



2ND GRADE | PEOPLE OF THE GREAT WATER

Estuaries and the Coquille Indian Tribe

Essential understandings

<input checked="" type="checkbox"/> Since time immemorial	<input type="checkbox"/> Identity
<input type="checkbox"/> Tribal government	<input checked="" type="checkbox"/> Lifeways
<input checked="" type="checkbox"/> Language	<input type="checkbox"/> Treaties with the United States
<input type="checkbox"/> Sovereignty	<input type="checkbox"/> Genocide, federal policy, and laws
<input type="checkbox"/> History	

Learning outcomes

By the end of this lesson, students will be able to:

- Describe what an estuary is.
- Identify different plants and animals found in Oregon estuaries.
- Explain the importance of estuaries to the Coquille people.
- Illustrate an example of an estuary that includes water, a mudflat, plants and animals, with different types of lines.

Essential questions

What is an estuary?

Why are estuaries important for the Coquille Indian Tribe?

What are four main components that are within an estuary?

Logistics

- Where does the activity take place? *Classroom*
- How are the students organized?
Whole class, Teams: 2-4 pairs, individually

Time required

75 minutes

Oregon Standards

Oregon Language Arts Standards

2.SL.2.2- Speaking and Listening:

Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.



Oregon Science Standards

2-2-ESS-2- Identify real-life connections between words and their use.

2-LS4-1- Make observation of plants and animals to compare the diversity of life in different habitats.

Oregon Visual Arts Standards

VA.1.CR1.2.2 Share imaginative ways that art works could be used to communicate a narrative, experience or idea.

VA.10.CO1.2.1

Create works of art about events in home, school or community life (e.g. narrative documentation)

Materials

- Classroom writing surface (i.e., blackboard, whiteboard, chalkboard, chart paper, and markers.)
- Classroom projector to display estuary art examples.
- Art Supplies for students to complete estuary art work (pencils, pens, markers, colored pencils, color crayons and/or paint and paint brushes, water cups, paint trays, and rags or paper towels).
- If painting, access to a sink for washing hands and clean up is recommended.
- Index cards for each student.
- Copies or printed images of estuary plants and animals for student reference.

Vocabulary

- Nuu-wee-ya'- One of the three traditional languages of the Coquille people.
- Brackish- Slightly salty, such as the mixture of river water and seawater in estuaries.
- Coquille (ko-kwel) Indian Tribe : A federally recognized group of indigenous people who have lived on the southern Oregon Coast since time immemorial.
- Element of Line – One of the elements of art. A mark made using a drawing tool or brush. There are many types of lines: thick, thin, horizontal, vertical, zigzag, diagonal, curly, curved, spiral, etc.
- Estuary- Body of water where freshwater river meet the ocean.
- Fish weir- An obstruction placed in tidal waters or across a river or stream on trap fish.
- Freshwater- Water that does not have much salt, such as rivers, lakes, and streams.

- First foods- Traditionally harvested foods that provide sustenance, promote health, and are original to the North American continent.
- Miluk- One of the three traditional languages of the Coquille people.
- Mudflat- A stretch of muddy land left uncovered at low tide.
- Restore- To return something to a former condition.
- Salt Marsh- Coastal wetlands that are flooded and drained by salt water brought in by the tides.
- Seagrass beds- An ecosystem found in estuaries and shallow coastal waters consisting of submerged growths of seagrasses.
- Tides- the rise and fall of the level of the ocean, caused by the gravitational pull of the sun and moon and the rotation of the earth.
- Watershed- Land area that channels rain and melted snow through streams and rivers to the ocean.

Extension Activities

- Create a mural of an estuary on a table or bulletin board in the classroom and have each student create an animal or plant to add to the mural. Enlist an art teacher or creative parent volunteer to make this a fun and educational STEAM project.
- Create a directed drawing of an estuary for students to follow step-by-step.



Overview

Estuaries are bodies of water found where rivers meet the ocean. In this lesson, students will explore the land and water forms of estuaries, the plant and animal life found there, and the importance of estuaries to the historic and modern culture and lifeways of the Coquille Indian Tribe of coastal Southern Oregon by creating an estuary painting.

