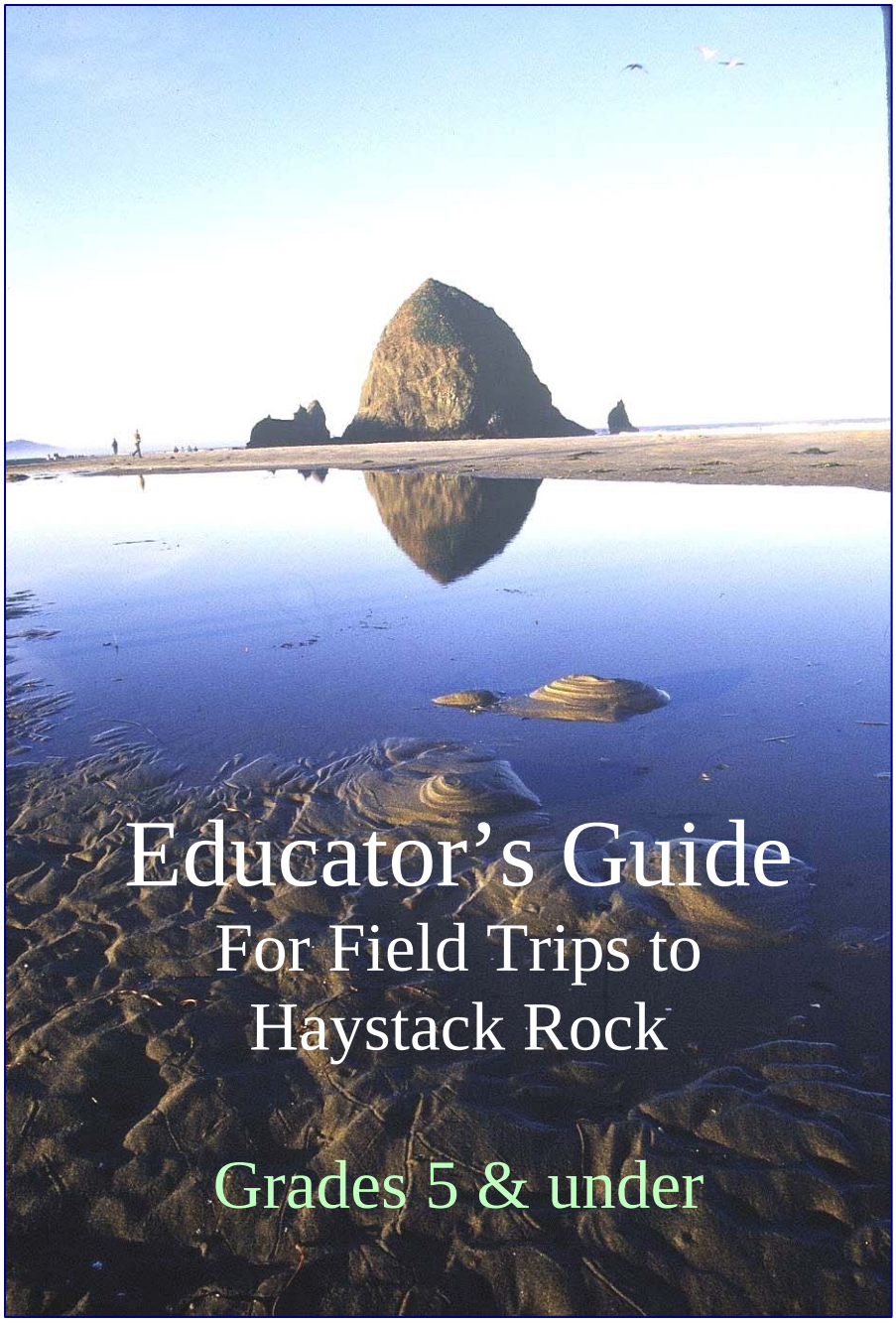

Educator's Guide

For Field Trips to Haystack Rock

Grades 5 & under

The Haystack Rock Awareness Program

A program of

The City of Cannon Beach

Last updated 1/12/2011

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About the Program:

