



Wetlands Web

Overview: In this activity, students will discover the different parts of a wetlands food web through discussion and by making a living food web. Then they will explore how the food web is affected when one aspect of it is disturbed.

Science Content Standards Correlations: pg 11

Activity Adapted From: Marsh Market, The Wonders of Wetlands

Grade: 4

Key Concepts: All the organisms in a food web depend on one another. If one aspect of a web is affected by something there can be a ripple effect through the entire food web.

Objectives:

Students will be able to:

- describe a food web including: producers, consumers and decomposers
- describe what happens to an entire food web when one aspect of it is disturbed

Possible Locations:

- anywhere on Refuge

Materials Provided by the Refuge:

- diagram of a food web
- 25 food web nametags
- string

Time Frame for Conducting this Activity (25 minutes)

Exploring the Wetlands Food Web (6 minutes)

- what a food web is
- primary producer, primary/secondary/tertiary consumer, decomposer
- how energy passes through a food web

Constructing the Wetlands Food Web (10 minutes)

- handout nametags
- use string to make the wetlands food web

Scenarios (6 minutes)

- see how the different scenarios affect the wetlands food web

Discussion (3 minutes)

- humans are part of food webs too
- the entire food web can be affected by one incident

How this Activity Relates to the Refuge's Resources

What are the Refuge's resources?

- significant wildlife habitat
- endangered species
- migratory birds
- resident wildlife

What makes it necessary to manage the resources?

- Wildlife may eat or become entangled in trash such as balloons, fishing line and Styrofoam peanuts.
- Loss of wetland habitats for wildlife due to development, such as landfills, buildings, agriculture land, roads, etc makes it more difficult for wildlife to find food, water, shelter and space.

What can students do to help?

Refuge staff acquire and preserve wetland habitat, but we need your help!

- be responsible for your own trash
- reduce, reuse and recycle, decreasing the need for landfills
- never dump anything down storm drains – pollution can contaminate and destroy wildlife habitat
- adopt a wetland or an endangered species
- only take your dog to place they are permitted and keep it on a leash
- keep your cat inside your house; they catch birds
- teach others what you have learned about habitats and endangered species

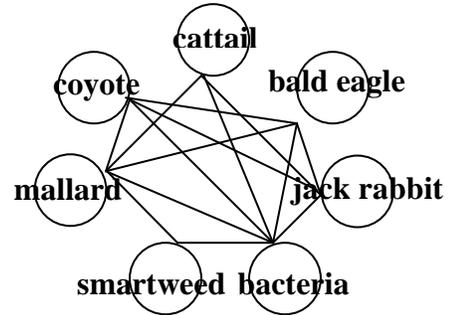
Supporting Information About This Activity

Wetland Food Webs

- A food web is a complex system of food chains where energy passes among organisms.
- The vast number of plants growing in a healthy wetland form the basis of a food web. A wetland with a great diversity of plant life will attract higher numbers and more types of animal species.
- Plants are called **primary producers** because they supply food at the lowest level of a food web. It takes an enormous number of individual plants to support the other parts of the food web. Wetland habitats are extremely productive in terms of plant life.
- **Primary consumers** (plant-eaters or herbivores) are the next level of a food web. Primary consumers include rabbits, mice, deer, some insects, fish, ducks and geese, etc.
- Primary consumers are eaten by **secondary consumers** (meat-eaters or carnivores). This group includes predators such as birds of prey, some snakes, foxes, wild cats and people.
- Secondary consumers are eaten by **tertiary consumers** (predators or scavengers), such as turkey vultures, crabs and sometimes people.
- Note these categories are very broad and general. Many animals fit into more than one group, and there are more complex levels of a food web.
- Any food web components mentioned above can be broken down by **decomposers**, organisms such as bacteria and fungi that reduce dead plant or animal matter into smaller particles. For example, a decaying plant will be broken down into nutrients that enrich the soil. This process supports the growth of more plants.

Prior to Activity

- When you make your living wetlands food web with the students, it should look something like this:



How to Lead This Activity by Following the “Do, Read, Ask” Teaching Format

Exploring the Wetlands Food Web (6 minutes)

Do

Have students sit down in front of you.

Ask

? Can anyone tell me what a food web is?

(A complex system of food chains where food energy passes among organisms (living things) as each eats or is eaten by others.)

Read

“Today we’re going to explore a wetlands food web and each of you are going to become a part of that food web. Then we’re going to discover what happens to our entire food web when one aspect of it is disturbed.

“Let’s start by looking at the different parts of a food web.”

Ask

? The lowest level of a food web consists of primary producers. Does anyone know what you could find in a wetland that would fall into that category?

(Plants are primary producers – cattails, bulrush, smartweed...)

? The next level of a food web consists of primary consumers. What do you think falls into this category?

If they're having trouble, ask if this level consists of herbivores (plant eaters) or carnivores (meat eaters).

(Herbivores are primary consumers – rabbits, deer, geese...)

