

## Photo Description



A crab sits on sandy beach ground. The crab has a hard shell and eyestalks that stick up. It uses its claws to dig in the sand.

## Scientific Phenomena

This image shows the Anchoring Phenomenon of animal adaptation to beach habitats. The crab demonstrates how living things have special body parts that help them survive in their environment. The crab's hard shell protects it from predators and waves, while its claws help it dig burrows in sand for shelter and find food. Its eyestalks allow it to watch for danger while staying low to the ground.

## Core Science Concepts

1. Animal Body Parts and Functions: Crabs have specialized structures like claws for digging, shells for protection, and eyestalks for seeing
2. Habitat Requirements: Beach animals need specific features to survive in sandy, salty environments with changing tides
3. Animal Behaviors: Crabs dig burrows, scavenge for food, and hide from predators as survival strategies
4. Living vs. Non-living: Students can observe how the living crab interacts with non-living sand and environment

### Pedagogical Tip:

Use hand gestures and movements to help students understand crab behaviors - have them practice "crab walking" sideways and pretend to dig with their "claws" to make the connection between body parts and functions more concrete.

### UDL Suggestions:

Provide tactile experiences by bringing in different shells, sand samples, and crab shells (if available) for students to touch and examine, supporting kinesthetic learners and students who benefit from multi-sensory input.

## Zoom In / Zoom Out

1. Zoom In: The crab's gills are hidden under its shell and work like underwater lungs, filtering oxygen from water so the crab can breathe
2. Zoom Out: This crab is part of the larger beach ecosystem where it helps clean the environment by eating dead plants and animals, connecting to ocean food webs

## Discussion Questions

1. "What body parts help this crab survive on the beach?" (Bloom's: Analyze | DOK: 2)
2. "How might a crab's claws be similar to tools that people use?" (Bloom's: Apply | DOK: 2)
3. "What would happen if a crab didn't have a hard shell?" (Bloom's: Evaluate | DOK: 3)
4. "What other animals have body parts that help them dig or protect themselves?" (Bloom's: Apply | DOK: 2)

## Potential Student Misconceptions

1. Misconception: "Crabs are fish because they live in water"

Clarification: Crabs are crustaceans with hard shells and jointed legs, not fish with scales and fins

2. Misconception: "All crabs live in the ocean"

Clarification: Some crabs live on beaches, in rivers, or even on land, but they still need moisture to survive

3. Misconception: "Crabs walk forward like people"

Clarification: Most crabs walk sideways because of how their legs are attached to their bodies

## Cross-Curricular Ideas

1. Math - Counting and Measurement: Students can count the crab's legs and claws, then measure different shells and sand samples using non-standard units (like blocks or paper clips). Create a simple graph showing "How many legs do different beach animals have?"
2. ELA - Story Writing and Descriptive Language: Students write or dictate simple sentences about the crab using sensory words: "The crab feels bumpy. The sand is soft. The crab moves sideways." Create a class book titled "Life as a Crab" with student-drawn illustrations and dictated text.
3. Art - Shell and Sand Collage: Students create beach habitat art by gluing real sand, shells, and other natural materials onto paper to make their own beach scene with a crab. This reinforces habitat understanding while developing fine motor skills.
4. Social Studies - Community Helpers: Connect to local beach workers like marine biologists, aquarium workers, or beach cleanup volunteers. Discuss how different people help protect crabs and their beach habitats, fostering community awareness and environmental stewardship.

## STEM Career Connection

1. Marine Biologist: A scientist who studies animals that live in the ocean and on beaches, like crabs. They watch crabs, learn about what they eat, and help keep beaches healthy. Average Salary: \$63,000 USD per year
2. Aquarium Worker: A person who takes care of crabs and other sea animals at aquariums. They feed the crabs, keep their tanks clean, and teach visitors about how crabs live. Average Salary: \$28,000 USD per year
3. Environmental Engineer: A person who designs ways to protect beaches and the animals that live there, like crabs. They figure out how to clean up beaches and keep habitats safe for all creatures. Average Salary: \$97,000 USD per year

## NGSS Connections

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

- Disciplinary Core Idea: 1-LS1.A - All organisms have external parts that they use to perform daily functions
- Crosscutting Concept: Structure and Function - The shape and stability of structures are related to their function

### Science Vocabulary

- \* Habitat: The place where an animal lives and finds everything it needs
- \* Adaptation: Special body parts or behaviors that help animals survive
- \* Predator: An animal that hunts and eats other animals
- \* Burrow: A hole or tunnel that animals dig in the ground for shelter
- \* Crustacean: An animal with a hard shell, jointed legs, and two main body parts

### External Resources

Children's Books:

- A House for Hermit Crab by Eric Carle
- Crab Moon by Ruth Horowitz
- Is This a House for Hermit Crab? by Megan McDonald