An aerial photograph of a river delta, likely the Amazon, with a false-color topographic overlay. The colors range from dark blue (low elevation) to bright green and yellow (higher elevation). The river channels are visible as dark, branching structures. The background is a solid black color.

# Xunaa Káawu

**Why do we live here?**

*Richard Carstensen  
Discovery Southeast  
2015: updates 2023*

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**Cover:** Satellite image of Cross Sound and Icy Strait, 1999. Heart of Xunaa Káawu. • **Above:** WNW over Wunachich T'akhéen, stream back of Porpoise Island (Salmon River) into S'it eeti Geeyi, bay taking the place of the glacier (Glacier Bay).

Kevin White photo

**Preface:** In late 2014, I was invited to participate in a program for Hoonah high school students. This multi-year course—a collaboration of Glacier Bay National Park, Hoonah Indian Association and Hoonah City Schools, addressed human connections to the land-&-seascape of greater Glacier Bay, homeland of Xunaa Káawu.

Thematically, Hoonah's program closely resembled an earlier one I helped develop for Goldbelt Heritage Foundation (GHF) that centered geographically on Áak'w and T'aakú K'wáan territories. We called that course *Why do we live here?* Specifically; what were the factors in choice of winter village sites and summer resource camps? How was the country and climate different in the depths of the recent Little Ice Age? Extending that question; why do we *still* live here (or elsewhere), two or more centuries later?

Although I had less knowledge of the Icy Strait region than of my backyard watersheds in the City and Borough of Juneau, I was honored by the invitation to export some of the principles and 'search images' we developed in the Juneau pilot course to another k'wáan territory. As in Áak'w Aaní, there were many culture bearers, teachers and scientists at Hoonah and Glacier Bay National Park who each brought deep insight to this project. The literature is equally rich: nowhere else in Southeast Alaska has there been more fruitful collaboration between cultural specialists and landscape ecologists. (Ackerman, 1968; deLaguna, 1972; Mobley, 1994; Cruikshank, 2005; Langdon, 2006; Mann & Streveler, 2008; Connor *et al* 2009; Schurr *et al*, 2012; Crowell *et al*, 2013). Fertile ground indeed, for the question *Why do we live here?*

*Richard Carstensen, naturalist, Discovery Southeast*

## Part 1: why do we live here?

### Five questions

To understand why a winter village or summer camp site was chosen in the Icy Strait-Cross Sound area, or anywhere else in Tlingit or Haida country, it helps to begin with 5 basic questions. Background and rationale for these questions—along with many site examples—are developed in the manual *Why do we live here? Investigating Traditional Ecological Knowledge in Áak'w and T'aakú Aaní*, written in 2013 to summarize a high school course of that name, for Goldbelt Heritage Foundation (GHF). Here, I won't repeat that background information, but simply list 5 of the primary factors in site selection.

In keeping with the query-format of our title, the 5 factors are presented as **questions**. I hope this helps



to preserve an open-mindedness in our studies of Xunaa Káawu, a hallmark of the scientific method and of the good hunter. For one thing, it's not at all certain these are the most important or universal criteria.<sup>1</sup> Could we build a better list, or phrase the questions more fruitfully? Certainly! And we *may*, before this course is over.

**1) foundation** Is there level, well-drained, easily excavated ground for homes and gardens?

**2) beach** Is there a smooth, moderately sloping beach, free of hull-bruising rocks?

**3) freshwater** Is there reliable, salmon-free water for drinking, washing, irrigation?

**4) sun** Is there maximum exposure to the day's warmest sun in the seasons occupied?

**5) view** Are there broad views and (in turbulent times) defensible nearby topography?

In our investigations so far at Juneau, Angoon and Sitka, these questions have generated exciting discussions about *why we live here*.

**Place-names convention:** In most of my writing since publication of *Haa L'éełk'w Hás Aani Saax'ú: Our grandparents' names on the land*. (Thornton & Martin eds. 2012), I've used Tlingit place names, followed by their translation *in italic*, and (colonial name) in parentheses. Euro-names, however regal or preemptive, were afterthoughts. **Example:** Kadi-ooni X'áat', *island with spring water* (Spuhn Island at Juneau; Kidney Island in the Beardslees).

**Citation convention:** Some sources are used so frequently I've abbreviated them: T&M12:43 = Thornton&Martin ed 2012, page 43; G&H98:137 = Goldschmidt & Haas 1998, page 137.

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<sup>1</sup> An example is the importance of wind protection at Xunaa. This factor does not easily plug into any of our 5 "primary" factors.

Mouth of Gakakaiwuhéen, *place where plenty of fish come* (Exclusion/Dundas River) —a panorama from 2 Shorezone images.

## Staying (and plotting) the course

*Why do we live here* is a **cartographic** question. In quizzes to evaluate students' environmental literacy there's always some version of the drinking-water question; make a map showing where your water comes from. Not one in 10 city dwellers could do that, but any Tlingit or Haida child could 'map' her water source before she could speak a full sentence. She knew what hill it bubbled from, how many steps from the clan house.

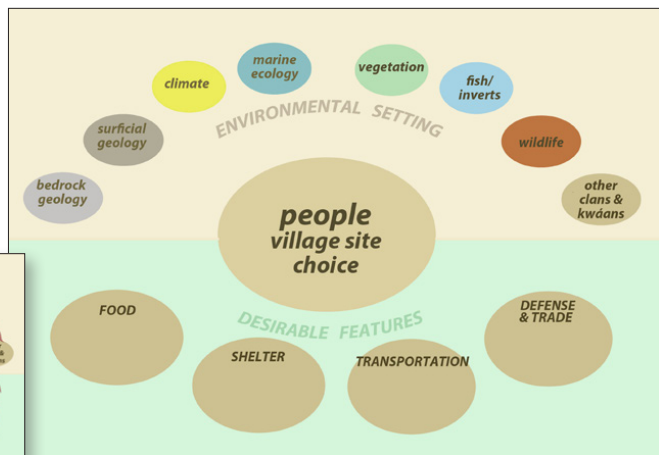
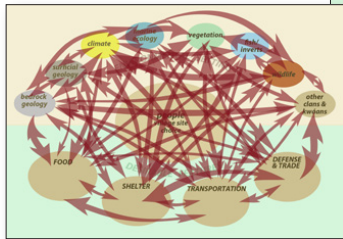
What are the basic human *needs*, from a geographer's perspective? And how, from an ecologist's perspective, does nature *meet* them? On the climatically austere but food-rich Northwest Coast, we could distill human needs into 4 simple categories:

- food & water
- shelter
- transportation
- defense & trade

When the elders speak of a clan's relationship to Lingít Aaní—its tenure, and its epic movements—their stories bear witness to these fundamental **needs**: food, shelter, transportation, defense and trade.

To analyse the environmental **context** of human residence and movement, ecologists and naturalists typically employ a systematic description, trending from the abiotic to the biotic—from 'bedrock to bugs.' They map and measure the area's geology, climate, marine features, soils, vegetation, terrestrial hydrology,

In GHF's pilot of *Why do we live here*, we used whiteboard versions of this diagram to frame brainstorming sessions. Although never as elaborate in class as the spiderweb below, the chart elicited observations and speculations about interconnectedness of all these factors.



fish & wildlife, then ultimately tie all of these factors to human histories and trajectories.

For purposes of classroom discussion, to engage the visually-oriented, and to keep all these interweaving factors 'in view,' we (GHF) organized them in the bubble diagram above. **Human needs** run across the bottom, and the **environmental setting** spans the top. It's an eye-opener to connect these bubbles, each to all of the others, gradually building the case for *why we live here*. Returning to that exercise repeatedly over the course of, say, a semester, also serves as a 'gap analysis;' where have we been most and least effective in addressing our essential question?

Whether or not you consider yourself a cartographer, this maturing relationship to home ground involves building a mental map of your watershed, and of the constellation of watersheds that landscape ecologists sometimes refer to as your "biogeographic province." Onto that map, you layer the contextual elements (environmental setting) of our diagram: where does nettle pop up first in spring? What direction do forest-felling gales come from? Where's the nearest source of whetstone, for



sharpening iron tools? The map is also a way of thinking about human needs. From which nearby bluffs can you see 5 miles out to sea over more than a 90° field-of-view? Is there canoe-quality redcedar in your province, or must you trade for it? Does your yakwdeiyí, *canoe-ramp*, permit a rapid launch at any stage of tide? Have any of your ancestors died there, in the surf?

And *who are* your ancestors? Even that question needs a map, sometimes called a family tree. You could probably name your parents and grandparents without invoking that mental map, but to push it back much further requires visual aids. Having helped my father write *Our Family Epic*—the 939-page story stretching from Nebraska and North Carolina back through Scotland, Denmark and Rome to somewhere in the Fertile Crescent—I can name all 16 of my great great grandparents. But not without scribbling down our family pedigree on the nearest used envelope. In Tlingit oratory, sequence-triggers may be more auditory, tapping the extraordinary human aptitude for memorization. Still, these song-&-story recitations march hand-in-hand with woven blankets and carved panels—maps of time and place.

The educator David Sobel, author of *Mapmaking with children: Sense-of-place education for the elementary years*, considers this plotting, this cartography, a fundamental human activity:

*“Mapmaking, in the broad sense of the word, is as important to making us human as language, music, art, and mathematics. Just as young children have an innate tendency to speak, sing, draw, and count, they also tend to make maps. When children share their homemade maps with me, I see their active yearning to make sense of the nearby world, their desire to record and share discoveries and their connections to place.”*

Sobel reminds us that “**graphicacy**” has a more formal place in British education—no surprise to anyone who’s admired the 10-foot-long British Headquarters map of Manhattan Island, made in 1782. Of course, by the time they finished it, they’d lost the war. But we educators have less imperialistic motives:

*“In British schools, educators add the skill of graphicacy to the traditional objectives of literacy and numeracy. By graphicacy they mean, ‘the communication of relationships that cannot be successfully communicated by words or mathematical notation alone.’ In everyday language this means being skilled at visual representations of information such as drawing, creating collages, constructing graphs, making diagrams, and making maps.”*

Sobel also advocates for “*mapping from the inside out,*” from earliest childhood tapping hearts as well as minds:

*“Children’s early maps ... depict ... beauty, secrecy, adventure, and comfort. With these ... endeavors as foundation, we gradually start to focus on scale, location, direction, and geographic relationships.”*



Kate Cruz photo

Students in the Goldbelt Heritage pilot course map their family trees from the online database called [Tlingit, Haida and Tsimshian genealogy of Canada and Alaska](#).

In this class, we’ll unearth, study, create and revise dozens—maybe hundreds—of maps. Each holds buried treasure. Each takes us one step closer to understanding Xunaa Káawu, and our place in it.

## Geography of Xunaa Káawu

Hoonah country is ‘different’—unique even within the constellation of Tlingit *kwáans* (geographic ‘tribal’ units) of which it is a member. Thornton (2012:27—henceforth T&M12:27) explains the name of our study area as follows:

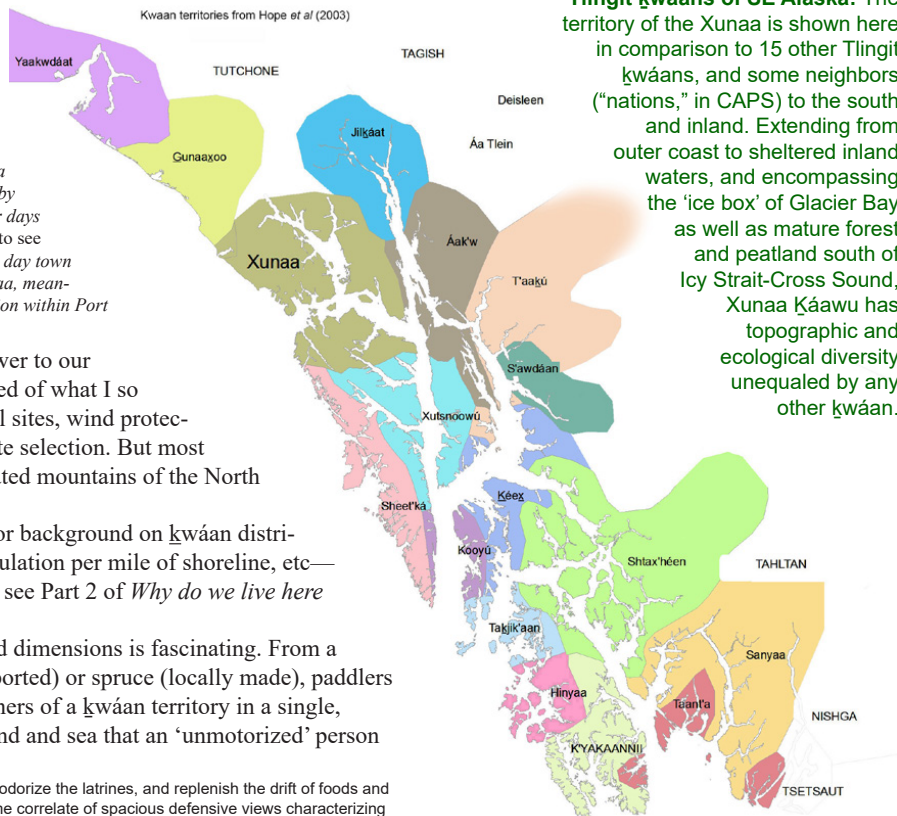
*“Xunaa Káawu (dwelling place in the lee of the north wind) is the only Tlingit geographic community that is not referred to as a kwáan, the term káawu being a synonym for (human) dwelling place. This name was bestowed on local Tlingits by a Sheet’ka leader who attempted to journey to their territory but was delayed for days by strong north winds, prompting him to exclaim, “I wonder when I will be able to see these men from the direction of the North Wind.” Xunaa, from which the present day town of Hoonah and the Huna (Xunaa) Tlingits draw their names, is short for Xunniyaa, meaning ‘lee of the north wind,’ and neatly describes the community’s sheltered location within Port Frederick.”*

And Hoonah’s *kwáan* name also provides one fundamental answer to our essential question: *Why do we live here?* Analysing about a hundred of what I so far consider the most important Tlingit and Alaskan-Haida cultural sites, wind protection doesn’t appear to rank as one of the fundamental criteria in site selection. But most villages are not in the firing line of the tallest, fiercest, most-glaciated mountains of the North Pacific coast.<sup>1</sup>

In Tlingit geography, the fundamental land unit is the *kwáan*. For background on *kwáan* distribution and certain metrics—such as human carrying capacity, population per mile of shoreline, etc—and for explanation of the relationship between clans and *kwáans*, see Part 2 of *Why do we live here* (Carstensen, 2013).

From a geo-ecological perspective, the ‘logic’ of *kwáan* size and dimensions is fascinating. From a centrally placed settlement, in a seaworthy canoe of redcedar (imported) or spruce (locally made), paddlers picking windows of fair weather could generally reach the far corners of a *kwáan* territory in a single, strenuous day. A *kwáan* also represents about the largest unit of land and sea that an ‘unmotorized’ person

<sup>1</sup> Some villages probably even *valued* a stiff and frequent breeze, to keep down bugs, deodorize the latrines, and replenish the drift of foods and garden-fertilizers onto home beaches. Breeze, in moderation, was also probably a welcome correlate of spacious defensive views characterizing most winter villages.



**Tlingit *kwáans* of SE Alaska:** The territory of the Xunaa is shown here in comparison to 15 other Tlingit *kwáans*, and some neighbors (“nations,” in CAPS) to the south and inland. Extending from outer coast to sheltered inland waters, and encompassing the ‘ice box’ of Glacier Bay as well as mature forest and peatland south of Icy Strait-Cross Sound, Xunaa Káawu has topographic and ecological diversity unequalled by any other *kwáan*.



An aerial photograph taken from an elevated perspective, likely from a boat or plane, showing a coastal town and a large body of water. The town is situated on a peninsula or narrow strip of land, with a large ship docked at a pier. The surrounding landscape is a mix of dense forest and cleared areas, with mountains in the background. The water is a deep blue, and the sky is clear. The image is oriented vertically, with the town and water on the left and the mountains on the right.

~1987?

Undated view SE over Hoonah. Fresh clearcuts mark onset of Huna Totem logging in the late 1980s. Spasski watershed in left distance has since been more completely deforested. Comparing past and present views of *where we live* is a rich window into changing relationships to Xunaa Káawu.

can come to know intimately during a lifetime.

The most comprehensive geographic summary of Southeast Alaska to date is the *Conservation assessment and resource synthesis for the Coastal Forests & Mountains ecoregion* (Schoen & Dovichin, eds, 2007). Chapter 4—the report’s geographic overview (Carstensen, Schoen & Albert, 2007)—divides Southeast into 22 biogeographic provinces. We based these units upon the Forest Service’s original 21 provinces, but deleted one (a rather confusing, discontinuous mainland unit on the border with BC) and added 2 for

Glacier Bay and the Chilkat region. According to that system, Xunaa Káawu spans 5 biogeographic provinces, whose salient attributes are as follows:

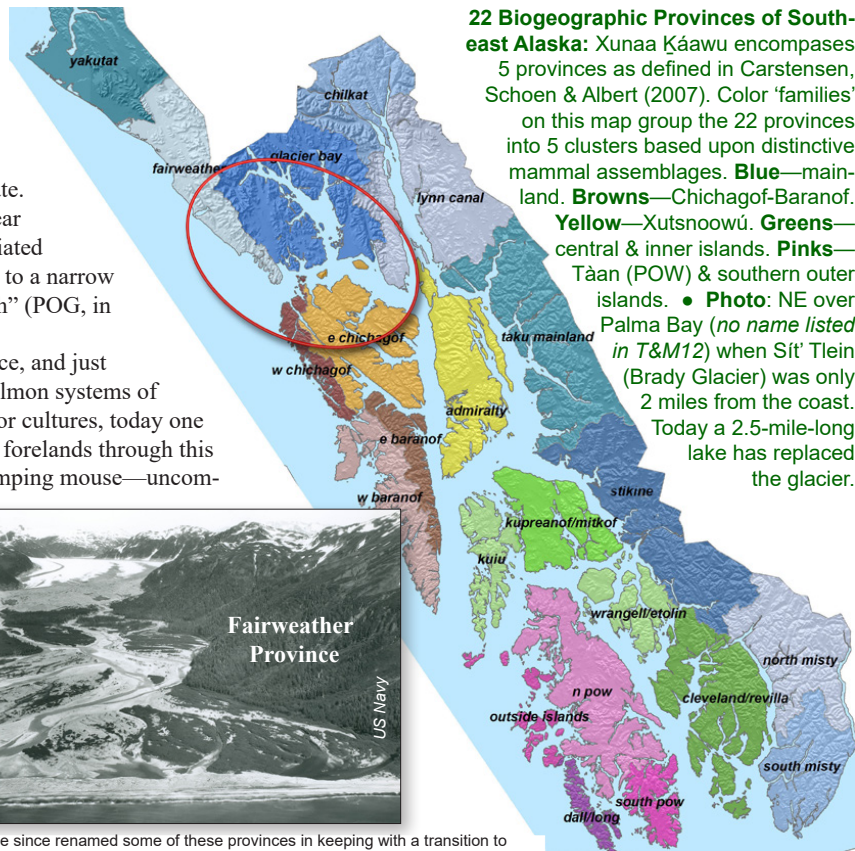
- **Fairweather Province** Today, the wildest of our 22 provinces; most difficult to access and with least human presence. Southeast's highest and most rapidly rising mountains were formed by collision of the Yakutat and Chugach terranes. Extremely wet hypermaritime climate. Glaciers cover 46%—more than any other province. Coastal refugia near Lituya remained ice-free during the great ice age; soils in those unglaciated pockets are by far the oldest in Southeast. Conifer forests are restricted to a narrow band along the coast, with the lowest percent of “productive old growth” (POG, in forester's lingo) of all 22 provinces.

The Alsek/Tatshenshini—defining the northern border of this province, and just beyond the claimed limits of Xunaa Káawu—ranks among the great salmon systems of the northwest coast—a lowland corridor connecting coastal with interior cultures, today one of the premier river float trips of our hemisphere. Moose colonized the forelands through this pass only about 50 years ago, along with lynx, red fox and meadow jumping mouse—uncommon elsewhere in Southeast.

- **Glacier Bay Province** Sit' Eetí Geeyí, *bay in place of the glacier* (Glacier Bay) experienced the most dramatic Little Ice Age (~1550—1850AD) in the world. About 85% of the province was covered by mile-deep ice in the upper reaches, sloping to the berg-spewing glacial terminus in Icy Strait (a name no longer descriptive). Many tidewater glaciers have since receded onto land. Recolonizing plants and animals followed, and after them, seal hunters, scientists, bureaucrats and tourists.



PS 2023: I've since renamed some of these provinces in keeping with a transition to Lingít but retained their boundaries. Numbers help to keep them in a general NW-to-SE series: 2 Lituya ● 3 Glacier Bay ● 5 Aak'w ● 10 West Xunaa ● 11 East Xunaa. More on biogeographic provinces is in a [draft atlas introduction](#), downloadable from [JuneauNature](#)



**22 Biogeographic Provinces of South-east Alaska:** Xunaa Káawu encompasses 5 provinces as defined in Carstensen, Schoen & Albert (2007). Color ‘families’ on this map group the 22 provinces into 5 clusters based upon distinctive mammal assemblages. **Blue**—mainland. **Browns**—Chichagof-Baranof. **Yellow**—Xutsnoowú. **Greens**—central & inner islands. **Pinks**—Taan (POW) & southern outer islands. ● **Photo:** NE over Palma Bay (*no name listed in T&M12*) when Sit' Tlein (Brady Glacier) was only 2 miles from the coast. Today a 2.5-mile-long lake has replaced the glacier.



Today, ice cover is reduced to 41% of the province.

At the onset of the Neoglacial, about 3- to 4,000 years ago, glacial advance built a vast, sparsely wooded outwash plain almost to the mouth of today's bay. Over this plain the Chookanhéeni, *grassy creek* (Berg Bay Creek) flowed, from which the [Chookaneidí take their name](#). Gustavus forelands were created by migrating outwash streams while ice still sat on the terminal moraine above T'aawák Séedi, *goose narrows* (Bartlett Cove Lagoon). They form a vast wetland mosaic, exceeded in size only by Yakutat forelands in all of Southeast Alaska.

Gakakaiwuhéen, *place where plenty of fish come* (Exclusion/Dundas River) and several river systems of the Gustavus forelands have the most extensive salmon habitat in Glacier Bay province. They share a history of rejuvenation or outright creation by copious glacial outwash or morainal impoundment in the Little Ice Age. Lakes supporting gaat, *sockeye*, have especially strong links to recent glaciation. Floodplains enfolding these systems now support mature forests with cottonwood, willow and alder that shed nutrient-rich leaf litter into the streams. Sitka spruce are dispersed among this deciduous matrix, but old-growth forests, abundant elsewhere in Southeast, are here confined to upland slopes.

Because of its youthfulness, lowland Glacier Bay seems almost a bioregion apart from the rest of the island provinces of Southeast Alaska. In our regional conservation assessment (Schoen & Dovichin, eds, 2007), we selected guwakaan, *deer*, ch'cet, *marbled murrelet*, and shéiyi, *spruce*, as **indicator species**, from which each watershed and province earned a



Glacier Bay Province

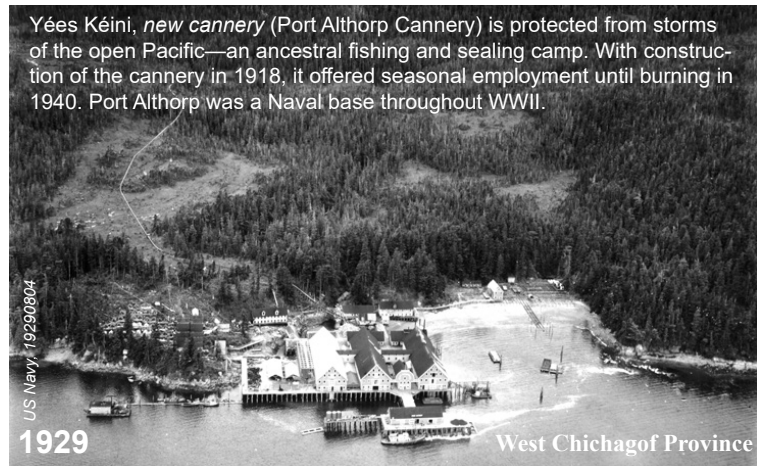
Kevin White photo ND

View north over X'áat'x'i Xoo, among the islands (Beardslee Group). Cloudy glacial silt, carried down from tidewater termini at bay head, begins to settle in calm pockets between the islands. The pancake-flat X'áat'x'i Xoo archipelago is made of densely compacted silt and clay, thought to be former lake beds that once dotted a coarse outwash plain prior to the final advance. Then, Sít'k'i T'ooch', *little black glacier*, mined away the coarser surroundings, turning these former wet concavities into dry convexities, and expelling the Xunaa temporarily from their ancestral biogeographic province.



score, or rank. By those criteria, Glacier Bay biogeographic province ranked poorly. If instead we'd chosen *dzísk'w*, *moose*, *yáay*, *humpback whale*, *dúk*, *cottonwood*, or the endangered, periglacial Kittlitz's murrelet as indicators, Sít' Eetí Geeyí would have claimed a more realistic rank among the world's richest and most charismatic provinces.

