

**U.S. Fish and Wildlife Service
Office of Subsistence Management
Fisheries Resource Monitoring Program**

**Collection of Traditional Ecological Knowledge
(TEK) Regarding Subsistence Fisheries in the
Eagle and Circle Areas of Interior Alaska.**

FINAL REPORT FOR GRANT NUMBER FIS00-026

MARCH 2002

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Final Report Summary Page

Title: Collection of Traditional Ecological Knowledge (TEK) Regarding Subsistence Fisheries in the Eagle and Circle Areas of Interior Alaska.

Study Number: FIS00-102

Investigator(s):

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Geographic Area: Eastern Interior/ Upper Yukon River

Information Type: Traditional Ecological Knowledge (TEK)

Issue(s) Addressed: Lack of recorded TEK regarding subsistence fisheries, particularly for freshwater species, in the Eagle and Circle areas of Interior Alaska.

Study Cost: \$30,000

Study Duration: 8-15-00 to 4-30-01.

Abstract: From August 2000 through April 2001, with assistance from the National Park Service; the Native Villages of Eagle and Circle undertook a project designed to collect Traditional Ecological Knowledge (TEK) from their residents (members of the Han Gwich'in and Kutcha Gwich'in (Kutchin) tribes, respectively). The goals of the project were to collect verbal and spatial subsistence information regarding 2 anadromous and 4 freshwater fish species: Chinook [king] salmon (*Oncorhynchus tshawytscha*), Chum [dog] salmon (*O. keta*), Northern Pike (*Esox lucius*), Arctic Grayling (*Thymallus arcticus*), Whitefish (*Prosopium cylindraceum*, *Coregonus* spp.) and Burbot [lush] (*Lota lota*). The Principle Investigator and Cultural Anthropologists, with assistance from four native Research Assistants (RA's), attempted to collect information about presence, abundance, habitat, and harvest of the above mentioned fish species. The project was partially successful in that a total of 21 "protocol" or "key informant" interviews were conducted, but the spatial data collection utilizing semi-directive group interview techniques was less successful than anticipated. Other project accomplishments included: assessment of the reliability of permit data from state agencies; productive "capacity building" in the form of training for local RA's to document TEK; and a good foundation for further involvement of local residents in natural resource management.

Key Words: chinook salmon, chum salmon, fisheries, king salmon, interior Alaska, *Oncorhynchus tshawytscha*, *O. keta*, *O. kisutch*, subsistence, traditional knowledge, Yukon River

Project Data: Data collected during this project were of 2 forms:

- 1) Spatial data in the form of fishing locations (i.e., point data) drawn by hand by participants on mylar overlays of topographic maps. These points were digitized by the NPS Alaska Support Office and are available as printed hard copy maps (.tif and .jpeg files) and are stored as Arc-View shapefiles. Anecdotal data associated with the points were also recorded: name of persons fishing, availability of fish, time periods, gear type, etc.).
- 2) Protocol “key informant” interviews were conducted by the Eagle (17 interviews) and Circle (4 interviews) Village research assistants. These 21 interviews were transcribed into Microsoft Word documents. Originals are on file at the Eagle Village Council office (included with the final report in a 3-ring binder). An excel data file and charts (protocol_dat.xls) describing these interviews are stored as electronic and printed files and submitted with the final report.

Citation:

Fox, Lisa M. 2002. Collection of traditional ecological knowledge (TEK) regarding subsistence fisheries in the Eagle and Circle areas of Interior Alaska. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, Final Report No. FIS00-102, Anchorage, Alaska.

TABLE OF CONTENTS

LIST OF FIGURES.....	5
EXECUTIVE SUMMARY	6
INTRODUCTION	7
OBJECTIVES.....	11
METHODS.....	12
RESULTS AND DISCUSSION	14
CONCLUSIONS AND RECOMMENDATIONS.....	19
ACKNOWLEDGEMENTS	21
LITERATURE CITED.....	22

LIST OF FIGURES

- Figure 1. Fish species sought after by Eagle and Circle Village residents, 1998-2000.
- Figure 2. Responses to questions regarding salmon health and spawning habitat by Eagle and Circle Village residents.
- Figure 3. Response to questions regarding human impacts on fish populations by Eagle and Circle Village residents.
- Figure 4. Responses to questions regarding youth participation in fishing activities, gear use, and waste of fish by Eagle and Circle Village residents.
- Figure 5. Responses to questions regarding Alaska Department of Fish and Game subsistence permit data by Eagle and Circle Village residents.
- Figure 6. Abundance information.
- Figure 7. View down the Yukon River from Eagle Village, December, 2000.
- Figure 8. Charlie's Hall, named for Charlie Juneby, on the south bank of the upper Yukon River, in Eagle Village, Alaska.
- Figure 9. Eagle Village Chief, Joanne Beck takes notes about the TEK subsistence Fisheries project during the introductory meeting, Charlie's Hall, Eagle Village, Alaska, December 2000.
- Figure 10. Lisa Fox speaking to Eagle residents about the TEK subsistence fisheries project during the introductory meeting, Charlie's Hall, Eagle Village, Alaska, December 2000.
- Figure 11. Don Callaway speaking to Eagle residents about the TEK subsistence fisheries project during the introductory meeting, Charlie's Hall, Eagle Village, Alaska, December 2000.
- Figure 12. Eagle Village residents (and Don Callaway, left) listen to Lisa Fox discuss the TEK subsistence fisheries project during the introductory meeting, Charlie's Hall, Eagle Village, Alaska, December 2000.
- Figure 13. Eagle Village residents listen to discussion about the TEK subsistence fisheries project during the introductory meeting, Charlie's Hall, Eagle Village, Alaska, December 2000.
- Figure 14. Eagle Village residents listen to discussion about the TEK subsistence fisheries project during the introductory meeting, Charlie's Hall, Eagle Village, Alaska, December 2000.
- Figure 15. Mary Rose David (left) and Bertha Ulvi (right), Eagle Research Assistants, practice recording mapping data at training session at Charlie's Hall in Eagle Village, Alaska, January 2001.
- Figure 16. Bertha Ulvi makes notes and studies the protocol questionnaire during training at Charlie's Hall in Eagle Village, Alaska, January, 2001.
- Figure 17. Gerald Ginnis (left) and Lee Crow (right) study the protocol questionnaire during training at Charlie's Hall, Eagle Village, Alaska, January, 2001.
- Figure 18. Mary Rose David (left), Gerald Ginnis (middle) and Lee Crow (right) study interview techniques during training at Charlie's Hall, Eagle Village, Alaska, January, 2001.

