

## Photo Description



These white birds are called ibises, and they live near water and muddy areas. They use their long, curved beaks to poke into the mud and water to find food like small fish, crabs, and bugs. The birds are wading in shallow water and walking on the wet, muddy ground together as a group.

## Scientific Phenomena

Anchoring Phenomenon: Why do ibises have long, curved beaks and spend so much time in water?

Scientific Explanation: Ibises have evolved specialized beaks and behaviors that help them survive in their wetland habitats. Their long, curved beaks are perfectly shaped for probing into mud and shallow water to catch small animals they eat. Their long legs help them walk through water without getting their bodies wet. This is an example of adaptation—physical features and behaviors that help animals survive in their environment. Ibises gather in groups (called flocks) because living together provides safety (more eyes to watch for danger) and makes finding food more efficient.

## Core Science Concepts

- \* Animal Adaptations: Ibises have special body parts (long beaks, long legs) that help them find food and survive in wetlands.
- \* Habitat: Ibises live in wet environments like marshes, swamps, and shallow water areas where they can find the food they need.
- \* Feeding Behavior: Ibises use their curved beaks as tools to search for food in mud and water, which shows how animals use their body parts to meet their needs.
- \* Social Behavior: Ibises live in groups, which helps them stay safe and find food more easily together.

### Pedagogical Tip:

When teaching adaptations to Second Graders, use direct observation and comparison. Have students look closely at the ibis's beak, legs, and behavior, then compare them to other birds (like robins or chickens) they might know. Ask: "How is this beak different? Why would that help in the water?" This concrete, visual approach helps young learners understand that body parts have purposes.

### UDL Suggestions:

Multiple Means of Representation: Provide images of ibises alongside other birds so students can visually compare beaks and legs. Use a "tool matching" activity where students match different bird beaks to pictures of foods they eat (worms, seeds, fish) to make the adaptation concept tangible.

Multiple Means of Action/Expression: Allow students to demonstrate understanding through drawing an ibis and labeling its special parts, acting out how an ibis walks and feeds, or using craft materials to build a model beak from a straw or pipe cleaner.

Multiple Means of Engagement: Connect to student interests by asking: "What tools do YOU use to get your food? (forks, spoons)" Then compare to how animals use their bodies as tools.

## Zoom In / Zoom Out

### Zoom In (Cellular/Microscopic Level):

Inside the ibis's beak, there are special sensory nerve endings that help the bird feel tiny movements in the mud—almost like the beak has "fingers" that can sense where food is hiding. These nerves send signals to the brain so the bird knows exactly where to peck, even when it can't see the food.

### Zoom Out (Ecosystem/Watershed Level):

Ibises are part of a larger wetland ecosystem. They depend on healthy marshes and shallow waters that provide their food (small fish, crustaceans, insects). In return, ibises help control insect and fish populations, and their droppings fertilize the water and plants. Many other animals—turtles, frogs, fish, and water plants—all depend on this same wetland habitat, creating an interconnected community.

## Discussion Questions

1. "Why do you think the ibis has such a long, curved beak instead of a short, straight beak like a robin?"
  - Bloom's: Analyze | DOK: 3
2. "What do you notice about the ground where the ibises are standing? How does that help us understand why their beaks are shaped this way?"
  - Bloom's: Understand | DOK: 2
3. "If an ibis couldn't find any food in the water, what do you think would happen to it? What does this tell us about why habitats are important?"
  - Bloom's: Evaluate | DOK: 3
4. "How are the ibises' long legs helpful when they live in water? What other animals might have body parts that help them live in water?"
  - Bloom's: Apply | DOK: 2

## Potential Student Misconceptions

- \* Misconception: "That long beak is for drinking water like a straw."
  - Clarification: The beak is primarily a hunting tool. Ibises use it to probe into mud and water to catch food. They drink water by dipping their beaks in, but the main job of their beak is finding meals.
- \* Misconception: "Ibises can walk on water because they are magic or special."
  - Clarification: Ibises have long, thin legs that spread their weight across the mud and shallow water, so they don't sink. Other water birds like herons and storks have the same adaptation. It's not magic—it's science!
- \* Misconception: "All birds have the same kind of beak."
  - Clarification: Different birds have different beak shapes because they eat different foods. An ibis's curved beak is made for poking in mud. A robin's short beak is made for eating worms on the ground. A hummingbird's long, thin beak is made for drinking nectar from flowers.