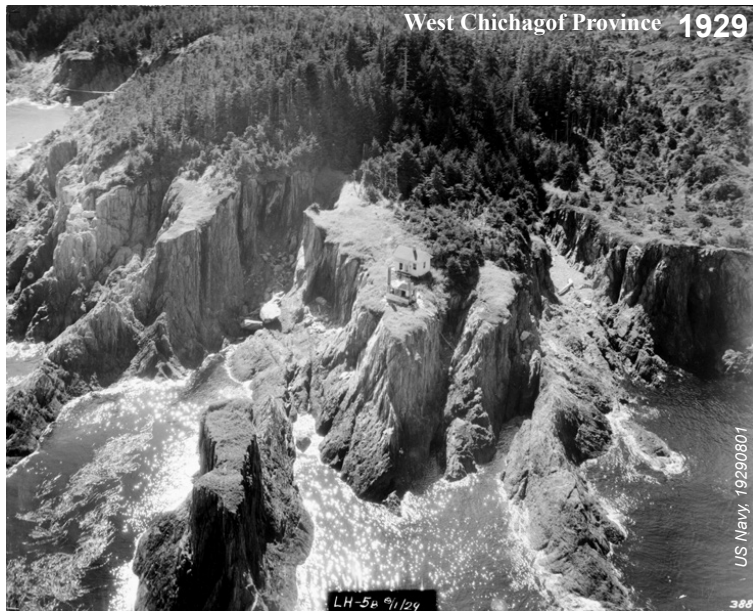
- Lynn Canal Province** The eastern portion of Xunaa Káawu extends into this mainland province that centers over lands and waters of Áak'w Kwáan. Much of the Xunaa portion is Wooshkeetaan country—a clan with strong presence today in both Hoonah and Juneau. The southern Chilkat range, tapering down to Wanyeik'axoo, *near among the edge place* (Swanson Harbor), dominates eastern Xunaa Káawu. Because of the vast still-healthy Juneau Icefield, this province is second only to the Fairweather in percent glacial cover, at 42% just edging out Glacier Bay Province (41%). Steep



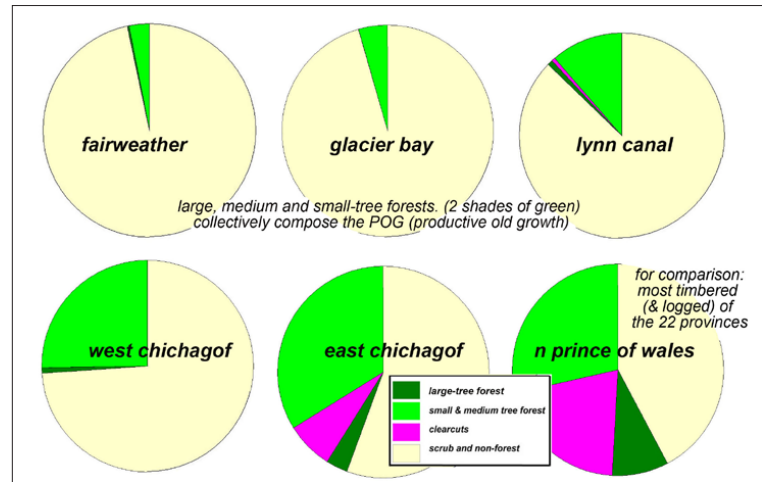
mountains with comparatively little mellow lowland topography contribute to strikingly low percent cover of productive old growth (POG) considered “commercial.” Compare the following pie charts for 6 biogeographic provinces. Connectivity with interior gives Lynn Canal Province the 3rd highest mammal richness—31 species compared to only 13 species on Chichagof Island.

- West Chichagof Province** The dramatic and complex shoreline of western Chichagof and Yakobi Islands is favored by advanced kayakers and recreational boaters, but the land is starkly unproductive throughout this province. Large-tree forest (pie charts, following) is almost non-existent—restricted to small patches in certain valley bottoms—and even productive old growth is scarce. Rolling coastal lowlands are dominated by sphagnum bog and stunted forested wetland. Prevalence of granitic bedrock, a saturated





**Above:** US Navy photographers were asked to document lighthouses in the 1929 surveys. They caught this low oblique at Yayá, steep side of it, (Cape Bingham, or Soapstone Point), a prominence emblematic of this scantily forested, wave-blasted, hypermaritime biogeographic province. • **Right:** Percent cover of vegetation types in the 5 biogeographic provinces of Xunaa Káawu, with a 6th, more southerly province for comparison. East Chichagof Province far exceeds its neighbors in quality of commercial forest land. “Scrub and non-forest” includes forested wetland, peatland, alpine & subalpine communities, and high rock and ice.



blanket of Edgcombe ash, and exposure to the open ocean combine to suppress forest development on West Chichagof compared to easterly portions of the island. Because this region has little appeal to the timber industry, conservationists were able to secure 87% of the province as Wilderness or LUD II—both off limits to logging.

Absence of wolves and rarity of persistent snow on the outer coast leads to high deer populations in this province. Even so, for the T’akdeintaan who claimed most of the outer coast, marine resources—laak’ásk, kat’áłxi, *black (nori) & ribbon (palmeria) seaweeds*, shaaw, *gumboots*, gaat sockeye, x’oon and tsaaw, *fur & harbor seal*—have always been the primary attractions of this lovely-but-forbidding coast. By some interpretations, the Chookaneidí



settlement *X̱aayta.aan*, *inside the redcedar village*<sup>2</sup> (Surge Bay) is where the first contact took place between Tlingit residents and European explorers (Dauenhauers & Black, eds, 2008).

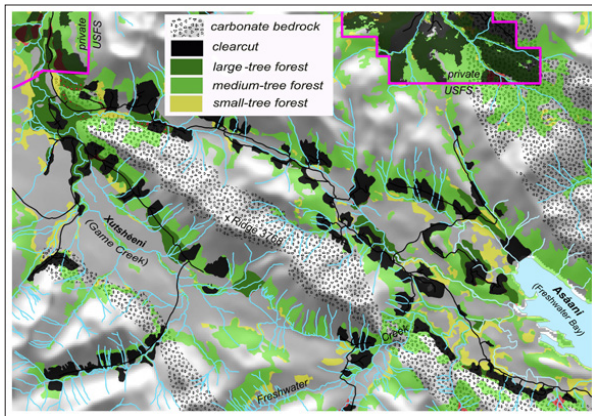
- **East Chichagof Province** Southeast's northernmost island province includes most of Chichagof as well as Lemesurier and Pleasant. Geologically, almost all of the province lies within the Alexander Terrane, which, farther to the southeast, contains the famous caves and (vanished) giant spruces of northern Tàan, *sea lion* (Prince of Wales Island). As on Tàan, carbonate rocks are common in East Chichagof Province, with high-quality karst scattered primarily throughout the eastern portion. In the following section on *Bedrock geology*, these are divided into medium

<sup>2</sup> I question the translation of this name in T&M12. In Edwards' *Dictionary of Tlingit* (2009), western **red**cedar is *laax̱* and **yellow** cedar is *x̱áay*. More thoughts on this name follow in the section on *Villages of Xunaa Káawu*.



versus high-% carbonates (paler vs darker blue). The western province is predominantly granitic with thinner soils and less productive forest (Nowacki *et al* 2001). *Unlike* northern Tàan and its satellite islands, where gently rolling *lowland* karst once hosted vast stands of large-tree forest, Chichagof karst is mostly

Hoonah in 3D. On these paired vertical air photos (stereograms), north is generally not 'up' but constrained by flight direction (left in this case). Best viewing is with pocket stereoscope over a high-res tablet. 3D viewing adds a whole new dimension to the question *Why do we live here?*

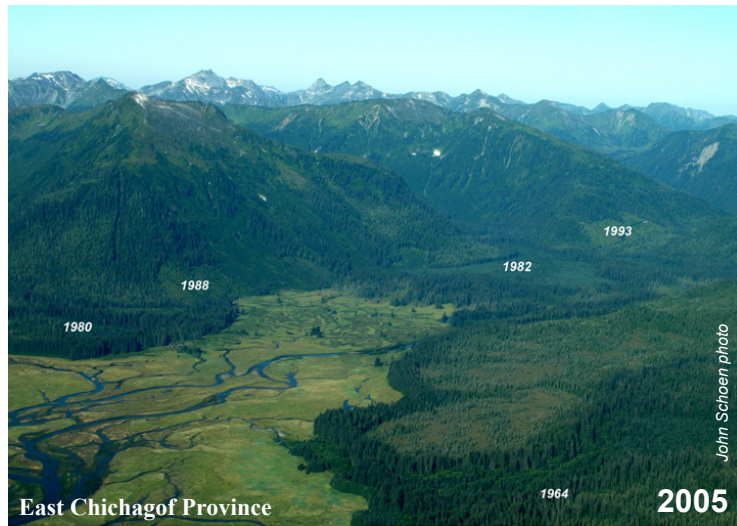


Karst near Xutshéeni (Game Creek) and Asáani (Freshwater Bay) in relationship to toe-slope logging. Black patches (clearcut) were once mostly large-tree forest (darkest green). While few clearcuts are directly on karst, most of the logged forests received nutrients from karst upslope.

confined to ridgetops and sideslopes too steep for such forest. However, nutrients delivered from these upland sources—and carbonate rock in colluvial-alluvial toe-slope formations—accounts for much of the productivity of large-tree forest in this province. Since the 1970s, most of that forest has been logged.

Precipitation decreases to the east. Hoonah lies in a rain shadow, with only 53 inches, while Pelican gets 123. Maritime influence is notably less than in West Chichagof Province, with a greater proportion falling as snow.

Unlike the other 4 biogeographic provinces of Xunaa Káawu, logging roads penetrate far into the island’s interior, providing greater human access but placing wildlife populations at risk of excessive hunting and trapping. Restrictions are imposed by ADF&G for vulnerable species such as xóots, *brown bear*, k’óox, *marten*, and—following a series of deep-snow winters from 2006 to 2009—guwakaan, *black-tailed deer*.



Neeká, *Chookaneidí slave's name* (Neka Bay) is the province’s largest estuary. This photo shows only its NW lobe, with dates of USFS logging in the surrounding uplands and alluvial fans. The 224-acre patch from 1982 was logged prior to establishment of the 100-acre maximum.

Biogeographic provinces, as currently drawn, reflect not only ecological realities but also today’s **island-centric** management. Comparing the [22 provinces](#), with the map of [16 kwáans](#), the latter, ‘tribal’ units center *not* on islands but rather on **marine passages**. For example, Xutсноowú (Admiralty Island) is today considered a biogeographic province onto itself, isolated rather than married to its neighboring islands and mainland shores. In contrast, to the Tlingit, Xutсноowú was and remains claimed by not one



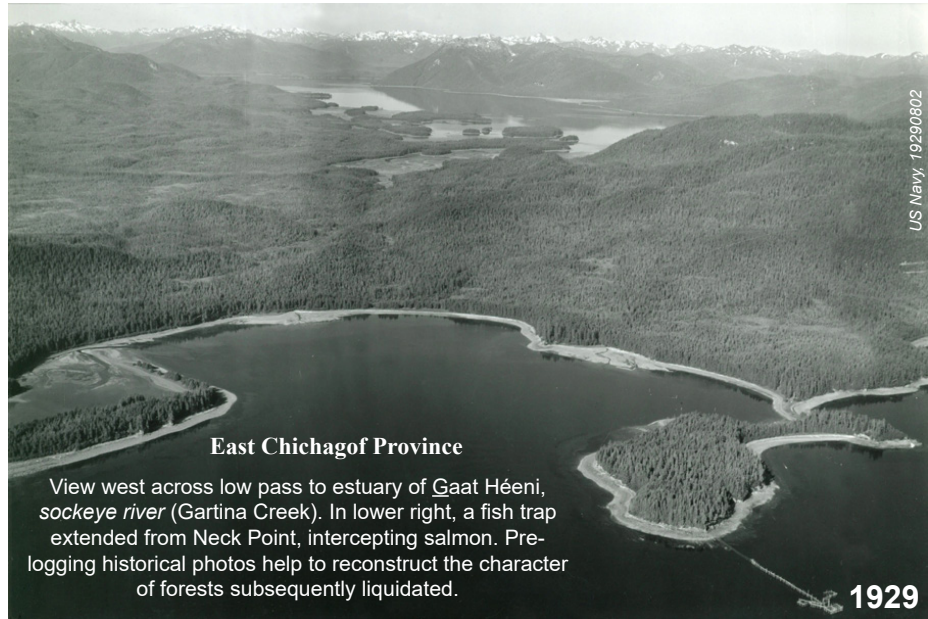
but 4 different kwáans: the Xutsnoowú, Áak'w, T'aakú and K'éex'. Kwáan units are usually split not down the center of waterways but along the islands' rarely-visited mountain spines. Geographically speaking, Xutsnoowú Kwáan are not the people of their eponymous island but rather the people of Chatham Strait,<sup>3</sup> using both sides equally.

Similarly, Xunaa Káawu were given their most recent name in recognition of the southwest-facing wind-protected bight on Chichagof Island. But geographically, at a broader scale, it may be better to characterize them as people of Icy Strait/Cross Sound.<sup>4</sup>

In consequence of divided ownership, land management of Xunaa Káawu is today schizophrenic, with mostly 'hands-off' protections north of Icy/Cross Sound under the National Park Service, and high timber-priority jurisdiction to the south, on Chichagof Island, under the US Forest Service. On Sealaska and Huna Totem lands, extraction has been still more aggressive. Compare, for example, the following panorama at Lakooxás' T'aak Héen, *creek beside toy boat island* (Spasski Creek) to the example of Forest Service

<sup>3</sup> T&M12 give no name for what we now call Chatham Strait—nor for Chichagof Island. Even the island called Xutsnoowú has a vigorously-contested place-name history (Hope & Thornton, 2000:34). These typify interesting gaps in the place-name atlas. It's tempting to speculate that people needed no names for features encompassing their entire inhabited universe—as a fish needs no name for water. But that's clearly simplistic when we remember that the Tlingit voyaged as far as Puget Sound for trade and war.

<sup>4</sup> *Ditto*; T&M12 offers no name for Icy Strait or Cross Sound. Incidentally, these 2 Euro-names are at least unyoked to IWGs. Vancouver named the former in 1794, reasonably enough, for westward-drifting bergs. Cook named the latter because it was "discovered" on Holy Cross Day, 17780503. (Well, okay, I guess that does obliquely reference an IWG. . .)



### East Chichagof Province

View west across low pass to estuary of Gaat Héeni, *sockeye river* (Gartina Creek). In lower right, a fish trap extended from Neck Point, intercepting salmon. Pre-logging historical photos help to reconstruct the character of forests subsequently liquidated.

logging at the Salt Chuck, or to the patchwork cuts on the previous map of karst and logging at Xutshéeni, *brown bear creek* (Game Creek). The Forest Service logs in baby steps; corporations log in watershed-gobbling sprints.

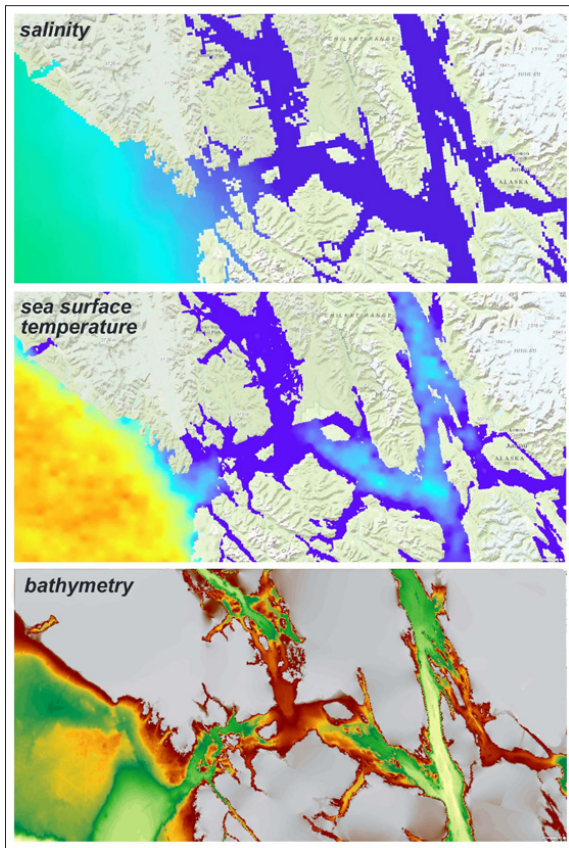


**Above:** Typical logging pattern on corporation lands free of USFS standards & guidelines (S&Gs). Deforestation above Spasski Creek bear-viewing shelters is only one appendage of a single contiguous clearcut spanning more than 2,700 acres. This pano was stitched from 2 Shorezone images. • **Right:** Typical logging mosaic on the Tongass National Forest: Salt Chuck at head of Port Frederick. Due to the 100-acre maximum patch size, largest clearcut is 41 acres (1992: upper left). However, the S&Gs allow new cuts to be scabbed onto earlier ones when regrowth attains 5 feet—leading on productive landscapes to what the Ground-truthing Project called “creeping megacuts.” ([Carstensen & Christensen, 2005](#)).

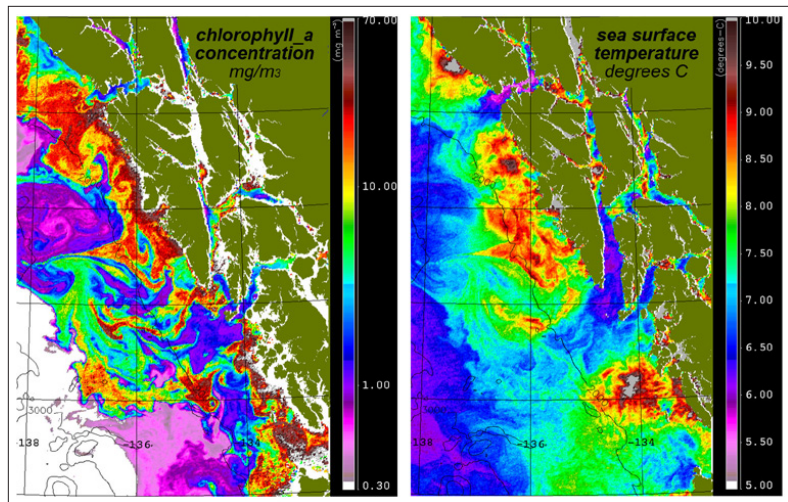
**Land and sea** I’ve focused on terrestrial geography in this section. But to marine-oriented cultures, oceanographic patterns could arguably be considered more relevant than, say, the productivity of forests or peatlands in the terrestrial ‘backyard.’ In their summary paper on







**Left:** Marine attributes in Xunaa Káawu, from *Icefields to Estuaries* module, hosted on the Southeast Alaska GIS Library.



Southeast's oceanographic habitats and linkages, Weingartner *et al* (2009) first link bottom topography (bathymetry) to tidal currents:

*"Tidal characteristics (sea-surface elevations and velocities) are strongly influenced by bathymetry and coastal geometry, and the contorted relief and channels of Southeast Alaska generate enormous spatial variations in tidal flows. For example, tidal currents in Cross Sound exceed 4 knots, whereas in Icy Strait, [they're only] 0.5 knots. . . Tidal streams around headlands can result in lee eddies that collapse on tidal reversal."*

Ultimately, these physical features determine biological patterns:

*"Major phytoplankton bloom occurs in the spring when stratification and light levels are suitable. . . Inshore waters initially stratify due to runoff. . . The phytoplankton community is dominated by chain-forming diatoms during the spring bloom that soon deplete nutrients. . . In Glacier Bay. . . the spring bloom typically occurs in March and high chlorophyll-a levels are sustained from spring through*

**Above:** While maps on left show long-term averages, this pair gives a snapshot from May 1st, 2009. Note extreme, fine-scale variability within Icy Strait/ Cross Sound, keyed to tidal currents, in turn dependent on bottom conformation. From <http://research.cfos.uaf.edu/>



summer and into autumn, presumably from renewal of nutrients from mixing or other fjord-related circulation processes. . . . Highest chlorophyll-a levels correspond to areas of moderate stratification, higher light levels (lower sediment loads), and zones of potential nutrient regeneration. . . . Geology, bathymetry, weather and larger scale climate variations strongly influence the phasing and magnitude of phytoplankton blooms in Southeast Alaska.”

Higher up the trophic (food) pyramid, connections become more speculative:

*“For king crab larvae, length of larval period was negatively correlated with chlorophyll-a concentration. Higher zooplankton production was correlated with higher growth in fish larvae, and zooplankton nauplii concentrations indicate fish larvae should not have been prey-limited. Timing of maximum fish larval abundance varied among species. Some species consistently reached peak abundance before spring bloom, whereas others reached*

*peak abundance in concert with zooplankton peak abundance, suggesting survival through early life history is determined by different processes in the two groups and that linkages to primary productivity are not consistent across species.”*

**Human geographies** I’ll rely on others to tell of the origins, movements and tenures of Xunaa Káawu’s clans and houses. Two examples may suffice here—the first from deLaguna (1972), as concerns the T’akdeintaan, a clan of the Raven moiety. Although this version comes from deLaguna’s description of the Yakutat region, that perspective is helpful in linking the T’akdeintaan to the rivers and bays of the outer coast. Please recognise that for every such story and interpretation, there are usually variants—either confirming, complementary or contradictory—yet always fascinating and educational. I’ve updated Frederica’s spellings to

NW across Mud Bay and T’awaḵx’áat’i, *goose island* to Yéik Yee Aaní, *land of shaman spirits* (Mt Fairweather area), 60 miles away.

East Chichagof Province 2005

John Schoen photo

A well-grounded answer to our essential question—*Why do we live here?*—would link the stories of each of these clans and houses (their birth places, pedigrees, splittings-off, crest-claims) to the geology and ecology of Xunaa Káawu. Such is the objective of our course.

follow T&M12:

*“The T’akdeintaan . . . are a Raven sib at Hoonah. Swanton (1908: 399) renders their name as . . . ‘retaining-timber-house people,’ and reports the Tax’hit aan, ‘people of slug house,’ were a branch of the above. Boas (1917: 124) gives tax’ as ‘retaining plank’ for a house; my informants translated [it] as ‘bench’ around the inside of a house, or as a ‘worm or snail out of the shell,’ while ‘slug’ was yen. (Evidently tax’ carries the implication of something annular or spiral, like the snail or the encircling bench.) My informants also insisted that the Tax’hit aan were different from the T’akdeintaan. The latter were really a branch of the L’uknaḡádi of Guséix.<sup>1</sup> When that town was*

1 Guséix translates as *sunken*, this is the famous ‘lost village’ on Akwe River, since relocated, and richly documented on Project Jukebox: <http://jukebox.uaf.edu/drybay/hmt/tape19a.htm>

### Clans and houses of Xunaa Káawu from Hope (2003)

RAVEN MOIETY		
clan	house	translation
T’akdeintaan	T’akdein Hit	T’akdein house
	X’áakw Hit	freshwater-marked coho house
	X’áakw yádi Hit	small freshwater coho house
	Yéil kúdi Hit	raven’s nest house
	Yéil Hit	raven house
	Yáay Hit	whale house
	K’óox Dísi Hit	marten moon house
	Teet Hit	wave house
	Kaa Shaayi Hit	man’s head house
	Tax’ Hit	snail house
Koosk’eidí	Xaas Hit	cow house
Gaanax’ádi	Gaanaxaa Hit	Gaanaxaa house

WOLF/EAGLE MOIETY		
clan	house	translation
Wooshkeetaan	Wooshdaa Hit	over all house
	Tóos’ Déx’i Hit	shark backbone house
	Noow Hit	fort house
Chookaneidí	Naanaa Hit	up the bay house
	Xáatl Hit	iceberg house
	Xóots Saagi Hit	brown bear’s nest house
	Wandaa Hit	around the edge house
	Xóots Hit	brown bear house
	Yan Wulihashi Hit	drifted ashore house
	Aan Eegayaak Hit	iceberg on the beach house
	Shux’aa Xaay Hit	first yellow cedar house
Kadaḡw’ádi	Xáay Hit	yellow cedar house
Kaagwaantaan	Xóots Kúdi Hit	brown bear’s nest house

*abandoned, about half of the sib moved to Lituya Bay, where they split into the X’at’ka.aayi and the T’akdeintaan. The latter are those who went on to Hoonah. On this journey they received their present name because they camped at a point, Daqden. However, they still claim Lituya Bay as their territory, and until recently hunted sea otter near Lituya Bay and Cape Fairweather. Their rights to Lituya Bay are generally acknowledged.*

*Another informant told me they received their name from a point, Daqden, near Sitka, where they camped during the*

*northward dispersal of Raven groups “after the Flood.” Tale 104 (Swanton, 1909: 388) implies they lived with the Kaagwaantaan at Sand Hill Town (or at a town called Xakw-noowú) north of Cross Sound. When this was destroyed by an advancing glacier, summoned by the incautious words of a menstruant, the Kaagwaantaan moved to Grouse Fort in Icy Straits, and the T’akdeintaan settled ‘at a place just opposite.’ Since Grouse Fort was on a point, it is not clear whether the T’akdeintaan settlement was on the mainland shore of the cove across from the point, or whether it was on the shore of Chichagof Island, south of Icy Strait.”*



For balance, our second example concerns the Chookaneidí, an Eagle moiety clan. *In Haa Shuká, our ancestors*, (Dauenhauers, eds, 1987:153) Nora's father Willie Marks recorded the story of *Kaakex'wtí*, the man who killed his sleep:

*"Now, I will tell of Kaakex'wti  
This place called Gathéeni  
is where people lived, out there along the ocean.  
On the mainland from Cape Spencer the place  
is called Gathéeni.*

*It was this kind of a place ancient people lived in.  
They used to live there, away from  
war parties; they lived in a safe place.  
A difficult place; this was how people lived."*

*Why do we live here?* So many answers in just this introduction to the story of *Kaakex'wtí*! ". . . a safe place. A difficult place . . ." How concisely this summarizes the forbidding sea stacks and narrow, surf-swept entryways at Aanax Séet and Ta.aan, described below in the section on *Camps & settlements of Xunaa Káawu*. Safety from war parties, yes, at a cost of extreme exposure to the temperamental sea.

Willie's account should be read and analysed, with reference to the explanatory notes (Dauenhauers, eds, 1987:360), which breathe life into the tale for those of us not privy to details of Chookaneidí history and protocol.

