Animal Behavior

Life Science | Lesson Guide

5th Grade

Photo Description

This image shows a green lizard resting on tree bark. The lizard has bright green scales on its head and body, white and light-colored scales on its lower jaw and throat, and a distinctive dark stripe running through its eye. You can see the detailed texture of its scales and how its body color blends in with the grayish bark of the tree behind it.

Scientific Phenomena

Anchoring Phenomenon: Why does this lizard's color help it survive in its habitat?

This lizard displays camouflage, a protective behavior where an animal's color and pattern match its environment. The green coloring helps the lizard blend in with leaves and green vegetation, making it harder for predators (like snakes or birds) to spot it. Additionally, the lighter coloring on its underside helps it blend with lighter tree bark. Over many generations, lizards with colors that matched their environment survived better and passed those traits to their offspring—this is an example of natural selection.

Core Science Concepts

* Adaptation: A trait that helps an animal survive and reproduce in its environment. This lizard's green color is a physical adaptation that helps it hide from predators.

* Camouflage (Cryptic Coloration): When an animal's appearance helps it blend in with its surroundings. The green and white coloring of this lizard makes it difficult for predators to see it against trees and plants.

* Predator-Prey Relationships: Predators hunt prey animals for food. This lizard's camouflage helps protect it from predators, which is one way prey animals survive.

* Behavior vs. Physical Traits: Some adaptations are things animals do (behaviors, like staying very still), while others are physical features animals are born with (like color or body shape).

Pedagogical Tip:

When teaching adaptation, use the "Why-How-What" sequence: Start by asking WHY the adaptation exists (survival), then explain HOW it works (mechanism), and finally identify WHAT the trait is. This scaffolds student thinking from abstract to concrete.

UDL Suggestions:

Provide multiple means of representation: Display high-resolution close-up photos of the lizard alongside its habitat. Some students may benefit from a labeled diagram highlighting the color differences between the lizard's upper and lower body. Consider offering a short video showing the lizard in its actual environment to reinforce how camouflage works in context.

Zoom In / Zoom Out

Zoom In: Cellular Level
At the microscopic level, the lizard's skin is made up of millions of tiny cells. Some of these cells contain special chemicals called pigments (like chlorophyll and carotenoids) that absorb certain colors of light and reflect others back to our eyes. The green pigment in the lizard's skin cells absorbs red and blue light but reflects green light, which is why we see it as green! These pigment cells work together across the lizard's body to create the overall green color we observe.

Zoom Out: Ecosystem Level
Zooming out, this green lizard is just one part of a much larger forest ecosystem. The lizard depends on green plants and insects for food, while predators like snakes and birds hunt the lizard. The lizard's green color is an adaptation that evolved over thousands of years because lizards that blended in with green plants survived longer and had more babies. This is part of the food web—a system where energy flows from plants to herbivores (like insects) to carnivores (like this lizard), and eventually to the lizard's predators. The entire forest ecosystem depends on these interconnected relationships and adaptations.

Discussion Questions

1. How do you think this lizard's green color helps it stay safe in a forest? (Bloom's: Understand | DOK: 1)

2. What would happen to this lizard if it lived on brown, rocky ground instead of green trees? Why? (Bloom's: Analyze | DOK: 2)

3. Compare this lizard to a desert lizard you might see. What different colors might a desert lizard have, and why would those colors help it survive? (Bloom's: Evaluate | DOK: 3)

4. Do you think camouflage is something the lizard learned, or something it was born with? How do you know? (Bloom's: Analyze | DOK: 2)

Potential Student Misconceptions

Misconception 1: "The lizard turned green to match the tree because it wanted to hide."
- Clarification: The lizard didn't choose to be green or decide to change colors to hide. The lizard was born with green scales because its parents had green scales. Over many, many generations, lizards with green coloring survived better in green forests and had more babies with green coloring. This is called natural selection—it happens naturally over time, not because animals make a choice.

Misconception 2: "All lizards are green because they all live in the same place."
- Clarification: Different lizards live in different habitats and have different colors. Some lizards are brown and live in deserts, some are gray and live on rocks, and some are green and live in forests. Each type of lizard has colors that match its own habitat. Camouflage is not the same for every animal—it depends on where they live.

Misconception 3: "Camouflage means the lizard can change its color whenever it wants, like a chameleon."
- Clarification: While some lizards (like chameleons) can change colors, most lizards like this one cannot. This green lizard is born green and stays green its whole life. Its camouflage works because its color stays the same as its habitat—it doesn't need to change. Camouflage is about having the right color for your home, not about being able to change colors.

Extension Activities

1. Camouflage Hunt Activity: Create a classroom "habitat" using colored paper (green, brown, gray) pinned to a wall. Hide small paper lizards of different colors throughout the habitat and have students try to find them. Discuss which colors were hardest to find and why. This demonstrates how camouflage works in real time.

2. Design-Your-Own-Lizard: Provide students with outline drawings of blank lizards and various colored markers/crayons. Ask them to design a lizard that would survive in a specific habitat you assign (rainforest, desert, snowy mountain, rocky canyon). Have them write or draw explanations for why their color choices would help their lizard survive.

