

Photo Description



This image shows a praying mantis, a large insect with a bright green body and two long front legs held up in front of its head. The mantis is perched on a plant stem near colorful pink and yellow flowers. You can see its big eyes looking forward and its leafy green color that helps it hide among plants.

Scientific Phenomena

Anchoring Phenomenon: Why does the praying mantis hold its front legs up in that special way?

The praying mantis holds its front legs up because it is a predator (an animal that hunts other animals for food). This pose helps the mantis catch insects like flies and grasshoppers that come near flowers. When an insect gets close, the mantis uses its powerful front legs to grab it very quickly—faster than we can blink! The mantis also has excellent eyesight and can turn its head almost all the way around to watch for prey. This is an example of how animals have special adaptations (body parts and behaviors) that help them survive.

Core Science Concepts

- * **Animal Adaptations:** The praying mantis has special body features that help it survive. Its green color blends in with plants (camouflage), its powerful front legs help it catch food, and its big eyes help it see prey.
- * **Food Chains and Predators:** The praying mantis is a predator that eats smaller insects. It hunts near flowers because insects come to flowers for food.
- * **Insect Body Structure:** The praying mantis has six legs (like all insects), two large eyes, and wings folded on its back. Its front two legs are specially adapted for catching prey.
- * **Habitats:** Praying mantises live in gardens, fields, and other places with plants and flowers where they can find food and hide from larger animals.

Pedagogical Tip:

Second graders learn best through observation and hands-on exploration. Before diving into vocabulary, have students watch a short video or observe pictures of a praying mantis moving and hunting. Ask them to describe what they notice BEFORE you introduce the word "predator." This builds schema and makes new vocabulary meaningful. You can also bring in a live praying mantis (if safe and ethical) for brief observation with proper handling protocols.

UDL Suggestions:

To support diverse learners: (1) Representation: Provide images, videos, AND real specimens if possible; some students need multiple modalities. (2) Action & Expression: Let students draw or act out how a praying mantis moves and catches food instead of only writing. (3) Engagement: Connect to student interests—ask if they've ever seen an insect in their backyard, making the lesson personally relevant. Use think-pair-share discussions to give all students time to process.

Zoom In / Zoom Out

Zoom In: Inside the Praying Mantis's Eyes

A praying mantis has very special eyes that work differently than ours! If we could look inside the mantis's eyes using a special microscope, we would see tiny structures that help it see movement super fast. The mantis's eyes have special cells that detect when things move, even tiny insects flying nearby. This is why the mantis can catch its food so quickly—its eyes send messages to its brain faster than most other insects' eyes can. Scientists call this "motion detection," and it happens at a level too small for us to see without special tools.

Zoom Out: The Garden Ecosystem

The praying mantis is just one small part of a much bigger system called a garden ecosystem. In this system, flowers need bees and other insects to help them make seeds. Small insects like flies and grasshoppers come to eat the flower pollen and nectar. The praying mantis hunts these insects. Then, bigger animals like birds might hunt the praying mantis! If we zoom out even further, we see that when plants die, they go back into the soil and help new plants grow. Everything in a garden is connected—plants, insects, predators, and even the soil beneath our feet all depend on each other to survive.

Discussion Questions

1. What do you think the praying mantis uses its big front legs for? (Bloom's: Understand | DOK: 1)
2. Why is the praying mantis's green color helpful when it sits on plants? (Bloom's: Analyze | DOK: 2)
3. If a praying mantis couldn't turn its head, how would that change the way it hunts for food? (Bloom's: Evaluate | DOK: 3)
4. Where would be a good place to find a praying mantis, and why? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

Misconception 1: "The praying mantis is praying because it's religious."

Clarification: The praying mantis got its name because its front legs look like hands folded together in prayer. But it's not actually praying! Those legs are hunting tools. The mantis holds them up so it can grab insects super fast. The name is just a comparison humans made because the pose reminds us of praying—it doesn't mean the mantis is doing something religious.

Misconception 2: "All insects are bad and we should get rid of them."

Clarification: Insects like praying mantises are actually helpful! The mantis eats insects that might damage our gardens or bother us. Many insects pollinate flowers so plants can grow food we eat. Even though some insects can be annoying, most are important friends in nature. The praying mantis is actually a "good bug" that helps gardens stay healthy.

Misconception 3: "The praying mantis is a bug, so it must be squishy inside like a caterpillar."

Clarification: Praying mantises have hard outer shells called exoskeletons, not bones like we do. The shell protects the soft parts inside, kind of like armor. This hard outside helps the mantis stay safe from predators and makes it strong enough to catch other insects. All insects have this hard outer covering—it's what makes them insects!

Extension Activities

1. Insect Hunt and Observation: Take students outside to a garden or grassy area (with proper supervision). Have them look for insects near flowers and plants. Ask them to observe and sketch what they see. Discuss: What do these insects need? Where do they hide? Would a praying mantis want to live here? This connects the lesson to their real world.

