

**AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON
SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA**

VOLUME 2—APPENDICES A-D

**Appendix D: Traditional Ecological Knowledge and
Characterization of the Indigenous Cultures of the Nushagak
and Kvichak Watersheds, Alaska**

**TRADITIONAL ECOLOGICAL KNOWLEDGE
AND CHARACTERIZATION OF THE INDIGENOUS
CULTURES OF THE NUSHAGAK AND KVICHAK
WATERSHEDS, ALASKA**

**Submitted to the Bristol Bay Assessment: Environmental
Protection Agency**



Nushagak River at Koliganek, September 19, 2011

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October 13, 2013**



Figure 1. Salmon Art, Wall of Sam Fox Museum, Dillingham. September 11, 2011. Photo by Alan Boraas

EXECUTIVE SUMMARY

1. Voices of the People

...Salmon more or less defines this area. It defines who we are. When you look at our art, you will see salmon....It is who we are. When you listen to the stories and take a steam, even in the middle of winter, people talk about salmon. It is in our stories; it is in our art. It is who we are; it defines us. M-61, 9/16/11

...we are relying on EPA to give us a fair shake out here. If EPA is going to crap all over our people, then take out the checkbook, federal government, and start writing million dollar checks for these people to move to Anchorage because you are going to kill us culturally, economically and every other way. M-60, 9/16/11

But I wouldn't trade this place for anything. This is home; this is where I find clean water to drink. M-51, 8/20/11

We love the place; its home. Moving is not an option to me. M-29, 8/17/11

...basically one of the main purposes of the Blessing of the Water is to make that Holy water.... When the Father blesses that particular river, that particular river becomes Holy. M-61, 9/16/11

I think with us, during potlatch times, during hard times, or Russian Christmas, or if we gather together, everybody brings out their dry fish or their jarred fish or their salt fish. Nobody goes hungry, there's always sharing. F-32, 8/18/11

We share with our families, or if anybody does not have fish, we give them fish also. F-27,
8/17/11

2. The Condition of the Indigenous Cultures of the Bristol Bay Region

This section of the Environmental Protection Agency's Bristol Bay characterization studies is based on 53 interviews in seven villages and an overview of previous research in the study area. The condition of the ecosystems, both riverine and lacustrine, on which the Yup'ik and Dena'ina depend for wild fish, mammals, and plants including the keystone species salmon, is nearly pristine. The cultures have proved to be sustainable in this region for thousands of years. Alaska Department of Fish and Game statistics indicate wild subsistence resources including salmon provide the Yup'ik and Dena'ina of the study area with the bulk of their food resources. Wild foods provide critical nutritional elements in both quantity and quality in the diet, but subsistence also forms the core of the culture itself, including knowledge, attitudes, identity, and beliefs important to the Yup'ik and Dena'ina people in their daily lives.

The villages of the study area are predominantly Alaska Native and the population remains stable (United States Census, Alaska). The culture has a very high degree of homogeneity in relation to salmon and water quality as represented by interviewees' responses to questions about the importance of salmon and streams in their lives. Interviews conducted in this project relating to the importance and significance of salmon and clean water resulted in 97% concurrence among Elders and culture bearers—individuals who have an honored place in the culture of the villages. The Yup'ik people of the region retain their language, and more than 40% of the population continues to speak it. The Dena'ina are undergoing a cultural renaissance through language revitalization programs and the emergence of culture camps. Both languages have a large number of words related to salmon and stream resources reflecting nuanced understanding developed over time and represent frames reflecting basic cultural schema.

Elders and culture bearers continue to instruct young people particularly at fish camps where not only fishing and processing techniques are taught, but also cultural values. The social system which forms the backbone of the culture, nurturing the young, supporting the producers, and caring for the Elders, is based upon the virtue of sharing the wild foods harvested from the land and waters. Sharing networks of wild foods, particularly wild salmon, define community membership. Sharing networks also extend to family members living far from home.

The Yup'ik and Dena'ina consider the land and waters to be their sacred homeland. They have traditionally considered the salmon as kin in the sacred web of life. The populations of both Yup'ik and Dena'ina have shown themselves to be spiritually tenacious, combining elements of traditional practices with those of Russian Orthodox and other Christian churches to create a rich syncretic religious heritage for their families providing mechanisms to contextualize modern subsistence life. They continue to practice a first salmon ceremony paying homage to the first salmon caught in the spring and the renewal of their cycle of life. The rivers are blessed by priests annually in the Great Blessing of the Water at Theophany, celebrating the baptism of Christ and symbolically purifying the water of contamination preparing it for the return of the salmon. This ceremony, for Orthodox Yup'ik and Dena'ina, is the pure element of God

expressed as sanctified nature. The holy water of the rivers derived from this ceremony is used to bless the homes, churches, and people and is believed to have curative powers.

3. The Status of the Resource Relative to other Salmon Culture Ecosystems Internationally

The Human Relations Area Files on-line cultural database (Human Relations Area Files, World Cultures Data Base. <http://www.yale.edu/hraf/collections.htm>) identifies 23 world cultures in which anadromous salmon are, or were, a chief component of subsistence. However, today only in Alaska are wild, non-farmed, non-hatchery spawned, non-bioengineered salmon both abundant and reliably accessible to indigenous people. The Yup'ik and Dena'ina of the study area are among the few remaining cultures to still rely on wild salmon as a chief source of nutrients and have an intact relationship with the landscape that supports them and the food that has shaped their cultural traditions.

4. The Causes of the Unique Status of the Resource and the Vulnerability of the Resource

This area is among the last remaining truly viable cultural and ecologically interdependent human/salmon ecosystem in the world because it is an intact ecosystem largely due to the fact that it is remote, roadless, and until recently in the 1980s, not thought to contain sizeable extractive natural resources of value other than fish and game. In addition the unique Alaska State and United States Federal subsistence laws including the Alaska Native Claims Settlement Act (ANCSA, Public Law 92-203 with amendments), Alaska National Interest Lands Conservation Act (Public Law 96-487 with amendments), and the State of Alaska Subsistence Act 1978 (with amendments; encoded within AS 16-05) protect rural and indigenous people's right to harvest wild resources and in some cases provide a priority to those resources over commercial and sport interests.

5. Vulnerabilities

The existing culture of the indigenous people of the study area is vulnerable to Negative changes in the quantity or quality of wild salmon resources or the quantity or quality of water in the Nushagak or Kvichak watersheds. Negative impacts to salmon would leave the existing culture susceptible to destabilization and affect its present sustainability, ability to cope with natural disasters, and promote assimilation and relocation to urban cultural centers. If significant negative impacts to salmon or streams occur, the cultural stability will be vulnerable to change in the following ways:

- Since the diet is heavily dependent on wild foods, particularly salmon, the diet would be changed from a highly nutritious diet to one based on store-bought processed foods.
- Since the social networks are highly dependent on procuring salmon (fish camps) but also sharing salmon and wild food resources, the current social support system would be appreciably degraded
- Since meaningful family-based multi-generational work takes place in fish camp or similar subsistence settings, transmission of cultural values and language learning would be impacted and family cohesion impacted.
- Since values and the belief system are represented by interaction with the natural world through salmon practices, clean water practices, and symbolic rituals, core beliefs would

be challenged potentially resulting in a breakdown of cultural values, mental health degradation and behavioral disorders.

- Since a yearly subsistence round rests on having time to harvest and process wild foods, a shift from part-time wage employment supporting subsistence to full-time wage employment would impact subsistence-gathering capabilities by restricting the time necessary to harvest subsistence resources.
- Since the area exhibits a high degree of cultural uniformity tied to shared subsistence practices, substantial change could provoke increased tension and discord both between villages and among village residents.

Table of Contents

I.	INTRODUCTION	11
A.	Overview and Question	11
B.	Methodology	12
C.	Villages, Population, and Ethnicity	16
II.	CULTURAL AND HISTORICAL BACKGROUND.....	21
A.	Pre-Contact Bristol Bay	21
1.	Voices of the People	21
2.	Introduction	21
3.	Pre-Contact Salmon Fishing Cultures	23
B.	History and Culture of the Yup'ik Area.....	31
1.	Voices of the People	31
2.	Introduction	32
3.	Pre-Contact Culture	32
4.	Post-Contact Yup'ik History and Culture (A.D. 1791 to 1935).....	33
C.	History and Culture of the Dena'ina	37
1.	Voices of the People	37
2.	Pre-Contact Culture	38
3.	Post-contact History and Culture.....	39
D.	Traditional Yup'ik and Dena'ina Spirituality and Cosmology	42
1.	Traditional Yup'ik Spirituality	42
2.	Traditional Dena'ina Spirituality	46
E.	The Yup'ik and Dena'ina Languages: Salmon and Streams.....	49
1.	Voices of the People	49
2.	Introduction	49
3.	The Central Yup'ik Language	49
4.	The Dena'ina Language.....	56
III.	MODERN CULTURE.....	65
A.	Interview Synopsis	65
B.	Subsistence	70

1.	Voices of the People	70
2.	Introduction	72
3.	Subsistence in Alaska	73
4.	Scope of Subsistence	76
5.	The Seasonal Subsistence Round	81
6.	The Interplay of Subsistence and Wage Income	82
7.	Subsistence as an Economic Sector	85
8.	Subsistence and “Wealth”	88
C.	Physical Well-being: the Role of Subsistence.....	90
1.	Voices of the People	90
2.	Introduction	92
3.	Nutrition.....	94
4.	Fitness.....	96
5.	Disease Prevention	96
6.	Local Wild Fish	98
D.	Traditional Ecological Knowledge.....	100
1.	Voices of the People.....	100
2.	Introduction	101
3.	Summaries of Important TEK Studies.....	102
E.	Social Relations.....	108
1.	Voices of the People	108
2.	Introduction	111
3.	Sharing and Generalized Reciprocity	111
4.	Fish Camp.....	113
5.	Gender and Age Equity	116
6.	Wealth.....	116
7.	Behavioral and Mental Health.....	117
8.	Steam Baths	120
9.	Suicide in the Study Area	121
F.	Spirituality and Beliefs Concerning Water and Salmon	124
1.	Voices of the People	124
2.	Introduction	127
3.	Great Blessing of the Water.....	128

4.	Respect and Thankfulness	131
5.	First Salmon Ceremony	131
G.	Messages From the People.....	133
1.	Voices of the People	133
IV.	CONCLUSIONS.....	136
V.	APPENDIX 1. METHODOLOGY, CONSENT FORM and TRIBAL LETTER OF INTRODUCTION	138
VI.	REFERENCES CITED.....	144

List of Figures

Figure 1. Salmon Art, Wall of Sam Fox Museum, Dillingham. September 11, 2011. Photo by Alan Boraas.....	1
Figure 2. Nondalton, August 17, 2011. Photo by Alan Boraas	14
Figure 3. Population Change for the Study Area: 1980 to 2010. Data from U.S. Census.....	17
Figure 4. Curyung Tribal Offices, Dillingham, September 16, 2011. Photo by Alan Boraas	18
Figure 5. New Stuyahok, January 17, 2012. Photo by Alan Boraas.....	20
Figure 6. Cultural Chronology of Nushagak and Kvichak River Drainage Salmon-Based Cultures. Compiled from the Alaska Heritage Resource Survey database by Alan Boraas.....	22
Figure 7. Lake Iliamna. Photo by Alan Boraas.....	26
Figure 8. Koliganek Tribal Offices. September 19, 2011. Photo by Alan Boraas.....	36
Figure 9. Kijik River, called, <i>Ch'ak'dlatnu</i> 'Animals Walk Out Stream' in the foreground; <i>Yuyan Ach'edelt</i> 'Where We Walk into the Sky' is the snow-covered pass in the distance. Photo by Alan Boraas	38
Figure 10. Pedro Bay, General Location of the 18 th Century Lebedev Company Post. August 19, 2011. Photo by Alan Boraas	40
Figure 11. Nushagak River, January 18, 2012. Photo by Alan Boraas.....	42
Figure 12. Iliamna Village. August 20, 2011. Photo by Alan Boraas	46
Figure 13. Evil Creek <i>Qil'ihtnu</i> near Lake Clark. Photo by Alan Boraas	48
Figure 14. Newhalen. August 20, 2011. Photo by Alan Boraas	72
Figure 15. Per Capita Wild food harvest in pounds and selected meat sources. From Table 13 compared to U.S. Average Per Capita Meat Consumption. Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005, U.S.D.A Factbook.	78
Figure 16. Significant Aspects of the Subsistence Seasonal Round.	82
Figure 17. Subsistence Skiffs, Nushagak River, New Stuyahok. May, 2011. Photo by Alan Boraas.....	84
Figure 18. Salmon Drying. Koliganek. September 17, 2011. Photo by Alan Boraas.....	88
Figure 19. Talarik Creek, Newhalen River, and Lake Iliamna. January 17, 2012. Photo by Alan Boraas.....	89
Figure 20. Ekwok. September 11, 2011. Photo by Alan Boraas	94
Figure 21. Nushagak and Wood Rivers. September 11, 2011. Photo by Alan Boraas.....	98
Figure 22. Pedro Bay. August 18, 2011. Photo by Alan Boraas.....	111
Figure 23. Jarred Salmon Being Prepared at Fish Camp. July, 2012. Photo courtesy of Karina Chambers.	112
Figure 24 Young Boy Helping at a Nondalton Area Fish Camp. Photo courtesy of Karina Chambers	114
Figure 25. Smoking Salmon at a Nondalton Area Fish Camp, July, 2012. Photo courtesy of Karina Chambers.....	115
Figure 26. Hot Room of a <i>Maqi</i> or Steambath. New Stuyahok. January 16, 2012. Photo by Alan Boraas.....	119
Figure 27. Firewood sled (foreground) and <i>Maqi</i> or Steam Bath (background). New Stuyahok, January, 18, 2012. Photo by Alan Boraas	121

Figure 28. St. Michael the Archangel Russian Orthodox Church, Koliganek. September 15, 2011.
Photo by Alan Boraas 125

Figure 29. The Eve of Theophany, St. Sergis Orthodox Church, New Stuyahok, January 18,
2012. Photo by Alan Boraas 127

Figure 30. Procession going onto the Nushagak River at New Stuyahok for the Great Blessing of
the Water. January 19, 2011. Photo by Alan Boraas 128

Figure 31. Great Blessing of the Water, Father Alexi Askoak, St. Sergis Church, New Stuyahok.
January 19, 2012. Photo by Alan Boraas 130

Figure 32. Kvichak River and Lake Iliamna at Igiugig. May 16, 2011. Photo by Alan Boraas. 132

List of Tables

Table 1. Number of Interviews per Village	13
Table 2. Census of the Towns and Villages of the Nushagak and Kvichak River Drainages, 1980 to 2010. Data from U.S. Census, Alaska; Alaska Community Database; Native Names from Indigenous Peoples and Languages of Alaska, Gary Holton Alaska Native Language Center, 2011.	16
Table 3 Village Water Sources. Data from the Alaska Division of Community and Regional Affairs. http://www.commerce.state.ak.us/dca/commdb/CF_COMDB.htm	20
Table 4. Arctic Small Tool Tradition Sites in the Study Area. Compiled From Alaska Historic Resources Survey.	24
Table 5. Norton tradition sites in the study area. Compiled from Alaska Heritage Resources Survey.	27
Table 6. Pre-Contact and Early Contact Period Yup'ik Sites, A.D. 1000 to A.D. 1800. Compiled from Alaska Heritage Resources Survey.	28
Table 7. Pre-Contact or Early Contact Period Dena'ina Sites in the Study Area. Compiled from Alaska Heritage Resources Survey.	29
Table 8 Estimated Number of Central Yup'ik and Dena'ina Speakers. Data from Krauss (2007:408)	50
Table 9. Yup'ik Words for Salmon and Other Fish and Related Fishing Terms. From Jacobson (1984)	51
Table 10. Dena'ina Words for Fish and Streams. Data from Kari (2007).....	58
Table 11. Nominal Evaluation of Responses to Semi-Structured Interview Questions.	66
Table 12. Use and Reciprocity of Subsistence Resources. Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005.....	76
Table 13. Per-Capita Harvest of Subsistence Resources. Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005.....	77
Table 14. Per-Capita Harvest of Salmon Resources. Data from Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005	80
Table 15. Commercial Fishing Permit Holders and Crew Licenses	84
Table 16. Percent Not in the Labor Force, 2010.....	86
Table 17 Scholarly Articles on the Health Benefits of Omega-3 Fatty Acids, 2012.....	93
Table 18 Subsistence Fish, Terrestrial Mammals, Birds and Plants (Nushagak-Mulchatna Traditional Use Conservation Plan, 2007).....	103
Table 19. Traditional Yup'ik and Cup'ik Cultural Practices Correlated with Medicaid Billing Categories. Modified from Mills (2003:87).....	120
Table 20. Suicide Rates in the Study Area (in gray) compared to Alaska and Other Selected Areas.	122

I. INTRODUCTION

A. Overview and Question

The purpose of this Bristol Bay Cultural Assessment is to provide information to the Environmental Protection Agency on the status of the indigenous cultures of the Nushagak and Kvichak River watersheds and their dependence on and relationship to salmon and other stream-based natural resources of the region. The focus of the Bristol Bay Assessment is salmon and water and this part of the overall assessment portrays the human dimension of modern indigenous “salmon-cultures” of the region. The Human Relations Area Files on-line cultural database (<http://www.yale.edu/hraf/collections.htm>) identifies 23 cultures in which anadromous salmon are or were a chief component of subsistence. Wild Atlantic salmon populations have been decimated by high-seas fishing and habitat degradation such as dam building (Montgomery 2003:111-118). Consequently indigenous cultures such as the Sami of Fennoscandia, Micmac and Abenaki of northeastern North America and other cultures once dependent on Atlantic salmon have been forced to choose non-traditional options (cf. Lehtola 2004: 72-84). In the Asian Far East wild salmon have likewise been decimated in Japan and Russia through overfishing and habitat destruction and legal restrictions to indigenous fishing, and cultures like the Ainu of Hokkaido and Nvkh of Sakhalin Island can no longer depend on wild salmon and diet and cultural institutions based on salmon have been severely affected (cf. Iwasaki-Goodman and Nomoto 1998: 27-46). In the Pacific Northwest of North America hydroelectric dam building, overfishing, and habitat degradation have decimated wild salmon runs and the Northwest Coast cultures from California to British Columbia can no longer subsist on wild salmon as they once did (cf. Johnsen 2009).

The Yup'ik of the Nushagak, Kvichak and Wood River watersheds and the Dena'ina of the Lake Iliamna, Newhalen River and Lake Clark (also the Kvichak River watershed) are among the few remaining cultures still relying on wild salmon as a chief source of nutrients. This reliance on salmon has lasted unbroken for at least 4000 years and salmon subsistence has shaped cultural patterning in multiple ways. Today modern technology is used but many beliefs, social practices and components of spirituality are part of this long history and form both Yup'ik and Dena'ina essential identity and provide the cultural basis for sustainability. To say they are the last wild salmon cultures is an overstatement, but they are certainly among the last. Part of the reason they remain is that Alaska in general, and Bristol Bay in particular, has become the world's last bastion of wild, non-farmed, non-hatchery raised, non-bioengineered wild salmon.

This document is not an exhaustive study of all aspect of all cultural research in the study area; rather, it is a characterization of the village cultures of the Nushagak, Kvichak and Wood River drainages focusing on the relationships of the people to salmon. This document contains five parts. First, this introduction contains information about the project and its methodology. Second, it consists of contextualization of relevant prehistoric, historic, linguistic, and cultural information obtained from anthropological, historical, and other publications and data bases. Third, this document describes the modern culture of the drainages and includes the product of interviews in villages of the Nushagak and Kvichak River watersheds conducted in 2011, which

constitutes original research on the peoples of the area as well as drawing from relevant recent anthropological research. Fourth, this document contains conclusions about the vulnerability of the culture to loss of clean water and salmon resources in the Bristol Bay area. Between us (Boraas and Knott) we have 48 years of research, teaching, and collaboration with Alaskan tribes, and that experience is reflected in this study.

B. Methodology

Section 3, Modern Culture, of this study represents original qualitative, interview-based research which asks the question, “How are salmon and other stream-based resources and water important in your lives?” The interview questions involved the topics (domains) of nutrition, subsistence, social relations, spirituality and beliefs. In addition a final question was asked: “is there anything you would like to add, or is there anything you would like the Environmental Protection Agency to know about the situation in your villages.” The interview questions are listed in Section III.A.

We recognize and respect that some cultural information may constitute intellectual property rights and is not to be shared with the broader public. As a guide we followed the principles of the United Nations Declaration on the Rights of Indigenous Peoples, particularly Article 31, Section 1 (UNDRIP 2007):

Article 31

Section 1. Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.

The study area was defined by the Environmental Protection Agency’s assessment team to include the villages of Aleknagik, Port Alsworth, Igiugig, Levelock, Ekwok, Kokhanok, New Stuyahok, Koliganek, Curyung (Dillingham), Nondalton, Pedro Bay, Newhalen, and Iliamna. All are within the Nushagak or Kvichak watersheds except Aleknagik which is in the Wood River watershed near the Nushagak River. As a foundation for this research, all of the federally recognized tribes in the watersheds were contacted through the Environmental Protection Agency’s Tribal Trust and Assistance Unit in Anchorage following government to government protocols requesting permission to conduct interviews. Since one of us, Alan Boraas, is an Honorary Member of the Kenaitze Indian Tribe, a letter of introduction from the Kenaitze Tribe to village councils was included in the government to government packet following village conventions (See Appendix 1 which also includes the initial statement of methodology). We selected seven villages in which to conduct interviews: New Stuyahok, Koliganek, Curyung (Dillingham), Nondalton, Pedro Bay, Newhalen, and Iliamna. Four are primarily Yup’ik villages and three are primarily Dena’ina villages.

Table 1. Number of Interviews per Village

Village	Males	Females	Total
Curyung (Dillingham)	7	0	7
Iliamna	1	3	4
Koliganek	5	5	10
Newhalen	5	6	11
New Stuyahok	5	2	7
Nondalton	4	6	10
Pedro Bay	2	2	4
Total	29	24	53

We interviewed 53 Elders and culture bearers, people whom the various village councils or their designates (often the village environmental officer) identified as authoritative sources of information about subsistence, traditional ecological knowledge, nutrition, social relations and spiritual aspects of their culture. The village-selected interviewees consisted of 24 females and 29 males (see Table 1) and ranged in age from mid-twenties to a man reportedly in his nineties. Most, however, were in their forties or older due to the intentional weighting toward village-selected Elders and culture bearers. We were not consulted in the selection of specific interviewees and were assisted by a tribal employee or a village council member who arranged the time and place of the interview. The interviews took place in the villages at a tribal or community center or at private homes because, from the standpoint of the interviewees, they are safe, non-threatening places in which to discuss important cultural matters. The consent form is in Appendix 1 and signed forms are currently under the authors' control. We normally interviewed two to four individuals at any one time but some sessions included as many as six and one was a single interviewee. The interview sessions lasted about two hours with a short break. Interviews followed a standard semi-structured interview process in which a set of questions guided the interview but interviewees were free to add additional information or perspective, in some cases delving into topics not covered by the original question. The questions were specifically designed not to be answered briefly but to probe the subject and allow interviewees to describe cultural structures which for the most part were familiar and obvious to local villagers, but not commonly understood to others, particularly those outside the region. If a response was brief we would respectfully clarify or amplify upon the question to generate a more complete narrative. Interviewees were told they did not have to respond to a question if they chose not to, although none did so verbally. If an interview session exceeded two hours we occasionally eliminated some questions to shorten the time commitment; nevertheless, some interviews exceeded two hours. If the topic of a question had already been covered in a previous discussion during a session we eliminated the question. Consequently, not all interviewees responded to every question. Regularly one person would respond and others would nod agreement or disagreement and we did not request them to repeat the response already given by a speaker out of respect for cultural protocols. Since the questions dealt with a cultural standard (domains), there were few alternative or divergent points of view. We encouraged respondents to use their Native language and some of the interviewees chose to speak in Yup'ik, in which case an interpreter was present to translate the question into Yup'ik and the response into English.

None chose to speak in Dena'ina. Many Elders think and respond in their Native language which generated more accurate, empowered, and nuanced responses to questions about culture.



Figure 2. Nondalton, August 17, 2011. Photo by Alan Boraas

We digitally recorded the interviews and, in the Kenai Peninsula College Anthropology Lab, transcribed the recordings including both responses to our questions and additional perspective provided by the Elders or culture bearers.

The transcribed interviews were lumped into a single Microsoft Word document and the lumped document was searched for key words related to the sub-headings of this report using the powerful search feature of Microsoft Word 2010. In this way we were able to capture responses both to the theme of the question we asked and to that theme that might have been discussed by interviewees in the context of a question related to a different topic.

In this document responses of Elders and culture bearers appear in italics titled “Voices of the People” preceding the anthropological discussion of each section. These direct quotations reflect both the consensus among those interviewed and the rare deviations from consensus. By the standards of highly pluralistic modern America, the Yup’ik and Dena’ina villages of Southwest Alaska are culturally much more homogenous; consequently, the narratives reflect that homogeneity as indicated by the summary of responses described in Section III, A. These responses represent an emic view¹ and are intentionally placed at the beginning of each section as the core of the section or sub-section. They are meant to be read and not to serve as mere illustration. “Voices of the people” statements were selected through the search process

¹ An “emic” perspective is that of a participant in the culture whereas an “etic” perspective is that of a non-member describing or analyzing a culture such as an anthropologist or journalist.

described above because they were concise, clear, and reflected the intent of the speaker in the context of their broader narrative. Not all responses are included in this document. The entirety of the transcribed interviews are over 500 pages in length; all were carefully read and helped shape the writers' understanding of modern village culture. The English response or translation is transcribed "as is" with little grammatical modification; readers must understand that for some, English is a second language and imperfect English grammar is not to be construed as imperfect or naive thinking. Following University of Alaska Institutional Review Board Standards to protect individual identity of the interviewees, each Elder or culture bearer has been designated by a code, using an "M" or "F" for "male" or "female" and a number, along with the date of the interview.² Only we, the interviewers, know the names of the interviewees.

All deviations from consensus have been included in the qualitative "Voices of the people" responses. In addition, the entire 500 page typed narrative was assessed from a favorable/unfavorable or agree/disagree standpoint to give a sense of the degree of conformity to a response. These results, along with the interview questions, are portrayed in Section III.A. and referenced throughout this document to give a more numerical sense of the culture standards of the Nushagak and Kvichak drainages.

² Funding for this project was administered as a contract through the University of Alaska Anchorage/Kenai Peninsula College and came under Institutional Review Board (I.R.B.) auspices since it involved human subjects. See (<http://www.uaa.alaska.edu/research/ric/irb/training.cfm>), The UAA I.R.B. reviewed and approved the methodology and consent forms of this project (see Appendix 1). I.R.B. stipulates protection of the identity of human subjects, consequently the names of the participants of this study and not revealed (see <http://www.uaa.alaska.edu/research/ric/irb/policies.cfm>, click on UAA Faculty Handbook). Signed consent forms are held by the researchers.

C. Villages, Population, and Ethnicity

In the 2010 United States Census, the 13 communities of the study area had a total population of 4337. Table 2 describes the population characteristics of the 13 villages and towns located in the Nushagak, Wood, and Kvichak River drainages.

Table 2. Census of the Towns and Villages of the Nushagak and Kvichak River Drainages, 1980 to 2010. Data from U.S. Census, Alaska; Alaska Community Database; Native Names from Indigenous Peoples and Languages of Alaska, Gary Holton Alaska Native Language Center, 2011.

Watershed	Community	Native Name	1980 Pop.	1990 Pop.	2000 Pop.	2010 Pop.	% Alaska Native, 2010	Ethnic Majority
Nushagak River	Dillingham	Curyung	1563	2017	2466	2378	55.9	Yup'ik
	Ekwok	Iquaq	77	77	130	115	90.4	Yup'ik
	Koliganek	Qalirneq	117	181	182	209	95.7	Yup'ik
	New Stuyahok	Cetuyaraq	331	391	471	510	93.5	Yup'ik
	Portage Creek	N/A	48	5	36	2	50.0	Yup'ik
Kvichak River	Igiugig	Igyaraq	33	33	53	50	40.0	Yup'ik, Alutiiq/ Caucasian
	Iliamna	Iliamna	94	94	102	109	54.1	Dena'ina, Caucasian
	Kokhanok	Qarr'unaraq	83	152	174	170	80.0	Yup'ik/Dena'ina/ Alutiiq
	Levelock	Liivlek	79	105	122	69	84.1	Yup'ik
	Newhalen	Nuuriileng	87	160	160	190	80.0	Yup'ik
	Nondalton	Nundaltin	173	178	221	164	63.4	Dena'ina
	Pedro Bay	N/A	33	42	50	42	66.7	Dena'ina
	Port Alsworth	N/A	22	55	104	159	21.4	Caucasian
Wood River	Aleknagik	Alaqlaqqiq	154	185	221	219	81.9	Yup'ik
						4337 Total 2010 Population		

Since no borough or other census area is specifically limited to the watersheds in question, this village by village enumeration is the most accurate reflection of population characteristics and dynamics.

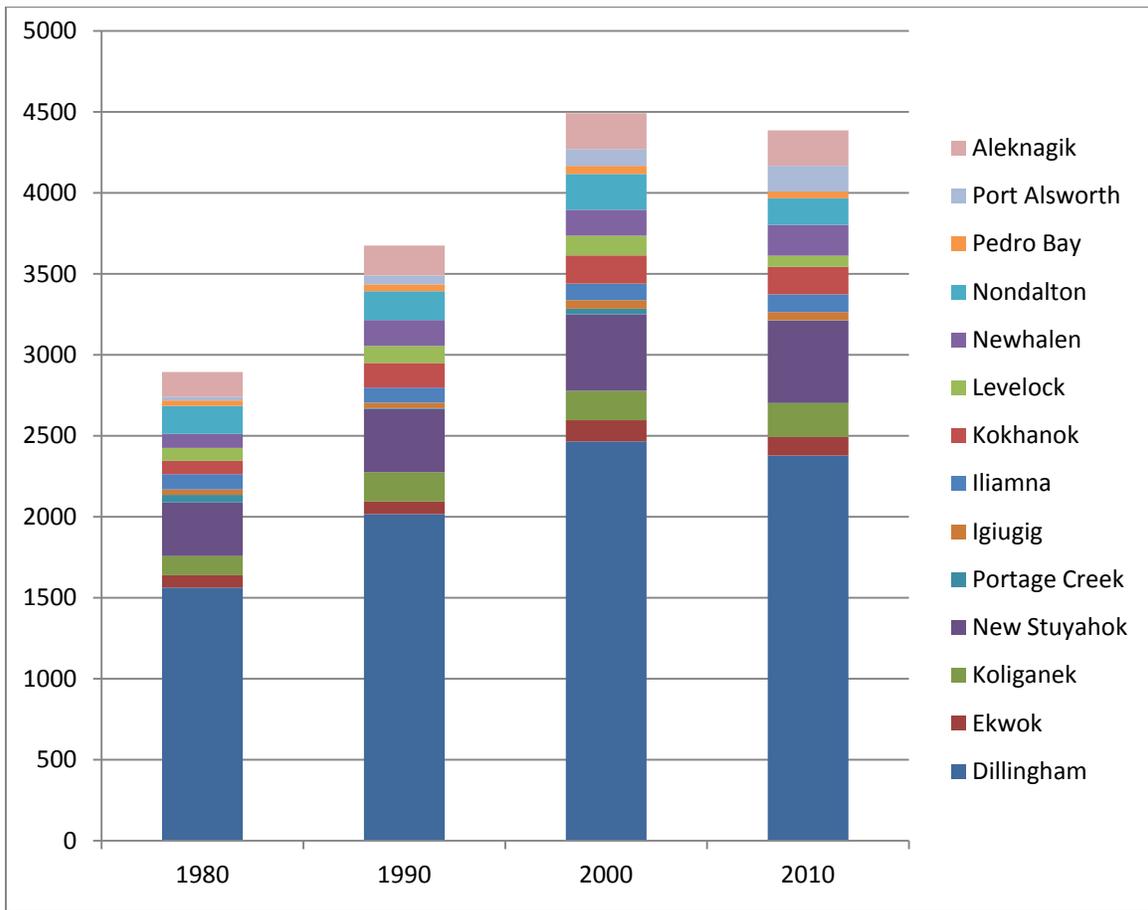


Figure 3. Population Change for the Study Area: 1980 to 2010. Data from U.S. Census.

Table 2 indicates the population of the study area grew substantially from 1980 to 2000 and remained stable between 2000 and 2010. The 1980 to 2000 village population growth is probably due to post-ANCSA changes in land-ownership and is related to a similar phenomenon throughout Southwest Alaska (Fienup-Riordan 1994:39). The population of individual communities can vary considerably; in small populations only a few large families moving in or out can change the overall population considerably. Of the 14 communities identified in Tables 1 & 2, five are anomalous for different reasons: Dillingham, Port Alsworth, Igiugig, Iliamna, and Aleknagik. Dillingham has, by far, the largest population in the area (2,378 in 2010) and is a regional center with an economy based on the Bristol Bay commercial fishing industry, as well as government services, transportation, and professional and business services (Alaska Community Database). Dillingham has a small branch of the University of Alaska, a museum, and Alaska Department of Fish and Game (ADFG) offices, as well as several stores, churches, hotels, and other institutions typical of mid-sized Alaskan towns. Dillingham, however, is 55.9% Alaska Native—mainly Yup’ik—and the Curyung Tribe and Bristol Bay Native Association and associated agencies are a significant presence (Alaska Community Database).



Figure 4. Curyung Tribal Offices, Dillingham, September 16, 2011. Photo by Alan Boraas

Aleknagik is anomalous because it is the only village not in the Nushagak or Kvichak drainages and it is connected by 25 miles of road to Dillingham where institutional services, grocery stores and so on are located. Other than that it shares the characteristics of the Yup'ik and Dena'ina villages in the Nushagak and Kvichak drainages. It is located on Lake Aleknagik where the Wood River drains south to Bristol Bay and is primarily Yup'ik (81.9%). Unlike most other villages, Aleknagik has been influenced by Seventh-Day Adventists and Moravian as well as Russian Orthodox churches. The people of Aleknagik can access resources to the lake system to the north as well as the Nushagak and Kvichak Rivers and coastal areas via large skiffs and maintain close cultural ties to those areas.

Port Alsworth is only 21.4% Alaska Native and thus does not have the majority or near-majority Alaska Native population that other villages in the study area have. The population is primarily associated with two institutions. First, Lake Clark National Park and Preserve, which surrounds Lake Clark, has its regional headquarters in Port Alsworth. Because of the park, a number of eco-tourism guides unaffiliated with the park but using its resources are headquartered at Port Alsworth. Second, The Tanalian Bible Camp and associated ministries, loosely connected to Samaritan's Purse, a national fundamentalist Christian ministry directed by Rev. Franklin Graham, is also located at Port Alsworth. Yup'iks who relocated to the area in 1944 (Gaul, 2007:60-61) account for most of the town's Alaska Native population (Port Alsworth is well within traditional Dena'ina territory). Port Alsworth is not a federally recognized tribal entity but is included in this report because it is within the Kvichak watershed.

Igiugig, located where the Kvichak River drains Lake Iliamna, has a substantial number of guided sport fishing and sport hunting operations that have recently moved into or near the village which accounts for the relatively large non-Alaska Native percentage of the population. The same is true for Iliamna, a traditional Dena'ina village located on Iliamna Lake. It has also become a staging area for exploration and other activities associated with proposed copper/gold porphyry mines in the area. Consequently, Iliamna has a proportionately larger non-Alaska Native population than most other villages in the area, although the Alaska Native population (54.1%; Alaska Community Database) outnumbers other ethnic groups, and is still the dominant ethnic group.

