource that comes from Earth. Earth materials can be classified by their observable properties.

Performance Indicators: Students who demonstrate this understanding can

1.E.4A.1 Analyze and interpret data from observations and measurements to compare the properties of Earth materials (including rocks, soils, sand, and water).

1.E.4A.2 Develop and use models (such as drawings or maps) to describe patterns in the distribution of land and water on Earth and classify bodies of water (including oceans, rivers and streams, lakes, and ponds).

1.E.4A.3 Conduct structured investigations to answer questions about how the movement of water can change the shape of the land.

1.E.4B. Conceptual Understanding: Natural resources are things that people use that come from Earth (such as land, water, air, and trees). Natural resources can be conserved.

1.E.4B.1 Obtain and communicate information to summarize how natural resources are used in different ways (such as soil and water to grow plants; rocks to make roads, walls, or buildings; or sand to make glass).

1.E.4B.2 Obtain and communicate information to explain ways natural resources can be conserved (such as reducing trash through reuse, recycling, or replanting trees).

Standard 1.E.4: The student will demonstrate an understanding of the properties and uses of Earth's natural resources.

SOUTH CAROLINA LEARNING STANDARDS

Grade One Life Science: Plants and Their Environments

Standards

1.L.5: The student will demonstrate an understanding of how the structures of plants help them survive and grow in their environments.

Conceptual Understanding

1.L.5B. Conceptual Understanding: Plants have basic needs that provide energy in order to grow and be healthy. Each plant has a specific environment where it can thrive. There are distinct environments in the world that support different types of plants. These environments can change slowly or quickly. Plants respond to these changes in different ways.

Performance Indicators: Students who demonstrate this understanding can

1.L.5B.1 Conduct investigations to answer questions about what plants need to live and grow (including air, water, sunlight, minerals, and space).

1.L.5B.2 Develop models to compare how the different characteristics of plants help them survive in distinct environments (including deserts, forests, and grasslands).

1.L.5B.3 Interpret data from observations to describe how changes in the environment cause plants to respond in different ways (such as turning leaves toward the Sun, leaves changing color, leaves wilting, or trees shedding leaves.)

SOUTH CAROLINA LEARNING STANDARDS

Grade Two Animals and Their Environments

Standards

2.L.5: The student will demonstrate an understanding of how the structures of animals help them survive and grow in their environments.

Conceptual Understanding

2.L.5: There are many different groups of animals. One way to group animals is by using their physical characteristics. Animals have basic needs that provide for energy, growth, reproduction, and protection. Animals have predictable characteristics at different stages of development.

2.L.5B. Conceptual Understanding: Animals (including humans) require air, water, food, and shelter to survive in environments where these needs can be met. There are distinct environments in the world that support different types of animals. Environments can change slowly or quickly. Animals respond to these changes in different ways.

Performance Indicators: Students who demonstrate this understanding can

2.L.5A.1 Obtain and communicate information to classify animals (such as mammals, birds, amphibians, reptiles, fish, or insects) based on their physical characteristics.

2.L.5A.2 Construct explanations for how structures (including structures for seeing, hearing, grasping, protection, locomotion, and obtaining and using resources) of different animals help them survive.

2.L.5A.3 Construct explanations using observations and measurements of an animal as it grows and changes to describe the stages of development of the animal.

2.L.5B.1 Obtain and communicate information to describe and compare how animals interact with other animals and plants in the environment.

2.L.5B.2 Develop and use models to exemplify characteristics of animals that help them survive in distinct environments (such as salt and freshwater, deserts, forests, wetlands, or polar lands).

2.L.5B.3 Analyze and interpret data from observations to describe how animals respond to changes in their environment (such as changes in food availability, water, & air).

2.L.5B.4 Construct scientific arguments to explain how animals can change their environments (such as the shape of the land or the flow of water).

SOUTH CAROLINA LEARNING STANDARDS

Grade Three Life Science: Environments and Habitats

Standards

3.L.5: The student will demonstrate an understanding of how the characteristics and changes in environments and habitats affect the diversity of organisms.

Conceptual Understanding

3.L.5A. he characteristics of an environment (including physical characteristics, temperature, availability of resources, or the kinds and numbers of organisms present) influence the diversity of organisms that live there. Organisms can survive only in environments where their basic needs are met. All organisms need energy to live and grow. This energy is obtained from food. The role an organism serves in an ecosystem can be described by the way in which it gets its energy.

3.L.5B. When the environment or habitat changes, some plants and animals survive and reproduce, some move to new locations, and some die. Fossils can be used to infer characteristics of environments from long ago.

