

SCIENCE

# Food Sovereignty and Environmental Sustainability

## ESSENTIAL UNDERSTANDINGS

- History
- Lifeways

## LEARNING OUTCOMES

- Students will develop an appreciation for the traditional food systems of Native Americans in Oregon.
- Students will examine tribal and intertribal initiatives in Oregon aimed at restoring traditional food systems.
- Students will identify how tribal food sovereignty efforts in Oregon can help support a more sustainable and resilient environment and food system.

## ESSENTIAL QUESTIONS

- How did the traditional food systems of Native Americans in Oregon differ from the food systems introduced by non-Indigenous settlers?
- What are examples of tribes in Oregon working to restore traditional food systems?
- What can we learn from the tribes' food sovereignty efforts to improve environmental conditions?

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## Overview

Students will learn about the concept of food sovereignty and will explore features of the traditional food systems of Native Americans in Oregon and compare them to current food cultivation and consumption practices. Optionally, they can then research and prepare case studies of tribal and intertribal food sovereignty projects in Oregon and analyze the lessons those studies can provide for reducing the impact of human activities on natural systems.

## Background for teachers

The traditional lifeways of Indigenous people in Oregon were adapted to the natural rhythms and cycles of food sources, and first foods formed the backbone of many Indigenous societies because of their cultural, economic, and medicinal importance. Foods were also deeply respected and regarded by tribes because they were necessary for survival of the group. Traditional first foods such as salmon, huckleberries, and camas nourished tribes in Oregon in numerous ways and kept them vibrant and healthy. In exchange, Native Americans in Oregon saw themselves as stewards of first foods and the land that produces them.



## LOGISTICS

- Where does the activity take place?  
Classroom
- How are the students organized?
  - ☒ Whole class
  - ☒ Teams: 3 – 4
  - ☒ Pairs
  - ☒ Individually

## TIME REQUIRED

50 – 100 minutes

They honored first foods in cultural practices (e.g., first-salmon celebrations) and by using sustainable hunting, gathering, and land-management practices that protected first foods and reduced overconsumption and waste. Examples included setting controlled fires on oak savannahs to eliminate brush and kill acorn-eating insects and setting aside portions of camas prairies from harvesting to allow the plants to repopulate an area.

These and other traditional food cultivation and consumption patterns in Oregon were disrupted or curtailed by colonization by non-Natives and the introduction of western diets and processed foods. Settlers fenced off lands on which tribes foraged and used them for farming and ranching of non-Native plant and animal species. Dams flooded traditional Native fishing spots (e.g., Celilo Falls) and disrupted or blocked salmon migrations. By force or necessity, Native Americans in Oregon gave up many traditional hunting and gathering practices and adapted to the settlers' capitalist economy, food system, and diet. Besides these traumas of initial colonization, over generations

## STANDARDS

Oregon science standards

HS-LS2-7--Design, evaluate and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-ESS3-4 – Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

## MATERIALS

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

- PowerPoint presentation – If using this presentation, load the slides prior to the lesson to ensure they are displaying properly.
- Poster paper and markers
- Blackboard or whiteboard
- Internet access
- Computers and internet access for students (classroom computers, mobile devices, or computer lab reservation) – Arrange for computer and internet access for students if you choose to have students research the food sovereignty case studies during class time (or you could permit them to use their personal mobile devices to conduct research, depending on your own or the school's policies).

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these changes had impacts on many aspects of tribal life, as diets shifted dramatically to western high-fat and high-sugar foods and sedentary lifestyles. In addition, the denigration of their former lifeways as inferior or useless also caused further psychological damage. Native Americans' ancestral lands have also been affected by the changes wrought by colonization as the market economy promotes commodity crops and consumer practices that deplete soil; decrease species diversity; contaminate ground and waterways with synthetic fertilizers and pesticides; and alter plants, animals, and food through genetic engineering and "food science."

