

Living by the Seasons

A Science, Math and Literacy Unit for Grade 2

Introduction

For thousands of years, Tlingit people have lived off the land in Southeast Alaska. Important resources for Tlingit people include salmon, berries and beach foods. In the summer and fall, it was important to preserve foods such as salmon, meat and berries to last through the winter. Harsh weather conditions and relative scarcity of food made food preservation necessary for winter survival. Some beach foods were and are harvested year round and some beach foods were and are harvested seasonally.

Unit Overview

This unit is designed to allow students to have hands-on, outdoor experiences observing seasonal changes and make connections with seasonal Tlingit activities during different times of the year. This unit includes three lessons with field trips designed to be taught in fall, winter and spring. In the fall and winter lessons, students should visit the same area, ideally a place where both berries and salmon can be found. In the winter lesson, students' attention will be called to the relative scarcity of food and the need for preservation for survival. In the spring, students will visit a local intertidal zone to look for year-round beach foods and spring beach foods. It would be great to have an elder come in or on field trips and share some seasonal foods/activities with the class.

As a result of this unit students will understand,

- ✓ Different plants and animals have seasonal life cycles that help them to grow, develop and survive.
- ✓ The Tlingit people were knowledgeable and respectful of the life cycles they observed. This ensured survival and allowed the Tlingit people to thrive off the land despite the harsh climate.

As a result of this unit students will be able to,

- ✓ Ask questions
- ✓ Make observations
- ✓ Predict
- ✓ Describe what they see
- ✓ Make generalizations and inferences based on observations
- ✓ Communicate what they have learned



Literacy Emphasis

This unit has a significant writing component. Students will work on non-fiction, expository writing to share what they observe. They will also do research and create group writing project based on a specific plant or animal.

Tlingit Educational Significance

Seasonal availability of foods and resources, as well as the climate of Southeast Alaska dictated the seasonal activities of Tlingit people before contact with Europeans. Tlingit people relied on natural indicators, rather than a western calendar, to dictate when they did things. Many people still live this lifestyle today.

Tlingit Elder or Culture Bearer Role

An Elder could enhance learning by coming in to tell stories about seasonal activities, demonstrating food preparation and coming on field trips with students to share methods of harvesting, respect protocols and seasonal indicators.

Culminating Project or Event (Optional)

Students will work in groups to research the life cycle of a plant or animal traditionally used by the Tlingit people. They will use digital storytelling to share their learning about the life cycle of their plant or animal and its traditional uses. In the spring, families will be invited in to view a student created digital storytelling project with photos and student narration from the project.

Lesson Overview

Lesson Description	Literacy Strategies	Academic Vocabulary
Tlingit Calendar & Later Summer and Fall (August/September) Activities – Salmon & Berries Students will discuss how they do different things in the fall (going back to school, wearing warmer clothes, etc.). Students will learn about Tlingit seasonal activities during this time of year. Students will go on a short nature walk and look for two important Tlingit resources: Salmon and berries. Students will be asked to notice where the salmon and berries are in their life cycle. Upon returning to the classroom, students will journal to share their observations, with some discussion of how summer and fall foods are preserved for winter.	<ul style="list-style-type: none">▪ Think & Write▪ Think-Pair-Share▪ Observation Journal▪ Group Discussions	<ul style="list-style-type: none">▪ Natural Resource▪ Seasons▪ Harvest
Tlingit Winter Activities – Reading Aloud & Games Students will go on a Winter nature hike in an area that may have good animal tracks. Prior to the hike, students will be asked to remember our fall hike and think about the resources that they found. They will be asked to think about the berries and salmon and predict whether those	<ul style="list-style-type: none">▪ Observation Journal▪ Think-Pair-Share	<ul style="list-style-type: none">▪ Life Cycle▪ Preserve▪ Dormant▪ Developing▪ Nutrition▪ Scarcity



resources will be around. During the hike, students will be encouraged to notice the scarcity of plants and few animal signs. Upon return to the classroom, students will hear the story “Salmon Boy” and learn about Tlingit food preservation and the value of food, taste smoked and dried salmon.

