

FOOD FROM THE SEA: VILLAGES & RESOURCES GR: 6-8 (LESSON 1)

Elder Quotation:

“When resources became limited, people moved on. They took all of their camp out. Then they would go back when resources returned. Villages didn’t exist, there were seasonal camps. They always traveled from fall to spring. That’s what is happening here, we’re not moving.”

– Nick Tanape Sr., Elder, Nanwalek, 2004¹

Grade Level: 6-8

Overview: Traditionally the Sugpiat and Eyak people migrated from their villages to fish and hunting camps to harvest seasonal resources. More permanent villages were established with the advent of Russian trading posts and commercial canneries. Permanent villages changed the pattern and intensity of local resource use and availability.

Standards:

<i>AK Cultural:</i>	<i>AK Content:</i>	<i>CRCC:</i>
D1: Acquire in-depth cultural knowledge through active participation and meaningful interaction with Elders.	Science C (2): A student should understand and be able to apply the concepts, models, theories, facts, evidence, systems, and processes of life science and should (2) develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms;.	L1: Students should understand the value and importance of the Sugt’stun language and be actively involved in its preservation.

Lesson Goal: To understand how sustained village location affects the use and availability of local marine resources.

Lesson Objectives: Students will:

- Predict which factors contributed to changes in subsistence food harvests over time.
- Research and appraise leading factors contributing to changes in subsistence harvests.
- Revise timelines to reflect research results.
- Learn to pronounce the Sugt’stun and/or Eyak vocabulary

Vocabulary Words:

Sugt’stun Dialects

English:	PWS:	Lower Cook Inlet:	Eyak:
village	<i>nunagpet</i>	<i>nunagpet</i>	<i>iiyaaGdaad</i> (Literally: at Eyak)
change	<i>cimirluni</i> (pl: <i>cimirluq</i>)	<i>cimirlutku</i> (pl: <i>cimirluq</i>)	
cannery	<i>pankahwik</i>	<i>saalawik</i> (pl: <i>saalawit</i>)	yahdda’aaw

Materials/Resources Needed:

- Map of Alaska showing locations of Port Graham, Nanwalek, and Seldovia
- ‘The Bidarki Story’ Handout / FFS 68 Villages and Resources.1.1 (See below)

Kit Library:

- Salomon, Anne K., et al. *Imam Cimiucia = Our Changing Sea*
- Smelcer, John E. and Morgen A. Young. *We Are the Land We Are the Sea: Stories of Subsistence from the People of Chenega*
- Stamp, Bobby A. *Chenega as I Saw It – It’s People*
- Tabios, Derenty, et al. *Looking Back on Subsistence: Interviews with Elders of the Chugach Region*

Web Resources:

<http://aswc.seagrant.uaf.edu/grade-5/investigation-1/bidarki-story-background.html> Retrieved 1.31.2018 – Teacher Background suitable as research resource

Teacher Preparation:

- Review Activities and practice Sugt’stun and/or Eyak vocabulary.
- Review Alaska Sea Grant Synopsis of Bidarki Population Decline and make student copies.
- Invite Elder to discuss changes in subsistence harvest patterns in the last century.
- Before the Elder or Recognized Expert arrives, please review with all of the students, ways to show respect for the Elder during his or her visit.

Opening: Challenge students to brainstorm major changes/*cimirluki* in the Sugpiat or Eyak subsistence harvest patterns in the last 150 – 200 years. Were village/*nunagpet* sites always permanent? How might a cash economy change life in the village/*nunagpet*? Changes/*cimirluq* caused by advances in technology? List all suggestions on the whiteboard and label as Changes/*Cimirluq*. Ask students to predict which will prove to be the five most important changes/*cimirluq* affecting subsistence resources and write them down.

Class Activities:

1. Describe the traditional Sugpiat and/or Eyak lifestyle of seasonal migration following subsistence resources. Beginning in the 19th century the Russian American Company and missionaries established trading posts and churches around the Chugach region. Their centralized services affected people’s movements from fish camps to hunting camps as they hunted for, and traded with, the Russians and converted to Russian Orthodoxy. The arrival of commercial canneries/*saalawit* around the turn of the 20th century further anchored the life of the village/*nunagpet*. Work at the cannery/*saalawik* was available only during the time when the Sugpiat and Eyak traditionally put up salmon for the winter, displacing subsistence efforts to cannery/ *saalawik* down times.ⁱⁱ
2. Share the following quotes from Elders regarding the changes in village life in the 20th century:

“*Suget ilalrit mikhnemni, 40s taumi 50s, iqallut maliglluki. Supet Arulayamek nunakuarlalrit Paluwigmen. Salayaq patungan Arulayagmi, suget naugt’at’llrit Nanwalekgmen, Paluwigmen, Kiaut.*”

“People were still nomadic when I was a kid in the ‘40s and ‘50s. They migrated with the fish. Our people living in Portlock would come to Port Graham over land. When the cannery closed down there in Portlock, people moved to Nanwalek, Port Graham, and Seldovia”

- Elenore McMullen, past chief and Elder, Port Graham, 2004ⁱⁱⁱ

“Prior to the 1920s, we used to travel as part of our seasonal round of hunting, fishing, and gathering. The establishment of canneries disrupted our seasonal cycle of movement because cannery work was available during the months when we traditionally put up salmon for winter supplies. We stopped moving as much as we did in the past. Consequently, our hunting, fishing, and shoreline gathering became increasingly concentrated around the village. Sustained localized harvest likely had a profound effect on local marine resources.”

- Anne Salomon, Henry Huntington, Nick Tanape Sr.^{iv}

3. Have students make rough timeline of subsistence lifestyle changes/*cimirluq* using their predictions.
4. Introduce Elder and invite him or her to discuss the changes/*cimirluq* he or she has heard about or directly observed in subsistence harvest patterns over the last century.



Bidarki with knives, Port Graham

5. As a class discuss how more permanent village/*nunagpet* sites would have changed subsistence patterns.
6. Locate the villages of Nanwalek, Port Graham, and Seldovia on a map and distribute Bidarki Background reading and allow students time to read and underline key timeline info.

7. Divide students into small groups to combine and update their timelines of changes/*cimirluq* which include what they believe to be the five most important factors which contributed to the decline in bidarki populations in Port Graham and Nanwalek.
8. Invite the Elder to observe and join in group discussions.
9. Invite student groups to share and defend their results and compare to their original predictions. [*Timelines should not be limited to information provided by the Alaska SeaGrant handout. Changes in areas harvested and the size of the human population are also contributing factors.*]

Answers will vary but should include the following factors:

- 4500 years ago – Change from consumption of marine invertebrates to intertidal harvests
- 1780s – Advent of Russian trading posts (using barter system, not cash), churches centralized services changing village locations
- 1780s – mid-18th century overhunting of otter (which eat many marine invertebrates)
- 1880s – introduction of commercial fishing, canneries
- 1900s – introduction of cash economy
- early 20th century replacement of wooden dories with motorboats extended harvest areas
- 1911 Fur Seal Treaty protected sea otters (which then numbered as few as 2,000)
- 1920s-1950s Abundant harvests of marine invertebrates in Port Graham & Nanwalek (This is within living memory of many Elders and provides a baseline of size and abundance memories which confirms the bidarki population decline)
- 1980s – Widespread use of freezers in village allows harvesters to preserve and share – including sending subsistence food parcels to those living outside the village - more subsistence foods
- 1980s – Crash of Dungeness crab and shrimp fisheries means greater reliance on other intertidal food sources (serial resource depletion)
- 1989 – Exxon Valdez oil spill, ecological damage limits subsistence harvests
- Additional ideas: permanence of village sites due to cash economy and public schools reinforces uses of same subsistence harvest sites; village population increases with better health care

10. *Optional*: Discuss how community might adapt to preserve subsistence food populations.

Assessment:

- Students hypothesized which historic factors contributed to changes in harvests of subsistence foods.
- Students can explain the comparison of their predictions through research and discussion of the decline of the bidarki populations of Port Graham and Nanwalek.
- Students created, revised, and defended timelines of changes leading to the decline of the bidarki populations.
- Students correctly pronounced Sugt’stun or Eyak vocabulary words.

ⁱ Salomon, Anne K., et al. *Imam Cimiucia = Our Changing Sea*. Alaska Sea Grant College Program, 2011. p. 40

ⁱⁱ Salomon, p. 20

ⁱⁱⁱ Salomon, p. 20

^{iv} Salomon, p. 20



Bidarki Harvest, Port Graham, 2018

FFS 6-8 Village Resources.1.1

Alaska SeaGrant: Instructional Background Research <http://aswc.seagrants.uaf.edu/>

The Bidarki Story

“Bidarki” is a common name for species of chiton that is common in suitable rocky intertidal habitat of Southcentral Alaska. This name reflects the history of the area: “bidarki” is the Russian word for the type of boat that the animal resembles when it curls up into a defensive half-circle. *Katharina tunicata*, the scientific name for the species bestowed to honor Lady Katherine Douglas who first described it, has given rise to the common name “katy chiton.” Like all other members of the chiton family, the bidarki has a skeleton of eight overlapping hard plates surrounded by and held together by a fleshy girdle and protecting the large foot on its underside. In this species, the girdle is black and leathery and may cover the plates entirely like a jacket, which has given rise to yet another common name, the black leather chiton. Similar to snails, the mouth of chitons (at one end of the foot) contains a tongue-like, hard radula, which the animal uses to munch on the base of kelp fronds and scrape algae off rocks, including the calcified hard crust formed by coralline algae.

Intertidal ecologists began to focus more on bidarkis when they read about a northern Washington beach study that demonstrated their important role in structuring the community. The research, done by Dr. Robert Paine of the University of Washington, showed the bidarkis had “strong interactions” with

seaweeds they grazed. With bidarkis present, the coralline algae crust and other short, stubby algae thrive because the large kelps that would shade them out or overrun them with large holdfasts are kept in check. With bidarkis absent, the kelp community thrives instead. As the community shifts dramatically in structure, it shifts the nature of food and shelter for a host of other marine invertebrates and the substrate for seaweed species to settle and thrive.

Bidarkis have traditionally been of interest to Alaska Natives in the Sugpiaq (Chugach Alutiiq) communities of Port Graham and Nanwalek in Kachemak Bay as an important subsistence food, for more than 100 years. By the year 2000, however, concern was growing among community members who had observed a decline over the previous 10-15 years. The harvesters agreed that bidarkis were harder to find and smaller in size. The tribal governments became concerned about the future of the harvest.

Beginning in 2002, University of Washington scientist Anne Salomon traveled to Port Graham and Nanwalek to work with the tribal government and community members to study the cause of the decline. Unraveling the mystery required scientific investigations, experiments, and the assistance of a social scientist, Henry Huntington, to interview community members in order to reconstruct the history of the ecosystem. Insights from this historical information would not have been possible without the repository of traditional ecological knowledge that rested in the memory of tribal elders and other long-term residents.

Anne Salomon selected eleven study sites, through consultation with the elders and surveys of current bidarki harvesters, that included some heavily harvested sites as well as sites that were seldom or never harvested due to remoteness or sea conditions. She assembled teams of observers that included community members, and they made repeated counts of bidarkis in quadrat plots (the same sampling method that students practice in Investigation 4 of this unit). In addition, the team measured a number of variables at each site, including seawater temperatures, the maximum force of wave shock, and the number of other bird and marine mammal predators present at each site.

Henry Huntington, an Alaskan social scientist, reviewed historical records and midden pile remains dating back to more than 4,500 years BP, and conducted interviews with Sugpiaq elders about subsistence harvest practices, the composition of the harvest, and changes in the local ecology and economy that they had observed.

