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# Maritime Alpine Cairns in Southeast Alaska: A Multidisciplinary Exploratory Study

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**MARITIME ALPINE CAIRNS IN SOUTHEAST ALASKA:  
A Multidisciplinary Exploratory Study**

by

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2016

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Arctic Social Sciences Program, Division of Polar Programs

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## EXECUTIVE SUMMARY

This report describes the goals, data recovery methods, data analysis, and conclusions of a pilot project “A Multidisciplinary Exploratory Study of Alpine Cairns, Baranof Island, Southeast Alaska,” funded by the National Science Foundation under Project No. 1230132. The project brought together experts in the disciplines of archaeology, lichenology, and oral history to address questions regarding artificial and presumably prehistoric, high altitude cairns. The opinions, conclusions, and recommendations expressed in this report are those of the authors and do not reflect the views or recommendations of the National Science Foundation.

In 2011, the Principal Investigators met and consulted with the tribal governments of the Sitka Tribe of Alaska and Angoon Community Association (Kootznoowoo Tlingit) about a project proposed to take place at or near their customary tribal boundary. Project planning and background research continued in 2012 as snow cover at the project site prevented fieldwork that summer. In 2013, Principal Investigators brought together a research team incorporating experts in the fields of anthropology, oral history, and botany. Two graduate students were brought onto the team to allow their participation in project planning and development. Fieldwork was initiated in July 2013, by Oxford University cultural anthropologist and oral historian, Dr. Thomas F. Thornton. He was able to draw upon twenty years of ethnographic research in those communities to conduct interviews with Tlingit elders at numerous communities in southeast Alaska. The purpose of this effort was to develop an historical-ecological context for Tlingit cultural activities, migrations, and ethnogeography in alpine settings. Dr. Thornton’s portion of the report provides an extensive narrative of project background, research objectives, methodology, descriptive data, and research conclusions.

Archaeological and lichenological fieldwork took place in August 2013 and in 2014 at Cross Peak on Baranof Island and along both coasts of Hoonah Sound. Lichen and lichenometric inventory was undertaken in 2013 collecting data of interest to the lichenology research community and to apply traditional and innovative methods of dating alpine cairns based on the lichen and moss growth on their surfaces.

Archaeological investigations were conducted in a manner consistent with the Secretary of the Interior’s Standards and Guidelines for Archaeological Documentation. All work was under the supervision of persons with appropriate professional qualifications. Archaeological researchers meet the professional qualifications included in “Secretary of the Interior’s Historic Preservation Professional Qualification Standards” (*Federal Register* Vol. 62, No. 119, pp. 33719-33723). This work initially focused on the slopes and crest of Cross Peak Mountain with goal to of identifying all cairns on the mountain as well as any other types of sites that might occur in the locality. The team recorded 50 cairns within 5 sites on Cross Peak Mountain. Archaeological data collected during this inventory includes cairn dimensions, GPS positions, still photographic images, and video documentation. Topographic mapping of the research locale and clustered features was

undertaken by UNAVCO using ground-based Lidar. With inventory and mapping completed, four alpine cairns were selected for excavation/dismantlement based on their morphology and lichen growth. As each feature was disassembled, archaeologists sought artifacts, faunal and floral materials, and carbon samples from inside and/or immediately under the cairn. All dismantled cairns were subsequently rebuilt within its marked footprint and within its approximate original morphology with lichen-bearing surfaces facing outward to the extent possible. No artifacts occurred within, under, or the excavated cairns. Radiocarbon (AMS) analysis of collected organic materials and lichenometrics indicate that alpine cairns on Cross Peak are prehistoric and built within the last two millennia. Physical, historical, and oral history points to construction of the cairns by ancestors of the Tlingit and, more specifically, by ancestors of Sitka and Kootznoowoo tribes.

In September 2014, after retrieving a time-lapse camera left to overwinter at Cross Peak, one of the Principal Investigators and the project photographer conducted a helicopter survey over mountains along the lower reaches of Hoonah Sound. This survey identified 39 cairns at 29 sites demonstrating that alpine cairns occur in abundance on Baranof and Chichagof Islands.

This innovative project has provided, for the first time, hard data on what may be the most ubiquitous prehistoric cultural feature in Southeast Alaska. The potential for coastal environments to be altered by dramatic change in climatic dynamics and regional tectonic activity influences local decision-making about resource use in various coastal landscapes throughout the world. This project contributes to the existing knowledge base of prehistoric and historic land-use in southeast Alaska, a means by which to ascertain how indigenous groups responded to the dynamics of a changing environment. The information collected about human activities on the Baranof, Chichagof, and the broader Alexander Archipelago broadens understanding of past human adaptation to this overall coastal environment. It has the potential to permit an assessment as to how this adaptation may or may not have varied from that of the land use practices of other coastal social systems in the world. In addition, data collected in this case study may be especially useful in understanding human adaptation in relation to rapid climate change due to the 1) rapid and dynamic climate and geomorphological changes in the landscape and 2) long-term habitation by peoples with strong oral tradition and ethnogeographic consciousness and adaptive capacity and resilience, etc.

## ACKNOWLEDGEMENTS

This has been a long and fairly complex project, the complexity of it requiring the authors of this report to partner with a number of organizations and work closely with many people over the course of four years.

First and foremost, the research team would like to recognize the **Arctic Social Sciences Program, Division of Polar Programs, National Science Foundation** without whose funding and guidance this project would not and could have taken place. Special thanks to Arctic Social Sciences Program Director Dr. Anna M. Kerttula de Echave for her guidance throughout the life of this pilot project. NSF-Arctic Social Sciences support includes:

2011 - NSF-Arctic Social Sciences Proposal 1145831 "Consultation Travel for A Multidisciplinary Pilot Study of Alpine Cairns, Southeast Alaska."

2012 - NSF Proposal 1230132 "Pilot Project: A Multidisciplinary Exploratory Study of Alpine Cairns, Baranof Island, Southeast Alaska."

2013 - Supplementary funding to Award # 1230132 to conduct video, still photographic, and time-lapse photographic documentation of research.

Drs. Hunt and Hartley acknowledge the assistance provided by our many partners in this project:

**Tongass National Forest** - former Sitka District Chief Ranger Carol A. Goularte; Sitka Zone Archaeologist James "Jay" Kinsman; Ecologist Karen Dillman; Admiralty Monument Ranger Chad Van Ormer; Tongass National Forest Heritage Program Manager, Mark McCallum and Theresa Thibault; Admiralty National Monument, Juneau and Yakutat Ranger Districts Archaeologist Myra Gilliam; and Petersburg District Archeologist Jane Smith. This group of people provided important information about other cairn sites, gave us good advice as to how to proceed with this project, provided short-term housing upon occasion, and found space for us to store field equipment.

**Sitka Tribe of Alaska** – Past and present members of the *STA Tribal Council*: Michael Baines, Benjamin Miyasato, Lawrence "Woody" Widmark, Tom Gamble, Rachel Moreno, Harvey Kitka, Mike Miller, Stephanie Edenshaw, Tanya Bonorden, Mike Miller, Archie Nielson, Lillian Feldpausch, Wilbur Brown, and Dale Williams. Past and present members of the *Cultural, Customary and Traditional Committee* chaired by Nels Lawson, and *STA Resource Protection* - Director Jeff Feldpausch.

**Angoon Community Association - Kootsnoowoo Tlingit.** Past and present members of the *ACA (Hoonah (Xutsnoowú)) Tribal Council*: Wally Frank, Sr.,

Denise Jack, George Nelson, Floyd Jim, Raynelle Jack, and Andrew (Andy) Gamble, Jr.

**Office of History and Archaeology, Alaska Department of Natural Resources.**  
Alaska Heritage Resources Survey Manager Jeffrey Weinberger.

**CH2M HILL, Inc., Polar Field Services**, a partner organization with the National Sciences Foundation, provided most of this project's logistical needs. People we worked with include Alaska Science Project Manager Christine Hauper, Operations Manager Matt Irinaga, Project Manager Naomi Whitty, Alaska Science Planner Cody Johnson, and especially our Field Camp Manager Dean Einerson.

**UNAVCO**, another NSF partner organization, provided LiDAR mapping of the site and surrounding area. This work was done by Data Engineer III Marianne Okal.

**National Park Service** – former Cultural Resource Specialist Wayne Howell (now retired) at *Glacier Bay National Park and Preserve* provided us with a great deal of good advice and generally assisted us in many ways using his broad experience in the Northwest Coast culture area. Dr. Robert Bryson, Anne Vawser, and Amanda Renner at the *NPS-Midwest Archeological Center* in Lincoln, NE, provided the project with GIS expertise.

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**Nebraska Education Telecommunications (NET)** - Special Projects Manager Michael Farrell, and nature photographer Michael Forsberg provided guidance and oversight for digital video, time-lapse photography, and still photograph documentation of the project. We would like to recognize in particular the work of Peter Stegen, NET Intern who served as project photographer and videographer. Jann Howard and Pat Richmond transcribed many of Tom Thornton's interviews. Scott Beachler did the map animation and Jeff Dale provided technical support.

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**University of Nebraska-Lincoln** provided all administrative and organizational needs of the project. Among those lending the project much support are Department of Anthropology Chair and Professor Dr. LuAnn Wandsnider; Department of Anthropology Professor Dr. Raymond Hames; graduate student Michael Chodoronek; Business Manager Shelley Sorensen; Accounting Associate Breana Garretson, Grants Specialist Sara Mattson, Sr. Budget/Financial Analyst Alycia Libolt, Financial Associate Kristi Hurley, Grants Coordinator Nancy Becker, and Director of Sponsored Programs Jeanne Wicks.

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Other contributors providing information on alpine cairns and similar sites or assisting with public outreach include: Journalist Alicia Clarke wrote two articles about our project (2014a, b); Environmental Consultant Catherine Pohl; Dr. Douglas Deur, Associate Research Professor, Oregon State University; and Archaeologist Luz Ramirez de Bryson translated archaeological reports from Chile and Argentina.

Dr. Thornton wishes to thank the Sitka Tribe of Alaska, especially Harvey Kitka and Nels Lawson, for their assistance with this project in Sitka, and the Angoon Community Association, especially Donald Frank, a tribe member also with the USDA Forest Service, who assisted us in Angoon. I am very grateful to Pete Stegen for his work with filming and transcribing interviews, and to Jamie Hebert for transcription, editing, and other production assistance. As well, I am indebted to Sealaska Heritage Institute, especially Zachary Jones, former archivist, Ishmael Hope, language specialist, Charles Smythe and Rosita Worls for their help with accessing materials in SHI's collections. Thanks also to Jay Kinsman of the USDA Forest Service in Sitka, Jackie Hernandez of the Sheldon Jackson Museum, and the staff at the Sitka Historical Museum and the University of Washington Library, Special Collections. Finally, and most of all, I wish to thank all those who graciously agreed to be interviewed or otherwise shared information for this project, all of whom are listed in Appendix A of this report.

Finally, last but not least, Dr. Hunt wishes to express his gratitude to Greg Dudgeon, formerly National Park Service Superintendent at Sitka National Historical Park and currently Superintendent at Gates of the Arctic National Park and Preserve and Yukon-Charley Rivers National Preserve. Greg is to blame for exposing Hunt to the existence of alpine cairns by making it possible to conduct his initial survey of those features in 2007 on Baranof and Chichagof Islands. Dudgeon is a true Alaskan and has spent his career protecting our nation's cultural and natural resources within the National Park System.



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# **I. INTRODUCTION**

by

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Nearly all prehistoric and ethno-archaeological investigations in Southeast Alaska have concentrated on coastal areas within a couple hundred feet of sea level. As a result, the extent to which inland and alpine areas were utilized in Native subsistence and other activities and how such activities may have varied through time is not well understood. Reports of cairns and other rock features on mountain peaks scattered throughout the region are an indication of potentially significant human use of these alpine settings in coastal landscapes, especially during periods of rapidly changing environmental conditions. The purpose of this project was to ascertain whether site-specific and oral history data exists to determine when and why these cairns were created. An accurate interpretation of the role of cairns within the cultural topography of Southeast Alaska constitutes the fundamental goal of this research. Results of these efforts are intended to contribute to a better understanding of the dynamics of indigenous adaptation to a Pacific Northwest coastal environment where ready access to the adjacent alpine tundra may have influenced the changing complexity of the socio-cultural environment through time.

## **Location**

The study area lies in the Alexander Archipelago (also known as the ABC islands, i.e. Admiralty, Baranof, and Chichagof) in central Southeast Alaska (Figure I-1). Tongass National Forest encompasses the overwhelmingly greater part of these lands along with the Coastal Mountains. The focus was an alpine area on the southern side of the intersection of Peril Strait and Hoonah (Xutsnoowú) Sound, on Duffield Peninsula at the far northern end of Baranof Island (also known as Baranov Island, Shee, or Sitka Island). The primary alpine area investigated was on the west side of Duffield Peninsula on a mountain informally known in the area as Cross Peak or Cross Mountain. A secondary area selected for helicopter inventory included mountains along the east and west shores of lower Hoonah Sound.

## **The Research Team**

The multidisciplinary research team was composed of specialists in the field of archaeology, cultural anthropology, lichenology, and LiDAR mapping. Research and



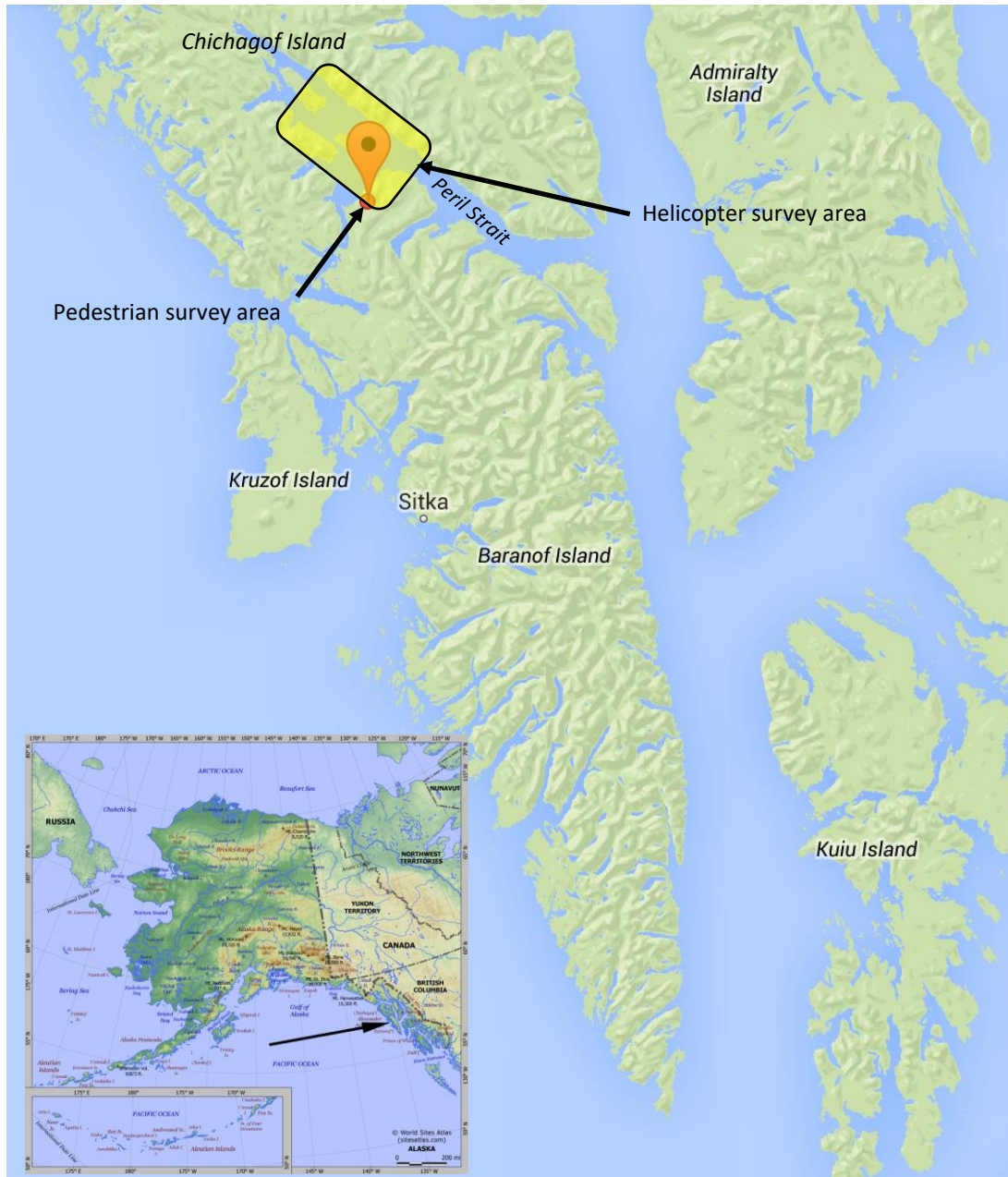


Figure I-1. Location of the Alexander Archipelago in Southeast Alaska.

oral history partners were drawn from the University of Nebraska-Lincoln, Oregon State University, the Sitka Tribe of Alaska, the Angoon Community Association, Oxford University, UNAVCO, Nebraska Educational Telecommunications (NET), the U.S. Forest Service, CH2M Hill Polar Services, SRI, Polar Field Services, and UIC Science. The project was enabled by Early-concept Grants for Exploratory Research (EAGER) funding from the National Science Foundation, Arctic Social Sciences, Division of Polar Program (National Science Foundation 2015a, b).

This project was conceived and led by Drs. William Hunt and Ralph Hartley, archaeologists in the Department of Anthropology, University of Nebraska-Lincoln, in Lincoln, Nebraska. They were assisted by Department of Anthropology graduate student Mike Chodoronek in collecting and recording archaeological data. That work, along with photogrammetric field applications contributed to his M.A. thesis. Department of Anthropology Chairperson, Dr. LuAnn Wandsnider, served as the project sponsor and the University provided office and laboratory space, equipment, budgetary oversight, and other administrative functions.

Lichenological investigations were led by Dr. Bruce McCune, Professor at the Department of Botany & Plant Pathology, Oregon State University. Dr. McCune was assisted in the field by OSU graduate student Nijmah Ali. Ms. Ali used lichen field data in her work leading to a Master of Science degree.

The project was preceded, in 2011, by a NSF-Arctic Social Sciences supported NSF Proposal 1145831 "Consultation Travel for A Multidisciplinary Pilot Study of Alpine Cairns, Southeast Alaska." This travel took place October 31 through November 8 during which project co-Principal Investigators Hunt and Hartley met with Forest Service representatives, tribal councils of the Sitka Tribe of Alaska and the Angoon Community Association (representing the Xutsnoowú Tlingit), as well as with members of the STA's Cultural, Customary, and Traditional Committee. Topics for discussion included previous cairn investigations, traditional territories, 106 compliance, roles of project partners, anticipated project schedule, proposed field methods, plan for unexpected discovery of human remains, tribal liaisons, Tlingit student participation, and reporting of results. All potential partners expressed great interest in the project and were eager to participate.

Elders from regional Tlingit tribes provided oral background information on Tlingit history and alpine activities prior to the cairn inventory. Each individual was interviewed by Dr. Thomas Thornton with video documentation by Peter Stegen (NET). Associate Professor Dr. Thornton is Director of and Senior Research Fellow, Institute of Environmental Change and Management at Oxford University, Oxford, England. Transcription of Dr. Thornton's interviews with Tlingit elders was provided by the Nebraska Education Telecommunications (NET) Special Projects Division.

Mapping of terrain and features was accomplished by Marianne Okal, a LiDAR Engineer at UNAVCO, Inc., a university-governed consortium based in Boulder, Colorado, facilitating geoscience research and education using geodesy<sup>1</sup> (UNAVCO 2015).

Field activities were extensively documented using digital photography (still and video). This work was accomplished under a planned approach developed by Nebraska Education Telecommunications (NET) Special Projects Manager Mike Farrell and conservation

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<sup>1</sup> The scientific discipline that deals with the measurement and representation of the Earth in a three-dimensional time-varying space.

photographer Mike Forsberg. Working under Farrell's and Forsberg's guidance, Peter Stegen conducted on-site and laboratory documentation, edited the products, and produced a video documentary for the project (Stegen 2016). Additional photogrammetry documentation of cultural features was accomplished by Department of Anthropology graduate student Michael Chodoronek.

## Logistics

Pre-project logistics was assisted by the U.S. Forest Service. USFS Archaeologist Jay Kinsman aided in pre-fieldwork housing, tribal consultation, water transportation during project planning and pre-field season phases, as well as pre- and post-field season equipment storage. Field records are to be curated by the Forest Service at the University of Alaska Museum in Fairbanks.

Logistics for the field portion of this complex project including camp operations (Figure I-2) was provided by CH2M Hill Polar Services (CPS) and Polar Field Services (PFS). CH2M HILL, Inc., Polar Field Services, SRI, and UIC Science form the CPS team, which provides Arctic research support and logistics services ("ARSLS") under contract to their only client, The National Science Foundation's Arctic Program (CH2M Hill Polar Services 2015; Polar Field Services 2015).



Figure I-2. Cross Peak archaeological expedition base camp (photo by Peter Stegen).

Logistical planning management was delivered by Christie Hauptert, Marin Kuizenga, Matt Irinaga, Alaska Operations Main Office, Polar Field Services. Satellite phones & communications were provided by Clay Ross, SRI. Remote Medical (kits & service) was provided by Kim Derry, Alaska Operations Main Office, Polar Field Services. Dean Einerson ably served the team as the PFS Camp Manager. Ernie Eggleston, owner and operator of *The Gust*, transported our gear, supplies and personnel from Sitka at the initiation of the field work and its return at the end of the project. His cooperation, support, encouragement, and community contacts contributed greatly to ensuring a safe and well equipped field camp.

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## II. ARCHAEOLOGY: An Inventory of Marine-margin Alpine Cairns in Southeast Alaska

by

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### Research Context

#### Cairns in World-wide Contexts

Relationships between ethnographic and archaeological derived data may best be assessed at the scale of the landscape where the history of people's activities and the formational processes affecting material and constructed features intersect to create a cultural topography of places with varying intensity of use (Whittlesey 1997; Wandsnider 2004; McGlade 1995; Grove 2009). Although acknowledged to be difficult to conceptualize as a unit of analysis, Zedeño, et al. (1997:126; 2014:106-107) focused on the historical and relational dimensions of *landscape* as a "network of interactions between people and landmarks." Here, landmarks are considered the transformation of a place or resource into a locational marker, the history of which may or may not be reflected in observable material culture or behavioral residue. Human modifications to a landscape surface in the form of stone architecture, encompassing stacked loose stone and cairns, are, as noted by Wandsnider (2004:77), *introduced* to the biophysical environment as locational markers, having the potential to be modified for different uses, maintained, or destroyed. Such constructions of loose, un-cut rock of a size that can be moved by one or two people are observed cross-culturally in various topographical situations. And comparative reference to these cultural features from historical and anthropological literature is somewhat burdened by the difficulty of nomenclature. The function or use-life of these stacked rock features, often gleaned from ethnographic, ethno-historical, and/or oral accounts, often helps create categorical descriptions. Occasionally acknowledged, however, is the multiple use or alteration in morphology of the rock constructions through time as need or opportunity is assessed.

The definition of alpine cairns in this study is variously sized piles of rock, intentionally created by human action in mountainous areas above tree line. In Southeast Alaska such cairns are observed at elevations of about 1600 ft. (488m) AMSL and above. These high altitude cairns have been known to Westerners since arrival of the Russians to the region in the 1790s. Their derivation(s), age(s), and function(s) however, have remained a

mystery<sup>2</sup>. The Tlingit, who have occupied this region for at least 4,000 years (and probably much longer), have not, until now, been systematically consulted about the derivation or significance of the cairns. The Tlingit call these features *té xóow* and, where mentioned in oral history, are generally attributed to their ancestors or other groups in the distant past who constructed them for shelter, for subsistence purposes, spiritual sites, or boat anchorages during the “Great Flood”.

A cursory, cross-cultural overview of comparative stone architecture, in what are now settings from which ethnographic, ethno-historical, or archaeological information exists, suggest that nearly all of these features reflect one or more of the following activities: hunting (e.g. blinds, drive lines); temporary storage (e.g. food caching); spatial orientation (e.g. route markers); or, the memorializing of a perception of place and time, including rock construction at or over human burials that can serve both as a locational marker and means of initially protecting the remains.

The steering or herding of groups of ungulates for the purpose of communal hunting is known to be facilitated by the construction of numerous cairns of loose, portable rock placed in a spatial formation with a goal of manipulating the movement of the animals. This means of procurement is well documented, and arguably well analyzed, especially for caribou, bison, elk, and Pronghorn antelope in the northern hemisphere (e.g. Anell 1969; Benedict 2005; Brink 2005; Weimer 2009; Wilson and Slobodina 2007; Zedeño, Ballenger and Murray 2014), vicuñas (wild camilids) in the high altitudes of the south central Andes (Moreno 2012), and antelope on the Tibetan Plateau (Fox and Dorji 2009). The investment in constructing and maintaining these cairns results in the potential for a subsistence payoff that can be reaped for years, dependent primarily on the ungulate population density and their behavioral dynamics subject to environmental conditions. This strategy is observed, for the most part, on landscapes devoid of dense trees and large brush, making the elevated state of rock cairns something not likely ignored by ungulates wary of non-human predators.

The seasonal nature of the inland hunting of these animals is also facilitated by the construction of hunting blinds, usually low rock walls, often semi-circular, sufficient to permit human concealment (e.g. Binford 1978: 182-183; Schaaf 1988:249-253; Brink 2005; Dalton 2011). Structures built for this purpose often, but not consistently, are observed in association with cairns where communal hunting is reported or interpreted. Horseshoe or U-shaped hunting blinds, positioned to ambush Bighorn sheep along trails in the Great Basin are oriented such that the entry into the blind usually faces away from the trail. Similarly situated blinds are observed in southern Yukon alpine settings in proximity to trails used by sheep. The context of these blinds suggests that the hunting was conducted by small groups of hunters (Hare, et al. 2004; Greer and Strand 2012). In southeast Alaska Mountain sheep are reported to have been “driven” up mountain slopes, where Chilkat Tlingit hunters, having climbed “high in the mountains” were “lying in wait at the top”,

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<sup>2</sup> Large cairns were built historically by surveyors; this practice continued after the World War II period when many areas in Alaska and the Canadian territories were mapped in detail. Some of these survey cairns are known to be associated with brass markers making them easy to distinguish from large prehistoric cairns.

presumably hidden from view from the animals moving upward (Anell 1969:23; Krause 1956:125).

The use of portable rock to construct boundaries around and over food caches, consisting most often of meat, is well documented in central west and northeast Greenland (e.g. Grøwnnow, et al., 1983, 2011; Sørensen 2010), the Anaktuvuk Valley of northern Alaska (e.g. Binford 1978: 55-57, 241-242; Schaaf 1988:246-249), central Canadian Arctic (Benedict 2005); northwest Argentina (Haber 2009), and in southern Patagonia (Borrero et al., 2011). Henderson (1997) notes that in Keewatin, Northwest Territories of Canada, food and oil caches are created on the ridges above the coast line where they are less likely to be covered with snow. Within a well developed ethno-historic and archaeological investigation of strategically placed cairns throughout the coastal areas of the Labrador-Quebec peninsula and Newfoundland, Stopp (2002:321) emphasized that while the morphological properties of stone caches established by Arctic and Sub-arctic people varied greatly regionally “the use of a stone matrix for food storage seems to be consistent among northern peoples.”

Cairns observed in proximity to trails and on prominent topographical situations are often interpreted as useful reference points in spatial orientation, sometimes in concert with the marking of special places associated with a belief system. Such constructions, of often incremental accumulation, have been deemed “shrines”, especially along well used trails (e.g. Jett 1994; Haynal 2000). Prehistorically or proto-historically constructed cairns maintained as trail markers are well documented in the northern hemisphere, south America, Latin America, northern Europe, and Russia (e.g. Chartkoff 1983, Loendorf and Brownell 1980; Wisehart 2005; Jett 1994; Mizin 2013). Interpretations of cairn locations as delimiting claimed territory in the south central Andes have also been suggested (Moreno 2012). Routes of travel used through generations in Arctic Canada are dependent on memory, permanent features of the natural landscape, and built rock cairns or, more recently, introduced landmarks such as fifty gallon barrels. Trails used in this environment are not static through time however, some segments are abandoned and new routes are improvised, reflecting subsistence need, social networks and means of transport (e.g., Aporta 2004, 2009). The spatial configuration of these landmarks may not, consequently, reflect orientation to a single linear route.

The construction of cairns referenced above reflect economic activity in various topographic settings, some far distant from what’s now termed the “North Pacific Coast” (Darnell 2015:240). However, while archaeological and ethno-historic evidence for investing in the construction of these rock features focuses, to a large extent, on indigenous subsistence practices, the significance of these places by those who consider use history as enforcing social identity makes assigning simplistic function to at least some of these rock features less than adequate. Adding to the ambiguity inherent to the underlying incentives for the topographic placement of cairns are the social and spiritual needs of individuals. Rock features, in the form of loosely stacked rock associated with places of vision and power quests, prayer seats, and other components of indigenous belief systems, for example, are most often observed at high altitude, sometimes on high peaks or ridges,



throughout the west and northwest of North America (e.g. Caldwell and Carlson 1954; Chartkoff 1983; Haynal 2000; Hartley and Vawser 2007; Minor 1976; Weimer 2009).

The significance of the place of a rock cairn and its indigenously assigned meaning can be vulnerable to change through time however (Van Dyke 2008). The utility or value attributed to a place of one or more constructions of rock is subject to variation, often determined by the dynamics of the bio-physical and social environmental conditions characteristic of the landscape (e.g. Stewart et al. 2004; Henderson 1997; Uebelacker 2011:25). As noted by Norman Hallendy (2009) from his decades of documenting *inuksuit* rock features with Inuit elders throughout the Canadian arctic, many are assigned meaning with varied significance that may transcend the initial incentive for construction. Marking the landscape for navigational purposes, preferred hunting, fishing or camping, or to the location of nearby caches are but some of the purposes for these stone constructions, many of which, especially those facilitating navigation, have been maintained or re-created throughout the 20<sup>th</sup> century (Heyes 2002). Others, created casually near coast lines during travel, endure and may be assigned significance long after their introduction to the landscape (e.g. Graburn 2004).

The construction of cairns at or over prehistoric human burials is observed in various parts of the world. For example, along the Atlantic coast in Fuego-Patagonia, as well as further inland, graves covered with stacked rock, *chenques*, were placed atop hills or otherwise at high altitude. Not all *chenques* include human remains, although some appear to be positioned in proximity to others that do contain remains (Prieto and Cardenas 2007; Magnin 2009). Within the North Pacific Coast region cairns in these contexts are well known especially since the excavations of Harlan Smith in 1897-1899 (Smith and Fowke 1901). More recently Thom (1995) and Mathews (2006) have pursued the morphology, spatial distribution, and hierarchical social context of such cairns at the confluence of the Harrison and Fraser Rivers in British Columbia and south Vancouver Island. Here, not unlike mortuary related cairns reported by Haynal (2000) in southern Oregon and northern California, human remains may or may not be at or within the confines of stacked rock. He notes that, with reference to information from a Klamath informant, remains from cremation were often buried in proximity to where the individual died when away from a village, and a cairn might be constructed nearby as a locational marker. Further north however, in the area occupied traditionally by the Tlingit, no stone piles are known to have marked or been associated with burials.

The erection and maintenance of surface stone features for the purpose of facilitating communal hunting or with proximity to human remains, is increasingly being considered as also a means by which to claim space in a landscape setting that was witnessing at least periodic competition between groups (e.g. Zedeño, Ballenger, and Murray 2014; Mantha 2009; Moreno 2012; Buikstra and Charles 1999). Social interaction among bands or other sub-groups may underly the remains of prehistoric as well as post-contact activities observed in the archaeological record of alpine and sub-alpine environments of coastal British Columbia and the northern Cascades (Mierendorf 1999). The pursuit of mountain goat by three or more coastal Salish hunters in the alpine environment of Squamish

Traditional Territory took place in “owned” areas, where hiding among “large rocks and knolls” enhanced access to prey. Deer and elk, when encountered, would also be taken from the high mountains (Reimer 2003:49-50). Cairns as archaeological signatures of socio-spatial signaling may not, in such an environment, be distinct from that which serves to enhance successful subsistence practices.

No systematic research, until now, has been conducted on high altitude rock features in central southern Alaska for several reasons. Perhaps most importantly, traditional Northwest Coast culture, with its coastal occupations and subsistence centered on marine and riverine fauna and (generally) lowland flora, has heavily influenced archaeological research. This has resulted in archaeologists focusing their investigations on low altitude sites at or near island margins. The lack of known historic occupations on island interiors and the resulting poor understanding of interior land use have exacerbated this situation. In addition, virtually all development during the historic period focused on island margins, the rugged landscapes of the island interiors making movement from one place to another extremely difficult. Archaeological sites discovered during the course of improvements in infrastructure or new developments, therefore, are by default located on or near the coastline. The result is that most archaeological models and narratives for Northwest Coast subsistence place a heavy emphasis rightly or wrongly on the shoreline during the past 10,000 years (e.g. Ames and Maschner 1999; Matson and Coupland 1995; Davis 1990; de Laguna 1990; Emmons 1991; Moss 1998a, 1998b, 2004, 2011; Connor et al. 2009).

### The Study Area

Baranof Island is one of three large islands in the Alexander Archipelago, a 300 mile long cluster of steep, mountainous islands that form the greater part of Southeast Alaska. The archipelago extending southward from Glacier Bay and Cross Sound to the Dickson Entrance. The greater portion of the archipelago occurs within the Tongass National Forest while the study area itself lies within the Sitka Ranger District of the Tongass.

The study area occurs within the Pacific Northwest Temperate Rainforest, the largest temperate rainforest in the world. Extending from northern California to mid-Alaska, the region continues to be lightly inhabited to this day with many considering it the last true wilderness region in the United States and the Pacific Coast. A temperate rain forest is very wet and cool. Characteristically, a rain forest must receive more than 55 inches of rainfall a year with ten percent or more occurring in the summer. It has a dormant season caused by low temperatures and, as might be expected given the level of precipitation it experiences, the rain forest has very few fires. The northerly end of this region receives an average of 96 inches (2.44 m) of precipitation each year with an average snowfall of over 40 inches (1.0 m). The wettest months of the year are September and October and the driest are June and July although, even at that time of the year, it is a rare summer day when rain fails to appear. The expanse of water surrounding the islands produces a very mild climate with a mean winter temperature of 38° F (3.3° C) and a mean summer temperature around 62° F (16.7° C). The coldest months are December and January with temperatures as low

as 0° F (-17.8° C) but can reach, more rarely, as high as 60° F (15.6° C). The warmest months are July and August which can have extreme high and low temperatures of 41° to 86° F (5-30° C).

The islands' landscapes are typified by impenetrable rugged mountains which steeply plunge at island margins into the ocean depths. The land has been sculpted by tectonic forces and glacial action which have brought with them eons of uplift, subsidence, and erosion. There is evidence for almost continuous interaction between Pacific and Alaskan crust for millions of years. Models of global plate motion imply that since earliest Jurassic time (around 210 million years ago) as much as 15,000 km of northward-moving Pacific crust have been forced beneath Alaska, an amount perhaps not equaled elsewhere in the world (Scholl and Cooper 1977:468). This grinding of tectonic plates has lifted Baranof Island from the ocean creating the captivating cragged mountain system seen today.

Tectonic activity has also brought considerable volcanic activity to the area. Across the bay from Sitka on the south end of Kruzov Island is Mount Edgecumbe, a striking cone-shaped volcano many call the "Mt. Fuji of Alaska." Snow-capped for all but a couple of months each year, Mount Edgecumbe rises 3,182 ft (970 m) above the ocean. Its peak is the most prominent feature of the Mount Edgecumbe volcanic field, which extends over 260 sq km of Kruzov Island and includes the large composite cones of Mount Edgecumbe, Crater Ridge, and Shell Mountain. Although volcanic activity originated here about 600,000 years ago, the island witnessed a more recent series of major explosive eruptions about 9000-13,000 radiocarbon years ago. The latest dated eruptions (about 4,500 years ago) were "pyroclastic" in that they produced avalanches of superheated flows of muddy ash, pumice, rocks, and gas (Smithsonian National Museum of Natural History 2008; Chaney et al. 1995:72). Ash and pumice remnants of this eruption occur in many areas of the islands.

Ice was the third major actor in sculpting the face of Baranof Island. Glaciers covered the Alexander Archipelago during the last glacial epoch (known as the Wisconsin or Last Glacial Maximum) reaching their maximum extent sometime before 14,000-16,000 years ago. Flowing ice fields dramatically changed the landscape of the island cutting deep gouges which can still be seen today as fjords on the island perimeter and in the mountainsides as U-shaped depressions called cirques. Unimaginable tons of stone, dirt, and other debris were moved down the face of the slopes and then redeposited along the shorelines. River and streams generally flow through steep-sided valleys created by glaciers. As glaciers melted around 14,000 years ago, the sea rose over the land. In some areas, particularly the inner fjords of Southeast Alaska, sea levels rose over 650 ft (200 m). A short term glacial advance, known as the Neoglacial Period, occurred sometime between 9,000 and 13,000 years ago. In the immediate post-glacial period, island margins actually lay under water. With combined actions of the tectonic plates and isostatic rebound (land rising due to the decreased weight of the melted glaciers), the land has risen approximately 40 feet (12 m) in the last 10,000 years. The land continues to rise. Based on tidal gauge measurements from 1938 to 1972, for example, the Sitka area is rising at a rate of 1.4 inches (3.4 cm) every ten years (Kriekhaus et al. 1993).

This geological history and climatic variation, created a series of unique soils in the region. Soils are related to the relative ages of each of the landforms. Upland terrace and lowlands have soils with the greatest development, suggesting they are the oldest landforms (Spodosols). Typically these are well drained, though shallow, and have a well-developed subsurface layer of iron and/or humus accumulation (called a B horizon). One of the other soils found in the lowlands was formed in volcanic ash (Andisols) and a third soil type found in the lowlands is basically organic material less than 20 inches thick over bedrock (Histosol). Next in relative age are the uplifted beaches, stream terraces (old floodplain), and the current floodplain. Soils in these areas belong to the soil order Inceptisols, a name which implies a soil at its inception or beginning. They are less developed than the upland terrace and lowland Spodosols. The youngest landforms are the estuaries and beach meadows. Beach meadows are actually part of uplifted beaches and are still influenced by high tides during storm and extreme tidal activity. Soils in these landforms belong to the soil order Entisols and usually have surface layers enriched with organic matter (A horizon) and overlying layers of parent material (C horizons) (Kriekhaus, et al. 1993:4-5).

The study area's bedrock geology is uniformly tonalite (Figure II-1). This stone is described as “gray-green, massive, medium-grained biotite-hornblende. Primary minerals

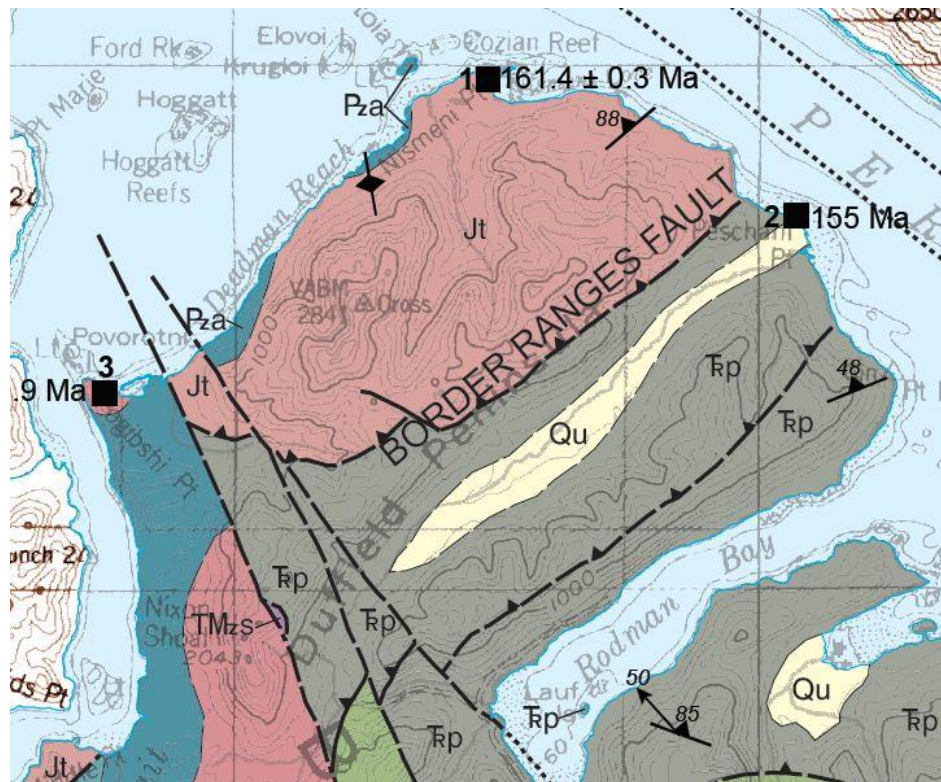


Figure II-1. Duffield Peninsula hard rock geology map (Jt = tonalite) (Karl et al. 2015).

include quartz, plagioclase, biotite, hornblende, and accessory muscovite, garnet, and sphene. Secondary minerals include calcite, albite, prehnite, epidote, chlorite, sericite, and magnetite” (Karl et al. 2015). All rock features in the primary study area, both natural and cultural, are composed of tonalite.

The study area's complex developmental history has produced a great deal of environmental diversity. At island margins, one may find a full range of island environments within less than a mile of one another; everything from snow-capped alpine tundra through marine depths up to 300 feet (100 m) or greater. This diversity is expressed through a wealth of environmental niches which support a very broad range of plant life when compared to non-rain forests. They contain fewer species of plants than the rainforests of the tropics, but the total amount of plant life is about the same within a given area.

According to the World Wildlife Fund (2008), the predominant forest type in the region is coastal Sitka spruce (*Picea sitchensis*) and hemlock (*Tsuga* spp.). However, poorly-drained sites contain muskegs and low lying areas along river channels contain alder (*Alnus* spp.), cottonwood (*Populus trichocarpa*), and Alaska paper birch (*Betula papyrifera*). Twenty-one ecological provinces have been recognized in southeast Alaska and seven vegetation series and 41 associations have been identified in this area, including shore pine (*Pinus contorta*), mixed conifer, western hemlock (*T. heterophylla*), western red cedar (*Thuja plicata*), western hemlock-yellow cedar (*Chamaecyparis nootatensis*), mountain hemlock (*T. mertensiana*), and Sitka spruce. In general, species richness (conifers, plant associations, birds, mammals) declines with increasing latitude. For instance, the southern portion of the region contains 60 percent of the species on only 20 percent of the land base. Numerous species of shrubs, including devil's club, skunk cabbage, salmonberry, huckleberry, elderberry, and blueberry, grow in the forest and on its fringes, often creating an impenetrable dense understory. The variety of large mammalian species is very small due to the island being isolated from other land masses for so long. At present, the only native large mammal species on the islands are brown (grizzly) bears and Sitka deer, both of which occur in large numbers. Mountain goats were introduced to the island in 1923 as a game animal. Other smaller mammals include mice, voles, red squirrels (introduced in 1930), marten (introduced in 1934), mink, and river otters. Numerous songbirds occur and bald eagles, ravens, spotted owls, and great horned owls are important predators and scavengers (Dice 1943:30-31; Whitney 1985:48-50, 57-61; Shelford 1974:229-233; McConnaughey and McConnaughey 1985).

### Indigenous Occupation and Use of the Area

The prehistoric and protohistoric use of this region may be easily understood by dividing the northern Northwest Coast cultural sequence into three periods: Early (10,000 to 5,000 years ago), Middle (5,000 to 1,500 years ago), and Late (1,500 years ago to AD 1741). Throughout the prehistoric period, boat travel is inferred from the earliest sites scattered throughout the islands. Archaeological research indicates that people focused their food

gathering efforts on intertidal and near-shore environments with fishing and shellfish harvests being the mainstay of subsistence. Salmon were increasingly harvested with the introduction of fish weirs sometime prior to 3,000 years ago. While sea hunting of mammals and birds appears to have been more common through time, these animals were never a subsistence mainstay (Moss 1998a, 1998b, 2011).

