

Exxon Valdez Oil Spill
Restoration Project Annual Report

Community Involvement Project

Restoration Project 97052A
Annual Report

This annual report has been prepared for peer review as part of the *Exxon Valdez* Oil Spill Trustee Council restoration program for the purpose of assessing project progress. Peer review comments have not been addressed in this annual report.

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for:

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April 1998

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Study History: The *Exxon Valdez* oil spill caused severe disruption in the lives of those who live within the spill-affected region. Consequently, the contamination and devastation has caused the residents of these communities to be concerned over the safety of wild food sources and the integrity of the environment. The majority of the scientific work done for the Trustee Council is through state and federal agencies located in Anchorage, Juneau, or Fairbanks. The need for this project stems from concern by residents of spill-affected communities that their involvement was not adequately taken into consideration and that the information collected by scientists throughout the spill area was not reaching the communities.

Abstract: In an effort to enhance communication between the *Exxon Valdez* Trustee Council and communities and to increase involvement in the process by the communities, a community facilitator has been hired through subcontracts between Chugach Regional Resources Commission and the village councils in the following communities: Chenega Bay, Tatitlek, Valdez, Cordova, Port Graham, Nanwalek, Seldovia, Ouzinkie, Seward, and Chignik Lake. Furthermore, a spill area wide community involvement coordinator has been hired by CRRC to facilitate the communication between the communities, Trustee Council, and principal investigators.

Key Words: Chugach Regional Resources Commission (CRRC), community involvement, subsistence, TEK, traditional ecological knowledge.

Project Data: (will be addressed in the final report)

Citation:

Brown-Schwalenberg, P.K. 1998. Community involvement project, *Exxon Valdez* Oil Spill Restoration Project Annual Report (Restoration Project 97052A), Alaska Department of Fish and Game, Habitat and Restoration Division, Anchorage, Alaska.

Report: Activities conducted by the Chugach Regional Resources Commission staff during the months of October-December, 1996, in relation to the Community Involvement Project, are listed below to inform you as to the current activities in each of the communities and in the region as a whole.

As an update to the funds transfer from the EVOS Trustee Council to the villages, we have negotiated an agreement with the Department of Interior in Washington, D.C. to add funds to the CRRC 638 contract and we will, in turn, transfer those funds to the village council. As you recall, up until this point, we have had to go through an economic development district or the project goes out for bid and we are faced with bidding on our own projects, or a contract is negotiated between the village or CRRC and the state agency, which is also a lengthy process. The pilot project we are working on for this funds transfer method is Eyak's elders and youth conference planning grant. It is a small \$15,000 grant and I was assured we would receive the money in January. I contacted Juneau Area Office and they are checking on the status of this project.

Two meetings with the Eagle Staff Fund (one in Anchorage and one in Seattle) were held to discuss their participation on some of the projects in the Chugach Region. As you know, we are currently seeking funds for the processing facility in Tatitlek, expansion and the construction of a hatchery in Port Graham, the youth/elders conference in Eyak, and operational funds for the shellfish hatchery in Qutekcak. These projects have all been discussed with Eagle Staff Fund personnel and a trip has been planned to meet with them at their offices in Virginia on January 31st. They are very interested in assisting us and if they cannot provide the funding for some or all of these projects, they are willing to introduce us to other granting organizations that may.

Dr. Pam Colorado and Dr. Henry Huntington were hired to serve as the Traditional Ecological Knowledge (TEK) Specialists for the TEK, which was funded by the *Exxon Valdez* Trustee Council. They started officially on January 1, 1997, and things seem to be running quite smoothly. The Trustee Council staff is keeping quite a close eye on this project, due to its innovative nature. The success of this year's project will play a large role in whether or not we receive funding in future years.

Contracts with all village councils for a Community Involvement Facilitator have all been sent out and we are awaiting signed copies back at the CRRC office. A meeting of the facilitators is being planned for in January during the Restoration Workshop.

Activities conducted by the Chugach Regional Resources Commission staff during the months of January - March, 1997, in relation to the Community Involvement Project are listed below to inform you as to the current activities in each of the communities and in the region as a whole.