The analysis of quantitative data collected at the study sites led to the conclusion that, in agreement with the harvesters' qualitative observations, bidarkis were indeed smaller, on average, and in less dense concentrations at harvested sites closer to the villages. Experiments involving the exclusion of bidarkis from small areas also confirmed that the bidarki played the same "strong interactor" role in the intertidal areas of Kachemak Bay that it played in the earlier study done in Washington. Measurements of the other variables at the site yielded no consistent pattern relative to bidarki size and density, with the exception of the numbers of sea otters, which were more plentiful at the low-density sites.

The combination of natural and social science methods provided the following story and hypothesis about the cause of the bidarki decline:

- Prior to the Russian occupation in the 1780s, the Sugpiaq Natives were semi-nomadic, traveling from small settlements to seasonal camps for specific harvest activities. Remains from archaeological sites contain shells, indicating that their harvest of marine invertebrates modified the intertidal ecosystems for

at least the past 4,500 years. Remains from a 700-year-old site in Port Graham contained shells, with the greatest number being those of the large hairy triton snail (*Neptunea*).

- After the arrival of the Russian fur traders, the fur trading companies and the Russian Orthodox Church centralized services, which led to larger, more permanently established villages. The fur trade wiped out the sea otter in Kachemak Bay and Cook Inlet by the early 1900s.
- In the absence of sea otter predators, the chitons they preyed on became more abundant, along with other prey species such as sea urchins, sea cucumbers, crab, clams, cockles, mussels, and octopus.
- Commercial fishing and canneries gradually replaced fur trading by the late 1880s, which continued to promote larger, permanent settlements. Subsistence harvest efforts became concentrated around these villages. The cash economy was introduced in the early 1900s. Wooden dories were replaced by motorboats for fishing and travel.
- From the 1920s to the 1950s, people harvested the broad range of marine invertebrates that were available and abundant
- The sea otter was protected in 1911 and populations recovered, returning to waters and reefs off Port Graham and Nanwalek in the early 1960s.
- In the early 1980s, freezers began to be used to store food. Dungeness crab and shrimp fisheries crashed and marine invertebrate populations became less abundant.
- In 1989, the Exxon Valdez oil spill in Prince William Sound had large social, cultural, and economic impacts on the villages. Local hire of cleanup crews provided high incomes for a short period of time. Many people bought new and better boats and motors and began to travel farther for harvests.
- The hypothesis for the cause of the decline of bidarkis is that, after the return of the sea otter to the area, all of the factors described above resulted in a “synergistic serial depletion” of all of the marine invertebrate species that humans and sea otters both preyed on. “Serial depletion” refers to the historical sequence of depleting a series of prey species in a step-wise fashion, by focusing efforts on a preferred species (e.g., sea cucumbers, Dungeness crabs, hairy triton whelks) until it becomes scarce or too hard to find and then switching to the next preferred species (e.g., clams, cockles, bidarkis) after each formerly preferred species is reduced to such low numbers that local populations can’t recover. The combination of human and sea otter predation on each species was “synergistic,” in that the effect was more intense because of the combination of predators focused on the same prey species and then switched to the same alternative species.
- Based on this hypothesis, the localized depletion of bidarkis around the villages would then be at the end of a chain of events that created the permanent settlements (which localized human harvest effort), increased the efficiency of harvest through improved boat and food storage technology, and reintroduced sea otters to their former range. The end result was that each individual otter and human now consumes more bidarkis per capita because alternative food sources are scarce. (Another term that captures the hypothesis is “fishing down the food web.”)

One of the unique aspects of the bidarki story is the collaboration of scientists and community members in putting together and telling the story. The tribal governments participated in the study as the basis for a

local management plan for bidarkis. Armed with a better understanding of the causes of the decline, they are working on local rules to regulate the harvest so it is sustainable. The following is taken from a portion of the final report on the project Imam Cimiucia: Our Changing Sea, co-authored by “the bidarki team” of scientists and community members:

“You have to ask yourself, ‘Can that beach sustain that?’ You have to think about these things if we want our kids to enjoy it.” (Walter Meganack Jr., Chairman, Port Graham Corporation)

Where does this leave us? Thinking about the future, there are grounds for concern and reasons for hope. There is no question that the local ecosystem has changed. There is also no question that the human communities have changed. But these changes have also forced people to think about the future, to think about the consequences of their own actions. People are asking what they can do to make things better.

There are many ideas for how to better manage the actions of people from the villages. This is what management boils down to: changing human behavior. We cannot manage ecosystems but we can consider carefully how we act and how our actions affect the rest of the system. One starting point is within our villages themselves.

On the foundation of Sugpiaq knowledge and wisdom, we can take action to protect the animals we use and the ecosystem that sustains them. Those actions may be similar and/or different from the traditional management practices that the Elders refer to. A combination of local knowledge and science can be used to develop alternative management strategies. The effectiveness of those strategies can be monitored by using scientific techniques as well as traditional observations. A management plan for bidarkis may include size limits or seasonal closures during spawning season, protecting nursery areas, or closing some beaches entirely to harvest to promote the recovery of bidarki populations.

You have listened to a story told through the voice of many storytellers: Elders, village residents, an anthropologist, several photographers, and a marine biologist. Collectively, we have pieced together bits of our history and our combined knowledge to more holistically understand the complex drivers of change in our ocean home. By sharing this knowledge, we hope to inspire solutions for the future. By integrating knowledge systems and delving into our ecological and social past we hope to foster a culture of sustainability, one that acknowledges both ecological and human systems and the need to shift our time frame of thinking into the deep past and far into the future.

References:

Salomon, A.K. 2006. Investigating the relative roles of natural factors and shoreline harvest in altering the community structure, dynamics and diversity of the Kenai Peninsula’s rocky intertidal. Final report, GEM Project 030647, Exxon Valdez Oil Spill Trustee Council, Anchorage, Alaska.
http://www.evostc.state.ak.us/Files.cfm?doc=/Store/Final_Reports/532pdf&

Salomon, A.K, N.M. Tanape Sr., and H.P. Huntington. 2007. Serial depletion of marine invertebrates leads to the decline of a strongly interacting grazer. *Ecological Applications* 17(6):1752-1770.

Salomon, A.K., and L. Williams. 2007. Effects of chiton depletion and traditional ecological knowledge. *Bulletin of the Ecological Society of America*, July 2007, pp. 247-249.

FOOD FROM THE SEA: INTERTIDAL HARVESTS GR: 6-8 (LESSONS 2-5)

Elder Quotation:

“I remember we would get butter clams during low tide. You have to work kind of fast to get the clams because the tide comes back quickly. Sometimes we would go to Cordova to dig for razor clams. One time I went clam digging with my husband and one of our sons. You know, they had those wooden boxes in those days. We filled twenty-two of those boxes! They were all full of razor clams.” - Maggie Totemoff, Chenega Elder, 2007¹

Grade Level: 6-8

Overview: As our Elders have observed the relative abundance of certain subsistence foods in the Chugach region has changed over time. Students research potential reasons for changes in the local availability of intertidal foods through interviews with Elders, planning and conducting their own tidal edibles field trip, and directed readings.

Standards:

<i>AK Cultural:</i>	<i>AK Content:</i>	<i>CRCC:</i>
<p>C1: Perform subsistence activities in ways that are appropriate to local traditions.</p> <p>D1: Acquire in-depth cultural knowledge through active participation and meaningful interaction with Elders.</p>	<p>Science C (2). A student should understand and be able to apply the concepts, models, theories, facts, evidence, systems, and processes of life science and should (2) develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>SS3: Students should be able to gather plants, berries, and other edible foods.</p> <p>L1: Students should understand the value and importance of the Sugt’stun language and be actively involved in its preservation.</p>

Lesson Goal: To investigate potential reasons for changes in the local availability of traditional subsistence tidal foods edibles and conduct a field trip to identify, harvest, and prepare a local tidal edible as advised by local Elders.

Lesson Objectives: Students will:

- Review potential intertidal subsistence harvest foods.
- Interview Elders about local intertidal subsistence foods availability and compare results.
- Plan an intertidal field trip to identify and harvest target species.
- Discuss overlap of TEK and formal intertidal harvest guides and harvest sustainability.
- Learn the Sugt’stun or Eyak vocabulary listed below.

Vocabulary Words: Sugt’stun Dialects

English:	PWS:	Lower Cook Inlet:	Eyak:
clams	<i>salat</i>	<i>salat</i>	<i>jiidaadAG uniik’ Awaqa qa’ qiisid</i> (razor clams)
cockles		<i>taugtaaqa</i>	sahx
sea urchins	<i>uutut</i>	<i>uutut</i>	<i>iinLk’a’d</i> (sea urchin eggs)

Dungeness crabs	<i>yual'ayak</i>	<i>yual'ayak</i>	<i>qiiyAdAch'an'k</i>
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Materials/Resources Needed:

- Long, Nancy *Digging for Delight and Digging Up More Than I Wanted*ⁱⁱ – handout (FFS 68 Intertidal Harvests.2.1 Clamming)
- ‘Looking Back on Subsistence’ – handout (FFS 68 Intertidal Harvests.2.2 Elder Interviews)
- Herz, Nathaniel. (2018, March 17) *Alaskans Make New Push to Kill More Sea Otters, Saying They’re Decimating Southeast Shellfish* Alaska Dispatch News – handout (FFS 68 Intertidal Harvests.2.3 Otter Predation)
- Tidal Edibles cards – 3 sets

Class I

- Tidal Edibles cards
- ‘Looking Back on Subsistence’ – handout – one per student

Class II

- ‘*Digging for Delight*’ handout (See below) – one per student
- Otter predation article (See below) – *optional handout – one per student*
- Field Trip Permission slip – one per student

Class III

- Field Trip transportation arrangement
- Designated area in classroom to store harvest

Class IV

- Cooking implements and heat source to demonstrate harvest preparation

Kit Library:

- Garza, Dolores A. *Surviving on the Foods and Water from Alaska’s Southern Shores*

Web Resources:

Bidarki Populations

- <http://aswc.seagrant.uaf.edu/grade-5/investigation-1/bidarki-story-background.html> Teacher Background suitable as research resource, list of potential reasons for bidarki population decline

Clamming

- http://www.adfg.alaska.gov/index.cfm?adfg=wildlifeneews.view_article&articles_id=200 Safe Clam Harvesting, Historic case of 100 deaths; Long, Nancy (March 2006) ‘*Digging for Delight and Digging Up More than I Wanted*’
- <https://www.youtube.com/watch?v=ckHovMkiq2I> How to Catch a Razor Clam (4:04)

Subsistence Resources

- <http://www.adfg.alaska.gov/techpap/tp104.pdf> Stanek, R. T. (1985). *Patterns of Wild Resource Use in English Bay and Port Graham, Alaska* (Technical Paper No. 104). Anchorage, AK: Alaska Dept. of Fish and Game, Division of Subsistence. Intertidal Subsistence Resource List and Shellfish discussion pp.157-165

Teacher Preparation:

Class I

- Review activity plan and practice Sugt'stun or Eyak vocabulary.
- Decide on local beach to explore for field trip. Consult community members on best location to find clams, cockles, sea urchins, and/or Dungeness crabs.
- Contact your Local Education Coordinator or local Tribal Council for a list of Elders that could share their expertise on the lesson content.
- Review the tide tables to pre-select best low tide for planning an intertidal harvest. Minus tides are preferred. An hour before low tide works best. There are significant minus tides in the spring which allow students to see and harvest more.
- Invite an Elder or Recognized Expert to accompany class on field trip to identify edibles and share any stories or memories associated with the harvest, processing, or eating of clams, cockles, sea urchins, or Dungeness crab.
- Before the Elder or Recognized Expert arrives, please review with all of the students, ways to show respect for the Elder during his or her visit.
- Tidal foods are a source of proteins (chitons, octopus, mussels, crabs); Vitamins A (chitons, sea cucumbers), B (animal foods, some seaweeds), and C (sea lettuce, clams mussels, crab); and the important minerals which help regulate most body functions, and are essential to bone and blood health (calcium: chitons; iron: chiton, octopus, mussels, clams; zinc: sea urchin roe, king crab; phosphorus: octopus, clams, mussels, sea urchin roe, king crab' manganese: mussels; selenium: clams mussels, king crab). Moreover, these nutritious foods are available when other traditional foods are scarce.ⁱⁱⁱ

Class II

- Review summary of reasons for bidarki/chiton population fluctuations from Sea Grant website listed above or see 'The Bidarki Story' handout from FFS 68 Village Resources.1
- Plan and arrange field trip date, transportation, permission slips.
- Review safe harvest information:

“The first known PSP death along the North Pacific Coast occurred in 1793 when John Carter, a seaman on Captain George Vancouver's expedition, died after eating mussels. In the late 1790s, (1797 or 1799 accounts differ) Aleksander Baranov of the Russian-American Company logged one of the most tragic PSP reports in history. His account describes how Aleut hunters under his command stopped to harvest mussels. Two minutes later, half the party became ill, within two hours nearly 100 were dead. The tragedy occurred near Sitka in a place called Khutznov Strait, renamed Peril Strait to commemorate the horrific event....

