

Photo Description



This image shows a beautiful pond filled with water lilies—those round, green leaves floating on the water with white flowers blooming on top. The pond is surrounded by trees, bushes with pink and red flowers, and dark rocks. Many different plants and animals make their home in and around this water.

Scientific Phenomena

Anchoring Phenomenon: Why do water lilies float on water and bloom with flowers?

Water lilies have special adaptations that allow them to thrive in pond environments. Their leaves (called lily pads) are flat and waxy, which helps them float on the water's surface. The stems are flexible and can stretch as water levels change. The flowers bloom at the surface to attract pollinators like insects and bees. This pond ecosystem demonstrates how living things are interconnected—plants provide food and shelter, while the water provides the environment all these organisms need to survive.

Core Science Concepts

- * **Habitats:** A habitat is a place where animals and plants live. Ponds are habitats that provide water, food, and shelter for many living things.
- * **Living Things Need Water:** All the plants and animals in this pond depend on water to survive. Water is one of the most important things living things need.
- * **Adaptation:** Water lilies have special features (like flat leaves and waxy coating) that help them survive in water. Different plants and animals have different body parts that help them live in their habitat.
- * **Producers and Consumers:** The plants (like water lilies) make their own food from sunlight. Animals that live in the pond eat the plants or other animals.

Pedagogical Tip:

Use the "Notice, Wonder, Investigate" strategy with this image. First, ask students what they **NOTICE** (the water lilies, flowers, rocks). Then ask what they **WONDER** about (Why do lily pads float? What lives under the water?). Finally, plan simple investigations to answer their questions. This builds scientific curiosity and ownership of learning.

UDL Suggestions:

For multiple means of representation: Provide images alongside real objects (water lily photographs, actual pond water samples in clear containers). For multiple means of action/expression: Allow students to draw, build clay models of pond animals, or act out how water lilies grow. For multiple means of engagement: Connect to students' experiences with water (bathing, rain, puddles) and invite them to share their own observations about where they've seen plants or animals living.

Zoom In / Zoom Out

Zoom In: Inside a Water Lily Leaf

Water lily leaves have tiny holes underneath called stomata that plants use to breathe! These holes are so small you need a microscope to see them. Inside the leaf are special tubes that carry water from the roots up to the leaf, kind of like straws. The leaf also has a waxy coating that is waterproof—imagine putting wax on your jacket so rain slides off. This coating keeps the leaf from getting waterlogged and helps it float!

Zoom Out: The Whole Pond Ecosystem and Beyond

This one pond is connected to much bigger systems! The water in the pond comes from rain that falls from clouds and from underground springs. Plants in the pond create oxygen that fish and other animals breathe. When leaves fall into the water and break down, they become nutrients that feed new plants. Fish and frogs from this pond might travel to other ponds and waterways, connecting this habitat to rivers, wetlands, and eventually to lakes and oceans. Everything in nature is connected!

Discussion Questions

- * What do you see living in or near the water in this picture? (Bloom's: Remember | DOK: 1)
- * Why do you think the water lily leaves are so big and flat? (Bloom's: Analyze | DOK: 2)
- * If the pond dried up, what would happen to all the plants and animals that live there? (Bloom's: Evaluate | DOK: 3)
- * How is a pond different from the place where you live? (Bloom's: Compare | DOK: 2)

Potential Student Misconceptions

Misconception 1: "Water lilies are just leaves floating randomly."

Clarification: Water lilies are actually whole plants with roots! The roots grow down into the mud at the bottom of the pond, and the long stems stretch up to hold the leaves and flowers on the surface. The plant is anchored to the ground, not just drifting around. The roots drink water and nutrients from the mud to help the whole plant grow.

Misconception 2: "All the white flowers are the same kind of plant."

Clarification: Different plants with different colors grow in and around ponds! In this photo, the white water lilies are one plant, but the pink and red flowers you see in the background are different plants. Some grow in the water, and some grow on land around the pond. Each plant is adapted for its own spot.

Misconception 3: "Nothing lives in the pond except the plants we can see."

Clarification: Ponds are full of life we can't see in photos! Underneath the water are fish, tadpoles, snails, and tiny creatures called microscopic organisms. In the mud are worms and insects. Above the water, dragonflies and water striders zoom around. The pond is like a busy apartment building where many creatures live in different "rooms"!