The remaining study area communities are Yup'ik or Dena'ina villages with close connections to traditional practices. They are relatively small, with populations ranging from 510 (New Stuyahok) to 42 (Pedro Bay) (Portage Creek, population 2, is seasonally occupied as of 2011, according to interviewee M-26), and from 93.5% Alaska Native (New Stuyahok) to 67% Alaska Native (Pedro Bay). Most have a single church (Russian Orthodox), a public school, a health clinic, an airstrip, a small general merchandise store, a post office, a tribal center, city and/or village corporation offices, a landfill, cemetery, and fuel storage tanks (Alaska Community Database and observations). There are community health aides in the villages of Koliganek, New Stuyahok, Ekwok, Igiugig, Levelock, Kokhanok, Nondalton, and Pedro Bay (Bristol Bay Area Health Consortium, BAHC 2006) and some also have dental aides. The clinics are connected via internet to consulting physicians and the Alaska Native Hospital in Anchorage. Many of the villages are being connected to high-speed fiber-optic internet. Drinking water in the study area villages is derived from multiple sources depending on the village including municipal treated water, piped but untreated water, individual wells, or hauled directly from rivers or lakes³ (from the Alaska Division of Community and Regional Affairs. http://www.commerce.state.ak.us/dca/commdb/CF_COMDB.htm). Table 3 summarizes the sources of drinking water by village.

³ According to the State of Alaska definition of a “served” community, there must be at least 60% of the households served with a municipal water system, and therefore some households will have a different water source, whether it be an individual well or they haul water.

Table 3 Village Water Sources. Data from the Alaska Division of Community and Regional Affairs.
http://www.commerce.state.ak.us/dca/commdb/CF_COMDB.htm

Community	Municipal/Piped Water	Individual Wells	Haul Water
Dillingham	x		
Ekwok	x	x	
Koliganek	x	x	x
New Stuyahok	x	x	x
Igiugig	x		x
Iliamna		x	
Kokhanok	x	x	
Levelock		x	
Newhalen	x	x	
Nondalton	x		
Pedro Bay		x	x
Port Alsworth		x	x
Aleknagik		x	x



Figure 5. New Stuyahok, January 17, 2012. Photo by Alan Boraas

II. CULTURAL AND HISTORICAL BACKGROUND

A. Pre-Contact Bristol Bay

1. Voices of the People

Salmon and fresh water has been the lifeline of the people here for thousands of years. If you look at the water, that is why fish and game has survived so well here, because we have such clean water. M-62, 9/16/11

[If the salmon were to be impacted], it would stop 10,000 years' plus tradition, culturally and spiritually for my people; not only my people, all the other communities and villages in this region will go away. We would cease to exist. We can't go anywhere. Where are we going to go? M-33, 8/18/11

Freeze drying is not a new thing. That's been going on with my people for over 10,000 years, eating freeze dried food. M-33, 8/18/11

There's 10,000 cache pits [at the Kijik archaeological site on Lake Clark] and they are still counting; over 200 houses, which are huge. So it was pretty big. M-29, 8/17/11

My father, he usually keeps fresh salmon. He would dig a pit and take the topsoil off; dig it out lay some grass on the bottom and on the side. Then take the salmon, lay them in the pit until he filled it up. Then he would put grass on top of it. Then he would lay gravel right on top of it, and he would mark each corner for winter time. Put poles on each corner so he could find where he buried his salmon. And in the winter time, if he wanted salmon, he would take his axe and cut out a piece of the soil and dig from there. That was his freezer. That is how my dad would keep salmon. M-54, 8/20/11

2. Introduction

The pre-contact history (prehistory) of the Bristol Bay drainage is not as well documented as in other parts of Alaska but sufficient data exists to provide a preliminary outline of the study area prehistory. Within the study area there are a total of 228 historic and prehistoric sites listed on the Alaska Heritage Resources Survey (A.H.R.S.), the state's database for officially designated sites kept by the State of Alaska, Office of History and Archaeology. To better understand the patterns of culture change and establish the time-depth of salmon use in the Nushagak and Kvichak River drainages one of us (Alan Boraas) generated a database of the 228 sites and from that developed a preliminary prehistoric cultural chronology depicted in Figure 4.

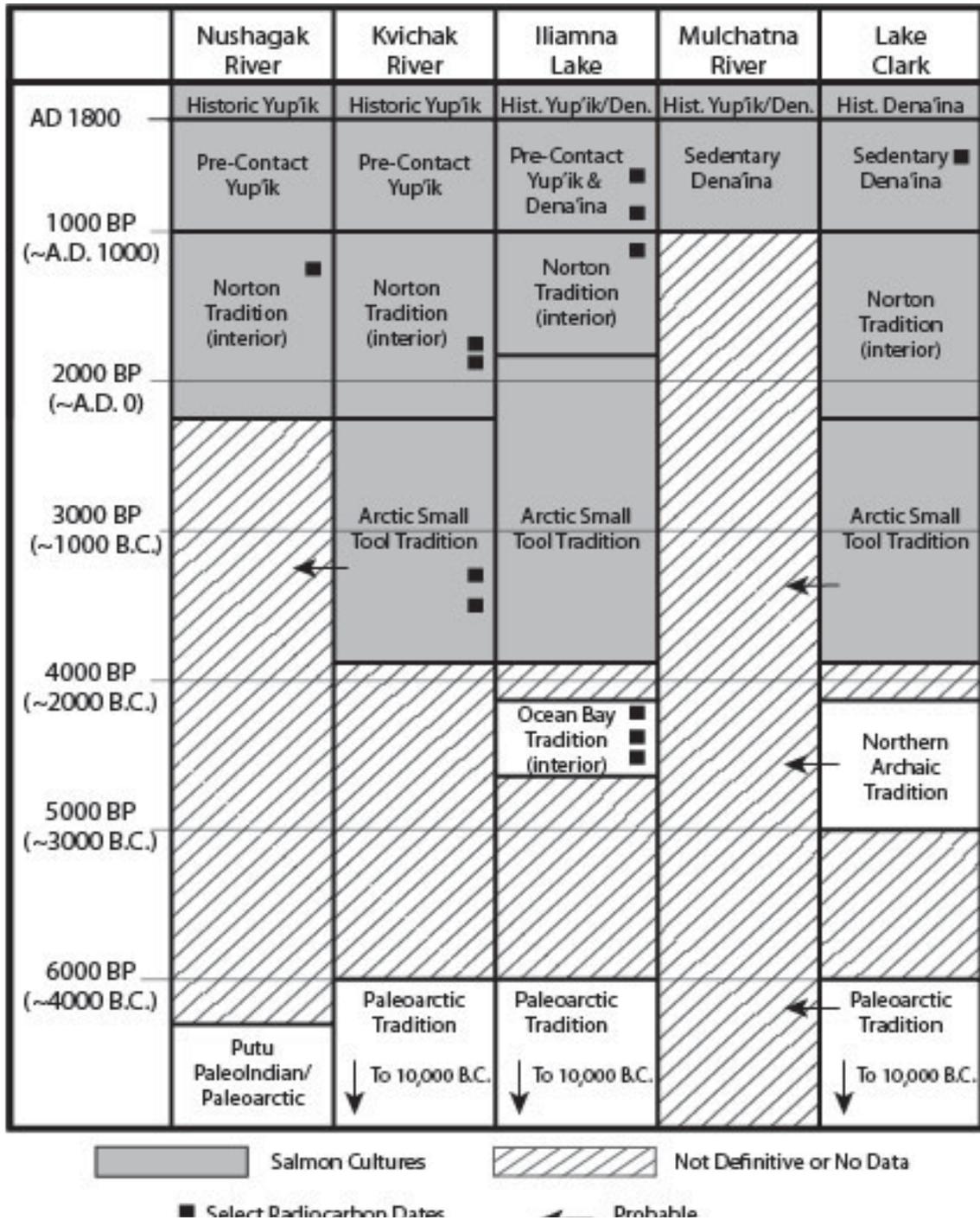


Figure 6. Cultural Chronology of Nushagak and Kvichak River Drainage Salmon-Based Cultures. Compiled from the Alaska Heritage Resource Survey database by Alan Boraas

The “BP” (Before Present) of the y-axis of Figure 4 is in uncalibrated radiocarbon years and an approximate B.C./A.D. date is indicated.⁴ AHRS site data was assembled for five regions (Figure 3) within the Nushagak and Kvichak River drainages, including:

- The Nushagak River from its mouth to headwaters.
- The Kvichak River, including nearby archaeological sites in the Alagnak River drainage.
- Iliamna Lake and the lower Newhalen River
- The Mulchatna River.
- Lake Clark, Sixmile Lake, and the Upper Newhalen River

3. Pre-Contact Salmon Fishing Cultures

The study area was occupied as early as 10,000 BP by core and microblade makers of the Paleoarctic tradition. Included in the AHRS database is a single site with two Putu-like points (XHP-00430) normally found only on Alaska’s North Slope but found here with Paleoarctic microblades. Subsequently, archaeological cultures of the Northern Archaic and Ocean Bay traditions occupied the area. None involved intensive salmon fishing as indicated by AHRS records. The Paleoarctic and Northern Archaic sites are associated with Athabascans (Boraas 2007: 34-7) and establish a time-depth for the Dena’ina or proto-Dena’ina in the study area.

As described below, archaeological records indicate Yup’ik or proto-Yup’ik people have been fishing for salmon for at least 4,000 years (Figure 4) and may be genetically related to earlier Siberian salmon fishers. Salmon fishing first appears with the Arctic Small Tool tradition (ASTt) (see Figure 4) and Table 4 is a list of ASTt sites in the study area. ASTt cultures are widespread in western and northern Alaska where the site data indicates the existence of interior nomadic hunters (primarily caribou) or coastal sea mammal hunters. In the Bristol Bay drainage, however, three village sites evidenced by ASTt-style houses and artifacts are found on the Kvichak River and five alpine sites (artifacts only) indicate hunting above tree line (see Table 4). The houses are permanent structures, generally measuring four meters on a side, indicative of sedentary or semi-sedentary people and are located adjacent to salmon spawning streams. The ASTt site at Igiugig (ILI-00002), where the Kvichak River flows out of Iliamna Lake, is an example of such a site (Holmes and McMahan, 1996).

⁴ The deviation between calibrated calendar years and uncalibrated radiocarbon years becomes significant before 1500 B.C. By 2000 B.C. uncalibrated radiocarbon years are ~ 400 hundred years old (<http://www.radiocarbon.com/calendar-calibration-carbon-dating.htm>).

Table 4. Arctic Small Tool Tradition Sites in the Study Area. Compiled From Alaska Historic Resources Survey.

ARCTIC SMALL TOOL TRADITION AD 200 to 1800 BC			
Area	AHRS Site	Characteristics	Houses
Nushagak R.	NAK-00018, B	cores and microblades	
Iliamna Lake	ILI-00035	Lithic tools	
Iliamna Lake	ILI-00201	Microblade core	
Iliamna Lake	ILI-00205	Microblade core	
Iliamna Lake	ILI-00193	Lithic camp: microblades, side blades, end scrapers, knives.	
Iliamna Lake	ILI-00219	Microblade core	
Iliamna Lake	ILI-00218	Microblade core	
Kvichak	DIL-00088	Village, sedentary houses; C14 Date, 3580+/-150;	19
Kvichak	DIL-00170	Village; Brooks River Gravel Phase	2
Kvichak	ILI-00002	Cores, microblades, burins, notched stones, 4000 artifacts; Brooks River Gravel phase, ca. 1800 BC to 1100 BC 3350+/-60 BP radiocarbon date, possible Norton component	
Kvichak	ILI-00072	Microblades and other lithics	
Kvichak	ILI-00206	Village site	1

Anadromous salmon remains, while not common, occur in ASTt sites (Dumond, 1984), suggesting salmon were a significant subsistence human resource in riverine and lacustrine areas of southwest Alaska. The lack of abundant salmon bones in ASTt sites may be due to small populations of salmon, decomposition of the relatively delicate bones, or the practice of returning salmon bones to the water—similar to ethnohistoric Yup'ik and Dena'ina—thereby contributing to marine-derived nutrients important in salmon habitats. Further research is necessary to clarify this point. The fact that one site (DIL-00088) contains 19 sedentary houses and is located along a salmon stream indicates salmon were likely a primary resource (Holmes and McMahan, 1996).

Analysis of human hair from a 4,000-year old ASTt site in Greenland places the mitochondrial DNA (mtDNA) in the D2c haplogroup⁵ reflecting Siberian origins (Gilbert et al., 2008). Today, haplogroup D2c is present, but haplogroup A is dominant among Yup'iks; haplogroup A also has Siberian origins where researchers place its origin as early as 7,000 years before present (Rubicz et al., 2003). Both haplogroups indicate that the time-depth of Yup'ik people in southwest Alaska is at least 4,000 years and that they derive from Siberian origins, where their ancestors were also potentially salmon fishers. As described in the section on

⁵ For a discussion on haplogroups see the National Geographic Human Genographic Project, <https://genographic.nationalgeographic.com/>

nutrition (III.C.3.), evidence is building that Yup'iks are biologically adapted to salmon and 4000 years is the temporal context in which that evolution took place.

In all but the Mulchatna River where evidence has yet to be found, the Arctic Small Tool tradition is followed by a well-developed salmon culture, the Norton tradition, dating from ~300 B.C. to A.D. 1000 (see Figure 4; Table 5). Like ethnographic Yup'ik, the Norton tradition has both a coastal and interior subsistence orientation. The coastal Norton tradition is found in sites as far north as Cape Denbeigh and relied primarily on marine mammals (Dumond 1984: 99-101). The interior Norton tradition sites, such as those in the study area on the Nushagak and Kvichak Rivers and Lakes Iliamna and Clark, had a salmon-oriented subsistence culture based on the following evidence: archaeological features, (mainly house styles similar to those at ethnographic Yup'ik salmon fishing sites) large sedentary villages (villages located adjacent to salmon fishing locations) and net fishing artifacts. Riverine Norton tradition sites are similar to ASTt sites in that they consist of large, permanent houses located on salmon streams. One large Norton tradition site on the Kvichak River (DIL-00161) consists of 34 to 45 houses representing a population sustainable only through the availability of abundant resources such as anadromous salmon. In addition, the artifact inventory for the eight Norton village sites in the study area (see Table 5) contains notched stones that were used as net weights (Dumond, 1987:11), similar to the lead line of a modern net. In addition to dwelling houses, Norton sites in southwest Alaska contain large structures indicating a *qasgiq* (*kashgee*, *kasheem*, *kazigi*,; local pronunciations and Euroamerican spellings vary), a men's house also found among pre-contact and early historic Yup'ik villages. These finds indicate that the Bristol Bay drainage Norton culture were Yup'ik or proto-Yup'ik speakers and relied on salmon as their primary subsistence food.



Figure 7. Lake Iliamna. Photo by Alan Boraas

Table 5. Norton tradition sites in the study area. Compiled from Alaska Heritage Resources Survey.

NORTON TRADITION AD 1000 TO 300 BC			
Area	AHRS Site	Characteristics	Houses
Kvichak	DIL-00161	Prehistoric village (6100 artifacts) 1760+/-40 BP	34-45
Kvichak	DIL-00174	Two large house depressions; Smelt Creek Phase 1920+/-40	2
Kvichak	DIL-00175	Village site, artifacts, pottery; Norton Brooks River Weir and Brooks River Falls phases, 1830+/-40 BP	8
Kvichak	DIL-00229	Prehistoric Village	1
Kvichak	ILI-00073	Village site, Pottery,	4
Kvichak	DIL-00207	Village, 43 house depressions; lithics and ceramics	43
Iliamna Lake	ILI-00056	Village, C14 date 860+/-60	12-15
Iliamna Lake	ILI-00127	Pottery and stone beads	
Iliamna Lake	ILI-00128	Weir, Early Norton	
Iliamna Lake	ILI-00098	Village, cache pits no houses apparent on surface, fiber pottery	
Lake Clark	ILI-00012	Village	12
Lake Clark	XLC-00086	Bifaces, scrapers, sideblades, fiber pottery.	

The Norton tradition in the study area is succeeded in Yup'ik territory by a number of pre-contact Yup'ik sites listed in Table 6. Almost all of the sites include semi-subterranean house pits indicating sedentary or semi-sedentary occupation.

Table 6. Pre-Contact and Early Contact Period Yup'ik Sites, A.D. 1000 to A.D. 1800. Compiled from Alaska Heritage Resources Survey.

PRE-CONTACT YUP'IK AD 1000 TO AD 1800			
Area	AHRs Site	Characteristics	Houses
Kvichak	DIL-00168	Prehistoric Village	3
Iliamna Lake	ILI-00034	Village	10
Iliamna Lake	ILI-00032	Village	5
Kvichak	DIL-00033	Lithic remains, ceramics; surface finds in Levelock	
Kvichak	DIL-00226	Village Prehistoric and/or Early Historic Village	7
Kvichak	DIL-00227	Prehistoric and/or Early Historic Village	1
Kvichak	ILI-00053	Village (10 houses with 2 Kashgee) Possible historic component	10
Kvichak	ILI-00074	Village	N/A
Nushagak R. Mouth	DII-00057	Village, slate blades, pottery	6
Nushagak River	Dil-00047	Yup'ik Village	4
Nushagak River	DIL-00155	Village, House	3
Nushagak River	DIL-00052	Yup'ik Village, Nautauagavik	4
Nushagak River	DII-00040	Yup'ik Village, Old Kokwok	6
Nushagak River	DIL-00002 A	Yup'ik village, Akulivikchuk	8-88
Nushagak River	DIL-00048 A	Yup'ik village, Agivavik	11
Nushagak River	DIL-00196	House pits, New Stuyahok airport road	N/A
Nushagak River	XNB-00029	Yup'ik Village	3
Nushagak River	NAK-00143	Yup'ik Village	9
Nushagak River	NAK-00001	Yup'ik Village	8
Nushagak River	DIL-00148	Yup'ik Village; C14 dates: BP 60+/-90 BP 50+/-70 BP 1330+/-90	8
Nushagak River	NAK-00144	Yup'ik Village	3
Nushagak River	TAY-00003	Yup'ik Village	2
Mulchatna River	DIL-00177	House, prehistoric	
Iliamna Lake	ILI-00123	Village	2
Mulchatna River	DIL-00194	Prehistoric Village	3

It is not clear how long the Dena'ina have been salmon fishers, but about A.D. 1000, the Dena'ina of the Mulchatna River and Lake Clark areas developed a method to catch salmon using weirs and began storing salmon in underground cold storage pits called *enhen tugh* (Kenai dialect) that appear in the archaeological record (Boraas 2007). Salmon storage technology spread to Iliamna Lake, Cook Inlet, and the Susitna and middle Copper River areas (Boraas, 2007). A proliferation of Dena'ina sites—65 have been found to date, far more than any other pre-contact period—occurs in the study area, dating to just after A.D. 1000 (Table 7 and Lynch, 1982). Forty-one sites are village sites (not necessarily occupied simultaneously) and the Kijik

Site, XLC-00084 and associated sites, are among the largest in Alaska for the prehistoric period. We can conclude that weir fishing and the underground cold storage technology described in the pre-contact culture section (II.C.2.) below was an extremely successful adaptation and shaped the Dena'ina as "salmon people."

Table 7. Pre-Contact or Early Contact Period Dena'ina Sites in the Study Area. Compiled from Alaska Heritage Resources Survey.

SEDENTARY DENA'INA AD 1000 TO AD 1800			
Area	AHRS Site	Characteristics	Houses
Mulchatna River	XLC-00072	Village	1
Mulchatna River	XLC-00076	Village	2
Mulchatna River	XLC-00078	Cache pits	
Mulchatna River	XLC-00074	Village, Dena'ina	1
Mulchatna River	XLC-00075	Village, Dena'ina	1
Mulchatna River	TAY-00046	Cache pits	
Mulchatna River	TAY-00026	Cache pits	
Mulchatna River	TAY-00030	Cache pits	
Mulchatna River	TAY-00027	Cache pits	
Mulchatna River	TAY-00031	Cache pits	
Mulchatna River	DIL-00200	Cache pit	
Mulchatna River	DIL-00201	Cache pit	
Iliamna Lake	ILI-00029	Fish camp	
Iliamna Lake	ILI-00046 B	Village Complex	
Iliamna Lake	ILI-00019	Village site	3
Iliamna Lake	ILI-00135	Cache pit	
Iliamna Lake	ILI-00021	Village	nd
Iliamna Lake	ILI-00020	Village, houses undetermined	nd
Iliamna Lake	ILI-00001 A	Village	5
Iliamna Lake	ILI-00047	Cache pits	
Iliamna Lake	ILI-00049	Village	4
Iliamna Lake	ILI-00018 B	Village 560+/-60 BP	nd
Lake Clark	XLC-00048	Cache pits	
Lake Clark	XLC-00057 A	Prehistoric Village	30
Lake Clark	XLC-00102	Village	10
Lake Clark	XLC-00167	Village	5
Lake Clark	XLC-00166	Village	2
Lake Clark	XLC-00094	Village	19
Lake Clark	XLC-00165	Village	2
Lake Clark	XLC-00164	Village	2
Lake Clark	XLC-00155	Village	5
Lake Clark	XLC-00163	Village	1
Lake Clark	XLC-00162	Village	2
Lake Clark	XLC-00101	Village	11
Lake Clark	XLC-00100	Village	14
Lake Clark	XLC-00099	Village	2
Lake Clark	XLC-00084	Village (possibly two sites)	95
Lake Clark	XLC-00092	Village	13
Lake Clark	XLC-00090	Village; C14 BP 300+/-60	10
Lake Clark	XLC-00091	Village	4
Lake Clark	XLC-00093	Village	1

Lake Clark	XLC-00021	Cache pits	
Lake Clark	XLC-00020	Village	2
Lake Clark	XLC-00012	Village	2
Lake Clark	XLC-00013	Trapper cabin	
Lake Clark	XLC-00159	Village	3
Lake Clark	XLC-00158	Village	2
Lake Clark	XLC-00104	Village	1
Lake Clark	XLC-00157	Village	3
Lake Clark	XLC-00156	Village	12
Lake Clark	XLC-00105	Village	10
Lake Clark	XLC-00088	Cache pits	
Lake Clark	XLC-00083	Village	6
Lake Clark	XLC-00097	Village, 1 house	
Lake Clark	XLC-00098	Village	5
Lake Clark	XLC-00003	Cache pits	
Lake Clark	XLC-00004	Cache pits	
Lake Clark	XLC-00008	Village	4
Lake Clark	XLC-00250	Cache pit	
Lake Clark	XLC-00133	Village	3
Lake Clark	XLC-00134	Village	1
Lake Clark	ILI-00087	Cache pits	
Lake Clark	XLC-00096	Village	1
Lake Clark	XLC-00249	Cache pits	
Lake Clark	XLC-00107	Village	1
Mulchatna River	DIL-00150	Cache pits	
Iliamna Lake	ILI-00031	Village	5

B. History and Culture of the Yup'ik Area

1. Voices of the People

We want to give to our children the fish, and we want to keep the water clean for them....It was a gift to us from our ancestors, which will then be given to our children. F-69, 9/18/11

When I was a little girl they had no Snowgo's [snowmachines], they had no Hondas [Four-wheel all-terrain vehicles]. We live up river and they fished all the time. In wintertime they fished under the ice. They travel with dog teams. My Dad would take me out ice fishing. I used to be scared of those pikes. I don't know how old I was. That's the only thing they do is try to catch fish, summer time nets, and winter time they do ice fishing. That's how they pass it on down. They subsistence fish, usually they travel with dog teams, that's what they did, and that's how come those people were healthy. They walked, and walked, they worked from morning until they go to bed. That's how come they were healthy. They eat their fish, they go get wood with the dog team, they hunt with their dog teams, and they travel to village with their dog team. People walk and they eat that fish. That's what makes them live long and healthy, I noticed that. F-23, 5/18/11

All we have is use the salmon, salmon all the time. The old people tell us you guys have only one salmon season you guys got to catch it. If you don't catch it you won't have much in the winter, long winter. F-41, 8/19/11

When you look at the map and where the old villages were they were there because of the salmon. You go to Igiugig and ?, and Port (?), Levelock, South Levelock and Dillingham... all those villages. Site selection of those communities was very important and it was because of the production of subsistence foods at each of those sites processed. Most of those produced salmon in addition to [other foods], for example you go to the village of Manokotuk, and it is rich in berries. If you go to the upriver villages they are rich in caribou and moose and other resources. Each village was selected by the folks...because of their subsistence resources. M-61, 9/16/11

My father along with other people was very active in fisheries politics. Bristol Bay used to be controlled by Brindle which was a big cannery superintendent and what he said was law of the land. Fish and game used to listen to those big processors. One time my dad was talking to a group Truman Amberg, Joe McGill, Joe Clark from Clark's Point, saying we got to go on strike this year. I think it was Joe McGill said we're not going to get any more money [father's name]. Why are we going on strike? You know we are just going to end up sitting on the beach. Dad says we got to let the fish pass. What that meant was we needed more fish up the river spawning so we would have better seasons later. Then a group of locals said okay we're going to strike but know they're not going to give it but we will get more fish up the river because the Japanese decimated our runs in Bristol Bay in the '60's and 70's. We had to build our runs back up, M-60, 9/16/11

Like before, you know a lot of people used to put up a lot of fish 3000, 4000, 5000 fish. They used to have a lot of dogs while they were living that is how they try the tradition they have. They used to hook up their dogs and go wherever they wanted to go. They used to put up a lot of fish to eat. When they get moldy they just wipe it off and eat them. That is the way it was in my living days. Nowadays people when it is moldy they throw them away, that is the way of life now. You can't do that anymore. M-49, 8/20/11

2. Introduction

Perhaps as a result of the relatively recent occurrence of contact with non-Natives, the Yup'ik of the Nushagak and Kvichak watersheds have retained their traditional culture and language, ecological knowledge and practices, social systems, and spirituality, to as great or a greater degree than any other Alaska Native populations. Where they have adopted non-Yup'ik traditions, such as Russian Orthodoxy, they have blended their own practices and beliefs with the introduced practices to create a new belief system that retains the Yup'ik culture as a whole.

3. Pre-Contact Culture

An Eskimo-speaking people have been living in the region for at least 4,000 years as a recognizable salmon culture, at least as far back as the Norton tradition and Arctic Small Tool tradition.

The Yup'ik of the Nushagak, Kvichak and lower Mulchatna Rivers historically were organized in bilateral extended families of up to about thirty people settled in permanent and semi-permanent villages. Many of the villages contain a *qasgiq* (*kashgee* and other dialect variations) or men's house, and are relatively small, averaging five to six houses per village in the 12 pre-contact villages for which there is house data (see Table 6). Historic Yup'ik village sites, of which 21 are currently documented, average between 8- 9 houses per village. Today there are only four modern Yup'ik villages along the Nushagak River (Dillingham, Ekwok, Koliganek, New Stuyahok, (and possibly Portage Creek); see also Table 1) and, except for seasonally occupied Portage Creek, they are larger in population than their historic or pre-contact counterparts.

The wetland landscape is not easy to traverse, except by river, or in the depths of winter when all is frozen. The abundance of fish and game in the Bristol Bay region allowed the Yup'ik to stay within a relatively fixed range, although they moved throughout their range seasonally from a base village, to hunt, gather, and participate in summer fish camps. The extended families practiced food sharing and generalized reciprocity, both within and between families. Most larger villages functioned as independent and self-sufficient social units, and people married within the village or nearby villages. Sometimes fluctuations in game or fish availability caused groups or individuals to travel from one region to another. Large disruptions to the population occurred when epidemic diseases arrived with European explorers. These diseases devastated whole populations, decimated villages, undercut social distinctions (Fienup-Riordan, 1994).

Historically, including after contact, in the winter villages the men and boys older than seven or eight lived in the *qasgiq*, the large communal men's houses, while women and girls lived in a smaller house called an *ena*, both built from sod and wood. During the winter, the

community came together for dances and storytelling, but otherwise, men and women kept in their separate groups and worked to do gender-specific chores. Men, for example, repaired the tools for hunting, while women sewed clothes as well as waterproof raingear to protect everyone from harsh weather.

In the summer, everyone participated in harvesting salmon, whether net fishing, or processing the fish in fish camps. Women dominated the work of processing in the fish camps. Family groups might put up as much as 5,000 fish (personal communication to Catherine Knott, Lena Andree, Yup'ik Elder, Dillingham; July, 2011), including fish for their dogs.

The Yup'ik traveled to different subsistence sites either overland, by foot or dogsled, or on the water, in vessels that ranged from small kayaks to larger wooden boats. Traditional festivals during the year included the Bladder Festival, *nakaciuryaraq*, the Messenger Feast, *kevgiryaraq*, and the Seal Party, *uqiquryaraq*. Food exchanges played an important part in these festivals described below.

4. Post-Contact Yup'ik History and Culture (A.D. 1791 to 1935)

At the turn of the 19th century, the bilateral extended family, stretching over several generations, still formed the basis of Yup'ik villages (Fienup-Riordan 1994). Winter villages could be just one family, but ranged up to 150 to 300 people in some places. Families did not all live together in one house; the winter villages had one or more *qasgiq*, where men and boys over age 6 or 7 lived and worked together, telling stories, making tools, and preparing for subsistence activities. In the *ena*, women, girls, and the youngest boys lived in groups of up to a dozen, and the women taught the girls how to sew and cook. They cooked the meals there, either in the entryway, or in a central fireplace. Each winter, for three to six weeks, boys and girls would switch homes, and the men would teach girls survival and hunting skills, while the women would teach the boys how to sew and cook (Fienup-Riordan, 1990).

The *qasgiq* also functioned as the communal sweat bath for the men. They would open the central smoke hole, feed the fire until the heat was intense (possibly up to 300 degrees), then bathe. Men sat in the sweat house in the order of their social status. The *nukalpiaq*, or good provider, held a high social position and contributed wood for the communal sweat bath, as well as oil to keep the lamps lit; he also played an important role in midwinter ceremonial distributions of food (Fienup-Riordan, 1994). There was competition between families to be the best providers.

Contact between the Yup'ik of the Bristol Bay area and Russians or Americans was later and more limited than in most of the rest of Alaska. The region was perceived to have few resources worth exploiting, and the marshlands were difficult to traverse. While some Russian explorers, traders, and missionaries persisted and made repeated contact with the Yup'ik throughout the nineteenth century, they did not settle in the area in any numbers until the twentieth century (VanStone 1967). As a result, the Yup'ik of this region, perhaps more than any other indigenous peoples in Alaska, have retained much of their language and cultural traditions to the present time.

When the Europeans came, they brought diseases, to which the Yup'ik and other Alaska Native populations had no immunity. The first epidemic known to have occurred in the Nushagak River region was before 1832, but there are no records of the number of dead. The 1838-1839 smallpox epidemic caused several hundred deaths in the Nushagak region and also

occurred in the Dena'ina territory. Vaccines were introduced in 1838, and some Yup'ik received them, probably reducing the scope of the epidemic and subsequent outbreaks of smallpox. But each year, while not necessarily counted as an epidemic period, brought more death and illness to the region. Survivors were often weakened and succumbed later to other illnesses. VanStone states that during this period "The specter of ill health and death was continually present among the Eskimo population of all southwestern Alaska" (VanStone, 1967:100). VanStone (1967:100) goes on to state that the loss of population (especially Elders), the disruption of families, the plethora of orphans, and subsequent rearrangements of the social order created a social and cultural upheaval that the Yup'ik struggled to overcome. The European visitors and settlers may not have understood that what they observed was not the way the Yup'ik had lived even a few short years before.

It is not certain when the first Russian visit to the Nushagak and Kvichak region occurred, but in the early 1790s Aleksey Ivanov of the Lebedev-Lastochkin Company made an overland journey to Iliamna Lake from Cook Inlet and then west into the Mulchatna and Nushagak drainage. His guide was apparently Dena'ina because the place names, including *Dudna* (spelled Tutna) the Dena'ina name for Yup'ik's (Downriver People), are Dena'ina, (Chernenko 1967:9-10). The Russian-American company sent an expedition in 1818 to explore the territory north of Bristol Bay. In the same year, the company established a post at the mouth of the Nushagak River, the Alexandrovski Redoubt. Feodor Kolmakov, of mixed Russian and Native American ancestry, was in charge; he established trade relations with the Yup'ik and baptized some of them, spreading the influence of the Russian-American Company (VanStone, 1967:9).

In the summer of 1829, two minor Russian visits had major consequences for the Yup'ik. Ivan Filippovich Vasiliev led an overland expedition to ascend the Nushagak River, and the priest, Ivan Veniaminov, visited the redoubt. Veniaminov took away a permanent interest in the Bristol Bay region and in the Nushagak station which carried over even into his later position as Bishop. Vasiliev's exploration, in turn, established travel routes that were used by subsequent fur traders (VanStone, 1967:11).

Christianity was introduced in 1818, at the time that Alexandrovski Redoubt was built, but it was not until Veniaminov's arrival in 1829 that extensive missionary activity took off. Veniaminov was flexible in his approach to the Yup'ik and their traditional religion and numerous conversions were registered in church documents. Veniaminov noted that "the Nushagak River was for them [Yup'ik] the River Jordan" (cited in Barsukov, 1887-1888, vol. 2:37). In 1832 Veniaminov visited again and had a small chapel built. By 1842 there were about 200 converts at Nushagak, and in 1844 Bishop Veniaminov had a new church built. The church, by 1879, was close to 2,400 members. Its success among the Yup'ik may have had much to do with the flexibility of Veniaminov's approach toward them. Yup'ik people were not required to fast and many indigenous customs were tolerated (VanStone, 1967:31).

Fur trading accompanied exploration, and sometimes incited it. By the 1840's contacts between the Kolmakovski Redoubt, on the Kuskokwim, and Alexandrovski at Bristol Bay were frequent. The company managers of the fur trade created *toyons*, designated local community leaders, and rewarded them with silver "United Russia" medals and incentive gifts. These *toyons*, motivated by their new prestige and the material rewards offered, then encouraged the members of their social networks to trap more furs for the Russians (Van Stone, 1967:56). The process of using village providers to convert the population into loyal company men and women to recruit

fellow villagers into exploiting and extracting the resources of their own region for external benefit in a colonialist economic system has not changed in over a hundred years.

Trade items included wool blankets, tobacco, beads, tent cloth, cast iron kettles, knives, iron spears, steel for striking a fire, needles, combs, pipes, etc. (VanStone, 1967:56). While these items did not immediately alter the deeper structures of the culture, the desire for them acted as a change agent among the population. Where before, access to status had been open to all, through skills and responsible sharing with others, access to the time and materials for trapping, open to fewer individuals, had the potential to change the social dynamics of the Yup'ik. The companies allowed the Alaska Natives to purchase some items on credit; as debt mounted, some would be unable to repay for years. After the Alaska purchase, the powerful Alaska Commercial Company post at Nushagak maintained a trading post through the remainder of the nineteenth century engaging in about \$10,000 in fur trades annually (VanStone, 1967:56),

In the nineteenth century gold mining occurred but was economically unimportant compared to other activities. In 1887-1888 the prospectors Percy Walker, Henry Melish, and Al King placer-mined for gold in the Kuktuli and Nushagak Rivers, and there was also placer mining along the Mulchatna. In 1909 a group organized the Mulchatna mining district and formed the Mulchatna Development Company in Seattle (VanStone, 1967:83). Their activities were confined to the upper Mulchatna River in Dena'ina territory, and there was only a very temporary influence of miners on the local Alaska Native population. One Elder (New Stuyahok Interviewee in a non-recorded interview situation) told the story of his grandfather, who showed him gold and told him that if he found rocks with gold in them to throw them away, because they were bad. The grandson thought it was because it would cause social disruption by bringing strangers to the area who would disrupt the land and the culture of the people. The Elder said he had thrown a big chunk of gold away once, but he thinks he still knows where it is. The experience of the Yup'ik people with larger mining corporations has been minimal. Fish have been far more important both to subsistence and cash-based economies.

