



Wetlands Who's Who

Overview: In this activity, students will discover what an adaptation is. Then they will decide which adaptations belong to actual animals or plants, but here's the trick – they're all real! And they all can be found at the Refuge!

Activity Adapted From: Can It Be Real?, Project Learning Tree

Recommended Grades:
3 and up

Key Concepts:

Adaptations in physical structure or behavior may improve an organism's chance for survival.

Objectives:

Students will be able to:

- explain what an adaptation is
- describe four or more adaptations that plants and/or animals on the Refuge have

Possible Locations:

- anywhere on Refuge

Materials Provided by the Refuge:

- photos of plants and animals used in the activity

Time Frame for Conducting this Activity (20 minutes)

Adaptation Introduction (5 minutes)

- what an adaptation is
- examples of adaptations in birds
- have them think of some adaptations

Adaptation Activity (10 minutes)

- explain activity
- descriptions of adaptations

Discussion (5 minutes)

- all of the adaptations were real and can be found on the Refuge

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

Adaptation

- When an organism's environment changes, the organism must either move, adapt or die out. The changing of an organism over time that makes it suited to its environment is called adaptation.
- Structural adaptation is the result of the combined effects of variation and the selecting power of the environment. Here is an example of how it works. Suppose that plants in a population have differing capacities for producing cutin (a waxy, outer coating) on their leaves. Some individuals are heavily covered with this protective layer, and others are only thinly covered. If the climate becomes drier, as it did in the Sahara Desert, plants with thicker cutin will not dry as fast as those with thin cutin and may live to produce seeds. They have been "selected." Succeeding generations will also show variability, and those with the best protection against drying will be the only ones to live and reproduce. In this instance, only one feature - cutin covering, has been pointed out, but in reality a plant would have to possess a whole range of features that work together. It is the species, not the individual that adapts structurally.
- Individual animals can adapt by changing their behavior.
- Some scientists estimate that we share this planet with 10 to 30 million different species of plants and animals, most of which are insects. Each of these species possesses an array of adaptations that enable it to live in its environment. While some of these adaptations may seem abnormal to us, they help to ensure the survival of the species.

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

Adaptation Introduction (5 minutes)

Do

Have students sit down in front of you.

Ask

? Today we're going to discover some cool adaptations that wildlife and plants have.

Can anyone tell me what an adaptation is?

(If a species has an adaptation that means it changed physically or behaviorally to improve its conditions in its environment. Individuals can also adapt behaviorally, but not physically.)

Read

"Lots of things have adaptations; birds are great examples of adaptations. For example, they have feathers, allowing them to fly while being sturdy and flexible at the same time. Birds can spread and clean these feathers with their beaks, then pull them back together when they need to fly.

"Another adaptation certain birds have is webbed feet. Ducks, geese and swans have webbed feet to help propel them through the water with little effort, it also helps them walk on the soft-wet ground in the wetlands."

Ask

? Can anyone else think of other adaptations wildlife, plants or even people have?

(Lots of possibilities, but here are some examples in case you get a quiet group:

-Camouflage to blend into environment, which helps to either hide from predators or sneak up on prey.

- Brightly colored feathering helps male birds attract a mate.

-Some animals have scales to help protect themselves from their environment.

-Cattails normally have their roots under water, so they have hollow stems so they can get oxygen from the top of the plant rather than the roots.

-Humans have opposable thumbs!)

Adaptation Activity (10 minutes)

Read

"Some adaptations are pretty hard to believe, so we're going to take a look at some adaptations

and you're going to decide if you think the adaptation belongs to a real animal or plant or if you think the adaptation is made up.

"I'll start by telling you about the adaptation, then move to the left side of the trail if you think it's real or move to the right side of the trail if you think the adaptation is made up.

"Any questions?"

"OK then, let's get started!"

"This crustacean can move in any direction and overcome obstacles easily, if any of its legs are broken off they can regenerate. It can change color to match its habitat and it breathes through gills.

"If you think these adaptations belong to a real animal move to the left side of the trail, if you think it's made up move to the right side."

Do

Compare the two groups.
Hold up photo of the crayfish.

Read

"A real animal does have this adaptation and it's called a crayfish. It has five pairs of jointed legs that allow it to move around easily. It also has swimmerets (small appendages) that are used for balance and swimming. If any of its legs, pincers or swimmerets break, new ones can regenerate.