Performance Indicators: Students who demonstrate this understanding can

3.L.5A.1 Analyze and interpret data about the characteristics of environments (includlng salt and freshwater, deserts, grasslands, forests, rain forests, and polar lands) to describe how the environment supports a variety of organisms.

3.L.5A.2 Develop and use a food chain model to classify organisms as producers, consumers, and decomposers and to describe how organisms obtain energy.

3.L.5B.1 Obtain and communicate information to explain how changes in habitats (such as those that occur naturally or those caused by organisms) can be beneficial or harmful to the organisms that live there.

3.L.5B.2 Develop and use models to explain how changes in a habitat cause plants and animals to respond in different ways (such as hibernating, migrating, responding to light, death, or extinction).

3.L.5B.3 Construct scientific arguments using evidence from fossils of plants and animals that lived long ago to infer the characteristics of early environments.

SOUTH CAROLINA LEARNING STANDARDS

Grade Four Life Science: Characteristics and Growth of Organisms

Standards

4.L.5: The student will demonstrate an understanding of how the structural characteristics and traits of plants and animals allow them to survive, grow, and reproduce.

Conceptual Understanding

4.L.5A Scientists have identified and classified many types of plants and animals. Each plant or animal has a unique pattern of growth and development called a life cycle. Some characteristics (traits) that organisms have are inherited and some result from interactions with the environment.

4.L.5B. Plants and animals have physical characteristics that allow them to receive information from the environment. Structural adaptations within groups of plants and animals allow them to better survive and reproduce.

Performance Indicators: Students who demonstrate this understanding can

4.L.5A.1 Obtain and communicate information about the characteristics of plants and animals to develop models which classify plants as flowering or nonflowering and animals as vertebrate or invertebrate.

4.L.5A.2 Analyze and interpret data from observations and measurements to compare the stages of development of different seed plants.

4.L.5A.3 Develop and use models to compare the stages of growth and development in various animals.

4.L.5A.4 Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment.

4.L.5B.1 Develop and use models to compare how humans and other animals use their senses and sensory organs to detect and respond to signals from the environment.

4.L.5B.3 Construct explanations for how structural adaptations (such as methods for defense, locomotion, obtaining resources, or camouflage) allow animals to survive in the environment.

SOUTH CAROLINA LEARNING STANDARDS

Grade Five Life Science: Interdependent Relationships in Ecosystems

Standards

5.L.4: The student will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems.

Conceptual Understanding

5.L.4A. Ecosystems are complex, interactive systems that include both the living components (biotic factors) and physical components (abiotic factors) of the environment. Ecosystems can be classified as either terrestrial (such as forests, wetlands, and grasslands) or aquatic (such as oceans, estuaries, lakes, and ponds).

5.L.4B. Conceptual Understanding: All organisms need energy to live and grow. Energy is obtained from food. The role an organism serves in an ecosystem can be described by the way in which it gets its energy. Energy is transferred within an ecosystem as organisms produce, consume, or decompose food. A healthy ecosystem is one in which a diversity of life forms are able to meet their needs in a relatively stable web of life.

Performance Indicators: Students who demonstrate this understanding can

5.L.4A.1 Analyze and interpret data to summarize the abiotic factors (including quantity of light and water, range of temperature, salinity, and soil composition) of different terrestrial ecosystems and aquatic ecosystems.

5.L.4A.2 Obtain and communicate information to describe and compare the biotic factors (including individual organisms, populations, and communities) of different terrestrial and aquatic ecosystems.

5.L.4B.1 Analyze and interpret data to explain how organisms obtain their energy and classify an organisms as producers, consumers (including herbivore, carnivore, and omnivore), or decomposers, such as fungi and bacteria.

5.L.4B.2 Develop and use models of food chains and food webs to describe the flow of energy in an ecosystem.

5.L.4B.3 Construct explanations for how organisms interact with each other in an ecosystem (including predators and prey, and parasites and hosts).

5.L.4B.4 Construct scientific arguments to explain how limiting factors (including food, water, space, and shelter) or a newly introduced organism can affect an ecosystem.

