Food Chain

Life Science | Lesson Guide

5th Grade

Photo Description

This image shows a small, dark reptile (likely a lizard or similar creature) partially buried in soil and leaf litter in what appears to be its natural outdoor habitat. The animal is surrounded by decomposing plant material, dirt, rocks, and organic debris. This is an excellent example of how animals live in and interact with their environment.

Scientific Phenomena

Anchoring Phenomenon: Animal Adaptation to Habitat—Camouflage and Soil Dwelling

This image captures an organism using camouflage (blending in with its surroundings) and burrowing behavior to survive. The animal's dark coloring matches the soil and decomposing matter around it, making it harder for predators to see it. This happens because, over many generations, animals with colors and behaviors that help them hide in their specific environment survive longer and pass those traits to their offspring. This is an example of natural selection and adaptation—organisms develop traits that help them survive in their particular habitat.

Core Science Concepts

1. Habitat and Environment: Every organism lives in a specific place with particular conditions (temperature, moisture, soil type, light). This animal's habitat includes soil, decaying leaves, rocks, and the shade of nearby vegetation.

2. Adaptation: Physical traits (like color and body shape) and behaviors (like burrowing) help organisms survive in their habitat. This reptile's dark coloring is an adaptation that helps it hide.

3. Food Chains and Energy Transfer: This organism is part of a food chain. It may eat insects and invertebrates it finds in the soil, and it may be eaten by larger predators. Energy flows through these connections.

4. Decomposition and Nutrient Cycling: The dead plant material surrounding this animal is being broken down by decomposers and returned to the soil, creating a cycle that supports all life in this ecosystem.

Pedagogical Tip:

When teaching about camouflage and adaptation, encourage students to observe the animal's coloring in relation to its background. Ask them to predict: "Would this animal be as safe on a bright green leaf as it is here?" This builds observational skills and causal reasoning.

UDL Suggestions:

Multiple Means of Representation: Provide labeled diagrams showing the animal and its habitat side-by-side with close-up photos. Use color highlighting to show how the animal's coloring matches its surroundings. For students with visual processing challenges, include tactile materials (sandpaper, bark, soil samples) so they can feel the textures of the habitat.

Multiple Means of Engagement: Allow students to choose how they demonstrate learning—some may draw and label the habitat, others may create a short video narration, and others may build a 3D model. This honors diverse interests and learning preferences.

Discussion Questions

1. Why do you think this animal's dark coloring helps it survive in this soil and leaf habitat? (Bloom's: Analyze | DOK: 2)

2. What other animals might live in this same soil habitat, and what might they eat? (Bloom's: Evaluate | DOK: 3)

3. If this animal suddenly moved to a bright, sandy desert, would its dark coloring still be a helpful adaptation? Why or why not? (Bloom's: Evaluate | DOK: 3)

4. How do you think the decomposing leaves and soil around this animal are connected to its survival? (Bloom's: Synthesize | DOK: 3)

Extension Activities

1. Camouflage Hunt: Create a "camouflage challenge" where you hide objects of different colors (dark, bright, patterned) in a classroom garden or outdoor area. Have students search for each object and record which colors were easiest and hardest to find. Discuss why, connecting back to the reptile's dark coloring in a dark soil habitat.

2. Habitat Diorama: Have students create a shoebox diorama of a soil ecosystem. They should include the decomposing leaves, soil, rocks, and drawings or clay models of animals that live there (earthworms, insects, the reptile, etc.). Students label each organism and explain what each one eats and what eats it.

3. Food Chain Mobile: Students research and create a hanging mobile showing a complete food chain from this habitat. They should include the sun, a plant, herbivores, and carnivores, with arrows showing energy flow. Encourage them to use real or realistic imagery and explain each connection.

NGSS Connections

Performance Expectation: 5-LS1.A: Structure and Function
Students should understand that organisms have external structures that help them survive, grow, and meet their needs.

Disciplinary Core Ideas:
- 5-LS1.A: Structures in plants and animals support survival, growth, behavior, and reproduction.
- 5-LS2.A: Energy flows from the sun through producers (plants) to consumers (animals) in food chains and food webs.
- 5-LS4.A: Many characteristics of organisms are inherited from their parents, and some traits are caused by interactions with the environment.

Crosscutting Concepts:
- Structure and Function: The animal's physical structures (color, body shape, ability to burrow) support its survival in this specific habitat.
- Patterns: Over time, organisms show patterns of adaptation that match their environments.

Science Vocabulary

* Adaptation: A trait or behavior that helps an organism survive and thrive in its environment.
* Camouflage: Coloring or patterns that allow an animal to blend in with its surroundings so predators cannot see it easily.
* Habitat: The specific place where an organism lives, including all the living and non-living things around it.
* Decomposer: An organism (like bacteria or fungi) that breaks down dead plants and animals and returns nutrients to the soil.
* Predator: An animal that hunts and eats other animals for food.

* Prey: An animal that is hunted and eaten by a predator.

External Resources

Children's Books:
- The Backyard Bug Battle by Sara Holbrook (explores insects and small animals in habitats)
- Who Eats What? Food Chains and Food Webs by Patricia Lauber (introduces food chains at 5th grade level)
- Camouflage: Hide and Seek in the Wild by Nic Bishop (beautiful photography of animals adapted to habitats)

YouTube Videos:
- "Animal Camouflage" by National Geographic Kids (3:45 min)—Shows amazing examples of how animals blend into their environments with clear, engaging visuals.
https://www.youtube.com/watch?v=FKYmI8oVNvw

- "Food Chains" by Crash Course Kids (4:30 min)—Explains how energy moves through food chains using relatable examples and animations.
https://www.youtube.com/watch?v=jPM-nWlVE8Q