Native American tribes in Oregon are working to restore traditional food systems and practices. These efforts seek to "decolonize the diet" of tribal members, restore connections of tribal members to first foods, restore and promote traditional land-management practices, and revive cultural pride. They are an attempt by Native American people to restore their food sovereignty in the same way they have fought to maintain their rights to govern their own affairs in other domains. Tribes are using both traditional knowledge and oral histories and western science and partnering with other tribes and non-Native organizations to restore native habitats, protect native plant and animal species, and model conservation and environmental sustainability practices that can benefit both Native and non-Native Oregonians alike.

## MATERIALS (Continued)

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

- Street Roots article, "The growing movement to restore native food sources" (one copy per student): Available online and as a handout in the lesson files.
- Indigenous Oregon Food Sovereignty Case Study Guide (one copy per student)

## VOCABULARY

**Agriculture** – Farming, including growing plant crops and rearing of animals for meat, wool, and milk.

**Colonization** – Settling among and establishing control over the Indigenous people of an area.

**First foods** – Foods eaten by Indigenous people prior to contact with or colonization by non-Indigenous people.

**Food sovereignty** – The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems.<sup>1</sup>

**Food system** – The path and processes that food travels from field to be eaten; sometimes referred to as "from field to plate."

**Hunting and gathering** – Obtaining food by collecting wild plants and pursuing wild animals.

**Indigenous** – Native to an area; living in an area prior to the arrival of later inhabitants.

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<sup>1</sup> U.S. Food Sovereignty Alliance.



## Resources

Climate Justice Alliance, *Food Sovereignty*,  
<https://climatejusticealliance.org/workgroup/food-sovereignty/>

Kimmerer, R. (2015). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants*. Minneapolis, MN: Milkweed Editions.

KLCC, "Farewell Frybread, Hello Camas; First Nations Revisit Traditional Foods," <https://www.klcc.org/post/farewell-frybread-hello-camas-first-nations-revisit-traditional-foods>

Northwest Portland Area Indian Health Board, NW Tribal Food Sovereignty Coalition, <https://www.foodsystemsjournal.org/index.php/fsj/article/view/743/732>

Nelson, M. (2008). *Original instructions: Indigenous teachings for a sustainable future*. Rochester, VT: Bear & Company.

## VOCABULARY Continued

Seasonal rounds – A pattern of moving from one location to another in order to hunt and gather food and other resources.

Sovereignty – The power of a people or community to make decisions for itself without interference from others. Tribal sovereignty in the United States refers to the inherent rights of Indigenous tribes to govern themselves within the borders of the United States.

## Considerations for teachers

### Assessment

- Students should be assessed formatively. The formative assessment will be teacher observation of student participation in class discussions and (if applicable) group work on case study research of food sovereignty for Native Americans in Oregon. Summative assessment can be provided by having students complete an exit ticket or a writing exercise in which they answer the Essential Questions for the lesson.



For the optional case study research, if used as an individual homework assignment, then each student's work can be assessed for completeness and effort.

## Practices

- The teacher must be prepared to activate engagement strategies, such as think-pair-share and group projects.
- The teacher should be conversant with essential information about modern food-production practices to support a fair and respectful comparison of it to traditional systems of Native Americans in Oregon.

## Learning targets

- I can compare the traditional food systems of Native Americans in Oregon to the current food system and propose a solution for its impact on overall environmental stability and changes.
- I can identify and describe examples of Native American tribes in Oregon working to restore traditional food practices.
- I can describe how the food-sovereignty work of Native American tribes in Oregon can promote environmental sustainability and stabilizing the natural system.

## Options/extensions

- Have students do deeper research on the Native American food sovereignty projects they analyzed in their case study work. This could include contacting the tribe(s) to see if someone from a project is willing to be interviewed and/or share information; gathering information available online; and/or taking a trip to visit the program in person (if invited).
- Invite a guest speaker from a tribe and/or other organizations contributing to Indigenous food sovereignty and environmental stewardship to talk about their work. Examples might include university faculty, staff members from outreach and support programs serving Native Americans, and Oregon State University Extension Office staff members.