The Haystack Rock Awareness Program (HRAP) is an environmental education program of the City of Cannon Beach. HRAP's mission is to protect, through education, the intertidal and bird ecology of the Marine Garden and Oregon Islands National Wildlife Refuge at Haystack Rock. The program provides trained staff and volunteer natural history interpreters during spring through fall to educate visitors about the rocky intertidal and nesting seabird areas. In addition, HRAP coordinates field trips with visiting groups during this time. Groups are scheduled to spread out the impact and crowding of this intensely visited area. This provides a more enjoyable experience for students and helps prevent damage to the fragile Marine Garden ecosystem. If you would like to schedule a trip, please read the *Scheduling Tips* section which gives directions for scheduling and contact information for the Marine Education Intern. If you have already scheduled your trip, we look forward to seeing you on the beach! More information on our program can be found at our website:

http://www.ci.cannon-beach.or.us/%7ENatural/HRAP/hrap-program.html

NEW! To HRAP in 2011! A short video to help you prepare for your field trip to Haystack Rock.
Click on link above, then click on "Teachers Planning a Field Trip" at the top of the page. Click on highlighted "Watch...." to view.

About Field Trips:

HRAP schedules field trips at the rock an hour before low tide and at low tide. Field trips run approximately an hour so we can accommodate as many groups as possible during the low tide. Please arrive a few minutes before your scheduled time so you can get the maximum time possible in the intertidal area. Also please come prepared with students divided into 4 groups with chaperones with each group.

HRAP will set up 4 stations for students at Haystack Rock:

1-2 Intertidal stations: We typically have one intertidal station on the north side and one intertidal station on the south side of the rock. Each station will focus on different aspects of the intertidal habitat. At times, only a single intertidal station will be available due to tide, weather, or ephemeral deep water channels that may prevent access to some areas.

1-2 Bird viewing stations: A bird viewing station will be set up on the north or south side of the rock to view nesting seabirds. We may set up two bird viewing stations to provide views of different species and habitats (e.g. Tufted Puffins on the north side and Black Oystercatchers on the south side).

1 Aquaria station: In addition, HRAP has a temporary collection permit which allows us to set up aquaria tanks at tables in front of the Marine Garden. Aquaria,

microscopes or stereoscopes will be set up to give students a closer view of intertidal animals. Animals will later be returned to their intertidal homes.

Please see the *Study Ideas* section for a more detailed discussion of the field trip. A classroom introduction to the marine environment before your trip will greatly enhance the student's learning experience. The more specific the activities or study focus, the better. Students will learn relatively little from a vague assignment, such as "head out and find as many different creatures as you can". With such an assignment, students are more likely to get injured rushing from place to place to find animals and are more likely to damage the intertidal areas in the process.

About Haystack Rock:

Haystack Rock is a protected Marine Garden and is part of the Oregon Islands National Wildlife Refuge. Everything above the high tide line (upper barnacle line) at Haystack Rock is part of the Oregon Islands National Wildlife Refuge and is closed to public access to protect wildlife. Everything below the high tide line is a state-protected Marine Garden, set aside for wildlife habitat preservation and public education. Collecting, climbing, and harassment are prohibited by these designations.

More information about the Oregon Islands National Wildlife Refuge can be found at:

http://www.fws.gov/oregoncoast/oregonislands/

More information about Marine Gardens can be found at:

http://www.oregon.gov/OPRD/NATRES/RS_FAQcoastal.shtml#What_is_a_Marine_Garden_

To the Teacher:

Volunteers and staff of the Haystack Rock Awareness Program designed this intertidal ecology unit for school groups who visit Haystack Rock. It is intended to facilitate a basic understanding of the intertidal animals, nesting seabirds, and the associated habitats at Haystack Rock. A donation of $2 per student is suggested to support the continuation and improvement of our program. This is a work in progress and your input is greatly appreciated.