For our purposes, and for brevity, the distillation in Julie Cruikshank's *Do glaciers listen?*

(2005:37) gives us much of the story's background **geography**—and exemplifying the detective work necessitated by constantly changing periglacial environments. Julie draws from 3 versions of the story: Willie's, and 2 variants from Swanton (1909), by Deikinaak'w, a Kaagwaantaan Eagle man, and Kaadashaan, a Kaasx'gweidí Raven, one of the guides of Muir and Young in 1879. She also connects this story to the subsequent saga of Kaasteen, in the accounts of Susie James and Amy Marvin:

*"Kaakex'wti [was] a member of the Chookaneidí clan, living somewhere between Mount Fairweather and Cross Sound. [He] travelled inland and met, then 'organized' Athapaskans living on the lower reaches of the Alsek River, and ultimately incorporated them into trading relationships with coastal Tlingit. Kaakex'wti's journey was prompted by distressing events, including an epidemic, that caused him to turn his back on the sea and head inland, fully prepared to die. He crossed a glacier that deLaguna suggests could refer to 2 probable routes. One originates at Icy Point . . . and leads across a glacier that has now receded; however on that route he would have required someone to ferry him across Lituya Bay to connect with beach access to Dry Bay. The other route begins at the head of Glacier Bay and would have involved crossing the combined Melbern and Grand Pacific 'through glaciers' to Alsek River. In either case, headed northwest, using Tsalxáan (Mt Fairweather) as both compass and weather vane. He reportedly wore snowshoes with claws that allowed him to scale cliffs and cross glaciers.*

*Eventually, Kaakex'wti reached the Alsek River, where he encountered a party of Athapaskans. He studied them at a distance (just as they observed him), amazed to see that they had only the most rudimentary techniques for procuring food.*

*Curiosity grew on both sides, and when they met he taught them how to make fish traps for eulachon and salmon, and deadfalls to catch small game; how to preserve and store meat, roots, and berries, and how to use a pit oven. . . These Athapaskans in turn arranged for him to marry the 'daughter of the chief,' and their wealth amazed Kaakex'wti: at his wedding he received moose skins, marten skins, beaver skins, and 2 copper spears valued at 2 slaves. The relationship strengthened, and other glacier crossings are reported during Kaakex'wti's residence on the Alsek, including the arrival of a slave from a Chilkat Tlingit community on Lynn Canal via an interior route across a glacier to the Alsek.*

*After some years—the number varies from version to version—Kaakex'wti proposed that his Athapaskan in-laws accompany him back to his coastal home to formalize more systematic trade. They gathered 'small coppers' and set off. At their first destination, they had a rude shock. Tlingit residents, ironically members of Kaakex'wti's own Chookaneidí clan, were so alarmed by the strangers that they insulted and dismissed them, forfeiting his gift of copper and their opportunity to participate in what would become a flourishing trade. Persevering, the party crossed another glacier above Cross Sound and reached a Kaagwaantaan clan settlement called Sand Hill Town. Thomas Thornton identifies this as L'eiwshashakee Aan, town on the glacial sand cutbacks, located at Bartlett Cove. . . These Kaagwaantaan clan hosts were more welcoming and ultimately profited so much from their subsequent trade with Athapaskans that they were able to build the enormous 8-beamed Shadow House that took a year to complete. 'The house was so big that a person who walked in front of it always appeared small, and when he entered, one had to speak loudly to be heard across.'"*

*Yet just a year later [in the Deikinaak'w version] Shadow House was completely crushed by an advancing glacier when a young woman who was secluded at the onset of puberty angered it by speaking carelessly. . . [3 versions summarized. In each of them] . . . the image of the 'woman in the glacier' remains the embodiment of the current Chookaneidí clan title*

to Glacier Bay, a claim clan members say is verified by the fact that they paid for this place with the blood of their ancestor, the woman in the glacier. . . . Glaciation here has erased most remains of ancient settlements, and isostatic rebound and tectonic uplift make other sites difficult to locate.”

Julie’s conclusion about difficulties in reconstruction are probably valid in regard to L’awshaa Shakee.aan, *town on top of the glacial sand*. The topography of Bartlett Cove was so radically rearranged by advance of Sit’k’i T’ooch’ that the village can only be placed approximately (sidebar *Before the last advance*). But for camps and settlements in less dynamic locations, researchers and elders actually know a great deal about why and *exactly where* people lived. And for lesser known cultural sites, the convergence of oral tradition with scientific investigations holds great promise for more discovery.

One final note about ‘balance,’ scaling out to broader landscapes and world-views than just Tlingit clan relations and reciprocities. Julie Cruikshank is Canadian, and has given us beautiful stories from the perspective of interior women (Cruikshank, 1990). She points out that the story of K̄aakex’wtí is also important among Athabaskan people, but that the encounter between ‘nations’ at Dry Bay is differently framed by the people of caribou and silverfox. In these accounts K̄aakex’wtí was “*put to work*” by his new friends and in-laws. To the Southern Tutchone, the coastal Tlingit were:

“relatively impoverished ‘poor cousins’ and the Athapaskans taught them all the skills they needed to survive.” Cruikshank (2005)

Every story-teller and writer brings bias to the tale. It will be our challenge in this course—in asking *why we live here*—to remain alert to biases in others and in ourselves. Master ethnologists such as Frederica deLaguna and Julie Cruikshank learned through deep experience to see the world with equal resolution, through eyes of residents and aliens, through lenses of science and of place-based cultures. They remind us that ever-strengthening tolerance and curiosity are among the richest gifts of a balanced education.





siliceous turbidites, and limestone. In Glacier Bay area, includes thin-bedded argillaceous and calcareous sedimentary rocks of Rendu Formation, with more limestone than Tidal Formation, and locally silicified 'hornstone.' Conglomerate with pebbles and cobbles of granite, syenite, limestone, graywacke, chert, quartz and limestone. Upper member has medium to thick-bedded gray, fetid, fossiliferous limestone, and black, organic calcareous mudstone.

**DSld** Limestone & dolostone (Lower Devonian to Silurian): In Glacier Bay includes Pyramid Peak Formation, consisting of light gray, very thin to thick bedded nonfossiliferous limestone with interbedded argillite near top; lower part thin bedded dark gray to black limestone. Includes Kennel Creek Limestone with gray, thin- to very thick-bedded limestone with few beds of dolostone and limestone breccia, minor shale and siltstone.

**Sab** Massive limestone and algal boundstone (Lower to Upper Silurian): In Chilkats & Glacier Bay includes Willoughby Limestone, containing massive, bluish gray to light gray limestone and marble; also reefoid limestone with minor limestone breccia, mudstone, and polymictic conglomerate.

**SOI** Limestone (Ordovician? & Silurian): In Glacier Bay & Chichagof, includes metamorphosed limestone & chert associated with metamorphosed turbidite units, including gray to white massive marble, with chert nodules & minor intercalated ribbon quartzite.

**Stl** Limestone (Silurian): In Glacier Bay, thin to medium bedded light gray limestone and minor limestone turbidites; also limestone of the Tidal Formation, max thickness 2,300 ft. but mostly <200 m. Limestone turbidites probably interchannel & overbank deposits. More massive limestones may be slope facies deposits or carbonate banks like other carbonate units in Glacier Bay.

#### CARBONATES-MEDIUM%

**Drl** Redbeds, conglomerate, limestone (Lower Devonian): On Chichagof, includes Cedar Cove Formation; lower member is mixed argillite, tuff, limestone, & graywacke; upper member is dominantly limestone. Gradationally overlies Kennel Creek limestone. Graywacke forms turbidites, debris flows, & crossbeds, & is locally conglomeratic.

**Pal** Argillite & limestone (Permian): Thick limestone section includes phyllite, slate, shale, & graywacke; limestone is thin-bedded &

depositionally interbedded with other rock types; *Ps*/ unit exposed north of Casement Glacier & south of Adams Inlet, Glacier Bay. Sittgha-ee Peak Formation phyllite, slate, and metagraywacke. Also shale, siltstone, & graywacke (?) found in Muir Province In Chilkat Mountains area.

**Pzmc** Marble & calc-silicates (Paleozoic): Marble & calc-silicate layers up to several hundred meters thick. Mappable units within *Pzam* unit.

**Pzs** Siliceous & calcareous schist (Mesozoic & Paleozoic): Banded siliceous & felsic semischist, quartzite, sericitic and chloritic phyllite, calc-silicate gneiss, & marble. Felsic & silicic semischist locally have relict volcanoclastic texture.

**Stg** Graywacke & calcareous wacke turbidites (Silurian): In Glacier Bay, Rendu & Tidal Formations include thin bedded argillite, limestone, & limy mudstone; carbonates & fine-grained clastics, graywacke exposed south of Adams Inlet. In Chilkats & Chichagof, includes Point Augusta Formation, containing grayish brown to gray fresh, tan to gray weathering graywacke, mudstone & calcareous mudstone; graywackes. Soft sediment deformation is common.

#### SEDIMENTARIES

**KJk** Melange facies of Chugach accretionary complex (Cretaceous & Jurassic): On Yakobi & Chichagof, Kelp Bay Group consists of slaty argillite with lenses of tuff, graywacke, & chert. Tectonically disrupted fabric overprints soft-sediment deformational features, chaotically deformed greenstone, greenschist, tuff, graywacke, argillite, chert, limestone, & phyllite in a foliated argillaceous & tuffaceous matrix.

**TKs** Sitka Graywacke of the Chugach accretionary complex (Tertiary & Cretaceous): A discontinuous belt of interstratified metagraywacke & argillite along west coast of Yakobi, Chichagof, & Baranof Islands

**Ty** Yakataga Formation (Pleistocene to Miocene): Gray marine tillite, siltstone, sandstone, & conglomerate of the Yakataga Formation around Lituya, ~5,000m thick. Base defined by lowest appearance of matrix-supported clasts inferred ice-rafted. Unit marks change from deep water temperate fauna to shallow, cold water fauna. Majority is diamictite of massive to sandy mudstone with clasts to 5m. Some clasts are faceted or striated, with crushed shells in growth position. Sandstone is lithofeldspathic & includes rhythmic sandstone-mudstone turbidites with graded beds, contorted beds, & flute casts.

#### METAMORPHICS

**Kvm** Schist & gneiss of Chugach accretionary complex (Cretaceous): Muscovite schist & phyllite, biotite schist & semischist, chlorite schist, and phyllite - moderately folded / faulted, between the Tarr Inlet fault & the Fairweather fault metagraywacke & slate protoliths.

**Pzam** Amphibolite & marble (Paleozoic): Baranof, Chichagof, and Yakobi Islands. Banded hornblende-plagioclase and biotite-hornblende-andesine-quartz + or - almandine garnet amphibolite with subordinate marble in lenses up to 50 m thick. Greenschist to amphibolite facies metamorphic rocks include amphibolite, gneiss, and schist, locally intercalated with thin units of marble and calc-silicate granofels.

**SOmi** Metamorphosed intrusives (Silurian to Ordovician): Heterogeneous, granitic to mafic plutonic & metamorphic rocks consisting of granite, syenite, quartz monzonite, leucodiorite, diorite, quartz diorite, gabbro. Garnet-hornblende gneiss in Mount Fairweather quadrangle.

**SOT** Volcanoclastic turbidites, argillite & chert (Silurian & Ordovician): In Glacier Bay & Chichagof, includes hornfelsed units with granoblastic, layered, light gray to light green, fine-grained hornfels, also metasedimentaries, & foliated amphibolite, low pressure hornfels facies minerals.

**Trg** Greenstone (Triassic): On Baranof, includes massive greenstone east of Patterson Bay. Massive greenstone with relict vesicles and calcite-filled amygdules. Mostly massive and several 100 meters thick. Rare pillow breccia, rare lenses of lapilli tuff, rare feeder dikes. No marble.

**Trsv** Volcanoclastics of Rodman Bay (Triassic): Massive & schistose greenstone, graphitic schist, phyllite, and graywacke, dominantly greenstone with interlayered graphitic schist or phyllite. Lenticular beds of limestone similar in color & composition to Whitestripe Marble.

#### INTRUSIVES

**Jmi** Sheared diorite (Jurassic): Green, medium grained hornblende diorite. Pervasively altered to chlorite & epidote. Not magnetic. Color index 25-35. An extensively altered and sheared, green to gray green (C.I. 15-25), medium grained, hornblende forms extensive sills & dikes in Whitestripe Marble & contacts with Goon Dip Greenstone.

**Jqd** Quartz diorite & tonalite (Late Jurassic): Fine- to medium-grained, subhedral, hypidiomorphic mineral textures. At Kennel Creek on east Chichagof Island, buff to light gray, Cl 2-10, hornblende adamellite, hornblende monzonite, & biotite alaskite.

**Jqt** Quartz diorite & tonalite (Middle Jurassic): On Chichagof, medium to dark gray green (C.I. 25-50), medium to coarse grained, foliated hornblende, more than biotite. One to 2% magnetite is common, some to 5%.

**Kd** Syenite, monzonite, & diorite (Cretaceous): In Skagway & Mount Fairweather quads, hornblende biotite diorite, hornblende biotite quartz diorite, lesser amounts quartz monzonite, quartz monzonite gneiss, granodiorite, & hornblende. Color index in diorite is 15-25. Granodiorite contains 15% biotite, 5% hornblende, 15-20% quartz. Plutons west of William Henry Bay mostly sheared augite biotite diorite, augite diorite.

**Kg** Granite, adamellite, granodiorite, & tonalite (Cretaceous): In Chilkats, light to medium gray, pinkish gray, color index 4-30, average 15, medium-grained, equigranular, locally seriate, biotite-hornblende granodiorite, hornblende-biotite granodiorite

**Kgb** Gabbro (Cretaceous): Hornblende gabbro & hornblende leucogabbro. Locally gabbro contains uraltic hornblende with pyroxene cores. Also layered leucocratic gabbro. Layering consists of alternating bands of fine-grained leucocratic gabbro.

**Kgm** Migmatite (Cretaceous): In Glacier Bay area, migmatitic granodiorite; light gray biotite hornblende granodiorite invader with mafic agmatite, plastically deformed schist, gneiss, & marble inclusions, & with felsic segregation & restite fabrics.

**KJd** Diorite (Cretaceous or Jurassic): Pervasively altered hornblende diorite. Green, medium-grained, inequigranular, color index of 40. Dominantly a medium to dark gray green (C.I. 35-50), medium to coarse grained, foliated, hornblende diorite with minor clinopyroxene gabbro. Up to 3% magnetite.

**KJt** Tonalite & granodiorite (Cretaceous or Jurassic): Garnet-bearing, medium grained tonalite & granodiorite, mafic xenoliths numerous locally, particularly near contacts with Goon Dip Greenstone. Large areas with abundant inclusions & septa of metamorphic rock near Black River, Deep Bay, & Patterson Bay on Chichagof.

**Kqm** Quartz monzonite and quartz diorite (Cretaceous): In Chilkat Mountains, quartz monzonite is medium-grained, locally K-feldspar porphyritic. Lineated hornblende defines magmatic foliation

**Sum** Pyroxenite, hornblende, & gabbro (Early Silurian and/or Late Ordovician): Magnetite pyroxenite, olivine pyroxenite, & magnetite pyroxene gabbro, with minor biotite and a rare hornblende at Salt Chuck. To 10% magnetite at Salt Chuck. Thermal aureole at Salt Chuck is ~10m wide.

**Tegr** Granite (Tertiary—Eocene): Very light gray to white, Cl ~3, medium-grained biotite muscovite granite crops out among small islands along west coast of Chichagof

**Tet** Tonalite & granodiorite (Tertiary—Eocene): Biotite-hornblende granodiorite found in Geikie and Chilkat Provinces of Glacier Bay. A dominantly light to medium gray Cl 5-40, medium grained, biotite more abundant than hornblende

**Toeg** Layered gabbro (Oligocene & Eocene): Layered pyroxene & hornblende gabbro. Also includes olivine gabbro, norite, troctolite, anorthosite, pyroxenite, dunite. Contains magnetite, & locally imenite. Also contains copper & nickel sulfides, including the Brady Glacier Cu-Ni deposit. Found in Mount Fairweather area, Mt. Crillon, & La Perouse. Bohemia Basin on Yakobi is underlain by medium to dark gray, Cl 40-75, locally brown gray, medium to coarse grained, orthopyroxene + plagioclase + clinopyroxene gabbro norite and norite

**Toemm** Migmatite (Tertiary): This unit includes migmatites peripheral to shallow intrusives in western Glacier Bay, associated with Toem bodies and Tet bodies—in some places these intrusives overlap & migmatites are difficult to distinguish

**Togd** Granodiorite & quartz diorite (Tertiary—Oligocene): In Haines area, hornblende-biotite quartz diorite & granodiorite. Medium-grained, subhedral, color index 20. Takhin block. Large andesitic roof pendants are andesitic, massive, usually porphyritic, gray-green. Found in Mt Fairweather area & on Baranof.

**Togr** Granite & granodiorite (Tertiary): Light gray to pink hornblende biotite granite & granodiorite. Not magnetic. Color index 5 to 15. Equigranular, medium- to coarse-grained. Locally contains K-feldspar phenocrysts. High temperature fabric defined by mafic minerals near margins. Haines area.

## VOLCANICS

**DSv** Volcanic & sedimentary rocks, undivided (Devonian & Silurian): Dark green basalt (60-70%) and white, green, and lavender chert (20-30%)

**uDV** Volcanic rocks (Upper Devonian): On Chichagof Island includes green & red andesite & basalt flows, breccia, & tuff, buff to red pyroclastic rhyolite & felsic volcanic rock, subordinate conglomerate, graywacke, black argillite & dark gray limestone, of Freshwater Bay Formation

**SOsv** Sedimentary & volcanic rocks undivided (Silurian & Ordovician): Includes metasedimentary & metavolcanic rocks north of Klehini River.

**SOv** Volcanic rocks (Silurian & Ordovician): Andesitic breccia, with phenocrysts of pyroxene, hornblende, and plagioclase. Also includes basaltic volcanic rocks with stubby phenocrysts of fresh augite & altered andesine plagioclase, submarine flows (often with pillow structure), breccia & tuff.

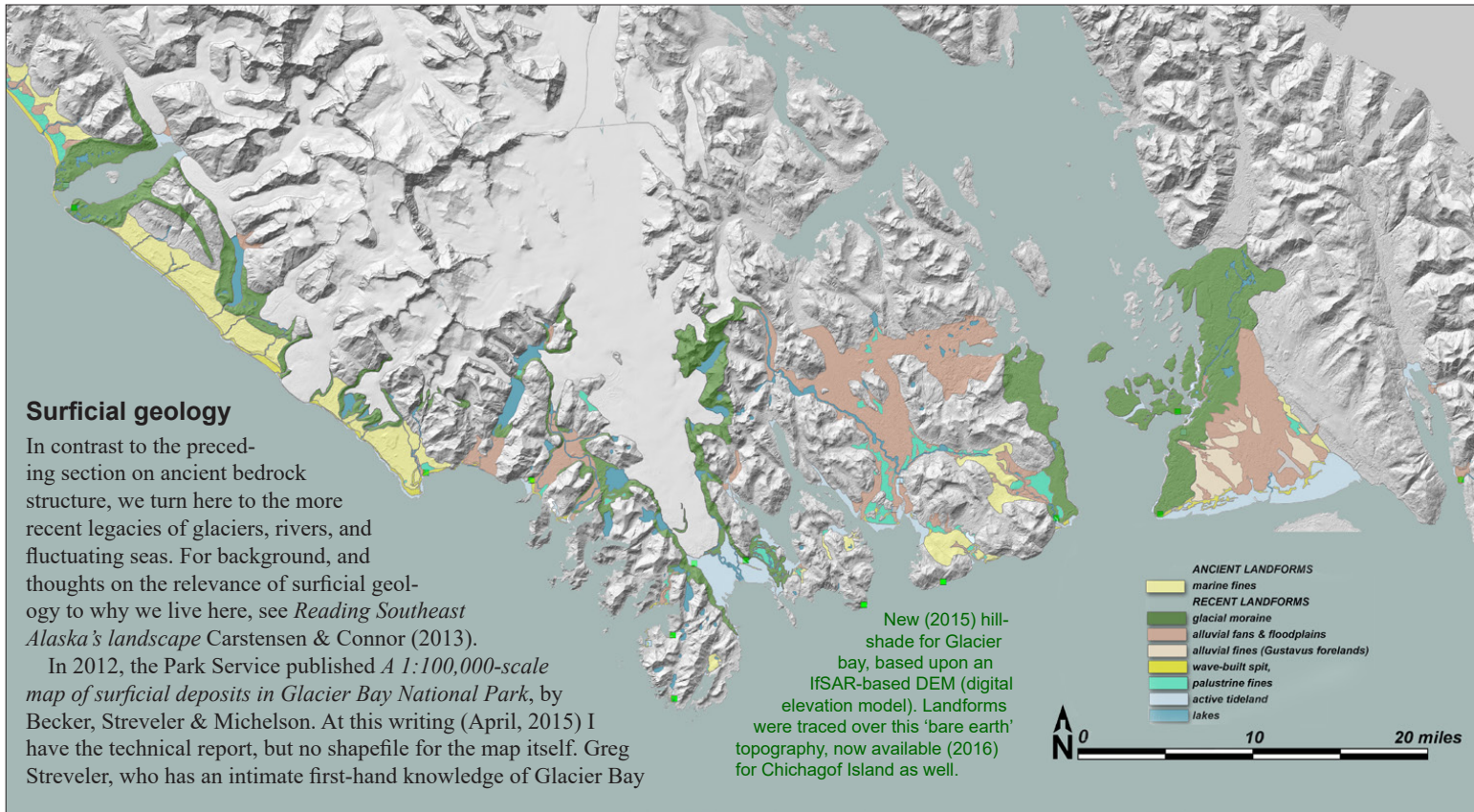
**TKsv** Mafic volcanic rocks of Chugach accretionary complex (Tertiary & Cretaceous): Massive & amygdaloidal mafic volcanic flows, pillow basalt, breccia & thick sills interbedded with sandstone turbidites of Sitka Graywacke

**Tv** Undivided volcanic rocks (Tertiary—Oligocene): Volcanic rocks, undivided. Medium to dark gray aphanitic basalt & andesite, plagioclase & augite porphyritic basalt & andesite; subordinate white flow-banded rhyolite, mafic to felsic volcanoclastic rocks. Intercalated lenses of fluvial gravel & conglomerate. Andesite & sedimentary rocks with coal. Includes Cenotaph Volcanics in Lituya area with 400m of green, red, & purple andesitic volcanic flows, breccia, and tuff, interbedded with red, tuffaceous siltstone, glauconitic sandstone, and pebble-cobble conglomerate.

## SURFICIAL

**Qa** Alluvial deposits (Quaternary): Unconsolidated alluvial, alluvial fan, & alluvial terrace deposits. These landforms are developed in much greater detail in the following section.





geography and landforms, hand-drew most of this map with reference to aerial photography. I'll return to the Streveler-team landforms classification shortly.

**New cartographic resources** Meanwhile, the Geographic Information Network of Alaska (GINA) and the AlaskaMapped website (<http://ifsar.gina.alaska.edu/>) have posted new digital elevation models (DEMs). These derive from a technology called IfSAR—Interferometric synthetic aperture radar—developed for airborne topographic mapping. IfSAR digital elevation models for most of Southeast became available for almost all of Southeast Alaska in late 2015 this year. All of Glacier Bay National Park was already on the GINA site at the time of our spring course at Hoonah, allowing me to pioneer the use of IfSAR products for landform-interpretation in what is unquestionably Southeast's most diverse and spectacular landscape.

To inform surficial geologic mapping, using ArcMap's Spatial Analyst, I've so far generated 2 products from the 6 IfSAR-based DEM tiles covering Glacier Bay: hillshades and 10-foot contours. The hillshades are available in 3 forms:

*"Bare-earth DEM (DTM), Surface DEM (DSM), and an orthorectified radar intensity image (ORI). The elevation models have a 5-meter post spacing, 22-foot contour equivalent accuracy, vertical accuracy of 3-meter LE90 (0-10 degree slope) and horizontal accuracy of 12.2-meter CE90."*

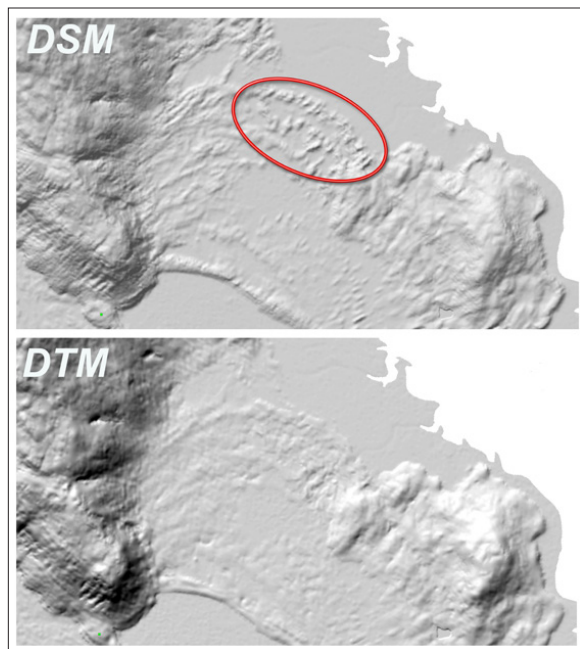
The DTMs purport to show topography through an algorithm that subtracts away the overlying vegetation.

However, after comparing the DTM rasters to the DSMs, I prefer the latter. They do indeed show minor 'bumpyness'—an artifact of tree and shrub cover. But this enhances the distinctiveness of features such as glacial moraines. For the past year, in the Juneau area, I've created maps from higher resolution LiDAR-generated DEMs, and in that case the 'veg-subtracted' bare-earth display does indeed reveal features that are muted and concealed by overgrowing vegetation. In contrast, the lower-res DTMs for Glacier Bay appear simply 'smudged,' revealing nothing that the DSMs don't show with, greater visual interest.<sup>1</sup>

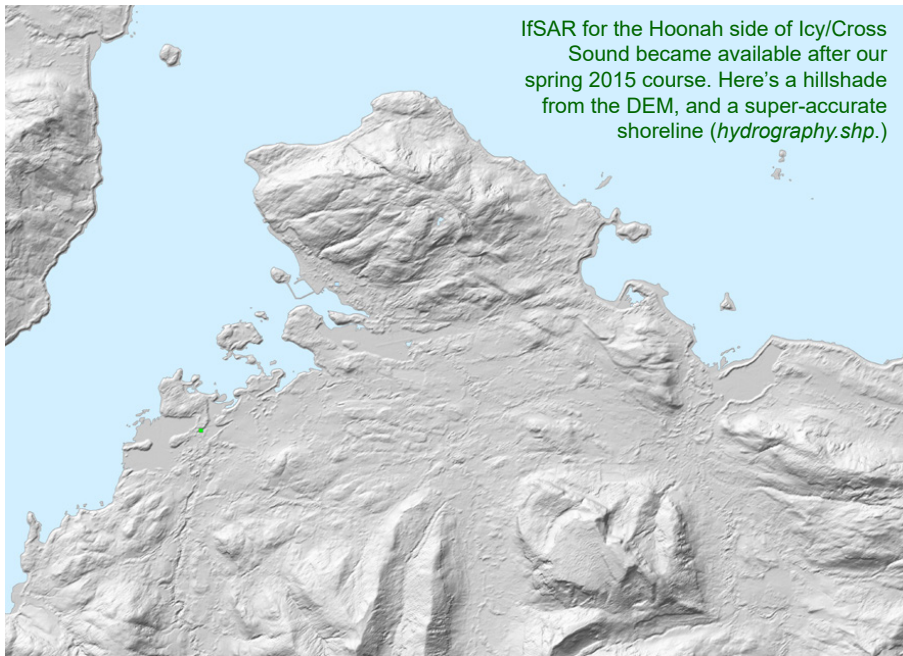
In addition to landforms captured as DSMs and DTMs, GINA hosts ORIs for download:

*An Orthorectified Radar Image (ORI) is a grayscale image of the earth's surface similar in appearance to a black-and-white photograph, based on intensity of radar signals, thus unaffected by darkness and able to penetrate most clouds. [LiDAR-based DEMs are from laser light, thus dependent on clear flying conditions.] The radar signal strikes the terrain obliquely, accentuating landscape details.*

<sup>1</sup> Of course, for actual elevation measurement, the DTMs will presumably come closer to giving true ground level. Dave Gregovich, ADF&G, has explored 'subtraction' of DTMs from DSM's to see what can be learned of forest structure from these 2 layers.