Figure 19. Don Callaway (left), and Lisa Fox discuss mapping techniques and protocol questions during the RA training session at Charlie's Hall, Eagle Village, Alaska , January 2001.

Figure 20. Don Callaway (left), and Lisa Fox discuss mapping techniques and protocol questions during the RA training session at Charlie's Hall, Eagle Village, Alaska , January 2001.

Figure 21. Examples of data collected from practice exercises during the RA training session at Charlie's Hall, Eagle Village, Alaska , January 2001.

Figure 22. Examples of data collected from practice exercises during the RA training session at Charlie's Hall, Eagle Village, Alaska , January 2001.

Figure 23. Danny David (rear center) offers input to the RA trainees during practice exercises at Charlie's Hall, Eagle Village, Alaska, January 2001.

EXECUTIVE SUMMARY

This study was undertaken in the Villages of Eagle and Circle, Alaska from August 2000 through April 2001 in order to document Traditional Ecological Knowledge (TEK) regarding present and historical use of subsistence fisheries in the Upper Yukon River area. The study area encompassed the immediate vicinity of the mainstem Yukon River from approximately Circle Village upstream past Eagle Village to the Canadian border. Participants were Northern Athabascans belonging to the Han Gwich'in (Eagle Village) and Kutcha Gwich'in (Kutchin) (Circle Village) tribes.

This study had 6 objectives:

- 1) To collect spatial and temporal information about the presence and abundance of anadromous fish species, Chinook (King) and Chum (dog) salmon; as well as Traditional Ecological Knowledge (TEK) relating to the use of salmon spawning habitats, life histories, population trends, human harvest, and traditional fishing methods.
- 2) To collect spatial and temporal information about the presence and abundance of freshwater fish species: Northern Pike, Arctic Grayling, Whitefish, and Burbot (lingcod or lush); as well as TEK relating to fish habitat preferences, life histories, population trends and human harvest.
- 3) To use TEK to identify critical resource management issues related to local subsistence fisheries from the perspective of the native community; and to provide input for future research and monitoring efforts for subsistence fisheries in the Upper Yukon area.
- 4) To ascertain the reliability of subsistence fishing permit data collected by the Alaska Department of Fish and Game (ADF&G).
- 5) To build local capacity through training local research assistants (RA's) in documenting TEK utilizing group interview techniques with topographic maps, and "protocol" or "key informant" interviews.
- 6) To establish a basis for further capacity building and increased involvement of local village residents in long-term wildlife management studies.

The Principle Investigator (PI), with support from Cultural Anthropologists from the National Park Service(NPS), and four native Research Assistants (RA's) from Eagle and Circle Villages, collected data to accomplish the objectives listed above. Methods used included group "semi-directive" interviews to record spatial data; and individual "protocol" or "key informant" interviews to collect verbal information. A series of training sessions (one in Eagle, one in Anchorage) and four community meetings (two in Eagle, two in Circle) were held to accomplish these tasks. Because these types of interviews had not been conducted previously in these communities; introductory meetings were held in both Eagle and Circle to obtain consent for project participation. Participation by residents in the community meetings and protocol interviews ranged from average to poor. Objectives 1 and 2 were only partially completed. Objective 3 was not met during this project; however, objectives 4,5, and 6 were fully accomplished. The spatial data collection utilizing semi-directed group interview techniques was less successful than anticipated. A total of 96 fishing locations were documented during the group semi-directive mapping exercises, 62 of these points were in the Eagle area, and 34 from the Circle area. Fishing locations designated as "abundant" for numbers of fish caught decreased from 52% in the pre- 1960 sample to 31% in the post- 1960 sample (Eagle area). Similarly, fishing locations designated as "scarce" increased from 4% in the pre- 1960 sample to 15% in the post- 1960 sample (Eagle area). No abundance information was collected in Circle Village. A total of 21 "protocol" or "key informant" interviews were conducted by the RA's. In general, respondents felt that humans have affected fish populations (78%), fish are less healthy currently than previously, commercial fishing negatively affects fish populations (95%), and that no fish are wasted in their villages. It is the conclusion of the PI that group interviews are not an effective method for collection of TEK from residents of these native villages. In order to fully meet objectives 1 and 2, a much longer period of time, and many more hours of salary time would have been necessary for individual interviews.

