



Human-Ecosystem Calendar

Grade Level: 4-12
Length: 90-120 Minutes, some can be outside of class
www.pwsrcac.org/lessons

Portions adapted by Elizabeth Trowbridge from the Alaska Sea Week Curriculum, Vol. VI

NGSS Standards

This lesson builds foundational understanding of human interactions and relationships with local ecosystems. There is no specific Next Generation Science Standard for this learning, but it is integral to many of the standards at different age ranges.

Related Resources

Websites

- <http://www.nwf.org/What-We-Do/Protect-Habitat/Gulf-Restoration/Oil-Spill/Effects-on-Wildlife/Compare-Exxon-Valdez-and-BP-Oil-Spills/Day-the-Water-Died-Essay.aspx>
- <http://www.childrenofthespills.org/index.php/people>
- <http://www.ankn.uaf.edu/publications/handbook/littlefield.html>
- <https://chugachheritageak.org/resources>

Overview

Generations of humans living along the coast are dependent upon healthy ecosystems.

Objectives

- Students will identify their personal use of local habitats, ecosystems, and natural resources.
- Students will research and become familiar with native uses of local plants and animals.
- Students will understand that humans are also an interdependent part of ecosystems.

Materials

- Paper
- Pens or Pencils
- Markers, Colored Pencils, Crayons
- Rulers
- Staplers with Staples
- Whiteboard or Poster Board
- Dry-Erase Markers or Colored Markers
- Computers with Internet Access OR
- Local Presenters about Subsistence & Commercial use of Local Plants and Animals OR Guides to Local Plant and Animal Use

Notes**Background**

A wide variety of Alaska Native cultures have inhabited the shores and waters of south coastal Alaska, including Chugach, Eyak, Sugpiaq/Alutiiq, Dena'ina, and Aleut/Unangan people. For thousands of years they depended upon the rich land and water ecosystems for food and shelter. Alaska Natives continue to depend heavily on a subsistence way of life, even though they are now part of a cash economy. Other Alaskan people also rely on these coastal ecosystems for subsistence, recreation, and commercial use. Rural lifestyles and traditional ways make subsistence activities essential to health and well-being of both individuals and cultures. Coastal waters have provided herring, salmon, halibut, cod, crab, shrimp, chitons, other invertebrates, sea birds, and seaweed for hundreds of years, providing both food and livelihood to local people. Terrestrial mammals and birds that feed off of marine life have also been very important resources for Alaska Natives for thousands of years, and more recently, other rural residents.

The *Exxon Valdez* oil spill dramatically affected Native communities of south coastal Alaska, as well as non-Native communities that also rely on coastal ecosystems. Not only did the spill diminish their food supply and reduce confidence in traditional foods, the clean-up work brought new temporary jobs and non-traditional foods to the villages. In many cases, this created a false boom economy that disappeared after a few years, leaving the villages with unstable food sources and livelihoods, and undermining their way of life.

The following article written by Native Elder Walter Meganack, Sr. articulates the devastation that followed the oil spill in Native communities: <http://www.nwf.org/What-We-Do/Protect-Habitat/Gulf-Restoration/Oil-Spill/Effects-on-Wildlife/Compare-Exxon-Valdez-and-BP-Oil-Spills/Day-the-Water-Died-Essay.aspx>. Many people address changes to traditional and subsistence foods following an oil spill in their interviews at Children of the Spills (<http://www.childrenofthespills.org/index.php/people>). You can read or listen to excerpt from these interviews to augment the words of Walter Meganack, Sr.

Hosting an Elder in the classroom is a powerful way to broaden students' perspectives, sustain traditional knowledge, and introduce intergenerational connections. See <http://www.ankn.uaf.edu/publications/handbook/littlefield.html> for guidance on how to invite and host an Elder in your classroom.

Creating an ecosystem calendar is meant to increase students' awareness of the lifestyles of southcentral Alaska Natives and also how students rely on their own local ecosystems.

Preparation

Access interviews with Alaska Native elders and young people where they discuss impacts of the oil spill and how families and communities fought to preserve traditions and livelihoods at:

<http://www.childrenofthespills.org/index.php/people>

Introducing the Lesson

Read as a class or homework assignment the article by Walter Meganack, Sr. Ask students how the article makes them feel. Have they ever lost something important to them that forced them to change how they live? What sort of things might they have to change if an oil spill happened now?

Activity

1. Discuss what it means to depend upon the land and water for your food and shelter. Ask students how they rely on local ecosystems for food, shelter, livelihood, and recreation. Create a list on the board of all the things students get from local ecosystems. You can also create a list of things students get from far away ecosystems (tropical fruit, metals, petroleum products, etc.).
2. Have students think individually for 1-3 minutes and then discuss this question with a partner for 5-10 minutes: How do you, or people you know, help to protect the local ecosystems that you rely on?
3. Invite group discussion on the question, and highlight together some ways that science ideas and understanding of ecology and environmental processes can help us be stewards of the ecosystems we live in.