TEACHER AND STUDENT RESOURCES

Pre-visit Resources

National Geographic - River Otters
National Geographic - Raccoons
National Geographic - Bobcats
National Geographic - Eastern Gray Squirrel
Busy Little Squirrel, story by Nancy Tafuri
Poster/Project Ideas & Examples

Onsite Resources:

Information about Animals Represented by FURS
Animal Furs Color/Data Pages, G 1-3
Animal ID Sleuths Data Page, G 4-6

Post-visit Resources:

Ecosystem dynamics
The World's Biomes
Animals in habitats
Understanding Food Webs
Maritime Forest Food Web Diagram
Food Chains & Food Webs G1-3, YOUTube Video

PRE-VISIT LESSON: COMMON MAMMALS IN PORT ROYAL SOUND AREA

Lesson Description

This lesson will introduce local animals commonly found in the Port Royal Sound Watershed and within the sound itself. It is adaptable for all elementary grades but specifically focused on Grades 1 - 3.

Objectives:

- Describe physical characteristics of local mammals, comparing and contrasting otters, squirrels, fox, raccoons, bobcat, mink, opossum and others.
- Research specific food, shelter, and needs provided by their habitats.
- Observe and interpret how these animals use natural resources
- Explain unique adaptations these animals have developed to defend and protect themselves.
- Construct explanations describing how these animals' adaptations help them survive.
- Discuss how these animals grow, change, and reproduce
- Classify how these animals adapt and change in response to changes I their habitats
- Evaluate the threats posed to these animals by humans.

Procedures

1. Expose students to stories, field guides, videos, and photos that include a variety of factual information about local animals, including mammals they will learn about during their visit to PRSF Maritime Center, specifically, otters, fox, squirrels, bobcats, mink, and opossum.
2. Discuss characteristics of all mammals.
3. Compare and contrast these special mammals. Include physical traits, behavior, as well as ways they defend and protect themselves.
4. Encourage children to distinguish these wild mammals from the animals they already know about such as pets, farm animals and other animals they have observed first hand.
5. Provide an assignment outline for children that invites them to create a product to share with the class. Suggestions for products include: posters, advertisements, or signs that help protect animals, encyclopedia or field guide pages, family "photo albums" that show parents and babies in their habitats, nests and burrows. **See suggestions and examples of products linked in Student and Teachers Resources section, above.**

Cuminating Assessments

1. Which mammals are common in and around Port Royal Sound? How are they adapted to live and grow here?
2. Where and when are we likely to find these mammals? What natural resources do they need from the ecosystem to survive? How do we know?
3. What do these mammals eat? What eats them? What evidence do we find to support what we know?
4. What kind of dangers do these animals face? How do they defend and protect themselves?
5. How does human behavior affect these animals?
6. Is it important for humans to help these animals to survive? Why or why not? What are some ways we can help?

ONSITE EXPERIENCE
ANIMAL ID "SKINS & SKULLS"

Objectives:

- Identify and describe common animals found in and around Port Royal Sound.
- Compare and contrast animal structures presented in skulls, skins and models.
- Explain how these structures support animal growth and survival.
- Connect the forms of these animal structures to their functions.
- Evaluate animal diversity in our local ecosystem as represented by the samples.
- Assess how humans affect the chances of survival for these and other wild animals.

Focus Questions

- What animals live in and around Port Royal / sound? How do we know?
- How do their special structures help them to grow, survive and reproduce?
- How do these animals interact with each other and with humans?
- What needs do these animals share?
- What unique characteristics does each animal have?
- How does human behavior affect these animals?
- Why do these animals matter?

Materials

Furs – squirrels (grey and fox), otter, mink, raccoon, opossum, red fox, bob cat

Skulls – mink, bobcat, red fox, coyote, raccoon, crocodile (no alligator), deer, turtle shell, beaver

Mounts – sponges, arthropod, crustacean, green cases (have many animals displayed in acrylic)

Plastinated models – sea star, fish, shark

Live animals – corn snake, toads

Field Guides to local animals. Publications with color photos of animals in their habitats, their life stages, descriptions of common behaviors etc.

Observations/Data record sheets, colored pencils, markers and/or crayons

Procedures

(See Teacher Resources for Student Reproducibles)

Teacher-directed, "Show and Tell" Activity.

- Student groups all observe the same sample by passing it from group to group, before going on to the next animal sample.
- Teacher encourages discussion about each animal sample, directing students to identify it and share special details.
- Students record their observations, color/embellish drawings of the animals and add interesting details to their data sheets. They move as a class from one animal sample to the next.

Student-directed, "Super Sleuth Activity."

- Student groups are allowed to examine the samples, one by one, but are not given the identification until all groups have observed all samples.
- After student groups have recorded their own ideas, including identification of each sample, the teacher discloses the identity of each fur, skull and model.
- During the summary, students and teacher discuss, analyze answers, and suggest inferences based on their observations.

