# Indigenous Sealing and the Cultural Ecoscape of Yakutat Fiord, Alaska

## Chapter 1
## INTRODUCTION

---

> The Indigenous people have a long relationship with places that they have occupied… They have generations of knowledge that has been acquired by patient observation and experimentation and passed on to their descendants.
>
> Judith Ramos, Yakutat, 2014

### WHERE GLACIERS MEET THE SEA

Glacial fiords along the coasts of British Columbia, Alaska, Canada, Greenland, Norway, and Sweden have attracted human settlement for thousands of years (Fitzhugh 1972; Friesen and Mason 2016; Matson and Coupland 1994) in part because of the exceptional productivity of their marine food webs. Tidewater glaciers and glacial streams release mineral nutrients into the sea that spur the growth of phytoplankton and the increase of faunal populations at all trophic levels, from zooplankton to fish, marine birds, and sea mammals, effects that are amplified when glaciers are in retreat (Aramitsu et al. 2016; O'Neel et al. 2015; Renner et al. 2012; Stempniewicz et al. 2017; Urbanski et al. 2017). The terrestrial ecosystems of deglaciated fiords, particularly in the Subarctic, can also become vigorously productive over time. Glacial retreat uncovers barren land that undergoes biotic succession toward mature plant and animal communities (Chapin et al. 1994; Mathews 1992; Milner et al. 2007) and glacial watersheds become spawning grounds for anadromous fish (Milner et al. 2000; Naiman et al. 2002). The closely linked marine and terrestrial ecosystems of glacial fiords emerge, complexify, and generate food resources capable of sustaining populous human communities as an integral part of the web of life.

The Gulf of Alaska, the setting for this study, is a notably productive and biodiverse marine ecoregion influenced by the circulatory engine of the Pacific Gyre and high-volume freshwater flows from rivers and glaciers, which drive the Alaska Coastal Current (Fautin et al. 2010; Hood and Zimmerman 1986; Spies 2007). Its coastline was carved by Late Pleistocene glaciation, and remnant glacial tongues descend from montane ice fields to the sea or to drainages at the heads of numerous fiords (Mann and Hamilton 1995). Nearshore primary productivity is concentrated in these water bodies, including both individual fiord basins and the mega-scale glacial estuaries of Cook Inlet and Prince William Sound (Fig. xx). Phytoplankton

blooms develop in Gulf of Alaska fiords during summer due to long hours of daylight and the availability of glacial and bottom-derived nutrients, leading to higher levels of annual primary production than in mid-ocean or continental shelf waters (Cooney 2007). Fish, marine mammal, and bird populations that flourish in fiord habitats of the Gulf of Alaska have supported human coastal societies for 10,000 years or more, and archaeological sites of all time periods cluster in these resource-rich zones (Crowell 2000; Crowell et al. 2003; Crowell et al. 2013). Sustained by this abundance, Indigenous populations along the Gulf of Alaska coast were substantially larger than in the Alaskan interior, and social organization was more complex (Erlandson et al. 1992; Oswalt 1967; Townsend 1980).

[Figure xx: *Satellite imagery of the Gulf of Alaska showing glaciers, plankton productivity; labeled with Pacific Gyre and Alaska Current, major place names Yakutat Bay study area*]

## INDIGENOUS KNOWLEDGE AND THE CULTURAL ECOSCAPE OF YAKUTAT FIORD

At Yakutat fiord in Southeast Alaska, glacial recession beginning just before the onset of the Little Ice Age (1250–1900 CE) opened a 60 km-long ocean inlet for settlement by peoples from adjacent regions of the eastern Gulf of Alaska (Fig. xx). Eyak, Ahtna, and Tlingit immigrants adapted their foraging economies to the fiord's emerging cryogenic habitat and burgeoning ecosystem, a process that has unfolded over eight centuries and continues to the present.