## Extension Activities

- Activity 1: "Beak Tool Exploration"

Provide students with different "tools" (tweezers, clothespins, straws, spoons) and ask them to pick up small objects like cereal, pasta, or peas from a shallow tray of water or sand. Have them try each tool and discuss which one works best and why. Connect this back to how different bird beaks are "tools" designed for different jobs. Students can draw or write about which beak tool they think works best and why.

### Activity 2: "Design Your Own Bird"

Give students paper, markers, and craft supplies to create their own bird. Ask them: "Where would your bird live? What would it eat? What should its beak look like? How long should its legs be?" Have students present their bird and explain their design choices, using what they learned about how body parts match habitats and food sources.

### Activity 3: "Wetland Walk or Virtual Exploration"

If possible, take a short nature walk to a local pond, marsh, or wetland area (with proper safety precautions) to observe real wildlife. If a field trip isn't possible, use virtual wetland videos or photo galleries to observe various animals that live in wetlands. Have students record or sketch the animals they see and discuss: "What body parts do these animals have? Why might those body parts help them live here?"

## Cross-Curricular Ideas

### Math Connection:

Have students count the ibises in the photo and create a simple bar graph showing "How Many Ibises?" Students can compare numbers and use words like "more" and "fewer." You could also measure and compare the length of different bird beaks using string or rulers.

### English Language Arts Connection:

Read a picture book about birds or water animals, then have students write or dictate simple sentences about ibises (e.g., "Ibises have long beaks. They find food in the water."). Students can illustrate their writing and create a class book titled "All About Ibises."

### Social Studies Connection:

Discuss where wetlands are found (show a simple map), and talk about how people and animals share environments.

Discuss: "Why is it important to protect wetlands?" This builds awareness of environmental stewardship and community responsibility.

### Art Connection:

Have students create an ibis using white paint, markers, or collage materials. They can paint or draw the habitat around it, including water, mud, and other animals. Display the artworks and discuss the different ways artists showed the same animal.

## STEM Career Connection

\* Wildlife Biologist: A scientist who studies animals and how they live in nature. Wildlife biologists watch birds like ibises, learn about their habits, and help protect them and their homes. They might work near wetlands, in offices, or in laboratories. They help people understand why animals are important.

- Average Annual Salary: \$65,000 USD

\* Wetland Ecologist: A scientist who studies wetlands and all the plants and animals that live there. Wetland ecologists make sure wetlands stay healthy so that birds like ibises have safe places to live and find food. They do fieldwork, research, and help communities protect these special environments.

- Average Annual Salary: \$62,000 USD

\* Bird Ornithologist (or Ornithologist): A scientist who studies birds and learns all about their bodies, behaviors, and habitats. Ornithologists might count birds, band them (put tiny identification bands on their legs), and track where they fly. They teach people why birds are amazing and important to our world.

- Average Annual Salary: \$70,000 USD

### NGSS Connections

Performance Expectation:

2-LS1-1: Plan and conduct investigations to provide evidence that plants get the materials they need for growth chiefly from air and water. (Adapted to animals: Observe that animals get materials they need by eating food and drinking water)

Disciplinary Core Ideas:

- 2-LS1.A Structure and Function: All organisms have external parts that help them survive, grow, move, and reproduce in their environment.
- 2-LS4.D Biodiversity and Humans: There are many different kinds of living things in any area, and they exist in different places on land and in water.

Crosscutting Concepts:

- Structure and Function: The shape and structure of an animal's body parts relate to the job those parts do.
- Patterns: Different animals have different body parts, and these differences follow patterns based on where they live and what they eat.

### Science Vocabulary

- \* Adaptation: A special body part or behavior that helps an animal survive in its home.
- \* Habitat: The place where an animal lives and finds food, water, and shelter.
- \* Beak (or Bill): The hard, pointed mouth part of a bird that is shaped differently depending on what it eats.
- \* Wetland: An area of land that is very wet or has water in it most of the time, like a marsh or swamp.
- \* Flock: A group of birds that live and travel together.
- \* Predator: An animal that hunts and eats other animals for food.

### External Resources

Children's Books:

- \* "What Do You Do With a Beak?" by Emma Carlson Berne – A fun, interactive picture book that explores how different birds use their different beaks to find food, perfect for Second Grade learners.
- \* "Stranger in the Woods" by Carl R. Sams II and Jean Stoick – A beautifully illustrated book featuring wetland animals and their habitats, which helps students understand ecosystems.
- \*\*"Birds" by Kevin Henkes – A simple, engaging picture book that introduces different bird species, including wading birds, with charming illustrations and accessible text for early readers.