Preparing for Your Trip: Scheduling, Beach Safety & Stewardship

Exploring tide pool areas is fun, but adequate planning is essential. Waves crash and smash against the rough and rocky shore. Wind blows, sun shines and rain...well, rains. Planning ahead will make the trip rewarding and safe for your class.

Scheduling Tips:

1. **Check a tide schedule**- There are roughly two lows and two highs each day. Tides of 0.0 feet and lower are better for tide pool viewing at Haystack Rock. When the ocean is calm, many intertidal areas can still be viewed at plus 1 to 2 foot tides, but a calm ocean is not predictable. Understand that tide books reflect an educated guess and the weather can affect the accuracy of the information. The tide table booklet most adequate for the low tides at Haystack Rock is the Pacific Beaches tide table. Pacific Beaches tide tables are available at many coastal businesses and visitor facilities. On the web, visit the website for tide predictions at:
http://www.cannon-beach.net/cbweather.html

2. **Identify dates with appropriate tides -Try to plan your visit an hour before low tide or at low tide.** An hour before is preferred as this will give you time to explore while the water is still receding. Remember, weather conditions like big surf and strong winds can GREATLY affect both the level of the tide and the speed with which it comes in. **Remember to arrive at least a half hour before your beach start time. This will allow time to get organized, have restroom breaks and walk to Haystack Rock.**

3. **To schedule a trip with the Haystack Rock Awareness Program**, please call or e-mail the Marine Educator Intern at 503-436-8095 or donna.lenius.hrap@gmail.com. Scheduling begins as early as December for spring field trips. Please try to schedule your trip at least two months in advance before the low tide dates are fully booked. Identify alternative dates in case your date of choice is already filled.

4. Adult supervision is important for safety and to ensure a high quality experience- Recommended adult:student ratios are 1:4 for ages 8 and under; 1:6 for ages 9 to 12; and 1:8 for ages 13 to 18. This makes it easier for the students to focus on the planned activity and questions can be responded to more easily.

Beach Safety Tips:

Our rocky shores are rough, wet places home to both animals and plants. While they are fun places to explore, safety precautions are a must. Rocks are slippery, the ocean is dangerous, and sneaker waves are a common occurrence. In addition, rocky shores are homes for animals and plants not well adapted to our feet and hands. Remember the following guidelines to ensure a safe trip to the tide pools for you and for the animals and plants that live there.

1.Keep an eye on the ocean – Large wave surges, or sneaker waves, can knock any person off their feet without warning! Sneaker waves are not predictable, but if you remember to never turn your back on the ocean you will be able to see when large waves are coming and move to a safe area.

2.Use caution – Running, jumping, or playing around in tide pool areas is unsafe for you and for the animals that live there. Rocks that are covered with wet algae and animals are slippery. Some animals and rocks are sharp. The combination of slippery and sharp has resulted in many injuries in tide pool areas, so please walk in intertidal areas! (See the *Stewardship* section for avoiding stepping on plants and animals).

3.Check your tide table – Know when the tide is coming in so you can watch for rising water. And realize that the time is only a prediction and the weather can affect the accuracy of the information.

4.Be ready to get wet – Wearing proper shoes allows you to avoid rock hopping, which is safer for you and the animals and plants that live on rocks. Wear layered clothing for unpredictable weather changes and bring a rain jacket. If you are traveling a long distance a change of clothes is a good idea just in case you get wet.

5.Please do not play on driftwood – It only takes four inches of water to move a five-ton log!

6.Please don't allow children to play in the water without adult supervision. Undercurrents and rip tides can pull children far away from shore. Ask a life guard where there are known rip currents and keep an eye on kids to make sure they do not go out too deep, or play in unsafe areas.

Stewardship:

Intertidal areas are fragile ecosystems. Activities such as trampling, turning over rocks, and removing animals from their habitat can greatly damage the tide pool life. Yet we can all enjoy tide pool areas and ensure their survival by following a few simple rules.