Dr. Pam Colorado and Dr. Henry Huntington have been contracted as the Traditional Ecological Knowledge (TEK) Specialists for the TEK Project, which was funded by the EVOS Trustee Council. They are working to get the project off the ground and have made plans to travel to the villages later this summer. So far, they've gone to Eyak, Tatitlek, Nanwalek, and a short stop in Port Graham. They have identified the herring project as one of the projects they will be working with, as well as the octopus project. Project proposals were also developed in March for the continuation of this project, as well as the Community Involvement Project, Clam Restoration Project, and the Port Graham Pin Salmon Project. As you know, Martha Vlasoff

took a 37-day leave of absence in March. Shortly after her return, she resigned from this position due to stress. We are currently seeking a replacement for Martha and have extended our appreciation for the hard work she put into developing and overseeing this project over the past two years.

As an update to the funds transfer from the EVOS Trustee Council to the Eyak Village Council for the Youth/Elders Conference, the money has been transferred to the BIA, will be placed in our P.L. 93-638 contract, and we will then pass these funds on to Eyak. I believe this mechanism will work quite well, once all the bugs are worked out.

Because of the meetings held in the last quarter with the Eagle Staff Fund, the CRRC Executive Director and Glenn Ujioka traveled to Fredericksburg, West Virginia, to meet with their entire staff. The staff of the Alaska Inter-Tribal Council (AI-TC) all accompanied us on this trip. We met with the Executive Director, two project officers, their development person (fund raiser), and public relations staff. They are interested in several projects we are working to develop and they also familiarized us with various private funding sources we can contact for financial support. The next closing deadline is in June, so we will be working to submit something to them at that time. We are currently seeking funds for the processing facility in Tatitlek, construction of a hatchery in Port Graham, the youth/elders conference in Eyak, and operational funds for the shellfish hatchery in Qutekcak.

We are getting closer to reaching an agreement on the operations contract for the Mariculture Technical Center in Seward. We were able to get \$250,000 appropriated through the state legislature for the equipment in the facility -- funding that CRRC and/or the Qutekcak tribe would have had to pay in order to move into the facility. Unfortunately, the appropriations language states that the funding will go to Fish & Game. We have also been asked to provide a full business plan before Fish & Game agrees to sign the contract. This will be submitted by May 27, 1997.

The Executive Director participated in the Alaska Inter-Tribal Council's conference on Indian Country in Alaska. This conference was developed as a result of the recent Venetie Decision reaffirming the existence of Indian Country in Alaska. This decision, if upheld by the Supreme Court, has many implications for the Alaska tribes relative to natural resource management. As sovereign governments, tribes have the authority to pass rules and regulations governing their members, but the existence of Indian Country opens the door for tribal management of natural resources on a larger scale, as well as the opportunity for co-management. CRRC is continuing to keep abreast of this issue and traveled to Washington, D.C. to discuss this issue with our congressional delegation as well as congressmen and senators from other states.

I received word from Molly McCammon regarding the clam project and the community involvement/TEK project. Their review team was in Anchorage reviewing the proposals submitted for FY98 funding. They are planning on deferring both projects until they can conduct a review on each one. I have met with Stan Senner, EVOS Staff and Bob Spies, Chief Scientist, to discuss these issues. These funding and objectives of these projects may be reduced, but a formal review will be held in July to determine the extent of the reductions, if any.

Community Involvement Facilitators and CRRC staff attended and participate in the Restoration Workshop. Many side meetings were held with PI's to discuss the status of specific research

projects that are conducting. As always, this was a very informative and valuable session for the facilitators. The one difficulty is the constant struggle over lack of time to get many issues addressed and activities accomplished in one week.

Upon Martha Vlasoff's return to the job, Dr. Pam Colorado, David Scheel, and Jody Seitz traveled to Tatitlek on April 15 - 17, 1997 to conduct Indigenous Training. The goal was to create community awareness of Indigenous Science; to establish an indigenous science infrastructure and to provide indigenous science training for two PI's. During this visit the group was introduced to the village by Gary Kompkoff, Village Chief. He informed the group of the issues the village is dealing with and invited the group to view the subsistence video sponsored by the *Exxon Valdez* Oil Spill Trustee Council (EVOS). The group also made a visit to the home of one of the village elders, and presented information at a workshop held at the school which was facilitated by Martha. Each group member felt that the trip was a success due, in part, to the close relationship Martha has with the village residents.

