



SCIENCE

# Food Sovereignty

## ESSENTIAL UNDERSTANDING

- Since time immemorial

## LEARNING OUTCOMES

- Students will understand the significance of the lamprey to the Siletz Tribe and learn about the concept of food sovereignty.
- Students will identify the importance of restoring lamprey populations and connect Siletz lamprey restoration efforts to larger regional, national, and global movements to ensure food sovereignty for indigenous peoples.

## ESSENTIAL QUESTIONS

- What is food sovereignty?
- How has the Siletz Tribe worked to maintain connections to traditional foods?

## LOGISTICS

- Where does the activity take place?  
*Classroom*
- How are the students organized?
  - ☑ Whole class    ☑ Teams: 2 – 4
  - ☑ Pairs    ☑ Individually

## TIME REQUIRED

Six hours

## Overview

*“Food sovereignty is 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. It puts the aspirations and needs of those who produce, distribute, and consume food at the heart of food systems and policies rather than the demands of markets and corporations.”*

– Declaration of Nyéléni, the first global forum on food sovereignty, Mali, 2007

The lamprey (or *Skwakol* in Chinook Jargon, one of the languages spoken at Siletz) has been an important food source for the peoples of the Confederated Tribes of Siletz Indians and many other Tribes in the Pacific Northwest since time immemorial. Lampreys provide an important source of nutrition for Tribal people, who often serve this rich, fatty meat at feasts and celebrations. In recent years, Tribes have struggled to maintain their cultural connection to the lamprey due to a sharp decline in the lamprey population caused by environmental degradation.

In this lesson, students will learn about the cultural significance of the lamprey to Siletz people as well as Tribal efforts to preserve, protect, and replenish



the lamprey population. Students will connect efforts to revitalize lamprey on the Siletz River with larger issues of food sovereignty and the intersection of ecosystems, food, and culture for Indigenous people throughout the world.

## Background for teachers

Lampreys are an ancient type of jawless fish. Although they are often referred to as the “lamprey eel,” they are not a true eel. Many species of lamprey are *anadromous*, which means that (like salmon) they are born in freshwater streams and migrate out to sea before eventually returning to rivers to spawn. In addition to feeding people, lampreys are a critical part of the ecosystem of Northwest rivers: juvenile lamprey are filter feeders that improve water quality, while the bodies of adult lampreys returning to spawn bring crucial ocean nutrients to animals and plants living along watersheds throughout the Northwest.

Because many adult lampreys are parasitic, meaning they latch on to a host animal to feed, early conservationists considered them a nuisance or even a threat to other aquatic species. In the 20th century, lampreys were rarely studied and sometimes even poisoned in a misguided attempt to help declining salmon populations. Ecologists now recognize what Tribal people have always known—that both salmon and lampreys are important parts of a healthy interconnected ecosystem.

## STANDARDS

### Oregon science standards

**HS-LS2-6** - Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions but changing conditions may result in a new ecosystem.

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

**HS-LS2-8** - Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

**11-12.WHST.7** - Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

**11-12.WHST.9** - Draw evidence from informational texts to support analysis, reflection, and research.

## MATERIALS

- Pencil
- Paper
- Graphic organizers
- Internet access

For Native people across the Pacific Northwest, lampreys made up an important part of traditional diets—the rich, fatty meat providing nutritious calories. This was especially true for the dozens of bands of Native people forcibly removed to the Siletz (Coast) Reservation from across Western Oregon, Southwest Washington, and Northern California beginning in the mid-1850s. As families struggled to adapt to reservation life and the hunger that often came with government mismanagement, continuing the lamprey harvest provided a crucial lifeline on the reservation. Annual gatherings during the lamprey run (the time when the lampreys return to freshwater to spawn) carried on the traditions of harvest, ecological stewardship, and community sharing—keeping the lamprey an important cultural and nutritional cornerstone for the peoples removed to Siletz well into the 20th century. Even into the 1930s, some Siletz elders recall taking a pocketful of smoked lamprey to school each day as their lunch, and the traditional regional gathering site at Willamette Falls remains in use today by Tribes from across the region, including Siletz.

