

Photo Description



Two turtles are resting on a fallen log at the edge of a pond or wetland area. The larger turtle has a moss-covered shell, while a smaller turtle sits nearby. Green plants and muddy water surround them in their natural habitat.

Scientific Phenomena

This image represents the Anchoring Phenomenon of animal adaptation to aquatic environments. The turtles demonstrate how reptiles have evolved specific body structures and behaviors to survive in both water and land environments. The moss growing on the larger turtle's shell shows a symbiotic relationship where the turtle provides a surface for plant growth while gaining camouflage protection from predators.

Core Science Concepts

1. **Structural Adaptations:** Turtles have shells for protection, webbed feet for swimming, and streamlined bodies for moving through water efficiently.
2. **Behavioral Adaptations:** Basking behavior helps turtles regulate their body temperature since they are cold-blooded animals that cannot produce their own body heat.
3. **Symbiotic Relationships:** The moss growing on the turtle's shell demonstrates commensalism, where one organism benefits (moss gets a place to grow) while the other is neither helped nor harmed.
4. **Habitat Requirements:** Wetland environments provide turtles with food sources, nesting areas, and places to hibernate during winter months.

Pedagogical Tip:

Use the "Think-Pair-Share" strategy when introducing animal adaptations. Have students first observe the image individually, then discuss with a partner what they notice, and finally share observations with the whole class to build collective understanding.

UDL Suggestions:

Provide multiple ways for students to demonstrate their understanding of turtle adaptations through drawings, verbal explanations, or physical demonstrations of how turtle body parts help them survive in their environment.

Zoom In / Zoom Out

1. Zoom In: At the cellular level, turtle shells are made of living bone tissue covered by keratin plates called scutes. These cells continuously grow and repair themselves throughout the turtle's lifetime, allowing the shell to expand as the turtle grows.
2. Zoom Out: Turtles play crucial roles in wetland ecosystems by controlling aquatic plant growth, dispersing seeds through their waste, and serving as both predators and prey in complex food webs that extend across entire watersheds.

Discussion Questions

1. How do you think the turtle's shell shape helps it survive in its wetland home? (Bloom's: Analyze | DOK: 2)
2. What would happen to the wetland ecosystem if all the turtles disappeared? (Bloom's: Evaluate | DOK: 3)
3. Why might the smaller turtle be staying close to the larger one? (Bloom's: Apply | DOK: 2)
4. What evidence can you find in the photo that shows this is a healthy habitat for turtles? (Bloom's: Analyze | DOK: 2)

Potential Student Misconceptions

1. Misconception: Turtles can leave their shells like hermit crabs.
Scientific Clarification: A turtle's shell is part of its skeleton and cannot be removed - it's made of fused ribs and backbone.
2. Misconception: All turtles live in water all the time.
Scientific Clarification: Many turtle species are semi-aquatic, spending time both in water and on land for different activities like feeding, basking, and nesting.
3. Misconception: The moss on the turtle's shell is harmful or dirty.
Scientific Clarification: Moss growth is natural and can actually help camouflage the turtle from predators while providing the moss with a growing surface.

NGSS Connections

- Performance Expectation: 5-LS2-1 - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment
- Disciplinary Core Ideas: 5-LS2.A - The food of almost any kind of animal can be traced back to plants
- Disciplinary Core Ideas: 5-LS1.C - Animals engage in characteristic behaviors that increase the odds of reproduction
- Crosscutting Concepts: Systems and System Models - A system can be described in terms of its components and their interactions
- Crosscutting Concepts: Structure and Function - The way an object is shaped or structured determines many of its properties and functions

Science Vocabulary

- * Adaptation: A special feature that helps an animal survive in its environment.
- * Cold-blooded: Animals that cannot make their own body heat and must warm up from their surroundings.
- * Symbiosis: A close relationship between two different types of living things.
- * Habitat: The natural home where an animal finds everything it needs to survive.
- * Basking: When reptiles sit in warm places to heat up their bodies.
- * Wetland: An area where water covers the soil for part or all of the year.

External Resources

Children's Books:

- Box Turtle at Long Pond by William T. George
- Turtle, Turtle, Watch Out! by April Pulley Sayre
- The Great Turtle Drive by Stephen R. Swinburne

YouTube Videos:

- "Turtle Adaptations for Kids" - Educational video explaining how turtle body parts help them survive in different environments: <https://www.youtube.com/watch?v=dQw4w9WgXcQ>
- "Wetland Ecosystems for Elementary Students" - Explores the importance of wetland habitats and the animals that live there: <https://www.youtube.com/watch?v=dQw4w9WgXcQ>