Another trip was made on April 18, 1997 by Martha and Dr. Colorado to Nanwalek and Port Graham to accomplish the same goal as the trip to Tatitlek. Upon arrival to Nanwalek, Nancy Yeaton, Community Facilitator, greeted them at the Council office and reviewed the day's agenda. The agenda consisted of meeting with Mr. Vincent Kvasnikoff, Sr., Village Chief, and two elders in the village. The visits were successful and the concerns and comments of the chief and elders were discussed.

During the week of April 21, 1997 Martha and Pauline Allen, CRRC Contract Administrator, attended the Annual Cultural Heritage Week in Tatitlek. While in Tatitlek, Pauline made several home visits to inform and update the village members on the activities The Chugach Regional Resources Commission (CRRC) is currently conducting.

On May 5, 1997, Martha submitted her resignation as Spill Area Wide Coordinator. During her last two weeks she worked out of her home. CRRC immediately began advertising for the Spill Area Wide Coordinator position with a closing date of May 20, 1997. After a brief staff meeting between the Executive Director and Contract Administrator, Pauline offered to be the point of contact until the position could be properly advertised and the position permanently filled. She immediately informed the ten community facilitators of Martha's resignation and the facilitators appreciated the availability of a contact person during the hiring process. During the month of April, Pauline received a number of calls pertaining to the local repository issue which seemed to be one of the main concerns each community had and still has at this time. Also, she had received several requests to visit the communities to inform and update the villages councils of the existing Community Involvement Project. During this period she was invited to make a presentation at the Kodiak Tribal Council to inform the council members of the importance of the project and to update them on the activities of the EVOS Trustee Council.

The CRRC office received several resumes and, with the assistance of three community facilitators, EVOS staff, and Alaska Department of Fish & Game (ADF&G) staff, Patty Brown-Schwalenberg, Executive Director, CRRC, narrowed the selection down to interviewing the top three applicants. The screening and interviewing process took place on June 13, 1997 and the interviewing committee selected Ms. Cheryl Sampson to fill the Spill Area Wide Coordinator position. Ms. Sampson gladly accepted the position beginning June 21, 1997. Unfortunately, on the day she was to start work, Ms. Sampson informed Ms. Brown-Schwalenberg that due to

personal reasons, she could not fill the position. At this point, it became critical to fill the position due to the upcoming project review scheduled for early July. In order to keep the project functioning, Ms. Brown-Schwalenberg offered the position to Ms. Pauline Allen. Ms. Allen appreciated the offer but expressed the desire to remain in her current position. After some discussion, it was agreed that Pauline Allen would work part-time at the EVOS office and part-time at the CRRC office until the position was filled. Again, the facilitators appreciated the availability of having a contact person; this action also satisfied Ms. McCammon's concerns regarding the project's progress. While Ms. Allen occupied this part-time position, she organized and reviewed the materials at the EVOS office, attended necessary meetings, and contacted the community facilitators on a weekly basis. Some of the communities requested her to visit their community. One trip was made to Chignik Lake in August, 1997.

On July 7, 1997 Pauline Allen met with Mr. Walter Meganack, Jr., Community Facilitator for Port Graham, Ms. Rita Miraglia, Oil Spill Coordinator for the Subsistence Division of Alaska Department of Fish & Game (ADF&G), and Mr. Henry Huntington, Traditional Ecological Knowledge (T.E.K.) Specialist. The purpose of this meeting was to draft an agenda for a Community Involvement/Traditional Knowledge Planning Meeting with the Community Facilitators scheduled for July 8, 1997 at the Chugach Regional Resources Commission board room. The purpose of the July 8th meeting was to meet with the Community Facilitators to get an update on the status of the Community Involvement/T.E.K. projects. Also, to review the EVOS July 9th agenda and prepare for discussion on the FY 98 projects at the meeting. The main topics of concern from the facilitators in both the July 8th & 9th meetings were; the ongoing desire to have local repositories in each village/communities, the T.E.K. project regarding release of information to scientists, and the need to have the village proposals funded.

