



Place-Based Geospatial Education for Alaska
Teacher and Student Guide
Grades 6-12

MapTEACH

PLACE-BASED GEOSPATIAL LEARNING
AND APPLICATIONS IN ALASKA



Mapping Technology Experiences with Alaska's Cultural Heritage



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Digital versions of this Teacher and Student Guide, as well as additional maps, PowerPoint Presentations, Software, and Data are available on DVD or online from MapTEACH at:

www.mapteach.org

MapTEACH: PLACE-BASED GEOSPATIAL LEARNING AND APPLICATIONS IN ALASKA

MapTEACH (Mapping Technology Experiences with Alaska's Cultural Heritage) is an educational curriculum for middle and high school students designed to help them both (1) understand the physical and cultural features of their environment, and (2) use mapping technologies to enhance and portray that new understanding. As such, it emphasizes the integration of three focus areas: geoscience, local landscape knowledge, and geographic information science (GPS, GIS and remotely sensed imagery). MapTEACH gives Alaskan students the opportunity to make a connection between traditional ways of viewing the landscape, scientific ways of making observations about the landscape, and the process of using cutting-edge information technologies to gather and disseminate information about the landscape. At its core, this curriculum is place-based and interdisciplinary in nature, and seeks to connect students, teachers, community members and scientists in an exploration of the local landscape from multiple perspectives. Lessons are organized into the following sections for ease of use:

Section 1: Place Names and Landmarks

These lessons seek to answer the question "How do you know where you are?" by grounding students in an appreciation of their own mental maps and then expanding this to include understanding and documentation of the place names and landscape knowledge of local experts. This work is based on the belief that there are many ways to "know" where you are and that each way of knowing contributes to our overall understanding of the landscape.

Section 2: Remote Sensing and Geology

These hands-on lessons introduce students to remotely sensed imagery by exploring local air photo imagery, stereo pair photographs and topographic maps and by using these maps and imagery to evaluate river erosion and change over time. These lessons are not only interesting and relevant in their own right, but provide a solid introduction to the imagery used in several of the GIS lessons.

Section 3: Global Positioning System

These lessons guide students through the basic uses of handheld Global Positioning System (GPS) units by finding and placing geocaches, documenting waypoints, and downloading location information into a computer in order to create a map of a place or a journey.

Section 4: Geographic Information Systems

These lessons enable students to use GIS mapping technology to enhance and portray their understanding of the world around them by: (1) exploring the fundamental concept that maps are made of layers of data and a computer

allows us to stack these layers in many different ways; and (2) manipulating existing data layers and adding their own data to generate original maps of personal, cultural or scientific interest.

As can be seen in Tables 1 – 4 below, each section has a coherent set of goals and, with a few exceptions, lessons in each section are sequential so that they can be worked through in part or in whole in the order presented. In practice, however, the lessons are intended to be used in a variety of combinations, mixing and matching lessons from several sections to achieve desired learning outcomes and timeframes. Table 5 demonstrates how different elements of this curriculum might be adapted to suit unique classroom needs by describing several potential lesson sequences.

Several of the lessons included in the MapTEACH curriculum involve making digital maps using GPS and other data collected locally by students. Satellite imagery can be a useful and informative base map layer upon which students can display their own data. It is not feasible for MapTEACH to be able to anticipate every possible area that any given student project would need satellite base map data for, therefore we have developed two procedures so teachers (or advanced students) can generate their own image layers for use in their local-area digital mapping projects. These procedures can be found in the Appendix.

We expect and hope that as you become more familiar with this curriculum, you will find new ways to use and adapt these lessons and make them your own. We hope you will share these adaptations with us and also let us know what we might do next to make this curriculum more responsive to your needs.

Table 1 – Place Names and Landmarks Lessons

| Lesson Name | Lesson Summary |
|--|---|
| PNL 1 - Mental Maps | This activity introduces the essential question for the unit: "How do we know where we are?" and sets the stage for the unit through a mental map activity and class discussion. |
| PNL 2 - Simon Paneak Sketch Maps | Students examine and discuss the sketch maps and life story of Simon Paneak, a Nunamiut hunter from Anaktuvuk Pass, as an example of the extensive landscape knowledge often held by mature Alaska Native hunters and travelers. |
| PNL 3 - Working with Local Experts | Students become more familiar with local landmarks, place names and stories as they listen to and work with a local landscape expert. |
| PNL 4 - What's in a Name? | Students study an Inupiaq place names map of the John River area, read the accompanying stories, discuss their significance and then brainstorm a list of place names for their own area. |
| PNL 5 - Picking Points off a Paper Map | Students identify place names or landmarks on a topographic map and use TopoZone, a web-based mapping program, to determine the latitude and longitude of these sites. These coordinate locations can then be used in digital map-making or way-finding with a GPS. |
| PNL 6 - Place Names Field Trip | Students complete classroom preparation and go on a field trip to document local place names and landmarks. |

Table 2 – Remote Sensing/Geology Lessons

| Lesson Name | Lesson Summary |
|--|--|
| RSG 1 – Air Photo Interpretation | This activity introduces students to color infrared (CIR) air photo interpretation. Students examine a CIR air photo of their community, identify prominent features and interpret what those features might be through use of an air photo key. |
| RSG 2 - Seeing in Stereo and Route Finding | At stations set up around the room, students view and interpret stereo pair air photos in three dimensions (3-D), compare them with topographic maps of the same area and determine which route is "best." Students also discuss the advantages and disadvantages of each image with regard to finding your way. |
| RSG 3 – Evaluating Erosion | Students examine several air photos of Alaskan rivers and identify areas of erosion and deposition. |
| RSG 4 – Change Over Time | Students study a chronological series of images and maps of Fairbanks or Nenana, looking for evidence of changes over time |

Table 3 – Global Positioning System Lessons

| Lesson Name | Lesson Summary |
|--|---|
| GPS 1 – Introduction to GIS with Geocaching | Students learn how to use GPS units to perform a variety of tasks. They learn how to: adjust the settings of the units; enter and mark waypoint information; find geocaches; and place a geocache. |
| GPS 2 – Field Data Collection for GPS Data and Digital Photo Documentation | Students go on a field trip to collect geospatial data and other useful information to document sites of interest they encounter. |
| GPS 3 – Using Your Own Field Trip Data | Students make GIS maps using data they have collected on a local field trip with their GPS units and digital cameras. They download their photos and GPS waypoints into a CSV file and then make a map of their sites that includes photos they took on their field trip. |
| GPS 4 – Hotlinking to a Field Trip Data Document | Students create Word documents describing their field trip sites and then learn how to hotlink the points in a GIS project to these Word documents thus creating an interactive map. |
| GPS 5 – Using Track Log Data | Students make GIS maps using track log /trail data they have collected on a local field trip with their GPS units and digital cameras. |

Table 4 – Geographic Information Systems Lessons

| Lesson Name | Lesson Summary |
|--|---|
| GIS 1 – Many Layers Make a Map | Students brainstorm a list of information portrayed on topographic maps sort that information into categories or themes and then trace a few layers onto mylar in imitation of GIS layers/themes. |
| GIS 2 – Introduction to GIS Using AEJEE | Students are introduced to the use of GIS as a way to make customized maps. Students learn to: add layers, set projection, modify the appearance of the map and label features on it. |
| GIS 3 – Working with GIS Data: View, Label, Measure and Identify | Students learn some of the key qualities of GIS that make it more dynamic and powerful than paper maps. They learn new ways to view the information held in a GIS, and begin asking questions and solving problems. |
| GIS 4 – Maps with Raster Images I: Statewide Shaded Relief | Students work with a shaded relief image of Alaska and answer questions about what they can observe. |
| GIS 5 – Maps with Raster Images II: Local Shaded Relief Base Map | Students use a shaded relief raster layer and several vector layers to make a base map, centered on their community. The base map they construct during this exercise will be used as a starting point for several future GIS lessons. |
| GIS 6 – Maps with Raster Images III: Satellite Imagery | Students use GIS to load and view true-color and enhanced satellite images of Alaska. Based on their knowledge of Alaskan geography and recent image interpretation experiences, they interpret features found in the satellite images. |
| GIS 7 – Community GIS: Geologic Hazards | By choosing an Alaskan community as a starting point, students investigate and map geologic hazards that may affect that community directly. In turn, students begin to see how the geology and climate of a place sets the stage for specific hazardous events. |
| GIS 8 – Community GIS: Natural Resources | Geological resources often play a critical role in the economies of Alaskan communities. During this lesson, students investigate the distribution of resources regionally and locally. The maps students make can help them explore current and potential resource use by their project communities. |
| GIS 9 – Community GIS: Land Management | Who decides what is done with land in Alaska? Using GIS tools and information, the students investigate land ownership and management units and the distribution of resources beginning with their project community and expanding outward. The maps students make can help them explore current and potential resource use by their project communities. |

| | |
|---|--|
| GIS 10 – Good Map – Bad Map | The teacher reviews basic cartographic guidelines, and then shows an example AEJEE map that is cartographically incorrect, incomplete, and poorly designed. Students critique the map. A correct, complete, and attractively designed map is then reviewed for comparison. |
| GIS 11 – Community GIS: Map Layouts | Beginning with the base map created in GIS 7 -Community GIS: Geologic Hazards, students make map layouts that can be saved and printed as paper maps and used for reports or presentations. |
| GIS 12 – Adding Coordinate Locations into a GIS | Students use Serpentine Hot Springs on the Seward Peninsula as an example site to learn how to manually add coordinate data into a GIS project by creating a <i>comma separated values</i> file (.csv) and importing it into an AEJEE project |
| GIS 13 - Hotlinking | Students modify the Serpentine Hot Springs csv file created in GIS 12 as an example site to learn how to hotlink data in a GIS project to a website about the hot springs, thus creating an interactive map. |
| GIS 14 – Change Over Time – Shorefast Sea Ice | Students use GIS to analyze changes in the extent of shorefast sea ice. They extract information from multi-year and single year data and look for trends over time. |

Table 5 - Sample MapTEACH Lesson Groupings

| Goal | Time (Hours) | Field Work | Equipment | Lessons |
|--|--------------|------------|---|---|
| Brief introduction to Native place names | 3 | No | None | PNL 1 – Mental Maps PNL 2 – Simon Paneak Sketch Maps PNL 4 – What’s in a Name? |
| Brief introduction to GPS receivers | 3 | Yes | <ul style="list-style-type: none"> • GPS Receivers • Digital Cameras | GPS 1 – Introduction to GPS with Geocaching GPS 2 – Field Data Collection Using a GPS and Digital Camera |
| Brief introduction to GIS | 3 | No | Computers* | GIS 1 – Many Layers Make a Map GIS 2 – Introduction to GIS using AEJEE GIS 3 – Working with GIS Data |
| Landscape change over time | 4 | No | Computers* | RSG 1 – Air Photo Interpretation RSG 4 – Change Over Time GIS 2 – Introduction to GIS using AEJEE GIS 14 – Change Over Time – Shorefast Ice |
| Using GIS to create local maps | 8+ | Yes | <ul style="list-style-type: none"> • Computers** • GPS Receivers • Digital Cameras | GIS 1 – Many Layers Make a Map GIS 2 - Introduction to GIS using AEJEE GPS 1 – Introduction to GPS with Geocaching GPS 2 – Field Data Collection Using a GPS and Digital Camera GIS 10 – Good Map/Bad Map GPS 3 – Using Your Own Field Trip Data GPS 4 – Hotlinking to a Field Trip Document |
| Using GIS for community planning | 10 | No | Computers* | GIS 1 – Many Layers Make a Map GIS 2 - Introduction to GIS using AEJEE GIS 3 – Working with GIS Data GIS 4 – Statewide Shaded Relief GIS 5 – Local Shaded Relief GIS 6 – Satellite Images GIS 7 – Geologic Hazards GIS 8 – Natural Resources GIS 9 – Land Management GIS 10 – Good Map/Bad Map GIS 11 – Map Layouts |

* Loaded with AEJEE software and data

** Loaded with AEJEE software and GPS Babel

| Goal | Time (Hours) | Field Work | Equipment | Lessons |
|--|--------------|------------|--|---|
| Using GIS to create local place names maps | 15 | Yes | <ul style="list-style-type: none"> •Computers** • GPS Receivers • Digital Cameras | PNL 1 – Mental Maps PNL 2 – Simon Paneak Sketch Maps PNL 3 – Working with Local Experts PNL 4 – What’s in a Name? GPS 1 – Introduction to GPS with Geocaching GPS 2 – Field Data Collection Using a GPS and Digital Camera GIS 1 – Many Layers Make a Map GIS 2 – Introduction to GIS using AEJEE PNL 6 – Field Trip Guide GIS 10 – Good Map, Bad Map GPS 3 – Using Your Own Field Trip Data GPS 4 – Hotlinking to a Field Trip Document |

MapTEACH:

Place Names and Landmarks (PNL)

PNL Lesson 1
INTRODUCING THE UNIT AND MENTAL MAPS
TEACHER INFORMATION

Lesson Summary: This activity introduces the essential question for the unit: “How do we know where we are?” and sets the stage for the unit through a mental map activity and class discussion.