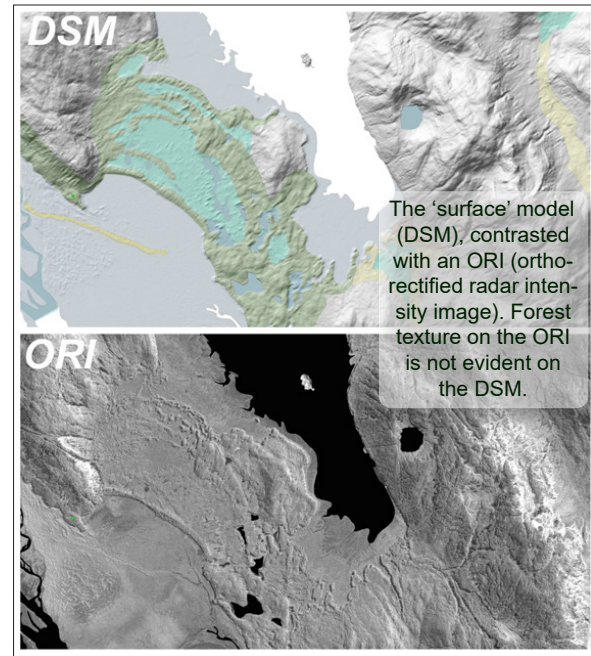


Hillshades for Taylor-Dundas isthmus. The 'surface' model (DSM), by including vegetation, accentuates features that are muted in the 'terrain' model (DTM). Compare forested moraines in red oval.



Features such as **subtle faults and folds may be more clearly seen on radar imagery** than on conventional aerial photographs or satellite images. IfSAR data were contracted through 2 separate vendors; ORI products are at either 2.5-meter or 0.625-meter resolution.

From Dave Gregovich (ADF&G) I copied a drive prepared by Dustin Wittwer (USFS) with nearly all of the available IfSAR for the Tongass. It takes awhile to get used to the indices, folder structure, and what the various



layers give you. For example, the *hydrography.shp* tiles give unprecedentedly high-accuracy fresh and saltwater shorelines.



**Sedimentary Provinces of Xunaa Káawu** Streveler, Becker and Mickelson (2012) defined 8 “sedimentary provinces” within the region covered by their surficial geology map. Four of these encompass Xunaa Káawu. One, named the Excursion Province, was not intended to describe the Chichagof side of Icy Strait, but comes closest to characterizing regions southward from Little Ice Age glaciation.

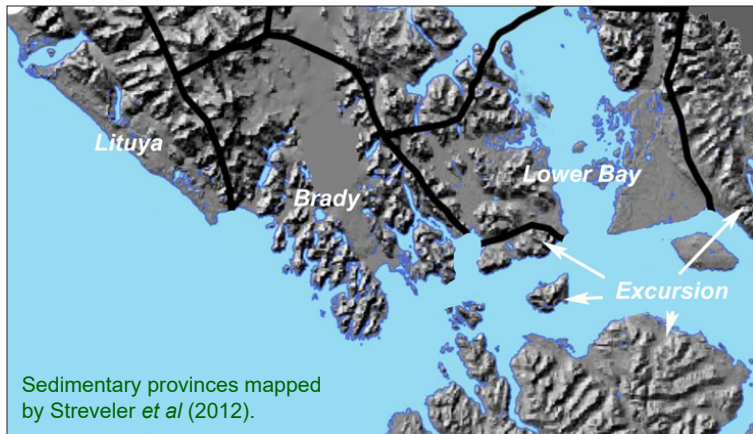
#### **Excursion Province:**

*“Excursion River watershed is the largest in the map area not directly impacted by Neoglacial ice. Its valley floor contains extensive Holocene stream sediment (S2)<sup>1</sup> Pleistocene ice flowing westward across Excursion Ridge left thick glacial deposits (T3) on the west side. Uplifted Pleistocene glaciomarine deposits (M3) appear extensive on lowlands east of Dundas Bay and Pleasant Island. Other [steeper] Icy Strait islands are free of extensive sedimentary deposits. An extensive but almost unstudied late Pleistocene record exists in the glacial deposits throughout southern Excursion province, well exposed at Falls Creek. These deposits include thick till (T3), ice-contact sediments (I3), delta and uplifted marine components (M3). A former beach now about 60 m above present high tide was dated to 13,900 14C yr BP (Mann & Streveler, 2008)*

#### **Lower Bay Province:**

*“Remnants of an immense late Neoglacial outwash plain (S2) now fringe lower Glacier Bay, and remain as islands within the bay. Overriding ice in a final advance to Icy Strait about 250 calendar years ago dissected and deformed portions of that plain; undisturbed outer fringes remain NE of Point Carolus and especially in the Gustavus forelands. Large morainal complexes are built into the lower Beartrack River valley, trapping a former glacial lake. They extend southward to Points Gustavus and Carolus. A second large Neoglacial outwash plain (S2) was built into the Dundas River valley from several ice sources to the north and east. It has been partially reworked by modern outwash (S1) from the Dundas River. Rapid isostatic rebound (~25 mm/yr) and relatively flat terrain have combined to produce notable areas of raised marine sediments in this province.*

**Beardslee Formation** Abbreviated from Connor et al (2009), this formation includes the Beardslees, perimeter of Beartrack Cove, Gustavus forelands, islands near Berg Bay, and discontinuous pockets along island and mainland shores in mid-bay. Sediments are of deformed and eroded river (S2), lake (L2), and marine sediments (M2), in some localities sparsely overlain by till (T/S2) or wind-deposited sands and silts (W1). Water-lain deposits are rarely larger than fine gravel except in the northern extent. Silt and sand crop out along many shores. A late



Sedimentary provinces mapped by Streveler et al (2012).

*Neoglacial lateral moraine cuts NE-SW across the Beardslee Formation. Outside the moraine, the Gustavus forelands are unmodified by ice.*

*The large outwash complex (S2) veneering Dundas Valley appears to have been constructed from 5 distributaries of late Neoglacial Glacier Bay ice, assisted to a minor degree by Brady Glacier ice. Exposed vertical sections exist along the valley's rivers, but remain unstudied. The valley has not been overridden by Neoglacial ice, but has been modified at the Dundas River mouth by isostatic rebound and ongoing beach processes. Its western margin is also currently being modified by the Dundas River.*

#### **Brady Province:**

*“Early Neoglacial advances of the Brady Glacier have built complex assemblages of glacial (T2), outwash (S2) and lake deposits (L2) into Taylor and Dundas Bay lowlands, and into small fjords from Palma Bay to Graves Harbor. Pleistocene deposits are found outside Neoglacial limits. Unlike Glacier Bay ice, the Brady's has remained in contact with its late Neoglacial features, and so many sedimentary processes remain active today. An early Neoglacial outwash/morainal complex (S2 and T2) has been exposed by river erosion along upper Dixon River where it abuts the end of Boussole Valley. Extensive deposits formed by the Brady's early*

<sup>1</sup> Landform codes are explained below, after these province descriptions.

*Neoglacial advance are found in most valleys around the lower reaches, but are not well exposed.*

*The Dixon Harbor Biological Survey provided Streveler the opportunity to view sedimentary features in the western half of the province and provided Derksen (1976) with opportunity to intensively study the entire area. Advance of the Brady to its latest Neoglacial maximum has been recently described by Capps et al (2011).*

## **Lituya Province:**

*“This province’s sedimentary history has been dominated by Desolation Valley, which collected ice from the Fairweathers, shunting it to discrete outlets and away from intervening areas, leaving some high terraces unglaciated. Outlet glaciers vary in ice-retreat chronology: some remaining near their Neoglacial maximum (e.g. LaPerouse); and some retracted (e.g. Lituya). All have associated deposits extending back into the Pleistocene. Lowlands between outlets have been carved by the sea into a stepped series of raised terraces, surfaced by a complex assortment of marine and glacial deposits of various ages. Some of the oldest terrestrial deposits known in Southeast Alaska are found within the upper terraces—perhaps our most important record of events prior to the Last Glacial Maximum. A sequence of largely unstudied peats atop the high Echo terrace is >50,000 <sup>14</sup>C yrs BP (Mann, 1983). Ancient moraines (T3) also occupy the terraces; in outlet valleys such as Lituya, Fairweather, Crillon, Dagelet and LaPerouse, huge composite moraines exhibit records where ice and water erosion at their bases have opened them to scrutiny.*

**A landforms classification for Xunaa Káawu** Streveler’s team assigned abbreviations to landform units consisting of a letter for the type, and a number for the age: 1) Modern, <100 yrs; 2) Holocene, 100 to 10,000 yrs; 3) Pleistocene, >10,000 yrs. For example, “S1” is alluvium showing recent stream activity; vegetation is absent to shrubby. To qualify for mapping, sedimentary units had to be more than 2 meters thick and over 30,000 m<sup>2</sup> (= 5.5 football fields including end zones)

- **stream sediment (S)** – Layered sand and/or gravel with rounded particles deposited by streams. Includes outwash, alluvial fan, and delta sediments deposited above lake or sea level (topset beds).
- **ice-contact sediment complex (I)** – A mixture of rounded-to-angular sediments of all sizes with varying degrees of layering that were deposited on, adjacent to, or under glacial ice. Includes eskers, kames, hummocky topography, and undifferentiated collapse features.
- **till (T)** – Rounded-to-angular sediment of any size directly deposited by a glacier, not overlying other thick deposits.

- **till over layered sediment (T/S)** – Till lying upon layered sediment, such as stream or lake deposits.
- **lake sediment complex (L)** – Layered sediment, generally sand, silt and/or clay in particle size, deposited below the surface of a lake. Includes lake floors and the underwater portions of deltas and beaches.
- **marine sediment complex (M)** – Deposits of rounded particles ranging in size from clay to boulders that are usually layered and were formed by marine processes. Because we did not map below the mean high tide, these deposits have been lifted above sea level by isostatic rebound.
- **colluvium (C)** – Loose, unsorted deposits at the foot of a slope or cliff, brought there by gravity.
- **wind-blown sediment (W)** – Sand deposited by the wind. We did not map loess, which is silt deposited by the wind, because nowhere in the map area is it 2 m thick.

On receipt of a GIS version of the Streveler-team surficial geologic map, I will excerpt portions into this scoping document. Streveler’s map represents far greater detail, regional familiarity, and long-term ground-based observation than my rapid tracings over hillshade that open this section. Meantime I’ve shown examples of my mapping process to Greg, and look forward to further fine-tunings with his advice and coaching.

**Spanning the ‘disciplines’** Of the collaborative descriptions of Xunaa Káawu cited in my preface, most ground-breaking in my view has been the Connor *et al* (2009) study, titled *The Neoglacial landscape and human history of Glacier Bay*. As with the 2012 NPS surficial geologic map, this effort drew heavily from the broad experience of naturalist Greg Streveler, who has lived in Gustavus and guided specialists of all disciplines throughout the Park for half a century. The 5 coauthors described their study as “*the first serious attempt to integrate the geologic and ethnographic records.*” By this claim, they did not mean to disparage the work of specialists, but to point out that genuine integration is rare.<sup>2</sup> Their abstract lays out a Neoglacial chronology in

<sup>2</sup> As a generalist myself, attempting to follow in the footsteps of Streveler, I’ve taken to heart his recommendations in an address to the 4th Glacier Bay Science Symposium, titled *Peripheral vision as an adjunct to [scientific] rigor*. (Streveler, 2007) Science requires focus, often at the expense of understanding outside one’s specialty. This is particularly problematic in fields as disparate as ethnography and glaciology. To ‘get serious’ about bridging such a gulf, you not only need to assemble a team of 4 specialists (Connor, Post, Montieth & Howell) and staple their understandings together. You need to

a manner that respects—rather than glossing or over-riding—the orally transmitted accounts:

*“Neoglacial changes in ice positions, outwash and lake extents are reconstructed for c. 5500-200 cal. yr ago, and portrayed as a set of 3 landscapes at 1600-1000, 500-300 and 300-200 cal. yr ago. This history reveals episodic ice advance towards the Bay mouth, transforming it from a fjordal seascape into a terrestrial environment dominated by glacier outwash sediments and ice-marginal lake features. This extensive outwash plain was building in lower Glacier Bay by at least 1600 cal. yr ago, and had filled the lower bay by 500 cal. yr ago.<sup>3</sup> The geologic landscape evokes the human-described landscape found in the ethnographic literature. Neoglacial climate and landscape dynamism created difficult but enduring environmental conditions for the Huna Tlingit people living there. Choosing to cope with environmental hardship was perhaps*

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painstakingly interweave them under guidance of someone who pays attention to everything—ie, Strevelerian ‘peripheral vision.’

3 It was on this plain that Chookanhéeni, grassy river flowed—the stream from which the Chookaneidi clan derives its name.

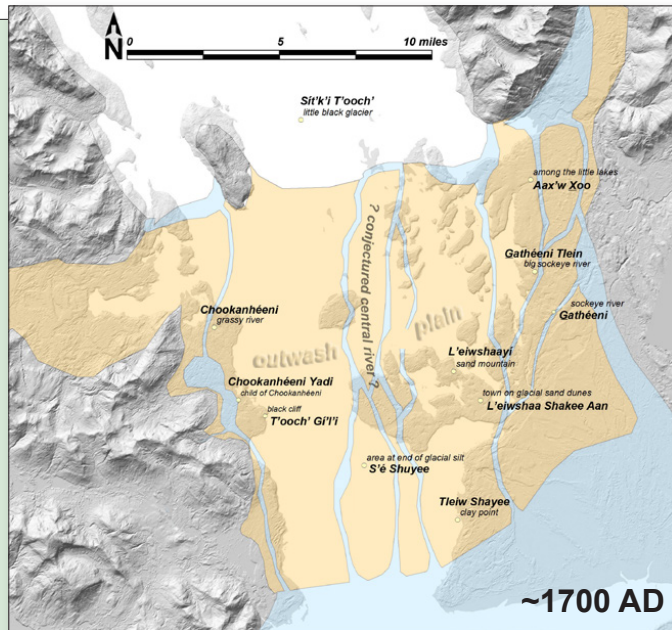
## Before the last advance

Connor *et al* (2009:338) include a rough sketch map, Figure 7, that I’ve overlaid here upon the new IfSAR DEM-based hillshade to provide a few more reference features. They titled it **Conjectured Huna Tlingit homeland of 300 years ago**. Below, I’ve paraphrased and condensed their comments on key place names:

- **Sit’k’i T’ooch’, little black glacier** Distance and appearance are implied in this name, suggesting it was well back from the settlements (little) and in a state of quiescence (dark and rock-strewn). Yet it must have been sufficiently close that villagers could see trading parties crossing it while coming from interior as related in the account of **K̄aakex’wti**: ‘*The Athapascans on their way down used to be seen when still far back from the coast*’ (Swanton, 1909).

- **Aax’w X̄oo, among the little lakes** Sockeye prefer to rear in clearwater lakes. In one narrative, lakes are associated with Aax’w X̄oo, located up near the glacier when viewed from the **Ḡathéeni** village. Plausible locations for lakes are morainal impoundments formed when West Arm ice pressed against the eastern fjord wall; geologic evidence documents glacial damming in Beartrack Valley about 470 years ago. Such lakes would have linked to the nearest river system through outlet channels, providing sockeye spawning habitat.

- **Ḡathéeni Tlein, big sockeye river** (Beartrack River) Determining the number and placement



of rivers is somewhat challenging. Annie Houston (Black, 1957) claimed that ‘*Along the river was where the village was. Now the river is the bay.*’ She variably links this river to the western margin of the fjord—‘*Willoughby and the other islands were in the middle of the big river, on sand bars*’—but also to **Ḡathéeni** on the eastern side. Given the physiography of the fjord—~9 miles wide on the north, opening to ~15 miles on the southern end—a single river channel sweeping from west to east across an unstable and aggrading



preferable to the more severely deteriorating conditions outside of the Bay as well as conflicts with competing groups. The central portion of the outwash plain persisted until it was overridden by ice moving into Icy Strait between AD 1724-1794. This final ice advance was very abrupt after a prolonged still-stand, evicting the Huna Tlingit from their Glacier Bay homeland.

Why do we live here? The Connor team's abstract suggests tension between “*environmental hardship*” versus avoidance of “*conflicts with competing groups.*” This harks back to Willie Mark's story of *Kaakex'wtí*, beginning at storm-lashed “. . . a safe place. *A difficult place . . .*”

Clan crests are born in such hardships; this too is a fundamental theme of our course. On page 3 of this document I introduced 5 questions to ask of any candidate location for a camp or residence. The 5th of these questions addresses the tension between comfort and safety:

**View:** Are there broad views

outwash plain is improbable. In fact, the ethnographic accounts do name 2 distinct rivers: the *Gathéeni* and *Chookanhéeni*.

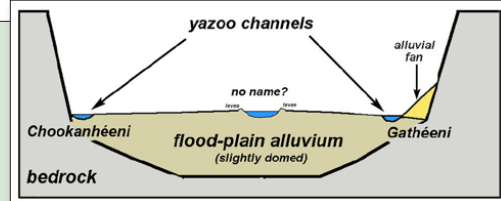
- **Gathéeni, sockeye river** (Bartlett River) Four modern rivers have become namesakes of these ancient rivers for the Huna Tlingit—*Chookanhéeni* & *Chookanhéeni* Yadi on the west, and *Gathéeni* & *Gathéeni* Tlein (Bartlett & Beartrack) on the east. Names and stories of rivers imply they were productive ancestrally, which further suggests feeding by clearwater tributaries entering the main valley from bedrock-constrained lateral valleys.

- **conjectured central river** (no Tlingit name) When *Kaakex'wtí* and friends were turned away from *Chookanhéeni*, they crossed a glacier, eventually arriving at *sandhill town*. Direct distance from *Chookanhéeni* to modern Bartlett Cove, is only about 8 miles. It seems odd that *Kaakex'wtí's* party would backtrack up-valley to take a glacier crossing. There must have been a serious impediment to travel in the path of the direct route, such as a glacial outwash river. Our interpretations of the geological situation supports this 3-river' scenario. An *unnamed* and inhospitable river covered the central part of the outwash plain, and 2 *named* rivers flowed into the plain from the east and west originating from clear-water sources, constrained along the valley margins by the aggrading plain.<sup>1</sup> These named rivers would have supported salmon populations and provided a means of livelihood for human habitation.

- **L'eiwshaayi, sand mountain** Tlingit place-names and ethnography identify this topographic eminence on the valley floor, arching northward from the current Point Gustavus to the base of the Beartrack Mountains. *L'eiwshaayi* could have been a region of aeolian dunes or a pre-existing glacial moraine, or some combination of both.

- **L'eiwshaa Shakee Aan, town atop glacial sand dunes** A major village was said to occupy a large dune within *L'eiwshaayi*, located

<sup>1</sup> Streams elbowed to the valley walls of aggrading floodplains by a raised center are termed “yazoo channels,” as explained in the cartoon, above right.



Cartoon profile northward up S'é Shuyee, area at the end of glacial silt, before the last advance of Sit'k'i T'ooch', and before a bay (S'it' Eeti Geeyi) took the place of the receding glacier. Somewhat counter-intuitively, the center of a broad glacial floodplain is domed, and higher than its margins. That's because the valley center receives more deposition, as dominant, sediment-choked central channels migrate back and forth.

near today's Bartlett Cove. The Bartlett Cove area was terrestrial during the Little Ice Age and well out onto the plain.

How was life at *L'eiwshaa Shakee Aan* more tolerable than conditions on the rest of the outwash plain? For one thing, tall sand dunes (or moraines) could have provided sheltered breaks from winds blowing off the glacier. Secondly, this site may have been well forested. In the *Kaakex'wtí* story, large trees were cut by villagers for house timbers. Today, rooted stumps of large trees are relatively common in the 'Barco' intertidal. Thirdly, the high vantage of *L'eiwshaayi* would have afforded defensive visibility.

- **S'é Shuyee, area at the end of glacial silt** As the oldest name [on preceding map], this indicates the Huna Tlingit recognized their

and (in turbulent times) defensible nearby topography?

Today, few Southeast Alaskans fear the sudden appearance of enemy canoes or aircraft on the home beach. But if we ask this question more broadly and metaphorically, it's surely still relevant. Almost all of us who moved here from 'outside' have traded sunnier, more benign climates for environmental and conditions we deem more important. Perhaps we even moved here out of distaste for cultures, political suppressions, or dominating family members, whom we hope will never pursue us to this beloved, drizzly abode—Willie Mark's "*difficult place*."

What are the unique challenges and gifts of Xunaa Káawu? Why, *today*, do we still live here? And what do we learn from the past, into the not-so-distant depths of the Little Ice Age?

homeland was a glacio-fluvial environment, even to the point of distinguishing grain size. The land is described as the distal end of the glacier system indicating that people preferred living farthest from direct effects of that hostile environment, and with reasonable access to tidewater. *'The only glacier was way up on Mt. Fairweather'*. In Susie James's narrative: *'...you could clearly see up the bay. Through the mountains there you could see the glacier waaaaay up the bay; it was only a tiny piece. It was hanging there up the bay. It couldn't be seen much from the river; it could only be seen from way out'* (Dauenhauers, 1987).

- **Tleiw Shayee**, *clay point* Wooshkeetaan legends anchor to named places extending from Tleiw Shayee—found today on the eastern Bay-shore—through 'Barco' to the Beartrack Mountains.

- **Chookanhéeni**, *grassy river* Hoonah residents today perceive S'é Shuyee as a 'Tlingit Garden of Eden'. The meadow-lined Chookanhéeni had upstream-downstream houses, possibly just summer camps where families went to harvest fish, returning to the winter village of L'eiwshaa Shakee Aan. Alternatively, it may have been left unoccupied *before* the advance of the glacier, if the river had moved away from the village, making canoe travel difficult. All of the oral histories focus on the glacier destroying L'eiwshaa Shakee Aan, but none describe it over-running Chookanhéeni.

- **Chookanhéeni Yadi**, *child of Chookanhéeni, tributary* A stream entering the modern Bay just north of Rush Point is called Chookanhéeni Yadi, a name implying secondary rank, such as a tributary to a larger stream.<sup>2</sup>

<sup>2</sup> If these verbal descriptions correctly place Chookanhéeni Yadi and T'ooch'



Kevin White photo, ND

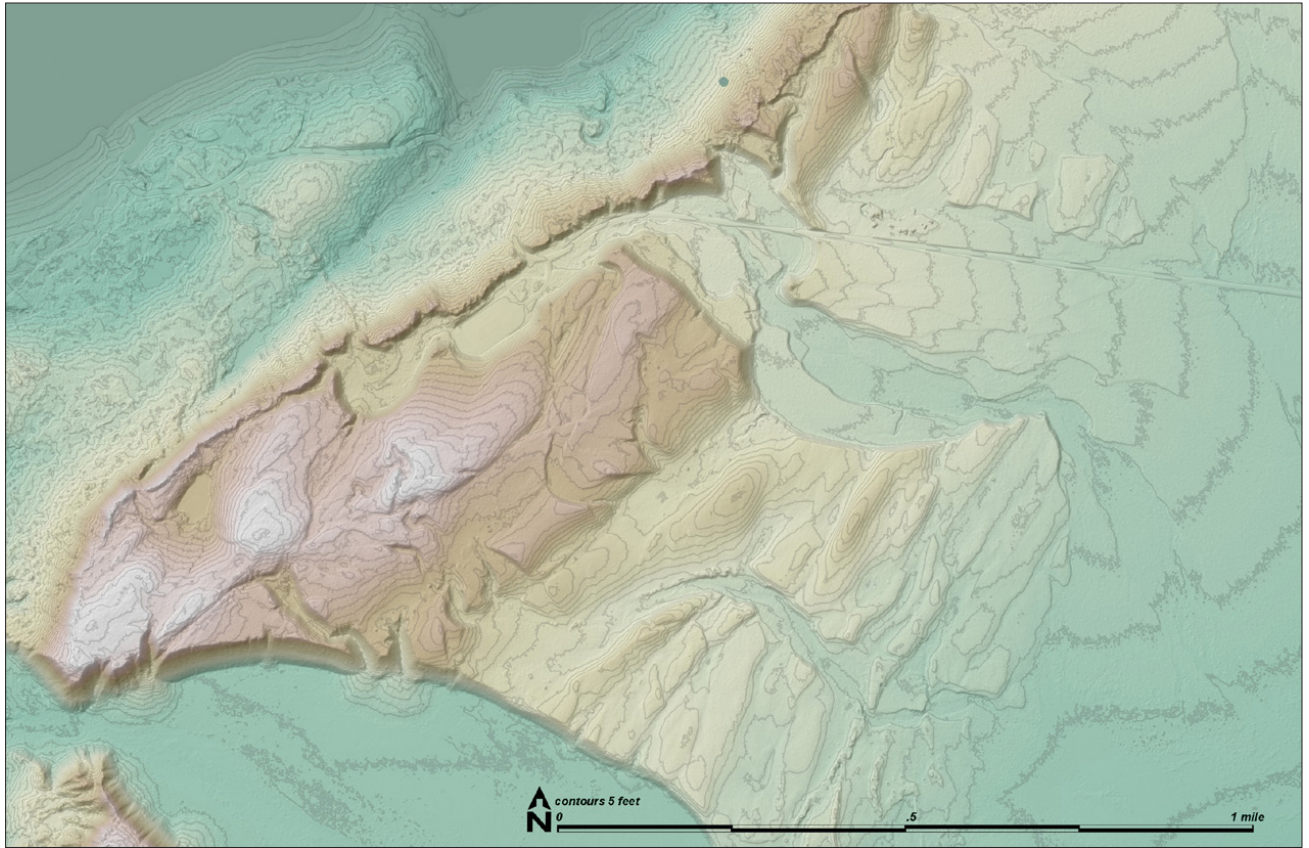
Today's Beartrack valley retains an actively aggrading mosaic of braiding channels, spruce-covered levees (compare preceding cartoon), alder-willow thicket, and young palustrine herbaceous meadow on fines. Much of S'é Shuyee—the pre-advance outwash plain of 300 YA—looked like this, with of course the addition of broad expanses of completely unvegetated alluvium.