A good resource for identifying clams and providing information on PSP is this online, two-page handout from the Alaska SeaGrant Marine Advisory publication, Alaska's Marine Resources: Paralytic Shellfish Poisoning, the Alaska Problem, <http://www.uaf.edu/seagrant/bookstore/pubs/SG-ED-30.pdf>

Unfortunately, due to the great expense of regular testing, there are only a few recreational clam-digging beaches that the state is able to classify as safe. All are located in the Cook Inlet and Kachemak Bay area: Halibut Cove Lagoon,

Jakolof Bay, Kasitsna Bay (McDonald Spit), Tutka Bay, Chugachik Island, Sadie Cove, Polly Creek and Crescent River.”

Excerpted from Nancy Long, 'Digging for Delight and Digging Up More Than I Wanted,' Alaska Fish & Wildlife News, March 2006. See Materials List above.

- Review otter predation article and consider whether to summarize for class or distribute for in-class reading.

“A 2008 federal assessment estimated 10,500 sea otters in Southeast Alaska, and that number rose to nearly 26,000 in [the latest assessment, updated in 2014](#), which pegged the population's growth rate at between 12 and 14 percent a year. Otters are effective predators; they have a high metabolism and lack blubber, eating about 25 percent of their body weight each day. In the areas where they've expanded, both researchers and fishermen say they can quickly deplete populations of abalone and sea urchins, then sea cucumbers, geoduck clams and Dungeness crabs.

...

And scientists say that while the animals do deplete shellfish stocks, they can also help boost the presence of some species like kelp — which produces habitat for fish and can even trap climate-warming carbon from the atmosphere, Estes said. "You could ask the question: What's the benefit of having kelp versus the cost of losing the shellfish, and how do these things balance out?" he said. "It's complicated. It's not a simple, little problem." “

Excerpted from Nathaniel Herz, (018, March 17) Alaskans make new push to kill more sea otters, saying they're decimating Southeast shellfish Alaska Dispatch News. See Materials List above.

Class III

- Review activity plan and practice Sugt'stun or Eyak vocabulary.
- Invite an Elder or Recognized Expert to accompany class on field trip to identify edibles and describe harvest method. Encourage him or her to recall any stories or memories associated with the harvest, processing, or eating of tidal edibles.
- Assemble collection gear.
- Camera and video recorder

Class IV

- Invite an Elder or Recognized Expert to discuss and demonstrate how to prepare the target species.
- Assemble items needed for harvest preparation including hot plate and pan, and utensils, plates, napkins
- Load slideshow of fieldtrip photos and select video footage to share.

Opening: Read Elder Quotations to initiate a discussion of traditional subsistence foods gathered from the nearshore. Are students aware of changes in harvest patterns in their village?



Irene Hanson clamming, Cordova; Courtesy of Native Village of Eyak

Activities:

Class I – What’s Changed?

1. Review Tidal Edibles cards and discuss which are available locally, which are still actively consumed (tastes change over the generations!).

“Everything was subsistence back then. Sometimes, we’d get sacks and sacks of butter clams, and we’d take them home. When the tide went out the men would have big gunny-sacks full of clams, which they tied up and put in the water to keep the clams alive and fresh. Whenever we needed some clams, they’d simply pull them up and bring them home for us to cook. Sometimes, we’d go out clamming at night when the tide was low. We’d use gaslights so we could see the clams. There were just tons of butter clams and cockles. We also used to get sea cucumbers. They were very good to eat. Nobody gets them nowadays because there are none.”

– Jessie Tiedeman, Tatitlek Elder, 2007^{iv}

“The clams were so big, you only needed six to make a chowder. Now, you need a bucket because they are so small. You can still get them, but you have to work hard for them. You have to dig and dig and dig. I’m talking about these big clams. Not these tiny ones. I see people with buckets of small ones. No wonder they’re declining. They don’t let them grow.”

– Dorothy Moonin, Port Graham Elder, 2004^v

2. Introduce Elder and invite him or her to comment on which of these foods are abundant locally, when and where they are available and if she or he has observed fluctuations in particular tidal food populations or heard about changes.
3. List “Intertidal Resources” on board and invite students to share stories of tidal harvests. How do students think intertidal harvests have changed over generations? Why?

<u>Intertidal Resources</u>	
bidarkis/chitons	octopus
clams (butter/horseneck/razor/steamer)	seaweed (black, popweed...)
cockles	sea cucumbers
crab (Dungeness, king, tanner)	sea urchins
herring eggs	shrimp
kelp	snails
mussels	

4. Read an excerpt from a 1985 Dept of Fish and Game Technical Paper:

“Traditionally, shellfish were considered by residents as part of a single large category of resources called uyangtaaq which collectively includes any bottom dwelling species. (W. Meganack, pers. comm., 1982) In the past harvesting was done with spears and by hand picking while walking the intertidal areas during low water or in shallow waters from a kayak built specifically for this purpose. As recently as the 1950s, spearing was done from skiffs which replaced the kayaks. (M. Tanape, pers. comm., 1982)

Stanek, R. T. (1985). *Patterns of Wild Resource Use in English Bay and Port Graham, Alaska* (Technical Paper No. 104). Anchorage, AK: Alaska Dept. of Fish and Game, Div. of Subsistence. pp.157-158
5. Distribute ‘Looking Back on Subsistence’ handout and allow time for students to read through the materials and continue discussion of subsistence food availability.

[Note “Looking Back on Subsistence” was published in 2000 and already Elders observed distinctive changes in local tidal edible populations. Recall changes in bidarki/chiton harvests noted in FFS 68 Village Resources and the possible reasons for them; increased otter population, increased harvests, increased local population; freezer storage possible; serial depletion of resources.]
6. Display tide tables on a projection screen to identify best low tides for field trip.
7. Homework: Have students interview a family member or Elder knowledgeable about local intertidal harvests. Students should bear in mind that they will plan a harvest fieldtrip based on interview results.

Class II – What to Harvest?

1. Compare and evaluate interview results. What should class harvest? Why?
2. Discuss potential reasons for changes in intertidal subsistence food abundance (*Overharvesting, earthquake, climate change, changes in traditional lifestyles, otter population increase...*)
3. Distribute “Digging for Delight” article and allow students time to read it.
4. Discuss whether safety concerns are a potential reason for changes in food abundance (*PCP poison, oil spill and other contaminant residue*)

5. Summarize or distribute otter predation article and discuss impact of growing otter population.
6. Watch ‘How to Catch a Razor Clam’ YouTube video and review methods for harvesting target species. What implements and clothing will be needed?
7. If needed, distribute Field Trip Permission forms.

Class III – Field Trip

1. Go on field trip.
2. Have Elder/Expert demonstrate where and how to harvest target species. (*Note: Because of shellfish mobility their numbers fluctuate with the season so Elder experience is particularly valuable here.*)
3. Have students repeat the target species name in both English and Sugt’stun or Eyak.
4. Distribute collection buckets and retrieval tools for students to harvest samples.
5. Take photos of identification and harvest, video descriptions of same for use in final lesson. Encourage students to discuss relative abundance or scarcity of resource for the video recorder.
6. Return to class with harvest samples.

Class IV – Harvest Processing

1. Invite Elder/Expert to demonstrate how to prepare and cook harvest.
2. Share and enjoy!
3. Discuss how Elder input affected the choice of the target species and the future of subsistence harvests in light of potential reasons for the changes observed.
4. Show pictures and videos of field trip.

Assessment:

- Students reviewed traditional intertidal subsistence foods.
- Students interviewed Elders regarding their harvest of intertidal subsistence foods and observed changes in abundance levels.
- Students compared tidal harvest interview results.
- Students discussed potential reasons for observed changes and concluded which species to target for harvest.
- Students identified the target species and observed its processing and preparation.
- Students correctly pronounced the Sugt’stun or Eyak vocabulary

ⁱ Smelcer John E. and Morgen A. Young. *We are the Land We Are the Sea: Stories of Subsistence from the People of Chenega*. Chenega Heritage, Inc., 2007. p.123

ⁱⁱ Long, Nancy *Digging for Delight and Digging Up More than I Wanted*. *Alaska Fish and Wildlife News* 2006 March.

ⁱⁱⁱ Unger, Suanne. *Qaqamiigux: Traditional Foods and Recipes from the Aleutian and Pribilof Islands: Nourishing Our Mind, Body, and Spirit for Generations*. Aleutian Pribilof Association, Inc., 2014. p.296

^{iv} Smelcer, p.113

^v Salomon, Anne. K., et al, *Imam Cimiucia = Our Changing Sea*. Alaska Sea Grant College Program, 2011.p.31

FFS 6-8 Intertidal Harvest.1.1
Digging for Delight and Digging Up More Than I
Wanted By Nancy Long



Life abounds in the intertidal area that is revealed during a minus tide. Photo by Ted Mattson

Middy's tail thumps against the back hatch, expressing the

excitement we both feel as I approach the trailhead. My headlights reveal a few other cars in the dirt parking lot - comrades with a similar mission, I surmise.

The conditions are perfect this January evening, not too cold, beautiful starry night, and a 7:15 p.m. -4.2 low tide. Fairly extreme for Juneau, the tide won't be this low again until April.

Clad in hip waders and headlamp, I gather up my gear: lantern, gloves, hand rake, bucket, and sport fish license. Middy bounds just ahead on the snowy trail with her bouncy, happy-dog cadence as we make our way through the half-mile of dark woods to the beach.

Emerging from the woods, a half-dozen lights dot the dark expanse of beach. I take in a long deep breath and savor the thick scent of intertidal soup; algae, starfish, anemones, chitons, limpets, crabs, nudibranchs... hundreds of wondrous organisms exposed for just a few hours. I love this smell.

Two people are heading back toward the trail from the beach, "Already filled your bucket?" I asked, trying not to blind the man and teenage girl with my headlamp as they pass. "We've been collecting samples for a science project," declares the familiar looking fellow. As they pass, I realize it's my son's ninth grade science teacher. This extreme low tide summons those wanting more than steamers dipped in butter.

Scrambling down the beach across barnacled boulders, Middy and I reach the sand and mud flat where walking is easier. We sloop our way to a favorite stretch of rocky beach where I once hit the mother lode.

After finding a spot without too many large rocks, I light the lantern and begin searching for telltale bivalve holes in the gravel. Looking up, I notice Middy sniffing and pawing at a spot a few meters from me. “What’d you find girl?” Amazingly, by accident or intentionally, she found an area thick with clams.

