

Photo Description



This image shows a praying mantis perched on a plant stem among colorful flowers. The mantis has a long, thin green body with large front legs that are folded up like it's "praying." You can see its large eyes looking forward and its spiky legs ready to grab prey. A bee can be spotted in the background near the pink flowers.

Scientific Phenomena

Anchoring Phenomenon: A praying mantis waiting silently among flowers to catch insects.

Why This Happens: Praying mantises are ambush predators—they hunt by staying very still and camouflaged among plants. Their green color matches the plants around them, making them nearly invisible to insects like bees and butterflies that come to the flowers. When prey gets close enough, the mantis uses its powerful front legs to snap out and capture the insect in a fraction of a second. This hunting strategy is called "sit-and-wait" predation, and it works because the mantis blends in with its environment while waiting for unsuspecting meals to come to it.

Core Science Concepts

- **Camouflage and Adaptation:** The mantis's green color is a physical adaptation that helps it hide from both predators and prey. This is an example of how animals' body structures help them survive in their environment.
- **Predator-Prey Relationships:** Praying mantises are predators that eat insects, while they themselves are prey for birds and lizards. This creates a food chain and shows how animals depend on each other in nature.
- **Hunting Strategies and Behavior:** Different animals hunt in different ways. The mantis uses stealth and speed, while other predators might use teamwork, running speed, or other strategies.
- **Life Cycles:** Praying mantises go through incomplete metamorphosis—they hatch looking like tiny adults and grow larger through several stages, rather than changing form dramatically like butterflies do.

Pedagogical Tip:

When teaching about predator-prey relationships, help students understand that this isn't "mean" or "unfair"—it's a natural part of how ecosystems work. Use language like "the mantis needs to eat insects to survive" rather than focusing on the "violence" of the hunt. This builds ecological literacy without creating unnecessary emotional distress.

UDL Suggestions:

To support diverse learners: (1) Provide labeled diagrams of a mantis's body parts for visual learners; (2) Use hand motions to demonstrate how a mantis strikes (kinesthetic learning); (3) Create a word bank with key vocabulary for students who need language support; (4) Offer video clips showing mantis hunting in slow-motion so students can observe the behavior multiple times at different speeds.

Discussion Questions

1. Why do you think the praying mantis is green instead of red or blue? (Bloom's: Analyze | DOK: 2)
 - This question pushes students to connect the mantis's color to its survival strategy.
2. What might happen to the bee in this picture if it gets too close to the mantis? (Bloom's: Predict | DOK: 2)
 - Students use evidence from the image and prior knowledge to make predictions about predator-prey interactions.
3. The mantis hunts by staying still and waiting. Can you think of other animals that hunt in a different way? (Bloom's: Evaluate | DOK: 3)
 - This extends thinking beyond the mantis and encourages comparison of hunting strategies.
4. If all the flowers near the mantis died, how might that change where the mantis could hide? (Bloom's: Analyze | DOK: 3)
 - This connects the organism to its habitat and explores cause-and-effect relationships.

Extension Activities

Activity 1: Camouflage Hunt

Create a "mantis hunt" game in your classroom or outdoors. Hide small green objects (paper, plastic toys, etc.) among plants or natural items. Have students search for them within a time limit. Discuss how the green color made them harder to find, just like the mantis's camouflage helps it hide. This builds kinesthetic understanding of how adaptation works.

Activity 2: Design Your Own Predator

Provide students with art supplies and have them design an imaginary predator for a specific habitat (desert, forest, ocean, etc.). They must explain: What does it eat? What color is it and why? How does it hunt? This develops their understanding of how animals' structures and behaviors fit their environments.

Activity 3: Food Chain Diagram

Have students create a food chain or food web that includes the praying mantis. Start with the sun !' flower !' bee !' praying mantis !' hawk (example). Students can draw or cut out pictures to represent each organism and use arrows to show energy flow. Discuss: Where does the mantis fit? What eats the mantis? What would happen if one organism disappeared?

NGSS Connections

Performance Expectation:

4-LS1-1: From Molecules to Organisms: Structures and Processes — "Construct an argument that plants get the materials they need for growth chiefly from air and water." (Note: While this image focuses on the mantis, it can connect to the broader ecosystem context.)

Relevant Performance Expectations:

- 4-LS2-1: From Ecosystems to Interactions, Energy, and Dynamics — "Construct an argument that living things are affected by and can affect their environment." (The mantis's camouflage and hunting affect its ecosystem.)

Disciplinary Core Ideas:

- 4-LS1.A — Structure and Function: "All organisms have internal and external structures that serve various functions in growth, survival, behavior, and reproduction."
- 4-LS2.A — Interdependent Relationships in Ecosystems: "Plants depend on animals for pollination or seed dispersal, and animals depend on plants for food and other uses."

Crosscutting Concepts:

- Structure and Function — The mantis's body structure (long legs, folded posture, large eyes) enables its hunting function.
- Cause and Effect — The mantis's camouflage causes insects to not see it, which affects whether the mantis will catch food.

Science Vocabulary

- * Predator: An animal that hunts and eats other animals for food.
- * Camouflage: When an animal's color or pattern helps it blend in with its surroundings and hide from other animals.
- * Adaptation: A body part or behavior that helps an animal survive in its environment.
- * Prey: An animal that is hunted and eaten by other animals.
- * Ambush: A surprise attack by an animal hiding and waiting for its target to come close.
- * Ecosystem: All the living and non-living things in one area and how they interact with each other.

External Resources

Children's Books:

- Praying Mantis: Master of the Garden by Gail Gibbons (informational text with illustrations)
- The Praying Mantis by Jacqueline A. Ball (simple, engaging narrative)
- What Do You Know About Insects? by Buffy Silverman (includes praying mantis section)

YouTube Videos:

- "Praying Mantis Hunting in Slow Motion" — Brave Wilderness (<https://www.youtube.com/watch?v=xg3bvREIKxU>) — Shows the incredible speed and precision of a mantis strike in slow-motion, making the predator-prey interaction observable and safe for students.
- "Life Cycle of a Praying Mantis" — National Geographic Kids (https://www.youtube.com/results?search_query=national+geographic+kids+praying+mantis) — Demonstrates the mantis life cycle and various hunting techniques in different environments.

Instructional Note: This lesson works best when paired with outdoor observations (if mantises are native to your area) or with high-quality video footage. Consider inviting a local entomologist or nature expert to visit your classroom if possible. Always emphasize that praying mantises are beneficial insects and should not be harmed.