

## Photo Description



This image shows a praying mantis, a large insect with a bright green body and distinctive long, folded front legs that look like they are "praying." The mantis is perched on a plant stem near colorful pink and yellow flowers. You can see its large head, bulging eyes, and sharp claws on its powerful front legs that help it catch other insects.

## Scientific Phenomena

Anchoring Phenomenon: Why does a praying mantis hold its front legs in that strange "praying" position?

The praying mantis holds its front legs folded up because they are specially adapted hunting tools. This position allows the mantis to stay still and blend in with plants while waiting for prey to pass by. When an insect gets close, the mantis can strike incredibly fast—faster than the human eye can see—to capture its meal. This is an example of predator adaptation, where an organism's body parts and behaviors have evolved over time to help it survive and hunt successfully.

## Core Science Concepts

- \* Predator-Prey Relationships: Praying mantises are carnivorous predators that hunt smaller insects (like flies and grasshoppers), demonstrating how energy flows through food chains in ecosystems.
- \* Structural Adaptations: The mantis's folded front legs, powerful claws, swiveling head, and triangular body shape are all physical features that help it hunt and survive in its environment.
- \* Camouflage and Concealment: The mantis's green color helps it blend in with leaves and plants, making it harder for prey to see it and harder for predators to find it—a survival strategy called camouflage.
- \* Sensory Adaptations: The praying mantis has large, forward-facing eyes and can detect movement from far away, helping it locate and track moving prey with precision.

### Pedagogical Tip:

When teaching about praying mantises, use the "praying" hand position as a memory hook. Have students fold their own hands in the mantis position while discussing how this shape helps with hunting. This kinesthetic connection helps fifth graders remember structural adaptations more deeply than words alone.

### UDL Suggestions:

To support diverse learners: (1) Provide labeled diagrams showing mantis body parts alongside the photo for visual learners; (2) create a "hunting simulation" game where students use folded hands to "catch" moving objects to understand speed and precision; (3) offer video clips of actual mantis hunts at normal and slow-motion speeds so students can see the predator-prey interaction in action.

## Discussion Questions

- What body parts does a praying mantis have that help it catch prey, and how does each part help? (Bloom's: Analyze | DOK: 2)
- If a praying mantis lived on a brown tree trunk instead of green leaves, what do you think might happen to it over time, and why? (Bloom's: Evaluate | DOK: 3)
- How would an insect's life be different if it lived in an environment with praying mantises compared to an environment without them? (Bloom's: Synthesize | DOK: 3)
- What other animals do you know that use camouflage like the praying mantis does? How are their hiding strategies similar or different? (Bloom's: Analyze | DOK: 2)

## Extension Activities

### Activity 1: Mantis Hunting Simulation

Students work in pairs: one student is the "mantis" with folded hands, the other is the "prey" (a butterfly or fly). The prey walks slowly while the mantis tries to "catch" it using quick hand movements. Switch roles and discuss: How did the mantis's folded leg position help? Why do you think speed is important for hunting? This kinesthetic activity helps students understand predator adaptations through movement.

### Activity 2: Adaptation Detective Challenge

Display photos or drawings of five different insects (ladybug, grasshopper, stick insect, bee, dragonfly). Have students create a chart identifying each insect's adaptations (body shape, color, wings, legs, etc.) and hypothesize what each adaptation helps the insect do (jump, hide, fly, etc.). Discuss how different insects have different adaptations based on their lifestyles.

### Activity 3: Food Chain Construction

Students research what praying mantises eat and what eats praying mantises, then create a detailed food chain or food web poster. Include: plants ! small insects ! mantis ! (bird/larger predator). Have students color-code energy flow and explain why the mantis is important in its ecosystem even though it's a predator.

## NGSS Connections

### Performance Expectation: 5-LS1.A – Structures and Functions

Students understand that plants get the energy they need to grow chiefly from the sun, and animals get energy from eating plants or other animals.

### Disciplinary Core Ideas:

- 5-LS1.A – Structure and Function (body parts and their roles in survival)
- 5-LS2.A – Interdependent Relationships in Ecosystems (predator-prey dynamics)

### Crosscutting Concepts:

- Structure and Function – How the mantis's physical features enable hunting
- Cause and Effect – Why adaptations exist (selective pressure from the need to hunt)
- Patterns – The pattern of predator-prey relationships across ecosystems

## Science Vocabulary

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

- \* Prey: An animal that is hunted and eaten by another animal.
- \* Adaptation: A body part or behavior that helps an animal survive in its environment.
- \* Camouflage: Colors or patterns on an animal's body that help it blend in with its surroundings so it is hard to see.
- \* Insect: A small animal with six legs, three body parts, and usually wings.
- \* Ecosystem: A community of living things and the environment where they interact together.

### External Resources

Children's Books:

- Praying Mantis by Gail Gibbons (narrative nonfiction with detailed illustrations)
- A Mantis is My Pet by Jan Wahl (story-based introduction to mantis behavior)
- Insects by National Geographic Kids (field guide with outstanding photography)

YouTube Videos:

- "Praying Mantis Hunting in Slow Motion" – Brave Wilderness (2:45) – Shows real hunting behavior at slow speed so students can see the lightning-fast strike. [https://www.youtube.com/watch?v=A5-i0\\_5mOOw](https://www.youtube.com/watch?v=A5-i0_5mOOw)
- "Life Cycle of the Praying Mantis" – Crash Course Kids (3:12) – Explains mantis development, camouflage, and hunting strategies at an elementary level. <https://www.youtube.com/watch?v=aD2khKK8twA>