Kneeling down, scratching and digging through gravel and sand with my hand rake, I pull one clam after another from the ever-widening hole. Immersed in my own efforts and enjoyment of mingling with eels, worms, urchins and other creatures in my pursuit of clams, I didn’t even notice the approaching figure. “Excuse me, have you come across any juvenal king crab tonight?” I look up and discover Joel Webb, a commercial fisheries biologist who works just down the hall from me in the ADF&G headquarters office. He is out looking for juvenile red king crab to conduct growth and aging studies.

Baby crabs are scarce, but the claims are bountiful. I fill my bucket and head back toward the trail when I notice that the light from a clam digger down the beach is very dim. I stop to offer my light. His lantern had broken and his headlamp was quickly losing power. Grateful for the light, he offers me a cold beverage. Hiking back out to the road, we talk about past clamming adventures, clam recipes, and shared what we knew of paralytic shellfish poisoning (PSP) and how to avoid it.

Like many in Southeast Alaska, I’ve always been PSP cautious and careful about when to clam (only months with “r”s), what (only Pacific littlenecks, never butter clams or mussels), where (familiar and popular or perceived “safe” beaches).

I really enjoy clam digging. Months ago, I decided to write a firsthand account expounding on the pleasures of clam digging, along with tips on how to avoid the dangers of PSP. I waited for the right low tide and was pleased with having had a successful and wonderful clamming adventure to share. My clams were happy, as clams are, in a bucket of saltwater in the garage and it was now time to gather information on avoiding PSP.

I Googled; read various shellfish reports, accounts and publications; contacted the Alaska Section of Epidemiology and shellfish experts with the Alaska Department of Environmental Conservation (ADEC). I made valiant efforts to find information on how to go clamming safely and also validate my own clam digging passion and pursuits. Despite my desires, all published and scientifically informed avenues led to the same conclusion. **DON’T DIG CLAMS ON BEACHES IN ALASKA THAT ARE NOT CLASSIFIED AS SAFE. DANG!**

There are no classified beaches in Southeast.

The first known PSP death along the North Pacific Coast occurred in 1793 when John Carter, a seaman on Captain George Vancouver's expedition, died after eating mussels. In the late 1790s, (1797 or 1799 accounts differ) Aleksander Baranov of the Russian-American Company logged one of the most tragic PSP reports in history. His account describes how Aleut hunters under his command stopped to harvest mussels. Two minutes later, half the party became ill, within two hours nearly 100 were dead. The tragedy occurred near Sitka in a place called Khutznov Strait, renamed Peril Strait to commemorate the horrific event.

According to the state's Epidemiology Section, 189 PSP incidents (many go unreported) have been registered since they began their monitoring efforts in 1976. In most cases, people recover from their PSP experience. However, mussels and butter clams in the Kodiak area have been responsible for a number of PSP deaths since 1976.

"I'm not sure why people continue to dig for clams on unclassified beaches," said Mike Ostasz, Shellfish Program Manager at ADEC. "It's very risky and usually just a matter of time until people finally end up the emergency room."

I proceeded to tell him how I "safely" harvested and prepared my clams and that I had clammed off and on for several years in Southeast without incident. There was a long pause, "You've been lucky so far." he said. "My recommendation is to buy your clams or use the recreational beaches in Southcentral that we regularly test and classify as safe. Store-bought clams are completely safe because they come from commercial shellfish growers in Alaska and elsewhere that continually test for PSP and bacteria."

Ostasz provided many accounts of people who ate from the same batch of clams where a few got sick and others were fine. Accounts of people clamming during the "r" months on beaches that they thought were safe. "There are a lot of myths out there, but they are just myths," he said. "Never count on a taste test of a few clams before the family gathers to chow down. Different clams and areas in close proximity can vary greatly in levels of PSP."

The national public health standard considers toxin levels above 80 micrograms per 100 grams of tissue unsafe for consumption. Some clams retain extremely high levels of the toxins for several months – up to two years for butter clams. The frequency of PSP algae blooms spike during the summer months, but can occur at any time of year. And unfortunately, there is no way for recreational clambers to detect the many types of algae toxins included in the PSP category.

The bottom line is, if you really want to dig your own and not poison yourself, family, and friends, go to the classified beaches and know your clams.

A good resource for identifying clams and providing information on PSP is this online, two-page handout from the Alaska SeaGrant Marine Advisory publication, Alaska's Marine Resources: Paralytic Shellfish Poisoning, the Alaska Problem, <http://www.uaf.edu/seagrant/bookstore/pubs/SG-ED-30.pdf>

Unfortunately, due to the great expense of regular testing, there are only a few recreational clam-digging beaches that the state is able to classify as safe. All are located in the Cook Inlet and Kachemak Bay area: Halibut Cove Lagoon, Jakolof Bay, Kasitsna Bay (McDonald Spit), Tutka Bay, Chugachik Island, Sadie Cove, Polly Creek and Crescent River.

There is no antidote for PSP and the toxins are unaffected or diminished by freezing, cooking, steaming, frying, baking, microwaving, etc. Symptoms usually occur in less than an hour after ingestion and include tingling or numbness in the lips and tongue, often followed by tingling and numbness in the fingertips and toes. These symptoms may progress to loss of muscle coordination, dizziness, weakness, drowsiness, incoherence, and even death. You should induce vomiting at the first sign of symptoms and immediately seek professional medical attention. Not my idea of a good time.

Giving up clam digging is disappointing, but Middy and I will find new low tide adventures to enjoy in Southeast Alaska, perhaps working on a science project with students, or helping a biologist find baby king crab. As for the clams we gathered, they are now in the freezer and will be used for crab bait this summer.

Nancy Long is ADF&G's Department Information Officer working in Juneau, a small town where you run into all kinds of people you know on the beach. She grew up digging "safe" clams in the San Juan Islands where she also enjoyed her Grandma's wonderful chowder, the recipe is available in this month's issue of Alaska Wildlife News.

http://www.adfg.alaska.gov/index.cfm?adfg=wildlifeneews.view_article&articles_id=200&_ga=2.255100109.432757103.1518035007-1090411289.1502326285 Retrieved 2.7.2018

Lord, N. (March 2006) *Digging for delight and digging for more than I wanted*. Alaska Department of Fish and Wildlife

FFS 68 Intertidal Harvests.2.2 - Elder Interviews

Looking Back on Subsistence: Interviews with Elders of the Chugach Region (2000)

“Other seafood were plentiful at Port Graham and Nanwalek as well. The *Dungeness crab* (yu’alaiyak) was available in spring and fall, but it was not taken in July because of its soft shell. (The crab sheds its old shell and develops a new one to accommodate growth.) The crab was generally taken in the saltwater lagoons or at the head of the bay where the water was shallow especially at low tide. It was taken mostly with long spears or a type of dip net. Preparation was simple. The crab was boiled for twenty minutes and eaten right out of the shell. Once plentiful up until about ten to fifteen years ago, this species is no longer available, perhaps because of over harvesting or sea otter predation. No one really knows why.

Butter clams (salat) and *cockles* (taugtata) were once abundant at Port Graham, harvested by both people from Port Graham and Nanwalek. They could only be harvested during an extremely low tide or what is known as a minus tide. They could be prepared in any number of ways: they could be boiled in the shell, shucked and fried, or simply eaten raw.

The clams and cockles were only harvested from about October until about April or May in the spring. Summer harvesting was avoided; I suspect it had something to do with the “red tide” or what is referred to in the scientific community as PSP (paralytic shellfish poisoning). This harvest schedule also applied to the other shellfish such as the *mussel* (amyaq) that is still available in great numbers.* However, the clams like the crab disappeared about ten to fifteen years ago. It is suspected that the sea otters did them in.

There is one kind of shellfish that is still available and eaten as in the early days. *Chitons* or *bidarkis* (uhuitaq) were harvested at very low tides from rocks or reefs. Preparation was simple. Either they were consumed raw off the shell or place in a vessel with boiling water poured over them, shelled and eaten. People often preferred eating them dipped in seal oil.

Salt-water snails (iput) were also found at low water on the beaches. Boiled in water for ten minutes, the meat was picked or of the shell and eaten with without seal oil. They are still prepared the same way today.”

- Compiled by Derenty Tabios

’Gathering Intertidal Foods (pp 12-13)’

*Note: Because of warming ocean temperatures the rule about only harvesting shellfish in months with an ‘r’ in it has become problematic. See <http://www.seator.org/Data> for current information on shellfish toxin testing by the Southeast Alaska Tribal Ocean Research

Elder Interviews: Potential Questions

1. What traditional intertidal foods did you harvest as a child?
2. Do you still harvest these foods? Why or why not?
3. What was/is your favorite intertidal food? How did/do you prepare it?
4. What changes in intertidal food availability have you noticed in your lifetime?
5. What do you feel accounts for those changes?

FFS 68 Intertidal Harvests.2.3 - Otters

<https://www.adn.com/politics/2018/03/17/alaskans-make-new-push-to-kill-more-sea-otters-saying-theyre-decimating-southeast-shellfish/>

Politics

Alaskans make new push to kill more sea otters, saying they're decimating Southeast shellfish

- Author: [Nathaniel Herz](#)



Southeast Alaska's marine ecosystem is undergoing changes due to an increase in sea otter population. The sea otters were reintroduced to Southeast Alaska by the Alaska Department of Fish and Game during a program that started in 1965. Of the 412 sea otters reintroduced in 1965, 89 percent were relocated from Amchitka Island while the remaining 11 percent came from Prince William Sound. This sea otter is from Simpson Bay in Prince William Sound in 2004. (Photo by Dr. Randall Davis / Texas A&M University)

Southeast Alaska's clams, urchins and crabs have fueled lucrative fishing industries and fed hungry families for decades.

They also feed sea otters.

And now, that human dependence on shellfish is clashing anew with a successful, state-sponsored restoration program that brought the marine mammals' population back from near extinction a century ago.

The long-running conflict between otter conservation and Southeast fishermen and tribal groups has drawn new attention this year. State lawmakers and other policymakers have drafted letters asking the Trump administration and a Republican-controlled Congress to loosen federal otter protections, and to grant local managers more power to cull the animals and leave more urchins, clams, crab and sea cucumbers for humans.

Federal action is far from certain, but those who depend on shellfish warn of an increasingly dire problem.

The story of sea otters in Southeast Alaska spans more than 150 years — from when Russians hunted them to near-extirpation to the 1960s restoration, which relocated hundreds of animals from the Aleutians by cargo plane.

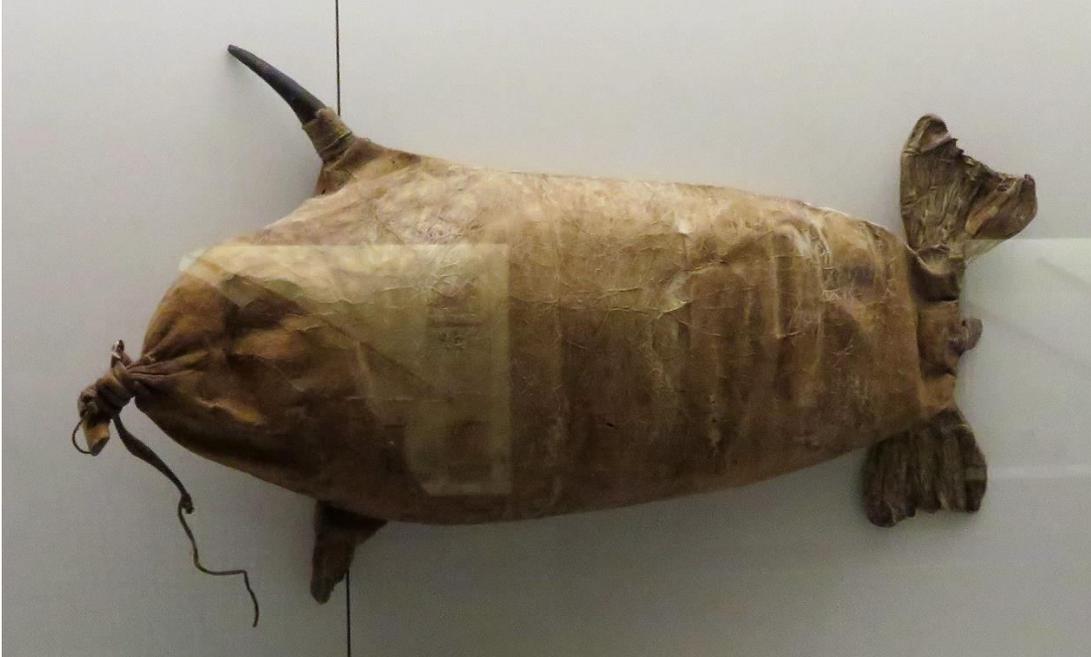
The otter restoration has been a success, with the Southeast population growing to more than 20,000. Scientists say the otters' resurgence is restoring the environment to the way it was before the Russians, but they also acknowledge that shellfish, which boomed in the otters' absence, are now being depleted.