There is a general consensus that two fundamental coastal adaptations were in operation through time on the Northwest Coast. The first of these, dating from around 10,000 years ago to around 4,500 years ago, focused on human colonization of the archipelago and long-term adaptation to the coastal environments (Erlandson 2001; Erlandson, Moss and Des Lauriers 2008). The second, beginning about 4,500 years ago, marks an emergence of a Northwest Coast cultural pattern. By around 2,000 years ago, this pattern had evolved into a widespread, integrated cultural system that continues to the historic present (Matson and Coupland 1995). Prehistoric use of high altitude areas or alpine resources has not been a focus of investigations in southeast Alaska. Consequently, little is known regarding the role of the alpine areas through time.



Figure II-2. Detail of customary Tlingit tribal area boundary map showing Sheet'ká Kwáan and Xutsnoowú Kwáan boundaries on northern Baranof Island and southern Chichagof Island (after de Laguna 1990:203). Red circle is the approximated location of the primary study area. Blue is the approximated secondary inventory area.

The study area sits at the boundary of two traditional Tlingit territories known as Sheey At'iká Kwáan or Sheet'ká Kwáan and Xutsnoowú Kwáan (Hutsnuwu Kwáan (Figure II-2). Sheet'ká (shortened to Sitka) Kwáan, meaning “oceanside of Baranof Island (Shee),” designates territory incorporating the western side of Baranof Island, the greater reaches of Peril Strait, southwestern portions of Chichagof Island, and the myriad islands and bodies of water between these locations. Xutsnoowú Kwáan, translated as “Brown Bear Fort,” straddles Chatham Strait and includes the northeastern side of Baranof Island, the southeastern third of Chichagof Island, and the western two-thirds of Admiralty Island.



Oral histories suggest the Tlingit have lived in this region for at least 4,000 years, if not longer and traditionally defined themselves according to “the customs and traditions they followed in obtaining, processing, and distributing wild resources” (Thornton and Hope 1998:62-68). This collection of activities formed an annual cycle with subsistence being the foundation of customs and ritual. In general, spring found the people in their winter village. From there, the people hunted brown bear and small fur-bearing mammals and fished for halibut, cod, red snapper, and king salmon in deeper waters. Although herring eggs were harvested at this time, shellfish were avoided at certain times; the Tlingit believing the herring spawn make shellfish poisonous. The importance of shellfish to the Tlingit, however, can hardly be overestimated (Moss 1993), as can be inferred from their saying *Tlein da kwa goot*, or “When the tide is out, the table is set.” The roots of alpine French honeysuckle (*Hedysarum hedysaroides*), called *tseit* by the Tlingit, were dug and the inner bark of alder (*keishish*) was harvested. Yellow cedar bark (*Teey hoodi*) and spruce roots (*Seet sheiyi*) were collected for weaving. By late spring, the people were harvesting greens, salmonberry shoots (*K'eit*), and abalone (*gúnxaa*) (Newton and Moss 1984, 2005; Thornton and Hope 1998; Sitka Tribe of Alaska Kayaani Commission 2006a, 2006b).

With the onset of summer, clan and house groups moved to their fishing camps throughout the kwáan. They stayed in these summer encampments until about September catching and curing salmon and gathering a wide variety of berries and other plants as they became available. This traditionally was also the season of travel, trade, warfare, and slave raids (Sitka Tribe of Alaska Kayaani Commission 2006a and 2006b; de Laguna 1990).

Fall was the time for returning to the winter village. The people focused on drying fish, harvesting rosehips (*k'incheiyi*), low bush cranberries (*daxw*), and coho salmon. Some, before going to the winter village, went to the mountains to hunt bear and deer, this being the time these animals were at their fattest. In historic times, potatoes were harvested in the fall. As hunting and gathering was completed, the people returned to their winter village. The wealth of the summer and fall harvests made this an ideal season for holding traditional *koo.éex'* or potlatches through the winter months. Clams were dug in the depth of winter, and winter seaweed (*taakw laak'ásk*) was also collected (Sitka Tribe of Alaska Kayaani Commission 2006a, 2006b; de Laguna 1990). The clan and houses were the units that possessed territories, including rights to all game, fish, berries, timber, drinking water, trade routes, house sites, as well as songs, dances, stories, totemic crests, and all the privileges and authority that went with them. The clan and house leaders could assign fishing spots, open and close hunting seasons, adjudicate the laws, and oversee ceremonies (de Laguna 1990; Emmons 1991). It is important to note that island and mainland subsistence regimes varied significantly according to the topography, microclimate, and availability of key resources, as did use of specific alpine environments.

## Natural vs Artificial Rock Piles

What is a cairn and how can it be distinguished from similar natural features? According to the *Meriam Webster Dictionary*, a cairn is “a pile of stones that marks a place (such as

the place where someone is buried or a battle took place) or that shows the direction of a trail; a heap of stones piled up as a memorial or as a landmark.” The *Oxford Dictionary* adds “typically on a hilltop or skyline.” The unstated implication of these definitions is that cairns are and were made by humans who piled stones in a specific place, in a particular way, and for an explicit purpose. They occur almost everywhere there are suitable rocks to be had and occur in many forms ranging from a simple stack of rocks, circles, huge piles of stones, to complex chambered structures such as were built in the European Neolithic period. Despite the dictionaries’ descriptions, the functions of cairns are almost as varied as the locations they are found. Among the various uses are trail and route markers, elements of drive lines, burial markers, points of reference, religious and ceremonial elements, and many other purposes. Under this definition, even the Egyptian pyramids may be considered the most elaborate form of cairn.



Figure II-3. Stone rosettes at the Melville Peninsula, Nunavut. These small stone circles or ‘rosettes’ are formed on fine-grained sediments derived from limestone. They are about 50 cm in width and have clayey centers surrounded by a ring of limestone slabs. This pattern results from seasonal frost heaving of the underlying material (photo by Lynda Dredge, Geological Survey of Canada).

As one approaches high latitudes or altitudes, however, there can be natural accumulations of stone that can look very much like cairns. Such freeze-thaw features have even been observed on Mars (*Earth Observatory* 2008). They are common where there is permafrost and are caused by the alternating freezing and thawing of the ground. Smaller mounds, called frost mounds, may be from a few centimeters up to 1.5 m high but, in some instances these natural mounds can be huge – up to 40 m in height (features called “hydrolaccolithes” or “pingos”). Winter temperatures cause the ground to contract, in the process creating small spaces that fill with melt water in the summer. When winter returns and the water freezes, it acts like a wedge, enlarging the cracks. During these freeze-thaw cycles, the ground alternately heaves and sinks with larger elements forced

to the surface (Corte 1966). Ice heaves can cause circular mounds or raised rings in permafrost. It is important to note, however, that these natural mound-forming actions occur only in silty, sandy, or stony soils that have some depth to it. Consequently, they are not possible where the surface is bedrock such as that in our study area. Soils on Cross Peak Mountain and other similar montane locations are almost always too thin for permafrost and are therefore unable produce these natural features. Examples of cryogeological features are shown in Figures II-3 and II-4.



## Previous Archaeological Research of Alpine Cairns in Southeast Alaska

Only two archaeological site inventories are known for Southeast Alaska that have explored and recorded alpine cairns. These occurred at Glacier Bay National Park and Preserve and in the Peril Strait/Hoonah Sound area of the Tongass National Forest. Additionally, there have been a number of cairns recorded incidentally by U.S. Forest Service and others.



Figure II-4. Partially melted and collapsed mounds forming stone circles in Svalbard, northern Norway (*Frontier Scientists* 2013).

### 1995 - Glacier Bay National Park and Preserve

In 1995, an interdisciplinary survey of western Glacier Bay National Park and Preserve was undertaken by the National Park Service, Smithsonian Institution, and University of Alaska-Fairbanks under the National Park Service's Systemwide Archaeological Inventory Program (Crowell, Howell, Mann, and Streveler 2013; Schoenberg 1995). The purpose of this work was to examine Tlingit archaeology, history, and settlement patterns within the context of changing climate and coastal environments. The inventory was done in collaboration with the Hoonah (Xutsnoowú) tribe, the traditional indigenous occupants of the park. Among the recorded sites were forty that were attributed to indigenous prehistoric populations. The preponderance of these sites were discovered in lower elevations but three sites with 24 stone features were identified on separate mountain peaks (Figure II-5).

Survey on White Cap Mountain above the eastern bank of the Dundas River identified five stone features composed of slabs and fragments, some strictly composed of limestone with others also incorporating a few stones of granite. The site was designated 49-XMF-070. Surveyors observed lichens and moss on some or all of the granite in the features noting that limestone does not support either type of growth. Four of the features are "solid piles," cairns varying in size from 3.1 m x 1.7 m x 0.3 m high to 1.5 m x 0.8 m x 0.3 m high. The fifth feature is an oval ring 1.5 m x 1.2 m x 0.3 m high. Three boulders had been placed in the center. All features were above 3100 ft (950 m) AMSL; i.e., well above the tree line at 1640-1968 ft (500-600 m). Dundas Bay, located 4.4 km to the southeast is clearly visible from the cairns.

Eleven stone features were recorded at a site, 49-XMF-065, on an unnamed mountain above Point Dundas, all above 2000 ft (610 m) AMSL; e.g., more than 360 ft (110 m) above the tree line. All eleven features are cairns and these vary greatly in size from just three rocks (Cairn 7; 1.3 m x 0.8 m x 0.3 m high) to a very large feature composed of more than 20 stones (Cairn 3; 3.2 m x 2.4 m x 0.5 m high). Two of these (Cairns 7 and 9) were constructed on the top of large boulders. All are of granite and all are covered with dense

growths of lichen and moss suggesting some antiquity. From the cairns, one has nearly a 180° view of the ocean; i.e., southwest across the Inian Islands down Cross Sound and east to where Cross Sound intersects the head of Icy Strait.

A third cairn site, 49-XMF-064, was identified on an unnamed mountain 5 km west of Point Carolus, unofficially named Mount Carolus. This site occurs on a granodiorite dome above the tree line. Here, the tree line occurs between 1480 ft (450 m) and 2130 ft (650 m) AMSL. Up to twelve cairns may occur here between 2100 ft (640 m) and 2400 ft (730 m) AMSL. This group is composed of eight features southeast of the peak on a northwest-to-southeast trending ridge between approximately 2090 ft (637 m) and 2220 ft (680 m) AMSL. These vary in size from Cairn 2 that is 3.3 m x 2.9 m x 0.9 m high to Cairn 5 that is 1.25 m diameter. Two incompletely documented possible cairns occur between 2300 ft

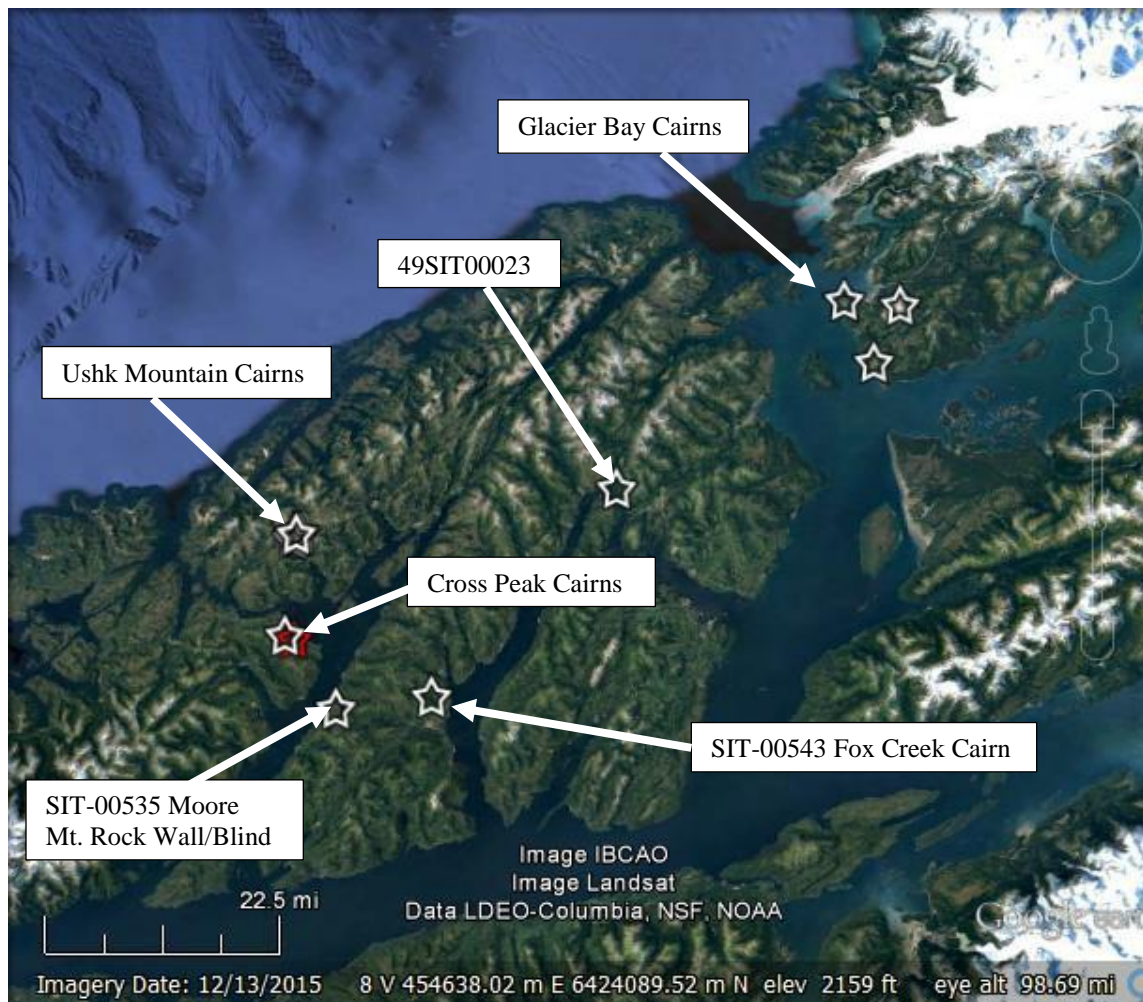


Figure II-5. Google Earth view locating cairn sites identified before this inventory in the north end of Southeast Alaska (note that north is toward the upper right corner of the image. The red star used to distinguish two sites that are very close to one another).

(700 m) and approximately 2350 ft (716 m) AMSL just west and northwest of the mountain summit. The investigators also noted at least two more cairns in the same vicinity that were not mapped. All of the cairns are composed of granite rocks and are heavily encrusted with lichen and moss with lower cairns (1-4) bearing thicker encrustations than the upper four cairns. From here, one may look southwest down the full extent of Cross Sound and to the east across the mouth of the Sitakaday Narrows to Point Gustavus. The cairns overlook the north end of Icy Strait and on a clear day it may be possible to see an amazing 81 km to the Mansfield Peninsula at the north end of Admiralty Island.

These three sets of features were interpreted by the investigators as possible monuments built by Tlingit ancestors to commemorate a disastrous event in the Tlingit oral tradition; i.e., the Great Flood.

#### 2007 - Peril Strait area, Tongass National Forest

In 2007, in response to urging by the *Xaatl Hit* (Iceberg House) Housemaster John Nielson, *Chookaneidi* clan (Sitka Tlingit), a multi-agency task force (U.S. Forest Service, the U.S. National Park Service, the U.S. Coast Guard, and the Sitka Tribe of Alaska) conducted a preliminary investigation of cairns in alpine tundra environments on Chichagof and Baranof Islands. The two- day inventory in 2007 recorded nine cairns on Chichagof and thirteen cairns on Baranof after spending about six hours at each location (Hunt 2007, 2010a, b).



Figure II-6. Cairn B at SIT-00735, the largest cairn in this site occurs on the uppermost point of a pinnacle and is 3 m x 3 m x 0.5 m. Ushk Bay and Hoonah Sound are visible in the upper left background.

All of the Chichagof cairns (Figures II-5, 6) were located on an unnamed mountain referred to by the investigators as “Ushk Mountain” as it was located near the head of Ushk Bay. Ushk Mountain is more-or-less U-shaped, the “U” being the perimeter of an immense cirque that drains the north side of the mountain into an unnamed stream flowing east into Ushk Bay. Only the north end of the mountain was inventoried and the spatial distribution of the cairns was such that four sites were recorded with the Alaska Heritage Resources Survey

(AHRs). Ushk Bay can be seen from all site locations. SIT-00775 is composed of one small cairn that is 1.5 m x 1.5 m. x 0.7 m high. The viewshed for this cairn is to the north.



SIT-00735 incorporates five cairns on a several hundred meter high cone-shaped pinnacle at the north end of the mountain's west arm. This site contains the largest cairn recorded during the 2007 inventory, Cairn 735A being 5 m x 5 m x 1.5 m high (Figure II-6). That feature is located on the peak of the pinnacle with at least four more stone features found downslope atop huge boulders. These cairns varied in size from 3 m x 3 m x 0.5 m (Cairn 735B) to 1.5 m x 1.5 m (Cairn 735E). Poor weather prevented the crew from measuring the height of Cairn 735E and weather conditions prevented at least seven more cairns from being recorded (this pinnacle was not completely inventoried). Most, if not all of the downslope cairns were situated on huge boulders. SIT-00776 is composed of two small cairns, Cairn 776A being 1.3 m x 1.3 m x 0.3 m and Cairn 776B being 1.0 m x 0.7 m x 0.3 m high. Finally, SIT-00777 is a very small cairn composed of only seven stones. It is 1.8 m x 1.8 m x 0.3 m high and has a view of Ushk Bay to the east.

A few days later, thirteen cairns were recorded on Baranof Island on the northwest side of a mountain informally known in the region as "Cross Mountain" (Figure II-5, 7). These occurred more-or-less in an arc south of a cirque draining to the northwest. An additional cairn was spotted above the highest sites but deteriorating weather conditions prevented its recordation. Cairns recorded at Cross Peak sit on elevated points of rock, either pinnacles or ledges, on the steep southern face of the mountain. Peril Strait as well as Ushk Bay could be easily seen from every



Figure II-7. Cairns 5(E), 3(C), and 4(D) (foreground to background) at SIT-00768. Peril Strait and Poison Cove are in the right central portion of the photo.

cairn. Initially, the sites were recorded with the AHRS as a single site, SIT-00768. Later, based on the spatial configuration of the cairns, the AHRS Coordinator at that time requested the cairns be recorded as six different sites (SIT-00768, 00769, 00770, 00771, 00772, and 00773). Unfortunately, the original number SIT-00768 was not removed from the database so one might conceive of the six sites, therefore, as subdivisions or sub-sites of SIT-00768.<sup>3</sup>

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<sup>3</sup> This is likely to contribute to some confusion to future investigators at this location (if any). We would like to point out, with regard to clarifying for non-U.S. readers, that these decisions were made for the most part for management rather than for research purposes. Also, with the additional discovery of many additional cairns during the 2013 inventory, SSIT-00768, 00769, 00770, 00771, 00772 have been subsumed under the current site number SIT – 00774. The AHRS coordinator removed SIT – 00773 from the complex as a separate site.

A post-fieldwork review of the cairn data suggested that the footprints of Cross Peak cairns have a narrower range than those recorded on Ushk Bay Mountain and vary in size from 1.23 m<sup>2</sup> (SIT-0771, Cairn J) to 11.31 m<sup>2</sup> (SIT-00771, Cairn H). The average size of Cross Peak cairns is 4.30 m<sup>2</sup> with a median size of 2.47 m<sup>2</sup>. If an extremely large pit cairn (SIT-00771, Cairn H) is eliminated, the size range is narrowed considerably to 1.33-7.07 m<sup>2</sup>, average size being 3.72 m<sup>2</sup> with a median size remaining 2.47 m<sup>2</sup>. Eight of the cairns were built on the edge of three ledges, each ledge having about a 3 m high face. The remainder occurred as individual features built on pronounced rock outcrops of several meters height.

The analysis of cairn size and form also resulted in the author of the report to postulate possible functions for the cairns. One extremely large cairn and seven associated very small cairns on Chichagof were deemed of uncertain function. Sixteen of the elongated cairns observed on Baranof and Chichagof Islands were tentatively interpreted as hunting blinds based on their more elongated shape and their location on large standing rocks or rock outcrops that would naturally screen the hunter from view by animals downslope. Five subconical cairns were interpreted as possible meat caches based on similarities in form with historic and prehistoric Inuit cairns built for that purpose. Based on its extremely large size and unusual location, Hunt postulated that SIT-00735 Cairn B could be a very large meat cache or a burial location, perhaps for a shaman as these traditionally occurred at some distance from a village.<sup>4</sup> Finally, as an alternative to all these possible functions, Hunt submitted that the cairns could also represent places where individual shamans sought spiritual power “through fasting, continence, or actually seeking it” (Emmons 1991:373), essentially functioning as a Northwest Coast version of a “vision quest” site.

At the time of the archaeological team’s visit to Cross Peak (late August 2007), blueberries were available in abundance at the landing zone. The co-occurrence of large numbers of deer and blueberries in the same general location suggested the possibility that small campsites might occur in sheltered locations on sun-warmed southern slopes.

While the age(s) of the features on Chichagof and Baranof were not determined, considerable antiquity was suggested by the maturity and quantity of lichen growth on exterior rock faces. It was also postulated that, based on the altitudes where the cairns occur, the features were created sometime in the late summer to early fall when the ground was clear of snow.

### Incidentally Recorded Alpine Cairns

This category includes sites that were recorded an incidental discovery as part of an inventory that was very focused in areal extent. Most commonly, they were identified during a Sec. 106 compliance inventory prior to construction or logging.

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<sup>4</sup> Tlingit ethnology indicates that all but shaman were cremated, the remains placed nearby in a chest or in a box on poles. The shaman’s dangerous physical remains were moved far from the village and placed in a location where his body would not be encountered (for instance, see Emmons 1991:280-281).

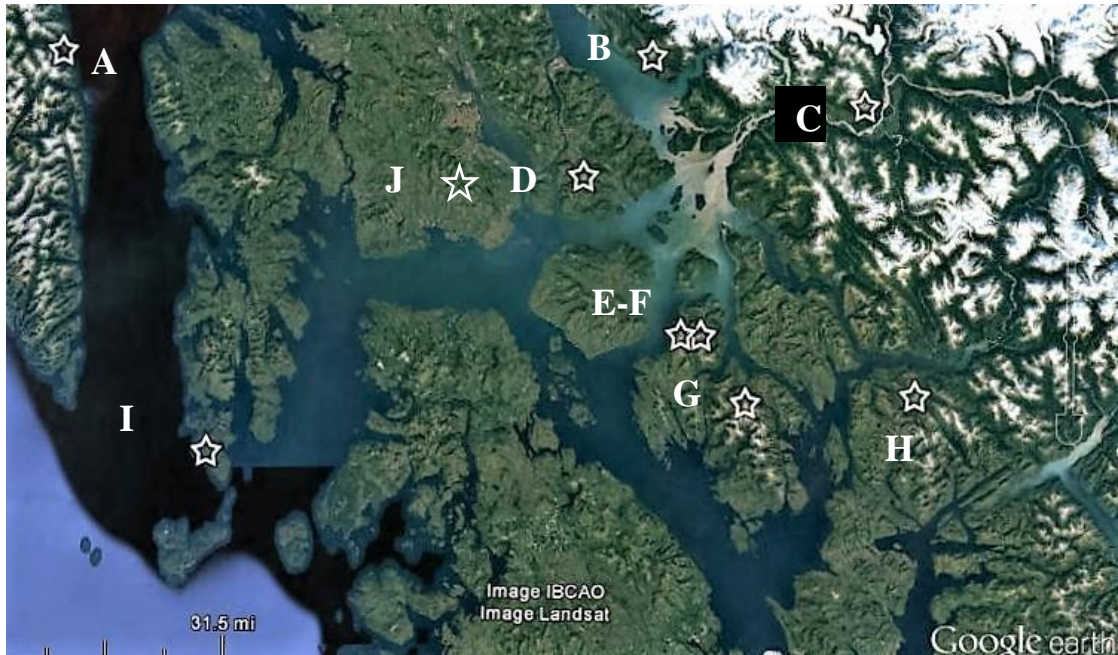


Figure II-8. Incidentally recorded cairns in central and southern areas of Southeast Alaska: A) XPA-00324 Red Bluff Cairns; B) Thunder Mountain Cairn; C) XBC-00067 Elbow Rock Cairns; D) PET-584 Crystal Mountain Cairns; E-F) Red Mountain Cairns and PET-00726 Bessie Peak Cairns; G) Etolin Island Cairn; H) XBC-00043 Cairns; I) Mt. McArthur Cairn; J) Lovelace Cairn.

### *Baranof Island*

XPA-00324 – This cluster of cairns do not occur at an altitude high enough to be considered “alpine” but they have many of the characteristics of those recorded on mountain tops. The site is near the center of Baranof Island on its eastern shore (Figure II-8A) and consists of six cairns on bedrock that are scattered over two adjacent southwest-to-northeast oriented hills (AHRS Record #15862952). These make up the south end of a short peninsula dividing Red Bluff Bay to the west and Chatham Strait to the south and east. FS Archeologist Pat Bower recorded the site in 2003 as part of a monitoring project. She noted that on a clear day one could see Kuiu Island and Admiralty Island. Two widely spaced cairns (Cairns 1 and 2) occur on a hill overlooking Red Bluff Bay with four more cairns (Cairns 3-6) clustered on the next hill to the north. Cairn 1 on the tip of the peninsula is the lowest in elevation (450 ft/137 m), has a brass cap adjacent to it, and may be historic. This led Bower to suspect that all the cairns are associated with land surveys. Cairn 1, however, appears to have a dense coating of lichens and moss, a factor that would suggest some age. The cairn seems to have been mostly collapsed or destroyed as its rocks have been scattered over a 3 m (10 ft) diameter area. Bower estimated its original diameter to be 1.1 m (4 ft). About 500 m (1/3 mile) to the northeast, at an altitude of 816 ft (~250 m) is Cairn 2. This is a small cairn; e.g., 0.6 m (~2 ft) in diameter and 0.5 m (~1½ ft) high. It is heavily encrusted with lichen growth. About 800 m (½ mile) north of Cairn 2, on the next hill north, is Cairn 3 also at 816 ft (~250 m) AMSL. This tiny pile of stones is 0.8 m (2.6 ft) in

diameter and 22 cm (0.7 ft) high. It too sports a dense coating of lichen and moss. Nearby Cairns 4-6 are described as “newer looking” or “modern,” presumably with little lichen or moss growth on them. Cairns 4 and 5, at 802 ft (244 m) and 812 ft (247 m) AMSL respectively, cluster with Cairn 3. Cairn 4 is about 25 m (82 ft) south of #3 and Cairn 5 is approximately the same distance to the southeast from Cairn 3. Cairn 4 is about 1.3 m (4.3 ft) in diameter and 0.4 m (1.3 ft) high. Cairn 5 is about 25 m (82 ft) southeast of Cairn 3 and is 0.8 m (2.6 ft) in diameter and 0.85 m (2.8 ft) high. The last cairn, #6, is situated nearly 100 m (328 ft) southeast of Cairn 3 on a small rise (810 ft/247 m elevation) and is the most unusual of the bunch. It is composed of two short stone piles capped with a “lintel” and another larger stone on top. The opening through the cairn is rectangular and oriented toward Kuiu Island to the southeast and possibly Cairns 3-5 to the northwest. Bower estimated that Cairns 1-3 were older based on their lichen and moss growth and suggested that Cairns 4-6 had been created during visitors’ recreational activities.

49SIT00737 - This site was recorded on the northwest side of Cross Peak Mountain by FS Archaeologist Jay Karchut in 2006 (AHRS Record 15882465; U.S. Forest Service 2006). Karchut identified one fairly large cairn situated on a narrow bench “at the edge of a cliff overlooking Peril Strait” (Figure II-5). His inventory was undertaken as part of Sec 106 compliance related to construction of a Coast Guard Remote Fixed Facility (RFF) and accompanying radio tower on the peak. The cairn measured 1.2 m (4 ft) in diameter and 70 cm (2.3 ft) high. The elevation of the site is 2467 ft (752 m) AMSL. Karchut reported that all stones were covered with moss and lichen, a factor suggesting some age. As the cairn was located well away from the proposed construction site, the FS found there would be no negative impact on the site.

### *Chichagof Island*

49SIT00535, Moore Mt. Rock Wall/Blind - A stone wall estimated to be a hunting blind was identified in 1996 after the site was described in a 1993 interview by Herb Hope, a Kiks’adi Tlingit that was living in Anchorage (OHRS Record 15825799). It consists of two “piles” of rocks in a small saddle between Mt. Moore and the peak to the northwest of Mt. Moore (Figure II-5). Rather than lying on flat ground, the feature sits on the east side of the saddle at the base of a steep slope. The elevation of this feature is ~2200 ft (670 m) AMSL. Both cairns are rectangular in outline, the southern-most cairn being ~3 m (10 ft) in length on the long axis (northeast to southwest) and ~2 m (7 ft) wide. The second cairn is located about 5 m (16 ft) west of the first. This larger feature is 5 m long, 4.5 m wide, 0.8 m high, and has a 0.75 m wide, 0.40 m deep “trough” running its full length. The purpose of this channel is uncertain. While Mr. Hope did not describe the site other than it being a rock wall, surveyors in 1997 thought it to be a hunting blind possibly associated with historic special use permits issued to residential and recreational cabins on Kadashan Bay during the 1940s to 1960s. This is not supported, however, by Mr. Hope’s statement that he saw it while hunting as boy with his father. In his 1993 interview, Mr. Hope was an elderly man.



49SIT00543, Fox Creek Cairn - In 1997, a timber crew spotted a cairn and associated stone alignment on the end of high mountain ridge overlooking Chatham Strait, Tenakee Inlet, and Kadashan Bay on the east side of the island (Figure II-5). The site was subsequently visited and recorded by Forest Service employees Rachel Myron and Mike Wellman (AHRS Record 15830279). Site records indicate the features are at approximately 2200 ft (670 m) AMSL and occur within and adjacent to a natural trough or fault line. The cairn is extremely large; e.g., 13 ft (4 m) in diameter and 3-3½ ft (1 m) high and is situated on a narrow (22 ft/7 m wide) east-west oriented spur. The stone alignment, or “wall” as it is described, is situated about 220 ft (67 m) or so to the southwest. It is ‘L’-shaped and also quite large: 32 ft (9.8 m) long on the southwest-northeast oriented long axis. The short axis is on the northeast end of the aforementioned alignment and 16 ft (5 m) long. Both elements are 2-3 ft (~ 1 m) high. The thickness of the wall is about 8 ft (2.4 m) as the feature has partially collapsed. Myron and Wellman indicated that, at the time the site was recorded, it was the only known cairn and rock alignment known for southeast Alaska.



Figure II-9. PET-0726, Bessie Peak cairn (photo courtesy Forest Service Archeologist Jayne Smith).

### *Etolin Island*

To date, alpine cairns have been identified at three locations on Etolin Island.

PET-0726, Bessie Peak Cairn - This is a single cairn located in the north end of Etolin Island (OHA Record 16006051). Although there are no details on the OHA site card about this site, Forest Service Archeologist Jayne Smith provided a photo of the cairn, its GPS location on Red Mountain, and its position on a quadrangle map (personal communication with Hunt). The feature occurs on an east-west trending ridge between 2600 and 2700 ft AMSL (Figures II-8F, II-9) and overlooks a series of small freshwater lakes to the south and southeast. From this location, one may see Zimovia Strait to the east with Wrangell Island on the opposite side of the strait.

Unrecorded Site #1, Etolin Island Cairns - A new alpine cairn site was discovered in 2011 when an alpine biodiversity inventory team identified three cairns on an unnamed mountain near the center of Etolin Island (personal communication from Catherine Pohl, Sept. 27 to Oct. 4, 2014, to Hunt). These were noted on the shoulder, or entrance point, of a long, steep-sided but gentle barren alpine ridge that leads to a high granitic mountain system at the edge of the Etolin wilderness area (Figures II-8G, II-10). The cairns face a long open channel (Zimovia Strait) and are located at about 3000 ft AMSL. The shape and





Figure II-10. Two of the three cairns discovered at Unrecorded Site #1, Etolin Island Cairns (photo courtesy Catherine Pohl).

construction of the cairns suggest the possibility that one or all may be of historic derivation although no associated survey markers were observed. This site has apparently not been recorded with the OHA as an inquiry in Surveys Search database failed to find a site at this location.



Figure II-11. Unrecorded site #2, Red Mountain cairns #1 (top) and #2.

Unrecorded Site #2, Red Mountain Cairns - This site is located 4.2 km almost due west of the Bessie cairns (Figure II-8E, II-11). Three cairns were observed and photographed by Forest Service personnel but apparently have not been recorded with the Alaska OHA. They occur at approximately 2800 ft AMSL on a very narrow northwest trending ridge 1.8 km northeast of Red Mountain's peak. Photographs suggest at least three cairns of various (unknown) sizes and shapes. The site overlooks the Stikine Strait to the northwest.

### *Kuiu Island*

XPA A-1, Mt. McArthur Cairn - This is apparently a temporary number assigned to the site by the Forest Service as neither the site nor the survey report has been officially recorded with the OHA. Mt. McArthur Cairn was first identified on August 13, 2007, and recorded by the Forest Service on Oct. 28, 2010. It is located at the end of an extensive ridge extending southwest from the peak of Mt. McArthur (Figures II-8I, II-12)

approximately 500 ft south of the Mt. McArthur Communication Site. This is a very low feature lying on a granitic outcrop constructed of weathered granitic rocks covered with

lichen growth. The cairn is located at approximately 1620 ft AMSL and overlooks Howard Cove and the southern mouth of Chatham Strait. Coronation Island is clearly visible to the south.

### *Mitkof Island*

PET-00584, Crystal Mountain Cairns - The Crystal Mountain cairns were first noted during a visit to that peak on September 17, 2007, for the purpose of archaeological inventorying a construction site for an A P & T Telecommunications Group antenna in the South Etolin Wilderness (USDA Forest Service 2007a, 2007b, 2010). They were recorded during July 8, 2009,

revisit by Paul Rushmore of Paleo Logics, an archaeological contractor, and Jane Smith, an archaeologist with the Petersburg and Wrangell Districts of the Tongass Forest. The cairns are situated at the south end of Mitkof Island (Figures II-8D, 8) below the now-constructed antenna on a ridgeline that trends northeast from the summit of Crystal Mountain, the highest peak on the island. The site consists of nine cairns located below and northeast of the Crystal Mountain summit, the highest about 250 ft below the peak at approximately 3,050 ft AMSL and the lowest at about 2,700 ft AMSL. The distance between the highest cairn and the lowest is approximately 300 m. All cairns lie on bedrock. Cairns 1 through 7 (including Cairns 4a and 4b) form a line down the center of the ridge with Cairn 1 at the highest elevation and Cairn 7 at the lowest. Cairn 8 is located 26 m east of Cairn 1. The features range in size from Cairn 2, the largest at 1.4 m x 2.6 m x 0.5 m high, to the smallest, Cairn 7 at 0.8 m x 0.9 m x 0.15 m high and with only about 8 rocks noticeable. Two of the features (Cairns



Figure II-12. XPA A-1, Mt. McArthur Cairn.



Figure II-13. PET-00584, Crystal Mountain Cairns 2 and 6 (photos courtesy Forest Service Archeologist Jane Smith).



4a and 8) appear to be at least partially disassembled with a “new” cairn (4a) constructed next to the scattered Cairn 4b. The cairns overlook Crystal Lake with Summer Strait visible to the south and Blind Slough, an inlet off Summer Strait, visible to the southeast. The surveyors believed the cairns to be potentially part of a more extensive linear feature of which only a portion have been recorded. There were no artifacts associated with any of the cairns.



Figure II-14. Two views (left = south, right = east) of the “Lovelace Creek” cairn on South Kupreanof Island (photos courtesy of Forest Service Ecologist Karen Dillman).

### *Kupreanof Island*

Lovelace Creek Cairns - An unrecorded cairn site reported to Hunt is located above a scree slope just north of Lovelace Creek on the south end of Kupreanof Island at 1835 ft AMSL (Figures II-8J, II-14). The area is free of rocks and the cairn to be densely covered with lichen suggesting that the structure was quite old. No dimensions are available for the cairn.

### *Mainland Cairns*

XBC-00043 - This unnamed site (Figure II-8H) was identified by Forest Service Archaeologists C. Hanks, W. M. McCallum, and P. Rushmore in 1998 (Hanks et al. 1998). It consists of three cairns located on a high mountain peak along the western perimeter of Hoya Creek valley at an elevation of about 3600 ft AMSL. According to the site card, the rock features are located on bare, bedrock knolls and form a straight line oriented generally northwest by southeast. The western-most cairn (feature 1) was intact while features 2 and 3 appeared to have been dismantled. The intact cairn was built in the form of a beehive, approximately 1.5 m in diameter and 90 cm high, and contains approximately 30 to 40 rocks (cobble and boulder-sized). The other two cairns contained up to 30 rocks each. The

surveyors noted that all of the cairns were highly weathered with surface pitting and lichen growth suggesting considerable antiquity. Nothing was found in, or associated with, any of the cairns to suggest their purpose. The site overlooks the Bradford Canal located 6.8 km to the north and immediately overlooks Hoya Creek to the east.

XBC-00067 - The Elbow Rock Cairns (Figure II-7C) was recorded by Jane Smith on June 4, 2010, as a part of the WRD Radio Communications Site Upgrades Project (AHRS Record #15966225; personal communication from Forest Service Archeologist Jayne Smith, 11/3/2010, to Hunt). The site consists of two cairns on the mainland approximately 40 km northeast of Wrangell near the United States/Canada border. The features occur on the 3900 ft peak of an unnamed mountain located about 390 m WSW from the border monument on Elbow Mountain. This is 35 km from salt water. The site commands a view of the Stikine River and a broad swath of the river valley. A Forest Service radio repeater site is located several hundred feet below and 150 m southwest of the cairns. The cairns are 5.25 m apart with Cairn 1 being intact and Cairn 2 scattered. Cairn 1 is 1.2 m NS x 1.27 m E-W x 1.02 m high. It consists of 18 granitic rocks which have flat surfaces that are positioned to form an triangular alcove that is 64 cm wide and 30 cm tall at the opening and is 77 cm deep. Cairn 2 has either fallen or been disassembled. It is represented by 27 sub-angular granitic rocks lying on a bedrock outcrop scattered across an area measuring 3.45 m N-S by 1.27 m E-W. Both cairns are heavily encrusted with lichens.

#### Thunder Mountain Cairns

This cairn site was identified by Forest Service Ecologist Karen Dillman but has yet to be recorded with Alaska OHA (Figures II-8B, 15). It is probably an historic cairn as it was found with wire wrapped around the rocks and has wood, perhaps a piece of 2X4 lumber, protruding from the top. This suggests it likely functioned as survey monument.



Figure II-15. Thunder Mountain cairn.

#### Stikine River Area

The Stikine River is important and notable in this study because it is commonly held by the Tlingit tribes as their ancestral homeland.<sup>5</sup> This area lies predominantly within Canadian territory and site records for the Stikine drainage were not reviewed for this report. Nevertheless, an abundance of alpine cairns were reported shortly after World War II as a commonly encountered feature on the lower Stikine by geologist F.A. Kerr (1948) as he surveyed west-central British Columbia. He noted that cairn sites occurred on both sides of the Stikine from the international border northward to the mouth of the Chutine

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<sup>5</sup> For instance, see Chapter IV for the testimonies of George Jim Sr. J.B. Fawcett, Tom Ukas, Billy Johnson and others as well as the Flood refuge story recorded by Swanton, the moiety name “Stikine Katcadi,” and the house name Stikine Tlingit within the Kiks.ádi clan.

River (Figure II-16), a distance of about 68 miles (110 km). Furthermore, he also remarked on the dearth of such features on the Stikine River past the mouth of Chutine River, on either side of the Chutine River flowing into the Stikine from the northwest, or on either side of the Iskut River flowing into the Stikine from the southeast. Most prominently mentioned were Geology Ridge and Pereleshin Mountain where more than 20 cairns were seen. Many of the characteristics of these cairns are very similar or identical to those cairns already discussed for greater Southeast Alaska but since Kerr's report on these features is short, it may be worthwhile to quote him extensively here:

All the observed cairns were on bare rock knolls either in scrub timber or above it. All were probably near or above an elevation of 3,000 feet. None was much less than half a day's hard travel, without load, from the river. They were generally placed on some prominence and overlook the river, but are not necessarily on the highest or most prominent peak. They were noted to be more abundant on granite mountains than on others, possibly because these are as a rule more rounded and support less vegetation. In places the cairns occur in groups, fairly often three in a line. ... The larger [cairns] contain some rocks that would more than tax the strength of one man, but usually all the rocks could be carried without much difficulty. Some of the larger and well built cairns would require the labour of a man for the better part of a day.

There are two main forms, the beehive and the slender cone. The former is the more common, though usually the tops are not completely rounded, but are roughly flat. The common size is 3 to 4 feet in diameter with the same height, though specimens up to 6 feet were found. The slender cone type was found mainly on Pereleshin Mountain ... The cone has a base of about 2 feet in diameter and is 4 or 5 feet high. Great care and precision was commonly used in building these as the sides are nearly vertical. A few cairns of other types were observed, among which was one of poor construction, about 12 feet long, 4 feet wide, and 3 feet high.

Nothing was found in any of the cairns to suggest their purpose, though many were examined with care. ... All show a mature growth on the outside of the hard, brown lichen common to other exposed rocks in the area ... [a feature that] indicates a considerable age for the cairns.

Careful inquiry by an intelligent halfbreed who was born and has lived more than 50 years in the vicinity elicited no information about the cairns from even the oldest natives. Apparently they know nothing about them, nor are there any legends that offer a clue.

All the observed cairns were on bare rock knolls either in scrub timber or above it. All were probably near or above an elevation of 3,000 feet. None was much less than half a day's hard travel, without load, from the river. They were generally placed on some prominence and overlook the river, but are not necessarily on the highest or most prominent peak. They were noted to be more abundant on granite mountains than on others, possibly because these are as a rule more rounded and support less vegetation. In places the cairns occur in groups, fairly often three in a line. ... The larger [cairns] contain some rocks that would more than tax the strength of one man, but usually all the rocks could be carried



without much difficulty. Some of the larger and well built cairns would require the labour of a man for the better part of a day.

They are placed along the stretch of the river that was a border zone, a meeting place for friendly pow-wows or deadly combat between the Thlingit tribe of the coast and the Tahltans of the interior. ... The cairns are most abundant near the Scud, which is about the halfway point between the coast and the interior; and many of them command a view of the Little Canyon of the Stikine ...

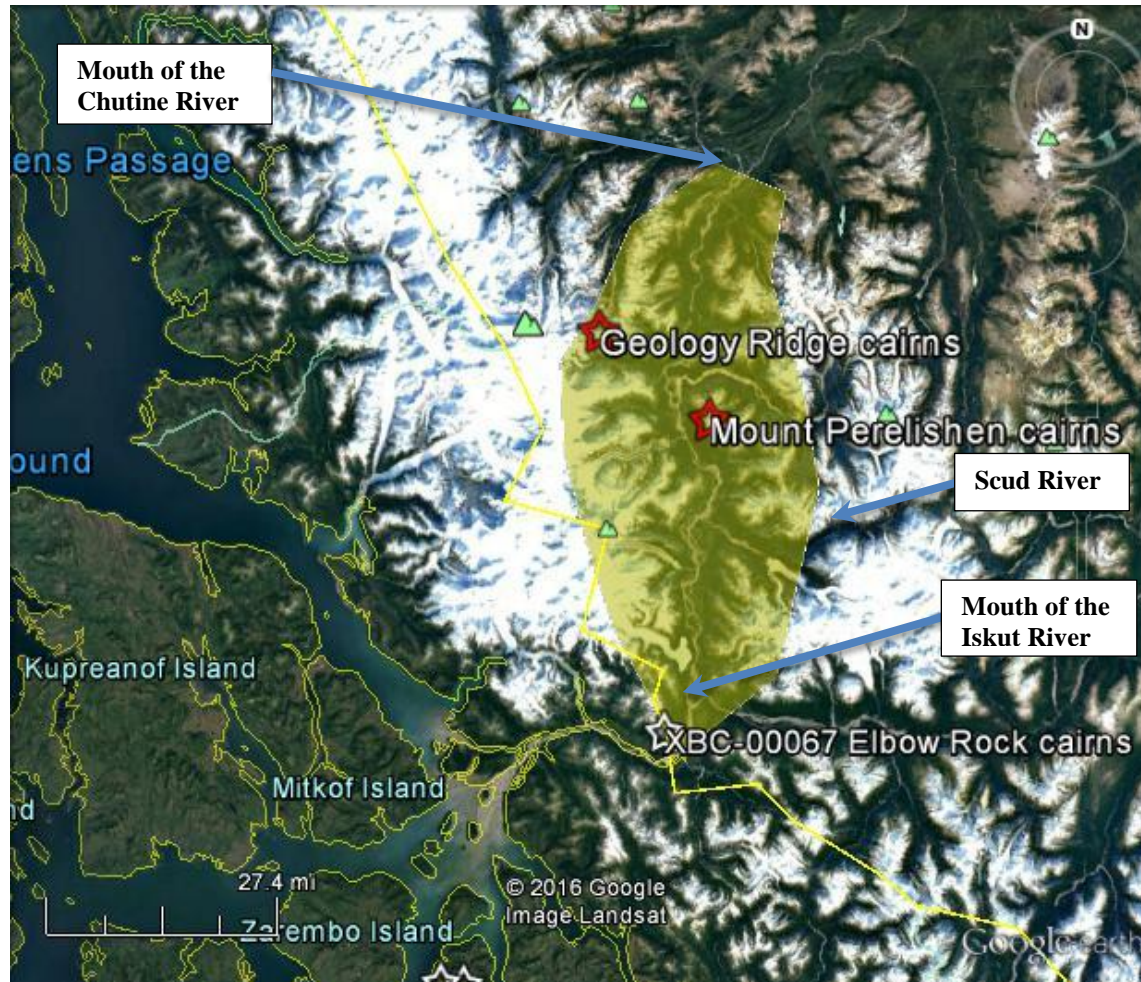


Figure II-16. Stikine River alpine cairn region (yellow) showing the approximated locations of Geology Ridge and Mount Perelishen cairn as indicated by Kerr (1948) as well as archaeologically identified Elbow Rock cairns. Yellow line is the United States-Canada International Border.