INTRODUCTION

The Native people indigenous to Eagle and Circle, Alaska are Northern Athabascans belonging to the Han Gwich'in and Kutcha Gwich'in (Kutchin) tribes (Caulfield 1979:5, Crow and Obley 1981:506–508). These tribes have a long, well documented history of occupation of the Upper Yukon area in east-central Alaska and Yukon, Canada. They traditionally relied on salmon and other fish as food sources, both for human consumption and for feeding sled dogs (Andersen, 1992:33, 2000:4). According to Osgood (1971:105,115), historic accounts indicate that the Han were more dependent on fish than on other wild game for food. They spent the late summer months harvesting and drying salmon for winter use (Griffin and Chesmore 1988:35). The abundance and reliability of salmon runs allowed the Han to establish a more sedentary settlement pattern than other native tribes in the area. Villages were located along the Yukon at important fishing sites (Stern 1978:7, 10). Salmon were (and currently are) primarily harvested for subsistence using gillnets and fish wheels, which were introduced on the Yukon in the early 1900s (Simeone and Fall 1996). Other species of freshwater fish were also caught and utilized opportunistically. Whitefish (*Prosopium cylindraceum*,

Coregonus spp.) were harvested in lakes and in the Yukon River; sheefish (*Stenodus leucichthys*) and Arctic grayling (*Thymallus arcticus*) were taken by hook and line. Burbot (*Lota lota*) were harvested using set lines (Osgood 1971:105–106, Caulfield 1979:16–18).

The Alaska Department of Fish and Game (ADF&G) Subsistence Division has an ongoing program of research to document the role of subsistence hunting and fishing in communities throughout the state. The Division currently documents subsistence use of chinook (*Oncorhynchus tshawytscha* [king]), fall and summer chum (*O. keta* [dog]), and coho (*O. kisutch* [silver]) salmon for the communities of Eagle and Circle, Alaska but has not conducted baseline studies to determine the subsistence use and harvest of other species of freshwater fish. No studies have been conducted that focus exclusively on the native communities and their use, harvest, or observations regarding the fishery resources of the region.

In 1987-1988, the U.S. Fish and Wildlife Service conducted studies on the Kandik, Charley, Nation and Tatonduk rivers within the Yukon-Charley Rivers National Preserve to collect baseline data regarding fisheries resources (Daum, 1994). This study documented 15 species of fish in the four drainages mentioned above with Arctic Grayling, Slimy sculpin (*Cottus cognatus*), Round Whitefish (*Prosopium cylindraceum*), Burbot and Longnose Suckers (*Catostomus catostomus*) representing the most numerous resident species. Daum (1994) also reported finding King (Chinook) salmon in all four streams and an apparent abundance of spawning habitat. Spawning Chum (dog) salmon were identified in the Tatonduk River and a small number of resident Dolly Varden (*Salvelinus malma*) were found in the Nation River. Unfortunately, this study has been one of the only comprehensive fish survey, sampling studies accomplished within Yukon-Charley Rivers NP and adjacent areas.

In order to address this lack of subsistence harvest data; the Native Villages of Eagle and Circle participated in a study to document Traditional Ecological Knowledge (TEK) from their village residents regarding present and historic subsistence fishery activities. Another compelling reason for both of these villages to engage in this project was the lack of documentation of TEK from the elders in their communities. Ecological knowledge was being lost as older residents would pass away without passing along the knowledge they had gained over a lifetime of living and fishing in these areas. Although oral histories have been collected in the past, this project sought to document the available biological knowledge in a more organized fashion.

The study was conducted by a local resident of Eagle (Lisa Fox, biologist), with technical support from the National Park Service (NPS), Anchorage Office; and assistance from four local Research Assistants (RA's). The project was designed not only to collect spatial and verbal data regarding subsistence fisheries; but also for “capacity building” purposes. Training of local residents in the methodology necessary to collect TEK was seen as an important first step down the road to increased participation in natural resource management planning for native tribes in the Upper Yukon River area. This study has

formed a basis for native village residents to provide input on important management issues facing their area.

Harvest data collected by the Alaska Department of Fish & Game (ADF&G), Subsistence Division was collected from the communities of Eagle and Circle since 1988, however the harvest numbers are aggregated from both subsistence and personal use fisheries. In addition, the harvest data for Eagle area combines information from Eagle and Eagle Village. This study attempted to supplement that lack of data exclusively from Eagle Village. In addition, one of the stated objectives of this project was to verify the accuracy of the data collected by ADF&G in these two communities.

ADF&G harvest information for 1999 showed residents of Eagle took 2,558 King salmon, 251 summer Chum salmon, and 11,292 fall Chum salmon, for a total of 14,101 fish (subsistence and personal use fisheries combined). During the same time period, Circle residents harvested 524 Kings, 60 summer Chums, and 2,722 fall Chums for a total of 3,306 salmon (Pers. Commun. B. Borba, ADF&G April 6, 2000 to Mary McBurney, NPS). Between 1988 and 1997, the median total catch for Eagle (all salmon species) taken for subsistence and personal use was approximately 10,800 fish with a mean catch of 11,226. Harvest records for Circle subsistence and personal use fisheries are continuous since 1991. The median total catch between 1991 and 1997 was 6,317 salmon (all species) with a mean catch of 6,073 (Scott, et al., 1999).

Traditional Ecological Knowledge (TEK)

This project sought to collect Traditional Ecological Knowledge, or TEK, in order to provide a starting point for a body of baseline data on the use of subsistence fishes by the residents of Eagle and Circle. Due to the ongoing deaths of elders in the community and the lack of documented history of subsistence use of fish resources, this methodology was thought appropriate. TEK is broadly defined as “a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment (Berkes 1993:3).” As a collective body of knowledge, TEK is highly specialized and develops over time “around the specific conditions of women and men indigenous to a particular geographic area (Grenier 1998:1).” As it relates to fisheries, TEK “appears primarily as knowledge based on experience, developed through the interplay between livelihood and natural conditions (Eythorsson and Mathisen 1998:206).”