As arriving groups settled in the fiord, they merged with coastal Eyak people who had resided since 800 CE on the ice-free Yakutat foreland, forming a multicultural Na-Dene population integrated by shared principles of matrilineal kinship (De Laguna 1972, 1990a, 1990b; De Laguna and McClellan 1981). Oral traditions record that Chugach Alutiiq (Sugpiaq) people, most likely from Prince William Sound, also hunted in the fiord during the early stages of glacial retreat but did not align with this social system or become part of the permanent population (Birket-Smith 1953; De Laguna 1972; Crowell et al. 2001).

[Figure xx: *Yakutat fiord with topography, selected place names, major settlements*]

Indigenous place names reflect linked processes of environmental change and human settlement. Yaakwdáat (Yakutat, "the place where canoes rest") is a Tlingit toponym derived from the Eyak name Diya'quda't, or Ya.gada.at "a lagoon is forming," referring to the enlargement of open water during glacial retreat (Deur et al. 2015:23; Thornton 2012:18). It denotes Yakutat Bay, the outer part of the fiord facing the Gulf of Alaska (Fig. xx). A Tlingit name, A T'eík ("behind it") signifies the narrow inner portion north of Point Latouche, known in English as Disenchantment Bay (Thornton 2012:21). The entire body of water is Laaxaayík, a combined Eyak-Tlingit word meaning "near the glacier" (Thornton 2012:18-19).

The multilingual overlay of place names reflects the sequence of migrations during glacial retreat (J. Ramos 2013). Names of Sugpiaq origin are confined to a few locations near the mouth of the fiord, while Eyak names are numerous along its shores as far as Knight Island and outer Disenchantment Bay, consistent with the early Eyak presence and the expansion of

their territory at a time when ice still extended part way down the fiord. While few Ahtna toponyms have been preserved, Tlingit (and combined Tlingit-Eyak) names occur everywhere from the foreland to the head of the fiord, a distribution consistent with the late arrival of Tlingit clans in the 18th century after the ice had largely withdrawn.

As this discussion suggests, Yakutat fiord is an historical landscape on which centuries of Indigenous history are memorialized by place names, oral traditions, and archaeological sites (Crowell et al. 2013a; Krupnik et al. 2004; Pratt and Heyes 2021; Thornton 2008, 2012). It is also a *cultural ecoscape* – an historicized ecosystem with which people have been interactively engaged for some sixty generations, harvesting wild foods from its ocean waters, intertidal zones, rivers, and forests and adjusting their food-gathering activities to its changing physiography and biogeography. Cumulatively, the remains of ancestral settlements are concentrated in the outer fiord and its islands, where marine resources are the most varied and prolific due to ocean mixing and enrichment by glacial nutrients. Some of the oldest villages are found on the adjacent Yakutat foreland, where an ancient coastal rain forest, long free of ice, supports diverse plant and animal communities. In contrast, use of the more recently deglaciated and relatively depauperate inner fiord has focused on a single key animal, the harbor seal (*Phoca vitulina*), which congregates on ice floes near the glaciers for birthing and rearing pups (Crowell 2016; J. Ramos 2020).

The influence of glaciers on the Yakutat ecosystem and its human participants is recognized in traditional beliefs that comprise the *sacred ecology* of the community (Berkes 1999; J. Ramos 2020). Thus, tradition bearers say that the spirit of Sit' Tlein (Hubbard Glacier) shelters the seals in spring before opening up the ice pack to release them for human use (Elaine Abraham, 11 June 2011 [IN-2]); Maggie Harry in Harrington 1940). It is also said that glacier and mountain spirits adopted the people of the Kwaashk'i Kwáan clan when they arrived at Yakutat after migrating from the Copper River, showing them "how to live" and secure food in the unfamiliar coastal environment (Elaine Abraham, 11 June 2011 [IN-2]).

The glacial path through time leads to the present, when the people of Yakutat continue to rely on harbor seals, salmon, and over 75 other species of wild foods for the majority of their sustenance, following hunting, fishing, and gathering practices that, however modified by new technologies, still reflect ancestral patterns and provide a guide for interpreting the past (Mills and Firman 1986; Sill et al. 2015). Extensive ecological knowledge of the fiord's plants, animals, and natural systems is maintained by current generations, as are traditional clan territories and social rules that govern the harvesting and sharing of subsistence foods (Goldschmidt and Haas 1998; Ramos and Mason 2004; Ramos and Schroder 2001).