## **Research Goals and Methods**

In recognition of the beneficial approach of multidisciplinary research, four basic general themes focusing on Baranof Island alpine rock cairns were pursued through the approaches of anthropological archaeology, geography, oral history, and lichenology – location, function, temporal association, and socio-cultural association. From within these themes a series of specific questions were asked:

1. Are the identified cairns spatially situated in any patterned way? And, if so, what social and/or environmental factors might account for this patterning?
2. Are the cairns contemporaneous or built at different points in time?
3. What accounts for cairn variation in size and morphology? And are alpine cairns of different form associated with one another in time and space?
4. What activities (if any) might have been pursued in proximity to the cairns and how might alpine cairns fit into the seasonal round and/or travel routes of their builders?
5. Does the mountaintop landscape reveal surface evidence of past human activities or residence other than that of cairns? If so, are cairns predictably situated relative to campsites?
6. What ethnographic or archaeologically derived cultures might be associated with the cairns?
7. Are these rock features similar in morphology, topographical context, or function to cairns documented elsewhere in the world?

In November of 2011, the principal investigators met with the Sitka Tribe of Alaska (STA), the STA's Cultural, Customary, and Traditional Committee, and the Angoon Community Association (ACA) to present an outline of the proposed research and a tentative schedule for field and post-field work. Comments, suggestions, and concerns were solicited from those attending the meetings as well as additional community members (2011 NSF support grant for Proposal 1145831 "Consultation Travel for A Multidisciplinary Pilot Study of Alpine Cairns, Southeast Alaska.").

In August of 2012, the principal investigators and the USFS Sitka District archaeologist, Jay Kinsman, conducted a field reconnaissance of the study area with the goal of assessing options for placement of a field camp that would undergo environmental impact assessment (EIS) evaluation and ARPA permit specifications (2012 NSF support grant for Proposal 1230132 "Pilot Project: A Multidisciplinary Exploratory Study of Alpine Cairns, Baranof Island, Southeast Alaska.").

In July 2013, fieldwork began with Dr. Thomas Thornton traveling to Juneau to begin his interviews with Tlingit elders. Thornton was accompanied by Peter Stegen who documented Thornton's interviews with still photography and video. More detailed information about this phase of the research is presented in Chapter IV.

The following month, the archaeological and lichenological teams began their field data collection. Accompanying the archaeologists and lichenologists were a UNAVCO mapping engineer and Polar Field Services camp manager. The camp site was located on a somewhat flat area of ground on the southwest face of Cross Peak. Archaeological was initiated with the team revisiting some of the thirteen cairns recorded during the 2007 reconnaissance (Hunt 2010). This effort provided all personnel with an acquaintance of the content and morphology of cultural features targeted for the survey.

While lichenologists McCune and Ali refined their approach to the lichenometry (see Chapter III) LiDar Engineer Okal initiated terrestrial mapping, archaeologists began a traditional pedestrian survey of the area surrounding the camp. Survey was conducted by 2-3 individuals walking the landscape spaced at 15m intervals. The topography was most efficiently examined by creating a combination of linear transects and, where optimal, sweeping concentric arcs. On the steep east and southeast side of "Cross Peak" proper, large boulders and associated erosional cavities were carefully inspected for material evidence of past human activities. Upon encountering a cairn, surveyors intensively inspected the surrounding area to determine whether artifacts or other cultural features might be nearby. Cairn features were then carefully recorded, each being assigned a sequential number beginning with 13, so as to continue a sequence but differentiate them from cairns documented in 2007 as Cairns A-M.



Figure II-17. UNAVACO engineer Marianne Okal mapping the Cross Peak survey area with TLS equipment.

For the first two weeks of field work Marianne Okal, UNAVACO mapping engineer, used terrestrial laser scanning (TLS) equipment to survey and image the terrain undergoing pedestrian survey (Figure II-17). This ground based LiDar (Light Detection and Ranging) creates sub-centimeter resolution of the topography (Figure II-18), including 3-dimensional imagery. The scanner used during this project was a Riegel VZ1000 with associated targets and GPS units. Datasets compiled with the TLS enabled highly accurate maps of the terrain to be created, exceeding in detail that of commercially available imagery.





Figure II-18. Lidar image of Cairn B (from *Cairns Uncovered* by Peter Steegen).

Dimensions of the cairns were measured (Figure II-19), with some delineation that included the exposed bedrock base upon which the cairn was constructed. Therefore, height of the cairns, when measured during this field work, varies from that of the soil surface to that of the often irregular surface of exposed bedrock. The extensive variance in morphology and topographical situation in concert with erosional processes at surrounding cairns made consistency in measuring the heights of cairns problematic. A GPS coordinate was derived for each cairn using a hand-held Trimble GeoXH 2005 (3000 Series) Handheld GPS as well as with UNAVCO's TLS technology. Documentation also included both digital and film (black and white) imagery. In addition, some cairns were photographed from above using a Canon Rebel Xsi digital camera mounted on a unipod camera mount and triggered remotely to provide a top-down view of the individual cairn and its immediate topographical situation. Cairns 1(A), 7(G), 8(H), 9(I), 12(L) and all three cairns

at 49SIT737 underwent extensive post-field digital photogrammetric documentation using PhotoScan Pro-Edition developed by Agisoft LLC (AgiSoft LLC 2014). This software allows the user to create three dimensional representations of each rock feature. This technology provided accurate measures of volume and comparable dimensions to that compiled in the field (Chodoronek 2015).



Figure II-19. Ralph Hartley (left foreground), Michael Chodoronek (left background), and Bruce McCune (right) recording a cairn in the Cross Peak investigation area.

Videography of the field project and all associated activities were conducted by NET technician Peter Stegen (Figure II-20). In addition, NET procured technicians to build a special protective enclosure and mount to house a Nikon camera, powered by both battery and solar cell units. This mechanism functioned over the course of nine months to create a time-lapse image sequence of a small portion of the mountain. The area documented by this imagery was determined by the interests of the lichenologists', the archaeologists', and the videographers' knowledge of the applicability of this particular camera and lens. Portions of this image sequence are included in the NET produced film "Cairns Uncovered."



### **2013 Cross Peak Site Data**

Oral histories told by most of the elders from several Tlingit tribes (see Chapter IV) consider alpine cairns as either monuments to the Great Flood or built by people who experienced the Great Flood. A few interviewees suggested the cairns were built as an element of shamanistic activities on the mountains but none of the elders reported cairn construction in the modern era.

Figure II-20. Project photographer and videographer Peter Stegen documented all aspects of the project.

#### SIT-000737

This site is composed of three cairns (Table II-1) overlooking the intersection of Peril Strait and Hoonah Sound. It was originally recorded as a single cairn by Jeremy Karchut in 2006, at that time the Archeologist for the Tongass NF Sitka Ranger District. He described the cairn as established on bedrock and located on a narrow bench or cliff about 275 WSW of the top of Cross Peak and at an elevation of 2467 ft (752 m). His detailed map of the site suggests the size of the cairn is about 1 m north-south by about 80 cm east-west. His documentary photo suggests the cairn is 90 cm high. Although the site form does not indicate this, Karchut's inventory was in anticipation of the Forest Service's installation of a repeater station on top of the mountain (Karchut, personal communication 2010). This suggests his inventory had taken place as a Section 106 compliance measure to determine whether the construction would affect significant cultural resources. This cairn is well below the proposed construction area and, as a result, the Forest Service approved tower installation and it was built in the summer of 2014. (U.S. Coast Guard 2016). Referred to as a Remote Fixed Facility (RFF), the complex includes towers, electronic shelters, power generators and shelters, helicopter pads, and propane tanks (U.S. Coast Guard 2013). More on this construction will be discussed later in this chapter.

In 2013, the location was resurveyed by the Alpine Cairn Pilot Project team. This fieldwork identified two additional cairns (field designation Cairns 40A and 40B) about 60 m north of the feature identified by Karchut (re-documented and field designated Cairn 39). These two new cairns are about 5 m apart and located on the same narrow bench as Cairn 39 (Figure II-21). Cairn 40A is 2.2 m long and 1.8 m wide. Cairn 40B, located northwest of 40A is 2.2 m long and 1.8 m wide. All three cairns are reached by traveling across a steep scree field. Cairn 39 was measured as 2.7 m long and 1.4 m wide. It is located about 305 m SW of a brass benchmark (CRO 1952) originally installed on the peak of the mountain in 1928 by the Coast And Geodetic Survey and relocated by the National Geodetic Survey in July 1986 (National Geodetic Survey 2015). Cairns 40A and 40B are located about 300 m WSW of that same datum. All three cairns are covered in moss and lichens.

Table II-1. Data table for cairns included in site SIT-000737 (heights not recorded).

Field #	Previous Site #	Elev. (m)	Length(m)	Width (m)	Comment
39	SIT737	750	2.7	1.4	Revisited 2013.
40A	NA	760	1.8	2.2	Recorded 2013.
40B	NA	760	2.4	1.3	Recorded 2013.

### SIT-000773

This site was originally recorded during the 2007 inventory on Cross Peak (Figure II-21). Although close to the western margins of SIT-000774, the two cairns here were maintained as a separate site at the request of the AHRs Coordinator. Based on their sizes and forms, the two cairns were interpreted in 2007 by Hunt (2010) as a possible hunting blind (Cairn 12 (L)) and a possible meat cache (Cairn 13 (M)). The site location was documented in 2013 (Table II-2) but no additional information was recorded for these features. Peril Strait and Hoonah Sound are visible from both cairns.

Table II-2. Data table for cairns included in site SIT-000773.

Field #	Previous Site #	Elev. (m)	Length (m)	Width (m)	Height (m)	Comment
12 (L)	SIT773	620	1.7	1.2	0.8	Recorded 2007. One of a pair of cairns down slope from LZ. Revisited 2013.
13 (M)	SIT773	619	2.7	2.9	0.7	Recorded 2007. One of a pair of cairns down slope from LZ. Revisited 2013.

### SIT-000774

This is a collection of 34 cairns of various size on the southern portion of a mountain informally known in the area as Cross Peak (Figure II-21; Table II-3). SIT-00774 incorporates sites previously recorded as SIT-00768, 769, 770, 771, and 772 during the preliminary inventory in 2007 (see Hunt 2010). The cairns sit on elevated points of rock, either pinnacles or ledges, on the steep northwesterly slope at the western end of the



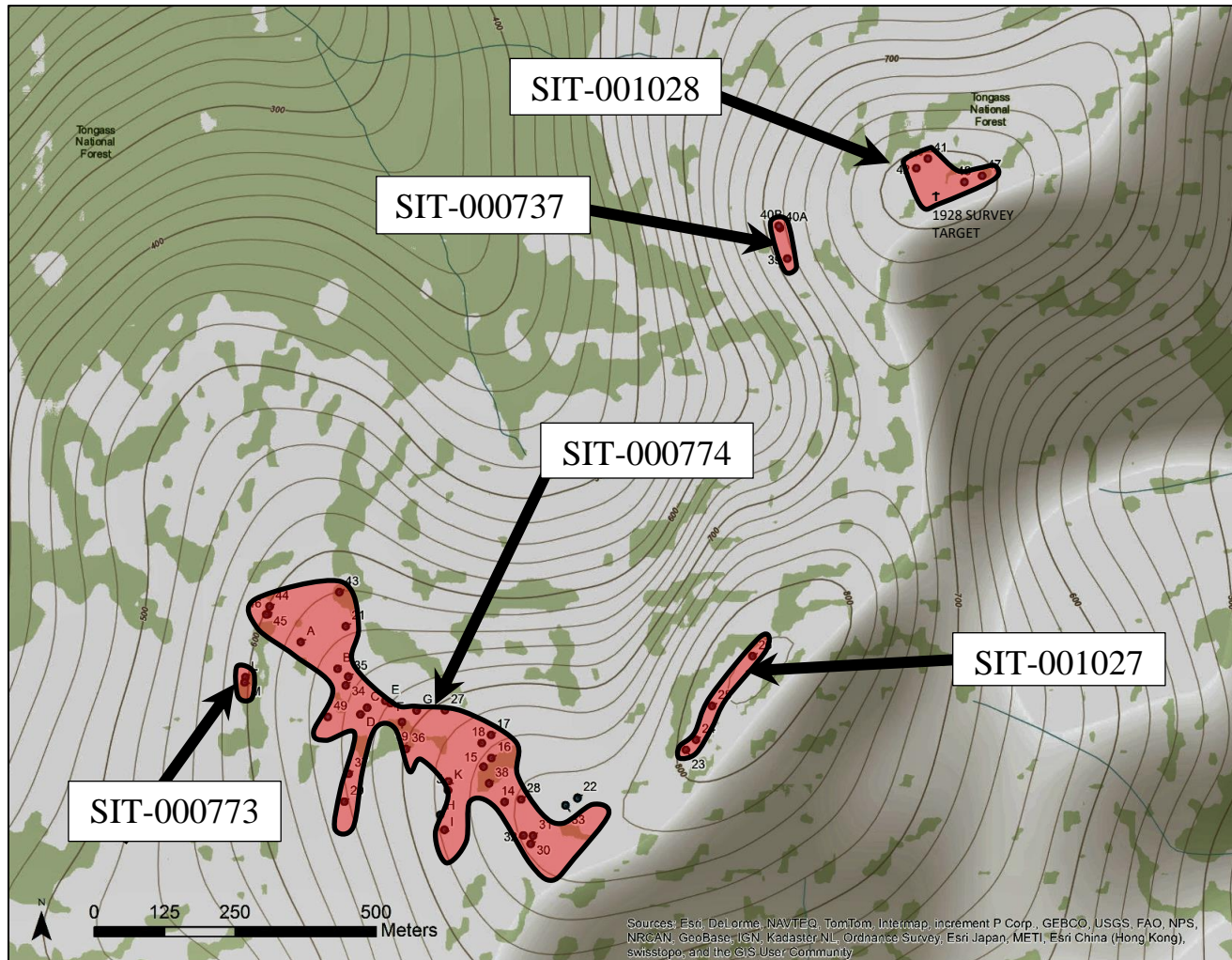


Figure II-21. Cairn numbers and sites recorded in the 2013 inventory.

Table II-3. Cairns included in site SIT-000774 (field numbers with numeral and alphabetic listing were recorded in 2007. Those with numerals only were recorded in 2013).

Field #	Former Site #	Elev. (m)	Length(m)	Width(m)	Height(m)	Comment
01 (A)	SIT768	650	3.3	2.7	0.8	Recorded 2007. Revisited 2013.
02 (B)	SIT769	674	2.0	1.4	0.8	Recorded 2007. Revisited 2013 & recorded as Cairn 20.
03 (C)	SIT770	702	2.7	2.1	0.7	Recorded 2007. Revisited 2013.
04 (D)	SIT770	697	2.6	1.3	1.0	Recorded 2007. Revisited 2013.
05 (E)	SIT770	709	3.1	2.7	---	Recorded 2007. Height not measured. Revisited 2013.
06 (F)	SIT770	715	2.1	1.5	0.8	Recorded 2007. Revisited 2013.
07 (G)	SIT770	725	3.0	2.9	0.9	Recorded 2007. Revisited 2013.
08 (H)	SIT771	749	4.0	3.6	1.4	Recorded 2007. U-shaped cairn in line with three other cairns (9, 10, 11) at margin of steep slope. Revisited 2013.
09 (I)	SIT771	750	2.1	1.5	0.8	Recorded 2007. In line with three other cairns (8, 10, 11) at margin of steep slope. Revisited 2013.
10 (J)	SIT772	750	1.3	1.2	0.4	Recorded 2007. Rectangular cairn in line with three other cairns (8, 9, 11) at margin of steep slope. Revisited 2013.
11 (K)	SIT772	750	1.6	1.3	0.8	Recorded 2007. In line with three other cairns (8, 9, 10) at margin of steep slope. Revisited 2013.
14	NA	774	2.2	2.5	.8	Recorded 2013.
15	NA	763	2.3	2.7	---	Recorded 2013. Height not measured.
16	NA	771	3.2	3.0	---	Recorded 2013. Height not measured.
17	NA	763	2.0	1.6	---	Recorded 2013. Height not measured.
18	NA	757	2.3	2.6	---	Recorded 2013. Height not measured.
19	NA	708	1.6	1.4	---	Recorded 2013. Height not measured.
21	NA	644	3.5	3.3	---	Recorded 2013. Height not measured.
22	NA	786	5.2	2.9	---	Recorded 2013. Height not measured.
27	NA	735	1.3	1.5	1.1	Recorded 2013.
28	NA	780	2.7	2.5	---	Recorded 2013. Height not measured.
30	NA	774	1.2	1.3	---	Recorded 2013. Height not measured.
31	NA	774	2.3	2.6	---	Recorded 2013. Height not measured.
32	NA	774	1.7	2.0	---	Recorded 2013. Height not measured.
33	NA	786	2.8	1.9	---	Recorded 2013. Height not measured.
34	NA	675	1.8	1.3	---	Recorded 2013. Height not measured.
35	NA	669	1.4	1.2	---	Recorded 2013. Height not measured.
36	NA	711	1.7	3.0	---	Recorded 2013. Height not measured.
38	NA	775	0.9	1.1	---	Recorded 2013. Height not measured.
43	NA	626	1.9	1.1	---	Recorded 2013. Height not measured.
44	NA	614	1.9	1.2	---	Recorded 2013. Height not measured.
45	NA	614	1.8	2.0	---	Recorded 2013. Height not measured.
46	NA	614	1.8	1.5	---	Recorded 2013. Height not measured.
49	NA	661	1.0	0.5	0.7	Recorded 2013. Height not measured.

mountain. Peril Strait and Hoonah Sound can be easily seen from every cairn. The lowest cairns are just above 1800 ft (549 m) AMSL while the highest are at about 2550 ft (777 m) AMSL. The site is located on a fairly steep west-facing slope with many outcrops and alpine tundra vegetation (low shrubs, mosses, sedges, and lichens). A deep, nearly vertical-sided cirque lies immediately north of the feature clusters. The base of the site is marked by a high ledge below which the forested area begins. A very shallow drainage runs downslope through the lower half of the site. A scree field borders the lower portions of the site on the south side.

#### SIT-001027

This site is composed of four cairns located at the head margin of a deep glacial cirque (Figure II-21) and is more-or-less in alignment from southwest (Cairn #23) to northeast (Cairn #26). Cairn #23 is 3.3 m long X 1.8 m wide x 1.3 m high. Cairn #24 is 2.2 m long x 2.0 m wide. Cairn #25 is 3.3 m long x 2.9 m wide. Cairn #26 is 3.2 m long x 2.3 m high. Heights were not measured for Cairns #24-26.

#### SIT – 001028

This is a group of four cairns of various size at the very edges of the highest point of Cross Peak Mountain (Figures II-21, II-22). Cairns are located on the rim of the highest portion of the mountain. This location is composed of solid bedrock with large areas of tundra vegetation. Two cairns (field #41, #42) are located on the northwest side of the peak. Cairn #41 is about 47 m northwest of a brass Coast and Geodetic Survey (C&GS) datum and about 20 m northeast of a Coast Guard datum located between Cairns #41 and #42. The other two cairns (field #47, 48) are on the east side of the peak. Peril Strait and Hoonah Sound can be easily seen from every cairn. Elevations range from 803 m (2,634 ft) to 846 m (2,775 ft) AMSL. The features vary in size from 1.7 m long x 1.3 m wide (field #47) to 3.0 m long x 2.8 m wide (field #42). This site also contains an historic wooden survey target (Figure II-20) apparently dating from the establishment of a brass datum in 1928 by the Coast and Geodetic Survey. It is located about 9 m northwest of the C&GS datum. This cross-shaped target was originally 2.44 m (8 ft) high according to the datum sheet description and is likely the source of the mountain's name. A few historic objects on the mountain top (battery core, bottle glass) are likely derived from the 1928 survey team's activities.

C&GS records indicated there was a fifth prehistoric cairn at the 1928 datum location (National Geodetic Survey 2015). The CG&S 1928 describes it as "A ROCK CAIRN 2-1/2 FEET HIGH WAS TORN DOWN AND THE STATION PUT AT THE POINT OVER WHICH THE CAIRN STOOD." The wooden target that had been raised over the 1928 datum lies west of the rocks in which the datum is set. The target now lies on the ground in pieces and is painted in alternating bands of black and white. The wires used to hold it in place above the brass datum were still in place at the time of this inventory. In addition to the original C&GS marker, another datum is located between cairns on the west side of the peak between cairns field #41 and #42. This datum is marked "Coast Guard survey





Figure II-22. Four of SIT-01028 features: top left = Cairn 41 (view to NW); top right = Cairn 47 heavily encrusted and almost buried by a dense growth of lichens & mosses (view to N); lower left = Cairn 42 (view to SW); lower right = historic 1928 survey target (originally cross-shaped) that gave the mountain its informal name (view to SW).

point 2007-LS10161.” This cross-shaped target probably gave rise to the informal name of the mountain as Cross Peak or Cross Mountain while it was still standing.

Some or all of the site features have likely been damaged or destroyed by construction of an U.S. Coast Guard Remote Fixed Facility (RFF) radio repeater tower in 2014. A Freedom of Information Act request to the U.S. Coast Guard provided some information on the construction camp plan and the resulting facility features (Figure II-23). It is unfortunate that a compliance inventory for the RFF conducted by the Archeologist for the Tongass NF Sitka Ranger District missed the four cairns in this site. Consequently, the Forest Service approved installation of the complex. The resulting as built plan conforms to facilities shown on the camp plan (U.S. Coast Guard 2014).

The Duffield RFF was built on top of the west and northwest sides of SIT – 001028 in the summer of 2014 (U.S. Coast Guard 2016). The installation (Figure II-24) is large and complex facility that includes a tower, electronic shelters, power generator and shelter, a helicopter pad, propane tanks (U.S. Coast Guard 2013). Comparing the footprint of the

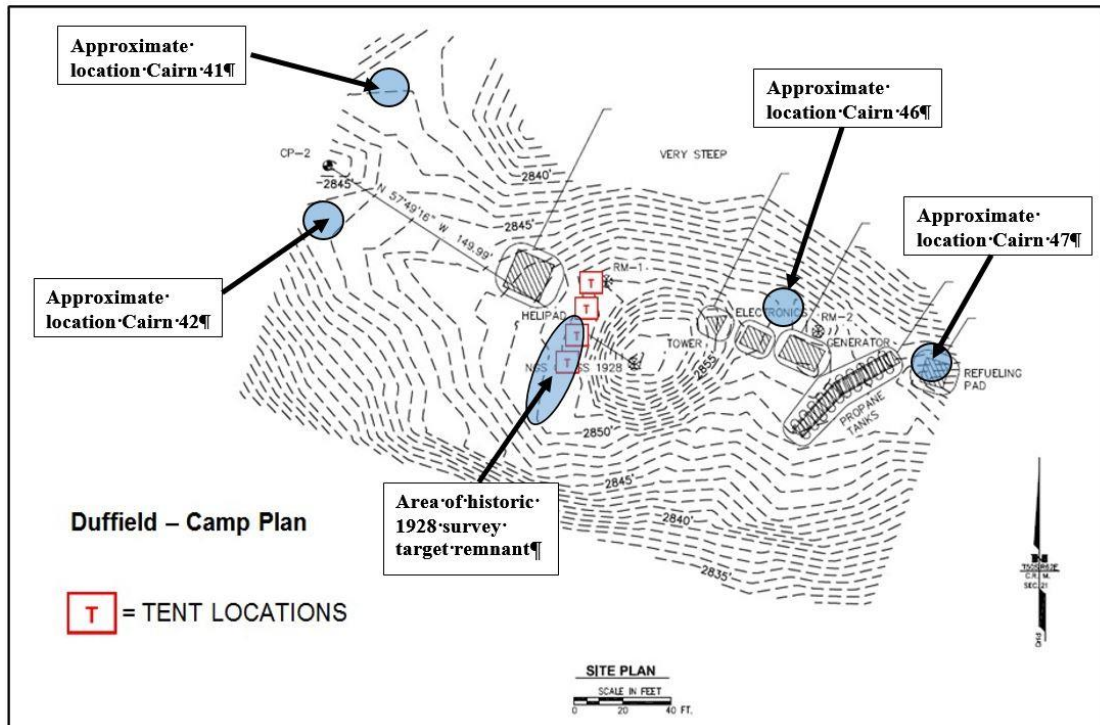


Figure II-23. Cultural resources at SIT – 001028 overlaid on the construction company camp plan for lodging construction workforce and the intended placement of RFF structures (Perini Management Services, Inc. 2013).



Figure II-24. The nearly completed Duffield Remote Fixed Facility (RFF) under construction at SIT – 001028. This photo does not show the large helipad constructed about 60 ft WNW of the radio tower (beyond the left margin of the photo) or the refueling pad just east of the propane tanks (at or beyond the right margin of the photo).



facility with the known positions of site features, it is certain that the historic 1928 survey target was destroyed by the construction laborers camp and associated foot traffic (see Figure II-22). Also, it is virtually certain that Cairns 46 and 47 were damaged or destroyed. Of the four cairns on Cross Peak proper, Cairn 47 is possibly the most ancient cairn in any of the five sites on Cross Peak Mountain and was located at or between the northerly end of the propane tanks and the refueling pad. Team lichenologists estimated that the feature may be 2000 or more years old judging by the mass of lichen and moss that had grown on the cairn and almost totally obscured it. The actual extent of the damage to SIT – 001028 can only be determined through a re-survey of the site.

### Cairn Testing and Dating at Cross Peak

At the end of the survey on Cross Mountain, four large cairns were selected for further investigation (Figure II-24); i.e., very limited tests of cairns carried out after 2012 consultation with the Angoon Community Association and the Sitka Tribe of Alaska's Cultural Customary and Traditional Committee. The latter group emphasized the importance of the cairns to the Sitka people and considered by them to be sacred sites. The cairns selected for testing were those that had been identified by Dr. Bruce McCune as the oldest in the main site (SIT – 00774) based upon successional lichenometry; e.g., Cairns 1(A), 3(C), 5(E), and 7(G).

The goals of this limited investigation were

1. To collect organic material suitable for radiocarbon dating from within or immediately under the cairns.
2. To determine whether cultural features occurred within or underneath the cairns that could provide clues as to their function(s).
3. To recover any artifacts or other materials within or under the cairns that could provide clues as to the function(s) and age of the cairns.

In many ways, this “deconstruction” of cairns was experimental. The “prime directive” here was to gather the information we sought with the least amount of damage. Therefore, excavation methodology varied from one cairn to the next based upon what was learned at the previous cairn. The universal procedure in each excavation was to place the removed rocks in a pile near the cairn, often on a drop cloth separating the stones from others at that location. Upon completion of the partial excavation of the cairn, stones were replaced and the cairn returned as closely as possible to its pre-excavation state. (Figure II-25).

Cairn 5(E) was the first to be examined. The investigative method here was to remove rocks from the surface of the cairn to the ground and to do so within a narrow 50 cm wide trench on the north-central side of the cairn. Unfortunately, the way rocks stack together in a pile is such that the trench either widens or narrows with depth. By the time the excavator



Figure II-25. Selected cairns were partially dismantled (top left), carefully placing the stones on a tarp (top right). The excavated portion was then photographed (center left) and a soil sample was taken from just below the stones for radiocarbon dating (center right). The cairn stones were replaced after each investigation approximating the cairn's original configuration (bottom image).

had removed as many rocks as would get him to a depth of 50 cm (measured from the crown of the cairn) the trench had narrowed to 30 cm or less. The excavator continued, however, until he had reached the ground surface and collected two soil samples for radiocarbon dating, the result of which would effectively provide a date after which the cairn was built. For example, if the returned date was 500±50 BP, the cairn must have been built sometime after AD 1400 and 1500. BP is defined as "before present", referring to the reference date of 1950.

As this pilot project was funded by the NSF, researchers were eligible to submit samples for AMS radiocarbon dating to the National Ocean Sciences Accelerator Mass Spectrometry Facility (NOSAMS) at Woods Hole, Massachusetts (Woods Hole Oceanographic Institution 2016). The dates returned by NOSAMS were then calibrated using Calib 7.1 (Stuiver and Reimer 2016; see Table II-4 below). No artifacts or other cultural material were encountered within the trench. No features were observed and it is unlikely they would have been seen in the dark and narrow confines of the trench if they had existed. Three soil samples were collected from 1.10 m, 1.15 m, and 1.18 m below the crown of the cairn.

The most likely date for age of the surface of the soil immediately below cairn 5(E) is from Sample #1 since it was acquired at the upper surface of the soil. When this date is calibrated within the one sigma (1 $\Sigma$ ) range, the most likely date is AD 1347-1392 with a 63% RAUPD (Relative Area Under the Probability Distribution). For simplicity, by simply looking at the median probability date, we could say that Cairn 5(E) was most likely constructed after AD 1348.

Table II-4. Radiocarbon dates for three soil samples from Cairn 5(E), calibrated dates, and median probability dates.

Sample #	Lab #	BP Age	Age Error	1 $\Sigma$ Date	RAUPD*	2 $\Sigma$ Date	RAUPD*	Median Probability Date
1	OS-110655	625	±40	AD 1296- 1322	0.370	AD 1287-1403	1.000	AD 1348
				AD 1347- 1392	0.630			
2	OS-110656	1,370	±25	AD 647- 666	1.000	AD 624-681	1.000	AD 655
3	OS-110657	3,200	±30	BC 1498-1444	1.000	BC 1521-1417	1.000	BC 1471

\* Relative area under probability distribution.

Next to be investigated was Cairn 7(G). In order to better visualize any feature that might exist below the cairn, a larger portion of the cairn was excavated. In this case, stones were removed from the northwest quadrant. No features were encountered and no cultural material occurred within or under the quadrant excavated. Again, three soil samples were collected from below the cairn; e.g., Samples #1-2 were collected from the upper surface

of a well-developed A soil horizon at 1.0 m and 1.03 m below the crown of the cairn, while Sample #3 was collected from the A/B subsoil below at 1.15 m. Again, with completion of the cairn's partial excavation, its stones were replaced and the cairn returned as closely as possible to its pre-excavation state.

The dates (Table II-5) are a bit out of order but those from Samples #1-2 are the most relevant here and since #2 provides the latest dates, one might conclude that Cairn 7(G) was likely built sometime after AD 396 but could have been built after AD 535. The median probability date allow a simplification of this date range somewhat in that it suggests that Cairn 7(G) was most likely constructed sometime after AD 461.

Table II-5. Radiocarbon dates for three soil samples from Cairn 7(G), calibrated dates, and median probability dates.

Sample #	Lab #	BP Age	Age Error (±)	1Σ Date	RAUPD*	2Σ Date	RAUPD*	Median Probability Date
1	OS-110658	1610	20	AD 405-430	0.495	AD 396-439	0.433	AD 461
				AD 492-513	0.319	AD 442-474	0.120	
				AD 516-529	0.186	AD 485-535	0.446	
2	OS-110659	1100	20	AD 900-922	0.421	AD 893-989	1.000	AD 946
				AD 949-980	0.579			
3	OS-110660	2410	30	BC 516-408	1.000	BC 737-688	0.114	BC 483
						BC 663-647	0.029	
						BC 548-401	0.856	

\* Relative area under probability distribution.

The same method used for partial excavation of Cairn 7(G) was also utilized for the investigation of Cairn 1(A) with removal of stones from the southeast quadrant. No features or cultural materials were identified in or under the portion of the cairn excavated. Only one soil sample was taken here and submitted for AMS dating. The returned date for sample OS-110652 was >Modern suggesting that the base of the cairn was not likely reached. A review of photographs made during the cairn's excavation confirmed that this is indeed the case.

Cairn 3(C) was the last to be investigated and this was accomplished by removal of stones from the east half of the feature. As the rocks were being removed from the northeast quadrant, a small scapula was recovered fairly near the surface of the cairn. Analysis of this faunal element and another recovered in 2007 from SIT-00773 Cairn 12(L) was

undertaken by Dr. Diane Hanson, Associate Professor, Anthropology Department, at the University of Alaska-Anchorage. Dr. Hanson indicated that this and the bone from SIT-00773 were Sitka deer and appeared to be of modern derivation (personal communication to Hunt 2014). Radiocarbon analysis of samples from both bones confirmed her estimate of age. An epithelial plate from a small deer was also recovered on bedrock at the base of the cairn. This specimen was not dated. Under the northern three-quarters of the cairn and lying directly on the bedrock was a fine black soil about 5 cm in thickness. Two soil samples were collected and later submitted for ASM radiocarbon analysis.

The radiocarbon dates (Table II-6) suggest that soil formation at this location took place relatively recently; e.g., around 500 years ago. Cairn 3(C) must have been constructed sometime after AD 1453 at the earliest and AD 1634 at the latest. Again, the median probability date suggests that the cairn was built sometime after AD 1508.

Table II-6. Radiocarbon dates for two soil samples from Cairn 3(C), calibrated dates, and median probability dates.

Sample #	Lab #	BP Age	Age Error (±)	1Σ Date	RAUPD*	2Σ Date	RAUPD*	Median Probability Date
1	OS-110653	375	30	AD 1453- 1515	0.750	AD 1446-1526	0.609	AD 1508
				AD 1597- 1617	0.250	AD 1556-1632	0.391	
2	OS-110654	335	35	AD 1491- 1528	0.331	AD 1469-1642	1.000	AD 1558
				AD 1551- 1603	0.469			
				AD 1611- 1634	0.2000			

\* Relative area under probability distribution.

In sum, the radiocarbon dating of soils from below the tested cairns suggests they were constructed during the past two millennia with cairn building possibly taking place as early as the 5<sup>th</sup> to 6<sup>th</sup> centuries (Cairn 7(G)). More cairns, however, may have been assembled during the last millennium; i.e. after the late 12<sup>th</sup> to 13<sup>th</sup> centuries (Cairn 5(E)) and subsequent to the middle 15<sup>th</sup> to early 17<sup>th</sup> centuries.

(Cairn 3(C)). One cairn's (Cairn 1(A)) sample returned a greater than modern age probably due to the excavator not reaching the base of the cairn. This data strongly suggests that the cairns in SIT-00774 are prehistoric and may be of some considerable age. The data also suggests that cairn building activities may have a long history, and possibly associated with the terminus of the Middle Prehistoric Period and throughout the Late Prehistoric Period. This coincides with the emergence and proliferation of the Northwest Coast cultural pattern.

## Helicopter (HELO) Reconnaissance Inventory (Hoonah/Xutsnoowú Sound)

On September 8, 2014, Ralph Hartley and photographer Peter Stegen recovered a time lapse camera that had been left on Cross Peak the previous year to document the alpine climate and vegetation through the fall, winter, and spring months (Figures II-26). After collecting the camera, they used their remaining helicopter time to conduct a reconnaissance survey of Chichagof Island mountain peaks along the east and west sides of Hoonah (Xutsnoowú) Sound. Given the ruggedness of the terrain, the helicopter proved to be an efficient means to quickly locate alpine cairns with the goal of making a preliminary assessment of cairn sites prevalence in the area. Over the course of about three hour's flight time, 39 cairns were observed at 29 sites (Figures II-27, II-28). Each cairn site was photographed, usually from a variety of directions and an approximation of its position in UTM's was measured using a Trimble GPS unit.<sup>6</sup> The conclusion after this flight was that alpine cairn sites are indeed common on Chichagof Island along both sides of Hoonah (Xutsnoowú) Sound. The AHR Survey Manager has given them site numbers with the proviso that the site forms note that each cairn site has not been ground-truthed to date. These sites and relative cairn sizes are listed below in Table II-7.



Figure II-26. In 2014, photographer Peter Stegen and archaeologist Ralph Hartley recovered a time-lapse camera left on-site the previous field season.

Table II-7. List of sites observed during a helicopter-based reconnaissance inventory according to their AHR number, site and cairn field numbers, and general size.

AHR SITE #	SITE FIELD #	CAIRN FIELD #	RELATIVE CAIRN SIZE	
			LARGE	SMALL
SIT – 01031	#1	HELO 01	X	
		HELO 02	X	
SIT – 01032	#2	HELO 03	X	
SIT – 01033	#3	HELO 04	X	
SIT – 01034	#4	HELO 05	X	
SIT – 01035	#5	HELO 06	X	
SIT – 01036	#6	HELO 07	X	
SIT – 01037	#7	HELO 08	X	
SIT – 01038	#8	HELO 09	X	

<sup>6</sup> While the helicopter in each instance hovered over the cairns, the Trimble GPS unit was not consistently able to measure its most accurate position. Thus, the use of “approximate” to describe locations.

AHR SITE #	SITE FIELD #	CAIRN FIELD #	RELATIVE CAIRN SIZE	
			LARGE	SMALL
SIT – 01039	#9	HELO 10	X	
SIT – 01040	#10	HELO 11	X	
SIT – 01041	#11	HELO 12	X	
SIT – 01042	#12	HELO 13		X
		HELO 14		X
SIT – 01043	#13	HELO 15		X
		HELO 16		X
SIT - 01044	#14	HELO 17	X	
SIT – 01045	#15	HELO 18	X	
		HELO 19		X
SIT - 01046- SIT - 01047	<sup>7</sup> *	*	*	*
SIT – 01048	#17	HELO 22	X	
		HELO 23	X	
		HELO 24	X	
SIT – 01049	#18	HELO 25	X	
SIT - 01050	#19	HELO 26	X	
SIT – 01051	#20	HELO 27	X	
SIT – 01052	#21	HELO 28	X	
		HELO 29		X
SIT – 01053	#22	HELO 30	X	
SIT – 01054	#23	HELO 31	X	
SIT – 01055	#24	HELO 32	X	
SIT – 01056	#25	HELO 33	X	
SIT – 01057	#26	HELO 34	X	
		HELO 35	X	
SIT – 01058	#27	HELO 36	X	
SIT – 01059	#28	HELO 37	X	
		HELO 38	X	
SIT – 01060	#29	HELO 39	X	
		HELO 40		X
SIT - 01061	#30	HELO 41	X	

<sup>7</sup>\* After submitting the site card for 1406 the flight data were reviewed with the result that HELO Cairns 18-19 assigned to SIT-01405 and HELO Cairns 20-21 assigned to SIT-01406 were found to be the same cairns. SIT-01406 was then deleted from the AHRS database. Site SIT-01407 was assigned to another project.



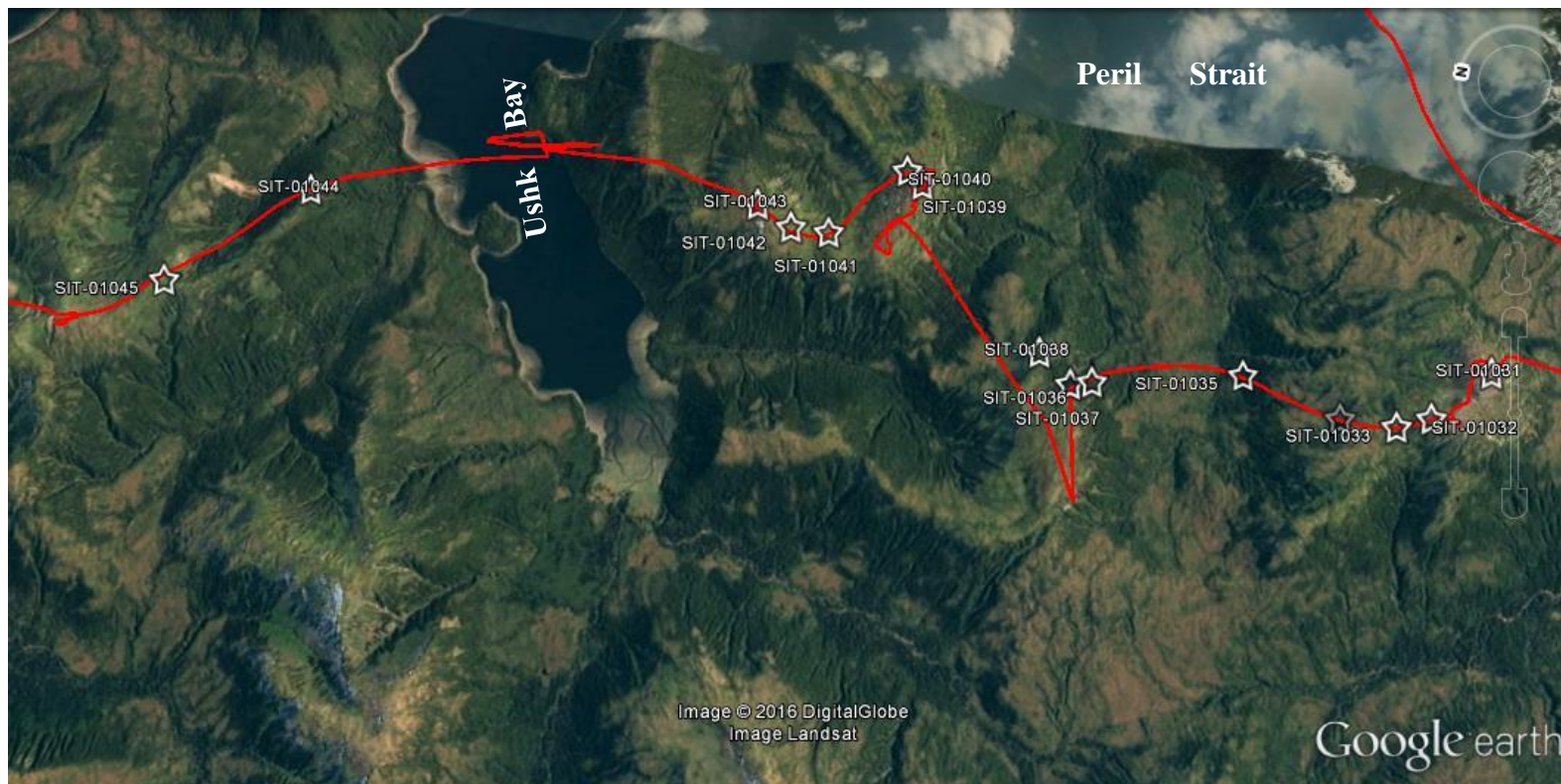


Figure II-27. Cairn sites observed on Chichigof Island on the west side of Hoonah Sound (North is to the left. The red line shows the helicopter flight path).



Figure II-28. Cairn sites observed on Chichigof Island on the east side of Hoonah Sound (North is to the left. The red line shows helicopter flight path).