Objectives: Students will understand that mental maps are “maps of the mind;” and that they are important tools because they are the maps that we think with.

Estimated Time: 45 minutes

Correlation to Alaska Standards:

Geography A Make and use maps, globes and graphs to gather, analyze, and report spatial (geographic) information.

BACKGROUND FOR THE TEACHER

When most of us think of finding our way or knowing where we are, we think of paper maps—the street, topographic and shaded relief maps of our classrooms, or the digital images so prominent on televisions and computers. But when it comes to knowing where you are in the world, we rarely think first of the maps we have in our heads; the mental maps that do the daily and unseen work of helping us know where we are.

Such mental maps are models in our mind—the images and memories of places and events that we carry in our heads. These models enable us to know quite well where we are or in what direction to go without consulting a physical map. We have mental maps of our room, the local store, our town, other places we have visited and even places we have never been to but about which we have acquired information. Mental maps are important geographic and cultural tools because they are one way that we make sense of the world. They help us store and recover information and connect with places, events, environments and people. They are the maps we think with.

Mental maps help individuals navigate but can also be shared with others to communicate the location of something: “It’s directly across the street from the general store.” This relational system works well as long as the landmark descriptions are distinct and sufficient for the listener to navigate. Landmarks can be as prominent a feature as a mountain or river, or as common as a stop sign or a building of particular color. Landmarks can also be places of historical, aesthetic or cultural importance.

It is important to note that when students sketch their mental maps, they are attempting to capture a rich, varied and multi-dimensional set of images on paper. Depending upon their prior experience with maps, their sketches may or may not be accurate to scale, location and cardinal direction. That's okay. The point of this lesson is simply to help them become aware of their mental maps and to realize how valuable they are. As map work proceeds, their knowledge of place will change and they may want to re-draw their mental maps several times to reflect this evolving understanding.

MATERIALS

- Pencils
- Writing and drawing paper
- Erasers
- Tape

INSTRUCTIONAL PROCEDURES

Gear-Up

- Ask students: "How do you know where you are? If you were going from your bedroom to your neighbor's house, how would you find your way?" Ask them to picture the route in their mind and then listen as a few others explain their routes.
- Ask as many questions and do as much probing as necessary to get students discussing what they see in their mind. Don't accept "I just know" for an answer. Listen for landmarks, spatial references and descriptions. Then explain that geographers call these internal images "mental maps," and explain what a mental map is.
- Expand the distance of this imaginary trip to something a little more complicated but still within their reach (for example, from school to the store, the store to home and then home to church) and explain that their job is to explain to outsiders how to get to there. They can either draw a map or write written directions that explain the route.

Explore

Provide each student with a pencil and with writing or drawing paper. If they choose to draw, explain that this is not about creating a beautiful map, but about trying to show how to get from here to there.

Generalize

- Ask student volunteers to either read their directions or show their maps to the class (and tape maps to the wall next to one another for comparison in the next step).
- As students are sharing, start a large class list of landmarks used (houses, stop signs, streets, stores, mountains, rivers, etc.).

- After volunteers have shared their directions and/or maps, guide students in a comparison of maps asking questions such as:
 - How are these maps alike (area and features shown, detail, spatial arrangement)?
 - How are these maps different?
 - What places were chosen most frequently as landmarks or references and why?
 - Were the written directions or drawn maps more helpful and why do you think so?
- Reinforce the idea that we generally know where we are because we have mental maps to think and navigate, and that these mental maps are:
 - Formed from our experience
 - Contain useful geographic and cultural information
 - Needn't be standardized to be valuable.

Apply/Assess Options

Journal entry prompt: Think of someone you know who travels your area extensively for hunting, fishing, trapping, etc. What do you think their mental map might look like? What kinds of landmarks might they use? How might their map be different from yours and why do you think so?

MORE EXPLORATIONS

- Narrow or enlarge the mental map area (for example, the classroom, school yard, state of Alaska) or ask all students to draw a mental map of the area you are about to study. For either of these extensions— and before students start drawing, —have them make a list of the places and things that they want to include on the map. Have them think about places they usually go, places where friends or relatives live and favorite places. How do they get to these places (roads, paths, trails, shortcuts)? What kinds of things do they see along the way? What kinds of reference points (landmarks) do they use for orientation?
- Create a large, classroom mental map, including important landmarks that have been identified. (Note: classroom negotiation of a common map can be very interesting and also very time-consuming.)
- Provide time throughout the unit for students to enhance/change their sketch maps to reflect new understanding.
- Invite in a local expert who has traveled your area extensively to share his/her mental map and stories.

TEACHER REFERENCES

University of Waterloo. 2003. "The Nature of Maps." Available online at: <http://www.fes.uwaterloo.ca/crs/geog165/maps.htm#Recommended%20Readings>

PNL Lesson 2
SIMON PANEAK'S SKETCH MAPS
TEACHER INFORMATION

Lesson Summary: Students examine and discuss the sketch maps and life story of Simon Paneak, a Nunamiut hunter from Anaktuvuk Pass, as an example of the extensive landscape knowledge often held by mature Alaska Native hunters and travelers.

Objectives: Students will understand that mental maps can be highly detailed and sophisticated images of the landscape that aid in navigation and reflect a sense of who people are in relationship to place.

Estimated Time: 1 hour

Correlation to Alaska Standards:

- Cultural E-2 Understand the ecology and geography of the bioregion they inhabit.
- Geography A Make and use maps, globes and graphs to gather, analyze, and report spatial (geographic) information.
- Geography B Utilize analyze, and explain information about human and physical features of places and regions.

BACKGROUND FOR THE TEACHER

Alaska Native people have navigated the land for thousands of years using extensive mental maps. Such travel was necessary in order to secure food and other resources, and it demanded not only an intimate knowledge of the terrain, but knowledge of when and where to go in order to be most successful.

Productive travel required the sharing of information between hunters and family groups, with the result that a rather astonishing array of places, trails and landscape features had names. These names were learned through personal experiences and stories and helped people orient themselves with regard to landmarks, served as guides for travel, marked resource areas or places of human activity, commemorated historical events, and forged a permanent and identifiable bond with the land. With this travel and attentiveness to the landscape, came an ability not only to know where you are and how to travel safely on the land, but a sense of who you are in relationship to the land.

As you can see by reading the handout *About Simon Paneak* and by looking at his maps, Simon Paneak exemplified the landscape knowledge necessary for a Nunamuit hunter to provide food for his family and to survive in a harsh

environment. He was unusual because he could both read and write English and because he worked closely with scientists and social scientists. He drew many of these maps to illustrate written stories of his travels. These stories and maps are compiled in books by John M. Campbell (see Teacher References). We use his maps and story because they are extraordinary examples, but also because they are published and accessible. If you have access to similar maps or landscape experts in your community, please work with them instead.

MATERIALS

- Class list of landmarks from PNL Lesson 1
- Copies of five different Simon Paneak maps grouped in packets such as: Packet 1 - Maps 1, 2 and 3; Packet 2 - Maps 1, 3 and 4; Packet 3 - Maps 1, 4 and 5; and Packet 4 - Maps 1, 2 and 5
- Copies of handout *About Simon Paneak*
- Copies of Student Exercise Sheet
- List of class landmarks from PNL Lesson 1 and/or composite map of local community if created in PNL Lesson 1
- Chart paper
- Wall map of Alaska
- Copies of topographic maps *Simon Paneak East* and *Simon Paneak West*. These are large (~ 2' x 2') composite topographic maps of the area encompassed by Paneak's sketches. JPEG images of these maps are in the appendix of the MapTEACH DVD or available for download from our website but require a large format printer or plotter. The following USGS 1:250,000 quadrangle maps may be used instead of the MapTEACH composite maps:

Killik River, Survey Pass, Wiseman and Chandler Lake. These USGS maps may be obtained from:

Map Office, Geophysical Institute
University of Alaska Fairbanks
903 Koyukuk Dr.
P.O. Box 757320
Fairbanks, AK 99775-7320
(907) 474-7598

INSTRUCTIONAL PROCEDURES

Gear-Up

- Review the class list of landmarks and ask students to share their journal entries from PNL Lesson 1. ("Think of someone you know who travels your area extensively for hunting, fishing, trapping, etc. What do you think their mental map might look like? What kinds of landmarks might they use? How might their map be different than yours and why do think so?")

- Explain that students are about to study some sketch maps drawn by Simon Paneak, a Nunamiut hunter from Anaktuvuk Pass, and point out Anaktuvuk Pass on a map. Explain that their job will be to make some observations of his sketch maps and to try to generally figure out what the maps represent; then to think about what these maps reveal about Simon Paneak.
- Group students in pairs and provide each pair with a map packet. As a class, guide students through observations/inferences of Map 1 using the questions in each column below.

| Map Number | Features (What kinds of features are shown on the map? Name at least five.) | Map Orientation (What clues are on the map that help you understand direction?) | Map Theme (What is the big idea that Simon Paneak wants to show?) |
|-------------------|---|--|---|
| #1 | <ul style="list-style-type: none"> • Hills • Rivers and creeks • Lakes • Fishing spots • Old trees • Anaktuvuk Village • Bluff | <ul style="list-style-type: none"> • Creeks flow vertically between top and bottom of page (dendritic pattern indicates creeks flow from top to bottom of page) | Places to fish! |

- Give each student pair a data sheet and ask them to carefully examine the maps; paying attention to what kinds of features are shown, how places are named, and what the maps reveal about the landscape and about the man who drew them. Ask students to record their observations and write down specific examples to support their analysis.

Explore

Provide time for students to carefully study the two maps and record information. (If time permits, allow students to trade maps and analyze more than two.)

Generalize

- Ask volunteers from each group to share their observations and inferences about each of the maps and record them on chart paper. (Make sure that each group has a chance to contribute their observations.)
- Help students resolve some of their questions by referring to the class topographic map of the area. (For example, which way is north on this map? Which way is the water flowing? What kind of country is this? What is a continental divide? Etc.) Or, if time permits, provide student pairs with a topographic map of the area and ask them to resolve their questions.
- Discuss what these maps reveal about Simon Paneak. Who do students suppose he was? What was his life like? How did he come to be able to draw such detailed maps?

- Explain who Simon Paneak was (or ask students to read "About Simon Paneak"). Refer to the class topographic map to show and talk about the amount of country represented by these maps.
- Talk about how much people are traveling today. By what means? What might our mental maps be like today in comparison to the old days?
- Post the class landmark map (from PNL Lesson 1) and ask if, after looking at Paneak's maps, there are any landmarks or features they would now like to add to the class list?

Apply/Assess Options

Journal entry prompt: What was the most interesting thing that you learned about Simon Paneak's maps? Why was it interesting?

MORE EXPLORATIONS

- Provide students with USGS Topographic Maps (1:250,000) and have them find and trace or label Paneak's landmarks and sketch map routes on the topographic map. (Note: some places will not be identified on the topographic map and spellings may be different.) Discuss. (Relevant USGS 1:250,000 maps are: Killik River, Alaska; Survey Pass, Alaska; Wiseman, Alaska; and Chandler Lake, Alaska.)
- Maps 4 and 5 used in this lesson are illustrations from "Story About Traveling Back in 1940," written by Simon Paneak (Campbell, 2004, pp. 85-97). Reading this story would help students better understand the significance of the maps and of Simon Paneak's remarkable life.

TEACHER REFERENCES

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Campbell, John Martin. 2004. *In A Hungry Country, Essays by Simon Paneak*. Fairbanks: University of Alaska Press.