By the end of the nineteenth century, Bristol Bay had become an important commercial salmon fishing zone. The first salmon cannery, The Arctic Packing Company, began operation in 1884 at the village of Kanulik at the mouth of the Nushagak River (Troll, 2011:3). The fourth cannery, built at Clark's Point in 1888, is now the oldest surviving cannery in the region (Troll, 2011:4). The commercial fishermen in Bristol Bay used wooden sailboats for drift gillnet fishing for sockeye salmon and were mostly Italians, Scandinavians, and Finns, hired at Seattle and San Francisco (Troll, 2011:10), although some Yup'ik also fished commercially including Lena Andree, now an Elder from Dillingham who fished on one of the wooden sailboats with her father in the mid-1930s. When World War II began and kept many of the European fishermen from coming to Alaska to fish, the canneries "discovered that the Native Aleuts and Eskimos were marvelous boatmen and seemed to have been born to sail," according to Al Andree (cited in Troll, 2011:35).

The U.S. Bureau of Fisheries visited the Wood River lakes and Nushagak and Nuyakuk Rivers, and, in 1935, the U.S. Geological Survey conducted the first survey of the region and produced what would become, for decades, the standard reference for people not from the region. For the Yup'ik, the Elders continued to convey their traditional knowledge of their homeland, as they had for thousands of years (Van Stone, 1967). A crevasse of deepening proportions opened between two contrasting interpretations of the landscape, that of the outsiders, who saw the region as a land of resources to be exploited, and that of the indigenous

peoples, who saw the region as the sacred landscape of home, and whose culture and way of life depended upon it.



Figure 8. Koliganek Tribal Offices. September 19, 2011. Photo by Alan Boraas

C. History and Culture of the Dena'ina

1. Voices of the People

We harvest [subsistence foods] three times for that one person: day of the burial, forty days later, and then one year later. It is really significant, just for that one person who passed away; we harvest from the land three times to honor and to pay our respects to ones who lost their family member. That has been going on for over 10,000 years. M-33, 8-18-11

...from our ancestors, that is how we get all of our information to have fish. The way we put it; the way we store it for us to eat. That is where we learned it. It is passed on from generation to generation to have fresh fish. F-48, 8/20/11

I always think that we are very, very, very lucky people. I know where I came from. I know who I am. I know where I belong in this world. I know where my ancestors come from. I know the trips; the walking, the hiking, I know the history of where they were. Every time I come into this part of the country or fly over it, when I first see the Lake Clark area or coming from the south and see Sixmile Lake, I know I'm home! F-32, 8/18/11

So the importance of this resource, specifically salmon, has a major impact on my people here. That's the reason why we live here. We have sockeye salmon until March, when everywhere else has no more. That's why my ancestors fought over this region... The reason why they've been here for so long is it's a healthy environment, and we have been kind of watching over it all these years. My ancestors fought over it, and they won every battle. We beat the Russians two times. It was musket against bow and arrow. So, you see, the importance of it has a really long history of why it is like it is now. We took care of it. Not only that, we have shared with everybody in the whole world.[in reference to commercially caught salmon] M-33, 8/18/11

My Auntie [name] would say, "Don't forget how to live off the land" and I'd think, "Oh, we could just go to the store and have microwave stuff." She said, "One day in this world something's going to happen where you guys are going to rely on living off the land, trapping off the land." Like we take things for granted now; we can go on an airplane and shoot a moose or trap beaver or trap squirrels up on the mountain. We have to. We can't just forget our ways; how to live off the land, because one day there's going to be something that happens in the world, where we are going to have to learn to survive out here. F-32, 8/18/11

But what the spiritual aspect of what they believed was strong...they had energy. Energy from what they worshipped; everything living. M-33, 8/18/11

That is spring water [at Kijik]. It does not freeze. That is why you can go over there and get a sockeye salmon in March; it might have a green head, and it's red, but it's still a sockeye salmon. You can go over there on New Year's Day and get a fresh sockeye salmon. F-33, 8/18/11



Figure 9. Kijik River, called, *Ch'ak'dlatnu* 'Animals Walk Out Stream' in the foreground; *Yuyan Ach'edelt* 'Where We Walk into the Sky' is the snow-covered pass in the distance. Photo by Alan Boraas

2. Pre-Contact Culture

Dena'ina origins are described in the section on Prehistory (II.C.2) and indicate the Dena'ina have been operating as a culture for whom salmon is the primary resource since A.D. 1000. Much can be inferred about the pre-contact Dena'ina culture because of Cornelius Osgood's (1976, originally published in 1937) comprehensive *Ethnography of the Tanaina* [sic]. Like the pre-contact Yup'ik culture, the Dena'ina pre-contact culture was sustainable and egalitarian in terms of equitable access to resources. The fundamental food source was salmon, but also included caribou, moose, bear, beaver, and other mammals and birds (Osgood, 1976:26) and about 150 edible plants (P. Kari, 1987:60-188). For the pre-contact Dena'ina salmon were caught in a number of ways, but primarily in weirs made of poles sunk into the bottom of a stream and strung with a lattice-like thatch, allowing water to pass through, but trapping migrating fish (Osgood, 1976:28). When they weren't fishing they simply opened a gate, and the fish swam through to spawn upstream. To solve the problem of storing this food resource for later use, the Dena'ina devised a simple but effective underground cold storage pit (Osgood, 1976:42). Two layers of birch bark, with moss in between, lined the pit, which was filled with dried fish, layered with grass, during fall freeze-up. The frozen fish were eaten throughout the

winter and spring, until the next summer's salmon run. Like modern fish camps, traditional Dena'ina fishing was an extended family operation. Everyone worked for, and received the benefits of, the clan-based family group.

Because of the stable salmon food resource and a means to preserve it, the Dena'ina lived in sedentary or semi-sedentary villages of substantial log houses, usually spread out along a ridge above a lake, a river side channel or a tributary to one of the major rivers (Osgood, 1976:55-62). The married men of a village were members of the same matrilineal clan and their wives and children were members of a different clan (Osgood, 1976:128-131). Within this family group, connected by blood and marriage, and allied for economic purposes, various individuals performed different assigned tasks. The Dena'ina called this group the *nakilaqa* (*ukilqa* in Osgood) (Osgood, 1976:134) or clan helpers. The clan helpers recognized a chief, called a *qeshqa*; in the Iliamna area the position was related to being a family head (Osgood, 1976:131-3; Fall 1987:6-8). The *qeshqa* had numerous characteristics, among them wisdom, experience, and generosity. He or she had three primary duties: first, to arbitrate and resolve disputes; second, to care for the elderly and orphaned; and third, to assure the survival of the clan helpers through the equitable distribution of food. Regarding the latter, the *qeshqa* controlled the foods gathered, processed, and stored by the clan helpers and had authority to redistribute the food (mainly salmon) back to people throughout the winter on an as-needed basis.

This system provided a safety net. Each *qeshqa* had a partner in a distant village, called a *slocin*. If one village ran low of food, the *qeshqa* could request aid from his partner, who would divert some of his village's food resources to the needy village. The second *qeshqa* would be willing to do this because, at some point, his village might be short of food, and the partner he helped would return the favor.

3. Post-contact History and Culture

In the study area Dena'ina territory includes the Kvichak drainage of Lake Clark, the Newhalen River and the west half of Lake Iliamna. Today, the Dena'ina villages in the Kvichak/Iliamna drainage are Nondalton, Iliamna, and Pedro Bay; Kokhanok is mixed Dena'ina Alutiiq, and Yup'ik. This brief history is germane to the project because it establishes: 1) the Dena'ina repelled Russian colonization maintaining population superiority in their homeland to this day; 2) they adopted Russian Orthodoxy which ritually incorporated traditional viewpoints of a symbolic relationship of people to the land, and, 3) they began to have economic ties to the Bristol Bay salmon canning industry. Through it all the people retained a strong subsistence lifestyle.

During the late eighteenth century, two Russian trading companies, the Shelikhov Company and the Lebedev Company, occupied Dena'ina territory, focusing primarily on the Cook Inlet region but extending into Iliamna Lake. The Lebedev established a post at Pedro Bay, on Iliamna Lake, in the 1790s (Ellana and Balluta, 1992:61). About 200 Russians occupied Cook Inlet and the Iliamna Lake area during the late eighteenth century; by the turn of the century, their presence had shrunk to a small handful through a complex series of events involving attacks and counter-attacks as outlined by Boraas and Leggett (in press, 2013). As a result of hostilities the Russian Lebedev Company left Alaska in the spring of 1798, and subsequent Russian presence in Dena'ina territory was minimal.



Figure 10. Pedro Bay, General Location of the 18th Century Lebedev Company Post. August 19, 2011. Photo by Alan Boraas

In 1838 a terrible smallpox epidemic decimated the Dena'ina (and most other Pacific coastal Alaska Natives). Where there are statistics, such as for the Kenai River drainage, about half the overall population died in two years (Fedorova 1973:164) and, although there are no specific statistics for the Lake Clark and Iliamna, it is likely the situation was tragically similar in the study area. Traditional shamanic practices were ineffective against smallpox and, after 1840, many Dena'ina were baptized as Russian Orthodox, (Townsend 1981:634-6), accepting the church's explanation for the epidemic as "God's will" (Boraas and Leggett in press, 2013). In 1853 the Orthodox Church undertook an inoculation program, vaccinating baptized Dena'ina against smallpox, and an Orthodox Church was built at Kijik in 1884 (Ellana and Balluta, 1992:63). It is probable that by the early twentieth century, most Dena'ina in the Iliamna/Lake Clark area were baptized as Orthodox.

Well into the twentieth century Dena'ina practiced a ritual that involved sending the spirit of the animal to the "reincarnation place." Land animal bones were burned in the fire and water animal bones, like salmon, were returned to the water. These practices ritualized ecology and were said to bring the animal back to be hunted or fished again (Boraas and Peter 1996:188-190).

Archaeological evidence indicates the Dena'ina were burning bones in their fire hearths (Boraas and Peter 2008:220-222)

As summarized by Karen Gaul (2007:48) salmon canning in Bristol Bay emerged as a major industry in the late 1800s. Unregulated Bristol Bay canneries regularly blocked the mouth of the Kvichak and Nushagak Rivers to harvest salmon; consequently, there were years when there was little escapement into the rivers, creating extreme hardship for the upriver Dena'ina and Yup'ik subsistence communities. Starting in the early 1900s, men from the inland villages traveled to the coast to work seasonally in the commercial fishery, as many still do today. The fur trade was a second non-subsistence occupation, providing cash for food, guns and ammunition, traps, cloth, and other items, but commercial salmon fishing remained the primary source of money for most indigenous families and supplemented subsistence activities (Gaul 2007:48).

Small scale gold mining in the upper Mulchatna was mentioned in the previous section. In 1902 a copper mine in Dena'ina territory was staked about nine and a half miles from Cottonwood Bay on Cook Inlet toward Lake Iliamna (DeArmond nd:30). Development, including 14 miles of trail, was carried out by the Dutton Mining & Development Company headed by George W. Dutton. Dutton was established as a small settlement on Cottonwood Bay where a post office was started in 1905. The deposit proved unprofitable and by 1909 the post office was closed and the mine abandoned.

D. Traditional Yup'ik and Dena'ina Spirituality and Cosmology

Many modern practices of Yup'ik and Dena'ina have their basis in traditional spiritual and cosmological beliefs, though they are sometimes re-contextualized in Christianity. This section discusses the traditional spiritual and cosmologic beliefs and practices of both peoples.



Figure 11. Nushagak River, January 18, 2012. Photo by Alan Boraas

1. Traditional Yup'ik Spirituality

Traditional Yup'ik values revolved around not only their extended families, but also their relationships with the wild animals and other components of the natural landscape. Within this belief system, the *Ellam yua*, or creative force, was a universal cosmic presence who coordinated existence and established a basic ordering framework; *tunghit* were powerful spiritual beings who controlled the recycling of different animals, fish, and bird forms (Langdon, 2002).

The Yup'ik have traditionally regarded animals as other peoples, or categories of kinsmen, with whom they have fluid relations that often cross species and interpersonal boundaries. There are numerous stories of half-animal, half-human beings who live in the villages or of people turning into seals, birds, fish, or other animals, and then turning back into humans, as well as stories of people who seem to be human, but turn out to be seals or other animals in a temporary human form. Several major traditional festivals and ceremonies, described below, honored this relationship. The spiritual values associated with each of these festivals emphasized sharing between humans and respect and care for animals. Traditional stories and advice speak of the animals giving themselves to the humans when the humans need them for food. The good practices of sharing, care, and respect (e.g., being careful with the animal's body and soul, and not wasting the food) ensured the animals' continued willingness to give themselves to the hunters and fishermen in the future. Sharing of the products of subsistence

with their human kin and other relations also strengthened the bonds of family and community. A version of The First Salmon celebration in the river communities is still celebrated today, when those who have caught the first king salmon in the spring share them with Elders and all those in need, as well as with friends and family, emphasizes these values.

The Yup'ik relations with the wild animals and fish of their landscape were primary, and in many ways still are. The Yup'ik related to the fish, the bear, the caribou, the moose, the ravens as relations, others equally inhabiting the landscape with them as interrelated peoples. During spring, summer, and fall the Yup'ik hunt and fish the animals as food, but when processing the animals as food they treat them with respect and care, and enable their return through rituals and ceremonies. In winter, a period of rest and renewal for the human population, in the past the Yup'ik attended to the renewal of life through the rebirth of the animals they had hunted, and fished, in, according to Fienup-Riordan five ceremonies, "three of which focused on the creative reformation of the relationship between the human community and the spirit world on which they relied." (Fienup-Riordan 1994:267). Today, many of the Russian Orthodox ceremonies continue to be based on this ancient calendar of propitiation of the world of the spirit, in all seasons. During the winter ceremonial season, the men beat the circular drum—traditionally made from stretching seal gut on a wooden frame—for songs and dances. The drum beats represented the heartbeat of *Ellam yua*. Thus, the celebrations were spiritual in the deepest sense. They were also material, involving the exchange and sharing of wild subsistence foods from both animals who had given themselves willingly to the hunters and plants gathered from the landscape, considered to be spiritually alive.

During the Bladder Festival, at or around the Winter Solstice, the women brought out the bladders of seals, which they had been saving since their husbands brought the seals to them to prepare, because the Yup'ik believed that the souls or essence of animals are located or retreat to their bladders when they are killed. By saving the seal bladders and returning them to the sea, the Yup'ik enable the seals to be reborn, and present themselves again as food for the Yup'ik when needed. The women take the seal bladders to the *qasgiq* where the men inflate them and keep them for about ten days, while they go through a series of rituals to honor the seals and share food in the community, before returning the bladders under the ice, to the sea, enabling the seals to be reborn and to present themselves to the Yup'ik when needed again as food. The men would compose new songs for the Bladder Festival, including songs about salmon, and sing continuously in the *qasgiq*; people believed that light from the lamp and the songs drew the attention of animal spirits (Fienup-Riordan, 1994:284).

At *Qaariitaaq*, at the beginning of the Bladder Festival, the young boys were painted to represent the spirits of the dead, and went visiting, going around to the different houses to collect special food treats. Every house was brightly lit, and the hostesses wore their best clothes. The boys held out their hand-carved bowls, and the women handed out the special snacks. On the fifth night of these celebrations, the boys, and men, came to fully embody the spirits of the dead, and the fifth night was considered the arrival of the spirits. (Fienup-Riordan 1994:271). At *Aaniq*, held directly after *Qaariitaaq*, two men dressed in gut skin parkas, are referred to as mothers, the "*aanak*," and they are taken around to collect newly made bowls filled with *akuutaq*, traditionally a mixture of fat and berries. Small girls and boys referred to as their "dogs" would accompany them.

*The way that people do things
And the way of helping others
And the way of creating friendship
The Bladder Festival is like an opening for these things to occur
And through those events
The people being scattered
Through that too they are gathered
(Toksook Bay Eders, November 3, 1983 NI57 in Fienup-Riordan, 1994: 267).*

Today, starting during the Russian Christmas season the modern ritual of “Starring” follows this familiar pattern – groups go visiting from house to house, and receive special foods.

Other important ceremonies include the Great Feast for the Dead, *Elriq*, held every ten years, as well as the annual feast for the dead, and *Kelek*, a festival that included both serious and comic masked dances, when “animal spirits and shamanic spirit helpers made themselves visible in the human world in dramatic form” (Fienup Riordan, 1994:316). *Kelek* was performed to influence the animal spirits and elicit successful hunting and fishing through the return of the animals the following year.

Two other winter festivals underscored the redistribution of goods, including subsistence foods. The first, *Kevgiq*, the Messenger Feast, was a celebration and display of the bounty of the harvest, in which villages challenged each other to exchanges of wealth, with demands for specific items that were difficult to provide, such as certain game meat in a year when that game animal was scarce. *Kevgiq* served to reduce tensions between villages through sharing and friendly competition. It also provided food security by strengthening ties between villages and encouraging exchange relationships that could help people in times of food shortages. Sharing was considered to be a behavior that would be rewarded by the return of the animals to those hunters and fishers the following year. *Petugtaq*, the Asking Festival, was a challenge to exchange gifts of value between cross-cousins and others, where the person whose gifts were the most valuable gained the highest prestige. Cross-cousins were in “joking cousin” relations with each other, and were able to call each other out on bad behavior, embarrassing each other without repercussions, since they were not permitted to get angry with each other (Fienup-Riordan, 1994:330). The behaviors were thus made public and frequently resolved through this tension-reducing mechanism. Both festivals involved teasing, dancing and singing as part of the ritual celebration of the exchanges. All of the traditional festivals required subsistence foods, not only for sustenance, but also for the meaningful symbolic and material exchanges.

During their ceremonies, the Yup’ik wore masks they had carved, often representing animals or those in transition between the animal world and the human world, the half-animal, half-human. These masks symbolized both the high regard of the Yup’ik for the animals and the importance of their roles in Yup’ik culture. For the Yup’ik, the masks were *agayuliyararput*, or “our way of making prayer” (Fienup-Riordan, 1996:xviii).

Dances, including *ingulag*—the women’s loon courtship dance—and other bird dances, filled the evenings and contributed to the festivities. Each dance told a story and many featured the animals with whom the Yup’ik partnered in their negotiation for existence in the challenging landscape. Dances were traditionally an essential part of the culture and celebrations and have returned in force as part of cultural revitalization along the Nushagak and elsewhere. Fienup-Riordan (1994:288) quotes Billy Lincoln:

And at night, every night, they have what is called *nayangaq*. They dance. These young people who are sitting against the far wall go down in front of them and dance, sitting down pretending to be some animal, so thus, the *nayangaq*. They imitate a certain animal. When the time came whatever animal he is pretending to be he imitates its noise. They imitate all kinds of animals – loon, hawk, raven, arctic fox. They make noise accordingly. They dance pretending to be some animal (July 10, 1985).

Then as now the dancers represent the many ways the stories and lives of the animals are woven into their own, in the richness of shared existence in the watersheds of southwest Alaska. Lincoln continues:

These dance motions were more than the mere imitation of the motions of the animals. When the performers danced during *Kelek*, they actually performed the animals' dances. Just as married women danced the loon's mating dance during *Ingulaq*, so the performers during *Kelek* danced the dances of the animals whose presence they hoped to elicit in the year to come. . .

In 1913 Hawkes quoted a Unalakleet chief in an eloquent estimation of the value of these dances within Yup'ik culture: "To stop the Eskimo singing and dancing," he said, "was like cutting the tongue out of a bird" (Hawkes cited in Fienup-Riordan, 1994:320-321).

Fienup-Riordan (1994:355; see also Fienup-Riordan 2010) summarizes how the Yup'ik traditionally saw themselves in relation to the universe: "Yup'ik cosmology is a perpetual cycling between birth and rebirth, humans and animals, and the living and the dead. Their relationship between humans and animals reflects a cycle of reciprocity in which animals give their bodies in exchange for careful treatment and respect."



Figure 12. Iliamna Village. August 20, 2011. Photo by Alan Boraas

2. Traditional Dena'ina Spirituality

The traditional Dena'ina spiritual world revolved around a quest for *k'ech eltani*, or “true belief,” as a way to understand and interact with the natural world (Boraas and Peter, 1996:183-4). The Dena'ina believed that social and ecological harmony was affected by an individual's attitudes, actions, and even thoughts toward other Dena'ina and toward nature. To maintain harmony, the Dena'ina sought true belief, a kind of mind-set expressed through hunting practices, cooking rituals, communication with animals and plants (prayer), and other practices that demonstrated having a “good attitude” toward the forces of nature. Kalifornsky (1991:13) writes that, “Whatever is on earth is a person [has a spirit] they used to say. And they said they prayed to everything. That is the way they lived.” Achieving *k'ech eltani* involved a spiritually torturous and mentally rigorous quest for understanding (Boraas and Peter, 1996:187).

Many of the Dena'ina traditional stories (*sukdu*) describe the dire consequences of having a bad attitude by not practicing the prescribed rituals such as burning the bones of consumed animals or distributing fish bones in the water as means to symbolically assure the animals would come back (Boraas and Peter, 2008:222-223). In these stories, a bad attitude would have the consequence of the animals, believed to be both sensate and willful, withdrawing and not offering themselves to be taken for food. The result would be starvation. A bad attitude could result in social turmoil or mental illness. There was immense pressure to behave and think respectfully toward the natural world including salmon.

In a forthcoming chapter on Dena'ina world view, Boraas (in press 2013) writes the following about traditional attitudes toward animals:

Attitudes toward bears typify attitudes toward animals. In “Three People in Search of Truth,” (Kalifornsky 1991:164-167) three brothers hunt a brown bear, the most feared and respected animal. The first fails because he is poorly skilled; the second fails because he is impetuous, and the third succeeds because he is skilled, controlled and speaks the correct words to the bear, which then respects him and does not resist being killed. In Kenai a successful hunter used the phrase *Chadaka, k'usht'a nhu'izdeyeshdle*, which translates as “Great Old Man, I am not equal to you,” to communicate humility toward the bear he was hunting (Kalifornsky 1991:167). In 1966 Mrs. Mike Delkettie, a Nondalton Dena'ina, reported that a similar saying was used in that area; moreover, the eyes of the bear were buried near the spot where it was killed as an offering showing proper respect (Rooth 1971:62). Francis Wilson, also from Nondalton, told Rooth (1971:50) that, after a bear was killed, they had to follow prescribed procedures, particularly in the treatment of the head, lest they never kill another bear, because “the bear still knows what is happening, so they have to be very careful with what they are doing.” Hunting rituals and prayers were meant to thank an animal for allowing itself to be killed and sometimes it also involved giving an offering as a measure of the importance of proper attitude (Rooth 1971:50).

The First Salmon Ceremony (Osgood, 1976:148; Kari and Fall 2003:184-190) expresses the intimate relationship of Dena'ina and salmon. The First Salmon Ceremony was based on a traditional story. As the Osgood's retelling goes, a *qeshqa's* (chief's) daughter was admonished not to go near the fish weir. The determined girl went anyway to find out what was in the trap, promising to return later. At the fish trap she saw a king salmon, began talking to him, and gradually transformed into a salmon and disappeared with him. The desperate *qeshqa* looked for his daughter to no avail. Years later, the *qeshqa* was collecting fish from the weir. He put them on the grass and took them to be cleaned, but forgot one little one. He returned to find a little boy sitting there. He walked around the boy three times and realized it was his grandson. The boy then told his grandfather the things that should be done to ensure the salmon return each year, and those things became the First Salmon Ceremony, a world renewal ceremony⁶ which ritually recognized the salmon's return and the Dena'ina as salmon people whose spirit is merged with the fish.

In 1862 Hegumen Nikolai, the first missionary priest stationed in Dena'ina territory wrote in his travel journal, “In the middle of May the king salmon reached our area [writing from Kenai]. This is the best red fish we have here, and the Kenaitze celebrated the fish run with some sort of festivities, during which they treated each other with food” (Znamenski 2003: 91). Fr. Nikolai was clearly referring to the First Salmon Ceremony.

Water was particularly important in Dena'ina spirituality in the act of moving into a spiritually liminal state. One kneeled beside a river or lake and took three sips of water (Boraas in press 2013). This was practiced well into historic times and also occurs in mythological stories (*sukdu*). For example in “The Woman Who Was Fasting” (Kalifornsky 1991:168-9) a young

⁶ World renewal ceremonies are important identity-building ceremonies that recognize the beginning or end of a year's subsistence activity and social cohesion. In American culture Thanksgiving is a world renewal ceremony.

woman was ritually fasting and spoke these words “People will learn something from our beliefs” as she took three sips of water. She was then able to perform a spiritually power act upon which she said, “When we pray and we fast there is another dimension.”

Some places took on special importance. The Giants Rock, *Dzelggez*, was along an old Dena’ina trail that became the Pile Bay Road between Old Iliamna and Kamishak Bay on Cook Inlet, one of the major trails connecting eastern and western Dena’ina territory. The rock was the site of a mythological story and was a spiritual place (Johnson, 2004:49-54). The rock was dynamited in 1955 as part of road building activities by the Territory of Alaska; Dena’ina still regularly leave votive gifts at the site in homage to the place and the mythological event that happened there. Other sacred rocks and sacred locations exist in Dena’ina territory, but for most their locations are privileged cultural information (Boraas 2009:10-20).

Not only are there sacred sites but the Dena’ina believed the landscape retained a sense of events that happened there: events which could be good or bad. For example, *Qil’ihtnu* is located near the historic village of Kijik on Lake Clark and the place name means “Evil Creek” (Kari et al. 1986:7-42) or “bad creek” (Kari and Balluta 1985:A-36). According to Albert Wassilie (Lynch 1982), in the 19th century an Orthodox priest violated taboos concerning the creek (which he later rectified) but to traditional Dena’ina the place retains a sense of its bad history. Spiritually powerful people and animals could detect information about these events and, thus, to travel was to encounter morally good and morally bad events encoded into the landscape (Boraas 2009:8-10).

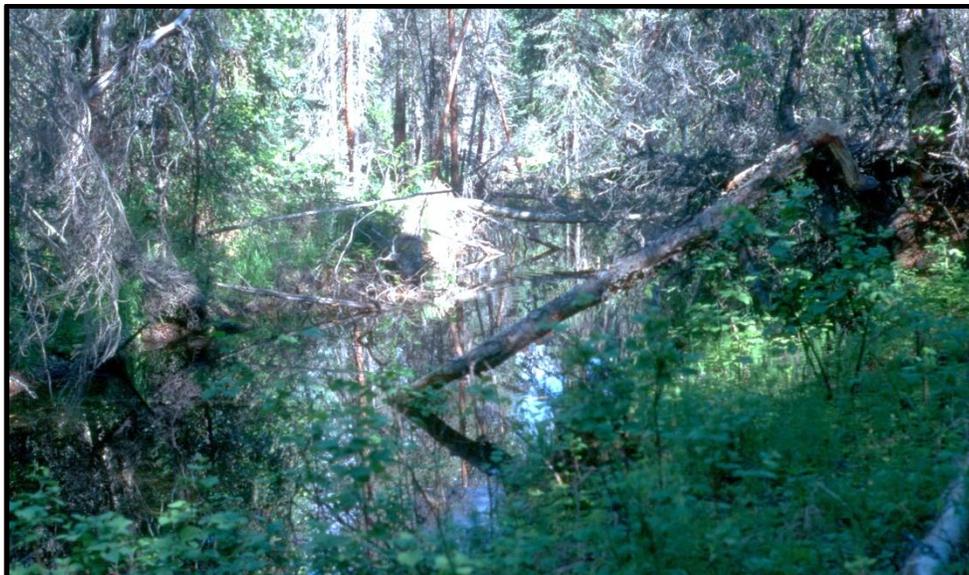


Figure 13. Evil Creek *Qil’ihtnu* near Lake Clark. Photo by Alan Boraas

E. The Yup'ik and Dena'ina Languages: Salmon and Streams

1. Voices of the People

Talk Native, no English....They talk Native [Yup'ik] better [than English]. [in reference to Elder interviews in Yup'ik] M-25, 5/18/11

That's why we quit using our Native tongue [Dena'ina] because we get our...ears pulled. I don't know how many times I sit in the corner because I use my Native tongue. We couldn't speak our own language in school because we get abused. F-46, 8/20/11

When we first went to school they took our dialect away from us and told us to speak English only. If we spoke our Native tongue we would get hit by the teacher which isn't right. Now they call it abuse. Anyways none of us speak our Native tongue [Dena'ina] because of that. My mom didn't speak English.... F-48, 8/20/11

2. Introduction

Language is intimately tied to cultural identity and Yup'ik and Dena'ina have evolved as languages of place for their respective areas over thousands of years. Landscape, subsistence, social relations, and spirituality are reflected in both languages. The variety of words a language has for a given topic generally reflects the importance of that topic, or cultural domain, to the people who speak it. Given their cultural importance, it is not surprising that both Dena'ina and Yup'ik have numerous, highly detailed terms involving salmon, other fish, and fishing. Streams are also intimately tied to Dena'ina and Yup'ik psyche and their languages reflect that fact.

One Yup'ik interviewee (M-25; 5-18-11) spoke about helping set up a 2011 Elders Conference which occurred a few days before our interviews in New Stuyahok in which the entire discussion was in Yup'ik. He said, "I set up that meeting [Elders Conference], I try to do it for a long time...yes, talk Native [Yup'ik], no English. Get somebody else to translate...they talk Native better [than English]."The speaker was expressing a version of linguistic relativity, the idea that the structure of language predisposed certain thought patterns that are not easily translated into another language and that, in turn, express deeply held cultural ideas (Mihalicek and Wilson 2011:461-467). In a similar way Boraas (2007) has described the way Dena'ina grammar influences Dena'ina thought processes.

3. The Central Yup'ik Language

The Yup'ik people of the Nushagak and Kvichak River watersheds are part of the Central Yup'ik group, of whom there is a population of about 25,000 in an area that also includes coastal communities and the lower and middle Kuskokwim River drainage (Krauss, 2007:408) (See Table 8). Ten thousand four hundred of this population, or 42%, speak Central Yup'ik of which

the 7,000 mostly Yup'ik of the Nushagak and Kvichak River drainages are a part. Central Yup'ik has one of the highest percentages of speakers among indigenous languages in the U.S and is an indicator of strong cultural heritage. Yup'ik is the first language for many residents in the study area and the language in which many feel most comfortable expressing complex or heartfelt ideas, which is why, for this project, we encouraged interviewees to respond in Yup'ik if they so chose. Eight of fifty-five interviewees spoke in Yup'ik.

