



SCIENCE

Caring for Rivers, Fish and People

ESSENTIAL UNDERSTANDINGS

- Lifeways

LEARNING OUTCOMES

Student will understand

- Tribal lifeways include ways of caring for land and water
- Solutions that help fish can also help protect human communities
- Traditional Ecological Knowledge (TEK) and modern science can work together.

ESSENTIAL QUESTIONS

- How do Oregon Tribes use their traditional knowledge to care for rivers and prevent flooding?

REQUIRED TIME

- 40 minutes

Overview

Students will explore how Oregon Tribes use Traditional Ecological Knowledge (TEK) and lifeways to manage water and protect communities from flooding, focusing on examples from the Confederated Tribes of Warm Springs. Students will learn how tribal lifeways include caring for the land and water to help both fish and people.

Background for Teachers

The Essential Understanding, Lifeways, focuses on how Native cultures and traditions are shaped by their environment, including the use of rivers and lakes for food, travel, and ceremonies. Oregon's nine federally recognized tribes continue to practice their unique lifeways today, including Traditional Ecological Knowledge (TEK) - the knowledge, practices, and beliefs about nature that tribal communities have developed over thousands of years.

All Tribes in Oregon are involved in restoring and maintaining healthy habitats for plants, animals, and people. The Confederated Tribes of Warm Springs has been particularly active in river restoration work, establishing the John Day Basin Office in



1997 to coordinate restoration projects across over 8,000 square miles of watershed. Their work combines Traditional Ecological Knowledge (TEK) with modern restoration techniques to help both salmon and human communities.

Considerations for Teachers

Practices

While teaching this lesson, the following principles can help guide your decision-making and engagement with students.

- Focus on teaching the Essential Understanding, Lifeways, through contemporary examples of tribal environmental stewardship.
- When sharing content with students, address the "why" not just the "what" - explain how Traditional Ecological Knowledge (TEK) guides modern restoration work
- Highlight the strengths of Oregon's Indigenous peoples today while connecting to their traditional lifeways.
- Ensure your teaching practices are accessible and appropriate for Native and non-Native students

Assessment

During this lesson, observe and listen to students during discussions and demonstrations to determine how their

STANDARDS

Oregon Science Education Standard

3.LS4.3: Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

KEY WORDS and IDEAS

- **Lifeways:** Thow a group of people life, work and play together
- **Traditional Ecological Knowledge (TEK):** What Native people have learned about nature by living close to the land for a very long time. This knowledge is passed down from elders to children through stories, songs, and doing things together
- **Watershed:** An area of land where all the water drains into the same river or lake
- **Restoration:** Bringing something back to its natural, healthy state
- **Floodplain:** The flat area next to a river where water naturally spreads during floods
- **Habitat:** The natural home where plants and animals live and get what they need to survive.



learning is progressing. Write down what you notice about what students say and do in relation to the success criteria. Use this formative information to provide feedback to students and plan next steps.

At the end of the lesson, provide students with an opportunity to reflect on their learning through self-assessment.

Success Criteria

Students can:

- Explain what "lifeways" means for Oregon Tribes.
- Describe how the Confederated Tribes of Warm Springs care for rivers.
- Explain how caring for fish habitats can help reduce flooding.

MATERIALS

What materials are needed for students to engage in this activity?

- Reading passages
- Graphic organizer
- Student self-assessment

Lesson Activities

Opening

Time: 10 minutes

Step 1:

Share a map of Oregon with students. Introduce the nine federally recognized Tribes of Oregon.

Say, "There are nine tribes in Oregon today. The Tribes are not the same! Each has its own land, language, and culture. Each Tribe is like a really big group of relatives, with lots of different big families. These families are called bands, and the bands come together to make the Tribe. One Tribe is the Confederated Tribes of the Warm Springs. Today we'll be learning more about how they are protecting their rivers."

Ask students to find the Confederated Tribes of the Warm Springs on the map.



Discuss the idea of lifeways with students. Say “lifeways are the special ways that Tribes live, including their traditions, beliefs, and daily practices. For Oregon Tribes, lifeways include how they take care of the land and water around them.”

Encourage students to think about their own lifeways. Caring for rivers is a lifeway for many Native peoples because it is central to identity, culture, and survival.

Step 2:

Explain the connection to caring for rivers: Ask students: Why are rivers important?

- Travel, food (fish), drinking water

Ask students to share their experiences with rivers. Explain that for Oregon Tribes caring for rivers means:

- Healthy fish for food (salmon, lamprey, steelhead)
- Clean water for drinking and ceremonies
- Clear passage for people and fish
- Having plants for medicine and basketry

All these things are a part of Tribal lifeways.

Discuss that many Oregon Tribes are involved in river restoration, sometimes on their own land and sometimes in partnership with other Tribes and other agencies.

Step 3:

Review the learning outcomes, success criteria, essential questions and key words and ideas with students.

Main Activity

Time: 20 minutes

Step 1:

Read the following text to students about the problem with the West Fork at Jones Creek.



The West Fork at Jones Creek is a special place near the Hood River. The Upper West Fork has really good, cold, clean water that fish like salmon love. It's one of the best places for fish to live in the whole Hood River area.

But there was a problem. A long time ago, people cut down too many big trees near the river. They also moved logs out of the water. This made it hard for fish to find good places to live and have babies.

