

PLANT & ANIMAL ADAPTATIONS

Grades: 3 – 6

50 minutes

Learning Objectives: explore some of the ways that plants and animals have adapted. Touch on natural selection and photosynthesis.

Materials:

Some items that demonstrate adaptations (seed, pine cone, snake skin etc.

Hickory nuts and a bone chewed by a squirrel.

Clear plastic jar in case you find something to show that might get away.

Rubber bands, enough to have 2 per student

Yarn for Birds and Worms activity (check site, rake if needed before activity)

Discuss different adaptations of several plants. Animals show up unexpectedly. If something shows itself, discuss an adaptation that it has. Green Anoles are good to show color change from green to brown/grey. Put a grey anole in a plastic jar and it will usually turn green. The throat fan is called a dewlap.

Adaptations are structural or behavioral changes that help organisms survive.

Adaptations enable some organisms to survive while others without the adaptations don't survive. The survivors produce offspring with the favorable adaptations. This process is known as **natural selection** (Survival of the fittest) and allows species to survive as their environment changes.

Name an animal or creature and ask a student to think of an adaptation that it has.

Choose your own, or ones from the list.

You can start by giving this example or anything else you prefer: Fox, Beaver and other mammals grow extra fur in winter and shed fur in warmer months. Goose bumps are a left over from this adaptation since we are not covered with fur.

Snail – slime

Turtle – shell

Birds – flight

Owl – eyesight

Fish – gills

Faun – speckled fur

Cat – whiskers

Skunk – smell

Spider – silk

Everything you encounter has some sort of adaptations that helps them survive in their habitat.

Thumb Bands: objective is to appreciate the importance of an opposable thumb.

Give each student two rubber bands to wrap around their thumbs and then their palms. Explain that you don't want to cut off circulation, but you want a reminder to not use their thumbs for the task they are about to do. Once they all have the bands on, (put two on yourself), ask them to untie and tie their shoes. If a student does not have laces, look to your adults to use their shoes.

After trying, and checking that they are not “cheating”, discuss that the opposable thumb is a valuable adaptation that people and some animals have.

Birds and Worms

Objectives: Concepts of **Camouflage** and **Natural Selection**

Materials: about 60-80 2 inch long pieces of yarn. 1/3 brightly colored, 1/3 nature tones, 1/3 muted earthy colors.

Before students arrive, select a grassy area and randomly distribute the yarn pieces. Take the group to the area and have them stand at one end. Explain to the students that they are small hungry birds looking to eat a single worm to make them full. There are a lot of different colored “worms” attempting to hide from them so they won’t be eaten. Define the boundaries and line the “birds” up at one end. For each round have students find one worm and return to the starting spot. Collect worms. Run several rounds until the majority of the worms have been picked up. Gather in a circle and present each round collected. Discuss which colors were easiest to find; which were hardest; which (if any) were not found at all. Students will discover that brown and tan worms were hardest to find. Why? **Camouflage** (the way an organism conceals itself by blending in with its environment). The color of worms is the color of soil. If worms used to come in a variety of colors, only the brown ones would have survived and reproduced. So eventually most worms became brown (this is known as **Natural Selection**).
REDISTRIBUTE WORMS FOR NEXT GROUP.

An additional activity or discussion can be added about different caterpillars or bugs that are brightly colored and why they might be that way. Their color says something about where they live whether they are poisonous or mimicking another insect that is poisonous.

Vines

While walking, point out the large grape vines. Vines over the “keep out” building are a good example. When the vines sense that they touch something they begin to curve toward it and wrap their curly cues – tendrils - around it. By using this means of support it can climb up to the treetops and get more sunlight. (Smilax, also called Green Briar has similar tendrils and twining) Plants need the sunlight to produce food, **Photosynthesis**. Grape vines are recognizable because they are free hanging “Tarzan vines” once they become old and established in the tree tops.

Other vines like Poison ivy, Virginia creeper and Cross vine also climb to the tree tops but use short roots to climb up a tree trunk or other support instead of tendrils and twining. Their stems remain firmly rooted to the trees that they climb. If there is time, find and identify Poison Ivy.

Findings

Have the students sit while discussing seeds, nuts, and any findings they ask about. You can discuss any adaptations you find appropriate. Hickory nuts are always available and a good choice. Camouflaged moth and snake skin can be shown.

The hard shell of a hickory nut protects the seed. When conditions are right the nut will sprout and grow into a tree. Animals use them for food, some animals like squirrels will carry them away and bury them as a way to store food. Lots are forgotten and grow into new trees. Because they have very hard and thick shells, hickory nuts take a long time to sprout, so there is a good chance that the squirrels will find some of the hidden nuts to eat later. **Squirrels have the useful adaptation of front teeth that keep growing** (like our fingernails). This allows them to be able to eat foods that other animals can't because squirrels constantly need to wear down their teeth to stay healthy. If they didn't, their teeth would curl under and the squirrel would starve. Squirrels also gnaw on other hard things like bones and antlers.

Name some other trees that have seeds with hard shells; oaks walnuts and pecans. These hard shelled **seeds that are hidden by animals is an adaptation of the plant** to help the seeds move away from under the tree where they fall so that some of them will grow up somewhere else. What are other ways that plants have adapted to disperse their seeds? Float on the air like dandelions. Winged seeds that twirl in the wind like maple and pine tree seeds. Berries that are eaten and the seeds excreted. Seeds that stick to fur or our clothing will fall off later.

Aquatic adaptations can be added if Pond Study is not part of the field trip.

Everything you encounter has some sort of adaptation that helps them survive in their habitat.

Information for Thumb Bands and Birds and Worms was adapted from a lesson developed by the Brandywine Valley Association, West Chester, PA

Rotation locations when more than one class has this lesson

Birds and Worms – Picnic table behind pool or at log by BPS2

Aquatic adaptations – Pond deck

Thumb bands and findings– BPS fire circle

Vines – Old building over bridge on hiking trail