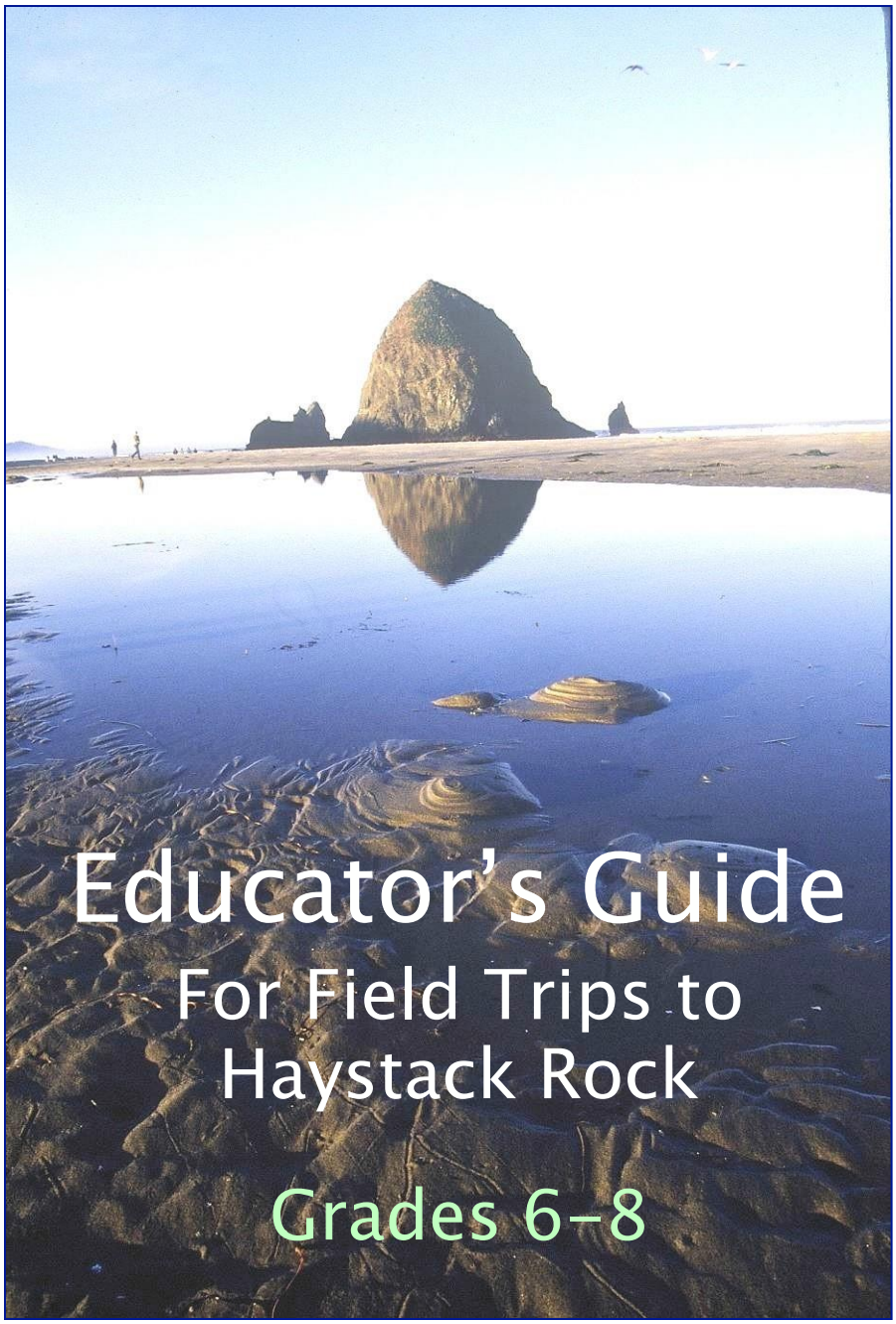

The Haystack Rock Awareness Program

A program of

The City of Cannon Beach

Last updated January 2016

Dear Group Leader,

Thank you for your interest in bringing a group to Haystack Rock. The Haystack Rock Awareness Program (HRAP) looks forward to supporting your visit! If this is your first field trip with HRAP, please review this Educator Guide carefully and let us know of any questions you may have. If you are a returning group, please note that HRAP's Educator Guides have been updated with an increased focus on linking student field trip activities to Oregon State Science Standards. We have also developed some new beach activities to support hands-on investigation, observation, and exploration.