Table 8 Estimated Number of Central Yup'ik and Dena'ina Speakers. Data from Krauss (2007:408)

Language Family	Language	Population Estimate	Speakers	Percent Speakers
Eskimo-Aleut	Central Yup'ik	25,000	10,400	42%
Athabascan-Eyak-Tlingit	Dena'ina	1,000	50	5%

Table 9 presents Yup'ik terms for salmon, related fish, and fishing activities. In many cases there are multiple words and/or dialect differences. As indicated the sheer number of words are indicative of a long history with salmon and fishing activities. Moreover, the nuanced meaning of some words is indicative of a deep knowledge of salmon and related activities. For example the word *kiarneq* means “unsalted strip or fillet of fish flesh without skin, cut from along the backbone and hung to dry”

Table 9. Yup'ik Words for Salmon and Other Fish and Related Fishing Terms. From Jacobson (1984)

English Term	Yup'ik Word	Literal Translation
		X indicated the literal translation is the same as the English term
salmon (generic) (<i>Oncorhynchus spp.</i>)	<i>neqaraq</i>	any species of salmon
dog salmon, chum salmon	<i>aluyak</i> <i>iqalluk</i> <i>kangitneq</i> <i>mac'utaq</i> <i>teggmaarrluk</i>	X 'fish' 'old dog salmon after spawning' X boiled half-dried salmon
humpback salmon, pink salmon	<i>amaqaayak</i> <i>amaqsus</i> <i>cuqpeq</i> <i>terteq</i> <i>amaqatak</i> <i>sayalleraam amaqatii</i> <i>neqnirquq</i>	X X X X 'back of fish, hump on back' 'back of spawning red salmon is tasty'
silver salmon, coho salmon	<i>caayuryaq</i> <i>qakiiyaq</i> <i>qavlunaq</i> <i>uqurliq</i>	X X 'streak or wake made on surface by fish'
red salmon, sockeye salmon	<i>cayak</i> <i>sayak</i> <i>sayalleq</i> <i>sayagcurtuq</i> <i>imarnikaralegmun</i>	X X 'he is fishing for red salmon at a deep calm place'
spawning salmon	<i>masseq</i> <i>masruuq una neqa</i> <i>nalayaq</i> <i>nalayarrsuun</i> <i>talayaq</i> <i>talmag (NUN)</i> <i>talmagtut</i>	'old salmon near spawning' 'this fish is a spawning salmon' X 'fish spear to catch spawning salmon' 'calico salmon' 'to spawn (of fish)' 'they are spawning'
king running under smelt	<i>aciirturtet</i>	'the first group of king salmon running under the smelt'
salmon egg	<i>cilluvak</i>	'salmon egg, especially aged salmon egg'
salmon strip	<i>culunallraq</i> <i>taryitaq</i>	'salted and dried salmon strip'
salted fish or meat	<i>culunaq</i> <i>culunanek ajurciuq</i>	'salted fish or meat that is eaten after it is cut up and soaked to remove excess salt' 'she is soaking some salted fish' see <i>culunaq</i> 'my wife cut up the salted fish'

	<i>sulunaq</i> <i>sulunanek ingqillruuq</i> <i>taryitaq, taryiraq</i> <i>taryirki sulunarkat</i>	‘salted salmon strip’ ‘put salt on the pieces of fish to be preserved’
scale (fish)	<i>kapciq</i> <i>qelta</i> <i>akakiik qeltairru suu</i> <i>pimiaraqa</i>	x ‘fish scale’, ‘take the scales off the whitefish so that I can make soup with it!’
rolled oats	<i>qeltengalnguut</i>	‘things like fish scales’
smelt	<i>cemerliq</i> <i>cimigliq</i>	x x
stick(n) fish-spreading	<i>ayagta</i> <i>ayagtekartellruunga</i>	‘prop, support, <i>especially</i> a small stick used to keep a cut fish open as it dries’ ‘I gathered material to use as spreaders for drying fish’
stickleback	<i>cukilek</i> <i>angun cukilegneq qaluuq</i> <i>ilaqcuugaq</i> <i>quarruuk</i>	‘one with quills’ ‘the man is dipnetting for sticklebacks’ x ‘needlefish’
supper	<i>atakutaq</i>	‘supper, evening meal’
tail, fish	<i>papsalqitaq</i> <i>papsalquq</i>	‘dried fish tail’ ‘tail or caudal fin of fish’
preopercle	<i>ulluvalqin</i>	‘gill cover of a fish, preopercle’
fish cheek	<i>ulluvalquq</i>	‘cut from the fish’
trap, fish	<i>taluyaq</i>	‘fish tray’
whitefish with pointed head	<i>cingikeggliq</i>	x
young whitefish	<i>esevsiar(aq)</i> <i>iiutliar(aq)</i>	x ‘whitefish fry’
frozen raw whitefish	<i>qassayaaq</i> <i>akakiigem meluanek</i> <i>qassallruunga</i>	‘frozen whitefish aged before freezing and served frozen’ ‘I ate the whitefish eggs raw’
To fish (v)	<i>neqsur</i>	?
Fish	<i>iqalluk</i> <i>ilaqcuugaq</i> <i>neqa</i> <i>neqet amllertut maani</i> <i>qimugtut neqait</i> <i>nangyarpiartut</i> <i>neqtulnguunga</i> <i>neqa unguvangaan ukliia</i> <i>neqngurtuq</i> <i>nereneqaiq, neqiaq</i>	‘dog, chum salmon, fish’ ‘small fish found in lakes’ ‘food;fish’ ‘the fish are plentiful here’ ‘the dogs’ food is almost gone’ ‘i’m tired of eating fish’ ‘even though the fish is still alive he is cutting it up’ ‘there was food everywhere’, <i>lit.</i> ‘it became food’ ‘food-stealing bird’
Boiled fish	<i>egaaq</i>	‘any cooked fish or other food’

Bundled fish	<i>inartaq</i>	x
Canned fish	<i>paankaraq</i> <i>qakiiyak paankarak uksuqu</i> <i>nernalukek</i>	x 'he is canning two silver salmon so that he can eat them in winter'
Cut fish	<i>cegeseq-</i> <i>cegtuq</i> <i>ceгаа, cegгаа</i> <i>ceg'aq, cegg'aq</i> <i>seg-</i> <i>ulligte-</i> <i>ulligtuq</i> <i>ulligtaaa</i> <i>ulligciuq</i> <i>ulligtaq</i> <i>ingqii-</i> <i>inguqin, inguqitaq</i> <i>neq'liur-</i> <i>neq'liurtuq</i>	'to cut fish for drying' 'she is cutting fish' 'she is cutting it' 'a fish cut for drying' (see ceg-) 'to cut fish for drying, in the traditional manner, making cuts so that air can reach all parts of the flesh; (NUN) to turn over' 'it is cut for drying' 'she cut it for drying' 'she is cutting it for drying' 'fish cut for drying' 'to make the horizontal cuts in fish flesh while preparing it for drying' 'board on which one prepares meat or fish' 'to work on fish (cleaning it, etc.)' 'he is working on fish'
Fish cut in half	<i>qup'ayagaq(NUN)</i>	'fish cut in half to hang and dry'
Dried fish	<i>neqaluk (NUN)</i> <i>neqerrluk</i> <i>palircima</i>	x x 'to be burnt by the sun (of dried fish)'
Dried small fish	<i>nevkuaq</i> <i>ulligtaruaq</i>	x 'split and dried small fish, such as whitefish, pike or trout'
Dried fish heads	<i>nasqurrluk</i> <i>qamiqurrluk</i> <i>irmiani nerevkaraa tepnek</i>	'cut and dried fish-head' (see above) 'she let her child eat some aged fish heads'
Dried frozen fish	<i>yay'ussaq</i>	'dried tomcod or whitefish that has been frozen all winter'
Air dried fish	<i>tamuaneq</i>	x
Fish dried in a basket	<i>tut'at (plural)</i>	'fish packed down and dried in a basket'
Fish partially dried and boiled	<i>egamaarrluk teggmaarrluk</i>	x 'boiled, half-dried salmon; dog salmon, chum salmon'
Frozen fish	<i>cetegtaq</i> <i>kumlaneq</i> <i>nutaqaq</i> <i>qercuqaq</i>	
Poke fish	<i>uqumaarrluk</i>	'fish slightly aged and stored in seal oil'

Fish partly smoked and stored in seal oil	<i>arumaarluk</i>	x
Fish in strips	<i>kiarneq</i> <i>palak'aaq (BB)</i>	'unsalted strip or fillet of fish flesh without skin, cut from along the backbone and hung to dry' 'strip of dried flesh'
Dried Fish tails	<i>parmesqatak papsalqitaq</i>	x ?
Fish strung to dry	<i>piirrarlluk (Y, HBC)</i>	'small fish, such as tomcod strung up for drying'
Fish hung to dry	<i>kanartaq</i>	x
Raw fish	<i>qassaq, qassaulria</i> <i>qassar-</i> <i>qassartuq</i> <i>qassaraa</i>	'raw fish or meat' 'to eat raw fish or meat' 'he is eating raw fish' 'he is eating it raw'
Raw frozen fish	<i>quaq</i>	'fish to be eaten raw and frozen'
Cooked piece of fish	<i>ukliaq</i>	x
Fish bin	<i>qikutaq</i>	'bin used for temporary storage of fish before they are cut up for drying'
Fish trap	<i>taluyaq</i>	x
Fish rack	<i>initaq</i> <i>ker'aq</i> <i>qer'aq</i>	'part of a fish rack on which the fish is directly hung'
Fish wheel	<i>akalria</i>	x
Fish fence	<i>capon</i> <i>angutet capcirtut uqvianek</i> <i>manignarmaluteng</i> <i>taluyakun</i> <i>kalgun</i>	'weir, fish fence; wall' 'the men set a weir of willows to catch loche with a fishtrap' 'weir, fish fence extending from the bottom of the river and leading fish to a place where one can catch them with a dipnet'
Fish spear	<i>aggsuun</i> <i>ag'ssuun</i>	x x
Fishing line	<i>ipiutaq (NSU)</i>	x
Fish camp	<i>kiagvik</i> <i>neqlilleq</i>	'summer fish camp' (see above)
Fish Village	<i>neqlercurvik</i>	'fish village, site on the lower Yukon'
Fisherman	<i>neqsurta</i> <i>neqsurtuq</i> <i>neqsurvik</i> <i>neqsurtuq tuniarkaminek</i> <i>aataka neqsurtenguuq</i>	x 'he is fishing' 'fishing place' 'he is fishing commercially' 'my father is a fisherman'
Fish hook	<i>iqsak</i>	x

	<i>iqsag/manaqutaq</i> <i>iqsagtuq/manartuq</i> <i>iqsagaa/manaraa</i> <i>manaq</i> <i>manar</i> <i>manaryartuq</i> <i>qerrlurcaq</i>	'to fish with a hook and line, to jig for fish' 'he is hooking for fish' 'he hooked it' 'fishing lure with hook' 'to fish with a hook, lure, and line, usually (though not necessarily) through a hole in the ice in winter' 'he went to fish with a hook and line' 'fishhook which is baited and set below the ice, held in place with a stick across the hole, and left unattended to be checked periodically'
Fish net	<i>kuvyaq, kuvya, kuvsaq</i> <i>kuvya</i> <i>kuvyauq</i> <i>kuvyaq cangliqellruuq</i> <i>nutaranek</i> <i>qemiraa kuvyaq</i> <i>qilagcuutmek aturluni</i> <i>kuvyaq civtaa</i> <i>kuvyaq takuua</i> <i>kuvyarkaqaq</i> <i>qelcaq (Y)</i>	x 'to fish by drift-netting or purse-seining' 'he is drift-netting' 'the net caught lots of fresh fish' ' he is stringing the net using a net shuttle' 'he set the net' 'he checked the nets' 'twine for making nets' 'net into which fish are driven by peopole who walk in and thrash the water'
Set net	<i>petugaq</i>	x
Fine mesh net	<i>caqutaugaq(NUN)</i>	'fine mesh net for dog salmon, worked by hand by men standing in the water, not left unattended'
Net shuttle	<i>imgutaq</i> <i>qilagcuun</i>	x x
Net setting line	<i>amun</i> <i>atirneq</i> <i>nuvun</i> <i>qemiq</i> <i>qemirtuq</i> <i>qemiraa</i>	'line used to set and reset a net under the ice' 'lead line of fish net' 'threading device (such as the line used to set a net under the ice, or a needle threader)' 'lead line or float line of a net' 'he is stringing (a net)' 'he is stringing it'
Net sinker	<i>kic'aqutaq</i>	x
Fishing rod	<i>manaq</i> <i>piqrutaq</i>	'fishing lure with hook'

Roe	<i>cin'aq</i> <i>cilluvak</i> <i>imlauk</i> <i>meluk</i> <i>melug</i>	'salmon egg, especially aged salmon egg' 'fish egg,roe' 'fish eggs, roe; fish eggs prepared by allowing them to age and become a sticky mass' 'to suck; to eat roe directly from the fish'
aged roe	<i>cuak</i>	x
herring roe	<i>imlauk (NUN)</i> <i>qaarsaq</i> <i>qiaryaq (NUN)</i>	'dried herring egg' x 'herring eggs, so called because they crackle when eaten'
fish rack	<i>ker'aq (NSU)</i> <i>qer'aq</i>	x x
trout	<i>anerrluaq (BB)</i> <i>anyuk (BB)</i>	'type of fish, salt-water trout' x
lake trout	<i>cikignaq</i>	x
steelhead trout	<i>irunaaq</i>	x
rainbow trout	<i>talaariq</i>	x
dolly varden (char)	<i>iqallugpik</i>	x
herring	<i>iqalluarpak, iqallugpak</i>	x
Arctic cod	<i>iqalluaq</i>	'boreal smelt'
Pike	<i>uksumi-llu iqsagnaartut</i> <i>cuukvagnek</i>	'and in the winter they would hook for pike'
Wolf Fish	<i>qugautnaq (NI, NUN)</i>	x
Smokehouse	<i>elagyaq</i> <i>puyurcivik</i> <i>talicivik</i> <i>neqnek aruvarqiyartua</i> <i>talicivigmi</i>	'partially underground cache; pit for cleaning fish; smokehouse' x 'shelter for smoking fish, smokehouse' 'go smoke the fish in the smokehouse'
Smoked Fish	<i>aruvarqi-</i> <i>aruvir-</i> <i>puyurqe</i> <i>puyurte-</i>	'to smoke fish' 'to be smoky; to smoke (fish)' 'to be smoked; to feed the fire when smoking fish' 'to smoke (fish)'
Subsistence	<i>angussaag-</i> <i>yuungnaqe-</i>	'to hunt, to try to catch game' ?

4. The Dena'ina Language

There is a dramatic difference in language retention between the Yup'ik of the Nushagak and Kvichak River watersheds and the Dena'ina of the Iliamna Lake and Lake Clark area. In

contrast to the Yup'ik, the Dena'ina population is much smaller, estimated by Krauss (2007:408) at 1,000 for the Iliamna/Lake Clark and Cook Inlet Basin areas. Krauss estimates that within this population there are only 50 Dena'ina speakers remaining (see Table 8), most of whom live in the vicinity of Nondalton or Lime Village (the latter outside the study area in the Kuskokwim River drainage). The youngest active Dena'ina speaker is 64 years old. Dena'ina is, thus, one of the world's most endangered indigenous languages (Boraas 2010:2). The reason for the disparity between Dena'ina and Yup'ik language usage is complex but a significant reason for Dena'ina language extinction was the Alaska Territorial School's federally mandated policy of punishment for children speaking their indigenous language in school. This forced assimilation policy occurred to various degrees throughout Alaska but its application seems to have been particularly harsh in Dena'ina territory (Boraas 2010:2).

Given the importance of language to cultural identity, the Dena'ina have begun to revitalize their language and significant efforts are underway to avoid its extinction both in spoken and written form (cf. Boraas and Christian 2010). There is a history of Dena'ina Elders working with linguists dating back to Anna Brigitta Rooth's (1971) work in 1966 in Nondalton followed by dozens of bilingual publications by James Kari working in collaboration with Dena'ina speakers starting in the 1970s and the bilingual publication of Joan Tenenbaum (1984). More recently a number of speakers from Nondalton and Lime Village have participated in Dena'ina Language Institutes, sponsored by a consortium of institutions including the Alaska Native Language Center, Alaska Native Heritage Center, the Sovereign Nation of the Kenaitze, and Kenai Peninsula College. The one to three-week institutes have been held at various locations including Nondalton and include workshops on Dena'ina language learning and teaching. Recently, two speakers from the study area, Andrew Balluta of Nondalton/Newhalen and Walter Johnson of Pedro Bay, now of Homer, have collaborated with linguist James Kari on important bilingual publications: *Shtutda'ina Da'a Shel Qudet: My Forefathers are Still Walking with Me* (Balluta 2008) and *Sukdu Nel Nuhtghelnek: I'll Tell You a Story: Stories I Recall from Growing Up on Iliamna Lake* (Johnson 2004). Finally, numerous speakers living and deceased (through archived recordings) contributed to *Dena'ina Etnena [Dena'ina Territory]: A Celebration* edited by Karen Evanoff (2010). This book is summarized in the Traditional Ecological Knowledge section (Section D).

The language is indicative of the importance of water and salmon and other fish to the Dena'ina. Streams are intimately tied to the Dena'ina psyche through language. The Dena'ina words for directions are not based on the cardinal directions, but on the concept of upstream or downstream. A Dena'ina description of direction results from combining one of five stems, indicating upstream, downstream, and related terms; one of six prefixes, indicating proximity; and a suffix indicating general direction or location (Kari, 2007:336). For example, the word "yunit" combines the stem "ni" (upstream) with the prefix "yu" (distant) and the suffix "t" (at a specific place) and means "at a specific place a long way up upstream." If one were using that phrase at Iliamna, *yunit* would mean the direction toward Nondalton, which is a specific place far upstream; in this case, the direction would be north, because from Iliamna the Newhalen River flows south.

Because streams, to Athabascans, are a fundamental cultural construct implicated in a wide range of cultural activities (subsistence, diet, travel, directions, spirituality etc.), Kari (1996) has used stream stem morpheme variations to understand pre-contact movements among Northern Athabascans.

The spirituality of water is also embedded in the language. The Dena'ina have 36 terms for streams (Kari 2007:123-4), among those the primary word for 'water' is of special note. The Dena'ina word for "water" *vinilni* (in the Inland dialect, *milni* in the Outer dialect) is unique among other Athabascan/Dene languages and Dena'ina linguist James Kari considers it to be esoterogenic meaning a special word reflecting special importance or sacredness (personal communication, Dr. James Kari, UAF Professor Emeritus, December 6, 2011). Dena'ina Elders Clare Swan and Alexandra Lindgren (2011) state "the Dena'ina word for water was held sacred" and by implication the water was sacred. The word *vinilni* and its sacred connotations is reflected today in the Orthodox Great Blessing of the Water ceremony described in section III.F.3 in which river water is annually baptized and made holy.

The Dena'ina named a general category of animal or plant by the name of its most important representative. For example, the name for animal is *ggagga*, for brown bear, and the name for tree is *ch'wala*, for white spruce. Not surprisingly, the name for fish is the name for salmon, *liq'a*. Table 10 is a compilation of Dena'ina terms for salmon, freshwater fish, and fishing technology which, like the Yup'ik counterparts, shows an intimate connection with salmon, fish, and fishing.

Table 10. Dena'ina Words for Fish and Streams. Data from Kari (2007).

Dialect notations: I = Inland, U=Upper Inlet, O=Outer Inlet, L=Lime Village, Il=Iliamna, S=Seldovia, Lk-i=Kuskokwim Deg H'tan, Su=Susitna Station, E=Eklutna, Ty Tyonek, T=Talkeetna, Kn=Knik		
English Term	Dena'ina Word	Literal Meaning
		x means literal translation same as English term.
salmon (generic) (<i>Oncorhynchus spp.</i>)	<i>liq'a (IU)</i> <i>luq'a (OSI)</i>	x x
Male fish	<i>Hest'a, qest'a (IO)</i> <i>Tl'ech'I (U)</i>	
Female fish	<i>Q'in'i</i> <i>Q'inch'eya (IO)</i> <i>Q'inch'ey (U)</i>	'roe one'
Small fish	<i>Chagela gga (U)</i> <i>Shagela gguya (I)</i> <i>Shagela ggwa (O)</i>	
Fry, baby fish	<i>Lch'eli, dghelch'eli</i>	'shiny one'
Bottom fish	<i>Tahliq'a (IU)</i> <i>Tahluq'a (O)</i>	'underwater fish'
Spring fish run	<i>Litl'eni (UI)</i>	x
Spring fish caught under ice	<i>Ten t'uhdi (U)</i>	x
king salmon, Chinook salmon (<i>O. tshawytscha</i>)	<i>liq'aka'a (IU)</i> <i>luq'aka'a (O)</i> <i>chavicha, tsavija (O)</i>	"big salmon" <Rus.
king; salmon sizes: smallest	<i>liq'agga (U)</i> <i>ggas ten'a (L)</i>	'small salmon' 'king salmon's handle'
two-foot king salmon	<i>q'inagheltin (U)</i>	'??'
largest king salmon	<i>liq'aka (U)</i> <i>vigit'in (L)</i>	'big salmon' x

middle-sized king salmon	<i>tl'istqeyi (U)</i>	x
humpback salmon, pink salmon (<i>O. gorbuscha</i>)	<i>qughuna (OUSI)</i>	'humped'
red salmon, sockeye salmon (<i>O. nerka</i>)	<i>liq'a (I)</i> <i>t'q'uuya (LNOSI)</i> <i>k'q'uuya ON</i> <i>q'uuya (U)</i>	x 'ridged'
nickname	<i>veghutna qilin (I)</i>	'it exists for people'
old fall sockeye	<i>bendashtggeya (U)</i> <i>dghelbek'i (UO)</i>	'partially white' <i>a rare verb stem</i>
dog salmon, chum salmon (<i>O. keta</i>), (I) early summer chum salmon	<i>alima (OII)</i> <i>seyi (U)</i> <i>nulay (NL)</i>	< Esk.. x 'runs again'
August run dog salmon	<i>shighat'iy (Lk-i)</i>	“?”
silver salmon, coho salmon (<i>O. kisutch</i>)	<i>nusdlaghi (I)</i> <i>nudlaghi (O)</i> <i>nudleggha, nudlegghi (U)</i>	'one that swims back'
steelhead trout (<i>Salmo gairdneri</i>)	<i>usdlaghi (O)</i> <i>telaghi (II)</i> <i>tuni, tuni denlkughi (N)</i> <i>shagela (U)</i>	? 'one that swims past' 'one that runs' 'water one' 'fish'
running salmon	<i>tuzdlaghi (OI)</i> <i>tuydlaghi (U)</i>	'one swimming in water'
fish laying eggs	<i>taq'innelyaxi (I)</i> <i>taq'innelyashi (UO)</i>	x
spawned-out salmon	<i>nudujuzhi, dujuzhi (I)</i> <i>dujuyi (U)</i> <i>itak'i (O)</i>	x x x
dead salmon	<i>tilani</i>	X
fall salmon, esp. sockeye	<i>hey luq'a (O)</i> <i>hey liq'a (IU)</i>	'winter salmon'
fingerling, baby salmon, alevin	<i>tuyiga (OI)</i> <i>liq'agga (U)</i> <i>liq'a gguya</i>	'water spirit' 'little salmon'
first fish run	<i>qtsa ghelehi</i>	x
last fish run	<i>q'ech'en ghelehi (I)</i> <i>unhtl'uh ghelehi (UO)</i> <i>unhtl'uyeh (I)</i>	x
old female salmon	<i>q'in ch'ezhi (I)</i> <i>q'in ch'eya (U)</i>	'infested roe'
red-colored salmon	<i>nuditq'azhi (I)</i> <i>nishtudghiltani (U)</i>	'one that is red' 'that which floats in midstream'
spring (early) salmon run	<i>ts'iluq'a (O)</i> <i>litl'eni (UI)</i>	'straight salmon' 'spring one'
summer salmon run, sockeye season	<i>chiluq'a (O)</i> <i>hchiliq'a (UI)</i> <i>shanlaghi (UI)</i>	x 'summer run'
fall-winter running salmon	<i>tuleha (OU)</i> <i>tulehi (I)</i>	'one running in water'
dead salmon that drift ashore	<i>nigatayilaxi (I)</i>	x
salmon captured in weir	<i>q'anughedeli</i>	'those swimming back'
Non-salmon fish	<i>Shagela (IO)</i> <i>Chagela (UII)</i>	'fish'

	<i>Chebay (U)</i>	
Alaska blackfish	<i>Huzheghi, huzhehi (L,N)</i>	‘gaping thing pointing up’
Freshwater sculpin	<i>Ch’qentl’emich’a</i> <i>Ch’qentl’emch’a (NL)</i> <i>Ch’qeldemich’a (Il)</i> <i>Ts’est’ugh’I, ts’est’uhdi (U)</i>	? ‘the one beneath rocks’
Burbot, lingcod	<i>Ch’unya (I)</i> <i>Ch’anya (U)</i> <i>K’ezex (Lk-i)</i>	
Burbot’s chin barbell	<i>Veyada k’ich’aynanik’et’i</i>	‘one that hands out from chin’
Arctic char	<i>Vat (NL)</i>	
Eel, lamprey	<i>Suy liq’a</i> <i>Liq’a q’int’s’a</i> <i>Lizil (O)</i> <i>Tl’eghesh (I)</i>	‘sand fish’ ? ‘salmon roe female’ ‘dog windpipe’
Large lamprey	<i>Ts’iten hutsesa (U)</i>	‘arrow nock’
grayling	<i>Ch’dat’an (I)</i> <i>Ch’dat’ana (U)</i>	‘one with a blanket’
Grayling’s dorsal fin	<i>Vech’eda</i>	‘It’s blanket’
Freshwater herring, least cisco	<i>Ghelguts’I k’una (N)</i>	‘pike’s food’
Three-spined stickleback	<i>Dghezhi, dghezha (O)</i> <i>Dgheyay (U)</i> <i>Dghezhay (I)</i> <i>Vek’eha qilani (NL)</i> <i>Tuyiga (Il)</i>	‘thorny one’ ‘one with quills’ ‘water spirit’
Spawning stickleback	<i>Bente qiyuya (U)</i>	‘one going in lakes’
Northern pike	<i>Ghelguts’I (I)</i>	‘swift swimmer’
Small pike	<i>Tl’egh tuzhizha</i>	‘grass water beak’
sheefish	<i>Shish (L)</i> <i>Zdlaghi (L)</i>	‘one that runs’
sucker	<i>Duch’ehdi (IU)</i> <i>Dehch’udya €</i> <i>Lih (O)</i>	‘open mouth one’
Brook trout, Landlocked Dolly Varden char	<i>Dghili juna (NL)</i> <i>Dghili chuna (Il)</i> <i>Dghelay tsebaya (T)</i>	‘mountain dark one’ ‘mountain fish’
Lake trout	<i>Zhuk’udghuzha (I)</i> <i>Bat (Su)</i>	‘spiny mouth’
Rainbow trout	<i>Tuni (I)</i> <i>Telaghi (U)</i> <i>Shagela (Il)</i>	‘water one’ ‘one that swims, runs’ ‘fish’
Dolly Varden trout	<i>Qak’elay (I)</i> <i>Qak’elvaya (Il)</i> <i>Telch’eli (O)</i> <i>Chebay (U)</i> <i>Liq’a k’gen (I)</i>	? ? ‘shiny one’ ‘fish’ ‘salmon’s husband’
Whitefish (any)	<i>Lih (UI)</i>	
Alaska whitefish	<i>Hulehga (I)</i> <i>Q’untuq’ (Lk-i)</i>	‘runs up’ ‘ridge on top’
Broad whitefish	<i>Telay (L)</i>	‘swimmer’
Broad whitefish stomach	<i>K’jida (I)</i> <i>K’eghezh (Lk-i)</i>	‘oval’

Round whitefish, pin-nose whitefish	<i>Hasten (IT)</i>	'pus handle'
Fish guts (all)	<i>K'inazdliy, vinazdliy</i>	'inner objects'
Fish bones	<i>K'iztin (IO)</i> <i>K'iytin (U)</i>	'inner long object'
Fish backbone	<i>K'eyena</i>	x
Fish belly	<i>K'eveda</i>	x
Dark fish blood along backbone	<i>K'tl'ech' (I)</i> <i>K'kuhchashga (I)</i> <i>K'kukelashch'a (L)</i> <i>K'chashga (U)</i> <i>K'kuhchash'a (O)</i>	x
Dark salmon meat near skin	<i>Beyes tut' tsen (UO)</i>	
Fins (any)	<i>K'ts'elghuk'a (I)</i> <i>K'ch'elna (OU)</i> <i>K'tay'a (U)</i>	x 'wings' 'paddle'
Pectoral fin	<i>K'ch'enla (U)</i> <i>K'ts'elghuk'a (I)</i>	'wing'
Dorsal fin	<i>K'iniq' ts'elghuk'a</i> <i>Ghuk'a (I)</i> <i>Biniq' ch'elna (U)</i> <i>K'inhdegga (O)</i>	'back fin' 'back swimmer' 'back wing' 'back collarbone'
Pelvic fin	<i>K't'egha (U)</i> <i>nilk'degga (O)</i> <i>k'eveda degga (I)</i> <i>nich' k'eltin'a (O)</i>	'paddle' 'paddles together' 'belly fin' 'one in the middle'
Anal fin and cartilage	<i>K'tselts'ena (U)</i> <i>K'tseldegga (IO)</i>	'anal bone' 'anal collarbone'
Adipose fin	<i>K'tagh'a (IO)</i> <i>K'tach'elvasha (N)</i> <i>Tak'elbasha, k'tach'ebasha (OU)</i>	'paddle' 'submerger'
Tail fin	<i>K'kalt'a degga (O)</i> <i>K'kalt'a ts'elghuk'a (I)</i>	x
Fresh air sack	<i>K'kuhlet'</i>	x
Fish collarbone, pectoral girdle	<i>K'degga</i>	x
Fish head gristle	<i>K'enchigija</i>	'head cartilage'
Fish meat	<i>K'enut'</i> <i>Duni (II)</i>	x 'food'
Fish tail	<i>K'kalt'a</i>	x
Meat next to fish tail	<i>K'kalt'a veghun</i>	'body of fish tail'
gills	<i>K'q'eshch'a</i>	x
Gut with stringy end (pyloric caecum)	<i>K'delchezha (OII)</i> <i>K'delcheya (U)</i> <i>K'jida</i>	'rattle'
Fish heart	<i>K'ggalggama (I)</i> <i>K'ggalggamam'a (IIOI)</i> <i>K'ghalggamama (U)</i> <i>K'qaldema (T)</i>	x
Hump on salmon's back	<i>K'eyenghezha (OI)</i>	x
Male sperm sac	<i>Hest'a vekulashga (I)</i>	x
Sperm, milt	<i>K'tl'ech'</i>	x
Nose cartilage	<i>K'ingija, k'engija (IOU)</i> <i>K'ingeja (II)</i>	x

Oily strip of meat in front of dorsal fin of salmon	<i>K'int's'isq'a (U)</i> <i>K'yin tseq'a (I)</i> <i>K'intsiq'a (OI)</i>	'back strip'
Roe, fish eggs	<i>Q'in</i>	x
Roe sac	<i>K'q'in yes</i>	x
scales	<i>K'gguts'a (O)</i> <i>K'ggisga (IU)</i>	x
Fish slime	<i>K'eshtl'a (OII)</i> <i>K'tl'eshch'a (IU)</i>	x
net-making tool, net stringer	<i>tahvil vel k'etl'iyi,</i> <i>tahvil qeytl'ixi</i> <i>tahvil dugula (I)</i>	'with it he weaves net'
net rack	<i>veq' k'etl'iyi</i> <i>veq' nuk'detggeni</i>	'on it he weaves something.' 'on it, it is dried'
net mesh measure	<i>ve» k'etl'iyi</i>	'with it, it is woven'
fishing clothes	<i>va liq'a ch'el'ih</i>	x
awl for stabbing salmon	<i>ts'entsel (U)</i>	
bale of fish	<i>vava hal</i>	'dry fish pack'
cutting board	<i>veq' huts'k'det'esi</i>	x
dipnet, long-handled dipnet	<i>tach'enil'iyi (UO)</i> <i>nch'equyi (LN)</i>	x
short-handled dipnet	<i>tach'enil'i (I)</i>	x
salmon dipnet (longer handle)	<i>shanlaghi tach'nil'iy (I)</i>	'summer run dipnet'
trout dipnet	<i>taztin (I)</i>	x
dipnet frame	<i>taztin duves (I)</i>	x
fish bait (on hook)	<i>k'eneheha (O)</i> <i>k'intneha (I)</i> <i>k'indneha (U)</i> <i>k'egh dghichedi</i> <i>bel ch'k'nulneq'i (O)</i>	x
rabbit or ptarmigan guts used for tomcod bait	<i>k'entleh, k'entleq' (U)</i>	x
natural rock hole fish bin	<i>tsaq'a (I)</i>	x
rock fish bin, fish cutting hole	<i>k'usq'a (NL)</i> <i>k'esq'a (OII)</i> <i>k't'usq'a (U)</i>	'cutting cavity'
fish box	<i>shagela yashiga</i>	x
fish club, seal club	<i>tsik'nigheli (IO)</i>	x
angled fish fence, dipnetting dock	<i>tanat'ini</i>	'woven into water'
fish fermenting hole	<i>chuqilin q'a (O)</i> <i>chaqilin q'a (IU)</i>	x
gaff hook, branch hook, leister	<i>qishehi (IU)</i> <i>k'isheq'i (II)</i> <i>sheh (L)</i> <i>shehi (O)</i>	'hooker'
fish hook	<i>ihshak, iqshak (OI)</i> <i>k'inaq'i, k'eninaq'i (U)</i>	Eskimo origin
Note: eleven separate types of named fish hooks		
fishing hole, fish trap location	<i>k'enq'a (OU)</i> <i>k'inq'a, -k'inq'a'a (I)</i>	x

fish trap location	<i>tach'k'el'unt</i>	'where we set object'
fish jigging hole in ice	<i>tasaq'a</i> <i>tatsiq'a (Il)</i> <i>ges aq'a (L)</i>	'water head hole'
fishing line	<i>shehi tl'ila (O)</i> <i>k'inaq'i tl'ila (U)</i> <i>iqshak tl'ila (I)</i>	'hook line'
fishing pole	<i>iqshak ten (IO)</i> <i>shehi ten (O)</i> <i>k'inaq'i ten, k'inaq'i nikená,</i> <i>k'niten, k'neten (U)</i>	x
fishing reel	<i>shehi tl'ila telcheshi (UO)</i>	
fishnet	<i>tahvil</i>	'underwater snare'
net-like fish drag	<i>nich' nuk'tasdun (SITy)</i>	'in back is hole'
Russian-era fishnet	<i>sétga (O)</i> <i>satga (U)</i>	Russian origin
drift net	<i>te»edi (I)</i>	'one that floats'
gunny sack net	<i>chida yiztl'ini tahvi» (I)</i>	
seine net	<i>vel niqak'idzehi</i> <i>nébod (O)</i>	'with it one scrapes in circle' Russian origin
sinew net	<i>ts'ah tahvil</i>	x
twisted willow bark fiber net	<i>ch'eq' tahvil (IU)</i>	x
small hole, net mesh,	<i>k'eniq' (IO)</i> <i>k'eneq' (OU)</i>	x
net drying rack	<i>tahvil denluh</i>	x
lead line	<i>duyeh vetsik'teh'i</i> <i>duyeh vetsittehi (I)</i>	x
corks, floats	<i>tahvil ts'esa (IO)</i> <i>tahbil jija (U)</i>	x
cork line	<i>vetsik'teh'i</i>	x
fish pew, pike	<i>liq'a el dalyashi (OU)</i> <i>liq'a vel telyayi (I)</i>	x
fish scaler, ulu knife	<i>vashla</i> <i>bel k'elggits'i (U)</i>	'little stone'
fish spreader stick	<i>k'enun'i</i> <i>nuk'ilqeyi</i>	x
hoop fish spreader	<i>dnalch'ehi (I)</i>	x
small fish spreader	<i>t'utseyyi (O)</i>	x
hand-held fish snare with handle	<i>k'entsa quggil (I)</i>	x
spruce root fish snare	<i>qunqelashi quggil (OU)</i>	x
fish stringer	<i>k'e'esh tl'il (OU)</i>	x
willow fish stringer	<i>q'eyk'eda (IU)</i>	'tough willow'
fishtrap, woven basket style trap	<i>taz'in (IO)</i> <i>tay'in (U)</i>	'object that is in water'
Note: Seventeen types of fishtraps for different species and conditions		
fishtrap funnel	<i>k'eshjaya (I)</i>	x
inner basket	<i>k'jaya (OU)</i>	'heart'
angled leads to trap	<i>taztin (I)</i>	'long object that is set'
long stick ribbing on fishtrap	<i>talyagi (IO)</i> <i>talyashi (U)</i>	x
spiral sticks on fishtrap	<i>k'etnalvesi (L)</i>	x

branch drag material put in weir	<i>k't'un dighali (U)</i> <i>k't'un dalghali (I)</i>	x
inner spruce bark reflectors pinned to bottom of weir	<i>tah'iggeyi (U)</i> <i>vejink'ehi (I)</i>	'under water turns white' 'stg. swims over it'
vertical stakes for weir	<i>dik'ali</i>	x
fish wheel	<i>niqak'uquli (I)</i> <i>niqaghetesi (U)</i> <i>naqak'ulqu»i taz'in (O)</i>	'scoop that turns'
lead line	<i>duyeh vetsik'teh'i</i> <i>duyeh vetsittehi (I)</i>	x
net-making tool	<i>tahvil vel k'etl'iyi</i> <i>tahvil dugula (IL)</i>	x
net rack	<i>veq' k'etl'iyi</i> <i>veq' nuk'detggeni</i>	x

III. MODERN CULTURE

A. Interview Synopsis

Table 11 is a synopsis of respondents to the semi-structured interviews. The interview process is described in the Introduction and readers should refer to that section (I.B) and note the questions were not designed to elicit a simple yes/no-type response (nominal data) but rather to elicit a narrative of how the interviewee felt about or understood the topic in order to give a richer and more nuanced understanding of cultural patterns and values. The “Voices of the People” in the following sections are a reflection of those deeper understandings. However, Table 11 has been derived from the interviews in order to give the reader a sense of the overall consensus or variation from consensus of the respondents. To accurately depict cultural practices, we read the interviews and characterized the response as Agree, or Disagree/Neutral for each interview question, generating nominal data. This data includes 53 interviews. Sometimes respondents in a group took up a topic at a later time during the interview in which case we included that response as it applied to a previous question. As discussed in Section I.B. Methodology, not everyone responded to every question. In a small-group setting often one person would respond and others would nod or otherwise express agreement with the speaker. We only recorded the verbal response, not non-verbal indications of concurrence in formulating the data in Table 11. A second reason not every responded to every question concerned the well-being of Elders. If Elders were tiring in the course of the two-hour sessions, or if the session went long, we often skipped questions to shorten the interview time.

The responses represent consensus or near consensus: 694 responses were positive and 18 were negative or neutral. The data indicate Elders and culture bearers reflect indigenous cultural standards that have a very high degree of homogeneity as represented by this set of questions revolving around the importance of salmon and streams in their lives. Responses to interview questions are used in the Modern Culture sections (III) that follow with statements like: “interviewees universally felt...,” “interviewees predominantly stated...,” or “interviewees indicated...”

While everyone who responded indicated that salmon were important in their lives (Question 1), four individuals out of 53 interviewees indicated they thought a subsistence lifestyle was no longer possible (see Section III.B.1 and 2).

Table 11. Nominal Evaluation of Responses to Semi-Structured Interview Questions.