Spring Beach Trip

This lesson will occur in April or May. Students will visit a local beach with an elder to learn about all the resources that can be harvested from the beach.

- Observation
- Small Group Work
- Sorting
- Classifying
- Graphing
- Study Site
- Limpet
- Sea Urchin
- Chiton
- Periwinkle
- Snail
- Sea Cucumber
- Seaweed

Suggested Pacing

Lesson	45 Minute Class Sessions
The Tlingit Calendar: Introduction to Living by the Seasons--Salmon and Berries	2-3
Living by the Seasons: Winter Months	2-3
Living by the Seasons: Spring Beach Trip	3 (with extended time for beach field trip)
Total Class Sessions	7-10

Standards Addressed in this Unit

RL.2.1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of a literary text using key details from the text.

RL.2.2. Retell stories, including fables and folktales from diverse cultures and determine the author’s purpose (e.g., teach a lesson, make you laugh, tell a scary story, describe an imaginary place), lesson or moral.

W.2.8. Recall information from experiences or gather information from provided sources to answer a question.

The student demonstrates an understanding of the processes of science by,

[3] SA1.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating

[3] SA1.2 observing and describing the student’s own world to answer simple questions. C1— Concepts of Life Science



The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection and biological evolution by,

[3] SC1.1 sorting Alaskan plants and/or animals using physical characteristics (e.g., leaves, beaks)

[3] SC1.2 describing how some traits (e.g., claws, teeth, camouflage) of living organisms has helped them survive as a species

The student demonstrates an understanding of the structure, function, behavior, development, life cycles and diversity of living organisms by,

[3] SC2.1 sorting animals and plants into groups based on appearance and behaviors

[3] SC2.2 observing and comparing external features of plants and of animals that may help them grow, survive and reproduce

2. MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart and compare problems using information presented in a bar graph

English Academic Vocabulary

- | | |
|--------------------|----------------|
| ☞ Natural Resource | ☞ Study Site |
| ☞ Seasons | ☞ Limpet |
| ☞ Harvest | ☞ Chiton |
| ☞ Life Cycle | ☞ Periwinkle |
| ☞ Dormant | ☞ Snail |
| ☞ Developing | ☞ Sea Urchin |
| ☞ Scarcity | ☞ Seaweed |
| ☞ Preserve | ☞ Sea Cucumber |
| ☞ Nutrition | |

Tlingit Heritage Language

- | | |
|-----------------------------------|--------------------------|
| ☞ Haa Kusteeyíx (our way of life) | ☞ Xáat (salmon) |
| ☞ Sha-ya-yi (August) | ☞ Eek (beach) |
| ☞ Dis Yadi (September) | ☞ Kees' (tide) |
| ☞ Tleikw (berry) | ☞ Nees' (sea urchin) |
| ☞ Kanat'a (blueberry) | ☞ Ts'ix'w (snail) |
| ☞ Kaxwéix (high bush cranberry) | ☞ Whaaw (gumboot/chiton) |
| ☞ Was'x'aan tléigu (salmon berry) | ☞ Yeil ts' aaxu (limpet) |
| ☞ Tleikatánk (huckleberry) | ☞ Yein (sea cucumber) |



Materials Needed For Unit

- ✂ Poster including English names of months with Tlingit moon names (adapted from For students: Science notebooks, pens, pencils, colored pencils (optional)
- ✂ Garza, Dolly. 1999. Tlingit Moon & Tide: Teaching Resource: Elementary Level.
- ✂ University of Alaska Sea Grant: Fairbanks, AK (available online at <http://www.ankn.uaf.edu/curriculum/Tlingit/Salmon/graphics/moonandtides.pdf>)
- ✂ The Tlingit Economic Year (graph) from Juneau Indian Studies Program Elementary curriculum guide
- ✂ 5 sets of laminated pictures of salmon, blueberries, salmon berries, high bush cranberries and huckleberries labeled with Tlingit and English names
- ✂ Samples of: smoked salmon, jam/preserved berries
- ✂ Salmon Boy Story: available at http://www.sealaskaheritage.org/programs/Salmon_Boy_Book_web.pdf

Lesson Plans

Lesson 1

The Tlingit Calendar

Introduction to Living by the Seasons – Salmon & Berries (Fall)

Description

In this lesson, students are introduced to the Tlingit Calendar and get an overview of Tlingit seasonal activities. Students share how their life changes from season to season and see how their activities are similar or different to Tlingit seasonal activities. Students compare the Tlingit Moons to the Julian calendar and use “The Tlingit Economic Year” to identify seasonal activities traditional to the month we are currently in. Students make predictions about which Tlingit resources they may see in the forest at this time of year.