Please pay SPECIAL attention to three items in this guide:

✱ Scheduling -- We appreciate you scheduling your visit in advance, rather than showing up unannounced. This helps us ensure that the greatest number of school groups and students can visit Haystack Rock, while minimizing our collective impact on the fragile intertidal ecosystem.

✱ Safety -- Please review our safety suggestions with both students and chaperones, before your field trip. Safety is our number one priority at Haystack Rock, and our goal is to keep people safe while also keeping Haystack Rock wildlife safe.

✱ Stewardship -- Haystack Rock belongs to all of us, and we share the responsibility to keep it healthy and flourishing for future generations to enjoy. Research has shown that when students and chaperones learn good tidepool etiquette before visiting Haystack Rock, they do less unintentional damage and gain more knowledge during their visit.

Questions or suggestions? Please contact me at: hrap@ci.cannon-beach.or.us.

Thank you and see you at the Rock!

Sincerely,

Melissa Keyser
Coordinator, Haystack Rock Awareness Program

Haystack Rock · Awareness Program

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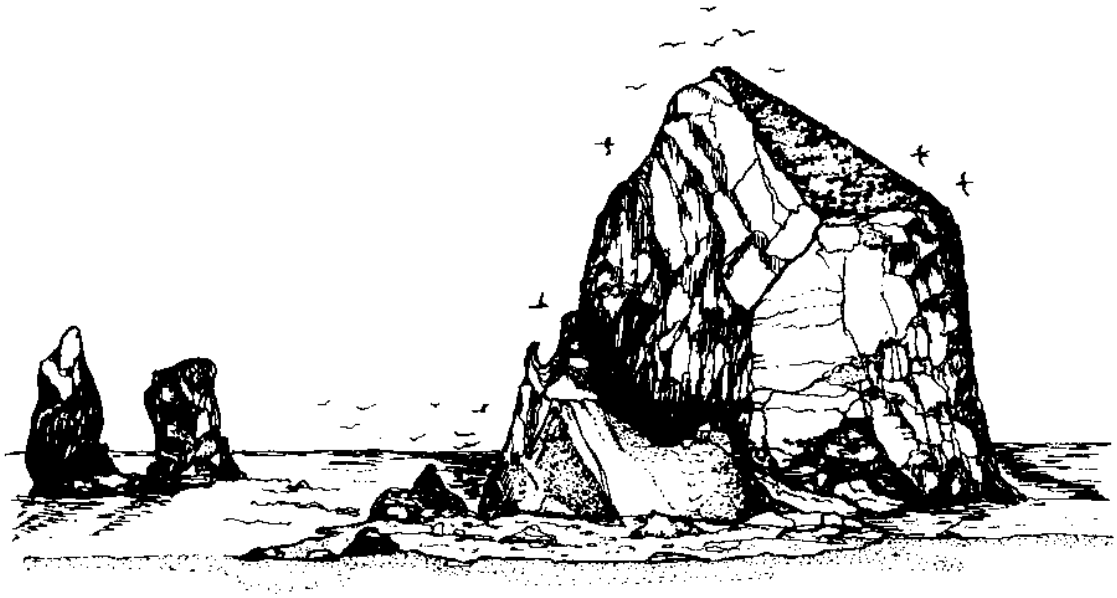


Artwork by Sally Lackaff

Preparing & Planning For Field Trips

About the Haystack Rock Awareness 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 interpreters during the spring and summer months 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.

Scheduling a Field Trip to Haystack Rock

All field trips should be scheduled with the HRAP Education Coordinator. We will schedule groups in the order in which requests are received. We highly recommend scheduling your trip at least two months in advance and to also have alternative dates in case your first choice is already fully booked.

Choosing a Day: Check the tide schedule! On the Oregon Coast there are two low tides and two high tides each day. Tides of 0.0 feet and lower are better for tidepool viewing at Haystack Rock. When the ocean is calm, many intertidal areas can still be viewed at plus 1 to 2 foot tides, but unfortunately a calm ocean is not predictable. Understand that tide books reflect an educated guess and the weather can affect the accuracy of the tidal prediction. The tide table booklet most adequate for the low tides at Haystack Rock is the Pacific Beaches tide table. These are available on the web at: http://www.cannon-beach.net/cbweather.html. Try to choose dates that allow you to arrive close to low tide. A field trip an hour before low tide is ideal, especially for younger children, 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. **Also, remember to arrive at the parking lot 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** (about 10 minutes from either parking lot, Tolovanna Wayside or Haystack Rock Public Parking).

