

FOOD FROM THE SEA: TIDAL ACTION GR: PREK-2 (LESSONS 4-5)

Elder Quotations:

“Don Kompkoff, Sr.: “[Charlie Selanoff] taught me quite a bit about survival out there. I’ve learned quite a bit from him. Where I could go. He said, “Come here, let’s go get some cockle.” I said, “Cockle...half-tide.” I said, “Well, that’s something.”

Michael Vigil: Port Wells.

Don Kompkoff, Sr.: Yeah, and we went to a place called Golden and we went in there. “Half tide,” he said. “I’ll show you how to catch them,” so, he had this contraption made. Had butter on the end of a stick like that, tied to it, and he just...you could see those cockles down on the water and scoop them up and I could get cockles at half tide just from learning from him. And all those goose tongue are on the beach Ed Bilderback said, “Come in, one day he said, “Come on, I’ll show you how to get these,” and he fried some up with bacon and they were delicious. So I went in there and got some goose tongue and I fried them up with bacon and they were just really good.”

- Don Kompkoff ¹

Grade Level: PreK-2

Overview: The Sugpiat and Eyak are coastal peoples who traditionally harvested much of their food from the ocean. This tradition continues in the subsistence lifestyle in which new generations learn to recognize and make use of the ocean’s bounty. It is vital that students understand how the time of year and stage of the tide affect what can be harvested from the shoreline.

Standards:

<i>AK Cultural:</i>	<i>AK Science Content:</i>	<i>CRCC:</i>
C1: Perform subsistence activities in ways that are appropriate to local traditions.	Science C3: Students will develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and local applications provide opportunities for understanding scientific concepts and global issues.	SS3: Students should be able to gather plants, berries, and other edible foods.

Lesson Goal: To understand tidal action and recognize how seasons of the year and stages of the tide affect the harvest of traditional foods.

Lesson Objectives: Students will:

- Extract information about tidal subsistence harvest from a Native legend.
- Model the concept of tidal movement.
- Identify tidal edibles and the intertidal zones in which they are found.
- Learn the Sugt’stun or Eyak vocabulary words.

Vocabulary Words: Sugt'stun Dialects

English:	PWS:	Lower Cook Inlet:	Eyak:
Listen! (directed to 3+)	<i>Niicugniluci!</i>	<i>Niicugniluci!</i>	
high tide		<i>tung'iq</i>	
low tide		<i>ken'aq</i>	
ocean	<i>imaq</i>	<i>imaq</i>	<i>lahdz</i> (forward, to the sea)
moon	<i>tanqik</i>	<i>tanqik</i>	<i>qAXah</i>
spring	<i>icuwaaq</i>	<i>iciwaaq</i>	<i>xahLch'aad</i> (towards summer)
summer	<i>kiak</i>	<i>kiak</i>	<i>xah</i>
fall	<i>uksuaq</i>	<i>ukuaq</i>	<i>XAlaagLch'aad</i> (towards winter)
winter	<i>uksuq</i>	<i>uksuq</i>	<i>XAlaaq</i>

Materials/Resources Needed:**Class I**

- Seasonal Harvest Cycle
- 'Woman in the Moon' Mask (See below) – print 1 copy (as large as possible) and cut out
- 30' length of line (rope)

Kit Library:

- Garza, Dolly. *Tlingit Moon & Teaching Resource: Elementary Level*
- Hodgkins, Fran and Jim Sollers. *Between the Tides*

Class II

- Field Trip transportation arrangement – if needed
- Field Trip Permission slip – if needed – one per student
- Appropriate clothing for field trip including rubber boots
- Paper plates (sturdy enough to hold tidal edibles) – one per student
- Markers
- Collection buckets – at least two; one for each tidal zone for classroom use specimens
- Tidal Edibles Cards
- Camera to photograph students collecting tidal edibles

Web Resources:

Tides

- http://www.afognak.org/files/language_books/Thematic%20Units.pdf Kodiak Alutiiq Heritage Thematic Units: Our Ocean's Resources, pp.8-17.

Tides and Timing

- <http://www.youtube.com/watch?v=Z0qGvC3vqaA> (3 minute) BBC video of Canadian Inuit mussel harvest under sea ice at low tide

Teacher Preparation:

Background: “Intertidal foods played an important role in [Prince William] Sound as well [as in Port Graham and Nanwalek]. Clams, cockles, mussels and chitons were just a few of the shellfish that were abundant and available for use. These resources could be eaten raw or cooked and garnished with seal oil. Henry Makarka informed me that cockles were dried for storage for later use, but mostly they were used immediately. Again, not unlike the folks on the Kenai Peninsula, Prince William Sound people harvested shellfish only in late fall or winter, possibly because of paralytic shellfish poisoning. Octopus was also available and taken during the very low tides...

