


Adaptations

Traveling Outreach Program
Pre- and Post- Visit Activities

Grades 2-4



 NATIONAL AQUARIUM IN BALTIMORE

The educational goals of the National Aquarium in Baltimore are supported by funding by the Jacob and Hilda Blaustein Aquatic Education Endowment Fund.

Animal
Planet

AUSTRALIA

WILD  EXTREMES



This booklet was prepared by the Conservation Education Department at The National Aquarium in Baltimore.

Nancy Hotchkiss, Director
Dianne Wilkes, Administrative Assistant
Susi Ridenour, Librarian

Staff:

Marjorie Bollinger
David Christopher
Melanie Clark
Vicki Fabiyi
Joe Harber
Martin Moretti
Julie Petrella
Beth Schap
Wendy Shepard
Kathy Siegfried
Jennifer Sillitti
Eve Stelzer

Illustrations by: Cindi Belcher

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Adaptations

A 45-minute Outreach program for Grades 2-4

Program Description

Adaptations will excite and engage your students in learning about how animals are adapted to living in water. This hands-on experience will expose students to several living marine invertebrates, such as a sea star, horseshoe crab, sea urchin, and hermit crab. Through the use of props and encountering these live animals, students will discover the adaptations of these animals; such as how they move, feed, see and protect themselves.

Planning for the Program

This Adaptations program fits into a unit pertaining to types of animals as well as a unit on adaptations of animals.

Pre-Outreach Program

The day before your Outreach program read the Teacher Background information and share this information with your students. Complete Activity 1 – Marine Invertebrates: Steps A, B, and C.

Day of the Outreach Program

The Adaptations program is a 45 minute program. The outreach staff will arrive to your school approximately 30 minutes before the start time listed on your contract. The outreach staff can move materials between classrooms; however, it is preferable to have one dedicated classroom for all classes to use for the program. The outreach staff requests that you allow at least 10 minutes between each program to clean up and set up for the next class. The outreach staff also requests a one hour break at midday for lunch. Please have a copy of the day's schedule available for Aquarium staff upon arrival. If you would like the Outreach staff to review your schedule, please fax it to 410-659-0116 ATTN: Outreach, or email to outreach@aqua.org.

Although parent volunteers are not required for this program, parents are welcome to take part. Volunteer information is included with your teacher packet.

Post-Outreach Program

The day after your visit complete Activity 2 - Which animal was your favorite?

AAAS Benchmarks

5A-K-2#1: Some animals are alike in the way they look and in the things they do, and others are very different from one another.

5A-3-5#1: A great variety of kinds of living things can be sorted into groups in many ways using various features to decide which things belong which group.

MD Science Content Standards

Science-Skills and Processes. Critical Thinking, Pre-K#1: Identify similarities and differences of objects, materials, concepts and actions.

Science-Life Science, Pre-K-3#1: Describe examples that show that living organisms have special parts that allow them to perform certain functions.

Teacher Background

There are over one million species of animals within the animal kingdom. This large group can be subdivided into vertebrates and invertebrates. Vertebrates are animals that possess a backbone made of several smaller bones called vertebrae. The invertebrates have no backbone. More than 95% of the animal kingdom is invertebrates, the majority being insects. During the **Adaptations** program, your students will observe four marine invertebrates, which are animals without backbones that live in the ocean.

In order to survive without backbones, these animals are uniquely adapted to their surroundings. Your students will be encouraged to learn about how each animal eats, sees, moves, and protects itself. By focusing on these adaptations, which are critical to survival, your students will learn the important role that each animal plays in the ecosystem.

Since handling the animals may be a new experience for the students, please review the following basic guidelines with them:

- Pick up the animal by the main body, not by appendages
- Hold the animal in the palm of your hand
- Always hold the animal over the water
- Don't keep the animal out of the water too long
- In case of sudden jitters, put the animal back in the water - please don't drop it!

Word Wall

Adaptation - the way in which one is equipped to survive in its environment

Ecosystem - a system formed by the interaction of a community of organisms with their environment

Invertebrate - an animal without a backbone

Marine - existing in, or produced by the sea

Vertebrate - belonging to a group of animals having a spinal column, including mammals, birds, reptiles, amphibians, and fishes

Resources

The National Aquarium in Baltimore web site.

<http://www.aqua.org>

Shape of Life: A revolutionary eight-part television series that reveals the dramatic rise of the animal kingdom through the breakthroughs of scientific discovery. The Shape of Life website features activities and resources, animal facts, and scientist biographies.

<http://www.shapeoflife.org>

Extraordinary Horseshoe Crab is an excellent children's book about the life of a horseshoe crab.