"I think what we're headed toward is a return to normality," said [Jim Estes](#), an ecology professor and otter expert at the University of California, Santa Cruz. "None of this was there, almost certainly, for a long time – until the otters were hunted to extinction."

But dive fishermen, who swim or walk along the ocean floor in search of seafood, describe areas carpeted with shellfish 15 years ago that are now completely devoid of them. One Southeast tribal leader, Joel Jackson, said he listens from his home to the sound of sea otters breaking open the same clams that residents of his village want to harvest themselves.

"That's the whole thing about sea otters: They're competing with us," said Jackson, president of the [Alaska Native tribal government in the Southeast village of Kake](#). "We don't want to completely annihilate 'em. But we'd like to keep 'em under control."

FOOD FROM THE SEA: SEALS GR: 6-8 (LESSONS 6-9)



Seal Stomach Float, Museo de América, Madrid; Photo by B. Kopchak

Elder Quotation:

“After a little while he went back to the seal again. The seals sleep a lot, that is why he (*Pukituq*) turned back into one. Whenever a seal dices, it sleeps a half hour or hour at a time. People hurry up in their baidarkas when a seal dives, and when they spit in the water. It wakes the seal up and it comes right away. When he turned into a human he told the people not to spit in the water because it splashed on the bottom and woke the seals up. “Spit on your paddles instead!” When he turned into a human he forgot to take out his seal canine teeth, that is why some people have “high teeth” now.”

‘Pukituq Who Turned into All Kinds of Animals’ as told by Makariⁱ

Grade Level: 6-8

Overview: Traditionally the Sugpiaq and Eyak peoples migrated from their villages to fish camps to harvest seasonal resources. More permanent villages were established with the advent of Russian trading posts and commercial canneries. Permanent villages changed the pattern and intensity of local resource use and availability.

Standards:

<i>AK Cultural:</i>	<i>AK Content:</i>	<i>CRCC:</i>
D1: Acquire in-depth cultural knowledge through active participation and meaningful interaction with Elders.	Science C (2): A student should understand and be able to apply the concepts, models, theories, facts, evidence, systems, and processes of life science and should (2) develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms;.	L1: Students should understand the value and importance of the Sugt’stun language and be actively involved in its preservation.

Lesson Goal: To research and recognize the adaptive uses of traditional seal hunting techniques and uses for the seal over time by the people of the Chugach region.

Lesson Objectives: Students will:

- Research subsistence seal hunting techniques and uses of seal in the traditional and modern lifestyles of the people of the Chugach region.
- Prioritize and select hunter and Elder observations to ‘tell the story’ of seal hunting and usage.
- Create a digital poster to summarize how the people of the Chugach Region’s subsistence hunting and use of the seal has changed over time.
- Learn to pronounce the Sugt’stun and Eyak vocabulary.

Vocabulary Words: Sugt’stun Dialects

English:	PWS:	Lower Cook Inlet:	Eyak:
They are hunting	<i>Pisuhtuk.</i>	<i>Pisuhtuk.</i>	
seal	<i>qaigyaaq</i>	<i>qaigyaaq</i>	keeLtaa (harbor seal)
braided seal intestines	<i>qaigyam qilui</i>	<i>qaigyam qilui</i>	
seal oil	<i>qaigyam uqua</i> (pl: <i>qaigyam uquwii</i>)	<i>qaigyam uqua</i> (pl: <i>qaigyam uquwii</i>)	

Materials/Resources Needed:

- Computer projection screen
- FFS 68 Seal.3 Poster Guidelines handout (See below) - one per student
- FFS 68 Seal.3 Research Sources handout (See below) - one per student
- Access to internet for research and capability of projecting students’ digital posters

Kit Library:

Neq’rkat: The wild foods cookbook

DeCourtney, Christine A., et al. *Traditional Food Guide for the Alaska Native People*

Salomon, Anne K. et al. *Imam Cimiucia = Our Changing Sea*

Smelcer, John E. and Morgen A. Young. *We Are the Land We Are the Sea: Stories of Subsistence from the People of Chenega*

Stamp, Bobby A. *Chenega as I Saw It – It’s People*

Tabios, Derenty, et al. *Looking Back on Subsistence: Interviews with Elders of the Chugach Region*

Unger, Suanne. *Qaqamiigux; Traditional Foods and Recipes from Aleutians and Pribilof Islands.* (Seals pp.61-96)

Web Resources:

Seal Characteristics

http://www.adfg.alaska.gov/static/education/educators/curricula/pdfs/ice_seal_student_guide.pdf

Seal Hunting and Safety, Yupik Region, Student Workbook (Grades 4-6). Overview of seal anatomy and ice seal species

<https://www.smithsonianchannel.com/videos/how-are-seals-different-from-sea-lions/35377>

(1:14) Quick review of physical differences between seals and sea lions

Seal Hunter Interviews

- <http://www.adfg.alaska.gov/techpap/tp249.pdf> Alaska Department of Fish and Game, Division of Subsistence. (1999) Ecology, harvest, & use of harbor seals and sea lions: interview materials from Alaska Native hunters Technical Paper No.249. pp.105-164
- <http://jukebox.uaf.edu/NanPG/nanwalek/html/23503.html> Interview with Nanwalek sea lion hunter Nick Tanape, Sr. (1996)
 - Section 1 (2:03) Personal Introduction
 - Section 2 (2:54) Marine Mammal Hunting: learning from father
 - Section 3 (2:57) Marine Mammal Hunting (cont.): 1950s, population changes, hunt techniques
 - Section 4 (2:37) Seals: sharing, seal fat, delicacies, preparation, manyuk (*cook on open fire*), celebrations
 - Section 5 (2:16) Seals (cont.): sharing, family, population decline, pup season
 - Section 6 (2:38) Seal and sea lion hunting, sharing, flippers
 - Section 9 (2:42) Animal Uses: meat, seal gut and pelt preparation, arts and crafts [Note: *renewed production and sale of Native crafts revived interest in pelts*]

Subsistence Seal Hunting

- <https://alutiiqmuseum.org/explore/lecture-videos> Patrick Saltonstall, Alutiiq Museum Archaeologist, 2016 Fall Lecture on “The Pursuit of Marine Mammals Before Gas and Ammo” prior to Russian arrival and use of guns (1 hr: 15 min)
- https://www.youtube.com/watch?v=BdX5m0rY_CY “Alutiiq Pride: A Story of Subsistence” (27:28)
 - 0-24 sec - Lidia Robarts’s Quyana song
 - 2:45-16:12 - Seal hunt: Elder Ed Gregoriouff on differences between bidarki and motorized hunt; When to shoot seal; Scientific research; Difference between male & female seal
 - 16:12-16:35 – Seal population changes

Traditional Ecological Knowledge and Western Science

- http://ankn.uaf.edu/Curriculum/Articles/BarnhardtKawagley/Indigenous_Knowledge.html Article Abstract with Venn diagram of TEK and Western Science comparison

Teacher Preparation:

- Review Activities and practice Sugt'stun or Eyak vocabulary.
- Invite Elder or Recognized expert in sealing to describe a seal hunt and the processing and use of the animal. Ideally, the Elder or Recognized Expert could also discuss changes in hunting techniques and seal uses over past decades.
- Before the Elder or Recognized Expert arrives, review with how to show respect for the Elder during his or her visit.



Traditional Seal Hunter Helmet, Museo de América, Madrid; Photo by B. Kopchak

Opening: Seals were a mainstay of the traditional Chugach regional diets. Special techniques and tools were developed to successfully hunt and use the seal. The sharing, preparation, and consumption of seal are an integral part of Sugpiat culture. But seal populations fluctuate, technological and governmental regulations are introduced, and time marches on. We want to examine and educate ourselves on how the people of the Chugach have adapted their seal hunting and their uses of the seal to today's world.

Activities:

Class I:

1. Introduce and invite the Elder/Recognized Expert to describe seal hunting and changes in techniques and uses for the seal he or she has observed in his or her lifetime. Advise the students to take notes, as their class project will rely on Elder/Recognized Expert quotations to tell the history of sealing and adaptations of hunting techniques and uses of the animal over the years.
2. Encourage student questions and sharing of any personal seal hunting stories or seal recipes.
3. Present Smithsonian overview of Seal vs. Sea Lion comparisons (*See website above*)
4. Show Seal Adaptation and Anatomy pages from ADF&G Seal Hunting & Safety Guide (*See website above*)
5. Share these Elder quotations and student's notes of traditional seal hunting techniques.

“Chenega Glacier, it played a big part in the village if you hunted seal. You will know that the seal like to stay out of the water on ice and they stay in herds, you would pick a point outside of the glacier and sit on the shore and wait for in-coming and out-going seal. They generally went with the tide. Seal was one of the main foods for my people.”

- Bobby Stampⁱⁱ

“If they caught a seal with a pup inside unborn they would take the film that was over the young seal and put it on the figure head of the bow and it was supposed to bring good luck.”

- Bobby Stampⁱⁱⁱ

“Because the seal was far ranging geographically speaking, hunters had to travel over water, sometimes great distances, by kayak (*paitalek*) or in later years by rowboat. Seals were hunted by bow and arrow or spears. Much of the hunting in the early days required the hunters to become familiar with beaches or reefs frequented by seals to rest and sun themselves out of the water. A good hunter could stalk and come within touching distance so they could club or spear the mammal. In more recent years with the advent of the firearm, seals could be taken while they were in the water, and from greater distances. Simeon Kvasnikoff told me the men were able to tell the difference between the males and females by their snout. The females were left alone during the gestation period when they were carrying pups.”

- Derenty Tabios^{iv}

6. *Optional Homework:* Ask students to interview a seal hunter about seal hunting techniques and animal uses and any observed changes in same.

Class II:

1. Watch a Tatitlek seal hunt from “Alutiiq Pride: A Story of Subsistence” (Minutes 2:45-16:12) (*See website above*) and discuss. *Optional video to add:* For butchering a seal
2. Divide students into small groups, distribute ‘Seal Poster Guidelines’ and ‘Seal Research Resources’ handouts and review project. See also Heritage website Science Poster Prompt. [Note: Student groups may choose their own topic (*Subsistence Seal Hunting* or *Subsistence Seal Usage*) OR Teacher may assign topic.]
3. Begin research.

Class III: Small groups continue research, select quotations for poster, and begin poster design.

Class IV: Students complete digital posters, review, and share. Which factors did students find most affected changes in seal hunting techniques and seal usage? Discuss how student re-telling varies or is similar? What are the effects of oral tradition? These Elders' quotations represent Traditional Ecological Knowledge (TEK). How do these observations mesh with Western science?

