Mammal

Earth & Space Science | Lesson Guide

3rd Grade

Photo Description

A gray squirrel sits in a garden holding a bright orange piece of food in its front paws. The squirrel is surrounded by green plants and flowers. You can see the squirrel's bushy tail, small ears, and dark eyes as it enjoys its snack.

Scientific Phenomena

This image represents the Anchoring Phenomenon of animal adaptation for survival in different environments. The squirrel demonstrates how animals have developed specific body parts and behaviors that help them find, gather, and eat food. The squirrel's front paws work like hands to hold food, its sharp teeth can bite through tough materials, and its behavior of eating in a safe location shows survival instincts. This phenomenon occurs because animals have evolved traits that increase their chances of surviving and finding the resources they need.

Core Science Concepts

1. Animal Body Parts and Functions: Squirrels have specialized body parts like flexible front paws for grasping, sharp teeth for gnawing, and strong hind legs for jumping and climbing.

2. Habitat and Survival Needs: Animals live in environments that provide food, water, shelter, and space. This garden habitat offers the squirrel food sources and plants for cover.

3. Animal Behaviors: Squirrels exhibit learned and instinctive behaviors like food gathering, storing food for winter, and staying alert for predators while eating.

4. Human Impact on Animal Habitats: Gardens and urban environments show how humans can create spaces that support local wildlife by providing food sources and shelter.

Pedagogical Tip:

Use the "See-Think-Wonder" thinking routine with this image. Have students observe what they see, share what they think is happening, and generate questions they wonder about. This builds scientific thinking skills and engages natural curiosity.

UDL Suggestions:

Provide multiple ways for students to share observations: drawing, verbal descriptions, acting out squirrel movements, or using digital tools. This supports different learning styles and abilities while keeping all students engaged in scientific observation.

Zoom In / Zoom Out

1. Zoom In: At the cellular level, the squirrel's digestive system breaks down food into nutrients that travel through its bloodstream to provide energy for all body functions. Special enzymes in the squirrel's stomach and intestines help process different types of foods like nuts, seeds, and fruits.

2. Zoom Out: This squirrel is part of a larger urban ecosystem that includes trees, plants, insects, birds, and humans. Squirrels help disperse seeds throughout the environment when they bury nuts and forget where they put them, helping new trees grow and maintaining the health of the broader forest ecosystem.

Discussion Questions

1. What body parts help this squirrel survive in its environment? (Bloom's: Analyze | DOK: 2)

2. How might this squirrel's life be different if it lived in a forest instead of near people? (Bloom's: Evaluate | DOK: 3)

3. What evidence do you see that shows this habitat meets the squirrel's needs? (Bloom's: Apply | DOK: 2)

4. Why do you think the squirrel is holding its food instead of eating it on the ground? (Bloom's: Analyze | DOK: 2)

Potential Student Misconceptions

1. Misconception: "Squirrels only eat nuts and acorns."
   Scientific Clarification: Squirrels are omnivores that eat a varied diet including fruits, vegetables, seeds, fungi, insects, and sometimes bird eggs.

2. Misconception: "Animals in cities don't have real habitats."
   Scientific Clarification: Urban environments can provide suitable habitats with food, water, shelter, and space that meet animals' survival needs.

3. Misconception: "Feeding wild animals is always helpful."
   Scientific Clarification: While occasional feeding may not harm animals, they are healthiest when they find natural food sources and maintain their wild behaviors.

Cross-Curricular Ideas

1. Math - Measurement & Data: Have students measure the length of different foods in the garden (carrot piece, nut, seed) using non-standard units like paper clips or blocks. Create a bar graph showing which foods are longest or shortest. This connects to squirrel food preferences and sorting by size.

2. ELA - Narrative Writing: Students write a story from the squirrel's perspective about finding food in the garden. Use sentence frames like "I was hungry, so I..." and "I felt happy when..." to scaffold descriptive writing while building empathy for animal experiences.

3. Social Studies - Community Helpers: Explore how park rangers, zookeepers, and wildlife biologists help protect animals and their habitats. Students can create "Help Wanted" posters for jobs that protect wildlife in their community.

4. Art - Observation Drawing: Students create detailed sketches of the squirrel, focusing on specific body parts (bushy tail, paws, ears). This combines scientific observation with artistic technique and reinforces understanding of animal adaptations through careful looking.

STEM Career Connection

1. Wildlife Biologist - A scientist who studies animals like squirrels in nature. They watch how animals live, what they eat, and how they survive in different places. Wildlife biologists help protect animals and their homes. Average Salary: $65,000 USD

2. Park Ranger - A person who takes care of parks and gardens where wild animals live. Park rangers make sure animals are safe, teach people about nature, and help keep habitats healthy for squirrels and other creatures. Average Salary: $42,000 USD

3. Veterinarian - A doctor who takes care of animals' health and helps them when they are sick or injured. Some veterinarians work with wild animals like squirrels to make sure they stay healthy and strong. Average Salary: $95,000 USD

NGSS Connections

Performance Expectation: 3-LS4-3 - Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Disciplinary Core Ideas:
- 3-LS4.C - Environmental changes can affect organisms and their survival
- 3-LS1.B - Organisms have unique and diverse life cycles

Crosscutting Concepts:
- Cause and Effect - Students can identify how environmental factors cause different survival outcomes
- Structure and Function - Animal body parts have specific functions that help with survival

Science Vocabulary

* Habitat: The natural place where an animal lives and finds everything it needs to survive.
* Adaptation: A special body part or behavior that helps an animal survive in its environment.
* Omnivore: An animal that eats both plants and other animals.
* Survival needs: The basic things all animals need to stay alive: food, water, shelter, and space.
* Environment: All the living and non-living things in a place where organisms live.

External Resources

Children's Books:
- Nuts to You! by Lois Ehlert
- Squirrels Leap, Squirrels Sleep by April Pulley Sayre
- Those Darn Squirrels! by Adam Rubin