Like the people of the Peninsula, the Sound people are handling changes in subsistence brought about [by] the declining populations of many common resources, regulatory restrictions, and time constraints brought about [by] the demands of modern times such as employment, governance issues, and schooling. Yet people persist in seasonal subsistence activities to provide food for the table, to share resources with (E)lders, family and community members, to maintain contact with nature, and to celebrate their culture.”

- Derenty Tabiosⁱⁱ

Prep for each class:

Class I

- Review activity plan and practice Sugt'stun and Eyak vocabulary.
- Contact your Local Education Coordinator or local Tribal Council for a list of Elders that could share their expertise on the lesson content.
- Invite an Elder or Recognized Expert to share information about tidal edibles harvest areas and seasons and any memories from his or her youth or lessons gained from Elders.
- Before the Elder or Recognized Expert arrives review with students how to respectfully interact with the Elder during his or her visit.
- Review seasonal harvest circle.

Class II

- Determine appropriate day and time for beach field trip. 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/Expert to accompany the class on the field trip to share where and when to gather tidal edibles and identify student finds.
- *Optional:* Mark and divide paper plates into halves to represent low and high tides or into thirds to represent two intertidal zones: low tide and high tide. The half tide referred to in the Elder quotes above is, logically enough, the area just in between these two.

Activities:

Class I – Tide Modeling

Opening: Read Between the Tidesⁱⁱⁱ to the class asking if students have ever seen the creatures mentioned or noticed how they're different above or the tide line.

Reviewing the book ask students what they know about tides. How often does the tide change? Does it matter to them? Did it matter to the Sugpiat and Eyak people a long time ago?

Many Native peoples who live along the ocean/*imaq* passed down stories of how tides came to be. According to the Chugach Legions, the Sugpiat said that the Owner of the High Water was an old, old woman and that a little bird could lift up the ocean water to let people travel underneath the waves.^{iv}

Listen/*Niicugniliuci!* to this legend from the Tsimshian people of Southeastern Alaska traditionally described how tides came to change twice a day.

Origins of Tides

The [Giant] Txamsem took his raven blanket and flew over the ocean with the firebrand in his hands. He arrived at the mainland and came to another house which belonged to a very old woman, who held the tide-line in her hand. At that time the tide was always high, and did not turn for several days, until the new moon came, and all the people were anxious for clams and other sea food.

Giant entered and found the old woman holding the tide-line in her hand. He sat down and said, "Oh, I have had all of the clams I need!" The old woman said "How is that possible? How can that be? What are you talking about, Giant?" "Yes, I have had clams enough." The old woman said, "No, this is not true." Giant pushed her out so that she fell back, and he threw dust into her eyes. Then she let the tide-line go, so that the tide ran out very low, and all of the clams and shellfish were on the beach.

So Giant carried up as much as he could. The tide was still low when he reentered. The old woman said, "Giant, come and heal my eyes! I am blind from the dust." Giant said, "Will you promise to slacken the tide-line twice a day?" She agreed, and Giant cured her eyes. Therefore, the tide turns twice every day, going up and down.

- F. Boas (1916)^v

1. This legend tells us that tides were important to coastal peoples or the story would not have been passed down through the generations. It tells us that the tides change twice a day and when it is best to harvest tidal edibles like clams and shellfish. How can we understand the tides even more?

2. Bring out the moon face (in kit) and introduce the moon/*tanqik*. The pull of earth's gravity keeps the moon/*tanqik* circling around it and the moon's gravity gently pulls at the Earth. Not enough to change the earth's orbit but enough to tug at things that move, like the ocean/*imaq*. Let's work it out.

Line students up shoulder to shoulder, from one side of the class room to the other leaving enough room for the moon to walk in front of them. Have students clasp the "tide-line" (rope)

with both hands to their chest. Students at either end of the line should hold onto fixed points so that the line of students doesn't drift. Explain that the students represent water on the earth's surface and the rope represents where the water meets the shore: the tide-line – like the tide-line in the legend.

