# Turtles

Life Science | Lesson Guide

3rd Grade

## Photo Description

Two turtles are sitting on a log near the water's edge. One turtle is smaller and darker, while the other turtle is larger with a shell covered in green moss or algae. Both turtles have their heads and legs sticking out of their shells, and they appear to be resting in the sunshine.

## Scientific Phenomena

The Anchoring Phenomenon shown here is habitat adaptation and symbiotic relationships in aquatic ecosystems. The larger turtle's shell is covered with algae or moss because it provides a perfect growing surface - the algae gets sunlight when the turtle basks, and the turtle gets camouflage protection. This happens because the turtle's shell stays moist from water and provides nutrients that help plants grow. The turtles are also demonstrating thermoregulation by basking in the sun to warm their cold-blooded bodies.

## Core Science Concepts

1. Animal Adaptations: Turtles have shells for protection and can pull their heads and legs inside when threatened. Their ability to live both in water and on land helps them survive.

2. Symbiotic Relationships: The algae growing on the turtle's shell benefits both organisms - the algae gets a place to live and sunlight, while the turtle gets camouflage.

3. Habitat Requirements: Turtles need both water and land areas to meet their survival needs including food, shelter, and temperature regulation.

4. Thermoregulation: As cold-blooded animals, turtles must bask in the sun to warm their bodies and become active.

**Pedagogical Tip:**

Use the "Think-Pair-Share" strategy when introducing this image. Have students first observe quietly, then discuss with a partner what they notice, before sharing observations with the whole class. This builds scientific observation skills.

**UDL Suggestions:**

Provide magnifying glasses or zoomed-in photos so students can examine the algae on the turtle's shell more closely. Create tactile models using clay and fake moss so students with visual impairments can feel the texture differences.

## Zoom In / Zoom Out

1. Zoom In: At the microscopic level, tiny algae cells are using photosynthesis to make their own food using sunlight, water, and carbon dioxide. These single-celled organisms attach to the turtle's shell and form the green coating we can see.

2. Zoom Out: These turtles are part of a larger wetland ecosystem that includes fish, birds, insects, and plants. The pond or marsh they live in connects to streams and rivers that flow to larger bodies of water, creating a network that supports many different species.

## Discussion Questions

1. "What do you think would happen to these turtles if their pond dried up?" (Bloom's: Analyze | DOK: 3)

2. "How does the algae growing on the turtle's shell help both the turtle and the algae survive?" (Bloom's: Evaluate | DOK: 2)

3. "What evidence can you find in the photo that shows these turtles are well-adapted to their environment?" (Bloom's: Analyze | DOK: 2)

4. "Why do you think the turtles are sitting in the sun instead of staying in the water?" (Bloom's: Apply | DOK: 2)

## Potential Student Misconceptions

1. Misconception: "The turtle is dirty and needs to be cleaned."
Clarification: The green growth is natural and actually helps the turtle survive by providing camouflage and doesn't harm the turtle.

2. Misconception: "Turtles are always slow."
Clarification: While turtles move slowly on land, they can be quite fast swimmers in water where they catch fish and escape predators.

3. Misconception: "All turtles can go inside their shells completely."
Clarification: Some turtle species cannot fully retract their heads and legs into their shells due to their shell shape and size.

## Cross-Curricular Ideas

1. Math - Measurement & Comparison: Have students measure the length and width of different turtle shells using rulers or string. Create a class bar graph comparing shell sizes and discuss which turtles are longer or shorter. Students can also count the number of algae spots they see on each turtle's shell.

2. ELA - Descriptive Writing & Storytelling: Ask students to write from the turtle's perspective: "A Day in My Life as a Turtle." They can describe what they see, feel, and do throughout the day. Students could also create "wanted posters" for turtles, describing their physical features, habitat, and behaviors using descriptive adjectives.

3. Art - Nature Collage & Camouflage Design: Students can create collages using torn green, brown, and gray paper to show how algae and moss help turtles blend into their environment. They could also design their own "turtle shell" artwork using patterns and colors that would help an animal hide in a pond or forest habitat.

4. Social Studies - Animal Habitats Around the World: Research and compare turtles that live in different parts of the world (deserts, rainforests, oceans, freshwater). Create a map showing where different turtle species live and discuss how their shells and behaviors are adapted to their specific environments and climates.

## STEM Career Connection

1. Wildlife Biologist: Wildlife biologists study animals like turtles in their natural habitats. They observe how turtles behave, what they eat, and how they survive. They might count turtles in a pond, take photos, and write down what they learn to help protect these animals. Average Salary: $63,000 per year

2. Wetland Ecologist: These scientists focus on wet habitats like ponds, marshes, and swamps where turtles live. They study how all the plants and animals work together and help protect these special environments from pollution and damage. Average Salary: $58,000 per year

3. Zoo or Aquarium Keeper: Keepers care for turtles and other animals in zoos and aquariums. They feed the turtles, clean their habitats, and make sure they stay healthy. They also teach visitors like you about why turtles are important! Average Salary: $31,000 per year

## NGSS Connections

- Performance Expectation: 3-LS4-3 - Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- Disciplinary Core Ideas: 3-LS4.C - Environmental changes affect organisms and populations in various ways
- Crosscutting Concepts: Cause and Effect - Students can identify the relationship between turtle behaviors and their survival needs

## Science Vocabulary

* Adaptation: A special feature that helps an animal survive in its environment.
* Habitat: The natural place where an animal lives and finds everything it needs.
* Camouflage: Colors or patterns that help an animal blend in and hide from predators.
* Cold-blooded: Animals that need heat from the sun or environment to warm their bodies.
* Symbiosis: When two different living things help each other survive.
* Basking: Lying in the warm sunshine to heat up the body.

## 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