Name: _____

Lesson 2
SIMON PANEAK'S SKETCH MAPS
STUDENT EXERCISE

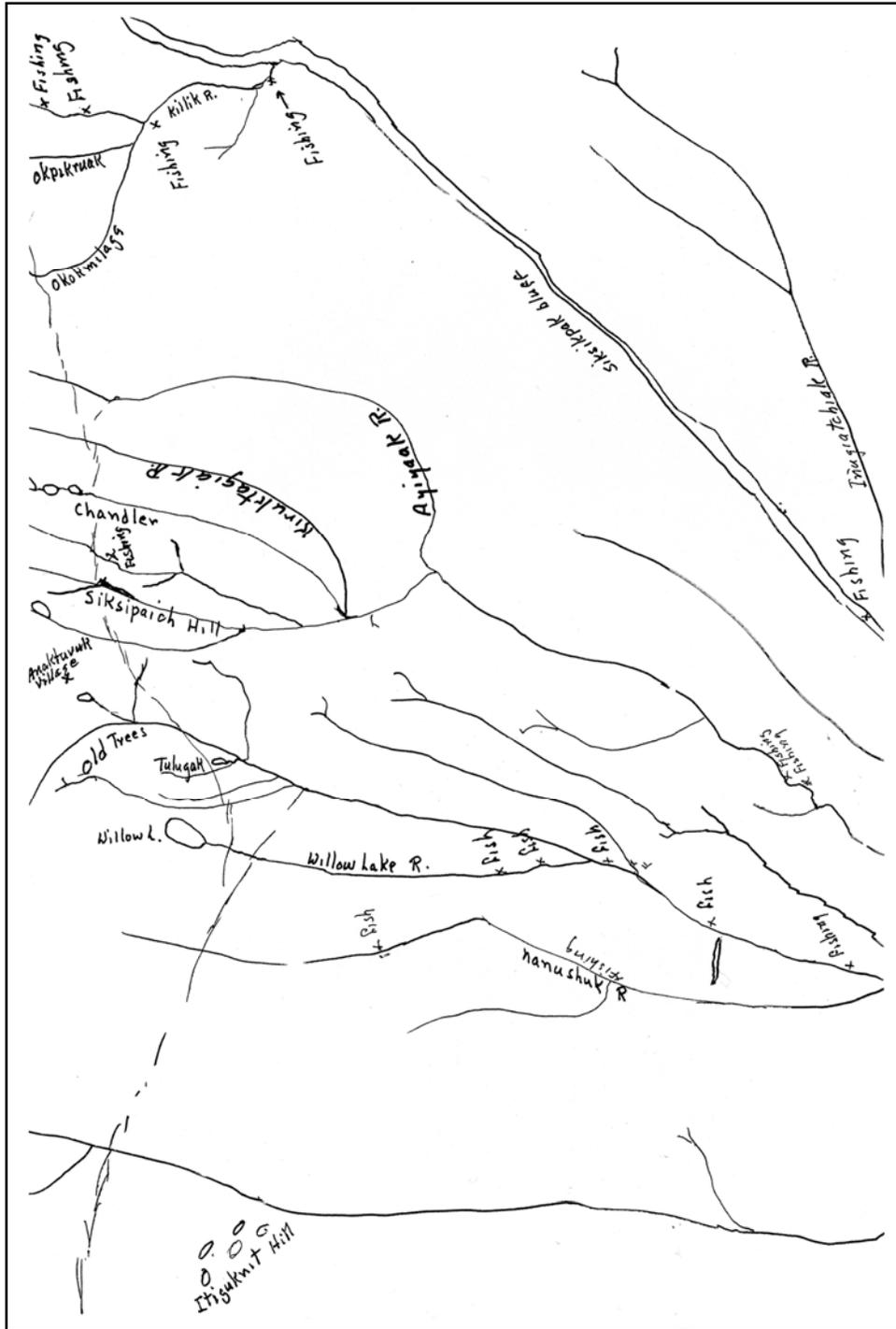
Carefully observe at least two of the maps drawn by Simon Paneak. For each map, answer the following questions.

| Map Number | Features (What kinds of features are shown on the map? Name at least five.) | Map Orientation (What clues are on the map that help you understand direction?) | Map Theme (What is the big idea that Simon Paneak wants to show?) |
|-------------------|---|---|---|
| #1 | <ul style="list-style-type: none"> • Hills • Rivers and creeks • Lakes • Fishing spots • Old trees • Anaktuvuk Village • Bluff | <ul style="list-style-type: none"> • Creeks flow vertically between top and bottom of page | Places to fish! |
| | | | |
| | | | |

What can you infer about Simon Paneak from these maps?

If you could ask him one question about these maps, what would it be? What do *you* wonder about when you look at them?

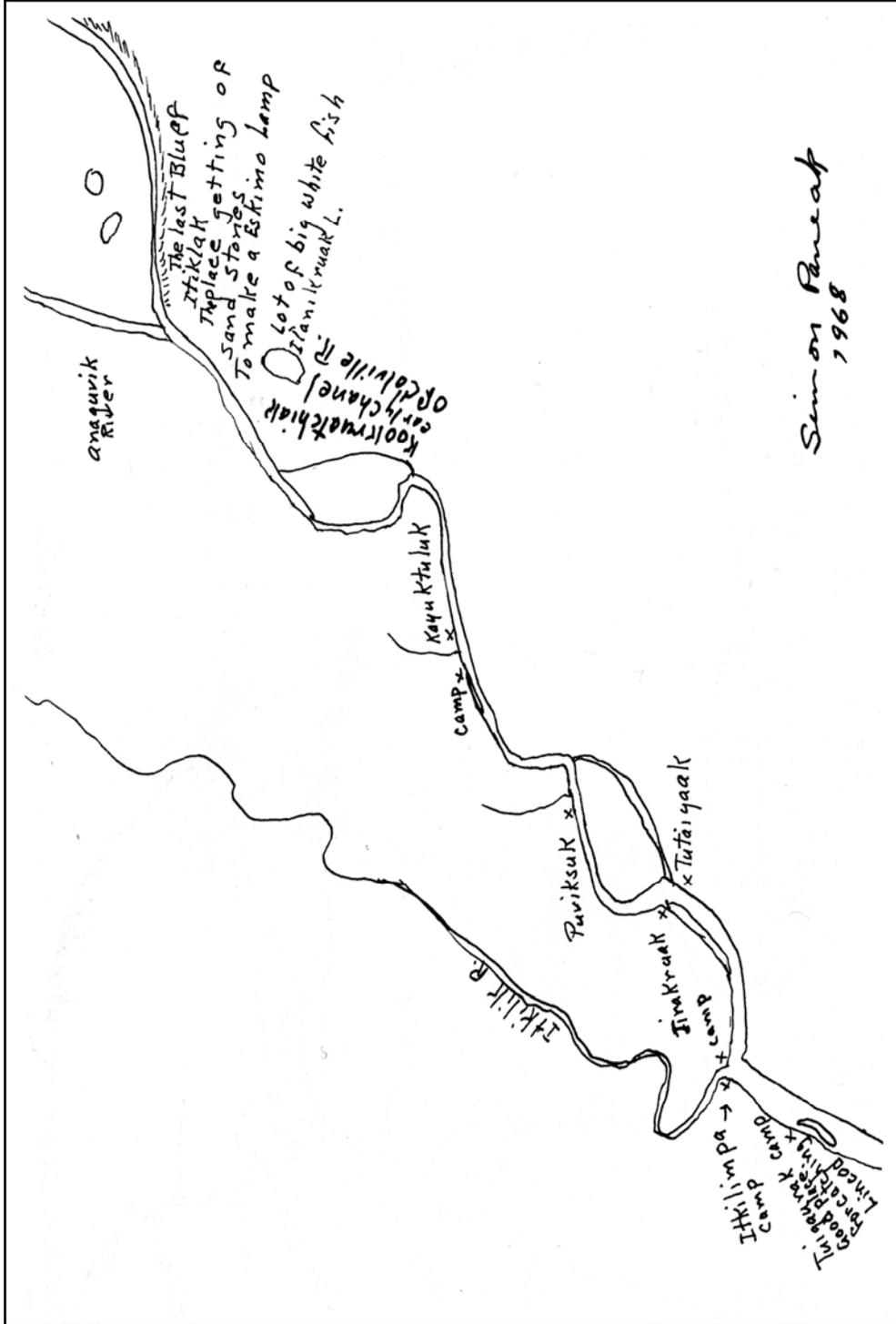
Courtesy of John M. Campbell (1998) Plate 32 Plate 59



Map 1

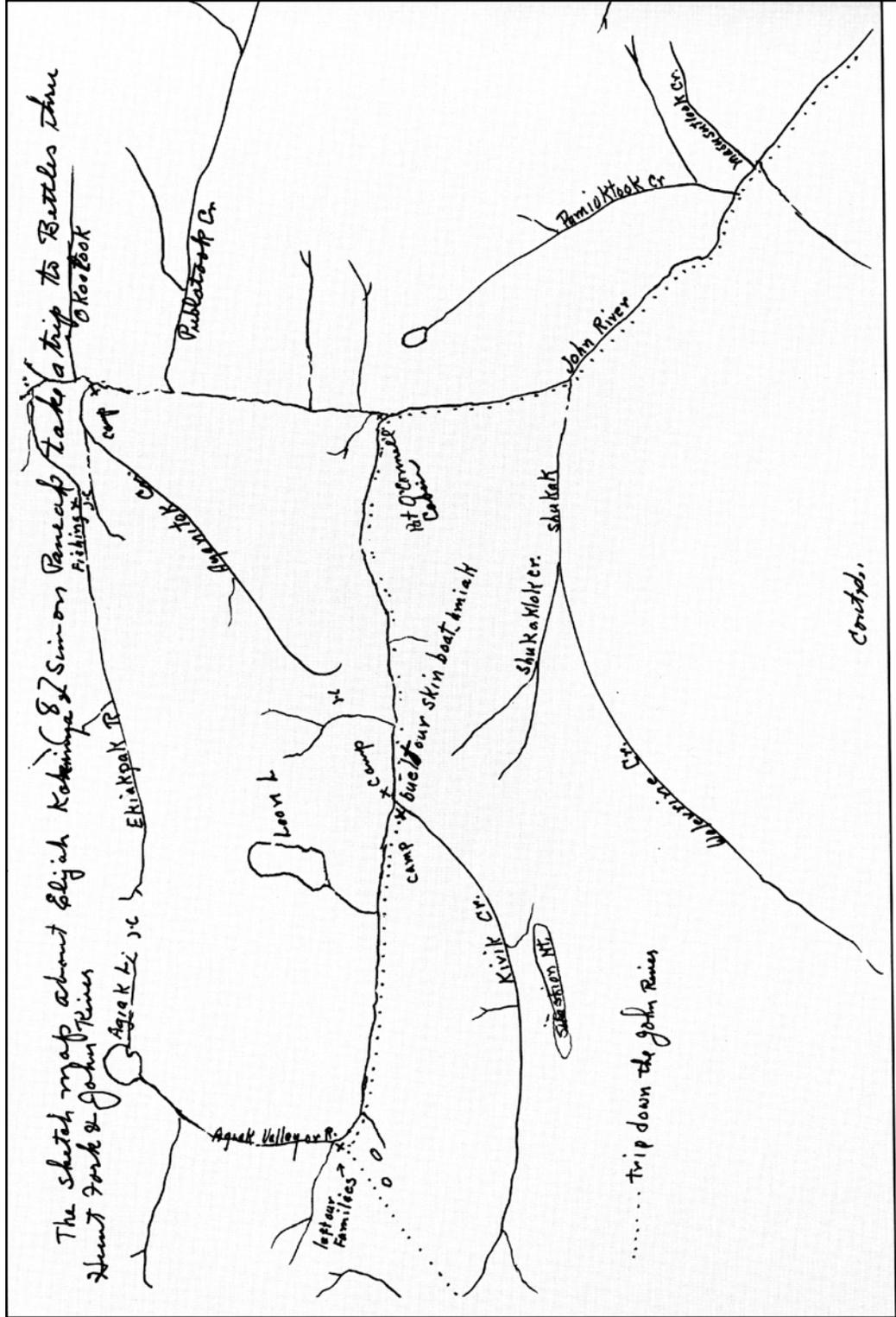
Courtesy of John M. Campbell (1998) Plate 60

Map 3



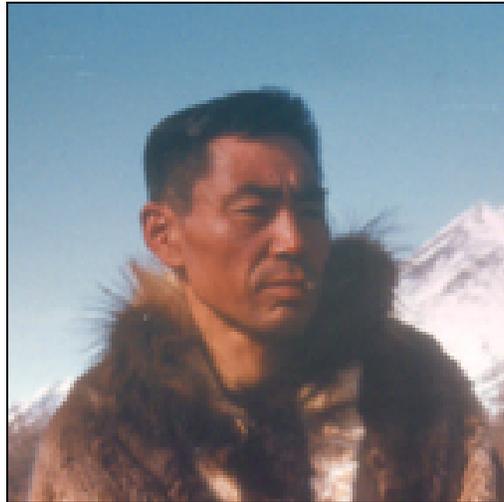
Courtesy of John M. Campbell (2004) Figure 38

Map 5



About Simon Paneak (Panniaq)

Courtesy of Simon Paneak Museum
<http://www.north-slope.org/NSB/55.htm>



Simon Paneak (Panniaq)
1900-1975

Simon Paneak was born in the spring of 1900 near the Killiq River valley of the north central Brooks Range, a mere 15 years after the very first outside explorers reached the area in the winter of 1885. He was the youngest of 6 children raised by his parents Tunganna and Kiktugiaq, to be a Nunamiut hunter, an inland Eskimo, born into the tradition of a highly mobile big game hunting society based upon the taking of caribou.