Question	Agree	Disagree or Neutral
<p>1. Are salmon critically important in your lives? Note: often asked: "If the salmon were to disappear for whatever reason, how would it affect your lives?" <i>Agree means people perceive salmon to be critically important in their lives. Disagree means salmon are not perceived to be critically important.</i></p>	40	0
<p>2. How many times in a week or a month do you eat salmon or other fish? Is it different during different seasons? <i>Agree means three or more times a week or "all the time." Disagree is less than three times a week or "seldom."</i></p>	35	0
<p>3. Do people in your village need to eat salmon to be healthy? How does salmon maintain or improve physical or emotional health? <i>Agree means people perceive they need salmon and other wild foods to be healthy. Disagree means they do not perceive salmon to be necessary for health and wellbeing.</i></p>	37	0
<p>4. Which foods are important to give to a child so that he or she will grow up to be smart or strong? <i>Agree means salmon and other wild foods are perceived to be necessary for children's health. Disagree means salmon and wild foods are not necessary and children can eat commercially purchased food and be healthy.</i></p>	30	2
<p>5. Does it matter to you if the salmon you eat is wild salmon? Does it matter to you if the salmon comes from the streams and rivers in your area? <i>Agree means people perceive that the salmon they harvest and consume must be wild salmon from local streams. Disagree means it doesn't matter where the salmon comes from.</i></p>	40	1
<p>6. Does it matter to you that the salmon are connected to the salmon your ancestors ate? <i>Agree means salmon genetically connected to fish their ancestor's ate is perceived to be important. Disagree means there it is not important that the salmon are genetically connected to ancestral harvests.</i></p>	27	0
<p>7. If the fishing practices and care for the streams and rivers are good (what the ancestors call, 'without' impurity, Dena'ina <i>beggesh quistlagh</i>), does it result in salmon coming back? <i>Agree means proper practices are perceived to result in the salmon's return. Disagree means practices have no effect on the salmon's return.</i></p>	37	0
<p>8. Have you observed changes in the numbers of salmon that come back each year? Is there a big difference some years? If there is, what do you think causes these differences?</p>	31	0

<i>Agree means people have observed changes in the number of returning salmon. Disagree means people have not observed changes in number of returning salmon.</i>		
9. Are salmon important for the lives of other animals or birds that are important to the Yup'ik or Dena'ina ? What would happen to these animals or birds if they can't eat the salmon? <i>Agree means salmon are important to other animals. Disagree means salmon are unimportant to other animals.</i>	35	0
10. Who do you share food with? Perhaps relatives in Anchorage or Dillingham? Elders? Who decides how to share the salmon, and who to give salmon to? <i>Agree means wild food is shared with family and/or friends living outside of the area. Disagree means wild food is not shared outside the area.</i>	31	1
11. Do you share salmon with people who don't do subsistence and what type of things to you get in return? <i>Agree means salmon are shared with people who don't do subsistence. Disagree means salmon are not shared with people who don't do subsistence.</i>	14	0
12. What does it mean for families to go fishing together? Do young people learn a lot at fish camp? How do you teach the young people to catch salmon? Do you teach young people to respect the salmon? <i>Agree means it is important for families to fish together. Disagree means it is not important for families to fish together.</i>	41	0
13. How do you feel when you give salmon? How do you feel when you are given salmon? <i>Agree means people feel good when they give or receive salmon. Disagree means people have no particular emotion when they give or receive salmon.</i>	33	0
14. Do you feel an obligation to return the favor when someone gives you salmon? <i>Agree means people feel no obligation to return the favor of a salmon gift. Disagree means people feel an obligation to return the favor of a salmon gift.</i>	5	0
15. Are salmon and other wild foods eaten in community celebrations? Is this important? <i>Agree means it is important to include salmon and wild foods in community celebrations. Disagree means it is not important that salmon and wild foods are included in community celebrations.</i>	27	1
16. It has been said that most Yup'ik/Dena'ina believe that a wealthy person is one with a large family. Do you think that family is more important than material wealth? <i>Agree means the person believes family is more important than material wealth. Disagree means material wealth is more important than family.</i>	36	1
17. Do you do anything to make sure the salmon will return? <i>Agree means people do specific practices or rituals to assure the</i>	37	2

<i>salmon return. Disagree means people do not do any specific practices or rituals to assure the salmon return.</i>		
18. What would it mean to treat salmon badly? Why is this bad? <i>Agree means there are specific things that are identified as bad practices with disagree consequences. Disagree means there are no specific things identified as bad practices with disagree consequences.</i>	9	3
19. Did the old people tell of a time when there would be a disaster and the fish would disappear? <i>Agree means people heard elders tell prophetic stories of the disappearance of salmon. Disagree means people never heard Elders tell prophetic stories of the disappearance of salmon.</i>	15	2
20. Do you ever thank the salmon for offering itself to you? Do you ever pray when you catch salmon? Do you make an offering when you catch the first salmon? <i>Agree means individuals give thanks through a prayer and give an offering when the first salmon is caught. Disagree means no prayer, offering or other recognition is given with the first salmon catch.</i>	37	0
21. Do you ever hear the Elders talk about the salmon having a spirit? <i>Agree means people perceive salmon to have a willful spirit. Disagree means people do not perceive salmon to have a willful spirit.</i>	19	3
22. Did you ever hear Elders talk about a stream having a spirit or being like it was alive? Do some people still think that way? <i>Agree means people perceive of a stream as having a spirit and being alive. Disagree means people do not perceive of a stream as having a spirit and being alive.</i>	7	0
23. Do rivers or streams have events – or stories - associated with them that are good or bad? Is it appropriate to tell any of them now? <i>Agree means there are stories associated with streams that have a moral implication. Disagree means there are no stories associated with streams that have a moral implication.</i>	8	0
24. How do people get money to buy boats and motors for subsistence fishing? <i>Agree means people commercially fish in Bristol Bay or engage in other part time employment. Disagree means people do not engage in Bristol Bay commercial fishery or other part-time employment.</i>	16	0
25. Do you feel a connection between the way you fish today and the ancestors' way of fishing? <i>Agree means people feel an emotional connection between subsistence fishing today and the subsistence fishing of their ancestors. Disagree means people feel no such connection.</i>	8	0
26. Why do you live in your village? <i>Agree means people desired to live in their village and felt an emotional attachment to their lifestyle. Disagree means people</i>	39	2

<i>were ambivalent or disliked living in their village or felt they had no future there.</i>		
27. Is there anything else you'd like to say? Is there any message you'd like to convey to Washington D.C./EPA (Environmental Protection Agency)	N.A.	N.A.
Total	694	18

B. Subsistence

1. Voices of the People

It's free, it's free and peaceful here, and we can get fish... F-27, 8/17/11

It may be different, the way we gather it nowadays, but it's the same end product. It's the same.

F-69, 9/18/11

If you get out in these outlying villages, about 80-90% of what they eat is what they gather from their front yards. I was in Igiugig this spring. A can of SPAM... Do you know how much a can of SPAM is in Igiugig? Eight dollars for a can of SPAM! ...There are fewer jobs, so subsistence is one of the main cultures and the driving force of the economy within a community. M-60, 9/16/11

Our fish is more important for them. I tell my kids and grandkids with fish they are very rich; without fish you are hungry. This is the important thing all over in Alaska for us. It is very hard out here in the bush. We have to pay double for every food we get, double to get our heating fuel, double for gas, and without gas, we cannot travel. It is very hard in a rural area. In a big city it is easy; you just grab everything from the store, department store. Out here we don't have grocery stores; our grocery store is very expensive. They give us prices that, if you buy one item, you pay for four. So it is very hard for us, but we grow our kids, and you ask us if it is important for us to have fish. We have to have fish every day because the fish is most important. F-48, 8/20/11

For two families we put up in jars 32 cases [of salmon]....that doesn't include frozen stuff. M-60, 9/16/11

We get them [smelt] until freeze-up here. Then, when the river freezes up, people go up and fish through the ice for them with hooks. They seine them up in the lake, too, but you have to catch them at the right time. M-62, 9/16/11

When that first salmon is caught, it is in the news. KDLG [Dillingham radio station]. Everybody knows about it. M-61, 9/16/11

And he still, to this day, goes to fish camp. He gets all excited about fish camp. He's down there getting his net ready, and he still, at 89 years old, still go out and sets his own net, picks his own net, and work on his own fish, because he knows, and he always tells us how important it is to save our fish and salmon for the winter months. F-32, 8/18/11

We would starve if we don't have fish or salmon. In this area we have lived with fish all our lives, from generation to generation. The people that stayed before us and kids that are behind us

will be living on fish. Salmon is very important; all kind of... Without fish we are very poor; we have no food to eat. With fish we are very rich; our stomach is full. That's the way I look at it. F-48, 8/20/11

Salmon is one thing. They make you feel rich because you have something to eat all winter. Smoked salmon, sun-dried spawned-out fish; all of those make you feel good, because you grew up with it, it is in your body. Any subsistence food; what you eat, like him and I [gestures]; we ate it for a long time. M-53, 8/20/11

Salmon is very important to us. I don't think we could live without fish.... I'm seventy-six years old, and I have never been without fish, since I was small. I don't know how I would feel without it. I think I used fish more than meat when I was growing up, because my Grandma raised me, and that's all she could get, was fish, because it's easier to get. She used to help people put up fish for us to have her share in the wintertime. Then she would put up salt fish for us to have in the winter, so we use it year round. F-27, 8/17/11

Minority View Subsistence

We couldn't live like our parents lived, because it doesn't exist anymore. I mean, we could fish and catch fish and stuff like that. You know, nowadays, you can't live on fish like you used to. You can't even get meat like you used to; you can't even go out hunting for moose or caribou. Nothing is here anymore; everything is disappearing. I know, you know [name] could verify too. There used to be so much caribou, we would see them all over the road, all over the lake, everything. F-44, 8/19/11

Like she was saying right now, even with subsistence, we can't live on that. We have to have money to pay for our bills, telephone, our lights, our heat and trash, our toys, water, and sewer. You have to pay so much a month for that. I myself will support any kind of entity that comes and bills for jobs. I don't think subsistence; we love subsistence, but I don't think it is going to last forever.... We need money to pay our bills. That is why a lot of people are moving to Anchorage. M-44, 8/19/11

We can't just go out there and get money from nowhere. You know, subsistence is gone in this village [Newhalen] and in Iliamna. Subsistence, we can't live on subsistence anymore. We have car payments to pay, we have Honda payments to pay, and we have our snowmobile payments to pay. How on subsistence; how are you going to pay all of those bills? Some pay \$500 a month for car payments. How are you going to pay \$500 a month on subsistence? You can't do that anymore; you have to live to make money nowadays for those young kids. M-49, 8/20/11



Figure 14. Newhalen. August 20, 2011. Photo by Alan Boraas

2. Introduction

In 1983 the Inuit circumpolar Conference and the World Council of Indigenous Peoples sponsored the Alaska Native Review Commission to conduct hearings in rural Alaska aimed, in part, to help the non-Native community understand the importance of subsistence to Alaskan Natives. In the commission's final report, Thomas Berger (1983:51) summarized rural subsistence as follows:

The traditional economy is based on subsistence activities that require special skills and a complex understanding of the local environment that enables the people to live directly from the land. It also involves cultural values and attitudes: mutual respect, sharing, resourcefulness, and an understanding that is both conscious and mystical of the intricate interrelationships that link humans, animals, and the environment. To this array of activities and deeply embedded values, we attach the word "subsistence," recognizing that no one word can adequately encompass all these related concepts.

In southwest Alaska subsistence is a fundamental non-monetized economic activity of the region and forms the basis of cultural life. Though the economy involves both cash and subsistence sectors, most of the protein comes from subsistence activity as indicated in the ADF&G Division of Subsistence data reproduced below. Moreover, cultural and personal identity largely revolves around subsistence. Echoing Berger's description cited above, this concept is expressed in a 1988 film by Brink and Brink where Dena'ina leader Fred Bismark highlighted the importance of subsistence when he said, "If they take subsistence away from us, they're taking our life away from us." Two decades later that remains true; Fall et al.(2009:2) wrote of the Nushagak and Kvichak drainages, "At the beginning of the 21st century, subsistence activities and values remain a cornerstone of area residents' way of life, a link to the traditions of

the past, and one of their bases for survival and prosperity.” Berger’s summary, Bismark’s statement and Fall’s analysis as well as interview generated “Voices of the People” at the beginning of this section illustrate the idea that subsistence is “life” and the foundation of culture for the Nushagak and Kvichak watershed villages. Everyone who responded to Question 1, Table 11 felt the loss of salmon would impact them negatively and subsistence based on salmon and other wild foods is the cultural foundation for the region. Four of the 53 interviewees felt subsistence was no longer tenable.

Subsistence is not a return to practices of earlier centuries but employs modern technology. Nylon nets have replaced spruce-root or sinew nets; aluminum skiffs and four-stroke motors have replaced kayaks or canoes; metal pots have replaced birch-bark or willow baskets; modern clothing has replaced sewn hides and skins; and freezers have replaced underground cold storage pits. Moreover, subsistence activities follow management practices formulated by the ADF&G, dictating bag limits and seasons. However, the results of these interviews and ADF&G research cited below confirm that the diet is still largely based on wild foods caught and processed by the people who live in the area. Values, such as respecting the salmon and not taking more than you need, among others, are still honored; and the identity of the people is shaped by the subsistence process, just as it was in the past.

As described in the Pre-Contact and History sections (II A & B.), indigenous people in the study area have been harvesting wild resources for at least 12,000 years and have intensively caught salmon for at least 4,000 years. This immense time depth has shaped all aspects of the culture, including social structure, political structure, and religion. Because Dena’ina and Yup’ik are the dominant populations in the study area, and because healthy wild salmon stocks and many other components of their traditional way of life still persist such as language, sharing wild foods and sharing beliefs related to nature, the area has a cultural continuum with the past that is rare in North America. In few places in the world do the same wild foods as their ancestors ate dominate the diet and shape the culture as they do today in the Nushagak and Kvichak watersheds

3. Subsistence in Alaska

The importance of salmon and other wild food resources in the study area is tied to federal and state subsistence legislation. No other state in the United States so broadly grants a subsistence priority to wild foods to indigenous people’s as does Alaska. Both federal and state subsistence legislation apply to Alaska but they differ, and have resulted in two sets of regulations because of an inherent conflict between federal and state legislation over indigenous rights vs. inherent rights.

Federal subsistence legislation began with the 1971 Alaska Native Claims Settlement Act (ANCSA, Public Law 92-203 with amendments), which extinguished aboriginal hunting and fishing rights and, in return, charged the Secretary of Interior and State of Alaska to “take any action necessary to protect the subsistence needs of Natives” (La Vine 2010:30-34). The federal subsistence intent of the 1971 ANCSA legislation was clarified in Title VIII of the 1980 Alaska National Interest Lands Conservation Act, (ANILCA, Public Law 96-487 with amendments). ANILCA recognized the cultural aspect of indigenous subsistence stating: "the opportunity for subsistence uses by rural residents of Alaska...is essential to Native physical, economic,

traditional, *and cultural* existence and to non-Native physical, economic, traditional, and social existence (emphasis added)" (La Vine 2010:32). The language describing the importance of subsistence to Alaska Native and non-Native rural communities is the same with the only difference that "cultural" importance is included in Alaska Native subsistence users' list of essential rights while that term is not included in the non-Native list of essential rights. That language became the basis for federally recognized indigenous subsistence rights.

Federal ANCSA and ANILCA legislation set up a legal conflict between indigenous rights and state law. The "Inherent Rights" clause in Article 1, Section 1 of the Alaska Constitution specifies equal treatment under the law for all Alaskans and makes no provision for indigenous rights. Consequently, subsistence became an important political issue in the early 1970s and remains so today (cf. AFN Federal Priorities, 2011, pp. 1-9).

The State has developed subsistence legislation within the context of the "Inherent Rights" clause cited above. As depicted in the 1988 documentary *Tubughna: The Beach People* by Brink and Brink, in 1973 Governor William Eagan made a promise to Alaska Native people. Speaking at a meeting in Anchorage, Governor Eagan said:

Let me assure you that the state's commitment to preserving subsistence capability in our fish and game resources is of the first priority and will continue to be. Continuing attention to the Native for maintaining subsistence capability is an integral part of the state's overall fish and game management program. It always has been, is now, and will be so in the future (Brink and Brink 1988).

That promise was partially realized as law in the 1978 *State of Alaska Subsistence Act*, (with amendments; encoded within AS 16-05) which provided for a Division of Subsistence within the ADF&G and defined subsistence as "customary and traditional use." The act also specified a subsistence priority in wild resource allocation over commercial or sport caught resources. The act did not limit subsistence to rural (largely Alaska Native) residents and did not recognize indigenous rights; to do so would have been unconstitutional in state law. The act also directed establishment of a Division of Subsistence within the Alaska Department of Fish and Game to "quantify the amount, nutritional value, and extent of dependence on food acquired through subsistence hunting and fishing" (AS 16-05.094) and has resulted in three decades of the most detailed subsistence data collected anywhere in the world, some of which is used in this report.

As a result of over forty years of legislation and adjudication revolving around the "Inherent Rights" issue among stakeholders, a dual management system has emerged. As summarized by La Vine (2010:34) the state now manages fish and game for subsistence purposes on state and private land including regional and village corporation land, while the federal government, through the U.S. Fish and Wildlife Service or cooperative agencies, manages fish and game in federally designated subsistence areas as determined by criteria applied and regularly reviewed by the Federal Subsistence Board. On state lands all citizens are eligible to harvest fish and game for subsistence purposes but are bound by the customary and traditional use criteria. On rural federal lands only rural residents are eligible to practice subsistence. On non-rural lands subsistence is prohibited. Alaska Natives and non-Natives of the communities of the Kvichak and Nushagak drainage fit both the "customary and traditional" and "rural" criteria and have engaged in subsistence fishing and hunting throughout this time period and will

continue to do so as long as they remain rural. Significant population increases constituting a shift from rural to urban would potentially change subsistence access as has happened, for example, on the Kenai Peninsula where the Dena'ina do not have full subsistence rights because the area is largely determined to be urban.

4. Scope of Subsistence

Table 12 is an indication of the importance of subsistence activities and salmon to the people of the Nushagak and Kvichak River systems⁷. Essentially everyone in every village and town (98% or more of the households) uses wild food subsistence resources, and most (88% to 100% of households) use salmon.

Table 12. Use and Reciprocity of Subsistence Resources. Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005

Community	Year	All Wild Resources; % Households that:			Salmon % Households that:		
		Used	Gave	Received	Used	Gave	Received
Aleknagik	2008	100	84.4	96.9	100	59.4	59.4
Dillingham	1984	98	62.7	88.2	88.2	34.6	43.8
Ekwok	1987	100	86.2	82.8	89.7	48.3	51.7
Igiugig	2005	100	100	100	100	83.3	83.3
Iliamna	2004	100	53.8	76.9	100	30.8	38.5
Kokhanok	2005	100	82.9	94.3	97.1	62.9	60
Koliganek	2005	100	92.9	89.3	100	60.7	53.6
Levelock	2005	100	85.7	92.9	92.9	35.7	78.6
Newhalen	2004	100	80	96	100	64	32
New Stuyahok	2005	100	73.5	98	89.8	55.1	63.3
Nondalton	2004	100	92.1	97.4	92.1	55.3	63.2
Pedro Bay	2004	100	88.9	100	100	72.2	77.8
Port Alsworth	2004	100	72.7	90.9	100	45.5	54.5

⁷ ADF&G subsistence data in Section III.B. was assembled by Dave Athons, ADF&G (retired).

The data of Table 12 also indicates reciprocal sharing of wild foods is a fundamental aspect of subsistence culture in the study area. In most villages almost 100% use wild food resources and more than 80% of households receive shared subsistence food resources of some kind. Sharing of salmon is lower than for all resources probably because, typically, extended family units work together at subsistence fish camps (Fall et al. 2010) and the fish they collectively harvest is not considered to be “shared” as much as “earned” among contributing extended family members. Further research by ADF&G or a similar entity could clarify the matter. Sharing is further discussed in Social Relations section (III. E.3).

Table 13. Per-Capita Harvest of Subsistence Resources. Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005.

Community	Year	Total Harvest Pounds	Estimated Per-Capita Harvest in Pounds						
			All Resources	Salmon	Non-salmon Fish	Land Mammals	Marine Mammals	Freshwater Seals	Beluga
Aleknagik	2008	51,738	296	143.4	25.6	66.1	9.5	0	4.8
Dillingham	1984	494,486	242	141.4	17.5	65.9	2.97	1.7	0
Ekwok	1987	85,260	797	456.2	68.6	249.2	0	0	0
Igiugig	2005	22,310	542	205.2	59.4	207.8	29.2	7.4	21.9
Iliamna	2004	34,160	469	370.1	34.1	32.7	6.5	6.5	0
Kokhanok	2005	107,645	680	512.8	36.3	95.9	1.7	1.7	0
Koliganek	2005	134,779	899	564.7	90.4	186.2	0	0	0
Levelock	2005	17,871	527	151.8	39.9	257.4	37.7	4.5	33.2
Newhalen	2004	86,607	692	502.2	31.8	104.5	4.4	4.4	0
New Stuyahok	2005	163,927	389	188.3	28.0	143.4	0	0	0
Nondalton	2004	58,686	358	219.4	33.9	81.8	0	0	0
Pedro Bay	2004	21,026	306	250.3	15.3	30	0	0	0
Port Alsworth	2004	14,489	133	89.0	12.0	24.7	0	0	0

Table 13 presents the range of some of the important subsistence resources used in the region and their relative importance to each village on a per-capita basis. This data does not include vegetation foods, birds/eggs, and marine invertebrates which are seasonally important,

nor does it include salmon retained from commercial fishing. While all subsistence foods are important— particularly for the physical and emotional benefits derived from a varied diet— salmon is, by far, the most important subsistence food ranging up to 82% of the subsistence diet. Land mammals, including moose and caribou among other species, are the second most important form of subsistence food for most villages. Many villagers but particularly Iliamna, Newhalen and Nondalton interviewees indicated that in recent years they are experiencing reduced subsistence returns of caribou. They feel the Mulchatna herd is declining or moving out, possibly due to overhunting from guided trips, fly-in hunters from Anchorage or Kenai, or seismic blasting and helicopter traffic from mining exploration.

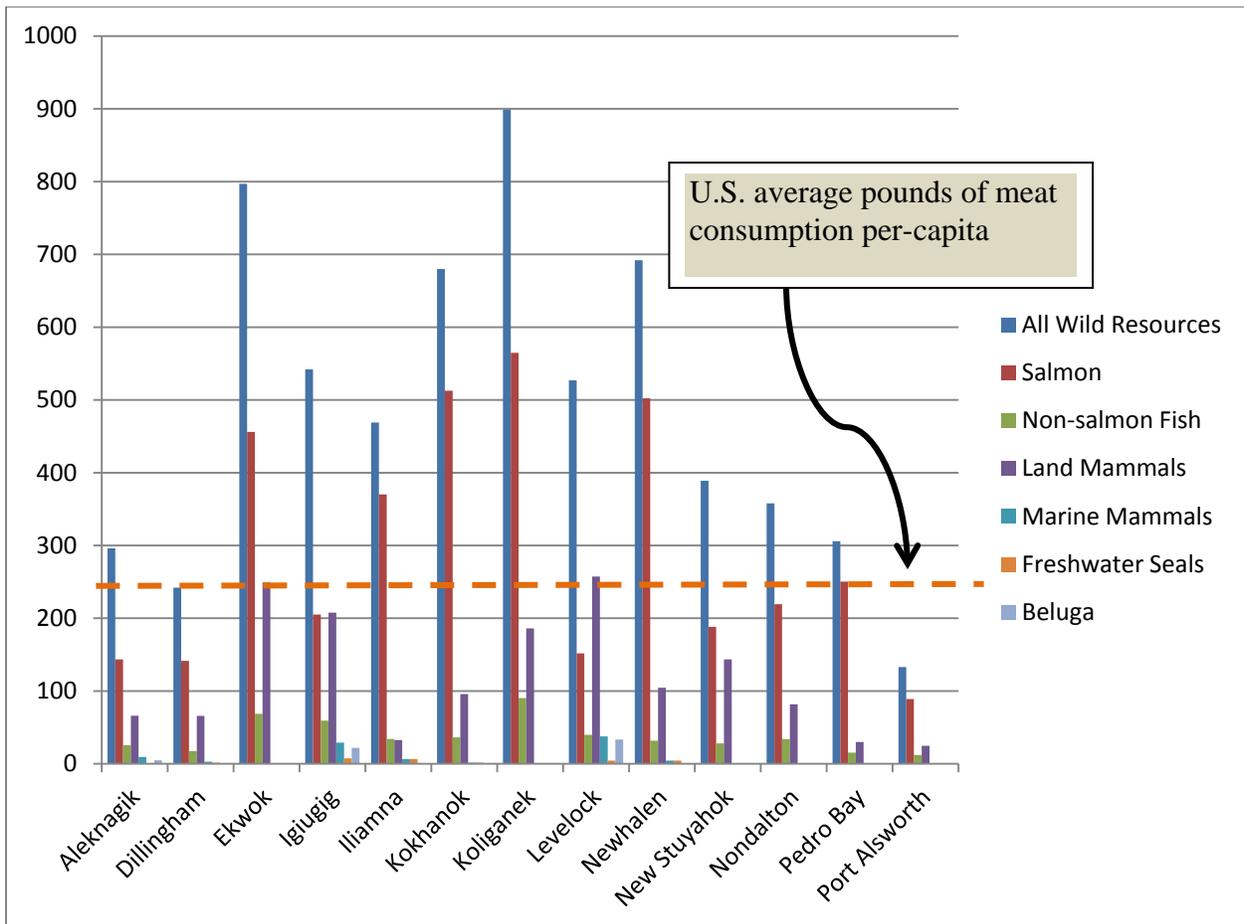


Figure 15. Per Capita Wild food harvest in pounds and selected meat sources. From Table 13 compared to U.S. Average Per Capita Meat Consumption. Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005, U.S.D.A Factbook.

Non-salmon fish (northern pike, Dolly Varden/char, various whitefish, trout, etc.) constitute a third important type of subsistence resource. Subsistence use of marine mammals includes beluga whales, which regularly move up the Kvichak River, and freshwater harbor

seals, a unique freshwater population that lives year-round in Iliamna Lake. These are significant subsistence resources for the Kvichak River villages of Igiugig and Levelock.

The data indicates as much as 899 pounds of dressed meat is harvested per-capita (Koliganek) and an average of 503 pounds of meat per-capita is harvested per village. According to the U.S. Department of Agriculture's "Agriculture Factbook," in 2000 Americans consumed an average of 277 pounds of meat per year per-capita (USDA Factbook). The difference, of course, is the subsistence data presented here is pounds per-capita harvested, not pounds per-capita consumed. A substantial amount of subsistence-harvested food is shared which partially accounts for such high numbers of per-capita harvest. The numbers are high, however, because the people eat a lot of wild food and subsistence foods are the staple of the culture.

Table 14. Per-Capita Harvest of Salmon Resources. Data from Data from Holen et al. 2012, Fall et al. 2009, Krieg et al. 2009, Fall et al. 2005

Community	Year	Total Harvest, Pounds	Per-Capita Subsistence Harvest in Pounds				
			All Wild Resources	All Salmon	King (Chinook)	Red (Sockeye)	Non-Salmon
Aleknagik	2008	51,738	296.0	143.4	72.3	40.3	25.6
Dillingham	1984	494,486	242.2	141.4	52.8	38.5	17.5
Ekwok	1987	85,260	796.6	456.2	178.2	160.3	68.6
Igiugig	2005	22,310	542	205.2	5.4	168.0	59.4
Iliamna	2004	34,160	469.4	370.1	0	369.8	34.1
Kokhanok	2005	107,645	679.6	512.8	3.2	480.4	36.3
Koliganek	2005	134,779	898.5	564.7	193.9	192.5	90.4
Levelock	2005	17,871	526.7	151.8	43.1	85.9	39.9
Newhalen	2004	86,607	691.5	502.2	10.1	487.6	31.8
New Stuyahok	2005	163,927	389.2	188.3	112.6	36.3	28.0
Nondalton	2004	58,686	357.7	219.4	0.4	218.9	33.9
Pedro Bay	2004	21,026	305.5	250.3	0	250.2	15.3
Port Alsworth	2004	14,489	132.8	89.0	0.7	87.6	12.0

Table 14 breaks down the subsistence harvest of salmon by species. King or Chinook salmon spawn in the Nushagak River but not normally in the Kvichak River and consequently are not harvested in the Newhalen River system. Today, interviewees report most king salmon are fished in camps on the Nushagak River located at Lewis Point (*Nunaurluq*) near the mouth of the river. Salmon are also taken near the villages (see Section II.B.3). Sockeye, or red, salmon constitute the most important subsistence salmon species in the villages of the Kvichak and

Newhalen River drainages and are also taken in significant numbers in the Nushagak River drainage.

5. The Seasonal Subsistence Round

As illustrated in Figure 5, the villages in the Nushagak and Kvichak River drainages have a seasonal subsistence round that involves harvesting wild resources at an optimal time throughout the year. Evanoff (2010:66) and Fall et al. (2010) have described the seasonal round for the Kvichak drainage Dena'ina and it is summarized as follows. In the spring, with the return of ducks, geese, and other waterfowl, small groups travel to hunting or egg gathering areas. In addition, villagers also gather early spring plants, such as fiddlehead ferns. In late May and early June, villagers begin harvesting salmon returning to spawn. Some families net salmon near their villages while others travel to fish camp. Subsistence salmon activities occur throughout the summer although many also engage in commercial fishing in Bristol Bay, depleting the fish camp personnel but providing cash to support subsistence activities. Late summer and fall subsistence activities involve berry and plant gathering. In late fall or early winter villagers engage in caribou and/or moose hunting depending on the ADF&G-determined hunting seasons for the specific area. Winter subsistence activities revolve around ice fishing for whitefish and other freshwater species, ptarmigan hunting, wood harvesting to supplement home heating and for steam baths, and trapping of furbearers.

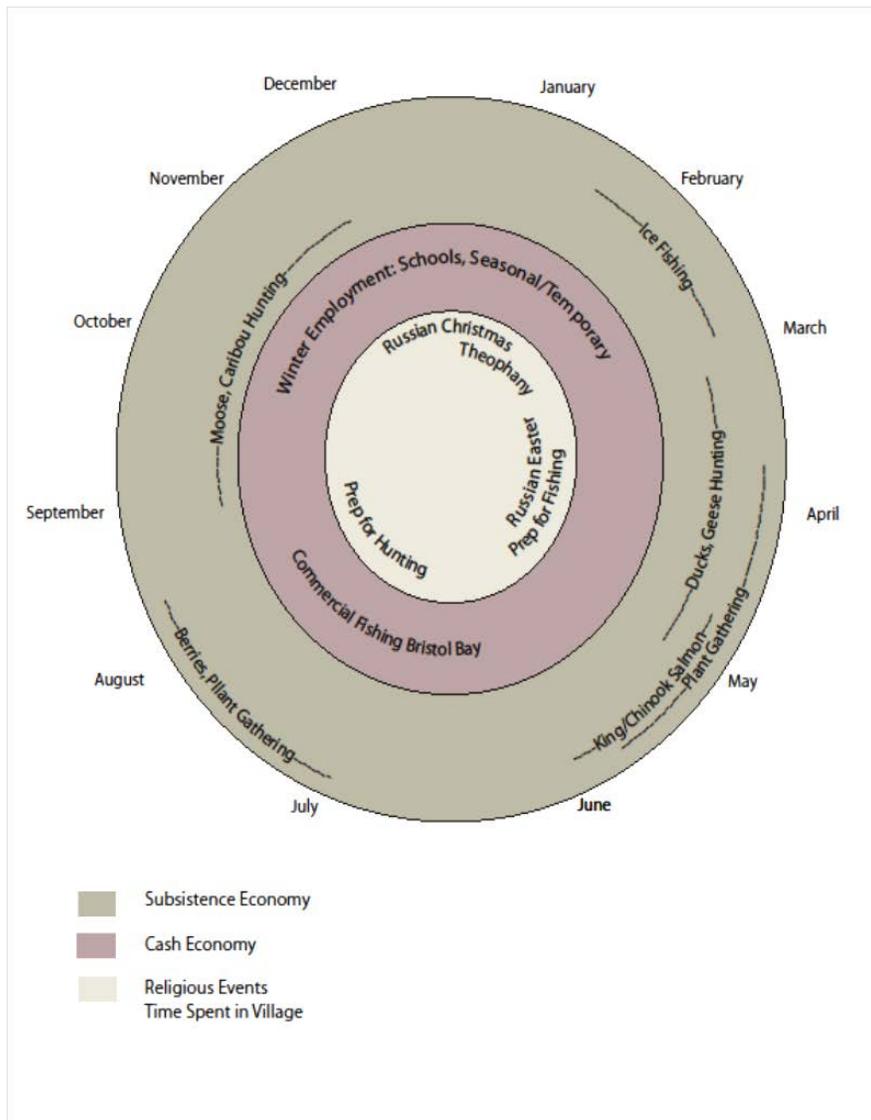


Figure 16. Significant Aspects of the Subsistence Seasonal Round.
Modified from Evanoff (2010:66).

6. The Interplay of Subsistence and Wage Income

Berger noted that subsistence is an interplay of the time, effort, and skill needed to catch, process, and store subsistence foods and part-time wage employment necessary to support the means of subsistence: boats, motors, fuel etc. (Berger 1985: 58) Moreover, Berger (1985:58) notes, “Most villagers do not distinguish conceptually between subsistence and cash elements of the same activity.” Today, interviewees reiterate this finding and indicate that, for those fully engaged in it, subsistence is a full-time job, but it is necessary to supplement subsistence with cash from part-time wage labor or commercial fishing, to defray the costs of subsistence activities. With gasoline costs presently in the \$6 per gallon range (summer 2011), trips to fish camps and other subsistence areas are expensive. Guns, ammunition, fishing gear, and modern

winter clothing, among other expenses, also add to the subsistence investment. While conducting village interviews, researchers observed that besides having a skiff and motor powerful enough to navigate rivers like the Nushagak, Mulchatna, Newhalen, and Kvichak, most families must also rely on one or more all-terrain vehicles (ATVs) and snowmachines for subsistence, all of which require considerable initial investment and maintenance costs. Rather than being recreational vehicles, these means of transport have become necessary for the longer travel distances required for modern subsistence. During the nineteenth century, dog teams, canoes, kayaks, and foot power via snowshoes or hiking were the primary means of transportation, and people, by necessity, lived in small villages located close to subsistence resources. In contrast, the twentieth-century establishment of trading posts/stores, schools, churches, and health services led to residents consolidating in fewer, larger villages. For example, today, there are only three interior villages on the Nushagak River whereas, in the mid- to late nineteenth century, there were eight (VanStone, 1967:114-115). The result of the consolidation is that village residents must now travel farther to obtain subsistence resources, requiring mechanized transportation to do so, and there is overlap among the range of village subsistence activities.

Interviewees indicate that to deal with these costs, many families report holding commercial fishing permits and fish the sockeye run in Bristol Bay during late June and into mid-July or engage in other forms of part time employment. Besides providing needed cash, these forms of employment, with their short duration and/or seasonal nature, are ideally suited to provide another ingredient critical to a subsistence lifestyle, time to engage in subsistence activities. Thomas Lonner indicates that in Bristol Bay villages cash is obtained from wage employment such as working in the commercial fishery (also corporate dividends from membership in Alaska Native Corporations and social welfare payments) and states “wage employment is intended to underwrite subsistence equipment; the time, energy, and opportunity cost in wage employment may be seen as an investment in subsistence” (Lonner cited in Lowe 2007:40). Table 15 is the number of 2010 Bristol Bay Fishing permit holders and crew member licenses for the study area villages reflecting the major source of cash to support subsistence activity.