In recent years, the lamprey run on the Siletz River has been decimated by environmental degradation, state mismanagement, and changing climate conditions. In response, Siletz people have turned to their ancestral knowledge to identify the precise causes of the decline and build the conditions necessary to restore the lamprey run on the Siletz River, thereby preserving their cultural connections with lampreys. As part

## VOCABULARY

- **Anadromous** - Species that migrate from the ocean up rivers to spawn.
- **Case study** - A type of research study focused on a particular person, group, or situation.
- **Oral history** - Information and history passed down verbally through generations.
- **Skwakol** - “Lamprey eel” in Chinook Jargon.
- **Food sovereignty** - The ability of communities to determine the quantity and quality of the food they consume by controlling how their food is produced and distributed.

of this effort, Siletz Tribal members conducted an oral history project in collaboration with Oregon State University. The resulting study, *Skwakol: The Decline of the Siletz Lamprey Eel Population During the 20th Century*, documents the declining lamprey population and its impact on Tribal community members by combining primary source research with oral history interviews.

Since the publication of *Skwakol*, work by Tribal elected leaders, natural resources professionals, and cultural practitioners has raised awareness of the understudied lamprey population decline. The Confederated Tribes of Siletz Indians has used its *Lhuuke Illahee* (“salmon place”) fish hatchery to raise juvenile lampreys and measure their population health. Tribal habitat restoration work in Oregon rivers, mostly designed to benefit salmon and steelhead, also benefits lampreys by improving the overall health of the ecosystem. Siletz and other Tribes also work together on the Willamette Falls Trust to restore public access to one of the nation’s largest waterfalls in a way that honors Tribal harvest and relationships to place. Even so, Tribes cannot do it alone. Full restoration of healthy lamprey runs will require concerted effort and investment from state and federal governments, landowners, and conservation groups.

## ADAPTIONS FOR DISTANCE LEARNING



The key point of the lesson is that lampreys are a vital cultural food source sustained by an ecological relationship with Indigenous peoples built over millennia. This relationship is one of care for one another: The lamprey gives life to feed the people and in return Native people care for the lamprey’s survival in the water systems. Since the arrival of settlers, this relationship has been stressed by state and federal policies, environmental degradation, climate change, and dam construction. Decimated lamprey populations are just one example of how food sovereignty has become an increasingly urgent issue for Tribal people across the United States. For Tribal people, food sovereignty means having the “ability to determine the quantity and quality of the food that they consume by controlling how their food is produced and distributed,” and a growing number of Tribes are “regaining control of their food supply by growing traditional foods on their own and collaborating with the federal government” (U.S. Department of the Interior, Indian Affairs, n.d.).

### What are the core Tribally focused concepts?

Use of the lamprey, conservation, and restoration are essential components for Siletz Tribal food sovereignty. Tribes should be able to exercise their governmental rights to determine the best approach to ensure ongoing access to traditional food sources. Since Tribes often share watershed and land management with neighboring non-tribal governments, this work can often be most effective when done collaboratively.

### What needs to be synchronous/asynchronous?

All lesson activities can be adapted to fit either synchronous or asynchronous instruction.

The lamprey is just one example of the interconnected issues Tribes face as they work to maintain and restore access to once-abundant traditional foods, preserve the ecological integrity of their homelands, and encourage the health of their communities. This set of related issues is what scholars often call *food sovereignty*.

Today, an array of forces in our changing landscape and climate put the plant and animal foods that Tribal people have always relied on at risk, undermining the food sovereignty of the Confederated Tribes of Siletz Indians. For Siletz people, fighting to maintain food sovereignty means more than sustainable farming or access to traditional foods; it means recognizing a perpetual responsibility to advocate for those plant and animal relatives who have sustained us since time immemorial, to give them a voice, and to ensure their persistence as well as our own.