Scheduling: To begin the scheduling process contact the HRAP Coordinator by phone: **503-436-8064** or email: **visithrap@ci.cannon-beach.or.us.** Please include the following information in your email or message.

- ☐ Your first date choice, as well as other alternative dates in case your first choice is full
- ☐ The earliest time you could arrive on each day
- ☐ Your school/group name
- ☐ Number of students/participants (if known at this time)
- ☐ The grade level of the students

The HRAP Education Coordinator will then look at the availabilities and send you a response with openings on the dates you requested. Once you are on the schedule, we will later follow-up with you to further discuss your field trip program.

Field Trip Program

To accommodate as many groups as possible during the low tide and to reduce environmental degradation, we schedule programs for either 60 minutes (groups of 50 or less students) or 75 minutes (groups of over 50 students). We also limit field trips to less than 100 students (if you have several classes/groups please schedule separate field trip slots if they exceed 100 in total).

HRAP field trip programs include 3 educational stations for groups of 50 or less students, or 4 stations for 50 or more students. These 15 minute stations include:

1-2 Intertidal Exploration Stations: We typically have one intertidal station on the north side and one intertidal station on the south side of Haystack 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 Observation Stations: A bird viewing station will be set up on the north or south side of Haystack 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 Investigation Station: In addition, HRAP has a collection permit which allows us to set up temporary aquaria tanks at the Marine Garden. Aquaria, and microscopes (or stereoscopes) will be set up to give students a closer view of intertidal animals. Animals must be returned to their intertidal homes before the tide is in, to ensure animal and interpreter safety (Important note! Because access to tide pools is essential to collecting and returning tide pool organisms, only days with favorable tides and weather will include an aquaria display).

Program Fee: The City of Cannon Beach provides Haystack Rock Awareness Program services at **NO** charge, but a donation of $1-$2 per student is encouraged to support the continuation and improvement of our program. This is a work in progress and your input is greatly appreciated.

Preparing for your Field Trip

In the Classroom: We highly recommend that you use this guide to help prepare your students for their field trip at Haystack Rock.

> *"Before the students arrive at the seashore, they need to have as much information about the day as possible. Sensory awareness activities in the classroom, such as drawing a rock or pine cone, help students focus their attention on the sensory aspects of a living organism or a tidal pool during their field trip experience...The more the students know about the place they're going to and the kinds of activities they will be doing, the less wild excitement you'll have to deal with. The better prepared they are, the easier it will be to connect their experience with the concepts and attitudes you're trying to develop"* (Snively, *Beach Exploration*).

The station sections in this guide can be used to help show the students what they will be doing the day of their field trip. In those sections there are also lessons to help prepare the students for their on-beach objectives. Any additional lessons about these topics will only enhance your students' experience. For questions or suggestions about curriculum ideas please contact the HRAP Coordinator.

Chaperones: 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 students to focus on the planned activity and questions can be more easily responded to. Please ask each of your chaperones to read and sign the *Chaperone Expectations* form enclosed. We suggest collecting these forms before exiting the bus in Cannon Beach. This form emphasizes HRAP's expectations while visiting the Marine Garden at Haystack Rock. It also allows HRAP staff and volunteer interpreters' to focus on education, and reduces unintentionally harmful behavior in this protected ecosystem.

What to bring: Having the right equipment and clothing is essential to a successful field trip. Students and chaperones are encouraged to wear shoes that you can get wet and layered clothing that can be adapted 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 onto the beach and the wind may be howling. Please encourage your students and chaperones to have the following list of items.

- Rain coat and pants or clothes that can get wet
- Rubber boots or shoes that can get wet
- 3-4 top layers on windy/cold days
- Change of clothes – water happens!
- Lunch or snacks
- Water
- Sun block
- Sunglasses or hat
- Identification guides (optional)
- A camera (optional)
- Lots of questions

What NOT to bring: Please help us keep our impacts to a minimum at Haystack Rock by not bringing the following items:

- Collecting equipment: including buckets, nets, aquaria, plastic bags, etc.
- Sticks
- Shovels
- Kites

Arrival

It is best to arrive at Haystack Rock a few minutes before the start time of your program. Please have your students separated into groups (3-4 depending on how many stations). HRAP will offer a quick introduction to welcome the students as well as to remind them of important tide pool etiquette. HRAP will also collect the *Chaperone Expectations* forms from you at this time.