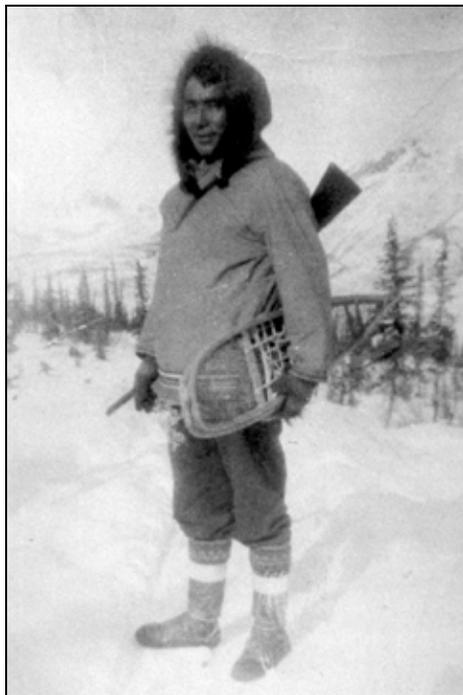
As a young boy, Simon found himself caught up in a torrent of social and historic events that eventually swept his family and his people from their mountain homeland and cast them upon the shores of the Arctic Ocean as refugees from starvation and disease. At the age of 6 or 7 he witnessed the unraveling of an ancient way of life as the caribou herds upon which his people depended failed, bringing repeated years of famine while waves of newly introduced diseases killed many others.

Driven by hunger and the need to seek relief, most surviving Nunamiut families moved coastward where they had access to trading posts and, occasionally, jobs. Over the next 20 years and more, while living along the arctic coast Simon grew into an active and robust hunter, even learning to read, write, and speak English. These were years when people largely supported themselves by trapping, at the height of the Arctic Fur Trapping Industry. With the collapse of this livelihood in the wake of the great depression, Simon, now in his thirties, became part of a movement of highly motivated and traditionally oriented families who determined

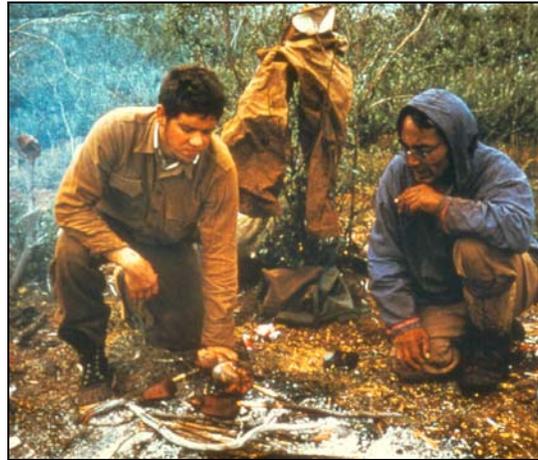
to return inland to resume their old way of life. It was a return made possible by the recovery of the caribou herds upon which they were dependant.

1943 saw first air contact with the Nunamiut when pioneer bush pilot Sig Wein encountered several families at Chandler Lake. Over the next few years Wein periodically re-supplied the Nunamiut and was instrumental in convincing the Chandler Lake and Killiq River families to relocate to the broad, open Anaktuvuk Valley where he could guarantee regular air service. Once air service was established, visiting scientists from many different fields began making their way to the Nunamiut people to study them and to learn from them. It was through his involvement with these researchers that Simon became well known to the outside world.

For nearly the next 30 years he worked with many scientists; among them botanists, biologists, geologists anthropologists and archaeologists who quickly came to recognize that he was a very bright and capable man. Simon's ability with the English language and his obvious intelligence vaulted him to prominence among the scientific community. So much so that many first rank and prominent scientists such as the noted Arctic Biologist Laurence Irving, quickly came to depend upon the experience, insight and judgment of this man. As Irving keenly appreciated Simon's knowledge, understanding and mastery of the natural world in which he lived, rivaled, if not exceeded, in some respects, that of professional biologists.



Simon the active young hunter.



*Simon working with Nicholas J. Gubser,
foremost ethnographer of the Nunamiut.*

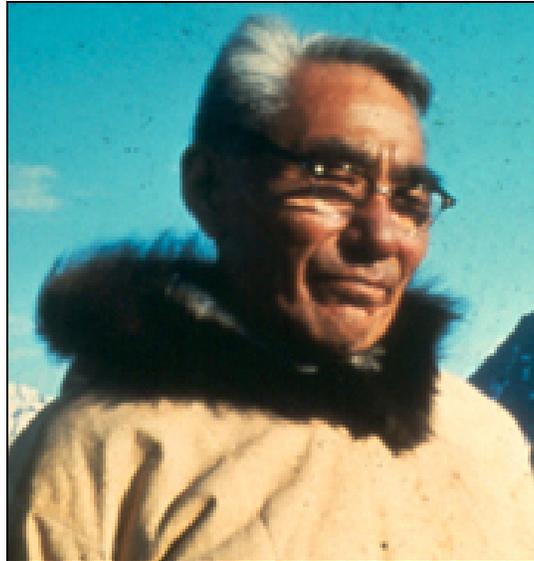
Nevertheless, it bears noting that within his own community, and among his own people, this level of knowledge and competency was, of necessity, commonplace. It was in fact, but a portion of what a mature Nunamiut hunter was expected to know and master in order to survive and support his family in the arctic environment. Several other Nunamiut elders, men a generation senior to Simon knew all of this and more, had they been asked, but Simon's facility with English was key in his attaining prominence.

In addition to the world of nature, Simon was also keenly interested in the history and traditions of his own people. He deliberately and actively sought out knowledgeable elders across northern Alaska to learn from them and in the process became an important source for anthropologists and archaeologists alike who came to work among his people. Interestingly, Simon, who was in the direct line of receipt and succession of those word of mouth stories also represents a transitional figure in the process of rendering them from oral to written history. He was instrumental in passing them along in both forms, orally on tape, which others like author Helge Ingstad and archaeologist Jack Campbell then rendered into written English, but also through his own numerous letters and written journals.

Simon remained a key source of information for many researchers up until his death in 1975, leaving behind a large family who took great pride in their father's accomplishments as a hunter, trapper, storyteller and historian.

In anticipation of the opening of this museum in 1986 the community of Anaktuvuk Pass voted to name the museum after Simon and it has been known as the Simon Paneak Memorial Museum ever since.

As part of a testament to Simon's importance to researchers, we offer this list of publications compiled by the late Laurence Irving highlighting many of Simons accomplishments and contributions to the world of knowledge and science.



Publications in which Simon Paneak was co-author

Irving, L. and S. Paneak. 1952. *On the weight and nutritional state of birds at the arctic terminus of migration*. Proc. 3rd Ak. Sci. Conf. p.212.

Irving, L. and S. Paneak. 1954. *Biological reconnaissance along the Ahlasuruk River west of Howard Pass, Brooks Range, Alaska, with notes on the avifauna*. J. Wash. Acad. Sci. 44(7):201-211.

Irving, L., G. C. West, L. J. Peyton and S. Paneak. 1967. *Migration of Willow Ptarmigan (*Lagopus lagopus*) in Arctic Alaska*. Arctic. 20(2):77-85.

**A Partial list of publications to which Simon Paneak
was acknowledged an important source of information. .**

Irving, L. 1953. *The naming of birds by Nunamiut Eskimo*. Arctic 6(1)-35-43.

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Feinstein, B. 1958. *A new gray-crowned rosy finch from northern Alaska*. Proc. Biol. Soc. Wash. 71:11-12.

Irving, L. 1960. *The birds of Anaktuvuk Pass, Kobuk and Old Crow*. Bull. U.S. Nat. Mus. 217.

Irving, L. 1964. *Terrestrial animals in cold: birds and mammals in Handbook of Physiology, Adaptation to Environment*. Washington, D.C., American Physiological Society, 1964. Sec.4, pp.361-377.

Gubser, N. J. 1965. *Nunamiut Eskimos, hunters of caribou*. New Haven. . Yale University Press.

Irving, L., G. C. West and L. J. Peyton. *Winter feeding program of Alaskan willow ptarmigan shown by crop contents*. Condor 69:69-77.

Irving, L. 1969. *Arctic Life of Birds- and Mammals, including Man*. Zoophysiology and Ecology Series. Springer Verlag.

PNL Lesson 3
WORKING WITH LOCAL EXPERTS -MENTAL MAPS
TEACHER INFORMATION

Lesson Summary: Students become more familiar with local landmarks, place names and stories as they listen to and work with a local landscape expert.

Objectives: Students will begin to name, locate and think about key places and landmarks in their area and about what these landmarks reveal about the history and culture of an area.

Estimated Time: 1 hour for initial classroom visit but time could be expanded to multiple visits.

Correlation to Alaska Standards:

Cultural D-4 Gather oral and written history information from the local community and provide an appropriate interpretation of its cultural meaning and significance.

Cultural E-2 Understand the ecology and geography of the bioregion they inhabit.

Geography A Make and use maps, globes and graphs to gather, analyze, and report spatial (geographic) information.

Geography B Utilize analyze, and explain information about human and physical features of places and regions.

BACKGROUND FOR THE TEACHER

This lesson is the local equivalent of PNL Lesson 2, Simon Paneak's Sketch Maps, and the background section from PNL Lesson 2 applies here as well.

MATERIALS

(Depends upon the local situation)

- Chart paper
- Brainstormed class list of landmarks
- 1:250,00 or 1:63,360 topographic maps of area
- Place names map work already done for area
- Simon Paneak Sketch Maps (from PNL Lesson 1)

INSTRUCTIONAL PROCEDURES

Getting Ready

Although the Simon Paneak sketch maps (PNL Lesson 2) are extraordinary examples of the kind of landscape knowledge held by traditional hunters, many communities in Alaska today have landscape experts who have similar

knowledge and who might be willing to work with students and share his or her mental map of the area. Such an expert might be an Elder with traditional knowledge, a riverboat skipper, a hunter, trapper or berry picker who travels the land, or someone with a keen interest in trails and old places. Is there a person who is known for his or her landscape knowledge; who knows where shortcuts and river crossings are; or who knows where hunting camps or trails are or used to be? Is this person also known as a teacher or a storyteller or someone who is willing to share their landscape knowledge with others?

Seek this person out and explain that you want your students to begin to learn about important local landmarks, trails and places and why they are important. Show them some Simon Paneak sketch maps and explain what you've been working on in class so far. Find out if they would be comfortable sketching their own mental map and then sharing stories about trips or talking about places important in your community. (Generally speaking, the more clear you can be about what you and your students need, the easier it will be for a local expert to respond.) If producing a place names map is the project goal, then explain the project as specifically as you can, possibly bringing along the *Trip to Puvlatuuq* map (PNL Lesson 4) or the *My Own Trail* map by Howard Luke (PNL Lesson 5) to help them get a better idea about where the work is headed. Explain that in order to make maps like these, students need a lot of help learning about important places and trails in your area.