Listed below are rules that help ensure the preservation of the Marine Garden and wildlife refuge for future visits. Thank you for helping us to be responsible stewards by following these guidelines.

1. Tread Lightly – Always stay on bare sand or small bare rock. It can be tricky to navigate tide pool areas without stepping on live animals. Please follow these tips to help minimize human impact on this fragile area:

a. Walk slowly, and look where you place your feet. Animals in the intertidal areas are often small and camouflaged.
b. Learn to recognize barnacles, mussels, anemones, algae, snails and other creatures so you can avoid stepping on them. Teach the students what to watch out for when walking in the area.
c. Please follow the instructed routes between stations and please note that we ask groups to walk around cobbles in front of rock and not through them. If the tide is low enough this shouldn't be a problem. Please ask an interpreter for directions on how to get to stations if you don't know or if the tide is too high for you to avoid walking through rocks.
d. Stay out of tide pools. Small puddles are hard to avoid, but walk around large pools please.
e. Wear boots that you can get wet. This helps prevent rock hopping when the tide starts to move in.
f. Avoid stepping on seaweed and algae-they provide food and hiding places for animals, and can be very slippery.

2. Explore Gently:

a. Use eyes more than hands and leave animals in their homes.
b. Do not poke, pry, rip or take animals or plants off rocks. These acts are guaranteed to kill or seriously injure animals.
c. Even though it's fun to look, do not turn over rocks. You can accidentally crush animals and kill them when turning over and replacing rocks. For an alternative activity, if looking for crabs, observe them with your eyes hiding in mussel beds. Ask an interpreter to help you.

3. Collecting is Prohibited at Haystack Rock– The tide pool area at Haystack Rock is a protected Marine Garden; this means everything in it is protected from collection and harassment. Animals and plants are alive; dead material and shells are recycled and reused; so, take only memories and pictures. Collecting is prohibited and punishable by law.

4. Climbing is Prohibited at Haystack Rock and all off shore rocks on the Oregon Coast. People easily disturb marine birds that nest on offshore rocks and marine mammals that haul out on these rocks. Birds will abandon their eggs and nests if people get too close which leaves eggs and chicks vulnerable to predators and to the weather! Marine mammals use the rocks as valuable resting areas. So, please remember climbing is prohibited above the high tide line at Haystack Rock and all offshore rocks along the Oregon Coast and punishable by law.

5. What to bring - Having the right equipment and clothing are essential to a successful field trip. Wear shoes that you expect to get wet and layered clothing that adapts to weather changes. Rain and wind are common all year round on the north Oregon coast, regardless of what the weather report may state or how the weather is when you get off the bus. A few steps on the beach and the wind may be howling. The following is a list of recommended gear:

- **a.** Rain coat and pants or clothes you can get wet
- **b.** Rubber boots or shoes you can get wet
- **c.** Lots of layers, at least 4 top layers on windy/cold days
- **d.** Change of clothes – water happens!
- **e.** Lunch or snacks
- **f.** Water
- **g.** Sun block
- **h.** Sunglasses or hat
- **i.** Identification guides
- **j.** A camera
- **k.** Your questions

6. What <u>Not</u> to bring to Haystack Rock - Please help us keep our impacts to a minimum at Haystack Rock by not bringing the following items:
-Observation equipment: including buckets, nets, aquaria, plastic bags, etc.
-Sticks
-Shovels
-Kites

Study Ideas: Pre-visit, visit & post-visit ideas

Note to Teachers: Below are suggested pre-visit, visit and post-visit activities and study areas. They may be adapted however you choose. Please communicate to the Program Coordinator regarding the topics that you would like to cover during the field trip. If they involve work sheets, teachers are responsible for preparing them for the trip ahead of time.