Departure

Before you depart from Haystack Rock, HRAP will de-brief the students by letting them share highlights from their field trip program. They will also give you, the teacher/group leader information about how to complete a field trip evaluation.

Haystack Rock Field Trip
Chaperone Expectations

As a chaperone on a field trip to Haystack Rock you play a vital role in helping students to learn about and preserve the fragile ecosystem at Haystack Rock. Haystack Rock is one of only seven state protected Marine Gardens along the Oregon Coast, and is part of the Oregon Islands National Wildlife Refuge(NWR). The Marine Garden encompasses a 300 yard radius around the Rock and is intended for wildlife habitat preservation, education, and exploration. The NWR at Haystack Rock begins at the high tide line(marked by the barnacle line) and is closed to public entry year-round because of the sensitive nature of nesting shorebirds and seabirds. The Haystack Rock Awareness Program needs your help to make the field trip as safe as possible for both students and wildlife, and you can do this by agreeing to the following:

1. As a chaperone and visitor to Haystack Rock, I will abide by the regulations set forth by Oregon Department of Fish and Wildlife and the U.S Fish and Wildlife Service. These regulations include:
    - **No Climbing above the high tide line (or barnacle line):** This is to protect the marine birds nesting on the offshore rocks, protect the rocks from erosion and for your safety. The marine birds are an intricate part of the coastal ecology and are protected by federal law.
    - **No Collecting:** A special permit is required to legally collect intertidal organisms in this area. Please take only pictures and memories.
2. I will follow rules set forth by the Haystack Rock Awareness Program and encourage students in my group to do the same. These rules include the following and are set in place to ensure the safety of both humans and intertidal plants and animals:
    - **Walk on sand or bare rocks:** This is to avoid crushing live animals. Wet shoes will dry, but dead animals are dead. Do not "rock hop", especially on larger rocks. Remember, even the barnacles are alive, fragile and important to the health of the Marine Garden.
    - **Explore Gently:** poking, prodding and pulling things off rocks is a way to damage tidepool creatures and their homes. Observing animals in their natural habitat is the best way to learn about their lifestyle. Animals that are moved away from their zone/home often die. Touch plants and animals as carefully as you would touch your own eye.
    - **Keep an eye on the ocean/Do not go behind temporary closure signs:** Large wave surges or "sneaker waves" can sweep you off your feet, rip currents can whisk you out to sea, and cold ocean waves can cause hypothermia in just 20 minutes. Never turn your back on the ocean! And, when exploring around rocks, please avoid walking behind any temporary closure signs that HRAP sets up.

By signing below I agree to follow these guidelines to help ensure student safety and preservation of this fragile area so that it remains a wonderful place to visit!

To learn more, visit www.ci.cannon-beach.or.us. **Thank you!**

Stewardship & Safety

Note to Teachers

Please share the information in this section with your students as part of your educational preparation. Feel free to copy and paste this information to make your own handouts or simply print out these pages. HRAP would like all visitors to respect this ecosystem and to be safe while exploring.

Stewardship

Stewardship is the responsibility for environmental quality shared by all those whose actions affect the environment. By being stewards of our environment, we can preserve places like Haystack Rock for future enjoyment and for future generations.

How to be a Steward at Haystack Rock:

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

1. **Tread Lightly – Always stay on 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 while exploring in the Marine Garden:

    a. Walk slowly and look where you place your feet. Animals in the intertidal areas are often small and camouflaged.

    b. Look out for barnacles, mussels, anemones, 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 generally ask visitors to walk around the Marine Garden on the sand instead of crossing through it. Please ask HRAP for directions on how to get to stations if you don't know or for the best route.

    d. Stay out of tidepools. Small puddles are hard to avoid, but walk around large tidepools please.

    e. Wear shoes or boots that 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, making it easy for you to fall.

2. **Explore Gently**:

a. Use eyes more than hands and leave animals in their homes.

b. Do not poke, pry, or take animals or plants off rocks. These acts are likely to kill or seriously injure animals.

c. Even though it's fun to look, please 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 find a "crab condo".