- Have students research other Indigenous food sovereignty projects elsewhere in the Pacific Northwest and across the United States.

## Reflection/closure

- Sum up the lesson by reviewing the learning targets. Have students provide two or three sentences that identify how tribal food sovereignty efforts and programs in Oregon can help promote sustainable environmental practices and food systems.

## Appendix

Materials included in the electronic folder that support this lesson are:

- Slides.PPT
- Materials\_StreetRoots\_GrowingMovementRestoringNativeFoodSources.pdf
- Materials\_IndigenousOregonFoodSovereigntyCaseStudyGuide

## Activity 1

### Activate Prior Knowledge<sup>2</sup>

Time: 20 minutes

#### Step 1:

Ask a student volunteer to list the ingredients (or some of the ingredients) in a recent meal they ate and write them on a piece of chart paper or a classroom writing surface.

#### Step 2:

Ask the class to think about and respond to the following questions, charting or recording their responses:

*What activities are involved in getting these ingredients to our plates?*

Examples:

- Growing and harvesting crops: What is grown when and why?
- Are there certain crops grown at *specific times* in Oregon that differ from when they may be grown in other states/countries?
- Are there certain ingredients that may grow better or worse in Oregon (versus other states/countries)?
- Which crops grow best in different regions of Oregon? Examples: Western Oregon (mushrooms, acorns, berries, roots of specific plants such as camas)
- Breeding, feeding, housing, transporting, and slaughtering animals
- Processing, packaging, transporting, storing, marketing, and selling food products
- Preparing food
- Eating food

<sup>2</sup> Adapted from Johns Hopkins Center for a Livable Future, "Food Frontiers: Teaching the Food System from Farm to Fork," <http://www.foodspanlearning.org/>



## Activity 1 (Continued)

- Disposing of/composting food

*How are the raw ingredients transformed into something we would eat?*

Examples:

- Sorting
- Washing
- Slicing
- Cooking
- Packing

*Who are the people involved at each step?*

Examples:

- Farmers/ranchers
- Transportation workers
- Food processing staff
- Food scientists
- Marketers/salespeople
- Store workers
- Chefs, cooks
- Consumers
- Garbage and compost collectors
- Landfill and composting facility workers

### **Step 3:**

Split the class into three groups by your preferred sorting method. Have each group review the list of activities generated for the first question in step two and brainstorm responses to the following:

1. Resources involved in each activity

*Suggestions: Natural resources (land, water, soil), labor, money,*



## Activity 1 (Continued)

*machinery fertilizers*

2. Effects of each activity on health, society, and the environment

(positive and negative)

*Suggestions: Feeding people, creating jobs, convenience, nutrition, energy, foodborne illness, hunger, greenhouse gases*

3. Influences on each activity

*Suggestions: Taste, costs, values, consumer demand, government policy, technology, labor, time*

### **Step 4:**

Have a representative from each group share their responses. Invite students who work or have family members who work in one or more of the activities briefly share what they or their family members do (e.g., farmer, repair farm machinery, truck driver, field laborer, chef).

### **Step 5:**

Summarize the activity for students.

#### **Say:**

*You now have a better sense of what we call the “food system.” [Clarify using definition above, if helpful.] As you’ve discovered, it is complex and it is shaped by the values and choices of many different people. Our food system does some things well, such as feeding a large number of people and creating foods people like. But it does some things less well, such as using up a lot of resources and distributing food unequally. More importantly, while we tend to take our food system for granted, it is not the only one available; historically, and even today, different cultures make different choices and have different values about how food should be grown or collected, prepared, and eaten.*



## Activity 2

### Oregon Indigenous Food Systems

Time: 15 minutes

#### **Step 1:**

Show the slide with the two main ways humans get food (hunting and gathering and agriculture). Allow students a moment to review; confirm understanding using definitions above and by asking questions.

