

Living Coast Discovery Center Field Trip Resource Packet

Eat, Not Eaten

In this packet you will find lessons and resources related to your Living Coast field trip. The first two activities are intended to bookend before and after your trip, followed by additional resources.

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Food Chain Introduction

Lesson Objectives:

- Students will be able to describe a food chain and how different producers and consumers are interconnected in an ecosystem
- Students will be able to define producer, consumer, carnivore, herbivore, omnivore and decomposer

Standards:

- **MS-LS2-1** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **MS-LS2-3** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- **MS-LS2-4** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Materials:

- Whiteboard (for teacher)
- Computers to access <http://plattebasintimelapse.com/education>

Outline:

Begin the lesson with the question: "What did you eat for dinner last night?" Break responses down into individual ingredients (separate lasagna into pasta, beef, tomatoes, and cheese) and write them on the board.

Once you have a broad sampling, begin categorizing the ingredients into producers, and consumers. Use questions such as:

- Which of these foods come from plants?
- Which of these foods don't come from plants? (If mushrooms are on the board, remember that technically mushrooms are fungi not plants!)

At this point, introduce the idea of producers as plants, or more scientifically, as organisms that make their own food through photosynthesis. Introduce the idea of consumers as animals, or more scientifically, as organisms that eat producers or other consumers.

Break down the consumer category further into herbivore, carnivore, omnivore, and decomposer. Use questions such as:

- Of the consumers, which are animals that eat plants?
- Which are animals that eat other animals?
- Which eat both?

- Are there any decomposers? (Mushrooms, crab, shrimp, and lobster are likely to be the only decomposers.)

Introduce the vocabulary words herbivore, carnivore, omnivore, and decomposer at this point and give the formal definitions.

Have students go to <http://plattebasintimelapse.com/education> to view examples of simple food chains and food webs.

Sweetwater Marsh Food Web

Lesson Objectives:

- Students will be able to describe a food chain and how different producers and consumers are interconnected in an ecosystem
- Students will be able to explain how an animal missing in their food chain will affect the health of an ecosystem

Standards:

- **4-LS1-1** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- **4-LS1-2** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- **5-LS2-1** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Materials:

- Sweetwater marsh animal list
- What eats what? document
- Paper and pencil

Outline:

Have students construct two food chains, using the animal list and the “what eats what” document to assist. They should make one aquatic and one terrestrial food web. Food chains can be as simple as written animal names on a sheet of paper. Students could also look up the animals that they use in their web and cutout or draw pictures to include.

Extension:

Present students with a natural disaster or human impact situation. Brainstorm how it might affect the ecosystem (ex. An earthquake could destroy burrows, habitat loss would get rid of trees/bushes) Have them look back at their food webs and discuss how their webs would change.

Ecosystems Out of Balance

Assign a “fuzzy situation” to a group of students (see below) to solve. Encourage students to be creative, but let them know they need to back up their choices. For example, if they want to invent a plant that doesn't need the sun for energy they can, but they must say what the plant will use instead.

Fuzzy Situation #1:

You are an astronaut who helped set up a new community on the dark side of the moon where it is very cold and dark. You need food to survive, but it is very expensive to ship food from Earth. Design an ecosystem to meet your needs.

- What problem do you need to solve first? (Hint: Why do things not grow on the moon already?)
- Be creative: Design specific producers, primary consumers, and secondary consumers. Remember to describe any special non-living factors in your ecosystem.

Fuzzy Situation #2:

You are an ecologist who has been called in for an emergency situation in Fox Mountain, USA. Their annual Fox Festival is coming up and the town is in a panic! All of the foxes are dying, and they want your help. After conducting a preliminary investigation, you find that the song sparrow population, on which the foxes feed, is dying as well.

- What could be the cause of this catastrophe?
- What other problems could result if this isn't fixed?
- How do you propose to solve it?

Fuzzy Situation #3:

You are scuba diving in the Gulf of Mexico on vacation with your family when you come across a fish graveyard in a very cold spot of water. There are tons of dead fish - but the weird part is that they are perfectly preserved and have not rotted. You bring a few samples on shore, have them tested at a nearby lab, and conclude that they all died at the same time - 10 years ago!

- What catastrophic event could have caused the massive death? Be specific!

After swimming around a little more, you find more fish graveyards containing fish that died at various times throughout the last 10 years. The ocean floor is littered with dead fish bodies!

- What things could be missing in this ecosystem? List at least
- By this time you've adopted this area as your personal project. How are you going to fix this situation?

Fuzzy Situation #4:

The world's population is growing at a very rapid rate (that's TRUE!). Meanwhile, as cities develop, farmland is getting harder and harder to find (also TRUE!). You are a new farmer who is out to earn a buck...

- What will you farm? Animals? Plants? Both? What are the advantages and disadvantages of each?
- What things in your ecosystem do you want to control?

Food Chain Vocab List

Abiotic Nonliving material

Adaptation The process by which plants and animals change their structure, form or behavior to increase their chances of survival in a given habitat.

Camouflage The appearance of an animal that enables it to hide or blend in with its surroundings.

Consumer An animal that eats plants or other animals for food.

Community A group of plants and animals living in the same area and depending on one another for survival.

Competition When two or more organisms attempt to use the same limited resources. Organisms often compete for food and space.

Decomposer Organisms such as bacteria that obtain energy by breaking down dead plants and animals into abiotic material.

Ecology The study of how organisms interact with living and nonliving parts of their environment.

Ecosystem A unit consisting of a community interacting with its physical environment.

Environment The combination of all factors that affect and influence the growth, development and reproduction of organisms – water, air, vegetation, animals, human elements, climate and location.

Food Chain The transfer of food energy for the source in plants through a series of animals, with repeated eating and being eaten

Food Web An interlocking pattern of food chains.

Habitat The place in which a plant or animal lives.

Niche The specific role played by an organism in a community.

Organism A single living plant or animal.

Predator An animal that eats other animals; a carnivore,

Prey An animal eaten by another animal,

Producer An organism that uses sunlight to convert carbon dioxide, water, and nutrients into food,

Scavenger An animal that eats the remains and wastes of plants and other animals.

Useful Links

Food Chain Introduction Videos

To videos about food chains from PBS

<https://www.pbslearningmedia.org/resource/idptv11.sci.life.oate.d4kfch/food-chain/>

<https://www.pbslearningmedia.org/resource/thnkgard.sci.ess.chain/think-garden-whats-a-food-chain/support-materials/>

Website Resource

Website with ecosystem-specific printables

<https://www.exploringnature.org/db/view/Food-Web-Activities>

Mountain Scramble

More complex ecosystem game that gets into population numbers and balance.

https://pbskids.org/plumlanding/games/ecosystem/mountain_scramble.html

Decomposers and Scavengers

Extension videos about decomposers and scavengers and their importance to the ecosystem.

<https://www.pbs.org/video/natureworks-decomposers-and-scavengers/>

Food Chain Art Project

Art project to make a visual representation of a simple food chain

<https://www.youtube.com/watch?v=85780-m9B9s>