Let students know that this problem is typical for many rivers in Oregon. Explain that next they will each be reading a paragraph that shares a solution to this problem based in Oregon Tribes' traditional ecological knowledge.

Step 2:

Put students in groups of three. Each student will read one of the three paragraphs related to a strategy the Warm Springs Tribe has used to restore rivers. Each student in a group will read a different paragraph. Count off students (1-3) so they know if they are reading paragraph one, two, or three. These paragraphs can be found in the handouts at the end of this lesson.

Ask students to fill out the graphic organizer as they read. This is also a handout at the end of the lesson. Students will use the information they write down when they discuss the paragraphs in their groups.

You can also collect the graphic organizers to review as part of your formative assessment.

After reading, have students share and discuss with their group what they learned. Each group can choose one thing to share with the whole group.

Facilitate a discussion about what students learned about how Tribes take care of rivers.



Closing

Time: 10 minutes

Step 1:

Continue the discussion around the following reflection question: "The Warm Springs Tribe shows us that caring for fish habitat also helps protect people from floods. Can you think of other ways that caring for nature might help people too?"

Address the following key points with students.

- River restoration activities are part of Oregon Tribes' modern lifeways of caring for rivers, the land, the fish and the Tribe.
- When fish are healthy, Tribes can fish, share traditional foods, and teach children about their culture.
- The river restoration helps keep their lifeways alive! In other words, river restoration isn't just a job for Tribes - it's how they live their culture by caring for the world, just as they have done since time immemorial

Step 2:

Have students do the self-assessment based on the Success Criteria. Review the Success Criteria as needed.

Extension Activity (Optional):

Water Flow Demonstration: Use a large, shallow pan filled with sand/soil to represent land. Create a "river" channel through the middle. Show normal flow, then flooding, then demonstrate how adding floodplains (flattening the soil by part of the river), adding something to represent large wood or wood piles, and creating side channels helps manage flood water. Students could work in groups with a few different river models or you could work together as a class on a single model. This hands-on demonstration can reinforce the concepts from the lesson.



Additional Resources:

- 3rd grade Science and Social Sciences lesson by the Klamath Tribes, [C'Waam and Koptu Lessons](#) (full lesson resources can be found on the [ODE/OIE THSH Tribal Curriculum webpage](#))
- Confederated Tribes of Warm Springs [website](#)
- Article: [West Fork at Jones Creek Habitat Restoration Project](#)

Referenced Projects

- Hood River West Fork restoration (2019): Hood River Watershed Group partnership with Confederated Tribes of Warm Springs placed approximately 350 pieces of large wood in streams
- West Fork side channel reconnection (2021): 0.5 mile reach restoration project near Red Hill Creek Confluence
- John Day Basin Office: Established 1997, coordinates restoration across 8,000+ square miles, 200+ projects completed



Handout: Reading 1

Putting Logs in Rivers: Odell Creek Dam Removal and Stream Restoration

One way that Tribes restore rivers is to put big logs and branches back into rivers. Long ago, rivers naturally had lots of fallen trees in them. But people took them out to make rivers easy to travel on. This made the rivers move too fast and flood. It also took away places for salmon and Lamprey to lay their eggs. In the Hood River area, the Warm Springs Tribe worked with partners to put about 350 pieces of large wood into streams in 2019. The logs create deep pools where fish can hide and rest and lay eggs. When big storms come, the logs slow down the rushing water and stop flooding.

Source: Hood River Watershed Group, [Odell Creek Dam Removal and Stream Restoration](#)



Handout: Reading 2

Reconnecting Side Channels in West Fork

Sometimes old stream channels get filled in with dirt or blocked off. This can happen from mining and other activities. Tribes dig the channels back out and connect them back to the main river. In the West Fork area, The Warm Springs Tribe reconnected side channels in 2021 to create 0.5 miles of new fish habitat. Fish love these quieter side channels, especially baby salmon. When the river is running high, the extra channels give water more places to go instead of all rushing down one river. It's like having more lanes on a highway!

Source: [West Fork at Jones Creek Habitat Restoration Project](#)



Handout: Reading 3

Restoring Floodplains at the John Day River

A floodplain is the flat area next to a river where water naturally spreads during big storms. Tribes remove barriers like old roads over rivers or rocks from mining or built-up dirt from dams so rivers can use their floodplains again. Since 1997, the Warm Springs Tribe has worked on floodplain restoration projects throughout the John Day River system. When rivers can spread into floodplains, young fish get shallow areas full of food to grow in. For people, it means flood water spreads out slowly over big areas instead of rushing down and causing floods in towns.

Source: [John Day River Watershed Restoration Strategy](#)



Handout: Graphic Organizer

Directions: As we learn about what Native Tribes do to protect rivers, write or draw ideas in the table below!

Name: _____ **Date:** _____



What Tribes do for rivers	How it helps fish	How it helps people



Handout: Student Self-Assessment

Name:

Directions: Read the lesson success criteria in the first column. Then decide, can I do this now or not yet. If you chose Not Yet, share one thing you can do as a next step. If you chose Yes, share what you did well.

Success Criteria	Not Yet	Yes
		
I can explain what "lifeways" means for Oregon Tribes.		
I can describe how the Confederated Tribes of the Warm Springs care for rivers.		
I can explain how caring for fish habitats can help reduce flooding.		



One thing I did well and one step I can take in the future.