### To prepare for this lesson teachers should

- Read *Skwakol: The Decline of the Siletz Lamprey Eel Population During the 20th Century* (link included in the appendix of this lesson plan)
- Review the Food Sovereignty Lab website for Cal Poly Humboldt Native American Studies to understand how academia is supporting the study and implementation of food sovereignty issues:  
<https://nasp.humboldt.edu/fsl>
- Read Why Food Sovereignty Matters, from the U.S. Department of the Interior, Indian Affairs: <https://www.bia.gov/service/indigenous-tourism/why-food-sovereignty-matters>

## References

Cal Poly Humboldt Native American Studies. (n.d.). *Food Sovereignty Lab and Cultural Workshop Space*. <https://nasp.humboldt.edu/fsl>

Columbia River Inter-Tribal Fish Commission. (n.d.). Pacific lamprey restoration efforts. <https://critfc.org/fish-and-watersheds/columbia-river-fish-species/lamprey/pacific-lamprey-restoration/>

Downey, T. (1996). *Skwakol: The decline of the Siletz lamprey eel population during the 20th century*. Oregon State University. [https://ir.library.oregonstate.edu/concern/technical\\_reports/br86bb99z](https://ir.library.oregonstate.edu/concern/technical_reports/br86bb99z)

Monroe, J. (2015). *The lost fish*. Freshwaters Illustrated. <https://vimeo.com/116177956>

U.S. Department of the Interior, Indian Affairs. (n.d.). *Why food sovereignty matters*. <https://www.bia.gov/service/indigenous-tourism/why-food-sovereignty-matters>

## Additional resource

Chisholm Hatfield, S., Marino, E., Whyte, K., Dello, K., & Mote, P. (2018). Indian time: Time, seasonality, and culture in traditional ecological knowledge of climate change. *Ecological Processes*, 7(1). [https://www.researchgate.net/publication/326272361\\_Indian\\_time\\_time\\_seasonality\\_and\\_culture\\_in\\_Traditional\\_Ecological\\_Knowledge\\_of\\_climate\\_change](https://www.researchgate.net/publication/326272361_Indian_time_time_seasonality_and_culture_in_Traditional_Ecological_Knowledge_of_climate_change)

## Considerations for teachers

### Assessment

- Written responses
- Whole group discussion
- Project-based learning with rubric

### Learning targets

- I can define the concept of food sovereignty.
- I can describe the cultural significance of the lamprey to the Siletz Tribe.
- I can describe Tribal conservation and restoration efforts to protect lampreys and relate those efforts to the concept of food sovereignty.

## Appendix

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

- Downey et. al.-*Skwakol The Decline of the Siletz Lamprey*. *Skwakol* is available for download via Oregon State University at:  
[https://ir.library.oregonstate.edu/concern/technical\\_reports/br86bb99z](https://ir.library.oregonstate.edu/concern/technical_reports/br86bb99z)
- Material\_Food Sovereignty Fair\_Student Handout.pdf
- Material\_Oral Histories\_ Graphic Organizer.pdf
- Material\_The Lost Fish\_Video Question.pdf

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## Activity 1

# “The Lost Fish”

*Time: 90 minutes*

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This activity will introduce students to the cultural connection between Native people and lampreys. First, lead students through a presentation about the importance of lampreys at Siletz. Next, students will watch the film *The Lost Fish*, produced by neighboring Tribes whose homelands span parts of the Columbia River Basin.