3. **Don't Collect at Haystack Rock– The tidepool area at Haystack Rock is a protected Marine Garden; this means everything in it is protected from collection.** Animals and plants are alive; dead material like shells are recycled and reused by tidepool animals; and small rocks provide shelter; so take only memories and pictures. Collecting is prohibited by a Oregon Department of Fish and Wildlife law.

4. **Don't Climb Haystack Rock.** All offshore rocks, reefs, and islands on the Oregon Coast are part of a National Wildlife Refuge. People can easily disturb marine birds that nest on offshore rocks and marine mammals that haul out on these rocks to rest. 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 can bite or become exhausted trying to move away from curious visitors. So please remember to stay below the barnacle line at all times, as required by U.S. Fish and Wildlife law.

Discussion Activity: Give your class a list of the rules at Haystack Rock and have them come up with reasons why that kind of behavior or activity is detrimental to the health of the ecosystem at Haystack Rock. OR have the students brainstorm additional ways they can be stewards at Haystack Rock.

What is a Marine Garden?

A Marine Garden is a type of Marine Protected Area (MPA) which is defined by the U.S Government as *"any area of the marine environment that has been reserved by Federal, State, territorial tribal or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein"*. The Rocky Shores Management Strategy within Oregon's Territorial Sea Plan (TSP) classifies 15 Marine Protected Areas actively managed in Oregon into three categories: Marine Gardens, Habitat Refuges, and Research Reserves. Haystack Rock, Cape Kiwanda, Otter Rock, Yaquina Head, Yachats State Park, Cape Perpetua, and Harris Beach State Park intertidal areas are all classified as Marine Gardens. In Oregon, this means a protected area in which it is illegal to collect any marine invertebrate (except a single mussel for fishing bait). Marine Gardens are areas set aside for educational programs and allow visitors to enjoy and learn about intertidal resources.

The Haystack Rock Marine Garden includes "all rocky areas, tide pools, and sand beaches situated between extreme high tide and extreme low tide lying within a 300 yard radius of the base of Haystack Rock" (2013 Oregon Sport Fishing Regulations, ODFW).

What is a National Wildlife Refuge?

National Wildlife Refuges (NWRs) are tracts of land or water set aside to conserve fish, wildlife and their habitat for future generations. The National Wildlife Refuge System is a network of over 540 refuges across the United States. The System is managed by the U.S. Fish and Wildlife Service and is considered to be a living heritage of our great country.

Haystack Rock is part of the Oregon Islands NWR which includes 1,853 rocks, reefs, islands, and two headlands. Although some NWRs allow public access, the Oregon Islands NWR is closed to public entry year-round, because of the sensitivity of nesting seabirds and other wildlife that utilize the refuge. The refuge at Haystack Rock begins above the high tide line, which is most noticeable by the top of the barnacle line (see photo below).

Above is the NWR

Below is the Marine Garden

Discussion Activity: Have your class brainstorm and list the benefits of designating protected areas like Marine Gardens and National Wildlife Refuges.

Beach Safety Tips

While the rocky shore environment is a fun place to explore, safety precautions are a must! Rocks are slippery, the ocean can be 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 tidepools 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 and jumping in tidepool 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 tidepool areas, so please walk slowly!

3. **Check local tide tables** – Know when low tide is, so you can watch for rising water when the tide is coming in. The low tide time is only a prediction, weather can affect the accuracy of this 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! Staying off of beached logs helps keep you from accidentally getting trapped under a log if waves move it.

6. **Please don't allow children to play in the water without adult supervision.** Undercurrents and rip currents can pull children far away from shore. There are known rip currents by Haystack Rock, so keep an eye on kids to make sure they do not go out too deep or play in unsafe areas (note: life guards are only present on Cannon Beach from June until September).

To watch beach safety commercials or for more information, go to:
www.oregonbeachsafety.org

Bird Observation Station

What is the purpose of the Bird Observation Station?

The purpose of this station is to closely observe birds, their nesting habitats, and behaviors. It will also introduce important concepts about birds, such as migration and adaptation, to the students.

What is the Bird Observation Station?

The HRAP team will set-up several telescopes so the students can view the birds in the Haystack Rock Wildlife Refuge (see photos below). They will also have several pairs of binoculars for students to use to find birds not displayed in the scopes. Depending on the day and the amount of birds visible, your field trip program may have 1-2 bird observation stations either on the North or South side of Haystack Rock.

