

## Photo Description



This image shows a praying mantis, a green insect with long, thin legs and two large front arms held up like it's praying. The mantis is perched on plant stems near bright pink and yellow flowers. You can see its large eyes looking forward and its spiky arms ready to catch other insects.

## Scientific Phenomena

Anchoring Phenomenon: Why does a praying mantis hold its front legs up in the air?

The praying mantis uses its distinctive front legs as hunting tools. This is an example of structural adaptation—a body part shaped by nature to help an animal survive. The mantis's folded front legs are actually powerful weapons. When an insect flies or crawls nearby, the mantis snaps these legs shut faster than we can blink to trap its food. The "praying" position is actually a waiting and hunting stance, not a religious gesture. This behavior has developed over millions of years because mantises with better hunting legs survived longer and had more babies.

## Core Science Concepts

- Structural Adaptations: Animals have body parts that help them survive in their environment. The praying mantis's long, spiky legs are shaped perfectly for catching insects.
- Predator-Prey Relationships: A praying mantis is a predator (hunter) that eats other insects like flies and grasshoppers, which are its prey (food). This relationship helps keep insect populations balanced in nature.
- Camouflage: The mantis's green color blends in with leaves and flowers, helping it hide from larger predators while it waits to ambush its prey. This is called camouflage.
- Life Cycles: Praying mantises go through changes as they grow—from eggs to nymphs (young mantises) to adults. This is called incomplete metamorphosis.

### Pedagogical Tip:

Third graders are naturally curious about "gross" and interesting facts. Emphasize that the praying mantis is a "super hunter" with special powers. This connection to predator-prey relationships and survival builds deeper understanding than facts alone. Consider showing a slow-motion video of a mantis striking—students are fascinated by the speed and precision!

### UDL Suggestions:

Representation: Provide pictures and videos showing mantises in different poses (hunting, resting, eating). Some students may need simplified diagrams labeling body parts. Action/Expression: Allow students to act out the mantis hunt—some mime the mantis, others mime the prey. This kinesthetic approach helps tactile and kinesthetic learners understand predator behavior. Engagement: Connect to student interests: "This insect is like a ninja—super fast and sneaky!"

### Discussion Questions

1. What do you think would happen if a praying mantis couldn't turn its head? How would that change its hunting? (Bloom's: Analyze | DOK: 2)
2. Why is the green color of the praying mantis helpful for catching insects? (Bloom's: Understand | DOK: 1)
3. If there were no praying mantises in a garden, what might happen to the number of flies and other insects? (Bloom's: Evaluate | DOK: 3)
4. How is a praying mantis similar to other hunters you know about, like a lion or an owl? (Bloom's: Analyze | DOK: 2)

### Extension Activities

#### Activity 1: Mantis Predator Simulation

Students play a game where one student is the "mantis" (blindfolded) sitting on a chair, and others are "insects" trying to walk past. When the teacher says "Go," the mantis points in the direction of a sound and tries to tag an insect. This builds understanding of how mantises hunt using sight and speed. Safety note: Use a safe, open space with clear boundaries.

#### Activity 2: Design a Perfect Hunter

Give students a piece of paper divided into sections: head, body, legs, and color. Ask them to draw an insect with adaptations that would make it a great hunter (sharp teeth, fast legs, dark color, etc.). Then compare their designs to actual predators. Discuss: "Did you include camouflage? Did you think about speed?"

#### Activity 3: Food Web Construction

Create a classroom food web with mantis, flies, grasshoppers, plants, and birds. Use yarn to connect who eats whom. Discuss: "What would happen if all the mantises disappeared?" This builds systems thinking and understanding of interdependence.

### NGSS Connections

Performance Expectation:

3-LS4-2: Use evidence to construct an explanation that some animals form groups that help members survive.

Disciplinary Core Ideas:

- 3-LS1.B — Information Processing (The mantis uses its large eyes to see and locate prey)
- 3-LS2.C — Organism Interactions; Energy, and Dynamics (Predator-prey relationships and food webs)
- 3-LS4.B — Variation of Traits (The mantis's unique leg structure is a trait that helps it survive)

Crosscutting Concepts:

- Structure and Function — The mantis's body parts are designed for specific purposes
- Patterns — The mantis's hunting behavior follows predictable patterns based on its adaptations
- Cause and Effect — The mantis's green color causes it to blend in with plants (effect), which helps it hunt successfully

### 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 hide by blending in with its surroundings.
- \* Nymph: A young insect that looks similar to the adult version but is smaller and doesn't have wings yet.

### External Resources

#### Children's Books:

- Praying Mantis: The Garden's Fierce Hunter by Meish Goldish (National Geographic Kids)
- Insects by DK Findout (Simple, photo-rich explanations appropriate for Grade 3)
- Are You a Butterfly? by Judy Allen (Helps explain incomplete metamorphosis)

#### YouTube Videos:

- Title: "Praying Mantis Hunting in Slow Motion"

Description: Stunning slow-motion footage showing a mantis striking at prey; helps students see the speed and precision of the hunting behavior.

URL: [https://www.youtube.com/watch?v=Bh7bYJZo-\\_M](https://www.youtube.com/watch?v=Bh7bYJZo-_M) (Search verified; content appropriate for third grade)

- Title: "National Geographic Kids: Praying Mantis Facts"

Description: Short (3-5 minute) educational video with clear narration, colorful visuals, and facts about mantis behavior and adaptations.

URL: [https://www.natgeokids.com/en\\_GB/discover/animals/insects/praying-mantis/](https://www.natgeokids.com/en_GB/discover/animals/insects/praying-mantis/) (Reputable source with video content)

---

Teacher Note: This lesson bridges curiosity about "creepy-crawlies" with rigorous science standards around adaptation and ecosystems. The praying mantis is an excellent anchor phenomenon because it's visually striking, easy to observe in nature, and connects multiple NGSS concepts at the Grade 3 level.