3. Tell students that they are attracted to the moon/*tanqik* because they are curious about it and want to touch it to examine it more closely. When the teacher says “Go” students should move the tide-line towards the moon/*tanqik* trying to touch it but they may not unclasp their hands or pull the tide-line away from the fixed points and no jerking. If the moon passes out of reach students fall back to their original positions. This demonstrates the effect that the moon/*tanqik* has on the tides. If all goes well, students will understand that it is the attraction (gravitational and centrifugal forces) between the earth and moon/*tanqik* that cause the tides.

4. Review with students: In the model, when was the high tide/*tung'iq* [closest to moon/*tanqik*] and when was the low tide/*ken'aq* [farthest from moon/*tanqik*]? When do you think is the best time to harvest food from the beach?

5. Explain that the intertidal zone is space between the highest high tide/*tung'iq* point on a shoreline and the lowest low tide/*ken'aq* point. Hundreds of marine animals and plants live in this habitat where the land meets the sea. But to harvest these sea foods you have to wait for low tide/*ken'aq* ...just like the legend tells us.

6. Expand upon idea of harvesting food at low tide/*ken'aq* instead of high tide/*tung'iq* and the traditional knowledge needed to harvest foods at the most advantageous time of year

7. Remind students to listen carefully (*Niicugniliuci!*) and invite the Elder/Expert to model the Seasonal Harvest Calendar and share personal stories about traditional harvests of food from the sea according to season, naming each season in Sugt'stun or Eyak, if possible; spring/*iciwaaq*, summer/*kiak*, fall/*uksuaq*, and winter/*uksuq*. Have students repeat season vocabulary. Which season is most productive for harvesting foods from the intertidal zone? Is it during the *iciwaaq*, *kiak*, *uksuaq*, or *uksuq*? [*The extreme low tides of the spring allow more tidal edibles to be harvested.*]

Optional: Share Canadian Inuit Mussel Harvest video to illustrate importance of knowing when the tide changes. (3 minutes)

Class II – Field Trip

1. Discuss proper beach etiquette and dress appropriately for field trip.
2. Review tidal zones and tidal edibles cards with students. Introduce the Elder/Expert remind students of the Elder/Expert's great subsistence experience and how important it is that they listen carefully (*Niicugniliuci!*).
3. Go to the beach an hour before low tide.
4. Have Elder/Expert point out the low tide/*ken'aq* marks and the high tide/*tung'iq* marks [Piles of debris, water line on rocks, and lack of tide pools]. Have students mark the low tide/*ken'aq*, and the high tide/*tung'iq* as well as the half-tide, the point halfway between the high and low tides with sticks.

5. Discuss the advantages of low tide/*ken'aq* how all the tidal edibles would be underwater at high tide/*tung'iq* and difficult to harvest.
6. Invite students to describe where and what their families harvest from the intertidal zone.
7. Distribute paper plates and markers and have students divide the plate in half with the marker to represent the low tide/*ken'aq*, the half-tide, and the high tide/*tung'iq* zones.
8. Collect the markers and offer tidal edibles cards to interested students.
9. Let students explore the beach and select a sample of subsistence foods and placing them on the plate in the same zone in which the foods were found.
10. Photograph students locating subsistence foods, for display in final lesson.
11. Invite the Elder/Expert to identify student finds and review where on the beach they were found.
12. Make a short list of items found and have students return samples to their original locations.
Optional: Divide students into two groups, one for the low tide zone and one for the high tide zone. Issue collection buckets. Have each group collect a small sample of items indicative of their zone to bring back to the classroom.
13. Return to classroom and review locations of tidal edibles found during field trip.

Assessment:

- Students demonstrated tidal movement under the moon's gravitational pull.
- Students identified tidal edibles and the zones in which they are found.
- Students correctly pronounced the Sugt'stun or Eyak vocabulary.

ⁱ 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.251

ⁱⁱ Tabios, Derenty, et al. *Looking Back on Subsistence: Interviews with Elders of the Chugach Region*, Chugachmiut Corporation, 2000. p.27

ⁱⁱⁱ Hodgkins, Fran and Jim Sollers. *Between the Tides*, Down East Books, 2007.

^{iv} Johnson, John F.C., et al. *Chugach Legends: Stories and Photographs of the Chugach Region*, Chugach Alaska Corporation (1984). p.88 ('Raven and the Owner of the High Water')

^v Garza, Dolores A. *Tlingit Moon & Tide Teaching Resource: Elementary Level*. Alaska Sea Grant Program, University of Alaska Fairbanks, 1999. p.33



Moon face in progress on Eyak Totem Pole by Mike Webber, Cordova



Woman in the Moon Mask, UC Berkeley Collection: Photo by B. Kopchak

Can print the enlarged photo below, if desired