Pre-Visit Goals

1. HABITAT – Identify the characteristics of a tide pool habitat and appreciate the extreme changes constantly taking place in the tide pool environment. High/low tide, wet/dry, cool/warm. Introduce nesting seabirds and identify five types of nesting habitats.
2. CLASSIFICATION - Living versus non living tide pool finds; Mobile vs. Sessile animals
3. ADAPTATION - Camouflage, holding on, staying moist, and protection from predators

Visit Goals –

1. HABITAT – Explore, observe intertidal areas and view intertidal zonation. View nesting seabirds and their associated habitats.
2. CLASSIFICATION - View sea creatures and their relatives at aquaria stations.
3. ADAPTATION - Illustrate adaptations such as ways to hold on, ways to conserve water, etc. Illustrate seabird adaptations.

Post Visit Goals

1. HABITAT – Food Chain in an intertidal habitat
2. CLASSIFICATION - Mobile vs. Sessile animals; Univalves/ Bivalves, Mollusk/Crustacean/ Echinoderm
3. ADAPTATION - Create your own intertidal creature; Holding on, Staying Moist, Protection from Predators

Pre Visit Activities

1. HABITAT

   A. Identify the characteristics of an intertidal habitat. Appreciate the extreme environmental changes that take place as the tide goes in and out.

Activity:

Tidal fluctuations are a repeating pattern in nature. Discover the similarities and differences in a given area during high tide and low tide.

a. Give children a simple picture of a rocky shoreline. Have children indicate the water level at the top. What goes on under the water? Barnacles extend their feather-like feet for feeding. Mussels open slightly to feed. Sea stars, periwinkles crabs, and fish move about under the water. Large fish may be found. Algae floats and sways with the water's movement. Birds fly overhead. Affix appropriate cutouts to the appropriate areas on the picture and color.

b. Give children a second picture identical to the first. Now indicate a low water level, so that only the pools are filled with water. Now where are the animals and algae? How are they behaving? Barnacles and mussels are closed up tight, still on their rocks. Crabs hide under rocks. Dry periwinkles hold on tight and stop moving. Moving periwinkles, sea stars, and fish gather in the wet spots. Algae sits limp and motionless. Large fish have retreated to deeper waters. Birds walk around, hunting for food. Affix cutouts and color.

c. Discuss the differences in these pictures. Which situation is the most wet/dry? The coolest/warmest? Which is the best time to hunt for food? (The answer depends on whether you're talking about a barnacle or a gull). When are the best hiding places available?

d. What would happen if the tide stayed low all the time? The animals and algae would dry out and die. The shallow pools of water would eventually evaporate.

e. What would happen if the tide stayed high all the time? Gulls would have to find someplace else to look for food but large fish would be able to spend lots of time looking for food. Algae and plants would never dry out, and in fact may grow so well that species may start to compete for resources like food, access to sunlight, space on rocks, etc.

B. Go over nesting seabirds and their associated habitats in background materials.

Activity: Play the habitat and identification matching game at the end of this guide.

2. CLASSIFICATION

Identify Living vs. Non-Living Tide pool Discoveries

Tide pools are teeming with life. Some of the living creatures and algae may not look like they are alive (especially at low tide), but they are!

Activity:

Discuss the difference between living and non-living tide pool finds. How can you tell if something is alive? Emphasize that sometimes it is hard to tell. Sort pictures/words into groups:

ALIVE	**NOT ALIVE OR NO LONGER LIVING**
Mussel, closed and holding on	Mussel shell, open
Barnacle	Rock
Sponge	Sand
Periwinkle, moving or holding on	Periwinkle shell, empty
Moist, deep green or brown algae	Dry, black or colorless algae
Bird searching for food	Feather
Sea star	Plastic

Moving and Holding On

Some animals are *mobile*, meaning they can move from one place to another. Others are *sessile*, or stuck to something. Some animals are mobile for some parts of their lives and sessile for other parts (for example, barnacle larvae move throughout the water column before settling on a substrate in an adult stage).

Activity:

Sort animals into groups based on whether or not they are *mobile* or *sessile*. Discuss how each animal moves or holds on.

