

## 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.

### Cross-Curricular Ideas

1. ELA - Narrative Writing: Have students write a day-in-the-life story from a turtle's perspective. Students can describe what the turtle eats, where it travels, and how it stays safe in the wetland. This connects storytelling skills with understanding animal behavior and habitat needs.
2. Math - Data Collection and Graphing: Students can research turtle populations in local wetlands and create bar graphs or line graphs showing how turtle numbers change across seasons. This integrates data literacy with understanding animal ecology and seasonal patterns.
3. Social Studies - Conservation and Stewardship: Explore how wetland habitats are being protected in your state or region. Students can research local conservation efforts, learn about endangered turtle species, and discuss what people can do to protect these important ecosystems.
4. Art - Camouflage and Pattern Design: Students can create artwork inspired by turtle shell patterns and the moss-covered adaptation shown in the photo. They can design their own "protective coverings" for imaginary animals, exploring how structure and appearance help organisms survive in different environments.

## STEM Career Connection

1. Wildlife Biologist: Wildlife biologists study animals like turtles in their natural habitats to understand how they live, grow, and reproduce. They spend time outdoors observing animals, collecting data, and working to protect endangered species and their habitats. Average Annual Salary: \$65,000 - \$75,000
2. Wetland Ecologist: Wetland ecologists are scientists who specialize in studying wetland environments and all the plants and animals that live there. They help protect these important habitats and understand how changes to wetlands affect the animals that depend on them. Average Annual Salary: \$60,000 - \$80,000
3. Environmental Educator: Environmental educators teach people of all ages about nature and how to protect it. They might lead field trips to wetlands, create programs about turtle conservation, and help communities understand why habitats like ponds and marshes are important for survival of species. Average Annual Salary: \$50,000 - \$70,000

## 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