Culminating Assessment

Refer to Focus Questions from the start of the exercise:

- What animals live in and around Port Royal /sound? How do we know?
- How do their special structures help them to grow, survive and reproduce?
- How do these animals interact with each other and with humans?
- What needs do these animals share?
- What unique characteristics does each animal have?
- How does human behavior affect these animals?
- Why do these animals matter?

Ask students (group by group?) to share discoveries, favorites, what they know now that they didn't know before. Challenge them to look for signs of these animals in their day to day lives and to share what they learned with friends, family and others.

POST-VISIT EXPERIENCE

Part One: Food Webs of The Port Royal Sound Area
Part Two: Diorama or Poster of Local Ecosystem, Featuring Local Mammals

Lesson Description

Food webs are an important tool to help understand interactions in an ecosystem. In this activity students reflect on their experiences at PRSF Maritime Center and create a simple food web using a variety of animals and plants.

As a culminating activity, students create 3D dioramas or posters showing several common animals from our local area or in other ecosystems elsewhere on Earth. They describe the animals, plants, and their interwoven relationships. The evaluate threats to these ecosystems and how humans are connected.

Objectives

- Develop and use a food chain model to classify organisms as producers, consumers, and decomposers
- Describe how organisms obtain energy
- Explain how changes in habitats can be beneficial or harmful to the organisms that live there.
- Develop and use models to compare how humans and other animals detect and respond to signals from the environment.
- Describe how specific adaptations allow animals to survive in the environment, such as methods for defense, locomotion, obtaining resources, or camouflage.
- Explain how organisms interact with each other in an ecosystem, including predators and prey, and parasites and hosts.
- Analyze and summarize how limiting factors, including food, water, space, and shelter or a newly introduced organism can affect an ecosystem

Procedure Part 1 - Local Food Web

Introduce simple food chains and food webs to students. Show examples. Use link in Teacher & Student Resources List, above, to find websites and YouTube videos outlining simple food chains and food webs.

Refer to color pages and diagrams started during on-site activity at PRSF Maritime Center. Use online references, field guides, and libraries to research animals discussed. Identify their roles within local food chains. Students list what kind of food each animal eats and trace the energy through the ecosystem. They use arrows to show the energy transferred from food to an animal. They integrate food chains to form larger more complex food webs diagrams.

List of species to be used for food web (please feel free to add any other plant or animal species that may be of importance):

- Consumers (White tailed deer, Grey squirrel, Fox squirrel, Raccoon, Opossum, Northern cardinal, oysters, muscles)
- Wading birds (great egret, blue heron, snowy egret, woodstork)
- Predators (Bobcat, Red fox, Yellow rat snake, Bald eagle, Osprey, River Otter, Mink, American alligator, feral hogs)

- Producers (Smooth chord grass, yaupon holly, american beauty berry, live oak, cabbage palmetto)

Procedure Part 2 - Diorama or Poster

Students use resources and notes to create a story for one of their food web animals that describes its habitat and its life there.

Each story should contain what that animal needs to survive, including shelter, food, water, climate and light. Other details to be considered are relative abundance, ratio of habitat to population size, and conservation status. What special relationships might this animal be in, such as mutualistic, commensalistic, or parasitic? What is this animal's relative importance to maritime forest ecosystem?

To illustrate the animal's story, students create a diorama or small 3D model of the animal in its habitat. This can be done with small tokens, toys, shells, small stones, aluminum foil, plastic wrap, dried plants, and the like attached in a shoebox or other open container. Another appropriate product is a poster or tri-fold showing the animal in its habitat, with other common populations of plants, animals, and decomposers. The students present their products as they tell the stories of their animals to their classmates and others.

Culminating Assessment Questions

- Which organisms in your food web are producers? Consumers? Herbivores? Carnivores? Omnivores?
- Describe the perfect dinner for your animal.
- What roles does each organism play in the food web?
- What would happen if your animal and all the others like it disappeared? How would that affect the food web and the ecosystem?
- How does each animal defend and protect itself from predators?
- Describe what would happen to your animal if the habitat changed, such as a flood, drought, fire, building of a highway, shopping center or human housing development.
- How do humans affect your animal and others like it? What threats do humans present? How does our behavior support your animal's chances of survival?
- What can we do to encourage your animal species to thrive?

This field trip module is possible through a grant from Community Foundation of the Lowcountry.

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SPECIAL THANKS

to Lois Lewis who helped design and create this field trip module.