MOBILE	**SESSILE**
Periwinkle	Mussel
Sea Star	Barnacle
Fish	Algae
Crab	Sponge
Sea Urchin	Sea Anemone

Activity:

Pretend a new creature is coming to live in the tide pools. Should it be mobile or sessile? Divide the class into two (or multiples of two) and have one half become advocates for being MOBILE and the half other proponents of a SESSILE lifestyle. Hold a mock debate, or have the new creature (a hand puppet?) interview the groups.

What are some advantages to being mobile? You can move in search of food, away from predators, away from competition, and away from problem environmental conditions.

What are some advantages to being sessile? Less energy is spent on movement, and resources are spent on growth and reproduction. Sessile tide pool organisms take advantage of the movement of the water around them… the water brings food, oxygen, and gametes from other animals. Strong holding mechanisms help them avoid being swept away by the tide.

1. ADAPTATIONS

Camouflage

Many tide pool creatures are difficult to see at first, because they are so well camouflaged. Their coloration, shape, and/or texture may make them look like their environment. These adaptations help tide pool creatures hide from hungry predators who search the area during low or high tides.

Activity: Cryptic Crabs

a. Cut out 3 crabs from newsprint, 3 from three different colors of construction paper. Affix all to newspaper, and cover before students enter. Tell students they will have 20 seconds to count as many crabs as they can in this mock “tide pool”. Unveil the creation for 20 seconds, and then recover.

b. Discuss how many crabs the children saw. Then examine the mock tide pool closely. Which crabs would be the last to be eaten, and why? Many crabs are not only cryptic in their coloration; some are shaped or textured like rock or sand. Others decorate their shells with algae to further camouflage themselves.

c. Optional: Add "rocks" to the tide pool, and hide some of the crabs under the rocks.

Follow-up Activity:

Pass out pictures of different marine organisms and have students describe what features help their animal camouflage/hide in its environment.

Drying out

Life in an intertidal area is marked by extreme changes in water level. Intertidal creatures may be completely submerged at high tide, yet high and dry at low tide. Discuss some of the following adaptations intertidal animals have for keeping themselves moist and healthy during periods of low tides.

Activity:

Set up models of different intertidal animals. Place wet paper towels inside three plastic containers with lids. Close the lid of the first container tightly. Pop off the lid of the second container, and place it lightly over the top without sealing it. Remove the lid entirely from the third container. Place all three containers outside on a sunny day. Check periodically to see what happens to the paper towels. Which towels stayed damp? Which dried out? What intertidal creatures do the paper towels and containers represent?

A. Closing-up: Barnacles, mussels, and periwinkles are only a few of the animals that can tightly close their shells to the drying air. Later, when submerged again, they can open their shells and feed.

B. Hunkering down: Crabs hide in wet places under rocks. Sea stars hold tight and retain water under their tube feet. They can be exposed to air for short periods of time as long as they stay moist.

C. Moving to the water: Some soft bodied sea stars, sea slugs, crabs and small fish collect in tide pools during low tide.

D. Swimming away: Large fish swim to deeper waters.

Visit Activities

Please allow approximately an hour for your field trip, 1.5 hours for groups over 100. Students and chaperones will be divided into groups of 25 or less which will rotate stations every 15 minutes. Rotating groups allows a more interactive guided experience with HRAP staff and volunteers. Please have the appropriate number of chaperones according to the age of your students.

The Stations: 1-2 Intertidal, 1-2 Bird, 1 aquaria table

1. **North Intertidal**
   Explore, Zonation & Adaptation – Students will explore, observe examples of intertidal zonation, camouflage, holding on, closing up and hiding, etc. while exploring the north side of Haystack Rock.

2. **Bird Station (north and/or south)**
   Species and Habitat- View nesting sea birds and note their associated habitat. Students will learn about different nesting habitats seabirds at Haystack Rock use, what type of foods they eat, and who their predators are.