Extraordinary Horseshoe Crab
by Julie Dunlap

Activity 1- Marine Invertebrates

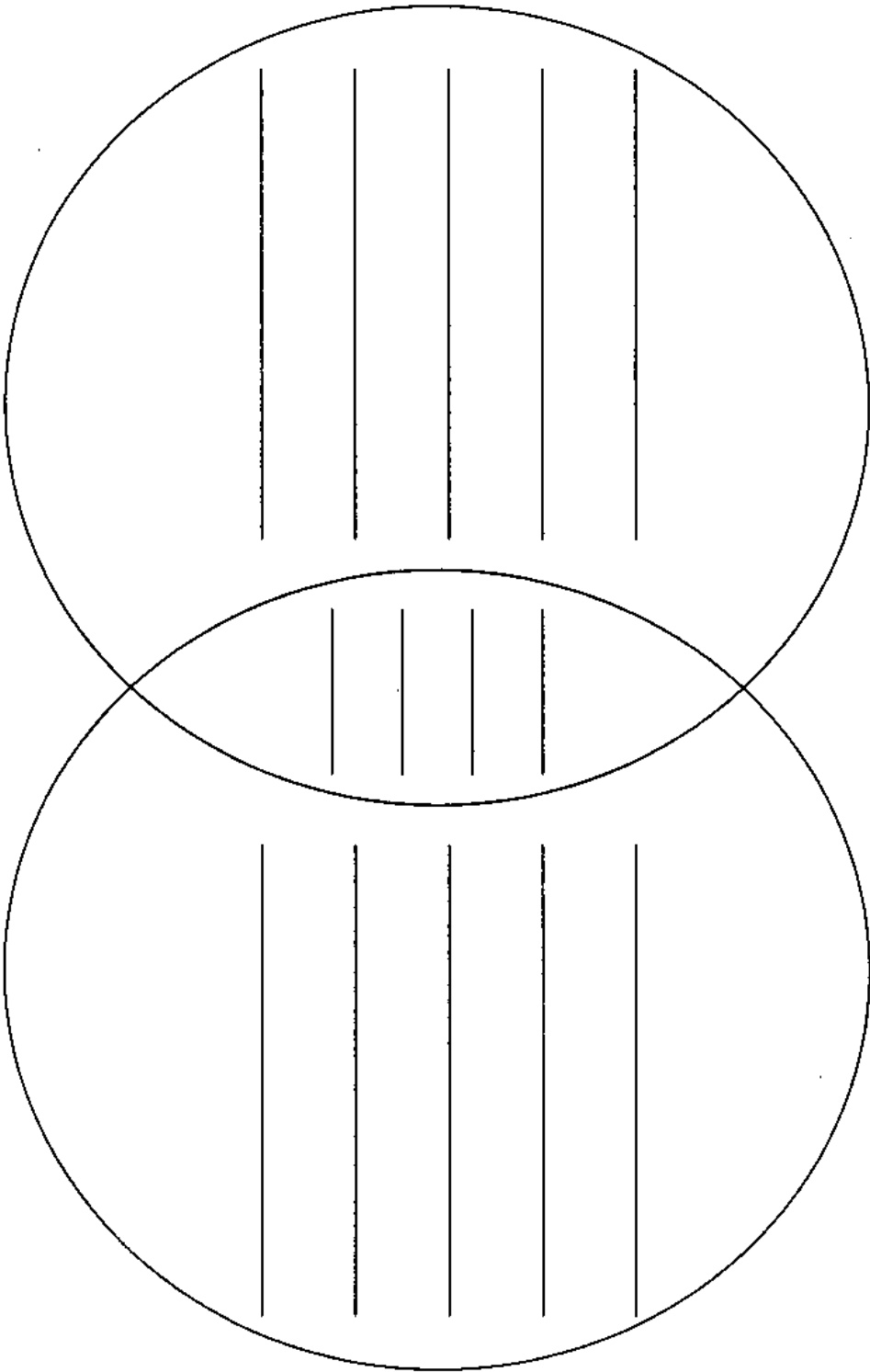
Step A: Complete a Venn diagram

Description

In this activity, students will brainstorm about the similarities and differences between two animals. They will complete a Venn diagram comparing two marine animals.

Procedure

1. Have students pick two marine animals; i.e. a fish and a crab.
2. Make photocopies of Venn Diagram and distribute to students.
3. Have students complete the worksheet.
4. Discuss the similarities and differences of these two animals.



Activity 1 – Marine Invertebrates

Step B: Which ones are "boneless?"

Description

In this activity, students will determine which animals on a worksheet are invertebrates and which ones are not. By studying what these animals look like, students will be able to circle the invertebrates.