3. Local Adaptation Hunt: If safe and age-appropriate, take students on a short outdoor walk to find real animals (insects, birds, etc.) that show camouflage or other adaptations. Have students photograph or sketch what they find and create a class poster showing "Adaptations in Our Community."

Cross-Curricular Ideas

Math Connection: Camouflage Statistics & Graphs
Have students conduct a "predator search" experiment where they hide paper lizards of different colors (green, brown, red, yellow) throughout a classroom "habitat" of colored paper. Record how many of each color students can find in a set time. Create a bar graph showing which colors were easiest and hardest to find. Discuss: Why do more students find the red lizards than the green ones? This connects probability, data collection, and graphing to the science of camouflage.

ELA Connection: Animal Adaptation Stories & Informational Writing
Students write a short fictional story from the lizard's perspective ("A Day in My Life as a Green Lizard") that incorporates facts about its habitat, diet, predators, and how camouflage keeps it safe. Alternatively, have students write an informational paragraph explaining camouflage to a kindergartener, practicing how to simplify complex ideas. This combines narrative and expository writing with science vocabulary.

Art Connection: Habitat Camouflage Dioramas
Students create small shoebox dioramas of different habitats (rainforest, desert, woodland) and design their own camouflaged animals using paint, colored paper, and natural materials (leaves, sand, twigs) to match their chosen habitat. Display the dioramas and have classmates guess which animal belongs in which habitat based on coloration and adaptation. This integrates visual art, design thinking, and ecological understanding.

Social Studies Connection: Biodiversity & Conservation Around the World
Research different lizard species from various regions (Europe, Africa, Asia, Australia) and create a world map showing where different lizards live and what their habitats look like. Discuss how climate change, deforestation, or habitat loss might affect lizards' ability to use camouflage. This connects to geography, cultural diversity of ecosystems, and environmental awareness.

STEM Career Connection

Wildlife Biologist
Wildlife biologists study animals in their natural habitats to understand how they survive, adapt, and interact with their environments. A wildlife biologist might spend time in forests observing lizards, recording their behaviors, measuring their sizes and colors, and studying how predators hunt them. They use this information to help protect endangered species and keep ecosystems healthy. Average Salary: ~$65,000 per year

Herpetologist (Reptile Scientist)

A herpetologist is a scientist who specializes in studying reptiles and amphibians like lizards, snakes, frogs, and turtles. They study how these animals adapt to different environments, what they eat, how they reproduce, and how their camouflage and other body features help them survive. Some herpetologists work in zoos or museums, while others do fieldwork in rainforests or deserts. Average Salary: ~$62,000 per year

Ecological Illustrator or Science Animator
These professionals create detailed drawings, paintings, animations, or videos that show animals like lizards in their natural habitats. They work with scientists to make sure every detail—like scale texture, color patterns, and background plants—is accurate and educational. Their work helps people understand animal adaptations through beautiful, clear visuals used in textbooks, museums, and nature documentaries. Average Salary: ~$58,000 per year

NGSS Connections

Performance Expectation:
5-LS1.A: "Support an argument that plants get the materials they need for growth chiefly from air and water"
Alternative relevant PE: 3-LS3.B & 5-LS4.A focus on variation and inheritance, which underpin this adaptation.

Disciplinary Core Ideas:
* 3-LS3.B - Individuals of the same kind vary in their traits (some lizards are greener, some browner).
* 3-LS4.C - Some kinds of plants and animals that once lived on Earth are no longer here; fossils tell us about them.
* 3-LS4.A - Different plants and animals live in different habitats and have different body structures that help them thrive there.

Crosscutting Concepts:
* Patterns - The green coloration of the lizard follows a pattern that matches its forest habitat.
* Structure and Function - The lizard's scales and color structure function to hide it from predators.
* Cause and Effect - Because the lizard is green, it can hide better; therefore, it survives longer.

Science Vocabulary

* Adaptation: A special trait or behavior that helps an animal survive in its home environment.
* Camouflage: Coloring or patterns that help an animal hide by blending in with its surroundings.
* Predator: An animal that hunts other animals for food.
* Scales: Small, hard, flat pieces of skin that cover and protect a reptile's body.
* Habitat: The place where an animal or plant naturally lives and finds food and shelter.
* Natural Selection: Over time, animals with helpful traits survive and pass those traits to their babies more often than animals without those traits.

External Resources

Children's Books:
Chameleons Are Cool* by Martin Jenkins, illustrated by Sue Shields – Explores color-changing adaptation in an accessible way for elementary students.
Hide and Seek: Animals in Camouflage* by John Woodward – Picture-rich book showing various animals and how they blend into habitats.
National Geographic Little Kids First Big Book of Animals* by Catherine D. Hughes – Includes sections on adaptations and survival strategies.

This lesson engages students in observing, analyzing, and explaining how animals' physical traits help them survive—core practices of fifth-grade life science.