3. **Aquaria Tables**
   Species Identification and classification. Students will observe animals in aquaria and learn more about how they live, what they eat, how they feed. Animal relatives will be illustrated.

4. **South Intertidal Station**
   Explore Habitat- Explore intertidal areas and discuss characteristics of an intertidal habitat.

Post Visit Activities

1. HABITAT

Intertidal Food Chain

Activity: Web of Life

Use pictures of different intertidal organisms to play the Web of Life game. Each child takes a picture of an intertidal organism, and the players sit or stand in a circle. The first player holds the end of a ball of yarn. The first player, who may hold a picture of a sea star, identifies another player whose organism a sea star will eat or will be eaten by (for example, a sea star will eat a mussel). The two players connect themselves using the yarn. The second player (the mussel), finds another player holding something a mussel will eat or be eaten by, and the yarn ball gets passed along. Each player holds the yarn when the connection is made, and soon there is a tangled web of connections extending across the circle!

2. CLASSIFICATION

What's in a name?

Scientists classify organisms into groups of organisms that are similar to one another.

One large group of animals often found in intertidal areas is called Mollusks. These animals all lack backbones, have soft bodies, and many create shell homes. There are two groups of mollusks with shells:

a. **Univalves** – Just as a unicycle has one wheel, and a unicorn has one horn, a univalve has one shell. *Uni* means one!

b. **Bivalves** – Bivalves have two shells, attached together at a hinge. Think of other words where *bi-* means "two". Try bicycle, bicentennial, binoculars…

Question: If there were such a thing as a mollusk with three shells, what would you call it?

Activity: Write as many words as you can think of that have the words *uni-* meaning "one", *bi-* meaning "two", and *tri-* meaning three.

UNI	**BI**	**TRI**
unicycle	bicycle	tricycle

From the list below, draw a circle around each organism that is a Mollusk. If the animal is a *univalve*, color in the circle with the color yellow. If the animal is a *bivalve*, color the circle green.

periwinkle	crab
mussel	limpet
barnacle	sea star
clam	oyster
whelk	scallop

3. ADAPTATION

Holding On

Whether mobile or sessile, many tide pool animals and algae have mechanisms for "holding on". Why? Discuss the turbulence of crashing waves and strong water currents sweeping back and forth. HOW do these animals hold on?

Activity:

Ask the children to fill in the blanks below for one organism they saw on their field trip. Use pictures of tide pool organisms to help the children remember.

I saw a: _____ and it held on to _____ by its _____

Discuss different ways some tide pool animals and algae hold on. For example:

ANIMAL	**HOLDS ON**
periwinkle	large foot
limpet	large foot
sea star	tube feet
sea urchin	tube feet
barnacle	cement
mussel	threads
kelp	holdfast

Creature Features

Activity:

Invent a new tide pool creature, and draw its picture. Explain how your creature will:

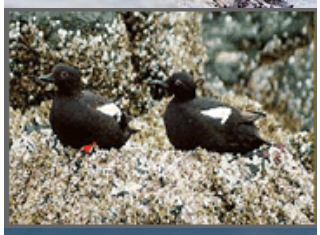
Eat	Move (or not)
Drink	Reproduce
Breathe	Avoid competition
Protect itself from predators	
Withstand tidal fluctuation	

Seabird Matching Game

Draw a line matching the description to the bird.

I'm crow-sized and nest in cavities near the high tide line. My bright red feet often give me away. I eat small fish and can be seen just past the waves sitting with my fellow birds.

I live near Haystack Rock year round, and nest in the same spot each summer. My favorite foods include limpets, mussels, and chitons. I'm a shore bird, and prefer to find food on the rocks or beach instead of diving in the cold water!



I am a migratory bird that nests at Haystack Rock during the months of April to August. My short wings make it hard to fly, but they make me a good swimmer. I can dive up to 300ft underwater and fly underwater to capture my prey!

I nest on rocky cliff sides, making my nest out of guano and plant material. You can see me at the rock year round. I can dive over 100 feet deep for fish.