- **T'ooch' Gí'l'i**, *black cliff* A prominent cliff stood near one Chookaneidi village at a place called T'ooch' Gí'l'i. A black siliceous shale is prominent in outcrops on the southern shore of Berg Bay and a cliff at Rush Point. This south-facing escarpment would have provided shelter from cold winds blowing off the glacier, and may also have afforded defensive visibility.

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Gí'l'i (and TT12 appears to agree), then Figure 6 in Connor *et al* (2009) maps both features too far south along the western shore. I've moved them northward to their presumptive positions at Rush Point.

**PS 2022:** I'm working remotely with Chris Fastie on initial explorations of the spectacular highres 2019 LiDAR for much of The Bay. In the example on right, the terminal moraine and associated, as-yet-unexplained landforms above extend into Barco from The Notch. Could L'eiwshaa Shakee Aan, town atop glacial sand dunes, have been sited somewhere along these highlands?





## Part 2: Camps and settlements

Crowell *et al* (2013) have provided the most recent and systematic description of cultural sites in Xunaa Káawu. Drawing from their tables and other sources, let's visit 30 of the most important winter villages and summer resource camps, proceeding from NW to SE:

**Ltu.áa** lake inside the point (or nostril) Lituya is on the cusp of Xunaa and Yakwdáat territory. Both L'uknax.ádi and T'akdeintaan once lived here—the former now based largely in Yakutat and the latter at Hoonah. The name Lituya Bay derives from

■ winter village  
■ summer camp

Few of these sites are on the southern, Chichagof side—in part a bias reflecting the more intensive archeological work on the Park side. • **PS 2023:** it's been nearly a decade since I started bravely into this site-by-site description of Xunaa Káawu living sites, yet no further progress, beyond where I left off, at Asgutu.aan. Nice placeholder map though, eh?



Alaska Shorezone, 20060722

NW across La Chaussee Spit. On a beach of mostly morainal boulders, this inviting, sheltered crescent makes the best canoe landing.

Ltu.áa, the word for the village inside the famous, scary, curving bay-mouth moraine. In place names, “Lutu” means an in-pocketing (nostril) or inward curve. Today’s Fish Lake, a sockeye system on the north shore, may be the “áa” referred to—nearest source of perennial domestic water to the spit—raising question as to which of the 2 northside villages mapped by LaPérouse is indicated by Ltu.áa. During nearly a month in the bay, LaPérouse estimated 700 to 800 people came and went, in what we would now call clan groups. He guessed all 3 “villages” were summer camps only, finding no winter-worthy structures. He saw no evidence of the smallpox that Portlock reported to the south, 3 years later. But on the other hand, the people of Ltu.áa had certainly met Europeans elsewhere in their annual movements:

*“To our great surprise they appeared well accustomed to traffic, and bargained with as much skill as any tradesman of Europe. Of all our articles of trade, they appeared to have no great desire for any thing but iron.”*

**Taan Teséet** *sea lion rock strait* LaPérouse called Taan Teséet the “principal village.” This is somewhat surprising, considering features such as aspect and canoe-access. deLaguna (1972) identified it as:

*“... the village with the cemetery or ‘morai’ on the SE shore of the bay, between Harbor Point and the hills called the Paps. LaPerouse’s chart indicates another village on the opposite shore,*



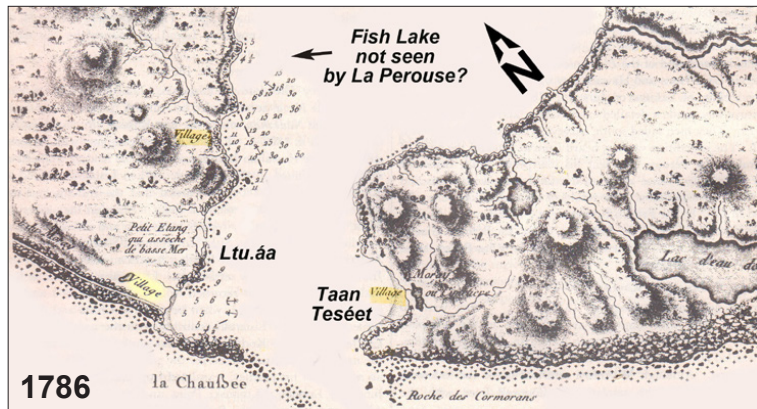
South over The Paps.

Alaska Shorezone, 20050722

Because of its position on the outer coast, more accessible to sailing ships than inside waters, we have a better cartographic and written description of Ltu.áa than for any Tlingit community in the earliest decades of contact. The French Commodore LaPérouse, on a scientific voyage around the world, was the first European to enter Ltu.áa, in 1786. The visit ended tragically; 2 boats and 21 men were lost in the bay-mouth tide rips.

LaPérouse remained at Ltu.áa from July 3rd to 30th. The most objective interpretation of his prejudiced but voluminous observations is by Frederica deLaguna (1972, pages 114-123), who reads-between-the-lines with empathy for both sides. For example, explaining LaPérouse’s doubt that a chief was “*actual proprietor*” of Kanaxdaḱéen, *flying over* (Cenotaph Island), she notes: “. . . land belonged to sibs . . . for whom the chief acted as administrator; with consent of the group he could give away territorial rights.”

As for why he sold Cenotaph, deLaguna concluded it was to diffuse tension: “. . . to the Tlingit, rights to exclusive use extended over many resources the European would consider free: fresh water, driftwood, marine mammals and fish, land game, and wild plants, all of which LaPérouse’s men were taking.”





Northwest over the mouth of Kaknau Creek on calm day. Young spruces in foreground, brown-tipped with heavy cone crop, colonize raised Little Ice Age beach terraces. Inviting canoe beach on right requires surf landing in typical southeasterly.



Alaska Shorezone, 20050722

*just inside La Chausee Spit [Ltu.áa], where a trail (“Chemain de la Pêche et du Morai”) ran northwestward just behind the rocky beach to the lagoon at the mouth of Huagin Eiver (“Riviere aux Salmons”), where there was another settlement. Farther up the northwestern side of the bay, just beyond the first hill, was a fourth village at the mouth of a stream.*

**Xaatgutu.aan** *nestled in spruce roots* At Kaháakw Héeni, *salmon egg creek* (Kaknau Creek), just inside T’aay Xé, *hot springs mouth* (Icy Point), was a transit camp used even in the memory of Xunaa elders (G&H98:137) by hunters *en route* to the sea otter grounds. Crowell *et al* (2013) estimated use in the late 1700s, as well as mid-Holocene use on the 100-foot bluff, sluffing at edge of the shorezone image above. They didn’t find the cabins Joe Ibach built here, but did locate the hot springs just west of the creek mouth.

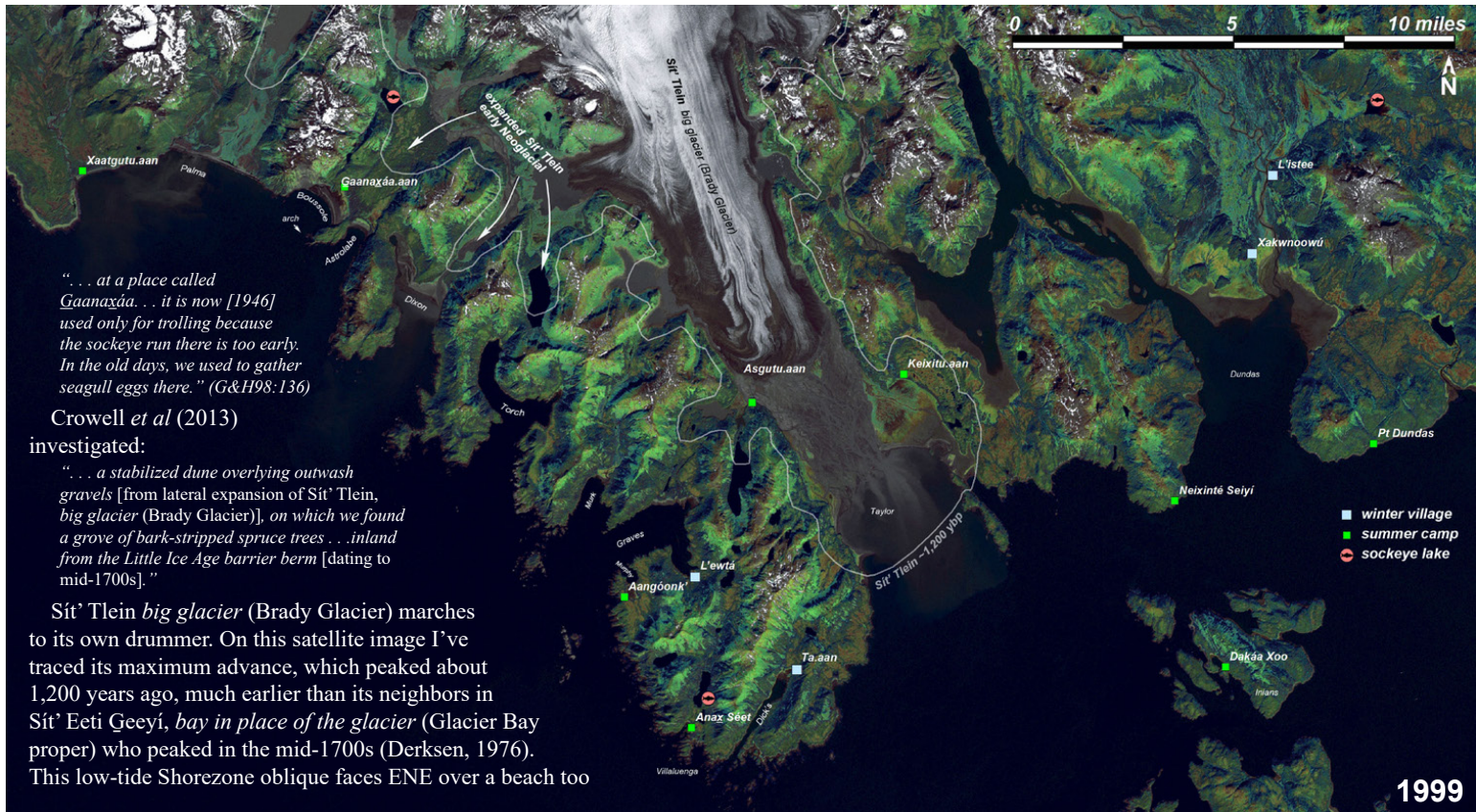
**Gaanaxáa.aan** *untranslated* The meaning of Gaanaxáa is unknown today, but it describes the dramatic sea arch off Boussole Head. The suffix “aan” means town.

1992



Gaanaxáa applies to Boussole Arch as well as a fishing camp here.





“... at a place called *Gaanaxáa*. . . it is now [1946] used only for trolling because the sockeye run there is too early. In the old days, we used to gather seagull eggs there.” (G&H98:136)

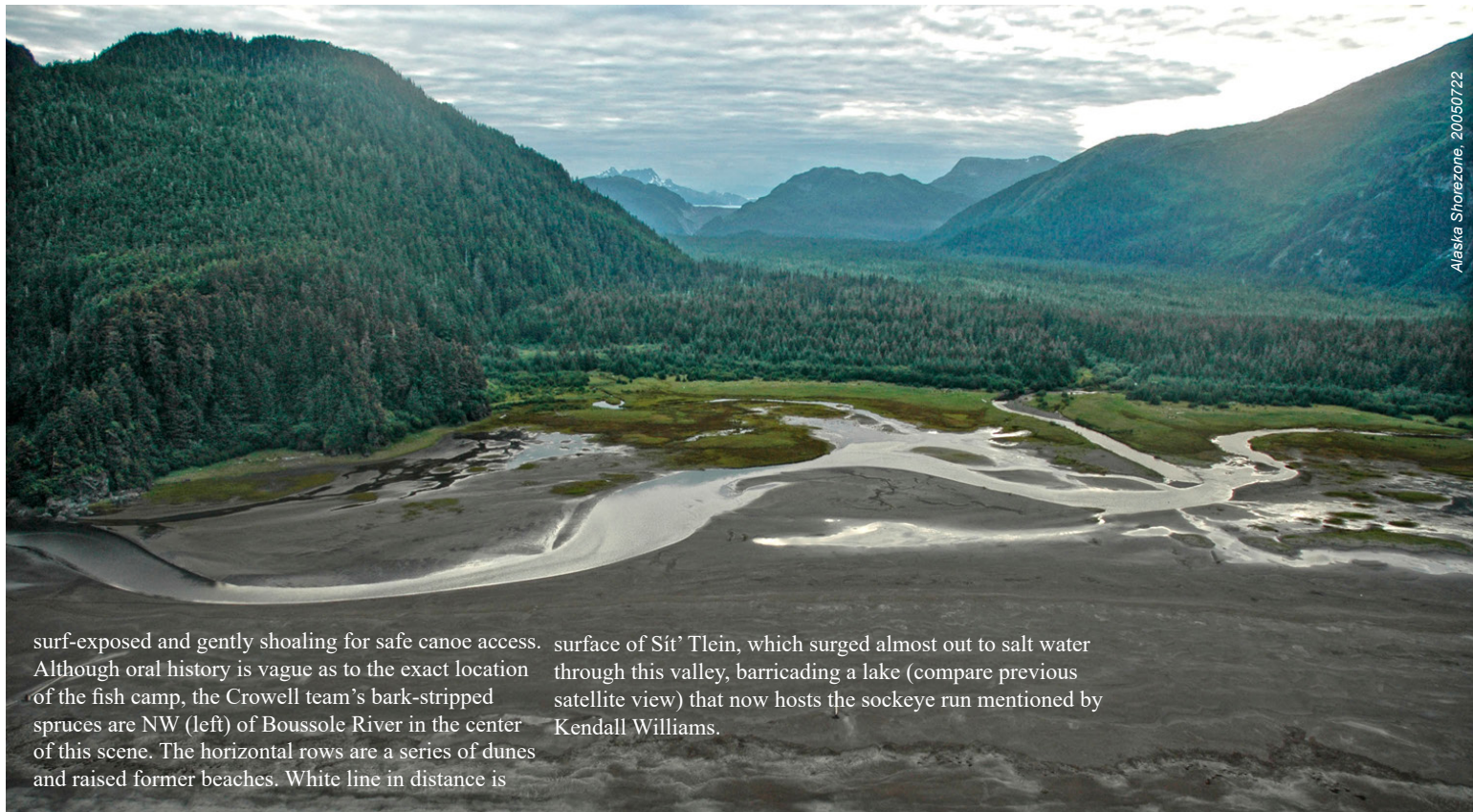
Crowell *et al* (2013)

investigated:

“... a stabilized dune overlying outwash gravels [from lateral expansion of Sít' Tlein, big glacier (Brady Glacier)], on which we found a grove of bark-stripped spruce trees . . . inland from the Little Ice Age barrier berm [dating to mid-1700s].”

Sít' Tlein *big glacier* (Brady Glacier) marches to its own drummer. On this satellite image I've traced its maximum advance, which peaked about 1,200 years ago, much earlier than its neighbors in Sít' Eeti Geeyí, *bay in place of the glacier* (Glacier Bay proper) who peaked in the mid-1700s (Derksen, 1976). This low-tide Shorezone oblique faces ENE over a beach too

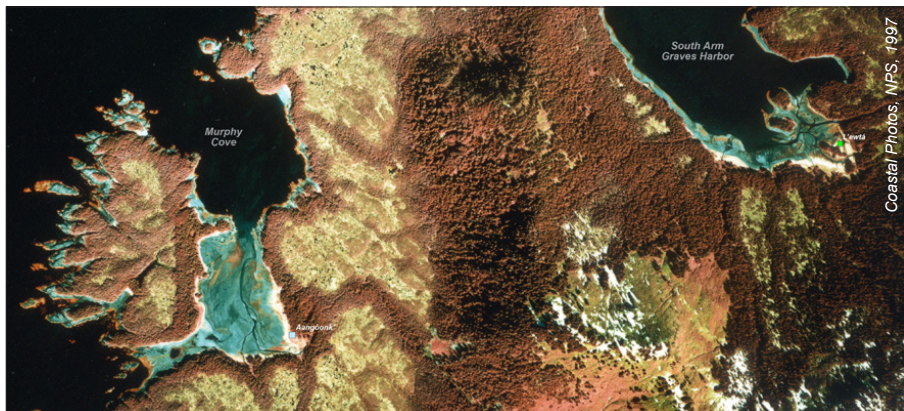
1999



surf-exposed and gently shoaling for safe canoe access. Although oral history is vague as to the exact location of the fish camp, the Crowell team's bark-stripped spruces are NW (left) of Boussole River in the center of this scene. The horizontal rows are a series of dunes and raised former beaches. White line in distance is

surface of Sit' Tlein, which surged almost out to salt water through this valley, barricading a lake (compare previous satellite view) that now hosts the sockeye run mentioned by Kendall Williams.





**Aangóonk'** town's little portage Called Murphy Cove today, the Tlingit name refers to a tidal pass, blue-grey in this color infrared aerial from the Park's Coastwalker project. Wayne Howell visited Aangóonk' with Nora Marks Dauenhauer, whose family wintered in this cove from the 1930s until WWII, putting their:

*"... seine boat aground on the last big tide of November [to] overwinter in canvas wall tents ... trapping and carving miniature totem poles from yellow cedar. . . [bark-stripping may evidence Nora's grandmother's] habit of making Tlingit 'snoose' from a mixture of tobacco, shredded yellow cedar bark, and wood ash."*

**L'ewtá** head of glacial sand This name for Graves Harbor probably refers not to the south arm shown above and right, but to the northeastern bay head, where the early Neoglacial expansion of Sit' Tlein delivered alluvium, later reworked into:

*"... a series of beach levels covered with young spruce . . . stepping down from the Little Ice Age barrier berm . . . deep forest soils layered over sand . . . around the backshore lagoon and on both sides of the river mouth . . . [the archeological team] found no cultural traces." (Crowell et al 2013)*

It seems odd that this mostly-sheltered cove with good canoe beaches, building substrate and diverse habitats should be lacking signs of human occupancy.



SE over mudflat at head of Murphy Cove. Portage called Aangóonk' is to the right.



WSW over Graves, South Arm.





**Anax Séet** *passage through the land* This is an alternate name for a stream otherwise known as Gaat Héeni, *sockeye river*, inside Naguk K'i, at the base of Naguk, (Dick's Arm). Crowell *et al* (2013) found

*"a small protected cove that offers a good gravel beach for landing small boats. . . Anax Séet enters from the NE, draining several interior lakes [with] a run of red salmon. [on the river banks the team found] a charcoal midden ~270 C<sub>14</sub> yrs BP.*

Notice on the preceding satellite image that there are only 2 mapped sockeye lakes on the entire outer coast from Icy Point to Cape Spencer. Although dangerous to access, sockeye are worth the risk, and this camp was used for generations. Recall Willie Mark's description, in the story of Kaakex'wtí ". . . a safe place. A difficult place . . ."



**Ta.aan** *sleeping town* (alternate name: Naguk.wa.aan, *town at the face of Naguk Héen*, *flowing stream*) "Sleeping town" references the epidemic in story of Kaakex'wtí. Naguk was renamed "Dicks Arm" by JF Pratt, USC&GS, in 1901. Orth (1967) doesn't say if this was yet another commemoration of Dick Willoughby, who scored such an abundance of Important White Guy Names in Xunaa Káawu. The Crowell team searched Naguk in May, 1995. A mile from bay head on the east side they found



SW over head of Naguk at low tide. Uplift and alluvial spruce, left foreground; scrubrier hemlocks, right foreground. The spruce site is a stronger candidate for cultural remains.

*“ . . . a small grove of culturally modified trees. . . . Bark stripping scars are present on at least a dozen yellow-cedar and spruce trees, some partially healed, indicating that the activity took place some years ago.*

Although a village and burial site were described here by George Dalton. From his reports and those of Kendall Williams:

*“ . . . we conclude that the settlement was . . . beside the salmon stream at the head of the bay or perhaps on the adjacent bluff where we searched without success. Additional study of this area is needed.*

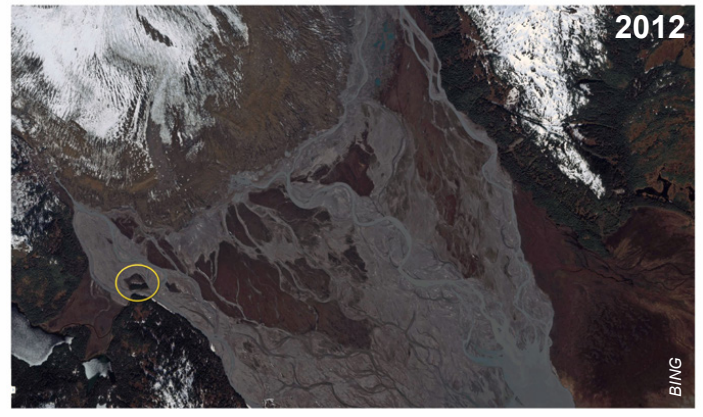
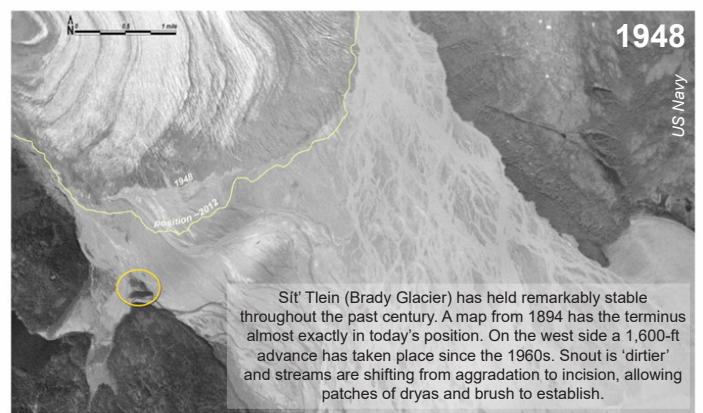
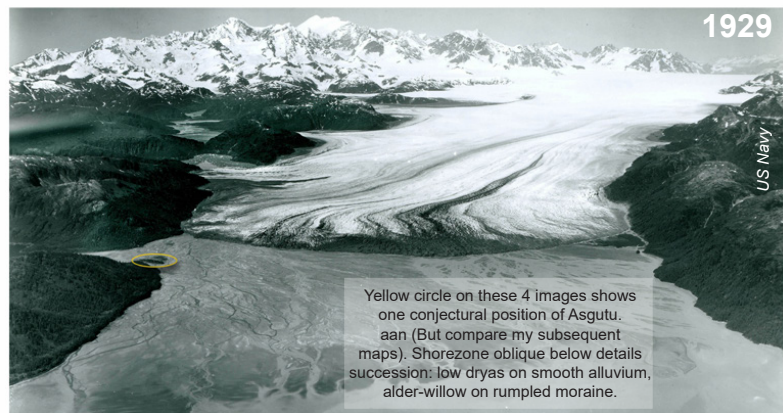


NPS imagery also captured the head of Naguk at low tide, showing one reason why this conjectured location for Ta.aan was sub-optimal. The long tideflat made for difficult canoe launchings. Foundation substrate for clan houses is minimal.

**Asgutu.aan forest village** When Lieutenant Whidbey of the Vancouver Expedition entered Taylor Bay on July 10th, 1794, the mudflat we find there today was a wide bay choked with floating and grounded ice bergs:

*“the . . . shore from cape [Spencer ran] north for about 3 leagues [=10 miles] to a low pebbly point; NNW from which, 5 miles further, a small brook flowed into the sound, and on its northern side stood the ruins of a deserted Indian village. To reach this station, the party had advanced up an arm about 6 miles wide at its entrance, but which had decreased to about half*







that width, and their further progress was now stopped by an immense body of compact perpendicular ice, extending from shore to shore . . .”

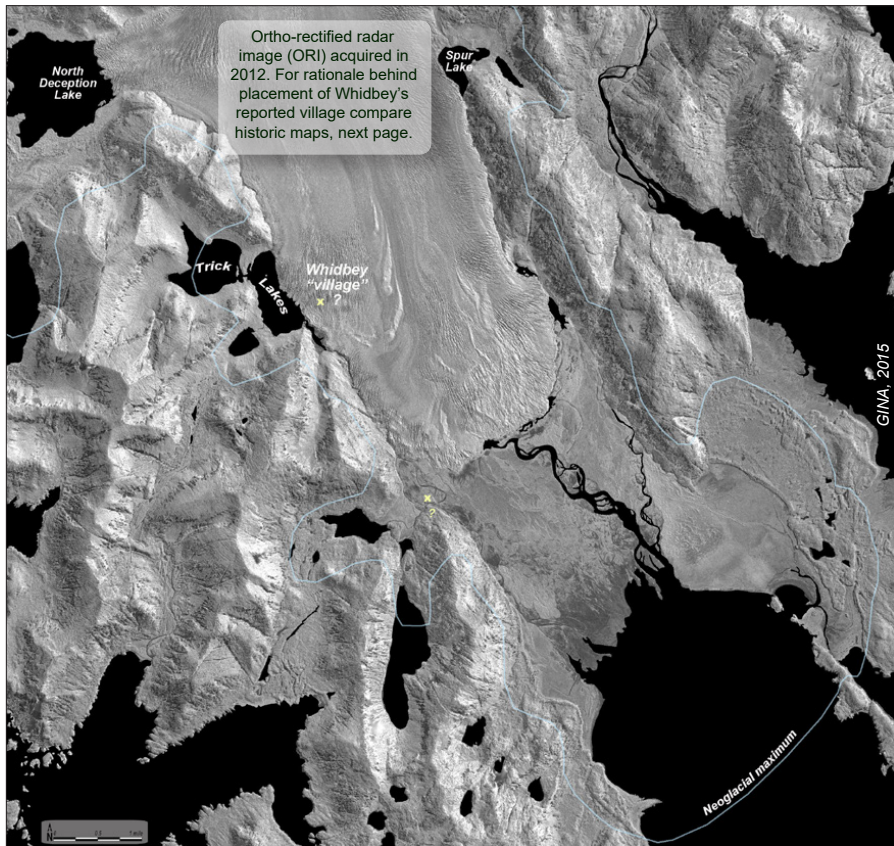
For more than a century, glaciologists and historians have debated the implications of this paragraph, as pertains to the 1794 position of the Sit' Tlein.<sup>1</sup> A century after Whidbey, Otto Klotz (1899:528) compared the charted positions and concluded the village **Asgutu.aan** had been buried by a 5-mile advance of Sit' Tlein. In the 1970s, glaciologist Steve Derksen studied and mapped the glacier, and decided Klotz's interpretation was flawed; the 1794 position was about the same as in 1894. Most recently, the Crowell team focused an unprecedented range of expertise onto the question. They were able to draw from tree-ring data collected by Capp *et al* (2011):

*“with dates spanning 1370 to 1861. . .From its point of maximum retreat . . . ~15 miles north of the present terminus in AD 1225-1305 the glacier began a gradual readvance that by 1830 had dammed . . .Spur Lake. . . [further*

<sup>1</sup> They of course did not call it by the Tlingit name. As the largest (Tlein = big) of the ice sheets in Glacier Bay—or at least largest once the bay-filling Muir had withered into its eponymous arm—Sit' Tlein needed a really IMPORTANT white guy name. In 1883, the US Coast & Geodetic Survey named this glacier for the reverend John Green Brady, missionary and later governor from 1807 to 1909 (Orth, 1967).