Table 15. Commercial Fishing Permit Holders and Crew Licenses

	Commercial Permit Holders, 2010	Commercial Crew Member Licenses, 2010	Subsistence Permits, 2007
Aleknagik	n.d.	n.d.	n.d.
Dillingham	227	272	n.d.
Ekwok	3	5	n.d.
Igiugig	4	4	6
Iliamna	15	26	54*
Kokhanok	9	19	29
Koliganek	18	25	n.d.
Levelock	6	10	1
Newhalen	11	1	n.d.
New Stuyahok	24	43	n.d.
Nondalton	6	6	29
Pedro Bay	3	0	19
Port Alsworth	2	4	30
2010 Data from ADF&G Commercial Fisheries Entry Commission. http://www.adfg.alaska.gov/index.cfm?adfg=fishingcommercial.main 2007 Data from Fall et al. , 2009, page 19 http://www.adfg.alaska.gov/specialpubs/SP2_SP2009-007.pdf * Combined data for Iliamna and Newhalen			



Figure 17. Subsistence Skiffs, Nushagak River, New Stuyahok. May, 2011. Photo by Alan Boraas

7. Subsistence as an Economic Sector

Labor statistics do not identify subsistence as an employment category because it is not based on wage-labor or a salary and, hence, people engaged in subsistence are considered “unemployed.” However, those who choose the subsistence lifestyle work long hours, utilizing considerable skill to provide food for themselves and their families and in interviews described subsistence as a full-time occupation.

The unemployment rate in the study area for 2012 ranges from 14% in Igiugig to 37% in Newhalen (computed from Alaska Division of Regional Affairs Community Database of actual number unemployed per village <http://www.dced.state.ak.us/cra/DCRAExternal/community>). This compares to the 2012 Alaska unemployment rate of 6.9% (computed from Alaska State Department of Labor and Workforce Development (<http://live.laborstats.alaska.gov/labforce/labdata.cfm?s=2&a=1>) and the United States 2012 unemployment rate of 8.1% (United States Bureau of Labor Statistics <http://data.bls.gov/timeseries/LNU04000000>).

The unemployment rate includes only people actively seeking wage-based employment and does not include villagers for whom subsistence is their non-wage employment. The percentage of working-age population “not in labor force” (http://www.bls.gov/cps/cps_htgm.htm#nilf) are high for the villages in the study area and may reflect that fact that subsistence is not a recognized category of employment. Table 16 presents data for the 2010 census of those “not in the labor force” for study area villages compared to Anchorage (28.4 percent is the Alaskan average). Most villages, with the exception of Dillingham and Pedro Bay, had substantially higher percentages of individuals “not in the labor force.” It is extremely likely, given the high amount of wild foods that are harvested, that many are not individuals who have given up looking for work, but who work at subsistence and consider themselves “employed” in the sense of providing for themselves and their families. In Alaska commercial fishing is an employment category though for many it is part-time so those who engage in the Bristol Bay commercial fishery do not show up as “not in labor force.”

Table 16. Percent Not in the Labor Force, 2010.

	2010 U.S. Census	Percent Not in Labor Force
Anchorage	216,404	26.5
Aleknagik	221	38.5
Dillingham	2378	27.6
Ekwok	115	44.4
Igiugig	50	nd
Iliamna	109	48.5
Kokhanok	170	nd
Koliganek	209	nd
Levelock	163	53.4
Newhalen	190	nd
New Stuyahok	510	46.1
Nondalton	164	50.0
Pedro Bay	42	20.6
Port Alsworth	159	35.4
From http://zipatlas.com/us/ak/city-comparison/percentage-not-in-labor-force.htm		

Based on 2010 U.S. Census Data, 4.0% (Port Alsworth) to 44.5% (Nondalton) of the residents in the study area communities have wage incomes below the poverty level. The weighted average for all communities (excluding Pedro Bay) is 17.1%. These rates compare to a 9.1% rate for Alaska and a 15.1% for the U.S. (DeNavas-Walt et al. 2011:14). These numbers are high but do not reflect the role of wages in a subsistence economy: wage income which for many is not considered the primary source of sustenance but functions to support non-wage subsistence activities. Neither do the statistics consider the non-monetized value of subsistence foods to the economies of the villages.

Subsistence is dictated by the seasons, is time-consuming and must be understood differently from recreational fishing or hunting. It is not critical if a recreational fisher or hunter misses a season due to work obligations or other demands, but, for many Bristol Bay village residents, subsistence is one's work obligation and employment in the cash economy impinges on the time that is necessary to obtain and process food for a family for a year.

Thornton (1998) writing in the on-line edition of *Cultural Survival Quarterly*, considered Alaska subsistence to be the leading employment sector of rural Alaska because of the number of people engaged in subsistence and the economic benefits derived from harvesting one's own food. Several attempts have been made to measure subsistence economically by monetizing wild food resources. Fall et al. (2009:3) measured the economic importance of subsistence by calculating the cost of replacing wild foods obtained from hunting, fishing, and gathering with

similar foods obtained in a market. Their published data indicates the average annual per-capita harvest of wild foods in the villages of the Nushagak and Kvichak River drainages is 304 pounds of salmon, 123 pounds of land mammals (mostly moose and caribou), 39 pounds of other fish, 23 pounds of plants and fungi (mostly berries), 9 pounds of marine mammals (freshwater seals and beluga whales), 8 pounds of birds and eggs, and one pound of marine invertebrates (mostly clams). To supplement their subsistence harvest, households in the Nushagak and Kvichak River drainages spend 15 to 26% of their annual cash income on store-bought food (Fall et al., 2009:3). In the ten villages for which there is recent data (i.e., excluding Dillingham and Ekwok), the annual per-capita cost of purchasing food ranged from \$1,467 to \$2,622. At 2004 prices (when the initial analysis was done), the annual replacement cost for the average subsistence harvest described above would be an additional \$7,000 per capita, which would increase the demands on the annual cash income an average of nearly 80% ranging from 23% for Port Alsworth to 157% for Koliganek. As high as they are, the estimate may be an under-representation of the estimated worth of subsistence resources. With rising food prices, the replacement value would be significantly higher today. King salmon fillets, for example were \$17/pound on December 30, 2010 at 10th and M Seafood's, Anchorage, Alaska. The replacement value of 193 pounds of king salmon alone for Koliganek, for example, would be \$3281 per-capita. This value does not reflect the intricate, time consuming care and skill given to smoking and processing salmon that Dena'ina and Yup'ik give to their food (cf. Felton 2005)

While monetizing subsistence gives a measure of its importance to the economy, these values do not reflect the fact that the people of the region unanimously reject replacing their traditional subsistence foods with farmed fish or other imported products, should deterioration of wild salmon runs occur (Interviews). This is based on the belief that such products are of inferior quality and that doing so would result in cultural degradation. See Section III.C.6 for a discussion of the importance of wild salmon from one's home river.



Figure 18. Salmon Drying. Koliganek. September 17, 2011. Photo by Alan Boraas

8. Subsistence and “Wealth”

In Alaska many non-Native people perceive subsistence as an activity for impoverished, unemployed rural people who live in employment-poor communities and cannot afford to buy food so they have to hunt and fish for it. Thornton (1998) asserts that this perception relates to the “minimum food and shelter necessary to support life” dictionary definition of subsistence and has given rise to the “subsistence-as-welfare” concept and associated negative implications. The Yup’ik and Dena’ina perceive subsistence quite differently. Interviewees spoke of the cultural value of subsistence as a chosen lifestyle. (See also the comments by Berger in Section B.2. at the beginning of this section.) As indicated in the 2011 interviews, subsistence is a lifestyle chosen by both old and young. Subsistence is a job, in which the wages are healthy wild foods and the benefits include not only vigorous outdoor activity shared with friends and family, but also a large measure of self-determination supported by a community of like-minded people. Subsistence is coterminous with culture, and the entire range of social and spiritual activities that “culture” implies. Consistently, the Yup’ik and Dena’ina communities of the Nushagak and Kvichak River drainages define a “wealthy person” as one with food in the freezer, a large extended family, and the freedom to pursue a subsistence way of life in the manner of their ancestors (see Social Relations, Section E). Their ability to continue their reliance on subsistence

and their concept of wealth has contributed to the maintenance of vital and viable cultures for the last 4000 years.

Interviewees did not talk about materialism either as actual or a symbol indicator of wealth. Typical signs of wealth in urban Alaska such as a large bank account, investment, an elegant home in a high status neighborhood, an expensive automobile, nice clothes or other indicators of wealth were never mentioned in the interviews. Fish, family, and freedom are the indicators of wealth in the Yup'ik and Dena'ina communities of the Nushagak and Kvichak watersheds. In expressing these concepts the interviewees were expressing a local interpretation of the United Nations Declaration on the Rights of Indigenous Peoples, particularly Articles 3 and 26 (UNDRIP 2007) :

Article 3

Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.

Article 26

1. Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.



Figure 19. Talarik Creek, Newhalen River, and Lake Iliamna. January 17, 2012. Photo by Alan Boraas

C. Physical Well-being: the Role of Subsistence

1. Voices of the People

We crave it [salmon] when we don't have it. We just need it. F-30, 8/17/11

You know, it's got that one oil in it that is a cancer-fighting oil, and it's really good. F-38, 8/18/11

I think it [salmon] is healthier than probably beef or pork or something like that. M-68, 9/18/11

Yes, to be healthy, like I say, if we don't eat fish we won't have anything to eat. That is our health. F-48, 8/20/11

When you are eating fish...you get a drink of water to flush yourself out. If you don't eat fish, you will starve. You got to flush yourself out with water every day; that is what your health is about. God put us on this earth to eat fish every day. That's what it is. Without fish, like I said, we are hungry; with fish we are full. F-48, 8/20/11

We have...to live healthy to be free from diseases if we eat healthy food. Not breathe air that's no good or drink water that is no good; it will affect your whole body. So, on the subsistence, I say let's protect Mother Earth; I demand it. If we don't protect Mother Earth, we are gone. M-51, 8/20/11

We don't buy meat very much. Salmon is our most important dish. F-27, 8/17/11

Salmon is a really an important part of our diet. I think it has things that meat [domestic beef for example] does not have. You are always hearing things about fish oils and how healthy [they are], but we already have that, so we must be healthy. F-34, 8/18/11

We can't live without salmon. We'll be missing something. F-27, 8/17/11

Well, we grew up with it. We need it. If we don't have it, we miss it. I can't see anybody that lives around here without it. F-30, 8/17/11c.

I've seen kids teethe on smoked salmon strips. They're hard. They get all fishy and smelly, but man, they just chew. It's better than the rubber toy. F-38, 8/18/11

...[salmon] is one of our healthiest foods we can give to our child.... It is really healthy. F-69, 9/18/11

To me, I think eating salmon has sustained our ways of life. I think by eating a lot of salmon, we are a healthy, healthy Dena'ina. I always tell children there at potlaches or wherever; I say that, "If you eat this piece of fish you're going to be a smart Dena'ina woman, you might be able to

be a lawyer or a doctor.” It’s surprising that, just by telling them that, they...eat it, and they will say, “Oh, taste good.” F-32, 8/18/11

When my kids grew up, I mostly gave them fish and moose meat. F-44, 8/19/11

I definitely limit my child; you know, the fast foods, we eat it once a week, sometimes more... [They eat] moose meat, the fish...berries, and wild plants as well... We want to give to our children the fish and we want to keep the water clean for them. It was a gift to us from our ancestors, which will then be given to our children. F-69, 9/18/11

The school system here does get volunteers who donate fish to the schools. Prior to that they used to order cod fish and other fish from out of the area. The kids didn’t like it. Not from here. They finally started the donation program, and the fishermen stepped up to the plate and said, “Yes, definitely.” The crew members didn’t balk. There were no qualms whatsoever about donating fish to the schools. M-61-9/16/11

It is the best hot lunch program we have; the kids just love it when they have salmon day. M-60, 9/16/11

Yes, and that it is healthy [wild salmon]...and something they [Yup’ik] wouldn’t have without But if we ever lose it, then we won’t have anything at all. M-68, 9/18/11

I think it would matter [that the salmon be wild]; that would be our concern. We like to take our wild natural renewable resource salmon rather than farmed salmon because you never know what they’ve [farmed salmon] been eating. M-26, 5/19/11

Wild salmon is more important for us, or wild fish. I don’t believe in farmed fish, because wild fish is better for all our health. It has all natural oil, and we don’t paint it with artificial paint like the farmed fish you get. You can sell your farmed fish all you want, but wild salmon is more important to us. F-48, 8/20/11

...people from Kenai or Anchorage, they can go to Kenai and get their salmon, but they always say there’s nothing like the lake salmon. There’s nothing like salmon that comes from Sixmile Lake. We hear that all over.... I always try other people’s fish, but there’s nothing like salmon from our own stream, salmon from the lake that comes up. Well, I guess we’re spoiled having our own. F-32, 8/18/11

There is nothing better than wild salmon...I have talked to many people all over the state, and the best salmon comes from this area, Bristol Bay. M-29, 8/17/11

One year we got a farmed salmon.... What a difference! It came in with the usual run, and it was salmon that was raised in the University of Washington [salmon farm]. They have a big place out there in Seattle. We went in there, and they had a lot of fish. The meat was soft, and the skin was not firm and scaly. I remember, my daughter was cleaning salmon that year, and she said,

“Where’d this fish come from? It looks like a salmon, but it’s terrible.” It was soft. It wasn’t like a wild salmon. F-38, 8/18/11

Matter of fact...I had [salmon] for breakfast this morning before I come over. They stay inside all day. M-53-8/20/11

In the summertime it is every day [we eat fish], as long as the fish are running. We eat fish every way we could: boiled, baked, fried. Every way we could, we eat fish. In the wintertime, what we preserve in the summertime is what we eat in the wintertime, like the dried fish, the canned fish. The fresh canned is something we eat a lot, because you can do so many different things with it. F-35, 8/18/2011

2. Introduction

As described in Section II.A.3., archaeological evidence indicates that salmon were an important component of the diet of the genetic ancestors of the Yup’ik and Dena’ina, as early as 4,000 years ago (see Section II.B.3). The Dena’ina track back to the Paleo-Arctic tradition, as old as 10,000 years ago, although evidence for intensive salmon utilization in Dena’ina territory does not occur until A.D. 1000.

Based on studies of other Yup’ik populations in the nearby Kuskokwim River villages, there is a strong possibility that, within their long history, the Yup’ik may have become genetically adapted to eating salmon. Several recent studies have shown that physical adaptation and evolution based on dietary factors (e.g., lactose intolerance) can occur in 3,000 years or less (Tishkoff, et al., 2007; Bersaglieri et al., 2004; Hollox et al., 2001). Other studies are demonstrating genetic changes at the population level in humans in a similarly short time frame based on adaptation to environmental stressors such as living at high altitudes in Tibet (Peng et al., 2010 :1075-1081; Xin et al., 2010: 75; Simonsen et al., 2010: 72-74).

Research is being done on the health benefits of omega-3 fatty acids, a significant component of wild salmon. One source, the DHA-EPA Omega-3 institute tracks the number of research reports on omega-3 fatty acids and provides this summary reproduced in Table 17 for 2012 alone (DHA-EPA Omega 3 Institute, nd, accessed January 7, 2013).

Table 17 Scholarly Articles on the Health Benefits of Omega-3 Fatty Acids, 2012

Subject	Number of Articles
Cancer Prevention and Management	10
Cardiovascular Health	49
Cognitive Performance	29
Eye and Visual Health	8
Fitness and Body	4
Inflammatory Diseases	4
Mental Health	19
Nervous System	5
Other Health conditions	29

Significant research is being done on Yup'ik and other populations vulnerability to coronary disease, stroke and diabetes particularly in relation to high consumption of salmon. The National Science Foundation recently funded a University of Alaska study to assess the differences between Yup'ik and other populations in drug metabolism, as well as in vulnerability to metabolic syndrome (development of risk factors for coronary disease, stroke, and diabetes). This study will consider the relevance of dietary differences and resulting long-term physical adaptation, including genetic adaptation (O'Brien et al., 2011). In a separate study researchers from the Center for Alaska Native Health Research (CANHR) are assessing how a subsistence diet affects the vulnerability of Yup'ik people to disease (O'Brien et al., 2011). In a 2009 study whose results strongly support the validity of red blood cell deltaN as a biomarker of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA); the researchers state, "the omega-3 (n-3) fatty acids derived from fish, eicosapentaenoic acid (EPA; 20:5n-3) and docosahexaenoic acid (DHA; 22:6n-3) are associated with a reduced risk of cardiovascular disease and other chronic diseases (O'Brien et al, 2009:913).

While the amounts of salmon and other fish consumed varies from village to village, and from one season to the next, the demonstrated importance of these foods in the diet is consistent with the traditional knowledge shared by Yup'ik Elders and culture bearers, as presented above (Section C.1.) that salmon is critical to their diet. As discussed below, the salmon-dependent diet of the Yup'ik and Dena'ina benefits their physical and mental well-being in multiple ways, as well as encouraging high levels of fitness based on practices involved in subsistence activities.



Figure 20. Ekwok. September 11, 2011. Photo by Alan Boraas

3. Nutrition

The dietary habits of Yup'ik and Dena'ina living in the villages of the Bristol Bay region show regular dependence on several species of wild salmon which they sometimes consume several times a day as the interviews attest. Yup'ik and Dena'ina primarily prepare and eat two species of Pacific wild salmon, Coho (red) and Chinook (king) in different ways, including fresh, salted, pickled, canned, dried, and smoked. Salmon and other traditional wild foods comprise a large part of the villagers' daily diet throughout their lives, beginning as soon as they are old enough to eat solid food (Interviews, 2011).

In addition to salmon, villagers also regularly consume other wild fish species, such as humpback whitefish, Arctic char/Dolly Varden, Arctic grayling, rainbow trout, and northern pike, the wild ungulates caribou and moose, and, to a smaller extent other mammals, birds, and bird eggs. Wild plants, including blueberries, crowberries, salmonberries, ferns, and other species, add fiber, vitamins, and minerals (Interviews). The Yup'ik and Dena'ina continue to harvest certain plants with medicinal values (cf. P. Kari 1995). It is important to recognize that in addition to providing a wide range of valuable nutrients and protein sources, the subsistence diet provides a year round workable harvest schedule with adequate time for preparation and storage.

While subsistence technologies have changed and are now supported in part by the cash economy that commercial fishing provides, enabling purchases of snow machines, rifles and other equipment, the basic subsistence seasonal schedule has been approximately the same for

hundreds and probably thousands of years. The implications for population sustainability within the environment, and co-evolution of the human population with environmental food availability mean that hypotheses about the risks of significant changes to the salmon population are important, and change in dependence on local wild salmon could have far-reaching impacts on Yup'ik and Dena'ina physical and psychological health, including at the genetic level.

Interviewees in the study area also eat store-bought foods, but do not prefer them (Interviews 2011). Like other northern subsistence cultures, the Yup'ik and Dena'ina consider their traditional foods to be healthful and satisfying in addition to providing strength, warmth, and energy in ways that processed store-bought food does not (Hopkins, 2007:42-50). Hopkins' study on health and aging also provides an insight into women's views of the importance of the subsistence diet. Eating subsistence foods was an overwhelming theme among all participants.. They generally viewed market or *kass'aq* (white person) food as unhealthful (Hopkins, 2007:46). Hopkins quotes one of the participants, describing the importance of the subsistence diet for Elders: "In years back, before I was born, I know there were elders that were very healthy and strong because they have their food, their native food, not mixed up with the *kass'aq* food. Although they have a hard life, they were healthy, strong, because of their native food. Seal oil, dried fish" (Hopkins 2007:46-50). This statement is consistent with the interviews.

In some parts of Yup'ik territory outside the study area traditional food consumption has decreased as described in a study done in three villages in the Yukon-Kuskokwim delta to the north of the study area (Bersamin et al. 2006). The reason for decreased traditional food consumption is not clear but is partly due to the drastic decline of king (Chinook) salmon, a decline that has not been as drastic for the Nushagak River. The number of Chinook salmon entering the Yukon-Kuskokwim systems, for example, has gone from 45,829 in 2006 to 9719 in 2011 according to Alaska Governor Sean Parnell's (2012) federal disaster request to the U.S. Department of Commerce. Chinook returns to the Nushagak River, however, were 101,572 down from the 15 year average of 170,186 (Fair et al. 2012:35) but not as drastic a decline as the Yukon-Kuskokwim decline. Fluctuating Chinook returns are, nevertheless, a significant concern to Villagers whose primary subsistence fish on the Nushagak are Chinook salmon and any substantial decrease would impact health and nutrition (interviews) as has happened in parts of the Yukon-Kuskokwim Yup'ik area. Bersamin et al. (2006) found that a decline in traditional food consumption in three Yukon-Kuskokwim communities resulted in diets where 63% of the population had diets classified as "poor" and the remaining 37% were classified as "needing improvement" according to Healthy Eating Index (HEI) indicators (Bersamin et al. 2006:1060). These HEI indices are far below United States averages. Moreover, the authors acknowledge that HEI may underestimate dietary health concerning traditional foods which are generally considerably higher in nutrient value than processed "store-bought" foods (Bersamin et al. 2006:1061). In the case of the Yukon-Kuskokwim delta villages the authors conclude: "Traditional foods are excellent sources of numerous essential nutrients but may not be consumed in quantities sufficient to meet recommendations. An even higher intake of traditional foods should be encouraged" (Berasmin et al. 2006:1062). Subsistence data presented in Section III.B. indicate wild traditional foods, particularly salmon, are consumed in sufficient quantities in the study area.

4. Fitness

Yup'ik and Dena'ina dependence on subsistence foods has the additional health benefit of providing opportunities and incentive for physical fitness, since engaging in subsistence harvesting improves fitness and fitness, in turn, enhances the efficiency of subsistence harvesting. Subsistence hunting, fishing, and gathering demands stamina to endure long periods of physical activity and strength to handle meat, large quantities of fish and heavy fishing gear. Hopkins (2007:45-46) quotes from the response of one study participant, over sixty years of age: "I think today most of the women are healthy for activity, physical activities. When they go berry picking, they're working using their bodies everything. When we are cutting fish, we are using everything, our muscles, lifting things."

The fitness needed for, and resulting from, subsistence is part of other aspects of village life, as well. Throughout the winter the Yup'ik villagers, from youth to middle-aged, play basketball and other sports regularly competing in vigorous games. Researchers watched in New Stuyahok as a team of middle-aged men defeated a younger team in an intense, hour-and-a-half game, then went to church services for an hour and returned to play another game of equal length. In several Yup'ik villages, including New Stuyahok, the physical activity of traditional dancing, is making a comeback. As described in Section III.E., this cultural activity is based on dance as story-telling, which both values and elaborates on traditional cultural practices, such as fishing.

While in New Stuyahok, researchers observed that Elders, including the oldest present, at around age 86, frequently walked to locations within the village. According to Hopkins, walking was the primary physical exercise identified in that study's interviews. "The participants referred to walking as an important component of health, both physical health and mental well-being. Walking is believed to keep the body strong, promote energy, and is a basic physical activity in gathering subsistence foods" (Hopkins 2007:46).

The apparent overall fitness of the village population in New Stuyahok gave researchers present at the Elders' Conference the impression of frequent exercise, and led to the hypothesis that the practices of subsistence food gathering, in addition to the food itself, create higher levels of fitness, and act to prevent and reduce health risks from more sedentary lifestyles. For Alaska Natives, as for other Native Americans, the high risk of diabetes and subsequent health consequences is serious enough to make the hypothesis an important one to test.

5. Disease Prevention

Beyond the Yup'iks' own personal conceptions and cultural knowledge about the importance of wild foods in their diets, many studies also confirm the remarkable health benefits of omega-3 fatty acids and the other nutrients found in high percentages in subsistence foods such as wild salmon, and the combination of salmon, wild greens, blueberries and other berries for preventive health among the Yup'ik. These studies particularly underscore the importance of salmon-rich diets for the prevention of maladies, including cardiovascular diseases and type 2 diabetes. O'Brian et al. (2009:913; see also O'Brian et al 2011; O'Harra 2011), for example, concluded that "the omega-3... fatty acids derived from fish...are associated with a reduced risk of cardiovascular disease and other chronic diseases."

In a cohort study of Yup'ik from the Yukon-Kuskokwim area (Boyer et al., 2007:2535-2540), the Center for Alaska Native Health Research (CANHR) found that metabolic syndrome is uncommon in salmon-consuming populations relative to others, occurring at a prevalence of 14.7% in the study population, compared to 23.9% in the general U.S. adult population. The study population also had significantly higher high-density lipoprotein (HDL) cholesterol levels and lower triglyceride levels than the general U.S. adult population.

In a related study, the Fred Hutchinson Cancer Research Center, in collaboration with the CANHR, found that Yup'ik Eskimos consume 20 times more omega-3 fatty acids from fish than the average American and display a much lower risk of obesity-related disease despite having similar rates of being overweight and obesity (Makhoul et al., 2010; Fred Hutchinson Cancer Research Center, 2011). Lead author, Zeina Makhoul, said:

Because Yup'ik Eskimos have a traditional diet that includes large amounts of fatty fish and have a prevalence of overweight or obesity that is similar to that of the general U.S. population, this offered a unique opportunity to study whether omega-3 fats change the association between obesity and chronic disease risk.... It appeared that high intakes of omega-3-rich seafood protected Yup'ik Eskimos from some of the harmful effects of obesity.... While genetic, lifestyle, and dietary factors may account for this difference, it is reasonable to ask, based on our findings, whether the lower prevalence of diabetes in this population might be attributed, at least in part, to their high consumption of omega 3-rich fish (Makhoul quoted in Woodward 2011).

Compounds derived from their subsistence diet, including omega-3 fats from wild salmon consumption, may also benefit mental health in Yup'ik populations. Lesperance et al. (2010), for instance, report that omega-3 fats can help prevent depression. Another study showed greater improvement in symptoms for patients with chronic depression who consumed omega-3 fats with their medication compared to those receiving only a placebo with their medication. After four weeks significantly reduced symptoms of depression occurred in six of ten patients receiving E-EPA while reduced symptoms only occurred in one of ten receiving a placebo (Nemets et al. 2006). See Section E.7., Behavioral and Mental Health for additional discussion of the behavioral and mental aspects of a subsistence lifestyle.

Other subsistence foods, such as wild greens have nutritional elements associated with better mental health, including folic acid and Vitamins A and C. Other factors associated with a subsistence lifestyle, including time spent outdoors and the physical fitness resulting from subsistence activities, may also benefit mental health. It is interesting to note that several Elder interviewees (Interviews 2011) said that, 20 years ago, no one in their villages knew anything about Alzheimer's disease; it was not an illness they had seen before, but it is appearing now and she attributed it to not eating enough Native foods.



Figure 21. Nushagak and Wood Rivers. September 11, 2011. Photo by Alan Boraas

6. Local Wild Fish

The Yup'ik and Dena'ina populations of the Nushagak and Kvichak watersheds have an interdependent relationship ecologically, nutritionally, socially, spiritually, and possibly evolutionarily, with the local wild salmon populations. It is clear that the benefits, and particularly the long term fit between the human and fish populations, depends upon maintaining the local wild salmon for subsistence fishing. While it would be easy to assume that any salmon would provide a similar quantity and quality of omega-3 fats, a Norwegian study showed that farmed salmon, fed a typical farmed salmon diet, did not have the omega-3 fats in beneficial quantities, in contrast to the wild salmon which did (Sincan, 2011).

It is important to underline that if a human population has adapted to particular environmental dietary elements with a genetic modification in their population, that modification is based on a relationship to the genetics of specific regional species, and subspecies. The fit between environment and population may not be transferable to other places.

Thus the elements of the subsistence diet, in particular wild salmon, provide several substantial health and fitness benefits to the Yup'ik and Dena'ina of the Bristol Bay region. According to recent studies at CANHR led by Andrea Bersamin, "Diets emphasizing traditional Alaskan Native foods were associated with a fatty acid profile promoting greater cardiovascular health than diets emphasizing Western foods" (Bersamin et al., 2007: 266; see also Bersamin et al. 2008). A study by Adler et al. (1994) regarding the benefit of salmon and seal oil consumption concluded these wild foods played a significant role in combating diabetes among Yup'ik and Athabascan Native Alaskans. Adler et al. (1994:1499) state, "Age-, sex-, BMI, and ethnicity adjusted analysis of daily salmon consumption also suggested protection against glucose intolerance....Compared with daily salmon consumers, those participants who ate

salmon on a less than daily, but more than weekly, basis were twice as likely to have developed glucose intolerance.” In the present interviews, when asked how many times you eat salmon respondents frequently said “all the time” (see question 2, p. 79) and when asked if you need salmon to be healthy all who responded said “yes” (see question 3, p. 80).

The loss of the local wild salmon as a large component of the Yup’ik and Dena’ina diet would result in risks to the physical and psychological health of the population, including greater risks of cardiovascular disease, type II diabetes, and depression.

D. Traditional Ecological Knowledge

1. Voices of the People

But, I think, when they're spawning, that's where they hit the spring waters, where it doesn't freeze. It's always open, even in the dead of the winter. It's always open; you got to be careful there. Especially up in Lake Clark, around Kijik. It's, man, 30 below zero, and it's still open water. M-29, 8/17/11

Our societies are not different than other societies we have special people that know fishing inside and out, we have people in our society that know weather inside out, that know plants inside out, and that know animals inside out. M-61, 9/16/11

...they drop last year's fish in the middle of the river and we do the same thing here. We put king salmon remains on a string tied to a rock and go out with a boat to the middle of the river and let it sink. That makes king salmon go on both sides [near the banks where they can be netted with set nets.] M-26, 5/19/11

When the fish first come up here we don't put our nets out here before a bunch of them go by for the people who live at the end of the river up in Nondalton and all those guys. They start calling up then maybe middle of July [to tell us they have fish, and then] we start putting our nets out. We just kind of watch the salmon go by for the people who live upstream from us. M-54, 8/20/11 They [the fish] are like us, when we want to know something we ask. The fish are the same way. As we were talking about earlier he mentioned that the fish have souls. Every living creature has a soul. All the animals have souls. They are sensitive, very sensitive. If you put something bad in the water the fish will sense it. They will probably not go up the river, they will go somewhere else. If they spawn here and they notice something different they will move to another spot. The fish are very sensitive. M-20, 5/18/11

What they used to say, was the first time, when they first moved down to fish camps, then this wild celery, I don't know if you know what that is, but we eat those. They go up on the mountainside and pick lots of that, and then they peel it, they peel the peelings off and we eat the inside part. So we have big parties with that. We just really enjoyed the fresh salads that we just had. it was already tall enough to eat. So when we get done with that, then the Elders would tell us, take all the leaves and the skin and everything off of this plant, take it out in the river and throw it in, and they would do that. Then we started asking why we were doing this. This fresh salad plant and the skin will meet with the salmon, and let the salmon know that they are already good to eat, and they need to hurry up and come up because we are hungry. F-28, 8/17/2011 In the winter not only salmon, we do a lot of ice fishing, and my uncle you met this morning [a man in his 90s], he has a trout net he puts out. F-35, 8/18/2011

2. Introduction

Anthropologists and other scientists have used different terms to describe the knowledge of indigenous peoples, including “cultural knowledge,” “indigenous knowledge,” “traditional knowledge,” and “local knowledge” (Berkes 1999:8). Fikret Berkes and others working in this area of ethnoscience use the term, “traditional ecological knowledge” or TEK. Berkes defines TEK as “a cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes 1999:8). TEK, as Berkes describes it, includes spirituality and social relations, as well as a wide range of cultural beliefs and behaviors related to surviving in a particular landscape, because of the holistic nature of culture itself. Berkes’ broad approach to TEK is the one used in this study.

Early studies of TEK depended on comparisons between taxonomies and species lists drawn up by Western scientists and those created by indigenous peoples (Knott, 1998). More recently, however, it has become clear to anthropologists, geographers, biologists, and others working with indigenous peoples that their knowledge is far more ecological in scope and requires more than species lists to document. Therefore, a number of scientists working with indigenous peoples have come up with a diverse range of tools to collect and document indigenous knowledge. These research tools include, but are not limited to:

- Maps of local hunting, fishing, and gathering areas
- Maps of sacred sites and other special use areas
- Traditional Place Names mapping
- Species lists
- Collection of stories, songs, and dances of interactions between animals, humans and other species, humans and the natural environment, or allegorical animal stories
- Studies of subsistence technologies
- Animal life histories and their interactions with other plant and animal species including humans, told as information by locals
- Plant life histories and their interactions with other plant and animal species, including humans, told as information
- Stories of human mistakes made, and lessons learned, about interactions with nature and the environment, including storms, earthquakes, floods, ice, glaciers, changes in nature
- Advice in the form of rules, proscriptions against certain behaviors, prescriptions for other behaviors, and guidelines for management of animal and plant harvests
- Uses for animal and plant species, including recipes for foods and medicines
- Observations shared, often about the complex interactions and ecological relationships in the landscape where the people live, hunt, fish, and gather.
- Local descriptions of long term trends for species numbers and migration patterns, weather patterns, climate, and other natural events
- Linguistic, biological, and archaeological evidence.
- And finally, at a broader level, the values, beliefs, social systems and spiritual practices that have developed over thousands of years through the cumulative application of TEK.

A number of important TEK studies have been done in both in the Nushagak and Kvichak River watersheds, and in the Lake Clark and Iliamna Lake area, that cover TEK in

detail. Among the Nushagak studies is one by the Nushagak-Mulchatna Watershed Council (NMWC) (2007) and among the Kvichak studies are those by Stickman et al. (2003) Evanoff (2010) P. Kari (1995) and Fall et al. (2010). In addition the Alaska Department of Fish and Game, Subsistence Division has a searchable database titled “From *Neqa to Tepa, Luq’a to Chuqilin*” which includes maps, place names, interviews, ADF&G technical papers and related TEK information from the Bristol Bay and Alaska Peninsula including extensive information from communities in the study area (ADF&G 2005). These long-term studies have focused on the Yup’ik and Dena’ina TEK in the Bristol Bay region and have provided a wealth of information some of which we summarize in Sections a through c below.

To supplement those long-term studies, we focused interview sessions on the broader levels of TEK, including the values, beliefs, social systems, and spiritual practices of the Yup’ik and Dena’ina that have developed over thousands of years through their cumulative application of TEK. During those sessions we learned much from the Elders and culture bearers about TEK and the cultures as a whole. We also heard some specific examples of ecological insights, prescriptions and proscriptions, and management guidelines for several species.

3. Summaries of Important TEK Studies

Nushagak-Mulchatna Watershed Conservation Plan

Over a two-year period [dates unspecified], the Nushagak-Mulchatna Watershed Council (NMWC) conducted interviews with Elders, residents, and others who use the watershed to create a database of the TEK of the Nushagak and Mulchatna drainages (NMWC 2007:3). The NMWC used the data to create an overall plan for protecting the waters and natural resources of the watershed. The interviews helped with the development of maps to identify areas critical to protection of subsistence resources and habitat. The plan identified 12 fish, 6 mammal, and 12 bird species important for subsistence and mapped 125 traditional use areas and 153 traditional area names. The flora and fauna considered most integral to traditional subsistence use were all five species of Pacific salmon, whitefish, winter freshwater fish, moose, caribou, waterfowl, and edible and medicinal plants (NMWC, 2007:19).

The study also identified probable threats to the watershed in the next fifty years, and, based on the TEK information collected, developed four strategic actions (Nushagak-Mulchatna Watershed Council, 2007:3):

1. Reserve adequate water flow for the Nushagak River and tributaries under existing laws for in-stream flow reservation.
2. Maintain the vegetative complex that supports moose, fish and other species within and adjacent to the floodplain.
3. Maintain water quality standards that protect wild salmon and other fish.
4. Prevent habitat damage that could result from mining.