I don't nest at Haystack Rock, and you will usually only see me here in the fall through spring. I like to hang out on the rocks. When its time to nest, I go into the watershed and make a nest in the woods, near rough fresh water rivers.

I'm an opportunist; this means that I will eat anything that I can! I feed on a variety of sea creatures, and even though it's a bad habit, people love to feed me when they visit they beach!

Haystack Rock Awareness Program

Haystack Rock Species Check List

BIRDS
( ) Tufted Puffin
( ) Pigeon Guillemot
( ) Common Murre
( ) Western Gull
( ) Pelagic Cormorant
( ) Brandt's Cormorant
( ) Black Oystercatcher
( ) Harlequin Duck
( ) Surf Scoter
( ) Black Turnstone
( ) Peregrine Falcon
( ) Bald Eagle
( ) Other_____

TIDE POOL CREATURES
( ) Crab
    ( ) Hermit Crab
    ( ) Purple Shore Crab
    ( ) Lined Shore Crab
    ( ) Dungeness Crab
    ( ) Porcelain Crab
    ( ) Red Rock Crab
    ( ) Kelp Crab
    ( ) Mole Crab
    ( ) Other_____
( ) Barnacle
    ( ) Acorn Barnacle
    ( ) Thatched Barnacle
    ( ) Goose Neck Barnacle
( ) Nudibranch (sea slug)
    ( ) Sea Lemon
    ( ) Shaggy Mouse
    ( ) Opalescent
    ( ) Other_____
( ) Sea Star
    ( ) Ochre Sea Star
    ( ) Sunflower Star
    ( ) Other_____
( ) Sea Anemone
    ( ) Giant Green Sea Anemone
    ( ) Aggregating Sea Anemone
    ( ) Other_____
( ) Snail
    ( ) Frilled Dogwinkle
    ( ) Striped Dogwinkle
    ( ) Black Turban
( ) California Mussel
( ) Limpet
( ) Chiton
( ) Sponge

FISH
( ) Tidepool Sculpin
( ) Cling fish
( ) Gunnel
( ) Other_____

ALGAE
( ) Green
    ( ) Sea Lettuce
    ( ) Other_____
( ) Brown
    ( ) Bull Kelp
    ( ) Rockweed
    ( ) Acidic Kelp
    ( ) Winged Kelp
    ( ) Ribbed Kelp
    ( ) Kombu or *Laminaria*
    ( ) Other_____
( ) Red
    ( ) Coralline
    ( ) Iridescent Seaweed
    ( ) Black Pine
    ( ) Sea Fern
    ( ) Wild Nori or Laver
    ( ) Other_____

VASCULAR PLANTS
( ) Surf Grass
( ) Eel Grass

OTHER
_____
_____
_____

Haystack Rock Awareness Program
Field Trip Evaluation

School_____ Date of field trip_____
Teacher(s)_____

1) What was your favorite part of the beach program and why?

2) What was your least favorite part of the beach program and why?

3) Did you feel adequately prepared for your visit? If not, what could HRAP have done to better prepare you?

4) Were there any topics not covered by the program that you would have liked your students to learn about? Think about this for each of the three stations (intertidal, bird, aquaria).

5) In what ways could we improve our program in coming years?

RATING SCALE:

Needs Improvement **N**	Full Performance		Exceptional Performance: **E**
	Satisfactory **S**	Above Average **A**	

For areas that do not apply, place "N/A" in rating box.

1. Work Product N S A E

The Program Coordinator's performance scheduling your trip, finding an appropriate day, time, and tide given schedule availability and weather	
Communication on trip preparation, safety precautions, and tidepool etiquette	
Performance of staff and volunteer interpreters	
Layout of beach program stations	
Amount of time at each station (if **N**, should it be shorter or longer?)	
Content of intertidal station	
Content of aquaria station (if present)	
Content of bird station	
Content of Mobile Education Unit	
Raters Explanation:	

Please mail, e-mail, or fax form to:
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