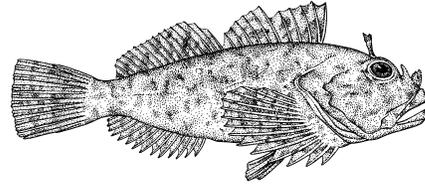
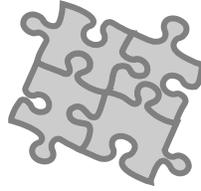


It's a Puzzle



Topics

Observation,
Adaptations

Grades

K-5

Site

Indoors, Aquarium

Duration

30 minutes

Materials

- Pictures of animals (magazines, calendars)
- Nonfiction resource materials (books, magazines, web sites)
- Poster board, cardstock, tag board
- Glue
- Scissors or cutting board
- **It's a Puzzle** (one for each student)
- Pencils
- Aquarium exhibits (optional)
- Writing paper or science notebooks

Vocabulary

adaptations,
camouflage, habitat

National Science Education Standards

Life Science (K-4)
Organisms and environments

Life Science (5-8)
Diversity and adaptations of organisms

Overview

What do animals need for survival in ocean habitats? How do scientists investigate and solve scientific "puzzles"? Students choose pieces of ocean animal puzzles with investigation topics. In small groups, they make observations of ocean habitats and their animals using nonfiction resources and aquarium exhibits. They record information about their animal's habitat and adaptations. Then they share their data to complete their "puzzles."

Objectives

Students will be able to:

- Observe carefully and record observations.
- Explain that animals have physical structures (body parts), behaviors or camouflage that may help them survive in ocean habitats.
- Identify food, water and shelter as animals' survival requirements.

Background

An animal's **habitat** is made up of living and nonliving things. Nonliving things include rocks, water, sand, soil and sunlight. Living things include plants and animals.

Plants and animals have physical structures and behavioral traits, called **adaptations**, that improve their chance for survival. For example:

- animals have body parts, such as paws, fur, or claws, which help them move, keep warm or find prey.
- like land plants that have leaves, stems and roots to transport water and minerals, ocean plants and algae have specialized structures that make them well adapted to an aquatic environment. For example, kelp, an algae found along North America's Pacific coastline, obtains its nutrients directly from the seawater. Unlike terrestrial plants, kelp has no roots to take in water and minerals. Its blades (leaf-like structures) collect sunlight for photosynthesis and absorb nutrients and carbon dioxide from the water. Its holdfast, a root-like structure, anchors the kelp to rocks and allows it to withstand high waves.



VOCABULARY

Adaptations: body parts and behaviors that help an animal survive

Camouflage: to blend in, match an environment

Habitat: a home where plants and animals have food and protection



TEACHER TIP

If you can't bring your class to an aquarium, consider doing this activity with animals found in your school's ecosystem. For example, you could use pictures of local birds, farm animals, or other wild animals. You could then go outside in the schoolyard or visit a local park, a petting zoo or a natural history museum and the Students could observe their animals in that location.

- **camouflage**, such as stripes or spots, may help an animal blend in with its surroundings to avoid predators or ambush prey. Animals also have behaviors that may help them find food (swimming, digging) or avoid predators (hiding, holding still).

Teacher Preparation

1. Make ocean animal puzzles (one for each student group). Glue a picture of an animal on stiff paper or recycled file folder. (Use illustrations from Monterey Bay Aquarium's animal fact cards at http://montereybayaquarium.org/lc/activities/critter_cards.asp.)
2. Cut the pictures into enough pieces for each student in the group to have one puzzle piece. On the back of the pieces, write topics (e.g., habitat, body parts, behaviors, interesting facts and so on) for the students to investigate.
3. Laminate all of the puzzles' pieces and place in one container. Mix up the pieces.
4. Print copies of the **It's a Puzzle** student sheet for each student or use science notebooks for recording information.