Yakutat thus presents an opportunity for the study of historical ecology (Crumley et al. 1994; Crumley et al. 2017) in a biodiverse subarctic fiord, with a focus on cultural construction of an integral role, or niche, in the ecosystem over a period of some 1,200 years (Hardesty 1972; Laland and O'Brien 2010; Odling-Smee et al. 2013). At Yakutat, this process entailed: 1) the intergenerational transmission of ecological and sacred knowledge as the conceptual basis for human interaction with the biome; 2) use of food harvesting technologies and construction

of villages, camps, food storage structures and other facilities to support year-round, long-term habitation; 3) participation in and modification of the ecosystem through subsistence harvesting of animals and plants as well as periods of commodified hunting under Western colonial rule; and 4) participation in a cooperative, lineage-based mode of production and social economy, similar to other Northwest Coast societies, which enabled adaptive success (De Laguna 1972, 1996; Emmons 1992; Matson and Coupland 1995; Oberg 1973).

## RESEARCH DESIGN, GOALS, AND METHODS

The stories of this land, and of the ancestors who made it their home, are perpetuated in oral tradition and held in memory by the Yakutat people. Based on knowledge passed on by his maternal uncle, the late L'uknax̲.adí Tlingit elder George Ramos, Sr. proposed that archaeologists could trace Yakutat's history by studying glacial retreat and the chronological sequence of ancestral villages and sealing camps, from the oldest near the mouth of the fiord to the most recent at its head. This collaborative, interdisciplinary study would include a special focus on the human relationship with harbor seals as a key to understanding Yakutat's culture, history, and way of life (George Ramos, Sr., personal communication to Steve Langdon, 2010).

George Ramos's words were an invitation and opening to conduct such research as a partnership between the Smithsonian Institution and the Yakutat Tlingit Tribe (YTT), as well as a recommendation for its design and goals. For his wife, the late Kwaashk'i K̲wáan elder Elaine Abraham (Alaska Native Science Commission) and their daughter, Judith Ramos (Department of Alaska Native and Rural Development, University of Alaska Fairbanks), the project represented an opportunity to integrate Indigenous and scientific knowledge about Yakutat's richly endowed natural and cultural worlds. It would also enable comparison of archaeological data with Yakutat's oral historical traditions, seeking consilience between these very different ways of understanding the past (Crowell and Howell 2013; Crowell 2021).

This volume presents results of the collaborative project conducted at Yakutat in 2011–2014 by the Smithsonian Institution's Arctic Studies Center in partnership with the community and YTT, with leading sponsorship by the National Science Foundation (NSF). Other partners and stakeholders included the U. S. National Park Service, National Forest Service, Sealaska Corporation, and Sealaska Heritage Institute. The study, led by Smithsonian principal investigator Aron L. Crowell, was entitled *Glacial Retreat and the Cultural Landscape of Ice Floe Sealing at Yakutat Bay, Alaska*, known informally as the Yakutat Seal Camps Project (Crowell 2012, 2015; Oh 2014). Elaine Abraham and Judith Ramos served as NSF senior researchers, joined by community students, adults, and elders who contributed to the process of discovery, documentation, and interpretation. This work owes a substantial intellectual debt to the late anthropologist Frederica de Laguna, whose research on Yakutat culture and history is highly regarded both within her profession and by the people of the community (Abraham and Ramos 2006; De Laguna 1972; De Laguna et al. 1964).

The study incorporates new and previous archaeological investigations (Davis 1996; De Laguna et al. 1964); Indigenous knowledge and place names (De Laguna 1972; Emmons 1991;

Goldschmidt and Haas 1998; Harrington 1940; Ramos and Mason 2004; Swanton 1909; Thornton 2012) and extensive information acquired through community interviews. Studies in glacial history (Barclay et al. 2001; Elmore et al. 2015; Plafker and Miller 1958; Zurbechen et al. 2015), marine and terrestrial ecology (Aramitsu et al. 2016; Milner et al. 2007; O'Neel et al. 2015; Sambrotto and Lorenzen 1986; Spies et al. 2007), and modern subsistence harvesting (Mills and Firman 1986; Sealaska Corporation 1982; Sill et al. 2015; Wolfe et al. 2008, 2009) contribute to the analysis.