According to Berkes (1993:5–6), the collection and documentation of TEK is important for social and cultural reasons, but it also has practical applications. First, TEK can be used to provide new biological and technological insights. The information gleaned from local community residents can be used to better manage the natural resources of the area. For instance, “rules of thumb” developed by resident communities and enforced by social and cultural means can often be as effective as western scientific approaches. This has often been demonstrated by hunters, trappers, and fishermen who use time-honored conventions and traditions to determine what to hunt, what species to harvest, when to stop harvesting, and to assess the condition of the resource.

Secondly, TEK can be used to establish protected areas to allow resident communities to live their traditional lifestyles with the benefits of designated conservation areas. Input from native village residents is critical, particularly to federal agencies, if the historic and present patterns of resource use are to be documented. TEK can be an effective basis for conservation education to many different groups of people.

Third, TEK can be used by agencies for planning purposes to supplement their existing information regarding environmental, natural resource and production systems. TEK can also be used for environmental assessment to evaluate potential impacts of policies and activities. Fourth, knowledge gleaned from collection of TEK can increase awareness and foster appreciation of traditional cultures and practices for those persons unaware of such cultural practices and activities (Berkes 1993:5–6).

Background on Eagle and Circle Villages

The study area encompassed the immediate vicinity of the mainstem Yukon River from approximately Circle Village upstream past Eagle Village to the Canadian border. Spatial data collected related primarily to the Yukon River corridor.

Eagle City and Eagle Village are located on the south bank of the Yukon River approximately 8 miles upstream from the boundary of Yukon-Charley Rivers National Preserve. Although there were originally 4 Han settlements on the Yukon River in the late 19th century, “Johnny’s Village”, or “Katshikotin”, is the only remaining permanent settlement and is now known as Eagle Village. “Charley Village”, or “Tadush” was located at the mouth of the Kandik River within what is now Yukon-Charley Rivers NP, and was destroyed by a flood in 1914. “Fetutlin”, or “Tsitoklinotin” was located at the mouth of the Forty Mile River. “Nuklako”, also called “Takon” was located near the mouth of the Klondike River but relocated to the Moosehide Reservation three miles from Dawson City, Yukon Territory during the gold rush (Stern 1978:7–10).

The Han settlement at Eagle became a trading post in the late 1800s and supplied miners working in the upper Yukon and its tributaries. Eagle City was founded in 1897 and quickly grew into a prosperous mining camp with over 1,700 residents by 1898 (Orth 1971: 291, 274; Department of Community and Economic Development, 2000). The Han village on the Eagle townsite relocated to a site three miles east of Eagle after non-native miners began settling in the area. The current population of Eagle is approximately 160 and is primarily non-Native. Eagle Village, part of Doyon Limited, regional native corporation, is a traditional native community with approximately 30 residents. Both Eagle communities rely on subsistence food sources, however residents of Eagle Village have fewer economic opportunities and live a more traditional subsistence lifestyle. (Department of Community and Economic Development, 2000).

The community of Circle is located on the south bank of the Yukon River to the northwest of Yukon-Charley Rivers National Preserve. The original inhabitants of the Circle area were the Kutcha Kutchin who lived along the middle Yukon River between Sam Creek and the Chandalar River (Caulfield 1979:5, 36; Slobodin 1981:515). Circle was established in 1893 as a mining supply camp and became the largest mining town on

the Yukon River before gold was discovered in the Canadian Klondike. The town currently has a population of approximately 90 and is predominantly Athabascan with some non-Native households. Native residents are members of Doyon, Limited and rely on subsistence hunting and fishing for food. Many households supplement their incomes through trapping and handicrafts (Department of Community and Economic Development, 2000).

OBJECTIVES

The specific objectives for this project were as follows:

- 1) To collect spatial and temporal information about the presence and abundance of anadromous fish species, Chinook (King) and Chum (dog) salmon; as well as Traditional Ecological Knowledge (TEK) relating to the use of salmon spawning habitats, life histories, population trends, human harvest, and traditional fishing methods.
- 2) To collect spatial and temporal information about the presence and abundance of freshwater fish species: Northern Pike, Arctic Grayling, Whitefish, and Burbot (lingcod or lush); as well as TEK relating to fish habitat preferences, life histories, population trends and human harvest.
- 3) To use TEK to identify critical resource management issues related to local subsistence fisheries from the perspective of the native community; and to provide input for future research and monitoring efforts for subsistence fisheries in the Upper Yukon area.
- 4) To ascertain the reliability of subsistence fishing permit data collected by the Alaska Department of Fish and Game (ADF&G).
- 5) To build local capacity through training local research assistants (RA's) in documenting TEK utilizing group interview techniques with topographic maps, and "protocol" or "key informant" interviews.
- 6) To establish a basis for further capacity building and increased involvement of local village residents in long-term wildlife management studies.

These objectives were modified slightly, not substantially, from those stated on the proposal (see final version of investigative plan, pg.5-6). Objective 1 was expanded to include additional information about King and Chum salmon populations, due to a lack of available information regarding freshwater fishes. Objective 3 was left in the list; however, it became apparent as the study progressed that there was insufficient ability on the part of the participants (residents, RA's, and principle investigator) to draw meaningful conclusions regarding future research and management directions for the Upper Yukon fishery resources.

