Slither, Slide, Creep and Crawl: Ocean Animal Exploration Traveling Outreach Program Pre- and Post-Visit Activities Grades Pre-K - K

National Aquarium
Education Department
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The National Aquarium is a nonprofit organization whose mission is to inspire conservation of the world’s aquatic treasures.
Slither, Slide, Creep and Crawl
A 30-45 minute traveling outreach program for Grades Pre-K—K

PROGRAM DESCRIPTION
Slither, Slide, Creep and Crawl will excite and engage your students in learning about marine animal adaptations. Learn how sharks, horseshoe crabs, snails, hermit crabs, and sea stars have adapted to their marine environment. Through the use of props and live animal encounters, students investigate how sea animals move, eat, and protect themselves.

PLANNING FOR THE PROGRAM
The Slither, Slide, Creep, and Crawl program takes place in your classroom. The students sit in a semi-circle around an Aquarium instructor. Your assistance with the children throughout the program is appreciated. Meeting and touching a live animal for the first time is exciting! Please prepare your students for this experience by discussing the following:

1. Each student will rinse his/her hands prior to touching the animals to remove any loose dirt or debris.
2. The animals are held by the Aquarium instructor. Students will have an opportunity to touch them. No one is required to touch the animals.
3. We employ the “one finger touch” rule for the safety of our animals: the students may touch the animals with one finger, gently stroking the animals and not poking them.
4. The animals in the program are gentle and cannot bite, pinch, or sting.
5. Each student will wash their hands following the animal encounters. We will provide hand sanitizer, however students should wash their hands with soap and water prior to eating.

This booklet contains basic information for teachers about the animals that could be used in the program, as well as some suggestions for related activities which can be used in the classroom. The content pages contain much more information than you will want to present to young children, but will provide teachers with excellent background information. Since this program is designed for both pre-kindergarten and kindergarten children, please modify the enclosed activities as necessary.

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-K-2 #2: Plants and animals have features that help them live in different environments.

MD Voluntary Curriculum

Grades PreK-K #1 – Science- Skills and Processes
Scientific Inquiry
Seek information through observation and exploration.

Grade K #1 – Science- Life Science- Cellular
Describe some of the ways in which animals depend on plants and on each other.

Grade K #1 – Science- Life Science- Biochemistry
Observe and describe characteristics, basic needs, and life cycles of living things.
PRE-OUTREACH PROGRAM
The day before your program, read the Teacher Background information and share this information with your students. As a pre-activity, you may include a discussion of the beach and animals that you might find there. Complete Activity 1 – Animal Memory Game found on pages 9 and 10.

DAY OF OUTREACH PROGRAM
On the day of your outreach programs, an Aquarium instructor will arrive at your school approximately 15 minutes prior to the start time listed on your contract. The Slither, Slide, Creep and Crawl program requires an area in your classroom large enough to fit all of your students into a semi-circle on the floor around the Aquarium instructor. Also, a power outlet is required in order to properly care for the animals used during the program.

POST-OUTREACH PROGRAM
The day after the Outreach program, complete Activity 2 – Aquarium Alphabet found on pages 11-16 and Activity 3 – Horseshoe Crab Puzzle found on pages 17 and 18.
Not all animals with shells are mollusks, however. For example, hermit crabs belong to the Phylum Arthropoda. Arthropods have a hard exoskeleton, jointed legs, and segmented bodies. The Class Crustacea consists of arthropods that can primarily be found in the ocean. They have two pairs of antennae and three distinct body parts: head, thorax, and abdomen. To support the body, the exoskeleton, or outside skeleton, is made up of a series of plates and tubes that are joined by flexible membranes to allow for movement. Several examples of arthropods include hermit crabs, horseshoe crabs, shrimp, lobsters, insects, and spiders. Gastropods, such as whelks and other snails, may be eaten or die leaving empty shells. Hermit crabs will use the abandoned snail shell as its home.

WHELKS

Whelks are one of the best known marine snails. The whelk family consists of about fourteen species. This marine snail can be found along the east coast of North America. Whelks are soft-bodied invertebrates (animals without backbones) that are protected by a very hard shell. The mantle of the whelk is a thin layer of tissue found between the body and the shell. To grow its shell, the mantle extracts calcium carbonate obtained from the sea. Marine snails are attached to their shells and can not completely leave them. Only when the animal has died will its shell become empty and inhabited by other invertebrates, such as hermit crabs. Whelk shells are usually light gray or off-white in color; some have brown and white streaks. The soft body of the whelk can be divided into the head, the body mass, and the foot. They have two light-sensitive eyespots that are found at the base of each of the antennae.