Funding for the Yakutat Seal Camps Project included an NSF EAGER grant (1132295) in 2011; an NSF Arctic Social Sciences research grant (1203417) in 2012 and supplemental award in 2018; a National Park Foundation Coastal Marine Program grant (PMIS204602) in 2014; a Smithsonian Institution Grand Challenges award in 2013; and a Sealaska Heritage Institute gift in 2010.

## DOCUMENTING ORAL KNOWLEDGE

Senior researchers Elaine Abraham and Judith Ramos joined Aron Crowell (Arctic Studies Center, National Museum of Natural History, Smithsonian Institution), Steve Langdon (University of Alaska Anchorage) and Gary Holton (Alaska Native Language Center, University of Alaska Fairbanks) to interview Yakutat community members about oral traditions, ancestral settlements, place names, sealing practices, and ecological knowledge (Fig. xx). Over 50 research interviews were conducted in English and Tlingit during the four years of the project. Interviews were sequentially numbered (IN-1, IN-2, etc.) as shown in Table 1.

[Figure xx: Elaine Abraham interviewing Lena Farkas, 2011]

Interviews with Yakutat community members were authorized by the YTT through a National Historic Preservation Act Memorandum of Understanding. Overall project design was developed with tribal representatives in accordance with the *Principles for the Conduct of Research in the Arctic* (Interagency Arctic Research Policy Committee 1990), including effective communication, collaboration, access to data, and respect for Indigenous knowledge and cultures. The Smithsonian Institution's Human Subjects Institutional Review Board (IRB) reviewed the initial NSF proposal in 2011 and determined that consultations with Yakutat elders and other community members did not constitute "research involving human subjects" under federal law or Smithsonian guidelines (Smithsonian Institution 2009; Smithsonian Human Subjects Institutional Review Board 2011). Nonetheless, the Yakutat interviews were conducted according to the ethical standards of such research including informed consent, right of review, and fair compensation. Contributors of oral knowledge gave written permission for their interviews to be videotaped, transcribed, translated, and used for purposes of research, print publication, and digital media. With permission from contributors, interview statements are attributed by name throughout this report and other publications.

English language transcriptions of interviews were prepared at the Arctic Studies Center in Anchorage during 2012–2019. Selected interview passages spoken in Tlingit were transcribed

and translated by linguist Jeff Leer (Alaska Native Language Center, University of Alaska Fairbanks). Judith Ramos assisted with interview transcriptions and is preparing her PhD dissertation on Yakutat traditional ecological knowledge (Indigenous Studies Program, University of Alaska Fairbanks) based on project data. Interviews recorded during the project have been compiled as a digital video archive to be held by the Yakutat Tlingit Tribe (Yakutat), Sealaska Heritage Institute (Juneau), and the National Anthropological Archives (Smithsonian Institution, Washington DC).

## ARCHAEOLOGICAL INVESTIGATIONS

Archaeological fieldwork conducted during 2011–2014 was coordinated with the Yakutat Tlingit Tribe, U. S. National Forest Service, U. S. National Park Service, Sealaska Corporation, and the State of Alaska's Office of History and Archaeology. These entities issued permits allowing subsurface testing and artifact collection on their lands, which include parts of the Tongass National Forest, Wrangell-St. Elias National Park, and Sealaska Corporation's Alaska Native Claims Settlement Act (ANCSA) allotment on Knight Island. This report presents final project results in accordance with provisions of a 2014 Memorandum of Agreement regarding Archaeological Data Recovery developed under Section 106 of the National Historic Preservation Act and signed by all parties in 2014. It follows Department of Interior guidelines (https://www.nps.gov/history/local-law/arch_stnds_7.htm) for archaeological reporting.