In addition to viewing birds, the students will participate in another activity (at a table separate from the scopes) which will teach them an important concept pertaining to birds. The students will gather in a group at the beginning of this station to hear the details of this activity as well as learn some fun facts about the birds of Haystack Rock.

Haystack Rock Awareness Program

On-Beach Objectives:

- **At the Scopes:** Observe two of the bird species, noting their interactions between individuals of the same species and their interactions with different species.

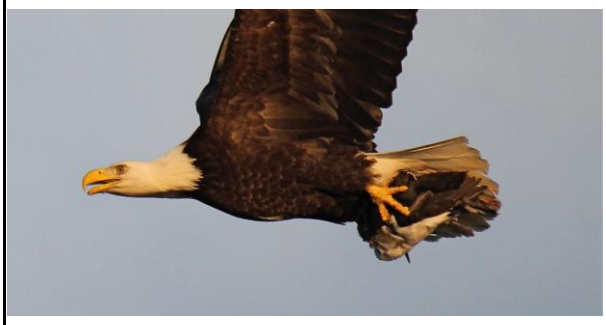
- **Non-Scope Activity:** Explore bird adaptations by examining different features of birds.

Lessons to prepare:

Lesson 1B: Important Bird Species of the Haystack Rock National Wildlife Refuge

Lesson 1B: Important Bird Species of The Haystack Rock National Wildlife Refuge

	Common Name *(Scientific Name)*
	Tufted Puffin *(Fratercula cirrhata)*
	Pigeon Guillemot *(Cepphus columba)*
	Common Murre *(Uria aalge)*
	Pelagic Cormorant *(Phalacrocorax pelagicus)*

	Common Name *(Scientific Name)*
	Western Gull *(Larus occidentalis)*
	Black Oystercatcher *(Haematopus bachmani)*
	Bald Eagle *(Haliaeetus leucocephalus)*

Aquaria Investigation Station

What is the purpose of the Aquaria Investigation Station?

The purpose of this station is to closely observe intertidal animals and algae to identify anatomical and behavioral similarities and dissimilarities which give rise to their classifications.

What is the Aquaria Investigation Station?

HRAP has a collection permit from the Oregon Department of Fish and Wildlife (ODFW) which allows us to temporarily collect both fish and invertebrate species to put in display tanks (or aquaria) in front of the Marine Garden (see photos below). This enables students to make closer observations of intertidal organisms.

The set-up and format of this station will vary depending on the tide, number of HRAP staff and volunteers, weather and the number of student participants. On an optimum day (a very low tide and ample staff and volunteers) there will be two tables with 4 to 5 display tanks with many organisms, microscopes, and hand lenses. On a challenging day (high low tide and minimal staff and volunteers) there may only be 1 to 2 tanks with fewer organisms, and hand lenses only. HRAP staff and volunteers will determine the lay-out of this station the day of your field trip after assessing the conditions that day, but will keep in mind what is needed to complete the student's on-beach objectives. HRAP may also utilize an alternate activity in case there is not enough specimens to observe in the aquaria.

Haystack Rock Awareness Program

On-Beach Objectives:

- Discuss how the organisms in the tanks interact with one another. And explore how humans can affect these relationships.

Lessons to prepare:

Lesson 1A: Community Interactions

Lesson 1A: Community Interactions

Warm-up Discussion: Have your students brainstorm different ways in which species in an ecosystem interact.

Task: Give your students the list of important vocabulary and interactions on the following page. Have them come up with or research specific examples for each type of interaction. A well-known example of symbiosis, for instance, is the clownfish and the anemone. This type of symbiosis is referred to as mutualism because the clownfish gets protection from predators by hiding in the anemone and the anemone feeds on food particles dropped when the clownfish is feeding.

Note: This activity will also help your students prepare for and understand the concepts presented at the Intertidal Investigation Station.

Community Ecology

Community ecology is the study of how interactions between species affect community structure and organization. Community ecology is very important when studying the intertidal ecosystem, because all organisms are interdependent.

Important Vocabulary:

Community: All organisms that inhabit a particular area. Or an assemblage of populations of different species living close enough together for potential interaction.

Community Structure: How many species there are in an ecosystem, which particular species are present, and the relative abundance of those species.

Interspecific Interactions: Interactions between individuals of different species.