Due to constraints regarding support from the NPS and the USF&WS, and the input of professionals with background in conducting TEK projects; the deliverables for this project were slightly modified. The original 4 deliverables (see final version of investigative plan, pg. 11) included audio and video tape compilations into "jukeboxes"

on CD's, and linkage of this information into the "Alaska Native Knowledge Network" maintained by the Alaska Native Science Commission. These actions (numbers 3 and 4) did not occur due to lack of available expertise and personnel. It was not possible for the principle investigator to conduct the group meetings and interviews, and also to run audio and video tapes. The local RA's in each community were occupied with their own duties, and other assistance was difficult to locate and coordinate.

The revised list of deliverables is as follows:

- 1) A final report summarizing the project activities for future reference to the USF&WS.
- 2) A summary of the TEK collected during community and protocol interviews in Eagle and Circle, including digital files of spatial data (ArcView).
- 3) An evaluation of the effectiveness of the techniques used during this project to collect and document TEK.
- 4) Successful capacity building in the form of training for 4 local RA's (Bertha Ulvi, Mary Rose David, Gerald Ginnis, and Lee Crow).
- 5) An established relationship with the Eagle Village Council as a basis for further native community involvement in subsistence management issues.

METHODS

To accomplish project objectives, a series of introductory, training and community meetings were held in Anchorage, Eagle, and Circle. A summary of the meeting times and attendees for each meeting follow in the Results Section. Development of the proposal was done primarily by Mary McBurney (NPS, Subsistence Chief for Lake Clark NP&P) and acquisition of funding was accomplished primarily by Eagle Village contract representative Gary Ricketts. Following the acquisition of funding, numerous meetings were held by teleconference between USF&WS, NPS, and Eagle Village personnel to try to determine the best way to implement the project. Lisa Fox was selected as the Principle Investigator (PI) and initial training sessions were scheduled. Lisa Fox is a wildlife biologist and this was the first time she had ever worked with TEK.

Meeting Schedule:

Training Workshop (Anchorage, October 11-12, 2000):
Eagle Village introductory meeting (Eagle, December 5, 2000):
Circle Village introductory meeting (Circle, December 6, 2000):
RA training (Eagle, Jan 22-25, 2001)
Eagle group mapping exercise (Eagle, March 13, 2001)
Circle group mapping exercise (Circle, March 27, 2001)
Individual protocol interviews by RA's (March-May 2001)

The first training/scoping meeting was hosted by NPS Cultural Anthropologists Don Callaway, Janet Cohen and Rachel Mason, and held in Anchorage on 11-12 October 2000. Meeting notes and accomplishments are printed under the "Planning" tab in the 3-ring binder containing the project information. At this time, a draft protocol

questionnaire was reviewed and additions and corrections were suggested by the group. Don and Janet explained the procedures and formalities associated with TEK projects. Karen Stickman, subsistence technician, from Lake Clark NP&P also attended to provide input and hear about the project as they were conducting a similar one at Lake Clark. Following this meeting, the project was more clearly outlined and the objectives were revised to those stated in the objectives section below.

Following this meeting, Lisa Fox (PI) began working with the Native Village of Eagle and the Circle Village Council to develop a list of elders and other key contacts in each community who were familiar with the subsistence fisheries of the area. Don Callaway and Janet Cohen continued training the PI as the project evolved (Miraglia 1998, Interagency Arctic Research Policy Committee 1992). Some of the issues discussed via telephone and e-mail prior to the first introductory meeting were:

- The need to obtain informed consent from participants
- Privacy issues
- Need to audio/videotape interviews
- Best methods to record information
- Equipment needed to record information
- Content of protocol questionnaire

The second set of meetings were the project introductions and consent to participate for each community. This meeting allowed Don Callaway, Chief Beck, and the PI to establish a connection with the communities and discuss issues that village residents felt were important. We were able to thoroughly explain to those present what type of information we were looking for, and how it would be used.

The third set of meetings were the actual community mapping exercises. RA's that had been hired in each community recorded data generated by the group interviews on topographic maps (1:63,360) (Huntington 1998, 1999) with mylar overlays. Originally, there were to be 18 mylar sheets used for each community meeting: 1 sheet each for 6 species of fish (King salmon, Chum salmon, Arctic Grayling, Burbot, Northern Pike, Whitefish) for 3 time periods (pre- 1950, 1950-1970, and post- 1970). However, at this point there were some changes in the methodology outlined previously. Due to a lack of ability of the participants to discern 3 time periods for recording fishing information (pre- 1950, 1950-1970, and post- 1970), we condensed the information collected into just 2 time periods: Pre- 1960 and Post- 1960. Other modifications included condensing King and Chum Salmon into 1 mylar sheet because participants insisted they did not have separate fishing locations for Kings and Chums; that they were caught simultaneously or at the same location over different run times. Spatial data recorded for the harvest of the freshwater species was so sparse that it all fit on one mylar sheet. The outcome was the production of 4 mylars for each community meeting: King/Chum salmon for pre- and post- 1960, and freshwater fish pre- and post- 1960. We had also planned to use additional mylars for salmon spawning habitat locations, but participants did not provide that information. Respondents were asked to rank the abundance of fish for each location given as "scarce", "average", or "abundant" and a different color marker was used for each category.

At each meeting, the Village RA's were the ones recording the spatial data. Notes were taken (by Jan Parish in Eagle, and by PI in Circle) to supplement the data written on the mylar overlays at each meeting. The notes included full names of persons fishing (when possible) and descriptions of fishing locations. Spatial data and associated notes about individuals recorded during the interviews was digitized and entered into the NPS geographic information system (GIS) and printed maps were produced using ArcView 3.2.