### **III. LICHENOLOGY AND LICHENOMETRIC DATING:**

#### **Lichenometry and Successional Metrics for Dating Prehistoric Cairns in Southeast Alaska**

by

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#### **Introduction**

The ages, derivations, and functions of stone cairns found in the alpine regions of southeast Alaska have baffled explorers, scientists, and native peoples alike. A set of these cairns, located at Cross Peak on Baranof Island, exemplifies the problem. These mysterious structures sit above the tree line, on the edge of geologic benches, overlooking the straits between islands (see cover illustration). To date, no artifacts have been found in, near, or under the cairns. Numerous hypotheses have been made about their derivations and functions, but a convincing explanation remains obscure. Regardless of the original purpose of the cairns, anthropologists would like to know their ages, and it is possible that knowing the ages of the cairns would help to inform us about their origins.

The cairns are colonized by a diverse community of lichens, mosses, and vascular plants. As such, the degree of colonization and growth of these communities can help us to estimate the ages of these formations. The purpose of our work was to use lichens, bryophytes, and plants to estimate the ages of the cairns. We applied three general methods for this: first, traditional lichenometry, which is based on radial growth rates of crustose lichens; second, successional metrics, which are based on the successional status of the vegetation growing on the cairns; and third, radiocarbon dating from samples of organic matter collected beneath select cairns.

#### **Methods**

Lichenometry uses the size of radially growing crustose lichens as a proxy for age, calibrating the size-age relationship by sampling the largest lichens on surfaces of known age. The basic premise is that the diameter of the largest, free-growing lichen colonizing a surface is proportional to the amount of time the surface has been exposed to its environment  $t$  (Naveau et al. 2007; Webber and Andrews 1973; Matthews and Trenbith 2011). By measuring lichen diameters and surfaces of known age (i.e., buildings, bridges, gravestones, landslides), one can construct a calibrated dating curve for an area of interest (Loso and Doak 2006; Jomelli et al. 2007).

### *Lichenometry Shortcomings*

As applied to the cairns on Baranof Island, lichenometry has three shortcomings: lack calibration points, the high coverage of lichens, and initial conditions that are not bare rock. We attempt to compensate for each of these as well as possible, as described below. First, we lacked comparable surfaces of known age from which we could calibrate local growth curves. We therefore applied measured growth rates from another site in Alaska, the Kenai Peninsula. We chose this site as being climatically closest to our study area.

Our second shortcoming is that we cannot meet a standard assumption in lichenometry that the measured lichens are free to grow radially. Instead, because the rock surfaces are so thoroughly covered by lichens and bryophytes, they interact in a complex mosaic with an unknown effect on growth rate. We accommodated this in two ways. First, we searched for lichens that showed the clearest circular growth patterns on the rock, even if contacting other thalli. Second, we based our estimates on just the largest diameter of a given thallus, ignoring shorter diameters that might have been caused by reduced growth from contact with other individuals or species.

The third shortcoming is that cairns are built from rocks exposed on the surface. Thus, many of the rocks in a cairn will have pre-existing lichens, sometimes quite old, even though the cairn is new. To circumvent this problem, we constructed a cairn at Cross Peak (the “calibration cairn”), using nearby available rock, and used the condition of the lichens on this cairn to calibrate a zero-age point, rather than assuming that all the lichens on a cairn postdate the cairn construction. Furthermore, we base our age estimates not on the largest lichen on a cairn, but rather on the modal size of the largest lichens, as explained further below.

### *Lichenometry Methods*

All eight cairns sampled [9(I), 39, 1(A), 5(E), 7(G), 3(C), 25, and 8(H)] are conically shaped except for cairn 8(H). At an unknown point in time, cairn H was disassembled and split into two distinct halves. Therefore, we delineated cairn H by its two parts: “H-disturbed” and “H-undisturbed”.

We measured the major axis of each of the ten largest crustose lichens on each cairn. The species most typically used in lichenometry is actually a group of species rarely differentiated in lichenometry, bright yellow crustose lichens (Figure III-1) in the *Rhizocarpon geographicum* group (Bradwell 2010). However, due to the vigorous growth and competition between lichens and the vegetative community, it was impossible to restrict our measurements to ten circular *Rhizocarpon* individuals. Consequently, we measured the diameters of the ten largest, subcircular crustose lichens. In the field, these included what we visually perceived as the *Rhizocarpon geographicum* group and members of *Lecidea*, in the broad sense. Upon identification in the lab, we found these





Figure III-1. Bruce McCune examining a bright yellow crustose lichen on bedrock in the Cross Peak study area.

additional species to include: *Carbonea vorticosa*, *Calvitimela armeniaca*, *Lecidea lapicida*, (all formerly considered *Lecidea*). We used these species to estimate the age of the cairns, making the assumption they exhibit similar growth rates as *Rhizocarpon alpicola*, the taxon used in the Kenai Peninsula growth curve, and a member of the *R. geographicum* group.

We used the modal size of the largest lichens, rather than the very largest lichen on a cairn, as a basis for the age estimate. This avoids the problem that the absolute largest lichen on a cairn is likely to predate the cairn; i.e., a lichen present on the cairn at the time of construction could be considerably older than the typical age of the post construction colonists. The modal age was identified as the first plateau in a ranked series of lichen sizes on an individual cairn.

### *Growth Curve Selection*

To choose the most suitable calibration curve for our study area, we assembled the five published dating curves for Alaska (Wiles et al. 2010). The growth rates represented by these curves vary tremendously, so we chose the Kenai Peninsula curve as most appropriate, based on climatic similarity. Both sites have oceanic climates with high precipitation (Table III-1; Shulski and Wendler 2007; Solomina and Calkin 2003), the strongest maritime influences occur in southeast and west coast regions Alaska. (). Second, lichens grow more rapidly in wet climates than in dry climates (Armstrong and Bradwell 2010). As such, lichens at our study site and the Kenai Peninsula most likely exhibit similar growth patterns. Growth curves constructed from other parts of Alaska came from drier, higher-elevation sites, where lichen growth is slow (Wiles 2010). These sites are the Wrangell-St. Elias Range, Alaska Range, Central Brooks Range, and the Kigluaik Mountains (Table 1).

The dating curve constructed for the Kenai Peninsula was calibrated from tree-ring dated controlled surfaces using the largest-lichen technique (Wiles et al. 2010; Solomina and Calkin 2003; Wiles and Calkin 1994). The equation used to estimate the age of the cairns (years) is as follows:

$$A = 43.95(10^{0.00817D}), \text{ where } D \text{ is lichen diameter (mm)}$$

Table III-2. Location and meteorological data for our study site (Cross Peak) and the published lichenometry sites across Alaska: Kenai Peninsula, Wrangell-St. Elias Range, Alaska Range, Central Brooks Range, and the Kigluaik Mountains.

Region	Latitude N	Longitude W	Average July Maximum (°C)	Average January Minimum (°C)	Mean Annual Precipitation (mm)	Average Annual Snowfall (cm)	Reference
Cross Peak	57° 30'	135° 28'	15	-6	2921	101	ClimateW NA
Kenai Peninsula	60° 60'	149° 20'	14	-15	1690	155	Wiles and Calkin 1994; Wiles et al. 2010
Wrangell- St. Elias Range	62° 58'	141° 56'	21	-25	279	145	Wiles et al. 2010
Alaska Range	62° 10'	145° 27'	20	-22	381	206	Wiles et al. 2010
Central Brooks Range	67° 25'	150° 06'	22	-28	365	224	Wiles et al. 2010
Kigluaik Mountains	65° 01'	165° 20'	14	-19	432	173	Wiles et al. 2010

### *Successional Metrics*

We introduce a new method of dating where the relative age of a surface is inferred as a function of attributes of the plant community mosaic (including species diversity, amount of bare rock, percent cover of primary, secondary, and tertiary colonists) and of overgrowth of rock contact points by single individuals (Figures III-2, III-3). The successional status of vegetation on each cairn will help thus us to infer the age of these structures.

For instance, consider a newly built cairn. Initial colonization of vegetation occurs by the encroachment of crustose lichens (primary colonists; Figures III-2 and III-3). In time, these primary colonists are overgrown by other lichens and bryophytes (secondary colonists). As more time passes, secondary colonists are overgrown by moss mats, turfs, and vascular plants (tertiary colonists). Contact points between adjacent rocks are overgrown by single individuals.

We divided each cairn, including the calibration cairn, into four roughly equal-sized pie-shaped sectors. Within each sector, we recorded percent cover of lichen, bryophyte, and vascular plant species using three 20 x 50 cm quadrats (Figure III-4), for a total of 12 quadrats per cairn.



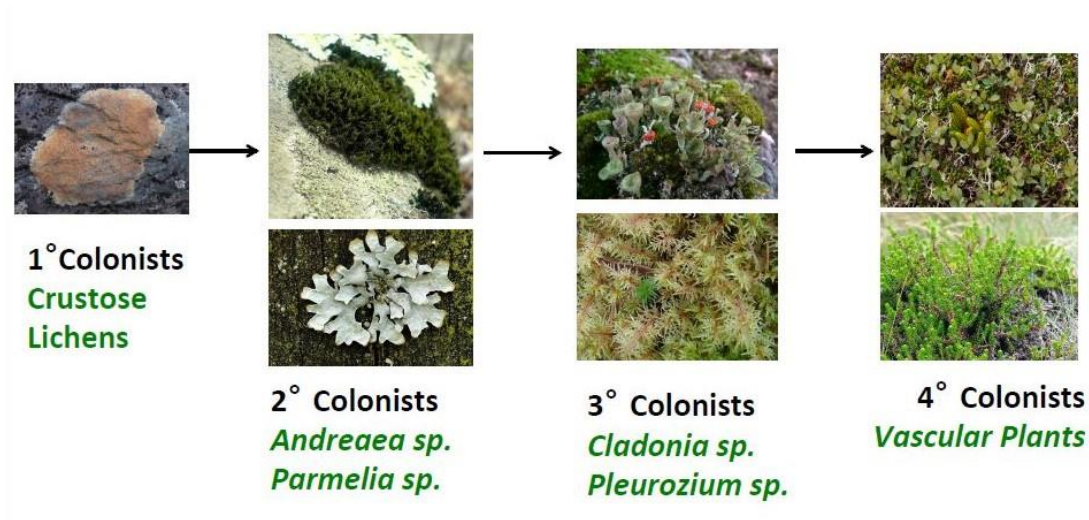


Figure III-2. Ecological succession is an orderly process of community development that is reasonably directional and therefore predictable.

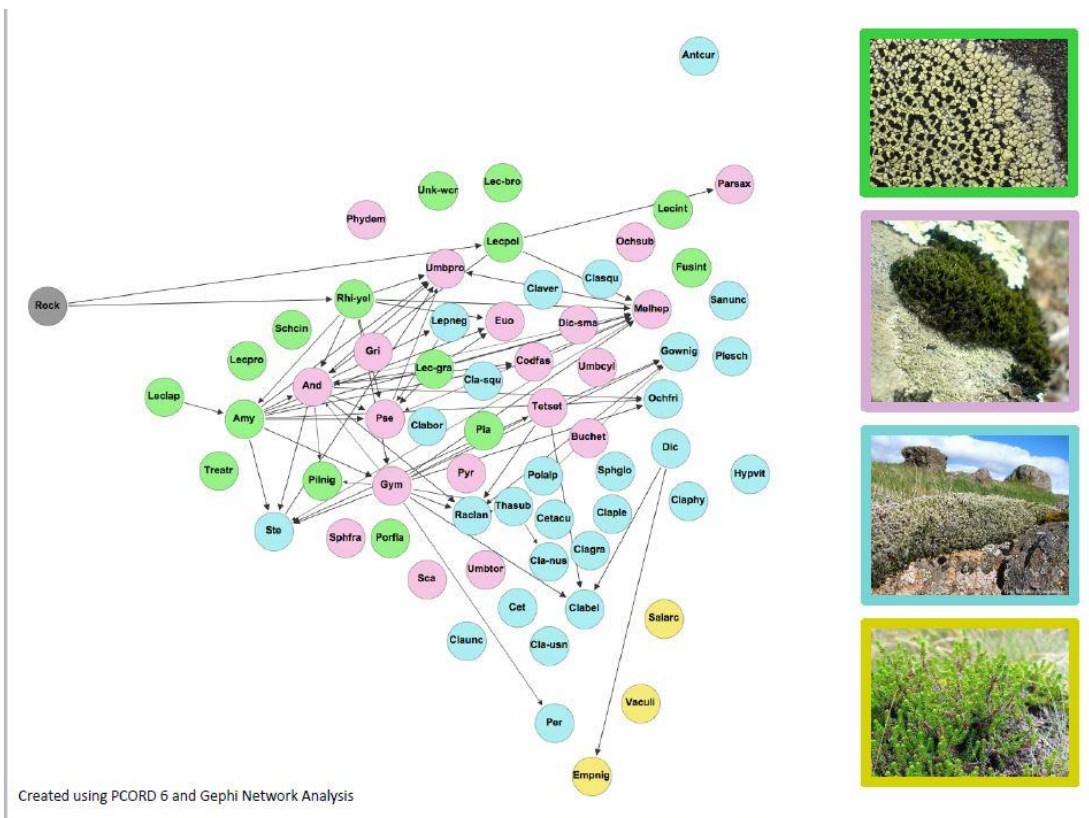


Figure III-3. Succession of lichen, moss, and plant colonization on the Cross Mountain cairn as illustrated in a network analysis of species relationships superimposed on an NMS ordination of species data. Green circles are 1° colonists, pink circles 2°, blue circles 3°, and yellow circles vascular plants.

Another community attribute used to determine the successional score involved scoring the class of colonist (primary, secondary, or tertiary) fusing two adjacent rocks together along a straight line within each sector. The idea is that upon initial cairn construction, rock contacts were void of vegetation. In time, these interfaces are inhabited by vegetation. As such, the class of colonist creating each fusion will inform us of the successional status of each cairn.

Based on these species cover data attributes, we also derived a score for each quadrat, using nonmetric multidimensional scaling in PC-ORD (McCune and Mefford 2016). We used “autopilot” with the medium setting and Sørensen (Bray-Curtis) distances. The best fit solution was then rotated to align the first axis with age-related variation, as indicated by the successional metrics. Scores on the first axes were then taken as the final successional score for each quadrat, then those were averaged to obtain cairn-level successional scores. Further methodological details and results of the successional metrics will be reported in a forthcoming paper (McCune et al. 2016).



Figure III-4. Nijmah Ali preparing to record the percent of lichens and plants on a cairn using 1 m quadrants.

### *Radiocarbon Dating*

Radiocarbon sampling was the final dating tool used to estimate the age of the cairns. This method involved collecting sediment samples from below select cairns and measuring amount of carbon 14 in that sample. Details are reported above in Section II. The results of the sediment sample dates were averaged and used here for further analysis.

## **Results**

Using the modal size of the largest lichens and the Kenai Peninsula growth curve (Figure III-5), the estimated minimum ages of cairns 9(I), 39, 1(A), 5(E), 7(G), 3(C), 25, 8(H-Disturbed), and 8(H-Undisturbed) are 368, 489, 342, 892, 892, 517, 258, and 187 years, respectively (Table III-2). Since we lacked comparable surfaces of known age, the

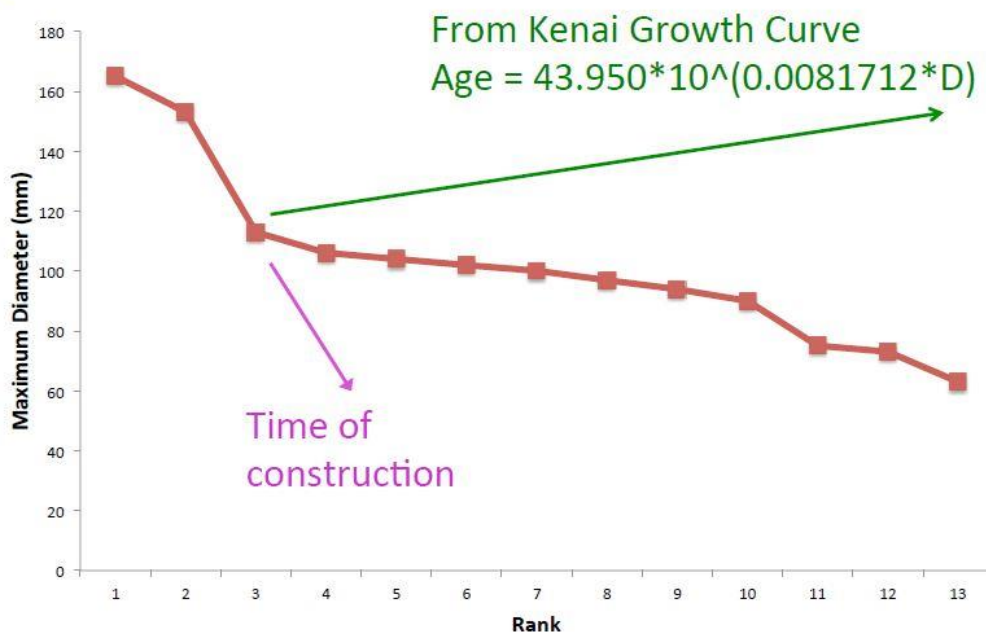


Figure III-5. Example of the use of modal lichen diameter along with the Kenai growth curve to assign age estimates to individual cairns.

calibration cairn acted as our “zero” age marker. The average estimated minimum age of all cairns, excluding the calibration cairn, was 467 years.

Sediment samples for radiocarbon dating were collected for cairns 3(C), 5(E), and 7(G). Radiocarbon dating and traditional lichenometry dating suggested that cairns E and G were among the oldest structures (Table III-2). However, the radiocarbon ages differ from the lichenometric ages by about 50, 300, and 800 years. Using the Kenai Peninsula growth curve, cairn E and cairn G were 892 years old.

Because so few C14 dates are available, it is difficult to draw conclusions. We can, however, conclude that the “modern” date obtained for cairn A is misleading and that the carbon sample retrieved from that cairn cannot be indicative of the true age of the cairn. For more robust radiocarbon results, sediment samples should have been collected for all cairns, including the calibration cairn.

The correlation between the traditional lichenometry and successional scores was very low,  $r = 0.1$ . The largest lichens were not necessarily on the most successional advanced cairns. For example, cairn E and cairn G are the oldest structures, based on lichen sizes; however, their successional scores are close to the median, 0.5. On the other hand, the two methods agree that cairn H-disturbed is the youngest pre-historic cairn. Its counterpart, cairn H-undisturbed, is close in age to cairn H-disturbed, based on the largest lichens, but cairn H-undisturbed is considerably more successional advanced than cairn H-disturbed. In this case, the successional scores clearly approximate better the ages of the cairns as

Table III-3. Age estimates and relative age estimates for each study cairn. “Lichen diam” is the modal major lichen diameter (see Methods). Lichenometric age was calculated from diameter using a lichenometry curve. The remaining variables are expressed as means (standard deviations), averaging across quadrats within each cairn. The successional score is position on an NMS axis of vegetation composition (lichens, bryophytes, vascular plants), with zero being the average position of all quadrats on that axis. Rock fusions are expressed as a percentage of the maximum possible, weighted by the successional class of the organism fusing the rocks, with zero indicating a relatively new cairn. Colonization scores are the weighted average successional class. Successional and colonization scores are unitless indexes of relative age as indicated by community composition. Both cover and species richness are expected to increase over time, at least early in succession. The oldest cairn for each method is indicated in **bold face**.

Cairn	Lichen diam (mm)	Licheno-metric age (yr)	C <sub>14</sub> age (yr)	Success-ional score	Rock fusions%	Colonization score	Sum cover%	Species richness
25	94	258	-	0.31 (0.36)	0.31 (0.07)	2.07 (0.18)	<b>131 (31)</b>	<b>28.0 (3.8)</b>
39	128	489	-	0.30 (0.54)	0.28 (0.09)	2.04 (0.31)	104 (36)	19.2 (3.1)
A	109	342	modern	0.54 (0.40)	0.27 (0.08)	1.92 (0.12)	123 (25))	18.5 (3.5)
C	131	517	472-442	-0.06 (0.55)	0.19 (0.11)	1.68 (0.31)	116 (43)	17.3 (4.4)
E	160	<b>892</b>	652-597	-0.03 (0.19)	0.35 (0.07)	1.81 (0.11)	99 (27)	17.9 (2.4)
G	160	<b>892</b>	<b>1604-1465</b>	0.13 (0.28)	0.31 (0.12)	1.95 (0.20)	99 (15)	20.1 (3.4)
H-Undisturbed	95	263	-	-0.03 (0.35)	0.33 (0.00)	1.80 (0.13)	84 (23)	20.0 (2.6)
H-Disturbed	77	187	-	-0.75 (0.51)	0.00 (0.00)	1.63 (0.17)	31 (9)	9.3 (2.1)
I	113	368	-	<b>0.55 (0.39)</b>	<b>0.39 (0.12)</b>	<b>2.09 (0.33)</b>	<b>131 (28)</b>	26.0 (3.4)
Calibration	113	-	-	-1.38 (0.54)	0.00 (0.00)	1.05 (0.33)	26 (19)	9.1 (3.7)

they appeared in the field. We therefore infer that the successional scores probably provide more accurate relative ages of the cairns than the lichenometric ages.

## **Discussion**

We have three types of age estimates for the cairns: traditional lichenometry, successional metrics, and carbon dating. Because each of these has flaws, as applied to this particular dating problem, we conclude that none of the methods alone is trustworthy. Having no “true” age for any cairn except for the calibration cairn, we cannot conclude which method was most accurate.

Although the relative age estimates from the traditional lichenometry seemed least reliable, collectively they do support the hypothesis of prehistoric origins for the cairns by providing a range of possible absolute ages. When using the Kenai Peninsula growth curve, the undisturbed cairns could potentially be 258 to 892 years old. Similarly, radiocarbon dates for the cairns suggested cairn construction before European settlement, about 450 to 1500 years before present.

### *Lichenometry*

The lichenometric ages were only weakly related to the successional metrics (Table III-4). We believe this to be a consequence of our violating basic principles of lichenometry as described above, and that our efforts to compensate for those problems were insufficient to salvage the method for anything more than a general indication of age.

Solomina and Calkin (2003) suggest that lichenometry is less reliable in wetter environments and dating curves are only useful for a few hundred years. With respect to the Kenai Peninsula growth curve, calibration points are well constrained for the past 400 yr and are  $\pm 20\%$  accurate, but beyond that, application of this curve is less reliable (Wiles et al. 2010). Cairns 39, E, G, and C yielded age estimates greater than 400 yr (Table III-2).

Estimates of cairn ages were highly influenced by the lichen growth calibration curve used. If we had used a growth curve from a drier, higher elevation location in Alaska, we would have yielded ages much older than those obtained with the Kenai Peninsula calibration curve. Consequently, growth curve selection based on ecological and climatic similarity is important. We chose the Kenai Peninsula growth curve based on climatic similarity, (i.e., maritime climate with high precipitation levels). Having a calibration curve for nearby surfaces of known age would have improve the age estimate, but would have still left us with two important violated assumptions: that the lichens were free to grow radially, without mutual interference, and that , the rock was bare at the time of cairn construction.

### *Successional Metrics*

Each cairn had been colonized by a diverse community of vegetation composed of lichens, bryophytes, and vascular plants. The degree of colonization and the successional roles of colonists helped us to estimate the relative ages of these cairns.

Five successional metrics were in general agreement on relative ages: successional score based on ordinations, percentage of rock fusions by overgrowing vegetation, colonization score based on the abundance of species weighted by colonization sequence, total percent cover, and species richness.

### *Combining Successional Metrics and Lichenometry*

Traditional lichenometry suggested absolute age estimates, but with considerable error because we clearly violated key assumptions. Successional metrics provided relative ages, probably with more precision than the traditional lichenometry (as exemplified by the results for undisturbed vs. disturbed Cairn H), but not absolute ages. Combining these two methods thus provided more information than either method alone.

Although dating old cairns in a moist alpine environment is a difficult challenge, we believe that reasonable estimates can be made for cairns several hundred or more years old. Our methods could be improved with more time and expense: by larger sample size (in particular more young cairns for comparison with old cairns), more radiocarbon dates, and gathering the data needed to construct local lichenometric calibration curves.

In contrast, the five other indicators of age are all in general agreement in contrasting the old, disturbed, and new cairns, as shown by the strong correlation coefficients among indicators (Table III-3). The weight of evidence suggests that cairn I is the oldest and most successional advanced of the cairns (Table II-2).

Table III-3. Matrix of simple correlation coefficients among indicators of cairn age. C<sub>14</sub> dates were not included because they were not available for most cairns. The strongly interrelated indicators are indicated in bold face.

	Lichenom	SuccScor	Fusions%	ColScore	SumCover	SppRich
Lichenometric age	1					
<b>Successional score</b>	0.09	1				
<b>Rock fusions%</b>	0.37	<b>0.87</b>	1			
<b>Colonization scores</b>	0.04	<b>0.94</b>	<b>0.82</b>	1		
<b>Sum of cover</b>	0.16	<b>0.93</b>	<b>0.84</b>	<b>0.82</b>	1	
<b>Species Richness</b>	-0.08	<b>0.84</b>	<b>0.87</b>	<b>0.83</b>	<b>0.89</b>	1



#### **IV. THESE MOUNTAINS SAVED A LOT OF PEOPLE': An Oral History and Ethnographic Overview**

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with input from Pete Stegen, Sitka Tribe of Alaska, Angoon Community Association, and the elders, historians, alpine hunters, and rovers of these and other northern Tlingit communities.

*These mountains saved a lot of people.*

-Mabel Jack (Tlingit Elder, Angoon,  
Interview, July 2013) referring to alpine  
cairns on mountain near Angoon, including  
Hood Bay

*All of the high mountains where the ridge [behind Sitka] runs back just as you get down from the peak ... you'll find some rock piles there, and over toward (skip [Angoon?]) there is so many of these mountains that are sacred, like Table Mountain in Whitewater Bay...relics from the days of the Flood, because the Indians claim that they were saved by some of these high mountains. And those that had dogs were spared because they kept other (skip [other animals away]). Some, ah, important names of some of these Island, mountains [such] as Ah Wass ka dee shaw, "weather is clash[ing] on them". There's some of these sacred mountains-- the Indians say "don't point at it."*

-Mark Jacobs Jr., (Tlingit Elder, Sitka Elder,  
USFS Interview)

*You know, in my old age, I've come to believe these things really happened. Our people were taught that from the time we were born that these things happen. We believe.*

-Cyril George (Tlingit Elder, Angoon,  
Interview, July 2013)

## INTRODUCTION

Stacked and standing rock features of cultural significance are found throughout the New World and the Old World. Along the coastlines of the Northwest Coast of North America they mark navigational pathways, territorial boundaries, caches, graves, refuge and habitation sites, and commemorate events. The abstract imagery on various petroglyphs and pictographs suggests both continuities and discontinuities within contemporary indigenous styles of art. Little is known about some of these designs, especially those constituting the petroglyphs, which are often described by contemporary Natives as “very old,” and are sometimes attributed to ancestors, other predecessors, or even other supernatural? Otherworldly beings, including the Trickster-demiurge Raven.

The significance of these more formidable configurations of rocks are best revealed at higher elevations, where they become strikingly apparent on the landscape piquing the interest of amateur and professional anthropologists’ in these features, which have come to be labeled “alpine rock cairns” (a potentially redundant term). Lt. George Emmons (1991:82) wrote in the early twentieth century:

...more baffling than petroglyphs and stone carvings are cairns of piled stones to be found on mountains well above timberline, both on the mainland and on offshore islands. They have no relation to the Russian occupation, and are not boundary marks. They are away from any trails or lines of travel, at altitudes of from two to three thousand feet, located on clear stretches, generally on mountain tops. The oldest natives can give no explanation of them, beyond the story that when the great Flood covered the earth, those who survived in canoes floated up and moored their craft here with great bark ropes, the decayed ends of which it is claimed can still be seen.

Working with the lead investigating archaeologists, William Hunt and Ralph Hartley, I conducted an ethnographic overview and interviews with elders in Angoon (Figure IV-1), Juneau, Haines, and



Figure IV-1. Thomas Thornton interviewing Gabriel George (son of Jimmy and Lydia George) in front of his home in Angoon, 2013.

Sitka regarding alpine cairn sites with the aim of addressing their origins, significance, and spatiotemporal dimensions in northern Southeast Alaska, particularly the ABC Islands (Admiralty, Baranof, and Chichagof). This project is supported by the US National Science Foundation (Project 1230132), and also includes a lichenologist (to date lichen growing on and around the rocks), students (both graduate students in archaeology at University of Nebraska and local students), and other professionals, consultants and staff from the Sitka Tribe of Alaska, Angoon Community Association, Sealaska Heritage Institute, the USDA Forest Service, US Coast Guard, and other agencies. This alpine turn in the archaeological investigation of Southeast Alaska, anticipated by Emmons, de Laguna and other early Tlingit ethnographers, represents an exciting new frontier for both ethnohistory and archaeology, both of which have previously been focused almost entirely (and perhaps too myopically) on the coastal zone.

Key research questions that helped guide this portion of the study are listed in Section II of this report. This ethnographic overview and oral historical study addresses the question of how cairns were used and how do they correlate with the established literature on ethnographic and archaeological cultures on the Northwest Coast? The study also seeks to shed light on the other questions through targeted enquiry of indigenous consultants knowledgeable of alpine cairns and their cultural distribution, contexts, associated artifacts, and meanings.

Within this interdisciplinary pilot study, the oral history and ethnographic review component was designed to 1) articulate with local tribes and clans (especially Sitka and Angoon) about the purpose of the project and sources of knowledge about the locations, significances, and values associated with alpine cairn sites; 2) identify elders and other experts with oral histories and other local knowledge of these sites; 3) interview these sources to identify the location of alpine cairn sites and document their history and cultural significance; and 4) enquire about concerns and suggestions regarding proper management and engagement of these sites as cultural features and, in the case of networked sites, cultural landscapes. This report is based on work carried out between May, 2012, and July, 2015, including: 1) a literature review; 2) archival investigations in Juneau, Seattle, and Sitka (Sealaska Heritage Institute, USDA Forest Service in Chatham and Juneau, NPS Sitka National Historical Park, and University of Washington Special Collections), and 3) consultations and interviews with approximately 35 Tlingit and other Southeast Natives in Angoon, Juneau, and Sitka, as well as other experts. The full results of the interviews have been transcribed (or summarized), coded, and analyzed.

### **What Do These Cairns Look Like and How Are They Characterized?**

The cover photo shows a typical alpine rock cairn found at 2000-3000 feet above sea level, on Northern Baranof Island above Peril Strait. It is emblematic of these features in terms of its construction. The cairn is composed of large, heavy rocks -- many

seemingly too heavy to have been moved by a single person – piled to heights of 3-6 feet and encompassing a conical area, 4-30 feet in diameter at the base. The stones generally appear to have been gathered from the immediate area, although at least one report (see Henry Denny narrative below) records the stones themselves being floated up to these altitudes in the rising canoes. In some cases reported from other locations, cairns may exhibit more nest-like characteristics with stacked rock walls (rarely intact) arrayed in circular formation, sometimes with a “petrified” rope, textiles (e.g. robes), or animal bones piled (or coiled in the case of the rope) either inside or just outside of the structure. It is important to note, however, that the size, shape, and assemblages associated with such features vary widely, and that a variety of stacked rock features, from single column markers to smaller (and perhaps even larger) rock piles can be found at a range of elevations and contexts throughout the Northwest Coast and beyond. Cairns such as the one pictured on the cover, however, are representative of those most commonly associated with the oral history of the alpine zone in this area.



Figure IV-2. John Nielson, Chookaneidi leader, at the 2004 Wolf House Koo.eex' (courtesy Sitka National Historical Park).

Some early geological observers characterized alpine rock pile features as the products of “frost action” (cf. de Laguna 1960), periglacial depositing, or even historical boundary marking (see Hunt and Hartley’s discussion in Chapter II, Natural vs Artificial Rock Piles). In the case of those found on northern Baranof Island, however, Dr. John C. Reed of the United States Geological Survey, who first informed Frederica de Laguna of these “mysterious cairns” (1960:23) more than a half century ago, suggested they were likely of human origin. We do not yet have independent scientific accounts or analysis of the contents of “petrified” (bark-woven) ropes or other anthropogenic materials, unfortunately. However, “imprints” in the stone contexts of these alpine features, suggestive of such artifacts, have been observed. John Neilson (Interview), a leader of the Sitka *Chookaneidi* (Figure IV-2), for example, described to us vividly the imprint of a raft in the stone face associated with one cairn site above Ushk Bay, which he documented when he accompanied Forest Service archaeologist Jeremy Karchut during a helicopter survey of the site in the early 2000s. However, to date no physical evidence has been discovered at alpine cairn sites to support an “archaeologically-based explanation for their derivation or function” (Hunt, pers. comm. 2016).

Native elders clearly distinguish alpine rock cairns as having been made by human ancestors, although the precise lineages of the builders may not always be clear. In some cases, such as in the *Dakl’aweidi* history of the mountain known as “Hood Bay Old Woman” on Admiralty

Island, the people are known by clan, if not by name (de Laguna 1960; Garfield George, Daniel Johnson interviews, discussed below). Interestingly the Tlingit terms used to characterize these sites vary, and I have not yet had a chance to analyze them all in conjunction with how they are translated in English. In English several terms are commonly used, deriving from the Tlingit terminology (though not always direct translations), including “stone nests,” “stone forts,” “Flood refuges,” “Flood markers” or “monuments,” “stacked/piled rocks,” and “stone platforms.” The fact that some of these terms reference the Flood directly reflects the primacy of this association in characterizing these features and how they were used. Significantly, almost no Natives I have interviewed use (and many don’t know) the English term “cairn,” which is actually of Scottish Gaelic origin. According to interviewees and the major ethnographic literature, the most proximal equivalent of cairn is *té xóow*, or “stone piles.” However, the term *té kúdi* is also commonly used to refer to “stone nests,” or sometimes *té kayáash*, meaning “stone platforms.” Finally, the coiled ropes associated with Flood refuge sites are sometimes termed *wook* (Henry Denny, below) or *té títx’*, “stone [petrified] rope.”

The Flood itself is used as a basic reckoning of the beginning time. As de Laguna (1960:129) suggests:

The native traditions would seem to fall into four "periods:" (1) a *mythical* group, dealing with the Flood, and with the adventures of Raven and of other beings that gave the world its present form; (2) a *legendary* group, overlapping in part with the former, in spirit if not in time, and telling how the present sibs had their origins, obtained their crests, and migrated to their present territories; (3) a *more clearly historical* set of stories, dealing largely with clashes between sibs, and including episodes that can be assigned to the days of the early explorers and Russians, or to the early American penetration of the territory; some origins of recent sibs occurred during this period; (4) and, lastly, *modern* stories of events that occurred within the lifetime of the narrator or of his older relatives who witnessed the events and told the present narrator about them.

The same is of course true of Flood stories in other cultural traditions, from the Americas to Asia to Africa to Europe and elsewhere (Dundes 1988). Even the Biblical Flood probably seems to have had inspirational precursors in ancient Mesopotamia, where the Sumerian Epic of Gilgamesh, dating back some 5,000 years and among the oldest written works on the planet, tells of an imminent Flood unleashed onto the world by wrathful gods. The protagonist, Utnapishtim, is forced to escape with his relatives, a few animals and grains in a small circular boat, waterproofed with tar and pitch, in search of dry lands. This epic Flood, which some archaeologists suggest relates to a deluge between 5000-7000 years ago from the Black Sea to Mesopotamia and the Mediterranean, marks a new epoch with the founding of new lands and emergence of new social divisions and ethnic groups. Translations of ancient cuneiform tablets in the 19th century suggest this story is probably an antecedent to the Flood story of Noah in the Bible. Though the dynamics, reach and causes of these floods are debated, there seem to be general agreement, based on modern

geology and paleontology, that they were localized at different times in different areas, and there was no single earthly deluge. Indeed, While Middle East, Indian Vedic and Mesoamerican (Aztec/Mayan) stories tell of rain generated floods in which select people are warned and able to retreat or survive them, elsewhere, for example Northwestern North America, Scandinavia, and Egypt, the flood commonly originates from tidal action cleansing and reforming the earth.

## **How Were the Sites Used?**

As suggested above, alpine cairns, like the larger ones featured in Hunt's (2010) report, were most often said to have been constructed as refuges from the great Flood. Other suggested uses include: shamanic sites, navigational sites, communication (fire) sites, graves or burials, commemorative markers, hunting blinds, caches (for meat especially), and other spiritual/ceremonial uses. Each of these uses is discussed in detail below, elaborating especially on the major flood refuge sites cited by Tlingit elders (both those interviewed and in the literature) as especially important in northern Tlingit country.

## Flood Refuges

A "raft" of Flood stories exists, both in the literature and in the living oral histories of contemporary Tlingit groups in the communities surrounding Chichagof and Baranof Islands, including Sitka, Angoon, Hoonah (*Xutsnoowú*), and Kake. As Emmons (1991), de Laguna (1972; 1960), and other anthropologists suggest, the majority of alpine rock cairns are associated with marking ("flood markers") or seeking refuge (in "stone nests") from the great Flood.

Building on Emmons' early suggestion that "The oldest natives can give no explanation of them, beyond the story that when the great Flood covered the earth, those who survived in canoes floated up and moored their craft here with great bark ropes, the decayed ends of which it is claimed can still be seen," de Laguna (1960), in her landmark study of Angoon entitled, *The Story of the Tlingit Community: A Problem in the Relationship between Archeological, Ethnological and Historical Methods*, specifically tried to correlate ethnological and historical sources (including oral history) with archaeological findings, in ways similar to what is proposed here. For the most part, however, de Laguna did not have the resources to survey the alpine sites. Still, she provides more detailed accounts of these sites than earlier sources, speculating in detail about those lying in northern Southeast Alaska. For example, she notes:

It is possible, too, that the archeologist might find something of interest in the "stone nests" said to have been built as protection against bears on the mountaintops during the Flood, for Dr. John C. Reed of the United States Geological Survey informs me that many years ago he found some mysterious cairns on the uplands of Baranof Island. While these were not on the peaks, and did not seem to have been built for



defence, they may have suggested the notion of the flood "nests." Again, the various caves that are mentioned in a number of stories might yield surprising contents if they could be found. Even if a majority of the traditions referring to places should prove to be simply fanciful explanations for natural features without archeological significance, others may refer to places that have caught the natives' interest because they actually do give evidence of topographic changes, such as changes of sea level, of drainage, or of glacial movements, and so may be of indirect value to the archeologist." (1960:23)

Further elaborating on this in supporting Emmons' observation, de Laguna notes:

Cairns like these were said by the Tlingit of Angoon and Yakutat to be 'nests' or forts made by survivors of the Flood to protect themselves from the bears that were driven to the summits of mountains by the rising waters (de Laguna and McClellan, field notes, 1950, 1952). Stone piles have been noted by some members of the U.S. Geological Survey, who offered no explanation for them. My archeological party of 1935 explored a pile of stones on a high ridge above the middle Yukon River, between Nulato and Holy Cross; this 'cairn' is due to frost action, according to our geologist Jack Eardley. But this explanation may not apply to all such piles. (Emmons 1991:83)

Frost heaves and periglacial action having been ruled out for many Southeast sites, most of which appear to be of post-glacial, anthropogenic origins. Flood refuge markers and refuge thus remain as potential explanations for the phenomena of cairns. De Laguna's suggestion that the great Flood might be a series of localized events, rather than a flood of Biblical geographic proportions is worth keeping in mind as specific cairn sites on Northwest Baranof and Southeast Chichagof islands are evaluated against the surrounding geomorphology and paleo-ecological records.

The Flood event, itself, is surrounded by a great deal of oral history. Since the missionary era (c. 1880-1920), it has often been linked with the Biblical Flood. However, as Elders pointed out to the early missionaries, based on their oral history, the indigenous Flood's mechanics were different, as it was produced not by heavy rains from above but by melting or shifting ice (glaciers), or disruption of the "Controller of the Tides" (variously depicted, but often as an Old Woman) from below (David Katzeek, Interview). Significantly, a number of sources attest to the fact that the Flood waters rose "slowly," allowing time for preparation and retreat, including making rafts (usually, as opposed to canoes), food stores, sturdy ropes (for mooring or climbing), and bringing dogs (for protection from bears and other animals).

De Laguna (1960:130-131) states that that the time of the great Flood (*aan galakú*, "land flooding time," in Tlingit) was actually the beginning of Tlingit history. One "old man, a devoted member of the Salvation Army," termed it "The Story of Creation," explicitly linking it to one in the Bible. She notes that the version below "is essentially the same as

the Tlingit versions discussed by Boas (1916, pp. 621-625), although some details are of sufficient interest to warrant a brief summary.”

### The Story of Creation

The first man in the world, *Qisxxóx*: (probably *Qls'xùxw*, "Flood-Call(er)," not Raven-at-the-head of-Nass-River, *Nas-cAkI-yel*, as this character is usually called) was so jealous of his beautiful wife that he killed all his sister's baby boys. [A nephew in the old days had access to his uncle's wife.] Finally a Crane gave the grieving mother a hot stone to swallow which resulted in the birth of an invulnerable son, who grew with miraculous rapidity to manhood. After the uncle had in vain tried to kill him in various ways, he discovered the young man sleeping with his aunt, and in a rage called up the Tide to drown them. The youth clothed his mother and his uncle's wife in the skins of ducks, so that they escaped by swimming. He donned the skin of a snipe, flew to the sky and suspended himself above the Flood by sticking his bill into the underside of the sky. Finally, as the Flood subsided, he fell down into some floating kelp. There was nothing but water then, no land anywhere. But he met two sea otters and induced them to dive for sand at the bottom of the sea, and from this created the land. On it he created the trees. The world then was dark, without sun, moon, or stars. He became born as a child to the daughter of the chief who kept these luminaries in his house. By crying, he obtained each of them in turn, and threw the stars and moon into the sky. When escaping through the smokehole with the box containing the sun (daylight), he was trapped for a time, and so became blackened by soot (1960:130-131).

"He was our God, and He created the world. We call him *Yel* [Raven]."

This version, it seems, is a consolidation of the Raven cycle, but the original Floods story is similar to the one told to us by David Katzeek (Interview). This Flood and Raven's remaking of the world are described further below.

The other prototypical Flood story begins not with the story of creation but with people living in different places when they become overwhelmed the Flood and must retreat to the mountains. These versions tend to focus on the displacement and refuge "stone nests" people had to build in the mountains in order to survive. De Laguna cites the following example from Angoon (1960:131):

### The Flood

There was a Flood, when all the people had to go to the tops of the mountains. They built walls of rocks around the tops, like nests. Some people had dogs. The bears came up after them. Those that didn't have dogs to chase the bears were all killed, but those that had dogs were saved.

I have been on top of one of the mountains, above Chaik Bay. I saw the rope there at the top, all turned to ashes. Another mountain where the people went is the high one across the Inlet, below Tenakee. You can see it from Angoon (over Graveyard Point [perhaps Yellow Bear Mountain]). People went to the tops of the mountains- all the high ones- in the Flood. All the high mountains have nests.

Other refuge mountains are south of Hood Bay and the peak known as Table Mountain south of Whitewater Bay. It is a general belief that to touch the nests or the old ropes on these peaks or even to point at them from the old village sites causes bad weather.

Swanton's version from Wrangell is rather similar to our "Story of Creation" except that it adds the notion that people escaped the Flood by climbing the mountains (Swanton, 1909, Tale 31, pp. 119-121). According to a Sitka story, it was Raven himself who wanted the Flood. He got the woman who controls the tides to raise the water so that he could go under the ocean. This caused the Flood, which rose so slowly that the people were able to get into their canoes and float up to the tops of the mountains. Bears and other wild animals took refuge there also, but the people who had dogs with them were protected. Some people built stone walls around the peaks and tied their canoes inside. Sometimes hunters see these stones and then it becomes foggy (Swanton, 1909, Tale 1, p. 16).

A similar oral history of the Flood was recorded for this investigation from David Katzeek (Interview 2013), an elder of the Shangukeidí Tribe, originally from Klukwan, but now living in Juneau. His Flood story is also Raven's story, and it is in this era that Raven's transformations begin. It is similar to Swanton's recorded versions in that Raven's uncle, Naas Shaak'i Yéil, becomes angry with him and tries to do away with him by causing water to pour from his dance hat until it floods the world, and the people must seek refuge in high mountain refuges, while Raven hangs from clouds (or, "the outer skin of the earth" translated as the atmosphere by Mr. Katzeek). In the alternate version, Raven commands the ocean tides to rise slowly, so the people have time to prepare their canoes and float to the high mountains, where they land, fend off bears and other wild animals also seeking refuge, and "wall the tops of the mountains" for protection and to tie off their canoes (Swanton 1909:16).