**Posters will be judged on fulfillment of the guidelines (minimum of 10 appropriate quotations); organization, coherence, and clarity of information presented, and overall impression.*

Assessment:

- Students researched seal hunting and subsistence uses of seal in the Chugach Region.
- Students synthesized Elder, seal hunter, and Recognized Expert quotations to summarize the story of traditional and modern seal hunting and seal uses.
- Students created original posters to explain the historic changes in subsistence seal hunting and usage.
- Students correctly pronounced Sugt'stun or Eyak vocabulary words.

ⁱ Johnson, John F.C., et al. *Chugach Legends: Stories and Photographs of the Chugach Region*. Anchorage, AK: Chugach Alaska Corporation., 1984. p.53

ⁱⁱ Stamp, Bobby A. *Chenega as I Saw It – It's People*. Chugach Alaska Corporation, 2010. p.4

ⁱⁱⁱ Stamp, p.15

^{iv} Tabios, Derenty, et al. *Looking Back on Subsistence: Interviews with Elders of the Chugach Region*. Chugachmiut Corporation, 2000. pp.15-17



Seal Hunter Helmet, Museo de América, Madrid; Photo by B. Kopchak

Project Goal: To tell the story of Sugpiat/Eyak seal harvesting and usage as described by Sugpiat/Eyak Elders, seal hunters through illustrative posters

Project Description: You are to research the history of the subsistence uses of seals, adaptations over time, and the importance of the seal to Sugpiat and Eyak culture. Then you will create an original digital poster (or posters) to tell the story of subsistence seal harvesting and usage in the Chugach region through the words of Elders and Recognized Experts. You must use a minimum of ten quotations as detailed below but you are, of course, free to add more. You may include additional information in your posters as needed to serve your selected quotations.

Topic Choice/Research/Quotation Selection/Poster Design

Determine if your group will produce subsistence seal hunting or seal usage poster. Review the poster guidelines and decide on a work plan. You will have two days to research and create your posters. You may choose to make a single poster or several. Use the “*FFS 68 Seals.2.2 Research Sources*” handout as a starting point for your research efforts.

Subsistence Seal Hunting Posters should:

- _____ Illustrate and describe where to harvest seals (1 Elder/Hunter quotation)
- _____ Illustrate a traditional seal hunt or *manyuq* (beach cookout)
- _____ Describe traditional seal hunting techniques (2 Elder/Hunter quotations)
- _____ Describe how hunting lore was passed along (2 Elder/Hunter quotations)
- _____ Illustrate and describe changes in techniques due to evolving technology and/or government regulation (3 Elder/Hunter quotations)
- _____ Describe importance of the seal hunt to Sugpiat and/or Eyak cultures (2 Elder quotations)
- _____ Include three Sugt’stun or Eyak vocabulary words

Subsistence Seal Preparation and Usage Posters should:

- _____ Illustrate and describe which seal parts are used and for what (1 Elder/Expert quotation)
- _____ Illustrate traditional seal gut braiding or a *manyuq* (beach cookout)
- _____ Describe traditional seal preparation techniques (2 Elder/Expert quotations)
- _____ Describe how seal preparation lore was passed along (2 Elder/Expert quotations)
- _____ Illustrate and describe changes in techniques due to evolving technology and/or lifestyle changes (3 Elder/Expert quotations)
- _____ Describe importance of preserving and eating seal as a part of Sugpiat and/or Eyak cultures (2 Elder quotations)
- _____ Include three Sugt’stun or Eyak vocabulary words

Posters will be judged on fulfillment of the guidelines; organization, coherence, and clarity of information presented; overall impression.

Final Class – Presentation

Team members will present poster information to class using both the English and Sugt’stun and/or Eyak words where appropriate.

FFS 68 Seals.3.2 Research Sources

Kit Library:

Neq'rvat: The Wild Foods Cookbook

DeCourtney, Christine A. et al. *Traditional Food Guide for the Alaska Native People*

Salomon, Anne K. et al. *Imam Cimiucia = Our Changing Sea*

Smelcer, John E. & Morgen A. Young. *We Are the Land, We Are the Sea: Stories of Subsistence from the People of Chenega*

Stamp, Bobby A. *Chenega as I Saw It – It's People*

Tabios, Derenty. *Looking Back on Subsistence: Interviews with Elders of the Chugach Region*

Unger, Suanne. *Qaqamiigux; Traditional Foods and Recipes from Aleutians and Pribilof Islands*. (Seals pp.61-96)

Web Resources:

Eyak Dictionary

- <http://eyakpeople.com/dictionary>

Seal Characteristics

- http://www.adfg.alaska.gov/static/education/educators/curricula/pdfs/ice_seal_student_guide.pdf Seal Hunting and Safety, Yupik Region, Student Workbook (Grades 4-6). Overview of seal anatomy and ice seal species
- <https://www.smithsonianchannel.com/videos/how-are-seals-different-from-sea-lions/35377> (1:14) Quick review of physical differences between seals and sea lions

Seal Hunter Interviews

- <http://www.adfg.alaska.gov/techpap/tp249.pdf> Alaska Department of Fish and Game, Division of Subsistence. (1999) Ecology, harvest, & use of harbor seals and sea lions: interview materials from Alaska Native hunters Technical Paper No.249. pp.105-164
- <http://jukebox.uaf.edu/NanPG/nanwalek/html/23503.html> Interview with Nanwalek sea lion hunter Nick Tanape, Sr. (1996)
 - Section 1 (2:03) Personal Introduction
 - Section 2 (2:54) Marine Mammal Hunting: learning from father
 - Section 3 (2:57) Marine Mammal Hunting (cont.): 1950s, population changes, hunt techniques
 - Section 4 (2:37) Seals: sharing, seal fat, delicacies, preparation, munyuk (*barbecue*), celebrations
 - Section 5 (2:16) Seals (cont.): sharing, family, population decline, pup season
 - Section 6 (2:38) Seal and sea lion hunting, sharing, flippers
 - Section 9 (2:42) Animal Uses: meat, seal gut and pelt preparation, arts and crafts [Note: *renewed production and sale of Native crafts revived interest in pelts*]

Subsistence Seal Hunting

- <https://alutiiqmuseum.org/explore/lecture-videos> Patrick Saltonstall, Alutiiq Museum Archaeologist, 2016 Fall Lecture on “The Pursuit of Marine Mammals Before Gas and Ammo” prior to Russian arrival and use of guns (1 hr: 15 min)
- https://www.youtube.com/watch?v=BdX5m0rY_CY “Alutiiq Pride: A Story of Subsistence” (27:28)
 - 0-24 sec - Lidia Robarts’s Quyana song
 - 2:45-16:12 - Seal hunt: Elder Ed Gregoroff on differences between bidarki and motorized hunt; When to shoot seal; Scientific research; Difference between male & female seal
 - 16:12-16:35 – Seal population changes

“Because the seal was far ranging geographically speaking, hunters had to travel over water, sometimes great distances, by kayak (*paitalek*) or in later years by rowboat. Seals were hunted by bow and arrow or spears. Much of the hunting in the early days required the hunters to become familiar with beaches or reefs frequented by seals to rest and sun themselves out of the water. A good hunter could stalk and come within touching distance so they could club or spear the mammal. In more recent years with the advent of the firearm, seals could be taken while they were in the water, and from greater distances. Simeon Kvasnikoff told me the men were able to tell the difference between the males and females by their snout. The females were left alone during the gestation period when they were carrying pups.

As I mentioned the seal were far ranging and required hunters to travel. I recently learned from Alex Moonin that my grandfather Mick Mumchuck and his oldest son, my namesake Derenty (*Tali*), would row from Port Graham to Windy Bay and other places by rowboat without the benefit of a motor. Covering distances that sometimes were greater than fifty miles or more. These were not overnight trips. They were gone sometimes weeks or months. Hunting whatever game was available, primarily seal.

The seal provided much in the way of food and clothing. There was very little of the seal that was not used. The meat was cooked over an open fire, boiled, or fried. It was also smoked and dried. The intestines were weaved, sometimes stuffed with meats and fats into a sausage. The heart, live, and kidneys were either boiled or cooked over an open fire. The flippers were singed of the hair and boiled (considered a delicacy). The skull was boiled and the brains eaten. The blubber was rendered into oil for garnishing other foods such as boiled or dried fish and also as the chief ingredient in “*akutaq*” (Native ice cream).

The different bones provided tools or other useful implements. The stomach was blown up and dried, a container used to store many things such as seal oil, salmon eggs, berries, and other foods. The dried stomach could also be used as a float tethered to a harpoon tip when hunting at sea.

The seals, once plentiful, today have become scarce. It was one game animal that provided for the entire community when shared. When the men returned from a hunt they deposited several seal carcasses on the beach and invited everyone to take home what they needed.”

- Derenty Tabios, Port Graham^{iv}

“I remember how when I was young we would go to a little cove at Coghill Point up around Port Wells. I had to wait at camp because I was too young to hunt with my dad and my brothers and the other hunters. When they took off, I used to walk up this hill around the point toward the glaciers. From the top of the hill, I could watch as they hunted seals amid the icebergs. I could also see the seals. I watched hunters sneak up on the seals and shoot one or two of them. That was fun. I would sit up there until they started heading back. They’d be back in camp before I could make it back down the hill.”

- Pete Kompkoff, Jr., Chenega^{iv}

“I was six years old the first time I shot a gun. We were seal hunting. My dad gave me a .32-20, which couldn’t hit the broad side of a barn. Maybe that’s why he let me use it. The government used to have a bounty on seals, on their faces. I think we used to get two dollars apiece. I got pretty good at shooting them. We’d give the government the faces and keep the rest for ourselves. We used to get so many back then. I don’t know why the government wanted them, probably because of the salmon because the seals were eating them. I used to go seal hunting with my Grandfather Willie Kompkoff, my Uncle Richard, and my dad. I would be tucked inside a bidarka. My grandfather died in the 1964 Earthquake. We’d go up into Icy Bay, just across from Old Chenega. We’d pick the right place, and I remember that we used to have to wait for the wind to turn, because you didn’t want to go in against the north wind and expend all your energy fighting it. At night we used to sleep on goatskins. Here it was the middle of winter, January. It would be cold outside. We would build a little campfire and put the goatskins on top of a piece of canvas underneath a tree. The canvas was to keep the goatskins from getting snow on them, to keep them dry. The skins were so warm that we really didn’t need a sleeping bag. Just a couple goatskins kept us warm. We had some tea and bread.”

- Paul Kompkoff, Jr., Chenega^{iv}

“Back then we ate everything we caught. Most of our food came from the land or the sea. Seal was a favorite. There was hardly any part that was discarded. The whole seal was utilized. Once you butchered a seal, the fat was anywhere from an inch thick to two or three inches thick. We cut off the fat to make seal oil. First, you cut off the seal fat into squares. Then, over an open fire, you toss the fat into maybe a five gallon can. You keep adding the little pieces of seal fat, dicing them up, and pretty soon you’ve got a five gallon can full of seal oil. You pour the rendered seal oil into jars. I used to ask my sister Jessie why my granny and mom used a little bit of water while making the seal oil. They used to put a little bit of water into the boiling seal oil. It was to purify it in some way, to get all the murkiness out of it. Once it settles in a glass jar, seal oil looks as clear as olive oil.

In the wintertime you’d invite your neighbors over. “Come have some tea and dried fish.” That’s what they’d say. You’d have a little bowl full of seal oil. Everyone would have their pieces of dried salmon, their cups of tea, and they would dip the dried fish in to the seal oil. Talk about good. You know, nowadays, I guess they found out that fish oil is the best for you. It’s full of omega 3. Seal oil is very similar – no cholesterol or anything. In fact, I can remember my dad drinking seal oil straight out of the jar. Most of the time, we just kept it in gallon jugs or barrels all winter long. It keeps well. In fact, I’ve got some now. I must have five gallons of seal oil in pint jars at home. Every now and then, I open one up and dip my dried or smoked fish in it.