Following the group mapping exercises, individual protocol interviews were conducted by the village RA's during March-May 2001. The Eagle RA's conducted 17 protocol interviews of good quality, and the Circle RA's conducted 4 interviews of average/poor quality. Protocol questions that lent themselves to yes/no type answers were entered on an excel spreadsheet, tallied, and graphed as histograms (Figures 1-6). Photos taken during the various meetings and training activities were captioned and attached to this report (Figures 7-26).

RESULTS AND DISCUSSION

The following are lists of meeting attendees for each phase of the project.

Training Workshop (hosted by NPS) in Anchorage (October 11-12, 2000):

Don Callaway, Cultural Anthropologist, AKSO, NPS
Janet Cohen, Cultural Anthropologist, AKSO, NPS
Mary McBurney, Subsistence Coordinator, LACL, NPS
Rachel Mason, Cultural Anthropologist, AKSO, NPS
Karen Stickman, Subsistence Specialist, LACL, NPS
Lisa Fox, Biologist, Eagle Village (seasonal NPS employee at the time)

Eagle Village Introductory Meeting (12/5/2000) Attendees:

Lisa Fox (Principal Investigator)	Danny David
Janet Cohen (NPS, AKSO)	Mary Rose David
Don Callaway (NPS, AKSO)	Bertha Ulvi
Oliver Lyman	Joanne Beck
Norman David	Edward David
Max Beck	Richard Silas
Cindy Gowins	Howard David
Eddie Biederman	Roger David

Circle Village introductory meeting (12/6/2000)

(List of attendees misplaced, approximately 20 people participated including the following):

Janet Cohen (NPS, AKSO)
Don Callaway (NPS, AKSO)
Lisa Fox (Principal Investigator)
Joanne Beck (Eagle Village Council)
Sonya Fields
Tonya Carroll
John Carroll
Terry Carroll
Darrell Crow
Lee Crow
Gerald Guinness
Rose Nathaniel
Margaret Henry John

Training for 4 Research Assistants (RA's) in Eagle: Jan 22-25, 2001

Janet Cohen (NPS, AKSO)
Don Callaway (NPS, AKSO)
Lisa Fox (Principal Investigator)
Mary Rose David (Eagle RA)
Bertha Ulvi (Eagle RA)
Gerald Guinness (Circle RA)
Lee Crow (Circle RA)

**Eagle Village community mapping meeting (3/13/2001):
Attendees (ages in parentheses):**

Samantha Silas (21)	Edward David (40)
Nellie Briggs (83)	Benny Juneby (44)
Max Beck (62)	Jan Parish (45)
Roger David (42)	Richard Froelich (54)
Matthew Malcolm (75)	Regina Scott (-)
Patrick (Sonny) Potts (30)	Lisa Fox, Principle Investigator (37)
Danny David (54)	Bertha Ulvi, Research Assistant (56)
Eddie Biederman (46)	Mary Rose David, Research Assistant (43)
Oliver Lyman (64)	

**Circle Village community mapping meeting (3/27/2001):
Attendees (ages in parentheses):**

Jessica Boyle (21)	Sonya L. Fields (32)
Melissa M. Carroll (20)	Tonya L. Carroll (32)
Paul S. Nathaniel (41)	Darrell E. Crow (31)

Lawrence Crow (26)
Richard K. Crow (37)
David Ginnis (27)
Everett Nathaniel (28)
Margaret Henry John (>40)

Larry Nathaniel (-)
Gerald Guinness (Research Assistant)
Lee Crow (Research Assistant)
Lisa Fox, Principle Investigator (37)

Introductory Meetings

During the introductory meetings approximately 40 native residents attended in both communities combined. During the group semi-directive interviews, approximately 30 native residents participated (excluding project employees). The training meeting in Anchorage resulted in education for the PI and Karen Stickman. Both of these individuals conducted TEK projects within the following year. The training held in Eagle for the RA's was for the most part successful although hampered by an alcohol-related death in Eagle Village at the time of the meeting. RA's were successfully trained in the methodology to conduct semi directive interviews and protocol interviews. The two Circle RA's received some training in administering oral histories. The capacity-building portion of this project was successful.

Spatial Data Collection

Spatial data collected from Eagle and Circle Villages were displayed on ArcView maps filed under the "TEK mapping" tab of the attached binder. All of the data regarding abundance, gear type, and all fish species are recorded as attributes to the point data; however, only fishing period, location, and names are displayed on the printed copies due to space limitations. For Eagle, 62 fishing locations were identified, 23 pre- 1960, and 39 post- 1960. Of these, 14 were fish wheels, 9 were fish camps, and 39 were fish nets. For Circle, a total of 33 fishing locations were identified, 8 were pre- 1960, and 25 were post- 1960. Of these, 8 were fish camps, 7 were fish nets, and 18 were fish wheels. Many of the fishing locations from the post- 1960 maps were fished by non-native persons, particularly in Eagle Village.

At the Eagle community meeting, participants were willing to rate their fishing locations in terms of abundance; in contrast, Circle residents did not give abundance estimations. They stated it was "different every year" and "depended on the water" and that they could not generalize as far as "scarce" or "abundant" were concerned.

For Eagle Village, participants rated 52% of the pre- 1960 fishing locations as "abundant" as far as quantity of fish caught, this percentage decreased in the post- 1960 sample to 31%. General comments made during the meeting indicated that the overall quantity of fish harvested had decreased over the lifetimes of those present. Coincidentally, participants rated 4% of the pre- 1960 fishing locations as "scarce" in fish abundance, and that percentage rose to 15% in the post- 1960 sample.