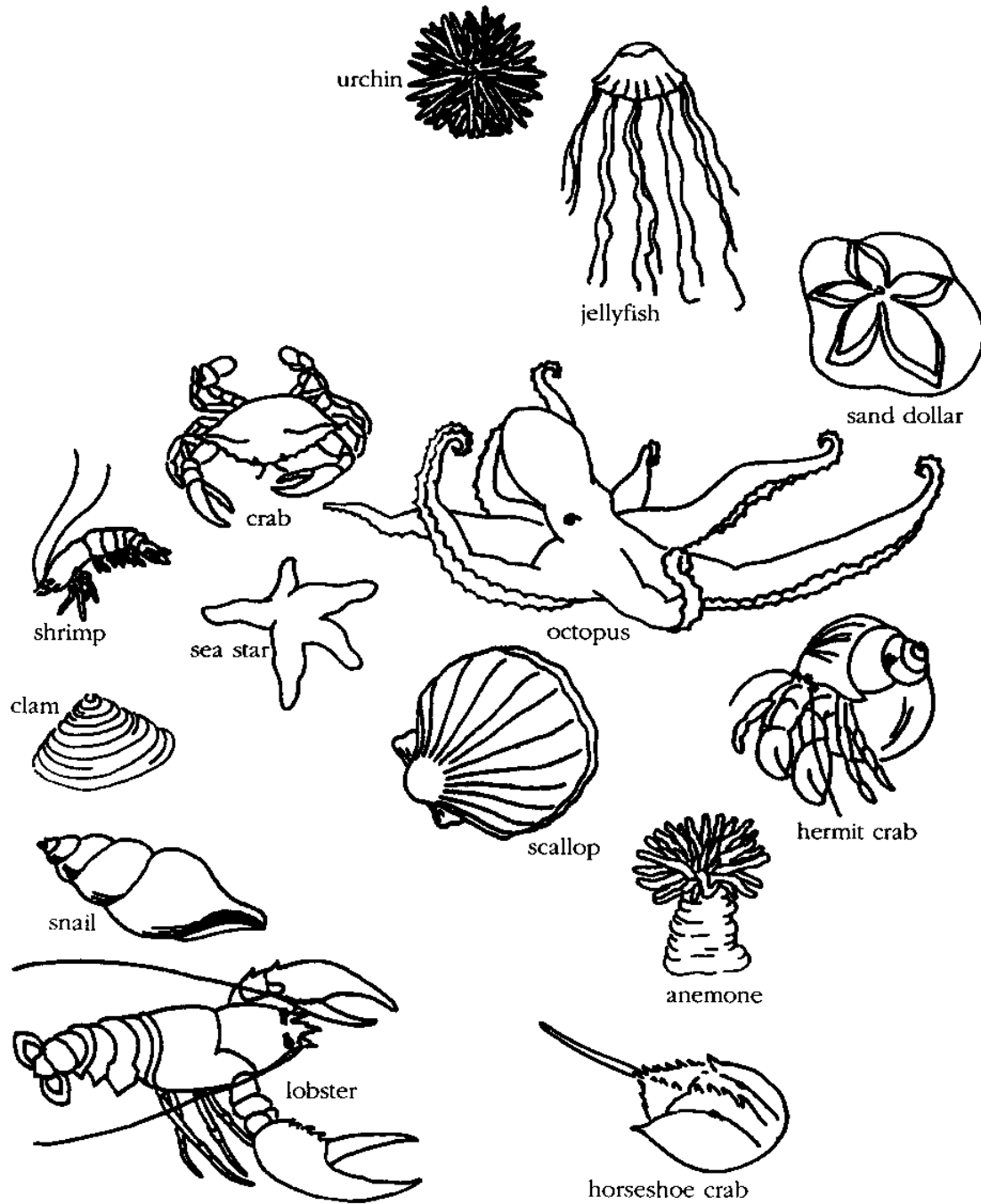
Procedure

1. Make photocopies of the "Marine Life" worksheet and distribute to students.
2. Have students circle the marine invertebrates.
3. Discuss which animals are not invertebrates and why.