Three common species of whelks are the knobbed whelk (Busycon carica), channeled whelk (Busycon canaliculatum), and the lightning whelk (Busycon contrarium). Whelks can either be predators or scavengers. Whelks bury themselves just below the surface of the sand where their favorite foods, like clams, scallops, and oysters, can be found. Others scavenge for dead plants and animals. Using its large foot, the whelk will grab the prey and either pound it apart on its own strong shell or it will insert the outer lip of its own shell between the two shells to force them apart. Once the tasty prey is open, the whelk will insert its feeding device, called a proboscis. The proboscis contains the radula, which is a rough tongue-like organ that has thousands of tiny tooth-like protrusions called denticles.
HERMIT CRABS

Hermit crabs have become a popular household pet. Land hermit crabs are different than the marine hermit crabs that students will see during the program. Marine hermit crabs can be found on coral reefs, sandy ocean bottoms, grass beds, or in tide pools. Most crabs are solitary, hence the name “hermit.” They hide during the day and feed at night. They have a tough exoskeleton, or outside skeleton, which provides protection. They not only use their claws for feeding, but also to defend themselves. Crabs, like many other marine invertebrates, have gills. The water is circulated through their gills, located under the exoskeleton, to extract oxygen. Land crabs will simply absorb oxygen through a thin vascular membranes under the exoskeleton.

Like their relatives the lobster, shrimp, and true crab, hermit crabs have three body regions: a head, thorax (mid-body), and abdomen; two pairs of antennae; crushing mouth parts known as mandibles; and a hard exoskeleton. Protected inside the shell is the soft abdomen, which the animal uses as an anchor to its adopted shell. This soft abdomen is a very vulnerable part of their body. Hermit crabs spend much of their time hiding in abandoned snail shells or searching for larger ones.

As hermit crabs grow, they molt, or shed, their exoskeleton. As they get bigger, the shell they are currently living in will get tighter. Much of the life of these crustaceans is spent feuding with other crabs for a good shell. Once it finds a suitable shell it will inspect the inside and outside of the new prospect with its antennae and claws. If it feels as if the shell is a good fit, it will release its anchoring limbs from the old shell, slip its abdomen out of the old shell and quickly insert it into the new one. If it is a perfect fit, the hermit crab is on its way, if not, it will quickly transfer back into the old shell.

Hermit crabs are omnivorous scavengers, feeding on both living and dead plant and animal materials. Although they are protected by their borrowed shells, they are preyed upon by larger hermit crabs, octopus, and even several kinds of reef fish with jaws specifically designed for crushing shelled invertebrates.

SEA STARS

Sea stars, formerly known as starfish, are related to sand dollars, sea cucumbers, and sea urchins. The name “starfish” was changed to sea star since the animal is not a fish. Sea stars are invertebrates since they lack an internal skeleton. There are 1,600 species of sea stars found worldwide.

All sea stars have a similar body form. Typical sea stars have five arms, but some, like the sunflower star found on the West Coast, have as many as 40! A light sensitive eye is located at the end of each arm. The back of the sea star is rough with a spiny appearance due to the presence of small spines and ridges. Located on the back of the sea star is a dark spot called the madreporite. Students often incorrectly think this is an eye, nose, or mouth of a sea star. The madreporite is an organ that acts like a straw to suck up water into the sea star’s body to move the tube feet located on the underside. The tube feet are hollow with suction cup tips. When water is squeezed through the hundreds of tube feet, they extend and allow the sea star to move, climb, and hold onto objects. The suction cups at the end of the tube feet can firmly attach the sea star to rocks and allow them to stay attached when pounding waves hit. The mouth is located in the center of the body on the same side as the tube feet.

The eating habits of sea stars are often seen as both intriguing and repulsive. All sea stars are predators and eat snails, crustaceans, polychaete worms, fish, and other sea stars. Many sea stars have the ability to eat bivalves like...
Behind the mouth and legs are the book gills. The book gills are flattened structures which overlap like the pages of a book and enable the animal to breathe by removing oxygen from the water. However, horseshoe crabs are so hardy that they may survive out of water for one year if the gills remain damp.

Adult horseshoe crabs have a telson that is usually about five inches long. Some believe that the tail is filled with venom or that it is used to “jab” the unwary beachcomber. Actually, the tail is harmless, (although it may indeed puncture a bare foot) and is used as a lever to right an animal that has been flipped on its back. It is also used in swimming, as are the book gills. When the crab swims, it does so in an upside down position.