On July 11 - 13, 1997 Henry Huntington traveled to Tatitlek to assist Jody Seitz in her research on traditional ecological knowledge of herring and forage fish. Both Henry and Jody conducted interviews with elders and other residents of Tatitlek with respect to the anonymity of the persons being interviewed. Henry also had a chance to discuss with Gary Kompkoff and others of the upcoming synthesis workshops for the FY 98 Traditional Ecological Knowledge Project 98052B. Overall, Henry felt that the trip was successful due to the willingness of the participants and Jody's good relationship with the Tatitlek residents.

On July 21, 1997 Pauline began her part-time position at the EVOS office. She spent her first week meeting with the EVOS staff members, reviewing the files, and contacting the community facilitators. I had intended to get at least a one page newsletter out before my time was up at the EVOS office, but unfortunately I was unable to accomplish this goal. Although, I was able to relay any information between the EVOS staff and facilitators on a verbal basis.

On July 27 - 29, 1997 Henry traveled to Homer to assist Jody Seitz in her research on the traditional ecological knowledge of herring and forage fish. The participants were mainly commercial fishermen and pilots. They were able to gather a significant amount of information which made the trip a successful one.

In August, on the 6th - 8th Henry traveled to Chenega Bay to learn about the village and discuss the T.E.K. project with the IRA Council regarding the Synthesis Workshops proposed for the FY

98 project. The meeting with the IRA Council was successful and Gail Evanoff suggested that Henry return for another visit in the near future.

Pauline made two trips one to Nanwalek and the other to Chignik Lake upon request of the Community Facilitators. On August 4, 1997 both Pauline and Patty traveled to Nanwalek to meet with Nancy Yeaton the Community Facilitator and some of the Nanwalek Council members to discuss the Community Involvement Project. Also, to meet with Carol Kvasnikoff, Project Coordinator, for the Nanwalek Sockeye Enhancement Project to visit the work site of the project and discuss concerns or questions some council members or village residents may have regarding the project. Then, on August 15, 1997 Pauline traveled to Chignik Lake to meet with Virginia Aleck, Community Facilitator and the Chignik Lake Council members. During Pauline's visit, Virginia had commented that she had worked very hard at getting the council members to agree to meet with me while I was there. I felt that their willingness to meet with me was a great accomplishment on Virginia's part. Virginia takes great pride in her position as the community facilitator and feels a great need to make this project a successful one in her village. With guidance from the Area Wide Spill Coordinator it can happen. She has been very concerned about the affects the *Exxon Valdez* Oil Spill has had on her village. She holds high respect in her village because of her years of experience as the Village Health Aide. Even though Virginia has resigned from this position (due to health reasons) the village residents still call on her in time of need. They feel a sense of comfort and assurance when she helps them with any problems they may have. Virginia strongly expressed her desire and need to assist her people in any wrong doings that may occur in the village as well as lending an ear for anyone that just need someone to talk to. The knowledge and experience Virginia has is something that should not be taken lightly or abused in anyway. I cannot say enough positive things about her. She is a remarkable woman.

The Community Involvement Project hired the Community Involvement Coordinator in July 1997. The hiring committee included three Community Facilitators, the Executive Director or CRRC, the Executive Director of the Trustee Council, and a representative from the Division of Subsistence. Hugh Short was hired and began work on September 2, 1997.

Much of September was spent by the CIC becoming familiar with the issues of the region and the Trustee Council, becoming acquainted with the job responsibilities, and becoming familiar with the Community Facilitators and communities. In particular, the week of September 2nd was spent reading past files and building a rapport with the Community Facilitators over the telephone. The CIC stressed the need for Community Facilitators to submit their monthly reports on a timely manner, per the detailed project description for 97052A. The major project goal for September was to bring stability to the project and begin to build quality lines of communication between the CIC, Community Facilitators, PIs, and Trustee Council staff.