Before work begins, talk with this person to better understand what they know and want to share. Ideally, such a person would be willing to come to class and work with students both initially on this lesson, sharing mental maps and stories, and then later to actually help with site documentation. In any case, the critical thing is to arrange an exchange between the landscape expert and students in a way that is comfortable and meaningful for all.

Gear-up

Remind students of their own mental maps and the Simon Paneak maps and explain that your visitor is going to share his or her mental map with the class today. Ask students to predict how the visitor's mental map will be similar to or different from theirs and ask students to explain why they think so. Explain that their job is to listen to this expert and to remember the stories and places he or she talks about so that this information can be used in their map project.

Explore

Expert shares and discusses mental maps of the area.

Generalize

- Give students some time to reflect on what was shared by the visitor. Ask them to record their thoughts using words, pictures or diagrams in as much detail as possible. What did the expert talk about or explain? What stories did he/she tell? What places did he/she talk about? What would you especially like to remember? What do you wonder about now?
- Ask students to discuss some of this information with the class.
- Post the class landmark list or map (from PNL Lesson 1) and ask if, after listening to the expert, there are any landmarks or features they would like to add?

(Note: The goal here is to help students think about not only place names and landmark information, but also about what the expert focused on and seemed to regard as important, gradually building an understanding of landscape that is more than just places on a map. Depending upon the situation, this might well reveal a whole new perspective on landscape including ways of observing, navigating and interacting with the landscape as well as the aesthetic regard for the land.)

Apply/Assess

- Refine and use this information for PNL Lesson 5: Picking Points or PNL Lesson 6: Place Names Field Trip.
- Journal prompts:
 - How was the expert's mental map different from yours and why do you think so?
 - What was the most interesting thing that you learned and why?

MORE EXPLORATIONS

- Provide students with USGS Topographic Maps of the area (1:250,000 or 1:63,360) and have them find and trace the local expert's mental map spots on the topographic map.

PNL Lesson 4
WHAT'S IN A NAME?
TEACHER INFORMATION

Lesson Summary: Students study a place-names map, read the accompanying stories, discuss their significance and then brainstorm a list of place names for their own area.

Objectives: Students will begin to understand the importance of place names and will begin to name, locate and explain the significance of specific landmarks in their area.

Estimated Time: 1 hour

Correlation to Alaska Standards:

- Cultural D-4 Gather oral and written history information from the local community and provide an appropriate interpretation of its cultural meaning and significance.
- Cultural E-2 Understand the ecology and geography of the bioregion they inhabit.
- Geography A Make and use maps, globes and graphs to gather, analyze, and report spatial (geographic) information.
- Geography B Utilize analyze, and explain information about human and physical features of places and regions.

BACKGROUND FOR THE TEACHER

*"There's no need for a place to have a name if you don't
have a good reason to remember it."¹*

Alaska's geographic place names have evolved over time and reflect the diversity of Alaska's history and the languages of the people who have explored or successively inhabited a region. Consequently, many Alaskan places were named by explorers for political or territorial reasons, and often without the explorers even setting foot on the land itself. Examples of such place names and the explorer's country of origin are: Kotzebue (Russia), Norton Sound (England), or Valdez (Spain). Other names, such as Anchorage, Fairbanks or Fort Yukon reflect American exploration and settlement. And still others, such as Nenana, Anaktuvuk Pass, or Unalakleet are accurate Alaska Native language names or are native names that have been changed or altered in some way as a result of adjusting to another language like English. These place names generally reflect present-day local usage, help people orient themselves geographically and serve

¹ Marino (2005) p. 57.

as landmarks or guides for travel. They conform to the principles of the U.S. Board on Geographic names for use on government maps and other publications and are clearly identified through the use of geographic coordinates.

While there is no doubt that such a standardized system of naming and mapping is essential, this system has effectively overlooked thousands of Alaska Native place names—names known well to the traditional inhabitants of a region and considered important for geographic, linguistic and cultural reasons. Alaska Native elders today are concerned that these names are being lost and that young people no longer know the traditional place names or landmarks of their area. Elders worry that without this knowledge, youth will not know how to travel safely on the land, and will lose the sense of place that is afforded by such travel and understanding.

Because of these concerns, there has been and continues to be an increased interest by both communities and researchers in the documentation of Native place names and their stories (see Teacher Resources). Such projects reveal that Native place names are an invaluable resource for storing information about past events and passing it on to future generations as part of an oral history. Scholarly attention to native place names is undergoing resurgence. This has resulted in several categorization schemes for Native place names, adapted for this lesson as follows:

- **Descriptive** place names describe features or physical land descriptions. A name such as *Qakjubuk*, meaning 'deep place in river,' would fit into this category; as would *Niiqjupaaq*, meaning 'northern most one, mouth of a river.'² Descriptive names might also refer to a landform that is named after something it resembles. Examples of this are *Quluchuukiik*, meaning 'woman's chest/breast,' and *Akubvik*, meaning 'place that looks like a ladies' skirt' or 'parka hem.'³
- **Historical** place names mark an event that happened in the past. *Abnatquksrat*, meaning 'old women', refers to an island where two old women were said to have passed away one day while picking berries.⁴
- **Resource** place names mark areas that are good for animal or plant harvesting.
- **Human Activity** place names describe places where human activity occurs, such as camping or subsistence activities. An example is *Nachirvik*, meaning 'place to look out.' This refers to a strategic hill where members of the tribe could scout game or enemies.⁵

² Marino, E. (2005) p. 53.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

- **Mythological or Spiritual** place names describe where mythological characters acted and moved about the land or where spiritual practices occurred.

While this lesson would undoubtedly be most meaningful if students used maps from their own area, we use *A Trip to Puvlatuuq* by the North Slope Borough School District, Alaska Native Education Program because it does a wonderful job of telling the stories behind place names and because it is published and accessible. If you have access to similar maps or place name experts in your community, please work with them instead. Please also check the Teacher Resources section at the end of this activity in order to find sources that might apply to your community.

MATERIALS

- Overhead of Simon Paneak Map 2, (from PNL Lesson 2)
- Completed Place Names and Landmarks (PNL Lesson 2: Student Exercise Sheets)
- Wall map of Alaska showing Anaktuvuk Pass and the John River
- Copies of handout *A Trip to Puvlatuuq*
- Overhead of maps from *A Trip to Puvlatuuq*
- Student Exercise Sheets
- Chart paper replica of blank data sheet

Optional Materials or Materials for Extension Activities:

- Complete copy of the book *Immiugniq Winter Sources of Drinking Water*, by the North Slope Borough School District, available online at <http://www.nsbds.org/anep/public/index.cfm/14.html>.
- 1:250,000 USGS map of Wiseman (enough copies for student pairs)
- Removable sticky arrows

INSTRUCTIONAL PROCEDURES

Gear-Up

- Remind students of their work with the Simon Paneak sketch maps, noting that his drawings not only conveyed information about rivers, creeks and trails but about historic events, hunting, fishing and camping spots as well. Ask students if they think that there is any other information conveyed by these maps that we might be missing?
- Show overhead of Simon Paneak Map 2. Call attention to the Inupiaq place names and ask students if they think these names might be significant in any way. If so, how?
- Explain that while we don't have explanations or stories for all of the place names on the Simon Paneak maps, we do have a place names map and stories about a trip down the John River from Anaktuvuk Pass (show area on wall map).

- Show overhead of the first map in *A Trip to Puvlatuuq* and pass out copies of *A Trip to Puvlatuuq* story and worksheet to students. Explain that this map is part of a story written by the North Slope Borough School district using information from Inupiaq elders. Review the categories for place names and do the first few place names as an example with the class using the overhead.

| Place Name | | Story | Descriptive | Historical | Resource | Human Activity | Other |
|------------|-------------------------------|--|-------------|------------|----------|----------------|-------|
| 1. | <i>Anaktuvuk Pass</i> | No story given | X | | X | | |
| 2. | <i>Inukpak or Giant Creek</i> | A big, tall skinny rock that looks like a giant man. Good for hunting. | X | | X | | |
| 3. | <i>Ppiquniq</i> | Not a traditional place name but a place where they stopped to learn about a piquiniq or large bump of ice | X | | | | |
| 4. | <i>Paluqtaq or Beaver</i> | A place where a "crazy" beaver built his house in the 1950's. | | X | | | |

Explore

Ask students to work in pairs and provide each student with a copy of *the A Trip to Puvlatuuq* handout. Ask students to look at the map, read the descriptions of the places described on the trip and record information on Student Exercise Sheets. (Note: The categories students choose are not as important as getting them to focus on the place names and the richness of their meanings.) Students can divide the work if time is short.

Alternatively, simply have the students read the story and follow the map, picking out five places that are of interest to them.

Generalize

- Ask students to share the kinds of information conveyed through the place names on *A Trip to Puvlatuuq* and record on a blank wall chart.
- Ask how this information helped people know where they were.
- Discuss why this information was not only helpful but also critical for Nunamiut survival. Ask if students think that the information is still important today.
- Discuss the question, "What do place names tell us about a place?"
- Discuss the importance of place names and the rise in efforts around the state to document these names.

- Ask if any of the students are aware of place names work in their own areas and discuss. Ask if students have suggestions about map resources or people who might help us think about the important place names and stories for your area.

Apply/Assess

Journal Prompt: Ask students to think of their home community and to list the names of at least three important place names/landmarks (the names can be in any language). Ask them to describe why those places are important. What are the stories behind them? Encourage students to ask their parents and grandparents about these places. Are these place names on maps and does it matter if they are or aren't? If students struggle with this, want to do more, or if time permits, let them work with the *Dictionary of Alaska Place Names* by Donald Orth (see Teacher Resources) or peruse place name websites listed in the Resources section.

MORE EXPLORATIONS

- Provide student pairs with USGS 1:250,000 topographic maps of Wiseman, Alaska and ask them to identify as many of the *Trip to Puvlatuug* place names as they can on this map. Have them label the places with a sticky note and record what they found on a data sheet like this:

| "A Trip to Puvlatuug" place name | Name on USGS Map |
|----------------------------------|--------------------|
| #1 Anaktuvuk Pass village | Anaktuvuk Pass |
| #2 Inukpak Creek | Inukpasugruk Creek |
| #9 Qalutagiak Creek | Kollutarak Creek |
| #10 Ikiapuk Creek | Ekopuk Creek |
| #11 Uquuluk | Till Creek |
| #16 Puvlatuug | Publituk Creek |
| #20 Hunt Fork | Hunt Fork |

- As students report what they found, ask and discuss why some spellings might be different. Ask why they think that only seven of the 20 names can be found on the USGS map and ask what they think might happen to those names if not listed on USGS maps. Share either the web or the book version of Orth's Alaska Place Names Dictionary. Discuss how place names reflect not only the history and culture of a place in time but also reflect the experience and bias of the mapmaker.
- Read and discuss "Athabaskan Place names for Rivers in Alaska" in Pearson, R.W. and Hermans, M. (2001), *Alaska in Maps: A Thematic Atlas*. University of Alaska Fairbanks, pp. 95 and 95.

TEACHER RESOURCES

Alaska Native Knowledge Network, "Oral Tradition and Cultural Atlases."
Available online at <http://www.ankn.uaf.edu/NPE/oral.html>.

North Slope Borough School District. *Immiugniq Winter Sources of Drinking Water*. Available online at <http://www.nsbsd.org/anep/public/index.cfm/14,html>.

Bright, William. 2004. *Native American Place Names of the US*. Norman: University of Oklahoma Press.

Luke, Howard. 1998. *My Own Trail*. University of Alaska Fairbanks: Alaska Native Knowledge Network.

Pearson, Roger W. and M. Hermans (2001) *Alaska in Maps: A Thematic Atlas*. University of Alaska Fairbanks.

"Project Jukebox: Oral History Program." University of Alaska Fairbanks. Available online at <http://uaf-db.uaf.edu/jukebox/PJWeb/pjhome.htm>
(This site contains over 35 projects from throughout Alaska that integrate oral history recordings with associated photographs, maps and text.)