Activity 1: Step B Marine Life

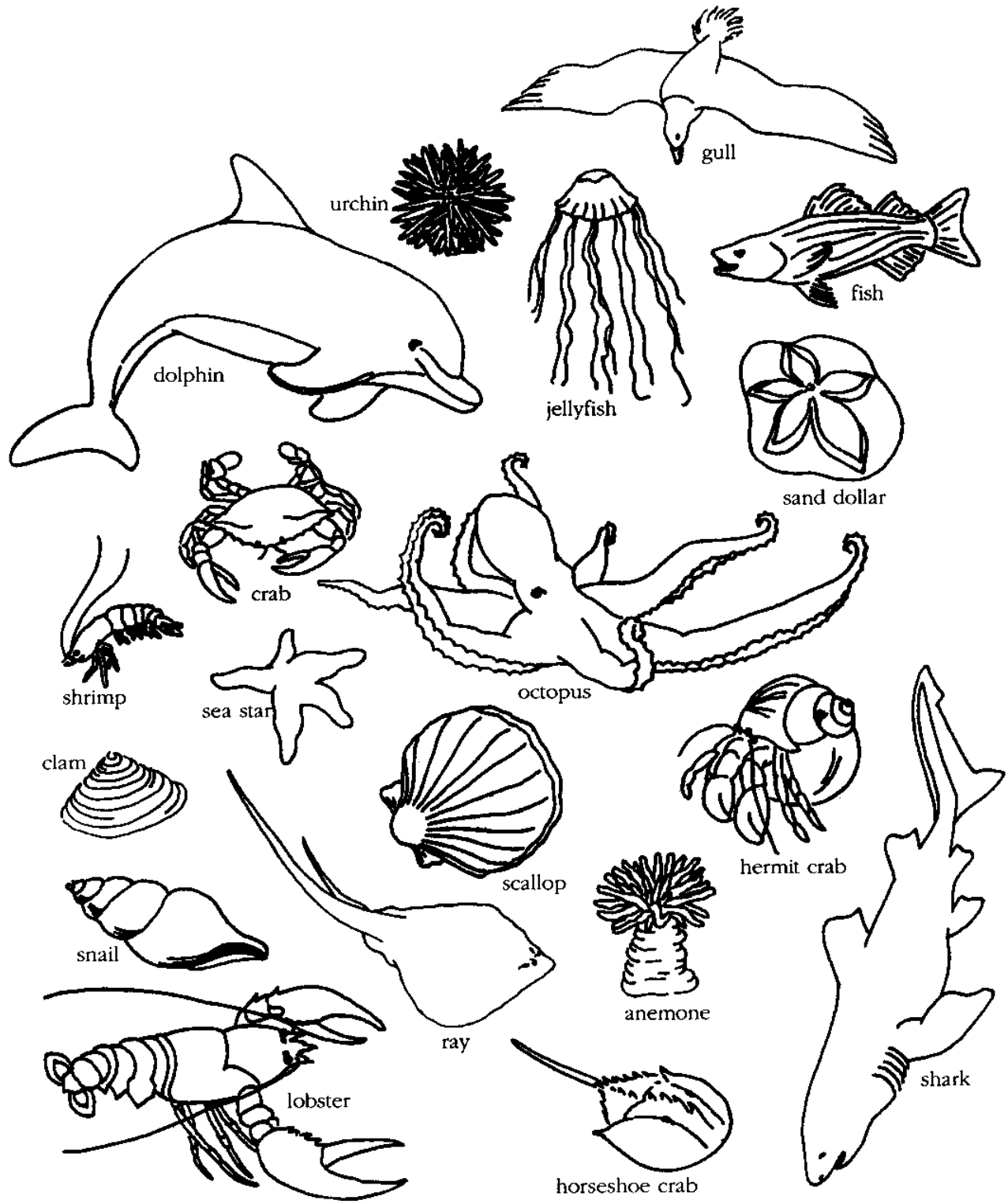
Instructor's answer sheet

Correct answers appear in black



Activity 1: Step B
Marine Life

Circle the marine invertebrates



Activity 1 - Marine Invertebrates

Step C: Adaptations

Description

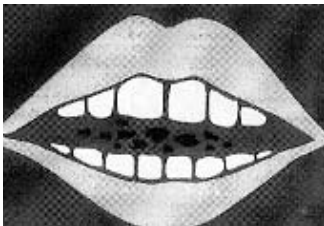
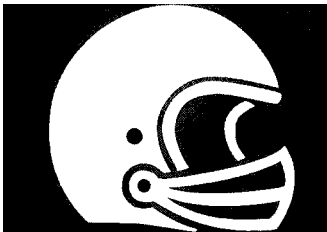
Students will complete the following worksheet by filling in the adaptation of humans that matches the symbol. This will help your students think about how we eat, move/walk, see, and protect ourselves. It will also prepare them for discovering the unique adaptations of marine invertebrates.

Procedure

1. Describe to students the activity that they will be doing.
2. Make photocopies of worksheet and distribute to students.
3. Have students complete worksheet and discuss the adaptations of humans.

Activity 1 - Marine Invertebrates

Step C: Adaptations



Activity 2 – Which one was your favorite?

Description

In this activity, students will write a letter to a friend telling them about their favorite animal they saw during their program. They will also pick their favorite adaptation and describe it to their friend (1st & 2nd grade); they will describe all four adaptations to their friend (3rd & 4th grade).

Procedure

1. Review with the students the types of animals they observed during the classroom program.
2. Explain adaptations again and ask the students to pick which animal was their favorite out of the four they touched.
3. Make photocopies and distribute the student page worksheet that is set up a like a letter.
4. Give students time to write a mock letter to their friend describing their experience and their favorite animal.
5. Post the letters or send them home with your students to share with friends and family.