Alaska Standards	Cultural	Language Arts	Other Science
	A1, A2, B1, B3, E1, E2	RL 2.1, RL 2.2, W.2.8	[3] SA1.1, [3] SA1.2
Essential Questions	How does the life of local people change from season to season?		
Lesson Topic	Seasonal Activities		
Strategies	Whole group instruction, think-pair-share, think and write		
Objectives	Assessment		
✓ Students will list two plants and/or animals that Tlingit people use to survive.	✓ On the hike: find and draw plants, animals or evidence of the plants and animals Tlingit people use to survive. Include labels.		
✓ Students will make connections	✓ Think-pair-share: 🔗 What Tlingit resources did you find on the hike?		



between their own way of life and traditional Tlingit ways of life.

- ✓ Students will identify the 12 months in English.

❓ What do you think it would be like to survive by living off of the land?

❓ How would it be the same/different to how you live now?

- ✓ Chorally recite the months in English while pointing to the calendar.

Duration – 3 sessions

- ✓ 30 minute introduction
- ✓ 45 minute hike
- ✓ 20 minute wrap up (these could happen on the same days or on different days.)

Materials

- ✂ Poster including English names of months with Tlingit moon names (adapted from For students: Science notebooks, pens, pencils, colored pencils (optional))
- ✂ Garza, Dolly. 1999. Tlingit Moon & Tide: Teaching Resource: Elementary Level.
- ✂ University of Alaska Sea Grant: Fairbanks, AK (available online at <http://www.ankn.uaf.edu/curriculum/Tlingit/Salmon/graphics/moonandtides.pdf>)
- ✂ The Tlingit Economic Year (graph) from Juneau Indian Studies Program Elementary curriculum guide
- ✂ Living By the Seasons Poster
- ✂ 5 sets of laminated pictures of salmon, blueberries, salmon berries, high bush cranberries and huckleberries labeled with Tlingit and English names
- ✂ Samples of: smoked salmon, jam/preserved berries
- ✂ Salmon Boy Story: available at http://www.sealaskaheritage.org/programs/Salmon_Boy_Book_web.pdf
- ✂ Winter Clothes
- ✂ Animal Tracking Books
- ✂ Salmon Boy Story
- ✂ Samples of: smoked salmon, dried salmon jam/preserved berries

English Academic Vocabulary

🗨 Natural resource

🗨 Seasons

🗨 Harvest

Steps

Introduction

Gather Students around for “Calendar Time.” Review the months in English. Then, share the Tlingit moon poster with the moons in Tlingit. Ask students to share what they notice about the Tlingit moon poster that is the same or different from our Julian calendar (it’s in a circle; there are also 12 moons/months, etc.). Explain that during each moon, Tlingit people traditionally did



different activities that involved living off the land. Introduce vocabulary words--natural resource: something that is found in nature and is valuable to humans. Ask students what season (period of the year) it is. Review the summer, fall, winter and spring months if necessary and make sure students know what season you are in.

Learning Activities

1) Tlingit Economic Year

Pass out one copy of “The Tlingit Economic Year” for every 2 students. Explain that this poster shows which resources were/are harvested during each month of the year. Direct students to work together to figure out which activities are important in August and September (Berry picking, salmon fishing and herb and root gathering.) Ask students if to share with a partner about a time they did one of these activities. Show students the Living by the Seasons poster and ask them to think about which resources on the poster they have seen outside in our area. Introduce vocabulary and show pictures of natural resources students are likely to see on the trail walk: tleikw (berry), kanat’a (blueberry), kaxwéix (high bush cranberry), was’x’aan tléigu (salmon berry), tleikatánk (huckleberry), xáat (salmon).