Like glacial termini and glaciologists interpretations thereof, history's opinion of John Brady has also vacillated. Comparing the 2 prevailing Euro-prescriptions toward Native Americans at the turn of the century—eradication versus assimilation—Hinckley (1980) placed Brady firmly in the latter, presumably more benign camp. Hinckley concluded *“in truth, Alaska's Natives never had a better friend.”* The Dauenhauers (eds, 1990:136) were less impressed, *“Brady personally seized Tlingit land and directed the building of a road through the center of the Tlingit burial grounds in Sitka, with the result that some of the streets of Sitka are paved, literally, with Tlingit bones.”*

Learning about these histories of cultural clash and subduction angers, embarrasses and sometimes amuses me. It's why I've settled on the convention of naming described on page 3 of this report—eg Sit' Tlein, *big glacier* (Brady Glacier)—and why I think this example of perhaps the most Important White Guy Name of all is worth looking at through a variety of cultural lenses.





**Kei x̱itu.aan** *village inside the brush* xx

**X̱aayta.aan** *inside the redcedar town* the Tlingit name for Surge Bay is translated in T&M12 as “*inside the red cedar village*” Could this be a mistaken interpretation? In Edwards’ Dictionary of Tlingit, western redcedar is laax̱ and yellow cedar is x̱áay. The latter grows abundantly on Yakobi Island, but the northern limits of redcedar are far to the south. It’s true, however, that since the onset of industrial scale logging on the southern Tongass, redcedar drift logs have been swept northward up the outer coast, and are sometimes found among the massive piles of beach drift.<sup>1</sup>

Here ends, for now, my compilation on Xunaa Ḵáawu settlements. Below is the list of as-yet undescribed sites on my radar. It’s weak for the Chichagof side of Cross Sound—Icy Strait, but can be buttressed with help from knowledgeable elders. Highest priority among these sites is Xunaa itself.

As we move into 2016, 3 upcoming events also elevate priorities for L’awshaa Shakee.aan, Gáaxw X’aa’yí and Gooyaxhsa.aan. First, Mary Beth has funding to take Hoonah High School students to Bartlett Cove this spring. The second and third sites will be field destinations for my training in May for the Icy Strait Point staff at the cannery site and Spasski.

**Neixinté Seiyí** *below the bluegreen claystone*

**Daḱáa Xoo** *among the sleeping man* The Hobbit Hole

**Xakwnoowú** *sandbar fort* The bluff in Dundas Bay

**L’istee** *fort (old language)* Up Dundas River

**Yáay Shaak’ú Aan** *whale’s little head village*

**Táas’ Daa Noow** *double-headed tide around it fort* Jack’s Cove, Lemesurier

**Xákw Tlein** *huge sandbar* Mud Bay

**S’ix’ X’aa’yí** *dish point*

**Gathéeni** *sockeye river*

**L’awshaa Shakee.aan** *town on glacial sand* Bartlett Cove pre-advance village

**Wéitadi Noow** *young womens’ seclusion fort* Excursion Inlet

**Ḵuyeik’ L’e.aan** *peaceful village*

**Xutshéeni** *brown bear river* Game Creek

**Xunaa** *shelter from north wind*

**Gáaxw X’aa’yí** *duck point, Icy Strait Point*

**Gooyaxhsa.aan** *wherever looks good, Spasski Bay.* For now, I’ve copied over a sidebar—*Where was the Spasski Village?*—from my May 2015 journal with speculation on which of several proposed locations is the best for this village.

**X’as’tuhéen** *creek inside the jaw*

**Lulxágu** *fireweed sand beach*

**Kax’noowú** *hen grouse fort*

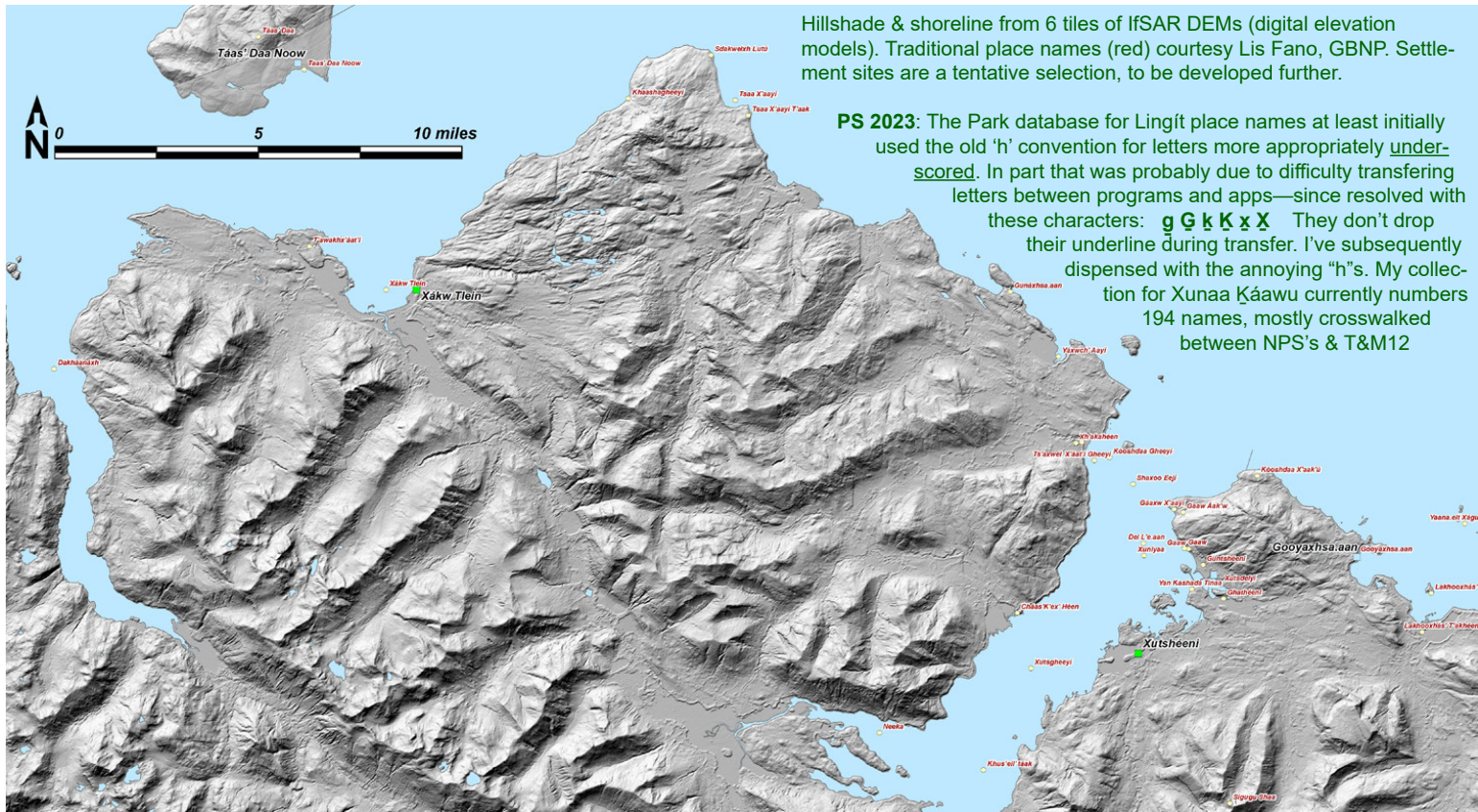
**Wanyeik’axoo** *near among the edge place* Ashley Entrance

“G&H98: In early historic times there was a village at Ashley Entrance which was established specifically for trade with whites. It belonged jointly to the Wooshkeetaan, T’akdeintaan, and Kaagwaantaan people. It was a Hoonah village, but was used by the Native traders from Sitka and Juneau. Only foundations remain there now [1946].”

**Taakw Aaní** *winter village* Pavlof Harbor

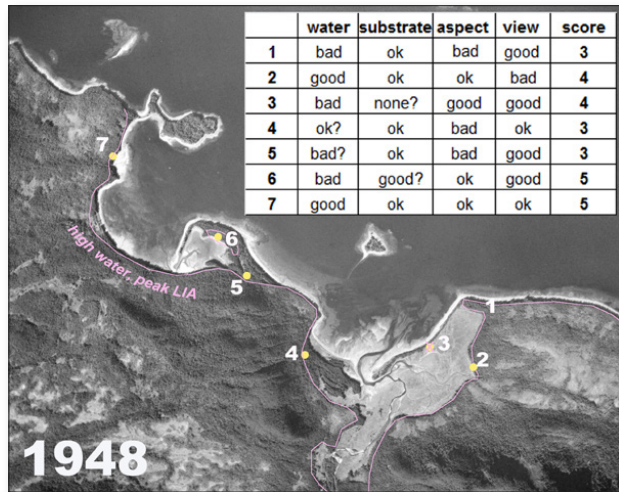
<sup>1</sup> PS: At Clan Conference in Fall, 2015, I learned from Tom Thornton that he and others now agree a more appropriate translation should be “*inside the yellow-cedar town.*”





Hillshade & shoreline from 6 tiles of IfSAR DEMs (digital elevation models). Traditional place names (red) courtesy Lis Fano, GBNP. Settlement sites are a tentative selection, to be developed further.

**PS 2023:** The Park database for Lingit place names at least initially used the old 'h' convention for letters more appropriately under-scored. In part that was probably due to difficulty transferring letters between programs and apps—since resolved with these characters: **g G k K x X**. They don't drop their underline during transfer. I've subsequently dispensed with the annoying "h"s. My collection for Xunaa Káawu currently numbers 194 names, mostly crosswalked between NPS's & T&M12



## Where was the Spasski village?

When Wayne Howell first told me about the move from Spasski village to Hoonah, he timed it to the 1750s, at peak LIA. If true, there'd have been zero uplift features. The wave-built spit enclosing today's Spasski estuary (site 3) either did not exist or was an uninhabitable, barely supratidal berm.

Above, I've marked and numbered 7 potential village sites between Neck Point and the eastern end of Spasski estuary. The pink line is a very crude EHW for maximum marine intrusion at the time of this reported village. Obviously the village has to be on that line. We'll be able to plot the line—and sketch in or even model the likely sources of unmapped, non-anadromous streams—more accurately on receipt of the new



IfSAR DEMs, hopefully by the end of this year.

To weigh relative merits of each site, I assigned each a *good*, *ok* or *bad* in four categories: access to goon héen, substrate for building and canoe access, aspect, and defensive view. To quantify them, *good* gets 2 points, *ok* gets 1 point, and *bad* gets zero. These points are tallied in the *score* column on right side of the table.

The shorezone obliques are shot at low tide, with numbers corresponding to the hypothetical village locations. To interpret these, it's important to recognize that none of the tall, dark coastal spruces existed. Broad mudflats with almost zero gradient at #s 2, 3 and 4 may not have been so prohibitive for 24/7 canoe-launchings, but the obliques do serve to illustrate how much better sites 6 and 7 were for access.

The two best sites for domestic water are #s 2 and 7; others range from dubious to deal-breakers. As for substrate, only sites 1 & 6 could *maybe* have offered friendly unconsolidated beach berms—perhaps constructional, barely supratidal meadows, extremely exposed in storms. All other sites would be forced up onto till-strewn bedrock uplands.

Aspect is suboptimal for all of these sites; my ratings here are just for *relative* rank among







The site we visited, #4, although inviting today and during the homestead era, ties for lowest score among these 7 options when you assume LIA conditions.

Sites 5, 6 & 7 are in Spasski Bay proper. They're more distant from bears and expansive, back-straining mudflats. The Shorezone oblique hints at a stream at #5 but the uplands above are convex; it's unlikely to be perennial. My pink, LIA tideline indicating a berm at #6 is highly conjectural.

All things considered, I lean toward Gordy's view that the most logical location for the Spasski village is site #7. For goon héen, aspect and canoe access, this is the obvious choice. Other sites might have offered better defensive visibility, but this could have been mediated by sentries and a fort on Neck Point.

the 7 options. Owen's choice, #3, is southeast-facing, but as mentioned above, this spit may not even have been supratidal at peak marine intrusion.

Defensive visibility was paramount for a core, winter village at the time of Xunaa's expulsion from Sít Eeti Qeyi. Stories of invasion and massacre by southern nations suggest that sites with limited visibility such as #2 were prohibitively insecure. Here in the firing-line of Glacier-Bay gales, tension between views and wind-protection was unforgiving. Site 2 was at once the *most* wind-secure and *least* enemy-secure. Since the migration story claims that the Spasski village was abandoned as too windy, we're probably safe in ruling out site 2.



## Through alien eyes

### *European visitors in Xunaa Káawu*

For this section I've borrowed a chapter title from Frederica deLaguna's *Under Mount Saint Elias* (1962). The journals of early explorers (aliens) are almost always heavily laden with bias against indigenous culture, and can be distasteful to modern readers. But to anyone seriously facing the question *why we live here*, those 'alien' accounts are essential reading. One goal of our course is to **become resident**—to rise above those alien perceptions. To do so, we, like deLaguna, should try to understand how each culture experiences new environments and human neighbors.<sup>1</sup>

### Vancouver log

The British Admiralty assigned George Vancouver (GV) the task of mapping coast lines, and to search for the fabled northwest passage. By 1793 and 94—the summers he spent surveying what became the Alexander Archipelago—most mariners suspected this passage did not exist. But GV followed his charge faithfully. One result was a chart so superior to its predecessors that subsequent explorers used it for almost another century. *However*, the geographic nuggets buried in this chart are served up alongside misalignments and outright invention. My

<sup>1</sup> The Chirikov log could shed more light on Xunaa Káawu, and should be added to this retrospective.

preface to GV's following (second-hand) account of the 'great loop' of Whidbey attempts to separate wheat from chaff.

Another caution: English writers in the late 1700s and early 1800s seemed to feel that sentences should span most of what we today consider paragraphs. This makes for tortuous reading today. I recommend taking a running leap at these sentences, and perhaps a strong cup of coffee (or tea, to don an English frame of mind?)

• **July 10, 1794** Following is Chapter IX, Vol 4 of Vancouver's *Voyage of Discovery*. (Lamb, ed, 1984) By July, 1794, GV was too ill to participate in the small-boat surveys, so remained at anchor in Port Althorp while Puget and Whidbey led separate parties into Cross Sound. Although Puget and Whidbey saw more country, in some ways GV's account of his stay in Port Althorp cast more light upon the Xunaa, as he had more prolonged contact with the same individuals. His opinion of them, at first positive, lapsed into suspicion and condescension:

*"Although the weather, during the night and morning, had been very rainy, yet it did not prevent our being visited by the natives in 7 or 8 canoes, containing men, women and children; who, from this early visit, we had great reason to suppose had their residence at no great distance. It appeared that they had taken up a temporary abode on one of the 2 small branches in this cove, for the purpose, it should seem, of being our near neighbors. Their numbers were afterwards*

*so augmented that we had frequently near an hundred about the vessels, who, notwithstanding the weather was foggy, rainy, and very unpleasant, furnished us with a tolerable supply of halibut and salmon; the latter was of a very inferior sort, and possessed little or no taste; in addition to these essentials, they disposed of a few indifferent sea otter skins: in this traffic they dealt very honestly, and in the other parts of their conduct they seemed to shew an open, cheerful, and lively disposition; yet no one was inclined to trust himself in our power on board, although on shore they were affable and familiar.*

*Since our arrival on the coast in this season, the state of my health had been too indifferent to allow of my taking any share in the several distant boat excursions . . . [more personal stuff, plus visit by Barber from the Bengal] . . .*

**18th** *The same very unpleasant weather continued with little variation; the wind blowing a strong gale from the eastward. On Friday afternoon our amicable intercourse with the inhabitants of the country was in some measure interrupted, by one of them having been detected in the act of stealing some of the lower part of the rudder chains. Some muskets had been fired to induce those in the canoe to return their prize to no effect; the launch was therefore sent in pursuit of the canoe, and just as the Indians were about to land the canoe overset, by which accident the stolen goods were lost, with such other valuables as they had collected during the day; and the party, consisting of 2 women and a man, were made prisoners, and with their canoe, brought on board. The 3 delinquents were ordered into irons; but they had not been long so circumstanced, before I received a very humble petition from the 2 ladies, who on promising they would not again be found so offending were liberated. The man remained in confinement until the next morning, when I understood that some similar acts had been committed on board the Chatham; this information induced me to consider; that making an example of the thief in our possession, might be attended with the desirable effect of preventing further misdemeanors; and for this reason he*

was punished with 4 dozen lashes, after which his canoe was returned to him, an he with his ladies was dismissed.

**22nd** On this correction being inflicted, the rest of the canoes quitted the cove, and no one came near us until tuesday, when only one came alongside. On the Indian meeting a friendly reception, his neighbors were induced to follow his example, and our former intercourse was perfectly re-established. Amongst the number who now visited us, was one of the women who had bee soverset in the canoe, and who in that scuffle had hurt the separated part of the lower lip; but on receiving the necessary surgical assistance for healing the wound, for which purpose she came regularly on board every morning, it was perfectly healed.

**23rd** The Arthur sailed on the 23rd, and on the saturday following the Jackal arrived, and anchored near us; on this occasion the former restrictions as to the purchase of furs were again reinforced.

Whidbey at this point returned from a great loop through Xunaa, Jilkaat, Aak'w and Xutsnoowu country. Here's GV's second-hand description, based upon the confiscated Whidbey journals which are apparently lost to history.

In reading this account it helps to bear in mind that GV **never saw these places.** <sup>2</sup> *However*, my experience in cross-referencing the reports of GV/Whidbey against those of Archibald Menzies throughout Aak'w/T'aakú country shows that reported distances and bearings **can generally be trusted.** These were trained surveyors.

<sup>2</sup> Most writers today use expressions such as "when Vancouver saw . . ." indicating they rely on secondary sources, and haven't read the original journals, nor taken time to digest the historical background of the expedition.

That said, anyone who has overlaid the Vancouver charts upon modern maps of Southeast Alaska has noted gross exaggerations and misalignments. To explain these, consider that cartographers before the advent of vertical air photography (~1920s) could not trace shorelines from Raven's privileged perspective. Voyagers (and later, land-based surveyors with tripod-mounted transits) periodically anchored their maps with celestial observations. In between these points of known reliability, field workers could only rough out their charted shorelines with impressionistic sketches. Back in civilization, those unpretentious sketches were inked over by draftsmen, resulting in more authoritative-looking productions than their authors might have intended.

Analysing the charts today, we need to know what was real and what was merely cosmetic embellishment. It appears to me that some interpreters, leery of the embellishments, have 'thrown the baby out with the bathwater.' One example has been noted in the long-debated location of the [village of Asgutu.aan](#), since buried (or not!) by subsequent advance of S'tit Tlein (Brady Glacier).

*10th* [Whidbey] commenced on the forenoon of the 10th from Cape Spencer, with very thick foggy unpleasant weather; this inconvenience, in addition to the immense numbers of huge pieces of floating ice, very much retards his progress across the sound. Having at length affected this object, the continental shore from the cape above-mentioned was found to take nearly a north direction for about 3 leagues to a low

pebbly point; NNW from which 5 miles further, a small brook flowed into the sound, and on its northern side stood the ruins of a deserted Indian village. To reach this station, the party had advanced up an arm about 6 miles wide at its entrance, but which had decreased to about half that width, and their further progress was now stopped by an immense body of compact perpendicular ice, extending from shore to shore, and connected with a range of lofty mountains that formed the head of the arm, and as it were gave support to this body of ice on each side. Their course was now directed across the arm, and on its eastern side, compelled by the inclemency of the weather, the party stopped until it should prove more favorable to their purpose. These shores are composed of a border of low land, which on high tides is overflowed, and becomes broken into islands. Here were erected 2 pillars 16 ft high, & 4 ft in circumference, painted white; on the top of each was placed a large square box; <sup>3</sup> on examining one of them it was found to contain many ashes, and pieces of burnt bones, which were considered to be human; these relicts were carefully wrapped up in skins, and old mats, and at the base of the pillars was placed an old canoe in which were some paddles.

*11th* [The weather in the night was dark with constant rain, and on the following morning it improved but little; yet as it permitted the party to see from point to point, Mr Whidbey prosecuted his researches, and found the shores of the icy barrier taking a direction S53°E, 4.5 leagues [16miles], to a point which I have named Point Wimbleton, lying from cape Spencer N53°E, distance 11 miles. In passing this place, they were obliged to make their way through a great quantity of floating ice, and between 3 small rocky islands lying at a little distance from the main land, which opposite to these islands terminates in steep, rugged, rocky cliffs. This point forms the NW point of entrance into an extensive branch of the sound extending to the eastward; its opposite point of entrance,

<sup>3</sup> Mortuary poles, also described in the following account by Menzies.

which I named Point Lavinia, is the NE point of Port Althorp, and lies from it S12°E, at the distance of 6 miles. Between these points is a group consisting of one low, and 2 high rocky islands, with some rocks an islets about them, from hence the shore took a circular direction to the NNE for about a league, and formed the western entrance of a smaller branch about 2 miles wide, extending to the N and NW; at the entrance of which, in mid-channel was only found 18 fathoms water; a circumstance we had been little accustomed to meet with in our examination of the several branches of this very extraordinary country; as in almost every other instance their depth had been far greater, than we had been provided to reach. Up this opening the party advance nearly in a NW direction about 2 leagues, where their further progress was nearly stopped by shoals, rocky islets, and rocks, extending across the branch, which decreased to about a mile in width, and for the space of about 2 miles, was occupied by these islets and rocks; beyond them on the western shore was a small shallow opening, that appeared to communicate with one of a similar description, and which had been noticed in the other arm a few miles below the icy barrier [Taylor-Dundas isthmus], but was too shallow to be approached by the boats. About 4 miles from hence in a northerly direction this branch finally closed, being in most places greatly encumbered with ice. on the return of the boats, they were much incommoded by the shoals that extend from the northeast side of the arm, to within half a mile of its SW side. About its entrance the soundings were regular, of a moderate depth, and afforded good and secure anchorage; but at this season, vessels would be much inconvenienced by the immense quantities of floating ice; this impediment, in addition to the weather being again very foggy, stopped the progress of their researches early in the afternoon, and obliged them to retire about a league within the entrance on the eastern shore. About 10 of the natives in 2 canoes had been met with, who had conducted themselves in a very civil and friendly manner. Toward evening and in the night, the ice accumulated so much as to threaten destruction to the boats, which under the circumstances of their situation,

could not without inconvenience and delay be hauled on shore; the utmost vigilance of the party became required to prevent their being damaged, which was happily effected, though with the loss of a grapple, as the Chatham's cutter had by the ice been unavoidably forced adrift. This, though an important loss, (none of the boats having a spare grapple) was soon compensated by the ingenuity of Mr Le Mesurier, who had the command of the cutter, and who immediately constructed one of wood, that answered the purpose of an iron one extremely well, during the rest of the expedition.

**12th** The morning of the 12th, though unpleasant, was rather more favorable to their pursuit, which was still greatly impeded by the ice. From the east point of this branch, which I have called Point Dundas, situated in latitude 58°21', longitude 224°1', the coast takes an irregular ENE direction about 7 miles to a point, from whence this branch of the sound appeared to be very extensive in an ESE point of view, and was upwards of 3 leagues across. The party proceeded from point Dundas to this station, through a channel from 2 to 3 miles in width, between the continental shore and an island about 7 miles long [Lemesurier] and 3 miles broad, lying in a NE and SW direction. This spacious inlet presented to our party an arduous task, as the space between the shores on the northern and southern sides, seemed to be intirely occupied by one compact sheet of ice affar as the eye could distinguish. While the boats remained at this point they were visited by the natives in several canoes, that had come from a small shallow brook a little to the westward of the point. Excepting a few indifferent sea otter skins, these people brought with them no articles for traffic. To the north and east of this point, the shores of the continent form 2 large open bays, which were terminated by compact solid mountains of ice, rising perpendicularly from the water's edge, and bounded to the north by a continuation of the united lofty frozen mountains that extend eastward from Mt Fairweather. In these bays also were great quantities of broken ice, which having been put in motion by the springing up of a northerly wind, was drifted to

the southward, and forcing the boats from the northern shore, obliged them to take shelter round the NE point of the above island [Lem]. This made Mr Whidbey apprehensive, that the still apparent connected body of ice from side to side, would at length oblige him to abandon his researches by this route, unless he should find it possible to force a passage through this formidable obstruction.

In attempting this, the party succeeded far beyond their expectations, for they gained an open navigation, and by 4 in the afternoon arrived at a low and nearly round island about 2 leagues in circuit, lying from the former island N83°E, distant 3 leagues [Pleasant Island]. This island is moderately elevated, its shores pleasant and easy of access, and well stocked with timber, mostly of the pine tribe. It presented a much more inviting appearance than they had been accustomed to behold, and the wind and weather being more favorable than for some time past, they continued along the continental shore, passing within some islets that lie about a league to the eastward of the round island [Porpoise Islands], until 9 pm, when it became calm, and the party rested for the night at the entrance of a brook, in a bay on the northern or continental shore, which from the round island lies S82°E, distant 10 miles.