Spatial data regarding freshwater fishes collected during the group meetings was sparse. For Eagle, those present identified some areas that they fish for grayling, but declined to give information on abundance or changes over time. Sites they identified as grayling fishing areas were:

- In front of the Village
- Dog Island
- Mouth of the Fortymile River (Canada)
- Mouth of the Seventymile River (downriver from Eagle)
- Eagle Creek (slightly upriver from the Village)
- Mission Creek (at Eagle City)
- Boundary Creek (upriver from Eagle)
- Sheep Creek (or the Tatonduk River, downriver from Eagle)

Those present declined to give any real geographical locations for the remaining freshwater species. They stated Whitefish and Burbot were only caught incidentally in their fish nets and not specifically sought after. They said Northern pike were caught on some of the lakes adjacent to the Yukon, but wouldn't really write them on the map, stating they were "all over" or that they couldn't exactly remember.

In addition, nobody was really willing to identify salmon spawning sites in the Eagle area, they stated that the fish have rarely/never spawned here. Most present agreed that the salmon bypass this area to spawn in Canada. Participants noted there were 2 reported sightings of salmon fry they could remember, once at Calico Bluff in the 1970s by Oliver Lyman. The other "a few years ago" by local trapper Dave Heyman, upriver of Eagle in a small creek, exact location unknown.

For Circle, the situation was very similar. Residents stated that the fishing was better where the channel is more narrow, upriver. Six-mile slough used to be good fishing, but now its filled in with sand. They stated there has always been good grayling fishing at the mouth of the Charley River. During the early-mid 1990s Margaret Henry-John used to travel upriver to Charley River for grayling fishing and often saw/caught sheefish. Residents stated they go to Big Lake/Fiasco Lake, about 3 or 3.5 miles from Circle by snowmachine to go ice fishing for Northern Pike.

Protocol Data

A total of 17 interviews were conducted by the Eagle RA's and 4 by the Circle RA's for a total of 21. Responses to questions were tabulated for both communities collectively due to the small sample size from Circle Village. Questions that required yes/no type responses were entered on an excel spreadsheet, counted and graphed as histograms (questions 1-3, 5, 8, 14-17, 20-27, 30, 37,38,40, and 47).

The mean age of protocol interview respondents was 51, the minimum age was 30, and the maximum age was 83. The average number of years spent in the community by respondents was 43, the minimum was 3, and the maximum was 83. The average number of years the individual fished in the community was 33, the minimum was 2, and the maximum was 80. The average number of years fished out of the past 10 was 7 years, the minimum was 0 and the maximum was 10.

When respondents were asked which fish species they had fished for within the last 3 years, the most sought after fish species was King salmon, followed by Chum salmon,

Whitefish, then Arctic Grayling (Figure 1). Regarding salmon health and spawning habitat questions, 56% of respondents stated that there was not spawning habitat in their area (Figure 2). 94% stated that the salmon were healthy when they fished as a child in the area and that percentage dropped to 65% who thought that salmon caught recently were healthy (Figure 2). 55% of respondents stated that there had been no change in size of salmon they have caught over the years and 35% stated that they catch more “jacks”, small male fish, than they used to (Figure 2).

Almost all the respondents felt that fish populations had been affected by one or more types of human activities over the years. 78% felt that humans had affected fish populations in a general sense and 85% felt that increased numbers of fishermen have affected fish populations. Respondents also felt that mining (39%), commercial fishing (95%), boating (32%), and increased numbers of visitors (11%) all affect fish populations to some extent (Figure 3). Eagle Village residents also felt that the Yukon Queen tourist vessel affected fish populations (80%) (Figure 3).

As far as youth participation in fishing activities is concerned, 63% stated that young persons participate in fishing and 100% said that they learn about fishing from the elders. Use of fishing gear does not seem to have changed very much over the years (75% stated no change), and only 37% of respondents stated it was more difficult for them to buy gear than it used to be (Figure 4). 100% of respondents stated there was no waste of fish in the Village (Figure 4), they stated all parts were utilized by humans or fed to dogs.

When asked about the accuracy of ADF&G collected permit data; most respondents seemed to think the data were reliable (Figure 5). Only 17-18% of respondents did not agree with the numbers presented in the survey. Those numbers were:

1998 Chum salmon harvest: Eagle 595, Circle 39;

93-97 Average King salmon harvest: Eagle 1,300, Circle 1,406

1998 No. households fishing: Eagle 55, Circle 24

When respondents were asked to rank abundance for the 6 fish species discussed (King salmon, Chum salmon, Whitefish, Arctic Grayling, Burbot, and Northern Pike), over the past 5 years, they were asked to use the same scale as the one used for the spatial data: “scarce”, “average”, or “abundant”. These responses were assigned numerical ranks, averaged, and plotted in Figure 6. Chum salmon seemed to exhibit a downward trend, while the freshwater fish species were not observed to decline by the respondents. Respondents rated King salmon harvest as fairly stable until 2000, when the average abundance index declined (Figure 6).

General points that most respondents made included the following:

- Young people do not seem to be that interested in fishing anymore, but if they are, they learn about it from the elders.
- The best place to catch fish is in the eddies.
- Regarding when to stop fishing: most respondents stated “September”, “when the ice starts flowing”, “when the freezer is full” or “when they have enough fish”. No

respondents stated any biological, harvest, or fish population-related reasons for the cessation of fishing activities.

- Commercial fishing, fishing on the lower Yukon, and fishing on the “high seas” all had decreased salmon numbers returning to the Villages of Circle and Eagle.
- Most residents disposed of fish parts by feeding them to dogs.
- Most stated that the “most important thing to them about fishing” was eating the fish.
- The salmon don’t spawn here, they spawn in Canada.
- When fishing with nets, they check them 2 times per day.

