

# Tidepool Party!



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**Adapted from:**

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**Time:**

- Activity: 1hr minimum

**Level:** All Ages

**Overview**

The primary objective for a day at the tidepools is for students to have fun being in nature exploring the tidepools in a way that is safe for themselves and for the ecosystem. This lesson plan provides instructors a way to introduce students to the coastal environment and the tidepool ecosystems at the Cape Arago tidepools. Activities include group discussion, guided exploration, and unstructured tidepool exploration.

**Oregon State Benchmarks Addressed**

**Life Sciences (5<sup>th</sup> Grade):**

- SC.05.LS.01 Group or classify organisms based on a variety of characteristics. *Students will recognize key organisms in the tidepools.*
- SC.05.LS.02 Describe the function of organ systems. *Students will understand the adaptations and functions of different organisms for their environment.*
- SC.05.LS.05 Describe the relationship between characteristics of specific habitats and the organisms that live there. *Students will explore the different zones of the tidepool ecosystem and understand the differences of the zones and the inhabitants.*
- SC.05.LS.06 Describe how adaptations help a species survive. *Students will explore the different organisms of the different tidal zones to understand adaptations.*

**Learning Objectives**

By the end of this activity, participants will be able to:

1. Develop an awareness of the safety issues involved in exploring the tidepools both for themselves and for the ecosystem.
2. Responsibly and safely explore the tidepools with and without direct adult intervention or interaction.
3. Identify and understand key roles of the major plant and animal species of the tidepools.

**Materials Needed**

**(Instructor Materials)**

- Field Guides: small books that can be easily referenced, books that present information appropriately for the age of the students.

- ❑ First Aid Kit
- ❑ Binoculars
- ❑ Extra rain gear
- ❑ Extra warm clothing: gloves, socks, top layer, hat
- ❑ Whistle: can be used for getting the attention of a group that has spread out around the tidepools
- ❑ Jeweler's Loops/Magnifying Glasses for investigating small organisms

**(Student Materials)**

- ❑ Each student should carry a small pack to contain the items they will need to stay comfortable throughout the time they will be exploring the tidepools.
- ❑ Close-toed shoes
- ❑ Extra rain gear
- ❑ Warm clothing: gloves, socks, top layer, hat
- ❑ Water Bottle
- ❑ Notebook and Writing Utensil

**Background Material**

The primary goal of this lesson is to help educators create a fun, safe, and meaningful educational experience at the tidepools at Cape Arago. Because there are so many excellent field guides this lesson plan will not include information about species or identification. Each instructor is encouraged to bring his or her own grade-level appropriate materials they are comfortable using with students. The additional reading and resources at the end of this lesson plan will include some great options for field guides and other materials that the instructor could bring on site.

The Cape Arago tidepools are an excellent place for students to learn about the marine environment and tidepool ecosystems. Instructors should plan trips around the daily low tide in order for students to fully experience the tidepools. Parking for buses or cars is at the top of the hillside. Upon unloading the buses instructors should gather the students together. There are information signs at the trailhead that cover some of the major safety issues for tidepool exploration. There is also a covered pavilion for that can be used for group activities or discussion if the weather is bad.

The trail down to the tidepools is steep and can be very slippery. Students should be made aware of this and adults should monitor behavior down the trail. Once arriving on the beach the best tidepools are to the north. There are no facilities down at the tidepools so students should use restrooms at the top of the trailhead. Nature is the bathroom while exploring the tidepools, so instructors should direct students to appropriate locations along the cliffs if the student needs to go to the bathroom.

**Activity Description:** The following activities start from the time when the students unload the buses at the top of Cape Arago, and continue down into the tidepools. This plan will provide methods to structure the tidepool exploration experience.

**Step 1: Getting Started: Introductions at the top of Cape Arago (10-15 minutes)**

Before leaving the bus the facilitator should remind the students of all the items they must have with them for a day of tidepool exploration (see materials

list). Upon departing the bus keep students actively engaged by having them brainstorm safety precautions for themselves and the environment. Next gather students near the trailhead where they can all see the posted information about safety information. Have each student read a different safety point about tidepool exploration. This group discussion will allow students to possibly share past experiences they have had in tidepools or at the beach. The parking lot is also the last place for students to use a bathroom so they should be encouraged to do so. If the weather is bad there is a covered pavilion for group discussion or other activities.

## **Step 2. Travel down the trail to the beach. (10 minutes)**

Before starting the group down the trail inform the students that the trail is steep and often very muddy and slippery. Stress the importance of moving slowly and staying on the trail. Switch back cuts are bad for the land and also can be dangerous shortcuts. In the wet Oregon coast environment switch back cuts can create new water run-off channels, which lead to erosion. An instructor or adult chaperone should go down the trail first to make sure no students get too far ahead, and they can establish a meeting place on the beach for the rest of the group.

## **Step 3. Exploration of beach and tidepool ecosystems. (This part of the lesson plan could take 30 minutes or the entire day depending on the group and how in-depth the facilitator wanted to go with each activity.)**

### **Introduction**

Emphasize how small this ecosystem is. Its entirety can be seen between the ocean water and the inland cliffs. Have students explore the beach to find common rocks and shells. Identify and explain their findings. Emphasize that nothing can be taken from the beach or tidepools, and that everything the students pick up should be returned exactly as it was found.