**13th** Here in the morning of the 13th they were visited by 15 Indians, men, women and children, who conducted themselves in the most civil and affable manner, and took much pains to explain, that they had been recently engaged in a war with the inhabitants of the southern side of the branch, in which they had been beaten, and pointed to a deserted village, where those of their comrades who had fallen had been buried. These people appeared to be of a very poor tribe, and had scarcely anything to dispose of; for which reason Mr Whidbey mad them presents of som few trivial articles, which were very thankfully received, and then he resumed his examination, and found the continent from the last-mentioned open bay compact, and taking course somewhat irregularly S50°E, 7 leagues, to a point, which I have called after the seat of my



ancestors. Point Couverden, where the observed latitude was 58°12', longitude 225°7'. At the distance of 2 miles to the NW of this point, the party passed a small cove with an island lying before it, and half a league south of the point, a high barren rocky islet.

The branch [Icy Strait] that had been thus navigated, was here about 5 or 6 miles wide, and at this station was united with a very extensive arm, taking a SSE and NNW direction. [Chatham Strait, where they turned north toward Jilkaat country]

**25th, returning toward Althorpe around Pt Augusta:** The weather continued to be calm and pleasant, and as they again proceeded on the morning of the 25th, this side of the branch was found to be composed chiefly of rocky cliffs, with islets and detached rocks, lying at some distance from the shore, which was compact, not very high, but well covered with wood, taking a direction of N60°W, 17 miles, to a point I called Point Sophia; forming the NE point of entrance to a deep sound, which I named Port Frederick, about a league wide, in an east and west direction, winding to the southward, and apparently much divided by water. From the west side of this south the shore took a more northerly direction, with some islets lying near it, to a point, which is the northern extremity of this supposed archipelago, and which obtained the name of Point Adolphus, situated in latitude 58°18', longitude 224°28.5'. This point the party reached in the evening, and about a league to the SW of it they rested for the night in a small cove under a high hill.

## Menzies log

● **July 10, 1794** Departing Althorpe, Lieutenant Whidbey led a party of surveyors into Cross Sound. Aboard was Archibald Menzies, ship surgeon and naturalist (Olson, ed, 1993). His first hand observations are essential cross-referencing to the above report from GV:

*"On the morning of the 10th of July I set out with Mr Whidbey who with 3 boats under his direction were armed & victualled for a fortnight so as to proceed to explore the interior branches of the Sound. We edged over to the NW point of entrance, passing vast quantities of ice in huge lumps drifting about with the tide which greatly incommoded our progress, especially as we had rainy weather, with fog so very thick that we could see but a short distance round us, & the Noise of the Surf against the Beach first announced our approach to the opposite shore, which we made a little more to the eastward of Cape Spencer & commenced our examination by coasting along it to the northward up an arm [Taylor] that terminated in an icy vale which made conspicuous appearance on our entering the Sound behind Mt Fairweather. The shore was found rocky & indented, with some Coves that appeared likely to afford shelter & anchorage but we had not time to sound them. In pursuing the western shore, we passed about 5 or 6 miles up the arm a small rivulet, near which we saw the ruins of an old indian village & a little further on our progress was obstructed by a vast field of drift ice, extending from shore to shore, that rendered it impracticable to proceed higher up at this time with the boats, & from a glimpse we had through the haze, it appeared to form a dense covering to the feet of the icy vale before mentioned, where the arm evidently terminated & where a continual rumbling & crashing noise was kept up by the ice. We therefore crossed over to the eastern shore, which we began to trace down till we came to a small bay near some Islands, where finding a convenient situation, we pitched our tents for the night. The land immediately behind us was low & marshy & produced a luxuriant crop of grass, but further back it became mountainous, & appeared everywhere covered with pine trees.*

**11th** *The weather next morning was still gloomy but the fog had in some measure dispersed & enabled us to proceed with more certainty in our examination. Our course was directed between some rocky islands & the Main, where we had considerable difficulty to encounter, as the passage was*

*nearly choaked up with huge lumps of ice, some of which were aground in pretty deep water, where they seemed to remain stationary from year to year, as their summits were made up of different layers of ice & snow, and the surrounding ice always preserves a sufficient coolness in the atmosphere to prevent their melting wholly away even in the hottest summer. A precaution was here taken of sending the Pinnacle ahead, as she was the strongest boat, & the 2 cutters followed close in her wake by which contrivance we got through without receiving any damage & proceeded to the eastward, entering soon after a spacious opening leading nearly in that direction, & steered with a group of rocky islands about 4 leagues from the entrance of the Sound, between these, the Tide went through with great rapidity, forming whirlpools in which large bodies of ice moved about in all direction, so that it required the utmost vigilance to keep ourselves clear of instant destruction, as many of these pieces of ice were of such magnitude that 2 of them approaching from opposite directions would crush either of our boats to pieces in a moment. We however happily got clear of this perilous situation, & soon after entered another arm [Dundas] winding off to the northward and northwest, which we pursued for about 10 miles, till we saw it terminated back by very high mountains. A little below the head of it a small shallow branch went off to the westward in a low marshy land, which may probably communicate with the icy branch we examined the day before, as the distance here between them, was not discovered to be above 3 or 4 miles. Finding the navigation near the head of the arm rendered very intricate with a number of small Islands & sunken rocks we returned back along the eastern shore of it, till we came to a deep bay skirted with a considerable tract of low land well wooded with pines. Here we saw the appearance of a village with some natives, but in attempting to approach it our boats grounded before we got within a mile of it, so that we were obliged to relinquish our design, and also our pursuits on this shore, which appeared to be strewed with low woody islands, we therefore crossed over to the opposite side of the arm, & put into a small Cove to dine, which gave some of the Natives*

from the village an opportunity to join us in 2 Canoes with an acceptable supply of fish. They were very inquisitive to know where we left the Vessels, from a desire no doubt of visiting them, & when we made them understand that they were not far off in a certain direction, and that plenty of fish would be very acceptable article of traffic to them, they quitted us very peaceably, apparently well pleas'd with the information & the treatment they receiv'd. In the afternoon we got out of the Arm & after rowing about 2 leagues, we came in the evening to a shallow bay with a fine sandy beach, skirted by a low flat tract of meadow land, which offering a very eligible situation for encampment, we landed & pitched our tents for the night. From this station the arm appear'd as far as we could see it to the eastward strewd over with vast quantities of ice floating backwards & forwards with the tides and currents, many huge pieces of which grounded at low water in the bay, that kept us in continual anxiety & alarm for the safety of the boats, & the utmost vigilance became necessary to prevent them being damag'd or carried adrift by the ice, notwithstanding which the Chatham's Cutter was actually torn from her grapnel, & owing to the darkness of the night, was some distance from adrift before she was observ'd, luckily however the loss of the grapnel was the only damage she sustain'd, & Mr Lemeurier [sic] who commanded her, continued to supply its place tolerably well for the rest of the cruise with a wooden one fix'd to a heavy stone; for the present she was haul'd on shore till the morning. Many of the large pieces of ice that grounded about the boats as the water fell from them, became either top heavy or some part of them by their position loosing their equilibrium tumbld off with a crashing noise that frequently awakened us in the night time & had any of the Boats happend to be near or under these falls, her fate must have been inevitable destruction; to guard therefore against these alarming dangers we pass'd the night with very little rest & by no means so comfortable as we expected from the eligible situation we had chosen.

**12th** We breakfasted next morning before we set out as the

Chatham's cutter took some time before she could be got ready & launched. This interruption afforded me an opportunity to botanize round our encampment, where I met with 2 plants I had not before observ'd any where else on this coast, one of them was an Alpine plant, the *Selena acaulis*, apparently brought down from the mountains by a large torrent which emptied itself into the bay close to us, & the other was the *Pulmonaria maritima*, who trailing branches with glaucous colored leaves adorn'd the barren beaches; & thus, it is wisely ordain'd by providence, that every situation however barren or parch'd should have its appropriate productions or ornaments, for this very plant remov'd to a good soil will generally pine away, but on the sea beach, its natural situation it thrives spontaneous luxuriously, & the same thing will happen with regard to many other plants.

We pursued our course to the eastward on the larboard shore & soon after pass'd the entrance of a small creek, where we saw a few temporary huts & some Natives, who were put into the greatest consternation at the sudden appearance of the 3 boats. Some of them began to carry their effects back into the wood, where the women and children also fled in great hurry to hide themselves, whilst a few of the men stood their ground at the water side & brandish'd their spears to oppose our landing, till we convinc'd them by amicable signs & steering a different way that we intend'd them no harm, on which 2 Canoes put off after us with 3 men in each & follow'd us for some time very peaceably. To the eastward of this creek we open'd a large bay choak'd up with ice & backed by a considerable tract of country presenting a prospect the most bleak & barren the can possibly be conceiv'd; the higher moutnains were envelop'd in perpetual snow, whilst the Valleys were chock'd up with a huge mass of rugged ice down to the water side, not a tree or shrub could be perceiv'd over this lifeless and dreary tract, which with the surrounding ice diffus'd a piercing chill we could scarcely endure. As we were rowing amongst the ice for a projecting pillar in the middle of the bay to satisfy our curiosity & take some bearings from the

top of it, we suddenly found ourselves in a most critical situation, by perceiving that many of the huge pieces of ice about us were aground, while others of less magnitude were in rapid motion by the influence of the tide, & frequently dashing against the stationary ones with a force sufficient to crush either of our boats that might come between them to pieces, & indeed one of the boats had a very narrow escape which led to the discovery of our perilous situation. We at this time sound'd and found we were in 4 fathoms about 2 miles from the shore, with a vast body of ice moving down upon us from the eastward & out of the bay. This oblig'd us to relinquish our design & instantly steer out into the middle of the arm where in deeper water we should have only to encounter with floating ice, & as we staid across the arm along the edge of this immense moving field, which nearly extended from side to side & was so closely pack'd together as to be impenetrable to the boats, we expect'd no less than to be carried back with it a considerable distance, but continuing our exertions for a place of safety, we reach'd nearly the opposite shore, where the ice was observ'd to be less compact & a likelihood of our being able to force our way through it, we therefore made the attempt & by using the same precautions as already mention'd of the 2 cutters following the pinnacle tract closely, we happily succeed'd, & found the encumbrance become less & less as we advanced to the eastward, till in the course of a few hours we got entirely beyond it & pass'd 2 or 3 very high pieces of a pyramidal figure that were little short we conceiv'd of 30 feet high above the surface of the water, from thence some idea may be form'd of their size & magnitude, as ice is allow'd to shew but a tenth or twelfth part of its whole bulk above water.

The arm now took a turn to the south eastward & appear'd wide & spacious & clear of any ice for at least 10 leagues in that direction. A little to the eastward of us was a large Island [Pleasant] of a very moderate height & well wood'd with pines, & as the shore of it appear'd very inviting, we land'd on the south point at 4 in the afternoon to take some bearings & with an intention to dine, but not being able to find any water upon it, we continued our progress for the continental shore,

passing a little to the southward a group of small Islands [Porpoise Islands] & on coming abreast of a large rivulet in the evening we landed on its banks & pitched our tents for the night [Village Point]. Here we found growing plenty of wild Orach, which we dressd, & as none of us had tasted greens or fresh vegetables

● **Fall, 1867** Immediately after the Alaskan purchase, Brevet Lieutenant-Colonel Robert N. Scott reported on kwaan numbers throughout the Archipelago. Most numerous at that time were the “Chilcahs” (Jilkáat), at 1,200, followed by the Hunnos (Xunaa), with 1,000 on the mainland, and another 150 on the northern end of Chichagof. Stikeens (Shtax’héen) and Kakes (Kéex’) were fourth in number, with 1,000 each.

● **July, 1880** L.A. Beardslee, Commander, US Navy, based in Sitka, reported

*“A miner named Willoughby, who, having seen the ores brought by the Hoonahs in March, had accompanied them on their return home, arrived in Sitka, and stated that he had been well treated by the Indians during a 2-month stay among them. He reported that frequently he heard them, while conversing, speak of the Jamestown . . . it was thus evident that the influence of the ship extended a long way beyond the range of her guns.”*

● **September, 1880.** Beardslee travelled to Chilkat country on the steamer Favorite, stopping on the way. . .

*“to visit the Hoonah villages in Cross Sound, and there take steps to prevent a threatened war between the Hoonahs and the British Columbia Indians of Fort Simpson, the latter having trespassed upon the rights of the former by killing sea otter upon the hunting grounds of the Hoonahs.”*

The following more detailed account of the 1880 visit (Boundary tribunal proceedings, 1904) is unclear as to authorship, but probably was by Wm Morris:

*“We proceeded to Port Frederick Harbor, as laid down in Meade’s chart, but called in the Indian tongue “Komtokkon.” It is the principal village of the Hoonah tribe, which is large, warlike, and powerful, estimated at some 800 in number. This tribe own the sea-otter grounds upon which the British Indians infringed, and were ready for war when we reached there. A pencil sketch of the above-named village will be here observed. Their villages, fishing and hunting grounds, are scattered all through Cross Sound, and once aroused they could do a great deal of mischief. The head chief being absent, after remaining here a sufficient length of time we proceeded in quest of him, and found him at last at a village situate on Tchishish Island [Lemesurier]. This latter not being named on the chart we called it Sherman Island, in honor of the late esteemed Secretary of the Treasury, and it will hereafter be so known in future charts, unless the Coast Survey should see fit to rechristen it.*

*The audience with this chief, Kahhoodoosak, and magnates was held in the cabin of the Favorite and was intensely instructive and interesting. An idea of it can be gathered from a’ drawing here inserted. The officers, including myself, were all resplendent in uniforms, gold lace, and buttons, with our swords either lying on the table or hooked up at the side.*

*This old chieftain spoke in slow and measured language and at times was really eloquent. I can not say when I have been more impressed with the innate power contained in a savage breast than on this occasion. He it was who had caused the letter to be written to Captain Beardslee informing him of the sea-otter raid, and who alone by the force of his own mighty will had prevented his tribe from murdering every King George Indian on the spot.*

*He dwelt at length upon the importance and gravity of the situation, and concluded by thanking Captain Beardslee for his visit and assuring him of his everlasting friendship and that of his tribe for the Boston white man. Captain Beardslee delivered a very sensible and well-digested speech, in which he informed them why his ship had been sent to the waters of Alaska, what the Great Father at Washington expected of the Indians, how they should behave, and the manner in which they would be punished if they failed to heed his advice and warning, which he had come so long a distance in person to give. He commended the chief for writing him the letter and not permitting his young men to engage in reprisals and go upon the warpath. It produced a very good effect, and then another actor appeared upon the scene. As the chief inclined his head toward the undersigned at a signal from Beardslee, a presentation was made in due form, and I was announced with quite a flourish of trumpets as the great Hy As Tyhee, the big peace commissioner from the Great Father at Washington, a tyhee superior in rank to Beardslee, who had come to talk peace and trade to himself and people. A mighty uAh!” was swelled forth from his cavernous chest, and, looking me straight in the eye, gurgled a string of words, which the interpreter simply translated “Go ahead.”*

*Rank is everything with these Indians, and the more important the personage and the more gold lace exhibited so much the greater do they fear and respect the individual. They look upon the captain of a man-of-war with far more fear than they do the vengeance of the Supreme Being.*

*It took some time to bring his mind to thoroughly follow and understand the different phases of the customs revenue which were presented to him, but I believe the interview will result favorably in this respect, for I impressed upon him the necessity which existed for his point blank directing his whole tribe to have no personal or commercial relations whatever with the Fort Simpson Indians; to utterly ignore them.*

*Care was taken to explain everything to him necessarily for him to know, and to impress upon him that if hereafter they traded for British goods that when next I came along in*



*a gunboat I would seize every article of foreign merchandise that could be found and confiscate it. They fully comprehended the situation before the powwow was concluded. We here learned that the smuggling expedition had returned to Fort Simpson with only one sea otter. As the canoes took an inside passage, we did not see them. We learned, however, that they were the avant courier of a large fleet, some 60 in number; expected up in October, 1880.*

*I went at length into the clandestine liquor trade carried on with British Columbia, and the manufacture of hoochenoo, and dwelt upon the violation of law in the former and the enormity of the latter.*

*The first part of the proposition was conceded, and promises to buy no more Hudson Bay rum or whisky were freely made ; but the truth compels me to say my attack upon hoochenoo did not achieve the brilliant effect expected. However, the lesson was taught and good fruits are confidently looked for.*

*The school question was prominently brought forward, and it was really touching to see these stalwart men begging that the white man would send some gospel man to teach their children to read and write. I have never seen any Indians anywhere so greedy for education as those along the shores of Alaska.*

*After this we proceeded to explore Glacier Bay, a name given by ourselves to a large sheet of water charted by Commander Meade as dry land. There are a large number of Indians living there in proximity to the sea-otter grounds, and we desired to hold a wa-wa with them but the navigation becoming more and more perilous and fog coming up decided Captain Vanderbilt not to risk his insurance by making any further effort, and we about ship and ran for a former anchorage.*

## Part 3: Appendices

### 1 The USS homestead maps

At the turn of the last century, Alaska began to see its first professional surveys—detailed and often artistic maps of small parcels—as settlers filed homestead claims on prime coastal land. Naturally, these claims were almost invariably on beach front previously occupied by the Tlingit, and are thus useful testament to *why we live here*—the “we” in this case being widely divergent cultures who nevertheless agree on many attributes of what makes a good home or place of business.

Examples of *disagreement* often point to European prioritization of features irrelevant to previous inhabitants. For example, the very first USS Plat #1, filed in 1891, was for a salmon cannery on the north-facing shore of gradually shoaling Chilkat Inlet. With high mountains right behind it, this is a dark, windblasted purgatory in winter. But it was the nearest suitable base to the Chilkat River for deep-draft ships to dock. In pre-contact times, Ldeiniyé (Pyramid Harbor), was at best a summer fish camp. The “Indian Houses”

(red-circled below) almost certainly post-dated the cannery, converging on site for employment. (Gus Klaney told Goldschmidt & Haas (1998) that the first fish trap placed by this cannery was torn down by his grandfather.)

Another very early USS plat, #7, maps the brand-new settlement on Dzantik’i Héeni creek of little flounders (Gold Creek), in 1892. As at Ldeiniyé, although that plat shows an “Indian Village” on the beach at what became Willoughby Avenue, this rainy, gale-swept site was miserable in winter, and only had a couple smokehouses in pre-contact times (Cropley, in Goldschmidt & Haas, 1998). The Piltzbury>Fliptown>Rockwell>Harrisburg>Juneau town-site prioritized precious metal over avoidance of foul weather.

Throughout the period of USS claims—from 1891 to the 1940s—numbers were assigned *roughly* in chronological order. But delays in filing, etc, affected their assignments. The lowest survey number I’ve so far located within Xunaa Káawu is the Astoria & Puget Sound Canning Company’s USS#227, near the mouth of Kuyeik’ (Excursion Inlet), dated 1908. (See, however the earlier 1903 filings below for James T. Barron, beginning with #318). Here’s



USS Plat #1 “Claimed by the Pyramid Harbor Packing Co. and the improvements appertaining thereto, under an Act of Congress, entitled ‘An Act to repeal timber culture laws, and for other purposes.’ SW shore of Chilkat Inlet. Surveyed Sept 28<sup>th</sup>, 29<sup>th</sup>, 30<sup>th</sup>, and Oct 1<sup>st</sup>, 1891, by George W Garside, US Deputy Surveyor. Scale of 3.00 chains to the inch.”

This original plat for 101 acres was stamped “superceded” when updated by an 1897, 25.5-acre plat claiming only the western half of this beach front. On that map the “Indian’s Houses” had moved outside the new property line, just east of “China House.”

the “General Description” of that first claim, by surveyor FJ Wettrick:

*“This claim is situate on the east shore of Excursion Inlet about 40 miles NW of Juneau, and about 3 miles southerly from the head of the Inlet. The easterly 2/3 portion is covered with a spruce and hemlock timber, while the remaining portion is a sand and gravel flat supporting a heavy growth of swamp or beach grass.*

*In the spring of 1908 the Puget Sound & Astoria Canning Company erected the salmon cannery upon the gravel flat . . . and operated the same during the entire fishing season. The land embraced within the boundaries of this survey is absolutely necessary to the operation of the canning plant, especially the beach land . . . This is required for web room, the fishing paraphernalia being spread out over the area for drying and cleaning.*

*The Indian cabins shown upon the plat have been built since the erection of the cannery and are inhabited only during the fishing season, the natives being employed as laborers in the cannery.*

USS#227 concludes with the following boilerplate:

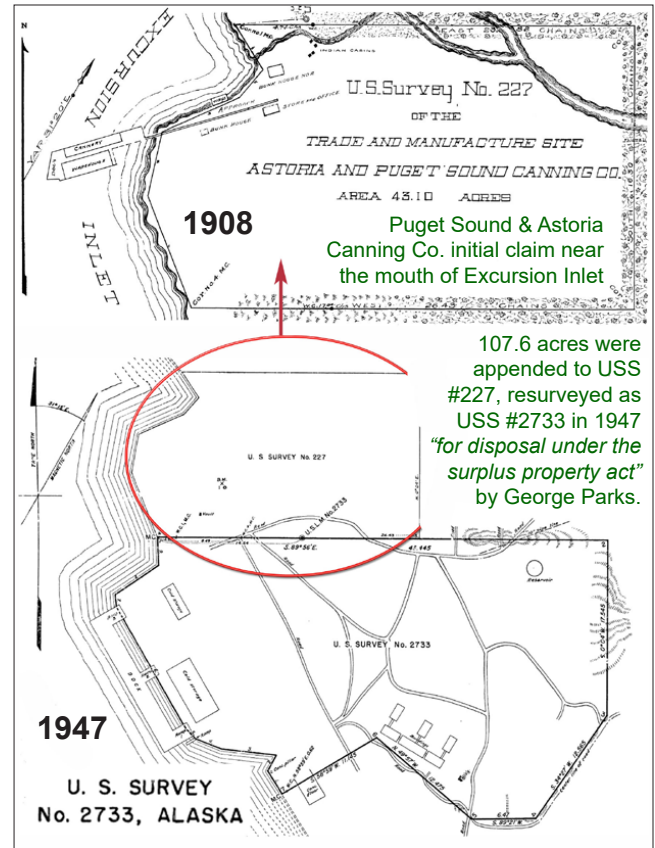
*“The survey of said tract does not embrace any lands to which the natives of Alaska have prior rights by virtue of actual occupation . . .*

Probably the Wooshkeetaan or other clans had at various times “actually occupied” every stream mouth in their territory. This same boilerplate was stamped on page 275 of USS#666, the Pacific American Fisheries’ 1909 claim on a delta to the north, near the head of Kuyeik’. There too, surveyor Wettrick took pains to explain the “Indian cabins” as post-cannery arrivals. No doubt they were, but this purportedly vacant delta was known throughout Xunaa Káawu as Weitadi Noow, *fort of the young women in seclusion*.

While the owners of Pacific American Fisheries weren’t named on USS #666, one among them was apparently a Civil War veteran, because this delta was claimed under the Soldier’s Additional Homestead Act of 1898. That act allowed veterans with homestead entries of less than 160 acres to select additional public lands to a total of 160 acres. On the beaches now generally referred to as “Homeshore,” a man named James T. Barron took strategic advantage of this Act. Along a shoreline generally unfriendly to canoe landings or safe anchorage, Barron scattered USS plats of several acres each—all at stream mouths that formerly hosted Wooshkeetaan fish camps.

James Barron knew how to play the system. As Mobley (2012) explains he was owner of the Thlinget Packing Company in Funter Bay, built on a supposed “mining claim:”

*It’s unlikely that the elder Barron had any intention of mining the claim; he completed the initial assessment work by excavating a . . . hole at what would become a warehouse site, and a flume from a small creek to . .*



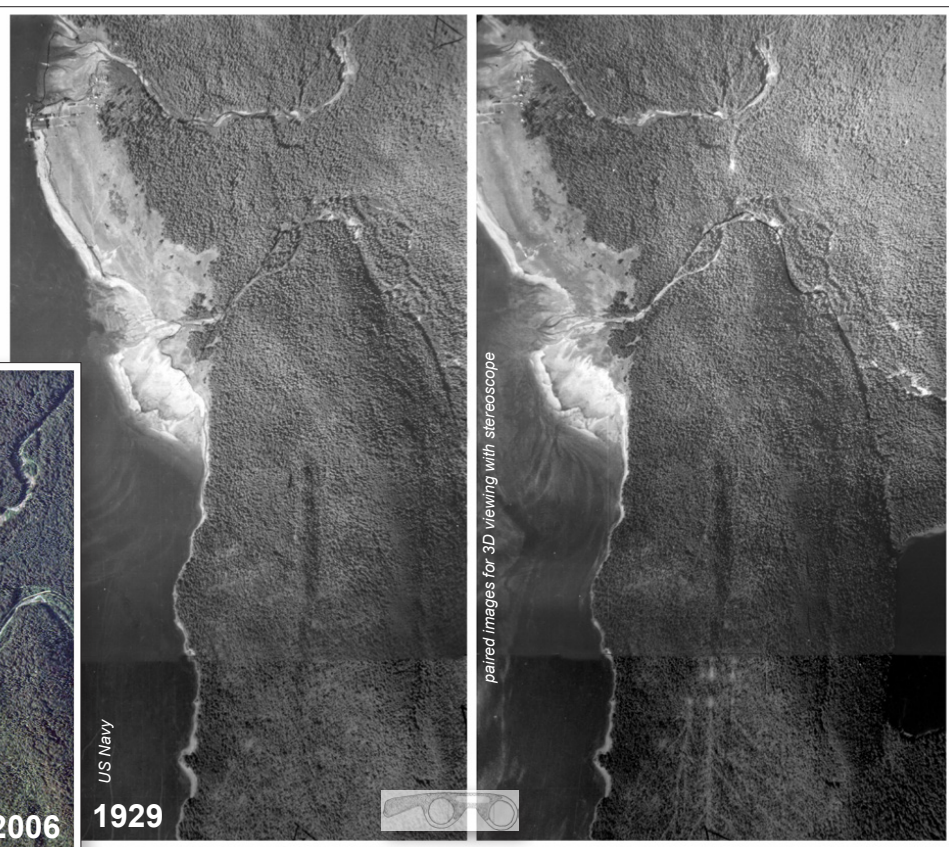


. what would become the cannery's powerhouse. The land was patented as U.S. Mineral Survey 560."