2) Trail Walk

Explain that we will be going on a trail walk and that along the way we will be looking for Tlingit resources. Have students make a prediction in their science notebook about what we might find. On the trail walk, stop at certain points to let students look for Tlingit resources. Bring along laminated pictures of Tlingit resources for students to share to help with resource identification. Give students 10 minutes to find a plant or animal sign and draw and label it. Encourage students to do this with 2 different plants and animal signs. Students may draw in their science notebooks or use the activity sheet included at the end of this lesson.



Closure and Assessment

Upon return to the classroom, have students sit with a partner. Ask them these questions and have them talk to their partner to answer them. Then, call on a couple students to answer each question out loud. Questions for Think-Pair-Share: What Tlingit resources did you find on the hike? What do you think it would be like to survive by living off of the land, if there were no grocery stores? How would it be the same/different to how you live now?

Discussion/Wrap-up

After the pair share, have students take 5 minutes to write in their journal about what they observed on the trail walk. Then give students a chance to share with the class. Review Tlingit vocabulary and introduce Haa Kusteeyíx--our way of life. Explain to students that they will be taking two more trail walks to look at Tlingit resources: in the winter and spring.

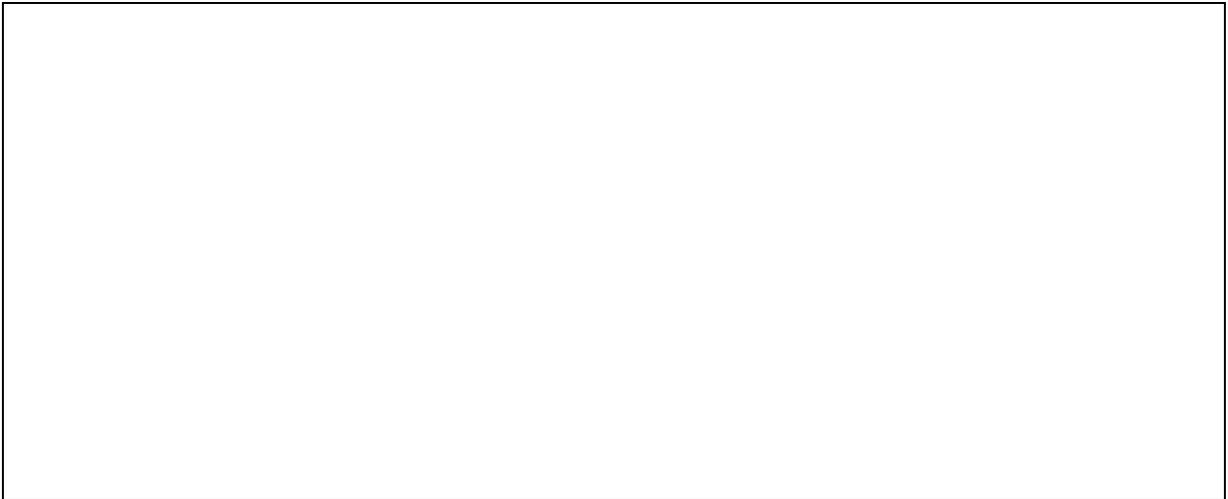


Lesson 1 Student Activity – Tlingit Resources

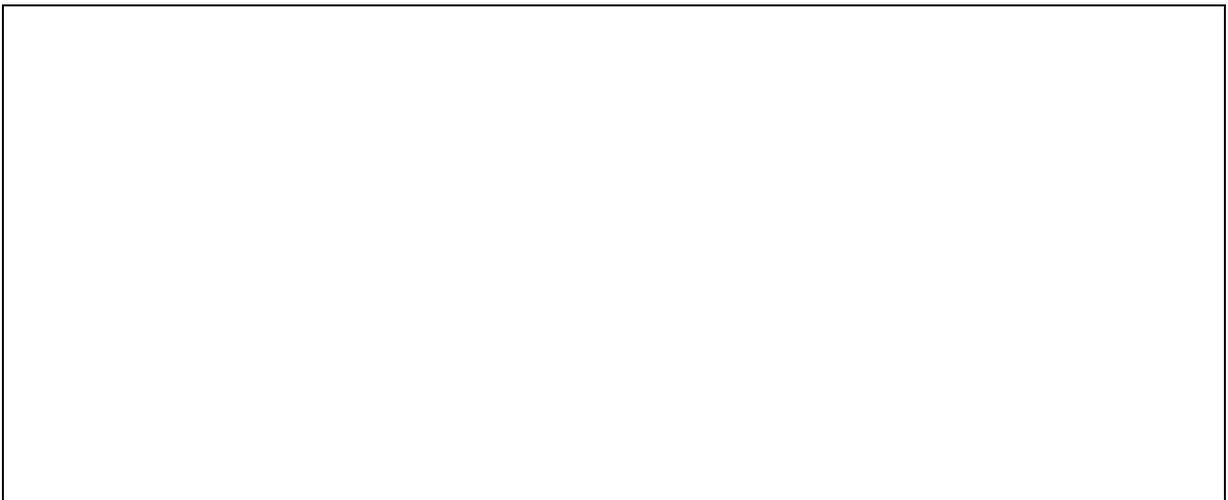
Name: _____ Date: _____

Instructions: Please draw and write the names of 2 plants or animal signs that you found on the hike that may be used by the Tlingit people.

1. Plant or animal name: _____



2. Plant or animal name: _____



Lesson 2

Living by the Seasons: Winter months

Description

In this lesson, students go on a second trail walk to investigate food availability in winter months. Students search for Tlingit foods that they saw in the fall and notice the relative scarcity of food. Students use a Venn diagram to compare what they found on the trail in the fall and what they found in the winter. Students hear the story of Salmon boy, discuss the importance of food preservation and taste preserved salmon and berries.