As Mr. Katzeek tells the story, it was before the great Flood that Raven was born, to a mother who swallowed him after he transformed himself into a small, attractively smooth and shiny stone, at the suggestion of Blue Heron. Raven was raised by his maternal uncle, who mistreated him, and their conflicts eventually triggered the Great Flood, which manifests not as torrential rainfall, as in the Bible, but rather as a great tidal deluge:

[Raven knew] that the tide is really going to come in... So the story goes that after [Raven] put his mother in [a black scoter skin] and he put her out on the water... He let it go [to float as the world flooded]. Let the tide come in. Then the story goes... *Yéil kaawxa awé. Yaa aan xáas'i dei wuditeen* [?]. F I love that word [*Aan xáas'i*], saying that the earth has an outer skin with it way up in the atmosphere where *Awuxaligaas* [?], the [Raven] was just hanging above the earth. And nobody

knows how long he hung there. And when the tide—when the water began to recede, was when he let go of that outer skin of the earth and fell all the way down to the waters and nobody—the storyteller says— no one knows how many days or how long it was for him while he was falling from the outer skin of the earth, that he finally came and landed on *geesh*, on bull kelp, over on this one place [perhaps near Dry Bay]. And when he sat there, up popped the sea otter. He talked to the sea otter and he asked the sea otter, ‘Can you go all the way to the bottom?’ And that sea otter said ‘Uh huh. Yes I can.’ ‘Well, then, if you can go all the way to the bottom, bring me some rocks and bring me some sand.’ So the sea otter goes down and brings rocks and sand to Raven. The story goes when Raven starts throwing-- he was throwing rocks out, and as he was throwing rocks all the islands started to form that are here in Alaska. The sand that he had when he threw it out, it made the Alaska Peninsula all the way on out--the Aleutian Chain...

... But historically, the reason there are *Deisheetaan* from the Interior, the reason there are Killer Whales [*Dak’laweidí*] from the Interior, the reason there are *Yanyeidis* [and other clans] from the Interior ... [is] because of fleeing--because of the great Flood that took place on this earth [causing clans to seek refuge and scatter]. So that’s the story (David Katzeek Interview).

Mr Katzeek’s version of this story is important in its details, for it clearly contextualizes the Flood as a major regional event, both catastrophic in scope and multi-sited in scale. He also ties the event to major migrations and redistributions of clans throughout Southeast Alaska. Finally, rocks prove to be significant, both in Raven’s transformation (into a “shiny stone”) and his (re)creation of the present geography of Alaska by scattering the rocks and sand that Sea Otter brings him.

De Laguna (1972:210) observed in her mid-twentieth century research in Yakutat that:

Raven was also indirectly responsible for the Flood, since this was produced by his jealous uncle in order to drown him. Although the Flood clearly does not come at the end of the Raven cycle, when these myths are considered together, nevertheless, since the Flood is held accountable for the dispersal of the various human groups, it may be taken in another sense as marking the transition from myth time to the human era. "It's just like the Old Testament, and after that it's New Testament again," explained an informant in referring to sib migrations after the Flood.

In reordering the Earth through the Flood, Raven remade the land for human habitation, exemplifying the principles of formation and transformation for which he is famous as a Transformer and world-maker. His doings thus became part of Tlingits’ heritage and destiny (*haa shagóon* in Tlingit). In one version of the Raven cycle recorded by Swanton, Raven is said to have endured the Flood by turning, cairn-like, to rock. After the Flood, Tlingit oral history relates that:

Raven [*Naas Shaak'i Yéil*, Raven at the Head of the Nass River] tried to make human beings out of a rock and out of a leaf at the same time, but the rock was slow while the leaf was very quick. Therefore human beings came from the leaf. Then he showed a leaf to the human beings and said, "You see this leaf. You are to be like it. When it falls off the branch and rots there is nothing left of it." That is why there is death in the world. If men had come from the rock there would be no death. Years ago people used to say when they were getting old, "We are unfortunate in not having been made from a rock. Being made from a leaf, we must die" (1909:81).

By molding people from leaf, Raven recognized the impermanence and mutability of life on earth, the formation and transformation of its beings from seed to leaf and back again. People may aspire to the immortality of rock (Kan 1989), and rocks—not least alpine cairns—may speak to humans' collective history and survival on the land. However, life on earth, at least for humans, is governed by the change, and change defies the rigidity and permanence of rock, and rewards continued growth, evolution, and renewal of the leaf as a living, adaptive entity. It is important that people did not stand still like rocks in the aftermath of the flood, but redistributed and reorganized themselves, through migration and adaptation, to the new world they faced when the waters receded.

Among the interior Tlingit and Tagish and Southern Tutchone Athapaskans the stories are similar. Catharine McClellan (1975:71-72) observed that:

All tribes tell too of a universal flood which occurred 'long ago', but it is not always clear whether this was in myth time or later. The Southern Tutchone tell of a more recent flood localized on the upper Alsek [River] where, indeed, there is good geological evidence for it. According to the story it was caused by a Kloo Lake shaman who was angered because some children laughed at his balding head. Presumably such an event could occur again.

Elder Annie Ned described to anthropologist Julie Cruikshank (2005:15) how "Raven, also known as Crow, originally configured the drainages from the interior to coast at the beginning of time, tipping his wings to orient them in the opposite directions; some lakes and rivers now flow north to the Yukon River and hence to the Bering Sea and other pour south to the Gulf of Alaska through the Alsek and Tatshenshini drainage." Thus Raven is not only the instigator of the earth-changing Flood, he is the shaper of its rehabilitation (via his re-piling of rocks), the manipulator of tides, and in Tlingit country he is the color of the Pacific Ocean itself, which in the Gulf of Alaska at least, is simply called *Yéil T'ooch*, "Black Raven." This ocean, too, is Raven's world, because it is also a result of the great Flood that Raven caused, and which he and his transformed humans had to adapt to when they returned to the coast—him from the sky and they from the mountain stone forts, where they sought refuge.

Songs, stories, crests, and names (place names and personal names) are associated with these events, and continue to be handed down according to the rules of matrilineal inheritance. For example, JoAnn George, the adopted daughter-in-law of *Dakl'aweidi*

leader Jimmy George, was given the name of the Old Woman (*Yishk'*) associated with the Flood, who turned to rock and for whom Hood Bay Mountain (Bear Pass Mountain) is named (Garfield George Interview; see also de Laguna 1960). And her daughter, *Shgen* (Shgen George, Interview). We talked to a number of hunters who have encountered these sites on Baranof, Chichagof, and Admiralty Islands, often in the company of more experienced partners, who initiated them into their meaning in relation to “the Flood” (or did so when uninitiated hunters returned to describe such sites to their elders). In the case of the stone “nests,” the walls were said to encircle the inhabitants not to keep out rising water, but to protect them (with the help of the dogs) from bears and other animals that might be competing for food and shelter.

In a 1970 recording, the late George Jim Sr. of Angoon ([n.d] 1970) ) tells “vividly how the people prepared for the Flood,” and the “evidence of the people surviving the great flood [such as] the markings [cairns] on the tops of the mountains and hand-made rope left at the tops of the mountains.” He also describes how the people had time to prepare for the Flood “because it didn’t come suddenly,” how various animals tried to climb aboard their rafts but were repelled by dogs and other weapons, and how people ended up in different places after the Flood. In the case of Mr. Jim’s clan, the proto-Wooshkeetaan ended up in the Interior and then on the “Stikine side” near Wrangell, before eventually, after waters receded, recolonizing the coast and moving to what eventually became Aak’w Kwáan in the Juneau Area (i.e., settlements at Young Bay, Auke Bay).

Other versions of *Kaach.ádi*, *Deisheetaan*, and *Dakl’aweidí* clan history, as related by Johnny C. Jackson, Robert Zuboff, and Jimmy George Sr. respectively (cf. Sealaska Heritage Institute Archival tapes; Thornton 2012) seem to corroborate this theme of Flood refugees retreating to the interior (often splitting up) and then returning to the coast via the Stikine and other river routes.

## **Alpine Cairns and Flood Stories in Central and Southern Tlingit Country**

Among the most detailed of the return migrations is that of Johnny C. Jackson, a *Kaach.ádi* elder from Kake, who recorded the following narrative (reproduced from Thornton 2012:128-129; see point 5 in Figure IV-4 for location). Johnny C. Jackson (Gooch Éesh, “Wolf Father”) was born Johnny Sumdum at Sumdum Bay in 1893. His mother was of the Raven *Kaach.ádi* clan, and his father a member of the Eagle/Wolf *Sit’kweidí* clan. Mr. Jackson lived most of his life in Kake and was renowned as a clan historian and storyteller until his death in 1985 (see Dauenhauer and Dauenhauer 1994 for a more extensive biography). In 1979 he related the geographic narrative excerpted,



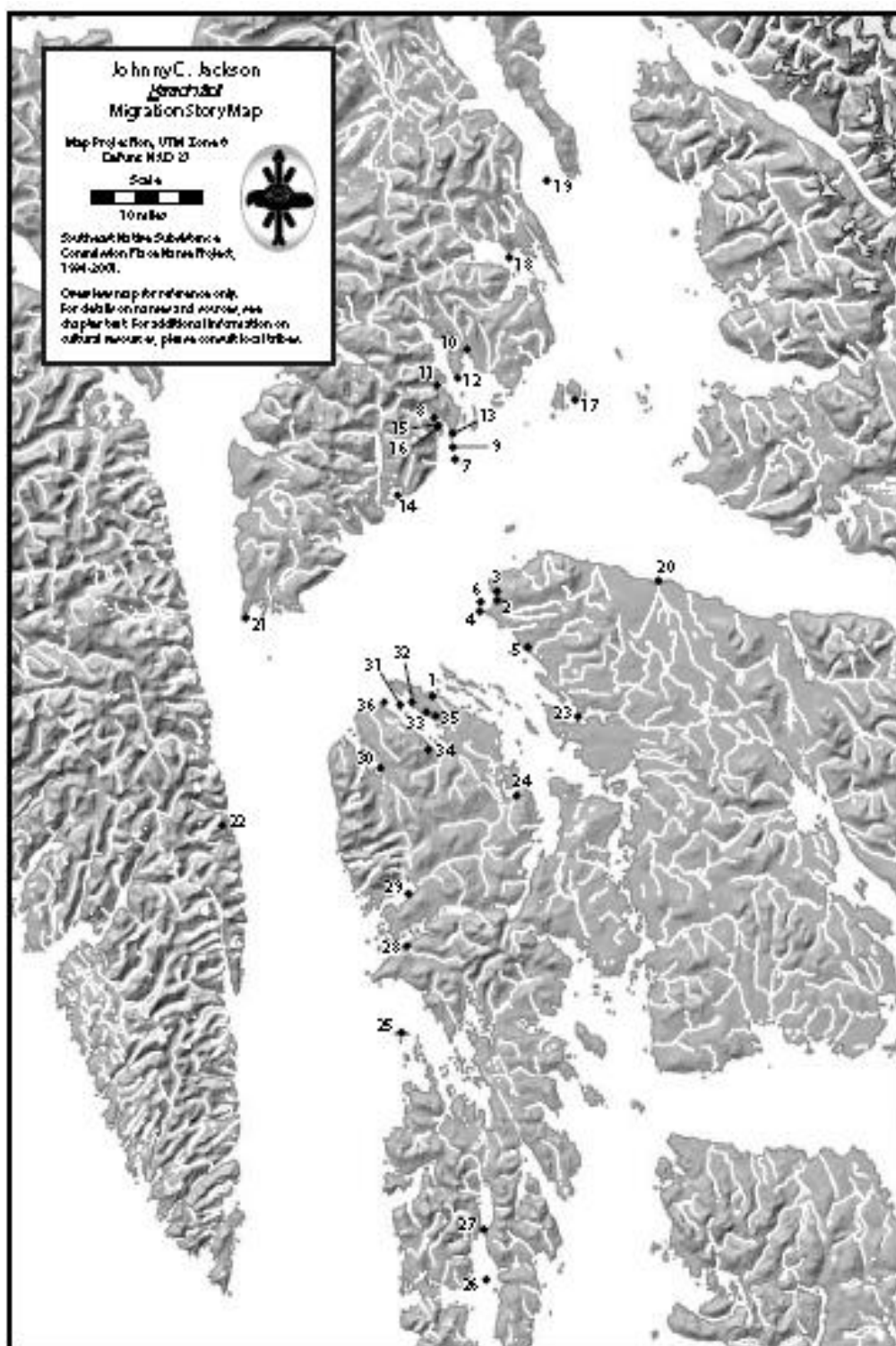


Figure IV-4. Locations mentioned in this report section (from Thornton 2012:130).

translated, and mapped here, which is remarkable for its tracing of clan migrations, and for the thirty-six Tlingit place names he unpacks in the context of his people's history.

### Returning Home: The Odyssey of the *Kaach.ádi*

Now this is what I shall tell. My grandfathers had all replaced each other -- the leaders of *Kaach.ádi* clan. .. when we still lived in the Interior [Canada]. Then we moved here, from the time of the Flood. They didn't care for the Interior, where the Flood had left them, since our former homes were on the coast. So they set out to search. Freshwater flows out into the salt water. So they followed the river. We who now live in Kake, we came out from the Nass [Naas] River area.

"Let's look for our original homeland," they said. So after a meeting they did . . . [After traveling northwest,] they found their homelands there. So they build houses there again. Across from here [at Keku Islands] they built houses there; their village used to be known as *Kéex' Luwoolk'i* [1; see migration story map]. They recognized that place. From there they began searching, out to the point: *L'axwein Aan* [2], *L'axwein Héen* [3], and *X'aaltunoow* [4]. Those were the places where they used to live, before the big Flood. They recognized these places. And here, the present site of Kake, the name of this place is *Ta.aan* [5]. *Ta.aan*.

From that place they set out to search for their land across the water [Frederick Sound]. They headed across, saying, "Our land used to be in that direction." When they arrived there, they recognized *Káach* [7]. The one closer on this side, the water[fall] runs down into the salt water . . . It was just as they had been told, *Káach Héen* [8], flowing into salt water, full of salmon. Even their old fort was there, a *Kaach.ádi* fort site [9; see below].

From there they began searching again. Inside the bay, they recognized where they, their children, and grandparents used to gather, process, and dry their harvest. The one at the head of the bay and the one down further they recognized as places they used to live. It was named *Sit'kú* [10]. The lower one, *Xakwli'héen* [11], was where it was at.

From there north -- *Yoowka Noow* [12], in back there is also a large salmon river. They recognized *Kutis'noow* [9] also in the bay. Then by chance they came across *Dliuwuwu X'aa* [13], a place they had been told about and recognized. The bottom was all marble rock, so it was easy to recognize.

Continuing south they came upon a small bay overgrown with dwarf maple growing. So it was named *X'als'eeigeiyak'w* [14]. South there's a point of land, there is a trail on the other side. Then on this side, *X'algiheen* [11], *Kudakak Héen* [15], and their village used to be named *Kudadak Aan* [16]. These places I have

named are the areas used and claimed by the *Kaach.ádi* clan. They also claimed all the islands in front of the bay [Neek, 17].

Further north all the way up to *Ldakéex'* [18] is claimed by those people who are related to us, they are called *Gaanax.ádi*. *Gaanax.ádi* claim from there north on into the bay up to *Kanak'aa* [19]. They had many forts in there; they knew the sites of their own forts . . .

*Xakwhéen* [20]. There they used to gather and render herring for oil; they also dried halibut there, and black seaweed and red ribbon seaweed, and dried meat there. That is why so many from here used to gather there in the spring and fall . .

From there a marker can be seen -- it's red. It crosses over to *Kudadak Aan*. People still gather food from there. Since our grandfathers have all gone on, [it's] up to us now. Until recently, I used to go there until my health no longer permitted it. They use to get fish there and it was a good place for *lein eetí* [food from the tidal area] from the beaches there.

The territory of the Angoon people starts at the island, Lisnoi Island, at the entrance to Eliza Harbor . . . towards Point Gardner [*Taan X'aayí*, 21]. From there towards here was an area we [the *Kaach.ádi*] owned.

*Gatgeeya* [22]. At *Gatgeeya*, there are things that date back to the time of the Flood. The mountain was sticking out of the water. At the top of the mountain there is something that dates back to the big Flood. During that big flood the people tied a rope there . . . There were no storms during that flood; that is why not all the people perished. Those people that had tied up to that mountain, after the Flood receded they were safe here . . . There is a river there named *Was'héeni* [23]. *Was'ineidí* and those across at *X'alchanhéen* [24], some of them survived too. However, everyone else perished.

There is much history related to the big Flood, which has been told right up the present. That is why the place names are the names of the different clans. From *Kooyú* [#25] this way, the *Kooyú Kwáan* and the *Naasteidí* intermarried. In *Keinyík* [26], the name of their village there is called *Xóots Noow* [27]. From there, in this direction, are *Kooyú Kwáan* place names. *Kwaat'aa Héen* [Bay of Pillars, 28] was jointly owned by the *Kooyú Kwáan* and *Shayá Kwáan* [Rowan Bay, 29], who are known as the *Shangukeidí* clan . . . Coming this way, *Kúchx'w* [Security Bay, 30] was claimed by the *Tanyeidí* clan . . . The last caretaker of Security Bay before I moved here was *Nawnuk* [ John Nannauck].

[Concerning *Tsaagweidí* history of Saginaw Bay] the clan originally inhabiting this place was known as the *Skanax.eidí* [People of *Skanáx*, 31]. Their original village was *Chana.aan* [32]. Their fort names were: *Taakw.aani Noow* [33]; from there up

to the head of the bay was *Watlax'aak Noow* [33]; another is *Yankatudutináa\** [35]; and then there is *Woogaani Noow* [36].

Jackson's narrative suggests that at least some *Kaach.ádi* may have taken refuge from the Flood on a mountain at *Gatgeeya*, Gut Bay on Baranof Island. This accords with another account from Ronald L. Olson (1967:30) in which he asserts, based his informant's (Jennie Thomas') account, that:

*The Stikine Katcadi (Raven moiety) are derived from the town of Kake on Kupreanof Island. At the time of the flood their ancestors climbed the mountain called. Tax [Gut Bay?] on Baranof Island. When the waters receded, they settled in Pybus Bay (Kac [Kaach]) on the southern end of Admiralty Island. There they lived a long time. Another clan called the Sakatla'di [?], from Baranof Island, joined them and eventually merged with the Katcadi [Kaach.ádi].*

Another Flood refuge mountain in the vicinity of Kake was at Port Camden. The following story, among the most detailed about the mechanics and impacts of the Flood, was recorded by ethnologist Viola Garfield from her Kake consultant, Peter Grant (Garfield [n.d.]:99-101):

*My uncle, Sáxa was the first man to teach this story. Tide came only so far and then doesn't go down far then each time it came up, it came higher, and the people knew it and got ready to save their lives. Put things in canoes, and each woman made a long [piece] of spruce root rope of [?] lengths [and] (asxadí, spruce root) le.t (spruce) together into long ropes. Tides go down and canoes are dry but each time they come up to the mountain, é.naca (Éinaa Sháa, Thornton 2012:139, #97) right inside Port Camden. Animals surviving around it tipped over some canoes. Bear etc. tried to get on the canoes. Mice also came up above tides and at night were like mosquitos. Big rock still there; people tied canoes to this rock. When the water [came to the] mountain, it did not cover [it] and [the] people were saved. And then the water began to go down slowly. Very many people drowned. Large uprooted trees destroyed canoes and killed people. Few were saved. All were like one family during the Flood. The separate tribes really started after the Flood. A family reduced to one man moved off and married somewhere [else] and then a new tribe was started.*

*When tides came down everyone came down to their places and people could not make fire or get fresh water. Small children die[d]. Finally the land [was] dry and rain gave them fresh water, and [the people] start to live normally. After [this] they started, they want back to all of the old places: Security Bay, Hamilton [Bay], etc., etc.*

Garfield records a query to Mr. Grant about the cause of the Flood, in answer to which she notes: "He didn't know what caused it, just the strange acting tide." This story was separately attested by Kake elders Harold Martin and George Davis in an interview in July

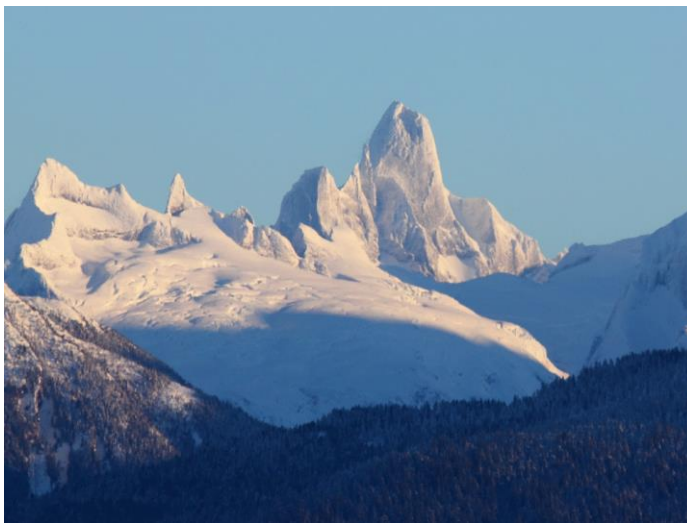
2013. They also suggested that Kaach.ádi elder Johnny C. Jackson had recorded a narrative about this site.

Among the few Flood refuge mountains to be commemorated on a totem pole is Taalkunaxk'u Shaa (Mountain at the Back of Taalku [Thomas Bay], near Wrangell, and known as Devils Thumb in English (Figures IV-5, 6). According to Olson (1967:57):

All of the clans of the Stikinkwan have migration legends save the Tatlkwedih (Taalkweidí, People of Thomas Bay). They lived in the Wrangell area even at the time of the deluge. They escaped the flood by climbing "Devil's Thumb Mountain." They owned the following places:

1. Thomas Bay. Their main village was here. From this place the Daklawedih went on their journey to the north.
2. Xattlai [Xeiti Geeyí] now called LeConte Bay.
3. Sitc [S'eech], now called Totem Bay.

Mention of this mountain or perhaps another refuge mountain farther up in the Interior of the Stikine River valley is made by J.B. Fawcett in a Sealaska Heritage Institute Archives recording (Fawcett [n.d.]). After coming back down the Stikine with the receding of Flood Waters (this migration is its own story, with some clan histories recounting perilous journeys under glaciers covering parts of the Stikine River) to the "sandy areas" of the coast, the Taalkweidí split further. Part of the clan moved to Duncan Canal, where they took the name of the upper reaches of that place (Lukaax, possibly transferred from a village site in Totem Bay, Lukax.aan), becoming Lukaax.ádi. Reference to this migration



Figures IV-5 and 6. "Devil's Thumb [left] totem-pole on Shustak's Point, Wrangell. Devil's Thumb {Taalkunaxk'u Shaa} is holy mountain to Talque-di [Taalkweidí], for it was on this they found refuge during flood. Carving represents personified mountain (Keithahn 1945:42; totem photo courtesy of U. S. Forest Service)".

is on another recording in the Sealaska Heritage Institute Archives, which concerns the history of the Lukaax̱.ádi as told to Austin Hammond (a Lukaax̱.ádi elder from Haines) by Lukaax̱.ádi elder Joe White. The following excerpt summary transcription was made by David Katzeek (see mammond n.d., 1984):

*He [Joe White] told the history from the beginning of the great flood.*

*He begins to tell a story about three boys who went to the top of the mountain [Devils Thumb? Or possibly a mountain near Excursion Inlet or Haines?] and found the rope that was left on the top of the mountain. They found material that appeared to be rope coiled on the top of the mountain.*

*When the flood went away they ended up in the interior.*

*He then talks about a place called Duncan Canal [after the return migration to the coast]. He calls the place Lukaaxh. He then goes on to say this is where we [Lukaax̱.ádi] migrated from [to Haines].*

A similar history of this migration of the Lukaax̱.ádi was related to the author by Lukaax̱.ádi elder John Marks in 1998, in which he also notes that his clan stopped at Excursion Inlet, where a branch remained (while the others continued on to Haines area), and adopted a new clan name based on the Tlingit name for Excursion Inlet [Kuyeik']: Kuyeik.ádi.

The Stikine River Valley, including its surrounding mountains and glaciers, comprise an important site of habitation, hazard and refuge during the Flood. Among the most important refuge sites was Cone Mountain, on to the South of the Stikine River, near the International border. The mountain served as a crest for the Naanyaa.áayí clan of Wrangell, along with the brown bear, which famously accompanied the clan refugees on their retreat from the Flood (along with a mountain goat), the bear ultimately being sacrificed for the people's survival.

#### How Cone Mountain and the Brown Bear became Sacred to the Naanyaa.aayí

*This story is adapted from John R. Swanton's Tlingit Myths and Texts (1909: 231), and was recorded from the Kaasx'agweidí leader Kaadaashaan in Wrangell in 1904. It shows well how events and features anchored in particular landscapes become sacred elements of clan's heritage, or shagóon.*

At the time of the Flood the Naanyaa.aayí were climbing a mountain on the Stikine River, called Sêku'qle-ca [Seikookléi\* Shaa, #67], and a brown bear and a mountain goat went along with them. Whenever the people stopped, these two animals stopped also, and whenever they moved on the animals moved on. Finally they killed the bear and preserved its skin with the claws, teeth, and so forth, intact. They kept it for years after the Flood, and, as soon as it went to pieces, they replaced



it with another, and that with still another up to the present time. This is why they claim the brown bear. During the times when this bear skin has been shown thousands of dollars worth of slaves and furs have been given away. Shakes [Sheiksh], head chief of this clan, would go up to a row of slaves and slap each one, upon which the slave would either have to be killed or sent home. This is why they gave great names to their children. They were very proud of owning this bear and did all kinds of things toward it. That is why all Alaska speaks of the Naanyaa.aayí as the chief ones owning the brown bear. Very many songs were composed concerning it, with words such as these, “Come here, you bear, the highest bear of all bears.” (Thornton 2012:147).

Olson (1967:32) adds the following details to the Naanyaa.aayí Flood story, some of which echo those recorded at Kake by Garfield about its devastating impacts and influence on clan migrations and reformations.

A white Kodiak bear led the way and the people followed his trail. The signs of this trek can still be seen. On the mountain have been seen the decayed remnants of a mat and of a rope which was used to moor the raft that was used. (There is a song about the bear which was composed then.) The Nanyaayih claim the mountain.

As the waters rose many animals climbed up to escape. The people built a sort of fort of stone and from this would spear the animals. Many people were lost for the frenzied animals tried to climb aboard the canoes, upsetting them. When the “tide” (flood) receded the people were in great distress. They had no fire and tried to eat raw meat, but would vomit it up. Only the flesh of the porcupine could be retained on the stomach. All their stored food and all their goods had been destroyed by the flood.

At this time the people of the various clans became scattered. The current carried the Nanyaayih to the Taku River. There they and others built a village called <Yai~yawa 'w" [?, possibly Yaawat'aayi , Thornton 2012, 73,#5]. The village was on the bank of the river, all the houses in a row. The house of the Nanyaayih was called Hítke'n (big house [Hít Tlein) and was the one farthest up-stream. When visitors came to the village they would ask where this house was and would be told “Nana'h” (upstream. or farthest upstream). From this the clan came to be called Nanyaayih.

Tom Ukas, a Stikine Tlingit of the Kiks.ádi clan, and child of the Naanyaa.aayí, interviewed in the 1970s, states that the Flood in the Stikine valley was the beginning of the parting of Tlingit clans to many different communities: “This is how we parted from one another,” he says, noting that his father was from Taku. “He was from the Hít Tlein Hítan.” According to David Katzeek’s interpretation of Ukas’ Tlingit words, Tom’s father’s people moved to Petersburg. Then to Stikine. They were from the Hít Tlein Hítan people. There were many clans that moved to different communities after the great flood.

There was a man named Keishishk' he was a tribal leader and he told the people that were coming in near his place he told them to build their house next to his. The name of the house was X'átgoo Hít (Dog Fish House). There was a lot of them they growing in numbers just like the Naanyaa.aayí people. They actually took the name Naanyaa.aayí for themselves as well.

[Later in the recording Tom] talks about a people who were called Taaskwéidí there was a great mountain they drifted up toward the top of the mountain. The place was called Tséikhukéi [? Location?], this is the place they survived the flood.

He then talks about where his father's people survived and where the people of Klawock survived and other communities. "This is the way it was and to this very day we are alive on our land," he says.

Mr. Ukas also references a song (now a memorial song) that is sung when people have to leave their lands for other places, that refers back to the Flood migrations. (David Katzeek notes that it is a "Killer Whale song that was sung by Awasti and Kaawásiik when they went under the [Stikine] glacier on a raft."). The words are as follows:

*I will not see my land's mountains.*

*I will not see my waters.*

*I will no longer see my house.*

This tape may be worth translating in full as locations for where the people of Klawock and various other communities not specified in the summary protocol, are apparently mentioned or alluded to. These are sites that do not otherwise appear to be mentioned in the literature.

Other similar Flood stories are recorded in the Ketchikan-Saxman area, including the following, recorded by Olson (1967:36) from his informant, Billy Johnson, about the coming of the Flood to Saanya Kwáan.

#### The Flood Comes to the Sanyakwan

*Along Djuna'k, (Unuk River) there were five villages. The houses of the Tekwedih were always at the upper of each village. The village farthest upstream was at the foot of a high mountain. The waters started rising. The people got a canoe ready and put supplies in it. All could have been saved but foam came up and they were also blinded by the tops of trees. Bears and wolves tried to climb into the canoes, capsizing them. So only a few people were saved. Trees floating capsized others. Some of the people had their dogs in the canoes and the dogs scared the animals away.*

*Those saved thought the “tide” (flood) would soon subside. But it rose instead. Inland was a high mountain called cakle 'n (big mountain [Shaa Tlein]). When the water reached its foot the people lost hope. They didn't know what to do. Some followed the canyon of a creek to escape the trees. All the animals were climbing the mountain. A wise man said they should twist a long rope to make an anchor line.*

*Then the people composed a song for their “grandchildren,” in case anyone survived. The words ran. “Let the line be twisted and ready. He hi hi hi.” When the water had nearly reached the top of the mountain they added the words. “Let everyone be ready to walk on the top. He hi hi hi.”*

*At the top two men took a log and weighted it down with stones. A storm arose, but the canoes were on the lee side. The top of the mountain was full of escaping animals. Women kept on making the anchor line longer and longer. Some say the mountain was finally covered; others say not.*

*The survivors were saved on three different mountains: the Tekwedi [Teikweidí] on Mount Stoeckl up the Unuk River, the Nexadi on the mountain called Gweka'h at the head of; Rudyerd Bay {Adam Mountains?}, and the Kiksadi on the mountain called Wátsdék [Wats Téik? Dome Peak?] up Boca de Quadra.*

*[Not long ago (i.e., in modern times) a Nexadi man named Sta'ct (Starfish), who was a good climber, wished to see the place where the Nexadi were saved. He climbed the mountain. At the top he found the anchor line still tied to the log. He ran down the mountain, for a dense fog comes whenever the mountain is climbed. The fog overtook him. It is not stated if he survived.]*

*The Tekweidh had noted which way they had come and when the waters receded they came this way (toward Ketchikan). On the way they sang a song, “I don't believe the place is dry where I am going to walk.” Some of the people (clans) were not able to find their original homes but they did find the five old villages. They rebuilt their homes at these places. (The sites of these can still be seen.) The Tekwedih went to the mouth of the Unuk River and built at the creek called Yéic Gíhin (Yes 'Bay [Yèis Geeýí]). Some settled at Yetlgunuuk (Raven \_\_\_\_? [Yéil Kòowu Nòow ?, See Thornton 2012:184, #28]) just above Anchor Passage. Here they were living when the whites came.*

Henry Denny (1902-1979), a Neix.ádi leader (holding the title of Gashéiksh IV, or Chief Shakes IV) from Saxman, made an extraordinary series of recordings, including some with his mother Bessie in the early 1970s (Denny [n.d.]). The following excerpts from draft transcriptions of these tapes include reference to the sites mentioned above, specifically in the vicinity of Boca de Quadra and up the Unuk River. The Unuk River story is especially detailed in discussing the logistics of preparation of the canoes, ropes (*wook*, woven from cedar bark), and “dead head” logs for anchoring on the mountain tops, and in suggesting that rocks to construct the cairns were carried in the refugees' canoes to the mountain tops:

The Flood at Boca De Quadra and Tlingit retreat to Wat-stak (Mountain)

Henry: *In a day's journey they make to the head of the bay, the main river at the head of the Boca de Quadra. And there, the man bared a name. The name of this man was Yak-YaAtes, that's the Frog Clan name.* [28:00]

Bessie: [Speaking in Native Tlingit Language]

Henry: *From there, they go out, they move out of the bay and move out into the other bay, where there's a lake. They dry fish there.*

Bessie: [Speaking in Native Tlingit Language]

Henry: *It is while they were drying fish there. It must have been when they were drying fish there, when the flood came upon the earth. And, when the tide went out ... The whale was in the lake when the tide went out.*

Bessie: [Speaking in Native Tlingit Language]

Henry: *When the tide went so low that the whale could not get out in the narrow little river there. So it went over the point from there, back a ways from the creek.*

Bessie: [Speaking in Native Tlingit Language]

Henry: *There's still today, there is a gap there over the point where the whale went out to sea.* [30:03]

Bessie: [Speaking in Native Tlingit Language]

Henry: *And so, it came to past that the whole bay was claimed by the Kiks.ádi, the Frog Clan.*

Bessie: [Speaking in Native Tlingit Language]

Henry: *The name of this mountain they call it Wat-stak.* [30:50] [[check location above Hugh Smith Lake?]

Bessie: [Speaking in Native Tlingit Language]

Henry: *At the time the world flood, this mountain was not covered by tide, and this is the place where the Saanya Kwaan had survived.*

The Flood [at Unuk River]

[4:13] Henry: *And one of these times, while they were living, people saw the tide come right up to their doors of their houses, and the tide went out again, and then people begin to go up the woods. They start pack as much food as they could pack up the woods, but they couldn't pack quick enough, so they started put them in canoes.*

Henry: *Not only Unuk people, but all over, all the Saanya kwaan the tide was coming up higher. Each time the tide come up, it'd go way up higher than the last high tide and when the tide go down it go down to where the last high tide was, and it goes up higher and it comes down to where the last high tide is. This is how the flood begins to come, and every day they come every tide, they come up higher and higher. [5:18]*

Henry: *They begin to go up the mountains, and the Unuk People, they started to go up the river. They had loaded their canoes. Of course, there was a lot of food all the way. The Unuk River is sixty-five, sixty-four mile long, from high tide mark to the head of the Unuk River. And way up the head there's a big mountain, they called it, still white man called it Silver Mountain and Tlingits called it, "Shak-klin". [5:49]*

Henry: *They kept on going up the river, they go many miles every day, and they keep on going up the river and they finally come up to, to Shak-klin. When they come up there, they started to go up the mountain.*

Henry: *When they are going up the mountain, the women, they start twisting ropes out of cedar bark. A lot of it, all of them, the men get the "Wook", they called it, "Wook" and they twisted this big rope, they say it's that big, and say it's about four inch rope they made. [6:33]*

Henry: *And they know, they keep going, the older people say, it going to come up the top of the mountains. And they pick the highest mountain, they start going up there [noise] and when they got so far up and when they are coming up to the trees, the end of the trees, the line trees, and they made a dead head [log or heavy timber submerged].*

Henry: *Some of the canoes were empty already with food, so they put rocks in it, a lot of rocks. And the older people say there's no rocks up on top the mountain. So, they loaded one canoe with rocks and they put the dead head on and they tied this big rope to it. And when they get to the top of the mountain, they, they, they put this dead head down, a big log, not a big log, but a good sized log, and they piled the rocks on top of it and they put the life line on it. [7:31]*

Henry: *And the more they do, the women were still twisting more ropes yet, to make it long enough. The tide went up and finally the top of mountain disappeared and they hang on to that rope, they tied their canoes to that rope. And there's, no more mountains anywhere.*

Henry: *And the bears and the things left, it was fearful, ~~deer~~ deer and animals, wolf and things were swimming in the water, they had to fight them off. And they keep on twisting this big rope, but no-one know how long they were up there. And finally, they stopped ... the rope stopped going overboard and then it started get slack. The tide began to go down again. When the tide started going down, they start, they just hung on.* [8:28]

### **Alpine Cairns and Flood Stories in Northern Tlingit Country**

Other Flood stories that concern northern Southeast Alaska locations include Robin Mountain at Kaliakh River, Mt. St. Elias above Icy Bay, and at Mt. Fairweather, above Lituya Bay, as in mountains in the vicinity of Hoonah (Xutsnoowú), Excursion Linet, and Glacier Bay (discussed below), and at Battery Point near Haines.

De Laguna (1972:794) said of sites at Mt. Fairweather and Mt. St. Elias near Yakutat:

Once there was a great Flood, believed to have been the same as that described in the Bible. This was like an abnormally high tide that covered all the earth. It was caused by Raven's jealous uncle who became angry when his beautiful wife was molested by Raven. This personage is equated with Noah by some, and was called in Tlingit QingA (or QingB)[?], and also 'He Who Orders the Tide' (*qik kuqek*). In two versions of the myth, this person is identified with the Moon (*dis*). He became so angry at what happened to his wife that he went up into the sky, and his slaves accompanied him as the Stars. The great Flood forced people into canoes and onto the tops of the highest mountains, where they built shelters or "nests". "A nest was built on Mount Fairweather during the Flood. It was called *qi<sup>^</sup> kanAda* [Kees' Kasnádaa], 'high tide all around....There was also a nest on Mount Saint Elias. No other mountains were mentioned, although many are known to the Angoon Tlingit (de Laguna, 1960, p. 52). The great Flood not only drowned many, but was responsible for the dispersal of the survivors, so that a number of sib origin stories begin with this event.

J.B. Fawcett ([n.d.] 1969?), an elder from Shangukeidí clan [?], also mentions Tsalkaan [*Tsalxaan Gooshká*, Mt. Fairweather Thumb?] and a site near Alsek River (and Excursion Inlet, more about which below) in a recordings partially transcribed by David Katzeek and Fred White. Mr. Fawcett cites the markers [cairns] at these sites as evidence and documentation of the events of the great Flood, indigenous claims about which the dominant society does not believe." According to David Katzeek:

"He then went on to say that people fled to the high mountains and that brown bears swimming in the water attached the people. He says that it was those people who had dogs that kept the bears away from them...[and ] that some of these dogs



became wild and are the animals that turned to be wolves. Prior to the flood there were no wolves according to his account” (Fawcett [n.d.]:3).

He further comments that people coming back to the coast after the Flood found the glacier [at Stikine River] was blocking their progress. It seems in a separate recording (transcribed by Fred White) that he may refer to this place where they found their way blocked as Táy’héen sháak [poss. Shtáy’héen Shaak, Head of Stikine River?].

### The Galyáx Kaagwaantaan and the Flood Refuge at Robin Mountain

Concerning Robin Mountain at Kaliakh River, near Cape Suckling, Thornton and Doug Deur interviewed Ted Valle Sr. of Yakutat in 2014 (for a project on cultural landscapes in Wrangell Saint Elias National Park; see Deur and Thornton 2015), about the origins, migration and settlements of his clan, the Galyáx Kaagwaantaan, as told to him in part by his mother. It accords with de Laguna’s account which states that,

It was here [Kaliakh River] that the Kagwantan came, drifting in canoes, during the Flood, and landed because they were attracted by the beautiful mountain above the river. This is *Kulthieth* or "Robin"(?) Mountain, called *TcAwa£* [*Ch'awáax*] “Robin Mountain,” from Eyak, see Thornton 2012:16, #30] which was described as striped with all pretty colors (banded sedimentary rocks?), as if it had been painted, and was bright where the water ran down. There was formerly a village, *Gi’liyA* or *GatyAX* > [*Gilyáx* or *Galyáx* = river; see Thornton 2012:16, #29] on the Kaliakh River near this mountain.... According to [Michael] Krauss, *galyAx* means 'the lowest' of a series. One of my informants who had visited this area as a boy in 1900 saw the remains of a large old-style house on the west side of the river. This was the Beaver House of the [*Galyáx Kaagwaantaan*], and the village their "capital town," where they defended themselves against an Aleut attack. The famous *Teqwedi* [*Teikweidí*] from Yakutat, *Xatgawet*, is said to have fought beside the local chief, his father-in-law. The *Kwack:qwan* [*Kwashk'ikwáan*] also lived here (1972:101).

De Laguna suggests that the Galyáx Kaagwaantaan moved originally from Copper River, perhaps as a result of the Flood, or a dispute, and became lost in the fog as they moved south, before finding the coast again at Kaliakh River. Mr. Valle’s account is as follows:

*And in the beginning my mother was telling me how we got to where we are was sometime a long time ago, and nobody knows. We didn't have calendars, we didn't have watches or anything then, but our people slowly moved sometime during a Flood because our people were floating around in the ocean. Nobody knows how long we floated around, but when we were heading [name of leader ? 3:16] and he told the people, 'Wherever's there's logs, there's got to be rivers, so we'll go over there.' And we went there. And the river that we came into and went into was what the Caucasian people today called Kaliakh, but our name for it was Galyáx. So*

*that's where we first went in and we started to build a village there. And I don't know exactly where it was but it's on Kaliakh River somewhere. ... I don't know how many years passed, passed, passed, and our people started to spread out in both directions. Some were going up toward [Bering River 4:09] and that's as far as they got.*

[The Kaagwaantaan settled for a time in the Bering River tributary:] *"We started here. Some people settled there also.... And they went up to Bering—I can't remember the Tlingit name for Bering, but they went to—there's a tributary there and they called this tributary [Sha haat ishtaak ?? 4:53], the one by Haines and Klukwan".*

*And we were staring to get worried because we were—[who] were we going to marry with us? We're going to start disappearing. ... That's what we were thinking, the people were thinking. But then they come across some Eyaks. We called them [Ka kay ah? 5:04]]. And we, eventually we [ended] up intermarrying with them.*

*...Then we built them houses up there on the Bering [River] and then another group had gone down toward Yakataga, the other way, and they built more little villages in Kaliakh of course, that was the main village. And in Tsiu they built a small village. And actually it's around Tsiu... the next river from Kaliakh was the Duktoth. And I can't remember a Tlingit name or Eyak name for it either, but the people call it Daktaal\* [from the Eyak for "cooked", #31]. We didn't build a village there or anything, but we moved on down to Yakataga [#32]. And pretty much that was the extent of our first branch".*

[Regarding the sacred mountain found on the regalia of the Galyáx Kaagwaantaan Beaver Clan] [Ch'awáax' 1:34:24]: *"I don't know. I think it might be an Eyak name. ... It's part of our crest. ... The last time I saw it was on one of my cousins and I don't know what happened to his regalia, but that's where I saw it" (TV). "Up the Bering—I don't know [1:35:11]] because the glacier has moved down and I don't know where Chilkat [Jilkáat, #19] was. That was where our village was actually built... And then somewhere on the shoulder there was a—it's called Yéil X'us.eetí [? Raven's Footprints 1:35:40, #39], but I don't know where it's at for sure. But from this island and you look ashore, and you see these tributaries. They look like bird footprints so they called it Yéil X'us.eetí.*

[Ted Valle expands upon the origin of the Beaver House on the Shaa haat [?], on the Bering River:] *"They went up there and that's where they encountered a washed out beaver dam. And there was a little beaver on a log, crying and singing. And so they got our mourning song from this beaver. ... And this man went up and got the beaver and saved it. So that was where we built our first House and we called it the Beaver House. ... Up there in Sha haat] on the Bering. We were one clan. ... An*

*Eagle Clan. And we were starting to get worried because we were—were we going to marry with us? We're going to start disappearing” (TV).*

Both Kulthieth Mountain and the beaver became crests, or *at.óow*, for the clan: the mountain for its role as a landmark and refuge for the clan from the Flood, and the beaver for its mournful song. De Laguna (1972:456) suggests that little is known about the symbolism of the mountain design however, the mountain is considered a sacred property of this clan. There are also songs associated with these events, including the mourning song inspired by the beaver.

Mr. Valle did not specifically mention cairns at Robin Mountain, but does suggest that the rocks associated with the area between Kaliakh and Bering River have special properties, which the people investigated, only to discover they were copper.