? Next we have secondary consumers. If herbivores are primary consumers, what do you think secondary consumers are?

(Carnivores are secondary consumers – golden eagles, coyotes, mountain lions...)

? There's even another level of consumers called tertiary consumers. This level may consist of other predators and scavengers. Can anyone think of an example of a tertiary consumer?

(Turkey vultures)

? There's one more level to our wetlands food web and that's decomposers. Does anyone know what decomposers do in a food web?

(Organisms such as bacteria and fungi reduce dead plant or animal matter into smaller particles. These decomposers are helpful to the environment, for example, decaying plants will be broken down by decomposers into nutrients that enrich the soil, and this process supports the growth of more plants.)

Do

Hold up the diagram of a food web while you're talking about the flow of energy, point out the different parts as you mention them.

Read

"Food energy passes among organisms in a food web as each eats or is eaten by others. For example, a primary producer, such as aquatic plants (*plants that grow in water*), gets energy from the sun and nutrients from the soil to help them grow. Then a primary consumer, such as a mallard eats the plant and gets energy. Then a secondary consumer, such as a coyote eats the mallard and gets energy. Unfortunately, the

coyote didn't find enough food and didn't make it through the winter, so a tertiary consumer, such as a turkey vulture eats the coyote's remains and gets energy. However, there was still dead plant and animal matter left lying around the Refuge; that's where the decomposers come in and break down the matter into smaller particles.

"Any questions?"

"OK, now that we've explored a food web, let's build one!"

Constructing the Wetlands Food Web (10 minutes)

Do

Have the food web nametags ready to pass out to the students as they name off the different parts of a wetlands food web.

Save a plant nametag for yourself.

Read

"Each one of you is going to become an organism that is part of a wetlands food web. As you raise your hand and name an organism that can be found in a wetlands food web, I'll give you a nametag to wear. OK, what types of plants and animal can be found in a wetlands food web?"

Do

Have the students name organisms until everyone has a nametag.

Make sure there's an assortment of primary producers, primary/secondary/tertiary consumers and decomposers.

Read

"OK, now that everyone is a wetlands organism, we have to make our food web!"

Do

Get the string and have the students stand in a circle.

Read

“I’m going to start our food web. As a plant, I’m going to find something that eats me. (*Do*) I’m going to hold onto the end of the string and pass the string onto the organism that eats me. Next, that student needs to hold onto the string and then pass the rest of it to an organism that eats their organism or to something that their organism eats.

“We’ll keep passing the string around until we’ve constructed our food web.”

Do

Have the students make as many of the possible connections as possible, with each student getting at least one connection.

Scenarios (6 minutes)**Read**

“OK, now that we’ve made our wetlands food web let’s discover what happens to the entire food web when one aspect of it is disturbed.

“I’m going to read a scenario then we’re going to see what happens to our food web.

“It is raining. A lawn-care company’s truck skids and crashes near the wetland, spilling hundreds of gallons of weed killer. The rain washes the chemicals into the wetlands.

“That can’t be good for our food web...”

Ask

? What organisms do you think are affected by this accident?

(Primary producers/plants)

Read

“If you are a primary producer/plant, raise your hand and keep it raised until the end.

“Everyone look around...”

“If you are connected to someone with their hand raised, raise your hand.

“Look around again, if you are connected to someone with their hand raised now, raise your hand.”

Do

Keep doing this until everyone has their hand raised.

Read

“As you can see the entire web was affected by something that originally affected only the plants.

“OK, hands down. Next scenario; a stream is blocked by a huge pile of dumped garbage. The part of the stream that usually flows through the wetland dries up.”

Ask

? What organisms do you think are affected by this accident?

(Primary consumers/fish)

Read

“If you are a primary consumer/fish, raise your hand and keep it raised until the end.

“Everyone look around...”

“If you are connected to someone with their hand raised, raise your hand.

“Look around again, if you are connected to someone with their hand raised now, raise your hand.”

Do

Keep doing this until everyone has their hand raised.

Read

“Again, everyone was affected.”

Ask

? Can anyone think of one more scenario that might affect our food web?

(A possibility: The wetland is filled in when someone buys the land and builds houses on it. (everyone is affected at once))

Do

Collect the string from the students. If you leave them holding it, they'll be paying attention to the string, not you.

Discussion (3 minutes)

Ask

? Did you know even humans are part of the wetlands food web? What do you think humans eat that can be found in the wetlands?

(Ducks, geese, deer, blackberries, cranberries, wild rice...)

? Remind me, when one organism was affected by something, what happened to the rest of our food web? Why?

(Everything in our food web was affected because all organisms are connected.)

Read

“When you’re out in the wetlands or even in the forest or at the ocean remember that one incident can affect an entire food web because food webs are all interconnected – and you may even be a part of that food web.

“OK, make sure you get your food web nametags to me.

“Any questions?”

Do

If you’re the last group to use this activity gather all the materials and bring them into the visitor center or to the Refuge staff member that was helping your group. Thank you!