

Photo Description



This image shows a praying mantis, a large green insect with long, folded front legs that look like hands pressed together in prayer. You can see its large eyes, thin body, and spiky legs perched on a plant stem near colorful pink and yellow flowers. The mantis is a hunter that waits very still for other insects to come close.

Scientific Phenomena

Anchoring Phenomenon: How does a praying mantis catch food it cannot reach?

The praying mantis demonstrates predatory adaptation and camouflage. This insect has evolved folded front legs (raptorial limbs) that allow it to ambush and snatch prey with lightning speed. The green coloring helps the mantis blend in with leaves and stems, making it nearly invisible to unsuspecting insects. This is an example of how animals have special body parts and behaviors perfectly suited to their role as hunters in nature. The mantis remains perfectly still—a hunting strategy called "sit-and-wait predation"—waiting for prey to approach before striking.

Core Science Concepts

- **Body Structures and Functions:** Praying mantises have specialized body parts (large eyes for seeing prey, powerful front legs for catching, and a flexible neck) that help them hunt. Animals have different body parts that help them survive.
- **Camouflage and Adaptation:** The mantis's green color helps it hide among plants. Animals have colors, patterns, and shapes that help them survive in their habitats.
- **Predator-Prey Relationships:** The praying mantis is a predator (hunter) that eats smaller insects. This shows how living things depend on each other in nature.
- **Insect Characteristics:** Like all insects, mantises have six legs, three body sections, and antennae. They are part of a larger group of animals called arthropods.

Pedagogical Tip:

First graders learn best through direct observation and hands-on exploration. If possible, invite a local naturalist or use a live (safe, contained) praying mantis for observation. Even video clips showing the mantis striking prey are far more memorable than pictures alone. The "WOW factor" of seeing this insect move creates lasting neural connections around the concept of adaptation.

UDL Suggestions:

Representation: Provide both visual images AND video clips of mantises hunting, plus simple labeled diagrams. Some students learn better kinesthetically—have students act out the "freeze and strike" hunting behavior with their arms.

Action & Expression: Offer multiple ways to show understanding: students can draw the mantis, act it out, build it with craft materials, or dictate observations to you. Avoid requiring writing, which is developmentally challenging in Grade 1.

Engagement: Connect to students' curiosity about "cool bugs." Frame the lesson as "Nature's Ninja" to capture their imagination and motivation.

Zoom In / Zoom Out

Zoom In: Microscopic Level

If we could shrink down and look at a praying mantis's eye under a microscope, we'd see thousands of tiny lenses packed together! Each lens helps the mantis see movement in different directions at the same time. This is why the mantis can spot a tiny fly moving from far away. The mantis's muscles in its front legs are also made of millions of tiny fibers that work together to make those legs snap shut super fast—faster than you can blink!

Zoom Out: Garden Ecosystem

The praying mantis is part of a whole neighborhood of living things in a garden or plant area. The mantis eats insects like flies and grasshoppers. Birds might eat the mantis. Plants provide the leaves and stems where the mantis hides and hunts. Flowers attract the insects that the mantis eats. When the mantis dies, it returns nutrients to the soil that help plants grow. Everything in the garden is connected like a chain, and removing one link (like the mantis) would change the whole garden ecosystem!

Discussion Questions

1. What special body parts does the praying mantis have that help it catch food? (Bloom's: Remember | DOK: 1)
2. Why do you think the praying mantis is green? How does that help it survive? (Bloom's: Understand | DOK: 2)
3. How is a praying mantis different from other insects like ants or bees? (Bloom's: Analyze | DOK: 2)
4. If a praying mantis didn't have those big strong front legs, how might its life be different? (Bloom's: Evaluate | DOK: 3)

Potential Student Misconceptions

Misconception 1: "Praying mantises are praying or religious insects."

- Clarification: The mantis got its name because its folded front legs look like hands pressed together in prayer, but the mantis is not actually praying. Those legs are hunting tools! The mantis is waiting quietly to catch insects to eat. We call it "praying" mantis only because of how it looks, not because of what it's doing.

Misconception 2: "All green insects are the same, and they all eat plants like grasshoppers do."

- Clarification: Even though many insects are green, they don't all eat the same things or live the same way. Grasshoppers are green and eat plants. Praying mantises are also green, but they are hunters that eat other insects! The green color helps both hide, but they use that hiding in different ways.

Misconception 3: "Insects are bugs, and all bugs are bad or dangerous."

- Clarification: Praying mantises are insects, and they are helpful in gardens and nature! They eat pest insects that can damage plants. The mantis is not dangerous to people—it won't hurt you. It's actually a helpful hunter that keeps the insect population balanced in nature.

Extension Activities

1. Mantis Movement Charades: Have students move around the classroom acting out how a praying mantis waits still and then quickly strikes. This kinesthetic activity reinforces the hunting adaptation and burns energy appropriately. You can play "freeze" music and students hold their "hunting position."