The large majority of USS claims within Xunaa Káawu are by European newcomers. However, at least 9 of these claims

**Clockwise:** USS claims in the Homeshore region by James T. Barron under the Soldier's Additional Homestead Act. They total at least 52 acres (I probably missed some), not counting Barron's 11.7-acre "mineral claim" in Funter Bay, which he actually selected for the Thlinget Packing Company's cannery site. • The Puget Sound & Astoria Canning Company's Excursion Inlet claim on Southeast's first aerial imagery in 1929, by the US Navy. North stream dry. By this time the cannery had operated for 2 decades • Excursion Cannery on USFS imagery on June 11, 2006.

USS#	date	acres
318	1903	3.7
319	1903	2.0
320	1903	5.2
321	1903	4.5
322	1903	4.3
460	1911	7.5
706	1905	7.4
1139	1912	17.4
	total acres	52.0

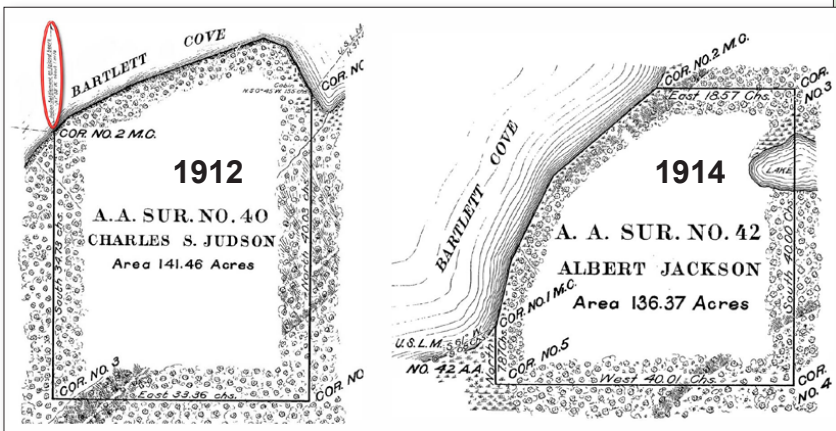


documented longstanding use by the people of Hoonah. Earliest-filed and best-known is probably USS #939, filed in 1912 by Charles Judson in Bartlett Cove. This property was described by Mobley (1994) for the Park Service, in a study of CMTs (culturally modified trees):

*“The area’s principal historic archeological locality is the Lester Island Village (JUN-026), the site of a Euroamerican saltery and cannery (established in 1883 and abandoned by 1910), a Hoonah summer fish camp, and a log cabin, general store, and trading post established by Dick Willoughby (Black 1957:23). Ackerman (1964) discovered 4 historic house pits which he attributed to the Native village, and a cemetery with at least 7 graves on a bluff overlooking the saltery.”*

The Judson claim was also known as AA (Alaska Allotment) Survey #40. Under “*general description*” is the following:

*“situated on the south side of Bartlett Bay, which is an estuary of Glacier Bay, south of a large Island, on the south shore of which is an Indian settlement. . . . The land is level rolling and hilly, the SE portion being somewhat choppy glacial moraine pot holes. . . . The soil is sandy loam and glacial deposit, covered with vegetable mould. . . . The timber is spruce and hemlock varying in size from 6 to 24 ins. diam., some of which is suitable for small piling. A large portion of the claim is covered with*



**Instructions for downloading .pdfs of USS plats:** Go to the BLM’s Spatial Data Management System website:

<http://sdms.ak.blm.gov/isdms/imf.jsp?site=sdms>

On the Alaska map portal, zoom into the Hoonah region. On the right-side TOC (table of contents) are numerous layers for natural and cultural features. Check all of the boxes under the top group, *land status*. In the *land survey* group, check the *surveyed lands* box. At first you may need to be zoomed-in pretty close to read the USS# (or MS#, for mining claims), but afterward you can scale out a bit.

Remember that the early historic surveys have the lowest numbers. In the Hoonah area, USS#s 10,000 and higher are recent ‘retrospective’ surveys beginning in the 1990s. They’re usually pretty cryptic about the original claim status and why these parcels were revisited.

Next, go to the BLM’s Survey Display page:

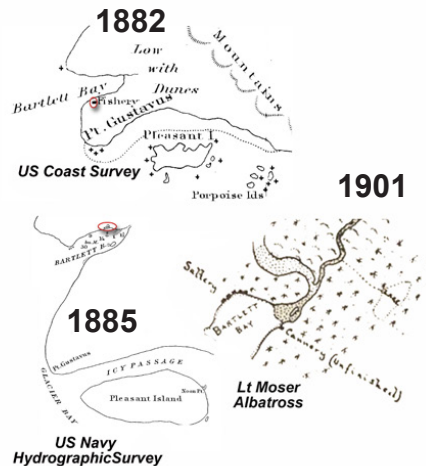
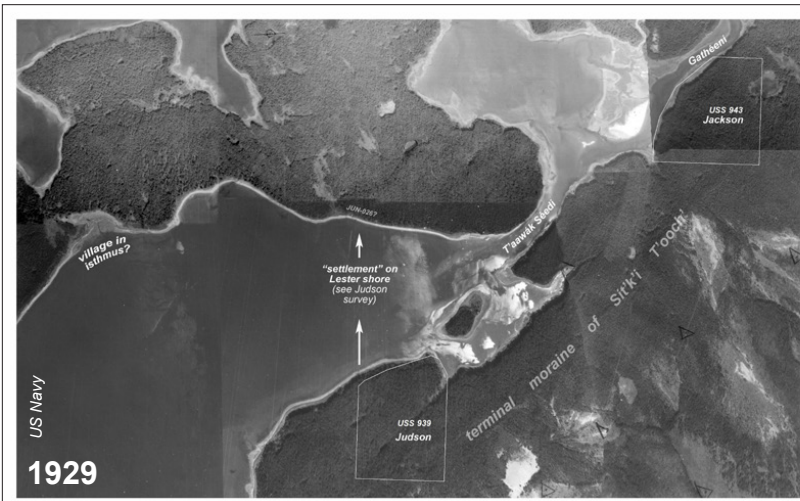
[http://sdms.ak.blm.gov/scanned\\_images/surveyindex.html](http://sdms.ak.blm.gov/scanned_images/surveyindex.html)

On the left are two query boxes; one to view the map, and another to download it. Type the USS# that you learned from the map page into the box and click *view survey*. (The pull-downs offer the option of downloading an MS, or mineral survey, instead of a USS).

If the map turns out to be the one you wanted, you now have the option of downloading a pdf version. Most of these include many pages of cartographic esoterica, but also some valuable historical information.

**For GIS users:** On the map portal on BLM’s Spatial Data Management site, zoom to extent of project area. In TOC, check box in the group *land survey* for *surveyed lands*. Next, on map-window header, click downward-blue-arrow icon to replace TOC with a *data download* dialogue window. Check *surveyed lands*, again, then *extract*. You’ll get a zipped folder with a *lyr\_land* shapefile. [Following map](#) is winnowed to just the USS and MS parcels of interest.

USS claims in Bartlett Cove on 1929 mosaic. On right are earliest historical charts that show cultural features in Bartlett Cove. Albert Jackson's claim was at the mouth of Gathéeni, sockeye river (Bartlett River). Strong tidal currents still flush through T'aawák Séedi, goose narrows, separating Lester Island from the mainland. The prominent ridge backing Bartlett cove was where Sit'k'i T'ooch' little black glacier finally came to rest after being called down by Kaasteen.



*an additional growth of alder brush<sup>1</sup>. . . only improvement is an old cabin, near corner #1, . . . built of small logs, roof practically gone from decay, and containing no floor. The cabin was formerly used as a smokehouse for drying salmon, tho does not appear to have been used for many years. . . . Along the north boundary of the claim, on the shoreline . . . are some old piling still standing, where was formerly located a saltery for salting salmon. This was owned, however, by white people, tho none of the old buildings are now standing. . . The claim possesses value principally for the timber thereon, and for the fishing priviledges in the adjacent bay.*

<sup>1</sup> These timber descriptions are valuable to forest ecologists. For example, no person now living remembers substantial alder growth beneath the canopy of tall spruces in Bartlett Cove. That successional stage ended around mid-century.

Mobley (1994) explains this image as follows, but does not commit to exact location. Presumably the view is NW across JUN-026: *"Tlingit summer camp at Bartlett Cove photographed by George T. Emmons in 1888, labeled . . . 'Khart-heenee' (Salmon water) a summer village of the Hoonah Kow . . . strips of Salmon and Halibut drying.' Negative #338436, G.T. Emmons collection, Department of Library Services, American Museum of Natural History."*







A narrow channel lying immediately NE of the claim and between the mainland and the small island to the NE, affords a good fishing ground, and a good harbor for small boats . . . Charles S. Judson, the Allottee, is a native Indian of Alaska, resides in the village of Hoonah in winger and fishes, usually with the Bartlett Bay bunch of Indians in summer, tho the past summer he worked in the cannery at Yakutat. He possesses no special rights to the claim which he seeks. His filing on the claim is, in my judgement, simply one of a series of filings of the family or tribe, of which Albert Jackson is the leader, and whose object is to corral the fishing priviledges in Bartlett Bay. Jno P. Walker; US surveyor.

Walker's concluding "judgement" introduces the next Allottee, Albert Jackson, who was fortunately given the opportunity to speak for himself by Goldschmidt, Haas and Kahklen in 1946. Some of Albert's testimony is at xxx. But through the rather 'europhied' eyes of the USS bureaucracy, here's the equivalent text claim #945 (AA Survey #42), also mapped and written by Jno. P. Walker:

"The lands embraced in AA#42 is situated at the head of Bartlett Cove . . . on the south side of a river entering the cove from the NE. . . The river is about 1/2 mile wide at high tide and is a passage way for red salmon to their breeding ground. . . The claim is heavily timbered . . . 6 ins to 2 ft and considerable of it suitable for small piling. A large portion of the claim is covered with an additional alder brush. . . There are no improvements whatever on the claim, as surveyed or as staked by the applicant, tho Jackson claims that his forefathers at one time had a cabin several miles further up the river, and also claims that he intends to build a cabin on the claim. . . It possesses value principally for the timber thereon, and for the fishing in the adjacent waters of the tidal river and Bartlett Cove. . . The object of the claimant . . . is in my judgement for the fishing priviledges in the adjacent waters. This view seems

especially probably when the fact is considered that the claim begins with stake #1 coincident with Corner #1 of this survey, and calls for "East 1/2 mile, then north 1/2 mile, then west 1/2 mile, then south with the meanders of ordinary high water to place of beginning" which meander line would cut the claim in 2 and leave the bulk of the area in the river. Stake #4 of the claim bears N51°14'W about 1/2 mile dist. from corner #1 of this survey and across the river's mouth.

I explained to Jackson that legal requirements would not permit me to make the survey according to his location stakes. He was present when the survey was made and expressed himself as being satisfied with the results. It is his intention, however, to have some member of his tribe to make application for a claim immediately across the river from his claim, and thereby obtain the same results as was his original intent. . . . Albert Jackson is a native Indian of Alaska, about 55 years old. Lives in Hoonah village in winter and spends the summers in a house situated at an old cannery site, on an island in Bartlett Cove, about a mile westerly from his claim. Numerous other Indians of his tribe also live in the same house, or groups of houses on the island, in the fishing season. Jackson states his rights to the claim on the fact . . . that his forefathers formerly lived in this general locality, about 2 miles further up the river. . . . Jno P. Walker, US surveyor.

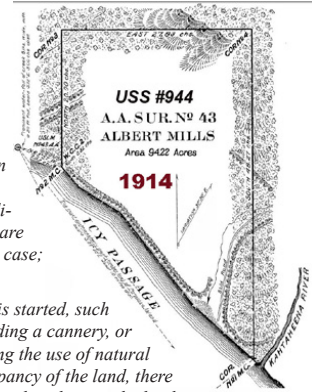
As a cartographer who used to work in pen and ink, I recognise the loving detail in Jno. P. Walker's maps. So it's hard to accept that the person who mapped Albert Mill's land at Katahéeni, trap creek (Falls Creek), could have written the following. Some of Mills' land had been horse-logged by Billy Patrick, but remaining conifers ranged up to 4 feet in diameter, "very good for piling or saw timber":

"The object of the claimant . . . is in my judgement for the

timber thereon, and for fishing of salmon in the Kataheena River. . . in this connection it would be well, I think, to call the attention of the Office to a common practise in South-east Alaska, among the Indians, where conditions are similar to those in this case; namely.

Where any enterprise is started, such as cutting timber, building a cannery, or any enterprise requiring the use of natural resources, or the occupancy of the land, there is always some Indian to lay claim to the land thru some pretext, usually with the result that the occupant will buy him off rather than go thru the trouble and delay that will otherwise follow. . . . I am reliably informed, however, that the applicant, Albert Mills, sold one such claim, at Village Point, to a cannery Company. This fact, together with the fact that the claim is of no possibly use to Mills unless he can get sale for the timber . . . leads me to suspect some such motive.

Albert Mills, the allottee, is a native Indian of Alaska, is 32 years old, married, and lives in Hoonah Village. He speaks fair english, owns a gas boat and engages in fishing, principally, for a living. Mills bases his claim . . . upon the fact that his grandfather [probably maternal, ie. same clan?] and later his uncle [maternal, same clan?] and now he, owns a cabin on Pleasant Island opposite the claim. (He claims no residence in this cabin at the present time.) That they and now he uses the mouth of the Kataheena River for fishing, and that his grandfather formerly trapped game on the lands embraced in the claim.

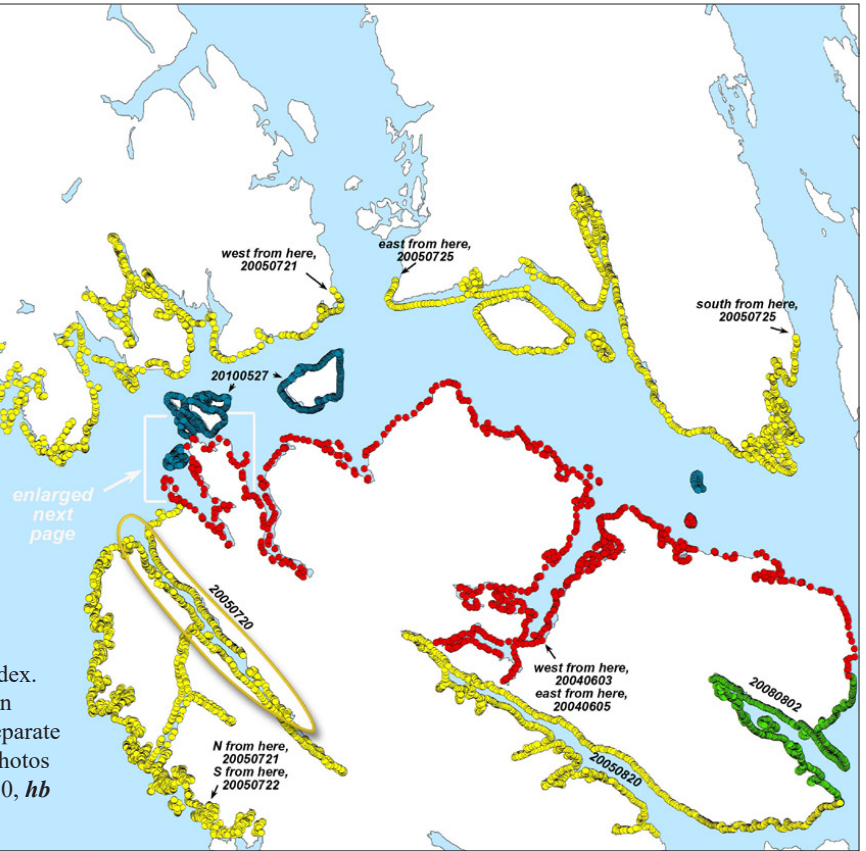
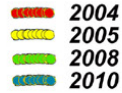


## 2 Alaska Shorezone oblique aeri-als

Beginning with a drive copied for me by Steve Lewis at NOAA, I've culled the mammoth Alaska Shorezone collection into a searchable collection for just the Icy Strait/Cross Sound region—ie, homeland of the Hoonah Tlingit, Gustavus/Elfin/Pelican folks, and NPS. Shorezone's oblique still images were acquired here in 2004, 2005, 2008, and 2010.

I'm organizing the collection in daily folders, titled by YYYYMMDD. While the original drive contains copies at several resolutions, I'm keeping only the hi-res *jpgs*. File size increased through the 6 years of the surveys; in 2004, the Nikon D70 images averaged 1.5 megs. Mandy's 2010 images were from a Nikon D90, averaging 5 megs.

It helps to understand some of the naming abbreviations in the *StillPhoto* field—the one I've labeled points by in the ArcReader index. For example, *se05\_mm\_0572.jpg* is in the southeast collection, taken 2005. In 2005, when the majority of stills were acquired during 4 separate day's missions, *mm* stands for Mary Morris (team Raven) and *ml* photos were by Mandy Lindeburg, of teams Halibut and Kingfisher. In 2010, *hb*

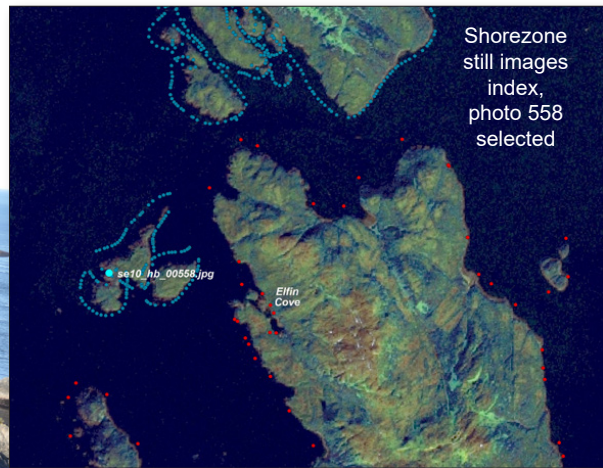




stands for team **humpback**, with Mandy as photographer.

I'm happy to pass along the Shorezone drive to anyone who uses these images regularly and would like to copy it. Much faster

way to peruse coastlines than on their website, where you have to wait for each requested image to download. On this drive, I can scan through a hundred images as fast as I can tap the right-arrow on my keyboard.



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## 4 Xunaa Káawu placenames

Áak'w Kakúxti, *dried-up little lake* (Vivid Lake)  
Aan Adéli, *village watchman* (Sealers Is)  
Anaxkuyaawal'ix'i Yé, *where glacier broke through*(Hugh-to-Scidmore)  
Asgutu.aan, *forest village* (vanished settlement in Taylor Bay)  
At Aani, *wildlife grounds* (Mount Wright)  
Atx'ás'i X'atá, *inside corner animal's jaw* (Jaw Point Geikie)  
Chookanhéeni, *grassy creek* (N Berg)  
Chookanhéeni X'akax'áat', *isle off C* (Netland Is)  
Chookanhéeni Yádi, *child of C* (N of Rush Pt)  
Daklshú, *woods-end bluffs* (N Sandy Cove)  
Éenaa X'atán, *spruceroot scraper lying there* (W Arm Dundas)  
Eey X'é, *current's mouth* (N Inian Pass)  
Gakakaiwuhéen, *place where plenty of fish come* (Dundas River)  
Gathéeni, *sockeye creek* (Bartlett River, Glacier Bay)  
Gathéeni, *sockeye river village* (Lester fishcamp)  
Gathéeni Tlein, *big sockeye river* (Beartrack River)  
Gíl' X'aan Seiyí, *red cliff area* (NW Fingers Bay)  
Guchhéeni, *wolf creek* (Wolf Creek Spokane Cove)  
Goosh T'eik Héen, *spring behind thumb* (~Pt Couverden)  
Gus'k'iyee K'wáan Geeyí, *people from under clouds bay* (Tidal Inlet)  
Gus'k'iyee K'wáan Noowú, *people from under clouds fort* (S Hugh Miller)  
Héen Xook Geeyí, *dry stream bay* (Adams Inlet)  
Hintuxux'aayí, *seagrass point* (Leland)  
Hinxuka.aani, *village reflected on water* (Muir Pt)  
Kadigooni X'áat', *island with springs* (Kidney Is)  
Kax'noowú, *hen grouse fort* (Groundhog Bay)  
Katahéeni, *trap creek* (Falls Creek)  
Kax'noowú, *grouse fort* (Ground Hog Bay)  
Keishish Aani, *alder country* (Pt Gus to Barco)  
Keixitu.aan, *village inside the brush* (vanished town in Taylor Bay)  
Káa Tlénx'i Kaadí, *slide of big men* (W Excursion)  
K'áach' Xágu, *ribbon seaweed beach* (N of Pt Gus)  
Koolsawú x'aa, *narrow sandy beach* (W Pleasant)  
Kóoshda X'aak'ú, *land otter little point* (Pt Sophia)  
Kulisawu X'áat', *slender island* (Porpoise Is)  
K'udéi's X'é, *inside mouth of K* (Lisianski Inlet)  
K'uyeik' X'aka.aan, *village at mouth of K* (N of Excursion Pt)  
K'uyeik' Tú, *inside K* (Sawmill Bay Excursion)  
K'uyeik' X'aka.aan X'áat'x'i, *islands at mouth of K* (Porpoise Islands)  
K'uyeik' L'e.aan, *peaceful village* (E Excursion)

K'wát' Aani, *gull egg islands* (mid GB)  
K'wát' Aani Luyee, *below point of gull eggs* (W Young)  
Lanastáak, *nose ring* (Dundas Bay)  
L'eiwshaayi, *sand mountain* (vanished moraine, Barco area)  
L'eiwshaa Shakee.aan, *town on the glacial sand* (Bartlett Cove)  
La.aayí Tukyeey, *below L: building the lake* (Muir Inlet)  
L'aa T'un X'áat'k'i, *little-island breasts* (Sisters)  
Laqooxás', *palisade island* (Spasski)  
Laqooxás' T'akhéen, *creek behind palisade*  
Lanastáak, *nose ring* (Dundas)  
L'awx'áat'i, *glacial sand island* (Strawberry Is)  
L'éiw Tú, *inside the sand* (Pt Gus to Salmon R)  
L'eiwshaa Shakee Aan, *town on glacial dunes* (Barco)  
L'eiwshaayi, *sand mountain* (Bartlett Cove)  
L'istee, *fort name in old language* (Dundas River)  
L'ukhéeni, *coho stream* (Berg Bay, S river)  
Lulxágu, *fireweed sand beach* (Homeshore)  
Lulxooshaa, *mountain amidst fireweed* (above Homeshore)  
L'uxh'uhéen, *murky creek* (above cannery)  
Nánde Néix' X'áat'i, *north marble island* (North Marble)  
Nánde Xánk', *small place close up bay* (Sawmill Bay, Excursion)  
Óoxjaa Geeyí, *windy bay* (Goose Cove)  
S'ax x'áat'i, *marmot island* (Young Is)  
Sdakweix' Lutú, *woman's name* (Pt Adolphus)  
S'é Shuyee, *at end of glacial silt* (vanished outwash—GB 1st name)  
S'é X'aayí Lutú, *clay point* (Point Gustavus)  
Shaa Káa Da Doogu, *strong person's mtn* (above Homeshore)  
Shaltláax K'áts'k'u, *small rock island with lichen* (Francis Is)  
Shaltláax Tlein, *big rock island with lichen* (Willoughby)  
Sigugu Shaa, *mtn with ears* (Two-eared Mtn)  
S'ik Shaanáxi, *black bear valley* (Bight east of Dundas)  
Sít' Eeti Geeyí, *bay where glacier was* (Rendu Inlet)  
Sít' Eeti Geeyí, *bay in place of the glacier* (Glacier Bay 3rd name)  
Sít' Tlein, *big glacier* (Brady Glacier)  
Sít' Tlein, *big glacier* (Grand Pacific & Margerie)  
Sít' T'ooch', *black glacier* (Carroll Glacier)  
Sít'k'i T'ooch', *little black glacier* (W Pleasant)  
Sít'k'i T'ooch', *little black glacier* (early name for GB glacier)  
S'ix' X'áayí, *dish point* (Pt Gustavus)  
S'ix' Tlein, *big dish* (Icy Strait)  
Taan Teiyí, *sea lion haul-out* (N Inian Pass)  
T'aawák' Séedi, *goose narrows* (near Lester Is)  
Tawéik', *little mtn sheep table rock* (Cross Sound)  
Tináak'w, *little copper shield small bight* (E Dundas)

T'ix'aa, *ice point* (Taylor Bay)  
T'ix'aa X'ákax'áat', *isle at mouth of T* (Taylor Is)  
Tlélkw Aani, *berry land* (Dundas River flats)  
T'ooch' G'íli, *black cliff* (Rush Pt or Berg Bay)  
T'ooch' Geeyí, *black bay* (Queen Inlet)  
T'saa Takdi X'áak, *between the seal harpooners* (The Laundry)  
T'sagéegi Téyi, *little seabird rock* (Geikie Rock)  
T'salgi Geeyí, *ground bay* (Tidal Inlet)  
T'saljaan Niyaadé Wool'éex'i Yé, *passage broke toward Mt Fairw* (J Hopkins)  
Wasus X'áat'i, *cow island* (Garforth)  
Wéitadi Noow, *fort of young women in seclusion* (Excursion)  
Wudzidugu Yé, *cottonwood place* (Geikie)  
Wudzidugu Yé Yádi, *child of cottonwood place* (Shag Cove)  
Wunachích, *back of porpoise island* (Pleasant)  
Wunachích T'akhéen, *stream back of porpoise island* (Salmon River)  
X'áat' Kulasá, *narrow island* (Drake Is)  
Xakwnoowú, *sandbar fort* (Dundas River)  
X'aan Goot Geeyí, *red cliff bay* (Fingers Bay)  
X'aak Dakadei Du Wakungi Yé, *slave's argument settled* (Groundhog)  
Xáatí Tú, *inside the icebergs* (Glacier Bay 2nd name)  
X'áat'x'i Xoo, *among the islands* (Beardslee Group)  
Xóots X'oo'sí X'aa, *brown bear paw point* (btwn Tidal & Vivid)  
Xúna Shuká Hit, *Hoonah ancestor's house* (Barco tribal house)  
Xuniyaa, *lee of the north wind* (Hoonah 3rd name)  
Xutsjini Hit, *brown bear paw house* (Beartrack Cove)  
Yaan tí ka, *outer coast* (Fairweather Coast)  
Yáay Shaak'ú Aan, *whale's little head village* (Carolus Pt town)  
Yéi Nées'kuxilitashaa, *raven sea urchin echo knife mtn* (Mt LaPerouse)

characters for cut & paste:

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