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, 2007[i]

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:

AK Cultural:	*AK Content*:	*CRCC*:
C1: Perform subsistence activities in ways that are appropriate to local traditions. 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.	SS3: Students should be able to gather plants, berries, and other edible foods. L1: Students should understand the value and importance of the Sugt'stun language and be actively involved in its preservation.

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	*salat*	*salat*	*jiidaadAG uniik' Awaa qa' qiisid* (razor clams)
cockles		*taugtaaq*	*sahx*
sea urchins	*uutut*	*uutut*	*iinLk'a'd* (sea urchin eggs)

Dungeness crabs	*yual'ayak*	*yual'ayak*	*qiiyAdAch'an'k*

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=wildlifenews.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?

Intertidal Resources	
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

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[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; algaes, starfish, anenomies, 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 slop 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 clammers to detect the many types of algae toxins included in the PSP category.

The bottom lines 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=wildlifenews.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* (taugtat) 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?

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-extermination 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."