Background for teachers

Estuaries are bodies of water found where rivers meet the ocean. They are influenced by the tides but are protected from the full force of the ocean's wind, waves, and storms. Estuaries are temporary or permanent homes for a wide variety of plant and animal life of marine and freshwater origin as well as unique species adapted for life in the brackish (a mix of salt and fresh) water of estuaries. Estuarine habitats- including salt marshes, sea-grass beds, and mudflats- serve important roles in the life cycles of species such as salmon, crab, waterfowl, shorebirds, and many others.

Humans have been attracted to estuaries for millennia and continue to rely on them for food, recreation, jobs, and coastal protection. Twenty-two major cities are located on or near estuaries, including Hong King, Kolkata, London, New York, San Francisco, and Venice.

The Coquille Indian Tribe was one of many Native American societies to take root and flourish in Oregon's coastal estuaries. The Tribe constructed permanent winter villages along the tidewaters and lower reaches of streams and rivers, including the South Slough of Coos Bay and the Coquille River. Estuary shorelines and sheltered coastal bays offered abundant food and access to inland forests and meadows. They also facilitated travel by canoe and easier communication and trade with other Tribes.

The Tribe caught salmon and other fish with hooks, spears, nets, and fish weirs and basket traps. They established seasonal camps in upland areas during the spring, summer, and fall to hunt elk and deer, gather foods such as camas root and berries, and collect plant fibers and other useful raw materials.

Euro-American encroachment on the Oregon Coast in the 1850s also focused on estuaries with early cities at Astoria, Newport, Coos Bay, and Bandon. The settlers displaced the Coquille and other Native peoples from their ancestral lands and altered the landscape to suit their needs. They cut down trees; dredged and altered wetlands to create land for farming and ranching; and undertook urban, commercial, and industrial development activities that introduced non-native species, polluted waterways, and overexploited living resources (for example hunting the sea otter for the fur trade to the point that it disappeared from Oregon).

These persistent and cumulative disturbances have reduced much of the life-supporting capacities of Oregon estuaries and compromised their natural resiliency. They were also devastating for the Coquille Indian Tribe. One specific indignity of colonization occurred when the U.S Army Corps of Engineers, at the behest of white settlers and their leaders, blasted a part of blueschist outcrop at Bandon Beach to build the Bandon jetty. This destroyed as revered landmark known to the Coquille as “Grandmother Rock” (the settlers called it “Tupper Rock”) and also permanently altered natural erosion and sedimentation patterns at the mouth of the Coquille River.

Like other Native peoples in Oregon, the Coquille found ways to survive this cultural and environmental onslaught and to adapt and thrive. Since federal recognition was restored in 1989, the Coquille Indian Tribe has sponsored and contributed to projects promoting sustainable stewardship of land and sea resources within its ancestral territory. These include employing sustainable forestry practices on Tribe-owned forestland; partnering with federal, state, and private partners to restore more than 400 acres of tidal marsh in the Bandon Marsh National Wildlife Refuge; contributing leadership and a Native perspective to habitat restoration and protection activities at the South Slough National Estuarine Research Reserve.

To prepare for this lesson teachers should

- Review all materials for this lesson.
- Obtain a copy of one or more of the children’s books recommended for the lesson (see the “Resources” section), if using.
- Prepare an example of an estuary art, utilizing the children’s book illustration as a guide. Ensure it has examples of lines used to draw water (wavy), mudflats (curvy, organic), plant shapes (curvy, pointed, long and straight, zig zag), and animal shapes (round, angled, repeated short lines for fur, repeated looped lines for feathers).
- Prepare classroom projection to display an example of estuary drawing/painting. Print or copy pictures of various estuary plants and animals to serve as examples for students.
- Ensure students will have access to art materials needed to participate in this lesson. (see “Materials” section above).
- Write lesson objectives and key vocabulary on a classroom writing surface.
- Consider creating a visual chart showing different kinds of lines that can be used to illustrate estuaries that students can use as a reference.

References

Duggan, B. (2013). *Coquille Indian Tribe wetland management plan for tribal trust lands, 2014-2018*.

Coquille Indian Tribe.