"OK, next adaptation; this bird uses its bill to scoop up water with tiny particles of food then pushes the water out of its bill while keeping the tiny particles of food inside.

"If you think a real bird has this adaptation move to the left side of the trail, if you think it's made up move to the right side."

Do

Compare the two groups.

Hold up photo of the northern shoveler.

Read

"A real bird does have this adaptation; a duck's bill is designed like a flat strainer, which enables it to run water through it and collect a great deal of suspended material from ponds. Northern shovelers are a great example of this because of their broad bills; some people even call them "spoonies" because of their bill.

"OK, now let's talk about a possible insect adaptation. This insect is well suited for wetlands life because it can walk on water.

"If you think a real insect has this adaptation move to the left side of the trail, if you think it's made up move to the right side."

Do

Compare the two groups.
Hold up photo of the water strider

Read

"Those of you who thought that was a real adaptation were right! A water strider has specialized, paddle-like legs that enable it to skate over the surface of the water, riding on the surface tension between the water and air. Water striders can be found throughout North America.

"Next up we have a mammal with dark-brown fur that loves the water. It has valves in its ears and nostrils to keep the water out. Its fur is waterproof and it has webbed feet.

"If you think a real animal has these adaptations move to the left side of the trail, if you think it's made up move to the right side."

Do

Compare the two groups.

**By this point some of the kids may be catching on that all of the adaptations are real, if so you can ask them to guess the animal or plant after you've described it.

Hold up photo of the river otter.

Read

“You guessed it - this animal is real! The river otter is an incredibly playful creature that can have up to one million hairs per square inch on its back to help keep dry. Webbed feet help it swim fast. It can stay underwater for several minutes thanks to ear and nostril valves.

“Plants also have adaptations. But is this one real or made up? This plant can suck up salty water through its roots, utilize the water and squeeze out the salt from its leaves.

“If you think a real plant has this adaptation move to the left side of the trail, if you think it's made up move to the right side.”

Do

Compare the two groups.
Hold up photo of saltgrass.

Read

“Yep, it's real! saltgrass can grow in alkali (salty) soils because it extracts the salt from the water, you can actually see and taste the salt crystals on the sharp-pointy leaves.

“How about another bird adaptation; this bird is able to hear the location of its prey even in pitch black. Also, it flies silently, allowing it to swoop down on prey before the animal has any warning.

“If you think a real bird has these adaptations move to the left side of the trail, if you think it's made up move to the right side.”

Do

Compare the two groups.

Hold up photo of the great-horned owl.

Read

“Those are real adaptations; great-horned owls have two ears, but one is an inch higher than the other; allowing them to hear the location of their prey on both a horizontal and vertical axis. Owls are able to fly silently because their flight feathers have soft, loose edges that muffle the sound made by the powerful wings. Another adaptation is that owls are able to rotate their head up to 270 degrees.

“How about another possible insect adaptation; this insect takes a bubble of air with them underwater so they can swim for several minutes without coming up for air.

“If you think a real insect has this adaptation move to the left side of the trail, if you think it's made up move to the right side.”

Do

Compare the two groups.
Hold up photo of the diving beetle.

Read

“The diving beetle requires a supply of air to stay underwater for minutes at a time. They take air underwater in a bubble that is attached to them.

“OK, one more possible adaptation; when approached, this secretive bird will freeze and rely on its camouflage to conceal it from predators. It may even stretch its neck up, point its bill into the sky and sway from side to side, imitating waving reeds.

“If you think a real bird has this adaptation move to the left side of the trail, if you think it's made up move to the right side.”

Do

Compare the two groups.

Hold up photo of the American bittern.

Read

“Yes, this is a real adaptation. The American bittern has adapted its camouflage so well that it rarely needs to flee from predators. It also uses its behavioral adaptation to elude predators.”

Discussion (5 minutes)

Read

“Did you notice that all of the adaptations we talked about belonged to real plants and animals?”

Ask

?Have any of you seen these animals or plants? Where at?

(Answers may vary.)

Read

“If you are good wildlife watchers you may actually see all of these plants and animals on this field trip - because all of these plants and animals can be found on the Refuge!

“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!