#### **Say:**

*All humans must eat, and human groups throughout history have relied on two main sources of food: hunting and gathering and agriculture. Both have their pros and cons. Some are listed on the slide; can you think of any others? [Take a few responses.] Neither is better than the other; both have tradeoffs. Over time more and more societies have moved in the direction of agriculture, and there are few pure hunter-gatherer societies left. Native Americans in Oregon were mostly hunter-gatherers, although they did sometimes use land cultivation practices such as controlled burning and tending fields of certain plants to ensure a more predictable food supply.*

#### **Step 2:**

Show the slide providing the definition of first foods. Define any unfamiliar terms using the definitions above and confirm students' understanding.

#### **Step 3:**

Display the slide with photos of some of Oregon's first foods. Ask students if they have seen or eaten any of the foods listed. Invite students who have a family tradition of fishing, hunting, or using any of the first foods listed to share some of their experiences.

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## Activity 2 (Continued)

**Say:**

*Each Native American tribe in Oregon ate a different mix of plants and animals depending on where they lived and what was in season, and they consumed many more types of food than are shown here. The slide shows some foods that were eaten by many Native people.*

**Step 4:**

Display the slide depicting a “seasonal round” calendar for Indigenous people of the Pacific Northwest. Confirm students’ understanding of seasonal rounds using the definition provided above. Reiterate for students that this calendar is meant to summarize hunting and gathering practices of multiple tribes; individual tribes may have eaten more, fewer, or different plants and animals than are depicted on the calendar.

**Step 5:**

Show the slide with the quote from Valerie Segrest, a Muckleshoot tribal member. Give students a moment to read it silently to themselves.

**Say:**

*Indigenous groups in Oregon and elsewhere have specific, sophisticated knowledge of the land. They had to know when the salmon would be running in the rivers; they had to know which plants were poisonous and which could be used for medicine because that knowledge was integral to survival of the group. The land and its animals and plants were more than just a source of food; they defined who they were and their place in the natural world.*

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## Activity 2 (Continued)

### Step 6:

Show the slide with the effects of colonization on first foods. Ask students what they think each picture represents and the impact it had on the Indigenous food system in Oregon. The following are suggestions if students need help:

*Barbed wire fence:* Non-Indigenous settlers forced Native Americans off their land and fenced it off. They could no longer access the fields, forests, and waterways to gather plant and animal foods. Settler ideas of land ownership supplanted Indigenous conceptions: land was private, for an individual person or family's exclusive use, as opposed to communal, in which it belonged to no one and could be used by all members of a family, village, band, or even with other tribes. Indians were moved to reservations far from their ancestral homelands on poor or unwanted land on which it was difficult to farm or ranch.

*Logs:* Settlers logged forests to clear land for farming, ranching, home-steading, and to make money. This reduced the ability of Native Americans to use trees for shelter, food, and materials.

*Cows:* Settlers brought with them non-native domesticated food animals such as cows, sheep, goats, pigs, and chickens. Free-ranging herds of cattle and sheep trampled grasslands and meadows and stripped them of native plants.

*Wheat field:* Settlers cleared land to plant non-native species of food plants for their use and to grow commodity crops to sell or to feed to animals.

*Dams:* Settlers built infrastructure such as dams, bridges, and roads that disrupted wildlife corridors, fish habitats, bird migration routes, and salmon runs.

## Activity 2 (Continued)

*Burger, fries, and soda:* Settlers brought with them foods, cuisines, and cooking methods that were familiar to them but alien to Indigenous Oregonians. These included refined sugars and seeds/grains (e.g., wheat flour), high-fat proteins, dairy products, and cooking oils and fats. Indigenous people adapted to these unfamiliar foods and preparation methods out of necessity or by force. Forced to give up hunting and gathering to supply most of their food, they had to take jobs to earn money to buy the settler foods.