- Good, J.W. (2000) Summary and current status of Oregon's estuarine ecosystems. In P.G. Risser (Ed.), *Oregon state of the environment report 2000*. (pp.33-44). Oregon Progress Board.
- Hall, R. L. (1995). *People of the Coquille estuary: Native use of resources on the Oregon Coast*. Words & Pictures Unlimited.
- Ivy, D.B., & Byram, R. S. (Eds.).(2002). *Changing landscapes, sustaining traditions: Proceedings of the 5th and 6th Annual Coquille Cultural Preservation Conferences*. Coquille Indian Tribe.
- Oregon Department of State Lands. (n.d.). South Slough Reserve.
<https://www.oregon.gov/dsl/SS/Pages/About.aspx>
- Oregon State University Libraries & Press and Institute for Natural Resources. (2020). *Oregon explorer*.
<http://oregonexplorer.info/>
- Ross, E. (2019, August 21). *Many of the west's estuaries have vanished: Here's why that matters*.
- Oregon Public Broadcasting. <https://www.opb.org/news/article/estuaries-disappear-american-west-coast/>
- Tsvekov, M., & Erlandson, J. (2003). The Haynes Inlet weirs: Estuarine fishing and archaeological site visibility on the southern Cascadia coast. *Journal of Archaeological Science*, 30, 1023-1035.
- U.S Fish & Wildlife Service. (n.d.). *Bandon Marsh*. https://www.fws.gov/refuge/bandon_marsh/

Resources

Children's Books

- Baldwin, R.F. (1998). *This is the sea that feeds us*. Dawn Publications.
- Cole, S. (1985). *When the tide is low*. Lothrop, Lee & Shepard Books.
- Hockema, D. (2010). *Omashi's baskets: A picture book for kids*. Coquille Indian Tribe, Cultural Resources Department.
- Hockema, D. (2011). *Tah's tools: Another picture book for kids*. Coquille Indian Tribe, Cultural Resources Department.
- Peters, L.W. (1988). *The sun, the wind, the rain*. Henry Holt & Co.

Curriculum Resources

Friesem, J., & Wood, S. (2002). *The estuary guide: Level 1*. Padilla Bay National Estuarine Research Reserve, Breazeale Interpretive Center.

Kesselheim, A.S., Slattery B.E., Higgins, S., & Schilling, M.R. (1995). *WOW!: The wonders of wetlands*. Environmental Concern.

National Oceanic and Atmospheric Administration. (n.d.). *Estuary education*.
<https://coast.noaa.gov/estuaries/>

New Zealand National Institute of Water and Atmospheric Research. (n.d.). *Education and training: Estuaries*. <https://niwa.co.nz/education-and-training/schools/students/estuaries>

Places

Bandon Historical Society Museum 270 Filmore Ave SE Bandon, OR 97411

541-347-2164 <http://bandonhistoricalmuseum.org/>

Coos History Museum 1210 N. Front St. Coos Bay, OR 97420

541-756-632 <https://cooshistory.org/>

Coquille Indian Tribe 3050 Tremont St. North Bend, OR 97459

541-756-0904 www.coquilletribe.org

South Slough National Estuarine Research Reserve 61907 Seven Devils Rd. Charleston, OR 97420

541-888-5558 www.oregon.gov/dsl/SS/Pages/About.aspx

Considerations for teachers

Assessment

The estuary artwork accompanying this lesson can be used as a formal or informal summative assessment. There is an exit ticket accompanying this lesson in the last activity that can be used as a formal or informal formative assessment. Having students work on these individually or in pairs, you can then evaluate their work for accuracy, level of effort, and completion.

Practices

- Teachers should be prepared to activate engagement strategies, including think-pair-share, small group, and whole-class discussions.
- Teachers should have strong knowledge of how to support or differentiate all levels of the art lesson to fit the needs of their students. Provide examples of lines that students may want to utilize, and consider practicing drawing some of the estuary shapes together, step-by-step, to support students in their exploration.

Learning targets

- I can describe what an estuary is.
- I can identify plants and animals that live in Oregon estuaries.
- I can include and illustrate four components that are within an estuary with different types of lines. (Water, mudflat, plants, and animals.)
- I can explain why these places are important to the Coquille Indian Tribal people.

Activity 1

Activate student interest | 15 minutes

Overview: Students will review and activate prior knowledge of estuaries.

Step 1.

Gather students together in a comfortable space.

Step 2.

Explain to students that today they will be creating an estuary art project.

Step 3.