What is at stake includes habitat, and wildlife including terrestrial mammals, birds, fish, and the subsistence way of life, along with the unique cultures it supports. The report states:

The Nushagak River system is the fifth largest river in Alaska by volume of water discharged. The drainage supports at least 13 anadromous species, 16 resident species, and four species of fish restricted to estuaries. The Nushagak River and its tributaries host five species of Pacific salmon and provide significant habitat

for Bristol Bay sockeye salmon – the largest runs in the world. The Nushagak River hosts the largest sport fishery for Chinook salmon in the United States, with the third-largest Chinook run in the country. In addition there are significant numbers of rainbow trout, grayling, Arctic char, Dolly Varden, northern pike, lake trout, and non-game species (NMWC, 2007:8).

The flora and fauna considered most integral to traditional subsistence use includes the following. Fish: 1. Sockeye, Chinook, and Coho salmon; 2. Pink and Chum Salmon; 3. Whitefish; 4. Winter Freshwater Fish. Mammals: 5. Moose; 6. Caribou. Other: 7. Waterfowl; and 8. Edible and Medicinal plants. The Elders and other knowledgeable individuals also identified critical habitat for the species of concern and their harvest locations. The conservation plan used this information to delineate the watershed into conservation target areas, in terms of habitat types important for traditional use species (NMWC, 2007:20). Salmon are the keystone species in the region, and provide enormous amounts of marine derived nutrients to the ecosystems described above.

In the present study interviewees identified potential threats to the area including recreation, recreational subdivisions, commercial lodge development, community development, mining, roads, high seas salmon fishing, ocean acidification, oil and gas development, and habitat shifting and alteration. Interviewees in Pedro Bay during the fall of 2011, for example, confirmed the high earthquake activity and expressed concerns about new road construction and its potential impacts on their streams and community, based on their long-term ecological knowledge.

The following tables list the primary and secondary subsistence species identified by the Nushagak River Watershed Traditional Use Area Conservation Plan (2007) and represents the breadth of wild food use and, indirectly, the knowledge of how to harvest, process, and prepare those foods.

Table 18 Subsistence Fish, Terrestrial Mammals, Birds and Plants (Nushagak-Mulchatna Traditional Use Conservation Plan, 2007).

Subsistence Fish Species		
Yup'ik	English	Scientific
Taryaqvak	Chinook (King) salmon	<i>Onchorhynchus tshawytscha</i>
Sayak	Sockeye salmon (Red)	<i>Onchorhynchus nerka</i>
Caayuryaq	Coho salmon (Silver)	<i>Onchorhynchus kisutch</i>
Amaqayyak	Pink salmon (Humpy)	<i>Onchorhynchus gorbuscha</i>
Kangitneq	Chum salmon (Dog)	<i>Onchorhynchus keta</i>
Talaariq	Rainbow trout	<i>Onchorhynchus mykiss</i>
Iqalluaq	Rainbow smelt	<i>Osmerus mordax</i>
Yugyak	Arctic char,	<i>Salvelinus alpinus</i>
Iqallugpik	Dolly Varden,	<i>Salvelinus malma</i>
Culugpauk/Nakrullugpak	Arctic grayling	<i>Thymallus arcticus</i>
Cuukvak	Northern pike,	<i>Esox lucius</i>
Can'giiq	Alaska blackfish,	<i>Dallia pectoralis</i>

Additional fish sometimes used

White fish, *Coregonus spp.*
Halibut, *Hippoglossus stenolupsis*
Flounder, *Plutichthys stellatus*
Sheefish, *Stenodus leuichthys*
Burbot, *Lota lota*
Sticklebacks, *Pungitius pungitius*
Tomcod *Eleginus gracilis*
Sculpin, *Cottus spp.*
Herring, *Clupea pallasii*

Subsistence Terrestrial Mammals

Yup'ik	English	Scientific
Tuntuvak	Moose	<i>Alces alces</i>
Paluqtaq	American Beaver	<i>Castor Canadensis</i>
Cuignilnguq	River Otter	<i>Lontra Canadensis</i>
Issaluuq	Porcupine	<i>Erethizon dorsatum</i>
Tuntu	Caribou	<i>Rangifer tarandus</i>
Taqukaq/Carayak	Brown Bear	<i>Ursus arctos</i>

Additional mammals sometimes trapped for furs

Mink *Mustela vision*
Muskrat *Ondata zibethica*
Red Fox *Vulpes vulpes*
Arctic Fox *Alopex lagopus*
Snowshoe hare *Lepus americanus*

Subsistence Bird Species

Yup'ik	English	Scientific
Lagilugpiaq	Canadian goose	<i>Branta Canadensis</i>
Kep'alek	Greater scaup	<i>Aythya marila</i>
Nacaullek	Emperor goose	<i>Caidris alpine</i>
Uqsuqaq	Pintail duck	<i>Clangula hyemalis</i>
Cetuskar	Harlequin duck	<i>Histrionicus histrionicus</i>
Qucillgaq	Sandhill crane	<i>Grus Canadensis</i>
Qugyuk	White swan	<i>Olor columbianus</i>
Tungunqeggig	Black scoter	<i>Melanitta nigra</i>
Qengallek	King eider	<i>Somateria spectabilis</i>
Curcurlig	Mallard	<i>Anas platyrhynchos</i>
Aqesgiq/Kangqiiq	Willow Ptarmigan	<i>Lagopus lagopus</i>

Additional Birds

Godwits
Dunlins
Golden Plover
Western sandpiper
Black turnstone
Red-throated loons
Arctic tern
Jager,
Marsh hawk

Kingfisher
Rock Ptarmigan, *Lagopus muticus*

Plants

Salmonberries, *Rubus chamaemorus*
Crowberries, *Empretum nigrum*
Blueberries, *vaccinium uliginosum*
Marsh marigold, *Caltha palustris*
Wild celery, *Angelica lucida*
Willow leaves, *Salix glauca*
Pond greens, sourdock, *Rumex artica*
Caiggluk, *Artemisia tilesii*

K'ezghlegh: Nondalton Traditional Ecological Knowledge of Freshwater Fish

K'ezghlegh: Nondalton Traditional Ecological Knowledge of Freshwater Fish is based on interviews with 18 Nondalton residents in 2001 and focused on their current and past subsistence use of sockeye salmon and other fish in the Lake Clark/Newhalen River drainage (Stickman et al. 2003: 8). Interview questions related to fishing practices, geographic locations, and Dena'ina place names. The questions were presented in semi-directed interviews, with USGS quadrangle maps of the Lake Clark Newhalen River area used to plot information. Answers revealed that the summer months, from mid-June through August, are traditionally devoted to harvesting sockeye salmon that are returning to Sixmile Lake and Lake Clark. Fish camps used to be set up around the outlet of Kijik Lake, but now are primarily at the outlet of Sixmile Lake but also along the shores of the Newhalen River, Sixmile Lake and Lake Clark (Stickman et al., 2003:11).

The interviewees listed nearly a dozen places as the most important locations for sockeye fishing and eighteen as primary locations for harvesting spawned-out sockeye or "redfish." Residents described in detail how and where they get salmon, listed 36 separate places where sockeye spawn, and gave descriptions of several areas where they have noticed reduced spawning activity, particularly Kijik Lake, which is well known as a very productive area. This area in particular has recently had reduced spawning activity due to beaver dams that seem to be blocking the entry of the salmon into the Kijik River, and preventing fish from moving upstream to spawning grounds in and around Kijik Lake. The study also asked about harvest methods and detailed the use of seines, spears, and fish traps. Seining is no longer allowed under State of Alaska fishing regulations and fish traps were banned in 1959. People do use commercially manufactured gill nets.

It was important to the residents that they were respectful of the fish and cared for them. "Everyone interviewed reported that they generally stop fishing once they have caught the number of fish they need" (Stickman et al., 2003:23). Residents also disapproved of people leaving their nets out too long unattended. Andrew Balluta, one of the residents interviewed, said, "They used to say if you don't use what you are catching in your net, don't leave your net out there" (Stickman et al., 2003:24). The study also elicited descriptions of putting up fish. The remaining sections of this report document residents' comments about change: observed change in salmon over time, observed environment changes, human-induced change; and finally the importance of salmon to the population as documented in the observance of the fish camps and the First Salmon Ceremony. A separate section documents the use of other freshwater fish, including rainbow trout, Dolly Varden, whitefish, grayling, northern pike, burbot, candlefish,

sucker, and lake trout, and their relative abundance. Residents also noted significant changes in the number of fish returning in the five to ten years prior to the 2003 report. “Each person interviewed reported fewer fish than in the past, and all indicated that they first noticed the change in abundance between five and ten years ago.” (Stickman, 2003:26). While Stickman et al. describe numerous possible reasons for the reductions in numbers, as well as changes in timing of the runs, the report also noted that flows in the Newhalen River in 2001 exceeded the level observed to prevent or delay sockeye migration into the lower river (Stickman et al., 2003:27-28 citing C. Woody).

Dena’ina Ełnena: A Celebration

Lake Clark National Park in a project organized by Karen Evanoff produced *Dena’ina Ełnena* (Dena’ina Land) (Evanoff 2010) as a compilation of place name maps and traditional knowledge stories told by Dena’ina Elders for the Inland Dena’ina. The elegant maps describe the scope of knowledge of the landscape as reflected in language, and the eleven maps and data include many of the 1400 place names known in the study area (Evanoff 2010:91). Before “paper” maps and GPS, the place names became a “cognitive” map through which people were able to discuss subsistence events or to know where they were when traveling. Kari (2003:157) describes the complexity of The Dena’ina place name system:

This is a memorized, verbally transmitted geographic system that is congruent across language and dialect boundaries. We can marvel at the strict purity, orderliness, symmetry, functionality, and the memorizability of the geography. This system is elegantly simple and flexible and has facilitated Athabascan travel and land use since antiquity.

Most (75%) of the Dena’ina place names are for hydrology, landforms, specific rocks, or flora and fauna. About 15% are for human activities such as subsistence places. There are very few personal names, Yup’ik loan word place names, or mythic names although notable exceptions to the latter are *Ch’iduchuq’a*: ‘Game Enters Mountain’ by Ruth Koktelash, an important Dena’ina origin story (Evanoff 2010:18-19), and *Kuzhaghaten Qatnik’a*: ‘The Giant’s Rock’ told by Walter Johnson (Evanoff 2010:37-8) also described in section D-2, Traditional Dena’ina Culture.

The maps of traditional trails (Evanoff 2010:44-45) document an extensive system to access subsistence territories, travel between villages, or meet with Yup’ik coming up the Nushagak and Mulchatna to trade such as *Yusdi Ghuyiq’*: Long Point, Dena’ina and Yupik at *Yusdi Ghuyiq*, by Albert Wassilie, (Evanoff 2010:16). Thirteen stories describe traveling including “*Qeghnilen* Area: Traveling to Fish and Hunt” by Pete Bobby (Evanoff 2010:43) about subsistence activities.

The Dena’ina seasonal round is described in a set of 15 stories about activities at different times of year and is the core of traditional ecological knowledge. For example one of the stories by Ruth and Pete Koktelash describes the underground cold storage pit for storing salmon for winter (Evanoff 2010: 77-78).

Many of the stories are about subsistence practices such as “*Eseni Dghitnu*: Cottonwood Extends: Respecting Trapping and Hunting Grounds” by Nicholai Balluta (Evanoff 2010:35, 41-42). Balluta describes the area west of Six Mile Lake and the Newhalen River and north of Lake Iliamna, the area of the proposed Pebble Mine development, as a traditional trapping ground divided between the people of Nondalton, Iliamna, and Newhalen. The trapping territories were

divided by village and Balluta states, “They used to respect one another’s trapping ground... Yeah, that’s our way, that’s our history” (Evanoff 2010:42).

Nature Conservancy Place Name Project

Place name mapping research is not nearly as far along in the Yup’ik areas of the Nushagak, and Kvichak watersheds. In 2005 The Nature Conservancy conducted research with the assistance of Yup’ik culture bearers on Nushagak River Yup’ik place names (Tim Troll, personal communication, November 15, 2011). Thirty-two traditional place names have been identified in the Ekwok area, eighty in the New Stuyahok area, and eighty-nine in the Koliganek area. Research is on-going but indicates, like the Dena’ina place name data, that the people have an intimate knowledge of their areas through traditional names.

Plant Lore and Bird Traditions

Priscilla Russell Kari conducted two important TEK studies in Dena’ina territory. The first, a study of Dena’ina (Tanaina) plant lore, describes the seasonal cycle in the Dena’ina use of plants, as well as detailing the gathering, processing, and preserving of the most important plants (P. Kari, 1987 (1995)). She also covers Dena’ina beliefs concerning plants and the Dena’ina plant classification system. Her study, based on long-term work in several Dena’ina communities, with a wide range of Dena’ina women, documents more than 150 plants that the Dena’ina depend on for foods, medicines, and other uses (P. Kari, 1987 (1995)). The second was done by Priscilla Russell with George West (Russell and West 2003) and details Dena’ina use of birds. Like the plant lore book, the bird book identifies each species, the native name, and use, often including how it was prepared. The ethno-botanical and ethno-ornithological knowledge portrayed in both of these books is highly detailed and an invaluable contribution preserving Dena’ina ecological knowledge.

E. Social Relations

1. Voices of the People

I feel good, proud [to share]. And when our friends give us back, way proud. M-60, 9/16/11

We share with the Elders first, then with family. Usually how I do it, if someone goes with me we go 50-50 and he can decide who to share his fish with, and we do the same. It's not decided by one person, usually me and my wife decide. M-26, 5/19/11

It makes me feel good when I give salmon to somebody. F-47, 8/20/11

*It makes you feel good inside because you are sharing. M-53, 8/20/11
It's a good feeling, because we know other people want it. It's a good thing to give away, it's healthy. F-30, 8/17/11*

Oh, it makes you really feel good [to give salmon], because I know we enjoy it, and people that can't get it that were almost raised on it.... That's just the way the whole village is; they share. F-38, 8/18/11

In our culture here you share with everybody. When I got my first moose, I had to give it to people; when my grandson got his first moose, you give it to people. You share it. That is one thing good about the community of Bristol Bay; we still hold on to our cultural values really strong. Sharing is a very important component to our culture. If somebody is handicapped and unable to provide for themselves, you find some Young Turk or young family to go help them out. You don't expect pay. M-60, 9/16/11

You know, I was having a hard time, and her husband [gestures] brought me a whole truckload of food, and I damn near cried.... Now, when somebody needs help, we do the same thing. If someone needs help, I try to help as much as I can; we always share. When we give something, it feels good, and when we are having hard times and get something, it feels good. M-43, 8/19/11

[Reference to a woman's] mom was blind, and she couldn't do certain things, so my mom always made sure she shared with her. That is one of the things she told me about sharing. She thought it was good to share with people who couldn't do things for themselves. But, she was always doing nice things for us, too. She [the blind woman] made us string to hang fish and things like that. She was really a nice person, her mom. F-44, 8/19/11

Yeah, we always share. Holidays, we share, and if somebody passes away, after burial we have a potlatch; we share. We share with people; that is the way we are brought up. F-41, 8/19/11

We share with people here and in Anchorage.... I like to go fishing, so if we run out of freezer space, I will ask people [who can't fish in the village, e.g. Elders] if they want fish, then I'll go out and catch some fish if they want. M-70, 9/18/11

Me, I share it with my younger sisters who never do subsistence. Like, some can't work anymore. They [gesture] share it with their parents. Me, I share it with my younger sisters or my son, my kin. F-23, 5/18/11

Me and my daughter always share after we fish for all summer, but she always tries to give me lots more, but I say, "No, you've got more kids." Sometimes we give [fish to] our daughter-in-law. F-22, 5/18/11

I think, with us, during potlatch times, during hard times or Russian Christmas, or, if we gather together, everybody brings out their dry fish or their jarred fish or their salt fish. Nobody goes hungry; there's always sharing. We would be greedy if we kept it all to ourselves, but there's always a sense of sharing with the community or sharing with relatives. F-32, 8/18/11

The people up there [Kvichak River villages in the 1990s] were not meeting their subsistence needs [allegedly due to ADF&G management decisions]. They weren't screaming about the cost of gas or the price of lights. They were screaming that they didn't have fish. There were people from over here that were shipping fish over there for people to meet their subsistence needs. M-60, 9/16/11

You are a very rich person if you share. If you don't share, you are nobody.... I have to go share food with my grandkids, great grandkids; it doesn't matter. I don't care if someone comes in and eats with us; I like to share. That's the way we were brought up. Anybody that is in the house, come and eat with us; you are welcome. F-46, 8/20/11

You know, when I was working down in Seattle, my mom used to send me pieces of dried fish all the time. You know, that mail was slow back then. When I would get it, man, it was just like candy. No, but one time she sent me mixed berries. You make it with lard; we call it "agutak." She sent me those, and by the time it got there, it wasn't good. Salmon doesn't spoil when it is dried. M-53, 8/20/11

We catch moose and caribou and give it away; it ensures good luck back. Even beaver, you give the whole beaver away after you skin it. After you skin the beaver, you give it away; give the whole beaver away. That animal that you give away... give[s] you back in return good luck. M-54, 8/20/11

[My wife] and I have been doing it for thirty some years, doing the fish camp, and putting up fish for the winter. When the kids were small, we were down there for them too, and hopefully, they will have a family, too, and carry on the tradition. M-33, 8/18/11

Some of the salmon we put up at my fish camp even goes all the way down [to] the states. My friend [name] comes in here, and she puts up fish, and she cans salmon.... [My daughter] and her friend...they also can fish and dry fish.... [My grandson] was here all summer. F-27, 8/17/11

The parents, their sisters, their aunties, their grandparents, their great grandparents. Everybody is there [at fish camp], you know, telling them [the children] how to do this....Everybody does it at their own camps, fish camps.... Everybody is living in different fish camps, so all these families that are together, that's how they taught the younger kids. F-28, 8/17/11

He [five-year-old grandson] went fishing with us once; now, he went and seined with us. That's ...how we learn, that's how we teach our kids [fish camp]. I mean, it's togetherness. F-30, 8/17/11

One of the things we were taught and we are teaching our kids and grandkids are that you do not waste. Boy if they let the fish get rotten boy they would be disappointed in us really bad. So we teach and pass that on, don't waste nothing. M-29, 8/17/11

We usually get our subsistence foods, salmon, and a wealthy person, years ago, was when he had a lot of dry fish for his dogs, salt fish, smoke fish. The women had their wooden kegs full of berries for their Eskimo ice cream. Maybe the father was fishing commercially and made enough to buy a few groceries form the store, enough [rifle] shells. That was a wealthy person. I think today a lot of people still think the same way. M-62, 9/16/11

Yeah, I think growing up in a small village wealth was defined by what you provided for your family. If you were a highline fisher, you were very wealthy, both physically, as well as mentally. If you were a good hunter, that in itself was very wealthy. Or a good trapper, good provider. M-61, 9/16/11

Salmon is one thing. They make you feel rich, because you have something to eat all winter. Smoked salmon, sun-dried spawned-out fish, all of those make you feel good, because you grew up with it; it is in your body. M-53, 8/20/11

As long as we have a lot of fish and meat and stuff, they are wealthy. We don't believe in... having lots of money. The wealth to us is having more fish put away for the winter, and meat; that's our wealth. F-27, 8/17/11

In this Western society of living in the city, everybody is for themselves. Everybody is worried about "Joe Blow" next door, who has a bigger TV or a bigger car; they are worrying about money, money, money! It just brings on the sickness of worrying. Here, we run a healthy life, because we have everything we need here; everything we could possibly want is right here. F-32, 8/18/11

They don't learn that at school [proper attitudes toward salmon]. [Laughter]. Elders teach them, Elders are teachers and pass it down to younger generations. They learn it and pass it down to their children. Right down to grandchildren, great grandchildren. M-53, 8/20/11



Figure 22. Pedro Bay. August 18, 2011. Photo by Alan Boraas

2. Introduction

Though each has a different cultural social organization going back to pre-contact times, today there are many similarities between the Dena'ina and Yup'ik of the Nushagak and Kvichak River watersheds. Among them are the importance of sharing subsistence foods, fish camp as a social and educational as well as economic institution, gender and age equity, and the concept of wealth.

3. Sharing and Generalized Reciprocity

The Yup'ik and Dena'ina cultures center on belonging to community and on sharing food as a means of creating and maintaining the living bonds of relationship. The focus on sharing functions as the elemental ordering factor in sustaining the culture and the long-term health of the communities. The practice of sharing is elemental in both indigenous and other cultures both from a material and a social standpoint (Counihan 1999:13). Interviewees indicated that the sharing, preparation, and consumption of food together has created opportunities for efficient and sometimes ritualized teamwork, as well as social bonding and building of networks. The Yup'ik and Dena'ina of the Nushagak and Kvichak River watershed villages, as traditional cultures,

continue these practices through harvesting, preserving, and preparing food together and sharing food through traditional practices and ritual celebrations. They continue to experience the social, spiritual, and nutritional benefits from sharing food, especially salmon, the staple food, up to the present.

Sharing remains a fundamental institution within Yup'ik and Dena'ina cultures today, according to interviewees, and the importance of sharing food, especially salmon, cannot be overemphasized. Among the Yup'ik, for example, *elaqyaq* means “those of the same stomach” and refers both to sharing food and being biologically related. Oscar Kawagley noted a similar linguistic reference: “The Yupiaq [Yup'ik] term for relatives is associated with the word for viscera, with connotations of deeply interconnected feelings” (Kawagley 2006:11). As Langdon indicates, the time people spent together in subsistence activities is extensive: “The Yupiit [Yup'ik] enjoyed the bounty of some of the world's richest salmon fisheries. Large quantities of fish were harvested and processed through relentless hours of work in order to sustain families and their dogs throughout the long winters” (Langdon, 2002:41).



Figure 23. Jarred Salmon Being Prepared at Fish Camp. July, 2012. Photo courtesy of Karina Chambers.

Yup'ik and Dena'ina sharing is “generalized reciprocity,” because the time and place of a return gift is not specified. In general, interviewees indicated that people do not expect a return gift when they share salmon or other subsistence foods with someone else, particularly an Elder, but a return gift of food always seems to appear, whether that month, that year or sometime in

the future. The altruism is part of social solidarity. Villagers do not consider sharing to be an obligation, but a way of life, as the Voices of the People at the beginning of this section indicate. Interviewees universally indicated that giving or receiving salmon or other subsistence foods makes them feel good. The altruism of sharing food expresses social solidarity between the participants. Almost universally, Dena'ina and Yup'ik seem to have small jars of salmon available for favored visitors to take with them.

Villagers particularly recognize some Elders who cannot participate in the rigors of subsistence harvesting as people with whom to share salmon and other subsistence foods. The informal first salmon sharing, for instance, always includes Elders (see Section III.F.5). Sharing salmon and other subsistence foods with family living in Anchorage or even farther away is an important bond to home, family, and place. Interviewees consistently talked about how much they appreciated a gift of canned or jarred salmon from home when they were away from the village. They also talked about how important it is for them to send a part of the place to family and friends living away from Bristol Bay.

The Dena'ina believe that tangible items can take on aspects of the owner. This personification is called *beggsha* if the aspects are positive and *beggesh* if negative (Boraas and Peter 2008: 215-9). Artifacts or places can have *beggsha* or *beggesh* depending on events associated with them. A place, something someone made, such as a birch bark basket, or salmon someone prepared take on *beggsha*. The term does not easily translate into English, so today people talk about giving “love” when giving a gift of something they made or prepared. Conversely, one receives “love” when receiving a similar gift. This perspective is one of the reasons that Alaska Native foods, especially salmon, are served at all gatherings such as potlucks and potlatches. Preparing and giving food is a tangible act of love. Recipients appreciate non-Native foods, but they are not from the place, were not made by the giver and, consequently, are not an expression of love when gifted.

Athabascan Elder, the late Reverend Peter John 1996:60) expresses love this way, “True love is something that you never see....By gathering to share food, songs, and speeches, love grows among the people.”

4. Fish Camp

Writing of subsistence in general, including fish camp, Yup'ik Elder and scholar Mary C. Pete (1993:10) wrote:

For many Yup'iks, subsistence activities teach children much more than hunting and fishing: they convey respect and proper conduct toward the land and water and animals and other humans; they promote satisfaction from hard work and contribution to the kin group. For many Yup'iks, subsistence goes beyond mere economy—it is a vital way of live and a source of pride and identity.

Both the Dena'ina and Yup'ik have a long tradition of going to fish camp to harvest salmon. As interviewees indicate, the villages of the Nushagak and Kvichak River drainages harvest salmon either at or very near town, and fish camp may be only a short boat ride or four-wheeler trip to a traditional fishing locality where they may or may not camp out (cf. Fall et al.

2010). Many villagers, however, still travel to a traditional place, set up camp, and live for several weeks catching and putting up salmon. Villagers from Kokhanok, for example, travel to fish camp on Gibraltar Lake, while residents of New Stuyahok, Ekwok, and Koliganek stay at various camps on the Nushagak River, downstream of the villages primarily at Lewis Point (*Nunaurluq*), and villagers from Nondalton go to camps on Sixmile Lake and Lake Clark. Generally, the interviewees indicate the fish camp consists of an extended family, with three or more generations, but close friends may also participate (Fall et al. 2010).



Figure 24 Young Boy Helping at a Nondalton Area Fish Camp. Photo courtesy of Karina Chambers

Families typically view fish camp as a good time when they can renew bonds of togetherness by engaging in the physical work of catching and processing salmon. Family members who don't live in the villages often schedule vacation time to return home to fish camp, not just for the salmon, but for family. The importance of sharing in vigorous, meaningful work cannot be overestimated. It creates cross-generational bonds between children, their parents, aunts, uncles, and/or grandparents that, today, are rare in Western culture because there are so few instances in which meaningful, multi-generational work occurs (Interviews, 2011).



Figure 25. Smoking Salmon at a Nondalton Area Fish Camp, July, 2012. Photo courtesy of Karina Chambers

Fish camp is a time when children and teens learn not only the practice of how to properly catch, clean, and process fish, but the values that are an integral part of harvesting salmon and interacting with nature. As such, it is a primary educational institution (Fall et al. 2010). Young people learn from their parental generation and, particularly, from their grandparents, their Elders, about the Yup'ik or Dena'ina way (cf. Ellana and Balluta 1992:208). Interviewees stressed that the primary value passed on at fish camp is respect for nature and, particularly, respect for salmon. As discussed in Section III.F.4., showing this respect involves using everything and disposing of what little is left over in a respectful manner. Fish are not disparaged, bragged about or made fun of. Catching salmon with a good attitude is the first step in imbuing it with the *beggsha* or love discussed in the previous section.

Fishing and fish camp also play a significant role in maintaining emotional and spiritual health because the meaningful group activity has a significant therapeutic affect (Capers 2003:1,8-10; Mills 2003:85-88). See Section 7, Behavioral and Mental Health Treatment below for further discussion on this matter.

5. Gender and Age Equity

Gender equity among subsistence families is balanced and has many of the characteristics of a traditional family farm or family-run business. Both men's roles and women's roles are equally valued, and it is common that men can do most "women's" activities (cook, clean fish, etc.), while women can do most "men's" activities (shoot a moose, run a boat, etc.) (Interviews 2011).

Traditionally, Elders are important members of village society, seen both as sources of values and storehouses of traditional knowledge, and they are valued in child-rearing, village decision-making, and life guidance. A common saying in the villages is: "When an Elder dies, we lose an encyclopedia."

6. Wealth

When asked their perception of wealth, only 3 of 53 interviewees, all from the same village, indicated that they measure at least part of their wealth in terms of money, material items, and potentially high-paying jobs (see Section III.B.8.). The remaining interviewees who commented responded that wealth is measured in terms of one, or more, of three themes: food in the freezer, family, and/or freedom.

To the majority of interviewees, stored subsistence food means a family is wealthy or rich as noted in Section III, B. Various entities attempt to monetize this value, but to the people, subsistence is priceless. It means you won't starve; it means you will have among the healthiest diets in the world; it means you will be able to actively engage in the sharing networks described above; and it means shared, activity that enhances family and/or village togetherness. A full freezer (or freezers, as is often the case), a well-stocked pantry and a full wood bin are primary symbols of wealth in the Nushagak and Kvichak River villages. Most villagers, of course, recognize that money is a necessity, but money is not the singular measure of wealth. Money is necessary for the tools for subsistence, gas and oil for boat and house, and occasional travel, and locals generally acquire it through part-time jobs or commercial fishing that still allows time for

subsistence activities. By Western materialist standards most of the villages are poor; by their own standards Nushagak and Kvichak River villagers are rich, and it is the people who live a non-subsistence lifestyle who are poor (summarized from interviews, 2011).

Interviewees indicate that wealth also derives from having a large, extended family, particularly one that is closely knit by subsistence activities. Nuclear families are not necessarily large, but having an extended family means having people you can count on if need be, and it means having people to whom you can give your love and assistance. This tradition of alliance through marriage has its origin in pre-contact Yup'ik and Dena'ina culture (see Sections II.B.3 and II.C.2).

Few interviewees spoke with fondness of living in Anchorage or other urban places they have lived or visited. Though hunting and fishing require abiding with ADF&G regulations, most villagers see those activities as involving a degree of freedom that does not often occur in non-subsistence work settings. As described in many interviews, with subsistence as your job, you don't have to punch a clock, you only follow nature's clock; you don't have a boss, you are your own boss, and you either suffer the consequences if you do not perform well or reap the benefits if you do. During our May visit to one village on the Nushagak River, two young men in their early twenties left on a 17-day subsistence trip upriver into the Mulchatna area, one of the most remote places in North America at any time of year, but virtually deserted in spring, when snow was still present. They were on their own, and apparently all who were connected to the endeavor embraced that freedom. As they left, for example, the mother of one of the boys simply said, "Be careful," just as a parent living on Alaska's road system might say to a son embarking on a trip to Anchorage. This view comes from villagers having knowledge of and ranging over a vast territory, almost all of which is in a natural state. Consistently, people are thankful to live in a place where they can live off the land in the manner of their ancestors, and don't want to live anywhere else (Interviews, 2011).

7. Behavioral and Mental Health

There is increasing recognition by Western behavioral and mental health practitioners of the role of traditional cultural practices in maintaining and treating behavioral and emotional health. In subsistence cultures, such as the Yup'ik and Dena'ina villages of the study area, Capers (2003:1) states that culturally-based behavioral assessments have a higher probability of providing useful information than Western based assessments. Capers (2003:1) points out that an assessment of healthy homes in Yup'ik territory can be measured of the size of the woodpile and the amount of fish put up for winter. Capers cites Kenneth Robertson of the Substance Abuse and Mental Health Services Administration (SAMHSA) as stating, "substance abuse renders individuals incapable of taking care of themselves or their families—which in turn affects the well-being of the entire community" (Capers 2003:1). From a behavioral health perspective, if one is abusing drugs or alcohol that individual will not be able to adequately engage in the demanding tasks of subsistence.

In a study done in Yup'ik territory (the Yukon-Kuskokwim delta) Hazel and Mohatt (2001) point out the importance of Native-based spirituality in substance abuse treatment rather than zealous application of Western-based treatment programs which may or may not work well. Hazel and Mohatt (2001:544) state:

Spirituality is central to the worldviews of Native people...a paradigmatic shift is necessary, one which moves away from a deficit and disease theory to an examination of the problem of alcohol addiction from an indigenous perspective. The new paradigm would focus on the revitalization of cultural pride, work within communities rather than just on individuals, see both abstinence and temperance as worthy goals, and acknowledge Natives' search for personal competence and spiritual power.

Hazel and Mohatt conducted focus group sessions with Yup'ik leaders in which they identified the therapeutic value of traditional activities in dealing with substance abuse including: use of Native healers; eating traditional foods; cleansing and purifying rituals; participating in Native dancing; singing and drumming; subsistence activities such as berry picking, hunting, and fishing; involvement in traditional art and crafts; attending spirit camps, and other worthwhile and meaningful activities that challenge the individual to remain connected to *Ellam-iinga*⁸ (Hazel and Mohatt 2001:547). It follows that such activities are important if not critical to the maintenance of emotional stability for healthy individuals.

Mills (2003:85-88) describes a behavioral treatment program that successfully utilized traditional practices in the Yukon-Kuskokwim part of Yup'ik territory. Table 20 describes the "categories" of traditional culture that were recognized as having therapeutic value not just in treating individuals with problems, but in maintaining day-to-day emotional balance. While Western culture usually does not recognize activities like fishing, berry picking, gathering and chopping firewood, walks, and steambaths as having treatment value, they proved to be of such significance in Southwest Alaska that they were recognized by Medicaid for the purpose of billing and reimbursement (See Table 20).

⁸ *Ellam-iinga* is a dialect variation of *Ellam Yua* a universal creative, cosmic force described in Section D-1 "Traditional Yup'ik and Dena'ina Spirituality and Cosmology."



Figure 26. Hot Room of a *Maqi* or Steambath. New Stuyahok. January 16, 2012. Photo by Alan Boraas

Table 19. Traditional Yup'ik and Cup'ik Cultural Practices Correlated with Medicaid Billing Categories. Modified from Mills (2003:87).

Traditional Practice	Medicaid Billing Category					
	Rehabilitation Treatment Services	Intensive Outpatient Services	Care Coordination	Individual Counseling	Family Counseling	Group Counseling
Pissuryaq (hunting)	X	X		X		
Aqevylguq/Ar'sasuuq (berry picking)			X		X	
Neeqsq-Kuyyiliuuni (fishing)	X	X		X		
Kaluukaq (to hold a feast, potlatch, ceremony)					X	X
Quqtaq (gathering wood)	X	X		X		
Eqiurtauq (chopping wood)	X	X		X		
Cuilqeriuni (tundra walk)						
Makiiraq (gathering edible and medicinal plants)			X		X	
Maqi (steam bath)	X	X	X	X		
Caliinguaq (traditional arts and crafts)	X	X				X

8. Steam Baths

In many villages, informal gender-specific groups meet several times a week for steam baths in small wooden buildings heated with wood-fired barrel stoves and share stories, the advice and wisdom of the Elders, and cultural connections. In some ways, these steam baths, or *maqi* as the Yup'ik call them, have taken the place of the men's traditional house, *qasgiq*, and the women's house, *ena*, where the transmission of cultural values and knowledge traditionally occurred, as well as much entertaining talk. As described in Section 7 they are a significant integrative factor in individual emotional stability. Among Dena'ina the traditional word for steambath is *neli* which traditionally was a spiritually powerful place as well as a place for healing (Kalifornsky 1991:48-50; 218). Today the Dena'ina *neli* has many of the social aspects of the Yup'ik *maqi*.

Modern *maqi* consist of three rooms, an outer changing room, a warm room and an inner hot room where the wood stove surrounded by rocks burns heats the inner room to over 200

degrees F. and as hot as 300 degree F (see Figure 25 and 26). Men generally take a “steam” earlier in the evening, and women later. The age range is from children about four to the eldest in the village. Bathers move in and out between the hot and warm room and finish by soaping and rinsing with buckets of fresh water. Young men sometimes engage in competitions to determine who can stand the hottest temperature. Steambaths are taken several times a week, for some each evening, and collecting firewood for the steambath is a regular activity. Kizzia (1991:129) describes the Nushagak River village *maqi* experience as a chance to “slow down and put the world in perspective.” The steambath is an institution of sharing community news and obtaining advice from Elders as well as a vehicle to maintain emotional and community stability.



Figure 27. Firewood sled (foreground) and *Maqi* or Steam Bath (background). New Stuyahok, January, 18, 2012. Photo by Alan Boraas

9. Suicide in the Study Area

Tragically, suicide is one of the primary indicators of individual loss of identity and breakdown of society (anomie). Alaska has one of the highest suicide rates in the nation and that, sadly, is due in part to very high rates in rural Alaska. However, as indicated by data from the Alaska Bureau of Vital Statistics (see Table 21), those high rates are not spread equally throughout rural Alaska. In the Northwest Arctic census area the age adjusted suicide rates per

100,000 are four times the Alaska rate (22.7 in 2009) and six times the national rate (11.5 in 2011). Suicide rates for the Bethel area north of the study area indicate a similarly grim picture.