On September 10-11, Pauline Allen and Hugh Short attended the annual Public Advisory Group field trip on Kodiak Island. The first day Hugh and Pauline were met at the airport by Margaret Roberts, Community Facilitator for Kodiak Island. A tour of the tribal council offices, the Fish Tech Center, and Alutiiq Museum preceded a meeting at the tribal council to discuss issues within the Kodiak Island community in relation to EVOS. Issues ranged from PSP in the clams, to small parcel acquisitions, to increased projects for the island. That evening a town meeting was held at the Assembly Chambers with the Public Advisory Group and community members. There we heard overwhelming support fro the small parcel acquisition of Termination Point,

concern over PSP, and the wishes for successful implementation of the Kodiak Waste Management Plan. The following day, community meetings were held in Port Lions, Larsen Bay, and Old Harbor. The CIC attended the meeting in Old Harbor where concerns were voiced by the 12 community members who attended on such issues as PSP research, factory trawler sea life destruction, land acquisition, and the effects of local tourism on the community.

September 18-19, the CIC traveled to Port Graham and Nanwalek to meet with Walter Meganack, Jr., the Port Graham Community Facilitator, and Nancy Yeaton, the Nanwalek Community Facilitator, as well as tribal council members, corporation representatives, and community members. In Port Graham the community was very interested in the funding of three projects. First, a proposal was submitted to DCRA for the construction of a floating skiff dock in 1996. Secondly, the community was interested in the formation of a Kenai Peninsula Waste Management Plan. Finally, a boom facility in Port Graham was requested to be further examined. This would be vital in the event of another oil spill, as the nearest boom is in Seldovia. The community of Nanwalek showed interest in the projects mentioned above as well. Cooperation between the villages is very important.

On September 23-24, the Chugach Regional Resources Commission held a board meeting. A Community Involvement Project update was given by Hugh Short. Board members were very concerned over the progress of the archaeological repository issue. A resolution was introduced and passed reiterating CRRC support for individual community repositories within the Chugach region. Hugh Short was instructed by the board to attend the next Trustee Council meeting on October 3 in Juneau to present the resolution. Board members were interested in the progress of the Restoration Reserve. Hugh Short was instructed to keep them abreast on the issue.

The CIC has begun to send EVOS updates to the spill-affected communities every two weeks, per the DPD. Also, a Community Facilitator meeting has been scheduled for October 20. Monthly reports have begun to come in regularly. Travel by the CIC to the communities will continue throughout FY98.

TRADITIONAL ECOLOGICAL KNOWLEDGE HANDBOOK:

**A TRAINING MANUAL AND REFERENCE GUIDE FOR
DESIGNING, CONDUCTING, AND PARTICIPATING IN
RESEARCH PROJECTS USING
TRADITIONAL ECOLOGICAL KNOWLEDGE**

**Prepared by
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1998

Funded by the *Exxon Valdez* Oil Spill Trustee Council as part of Restoration Project 97052B

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October 29, 1998

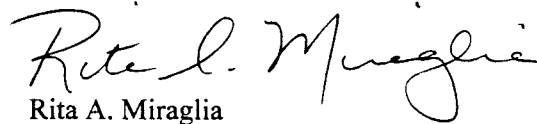
Dear Friends and Colleagues:

Enclosed is a copy of the "Traditional Ecological Knowledge Handbook: A Training Manual and Reference Guide for Designing, Conducting, and Participating in Research Projects Using Traditional Ecological Knowledge". The Handbook is a product of the Traditional Ecological Knowledge Project (EVOS Restoration Project 97052B), funded by the *Exxon Valdez* Oil Spill Trustee Council.

It is hoped that the Handbook will prove useful to a wide variety of individuals interested in bringing traditional knowledge into the EVOS restoration process, including EVOS project principal investigators, community leaders and other community residents. The topics addressed in the Handbook may also be of interest to organizations outside the spill area who would like to use traditional knowledge in their programs, or who would like to become better informed on these issues.

Please feel free to contact me by telephone at 907-267-2358, or via e-mail at RitaM@fishgame.state.ak.us, if you have any comments or questions.

