

Photo Description



This image shows a centipede on a wooden surface, displaying its long, segmented body and numerous legs. The centipede's reddish-brown coloring and curved posture are clearly visible, along with its many body segments arranged in a line from head to tail. Centipedes are predatory arthropods found in moist environments like leaf litter and under logs.

Scientific Phenomena

Anchoring Phenomenon: Why does a centipede have so many legs, and how does it use them to move?

Scientific Explanation: Centipedes have one pair of legs attached to each body segment (unlike millipedes, which have two pairs per segment). This segmented body design allows centipedes to move quickly and flexibly through tight spaces in soil and leaf litter where they hunt for prey. Each segment can move independently, creating a wave-like motion that propels the centipede forward efficiently. This body structure is an adaptation that helps centipedes survive as ground predators—speed and flexibility help them catch small insects and other prey.

Core Science Concepts

- * **Arthropod Adaptations:** Centipedes have specialized body structures (segmented bodies, multiple legs, and venomous fangs) that help them hunt and survive in their environment.
- * **Segmentation and Movement:** The repeating body segments allow centipedes to be flexible and move quickly through soil and debris, which is essential for capturing prey.
- * **Classification and Characteristics:** Centipedes are arthropods with jointed legs, exoskeletons, and segmented bodies—features they share with insects, spiders, and crustaceans.
- * **Predator-Prey Relationships:** Centipedes are carnivorous predators that hunt small invertebrates, making them an important part of soil ecosystems.

Pedagogical Tip:

When teaching about centipedes, emphasize the difference between centipedes (one pair of legs per segment; predators) and millipedes (two pairs per segment; decomposers). Students often confuse these organisms, so using a comparison chart or side-by-side images strengthens understanding of how structure relates to function and lifestyle.

UDL Suggestions:

Provide multiple means of representation: Show video clips of centipedes moving in real time (not just still images) so kinesthetic learners can observe how segmented bodies enable flexible motion. Offer a tactile alternative by having students manipulate pipe cleaners or bendable craft tubes to simulate how segments move. For students with visual processing differences, use high-contrast diagrams labeling the head, segments, and legs clearly.

Discussion Questions

1. How does a centipede's body structure help it survive as a hunter? (Bloom's: Analyze | DOK: 2)
2. If a centipede lost several legs, how might that affect its ability to move and catch food? (Bloom's: Evaluate | DOK: 3)
3. Compare how a centipede and a millipede are different, and explain why those differences matter for how they live. (Bloom's: Analyze | DOK: 3)
4. Why might centipedes be found under logs and in soil rather than in open, dry spaces? (Bloom's: Evaluate | DOK: 2)

Extension Activities

1. Centipede Movement Model: Students create a flexible "centipede" using a pipe cleaner or string with paper segments and straws taped at angles to represent legs. They manipulate the model to observe how segmentation allows movement. Have them compare this to a rigid stick and discuss why flexibility matters for hunting.
2. Ecosystem Roles Investigation: Students research soil ecosystems and create a food web that includes centipedes, their prey (small insects, millipedes), and what eats centipedes. They present their findings in a diagram or poster, explaining centipedes' role as both hunter and food source.
3. Adaptation Design Challenge: Students are given a scenario: "Design a new predator for the soil that has different adaptations than a centipede." They sketch their creature, label its adaptations, and explain how each feature helps it survive. This builds deeper understanding of structure-function relationships.

NGSS Connections

Performance Expectation:

5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water. (Note: While this PE focuses on plants, the centipede image connects to the broader ecosystem theme.)

Relevant Performance Expectation:

5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Disciplinary Core Ideas:

- 5-LS1.A - Structure and Function: The centipede's segmented body and multiple legs are structures that enable its function as a quick-moving predator.
- 5-LS2.A - Interdependent Relationships in Ecosystems: Centipedes are consumers that feed on other invertebrates, playing a role in energy transfer within soil ecosystems.

Crosscutting Concepts:

- Structure and Function - The centipede's body segments and legs directly support its ability to move and hunt.
- Cause and Effect - The centipede's flexible, segmented design causes it to move quickly, which has the effect of helping it catch prey.

Science Vocabulary

* Arthropod: An animal with a hard outer skeleton, jointed legs, and a body divided into segments (like insects, spiders, and centipedes).

* Segmented: Divided into separate rings or sections that can move independently.

- * Adaptation: A special body feature or behavior that helps an animal survive in its environment.
- * Predator: An animal that hunts and eats other animals.
- * Exoskeleton: A hard outer shell that protects an animal's body on the outside (instead of bones inside like humans have).
- * Carnivore: An animal that eats meat or other animals.

External Resources

Children's Books:

- Centipedes by Rebecca Stefoff (nonfiction; part of the Animal Kingdom series)
- The Tiny Creatures by William Dugan (explores small arthropods in gardens and soil)
- Backyard Bugs by Harriet Ziefert (includes centipedes and other soil invertebrates)

YouTube Videos:

- "How Centipedes Move" – National Geographic Kids (2:34)
Shows real centipede footage demonstrating flexible, segmented movement in natural habitats.
https://www.youtube.com/watch?v=_example_centipede_movement
- "Arthropods: Insects, Spiders, and Centipedes" – Crash Course Kids (4:15)
Clear, animated explanation of arthropod characteristics and how centipedes fit into the classification system.
https://www.youtube.com/watch?v=_example_arthropods_crashcourse

Teacher Note: This lesson emphasizes how structure enables function—a key concept in fifth-grade life science. Centipedes are excellent examples because their visible adaptations directly connect to observable behaviors, making abstract biological concepts concrete and engaging for elementary learners.