*[A] woman noticed that there was patches of green.... And she thought, 'Something's causing it to be green like that.' So she told the man, 'Why don't you dig some up to see what's causing that green water?' So they dug some up and there were copper nuggets, but they were oxidized, green. And so they dug some up and then they said, 'We're going to camp here for overnight.' So they put around where they were going to make a fire and they made a fire. When they woke up in the morning, the rocks were no longer laying there. They also discovered copper ... so they knew it was metal. Then they started heating it and see if they could make things of it. So, and the large nuggets that they found, they pounded flat and make what they call tinaa.*

Of the site on Mt. Fairweather, de Laguna (1972:91) records: “A stone "nest" or refuge is said to have been built on top during the Flood, called *Qis kAnada* [*Kees' Kaanadaa*], "High Tide All Around." This peak can be seen even from the ocean beach and the airfield near Yakutat, over 80 miles away. Like Mount Saint Elias, Mount Fairweather has captured the imaginations and played an important part in the lives of both the aboriginal inhabitants of the Gulf of Alaska and of White voyagers.”

Flood stories concerning Excursion Inlet and elsewhere in Hoonah (*Xutsnoowú*) Territory are related by Andrew Johnnie, a Chookaneidí elder, in a recording made by Hoonah (*Xutsnoowú*) Heritage Foundation in 1997 (Johnnie 1997 [2012]). Mr. Johnnie relates the story in Tlingit, and the bilingual version, with draft Tlingit transcription and translation, executed by linguist Keri Eggleston and elder Helen Sarabia is excerpted below.

<p><b>Speaker:</b> Andrew Johnnie Sr. (Chookaneidí)</p> <p><b>Linked audio/video/Elan files:</b> Andrew Johnnie Sr Video.eaf, Andrew Johnnie Sr audio from video.mp3</p> <p><b>Date recorded:</b> Feb. 3-4, 1997. Video recording obtained from Hoonah (Xutsnoowú) Heritage Foundation; Transcript archived at Sealaska Heritage Institute;</p> <p><b>Transcription/translation by:</b> Keri Eggleston and Helen Sarabia [considered draft]</p> <p><b>Date completed:</b> 7/6/2012; NSF award 0554163, Excerpted here by T. Thornton</p>	
Andrew Johnnie Sr. narrates his experience on a hunting trip where he found an old canoe against a long row of piled up stones, at Cape Bingham on the entrance to Lisianski Strait, across from Column Point	Tape mark: 00:49:00.980 to mark: 00:53:01.270
<i>Tléináxh áwé kei nxhagút wé dikéede.</i>	I'm walking up alone.
<i>Yá tlél daa sá yéi uxhsatínjich áwé,</i>	Because I wasn't seeing anything,
<i>tlaxh yóo shakée [?] kei xhagóot áwé,</i>	when I got to the top,
<i>kashaakh axh káa yéi wooneiyích áwé tle</i>	because I got tired,
<i>yá xhwsateeni té yan shakaxhwligán axh óonayi.</i>	I leaned my rifle against a rock that I saw.
<i>Axh [?] shukáa yan xhwasítan khuxhaatéés'.</i>	I put my [?] down in front of me and searched (for deer).
<i>Ch'a yóok dei áwé daa yan xha.éen daa sáwé a daat xhahán.</i>	Suddenly I became aware of what I was standing next to.
<i>Ách áwé [?] yáxh axhwdllichéin.</i>	That's why I looked [?].
<i>Tlél unalé tléix' hándit khaa xh'óos' yéi kooyáat' kéi kawduwachági té sáwé a daat shukaxhwdligán.</i>	It was piled up stones not quite a hundred feet long that I was leaning against.
<i>[Yóok' dei áwé?]</i>	[?]
<i>tlaxh yóo a shóot áwé tán wé seet tlein.</i>	At the end of it, a big canoe (with sharp pointed prow) was laying there.
<i>Tlaghanís teen áwé yéi kawduwagás'.</i>	It was propped up with a pole.

<i>Ách áwé</i>	That's why
<i>kasayeedéin yatee axh toowú.</i>	I felt ill at ease.
<i>Ách áwé át xhwaagút wé óonaa xhlashát.</i>	That's why I walked there holding my rifle.
<i>Át xhashée áyá yáa káa yéi akhéech át tlei kast'áat' yáxh yatee.</i>	When I touched the place where people sit, it felt like cotton.
<i>Tle ch'a yéi yaxhwilts'én.</i>	I just left it alone.
<i>A daa yóo tuxhwaatánk wáanáxh sáyá át tán yá dikée,</i>	I was thinking about it, why is it laying up here,
<i>yá seet kooyát'.</i>	this long canoe.
<i>Kha wáanáxh sáyá kinde [jeeyawduwayáxhw?] yáa té?</i>	And why did they [haul?] these rocks up here?
<i>Yá téixh siteeyi át.</i>	This thing made of rocks.
<i>Á áwé l áyáxh sh tooxhdanoogóoch áwé.</i>	I didn't feel right about it, that's why.
<i>Tlei aaxh ghunéi xhwaagút tlél dé axhwaal'óon tlaxh</i>	I just started to walk away from there, I didn't hunt anymore
<i>Shux'áanáxh xhát áwé yéi kaaxát kaawaháa.</i>	To begin with I'm the first one that this happened to.
<i>Áwé yéi tuxhditaan.</i>	That's what I thought.
<i>Has at wu.óon de áwé yéi khu yáat'aa s nadayéini.</i>	They shot something but they're packing this thing.
<i>Ách áwé tle shóode kaxhwdi.ák.</i>	That's why I built a fire.
<i>Has du yeegháaxh khuxhwaatées' [?]</i>	I was looking for them [?].
<i>Tlél aadóo sá aa- daa sá aw- wulaxheidl yáxh woonei du jeedé.</i>	Nobody got lucky.
<i>Xhaawé daa yéi tuxhaatánk khaan kaneegí gé s du een.</i>	I was thinking about telling them.
<i>Tléik', yóo tuxhwditaan, axh éesh tin tsá.</i>	No, I thought, just my dad.
<i>Ách áwé yáat'aanáxh áwé</i>	That's why through this one
<i>yá hóoch'i aayí a shunáa daa kagaxhlaníkni áwé gaxhyee.áaxh tsu a daat.</i>	when I finally get to the point you will also hear about it.

<i>Haaxh- Haa Lingítsh sateeyí xhá yáax' yéi yatee.</i>	Our Tlingit people are here.
<i>Yá aan galakhóo</i>	When this land flooded
<i>héen jinákh yaa khundakíl'i ásíwé gé yéi jiwduwanei.</i>	when people were running from the water, maybe that's when they did this.
<i>Ách áyá yéi shaa shakéex' kei [jiwduwayáxh?] yá té.</i>	That's why they [hailed?] these rocks to the top of the mountain.
<i>Wáa sákwshé s woonei aadáxh yá khu.oo tlél xhwasakú.</i>	I wonder what happened to the people from there, I don't know.
<i>A daat áwé shawduwatán yá seet kooyát'.</i>	They leaned this long canoe against it.
<i>Yakawduwagás'.</i>	They moved it.
<i>Gwál yéi yaakw yík áwé tsá áa khukawdixéel'.</i>	Maybe there was trouble on the boat.
<i>Yá khúxhde yaa k- yaa kdawóoxh áyá.</i>	The tide is ebbing.
<i>Yá aan galakhóo aagháa gýé kei jiwduwayáxh wé té.</i>	Maybe during the flood is when they [hailed?] those rocks.
<i>Ách áwé wé yaakw wé seet sáwé daat shawduwatán.</i>	Maybe that's why they leaned the canoe against it.
<i>Yéi áyá tsu a xheiní daa aa kkhwatée yáa a shóode.</i>	I'll add some more to the end.
<i>Tsú Chookaneidí áyá yéi woonei.</i>	It also happened to the Chookaneidí.
<i>Yá North Pass yóo duwasáagu yé.</i>	The place called North Pass.
<i>Yáax' yéi yan at kawdiyaayi yé khu.aa wé Lugheeyá.</i>	The place where this happened is Lugheeyá (Place name).
<i>Yóo áwé duwasáakw haat áwé áa litseen.</i>	That's what it's called. the tide is strong there.
<i>Yá North Pass yóo duwasáagu yé.</i>	The place called North Pass.
<i>Yáax' yéi yan at kawdiyaayi yé khu.aa wé Lugheeyá.</i>	The place where this happened is Lugheeyá (Place name).
<i>Yóo áwé duwasáakw haat áwé áa litseen.</i>	That's what it's called. The tide is strong there.



Andrew Johnnie Sr. narrates his experience on another trip near the Excursion Inlet Cannery where he was introduced to an alpine cairn assemblage from the days of the Flood, and where his ancestors were said to have taken refuge- TT	Tape mark: 01:25:25.740to mark: 01:27:19.760
<i>Yáadu xhá Lingítxh satí</i>	Being Tlingit here
<i>Dei yá Lingít aaní</i>	this Tlingit land
[?]	
<i>aan galakhú khoowdzitee.</i>	a flood was born.
<i>Yá yáa</i>	This
<i>Excursion Inlet yóo duwasáagu cannery.</i>	cannery called Excursion Inlet.
<i>Áx' a yíkt [?] duwasáakw Porpoise Island.</i>	There in it [?] is called Porpoise Island.
<i>Tlei aadáxh yánde áwé yá l'éiw tlein t'áak áyá</i>	From there to the beach behind the big sand
<i>yá shaa shakéede áyá tatóok tlein áwu á.</i>	toward the top of the mountain, there's a big cave there.
<i>Yá héen</i>	The water
<i>yá aan galakhú nákh yaa khundakél'i áwé.</i>	the Flood, people are running away from it.
<i>Shaawát áwé át áa kha du yéet yéi ksigéink'.</i>	There's a woman sitting there with her little son.
<i>Kha yá du xhúxh géwé nás'gináxh.</i>	And her husband too, maybe there were three of them.
<i>Áx' shóot has akawdi.ági yé.</i>	The place where they built a fire for themselves.
<i>Táach yaxh has yawuljaaghí áwé has du káxh kaawadaa áx'.</i>	They fell asleep and it engulfed them.
<i>Ch'u yeedádidé áwu á téixh has sitee.</i>	Still today it's there, they are rocks.
<i>Á áyá</i>	So
<i>aadé xhat wootsáay axh káak.</i>	my uncle asked me to go there with him.
[?]	
<i>yá khutaan</i>	this summer

<i>September-dé yaa khunahéini áwé aadé kái gaxhtoo.áat.</i>	when it gets to be September, we'll start going up.
<i>Ldakát yéide</i>	All kinds of ways
<i>kagaxhtushaxéet tlei ch'a daa sá</i>	we were going to write it down and whatever else
<i>kéi gaxhtootée aadáxh.</i>	we were going to take it from there.
<i>A shukát áyá táxh' wook'óots.</i>	Before that he had a heart attack.
<i>Áyá xháach khu.aa áwé tlei sh tóodáxh xhwaditee dé tlei.</i>	I just put it out of my mind then.
<i>Aagháa khuxhwaasheeyí.</i>	When I was looking for it.
<i>Á yéi áyá koogéi.</i>	This is all of it.
<i>A ítxh yánde kkhwatée.</i>	I'll end it after that.
<i>Gwál a xhoowú aa yeewháan yéi gaxhyisatéen yá video tape.</i>	Maybe some of you will see this video tape.
<i>A daat khushusagé yee jee yéi kghwatée.</i>	The knowledge of it will be with you.
<i>Haa Lingítxh sateeyí xhá yá aan</i>	Us being Tlingit in this land
<i>yá Lingít aaní gheix' yéi yatee yá aan galakhóo.</i>	this flood is enclosed within this Tlingit land.
<i>Yéi áyá koogé yáa yagiyee aayí.</i>	That's all for today.

Frank White (interview), current leader of the Kaagwaantaan Wolf House in Hoonah (Xutsnoowú), also had an experience of being led to an alpine cairn at Excursion Inlet [above the cannery on the east side] by his grandfather, John K. Smith. Mr. White was an adolescent at the time, and the expedition was considered part of his training as a future leader and historian. Frank White was interviewed for this project in Juneau.

[My grandfather was] *John K. Smith. He's a T'akdeintaan, the Raven people. Once we wound up there [Excursion Inlet] from Hoonah (Xutsnoowú). He had a boat named Grace. We landed at Excursion cannery and got ready, our packs everything, then the next morning we started hiking up before daylight. And we got to where he said 'That's it right there.'*

*It was getting dusk, so he said "tomorrow morning we'll go up on top. I'll show you something." And I thought about it all night and we made camp, built a fire, and ate what we had. Went and fell asleep. The next morning got up, ate, and then we went up to the top. The top was kind of flat. Right to the edge. It's almost like*

*that [referring to a table]. Right to the edge there was a pile of rocks. It was about four feet high, maybe some places are higher [and perhaps 20 feet in circumference]. My grandfather says there was some places where they ran out of rocks... Then he said, "You're probably wondering why they put rocks around the [top 13:37]]. It was not to keep the water out. They put it there—they went to that top of that mountain where, when water was coming up there. The earth was flooded. This was during the Flood. And they started building rocks big rocks and they made ropes and tied themselves to the mountain. But even the mountain went under. And they chopped themselves [their moorings] off of the mountain and some ended up in Canada, they said." I don't know how true that is, but they said they found a big rock, so it's pointing out the middle of that compound... [a] coil—big coil: about maybe from here to the couch [~ 5 feet]. About that big around [~ 4 inches]: rope. And they were so old my grandfather told me not to touch it. I didn't. It would just crumble. But for some reason, even how much it's blown up there, they [the winds] didn't blow that thing off. I asked my grandfather [about] that. He says, "Well there's some powers we can't see," he said. He taught me a lot of that stuff from our people. He said "you were born when they gave you that name... you're gonna be a leader of the—your people." And so I became the leader of my people.*

*[My grandfather] wanted me to see it. So the whole, [his]... whole purpose is just showing me that place. You know, he says when we're walking down on the—"we took a risk." And he said the reason I showed you [Tlingit name 27:28] he called me--my name--is to see it first-hand. Some people will ask you how long we've been here. So how long was the Flood? And we've been here. Yeah there's a lot of history that were lost. When I was growing up, I didn't really pay attention to it. I was put by my uncles, what their job was to get me ready when my time comes to lead. So that's how I learned some of my history, you know. Where we came from. Where we migrated from. And then, after the Flood.*

Mr. White's observation that the mountains at Excursion were not high enough to completely protect people from the Flood is significant and accords with Mr. Johnnie's suggestion that the Flood in that area "engulfed" the people. When asked if his relatives mentioned any other Flood mountains in the area, Mr. White noted that, "They're all around that area he [my grandfather] said, but this is the only one they showed me to, he said" (Interview). Mr. White also recorded a summary version of the story in Tlingit.

Other alpine cairn sites in the Hoonah (*Xutsnoowú*) were located in recent archaeological investigations in Glacier Bay National Park and Preserve (Crowell, et al 2013: 78ff). They found rock cairns on top of White Cap Mountain (49-XMF-070), above the east bank of Dundas River, above Point Dundas (49-XMF-065), and on Mount Carolus, above Pt Carolus in Glacier Bay (49-XMF-064). No oral history was collected on these sites, but archaeologist Robert Ackerman (1964:23) was told by Jimmy White, a Tlingit elder from Hoonah (*Xutsnoowú*), in 1963 that there was a ring of stones piled at White Cap Mountain which served as a "place of refuge for the Tlingit people during the time of the flood," and

since stood as a “monument to the Tlingit people” and their endurance of these catastrophic events. Crowell, et al (2013:80) suggest that these cairns are possibly monuments to the Flood survival story:

The cairns have no interior hollows to suggest meat caches and they are too low and inconspicuous to have served as way-finding markers or game drive constructions. The oval enclosure, which roughly corresponds in shape to the “nests” described in oral tradition, is too small to be a tent ring or hunting blind. We conclude that some or all of the rock features at the top of White Cap Mountain are probably Tlingit monuments built over the last hundred years to commemorate the story of the Flood. Two of them (Features 2 and 3) look relatively recent while others were built long ago, judging by the extent of moss and lichen growth. Variability in age might indicate an indigenous cultural practice that continued until the recent past, but newer cairns could also have been constructed by hikers, surveyors, or prospectors.

While evidence of such monument building is limited, it is suggested in some accounts, such as Jessie Dalton’s speech at the 1980 *Haa Shagóon* peace ceremony at Chilkoot (Dalton n.d.) that the ropes [and accompanying cairns] on tops of mountains came to signify peoples’ longevity, survival, and claims on the land. According to a summary transcription of the event, Mrs. Dalton stated in Tlingit “that before the U.S. bought Alaska the Tlingit people were on this land and the ropes on the top of the mountain because of the great Flood that came upon the earth her people fled to the mountains and the ropes on the top of many mountains documents this historical truth of the people who settled this land.” Elsewhere, including in Tlingit country at lower elevations, such commemorative stone monument construction and art work (e.g., petroglyphs, pictographs, etc. see Keithahn 1945) of this nature is not uncommon, and similar monuments can be found among other cultures (c.f. Molyneaux and Vitebsky 2000).

Commenting on the relative abundance of “Mountain top rock monuments” in the northern Tlingit region (though many are in fact not on mountain tops but in the alpine, nevertheless), Crowell et al. (2013:81) observe:

The local meaning of these features is strongly connected to the Raven flood story, which many in turn be an historical echo of the sinking of the land experienced by coastal communities during the Little Ice Age (~1350-1750) when the sea reached its highest relative position in at least 8000 years (Mann and Streveler 2008). It is notable that the geographic distribution of these alpine features, as presently known, coincides with the region that experienced the greatest amount of isostatic depression (hence flooding) during the Little Ice Age glacial advance in Glacier Bay (Larson et al. 2004; Motyka et al 2007). The belief that touching or pointing at mountain top cairns and rings will bring rain, fog, and bad weather is a symbolic connection to the flood story, especially the Nass Shakee Yéil version [see Swanton 1909: 120]. Dating and interpretation of these features might be assisted by

lichenometry—a method of age estimation based on the measured growth rates of certain lichen species.

It would be interesting to compare both lichenometry and the geomorphology of the alpine cairns north of Sitka, to see if dates can be obtained for their origins, and if these origins, as in Glacier Bay, seem to correspond with periods of localized sea-level rise or isostatic depression.

### **Flood Stories and Alpine Cairns in the Haines-Klukwan Area**

Two formal interviews were conducted with members of this community: Joe Hotch and David Katzeek (referenced above). Several archival sources in the Sealaska Heritage Institute and Sheldon Museum, especially those of Austin Hammond, also reference flood stories, alpine cairns, and petrified ropes in this area (Zachary Jones, pers. comm. 2011). One of these concerns a mountain above Chilkoot Lake (in the Takshanuk Range), the history of which was told to Austin Hammond (a *Lukaax̄.ádi* elder from Haines) by *Lukaax̄.ádi* elder Joe White. This summary was transcribed by David Katzeek. He told the history from the beginning of the great flood.

He begins to tell a story about three boys who went to the top of the mountain and found the rope that was left on the top of the mountain. They found material that appeared to be rope coiled on the top of the mountain.

When the flood went away they ended up in the interior.

He then talks about a place called Duncan Canal. He calls the place *Lukaaxh*. He then goes on to say this is where we migrated from.

In 1991 recording, Austin Hammond (1991) elaborated on this history, speaking of his own peoples' movements between Stikine, Haines and the Interior as a result of the Flood.

*When we first moved up, that was when there was a flood, on the mountains. There were two men up there. Nayookdatoosh, Seduction Point, it's called. Where they used to fish for halibut. This is the way things happened to our people. When the tide started to come up, some of the fishermen were talking to each other. How deep is it getting? Then they checked on it. There were the trees sticking out of the water, the flood was coming on us...*

*They checked around themselves they realized there's a flood. ....And when it dawned on them what was happening they said, "We're having a flood." And some of the people were putting logs together, putting them together trying to save themselves that way. And some of the dogs were on logs. And some of the bears also were on logs that were put together. And the dogs would bark at them and they'd have to go somewhere else, and some were on boats. And they saved*

*themselves in that way.... And the Raven and his elderly mother started up the mountain, and the elderly Raven, the mother, it was gettin' too much for her. You know how hard it is for an old person to climb a mountain.*

*Well, this was getting to her, getting to be too much, so Raven gave her something. Here try this, put this on. So she put it on. And then in the water and started to swim around like a duck. And boy, I think I'll wait, I'll have to this over better. I can't remember everything he said....*

*This thing we call Tchaak [Black Scoter?]. It's Raven's mother. She became Tchaak. The reason I'm telling it. The way our people scattered all over, when the flood started to happen. This is when some of us landed among the Interior Indians. When we came among the Interior Indians, there was an old man. He told his son. "This isn't our land. This isn't our land. Don't get crazy here. Our land is way on the other side of the mountain." From way up in the Interior, he pointed down towards this way, and then he started to think, and he asked him. How come they're staying here? And he started to tell them, just like I'm telling you, that the Tribe went out on them there. And when he died, his children, the one that was talking to his son, the one that was telling him, "This isn't our land." He told his children, "Your grandfather is the one that told us. 'This isn't our land. Don't act crazy here. This is the way we lived here, among the Interior Indians. This is the way we called them. Gu-na-na. Someplace else. Someplace else people.' " And we kind of shorten the word to Gu-nana. "We lived among them." This man was telling his children, and the children were talking about it. "Well, why are we staying here?" When they started to grow up, they said, "Let's go, let's go to our own land." Some of them came out of Taku. And some, Nass, from Nass. Some came down through Nass. And some through Wrangell. ... Stikine and Wrangell. And us, and at that time, halfway was our land. Stikine was the name of the place where they were. Now, it's a land. It's a town. This is also our land. The places we've been.*

*And then at that time, after we finally reached salt [water], some of the children, you see, this water passing through here, speaking of Chilkoot, you can drink water from there. When they came to salt water, the kids ran down to the beach with cups. They tried to drink the salt water, because they thought it was fresh water. And they started to cry.*

*They couldn't drink the water. And they knew, they knew that they'd come out from the Interior and were on salt water. White man would say, the place we came out was called Duncan Canal, but we called it, Klukaak [Lukaax]. That's why I am a Klukaakadi, because we stayed there. And this is where we came from. It's a long ways.*

Joe Hotch (Interview) also mentioned sites associated with the Flood in the vicinity of Haines, especially around Katzechin River across from Battery Point:



*Across from where they want to build the ferry base. They say there's a big, like a ship. There's a rock coiled up like rope on that. And people in the past respected place, because it's just like the ark of the Bible, it had the rope coiled up in the bow [boat-looking rock-told by Old Man Tom Jimmy]. It's still there I'm sure because they told as youngsters in that area, because it shows the history of God.*

*You call it Katzheen. It's sacred that place Katzaheen [on the right hand side]. The Whiteman changed it to Katzaheen. It's a Tlingit word. Kasaheen, the water's pouring down, Wullix'áasahéen, [waterfall; is also the name of the mountain].*

*The [Flood refuge] site is on a mountain above [Mount Villard?]. There's a lot of goats on that mountain and with the helicopters flying around, it's harming our cultural Chilkat weaving, because the goats provide the wool for the Chilkat blanket. All the way up to Klukwan.*

*Across from there at Battery Point you could see there's a rock there, but the world Flooded, a dog cried there, but it turned into a rock. That's why they call it Ketlgaaxyá, 'Place where a dog cried' ... right on the water [the place was].*

This story is interesting in that it discusses the phenomenon of living beings, in this case dogs, turning to rock, a common theme in Tlingit oral history and world view. It suggests that major events create their own stone memorials in the landscape.

### **Flood Stories and Alpine Cairns in the Angoon Area**

Mention has already been made above about major Flood refuge mountains around Angoon, documented by de Laguna (1960). Flood refuge mountains were identified by informants at Hood Bay (*Tsaagwaa Shaanák'u*, Hood Bay's [*Tsaagwaa*] Old Woman, see Thornton 2012:118, #158), Whitewater Bay (Table Mountain to the south; see Mark Jacob's statement above) and at Chaik Bay, (*Shalak'áts*, "Sharp Head"), to the Southeast East, [Thornton 2012:120, #237], Tenakee Inlet and elsewhere.

At Chaik Bay, de Laguna (1960:55) recorded that, "A mountain south of Chaik Bay (elevation 3,400 feet as marked on the U. S. Coast and Geodetic Survey Chart No. 8252) is called canaqAts [Shank'áts, variation on #158 above?]. This was also a Flood refuge mountain, and there is a rope at the summit, now reduced to ashes, according to the informant who claims to have seen it."

The oral history of Hood Bay Old Woman, related above and in more detail below, is more detailed and commemorated in Dakl'aweidi clan regalia (Figure IV-7). Linking the discussion of Hood Bay mountain to the broader geography of the Flood, the Little Ice Age, and clan migrations, Thornton (2012:108) observes:



Figure IV-7. Hood Bay Old Woman [*Tsaa Gwaa Shaank'w* in Tlingit] tunic, or shirt, at.óow (sacred possession) of the Dakl'weidí clan of Angoon. It is the name of a mountain at the southern head of Hood Bay which is associated with stories of clan ancestors seeking refuge from the Flood in an alpine rock cairn “nest” near the peak of the mountain. The tunic depicts the woman, Yishk', who turned to stone with the arrival of the Flood, and for whom the “life-saving mountain” (known as Bear Pass Mountain in English) is named. This oral history is commemorated in names, stories, songs, and crest designs like this. Charlie Jim (Deisheetaan, left) and George Davis (Teikweidí, right) hold the shirt which was made by Dakl'weidí elder Mary Bell, and was in the possession of Jimmy George, her son and the clan leader, around the time this photo was taken. People in Angoon are still very familiar with this landmark and the stories behind it, and a number of people have seen the cairn “nest,” which at one time featured a petrified rope coiled inside it (cf. de Laguna 1960; photo courtesy of Sergei Kan; see also Garfield George interview).

Hood Bay and its surrounding mountains, including Hood Bay Hood Bay (Tsaagwáa, “Harbor-Seal Ice Flows,”\* #163). During the so-called “Little Ice Age,” and perhaps before, icebergs from Glacier Bay and elsewhere choked northern Chatham Strait and would collect in Hood Bay, where harbor seals (tsaa) hauled out on them, thus inspiring the name. The name refers especially to the south arm of the bay. The Tsaagweidí, a branch of the Dakl'aweidí now located in Kake (Kéex'), took their name from this place, when they settled here after migrating from Stikine (Shtax'héen) River. The bay was the site of at least one famous village (Tanchwusxeek, “[Fish] Jumped and Kept Them Awake,” #177), a fort (K'óox Noowú, “Marten Fort,” #180), and several petroglyphs. Another landmark is Hood

Bay Mountain (Tsaagwáa Shaanák'u, "Tsaagwáa's Old Woman," #158), at the top of which people are said to have taken refuge during the Flood. The rope that they used to anchor their raft can still be seen there, but "it is now so old that if touched it turns to ashes" (de Laguna 1960, 52)."

Of the Deisheetaan and Dakl'aweidí clan, branches of which are found in Angoon and also in the Interior at Atlin and Teslin, elder Lydia George notes:

*Tléi aan galaku shukát áyá*  
This is before the Flood.  
*Aangalaku áwé dák kaa hawliláa.*  
After the Flood we ended up in the Interior.  
*Ách áwé haa xoonx'ee a.wóo yoo dakká.*  
That is why we have relatives in the Interior.

17:08      *Deisheetáan a.wóo aa dakká.*  
*Kaa wéi Daklawéidi tsú a.wóo.*  
*wéi dakká.*  
In the Interior are Deisheetáan and Daklawéidi.  
*Yoo áwé hás akanéek.*  
This is what they said.  
*Yaakw yátx'i yíx aawa.áat.*  
Everyone got in the small boats.

17:18      *wéi aan kéi nalkooní.*  
As the world was flooding.  
*Bible class áyá.*  
*Aax áwé yoo Shaa.*  
*Yadáatx aawoonéix.*

17:21      *Aax Saa áwé*  
"Shaa Dáax".[the name of the mountain where Deisheetaan took  
refuge, (location?)]  
Sam Johnson Jr. he was [given?] a name, "Shaa Dáax".  
that Robert Zuboff *yéi dusagóon*

Clarence:      *Yaa Téex' nák.*  
*Tléil gé aa kawdulnéek.*  
*Gunéi kawulgaas'ee anák?*  
Are there any stories of migrating from the Ice Age?

Lydia:      *Yéi áwé shkalnéek*  
*Deishú y'ei duwasáakw*  
Haines Mountain, *Akwshé?*  
The mountain in Haines is called Deishú. [*Geisán?*]

*Daaknák<sub>x</sub> aa áwé.*

18:07      *A woo, Aaa Tléin.*  
Up there is a big Lake.  
Áwé dleit káach, Atlin yoo yasáakw.  
Aaa Tléin áwé the Biggest Lake [Atlin, BC].  
*Ax' yéi haa wootee Aangalak<sub>u</sub> ít.*  
We lived their once after the Flood.

18:18      *Áat<sub>x</sub> áwé haligáas'.*  
Then we migrated down the Stikine River.  
“Stikine”.

Clarence:      *“Stikine yiknák<sub>x</sub>?*  
*“Háaw”.*

Lydia:      *Wéi Daklawéidi áwé kaa,*  
*Wéi Wooshkitaan.*  
*kaa wéi Deishitáan*  
*kuxdéi*  
Yaa Southeast *i kaadéi.*  
All these Clans migrated back up through Southeast

In a separate interview with her husband Jimmie George, Lydia George recounted additional details of the Flood migration. These are summarized by David Katzeek (*Kingeistí*) (George, [n.d.] 1988) as follows:

Lydia starts talking about the migration but then talks about the great flood and how the people fled to the interior and how the waters resided on the coast.

She tells of how they went back to the land that they had left because of the flood. They wanted to go back for the type for seafood that they lived off of before the flood. She gives an example of today. She said king salmon are being brought in today, halibut and other seafood.

She emphasizes that the people lived in their communities long before the great flood and lived off of the seas resources. She then mentions that the killer whale had already been created before the great flood she says.

She then tells of a place called Hood Bay where a woman was turned to stone there.

She then says when the land flooded they went to the top of the mountain. One of the people was carrying their bentwood box. He/she sat at the top of the mountain. It is said when this person is bending over it is when the fruit and berries was going

to be plentiful. It would be a good year for harvesting berries. If he/she is sitting upward then there would be very little fruit or berries to harvest she said. She then says that Hood Bay is her husband's peoples land.

She goes back to where the people were when the flood waters withdrew; they were in the interior when this happened. She mentions Teslin in the interior. She also mentions Stikine.

They started to return and she tells that the glacier had covered the area that they were trying to go through. They did not know if there were any people on the other side of the glacier. This was in the Stikine area she says.

There were two older women she says that went under the glacier on canoes.<sup>8</sup>

In our interview with 92 year old Cyril George (*Kaat Daa*) (Figure IV-8), an elder of the Basket Bay *Deisheetaan*, and nephew of Robert Zuboff, he told a similar history of the Flood retreat and re-inhabitation of Admiralty island by the *Dakl'aweidi* (Killer Whale) and *Deisheetaan* (Beaver) clans. In the case of the latter, he estimates that the clan members stayed in the lands above the Stikine River by *Shaa Dáax* mountain for some 14 years.



Figure IV-8. Documenting the interview with the late Cyril George Sr. (1922-2014) from Angoon at Sealaska Heritage Foundation.

*You know, in my old age, I've come to believe these things really happened. Our people were taught that from the time we were born that these things happen. We believe. So, these things do happen – happen to us, for us, there's a lot of things that happen for us because we believe...*

*[T]alking about the Killer Whale Tribe. I don't tell another Tribe's story. I might make a mistake in telling. I don't want that to happen. But when we left that – when we left that mountain, Shaa Dáax, when we started, half of our people started to go back to Teslin. They said they didn't think they'd survive so they took some little*

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<sup>8</sup> Note: this is contrary to Robert Zuboff's story. She does not mention *Aawastí* or *Kaawasik*, in Robert Zuboff's version of the story the two women go under the glacier on a raft. This sounds like Susie James's story of after the flood when the *Gaanax.ádi* [a branch of which became *Deisheetaan*] took their canoes on the other side of the glacier and went to look for people who they believed to be on the other side. They found them and they were the *Yanyeidí*, Wolf/Eagle family. The song that will be sung is a celebration song not a memorial. The other song is a memorial. This note is provided for those who have mixed up the two stories. Both of these stories are correct but they are two different stories at a different time in history, *Kingeistí*.

ones. If you go up there, you talk to some of them, they'll tell you, there that...they decided to move back. They're still up there [referring to Deisheetaan in Teslin and Atlin, BC].

When we – the part that our old story tellers tell is about that migration, the Killer Whale Tribe. Lake Atlin, it's a great big lake. I've heard bits of – little short stories of some of the hardships the Killer Whale people went through as they floated around during that world Flood. De Laguna, when she was – she was commissioned to write [and] these men are telling her about the stories of the Flood, she told them, that flood you're talking about is the same flood that the Bible talks about – over 14 thousand years ago. The Killer Whale Tribe originated a little South of Angoon or pretty close. Some of these things that start to happen, when that flood started, the Killer Whale Tribes started to do the same thing. The animals started to do the same things. Started to kill off the people. During my hunting days, across from Angoon on the hill [?], right at the top there, there's a rock pile. Back when I saw it I was about that high. It wasn't very – it isn't very long. All the loose rocks are picked from – you don't find any loose rocks for quite a while, it's all in that [cairn]. The story goes, that men started to build rock walls when the animals were getting at them. And, one of the recorded stories is that Jimmy George put down... there's an opening...the story says from out here you can look up this way [toward Hood Bay], you see those mountains. It says, on one of those mountain top, near the top, this woman [Yishk' was her Tlingit name] she turned to stone just before she got covered by the Flood. That story said you can still see it there today. I've never had the chance [to see it]...

See how they – the Killer Whale Tribe--they drifted around. They finally went – hit dry land above Lake Atlin..., the southern end. And,...they stayed right there, there's a sandbar that sticks out. The Killer Whale Tribe, they hit dry land up here so they called themselves the Dakl'weidi. Means way up and [behind?] is sand. They named themselves after that sandbar.

In the meantime we were coming from Teslin. They saw us [Deisheetaan]. Some of them came over wondering, what are people doing? We told them we're going to salt water. We're moving to salt water. Killer Whales says, 'can we join you? That's where we're from.' So, I get to tell their story. When we started the two tribes elected the Chief, the Killer Whale Tribe to be the leader of that because that's been – they'd been on a coastline, they knew that place.

So, we got down from there and we ran into a big glacier. There's [a] big river going under that ice. We were stuck. Two old ladies – two old ladies from the Killer Whale Tribe volunteer to drift under the ice on small rafts. They were strapped down. When they were pushed out, young bucks like him took off over the ice to see if they'll come out [downstream]. When they came drifting out they were so happy. These ladies started to sing such a happy song and...happy and just having fun....But the Killer Whale Tribe, some of them didn't want to drift under



*the ice. They went over the hill, came down and....My father-in-law, he says he was from the Killer Whale Tribe, [some] got too chicken to float under the ice [and went back to the interior].*

*We hit salt water in Wrangell.*

*When we left Wrangell some of our groups decided to go to Ketchikan. They knew the coastline – the Killer Whale. Some decided to go to Ketchikan, some stayed in Wrangell, and ... most of them came back to Angoon. As they were going along...this side of Kake, [at] Eliza Harbor [south Admiralty Island] – the Chief would tell the people – he'd spot a nice sandy beach – 'We're going to stop right here, we'll rest.'*

This story closely aligns with the tribal histories given by Jimmy and Lydia George, with the tribes eventually returning to Southeast, after their retreat from the Flood, but adding important details about where they stayed and divided, before ultimately moving back to Hood Bay and Angoon.

Finally de Laguna (1960) recorded the following history of the Flood refuge mountain called Hood Bay Old Woman above Hood Bay:

From Hood Bay Cannery a high mountain, evidently a volcanic neck, is visible above the end of South Arm. It is called "Box Mountain" from its shape [Bear Pass Mountain]. Like many peaks in the Angoon area, this is supposed to be one of the mountains where people took refuge during the Flood. The natives told us that there is a rope coiled up around the top of the peak, by means of which the people moored their raft or canoe, and that it is now so old that if touched it turns to ashes. One of the white men at the cannery reported that there is supposed to be a pool of water on top of the mountain [called *Shaa Aak'w*, according to Garfield George, Interview] that will rejuvenate gray hair because it is hair oil that was lost by an old woman who climbed the mountain. ... The same mountain is visible from Mole Harbor on the east coast of Admiralty Island. Mr. Hasselborg, who lived at Mole Harbor, told us that the Taku Indians of that area believed that if you "put your finger on" (point at) the mountain, it would rain immediately, even though the sky were [sic] clear. What may be the same mountain was called by an Angoon informant as "Hood Bay Old Woman," *tsaqW A canukw'* [*Tsaagwáa Shaaná'k'u*], because an old woman turned to stone on top of it during the Flood. She was a *DAql'awedi* [Dakl'weidi] woman, and that is why that sib owns Hood Bay. If you point a finger at her, our informant added, she gets mad and makes it rain.

Garfield George, present leader of the *Deishu Hít Deisheetaan*, and the son of Lydia and Jimmy George confirmed this story (Interview), and named the lake that restores youth as *Shaa Aak'w*, or Mountain Lake. He also recalled telling a group of his sportfishing clients about the taboo of pointing at the Flood refuge mountain, only to have one of them do it. And, indeed, they all suffered a heavy rain within hours.

In addition to the tunic representing Hood Bay Old Woman (Figure IV-7), another important piece of regalia that commemorates the flood, is thick pieces of cedar rope, that were worn as sashes and headbands on ceremonial occasions, such as memorial potlatches. According to Alan Zuboff (Interview 2013):

My grandfather [Robert Zuboff] talked about the Flood. How that came about was when I asked him about [a piece of] regalia, the rope, the cedar ropes – rope they used to wear here in Angoon. The rope they wore around themselves. I asked him about and he said, that's – he stopped for a while and he said-- that's when the Flood was going on... they had to make ropes to come up to Hood Bay Mountain-- to get on Hood Bay Mountain.

Mr. Zuboff comments that the ropes were used not only to secure rafts but also to climb the mountain, and to mark how high the water got on the mountain:

My grandfather said that they used to mark the how high it [the water] got by – they made a cedar rope around Hood Bay Mountain to see how high it got. Marked it, they made a cedar rope around Hood Bay Mountain to say this is how high it got. I don't know if they're still there – I don't think so.

Robert Zuboff's Tlingit recordings are currently being transcribed and translated at Sealaska Heritage Institute by Ishmael Hope (pers. comm. 2013). Mr. Zuboff's Flood story is interesting but not yet complete. Mr. Hope did share the following narrative with me, however, of which he has prepared a draft translation (Hope [n.d.] 2014).

*While we were there,  
the  
ocean began to pour in.  
While we were there,  
the  
ocean began to pour in.  
The Flood.  
The Flood.  
Then we went into our canoes.  
One mountain's peak  
stuck out.*

*We went a long way  
in our boats  
to get there  
on the mountain.  
It flooded around it.  
That is why that even today there are blankets,  
blankets there.*

*Ropes are there, too.  
The ropes have crumbled.  
Maybe they are root ropes.  
I saw it with my own eyes,  
those blankets  
and those ropes.  
The mountain sticks out behind Angoon.  
Sax'aayi Heen  
Mountain.  
And then  
they came down from the Flood  
over there.*

*Sax'aayi Héén* [Thornton 2012:118, #155] is a creek at the entrance of Hood Bay, above which the Flood refuge, Hood Bay Old Woman, can be seen.

Table Mountain above Whitewater Bay was another Flood refuge and alpine cairn site. De Laguna (1960) notes that a *Deisheetaan* man,

said that Table Mountain, a 2,400-foot peak south of the bay, was another refuge place during the Flood. There are ropes of ashes on top, which he has touched, and piles of stone, which are the remains of walls to keep out the bears that attacked those who took refuge on the summit. On both occasions when he had "fooled around" on top of the mountain, it rained, and the old people knew that he had been naughty.

Mabel Jack, interviewed in Angoon 2013 stated of this and the other Flood refuge mountains, such as above Tenakee Inlet and Chaik and Whitewater bays. "These mountains saved a lot of people" (Interview). Of Hood Bay Old Woman she recounted:

[My father] just said during the Flood-- he didn't say which year--but the Hood Bay Mountain...there's a Hood Bay Mountain where you can see it real clear that it's like a rocket...across from Hood Bay Mountain [Bear Pass Mountain, known as Hood Bay Old Woman in Tlingit] that's called....From the way he talked he said there was still a rope...around the face...the other...was at Tenakee Springs, similar to that one...[He] said if it wasn't for these mountains there wouldn't be much people here.

The Flood refuge mountain at Tenakee Inlet, like Hood Bay Old Woman, was visible from Angoon. According to de Laguna,

A 4,000-foot mountain south of Tenakee [Above Trap Bay] is visible from the extreme southern end of Angoon. It is called *Cl:lqWLa* [pronounced *Shaak'w Láax* by Garfield George and others; see Thornton 2012:115, #37]], and is another peak

on which people are supposed to have taken refuge during the Flood. It is said to have been formerly bigger, but a few years ago a piece fell off. It is used by the Angoon people to predict the weather, for a little cloud that usually clings to the summit shows the direction of the wind in Chatham Strait, often before the wind is felt at Angoon. If someone at Tenakee points at the mountain, this will bring rain. (1960:61).

According to Garfield George (Interview), *Deisheetaan* elder Jimmy Johnson told him of this refuge mountain, that it used to be very pointed and even higher before “piece fell off,” and that a song was composed when the people left that mountain at Tenakee. However, he is not sure that the song was recorded.<sup>9</sup>

Dan Johnson, a leader of the Basket Bay beaver clan (Kak’wkeidí), also gave oral history about a refuge mountain at Basket Bay (possibly also Shaak’w Láax as it lies between Trap Bay and Basket Bay), although he is not aware of alpine cairns being piled there:

Well, from the time that we were small, my grandparents would tell us the stories of the floods and how our people were climbing the mountains to stay ahead of the water and how fast the water was rising in some areas and for whatever reason, she never – my grandmother and my grandfathers never explained why they started putting together these big piles of rock. They call them – the word they used was in Tlingit meant platforms – [*kayáash*?] came out to be platforms because they couldn’t explain it in English either, you know, my dad had to interpret for my grandparents and said they are platforms, that’s the closest I can get to saying, but the grandparents said that they had no idea what it was for, what their intent was that these platforms, and, you know, but they were piling up these rocks, you know, and the ones that they always used to talk about are the ones on Hood Bay. But I know that our people – our household, our group was in Basket Bay at the time that was happening and our people were climbing that mountain there in Basket Bay, that tall one that comes to a peak.

...You can see it. You go out here in front [of Angoon], you’ll see it.

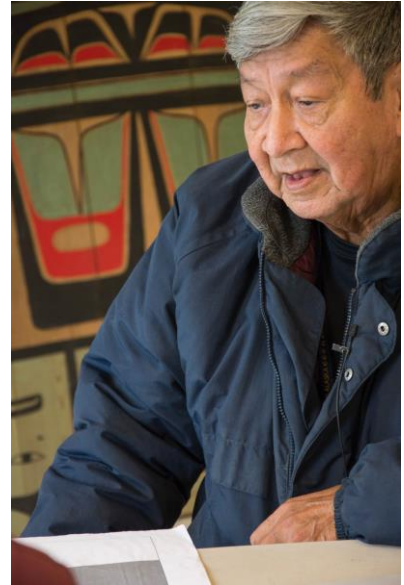
Yeah, and that’s where one of my names that I have comes from that time that we were – that our people were climbing it, staying ahead of the water and apparently the water was rising so quickly that the head men were pressing the people to hurry and the old timers and the children were getting exhausted having to climb that steep mountain and some of the people asked him if – we need to stop for a little bit for the old timers to rest and it’s – and I can’t say the phrase, if Alan Zuboff were here he’d know exactly how he’d say it to you but... and our head man looked around and he said, ‘well, yeah, we’ll stop here,’ and part of that phrase is...and that’s that portion of that sentence that our people grabbed hold of and created a

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<sup>9</sup> Thornton to follow up.

name ...They've contracted it down to its shorter version and interesting enough, too, the people that moved away from us, from Angoon centuries ago and moved up to the interior, they found the community of Atlin, Teslin, Carcross and Tagish. They left with the same names and to this day they use the ancient forms of saying them. They've come to visit us and we've been pretty amazed when they're talking and they're referring – they start referring to our grandparents and their using the ancient [phrases]....they've hung on to the ancient way of saying the names.