### **Step 7:**

Share a few concluding thoughts, such as the following:

### **Say:**

*Colonialism forever altered the cultures and lifeways of Indigenous people in Oregon. Despite overwhelming efforts to eradicate their people and culture, Indigenous people in Oregon persisted through a spirit of survivance and self-determination, holding on to their identity and heritage while forging a path into the future and refusing to be defined by the scars of past injustices. Today, tribes in Oregon are seeking to reclaim and assert their rights to govern their own affairs and shape their own destinies. They are exercising their sovereignty. This includes obtaining food sovereignty, which means reconnecting their members to first foods and restoring traditional food knowledge and systems.*

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## Activity 3

### Introduction to Food Sovereignty

Time: 15 minutes

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#### **Step 1:**

Ask students if they can define what “sovereignty” means, then ask the follow-up question: Can anyone define “food sovereignty?”

#### **Step 2:**

Show the slide with definitions of sovereignty and food sovereignty and confirm student understanding.

#### **Say:**

*Food sovereignty is an international effort to honor the foods and practices of Indigenous people, expand options for healthy and culturally appropriate foods, and limit the power of dominant cultures and international corporations to dictate or control what people should eat. There are Indigenous people in Oregon working to regain control over their food systems and bring back traditional land-management and cultivation practices. Because these practices were rooted in deep cultural beliefs about the reciprocal nature of humans to the land and its plants and animals, they can offer lessons for us today on how we can improve our own food supply, make it safer, and protect it from risks such as climate change.*

#### **Step 3:**

Distribute the *Street Roots* article on restoring Native foods. Give students five to eight minutes to read it. Debrief the article with students, asking them to identify things that stood out to them and questions they might have.

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### Activity 3 (Continued)

#### **Step 4:**

Display the slide listing Indigenous food sovereignty projects in Oregon. Explain that this is just a sampling of projects underway across the state to promote Indigenous food sovereignty and to learn how precolonial cultivation and land-management practices can improve the food system and make it more resilient in the face of threats, including climate change.

#### **Step 5:**

As time permits, pull up the websites of the projects listed or other websites that mention or describe them and give students a short tour. If you choose to have them do the case study activity during class time or as homework, note that students will have a chance to research one of the projects in greater detail.

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#### Activity 4 (Optional)

### Indigenous Oregon Food Sovereignty Case Study Research

Time: 50 minutes

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#### **Step 1:**

Display (or redisplay) the slide that provides the three Indigenous Oregon food sovereignty examples.

#### **Step 2:**

Distribute copies of the Indigenous Oregon Food Sovereignty Case Study Guide (one for each student).

#### **Step 3:**

Review instructions for students according to how you wish them to complete the activity.

- *Individual homework/extension assignment:* Assign one of the three Oregon Indigenous food sovereignty projects to each student to research. Set a deadline by which they should research the project and provide written responses to the prompts in the case study guide. Provide feedback and/or an assessment of each student's individual work.
- *In-class group activity (50 minutes):* Organize students into groups of four or five. Assign one of the three Oregon Indigenous food sovereignty projects to each group (duplicating assignments to multiple groups as needed). Have each group select a facilitator, a notetaker, a timekeeper, and a spokesperson. Provide instructions for how they can access the internet to conduct research on their assigned project (e.g., use classroom computers or tablets, go to the computer lab, or use their own personal electronic devices). Each group will fill out one of the case study guides and prepare a short presentation. Give students 30 minutes to research

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### Activity 4 (Continued)

the projects and record information in their case study guides, 5 minutes to organize their notes and prepare their spokesperson to report out, and 15 minutes for each group to give a 2- to 3-minute summary of their work. Monitor groups as they work to ensure they stay on task and answer questions. Conduct a whole-class debriefing of the activity as time permits.