Intraspecific Interactions: Interactions between individuals of the same species.

Niche: An organism's ecological role - how it "fits into" an ecosystem. If an organism's habitat is its "address," the niche is the organism's "profession" (Analogy by ecologist Eugene Odum).

Dominant Species: Species in a community that are the most abundant and therefore exert a powerful control over the occurrence and distribution of other species.

Keystone Species: Species that are not necessarily abundant in a community but exert strong control on community structure because of their pivotal ecological roles, or niches.

Types of Interactions: (Symbols + and - indicate how each interspecific interaction affects the survival and reproduction of the two species engaged in the interaction)

Competition = Species compete for particular resource that is in short supply. The resource could be space to grow or a shared food source (-/-).
Example:

Predation = Interaction in which one species, the predator, kills and eats another species, the prey (+/-).
Example:

Herbivory = Interaction in which an herbivore eats parts of a plant or alga (+/-).
Example:

Symbiosis (parasitism, mutualism, commensalism) = A relationship between two organism of two different species that live together in direct contact. Parasitism (+/-), mutualism (+/+), Commensalism (+/0): one organism benefits while the other is not harmed or benefited.
Example:

Information from "*Biology*" Campbell, Reece. 2005

Intertidal Exploration Station

What is the purpose of the Intertidal Exploration Station?

The purpose of this station is to observe intertidal organisms in their natural habitat. These observations will be discussed after exploration to introduce key ecological concepts such as adaptation and zonation.

What is the Intertidal Exploration Station?

This station focuses on free exploration, which will allow students to observe and make conclusions about the intertidal habitat and its inhabitants. HRAP will meet the group at the beginning of this station to quickly brief the students on tidepool etiquette. The students will then be led by the interpreter into the Marine Garden where the students will have time to explore. HRAP interpreters will be present to assist with finding and identifying organisms, and to answer questions. At the end of the station the group will reconvene to discuss the students' observations.

Haystack Rock Awareness Program

On-Beach Objectives:

- Discuss how individual organisms and populations interact in the intertidal ecosystem, and how changes in populations are related to resources.

Lessons to prepare:

Lesson 1I: Common Intertidal Species of the Haystack Rock Marine Garden

Lesson 1I: Common Intertidal Species of The Haystack Rock Marine Garden

Fish

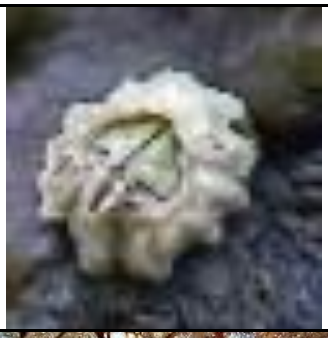
	Common Name *(Scientific Name)*
	Tidepool Sculpin *(Oligocottus maculosus)*

Crabs

	Common Name *(Scientific Name)*
	Hermit Crab *(Pagurus* sp.*)*
	Purple Shore Crab *(Hemigrapsus nudus)*
	Dungeness Crab *(Cancer magister)*

Photos taken by Susan Glarum (unless noted)

Barnacles

	Common Name *(Scientific Name)*
	Acorn Barnacle *(Balanus glandula)*
	Goose Neck Barnacle *(Pollicipes polymerus)*
	Thatched Barnacle *(Semibalanus cariosus)*

Bryozoans

	Common Name *(Scientific Name)*
	Branched-spine Bryozoan *(Flustrellidra corniculata)*

Sea Stars

	Common Name *(Scientific Name)*
	Ochre Sea Star *(Pisaster ochraceus)*
	Sunflower Sea Star *(Pycnopodia helianthoides)*

Sea Anemones

	Common Name *(Scientific Name)*
	Giant Green Anemone *(Anthopleura xanthogrammica)*
	Aggregating Anemone *(Anthopleura elegantissima)*

Photos taken by Susan Glarum (unless noted)

Hydroids

	Common Name (*Scientific Name*)
	Wine-glass Hydroid *(Obelia* sp.*)*

Nudibranchs (sea slugs)

	Common Name *(Scientific Name)*
	Sea Lemon *(Peltodoris nobilis)*
	Opalescent Nudibranch *(Hermissenda crassicornis)*
	Leopard Nudibranch *(Diaulula sandiegensis)*

Photos taken by Susan Glarum (unless noted)