CONCLUSIONS AND RECOMMENDATIONS

Although in some ways, this project fell short of expectations, several of the initial objectives were achieved. Spatial information and TEK relating to population trends, human harvest, and traditional fishing methods for Chinook (King) and Chum (dog) salmon were collected. Present and historic fishing locations for the villages of Eagle and Circle are now documented. Limited spatial data about the freshwater fish species of Northern Pike, Arctic Grayling, Whitefish, and Burbot were also collected. Fishing locations for these freshwater species are now documented for both villages. 21 local residents were interviewed using protocol questionnaires by the village RA’s. Not only did this provide a learning experience for the RA’s, it served to document some of the elders insights and opinions regarding present and historic fishing practices in their villages. Although the depth of the actual fisheries information collected during this study was insufficient to provide input for future research or monitoring efforts for subsistence fisheries in the Upper Yukon area; this will hopefully be possible in the near future.

Another very important aspect of this project was the successful completion of training activities resulting in local capacity building. Local village residents are now able to document TEK utilizing group interview techniques with topographic maps, and protocol or key informant interviews. In addition, this study has exposed both the Villages of Eagle and Circle to the process for providing input to federal agencies regarding natural resource management issues. This will hopefully open the doors for village residents to become more positive in their attitudes toward involvement in federal subsistence activities and natural resource management issues. Another goal that was achieved was a positive evaluation of the reliability of subsistence fishing permit data collected by the Alaska Department of Fish and Game (ADF&G).

The previous section contains only an overview of the data collected for this project. It is the opinion of the PI that it would be beneficial for a Cultural Anthropologist to review the protocol interviews to determine if there is more beneficial information that may be gleaned.

Evaluation of Methodology

Conceptually, all the components of the methodology involved in this study were sound. However, some seemed to work better than others due to the character of the remote

villages and the personalities of the individuals involved. First, the most successful portion of this study was the protocol interview component. The one-on-one situation seemed to be the most ideal for obtaining the type of information we were seeking. These interviews were performed by the native folks and were more successful, as their cultural heritage and style of communication was the same as the respondents. Bertha and Mary were much more successful than I believe I (PI) would have been in giving these interviews. Properly trained RA's from the native villages should play a key role in other studies of this type, as they are a tremendous asset. This is of course only true if the individuals are motivated. The Circle RA's were not very interested in completing interviews; hence they were not really an asset to the project. The Eagle RA's were an asset to the project when they were punctual, prepared, and motivated to work.

The least successful portion of this project was the group interview. There were a variety of reasons for this. One was the poor attendance to the meetings. In the future, if meetings of this type are held, it would be critical to provide transportation for everyone in the community to attend the meeting. The only way some of these residents would ever attend would be if they were physically picked up at their homes. This would require more staff and vehicles than were available during this project.

A second reason for the lack of success of the semi-directive interview technique was the unregulated flow of information. In most cases, individuals either were speaking all at once, or not at all. I was difficult for one note-taker and one map recorder to get everything down that 5 or 6 or 7 people are saying. It would be helpful to limit the group size by breaking up into smaller groups, and to have multiple recorders if necessary. Another thing I noticed was that the stronger personalities tended to limit the flow of information from the weaker personalities. In a group setting, as a fishing location was being discussed, most often those quiet individuals with conflicting opinions would just agree with the others rather than provide conflicting data or cause dissention. In addition, these meetings should take place over a matter of days, not hours. If the maps were left in the community hall for a period of time; I feel that the residents could remember more than they did. Under the "pressure" of having to remember names and places instantly, many felt uncomfortable and I think some data were lost. An ideal situation would be to have a set of maps that were portable enough to travel to individuals homes and have each person record what they remember during a protocol interview. This is of course far more costly and was beyond the time and funding allowed for this project.

While I was working on this project, I found the native residents to be, for the most part, quiet, private individuals. I would approach this project differently if I were to plan it again. I would allow a much greater quantity of time to interact with the participants and record the desired information. More time would be needed with the maps and small groups of individuals to really get some type of biological information. The time allowed for these activities under this past project was insufficient to really allow the participants time to "open up" and reveal their thoughts and opinions. It could potentially take weeks to really sit down with these residents and patiently record all that each one remembers about historical fishing locations, gear, fish populations, and harvest practices. I am

unsure of the depth of knowledge available from these village residents, but I am sure that the methods used for this project did not fully access the information available.

ACKNOWLEDGEMENTS

This study was completed with funding from grant number FIS00-026 from the U.S. Fish & Wildlife Service, Office of Subsistence Management, Anchorage, Alaska. Meetings and interviews were conducted with assistance from local residents acting as Research Assistants: Bertha Ulvi and Mary Rose David (Eagle), and Lee Crow and Gerald Ginness (Circle). Funds and payroll were administered through Eagle Village by Donna Westphal (Eagle Village Council, Administrator) and Joanne Beck (Eagle Village Council, Chief) also provided input and support. Bill Miller (Circle Village Council, Administrator) arranged accommodations for trips to Circle Village. Janet Cohen and Don Callaway (Cultural Anthropologists, National Park Service, Alaska Support Office) provided invaluable technical support and assisted in project design. Judy Kesler (Cultural Resources/Computer Specialist, National Park Service, Alaska Support Office) digitized spatial data and created maps for display. Jan Parish (Eagle resident) provided assistance as a note-taker during community meetings and assisted RA's to enter respondents comments on Microsoft Word forms.

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