**Say:**

*The lamprey eel, or **Skwakol** in Chinook Jargon, is an important traditional food for the people of the Confederated Tribes of Siletz Indians, as well as many other Tribes in the Pacific Northwest. In times past, Tribal people prized lampreys for their rich, fatty meat and served lamprey alongside salmon at feasts and celebrations. In recent years, however, there has been a sharp decline in the lamprey population due to state mismanagement, habitat degradation, the changing climate, and dam construction/management. This has made it difficult for Tribal people in Oregon to continue traditional harvesting practices. There are no longer enough eels to eat!*

*The decline of the lamprey population in the Pacific Northwest is part of a larger global pattern in which Indigenous people are facing increasing difficulty accessing traditional food sources. Access to land and resources are common barriers, but one of the biggest threats to the ability of Indigenous people to sustain themselves with a traditional diet is ecological destruction and change. For Tribal people in the Pacific Northwest, many traditional foods (like lamprey) rely on healthy oceans and rivers that have been severely impacted by dams, pollution, and climate change—forces far beyond the borders of Tribally managed land.*

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## Activity 1 (Continued)

Scholars and activists have developed the concept of **food sovereignty** to help explain this problem and provide a framework to imagine possible solutions. So, what is food sovereignty and why does it matter? The U.S. Department of Interior describes food sovereignty as “the ability of communities to determine the quantity and quality of the food that they consume by controlling how their food is produced and distributed.” Food sovereignty is so important because losing access to traditional foods has devastating impacts on the physical and cultural health of Tribal members. Traditional foods, often also called first foods, are typically much healthier than processed foods, so losing access to first foods often results in an overall decline in community health. Equally important is the relationship that Native people have built with their sources of food. Losing the ability to hunt, fish, or gather traditional foods severs thousands of years of knowledge and tradition that Native people have built to help sustain their communities and protect the environment.

As Native American scholar and activist Winona LaDuke explains, “Learning about food sovereignty teaches us how and why relationships to our food sources are fundamental to the existence of people and nature . . . Food sovereignty is an affirmation of who we are as Indigenous people and . . . one of the more sure-footed ways to restore our relationship with the world around us.”

Siletz people are working to protect their relationship with lampreys. In 1996, Tribal students at Oregon State University worked with Tribal elders to record their memories about the eel run and document the impact of the decline on Tribal people. Since then, Tribal elected leaders, natural resources professionals, and cultural practitioners have raised awareness of the understudied lamprey population decline on the Siletz River. The Siletz Tribe has used its Lhuuke Illahee (“salmon place”) fish hatchery to raise juvenile lamprey and measure their population health. Tribal habitat restoration work in Oregon rivers, mostly designed to benefit salmon and steelhead, also benefits lampreys by improving the overall health of the ecosystem. Siletz and other Tribes also work together on

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## Activity 1 (Continued)

*the Willamette Falls Trust to restore public access to one of the nation's largest waterfalls in a way that preserves Tribal harvest and maintains a relationship to a sacred place. Even so, Tribes cannot do it alone. Full restoration of healthy lamprey runs will require concerted effort and investment from state and federal governments, landowners, and conservation groups.*

*The lamprey is just one example of the interconnected issues Tribes face as they work to maintain and restore access to once-abundant traditional foods, preserve the ecological integrity of their homelands, and encourage the health of their communities. For Siletz people, fighting to maintain food sovereignty means more than sustainable farming or access to traditional foods; it means recognizing a perpetual responsibility to advocate for those plant and animal relatives who have sustained the Tribe since time immemorial, to give them a voice, and to ensure their persistence as well as the Tribes.*

*In order to better understand this relationship between the people and a food source, let's watch a short film on the Pacific lamprey restoration efforts among Tribes living along the Columbia River Basin. The people in this film are not part of the Confederated Tribes of Siletz Indians, but like the Siletz people, they also rely on lampreys as an important food source. During the film, I would like you to consider the following questions, gathering information and evidence to support your answers:*

- 1. How does the creation story support the relationship between animals and people?*
- 2. How does the relationship between animals and people support the need for conservation and restoration efforts for Tribes?*
- 3. Define food sovereignty in your own words.*

**NOTE:** These questions are also in the handout: Material\_The Lost Fish\_Video Question.pdf

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## Activity 1 *(Continued)*

Show students the film *The Lost Fish* <https://vimeo.com/116177956>. If needed, pause periodically for students to digest the information and write their responses to the questions. Answer any student questions for clarification and allow time for think-pair-share during and after the film. Finally, as a whole class, students should discuss and explain their answers using the evidence they gathered from the film.