A good time to observe horseshoe crabs is in the late spring when they migrate in large numbers to the shallow waters of bays and estuaries to mate. The female crawls onto the beach, usually with one or several males in tow. The males grasp the larger carapace of the female using a specially modified first pair of walking legs. The female then scoops out a depression in the damp sand and deposits 200 to 300 blue-green eggs the size of B-B’s. The male moves over the nest and covers the eggs with sperm. This accomplished, the pair leave the nest and return to the water.
Resources

NATIONAL AQUARIUM, BALTIMORE, MD
aqua.org
The National Aquarium’s website provides information about marine animals. The website also includes useful information pertaining to other teacher resources.

THE SEASIDE NATURALIST
by Deborah Coulombe
ISBN# 0-671-76503-5
The Seaside Naturalist discusses a general overview of the ocean and what affects it, marine food webs, and background information on the common marine plants and animals found along the Atlantic coast. Example topics include invertebrates, fish, shore birds, marine mammals, and marine reptiles. Large, simple drawings are labeled and are great for photocopying. The information is explained so even an amateur can become knowledgeable.

SEA STARS
by Lola Schaefer
ISBN# 0-516-21838-7
Sea Stars has a Pre-K-2 interest level with simple text and full color photographs. The content is good for emergent and early readers. This book is one in an eight book series on ocean life.

A HOUSE FOR HERMIT CRAB
by Eric Carle
ISBN# 0-88708-056-1
A House for Hermit Crab is a children’s book that brings to life the story of a hermit crab in search of a perfect home. Kids will enjoy the pictures while learning about hermit crabs.

HARRY HORSESHOE CRAB
by Suzanne Tate
ISBN# 1-878405-03-9
Introduce your students to horseshoe crabs through Harry Horseshoe Crab in this exciting story. The book contains engaging pictures and basic information about horseshoe crabs.
Activity 1 — Animal Memory Game

DESCRIPTION
During the Slither, Slide, Creep and Crawl program, your students will learn about a number of ocean animals. This activity allows you to help your students become familiar with the animals about which they will be learning. After completing this activity, each of your students will have a memory game of their own to play!

PROCEDURE
1. Read the Teacher Background information provided in this booklet on pages 5-8 and share it with your students.
2. Make 2 copies of the Animal Memory Activity Sheet found on page 10 for each student. Provide your students with crayons to color in each set of pictures.
3. Cut out the individual squares or have your students cut them out.
4. Each of your students has their own Animal Memory Game!
5. To play, place each animal square face down on a table top or the floor. Take turns picking pairs of cards. If the animals chosen match, the player gets another turn. If the animals chosen do not match, then the players turn is over and the next player has an opportunity to choose. The game is over when all cards have been chosen. The player with the most matched pairs wins!
Activity 1 — Animal Memory Game

<table>
<thead>
<tr>
<th>HERMIT CRAB</th>
<th>WHELK</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORSESHOE CRAB</td>
<td>SHARK</td>
</tr>
<tr>
<td>SEA STAR</td>
<td>SEA URCHIN</td>
</tr>
</tbody>
</table>
Activity 2 — Aquarium Alphabet

DESCRIPTION
During the Slither, Slide, Creep and Crawl program, your students were introduced to a number of ocean animals. The Aquarium Alphabet activity will allow your students to review what they learned about the animals, as well as allow them to practice their writing skills.

PROCEDURE
1. Review with your students the animals that they learned about during the Slither, Slide, Creep and Crawl program. These may include the shark, sea star, urchin, whelk, hermit crab and horseshoe crab.
2. Make a copy of each of the Aquarium Alphabet Activity Sheets found on pages 12-16 for each student. There are 5 activity sheets: hermit crab, horseshoe crab, sea star, urchin, and whelk.
3. Provide your students with crayons to color the sheets.
4. Have your students trace the name of each animal in the space provided.
Activity 2 — Aquarium Alphabet

Hermit crab
Activity 2 — Aquarium Alphabet

Horseshoe Crab
Activity 2 — Aquarium Alphabet

Sea star
Activity 2 — Aquarium Alphabet

U

Urchin
Activity 2 — Aquarium Alphabet

Whelk
Activity 3 — Horseshoe Crab Puzzle

DESCRIPTION
Engage your students in a fun activity to review the basic anatomy of the horseshoe crab. Students can recall what the animal looked like by piecing together the parts of a horseshoe crab.

PROCEDURE
1. Enlarge the picture of the horseshoe crab body parts found on page 18. You can either make copies for each student or do one large puzzle as a group.
2. Have your students color the puzzle pieces.
3. Have your students cut out the pieces.
4. Have your students fit together the pieces of the puzzle while explaining what each different body part is and its function. This is a two-sided puzzle, so some pieces are the top side of the horseshoe crab and some pieces are the bottom side of the horseshoe crab.
5. Your students may glue the pieces together to create a horseshoe crab model, or they may save the pieces so that they can use the puzzle again.
Activity 3 — Horseshoe Crab Puzzle