Sincerely,



Rita A. Miraglia
Oil Spill Coordinator
Division of Subsistence

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FOREWORD

Since the beginning of time, the Alaska Natives have relied upon the land and sea for their sustenance. The vast knowledge of the natural resources and environment that has been gained through the traditional harvests of fish and game and interaction with the environment has been passed from generation to generation and is a major component of the Native culture. This knowledge is not just limited to common knowledge of the resources, but includes specific details related to the condition of many of the different resources and how these conditions may have changed over the years. In order to fully assess the damages created by the oil spill, a comparison of conditions prior to and following the spill must be made. Western scientific research will provide the necessary information regarding the present condition of the resources; traditional knowledge of the Native Community can provide detailed information on conditions in the years prior to the spill.

The Traditional Ecological Knowledge project has provided the opportunity for the scientists and researchers to compare the results of their research with the traditional knowledge that exists in the Native Community. The integration of the two into a complimentary process will benefit not just today's generation, but will be for the good of future generations.

Gary Kompkoff

President, Tatitlek Village IRA Council

ACKNOWLEDGEMENTS

Thanks are due to Melanie Bosch, Patty Brown-Schwalenberg, Don Callaway, Maria Fernandez-Gimenez, Carl Hild, Henry Huntington, Sandra Schubert, Hugh Short, Claudia Slater, Joe Sullivan, and the residents of the communities of the Chugach Region, especially those of Chenega Bay, Tatitlek, Port Graham and Nanwalek.

PREFACE

This handbook has been produced as part of the Traditional Ecological Knowledge (TEK) project, funded by the *Exxon Valdez* Oil Spill (EVOS) Trustee Council (restoration project /052B). The project was designed to make optimal use of the complementary nature of scientific data and traditional knowledge, while increasing the involvement of spill area communities in oil spill restoration.

People living in the spill area have detailed knowledge about the condition of resources, which can add to data collected as part of scientific studies and may enhance the success of the restoration effort. This includes knowledge of the historic population sizes and ranges of many of the species injured by the spill, as well as observations concerning the diet, behavior and inter-relationships of injured species. This information can help researchers evaluate the injury and recovery status of these species.

Through the efforts of the Community Involvement and Use of Traditional Knowledge project, and the TEK project (EVOS Restoration Projects /052 and /052B, respectively), there has been much progress in making EVOS project principal investigators aware of the availability and value of traditional ecological knowledge. TEK was a major theme of the annual Restoration Science Workshop in January 1996.

The current project builds upon this foundation. In federal fiscal year 1998, this project continues the EVOS Trustee Council's initiative to enhance community involvement in the restoration program through the application of TEK in Trustee Council-funded projects. There are three primary tasks, including: (1) Providing assistance in data collection, analysis, and interpretation (continue working with EVOS project principal investigators to develop appropriate ways to apply TEK in ongoing and potential projects); (2) Synthesis workshops

(organizing focused discussions between principal investigators and community experts to develop substantive interactions about restoration research findings and TEK); and (3) Community assistance (building understanding of the benefits and implications of research on TEK in local communities).

The project funds a TEK Specialist to: (1) serve as a contact point for spill area communities, the community facilitators and spill area wide coordinator hired under Project /052A, and principal investigators on issues related to TEK, (2) provide technical assistance to restoration project principal investigators who plan to use, or for whom it would be appropriate to use, TEK; (3) review FY 99 work plan to identify restoration projects that may benefit from a TEK component, (4) consult regularly with the TEK Advisory Group, and (5) organize and coordinate synthesis workshops between project principal investigators and community experts.

This handbook is intended for use as a tool by the TEK Specialist, EVOS project principal investigators, and community residents in the effort to meaningfully bring TEK into the EVOS restoration effort.

INTRODUCTION

This handbook provides guidance to community involvement facilitators and others who may serve as local research assistants for *Exxon Valdez* oil spill restoration projects that have a traditional ecological knowledge (TEK) component. The handbook also provides information and suggestions for principal investigators who would like to include TEK in their research. It is intended that this handbook be updated as local researchers and principal investigators gain experience in collecting and using TEK.



The approach in this handbook is based on social science methods in general, and anthropological methods in particular. We suggest that the collection and use of TEK in restoration projects will be advanced if EVOS researchers, both local and non-local, learn and follow some basic procedures that are used by social scientists to collect information about subsistence uses and other activities in rural Alaskan communities.