I can remember my grandma preparing food when my dad brought in a seal. She'd take the seal guts and make a slit, maybe, every six inches. She would milk the guts and clean them out in water. Then what she did. What all the ladies did, they'd get a chunk of seal fat, a continuous strip of it, and the ladies would take the seal gut and had some way of braiding it around the fat. When they were done, they'd have this long braided rope, maybe two inches across, with seal fat stuffed inside. Then they would boil it. When it was done boiling, they would take it out of the pot, put it in a pan, and bake it in the oven. When it was ready, they'd cut it up into little slices. I tell you, it was delicious. And along with that, I used to think seal stomach was a gourmet part of the seal, once you cleaned it up. Boil it right along with the heart and the liver and then braid it, and when you had a feast you got a little bit of all of it. A lot of times seal was baked. They would make sure they left a certain amount of fat on the meat when they baked it. It was so good."

- Henry Makarka, Chenega^{iv}

"Sometimes, we went seal hunting at Icy Bay, which was a favorite spot for seal hunting because it was close to the village. There's a glacier there, and in the spring when the ice breaks, seals were everywhere. We would hunt in a bidarka or in a regular fishing boat. You had to paddle baidarkas, but even then most boats had outboard motors. There would be three or four people hunting together. It was a lot of fun. Sometimes we would see maybe fifty seals at a time. Hunting with rifles changed everything. I don't know what they used before. They had a spear in the bidarka, but I never saw anyone stab a seal with a spear. We would shoot the seals when they got up close enough to use.

After you shoot a seal, you cut it up and clean out the rib cage. You ate the liver, the heart, the kidneys, the intestines. The best part was the breast. You would take the kidney, the liver, and breast, and everyone would take every bit, trim the skin, cook it, put it on the boiler. They'd say, "The soup is no good if you don't stir it." We even ate seal pups. They tasted good."

- Andy Selanoff, Chenega^{iv}

"Some of the really strong memories I have of subsistence are about seal hunting. I remember being with my dad and watching him hunt seal. They used to hunt baby seal in the springtime. For about twenty years after the 1964 earthquake, we barbecued seal on the beach throughout the sound. I would watch my dad when he cut the seal open. He would tell me, "You have to be careful when you get to this part because there's a little bile sack, and if you get it on the meat you have to rinse it quickly. It's not good for the meat." He would catch a seal and go up to the beach and cut it open. He would cut out the parts we wanted and then go cut alder sticks for us to roast the seal meat, ribs, kidneys, and liver."

- Carol Ann Kompkoff, Chenega^{iv}

"My mother is from Tatitlek. In the mean time we lived here [in Cordova]. I lived here for eleven years. We migrated to Makarka Point. That was named after my father. We lived there for about five years and in that time I was also living with my grandparents, my father's father. In them days food was hard to get. We had to live off the land. He went seal hunting, duck hunting, and when the tide went out, he would go get octopus and cockles and dry them. He had a big smokehouse. I can't see anybody with that kind of smokehouse today that I can recall. They would just take the three of us and go down and pick up these fish for the winter. Here

were different ways to put them up. We salted the seal and the saltwater ducks. He would smoke cockles, boil the octopus and smoke that, get some codfish and dry it in the sun. After three days he would take them into the smokehouse and smoke them. I don't see anyone doing that now, you know. For the sinter, he'd just put them away. We would get seal oil. We would use a lot of seal oil for our lights in a wooden, well, it's like a stone, he had, a stone and a cloth for a wick in the seal oil.

.....

I took them [the grandchildren] and I barbecued a seal they got. I was surprised that they really went for it; I didn't think that they would eat a barbecued seal. They were watching me clean it on the beach. By the time I got through and put it on a stick and put it on this open fire, the best part was the liver, and I put a chunk of liver and seal blubber, then the kidney like a delicacy, you would call it in our days, the choice part of the seal, I barbecued that."

- Jessie Tiedeman, Tatitlek, Cordova^{iv}

"My dad is still a commercial fisherman. Every summer I go fishing with my dad and my brother Michael.....Before the oil spill, we used to long line for bottom fish, like halibut. Every summer we go seal hunting. Every time we go fishing, we tell my dad we need to stop because there's a seal right near the boat. All summer long, we put up fish, freezing it, canning it, and smoking it.

My dad was always trying to teach us independence and how to take care of ourselves and how not to panic in the wilderness. This past summer, one of the starters broke down, and we couldn't start the boat. My dad had to anchor us in a bay and leave with one of his buddies and go to Whittier. He was gone for five days. We had a lot of food. We had a little skiff with five gallons of gas in it...

My brother and I got really tired of eating store-bought food during those five days. There was this one seal...I swear he was asking for it. At first we thought, well Dad's not here, so let's just wait because he's going to want to skin it. My dad usually skins it out and lets us keep the hide if we want it. He pretty much keeps everything on the seal. So, this seal was following us around the whole five days. Every time we were in the skiff, it would pop its head up and just watch us. It was getting to know us pretty well. Seals usually stay pretty far off, but pretty soon it was getting within twenty feet of us. We would catch fish and when we'd reel them in, the seal would chase after them. My brother loves seal heart and liver. He said, "Beth, can I shoot it?" He was bothering the whole time. Finally, on the fifth day, I said, "Ok, we're going to get it today." Finally, it popped up again and Michael shot it. If you shoot a seal, you have to retrieve it quickly before it sinks. You have to look at it and see it breathe and then shoot it right when it gets full of air. There have been times when we've had to use fishing poles and try to snag them and reel them up. Seal are really tricky. They're really mischievous. But, we got that seal on board with no problem.

Usually, two kids stranded in a bay, hundreds of miles away from anywhere, is not a good thing. But we were perfectly happy. We still talk about it every day. We went on land and explored everywhere. We would not have been able to do that if we had not been taught all our lives how to survive. It was like paradise for us. We were just running wild. It was the coolest thing. I don't think anyone can understand how much we had to be taught in order to be comfortable in that situation.

- Beth Pipkin, Chenega^{iv}

How to Make Seal Oil

Put some seal blubber (fat) in a jar and place it under a stove or in a warm place.

Keep it under the stove until you get oil.

Fry the rest of the fat to get more oil. – Ephim Anahonak Sr.^{iv}

^{iv} Tabios, Derenty et al. *Looking Back on Subsistence: Interviews with Elders of the Chugach Region*. Chugachmiut Corporation, 2000. pp.15-17

^{iv} Smelcer, John E. & Morgen A. Young. *We are the Land, We Are the Sea: Stories of Subsistence from the People of Chenega*. Chenega Heritage, Inc., 2007. p.68 (Pete Kompkoff, Jr.)

^{iv} Smelcer, p.62 (Paul Kompkoff, Jr.)

^{iv} Smelcer, pp.75-76 (Henry Makarka)

^{iv} Smelcer, pp.93-94 (Andy Selanoff)

^{iv} Smelcer, p.48 (Carol Ann Kompkoff)

^{iv} Crittenden, R. (Ed.) *Out of Our Time: The Storytellers = Oonechguk Edowchu*. Cordova Baptist Press, 1980.

Interview with Jessie Tiedeman by Dean Kramer pp.58, 62 (Out of print)

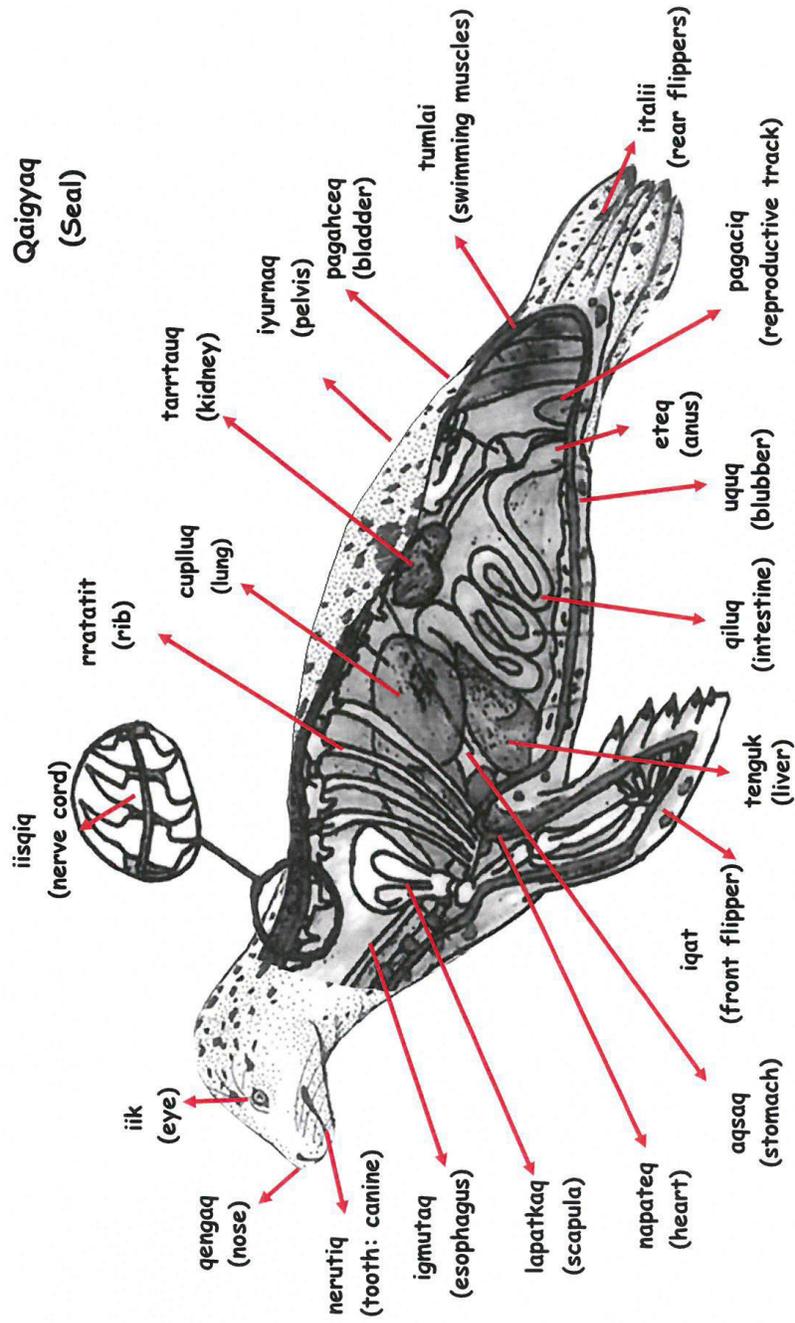
^{iv} Smelcer, pp.84-85

^{iv} Anahonak, Ephim Sr. "How to Make Seal Oil." *Fireweed – Cillqaaq* No.3, p.40