USGS. "Geographic Names Information System." Available online at <http://geonames.usgs.gov/pls/gnispublic>

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PNL Lesson 4
WHAT'S IN A NAME?
Student Exercise Sheet

1. Record the place name and briefly describe the meaning of the name.
2. Decide what kind of information is contained in the place name:
 - Descriptive - describes features of physical landscape or describes something that the landscape resembles
 - Historical - place names that mark an event that happened in the past
 - Resource - place names that mark areas that are good for animal, plant or other kinds of harvesting
 - Human activity - places where camping or subsistence activities occur

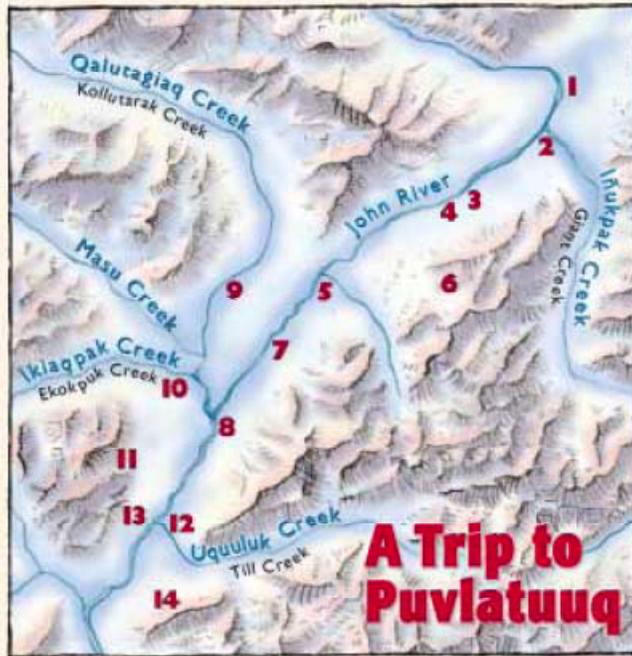
| | Place Name | Story | Descriptive | Historical | Resource | Human Activity | Other |
|----|-------------------------------|--|--------------------|-------------------|-----------------|-----------------------|--------------|
| 1. | <i>Anaktuvuk Pass</i> | | | | | | |
| 2. | <i>Inukpak</i> or Giant Creek | A big, tall skinny rock that looks like a giant man. Good for hunting. | X | | X | | |
| 3. | | | | | | | |
| 4. | | | | | | | |
| 5. | | | | | | | |

| | Place Name | Story | Descriptive | Historical | Resource | Human Activity | Other |
|-----|------------|-------|-------------|------------|----------|----------------|-------|
| 6. | | | | | | | |
| 7. | | | | | | | |
| 8. | | | | | | | |
| 9. | | | | | | | |
| 10. | | | | | | | |
| 11. | | | | | | | |
| 12. | | | | | | | |
| 13. | | | | | | | |

| | Place Name | Story | Descriptive | Historical | Resource | Human Activity | Other |
|-----|------------|-------|-------------|------------|----------|----------------|-------|
| 15. | | | | | | | |
| 16. | | | | | | | |
| 17. | | | | | | | |
| 18. | | | | | | | |
| 19. | | | | | | | |
| 20. | | | | | | | |

A Trip to Puvlatuuq

Source: North Slope Borough School District (2003).
IMMIUGNIQ: Winter Sources of Drinking Water. Alaska Native Education Program,
North Slope Borough School District, Barrow, Alaska. Pages 34-37.



of the creek. See that big, tall, skinny rock? Must be 12-15 feet high? Looks like a giant man standing there, doesn't it? That's how it got that name, Giant Creek, Inukpak. Good country for hunting. Close to home too. Really good for old men like me."

3 About piquiniq: This is where they stopped on the way home and learned about the piquiniq. On the way out to camp, they got on the main trail that cuts across many of the looping meanders of the river channel. Sometimes the trail is on the ice, and sometimes on the snow-covered ground. Usually the river ice was nice and

smooth, but every once in a while there was a large bump of ice, a piquiniq.

1 Anaktuvuk Pass village

2 Inukpak, or Giant Creek: As the family set out from the village on their way south to tree line, they first had to cross a broad patch of overflow ice. This icy area forms every winter, from underground springs and water flowing out of nearby Giant Creek into the headwaters of the John River.

Ataata explained its name: "Giant Creek, the white man calls it. We say Inukpak. Look up there near the mouth

4 Paluqtaq, or "Beaver": Not much further along they came to a small ice-covered pond near the river. "Back in the 1950s some crazy beaver came all the way up here to build his house in that little lake. Must have been lost, that guy. 20 miles north of the trees!" Ataata remembered.

5 Qalutaq, where the family stopped for tea on the way to camp Saturday morning.

Ataata told them, "It is an old, old camping place for our people; we have used it for many generations, because of the shelter of those willows and the good hunting nearby. It has lots of ptarmigan, and rabbits too, sometimes. Those are important animals to keep people alive if caribou or sheep are hard to find."

6 Alugvik: Standing near the willows at Qalutaq, Ataata pointed to the mountains. "Up there on the mountainside is what we call an Alugvik. Mountain sheep like to come there every morning, early, and sometimes late in the evening to lick the salt. People have always hunted sheep there. We still do today. But you have to get up early to get them. Can't be lazy and hope to eat sheep meat," he said with a twinkle in his eye.

7 Kiliiaagvak: From Qalutaq for another couple of miles is an area called Kiliiaagvak, which means "really freeze your face" because in winter, during a north wind, the wind is extra strong and cold there. "You really have to be careful about this place. You could get frostbite really easy," the children were warned.

8 Kayyaak: This is a place where a river, called Qalutaq, flows in from the west, cutting through a gap in an old river terrace on the right-hand side of the John River. "We call this place Kayyaak:

where two rivers meet and one flows into the other."

9 Qalutaq: The creek's name means "the way to Qalutaq." "If you keep to the right it will take you all the way over to Chandler Lake, a good place to fish. But you have to be careful. Every winter, a big crack of water opens up across the ice, from one side of the lake to the other. If you aren't careful you can fall in and drown," Ataata warned.

10 Ikiapak: If you turn right at Kayyaak and start to follow Qalutaq to the first fork to the left, just a mile or so up the stream, that leads to Ikiapak Creek and valley, which means "something big is split lengthwise."

About four miles in is a big overflow glacier, like the one at Iliupak (#2 on the map). But at Ikiapak there is also a sikusuq, where people like to fish sometimes. The family did not take this fork, so the children did not see this sikusuq.

11 Qikiqtaq: "You see that big mountain over there?" Ataata asked, pointing to the southwest. "See how it stands alone, separate from all the other mountains? We call that mountain Qikiqtaq. That means 'an island' because that lonely old mountain is just like an island in a lake, all by itself."

12 Uquuluk: In the old days people used to set up snares along this creek to catch caribou in the willows. Today, the origin and exact meaning of this name is not clear, however it may stem from a root word that means something sheltered. On the map this creek is called Till Creek.

13 Tulugalyaat: The river gets very narrow and rocky and there are steep cliffs on either side. People are careful not to travel too fast through here because they might tip over and get hurt. Midway up the cliffs on the right is a raven's nest. It has been there for at least a generation, maybe even longer. Tulugalyaat means "the little ravens."

14 Tanmigagvik: This is a big mountain on the south side of Uquuluk, or Till Creek. In the old days, usually during the spring caribou migration, people would chase the animals up the gently-sloping back side of the mountain, then over the top, and down the front to drive them into the snares hidden in the willows below.

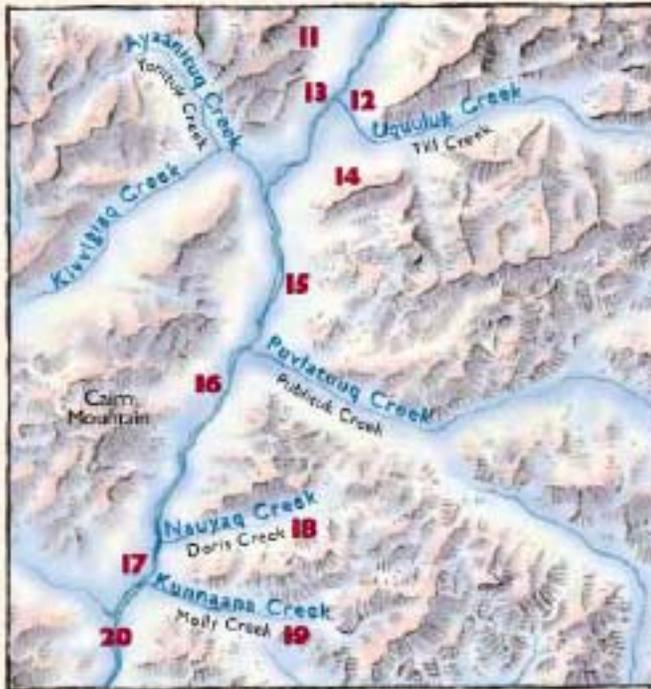
People used to "tanmigag" (slide down) the north face of the mountain on their snowshoes, using their walking sticks like a rudder and a brake to slide safely down the mountain. "I better not catch you kids trying that," Ataata laughed. "You might get hurt. Takes a lot of practice to do that right."

15 Napaaqtuq: The spruce forest starts here. Some are small and scattered and others, like those at Puvlatuuq, are tall and grow in thick bunches. When they saw the first spruce tree, Ataata laughed, "Kinda scrawny and short isn't it? Not much of a tree at all, but it is a tree all right, Napaaqtuq, a spruce tree." Before long, however, the spruce grow thickly along the banks of the river.

16 Puvlatuuq, the campsite: Ataata had searched the river bank until he found a faint old trail. "Took me a minute to find the old trail. I haven't been here for so long and the brush has kinda grown up some. But I got it now. This is Puvlatuuq. Your grandma and me and your daddy and auntie used to live here when they were small. Good old Puvlatuuq.

"See that framework over there made of spruce poles? It's almost all fallen down now, but that's what is left of our old house. Spruce tree frame, covered with moss to keep us warm. Real good house. That old house of ours, you know what we covered the walls and roof with? Moss. Ivruq. Plain old moss. That's why we call that kind of house an Ivruulik, after the moss we used to cover it with.

"Only problem is you gotta find it first. Come here I'll show you how. Stand over here, now bounce gently up



A few minutes later, after digging down through the snowdrifts, sure enough, there was the moss underneath.

17 O'Connell's trapping cabin and winter trading post: Pat O'Connell was the first trader to live with the Nunamiut and he set this up many years ago, back in the 1950s. After he left in the early 1960s, people used it as a trapping cabin for several years until it eventually burned down.

18 Doris Creek: Pat O'Connell named Doris and Molly Creeks, across the river from

and down on the snow." The children obeyed, but didn't feel anything unusual. "That's because there isn't any moss underneath," Ataata explained. He pointed to a different spot. Uluggaq and Masu tried bounding there. "Hey, it's different! It's kind of springy!" Ataata smiled. "That's how you find moss for building a house in the winter, even if you can't see it!"

his cabin, after two very pretty sisters. Apparently he was interested in marrying one of them, but neither one would have him.

19 Molly Creek: Also known as Kunnaana Creek.

20 Hunt Fork: The site of a sikusuiq. It used to have good lingcod and grayling fishing, but not in recent years.

PNL Lesson 5
PICKING POINTS OFF A PAPER MAP
TEACHER INFORMATION

Lesson Summary: Students identify place names or landmarks on a topographic map and use TopoZone, a web-based mapping program, to determine the latitude and longitude of these sites. These coordinate locations can then be used in digital map-making or way-finding with a GPS.

Objectives: Students will be able to pick coordinate points off a topographic map. (It is assumed that students have done the preceding PNL lessons and GIS Lesson 10, "Adding Coordinate Locations into a GIS.")