2. Camouflage Hunt: Hide pictures of praying mantises in a nature scene (leaves, stems, flowers) around the classroom. Students search for the "hidden" mantis, discovering firsthand how camouflage works. Discuss why this hiding ability helps the mantis survive.
3. Design a Hunting Arm: Provide straws, pipe cleaners, paper cups, and fasteners. Students design and build a model of a praying mantis front leg, then test it to "catch" lightweight objects (pom-poms, cotton balls). This connects to NGSS 1-LS1-1 about mimicking nature's designs.

Cross-Curricular Ideas

Math Connection: Counting and Comparing

Have students count the mantis's body parts: 6 legs, 2 antennae, 2 large eyes. Compare these numbers to other insects shown in pictures (ants have 6 legs, ladybugs have 6 legs). Create a simple bar graph showing "How Many Legs?" for different insects. This reinforces counting, comparison, and basic data representation.

ELA Connection: Descriptive Writing and Storytelling

Students dictate or draw a story called "A Day in the Life of a Praying Mantis." Prompt them with questions: "What does the mantis see when it wakes up? What does it eat? Who might try to eat the mantis?" Record their words on a large chart or in a class book. This builds narrative skills and vocabulary while deepening content understanding. You could also read aloud age-appropriate insect stories and have students act out scenes.

Art Connection: Camouflage Collage

Provide green, yellow, and pink paper scraps (matching the photo's colors), scissors, and glue. Students create a collage showing a praying mantis "hiding" in a garden among leaves and flowers. This hands-on activity reinforces the concept of camouflage while allowing artistic expression. Display the collages and play a game: "Can you find the hidden mantis?" This makes the adaptation concept tangible and visible.

Social Studies Connection: Habitats Around Us

Take students on a nature walk around the school grounds or local park to look for insects and their homes. Discuss: "Where do you think a praying mantis might hide in our schoolyard? What plants grow there?" Create a simple map of the classroom or outdoor area marking where different insects might live. This connects science learning to students' immediate community and environment, building place-based awareness.

STEM Career Connection

Entomologist (Insect Scientist)

An entomologist is a scientist who studies insects like praying mantises. They observe how insects live, what they eat, and how they help or hurt gardens and farms. Some entomologists work in museums, universities, or outdoor nature centers. They might catch and study insects, take pictures and videos of them, or teach other people about bugs. If you love watching insects and asking questions about how they work, you could be an entomologist!

- Average Annual Salary: \$65,000 USD

Wildlife Photographer

A wildlife photographer takes amazing pictures and videos of animals in nature, including insects like praying mantises. They use special cameras and lenses to capture insects doing cool things—like hunting or hiding. Their photos and videos appear in books, magazines, websites, and nature documentaries that teach people about animals. If you like taking pictures and learning about nature, this job could be for you!

- Average Annual Salary: \$42,000 USD

Garden Designer or Horticulturist

A garden designer plans and creates beautiful gardens for homes, parks, and public spaces. They know which plants grow well together and which insects help the garden stay healthy. A good garden designer understands that praying mantises eat pests, so they design gardens where mantises will want to live and hunt. This helps gardens stay healthy without using harmful chemicals. If you love plants and nature, you could design gardens that help insects thrive!

- Average Annual Salary: \$55,000 USD

NGSS Connections

Grade 1 Performance Expectations:

1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants or animals use their external parts to help them survive, grow, and meet their needs.

- Connection: Students could design a "hunting arm" inspired by the mantis's raptorial legs.

Disciplinary Core Ideas:

- 1-LS1.A Structure and Function – The praying mantis has body parts (legs, eyes, antennae) that help it live and survive.

- 1-LS1.B Growth and Development – Mantises grow through stages (egg !' nymph !' adult).

Crosscutting Concepts:

- Structure and Function – The mantis's folded legs are perfectly shaped for catching prey.

- Patterns – The green color pattern helps the mantis blend into its environment; the "freeze-and-strike" behavior is a repeating pattern.

Science Vocabulary

* Mantis: A large insect with long, folded front legs that it uses to catch other insects for food.

* Predator: An animal that hunts and eats other animals.

* Camouflage: Colors or patterns on an animal's body that help it hide from other animals.

* Adapt: To change or have special features that help an animal survive in its home.

* Insect: A small animal with six legs, three body parts, and usually wings.

* Antennae: Long, thin feelers on an insect's head that help it sense the world around it.

External Resources

Children's Books:

- Praying Mantis by Melissa Stewart (National Geographic Little Kids First Big Book Series) – Simple, beautifully illustrated facts.

- The Praying Mantis by Augusta Goldin (Let's Read and Find Out Science) – Clear text with engaging illustrations.

- Insects by Gallimard Jeunesse (First Discovery Books) – Interactive die-cut pages showing insect anatomy, including mantises.

Teacher Note: This lesson celebrates how animals are wonderfully designed for their specific roles in nature. First graders find praying mantises fascinating—leverage that genuine curiosity to deepen their understanding of adaptation, structure, and ecological relationships. The image provides an excellent "hook" for inquiry-based learning!