...We had a lot of old timers back then [when I was growing up] and they used to get together at the Blue House, our place all the time and we'd come home from school and there would be a big group of them that would be sitting there and there were many times that the discussion would end up about those piles of rock. They talk about that rope and how many of them – our grandfathers had actually seen that rope, that coil of rope [on Hood Bay Old Woman] and apparently it's not a small thing, it's a big, you know, a big coil and they were talking about the rope must have been at least 2 inches if not larger in diameter.



Peter McCluskey (Figure IV-9), a *Teikweidi* elder interviewed in Angoon in July 2013, spoke of a Flood refuge mountain above Saook Bay inside Peril Strait in his clan's ancestral territory.

Figure IV-9. Peter McCluskey of Angoon at Angoon Community Association.

Sa.óok [is] just what they call the mountain [range of mountains above Saook Bay].

[T]hey had to mark the rocks around the circle to [protect it? 11:29], but grandpa used to tell me they piled rocks around it then they put their rope in there or whatever it is. We don't know. They think it's a rope. ...They said there are some [cairns] at Hood Bay [too] but I haven't seen it for sure.

Several informants also described alpine cairns above Kooznoowoo Inlet, inside Angoon. Wally Frank Sr. (Figure IV-10) mentioned a site in Mitchell Bay “before you get into Salt Lake on the right (south) side...about a half mile up to the mountain top” (Interview 2013). These cairns, however, were apparently smaller piles of small rocks, which may have been used to mark hunting lookouts over clearings below, where deer could be seen.



Figure IV-10. Wally Frank Sr. of Angoon at Angoon Community Association.



Figure IV-11. Thomas Thornton with Kevin Frank at his Angoon home.

Above Kanalku Lake, Kevin Frank (Figure IV-11) found “wave-like” piles of rock, three or four in total that appeared to him to be Flood markers (Interview 2013). He discovered these in the 1990s at an elevation of about 2500 feet (perhaps at Kanalku Mountain or Middle Mountain), and had a powerful sense that they were ancestral monuments of significance. Flood markers were also reported to be above Gambier Bay, perhaps at Middle Mountain or the unnamed mountain east of it.

### Floods Stories and Alpine Cairns in the Sitka Area

In general, the Flood stories associated with Sitka area sites are not as well developed as those listed above, but numerous interviewees have commented on the presence and significance of alpine cairns in the mountains above Sitka and along Peril Strait. Mark Jacobs Jr., in an interview with the USFS (n.d.), commented:

All of the high mountains where the ridge [behind Sitka] runs back just as you get down from the peak ... you'll find some rock piles there, and over toward (skip [Angoon?]) there is so many of these mountains that are sacred, like Table Mountain in Whitewater Bay...relics from the

days of the Flood, because the Indians claim that they were saved by some of these high mountains. And those that had dogs were spared because they kept other (skip [other animals at bay?]). Some, ah, important names of some of these Island, mountains [such] as *Ah Wass ka dee shaw* (*Aawaskutí Shaa?*), “weather is clash[ing] on them”. There's some of these sacred mountains the Indians say “don't point at it.”

The belief is that pointing will bring fog and rain, and possibly bad luck.



In an interview with Fred Hope for the Forest Service (n.d.), Herman Kitka and his wife Martha reference several of the alpine cairns which were located for this archaeological study, including above Poison Cove (Herman) and above Deadmans Reach. They observe:

(Herman) There's one at every fish camp. We came across some at Nakwasina, also there's one at Deep Bay [Chichagof Island]. A regular platform, the sides is on that angle. I don't know where they found rocks that are just perfectly (blur) [round?].

(Martha) There's one at Poison Cove too?

(Herman) That's the one that Alfred was talking about. Alfred tried to dig it and something scared him, just the feeling, he started to say to me. He ran away from it (laugh). There's a good one above Deadman's Reach.

(Fred) Yes I've heard about that one! Do you know the shape of these monuments?

(Herman) When we went hunting we looked at it. They had piles on that trail that goes up to the peak. And the one at Crawfish [Inlet], it's in a circle. It's facing west, the opening. That rock is round, higher then your height. I don't know how they piled it. It never fall down, it's still in perfect shape.

(Fred) Even earthquakes haven't damaged them.

Cairn sites above Poison Cove near Ushk Bay were described in detail by Donald Frank (Interview) of Angoon:

Three of them [cairns] together [above Poison Cove on the alpine ridge about 2000 feet just south of Ushk Bay]. When we got up on the ridge, we come up this way and it's right about here [on map], cause you're looking down into the Bay. And, it's the steep side seeing that these are real close together. That's pretty right on where it's at.<sup>10</sup>

[M]y dad [Albert Frank Jr, *Kaagwaantaan*, Eagle Nest House], when he first told me about it, he said--I was in junior high-- and he said, 'Tomorrow you're going hunting with Pete [George],' and said ...' you watch him because he was a sharp shooter in our platoon and you're going to learn from him how to shoot long range, but you're going to see something up there. There's three rock circles – piles of rock. They were used for shelters by are called ancient people, so don't touch them.' He said, 'you leave them alone. We don't bother things like this and on the steep side of the mountain there's a coil of rope.' He said, 'leave that rope alone. Don't even touch it 'cause if you touch it it's going to turn to dust and crumble down to

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<sup>10</sup> SIT-01043 (see the helicopter survey in Section II) is in the location described by Mr. Donald Frank here and may be the same site.

the ground.' He said, 'leave it alone.' We always leave things alone. Yeah. .. They were left by, [it] goes back to what he calls 'ancient ones,' ancient people.

I found out not too long ago that someone went up there and destroyed them, after surviving Lord knows how many generations.

What's interesting about them is the rocks are so tightly fitted. Everyone of them when I walked around to look, to see if you could see inside—You can't see nothing, nothing in between....

[There were three of them together...on the steep ridge]. You could see across and see what do you call it, Cross Mountain [Peak]? ... There was one to the north, one over here, and one over here, like a triangle.

...[The elders] didn't really shine a lot of light on those stories, except to say it was during the time of the great Flood, and all that was left to walk across was the mountain peaks.

At this site, Mr. Frank also discovered a piece of rope, with some moss growing on it, which he described as "just like a woven piece of rope, maybe half-inch." He also emphasized the sightlines that could be perceived from these ridges:

"You had a pretty good view [from these cairns] of all the mountain ridges that line up. You get up on Cross Mountain, I mean this side of Cross Mountain [East], you could see all the ridges that tie in and come back to here (Sitka Sound area). If that's all you could see, it was like a highway."

The site at Crawfish (or West Crawfish) was further elaborated upon by Duck Didrickson and Herman Kitka interviews regarding Jamboree Bay (see Pratt 2004:15).

Tlingit elder Doug [Duck?] Didrickson (2002) states that Jamboree Bay Village lies in the shadow of one such "flood marker," situated at V ABM "Stone" about 1.4 km due east of the site. The marker is stone, presumably analogous to the nests reported by Angoon elders, and sits on top of a rounded, curiously low hill (ca. 275 m) as compared with more northerly sites. Didrickson explicitly associates the flood marker with Jamboree Bay Village. He indicates there are three sets of flood markers, one on each of the three major islands of the archipelago, Admiralty, Baranof, and Chichagof Islands. Tlingit elder Herman Kitka (b. 1914) also recalls a rock formation on a mountain top near the settlement that served as a refuge during the flood (Kitka 2004a). Kitka's father told him that such features are generally taboo.

However, it appears that the investigators or their informants may be confusing two sites, one at lower elevation (~275 m) associated with lower level flood tides and/or shamanic

power gathering (see below), and the other on a higher mountain top nearby (toward West Crawfish Inlet?).

Most alpine cairn sites identified by Sitka consultants were north of town. This may be significant because the earliest migrants were said to have settled (or resettled after an earlier volcanic eruption, flood, or other extreme event), perhaps 4-5000 years ago, north of town at Sinitzen Cove and Kalinin Bay. According to Herman Kitka Sr. (Interview 1998):

Seeking evergreen trees suitable for building houses, a canoe party went north from Tongass [Southern Southeast AK] along the outside coast. Ice flows still blocked the inside passages, and the land they found was thick with grass and alder, but no evergreens for timber. Soon, large smoke plumes twenty miles to the northwest became visible. The party made camp and sent a canoe to investigate the sources of the smoke. As they approached Sitka Sound, the scouting party saw a mountain upon an island [Kruzof Island], spouting fire and smoke, the one they call *L'úx*, "Blinking Top," Mt. Edgumbe. They named it that on account of that volcano. And the prevailing winds were coming from the northwest, blowing the smoke toward Sitka. That's how come there were no trees there. They decided to circle the island [Kruzof Island] and on the north side, at Sinitzen Cove, they found there was no smoke and there was plenty of big spruce for making houses. So they started to cut and split the trees when a woman appeared to them dressed in white. She demanded that they leave her island in peace. The medicine man, dressed for battle, was sent to meet the volcano woman, who called herself Shee. As they spoke she notices the jewelry of the Tlingit women. Shee agreed that in return for earrings, bracelets, and other gifts, the Tlingit could remain on her island. Later, they settled on the main island, Baranof Island, which was named Shee, after the Volcano Woman. In the Tlingit language "atik'a" means "on the outside" [ocean side] and so the people called the new village Shee Atik'a, people living on the outside of Shee island. Today we call it Sitka. And that is why the old people, when they are using that island for deer hunting and subsistence, would leave a small offering for Shee. They were thanking that volcano woman for the things they got from there.

*Luknaxádi* Elder Herman Davis (Interview) notes:

There's whale bones on the mountains in Kalinin Bay [Camelback? Mountain on Kruzof Island?].

[W]hen we were hunting up there I noticed that rock pile up there and I headed towards it. And I was just going to take one off the top and my buddy Willie Josephs, he really give me a nickname,--'Hoyman and Joyman.' you know. He yelled at me 'No! Hoyman and Joyman! No! Don't touch them! Don't touch them!' Boy, I jumped back at that. 'What's the matter? What's the matter?' That's when he told me, he said, 'You remember the Bible story about the Great Flood?' I said,

‘Yeah, I remember that.’ ‘Well, that’s where the flood stopped, right there.’ That’s the exact description he gave me. I never knew these rock piles were there.

And I think that’s how that whale got up there [on North Kruzof?] if that is true you know.

[How high up was it?]. About a thousand feet [above sea level], yeah.... [Maybe three feet across?] About that [3-4 feet] high. Pyramid style. That’s the one I saw....

Robert Sam, an elder of the *L’eeneidí* clan, related as story about how these whale bones arrived on the mountain tops, which seems to predate the narrative of human arrival to Sitka Sound described by Herman Kita as linked to the volcanoes activity (perhaps the following story refers to an earlier colonization of the area?):

There’s an ancient story called “Mucous Child” and it’s the story of a brother and sister here in Sitka. And they were, the sister was a very high caste woman and very beautiful, very beautiful woman: very high caste. People from all over would try to—men come from all over to try to marry her ... No one was good enough to marry her. Nobody. And one day she was out in the forest and she came across a slug. And she made fun of the slug. And even wanted to step on it, but something stopped her. And so she went on. And later on that evening a very beautiful man visited. And she fell in love with this man. And nobody would see her all day long....they would disappear in the forest and not be seen. So her brother became concerned about her and decided to enter the forest and find her. This is a very short version. And when he found her he was shocked by what he saw. And what he saw was his sister up on the side of a cliff, on the side of it. And she was screaming in terror and ecstasy. You know Tlingit stories, we always leave these things out.

She was screaming in ecstasy. And what she saw was a very beautiful man having sex with her, but really what her brother saw was this giant slug completely wrapped around and slime all over the place and his penis coming out the side of his head and going into her vagina. She was just in ecstasy, screaming on the side of the cliff. And her brother became very embarrassed and shocked at what he saw. And he—imagining going back to his people, so shameful. So he decided to come out and started clapping his hands and he became a Thunderbird. And when he took off—...There was a school of whales going through Sitka Sound and the waves from the wings blew all the whales [noise] up in Katlian [or Kalinin?] Bay. And now there’s some petrified whale bones up there. There’s photos, I’ve seen photos. And the woman [the sister]...didn’t want to come back to the people... She felt shame, so she crawled into the volcano. And she became ‘The Volcano Woman.’ So that could be a very good use of these upper mountains: lookouts.

Steve Johnson, the *Kids.ádi* grandson of oral historian and clan leader A.P. Johnson, suggests that stacking rocks as lookouts and flood markers may have been as important as building refuges for dwelling:

Well, I've heard a number of different things about [cairns]... I've never really heard too many people talk very specifically about them, other than just kind of vague, general things like 'This is one of the places where the people went when the water started to rise.' And I've heard several different reasons for those stone piles. Some people like Duck Didrickson-- he's passed away now--he mentioned that they built little walls to keep the other animals out. And that's why some of those were up there. My grandfather [A.P. Johnson] had talked about them carrying some of the rocks up the hill so that they could see with the different tide cycles, if the water was getting higher or if it was getting lower. And so they would make these little stone pile markers to see, you know, how far up the water was going so they could tell. Because apparently when the floods happened it was a rather gradual thing. Like the water level started to rise and so people had time to move up a little bit further. And the water levels would rise more and more each day.

Johnson also suggests in the old days, people used to maintain the sites, lest they fall into disrepair or disappear. According to his grandfather, cairn maintenance was done at the time that cedar trees in the alpine were pruned to produce clear wood.

They said if nobody maintained them, then they just kind of went away. And so you know individual clans and groups of people had their own hunting areas and they would go through and they would do that. The other thing they would do in some of those alpine valleys is they would take those little cedar trees and they would trim the branches off of them and kind of like make little bonsai trees so that they could harvest the wood later on for boats...

[by pruning they made sure] that the grain grew really close and didn't have very many ...And [my grandfather] said as a boy, they went up to one of the places and they did that and they restacked rocks. [Possibly near Anahootz Mountain, and another at Dool Mountain on Chichagof Island]

He posits that the mountains in Peril Strait were probably not high enough for people to completely escape the Flood, so they had to drift, presumably toward the mainland with higher peaks. He also recounts that

"My grandfather mentioned that there were some petroglyphs on top of some of the mountains too, that they had made-up there while they were staying up there to help document their journey. And you know, I've never seen them or know which mountains they're on, but he just said there were a few in one of his notes."

Among the best preserved cairn sites Mr. Johnson had seen was at Dool Mountain on outer Chichagof Island, which he describes thusly:

The [stone nests] were fairly encompassing. Pretty good size you know. I don't really know how many people you could fit in there, but a group of people hiding from something could fit in an awfully small space.

SJ: It ... maybe thirty [feet in diameter]...Yeah, it was fairly good size....some of the places it had kind of caves over, but the places that hadn't were about like that. So. Two and half, maybe three feet [high]. ..It was fairly close to the top. Well, there's the main rocky peak up there, it was just down from that....It's a hell of a climb. [The name *Dool* is sometimes translated as "Plenty" or "Land of Plenty", *Dool Aaní*]...It was fairly rich. I wasn't looking for food. I was looking for enlightenment of my own. So. You know, they have that old *Kik.sadi* village site just down at the bottom of it and they have the Frog Rock and things there. It's a rock shaped like a giant frog. I spent some time over there and... It was in October at the end of a fishing season and the weather was too rough to get back to Sitka here. And so I anchored up there and I spent about two and half weeks or so in Portlock [Harbor] in that area, exploring around. Yeah, and looking at some of the different places that I'd been by and heard about before but never really spent any significant time. And that's one of the things I did was spend a couple of days going up that hill and back.

[TT: Can you describe when you came upon this site, I mean, what was your reaction, your response?]

SJ: The first thing I thought was, 'That looks rather odd.' And then I realized you know what it was. ...I'd heard about it, but I'd only heard vague descriptions. There wasn't ever anything you know, and I've seen lots of pictures of them since, but that was the first time I ever saw one. And you know, I picked up some of the rocks too and restacked them.

[TT: At that site were there also flood markers lower down associated with it?]

SJ: There was a few further down. They were toppled over. And I didn't see them until I went back down. And I restacked one and then I found another and I didn't mess with it after that. I was trying to get down the hill before dark.

TT: [Did] you feel anything, -- you kind of sensed it was a cultural feature --but beyond that?

SJ: Well, I have all kinds of strong emotions all over this land. And it's definitely a connection. But I think the primary feeling that comes to mind is what were the real living circumstances that brought these people here and what did they do while they were here? What was their life? What was their thing like? And you know, all I can do is really speculate. I don't have any definitive stories or information or you know things like that. It's a speculation and wonderment.

Other people report having similar feelings and sensations, or of hearing traditional Native singing when they approach historic sites, including cairns. Tlingits may also choose to sing appropriate clan songs of historical commemoration or respect in response to this, or as they approach sacred sites (Garfield George, Interview) as this is considered an appropriate form of response and engagement with ancestral territory.

Rich Didrickson has also come upon cairns while hunting on Baranof Island, and describes the experience:

Well, part of my job there with the tribe [as STA Tribal Foods Coordinator] for harvesting was I was given a permit to harvest spring goats, mountain goats in the springtime, so those goats would be used again to feed the needy family and elders and stuff and the hides we would donate to the cultural center for their weavings and projects and stuff like that. So I spent a lot of time scouting different areas where I knew there were goats and actually where some of the elders and people that have been goat hunting knew were some good hunting spots were, so a lot of my time was spent just exploring new areas and one for instance, this one area up on Mt. Rosenberg near Annahoots or Annahoots Mountain, kind of the head of Nakwasina Sound...so right. Yeah, so we're right here. We anchored the boat up right here at the head of Nakwasina and hiked up there to [Mt.] Rosenberg and we came—there was still snow up on there, up on the mountaintops and again, it was springtime, so we were taking our chances of hiking around these snow drifts and snow-covered mountains, but I saw these piles of rocks and a lot of them were—well two of them were still in really good shape. These ... I found out were cairns. I didn't know at the time what they were. And they were piled oh the snow covered the base of them. I would say there's probably two to three feet of snow still on the top of the mountains. But these cairns would stick out another oh four to five feet and shaped like-- almost like a cone or a pyramid. And there was two up there that were still in really good shape and then, further down the hill a little ways we saw oh, two more, which looked like were cairns, but they were pretty ruined, pretty destroyed and ... not many people go up there, so I kind of doubt these people, but I think just Mother Nature kind of took its toll on these, but the friend I was hiking with kind of had an idea: they'd called them flood markers and they'd never seen them and so we kind of sat there and walked around a little further upon the mountaintops, the alpine area, to see if we could find any more, but we ended up taking a bunch of pictures and just really checking them out cause we'd never seen anything like that (Interview 2013).

These are very likely the same rock piles referenced by *Kaagwaantaan* elders Herman Kitka (above) and also by Charlie Joseph when discussing the importance of alpine cairns as historical markers of Tlingits' long occupation of the land (Dauenhauer and Dauenhauer 1994:325):

My grandfather, Sheeyák'w, would tell about *Aan Galakú*, [the Great Flood] when the world was flooded. Your people use to live in *Daaxeit* (Nakwasina). From time



immemorial, your stories came from there, on the mountain on top of there you will see rock piles [“monuments,” or markers]. Some of them are four feet high. Moss has grown around them. Some places —the highest mountain—have them in a round circle. That’s history. If you’re Tlingit, that’s proof you’ve lived here way before time, and you were created here.

The author observed a cairn above Nakwasina in August of 1989, when he travelled with Herb Hope, Fred Hope, and Harold Jacobs on a re-tracing of the *Kiks.ádi* Survival March (see Hope 2000).

Finally, the following sites are mentioned in an “Interview with Five Men” (USFS n.d.) recorded by Fred Hope: Kakul Narrows, Katlian Bay, Nakwasina Sound, Necker Bay, with the latter said to include a “coil,” perhaps referencing one of the petrified bits of rope that were coiled in the nests and reported used to tie the rafts or canoes to the mountains. The men interviewed include: David Davis, Herman Davis, Joe Howard, Willie [William] Joseph, and Fred Hope himself. The conversation regarding Flood is as follows:

(Willie) We know how old we are. When the flood was here and we have those deals [cairns] up on the mountains. The rocks, never touch that!

(Dave) That's right, there's one up there on Kakul Narrows.

(Willie) Yeah there's some in Nakwasina!

(Dave) There's one down there Necker Bay. That one is pretty high up and that coil I don't know what it is?

(Willie) What is surprising is you don't see no rock up there, but it's built up with rocks.

(Dave) And then there's another one.

(Willie) Loose rocks.

(Dave) It has to be in Katlian Bay straight up! Another pile of rocks.

(Fred) What shape? Huh? Got a shape to it?

(Dave) Yeah, right straight up, you know where that [blur] is at? Right straight up on top. Not very high, ten feet square.

(Fred) I want to explore it if I ever get a chance. Some of them are shaped like a J and are open on the west, some are pyramid shaped, some are just a wall.

[Unidentified speaker] The rock piles on the mountains? No! They are all built like this, just like that. They are not like this, like this!

(Herman) The one up on Kakul Narrows is like that.

(Willie) They did that. They knew they were going to flood over. They were going to have a few people up on top to survive! They already predicted it was coming.

### Shamanic Power Gathering

Contemporary Tlingits are often hesitant to discuss features of shamanism because it was forbidden by missionaries and also considered a powerful institution within its own right (not to be discussed lightly). Shamanic sites, including burials and power sites were shaman sought [or exercised their powers similarly?] were not a topic of everyday conversation for the uninitiated. However, there is some evidence that shamans and other spirit seekers constructed and utilized sites in the alpine, which are referred to sometimes as “stone platforms” or, more commonly in the southern Northwest Coast, as “prayer seats.” These sites were chosen in part because of their ability to “gather” power due to their location or conjunction of forces. At least two sites on Baranof Island were identified as shaman sites, where initiates went for their final stage of training. According to Herman Kitka Sr, one of these sites (see Pratt 2004 and USFS n.d.) lies above Jamboree Bay south of Sitka at an elevation of approximately 275m. Here, according to Mr. Kitka, a shaman had built and/or maintained a site for the purpose of enhancing his powers. Herman Kitka Sr. related (pers. comm. 2008) that a shaman is trained, but at a certain stage when he finishes his training he must find his own voice, his own power. To do this he retreats into the mountains and builds a platform of rocks on which to perch, and then meditates and fasts for several days. When he (or she, but usually he) finally obtains his power, he will return to his village, speaking a kind of gibberish unintelligible to the rest of the people. This is considered his unique language (i.e., possessed by no other humans), which he can use to communicate with the spirit world. Shamans were said to visit these places in order to fast, meditate and commune with spirit helpers (*yeik*) prior to engaging this power to heal the sick, sense threats, communicate with distant entities, and so forth.

The rocks themselves may have served as portals of communication (Pratt 2004:15) as they were considered in many instances to possess their own agency and spirit from which power could be obtained and prayers answered (Swanton 1908:89-91; de Laguna 1972:820).

In an interview with Fred Hope for the Forest Service (n.d.), Herman Kitka distinguishes these sites from the Flood monuments.

The closest I've come to seeing anything [else] like that [Flood monument at West Crawfish] is a pile of rocks that we came across behind Old Sitka. You could see that man had laid them there. Angoon is the one that is saying that they done that

during the flood, but that old guy says, that's Alex Andrews father. When he was telling stories about it he says that's where the medicine man [shaman], when he got all his training that he' s going to get from the Elder that's training him, see another medicine man trains a youngster as he's growing up. When he reaches manhood he's got all that training from that, that Uncle. Then he goes into that mountain to fast and that's the fasting platform that we're talking about, on top of the mountain. And he says that when he came down they're talking in another language, another tongue, they had to teach the people the Song that they acquired from the Spirit that entered him while he's fasting. That's where he gets his power, from the Holy Spirit that enters him.

More investigation might tell us exactly how this process works and how to distinguish clearly between Flood refuge nests, and shamanic platforms, which may have possessed different structures and perhaps been associated with different elevations (often lower, seemingly) or microhabitats than the Flood refuge sites.

### Navigational Sites

This was mentioned by several informants in connection with wayfinding of mountain routes from Sitka to Hanus Bay, including the well-known *Kiks.ádi* “Survival March” (Hope 2000). However, Herb Hope, having sought for many years to retrace this route and having located some of these features along the way (including on the 1989 expedition in which the author participated along with Fred Hope and Harold Kitka) doubted that wayfinding was the main purpose of the larger alpine cairns (though smaller stacked features clearly were erected for such purposes, often by contemporary hunters); instead, he associated them with the Flood, based on knowledge he had gained from his elders. He recounted stories of the Flood when we came upon one an Alpine cairn site above Nakwasina in August, 1989.

### Communication Relay Sites

Several of our interviewees remarked upon the fact that you could “just about see” from one of these sites from the next using the sightlines defined by the geography around each individual site. Alan Zuboff (Interview 2013), from Angoon, described how he had been told of these sights being used to relay communication via signal fires (with extra smoke generated by putting kelp on them) that could easily be transmitted from Northern Sitka Sound or Peril Strait, up through Hoonah (*Xutsnoowú*) Sound and then East toward Todd, Chatham Strait, and even across to Angoon, north to Sitkoh Bay, Basket Bay and Tenakee Inlet, or south to Kelp Bay, all habitation sites.

From when I was a young man my uncle used to say that back in the time when war was going on all the time we used to have fires across to signal Angoon people that people were coming to fight with us. It would seem as down there by...and over

here by White...so they used to have these big fires and they ... my uncle used to say they'd pack kelp up there – I don't know what the kelp was for – maybe to prolong or slow down the fire or make more smoke or something, or steam. So he packed kelp up there.

And, the fire used to last awhile. You know, I never hear how they ever faired because if you're making a signal fire how are you going to last up there cause somebody's going to see you. Surely, cause you're making a fire. I've never heard that part of the story. I've always known that there was fires up on the side of the mountain and from inside Dead Man['s Reach] from the turn [from Hoonah (*Xutsnoowú*) Sound to Peril Straits] was from inside the turn and then they made fires as they went along, as they went along.

Yeah, from Deadmans [Reach], yeah, so they'd be – they said up here soon as they saw fire on this side over here they'd make the fire when the other people saw the fire then they'd make a fire and so on and so on.

I know that people said they make these [cairns] to mark it.... To mark the spot, so, my people can go up by it and make a fire.

This is an intriguing idea, which requires knowledge of the network of sites to understand its function. However, given the sheer number of sites identified within this area, it deserves more investigation. And obviously if there were fires at these sites, one would hope to find some dateable evidence.

### Graves or Burials

There seems to be little evidence of this for the alpine sites. Save for shaman burials, Tlingits were cremated prior to contact. Lisiansky recorded Tlingit burial customs in detail in 1804-05 (see Emmons 1991:283), shortly after contact, as well as Russian revulsion toward these practices, including destroying Tlingit cremation burials:

The bodies here are burned, and the ashes, together with bones that remain unconsumed, deposited in wooden boxes, which are placed on pillars, that have different figures painted and cared on them, according to the wealth of the deceased.

On taking possession of our new settlement [Sitka], we destroyed a hundred at least of these, and I examined many of the boxes. On the death of a toyon, or other distinguished person, one of his slaves is deprived of life, and burned with him. The same inhuman ceremony is observed when a person of consequence builds a new house; with this difference, that on this occasion the unfortunate victim is simply buried without being burned. The bodies of those who lose their lives in war are also burned, except the head, which is preserved in a separate wooden box from that in which the ashes and bones are placed. This mode of destroying dead bodies,

originated, I was informed, in the ridiculous idea, that a piece of flesh gave to the person who possessed it, the power of doing what mischief he pleased [witchcraft]. The body of a shaman is interred only; from another absurd notion, that, being full of the evil spirit, it is not possible to consume it by fire.

Warrior heads buried in boxes, as described by Lisiansky have been found in numerous caves throughout Southeast Alaska, usually, but not always, proximal to settlements, and some at significant elevations, though not at alpine elevations (cf. Emmons 1991:283-85).

Most shamanic burials were not associated with the alpine zone, though they might be situated in caves or promontories up to hundreds of feet above the coastline. As Rosita Worl (interview) points out, these were sites that were not to be trifled with, and in most cases, only descendants of the shaman would be aware of them, and might visit them only in particular circumstances:

[O]nly the Shaman or members of his clan could go to a shamanic site, whereas in other [burial] sites, you hire somebody from the opposite side to attend that site. So a shaman site would not be visited by anyone else other than, you know, specific clan members, but not by non-clan members...it's not a public kind of site that people would be aware of. It's like a grave that you're not supposed to visit, [unless specifically seeking shamanic power]. You'll still know where they are to avoid them. But I mean it might have been these were not as well-publicized, but probably amongst the lineage...

...succeeding generations might come to a shaman site to try to get power, and sometimes they were successful and sometimes not because, you know, they say the spirit is the one who selects... you can't select. You can't say, I want a spirit and get it, you know, it just depends on the spirit itself.

Perhaps the only cause for creating an alpine burial would be if a fatal accident occurred there, and there was cause for producing an exceptional grave to dispose of the body or its cremated remains. Rosita Worl (Interview), suggested this possibility:

[We] have stories too about some of our people who had to be left behind on a trail or you know, in these trading ventures ...on these mountain tops ...[someone], you know, who was killed or he had an accident and got hurt and he ordered his nephews to leave him behind ...the stories are known among the Tlingits. [In one I know] the story is that he [the deceased] was covered, you know, they covered him [perhaps with rocks or rock shelter].

However, there is as yet no direct oral historical or archaeological evidence connecting such alpine burials with known cairn sites.

### Commemorative Markers

As noted above, some of our consultants suggested that these markers were developed to commemorate the Flood, and particularly the heights that the water reached during this extraordinary event (or events). Perhaps this is the reason why it is considered important not to touch or disturb them: they are sacrosanct monuments of an epic event and an ancestral presence and response to that event. Such monuments make the history of the epic floods a tangible and enduring presence. As has been shown above, this tangibility is important for educating current and future Native leaders and their kin of the longevity, resilience, and adaptiveness of their ancestors on land, and of the struggles they endured in holding fast to their homeland, or in cases of exodus or migration, the pain and sorrow they suffered in leaving it. In short, the monuments signify not only the specific locations of flooding events, but also the long-term “title,” rights, and commitments (material, emotional, and spiritual) of the people to these sacred landscapes.

Another component of the sacredness of these sites in terms of commemoration is the prescriptions and prohibitions associated with engaging them, particularly taboos against pointing at “Flood mountains” or touching alpine cairns and petrified “ropes” associated with the Flood. Such prohibitions serve to confirm the potency of these sites and of the importance of respecting ancestral presences and agency on the land. Recall that it was Raven’s “disrespect” of his uncle (or vice-versa) that caused the original Flood. If violated, as when Raven violated his uncle’s prescriptions, the transgressions may trigger severe consequences, harkening back to the Flood events, including severe fog, rain, or other bad weather. Through such signs and their consequences, the potency of the Flood, of ancestral wisdom and heritage, and of human connections to cosmic phenomena is reinforced.

It is possible that some cairns may have been erected for other commemorative purposes, but no other such purposes were cited by our informants.

### Hunting Blinds or Caches

While attractive to consider, especially because sites could potentially accommodate both functions, there seems to be little evidence of this in the historical or archaeological record. While Tlingits did hunt in the alpine, and at least one account (Wally Frank Sr.) posits that small cairns might have been used to site deer in clearings below the alpine, most blinds are associated with coastal hunting, such as for seals. Similarly, while caching might be an attractive option if one was traveling or too burdened to carry all one’s goods or game back down to lower elevation camps, such rock piles were suggested to be “no match” for a bear or other large predator, which could easily penetrate them to get cached meat. As Herman Davis (Interview) observed: “Well ...the brown bear has got a real sensitive nose, very strong claws. So that rock pile’s not going to keep it from wanting to get at that meat.”

However, Steve Johnson (Interview 2014) of Sitka stated, “I have heard that they were places where they would like freeze dry meat and cache them on the tops of the mountains and that they would build actual cache boxes and put them up there. I interpret it to mean

that they were out of wood, or baskets or something along those lines. But they could have been made out of rock.” This could explain the presence of wood and bits of textile at some alpine cairn sites. Obviously, too, if lower elevation settlements were flooded, there may have been no alternative but to cache supplies at higher elevations.

### Other Uses

Boundary markers? Temporary shelters (other than Flood refuge)? Medicinal or other preparation sites? Other spiritual or practical uses? All of these are, of course, possibilities, and such uses of stacked rock features have been documented elsewhere on the Northwest Coast, especially the existence of “prayer seats,” associated with vision quests and other spiritual preparation by specialists, and often marked by cairns (Doug Deur, pers. comm. 15/6/2012). However, we found little or no evidence such uses in our oral history interviews or the Tlingit literature, beyond the shamanic landscapes and platforms mentioned above.

Regarding boundary markers, Joe Hotch (Interview) of Klukwan, related that mountains themselves could serve as boundary markers, and indeed these were invoked in the territorial disputes with Canadian authorities:

The border with Canada was above the bridge at Wells. And the Klukwan chief told them [Canadian authorities]: ‘You move from here within a few days, or we’ll attack you.’ And the Canadian Officer said, ‘Where’s your boundary lines?’ And the chief was standing there [and said]. ‘You see the mountain tops? That’s my boundary.’ So the mountaintops were important to us at that time.

Another possibility among other uses that perhaps should not be discounted, especially for younger cairns, is the fulfillment of modern vision quests, trail blazing, or even “whimsy.” Regarding the latter attribution, some of our consultants suggested that bored children or other persons have been known to pile rocks, occasionally to serious conical heights, though no one could recall anyone having done so in alpine areas, as opposed to beaches or lower elevations.

### **Protocols of Engagement and Conservation**

Any discussion of features of cultural patrimony or outstanding significance begs the question of protocols for respectful engagement and conservation of these heritage landscapes. Members of the Sitka Tribe of Alaska Cultural Committee spoke to the issue of respectful treatment directly in the consultation meetings. This investigation adds further testimony in support of three major sets of prescriptions and prohibitions identified by tribal leaders on the Cultural Committee:



1. Approach cairn sites carefully. Generally this means “do not disturb” or disturb in the least invasive way possible. Despite their endurance from antiquity, they are conceptualized as very fragile. They can be dismantled, and the petrified features, such as coiled rope are said to disintegrate “into dust” if touched. Accordingly, the archaeologists have agreed to abide by cultural protocols established in conjunction with the cultural representatives of Sitka Tribe of Alaska and the Angoon Community Association. In the oral history collected to date, it was repeatedly made clear that, in general, Flood marker or refuge sites and their associated contents were not to be disturbed, and in some cases not even to be touched or pointed at, lest there be (typically deleterious) consequences (such as rainstorms or fog).
2. Ensure that the sites are treated with respect. There is concern among those interviewed that alpine cairn sites not be jeopardized either by the archaeological investigation itself or by subsequent publicity or representations of the site, which may invite disrespectful behavior, such as artifact hunting or other damage. This is because these sites are generally believed to be of both historical and spiritual significance. Thus, what W. Clarke observed further down the Northwest Coast in 1885 (p.40) remains true today: “One thing that gives us reason to believe [these rock piles sites are of religious or spiritual significance is] that under no circumstances will any other camp or tribe disturb them.”
3. Recognize the vital role of these sites, particularly those associated with the Flood in Southeast Alaska history. These sites are chronotopes--points where time and space fuse (see Bakhtin 1981 cited in Thornton 2008: 17, 106)—for marking aboriginal migrations, settlements, multi-local networks, and sociocultural resilience. Given the level of ignorance among the general population of the significance of aboriginal Flood refuge sites, and, contrastingly, their continued conservation and cherishment within Tlingit oral historical traditions, it would seem that much positive work could be done on developing this aspect of heritage recognition and conservation, including with words from the sources interviewed and cited for this report.

These points were also made by interviewees in Angoon and by the representatives of Sealaska Heritage Institute. SHI’s president, Rosita Worl (Interview), herself a professional anthropologist as well as an elder of the Shangukeidí clan, emphasized the need to respect the sites but also to draw strength from them and educate people about their significance:

As our people say, we’ve lived here since time in memorial. And the more evidence that we could find of our use of the area, I think this substantiates that and then also we like to tell the public that. We like to remind them that this is our land. I don’t care if we don’t have title to it, we still, you know, think that we’ve lived here, you know, since time in

memorial. And we want to make sure that our children know that. So these kind of things, you know, I think point to that, you know, validate that, that use.

Of course, I'd love [Natives] to have ownership of them, but absent ownership, we want to make sure that they're protected. We like to be able to educate the public as to the use, what they were for, and what we think they might have been used for. ... I think probably the most important is to talk about the Flood and the possible association of these sites... with the Flood.

[We have] those stories and songs about... when we came back [to the coast from the interior after the Flood]. We actually used one of the songs. We used one of the songs as our land claims song! I could still hear Susie ....Susie James. Yeah, she sang that song. ...and she taught us that song and that became our land claim song.

The association with land claims and land loss is indeed significance. As well there is concern that disrespect could bring harm beyond to the site itself, because of the potency and taboos associated with the Flood markers and refuge sites.

Herman Davis (Interview) made the following observations about respectful management of these sites:

Well, the only thing that I would say is that, if it was clan—conserve it, leave it alone, don't even touch it because it means something to the Native people. That's what I was thinking. Because ....who knows what's going to happen if you try to touch those things, even though it doesn't seem like nothing's going to happen at all. But I have a suggestion for you, for the people that's going to touch that: Ask for forgiveness from the people that put the rock there. Tell them why you're doing it. Even though they've been gone for a hundred years, two hundred years, three hundred, five hundred... Ask for forgiveness just like when we go hunting. We ask for forgiveness of the bears to forgive us for hunting on his land, but our children and our family are hungry. And that seemed to have worked for me and my buddy Joe Holland because every time he got off the front of the boat he said [it [?]; Tlingit 56:35]]. We haven't encountered them.

Cultural resource managers can take further guidance from those Native leaders who were initiated to the vital roles played by these alpine sites during the Flood, the most cataclysmic event in indigenous history. Charlie Joseph Sr. of Sitka, mentioned above and recorded in Nora and Richard Dauenhauers' 1994 book, *Haa Kusteeyi, Our Culture: Tlingit Life Stories*, was one of these leaders among the Sitka Kaagwaantaan. He makes the point that these alpine "rock piles" help to curate Native history:

My grandfather, Sheeyák'w, would tell about Aan Galakú, [the Great Flood] when the world was flooded. The white men (Gus'k'íkwáan) are always telling us we moved here from somewhere else. When did we move here? Before the flood? Or after? These are questions I ask. You walk around, my good son, on top of the

mountains. Your people use to live in Daaxeit (Nakwasina). From time immemorial, your stories came from there, on the mountain on top of there you will see rock piles [“monuments,” or markers]. Some of them are four feet high. Moss has grown around them. Some places —the highest mountain—have them in a round circle. That’s history. If you’re Tlingit, that’s proof you’ve lived here way before time, and you were created here.

His daughter, Ethel Makinen, relates that her father told Harvey Jacobs to go look for these rock piles, and he did, coming back to report that he found they were still there (pers. comm. with Roby Littlefield 2013). We might cite this as evidence of both the deep resilience and deep antiquity of Tlingit people in Southeast Alaska. Certainly it was of comfort to Charlie Joseph Sr. to know that the alpine cairns were not only there, but still there, as vital reminders of this legacy.

Similarly, Frank White Sr. (Interview, 2013), a Kaagwaantaan leader from Hoonah (Xutsnoowú), was initiated, in situ, by his grandfather on the significance of the cairns above Excursion Inlet cannery (as related above). From his present home in Juneau Senior Housing facility, Frank told us of how, when he came of age as a teenager, his grandfather took him up to one of these alpine Flood refuge sites as a special expedition, part of his training as a future clan leader. His grandfather wanted him to know the history of these refuge sites. The trip took two days, though they could have made it in one day. His grandfather wanted him to sleep and be fresh in anticipation of what he was to see the following morning. And when they arrived at the site, his grandfather told him specifically, “I want you to remember this” place and its special role in our history, when the people sought refuge from the Great Flood. Obviously, from the dramatic and detailed way that Frank told it, he did remember this history and seeing it and experiencing it the way he did undoubtedly helped to keep it alive in his mind. And in this way, perhaps future Tlingit leaders and scholars could be similarly initiated to the vital role that these sites have played in their history. But to do so means protecting them as vital repositories of knowledge and strength.

David Katzeek (Interview), a Shangukeidí elder from Klukwan (now residing in Juneau), sums up the importance of the stacked rocked Flood markers to understanding not only the history of the Tlingit people, but also the strength, adaptation, resilience and survival of the ancestors during a time of immense stress and environmental change:

Look at all these rocks. You can go and count them and look at the size of these rocks that are piled on top of one another. Why would anybody do this type of thing? And it’s like for us, this tells a story of survival. This tells a story of survival. This is material, but it also shouts the spirit of a human being’s endeavor to survive. [It] speaks louder than all the written books ... I remembered the stories. This story stood out in my mind and I would say, ‘if my people gave up, when the Flood happened, where would I be today?’ And that’s the power of these particular type of things. It’s no different than Davey Crockett and Daniel Boone and Paul Bunyon and who else you can name the different heroes, you know, of the American history.

Ours is just as real and has a lot of meaning. I probably have some songs from this ... I know they have a song for it.

Together the cairns and other commemorative stacked rock features, combined with the oral history, the crests or designs representing the Flood and its mountain refuges (as in the case of Taalk'unaxk'u Shaa and "Hood Bay Old Woman", see Figure IV-5, 6, 7), and the songs associated with these alpine sites serve to mark their sacredness as historical sites, "saviors" of the people, and emblems and sources of modern identity and inspiration, what Tlingits often term *shagóon*, or heritage and destiny. As such, they are very closely tied to clans. Thus, as Garfield George (Interview) suggests, these "life-saving mountains" and the cairns, artefacts and traditions associated with them should be cared for in close consultation with contemporary clan leaders who are descended from them and claim them as sacred ancestral property (at.óow) and heritage (shagóon).

## Conclusion

Southeast Alaskan alpine cairns, like petroglyphs and petroglyphs, or even the mighty rock arrangements of Stonehenge, are cultural sites of enduring significance. With the results of this research, we hope to contribute to a broader understanding of these features and how they relate to the dynamics of indigenous inhabitation and adaptation to an often rapidly-changing coastal environment, where ready access to the adjacent alpine tundra may have been critical to both disaster avoidance (in the case of floods) and long term survival.

This study has sought to document and analyze the similarities and differences in alpine cairn features and functions in cultural- environmental contexts in Southeast Alaska, as well adjacent areas where similar stacked rock features are found. By synthesizing the major oral histories and other sources of information on the Flood and its stone "nest" refuges, markers, and commemorative monuments, we have laid the groundwork to facilitate further investigation.

Recalling de Laguna's (1960:23) suggestion that, "Even if a majority of the traditions referring to places should prove to be simply fanciful explanations for natural features without archeological significance," some of these oral histories "may refer to places that have caught the natives' interest because they actually do give evidence of topographic changes, such as changes of sea level, of drainage, or of glacial movements, and so may be of indirect value to the archeologist." This study has examined dozens of oral histories for such clues, and found numerous pieces of evidence of both floods and flood refuges that may relevant to locating and investigating alpine cairn sites in Southeast Alaska.

A few patterns are evident. First, alpine cairns are widespread throughout Southeast Alaska and are especially associated with stories of the Flood which made retreat to high elevations or mountain tops of 1500-3000+ feet necessary for human survival. Second, not all the

alpine cairn sites mark true refuges, some, especially the smaller mountains on the islands were said to be inundated by water, forcing people to retreat to higher peaks, generally on the mainland and interior. Third, not all alpine cairns are “nests”, but rather many are “flood markers,” which may have been used to gauge flood waters as they ascended the mountains, or were erected in commemoration of earlier flood events, perhaps even from an earlier “Great Flood” epoch, as alluded to in the mythic time in Raven Flood stories. Crowell, et al (2013:81) observe:

The local meaning of these features is strongly connected to the Raven flood story, which many in turn be an historical echo of the sinking of the land experienced by coastal communities during the Little Ice Age when the sea reached its highest relative position in at least 8,000 years (Mann and Streveler 2008). It is notable that the geographic distribution of these alpine features, as presently known, coincides with the region that experienced the greatest amount of isostatic depression (hence flooding) during the Little ice Age glacial advance in Glacier Bay (Larson et al. 2004; Motyka et al. 2007).

It would be logical to investigate the correlation of these Little Ice Age events and displacements in Glacier Bay with those in other areas in Southeast Alaska where alpine cairns are found. A more complete survey of the geomorphology and hydrology of landscapes associated with alpine cairn sites (Appendix B) is a topic for further study.