Shelled Mollusks

	Common Name *(Scientific Name)*
	Frilled Dogwinkle *(Nucella lamellosa)*
	Black Turban Snail *(Chlorostoma funebralis)*
	California Mussel *(Mytilus californianus)*
	Mossy Chiton *(Mopalia muscosa)*

	Common Name *(Scientific Name)*
	Leather Chiton *(Katharina tunicata)*
	Ribbed Limpet *(Lottia digitalis)*
	Keyhole Limpet *(Diodora aspera)*

Sponges

	Common Name *(Scientific Name)*
	Red Encrusting Sponge *(Ophlitaspongia pennata)*
	Purple Encrusting Sponge *(Haliclona permollis)*

Algae

Green Algae

	Common Name *(Scientific Name)*
	Sea Lettuce *(Ulva lactuca)*

Red Algae

	Common Name *(Scientific Name)*
	Nori or Laver *(Porphyra* sp.*)*
	Black Pine *(Neorhodomela larix)*
	Iridescent Seaweed *(Mazzaella splendens)*
	Branching Coralline *(Calliarthron* sp.,*Corallina* sp., *Bossiella* sp.*)*

Photos taken by Susan Glarum (unless noted)

Brown Algae

	Common Name *(Scientific Name)*
	Pacific Rockweed *(Fucus gardneri)*
	Winged Kelp *(Alaria marginata)*

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
_____
_____
_____

Tidepool Safety & Etiquette

When visiting unfamiliar areas, safety precautions are a must! Ocean beaches and intertidal areas are beautiful, but can be dangerous. Human impact, such as trampling, overturning rocks and removing animals from the rocks, is greatly damaging to the wildlife and habitat. Please review the following tips with your group before arriving and remember: collecting, harassing wildlife and climbing at Haystack Rock are prohibited under local, state and federal regulations.

1. **Check a tide book**- Know the times and levels of both the high and low tides on the day of your visit. Understand that tide books reflect an educated guess and weather can affect information accuracy.

2. **Arrive at least an hour before low tide-** This will give you time to explore while the water is still going "out". 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.

3. **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 students to focus on planned activities and questions can be responded to more easily.

4. **Dress appropriately**- 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.

5. **Keep an eye on the ocean-** Large wave surges or "sneaker waves" can sweep you off your feet, rip currents can whisk you out to sea, and cold ocean waves can cause hypothermia in just 20 minutes. ***Never turn your back on the ocean!*** And, when exploring around rocks, stay away from the surf line.

6. **Walk on sand or bare rock to avoid crushing live animals-** Wet shoes will dry, but dead animals are dead. **Do not "rock hop", especially on larger rocks. Remember, even the barnacles are alive, fragile and important to Marine Garden health.**

7. **Explore gently** - poking, prodding and ripping things off rocks is a sure way to damage the area and the critters. Observing animals in their natural habitat is the best way to learn about their lifestyle. Animals that are moved out of their zone often die.

8. **Collecting is prohibited.** Please take only pictures and memories. (You need a special permit to collect and display intertidal critters.)

9. **Climbing is prohibited.** This is to protect the marine birds nesting on the offshore rocks, protect the rocks from erosion and for your safety. The marine birds are an intricate part of the coastal ecology and are protected by federal law.

By following the guidelines of tidepool safety and etiquette, you will help ensure your safety and help preserve this fragile area so that it remains a wonderful place to visit!

HAYSTACK ROCK AWARENESS PROGRAM- 2011

Haystack Rock is a protected natural area, managed by the Oregon Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. Everything below the average high tide line (i.e.: barnacle line), within a 300-meter radius of the Rock, is a protected Marine Garden set aside for wildlife habitat preservation and public visitation. Everything above the high tide line, including all offshore rocks and islands along the Oregon coast, is part of the Oregon Islands National Wildlife Refuge set aside for wildlife and closed to public access. To learn more, visit www.ci.cannon-beach.or.us. **Thank you!**

Oregon Science Standards *(2009)*
Grades 6-8

	Bird Observation Station	Aquaria Investigation Station	Intertidal Investigation Station
Structure and Function			
(7.1L.1) Compare and Contrast sexual and asexual reproduction. Explain why reproduction is essential to the continuation of every species.			X
Interaction and Change			
(6.2L.2) Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources.	X	X	X
(7.2E.3) Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems.		X	