>>Educator tip: For example, you might discuss how observations and knowledge of how plants grow can help us to understand how to harvest a plant in a sustainable way. Or how research on salmon spawning locations can help us to protect their habitat.

4. Introduce traditional uses of local ecosystems. A great way to do this, if you are able, is to welcome an Elder into the classroom to

present about their family's harvest practices and relationships with the land and water. If you live in southcentral Alaska, you could share videos or audio recording from Chugachmiut's Heritage Kits (<https://chugachheritageak.org/resources>). Reading a guide for traditional plant uses and taking a trip outside to identify some of these important plants can also be a good addition.

>>Educator Tip: If you don't live in southcentral Alaska, you can reach out to local tribal governments, community education centers, cultural centers, or community-driven museums for help finding appropriate guest speakers or materials to share with your class.

5. Discuss the month or season names in local cultures. See the end of this lesson for a table of Sugpiaq/Alutiiq month and season names in Sugs'tun and with English translations.
6. These months and seasons may not line up directly with our understanding of a calendar, but they shed light on human interactions with the natural world. Use this as a talking point to discuss how seasonal changes in plant and animal resources determine human patterns. Ask students to think about how they, and others in the community, rely on seasonal patterns of natural resources. How do they interact with and depend on the natural world at different times of year? Encourage students to think not only about food resources, but also recreational uses, aesthetic and cultural values, and commercial harvesting. List these ideas next to the local month names. Discuss parallels and differences.
7. Provide each student with paper, colored pencils, rulers, etc. Explain that they are going to make a human-use calendar. In addition to the usual grid of days on the bottom, each calendar page should also include a local traditional name for the month (if possible) and a unique name created by the student to reflect their own and community reliance on resources of that month. Students should also create an illustration at the top of each calendar page to reflect on or both of the names. For example, April might be "First Greens," June might be "Salmon BBQ Month," and December might be "Christmas Tree Harvest." In the Sugpiaq/Alutiiq tradition, these months would align with April: "The Warming Moon," June: "Salmon Month," and December: "The Snow's Moon."

Wrap-up

Have students share their calendars with the class. Provide time for questions. Discuss how the names for some months are similar across students and cultures, and others are more disparate. Ask students to think about what they would do if they couldn't use these resources. Brainstorm ways to use their knowledge, creativity, and scientific understanding to ensure these traditions are sustained into the future. Ask students to write a letter to themselves or a brief essay, or create a visual presentation or short film describing:

- What are some of the most important connections you have to local ecosystems?
- What do you want to do to help be a steward of the ecosystems you rely on?
- Why do you think this action will help to protect the ecosystem?

Ask students to share their ideas with a small group of classmates or the whole class. Guide them to include discussion of how science ideas, personal experience, and/or family or cultural practices combine to inform their stewardship actions.

Give these letters/pieces back to students again 3-6 months later as a reminder of their commitment. If possible, choose and complete some of these stewardship projects as a class.

>>Educator tip: While students are working on their letters/pieces, take some time to do so yourself. Modeling that we all can become better stewards is important!

Assessment

Evaluate their written/video/visual pieces for evidence of understanding how they and others can use science ideas to help protect local ecosystems. These pieces should include a clear connection between:

- (a) their uses of plants, animals, or the environment,
- (b) a stewardship action relevant to that ecosystem,
- (c) evidence from scientific ideas to support their choice.

Appendix

Sugpiaq/Alutiiq Names for Months & Seasons

A good resource for this information in southcentral Alaska comes from ALUTIIQ NOUN DICTIONARY and Pronunciation Guide: Common Nouns in Prince William Sound and Kenai Peninsula Alutiiq (excluding Kodiak Island) Compiled & Edited by John E. Smelcer, Ph.D.:

Kodiak Dialect	Nanwalek/Port Graham Dialect	English Translation	Approximate Gregorian Calendar Month
Cuqllirpaaq Iraluq		“the first moon”	January
Nanicqaaq Iraluq	Ya’alungia’aq	“the short moon”	February
Kaignasqaq Iraluq	Ya’alullraaq	“the hungry moon”	March
Uqna’isurt’sqaaq Iraluq	Saqulegciq	“the warming moon”	April
Nikllit Iraluat	Maniit Ya’allua	“the red salmon moon”	May
Naut’staat Iraluat	Iqallugciq	“the plants’ moon” (K) “salmon month” (N/PG)	June
Alaganat Iraluat	Uksuam Ya’allua	“the berries’ moon”	August
Qakiiyat Iraluat	Alusastuam Ya’allua	“the silver salmon’s moon”	September
Kakegllum Iralua		“the time of the runny nose”	October
Quyawim Iralua	Kapkaanam Ya’allua	“the Thanksgiving moon”	November
Qanim Iralua		“the snow’s moon”	December