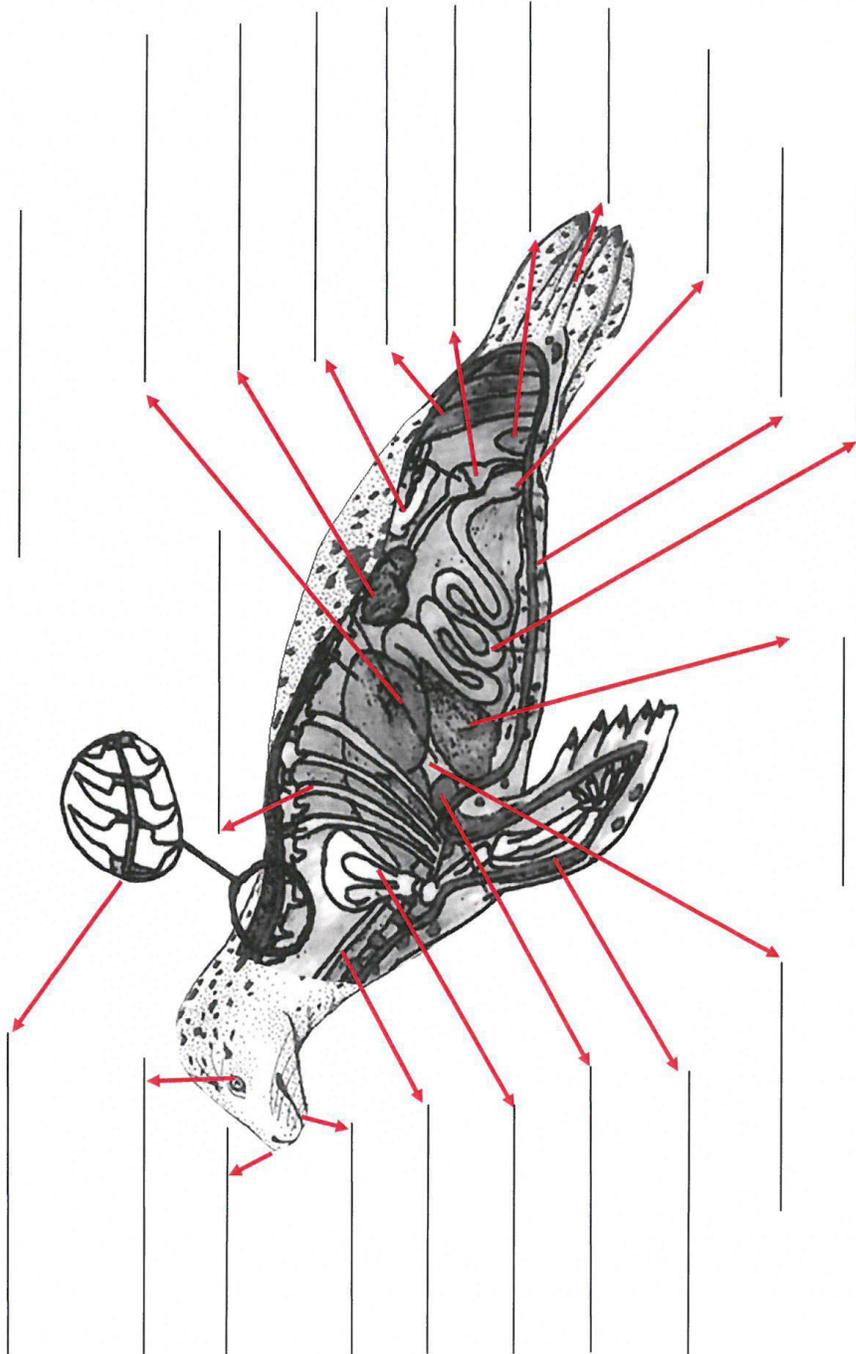


Seal Hunter Figurine, Museo de América, Madrid; Photo by B. Kopchak

Sugt'sturllinaq Nupuglluta: We Only Speak Sugt'stun



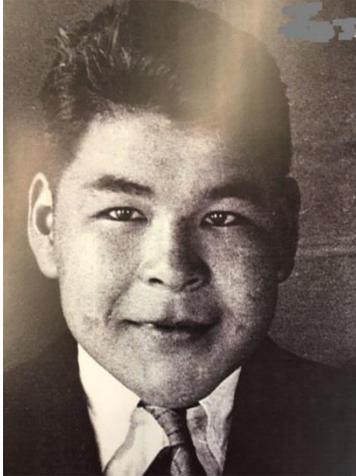
Sugt'sturllinaq Nupuglluta: We Only Speak Sugt'stun



FOOD FROM THE SEA: HERRING SPAWN GR: 6-8 (LESSON 10)

Elder Quotation:

‘The herring were more plentiful. They had no nets and they waved a dip net out of branches and roots. They would build a fire along the beach and when the herring were near, the light would attract them and it would be like a holiday. Everyone was at the beach, young and old filled up the containers they would find and everybody had herring... In the spring we watch the seal, you can tell when the herring was spawning because the seal would be covered with spawn, then we knew that we were not far from the spawning grounds. – Bobby Stamp p.11



Bobby A. Stamp (1926-2005) was born to a French Canadian father and Dorothy Vlasoff from Nuchek. He moved to Chenega at the age of seven where he lived a subsistence lifestyle and was taught cultural values and lore by the village Elders.

Grade Level: 6-8

Overview: The return of the herring has traditionally meant that spring has arrived. Fresh fish after a long winter of preserved and dried food was welcome and herring roe was especially appreciated.

Standards:

<i>AK Cultural:</i>	<i>AK Content:</i>	<i>CRCC:</i>
<p>C1: Perform subsistence activities in ways that are appropriate to local traditions.</p> <p>D1: Acquire in-depth cultural knowledge through active participation and meaningful interaction with Elders.</p>	<p>Science C (2). A student should understand and be able to apply the concepts, models, theories, facts, evidence, systems, and processes of life science and should (2) develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>SS3: Students should be able to gather plants, berries, and other edible foods.</p> <p>L1: Students should understand the value and importance of the Sugt’stun language and be actively involved in its preservation.</p>

Lesson Goal: To learn about the harvest and preparation of herring spawn.

Lesson Objectives: Students will:

- Review potential intertidal subsistence harvest foods
- Discuss relative abundance of subsistence herring spawn opportunities
- Compare herring spawn harvest methods.
- Observe or prepare herring egg salad
- Learn the Sugt’stun and/or Eyak vocabulary listed below.

Vocabulary Words: Sugt'stun Dialects

English:	PWS:	Lower Cook Inlet:	Eyak:
spring	<i>iciwaq</i>	<i>icuwaq</i>	<i>xahLch'aad</i> (lit: toward summer)
herring	<i>iqal_uahpat</i>	<i>iqal_uahpat</i>	waaw
herring eggs	<i>iqal_uahpat qahyait</i>	<i>iqal_uahpat qahyait</i>	waaw k'udA'uhdg
Bon appetit! Good eating!	<i>Tepkegtut!</i>	<i>Cacat tepkegtut!</i> (This smells good!)	

Materials/Resources Needed:

- 'Looking Back on Subsistence' Elder Interviews – handout, one per student
- Cooking implements and heat source to demonstrate harvest preparation
- Serving utensils, small bowls, forks for salad servings

Kit Library:

- Garza, Dolores A. Common Edible Seaweeds in the Gulf of Alaska. (2012)
- Garza, Dolores A. *Surviving on the Foods and Water from Alaska's Southern Shores.* (2007)
- Poling, Donald Robert. *Chenega Diaries: Stories and Voices of Our Past: Life and Times in the Native Village of Chenega, Alaska 1944-1948.* Chenega Future, Inc., 2011. (p.171 ling cod spawn harvest story – *quoted below*; p.252 fish egg preservation, survival food)

Web Resources:

Herring Spawn Harvest:

- https://www.youtube.com/watch?v=BdX5m0rY_CY Retrieved 12.6.2017 Tatitlek Subsistence Story (27:28) opens with Lidia Robarts Quayana song, herring spawn (16:40-21:15)
- <https://www.youtube.com/watch?v=oln3YwBzy0k&t=84s> (7:14 – first 2.47 on how spawn is collected) Herring spawn harvest (Sitka), Salad (Alaska Native Hospital)
- <https://www.youtube.com/watch?v=UEp1fxDp6-8> Herring spawn on hemlock from tree felling to ocean to drying
- http://www.adfg.alaska.gov/fedaidpdfs/rir.1j.2017.02.pdf?_ga=2.250536326.1004914198.1524510710-1463821139.1524510710 Retrieved 4.23.2018 p.7 Description of subsistence fishery considerations and how ADF&G currently sets herring roe subsistence harvest limits (Copying of paper contents not permitted)

Herring Population Decline

- <https://www.newsdeeply.com/oceans/articles/2017/10/13/boom-and-busted-lessons-from-alaskas-mysterious-herring-collapse> Overview of herring run failure post Exxon Valdez oil spill
- <https://www.youtube.com/watch?v=LlpqIc6fsY0> (also www.pwssc.org/herringsurvey) Overview of collapse of herring population in Prince William Sound and still unknown cause

Recipes

- <https://snapguide.com/guides/make-herring-egg-salad/> Illustrated recipe with peas, cheese...

Teacher Preparation:

- Review activity plan and practice Sugt'stun or Eyak vocabulary.
- Contact your Local Education Coordinator or local Tribal Council for a list of Elders that could provide some herring spawn with which to make herring salad.
OR Arrange a field trip to gather herring spawn.
- Invite an Elder or Recognized Expert to describe his or her experience with the harvesting or preparation of herring spawn to the class.
- Before the Elder or Recognized Expert arrives review with students how to interact respectfully with the Elder during his or her visit.

Opening: After a long winter with little fresh food the return of the herring was a clear sign of spring for the Native people of the Chugach region. The Sugpiaq and Eyak peoples learned to target the spawning grounds to harvest fresh herring roe deposited on kelp strands, popweed, or specially laid hemlock branches.

Activity

Class I:

1. Review Tidal Edibles cards and discuss which are available locally, which are still actively consumed (tastes change over the generations!).
2. Optional: Show final section (P.S. Making Stink Eggs Today) of 'Food from the Sea, Leona Olsen Interview' (See above.) above changing taste for fermented fish eggs.
3. Introduce Elder and invite him or her to comment on which of these foods are abundant locally, when and where they are available and if she or he has observed fluctuations in particular tidal food populations or heard about changes.
4. Read aloud this excerpt of a 1946 letter home from Chenega teacher John Poling describing an impromptu ling cod egg harvest when out with his young sons and 11-year-old Wally Brizgaloff:

“We rowed near the shore and Wally asked me to stop. He saw a huge cluster of ling cod eggs deposited in a cleft of rock at the low tide mark. It was low tide at the time. He warned me to be careful as the male codfish guards the eggs and will seize an invader. Wally got over on the rocks with a hand axe and chopped about ten pounds of the eggs off and Wally started to eat some of the crunchy pink raw eggs. Mitchy and Donny demanded some, so I gave them a chunk each, and ate some myself. They had a salty flavor that wasn't bad. The people cook them by boiling, but the children eat them raw, Wally said. We gave all the children in the village a big chunk of spawn, as it is called, and they were all happy.”

- *Chenega Diaries*, p.171

5. Show Sitka Herring Spawn video (see above): first 2:47 on how spawn is collected.
6. Invite Elder/Expert to describe local herring egg harvest (See also Bobby Stamp quote above) and demonstrate how to prepare herring egg salad or prepare your own.

7. Recipes:

Fresh Herring Eggs

Dip blanched herring eggs in soy sauce or seal/olive oil



OR

Alaska Native Medical Center Herring Egg Salad

Blanch herring eggs (dip in hot water and then place immediately in ice water)

Gently pull the herring eggs from the hemlock branch and place in bowl

Mix in by hand: sliced green onions, halved cherry tomatoes, shredded carrots & radishes

Add lemon juice to flavor mayonnaise and add to egg mixture to taste

Serve over bed of greens

OR

Leona Olsen's Herring Egg Salad

Cook rice and allow to cool

Blanch herring eggs on popweed (dip in hot water & then place immediately in ice water)

Place herring eggs with popweed in bowl

Mix in by hand: chopped onion, chopped celery, chopped carrots

Add just enough mayonnaise to adhere ingredients

Optional: Add cooked peas; Flavor with dill

8. Place servings in small bowls. Share and enjoy! Bon appetit!! *Cacat tepkegtut!*

Assessment:

- Students are able to list and describe traditional intertidal subsistence foods.
- Students can explain the relative abundance of subsistence herring spawn opportunities.
- Students described the differences in egg harvest methods and can demonstrate or describe one recipe to prepare herring eggs.
- Students correctly pronounced the Sugt'stun or Eyak vocabulary words.