Estimated Time: 1 hour

Correlation to Alaska Standards:

- | | |
|--------------|--|
| Cultural D-4 | Gather oral and written history information from the local community and provide an appropriate interpretation of its cultural meaning and significance. |
| Cultural E-2 | Understand the ecology and geography of the bioregion they inhabit. |
| Geography A | Make and use maps, globes and graphs to gather, analyze, and report spatial (geographic) information. |
| Geography B | Utilize analyze, and explain information about human and physical features of places and regions. |

BACKGROUND FOR THE TEACHER

There are two primary reasons for learning to pick coordinate locations from a topographic map. One reason is that you might want to convert a paper place names map to a digital map. As was mentioned in PNL Lesson 4 - *What's in a Name?* there has been and continues to be tremendous interest in the documentation of historic place names and their stories. Individual community members, village and regional corporations, governmental agencies and academic researchers have all played a role in such documentation. This research has resulted in a range of resources stored or documented in a range of places (such as under grandpa's bed, in library archives and everywhere in between.) Early documentation was often done on topographic maps accompanied by copious note taking, (and sometimes audio recordings), and is a rich source of historical information that preceded digital technology. With effort, many of these resources could be accessible to classrooms for conversion to digital maps.

A second reason for picking coordinates off a map is that you might want to select and plan a travel route beginning with a topographic map and then programming those points into your GPS.

In both of these cases, it is necessary to estimate the latitude and longitude of a waypoint with more accuracy than you would get by simply estimating that point on a topographic map. Use of Internet programs such as TopoZone, allow students to pick points with up to four decimal degrees of accuracy which is enough to get within a reasonable range for these purposes.

In this example, we work with *My Own Trail*, Howard Luke's published book and place names map. *My Own Trail* (book with one map included) and ordering instructions are described on the Alaska Native Knowledge website at <http://www.ankn.uaf.edu/publications/>.

Multiple copies of the map itself can be ordered by contacting: publications@ankn.uaf.edu. If you lack this resource or if you have local landmarks already marked on either sketch maps or topographic maps, please work with them instead. (Be aware that working with local maps will require modification of the TopoZone student directions because existing directions are specific to the Luke map)

MATERIALS

For each student group using *My Own Trail*:

- Copy of *My Own Trail* map
- Copy of "Life Along the River" section of Howard Luke's book, *My Own Trail*
- Copy of handout *Place Name Assignment Sheet*
- Computers with internet access to TopoZone
- Copy of Tanana Necktie Maps (Available as JPEG images in the appendix of the MapTEACH DVD or available for download from our website but require a large format printer or plotter.) The following USGS 1:63,360 quadrangle maps may be used instead: Fairbanks C-3 and D-2 and are available from:

Map Office, Geophysical Institute
University of Alaska Fairbanks
903 Koyukuk Dr.
P.O. Box 757320
Fairbanks, AK 99775-7320
(907) 474-7598

Alternatively, for each student group using local community material

- Sketch or topographic map of area with place names marked
- 1:63,360 topographic maps of area covered
- Computers with internet access to TopoZone

INSTRUCTIONAL PROCEDURES

Gear-Up

- Pass out copies of *My Own Trail* map to each group and ask students to spend some time reading and discussing the map and getting oriented. Ask students what they notice about the map and how it is alike and different from the *Trip to Puvlatuuq* map they worked with in PNL Lesson 4. Discuss the fact that *My Own Trail* is a place names map, rich with information, but that it looks more like an artistic rendering than a shaded relief map.
- Now ask them to suppose that their grandfather or grandmother had made a map like this and that they wanted to convert it to a GIS map. What would you need in order to mark these place names on a GIS map? (Note that coordinates are necessary for accuracy here.)
- Explain that the process for finding coordinates takes two steps:
 - First, each group will be assigned certain place names. Students then must compare Howard's map to the topographic map to locate and mark Howard's points on the topographic map.
 - Second, after all student groups have completed this task, they will use their marked topographic map to determine the site coordinates using TopoZone on the computer.
- Demonstrate the place names/topographic map comparison. Hand out worksheet, place name assignments and topographic maps to student groups.

Explore 1

Student groups mark places on the topographic map.

Generalize

- Discuss the challenges of transferring points from an artistic rendering to a topographic map.
- Discuss the pros/cons of each type of map.

Explore 2

Follow worksheet instructions to determine and record coordinates.

Generalize 2

Discuss issues of coordinate accuracy and how close is close enough.

Apply/Assess

Students use coordinates in GIS mapping or to create waypoints for travel.

TEACHER RESOURCES

Alaska & Polar Regions, Elmer E. Rasmuson Library
310 Tanana Loop, PO Box 756808
Fairbanks, Alaska USA 99775-6800
Phone: (907) 474-7261 Email: fyapr@uaf.edu

Alaska Native Knowledge Network, "Oral Tradition and Cultural Atlases."
Available online at <http://www.ankn.uaf.edu/NPE/oral.html>. (This site contains a comprehensive list of resources about oral tradition and the creation of cultural atlases and place names maps. The resources at this site provide examples and guidance about ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum.)

Kari, James and Fall, J. A. (2003) *Shem Pete's Alaska*. University of Alaska Press: Fairbanks

Luke, Howard (1998) *My Own Trail*. Alaska Native Knowledge Network, Fairbanks, Alaska. Order at <http://www.ankn.uaf.edu/publications/>

"Project Jukebox: Oral History Program." University of Alaska Fairbanks.
Available online at <http://uaf-db.uaf.edu/jukebox/PJWeb/pjhome.htm> (This site contains over 35 projects from throughout Alaska which integrate oral history recordings with associated photographs, maps and text.)

Name: _____

PNL Lesson 5
PICKING COORDINATES FROM PAPER MAPS
STUDENT EXERCISE

By the end of this lesson, you will be able to determine the coordinates of points on a paper map which you can then use to create points in a GIS project or use to enter as waypoints into a GPS. You do this in two steps:

- Marking points on a topographic map
- Determining the coordinates of those points on a computer

Step 1: Marking Points on a Topographic Map

1. Spend some time reading and looking at Howard Luke's map, *My Own Trail* and think about how it is alike or different from other maps you have seen. Record some of your observations here:

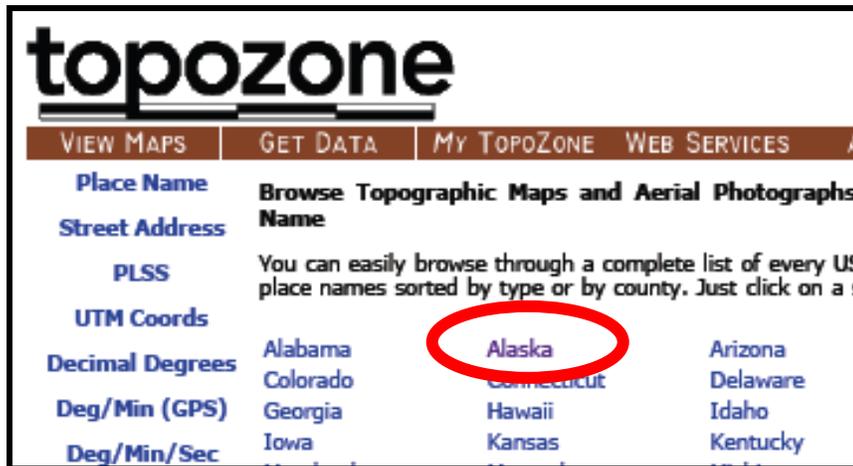
2. Record the place names assigned to you in the table below.
3. On Howard's map, find the first place that has been assigned to you and read what Howard has to say about it.
4. Find that same place on the topographic map and mark its location on the topographic map using the site number.
5. Do the same thing for all of the points assigned to your group.

WAIT to fill in the latitude and longitude until the computer lab.

| Site # | Site Name | Latitude | Longitude |
|--------|-----------|----------|-----------|
| | | | |
| | | | |
| | | | |

Step 2: Finding the Coordinates

1. Bring the marked topographic map to the computer lab.
2. Open an internet browser and go to TopoZone at:
<http://www.topozone.com/states/Alaska.asp>
3. Click on "Alaska."



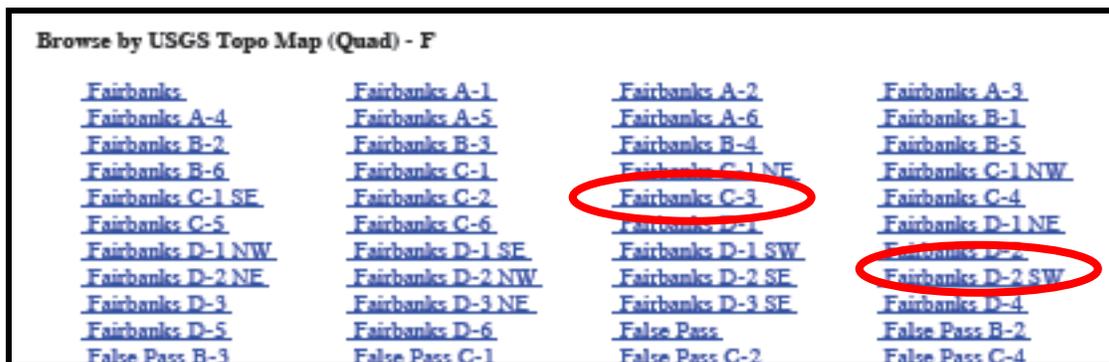
4. Click on Browse by US Topo Map (Quad) "F."



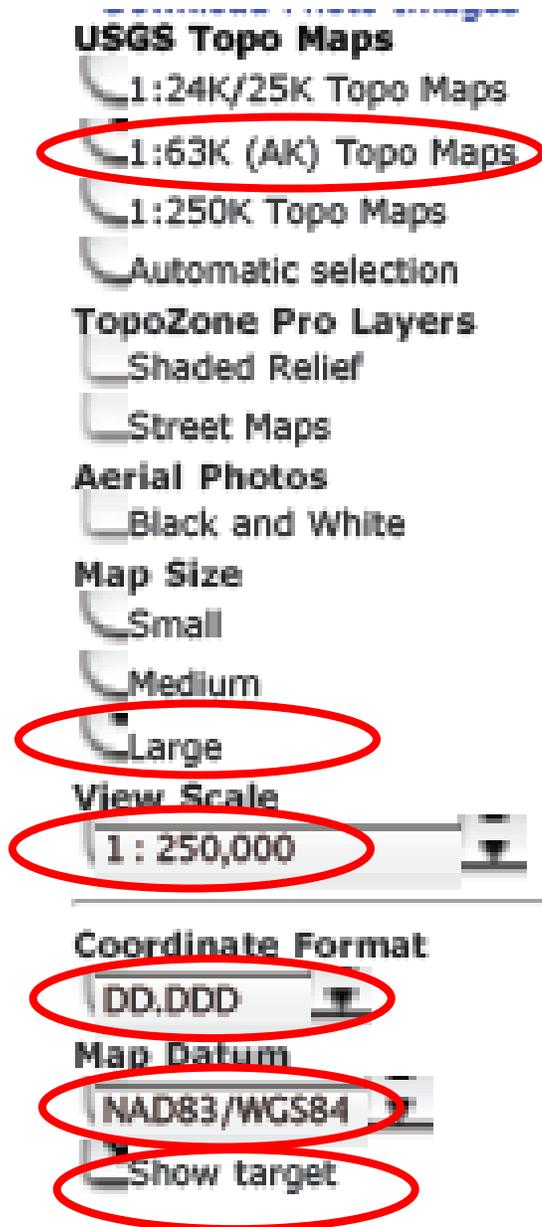
5. Select "Fairbanks D-2 SW" if your points include or are located NW of Crybaby Hill