Move the group to the tidepools at the north end of the cove. Upon reaching the tidepools the student will be ready to break away from the structured lesson and want to explore. This is the time to fully explain appropriate behavior. Begin by having the group brainstorm and reiterate appropriate behavior guidelines. In addition to the safety guidelines that are posted on the signs at the trailhead the students must understand how to responsibly explore the tidepools. This must include the importance of not disturbing the creatures in the tidepools in a way that could damage or kill them. Emphasize that tidepool exploration is a hands-on, sensory experience. Encourage the use of touch, smell, and listening in appropriate ways.

### **Activity: Animal Homes**

While students will want to explore the instructor should still guide the exploration in the beginning. Using the analogy of animal homes can be used to explain why removal of objects is prohibited, and why every object should be returned exactly as it was found. This activity could begin with students sharing their own experiences about having to move and how the move affected them.

Next, in a small area or tidepool have each student identify an object that they think could be an “animal home.” As a group discuss each object. Have students explain why they picked each object and what they think its role might be in the ecosystem. The instructor should demonstrate how to pick an object up, or flip a rock over, and then return it exactly as it was found. Students should practice this under supervision. The instructor should provide additional information about the role of each object. The instructor might also want to bring collected items that can be passed around as examples. If appropriate pass around identification books or cards to have the students learn about the objects they found.

The initial discussion about homes and moving draws on significant life experiences learning theory. The actual exploration and discovery of homes uses inquiry based learning, hands-on learning, and experiential learning.

#### **Activity: The Living Tidepool**

Next explain that much of what is seen in the tidepools is alive. Also much of the surface that students will walk on in the tidepool area will be covered in living organisms. Have students again identify different objects in the tidepools that they think are alive. In a group have students explain what they see their object doing and what they think it is. The instructor can add additional information about identification. Do not forget to address the vegetation.

This guided exploration activity incorporates the multiple intelligences learning theory because it allows students to make discoveries and observations with different senses. It also draws from the inquiry and experiential learning models.

#### **Activity: Scavenger Hunt and Group Presentations**

Another possible identification activity could begin with the instructor showing a picture, or collected sample of a certain animal or plant. Students then go find this organism. Upon finding it the group can discuss and describe it with the instructor providing additional information. Another activity that could be done in small groups would be research and presentations about the different organisms. Each group could find their organism and then explain its location, and characteristics to the group.

This activity is hands on and allows students to explore the tidepools with less structure. It also makes the students accountable for learning and sharing this learning with the group. These characteristics are consistent with the inquiry based and cooperative learning theories.

#### **Activity: Zones and Adaptations**

The tidepool environment can be broken down into different zones according to the distance from the ocean. Each zone will experience different amounts of seawater, fresh water, sun and other environmental elements. As a result different organisms will be found in different zones according to their characteristics and adaptations. While in each of these zones have the students brainstorm what the significant environmental factors are in each zone, and what some necessary adaptations organisms might need. A possible extension

of this activity would be to have students draw a picture of fill in some kind of visual with the different elements and organisms of each zone.

This may be a good final activity to do because it covers the bigger picture of the tidepool environment. Students will have already had a lot of time to interact with and explore each zone. It should be easier to recall what organisms were more common in the different zones after exploring the tidepools for some time. This activity incorporates the systems-thinking, hands-on, and inquiry based learning theories.

#### **Step 4. Gauging Understanding- Discussing Observations**

The primary way in which a facilitator of tidepool exploration activities can evaluate their activities is by observing student's behavior and level of enthusiasm throughout the day. The underlying objective is for students to have a fun and meaningful experience in nature, and a facilitator should be able to determine whether or not this is happening by observing group behavior.

More structured ways to measure learning could include giving individuals or groups checklists of organisms that they should find throughout the day. These lists could also include room for description of organism characteristics and location. The checklist could also include room for individuals to make drawings.

#### **Step 5. Wrap Up (15 minutes)**

Have students group up back on the beach at the base of the trail back up the hill. Go around the circle and have each student share their favorite part of the day, favorite organism, something they learned, something they want to learn more about, or ask any questions. This should be a fun concluding activity that includes all students.

Before returning to the bus, make sure students have left everything they found or collected throughout the day on the beach.

#### **Additional Reading/Resources**

The following are a few excellent field guides that are resources a facilitator could have at the tidepools:

- Alden, Peter. 1998. *National Audubon Society Field Guide to the Pacific Northwest*. New York, New York: National Audubon Society.

This is a comprehensive guide to the flora and fauna of the Pacific Northwest. It is small, and has color photographs.

-Kinghorn, Jenna. 1996. *My First Pocket Guide: Seashore Life*. Washington D.C.: National Geographic Society.

This guide is intended for a younger audience. It is small and contains good photographs.

- McConnauey, Evelyn. 1985. *Pacific Coast: Audubon Society Nature Guides*. New York, New York: Alfred A. Knopf.

This is a comprehensive guide of the flora and fauna of the Oregon coast.

- Russo, Ron. 1981. *Pacific Intertidal Life: A Guide to Organisms of Rocky Reefs and Tide Pools of the Pacific Coast*. Rochester, New York: Nature Study Guild.

This book is small sized and contains great pictures.