2. Make a Praying Mantis Model: Provide pipe cleaners, construction paper, and googly eyes. Have students build a 3D model of a praying mantis and label its body parts (head, legs, eyes). Display models around the classroom and have students explain what each part does.
3. Predator-Prey Movement Game: Play a classroom game where some students are "insects" (moving around the room) and one student is the "praying mantis" (trying to tag them gently). Rotate roles. Afterward, discuss how being a predator and being prey feel different, and why animals need to be fast or sneaky to survive.

Cross-Curricular Ideas

Math Connection: Insect Counting & Patterns

Create a graphing activity where students count how many insects a praying mantis might catch in a day (use realistic estimates: 5–10 insects). Have students make bar graphs or tally charts showing "insects caught" versus "insects that escaped." Students can practice skip-counting by 2s or 5s using insect illustrations. You could also create a simple word problem: "A praying mantis caught 6 flies on Monday and 4 flies on Tuesday. How many did it catch altogether?" This builds addition skills while reinforcing the predator-prey relationship.

ELA Connection: Descriptive Writing & Storytelling

Have students write or dictate a short story from the perspective of a praying mantis ("A Day in My Life as a Praying Mantis") or from a small insect's point of view ("Why I'm Scared of the Praying Mantis"). Encourage them to use descriptive words (green, fast, powerful, sneaky) and sensory language (what does the mantis see, hear, feel?). Students can illustrate their stories and share them with the class. This builds narrative writing skills and deepens comprehension of the mantis's role in nature.

Art Connection: Camouflage & Blending In

Have students create a "Praying Mantis Hide-and-Seek" art project. Provide green construction paper, markers, and collage materials. Students design a garden scene (flowers, leaves, stems) and then create a praying mantis that blends into the scene using camouflage colors and patterns. Display the artwork and challenge classmates to find the hidden mantis. This reinforces the concept of adaptation while developing fine motor skills and artistic creativity. You could also have students paint or color mantises on different backgrounds (brown leaves, pink flowers, green grass) to show how the same insect looks different depending on where it hides.

Social Studies Connection: Habitats Around the World

Praying mantises live on every continent except Antarctica! Show students a world map and mark where different types of praying mantises live (tropical rainforests, deserts, gardens, grasslands). Discuss how the mantis's body might change depending on its habitat. For example, mantises in rainforests might be different colors than those in grasslands. This introduces students to geography, biodiversity, and how animals adapt to different environments around the globe.

STEM Career Connection

Entomologist (Insect Scientist)

An entomologist is a scientist who studies insects, including praying mantises! These scientists observe how insects live, what they eat, and how they help or hurt gardens and farms. Some entomologists work in museums or universities, studying insects under microscopes and taking notes. Others work outside in nature, catching and observing insects to learn their secrets. Entomologists help farmers protect their crops by understanding which insects are helpful and which are harmful. They also help us understand why insects are important to our world.

Average Annual Salary: \$65,000–\$75,000 USD

Garden Designer / Horticulturist

A horticulturist is someone who designs and takes care of gardens and plants. These professionals need to understand which insects live in gardens and how to keep gardens healthy. If they know that praying mantises eat harmful insects, they might plant certain flowers to attract mantises to the garden! Garden designers think about all the living things in a garden—plants, insects, birds, and soil—and make sure they all work together. Some garden designers create butterfly gardens or pollinator gardens specifically to help insects and other animals thrive.

Average Annual Salary: \$50,000–\$70,000 USD

Wildlife Photographer

A wildlife photographer takes pictures of animals like praying mantises in nature. These photographers use special cameras and lenses to capture amazing photos and videos of insects hunting, moving, and living their lives. Wildlife photographers often work for nature magazines, documentaries, or educational companies. They need to be patient, sit very still, and know a lot about animal behavior so they can predict when something exciting will happen. The photo you're looking at was taken by a wildlife photographer who understands insects and knows how to capture their beauty!

Average Annual Salary: \$45,000–\$80,000 USD (varies widely by experience and publication)

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 external parts and internal systems.
- * K-LS1.C - All organisms have needs (food, water, air, shelter).

Crosscutting Concepts:

- * Patterns - Students notice patterns in how the praying mantis's body structure matches its hunting behavior.
- * Structure and Function - Students understand how the mantis's powerful front legs and large eyes help it survive.

Science Vocabulary

- * Predator: An animal that hunts and eats other animals for food.
- * Prey: An animal that gets eaten by another animal.
- * Adaptation: A special body part or behavior that helps an animal survive in its home.
- * Camouflage: Colors or patterns on an animal's body that help it blend in with its surroundings so other animals can't see it easily.
- * Insect: A small animal with six legs, three body parts, and often wings.
- * Habitat: The place where an animal lives and finds food, water, and shelter.

External Resources

Children's Books:

- Praying Mantis* by Darlene R. Stille (illustrated, factual, Second Grade level)
- The Praying Mantis* by Rachel Grack (National Geographic Little Kids, with photos)

Insects* by Darlene R. Stille (part of a series, includes information about many insects)

Next Steps: Use this lesson as a springboard to explore other insects, food chains, and animal adaptations throughout your Second Grade year!