OR

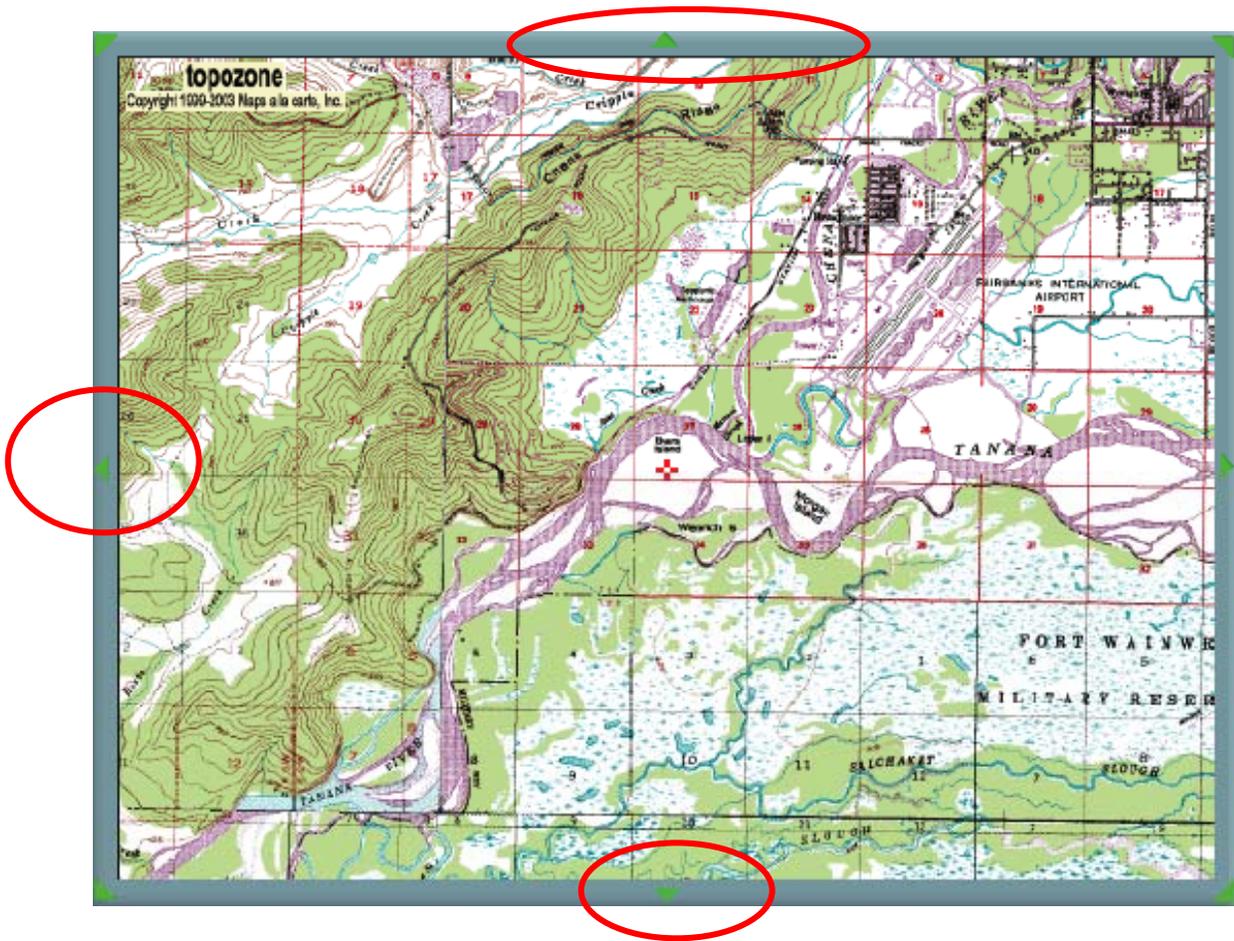
Select "Fairbanks C-3" if your points are located SW of Crybaby Hill.



6. Select:
- USGS Topo Maps: "1:63K (AK) Topo Maps"
 - Map Size: "Large"
 - View Scale: "1:250,000"
 - Coordinate Format: "DD.DDD"
 - Map Datum: "NAD 83/WGS 84"
 - Check: "Show target"

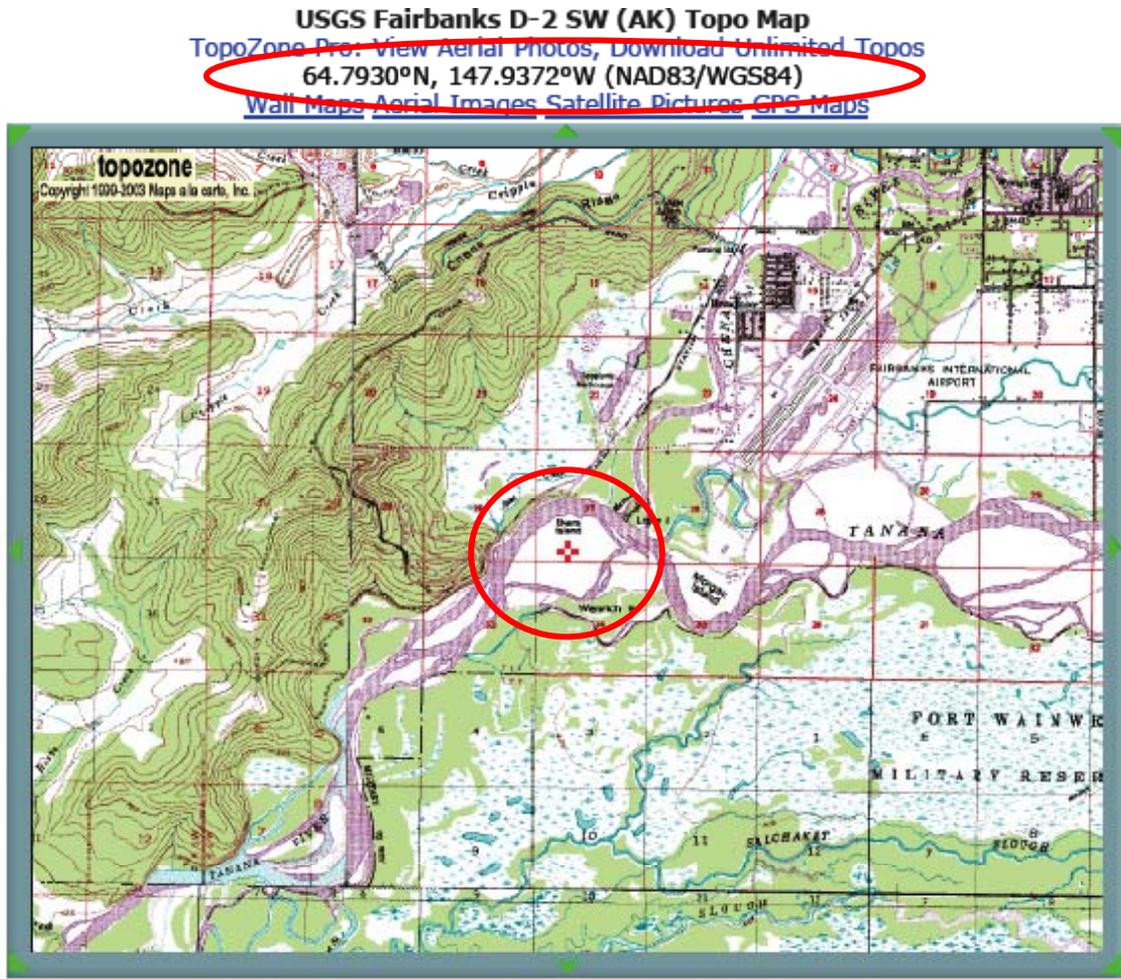


7. Use the green arrows to scroll and find the places you have marked on the topographic map.



You can also get a better look by going back to "View Scale" described in step 6 and changing the ratio.

- As you move the cursor, you will notice a moving symbol with crosshairs. Hover the crosshairs over the point you have selected and click. A red cross will appear and coordinates will be shown in text at top of map, as indicated.



- Record these coordinates in your table on page one of these instructions.
- Repeat steps 7 to 9 for each place name on your sheet.

PLACE NAME ASSIGNMENT SHEET

| Site # | Place Name | Described on Map? | Book Index Pages |
|--------|-----------------------------------|-------------------|-------------------|
| | Group 1 | | |
| 1 | • Chena Town | No | 39-41, 69,99 |
| 5 | • Pfeiffer | No | 46, 52, 54-57, 75 |
| 8 | • Too Netkum No' (Rosie Creek) | Yes | 47 |

| | | | |
|----|---|-------------------------------|---------------------------|
| | Group 2 | | |
| 2 | • Ch'eno' Xudochaget (Old Chena Village) | Yes | xii-xiii, 33, 34, 41, 99, |
| 6 | • Hadley | Yes, related to Hadley Island | 46 |
| 11 | • Norman Hadley Island | " | " |

| | | | |
|----|---------------------------------------|-----|----|
| | Group 3 | | |
| 3 | • Luke Slough | Yes | 79 |
| 9 | • Bughu Tr'etreghee (Crybaby Hill) | Yes | No |
| 12 | • Lost Creek | Yes | no |

| | | | |
|----|--|-----|---------|
| | Group 4 | | |
| 4 | • Kuth Tsoola (Tsoela?) (Long-Necked Willows) | No | xii, 33 |
| 7 | • Andrews | Yes | 47-48 |
| 10 | • Sam Charley Slough and Island | Yes | 33 |

PNL Lesson 6
FIELD TRIP GUIDE
TEACHER INFORMATION



Lesson Summary: Students complete classroom preparation and go on a field trip to document local place names and landmarks.

Objectives: Students will understand the importance and location of local landmarks using field notes, GPS receivers and digital cameras. (It is assumed that students have done GPS Lesson 1 and, optionally, GPS Lesson 2.)

Estimated Time: Depends upon the circumstances; but half- to full-day field trips often work best.

Correlation to Alaska Standards:

- | | |
|--------------|--|
| Cultural D-4 | Gather oral and written history information from the local community and provide an appropriate interpretation of its cultural meaning and significance. |
| Cultural E-2 | Understand the ecology and geography of the bioregion they inhabit. |
| Geography A | Make and use maps, globes and graphs to gather, analyze, and report spatial (geographic) information. |
| Geography B | Utilize analyze, and explain information about human and physical features of places and regions. |

BACKGROUND FOR THE TEACHER

This field trip is intended as a follow-up to classroom work on local landmarks. It differs from GPS Lesson 2 Field Data Collection Using a GPS and Digital Camera in that: (1) students will have researched landmark sites ahead of time, perhaps through books, talks with local landscape experts and/or use of TopoZone; and (2) hopefully a landscape expert will accompany students on this trip, shedding light on the places they visit.

If your class plans on traveling with a local expert, take care that the technological gadgets are off and out of use when the expert is talking. It generally works well to stop at a landmark, have the students listen and take written notes while the expert talks, and then use the GPS receivers and cameras for documentation.

Make sure that the GPS receivers and cameras are ready:

- Check batteries on both the GPS receivers and cameras
- Clear camera memory cards
- Clear waypoints and track logs from the GPS units
- Check time/date settings on the cameras
- Make sure that the cameras and GPS units are labeled

INSTRUCTIONAL PROCEDURES

In class, assign landmark sites to student teams and ask each team to fill out the "Classroom Work" sections of their Field Trip Planning and Observation Sheet. Explain that each team will be the classroom expert for the sites that they are assigned. If you did PNL Lesson 5, "Picking Points," you can also ask each team to program their GPS with the waypoints they determined for their assigned sites.

Remind students of the field protocols for respectful treatment of guests and use of equipment as follows:

- If an expert is traveling with you, allow the expert to share whatever stories and information they have when you first reach a site. Take written notes first, followed by GPS and camera documentation when the visitor has finished talking.
- Group roles are as follows: recorder, GPS operator and photographer.
- Roles should be rotated amongst the group so that everyone has a chance.
- It is the recorder's job to make sure that all information is written on the data sheet, but the whole group is responsible for helping collect the information.

Group Name: _____ Date: _____

Group Members: _____

GPS number: _____ Camera number: _____

Field Trip Planning and Field Observation Sheet

Site # _____

Classroom Work

English Name: _____

Alaska Native Name: _____

Story: _____

Field Data

Photo #: _____ Photographer: _____

Waypoint #: _____ GPS Operator: _____

GPS Accuracy: _____ Comments: _____

Field Trip Planning and Field Observation Sheet

Site # _____

Classroom Work

English Name: _____

Alaska Native Name: _____

Story: _____

Field Data

Photo #: _____ Photographer: _____

Waypoint #: _____ GPS Operator: _____

GPS Accuracy: _____ Comments: _____

Field Trip Planning and Field Observation Sheet

Site # _____

Classroom Work

English Name: _____

Alaska Native Name: _____

Story: _____

Field Data

Photo #: _____ Photographer: _____

Waypoint #: _____ GPS Operator: _____

GPS Accuracy: _____ Comments: _____

Field Trip Planning and Field Observation Sheet

Site # _____

Classroom Work

English Name: _____

Alaska Native Name: _____

Story: _____

Field Data

Photo #: _____ Photographer: _____

Waypoint #: _____ GPS Operator: _____

GPS Accuracy: _____ Comments: _____