Alaska Standards	Cultural A1, A2, B1, B3, E1, E2	Language Arts RL 2.1, RL 2.2., W 2.8	Other Science: [3] SA1.1, [3] SA1.2
Essential Questions	How do different plants, animals and people survive the winter?		
Lesson Topic	Tlingit winter activities, food preservation, respect, life cycles of plants and animal.		
Strategies	Observation, research, sorting, classifying, listening		
Objectives	Assessment		
✓ Students will identify seasonal changes in plants and animals.	✓ Venn diagram comparing fall trail walk and winter trail walk findings.		
✓ Students will recognize the importance of preserving foods to last for winter.	✓ Anecdotal notes taken by teacher during small group discussions.		

Duration: 80 minutes (20 minute introduction inside, 30 minute trail walk, 30 minute story/discussion inside)--can be done in one day or multiple days

Materials

- ✂ Living By the Seasons Poster
- ✂ Winter Clothes
- ✂ Animal Tracking Books
- ✂ Salmon Boy Story
- ✂ Samples of: smoked salmon, dried salmon jam/preserved berries
- ✂ Salmon Boy Story: available at
http://www.sealaskaheritage.org/programs/Salmon_Boy_Book_web.pdf



English Academic Vocabulary

🧠 Preserve

🧠 Dormant

🧠 Developing

🧠 Life Cycle

🧠 Nutrition

🧠 Scarcity

Steps

Introduction

Gather students together on the rug/carpet. Review the Tlingit moons and then ask them to remember our fall trail walk and share what they remember. Explain that today, we will be going out on another trail walk and again, we will look for Tlingit resources.

Learning Activities

1) Prediction

Ask students to write in their science notebooks to predict what resources they will find on the trail walk. Ask them to include whether they think we will find the same resources (berries, salmon) that we found on our fall trail walk. Also, ask them to think about what foods they might find outside at this time of year if they weren't able to use a grocery store. After students have written in their journals, share the Living by the Seasons poster. Ask students to think on the hike about why winter is not included on the poster.

2) Trail Walk

Students look for signs of plants and animals that may be of use to the Tlingit people during the winter months. On the trail, be sure to point out blueberry plants and guide students to any animal tracks you see. Weather permitting, have students draw a plant or animal sign they see in their science notebook. **Call students attention to the relative scarcity (a very small supply) of food.