An important principle in science is that how you know something is often just as important as what you know. For example, if you visit a village and want to learn where seals can be found and how abundant they are, you could just ask the first person you see and then go look where they tell you to look. However, it's more likely that you'd first ask around to find out who the seal hunters are. You'd want to know something about the hunters: how long they've lived in the community, how frequently they hunt, how others view their skills as hunters. All these factors would help you evaluate the information you are collecting. You might discover

that there are differences of opinion, so you could dig deeper, or encourage discussions among experts to clear up points of confusion. If you use these methods, you will leave the community with confidence that you have learned something about seals.

The same is true when a scientist asks you a question, or asks for your help in getting a question answered. The scientist will not only want an answer to the question, but will also want to know how you know the answer. This may appear disrespectful or rude, but when you think about it, examining the source of your information, and seeking alternative answers, is how people in villages learn about subsistence and other cultural activities. You place more confidence in the teachings of a respected elder than that of a younger person with less experience. You will be more successful

if you learn from a skilled hunter than from one with little experience or knowledge. Subsistence activities can be dangerous, so you are going to want to know something about your teacher, and you will want to test what you are taught.



It's the same with science: asking questions and testing answers is how understanding is reached.

Because of the importance of being able to explain how you know something as well as what you know, this handbook places an emphasis on record keeping. Types of records include notes, journals, reports, maps, video and audio tapes, and photographs. Keeping good records requires being aware of and writing down such things as dates, locations, identity of sources, and context.

The handbook describes various ways to gather information systematically so that others can understand, use, and evaluate it. These methods include:

- ⇒ **interviewing** “key respondents,” or people who are especially knowledgeable about a topic. For some topics, there might be just one acknowledged expert, while in other cases, several people might offer various ideas and observations on the subject.
- ⇒ conducting a systematic **survey** to get a range of information and responses, using either a set of open-ended questions (a “protocol”) for discussion, or a more formal written set of questions with more directed responses (a “questionnaire”). These methods are appropriate when you need to talk to a “sample” or selection of people or households.
- ⇒ **holding meetings** in which a **number of experts** are present and discuss a topic in depth. This is a good way to explore the range of knowledge and experience in a community, identify different points of view, and if appropriate, reach consensus.
- ⇒ investigating archives, data bases, and other written materials. If a topic has been studied by someone else, it is a good idea to **study their material** before-hand. This may give you insights on questions to ask. It also provides time-depth.
- ⇒ **observing** during field visits to communities, **participating** in subsistence and other activities, and visiting sites with knowledgeable people.

The handbook also describes the use of data gathering tools and visual aids to productive interviewing. Data gathering and recording tools include notebooks, calendars, tape recorders, still cameras, video cameras, and computers.



Visual aids, which are also helpful in gathering data, include maps, artifacts, and photographs.

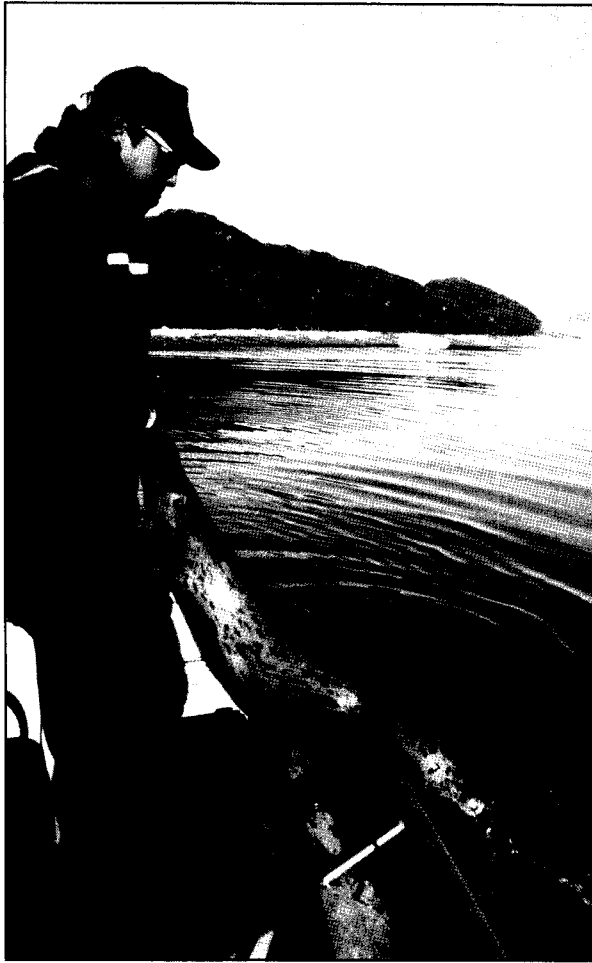
The handbook is intended as an introduction; the bibliography suggests additional readings on various topic areas. Before beginning the overview of research methods, the handbook first reviews several topics related to research ethics. Anyone involved in gathering information from and about people is wise to consider these topics before they begin their work.