Extension Activities

- * Create a Pond in a Jar: Fill a clear jar with water, sand, and small plants. Add small plastic animals or snails. Students observe and draw what they see over several days, discussing what plants and animals need.
- * Make Lily Pad Boats: Cut lily pad shapes from green paper with waxy coating (laminated or wax paper). Float them in a shallow water table and have students investigate what makes them float or sink using small objects.
- * Pond Animal Charades: Teach students about pond animals (frogs, turtles, fish, dragonflies) through pictures and videos. Have them act out how each animal moves, discussing why different animals move differently in water.

Cross-Curricular Ideas

Math Connection: Counting and Patterns

Have students count the water lily flowers and leaves visible in the photo. Create a simple bar graph showing "How many flowers?" vs. "How many lily pads?" Students can also look for patterns—do the flowers appear in a certain order? Can they predict how many flowers might bloom in a row?

ELA Connection: Descriptive Writing and Storytelling

Ask students to use sensory words to describe the pond: "What would you see, hear, and feel at this pond?" Create a class poem or song about pond life using rhyming words (frog/log, lily/water, etc.). Read pond-themed picture books aloud and have students retell the story through drawing or acting.

Art Connection: Nature Collage and Color Mixing

Students create their own pond scene using torn paper, paint, and natural materials (leaves, twigs). They practice mixing colors to make different shades of green for lily pads and pink/purple for flowers. Display artwork alongside the original photo and compare the real pond to student creations.

Social Studies Connection: Exploring Local Habitats

If your community has a nearby pond, park, or water feature, plan a nature walk or virtual tour. Discuss how people use and care for natural spaces. Talk about rules for visiting ponds safely (staying on paths, not picking flowers, respecting animals). Students can help create a "How to Protect Our Pond" poster for their school or community.

STEM Career Connection

Aquatic Biologist / Pond Scientist

An aquatic biologist studies plants and animals that live in water, including ponds, rivers, and lakes. They observe creatures like frogs, fish, and dragonflies, and learn what they need to survive. They might work in nature centers, museums, or universities, helping protect ponds and teaching others about water habitats. Sometimes they work outdoors with nets and cameras, and sometimes in labs with microscopes!

Average Annual Salary: \$66,000 USD

Landscape Architect / Garden Designer

A landscape architect designs beautiful outdoor spaces, including ponds and water gardens! They decide where to put plants, rocks, water features, and pathways to create lovely habitats for people and wildlife. They might design a pond for a park, a school, or a backyard. They use math and art to plan spaces and help nature thrive.

Average Annual Salary: \$68,000 USD

Environmental Educator / Nature Center Staff

An environmental educator teaches people (especially kids!) about nature and habitats like ponds. They lead nature walks, run programs, and help people connect with the outdoors. They might care for a pond at a nature center, show students the creatures that live there, and explain why ponds are important. They help people understand and protect natural spaces.

Average Annual Salary: \$38,000 USD

NGSS Connections

Performance Expectation:

K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

Disciplinary Core Ideas:

- * K-LS1.A - All organisms have basic needs for survival
- * K-ESS2.A - Earth materials support life

Crosscutting Concepts:

- * Patterns - Observe patterns in where plants and animals live
- * Structure and Function - Plant parts help them live in their habitat

Science Vocabulary

- * Habitat: A place where plants and animals live and find everything they need.
- * Water Lily: A plant that floats on top of ponds and has pretty flowers that bloom on the water.
- * Adaptation: A special feature or body part that helps an animal or plant survive in its home.
- * Pond: A small body of fresh water surrounded by land.
- * Ecosystem: All the living things and non-living things in one area that depend on each other.

External Resources

Children's Books:

- Pond Babies* by Sandra Markle (explores life cycle of pond animals)
- In the Small, Small Pond* by Denise Fleming (rhythmic text about pond habitats)
- From Tadpole to Frog* by Wendy Pfeffer (explains frog life cycle in pond)

Teacher Tip: Before this lesson, consider taking your class on a pond walk (if accessible) or arranging a virtual pond tour. First graders learn best when they can connect new concepts to their own observations and experiences. Even a small water feature like a bird bath or classroom water table can demonstrate these concepts!