3) Share findings/Complete Venn diagrams in pairs

Back in the classroom, have students share what they found on the trail. Ask them to think about what we found in the fall. Introduce the Venn diagram with a circle for the fall trail walk and a circle for the winter trail walk. Have students work in pairs to complete the Venn diagram for the two trail walks, comparing and contrasting what they observed. When students have completed Venn diagrams, ask each pair to share something that they noticed that was the same or different. Record your students' observations on a large Venn diagram. Talk with students about plants/animals they share that are traditional Tlingit foods, such as deer and rabbits. Ask students if they think it would be easy or hard to find and hunt these animals.



4) Salmon and Berries in Winter

If students do not mention salmon or berries, ask them if they saw them on this trail walk. Then, ask them where they think the salmon and berries are at this time of year. Explain that the salmon that were in the creek have died and their eggs are developing (growing & changing). Adult salmon are out in the ocean. Harvesting the ocean salmon would be difficult at this time of year because of wind and cold. Blueberry plants are dormant (in a resting state without leaves or berries) at this time of year because there is not enough sunlight for them to make food.

Introduce the idea that summer foods need to be preserved (Prepared to last for future use) to last through the winter. Review or introduce the word nutrition (the process of eating the right kind of food so you can grow properly and be healthy) and ask the students to think about how preserving foods for winter would help with nutrition.

5) Story: Salmon Boy

*If possible, invite an elder in to share this story. If not, the book is available online at http://www.sealaskaheritage.org/programs/Salmon_Boy_Book_web.pdf

After the story, ask students to share with a partner they learned from the story. Call on several students to share out loud with the class. Discuss reasons why food preservation was important for survival. Food preservation was critical for survival because there was not enough food available during winter for everyone to eat.

Then, if possible, have students taste smoked and dried salmon and preserved berries, remembering to be respectful.

6) Science Notebooks

Students write words to describe the tastes of salmon and preserved berries in their notebooks.

Discussion/Wrap up: Have students discuss these questions in small groups. What did you notice that was different on today's hike? Why was saving summer foods (preserving) so important for Tlingit people?



Lesson 3

Living by the Seasons: Spring Beach Trip

Description

In this lesson, students visit a local intertidal zone with a Tlingit elder or cultural specialist. Prior to the field trip, students will learn about intertidal food gathering and beach respect protocols. During the field trip, students will work in small groups to identify native beach foods and count different organisms in a designated area. After the field trip, students will graph and analyze their data back in the classroom.

Alaska Standards	Cultural A1, A2, B1, B3, E1, E2	Language Arts RL 2.1, RL 2.2., W 2.8	Other Math 2MD.10 Science: [3] SA1.1, [3] SA1.2
Essential Question	What foods can we find at the beach?		
Lesson Topic	Harvest time at the beach.		
Strategies	Observation, identifying, sorting, graphing		
Objectives	Assessment		
✓ Students will identify 3 or more of the following organisms/native foods at the beach: limpets, chitons, crab, whelks, sea urchins and seaweed.	✓ Anecdotal notes taken by group leader/teacher.	✓ Student data sheets produced in small groups.	✓ Students will work in small groups to create
✓ Students will identify and count the number of 2 or more of the above organisms in a given area using tally marks.	✓ Graphs and analyze their results.		
✓ Students will create a bar graph based on the data they collected at the beach.			

Duration – 3 sessions

- ✓ Session 1: 30 minutes in the classroom
- ✓ Session 2: 1-2 hours at the beach
- ✓ Session 3: 30-40 minutes in the classroom



Materials

- ✂ Harvest Time at the Beach poster
- ✂ Sea Life Identification Cards
- ✂ Coat Hangers stretched into a circle
- ✂ Hand lenses
- ✂ Data collection sheets
- ✂ Graph paper
- ✂ Pencils
- ✂ Story: Raven who went down along the Bull Kelp from Tlingit Moon & Tide, Teaching Resource: Elementary Level, by Dolly Garza

English Academic Vocabulary

- | | |
|--------------|--------------------|
| 🐚 Study site | 🐚 Periwinkle Snail |
| 🐚 Limpet | 🐚 Sea Urchin |
| 🐚 Chiton | 🐚 Seaweed |
| 🐚 Crab | |

Steps

Introduction

Story Title: Raven Who Went Down Along the Bull Kelp (Géesh Daa x woogoodi Yéil)

- ✓ Invite an elder in to tell this story.

