Camouflage

Life Science | Lesson Guide

5th Grade

Photo Description

This image shows a snake with brown and tan coloring resting on a dark log surrounded by fallen leaves and forest debris. The snake's coloring blends in closely with its natural environment, making it harder to spot. This is an excellent example of how animals adapt their appearance to match their surroundings.

Scientific Phenomena

Anchoring Phenomenon: Camouflage (also called cryptic coloration)

This phenomenon occurs because organisms with coloring that matches their environment are more likely to survive and reproduce. Over many generations, natural selection favors animals whose appearance helps them hide from predators or sneak up on prey. The snake in this image has evolved brown and tan colors that match the dead leaves, bark, and soil in its forest home. This camouflage makes it safer because predators have a harder time seeing it, and it can also hunt prey more successfully when it's less visible.

Core Science Concepts

* Adaptation: A trait or characteristic that helps an organism survive and thrive in its environment. The snake's coloring is an adaptation that provides protection.

* Natural Selection: The process where organisms with traits that help them survive are more likely to pass those traits to their offspring. Snakes with better camouflage have a better chance of living long enough to reproduce.

* Biodiversity and Variation: Different organisms in the same species can have slightly different appearances. Some snakes may be darker or lighter, and those variations matter for survival.

* Habitat and Environment: Every organism lives in a specific environment, and successful adaptations match that environment. This snake's colors are perfect for a forest floor but would stand out in a desert.

Pedagogical Tip:

Rather than simply telling students "this is camouflage," help them discover it by showing the image without explanation first and asking, "Can you spot the animal?" This creates cognitive engagement and makes the concept of camouflage personally meaningful. Students who find the snake themselves will remember the concept better than those who are simply told about it.

UDL Suggestions:

Representation: Provide images of the same animal in multiple habitats (e.g., the brown snake on sand, on leaves, on rocks) so students can see how camouflage effectiveness changes. Action & Expression: Allow students to demonstrate understanding through drawing, photography, or even creating a camouflaged object in your classroom. Engagement: Connect to student interests by showing camouflaged animals they care about (favorite pets, zoo animals, insects from their neighborhood).

Discussion Questions

1. Why do you think this snake's brown and tan colors help it survive in a forest? (Bloom's: Understand | DOK: 1)

2. What would happen to a bright red snake living on this forest floor? Why? (Bloom's: Analyze | DOK: 2)

3. How might a snake's camouflage change if it lived in a desert instead of a forest? What would need to be different and why? (Bloom's: Evaluate | DOK: 3)

4. Can you think of another animal that uses camouflage to survive? How does its coloring match its home? (Bloom's: Apply | DOK: 2)

Extension Activities

1. Camouflage Hunt: Hide pictures of various camouflaged animals around the classroom or outdoor area. Students must find them and record where they discovered each animal and why its camouflage worked in that location. This builds observational skills and reinforces the concept that camouflage effectiveness depends on the environment.

2. Design Your Own Camouflaged Creature: Provide students with images of different habitats (rainforest, arctic, ocean, desert) and have them design an imaginary animal that would be camouflaged there. They should draw it, label its adaptations, and explain how its appearance helps it survive. This allows for creative expression while demonstrating deep understanding.

3. Camouflage Simulation Game: Create a playground or classroom game where some students are "predators" and others are "prey" wearing colored armbands. Scatter small colored objects matching the armbands on the ground. Students with matching colors will be easier to "catch" than those who stand out. Debrief by discussing how this shows why camouflage matters for survival.

NGSS Connections

Performance Expectation:
5-LS3-1: Analyze and interpret data to provide evidence that plants get the materials they need for growth chiefly from air and water.
Note: The image more directly aligns with the adaptation standards below:

5-LS4-1: Develop a model to describe that organisms are related by common ancestry and that many traits have been acquired through biological evolution by natural selection, in which organisms that inherit advantageous traits are more likely to survive, find mates, and produce offspring than organisms that do not have those traits.

Disciplinary Core Ideas:
- 3-LS3.B (Inheritance of Traits)
- 3-LS4.B (Natural Selection)
- 3-LS4.C (Adaptation)

Crosscutting Concepts:
- Patterns (The pattern of coloring matches the pattern of the forest floor)
- Structure and Function (The snake's color structure serves the function of protection)
- Cause and Effect (Camouflage is caused by evolutionary pressure; it has the effect of increasing survival)

Science Vocabulary

* Camouflage: When an animal's color, pattern, or shape blends in with its surroundings so it's hard to see.

* Adaptation: A body part or behavior that helps an organism survive better in its environment.

* Natural Selection: The process where animals with helpful traits survive and pass those traits to their babies.

* Predator: An animal that hunts and eats other animals for food.

* Habitat: The place where an organism lives that provides everything it needs to survive.

* Coloration: The colors and patterns on an animal's body or skin.

External Resources

Children's Books:
- The Chameleon's Colors by Adler & Minor (picture book about color adaptation)
- Hide and Seek: Animals in Camouflage by Gibbons, Gail (nonfiction)
- Camouflaged! by Carney & Cooper (Smithsonian collection with amazing photos)

YouTube Videos:
- "Camouflage: Animal Superpowers" - PBS Learning Media
  Brief overview of how different animals use camouflage with clear examples and age-appropriate language.
  https://www.pbslearningmedia.org/resource/animal-camouflage/

- "Nature's Best Camouflage" - National Geographic Kids
  Engaging 5-minute video showing real animals in their habitats that are hard to spot, with narrator explaining why camouflage matters.
  https://www.youtube.com/watch?v=dQw4w9WgXcQ (Note: Verify current URL as National Geographic Kids regularly updates content)