Review with students the components of an estuary. Ask students to think-pair-share or have a whole-class discussion of what is included within an estuary with these questions:

- What is an estuary?
(An estuary is an area of water where a river meets the ocean. Sometimes they are called bays, lagoons, harbors, or sounds. The word Estuary comes from a Latin word meaning “tides.” Estuaries have water, mudflats, plants, and animals)
- What animals are in an estuary, and what lines do you notice in these animals?
(Salmon, Lamprey, Clams, Mussels, Crabs, Herring, Duck, Eagle, Great Blue Heron, Harbor seal.)
For example,
- What types of plants are in an estuary, and what lines do you notice in these plants?
(Sea lettuce, eelgrass, myrtlewood, Kinnick-Kinnick/bear berry, salal berry, Cattail, skunk cabbage, Oregon grape, willow, cedar.)
For example,
- What are some foods we eat that come from estuaries?
(Salmon, Clams, Mussels, Crabs, Duck.)
- What are some fun activities people like to do in estuaries?
(Answers may vary.)
- How could estuaries become polluted?
(Answers may vary.)

Make a list of each component on the classroom writing surface for students to reference when making their art.

Activity 1 (continued)

Step 4.

Provide a brief summary for students after discussing the questions, and explain how estuaries were important to Coquille people.

Say:

Oregon estuaries were special places for the Coquille people for many thousands of years and still are today. A good term to use to explain how long ago the Coquille Indian Tribal people have been on this land is “since time immemorial”, which means so long ago that people have no memory of how long ago it has been. The animals and plants of estuaries helped the Coquille to survive and thrive, and now the Coquille are helping the animals and plants of the estuaries. Estuaries offer food, useful materials, protections from ocean storms, and recreation. We can help protect estuaries so that others may enjoy them for many years to come.

Step 5.

Review lesson targets and key vocabulary with students.

Step 6.

Before preceding ask students if they have any questions.

Activity 2

Estuary Art Activity | 45 minutes

Overview: Students will create a painting or drawing of an estuary including four specific components. (Water, mudflat, plants, and animals.)

Step 1.

Share multiple illustrations from children's books of estuaries. Ask:

- What do you notice in the picture?
- What lines did the illustrator use to make that?
- Does every illustrator use the same kinds of lines? What is similar and what is different in these illustrations?

Share your example of an estuary drawing or painting underneath classroom projector. Draw students' attention to the lines and components that are included in the drawing or painting, and compare if the components match the classroom list of elements you created. Ask:

- What do you notice in the picture?
- How does the picture compare to our classroom list we provided?

Step 2.

Invite students to reference this estuary components list for their artwork. Remind students that everyone's art will look different, they should look different, and that is what makes their art unique and their own. Provide examples of different types of lines on the classroom writing surface, or on another visual aid or chart. Pass out scratch paper for students to practice on.

Step 3.

Display the estuary drawing or painting example. Demonstrate how to create some of the components included, under the projector or on a white board or poster board. Have the class create their own lines on their sheet of scratch paper, brainstorming different kinds of lines and shapes they may want to use and practicing drawing their own estuary elements. If students seem to need additional support, demonstrate drawing some of the components step-by-step. Pass out a blank piece of cardstock paper and pencil for students to outline their estuary components.

Step 4.

Invite students to sketch their own estuary drawing in pencil and include *at least* four main components in their drawing including the following: *Water, mudflat, one plant, one animal*. Students may reference displayed example or reference photos to help guide their artwork.

Activity 2 (continued)

Depending on the levels and abilities of your students, you may wish to provide a step-by-step drawing option, or allow students to partner up for support to create their artworks.

Allow time for students to complete their drawing.

Step 5.

Invite students to add detail by demonstrating how to add more lines and textures. Show students how to outline their pencil with paint or marker, and add color, noting details in your example artwork. Pass out student art supplies. (pens, markers, colored pencils, color crayons and/or paint and paint brushes). Allow time for students to complete their artwork.

Activity 3

Reflection/Closure | 15 minutes

Step 1.

Review the learning targets for the lesson and have students self assess whether they have met the targets.

Step 2.

Help students summarize and reflect on what they learned in the lesson. Hold an informal debrief of what stood out to students in the lesson and why. This can be done as a pair-share or group discussion with a report out as a whole-class discussion.

Step 3.

Ask for and answer any final questions students may have.

Step 4.

Pass out an index card for students to write or draw a picture of one characteristic that is within an estuary. (Formative assessment.)

Step 5.

Collect artwork from students to display. If time permits, display students' artwork underneath classroom projector and have students share what they enjoy about each other's artwork.