Crowell led the Smithsonian research effort, which included University of Alaska Anchorage and Yakutat graduate and undergraduate students, Yakutat high school students, and private and agency volunteers. Teams conducted site investigations and searched by boat and on foot for ancestral settlements along the east side of Yakutat fiord from Knight Island to the head of Disenchantment Bay, and on the west side from Point Manby to Bancas Point. Surveys were guided by earlier archaeological discoveries (Crowell 2011a; De Laguna et al. 1964) and knowledge of historical places that has been preserved in oral tradition (De Laguna 1972; Goldschmidt and Haas 1998; Harrington 1940). Oral information about the exact locations of former camps and villages was imprecise and field challenges to their rediscovery included dense brush and trees that have grown up on formerly inhabited areas, as well as tectonic uplift and subsidence that have displaced sites relative to current shorelines.

Mapping and subsurface testing were conducted at seven archaeological sites ranging in age from 1040–1410 cal. CE to the mid-20$^{th}$ century: Spoon Lake 3 (Alaska Heritage Resource Survey number YAK-076), Tlákw.aan (YAK-007), North Knight Island Village (YAK-205), Néix Hit Tá (YAK-010), Tłaxátà (YAK-011), Keik'uliyáa (YAK-012), and Woogaani Yé (YAK-202). Artifacts, architectural features, and faunal remains uncovered at these sites yielded information about the cultural identities, technological repertoires, social organization, and subsistence practices of the former occupants (Fig. xx). Calibrated radiocarbon dating of wood charcoal samples allowed synchronization of occupation periods at these sites with the history of glacial retreat and provided a chronological framework for related oral historical traditions. AMS (accelerated mass spectroscopy) radiocarbon dates are reported with calibrated age ranges at two standard deviations (95.4% confidence interval) and were calculated using OxCal4.2.4 (Bronk Ramsey

2009; Bronk Ramsey and Lee 2013), which is a probability-based method for converting ages in radiocarbon years into calibrated dates (Kovčik 2017; Kováčik and Cummings 2015).

[Figure xx: Excavating at YAK-012]

GPS coordinates of archaeological sites were recorded using a Trimble GPS unit, although generally poor results were obtained under heavy tree cover. A hand-held Garmin GPS was used to log approximate coordinates in the field, supplemented by readouts from Google Earth satellite imagery. Site locations were also recorded on USGS 1:63,000 topographic sheets and on project-generated locality maps. Low-altitude, georeferenced aerial photography of Yakutat fiord coastlines available through NOAA's Alaska ShoreZone program (https:/www.fisheries.noaa.gov/alaska/habitat-conservation/alaska-shorezone) was used as an aid for archaeological reconnaissance.

Site boundaries, cultural features, surface finds, topography, landmarks, excavation boundaries, test locations, and the elevation of site datum in relation to mean lower low water (MLLW) on the nearest beach were mapped using a GeoWin laser total station [Fig. xx]. An optical transit level served for rapid mapping of large areas and difficult terrain, or when poor weather conditions and boat travel made transport and use of the total station inconvenient. Permanent datum markers (iron rebar rods with stamped aluminum caps) were emplaced at sites for future reference. Initial site surveys included soil probes, metal detection, and shovel tests to assess the nature and extent of subsurface deposits.

[Figure xx: Mapping with the total station at YAK-012]

Subsurface data recovery was by stratigraphic block excavation, aligned with a metric survey grid. Soil was removed with trowels, brushes, and other hand tools. Excavation units were 1 x 1 m, whether they were isolated tests or contiguous with others in trenches or blocks, and were excavated through all cultural deposits to underlying soil. Artifacts, debitage, features, rocks, faunal remains, and other finds were plotted on waterproof unit-level sheets. Metric coordinates of artifact and faunal bone locations including east-west (X), north-south (Y), and elevation (Z) were recorded relative to site datum using the total station. Cultural strata were distinguished by soil character and content (e.g., particle size, charcoal-staining, presence of fire-cracked rock) and excavated as units, subdivided into 10 cm levels as needed for elevation control in thicker strata. Vertical stratigraphic profiles were drawn for selected cross-sections (Fig. xx). Excavated soil was wet or dry-screened through 1/8" screen mesh to ensure recovery of small artifacts and fragments.