Here is a copy of the story...

Raven came to a certain cliff and noticed an open door. He hid from the “old woman who controls the tide” who lives in this cliff. Looking out to sea, Raven saw some bull kelp in the water and flew out to it. He climbed down the kelp to the roots at the bottom of the ocean and found many sea urchins. He brought as many as he could carry back up with him. He began greedily eating his catch, making loud slurping noises. Hearing these slurping sounds, the woman who sat on the spot that controlled the tide asked, “Where did you get those sea urchins?” She knew the tide was not low enough for anyone to find sea urchins. When Raven ignored her, she repeated her question over and over. “Keep quiet, old woman,” Raven said, still eating his treasured sea urchins. But the woman kept up her questioning. After



Raven excited her, he began to prick her with the spines of the urchin. "Stop, Raven, stop," said the old lady.

As she began to move from her spot, the tide began to go down. This is what Raven wanted. He kept poking her and asked mink to tell him when the tide uncovered everything on the beach. Then Raven asked the old woman, "Will you let the tide rise and fall regularly through the months and years?" When she agreed, Raven stopped poking her. Since that time, the tide rises and falls regularly. And the sea urchin has become the mink's food. This is why old ladies have brown spots on their behinds.

Learning Activities

1) Harvest Time at the Beach (In Class)

Share the "Harvest Time at the Beach" poster with students. Ask students to share what they notice about the spring and All Seasons foods. Share photos of Tlingit Spring and year round foods and introduce Tlingit vocabulary,

☞ Eek (beach)

☞ Kees' (tide)

☞ Nees' (sea urchin)

☞ Ts'ix'w (snail)

☞ Shaaw (gumboot/chiton)

☞ Yeil ts' aaxu (limpet)

☞ Yein (sea cucumber)

Explain Beach protocols. Prior to starting their beach exploration remind students to be respectful. Remind them that their goal is to leave the beach in the same condition as it was when they arrived. For example, if anyone turns over a rock to find creatures, they MUST put the rock back in the very same location.

2) Beach Trip

Prior to dividing into small groups, review identification cards and data collection procedures. Students work in small groups to identify native beach foods in a general area. After about 1/2 hour of exploration, students place their round coat hanger on the ground. The area within their coat hanger is their study site. Their job is to identify 3-4 different animals within their study site and tally the number of each animal. One strategy for making the group work more effective would be to have each student in charge of counting one type of animal. Students repeat this process once or twice if time allows.



3) Graphing

In class, students work in their small groups to create a bar graph of their beach data. Students then answer the following questions: Which creature did you find the most? Which creature did you find the least? Did your data change if/when you moved closer or further away from the water?

Closure and Assessment

Groups share their graphs and observations with the class. As a class, discuss what it would be like and what you would need to think about to rely on beach foods. Remind students about reasons why certain foods are only collected at certain times of the year (Paralytic shellfish poisoning, animal life cycles).

Resources/Activity Sheets

Garza, Dolly. 1999. Tlingit Moon & Tide, Teaching Resource: Elementary Level. University of Alaska Sea Grant, Fairbanks, Alaska

Juneau Indian Studies Program. 1985. Living by the Seasons: Teacher's Guide. Juneau School District, Juneau, Alaska

Newton, Richard G. and Moss, Madonna L. 2009. Haa Atxaayi Haa Kusteeyix Sitee, Our Food is our Tlingit Way of Life: Excerpts from Oral Interviews. United States Department of Agriculture: Forest Service, Alaska Region, Juneau, Alaska



Beach Data Collection Sheet

Names: _____ Date: _____

Plant or Animal Name	Tallies	Number





Red Huckleberry

Tleikatánk





Blueberry

Kanat'a





High Bush Cranberry

Kaxwéix





Pink Salmon

Cháas'





Salmonberry

Was'x'aan tléigu