The suicide rates for the study area including the Dillingham census area which includes the Nushagak drainage villages of Dillingham, Ekwook, Koliganek, and New Stuyahok as well as five other villages outside the study area are comparatively much lower. In only one two-year period was the age-adjusted rate per 100,000 even calculable at the 95% confidence level because the number of suicides was so low (see Table 21). Suicides were even lower for the Lake and Peninsula Census area which includes the study area villages of Igiugig, Iliamna, Kokhanok, Levelock, Newhalen, Nondalton, and Pedro Bay in the Kvichak drainage and 10 other villages outside the study area. While any suicide is a horrible loss for family and community, especially in small rural villages, statistics indicate suicide is not of the epidemic proportions in the study area that it is in other parts of Alaska.

Table 20. Suicide Rates in the Study Area (in gray) compared to Alaska and Other Selected Areas.

	Alaska	Dillingham Census Area		Lake and Peninsula Census Area		Bethel Census Area		Northwest Arctic Census Area	
2010 Population	698,473	4,933		1,488		17,236		7,208	
	*per 100,000	*per 100,000	Actual Number	*per 100,000	Actual Number	*per 100,000	Actual Number	* per 100,000	Actual Number
2007-2009	22.7	42.4	6	--	0	61.6	30	67.5	15
2006-2008	22.6	--	2	--	0	50.1	25	93.0	21
2005-2007	20.9	--	2	--	0	38.3	19	81.9	18
2004-2006	21.0	--	2	--	0	48.1	24	79.4	18
2003-2005	21.0	--	4	--	0	56.9	29	66.1	15
2002-2004	21.5	--	4	--	1	50.8	26	74.8	17
2001-2003	19.4	--	3	--	1	32.7	17	78.4	17
2000-2002	19.6	--	1	--	3	27.6	13	74.5	16
1999-2001	18.3	--	2	--	2	23.8	11	62.2	13

* Rate is Age-Adjusted per 100,000 calculated at the 95% confidence interval

-- Rate per 100,000 not calculated because the incidence is too low to be within the 95% confidence interval

Data from "Alaska Bureau of Vital Statistics, Detailed causes of Death in Alaska.

http://www.hss.state.ak.us/dph/bvs/death_statistics/Detailed_Causes_Census/frame.htm

While suicide is complex, one of the chief reasons is a debilitating feeling of hopelessness. The 2011 Alaska Federation of Natives panel on suicide identified specific causal factors including historical trauma, substance abuse, sexual abuse, and family violence (DeMarban 2011). It is also not easy to determine why suicide rates are much lower in some parts of rural Alaska such as the Nushagak and Kvichak drainage. One reason is that Orthodoxy is generally strong in these villages and Orthodoxy considers suicide to be a sin and a violation of the fifth commandment “Thou shall not kill” (Morelli n.d.). Resident indigenous priests with close ties to the village no doubt provide preventative spiritual counseling to those in despair who might be contemplating suicide. Second, the cultural strength of a subsistence lifestyle cannot be discounted as a second effective defensive measure against suicide in places like the Nushagak and Kvichak villages where subsistence is very strong. Eating a healthy, natural diet; engaged in vigorous, meaningful outdoor activity with family and friends and the village support of those friends and family; and having a significant degree of independence and therefore feelings of control of one’s destiny; and living in a cultural continuum that goes back thousands of years on the landscape of one’s ancestors in all probability remediates the despair that can lead to suicide before it ever gets to a critical state.

F. Spirituality and Beliefs Concerning Water and Salmon

1. Voices of the People

Respect and Thanks

Yes, they do [streams have a spirit], like everything else, all living things. Before Russian Orthodox came here, that is what we worshipped. We worshipped all the living things, even the air, the sky, the moon, the sun, snow, rain. It is in every aspect of our lives, how we are made up, what we believe in, why are we still here? M-33, 8/18/11

They say everything on Earth has a spirit, like we have a spirit. So everything has spirits, the streams, the waters, the lakes, the mountains, trees, birds; everything has a spirit. To me, I think, that's why we have to pray, and you have to keep the streams clean, not pollute it. F-27, 8/17/11

I think that, if you treat animals disrespectful, that they are not going to show up again. F-32, 8/18/11

That is why we are so clean around here...they [outsiders] don't know if we camped around here or not, because we clean up our garbage, and we hardly leave any evidence that we were there. M-36, 8-18-2011

Yes, like all other things you are granted [by God], you give thanks for [salmon]. F-69, 9/18/11b.

First Salmon Ceremony

The first salmon, it's still tradition to share with everybody. You do say a prayer. F-47, 8/20/11

When we catch the first king salmon, about this month [May], maybe next week, we share that king salmon, cut in little pieces, to give to them to cook, especially to the Elders, because they always want fresh fish. F-22, 5/18/11

First catch is shared with all of the Elders. Elders first, always the priority, Elder, because they cut it in pieces, you know, if you catch a king, you share, instead of eating the whole fish by yourself. The first catch. M-20, 5/18/11

Tradition--first salmon, the very first salmon you catch you boil everything, everything. You don't waste anything then you eat it too. I mean, even the liver, if it's a male the sperm sac, everything. M-29, 8/17/11

Every year, when I first catch a king salmon, I usually pray to God and thank Him for it. A lot of people do the same thing, because he is the one giving us these wild foods. M-63, 9-18-11



**Figure 28. St. Michael the Archangel Russian Orthodox Church, Koliganek. September 15, 2011.
Photo by Alan Boraas**

Great Blessing of the Water

There are a lot of folks along the Nushagak, down to Dillingham, and along the chain that are Orthodox because of the Russian influence. They actually have three ceremonies in the church that deal with the salmon. The first one is the Blessing of the Water in the winter time. You have probably seen the newspaper articles about the priest that goes out there and blesses the water. It can be minus 40 or minus 50 [degrees Fahrenheit], and you seem them running that cross in the water, and they never freeze. That in itself is a miracle, I think. The other thing that happens is that, just prior to fishing, the church has a special service of the blessing of all the resources. The third thing is the blessing of the fishing boats. The individual fishermen, when they get done with all their nets and all their gear, they can ask the priest to come and bless their boats. M-81, 9/16/11

They do it every year at Theophany.... It's very important to us; it's a blessing of the water, blessing the river so the fish come in. It's an Orthodox religion ceremony. M-20, 5/18/11

The Holy water is so pure. We believe it is healing, has healing powers. When you are sick or have a cold, have just a little tiny bit. F-69, 9/18/11

And over on the Iliamna side, they will do the same thing that Father will do over here with the water, make holy water. People will come down there too with either buckets or jugs and fill them up. M-65, 9/18/11

I used to live in Portage where there is no clinic. That is the only thing I could give my kids [holy water, when they were sick]. You know pray upon them and let them make the sign of the cross and let them have a taste of the holy water. F-72, 9/19/11

That holy water is strong. To be honest with you people, I would not be talking with you right now [if not for holy water]. A long, long time ago, before I become a lady, we were upriver with my mom and dad. My mom was sick too, my grandparents and dad, too, and uncle [name]. In night time, I guess I almost go [die] you know. But my dad, he prayed for me. If you're really true, praying really hard, I guess he'll answer you. My dad tell me I have no more breathing, no more pulse. And when I come to, my dad was holding me like this, up you know, feeling my heartbeat. As soon as I opened my eyes my dad said 'you get up'. I said yeah, I told him I was going to sleep, how come you woke me up? I was going to go to Big Church [heaven], and my dad said 'you can't go to Big Church' When he tell me that, I told him holy water—I call Native way, malishok, holy water, malishok [Yup'ik]--'give me holy water to drink'. He did, my dad, he did. A little bit you know. I opened my mouth, I swallowed, the water was going down into my stomach... I closed my eyes, pretty soon I come through. My dad was up, my momma was sleeping, she was sick too upriver [Yup'ik placename]. I go but I came back. Almost going to that Big Church. My dad he tell me not to go into the church, come back, that's why I become a lady. It's true, I tell you guys the truth, better not forget that. Holy water is strong, that is what made me come back. F-66, 9/18/11



**Figure 29. The Eve of Theophany, St. Sergis Orthodox Church, New Stuyahok, January 18, 2012.
Photo by Alan Boraas**

2. Introduction

Most of the residents of the interior villages of the Bristol Bay drainage are Russian Orthodox Christians or were brought up as Russian Orthodox, and the Orthodox Church, along with the public school and the tribal structure, is among the dominant institutions in the villages. Many of the villages have a resident indigenous priest or priests; for others, clergy visit periodically on a scheduled basis. In some villages Protestant churches have formed: Port Alsworth, and Dillingham have Protestant church buildings, the latter in addition to an Orthodox church.

Beliefs concerning streams and salmon, in those villages where Orthodoxy is the dominant religion, involve a syncretism merging traditional beliefs with Russian Orthodox practice. Dena'ina writer Peter Kalifornsky (1991:249) described syncretism when writing about his great-great-grandfather's nineteenth century message to the Dena'ina people after his conversion to Orthodoxy: "Keep on respecting the old beliefs, but there is God to be believed in; that is first of all things on earth." Russian Orthodoxy itself has a syncretic tradition of melding Middle Eastern-derived Christianity with spirituality influenced by the northern environment. Billington (1970:18-19, and 403) points out that, though Orthodoxy moved north from Greece and Asia Minor into Russia in the ninth century A.D., its long history in the northern forest has shaped the belief system to interpret and interact with aspects of the subarctic taiga. Billington writes, "God

came to man not just through the icons and holy men of the Church but also through the spirit-hosts of mountains, rivers, and above all, the forests” (Billington 1970: 403). Consequently, many Russian Orthodox rituals involve interaction with nature. The mystical aspects of Orthodoxy fit well with traditional Dena’ina and Yup’ik beliefs, many of which related to interacting with the landscape on which their survival depended (Boraas, 2013 in press). For the Dena’ina and Yup’ik living in the Nushagak and Kvichak River drainages, beliefs regarding pure water and the return of the salmon, discussed below, ritually and spiritually express the meaning of life as people of the salmon.



Figure 30. Procession going onto the Nushagak River at New Stuyahok for the Great Blessing of the Water. January 19, 2011. Photo by Alan Boraas

3. Great Blessing of the Water

The “Great Blessing of Waters” takes place during the Feast of Theophany, a major event in the Orthodox Church calendar and is celebrated on January 6th of the Julian calendar, the calendar of Orthodoxy (January 19th in the Gregorian calendar). While all church rituals are important, Theophany can be considered to be the third most important church ritual after Christmas and Easter to the Orthodox of the Nushagak and Kvichak watersheds (personal communication, Fr. Alexi Askoak, St. Sergis Russian Orthodox Church, New Stuyahok, January 19th, 2012). A theophany is an event in which God reveals himself to humans and the Great Blessing of the Water marks the baptism of Jesus by John the Baptist. After Jesus’ baptism God appears saying, “this is

my son whom I love, with him I am well pleased,” (Matthew 3: 17, New International Bible). As explained by Fr. Alexi Askoak (personal communication, January 19, 2012), in the Orthodox view, baptism both redeems sin and brings the Holy Spirit to the recipient. Orthodoxy believes in the triune God, consequently Jesus is God and without sin. So Orthodoxy transfers the baptismal ceremony to one of God’s most important creations, water, and one of the creations most important to the people of the Nushagak and Kvichak since salmon and related wild foods are dependent on clean water.

An evening church service is held on the eve of Theophany in preparation for the blessing the next day. The two-day ritual is a liminal event with believers moving into a deeply spiritual mental state. At the service I (Alan Boraas) attended, 211 villagers of New Stuyahok were present filling the small church. The next morning a communion service was held involving the personal forgiveness of sins, and, as the sun rose, the people led by the priests went out onto the frozen Nushagak River where an Orthodox cross had been cut into the ice and a small hole had been made to withdraw holy water (Figure 28). There a baptism service was held purifying and sanctifying the water of the Nushagak River. At the moment in the service when the priest dips the cross through the hole in the ice into the water for the third time, God is believed to sanctify the water making it holy. According to Father Michael Oleksa the Great Blessing of the Water is done to “reaffirm the Church’s belief that the natural world is sacred and needs to be treated with care and reverence” (Orthodox Church in America, n.d.). The Orthodox Saint John Maximovitch (n.d.) wrote:

...when we bless waters of lakes, rivers and streams, we ask God to send His blessings upon the waters of His creation so that even though humanity has spoiled the world through sin and abused the environment over many generations, God has not forsaken the world. He sends His spirit to cleanse and sanctify His creation.

“Sin” in the form of human-caused pollution and other contaminants are ritually removed from the water and it is now considered pure and holy (personal communication, Fr. Alexi Askoak, January 19, 2012). In New Stuyahok, and other villages where the ceremony is performed, the now blessed water is dipped from the hole in the ice and saved in containers for personal spiritual use and a large container is taken back to the church for use as holy water. And, interviewees indicate, the water is now pure and clean in preparation for the return of the salmon.



Figure 31. Great Blessing of the Water, Father Alexi Askoak, St. Sergis Church, New Stuyahok. January 19, 2012. Photo by Alan Boraas

Holy water from the sanctified rivers is believed to have curative powers for both physical and mental illness and is drunk or put on the affected part for healing purposes (Fr. Alexi Askoak, personal communication, January 19, 2012). Several interviewees shared very personal incidents of the power of holy water to cure. Fr. Alexi told the story of one bitterly cold Theophany when he frosted his face during the ceremony. When they returned to the church one of the parishioners rubbed holy water on his face and he subsequently did not blister or suffer any ill effects other than one little spot the water had missed which left a mark for several years. Fr. Alexi believes God healed him through the holy water. A young 20-something interviewee in Koliganek movingly told of a time when her children were gravely ill and there was no doctor, health worker, or suitable medicine available. She said, “all I had was holy water.” She had the children drink the holy water and in a few days they recovered. She attributes their recovery to the power of the blessed water. An elderly woman movingly told the story of being brought back from near death when she was a child by holy water. Both stories are recounted in the “Voices of the People” at the beginning of this section.

The antiquity of the Great Blessing of the Water in Alaska is apparently as old as Orthodoxy. Hegumen Nikolai was an Orthodox missionary priest stationed in the Nushagak area in 1846 and then transferred to be the first permanent priest in Kenai where he served from 1846 to 1867 (Znamenski 2003:15-18). In his travel journals Hegumen Nikolai describes conducting the Great Blessing of the Water in Kenai in 1862 and 1863 on January 6th, Julian calendar. (Znamenski 2003: 94, 108) (Travel journals, official church documents missionary priests were required to

submit to the diocese yearly, have not been translated for earlier years for missionary priests operating in the Dena'ina or Yup'ik areas of the Nushagak and Kvichak watersheds.)

From a secular standpoint, the question is not whether or not holy water has healing efficacy or whether the water is actually purified, but how the Great Blessing of the Water ceremony and holy water reflect values of the people. By elevating water to sacred status, the people of the villages define core values. As described in section II. E. 4 the Dena'ina word for water, *vinl̄ni*, has sacred overtones and water, itself, is sacred. Since the word predates Christianity in southwest Alaska, we can assume sacred water has long been a part of the salmon cultures of the Nushagak and Kvichak watersheds because the people recognize that clean water and salmon are fundamental to life itself. The Great Blessing of the Water ceremony is an extension of that very old concept, rendering in Christianity the belief that water is sacred to life and culture. Through the liturgy of baptism the ceremony becomes a form of world renewal ceremony reestablishing God's intended order

4. Respect and Thankfulness

Water and salmon play additional roles in modern Orthodoxy in the study area as derived, in part, from traditional subarctic spiritual practices. Describing traditional Dena'ina beliefs, Kalifornsky (who was also a devout Orthodox Christian) writes (1991:362-363) that, after putting out his net, “*ᑕuq'a shegh dighelagh*” or “a fish swam to me,” indicating that the spirit of the salmon had a will and would allow itself to be taken for food if the net-tender had the correct attitude. Today, all interviewees that commented on it believe that salmon have a spirit or soul and that soul is a creation of God. Further, all interviewees who responded report offering a prayer of thanks when they catch salmon, particularly the first salmon as noted in the “Voices of the People” at the beginning of this section. That prayer may be a humble “in one's mind” statement or it may be spoken thanking God for the salmon.

Interviewees also still believe in treating all animals, including salmon, with respect. Several modern practices reflect this belief, for example, using the entirety of a fish for food, except the entrails, which villagers return to the water along with the bones that remain after consumption. To not use all of the edible parts of a salmon is considered to be abuse (interviewees). Another example, interviewees report, is never allowing fish or meat to spoil. Interviewees repeatedly stressed the importance of giving salmon and all subsistence animals respect. This attitude echoes the pre-contact beliefs that animals had a will and, if not treated properly, would not allow themselves to be taken for food, leading to dire consequences for the people (Boraas and Peter 1996:190-192).

5. First Salmon Ceremony

The First Salmon Ceremony is a world renewal ceremony which, like other world renewal ceremonies, recognizes the cyclical onset of the most important yearly event in the culture. As mentioned in Section II.C.2, the First Salmon Ceremony was described by ethnographer Cornelius Osgood (1976:148-9) and was practiced in pre-contact times and is based on a mythical story that merges people and salmon. Because of the importance of salmon in the lives of the Bristol Bay villagers, interviewees report they continue to mark the return of

salmon in the spring by a special observance. The actual practice varies, but involves a prayer of thanks to God for the return of the salmon and sharing the first salmon caught in the spring with Elders and others in the community. Typically, according to interviews, each receives a small piece, and there is a general feeling of happiness that the salmon have returned and the cycle of the seasons has begun again and nature will provide the people with sustenance. In some places the First Salmon Ceremony takes place at fish camp, where extended families and others present share the first salmon they catch with one another, including the Elders. In at least one village, New Stuyahok, the ceremony includes sharing the first salmon with “the underground,” by placing a small piece of it under the forest mat at the cemetery, symbolically sharing salmon with the deceased ancestors buried there.



Figure 32. Kvichak River and Lake Iliamna at Igiugig. May 16, 2011. Photo by Alan Boraas

G. Messages From the People

At the conclusion of the interviews we asked interviewees if there was anything else they wanted to say, anything we had not covered, and/or any message they wanted the Environmental Protections Agency to hear. The following reflect those comments:

1. Voices of the People

I, myself, get very emotional when the topic of the Pebble Mine comes up. I don't even want to think about it. In the future I don't want to think about total ruin of our way of life. It really saddens me. F-69, 9/18/11

For quite a few years there when we were building up the king salmon run we didn't even fish in June. It was just to build up those runs. It is kind of ironic that the kings we built up are on the Koptuli River where that mine is going to go. It is almost a whole decade that we sacrificed to build up that run. We built it up and now it might go away. M-61, 9/16/11

You don't see Bristol Bay having troubles because our ecosystem is whole and not damaged. We are very appreciative of what we have. In relationship to the mine the place I work up here is the Bristol Bay Economic Development Corporation and... one of the companies we bought is Ocean Beauty Seafoods which is one of the largest salmon producers in Alaska. We put up 161million pounds of commercially caught goods in a year. So I talk to the people and if there is a mine that goes in like pebble and we have copper coming out and affecting our fish, are you interested in buying our fish? These are customers we sell 300-400 thousand pound lots to. No, we are not interested....We don't want ourselves and our kids to eat contaminated foods. M-60, 9/16/11

It is clear, good water to drink. This is what we protect our good water to drink. F-48, 8/20/11

We can't even fathom somebody hurting the salmon. When the pebble mine folks first came in they said they were going to pump the tailings right into the middle of the lake. We said you are going to kill the lake. They said you guys got no say so....We said no you'll kill the lake. We couldn't fathom it. We said you kill the lake and we will go to war. M-60, 9/16/11

Since the Pebble Mine started their exploration, I speak for everyone around here that we have not had the big caribou herds that come through here anymore. F-69, 9/18/11

That is our greatest fear about the mine. The size of the hole and the tailing pond they are going to build. You know you see our KDLG water tower up here and the size of the walls are going to be greater than that and if we get a spill we are done. What we say is that we can't afford the risk. The mine might be safe but there might be an earthquake and pollution happens. We can't afford the risk. M-60, 9/16/11

In Easter they went up to Koliganek the next village up. He said people up there caught white fish and pikes. He said the water is good upriver, it's not like down here. I think it's the water

that is coming down from up Mulchatna. He thinks it's from them working on that pebble up there [pebble mine]. F-23, 5/18/11

There's open water all over. They got drilling rigs that are sitting on open water. You can't walk up there with knee boots you got to have hip boots there is so much water this year. The ground is saturated. M-60, 9/16/11

[Translator of 80+ year old Yup'ik-only speaking Elder] He is only worried about the Pebble, right now. If the Pebble starts, the water is going to get effected before anything else. That's what he is worried about.

M-21, 5/18/11 We feel that EPA is very important around here to give us a fair shot at examining this.... [reference to specific individuals deleted] You know they [state officials] are all for this economic development. You know economic development up in that mine they are going to bring in outsiders they are going to destroy the culture up there like you wouldn't believe. Most of the outsiders will, most of the jobs will go to outsiders and we will be left with the pollution. M-60, 9/16/11

They [Salmon] would not go there [where water is contaminated] They are also very sensitive to temperature. They have a really keen sensory acuity, not only them, but all the critters, all the birds. ...They are so sensitive in every aspect of that word. ...It's relying on the renewable resources for our people have been going on for a long time. The respect for it, it is still there for those of us who do respect it. We have been sharing it with everybody. Nobody was jumping up and down, hollering about one group or another, until the Pebble people came. We took all these resources just for granted. We did not know anything about open pit mine or mining. I realize as human beings we need mines. I have to buy bullets now and then. I have to buy a prop for my outboard motor. I have to go buy bearings for my Honda. This is not a place to have that. They cannot have that here. There is no balance there. They talk about coexistence, that is not...that's coming from the other side. That stuff can't coexist with salmon. Are you going to compare coal to copper? Copper is a thousand times more devastating than coal. [M-33, 8/18/11

The drill wells are making all the noise. We were over there, my wife and I were over there last spring, and when we went over there to check out the Pebble, there [we] saw three other helicopters right in the same area, and that's lots of traffic. We have not had caribou meat around here ever since. Haven't had caribou meat caught here in probably the last six years. M-68, 9/18/11

*Bristol Bay is renowned for what it has to offer. Like I was saying earlier, this region had a very good working agenda before the Pebble people came. M-33, 8/18/11
[Name] went with her and she is about 88 years old [mother and daughter on an Outside mine visit]. They went out to look at mines and [name] cried at every mine she looked at, she couldn't believe that man would be that disrespectful of the earth. She said literally cried... like her brother, mom or dad died. She represents us all, we can't see destroying the earth like that. We're not greenies you know we are far from green but we can you know. Without EPA we are*

sunk. ... We know it is just a matter of time. All of us have had a few cocktails and drove, one of these times we are going to have a few cocktails and get in a car wreck. It is just a matter of time. Just like that mine. We really feel helpless with the state government. It is like we are dispensable out here and it is better for the big boys to come in. that is what the mine people are telling us. Right guys? When they first started coming? You got no say, so we are coming. M-60, 9/16/11

And what is going to happen when this mine closes up? Our great-great-great grandchildren are going to end up paying for it. If they are fortunate enough to still be living in Bristol Bay if the salmon, the streams are not contaminated and sustained. I hate to think of the future if this mine goes through. The long haul it is going to be devastating. M-62, 9/16/11

We are very rich. With this new mine coming up, I would never trade my fish for money or a new house, or whatever. I'd like to have all that, but I would not trade what we have every year for how many centuries. F-35, 8/18/2011

IV. CONCLUSIONS

As described in Sections II and III, the Yup'ik and Dena'ina village cultures of the Nushagak and Kvichak River watersheds practice a subsistence lifestyle that developed over several thousand years of living in the area and depends primarily on salmon. At the same time the people have incorporated modern technology, political participation and educational standards into a successful transition into the modern world. As illustrated by the Elder and culture-bearer interviews, this lifestyle has built strong, connected networks of extended families and a culture based on sharing, traditional knowledge, and respect for the environment.

Most of the villages have schools (except Pedro Bay where children are home schooled), city government or tribal council, a health clinic, post office, small store, church, airstrip, and electricity and running water in most homes. Homes have radio and satellite TV and many are being connected to high-speed fiber-optic internet. Basketball games in the school gym and bingo at the council building, and sometimes Yup'ik and Dena'ina dancing, and communal sweatbaths are popular in the evenings. Four-stroke outboards on large skiffs, four wheelers, and snow-machines are everywhere. These changes are recent, however; up until about sixty years ago, traditional dog sleds and kayaks provided the transportation, and caring for dog teams took much time and effort. The availability of material goods from beyond the villages was limited, modern housing was nonexistent and formal education was mainly offered through boarding schools. The villages of the study area grew dramatically between 1980 and 2000, probably due to post-ANCSA changes in land-ownership (Fienup-Riordan 1994:39) and the population is now holding steady although there is local village variability.

These changes have resulted in some loss of traditional cultural practices; for instance, people no longer openly practice the Bladder Festival, *Kelek* or *Petugtaq*, although essential elements of these can be found in more informal practices, and in some cases transformed through corollary rituals in the churches (see Section III.F). Other changes have been more severe and have both made the communities more vulnerable to changes in their environment and placed them at higher risk for further cultural and individual losses. Examples of such changes include loss of control over traditional use areas, loss of community members to Western diseases and outmigration of young people, for either employment or education, the latter of which included, in the past, the involuntary placement of children in distant boarding schools, removed from the traditional culture (Interviews, 2011).

Some interviewees expressed a fear of the future that a traditional prophecy of "bad times" told by Elders might be coming true due to economic development resulting in cultural loss characterized as "anomie," the loss of meaningfulness, sense of belonging, and direction in life. The cultural and social impacts associated with Westernization have been described as anomie. Merton (1938: 682) gave a classic definition of anomie where he writes, "At the extreme, predictability virtually disappears and what may be properly termed cultural chaos or anomie intervenes." Anomie, the loss of meaningfulness, sense of belonging, and direction in life has occurred among all Alaskan Native cultures to one degree or another. Anomie increases cultural and individual risk for social ills such as depression and suicide, alcoholism and drug abuse, domestic violence, and aggressive behaviors. Healing practices can include those used for trauma and post-traumatic stress disorders, including traditional practices that reconnect the individual to society and the natural environment through meditative rituals. Traditional drumming, singing, and dancing have been shown to be effective in treating trauma and post-

traumatic stress. Culture camps and other methods of cultural revitalization (see Section III.E.4, 5) can be both preventative and healing for children and adults of indigenous cultures. It is critical to assess future risks and vulnerability, and take appropriate measures to reduce both.

Despite colonial disruptions to indigenous peoples in Alaska, the underlying cultures have so far endured among the Yup'ik and Dena'ina people of the study area because of a strong subsistence base. Wholesale changes to the ecosystem that supports their subsistence resources, however, whether they come from large-scale development, including mine development, climate change, high-seas overfishing, and/or declines in the ecological integrity of the North Pacific Ocean such as acidification, carry with them the risk of substantially altering the subsistence lifestyle and the fabric of Yup'ik and Dena'ina cultures. If these risks come to fruition, the Dena'ina and Yup'ik of the Nushagak and Kvichak drainages will, like the salmon cultures described in the introduction, cease to exist.

Among the specific potential risks associated with diminishment in either the quantity or quality of salmon, clean water and consequently subsistence are:

- Cultural and social disruption due to impact on a subsistence species that integrates village societies.
- Degradation of nutrition and physical health due to diminishment of subsistence foods and lifestyle.
- Loss of political power due to becoming a minority in one's own homeland, if there is an influx of outsiders to the region due to extractive resource development.
- Deterioration in mental and emotional health and increase in indicators of social distress (e.g. suicide) in due to the loss of traditional culture, subsistence, and meaning for life.
- Loss of language and traditional ways to express relationships to the land, one another, and spiritual concepts.
- Loss of meaningful work by extended families operating together as a cohesive unit.
- Reduction of gender equity resulting from loss of important economic activities and social networking opportunities, due to the potential diminishment of subsistence foods harvest and preparation, and replacement of this work with jobs that are typically more accessible to men (e.g. mining) or to fewer women (such as those who do not have small children).
- Loss of the means to establish and maintain strong social networks through sharing of subsistence foods.
- Impact on belief systems that revere clean water and a clean environment.
- Increased discord within and among villages between the majority and the minority over subsistence access or development issues has the potential to create long term rifts.

In summary, salmon and clean water are foundational to the Yup'ik and Dena'ina cultures in the Nushagak and Kvichak watersheds. The people in this region not only rely on salmon for a large proportion of their highly nutritional food resources; but salmon is also integral to the language, spirituality, and social relationships of the culture. Because of this interconnection, the cultural viability, as well as the health and welfare of the local population, are extremely vulnerable to a loss either quality or quantity of salmon resources or to deterioration of water quality.

V. **APPENDIX 1. METHODOLOGY, CONSENT FORM and TRIBAL LETTER OF INTRODUCTION**

Methodology: Cultural/TEK Study: Bristol Bay Project

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April 11, 2011,
Revised April 25, 2011,
Revised May 24, 2011

Purpose:

The purpose of this qualitative study is to describe the subsistence, nutritional, social, linguistic, and spiritual importance of salmon to the Yup'ik and Dena'ina of the Nushagak and Kvichak River drainages of Bristol Bay. This information will be integrated into a larger study, called the Bristol Bay Assessment, coordinated by the Environmental Protection Agency to be used to determine to proceed with a Section 404c review of the Clean Water Act. This action was requested by nine tribes/villages of the Bristol Bay region. If approved, 404c designation would prohibit any discharge into, fill, or similar modification of a stream or river in the region or other actions that would impact the subsistence fishery.

Design:

The product of this study consists of two parts.

- A. Summary of existing research: One part of this assessment consists of a literature and gray literature search and summary of the culture history, linguistic, subsistence and other aspects of cultural lives of the traditional and cultural lives of the Nushagak and Kvichak drainage people as it relates to streams and fishery subsistence, particularly salmon
- B. Elder and Culture Bearer Interviews: Second, this study will incorporate elder and culture bearer interviews to ascertain the importance of salmon and other stream-related resources and places in the ideal culture of the people. Ideal culture is a

standard to aspire to and thus is a measure of values and ideology that form the core of the people's contemporary identity. We are not undertaking a statistical sample of attitudes reflecting everyone in the culture, but listening to culture bearers who have the status of expert witnesses and act as spokespeople for their respective cultures. The remainder of this methodology will describe the elder and culture bearer interviews.

Selected Villages

Both time and money prohibit interviews in all villages in the region. Since this is not a statistical study, nor a hearing, we believe that a self-selected group of elders and culture bearers can best represent the perspective of the region. We intend to interview elders from six villages.

Semi-Structured Questions:

The interview format will be semi-structured, meaning the same questions will be asked of each of the elder/culture bearers. The only differences are that there are some questions that will only be asked of women, and some only asked of Yup'ik or Dena'ina respectively. If an elder/culture bearers wishes to provide additional information, that, of course, will be recorded.

Interview Questions

Draft Interview questions will be formulated in the following categories:

- Subsistence
- Nutrition
- Language and Stories
- Place names and Special/Spiritual places
- Social Factors
- Spirituality related to streams and fishery

The draft interview questions will be distributed for review by

- Village councils or similar authority
- E.P.A. personnel
- Selected anthropologists

and reformulated and condensed as needed.

Self-Selection

Village councils, traditional councils, or similar entity will be asked to select elders/culture bearers to be interviewed. We anticipate this will involve about three men and three women in each village.

Release

Interviewees will be asked to sign a consent form allowing the interviewers to use the recorded and transcribed interviews in a written document. In addition the village councils will be asked to sign a release form for the village to permit photographs and video both of individuals or the village to be taken and potentially used in the final product. Restrictions will be respectively adhered to.

Recording and Transcription

Interviews will be recorded either individually or in small groups. A digital recording and transcription will be made. Elders may wish to speak in Yup'ik in which case we ask a translator provide a summary at the time of the interview. Elders and culture bearers will be paid according to current standards for village/Elder interviews. The interviews will be approximately two-hours and conducted at a comfortable place.

The interviews will be transcribed into MS Word documents and both the recording and transcription be archived either at the National Park Service Alaska or suitable repository.

Coding

Word document interviews will be coded. Key words will be set up for use in identifying the subject of the paragraph of the transcribed recording. For example, through sophisticated searches everyone who responded to or used the term "sharing salmon" will be electronically listed and some or all of these responses either quoted or paraphrased in the final document.

Confidentiality

According to Institutional Review Board standards, names of interviewees will not be revealed in the final document. Each interviewee will be asked to sign a consent form that includes the voluntary nature of the interview, confidentiality, and that there is no known or perceived risk in granting the interview.

Peer Review

Both drafts and a final document will undergo peer review. For the purpose of this study anthropologists, EPA reviewers, other scholars, and Village Elders or Culture Bearers are peers.

**BRISTOL BAY TEK CULTURAL ASSESSMENT
CONSENT FORM**

PRINCIPAL INVESTIGATORS:

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DESCRIPTION:

This study intends to assess the importance of salmon, other fish resources, and streams in the cultural lives of the villages in the Bristol Bay drainage.

YOUR ROLE:

You are asked to respond to a series of questions on the importance of salmon, streams and related resources to the people of your village and your area. You may add any additional information you wish. The questions will take one to two hours at a mutually agreed upon place such as the tribal center.

VOLUNTARY NATURE OF PARTICIPATION:

Your participation in this project is voluntary and you may withdraw at any time. Your interview responses will be used in an Environmental Protection Agency assessment to describe the Yup'ik or Dena'ina use and attitudes about salmon and other stream resources.

CONFIDENTIALITY:

Your name will not be attached to your interview responses. Your name and any other identifiers will be kept in a locked file that is only accessible to me or my research associates. Any information from this study that is published will not identify you by name. The information will be kept for four years then stored at the National Park Service, Alaska. It may be used again by approved researchers or tribal/cultural entities for educational purposes.

BENEFITS:

There are no direct benefits to you. You will be given an honorarium at the rate of \$80 per hour for an approximately two hour interview.

RISKS:

There are no known risks for participation in this study.

CONTACT PEOPLE:

If you have any questions about this research, please contact the Alan Boraas at the phone number listed above. You may also contact Dr. Claudia Lampman, Compliance Officer, UAA Office of

Research and Graduate Studies, at 907-786-1099 for any questions concerning your rights in this interview

SIGNATURE:

Your signature on this consent form indicates that you fully understand the above study, what is being asked of you in this study, and that you are signing this voluntarily. If you have any questions about this study, please feel free to ask them now or at any time throughout the study.

Signature _____

Date _____

Printed Name _____

Mailing Address:



KENAITZE
INDIAN
TRIBE

WWW.KENAITZE.ORG

PHONE: (907) 283-3633 • FAX: (907) 283-3052

P.O. Box 988 • KENAI, AK 99611

March 1, 2011

To Whom It May Concern:

The purpose of this letter is to formally introduce our friend and honorary Kenaitze Tribal member, Dr. Alan Boraas. Dr. Boraas has worked with and on behalf of our Tribe for over 30 years. We have found him to be ethical, fair, and responsive to our requests for confidentiality. He respects our Dena'ina culture, traditions, and values, and lives them.

Dr. Boraas asked for this letter of introduction in observance of tribal protocol and because he values and respects our rights to sovereignty and self determination. We have no doubt that you will find him to be a man of integrity who shares our love for our waters and lands.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

Jaylene Peterson Nyren
Executive Director
Kenaitze Indian Tribe

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