[Figure xx: Recording cultural strata at YAK-076]

No human remains were anticipated or encountered but as mandated by the Native American Graves Protection and Repatriation Act, if human remains had been found they would have been immediately reported to the land owner and to the Yakutat Tlingit Tribe, and all research at the location halted pending consultation to determine proper action.

Post-field research during 2012–2019 included identification, analysis, and cataloging of artifacts at the Arctic Studies Center in Anchorage; production of site maps, stratigraphic profiles, and artifact plots from hand-drawn and electronic data using the Surfer mapping program (Golden Software); identification and analysis of archaeological fauna (Etnier 2017); palaeobotanical charcoal identifications and AMS radiocarbon dating of archaeological samples (Kováčik 2017; Kováčik and Cummings 2015); and consultation of ethnographic, archival, archaeological, and photographic collections at the University of Alaska Fairbanks, University of Pennsylvania Museum, National Museum of the American Indian, Library of Congress, and University of California Berkeley.

Project publications to date include an overview of Yakutat traditional knowledge of harbor seals and sealing, based on interviews with elders (J. Ramos 2020); a discussion of the Yakutat project as an example of best practices in sustaining Indigenous knowledge, for the Arctic Council (Crowell 2015); an historical and archaeological study of the 19$^{th}$ century Keik'uliyáa sealing camp in Disenchantment Bay (Crowell 2017); an analysis of historical and ecological factors leading to the mid-20$^{th}$ century population crash of harbor seals at Yakutat and around the Gulf of Alaska (Crowell 2020); and a comparison of oral traditions about the Gineix Kwáan (Ahtna) migration from Copper River to Yakutat Bay to archaeological data from the Tlákw.aan village site (Crowell 2021).

**ACKNOWLEDGEMENTS**

We express our deepest gratitude to Yakutat community scholars Elaine Abraham, Bertrand J. Adams, Sr., Lena Farkas, George Ramos, Sr., Raymond Sensmeier, and Ted Valle for so generously sharing Yakutat oral knowledge, and to other members of the community who provided interviews including Devlin Anderstrom, Ronnie Converse, Victoria Demmert, Eli Hanlon, Jeremiah James, Gary Johnson, Hayley Lekanoff, Kai Monture, Maka Monture, Sheri Nelson, Janice Piccard, David Ramos, Judith Ramos, Ingrid Shodda, and Jennie Wheeler. Judith Ramos served as project cultural liaison, working in this capacity to arrange and conduct interviews, set up public events including community presentations at Yakutat High School and the Alaska Native Brotherhood and Sisterhood Hall, and organize community visits to the archaeological excavations at Disenchantment Bay in 2013 and Knight Island in 2014.

The Yakutat Tlingit Tribe, Sealaska Corporation, and Sealaska Heritage Institute provided essential cooperation, permissions, and support, with special thanks to Victoria Demmert (President, Yakutat Tlingit Tribe), Rosita Worl (Director, Sealaska Heritage Institute), and Chuck Smythe (Director, Culture and History Department, Sealaska Heritage Institute). U.S. Forest Service staff Myra Gilliam (Archaeologist, Juneau and Yakutat Ranger Districts, Tongass National Forest), Rachel Myron (Archaeologist, Juneau and Yakutat Ranger Districts, Tongass National Forest), Lee Benson (Yakutat District Ranger), and Daryl James (Forester, Yakutat Ranger District) supported our work and issued an Archaeological Resource Protection Act (ARPA) permit that covered survey and excavation work on federal lands. Greg Biddle (Cultural Resource Manager, Wrangell-St. Elias National Park) administered the 2014 surveys and

excavations within Wrangell-St. Elias National Park, conducted under a National Park Service research permit. The Alaska Office of History and Archaeology in Anchorage issued state permits for archaeological work on intertidal lands and assisted all parties in implementing the NHPA Section 106 MOU.