Procedure

1. **SHARE PICTURES OF OCEAN HABITATS AND ANIMALS WITH THE CLASS.**
Show a picture of an animal in its habitat. Ask students what they notice about the habitats (living and nonliving parts). *What do animals need for survival? (food, water, shelter) What physical structures or behaviors do ocean animals have to help them survive? (physical structures: hard shell, claws, large mouths; behaviors: hiding in sand, chewing on plants, swimming fast; camouflage)*
2. **STUDENTS SELECT A PUZZLE PIECE FROM THE CONTAINER.**
After everyone has a piece, challenge students to find other students with the same animal and put their puzzles together. Then have them make observations about their animals from the pictures. What do they notice about the animals? What are the living and nonliving parts of their habitats? What questions do they have about them?
3. **STUDENTS INVESTIGATE THE TOPIC ON THEIR PUZZLE PIECE.**
Have students turn their puzzle piece over to discover the topic they are going to research. Each student in a group will have a different topic. (With younger students, this may be done as a whole group activity by choosing one animal as a class to investigate.) Have students use books and other nonfiction resources to gather information about their topics and record it on **It's a Puzzle** or in their notebooks. Encourage the students to share information that they find about the other topics with their group. Note: each student is only responsible for recording information about his/her topic.
4. **STUDENTS MAKE ADDITIONAL OBSERVATIONS OF THEIR ANIMALS AT AN AQUARIUM.**
If possible, take the students to an aquarium where they can observe their animal for five to ten minutes. They write their findings on their puzzle sheets or in their notebooks. For younger children, chaperones may write the information for their group.
5. **SHARE WITH THE CLASS.**
Back in the classroom, have each group put their facts together. They may make an oral presentation or create a poster, mobile or three-dimensional animal with their facts attached and share it with the class.

Extensions

- Use the included **It's a Puzzle Table Label** at a family discovery event.
- Have two groups work together to create a Venn diagram for their animals. Share how their animals are similar or different.
- Have the class create an "ocean puzzle" using blue butcher paper. Students draw ocean habitats on the paper and then draw puzzle piece lines on it. Students add their animals and information to the puzzle.

Resources

Website

Monterey Bay Aquarium. www.montereybayaquarium.org

- View live web cams to observe sharks in the Kelp Forest and Outer Bay exhibits, and sea otters, penguins and birds in their exhibits.
- Explore the Animal Guide to find out facts about hundreds of exhibit animals.
- Print Animal Critter Cards that contain pictures and information.
- Research ocean habitats and animals and do hands-on activities from the *Sea Searcher's Handbook*.
- Find other hands-on activities about multiple topics in the Teachers section.

Books

The Kelp Forest. Leon, Vicki. Blake Publishing, 1990.

Sea Searcher's Handbook. Monterey Bay Aquarium, 1996.

Shoreline. Taylor, Barbara. Dorling Kindersley, Ltd., 1993.

Tide Pool. Gunzi, Christiane. DK Children, 1998.

Young Explorer's Guide to Undersea Life. Armstrong, Pam. Monterey Bay Aquarium, 2001.

Standards

California Science Standards

Grade K: 2a, c; 4a, e

Grade 1: 2a, b, c, d; 4a, b

Grade 2: 2a, c, d; 4c, d, f

Grade 3: 3a, b, c; 5b, e

Grade 4: 2b; 3a, b; 6a

Grade 5: 2a, g; 6a, b, h, i

California Language Arts Standards

Reading

Writing

Written and Oral English Language Conventions

Listening and Speaking

**THE MISSION OF THE
MONTEREY BAY
AQUARIUM
IS TO INSPIRE
CONSERVATION OF THE
OCEANS.**



ELL TIPS

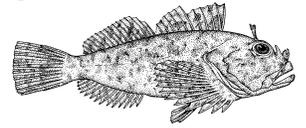
Build vocabulary for language learners by using realia. Have the students look at pictures or hold stuffed or plastic animals. Talk about some of the animal body parts (paws/claws, legs/flippers, mouths, eyes) and compare them to their own (arms, hands, legs, mouths, eyes).

It's a Puzzle!

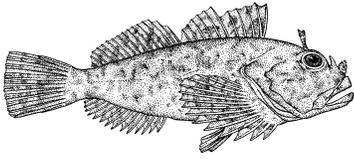


Your Name: _____

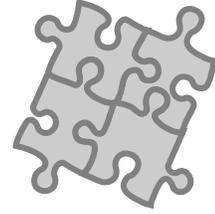
Animal Name: _____



Habitat and Food	Body Parts
Behaviors	Interesting Facts



It's a Puzzle! Table Label



1. Choose a puzzle piece. Find the fish that matches your piece.
2. Look on the back of the puzzle piece for ideas of what to observe, such as body parts or behaviors of the fish.
3. Make observations about your fish and write them on the student page.

¡Es un Rompecabezas!

1. Escoge un pedazo del rompecabezas. Encuentre el pez que es la pareja de su pedazo.
2. Observe detrás de su pedazo para ideas de que observar, como las partes del cuerpo o los comportamientos de los peces.
3. Haga observaciones sobre su pez y escríbalos en la página de estudiantes.