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## Activity 2

# Oral Histories

Time: 90 minutes

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Students will read portions of the case study, *Swakol: The Decline of the Siletz Lamprey Eel Population During the 20th Century* to gain a better understanding of the cultural significance of the lamprey to the Siletz people. Make copies of the *Swakol* (available at [https://ir.library.oregonstate.edu/concern/technical\\_reports/br86bb99z](https://ir.library.oregonstate.edu/concern/technical_reports/br86bb99z)) as well as the PDF handout of the graphic organizer (Material\_Oral Histories\_ Graphic Organizer). Students can work in pairs to read the case study, then synthesize and record the information on their graphic organizer.

### Say:

*Let's look more closely at the importance of lampreys to people at Siletz. You will read interviews conducted by Siletz Tribal students who spoke to Tribal elders about their memories and experience with the lamprey harvest and overall health of the ecosystem. You will work with a partner to analyze the interviews and record your findings on your graphic organizer. Be sure to look for both common and unique features of the relationship between the Siletz people and the lamprey.*

*Then, write a one-page written response—just a paragraph or two—answering the question: What is the cultural and nutritional significance of the lamprey to members of the Siletz Tribe? Include evidence from each of the interviews that you reviewed.*

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### Activity 3

## Food sovereignty fair

*Time: Three class sessions, 50 minutes each*

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In this activity, students will expand their understanding of food sovereignty by researching other Indigenous-led food sovereignty projects from across the world. Students work to identify a conservation effort or policy change that would support Tribes in restoring food sovereignty and develop an infographic to share their findings with classmates.

To get started, ask students to choose an independent research topic related to food sovereignty—either specific to Siletz, Native Americans in the Pacific Northwest, or Indigenous people across the globe.

Below are some sample topics, beginning with projects based in the Pacific Northwest and then including those in other regions and one in Africa.

- Camas Prairie Restoration: [https://www.fs.usda.gov/wildflowers/Rare\\_Plants/conservation/success/camas\\_prairie\\_restoration.shtml](https://www.fs.usda.gov/wildflowers/Rare_Plants/conservation/success/camas_prairie_restoration.shtml)
- Jamestown S'klallam in Washington, farming steelhead to protect their food supply: [www.seattletimes.com/opinion/modern-aquaculture-sustains-treaty-rights-and-tribal-food-security](http://www.seattletimes.com/opinion/modern-aquaculture-sustains-treaty-rights-and-tribal-food-security)
- Sea gardens across the Pacific: [wsg.washington.edu/new-story-map-unites-sea-gardens-around-the-pacific-and-shows-the-importance-of-revitalizing-indigenous-mariculture-practices-for-food-sovereignty-and-resilience](http://wsg.washington.edu/new-story-map-unites-sea-gardens-around-the-pacific-and-shows-the-importance-of-revitalizing-indigenous-mariculture-practices-for-food-sovereignty-and-resilience)
- Dr. Elizabeth Hoover on seed rematriation: [youtube.com/watch?v=qz6JjVylMIs](https://youtube.com/watch?v=qz6JjVylMIs)
- Work to protect wild rice habitat around the Great Lakes: <https://theways.org/story/manoomin>

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### Activity 3 *(Continued)*

- Work to revitalize Hopi dryland farming in Arizona: [youtube.com/watch?v=9KbF5IROViY](https://www.youtube.com/watch?v=9KbF5IROViY)
- Efforts to revitalize Native Hawaiian forms of agriculture: [sierraclub.org/sierra/2017-2-march-april/feature/poi-power-hawaiian-food-sovereignty](https://www.sierraclub.org/sierra/2017-2-march-april/feature/poi-power-hawaiian-food-sovereignty)
- Sena Alouka on promoting agroecology in Africa: [youtube.com/watch?v=4cNu0WfxuG8](https://www.youtube.com/watch?v=4cNu0WfxuG8)