Fourth, clusters of cairns may well have significance not just as singular features but as networked sites, or cultural landscapes. The numerous cairns found above Deadmans Reach, Ushk Bay, and elsewhere on Peril Strait, along with those found above Dundas Bay, Point Carolus, Cape Bingham, and elsewhere on Cross Sound suggest a functioning of these sites beyond mere refuge or commemoration. As our informants suggested, these sites may also have been used for the strategic sightlines they provided, facilitating both long distance perception of key vistas and travelways and communications across marine and terrestrial divides. Such extensions of perception are also associated shamanism. Yet, while some stacked rock features on Baranof Island were said to be associated with shamanism--particularly with the shaman’s initiation quests to acquire power-- most of these were said to be situated at lower elevations (e.g. at Jamboree Bay), than those associated with the Flood. However, it is possible that shamans sought and exercised their power at multiple elevations depending on local conditions and needs.

The preliminary dating of cairns at Cross Peak, from both soil samples and lichenometry (see Chapter III) suggest these features are “postglacial” but perhaps associated with the Little Ice Age period (268-892 BP according to the lichenometric dating). It may be, consistent with the findings at Glacier Bay, that localized flooding occurred in different areas of Southeast Alaska during this time. Under such conditions, it is conceivable that concerned indigenous inhabitants, cognizant of the epic Flood story of distant time (perhaps at the end of the last major Ice Age more than 10,000 years ago) began to make preparations. These preparations may have included marking the heights of advancing flood waters (“flood markers”) and watching and communicating from alpine “lookouts”

(cairns) above settlements and temporary encampments up and down Peril Strait, where the impacts of rising waters might have been most obvious and treacherous. Documented inland and overland trails connecting Sitka to Deadmans Reach, Rodman, Hanus, and Kelp bays across Baranof Island, and various bays on across Southeast Chichagof and Kruzof islands, and our interviews with Angoon and Sitka elders, suggest that a signaling system may have existed in association with alpine cairns proximal to these trails. Whether this signaling involved fires, as was suggested by one informant from Angoon, or other means of communication according to sightlines, or perhaps even through shamanic techniques, is not clear.

Results of the three dimensional mapping efforts by the archaeological team may help model the sightlines between cairns on Northern Baranof and Southeast Chichagof islands, so that potential patterns of connection and communication between the sites become more clear. Similarly, a comprehensive mapping and further investigation of sites documented in this oral history but not as yet ground-truthed or investigated could add valuable data points to the pictures as well as a more comprehensive and differentiated taxonomy of the types of cairns (nests, pyramid monuments, piles, platforms, etc.) found at various places.

At present however, it is difficult to draw conclusions on these the further genetic, ethnological, archaeological, and geomorphological evidence gathered since de Laguna's time on the natural and cultural history of Southeast Alaska, and perhaps with new dates produced by lichenometric dating and other archaeological work recently carried out on Northern Baranof Island in conjunction with this study, it may be possible to associate these features with the broader puzzle that is Southeast Alaska history over the past 10,000+ years. At same time, the oral history part of the project has also shown that alpine cairns and the histories they memorialize mean a great deal to contemporary Tlingits. They constitute not only monuments of resilience and adaptation, but also of longevity and deep connection to their homelands, to which, even when displace by the deluge, they sought to return in subsequent migrations. As such these sites remain a vital part of Tlingits' sense of identity and being in their homelands today.

As such they should be treated respectfully, both for what they represent and what they contain. As de Laguna found in Yakutat, the Tlingit people used to believe that rocks had "souls." As her informant testified:

They hear things, they says. When it's daylight, every- thing is just a rock, you know. It's turned to a rock. That's the way they says. That's a story." While this last was a reference to the myth of Raven's theft of Daylight, which she had just been telling, it seems to reflect a latent belief which could come to consciousness and influence action, just like the belief in glacier spirits. It will be remembered that there are no rocks or mountains near Dry Bay because they were all frightened away when Raven opened the Box of Daylight. Moreover, the hallucinations—shadows (qayahayi), or spirits—that Qakex<sup>^</sup>tE [Kaakeix'wtí] saw on his journey from Hoonah (Xutsnoowú) country to Dry Bay, and which were only rocks, not people coming to meet him, were I believe, the "souls" of the rocks (tE qwani) [Té kwaaní]

(see pp, 271, 272). Others have also seen what they thought were persons, only to discover that they were rocks, not the dead relatives (see p. 574)” (1972:819-820).

Or were they in some way the dead relatives? If we recall that real beings, like the Old Woman at Hood Bay mountain and the dog at Katzechin River, were said to have turned to stone at the Flood, we have a sense that this is possible within a Tlingit ethno-metaphysics. Recall, too, that, if Raven chose to fashion human beings from leaf rather than rock, for If men had come from the rock there would be no death,” then it is reasonable to assume that by becoming rock, the Flood story and the ancestors that lived it never die, but rather continue to speak to their descendants of their resilience, endurance, and immortal presence on the land.



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## **V. OUTREACH**

### **Consultation and Participation**

Federally funded investigations such as this are required by law to consult with Native Americans on any undertakings that may affect archeological sites and collections associated with their cultural history. In particular, the National Historic Preservation Act (NHPA) and 36 CFR 800, the Advisory Council on Historic Preservation (ACHP) regulations implementing Section 106, specify that an agency's preservation-related activities be carried out in consultation with other Federal, State, and local agencies, Indian tribes. This project addressed this requirement in two ways, through the formal compliance process and by principal investigators meeting directly with tribal governments and their representatives.

The research area for this project lies within the traditional lands of the Sitka and Xutsnoowú Tlingit. When this project was conceived, therefore, the principal investigators considered it only proper to involve these tribes in the investigation. Working together could only improve the degree and quality of the data that would be forthcoming. The archaeologists could provide new information to the tribes about cultural sites and features that are likely associated with their ancestors. In turn, the tribes could inform the archaeological team about current and ancestral use of the alpine regions. In addition, the archaeologists could be informed about tribal concerns prior to and during the fieldwork with regard to the work that was going to take place, the data that would be produced, and the distribution of project reports, articles and images.

This more personal and more informal means of consultation was undertaken in two ways. First, Principal Investigators Hunt and Hartley contacted by mail and telephone the Sitka Tribe of Alaska and Angoon Community Association describing our proposed project. Shortly afterward, they traveled to Sitka and Angoon to meet with the tribal counsels. At each meeting, a PowerPoint-based presentation was given explaining the project's background and purpose and offering to bring one or two tribal members up to the site as part of the team. In turn, the tribes agreed to work with project partners through a process of regular consultation with the Tribal Councils, the Sitka Tribal Cultural, Customary, and Traditional Committee, and project liaisons to be appointed by the tribes. The liaison for the Sitka Tribe was Resource Protection Director Jeff Feldpausch. The liaison for the Angoon Community Association was Tribal Administrator Raynelle Jack. Both were consulted and apprised of fieldwork progress.

Among project outreach goals were incorporation of Sitka and Xutsnoowú Tlingit youth in the fieldwork. With this in mind, the principal investigators offered to bring two youths from each tribe to participate in the fieldwork as members of the research team. Unfortunately, no young people in the Angoon community could participate as they already had full time summer jobs. Elizabeth Howard (Figure V-1), of the Kaagwaantaan clan in

the Sitka community, was chosen by the tribe to participate. Ms. Howard, a geology student spent the first two weeks of the project with the field crew working with and learning about archaeological field methods, basics of lichen identification, LiDAR mapping, and videography. As she noted during her time on-site,



Figure V-1. Elizabeth Howard (left), Kaagwantan clan, recording a cairn with University of Nebraska-Lincoln Michael Chodoronek (center) and Dr. Ralph Hartley (right).

“I guess the serenity I feel being up here, I take that as a sign that I definitely appreciate what these cairns have ... To be around them and to be here is pretty incredible. ... I feel the importance of them. They’re not just coincidental. They had a solid, you know, purpose and that is incredible (from *Cairns Uncovered*, a video by Pete Stegen).

## Videography

Video-graphic and time-lapse photographic documentation was undertaken to provide an enhanced understanding of the exploratory investigation at Cross Peak as well as to examine the dynamics of season change in this alpine environment. This goal was considered an important supplementary outreach medium to the public that would be made available with presentation on a website, public television outlets, and/or portable media products.

The photo/video documentation was conducted by Nebraska Educational Television (NET) staff in cooperation with the Institute of Agriculture and Natural Resources at UN-L who are the primary funders of the Platte Basin Time-lapse Project, a multi-year effort to document a watershed using digital imaging technologies and sophisticated storytelling strategies. All of the various types of anthropological and environmental investigations will be photo-documented using similar techniques. For example:

1. Equipment included a HD video kit for live action shooting and recording the selected oral histories with Dr. Thomas Thornton.
2. A set of short term time-lapse and other digital imaging and audio gear was utilized for documenting archaeological and lichen investigations, LiDAR survey, and camp life.

3. A camera system was also placed on-site that remained in place for 11 months. This system took time-lapse images that were stitched together to create a video that documents changes in environmental conditions on the mountain August 2013 to August 2014.

Nebraska Educational Television (NET) Special Projects Manager Mike Farrell and renowned conservation photographer Mike Forsberg developed the planned approach to this documentation and a budget for its implementation. Working under the direction of Farrell and Forsberg, Peter Stegen conducted on-site photo documentation (Figure V-2). Stegen also edited the products under Farrell and Forsberg's guidance and produced a short video documentary, *Cairns Uncovered*, that can be distributed through web sites (e.g., NET, UN-L Anthropology, Oregon State, Forest Service, Oxford University), and/or on public television (e.g. NET and Alaska PBS), and by preparing and delivering DVDs to Alaska public schools and SE Alaska tribes.



Figure V-2. Videographer/photographer Peter Stegen (right) at work.



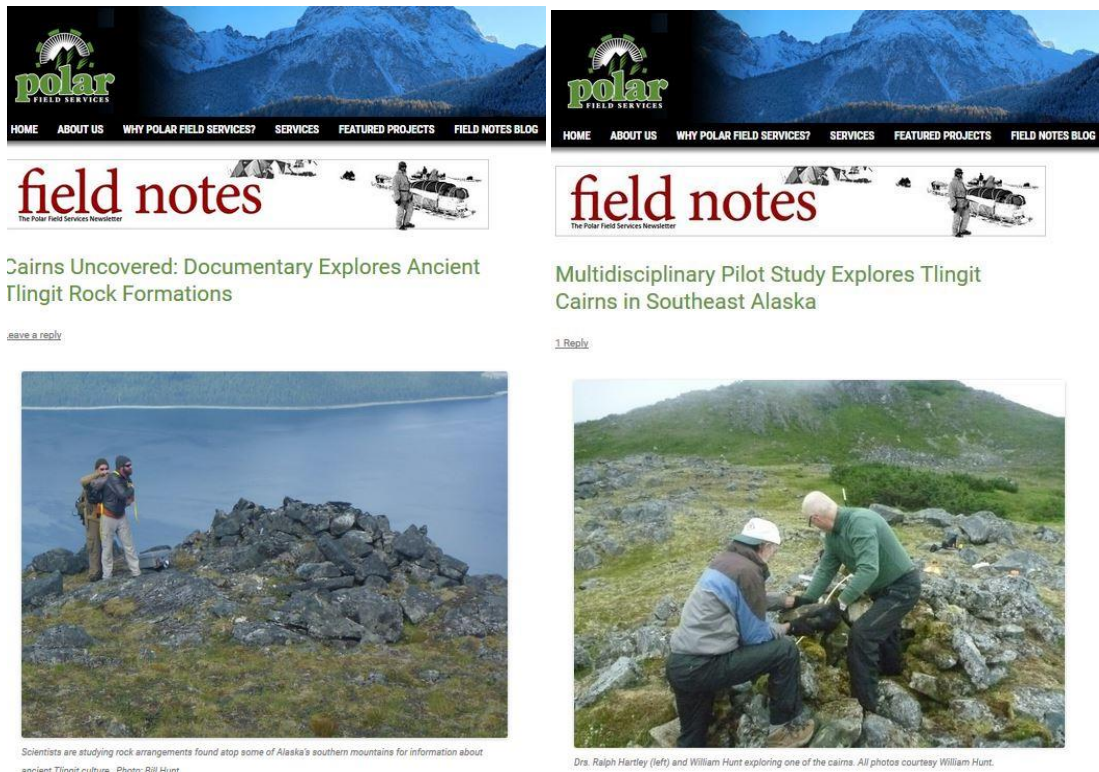
Figure V-3. Title frame of an early rough cut of the video documentary, *Cairns Uncovered*.

This videographic element of the project was undertaken to extend the range of broader impacts of the original pilot project award by significantly expanding the audience from predominantly professional archaeological, ethnological, and lichenological audiences to a broad range of the general public. The ultimate goal has been to produce a mini-documentary, 20-30 minutes in length, that would provide an overview of all aspects of the project; e.g., archaeology, culture history, oral history, and lichenology. Among the audiences targeted by this product are public, professional, and underserved audiences.

Public audiences would include both life-long learners that use NPR and PBS resources as well as audiences beyond PBS and NPR via the Internet. Among the professional audiences could be formal and informal science educators and communicators in 5-12 school grades, science museums, research centers, parks, zoos, etc. It could also be presented to underserved audiences such as Alaska's many remote Tlingit and other Native American communities.

## Internet News Stories

Two news stories prepared by Alicia Clarke were posted on the Polar Field Services website Newsletter *Field Notes* (Clarke 2014a, 2014b). One focused on Peter Stegen and his efforts toward creation of the documentary film *Cairns Uncovered* for this project. The second posting was about the project itself (Figures VI-4, VI-5). Another four page story about this project will appear online and in print in the publication *Scientia*.



Figures V-4 and V-5. Blogs about this project were posted on the Polar Field Services newsletter *Field Notes* in 2014.



## VI. CONCLUSIONS AND FUTURE RESEARCH

by

William J. Hunt, Jr. and Ralph J. Hartley

This was an extremely successful inventory with 89 alpine cairns recorded within 34 sites. Five of the sites and 50 cairns were identified on Cross Peak Mountain. Thirty-nine cairns in 29 sites were recorded on mountain peaks and ridges during the helicopter inventory on the east and west sides of Hoonah Sound. Now, what can we say about these enigmatic features.

As noted in Chapter II, recognition of the beneficial approach of multidisciplinary investigations focused on four general research themes relating to alpine rock cairns – location, function, temporal association, and socio-cultural association. Within these themes, we asked seven specific questions. These are addressed briefly here with information acquired through investigative evidence provided by anthropological archaeology, geography, oral history, and lichenology.

**Are the identified cairns spatially situated in any patterned way? And, if so, what social and/or environmental factors might account for this patterning?**

In general, alpine cairns recorded at Cross Peak, Chichagof Island, and other known sites throughout Southeast Alaska are assembled on elevated points of rock, either pinnacles or ledges. All have grand sweeping views of mountain landscapes and, with the exception of the inland alpine cairns, large bodies of ocean water.

At Cross Peak they occur in three situations. Most are found on the southwestern end of the mountain on fairly steep ground that slopes downhill toward the northwest. Peril Strait and Hoonah (Xutsnoowú) Sound are easily seen from every cairn. The physical situation of the various cairns strongly suggests they are postglacial as none are in or on moraines. The slope is composed of a broad area with natural terraces or ledges on its western side. On the northern edge of this group of landforms is a shallow drainage with a few isolated high spots that may be characterized as hillocks or mounds. These high spots are likely the remnants of eroded ledges and they, along with the ledges reflect the stratification of the bedrock and its emergence as outcrops. Cairns are found on the pinnacles of the mounds while, on the so-called ledges, the cairns are positioned at or near the forward “lip” and often overlook drop-offs of 2 m or more.

Cairns are also located on the upper perimeter of cirques and around the margin of the highest point of Cross Peak at the north end of the mountain. The largest cirque on the west side of the mountain divides it into northern and southern portions with only a narrow

bridge of land, an arête, connecting the two areas. Two groups of cairns occur on the upper margin of this large cirque.

Cross Peak itself, at the northern end of the land mass, is relatively flat and has been diminished on the north side by a steep-sided glacial cirque. Several cairns occur at the margin of this cirque. A pair of cairns also overlook the extremely steep scree-covered western slope of the mountain. One site, composed of three cairns was located on a narrow ledge within the scree, a somewhat difficult and dangerous location to get to.

No cairns exist on the landward (southern and southwestern) sides of the mountain nor were any such features observed on the often scree-covered slopes on the east side of the mountain. This leads us to believe that an expansive view of water must be important in alpine cairn site selection.

### **Are the cairns contemporaneous or built at different points in time?**

An attempt to determine relative ages of a number of Cross Peak cairns utilized three methods of dating; two methods of lichenometric dating and radiocarbon dating.

Lichenometry is a dating tool that uses lichens to estimate the minimum age of exposed rock and operates under one basic premise: the diameter of the largest, free-growing lichen colonizing a surface is proportional to the amount of time the surface has been exposed to its environment. At Cross Peak, lichenologists applied two methods to date a number of cairns: traditional lichenometry and successional lichenometry. Traditional lichenometry is based on radial growth rates of crustose lichens present on the cairns. Successional lichenometry, a novel and innovative dating method developed by Dr. Bruce McCune attempts to overcome some of the problems inherent in traditional lichenometry by examining the successional status of the vegetation growing on the cairns.

Eight cairns within SIT-00774 were examined by the lichenological team. Based on its lichen growth, one of these appeared to have been disassembled and rebuilt into two different elements. This feature was therefore considered to be two cairns. Dates derived from these cairns' lichen growths are presented in Table VI-1 below.

The second and very innovative method of lichenometric dating estimates minimum age of a feature as a function of attributes of the plant community mosaic, including species diversity, amount of bare rock, and percent cover of primary, secondary, and tertiary colonists; i.e., the higher the successional score, the older the cairn.

Several cairns were selected for partial excavation by the archaeological team with the goal of collecting organic material suitable for radiocarbon dating from within or immediately under the cairns. The cairns selected for testing were those that had been identified by lichenologists as the oldest in SIT-00774 based upon successional lichenometry.



The team's approach required partially disassembling selected cairns with the goal of acquiring cultural materials made of organic materials or perhaps charcoal from human activities that might have been associated with construction of the features. Unfortunately, no cultural materials were identified in, around, or under the cairns examined. No features were observed under the cairns.

Nevertheless, excavation determined that all of the cairns investigated are prehistoric in nature and it seems likely that all of the cairns documented in this inventory may be of prehistoric derivation. This is supported by radiocarbon dates for soil samples retrieved from below the base of several cairns and by the two lichenometric dating methods applied to a number of cairns. All are within the last two millennia. Dates/ages of alpine cairns derived from lichen should be considered estimates of the point in time the cairns constructed. Radiocarbon dates of sub-cairn soils reflect the earliest possible dates the cairns could have been built; i.e., construction occurred after the given date since the cairns sit on top of the dated soils. There is no evidence at present for an increase or decrease in the construction rate through time. Given the apparent narrow range of cairn distribution on the Lower Stikine River, however, and assuming these features were constructed very early in Tlingit history. Tlingit oral histories tell of movement out of their Stikine homeland at a time when the fjords and straits were generally ice-filled; e.g., at the end of the last glacial epoch. It would not be surprising then if Tlingit cairn construction was initiated 10,000 or more years ago serving as boundary markers between cultural groups as A.E. Kerr and his informants suggested after World War II.

Table VI-1. Comparison of Cairn Lichenometric and Radiocarbon Dates.

Cairn #	Lichenometric Dating Method		C <sup>14</sup> Median Probability Soil age (years)
	Modal Size (minimum age)	Successional Score (older than Cairn #)	
New*	0 yrs. old	Newest	Not dated
9(I)	368 yrs. old		Not dated
39	489 yrs. old		Not dated
1(A)	489 yrs. old		Modern
5(E)	342 yrs. old		625±40
7(G)	892 yrs. old		1610±20
3(C)	892 yrs. old		375±30
25	517 yrs. old		Not dated
8(H-Disturbed)	258 yrs. old	Youngest Prehistoric	Not dated
8(H-Undisturbed)	187 yrs. old	Slightly older than 8(H-disturbed)	Not dated

\* Calibration cairn built during the field season served as the "zero" age marker.

**What accounts for cairn variation in size and morphology? And are alpine cairns of different form associated with one another in time or space?**

This investigation was unable to answer this question based on the available data. More in depth inquiry may be able to address these variations.

**What activities (if any) were pursued by the cairn builders in proximity to the cairns and how might these fit into the seasonal round and/or travel routes of their builders?**

The available data suggests that there were no additional activities associated with cairn building. The lack of food-related faunal materials, artifacts, or features related to any kind of occupation suggests that cairn construction was probably the only activity taking place. It also indicates that cairn construction likely occurred within a very short time – perhaps a matter of hours or a few days. With regard to seasonality, assuming the climate was similar to the modern era (a big assumption), the most likely time of cairn construction would have been late summer to early fall, say July to September, as this is currently the most hospitable season in these alpine areas. The prime factor in being able to construct a cairn in this zone is availability of stone. Often the ground is covered with up to a meter or more snow for the remaining portion of the year. However, as the 2013-2014 time-lapse camera media shows, large areas of the ground can remain bare throughout the winter making it conceivable that cairn-building could take place any time of the year.

**Does the mountaintop landscape reveal surface evidence of past human activities or residence other than that of cairns? If so, are cairns predictably situated relative to campsites?**

No surface evidence of past human activities other than cairn construction was observed in the alpine areas of Cross Peak.

**What ethnographic or archaeologically derived cultures might be associated with the cairns?**

The lichenometric and radiocarbon dates associated with the tested cairns suggest that they are associated with the Late Prehistoric Period; e.g., after the emergence of the Northwest Coast cultural pattern. The investigators are confident that the cairns were built by ancestors of the Sitka and Hoonah (Xutsnoowú) Tlingit. This is based on

1. The occurrence of alpine cairns along the margins of the lower Stikine River, the avowed Tlingit ancestral homeland.
2. The prehistoric Northwest Coast cultural pattern continued from ca. AD 500 to historic contact.

3. The study area sits at the boundary of two traditional Tlingit territories known as Sheey At'iká Kwáan or Sheet'ká Kwáan and Xutsnoowú (Hutsnuwu) Kwáan.
4. Oral histories for both the Sitka and Hoonah (Xutsnoowú) Tlingit includes stories of arrival in this area as glaciers are withdrawing from the inter-island straits. A Sitka Tlingit story places their arrival in the area of Sitka Sound at a time when Mt. Edgecombe was erupting. Radiocarbon dates from charcoal at lower and upper contacts of ash from the last Edgecombe eruption indicate that event occurred between 2485 BC and 2900 BC. Finally, both tribes retain many stories about their ancestors building cairns, often with that activity associated with specific locations in their traditional territories. A strong relationship between Tlingit alpine activities and the cairns is therefore indicated.

**Are these rock features similar in morphology, topographical context, or function to cairns documented elsewhere in the world?**

While the placement of these cairns, above tree line and in proximity to a sea coast, is not well documented elsewhere in the world this form of stacked loose rock is known to be associated, pre- and proto- historically, with subsistence related activities, spatial orientation, and indigenous belief systems. Constructed as elevated forms to be visible to humans and/or other animals is the fundamental similarity inherent to rock cairns in the higher elevations of several continents. Their utility, spatial configuration, and assigned meaning vary cross-culturally with reference to the dynamics of the bio-physical and social environmental conditions.

**Outreach**

This pilot project has used a broad approach with regard to outreach. The project brought together experts in the fields of archaeology, lichenology, and oral history from the University of Nebraska-Lincoln, Oregon State University, and Oxford University. From the onset, principal investigators sought to include Native American tribes in the project. The objective of consultations with the Sitka Tribe of Alaska and the Angoon Community Association was to seek advice, understand concerns, inform, and involve members of those communities in the research. Two graduate students completed their Masters degrees based upon their work with this project. A twenty minute video was created in partnership with Nebraska Educational Telecommunications (NET). The goals of this effort were to inform a broad range of communities (tribal, school groups, professional groups, and the general public) with the project, the region and its history, field methods (archaeology, lichenology, oral history), and findings.

## Compliance Issues

The authors must note that it is unfortunate that a compliance inventory for a U.S. Coast Guard Remote Fixed Facility (RFF) on Cross Peak Mountain was flawed. While the FS archeologist did record a cairn (49 SIT 00737) on a ledge well below the proposed construction zone, the inventory missed the four cairns and historic survey marker identified on top of the mountain (49 SIT 01028). Consequently, the Forest Service approved the tower installation and the facility was built by a U.S. Coast Guard contractor in the summer of 2014 (U.S. Coast Guard 2016). The RFF installation was a rather large and complex construction. The U.S. Coast Guard notes that these facilities include large radio towers, electronic shelters, power generators and shelters, helicopter pads, and propane tanks (U.S. Coast Guard 2013). Since the relationship of cultural feature locations and the exact footprint of this particular RFF is not known to the authors, it is impossible to state with certainty what the extent of the construction impacts were. Nevertheless, it seems very likely that the historic cross and objects associated with the historic 1926 survey were impacted if not destroyed. The scale of the construction and associated activities also suggest that it is very possible that some or all of the four cairns (two that may be the oldest features identified in this inventory based on lichen and moss coverage) were damaged or destroyed as well. Only an additional inventory will shed light on these concerns.

**Broader Impacts:** The product of this work has and will continue to be developed for years after the fieldwork has been completed. A broad range of tangible, measurable results and product(s) have been and will be generated at the end of the project. Completed products include:

1. 2016, this comprehensive final report was delivered to the Tongass National Forest providing archaeological, oral historical and lichenological/lichenometric data, data interpretation, and addressing the research questions and issues important to protecting, preserving, and interpreting these resources.
2. 2016, a video *Cairns Uncovered* by Peter Steegen was delivered to the Tongass National Forest for distribution to the Sitka Tribe of Alaska and Angoon Community Association.
3. Graduate students Michael Chodoronek in the Department of Anthropology, University of Nebraska-Lincoln and Nijmah Ali in the Department of Botany and Plant Pathology, Oregon State University completed their M.A. degrees in 2015 using data acquired during this project.
4. Public and academic lectures:
  - a. July 2014, by Dr. Hunt to students at the Bronze Age Körös Off-Tell Archaeology (BAKOTA) project field school in Vésztő, Hungary.
  - b. September 2014, by Dr. Hunt and videographer Peter Steegen in 2014 to the general public about the project at the University of Nebraska-Lincoln.
  - c. October 2014, by Dr. Hunt to graduate student classes in 2014 at the Department of Anthropology University of Nebraska-Lincoln.

5. On line blogs about the project in 2014 by Alicia Clarke in the PFS newsletter *Field Notes*.

Anticipated future products may include:

1. Lectures/presentations at regional, national, and/or international anthropological, geographical, and archaeological conferences and symposia such as the 2016 and 2017 meetings of the Alaska Anthropological Association, International Congress of Arctic Social Sciences IX, and Society for American Archaeology.
2. Plant ecology/lichenological lectures/presentations to professional regional, national, and/or international conferences (e.g., Northwest Lichen Guild, the American Bryological and Lichenological Society, International Association of Lichenologists).
3. Articles for consideration by juried regional and national/international professional archaeological journals (e.g., *Alaska Journal of Anthropology*, *American Antiquity*, *World Archaeology*).
4. Articles for consideration by juried regional and national/international professional ecology, bryological, and lichenological journals articles (e.g., *The Bryologist*; *Arctic*, *Antarctic*, *Alpine Research*, and *Oecologia*).
5. Additional lectures to students at the University of Nebraska-Lincoln and Oxford University's School of Geography and the Environment.
6. Articles for the general public via general audience journals (e.g., *American Archaeology*, *Dig*, *Discover*, *Archaeology Magazine*, and *National Geographic*).
7. Project information and data placed on the Dept. of Anthropology, University of Nebraska-Lincoln website.
8. Project presentation on Nebraska Educational Telecommunications (NET) network show *Nebraska Stories*.

Finally, this study has been innovative and far-reaching in its multidisciplinary approach to understanding a hitherto little known Southeast Alaska site type. This investigation has, to date, led to:

1. The development of innovative approaches to dating stone features and thereby,
2. A broader understanding of alpine cairn form and size;
3. Identification of topographic locations where cairns are likely to occur and, as a consequence,
4. A better understanding of cultural landscapes created by cairn builders in alpine areas;
5. Establishing for the first time that alpine cairns are associated with a particular prehistoric culture and era;
6. An innovative method of locating and documenting alpine cairns over a very large area using helicopter, GPS unit and photography. This resulted in the identification of 41 cairns within 29 sites over a space of at least 38 linear miles. All this within four hours flight time.

7. Documentation of the abundance of cairns within a larger landscape based upon the results of this field documentation.
8. Demonstration that alpine cairns may be the most common site form in southeast Alaska and, as such, be the signature site form within alpine areas. Note the number of archaeologically recorded cairn sites and the quantity of cairn sites reported through oral historical accounts in Figure VI-1.
9. An understanding of the role alpine cairns have in Tlingit mythology and traditions.
10. A demonstrated correlation between some alpine cairns identified via oral history and archaeological data (Figure VI-1). Five sites in the northern portion of Southeast Alaska reported by Tlingit informants have been confirmed archaeologically – two through this inventory and three during the Glacier Bay inventory.
11. A clear association of a specific cultural feature and site type with specific ethnographic groups and their modern descendants (Figure VI-1).

### Potential Future Research Directions

While this study has revealed a great deal of information about alpine cairns, they remain an enigma in many ways. The features were found to occur in abundance in the Hoonah Sound/Peril Strait area on mountain tops and slopes with views of broad expanses of water. Further, they apparently occur throughout the archipelago of Southeastern Alaska and they have been reported in abundance on the high inland mountains bordering the lower Stikine River, an area that the Tlingit claim as their ancestral homeland. Future research issues/questions that have been raised or unanswered by this report and approaches toward answering such questions may include but are certainly not limited to:

Morphology/Architecture/Construction: Kerr in his 1947 report described at least three forms of alpine cairns in the lower Stikine River area and the 2013 inventories identified up to four forms.

Research Question/topic	Archival and Cultural Data Sources	Archaeological Data Sources
What is the range of alpine cairn morphology?	American and Canadian federal, and Canadian records, reports, and publications	On-the-ground and airborne (helicopter and drone) inventories
Does variation in form related to variation in function or temporality of construction?	American and Canadian federal, and Canadian records, reports, and publications	Excavation and rebuilding cairns



Figure VI-1. Cairn sites in Southeast Alaska that have been identified archaeologically (white stars) and those reported through oral history associated with the Great Flood (magenta circles). White human figures are reported cairn sites associated with shaman activities.



### Intersite Relationships:

Research Question/topic	Archival and Cultural Data Sources	Archaeological Data Sources
What kinds of sites occur in the vicinity of alpine cairn sites?	Review of British Columbia site records and reports and new SE Alaska site records and reports	On-the-ground archaeological inventory
	Additional Tlingit oral histories	
How far from alpine cairn sites are the nearby sites?		On-the-ground archaeological inventory
		Mapping
What are the obstacles to transport between alpine cairns and nearby sites?		
What kinds of sites occur rarely or never within the vicinity of alpine cairn sites?		

### Geographic Distribution/Cultural Landscape:

Research Question/topic	Archival and Cultural Data Sources	Archaeological Data Sources
In what areas do alpine cairns occur within Tlingit Southeast Alaska and British Columbia	Review of British Columbia site records and reports and new SE Alaska site records and reports	On-the-ground and airborne (helicopter and drone) inventories
	Additional Tlingit oral histories	
What are the physical components of the sites?	American and Canadian federal, and Canadian records, reports, and publications	Mapping intrasite distributions of alpine cairns
How are alpine cairns distributed across a landscape?	American and Canadian federal, and Canadian records, reports, and publications	Mapping intrasite distributions of alpine cairns
Are alpine cairns in other areas of Southeast Alaska and northwestern British Columbia similar in abundance to those identified in this pilot project study area?	Extremely high resolution air and satellite imaging over randomly selected areas within Southeast Alaska and near-coastal areas of northwest British Columbia	Mapping distributions of alpine cairn sites within these randomly selected areas
What are the intrasite relationships of alpine cairns with regard to morphology, time, and function?	Additional Tlingit oral histories	Excavation and rebuilding cairns
	American and Canadian federal, and Canadian records, reports, and publications	

Research Question/topic	Archival and Cultural Data Sources	Archaeological Data Sources
Do cairn sites in different areas vary in morphology, time, and function?	American and Canadian federal, and Canadian records, reports, and publications	On-the-ground archaeological inventory
		Excavation and rebuilding cairns
How have alpine cairns been physically affected by the natural environment?		On-the-ground archaeological inventory

### Function:

Research Question/topic	Archival and Cultural Data Sources	Archaeological Data Sources
Do other alpine landscapes reveal surface evidence of past human activities or residence other than that of alpine cairns?	American and Canadian federal, and Canadian records, reports, and publications	On-the-ground and airborne (helicopter and drone) inventories
Do other alpine landscapes reveal surface evidence of past human activities or residence other than that of alpine cairns?	American and Canadian federal, and Canadian records, reports, and publications	On-the-ground inventories
Did the rare extremely large cairns (>2 m in size and somewhat rectangular shaped) have a function very different from the more common cairns (<2 m diameter or less and circular or sub-circular in shape)?	American and Canadian federal, and Canadian records, reports, and publications	Excavation and rebuilding cairns
Are alpine cairns the result of an activity other than memorialization or escaping from the Great Flood?	American and Canadian federal, and Canadian records, reports, and publications	On-the-ground inventories
		Excavation and rebuilding cairns

**Climate change:** The National Academies of Sciences (2016) has noted that drastic climate changes are occurring in the Arctic today. This would certainly include the tundras of Southeast Alaska's alpine areas. They are having a drastic effect on wildlife migration and populations and may have impacts on Tlingit traditional subsistence. If the annual salmon run fails, for instance, did prehistoric Tlingit turn to mountain resources such as Sitka deer, blueberries, brown bear, and other food sources to survive to the approaching winter? What will be the effect of climate change on these resources during the 21<sup>st</sup> century and beyond? To understand the present and future climatic conditions of today and the coming century in the alpine areas, one must have a very good idea of what the conditions in those areas were like in the past. The study of alpine cairns can provide important information about past environments that may be difficult or impossible to acquire from other sources.

Research Question/topic	Archival and Cultural Data Sources	Archaeological Data Sources
Is there a relationship between climate and alpine cairn construction?	Tlingit oral histories	Excavation and rebuilding cairns for subcairn pollen samples
		Excavation and rebuilding cairns for subcairn soil samples
		Pollen cores from nearby bogs
How did alpine climates change through the period(s) that cairns were constructed?	Tlingit oral histories	Excavation and rebuilding cairns for subcairn pollen samples
		Excavation and rebuilding cairns for subcairn soil samples
		Pollen cores from nearby bogs

Site Protection: Alpine cairn sites by their very nature are in locations that are generally difficult for people to get to and in places well beyond the usual coastal construction zones. In general, then, it should be expected that these sites will almost never have negative human impacts. This report, however, has demonstrated that construction occasionally does take place on mountain peaks and ridges. In these circumstances, harm to alpine cairn sites, perhaps other kinds of prehistoric alpine sites, and unusual historic sites can take place if archaeologists, governmental employees, and construction personnel fail to recognize them for the important and sacred cultural features they are. Cairn sites are also subject to environmental actions such as impacts of rain, snow, and wind on soil erosion, plant and tree cover, destabilization of slopes, and other actions that can reduce cairns and destroy their environmental settings.

Research Question/topic	Archival and Cultural Data Sources	Archaeological Data Sources
Is there a relationship between climate and alpine cairn construction?	Tlingit oral histories	Excavation and rebuilding cairns for subcairn pollen samples
		Excavation and rebuilding cairns for subcairn soil samples
Are there natural actions underway that affect cairn stability?		On-the-ground and airborne (helicopter and drone) inventories
Has and does human activity in the alpine areas of Southeast Alaska impacted cairns?		On-the-ground and airborne (helicopter and drone) inventories

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## APPENDICES

Appendix A: List of Interviewees and Consultants, 2012-14.

Name (Tlingit)	Clan	Community (Kwáan)	Age (approx.)	Interview date & location	Recording
Abraham, Elaine	Kwashk'ikwaan	Yakutat	85	7/30/13, Sitka	
Dauenhauer, Nora (& Richard)	Lukaax.ádi	Chilkoot	80	7/21/13, Juneau	
Davis, George	?	Kake	77	7/23/13, Juneau	
Davis, Herman	L'uknax.ádi	Sitka	80	7/30/12-13, Sitka	x
Didrickson, Boyd	Kiks.ádi	Sitka	80	7/29/12, Sitka	
Didrickson, Donald (Duck)	Kiks.ádi	Sitka	75	7/29/12, Sitka	
Didrickson, Rich	L'uknax.ádi ?	Sitka	35	7/29/13, Sitka	x
Frank, Donald	Tsimshian (adopted Teikweidí?)	Angoon/ Metlakatla	55	7/24/13, Angoon	x
Frank, Kevin	L'eineidí	Sitka/Angoon	45	7/25/13, Angoon	x
Frank, Wally Sr.	Kaagwaantaan	Sitka/Angoon	80	7/25/13, Angoon	x
Gamble, Edward	L'eineidí	Angoon	75	7/24/13, Angoon	x
Gamble, Tom	Kiks.ádi	Sitka	35	7/29/13 Sitka 6/6/15	1/2
George, Cyril	Kak'wkweidí	Angoon	90	7/23/13, Juneau	x
George, Gabriel (w/ JoAnn George and Shgen George)	Deisheetaan	Angoon	60	7/25/13, Angoon	x

Name (Tlingit)	Clan	Community (Kwáan)	Age (approx.)	Interview date & location	Recording
George, Garfield	Deisheetaan	Angoon	53	7/24/13, Killisnoo	x
George, Jimmy	Deisheetaan	Angoon	60	7/23/13, Juneau	
Heinmiller, Lee		Haines	60	6/4/15	
Hope, Ishmael	Kiks.ádi	Juneau	30	7/31/13, Juneau	1/2
Hotch, Joe	Kaagwaantaan	Klukwan	80	6/4/15	
Howard, John	Wooshkeetaan	Angoon	80	7/25/13, Angoon	x
Jack, Mabel	L'eineidí?	Angoon	80	7/25/13, Angoon	x
Johnson, Daniel Jr.	Kak'wkweidí	Angoon	55	7/26/13, Angoon	x
Katzeek, David	Shangukeidí	Chilkat	70	7/22/13, Juneau	x
Kitka, Harvey	Kaagwaantaan	Sitka	70	7/30/12, Sitka	
Lawson, Nels	Kaagwaantaan	Sitka	75	7/28/12, Sitka	
Littlefield, John	L'uknax.ádi	Sitka	70	7/29/13, Sitka	
Martin, Harold	T'akdeintaan	Kake	78	7/23/13, Juneau	
McCluskey, Peter	Teikweidí	Angoon	80	7/25/13, Angoon	x
Nielson, John	Chookaneidí	Sitka	83	7/30/13, Sitka	x
Nielson, Ray	Chookaneidí	Sitka	55	7/30/12, Sitka	x
Sam, Robert	L'eineidí	Sitka	50	7/28/13, Sitka	x
White, Frank	Kaagwaantaan	Hoonah (Xutsnoowú)	75	7/22/13, Juneau	x
Worl, Rosita	Shangukeidí	Chilkat	70	7/23/13, Juneau	x
Zuboff, Alan	L'eineidí	Angoon	59	7/25/13, Angoon	x



Other contacts: Doug Deur (Anthropologist, Portland State University), Sergei Kan (Dartmouth College), Jay Kinsman (Archaeologist, USFS, Sitka), Roby Littlefield (Sitka), Kassy Littlefield (Sitka), Sue Thorson (Archivist, National Park Service, Sitka), Steve Langdon (University of Alaska Anchorage), Daniel Monteith (University of Alaska Southeast), Heather Powell (Sitka Tribe of Alaska), Jeff Feldspausch (Sitka Tribe of Alaska), Trista Patterson (Economist, USFS), Zachary Jones (Archivist, Sealaska Heritage Institute, Juneau), Charles Smythe (Ethnologist, Sealaska Heritage Institute, Juneau), Rosita Worl (President, Sealaska Heritage Institute, Juneau), Danielle DiNovelli-Lange (Anthropologist, Carlton University), Karen Hebert (Anthropologist, Yale University).

## Appendix B: Interview Schedule.

### Alpine Cairn Project, Oral History Component Interview Guide for Semi-Structured Interviews (1.0)

1. What are cairns or stacked rock features called (Tlingit, English, other terms)?
2. Where have you seen them (specific location and types of locations, e.g., mountain tops)? Have you seen any on Northern Baranof Island (can mention general localities if necessary to prompt)? How about elsewhere (esp. in Southeast Alaska)?
3. What are these features used for? (follow-up questions concerning the nature of uses, such as Flood refuges, hunting blinds/caches, shamanic associations, wayfinding, etc.)
4. Do they differ in shape and form? If so, how and why to they differ?
5. What factors determine their location, and how do the features relate to each other (i.e. do they constitute a network)?
  - a. Lower vs. higher alpine features (elevation)?
  - b. Peak vs. promontory features (viewsheds)?
  - c. Trails and navigation waypoints (travel corridors)?
6. What do you know about their origins and when they were constructed (e.g., oral history, migration, The Flood)?
7. How were they constructed (transport of stones, special tools, etc.)?
8. How and how often were they accessed?
9. Are they maintained (actively, or through respectful avoidance of contact, etc.)? How?
10. How should they be recognised and conserved/managed as historic sites/cultural resources?
11. Other comments/questions, particularly concerning the oral history or these rock formations the upcoming July/August archaeological investigation at Cross Mountain (e.g., tribal monitoring)?

Appendix C: Alpine Cairn and Flood Refuge Sites Mentioned.

Site Location	Oral Historical Description	Area
“Hood Bay Old Woman,” South of Hood Bay	Flood refuge, mountain	Angoon
Above Chaik Bay	Flood refuge	Angoon
Kanalku Mountain or Middle Mountain	Flood markers	Angoon
Kooznoowoo Inlet (above)	Alpine cairns	Angoon
Over Graveyard Point	Flood refuge, mountain	Angoon
Shaa Dáax’[location?]	Flood refuge, mountain	Angoon
Table Mountain, Whitewater Bay	Flood refuge, mountain, alpine cairn	Angoon
Battery Point	Flood refuge	Haines/Klukwan
Dundas Bay, Dundas River	Alpine cairns	Hoonah (Xutsnoowú)
Above Point Carolus	Alpine cairns	Hoonah (Xutsnoowú)
Above Point Dundas	Alpine cairns	Hoonah (Xutsnoowú)
Excursion Inlet	Alpine irn	Hoonah (Xutsnoowú)
Mount Carolus	Alpine cairns	Hoonah (Xutsnoowú)
White Cap Mountain	Alpine cairns	Hoonah (Xutsnoowú)
Tenakee Inlet	Flood refuge	Hoonah (Xutsnoowú)/An goon
Mt. Fairweather	Flood refuge, mountain	Hoonah (Xutsnoowú)/Ya kutat
Éinaa Sháa, above Port Camden	Flood refuge, mountain	Kake
Gut Bay	Flood refuge, mountain	Kake
Wat-stak Mountain, Boca de Quadra	Flood refuge, mountain	Ketchikan/Saxm an
Cross Peak, above Deadman’s Reach	Alpine cairns	Sitka
Poison Cove	Alpine cairns	Sitka
Ushk Bay	Alpine cairn, imprint of raft on Mt. face	Sitka
Baranof Island	Two shaman sites	Sitka

Site Location	Oral Historical Description	Area
Dool Mountain	Flood markers	Sitka
Mt. Rosenberg	Flood markers	Sitka
Crawfish Inlet and Jamboree Bay	Flood markers and Shaman's site	Sitka
Kakul Narrows	Flood markers	Sitka
Nakwasina Area	Flood refuge or marker	Sitka
Necker Bay	Flood markers	Sitka
Camelback [?], Kruzof Island, Kalinin Bay	Whale bones, flood site	Sitka
Saook Bay, Peril Strait	Flood refuge, mountain	Sitka/Angoon
Cone Mountain	Flood refuge, mountain	Wrangell
Devils Thumb Mountain	Flood refuge, mountain	Wrangell
Mt. Stoekl	Flood refuge mountain	Wrangell
Alsek River	Flood markers	Yakutat
Mt. St. Elias	Flood refuge, mountain	Yakutat
Robin Mountain, Kaliakh R	Flood refuge, mountain	Yakutat

\*Note: This table is incomplete in that 1) many of these areas contain multiple individual cairn or Flood sites, and 2) not all communities were surveyed either by this author or earlier ethnographic and archaeological investigations.