Students may also choose to research lamprey conservation efforts by other Tribes:

- Northwest Power and Conservation Council: “Rescuing ‘Brother Eel’: Unraveling the mysteries of Pacific Lamprey to rebuild depleted runs in the Columbia River” [nwcouncil.org/fish-and-wildlife/topics/rescuing-brother-eel](https://www.nwcouncil.org/fish-and-wildlife/topics/rescuing-brother-eel)
- Columbia River Inter-Tribal Fish Commission (Pacific Lamprey Restoration Efforts and Lamprey Restoration Plan): [critfc.org/fish-and-watersheds/columbia-river-fish-species/lamprey/pacific-lamprey-restoration](https://www.critfc.org/fish-and-watersheds/columbia-river-fish-species/lamprey/pacific-lamprey-restoration)
- “Return of the eels: Nez Perce Tribe releases pacific lamprey into Snake River.” [registerguard.com/story/news/2022/04/25/nez-perce-tribe-releases-pacific-lamprey-boost-snake-river-number/6535152607](https://www.registerguard.com/story/news/2022/04/25/nez-perce-tribe-releases-pacific-lamprey-boost-snake-river-number/6535152607)

Students will identify a target audience for their information and design an infographic using visual data to show what actions need to be taken and what the outcomes will be if those solutions are enacted or ignored. Students should prepare their infographics to be presented to policymakers, business leaders, and other community members to inform and inspire them to take specific action. The goal is to push decisionmakers to understand the importance of engaging the Tribal people in restoration efforts and setting up structures to work effectively with Tribal peoples.

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### Activity 3 (Continued)

#### Teacher can hand out the PDF: Food Sovereignty Fair\_ Student Handout

**Say:**

*We are now going to participate in a project-based learning activity. You may work in groups of three to complete this task. We are going to conduct research in order to create an infographic that can be presented to policymakers, community members, and other organizations. The goal is to help them see the importance of joining Tribal efforts to protect food sovereignty. Your infographic should be neatly organized and colored, using a variety of text features to highlight or emphasize important information. You may want to sketch a draft first and decide what information you will include, before you create a final infographic.*

*Your group is free to choose a specific topic and audience for your infographic. You can focus your infographic on lamprey restoration on the Siletz/Columbia Rivers that we've learned about already or choose another food sovereignty issue that affects the Confederated Tribes of Siletz. You can even expand your research to include the work that other Tribes are doing around the country, or the food sovereignty issues that other Indigenous people face around the world. Maybe you want to focus on a highly effective restoration effort that needs more resource allocation. Or maybe you'll find a restoration effort struggling against policymakers who don't value Indigenous input. Whatever you choose, be sure to consider both the importance of a particular food as a cultural resource to an Indigenous community as well as how food sovereignty helps maintain a healthy ecosystem.*

Show students this infographic as an example of how to take their research and place it into an infographic: "Revitalizing Cultural Burning": <https://www.fness.bc.ca/downloads/shackan-infographic.pdf>

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## Activity 4

### Reflection/closure

*Time: 20 minutes each*

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Sum up the lesson by asking students to share a piece of new information that has impacted their thinking about food sovereignty.

**Say:**

*Thank you for all of your work to learn about food sovereignty. We have learned about why the lamprey is not only important to Tribes, but also why their conservation is important to the ecosystem as a whole. A lot of work still needs to be done to restore lamprey on the Siletz and other rivers in the Pacific Northwest. Despite decades of work, Siletz people are still not able to harvest lamprey in the same way as their ancestors. But that doesn't mean that they've given up. To wrap up, I would like us to go around the room and share one new piece of information that you learned through these activities that you think might benefit ongoing efforts at restoring food sovereignty. How would you explain the importance of food sovereignty to someone who wasn't familiar with the term? What are some things that your community could do to create a more balanced and ecologically healthy food supply?*