WHAT IS TRADITIONAL ECOLOGICAL KNOWLEDGE?

Julian T. Inglis, Executive Director of the International Program on Traditional Ecological Knowledge at the Canadian Museum of Nature provides the following definition of TEK:

TEK refers to the knowledge base acquired by indigenous and local peoples over many hundreds of years through direct contact with the environment. It includes an intimate and detailed knowledge of plants, animals, and natural phenomena, the development and use of appropriate technologies for hunting, fishing, trapping, agriculture, and forestry, and a holistic knowledge, or “world view” which parallels the scientific discipline of ecology (Inglis, 1993: vi).

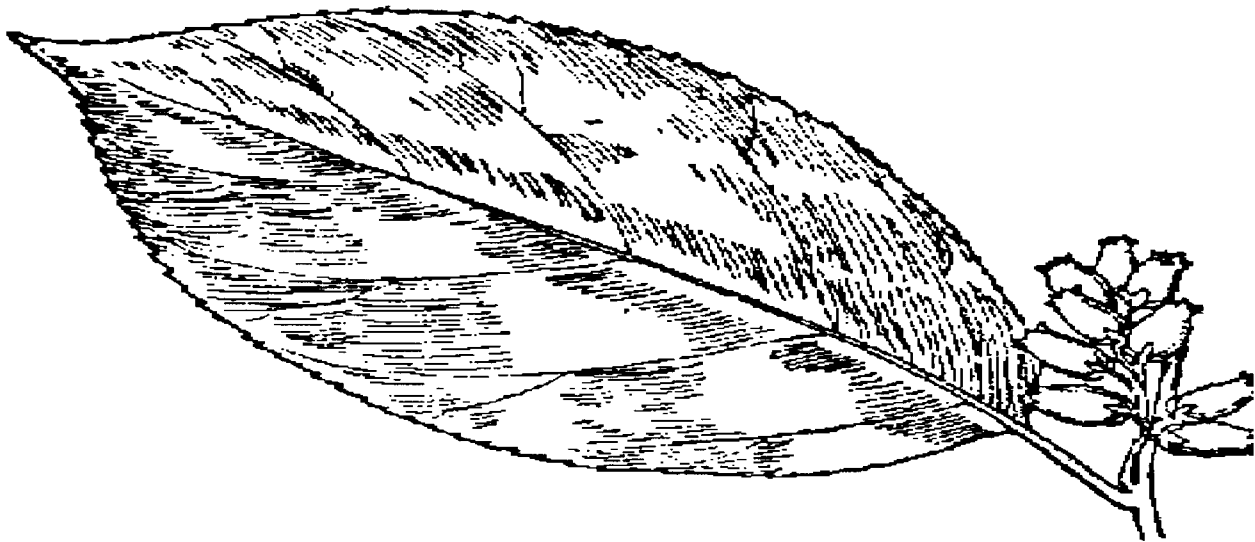


There is currently much debate over what should be labelled traditional ecological knowledge, and what should more properly be called indigenous knowledge, local knowledge, or experiential knowledge (for a good discussion of these various terms, see Stevenson, 1996). For the sake of simplicity, we are here using the term TEK in its most inclusive sense to embrace all of these categories of knowledge.

Traditional knowledge generally refers to the knowledge collectively possessed by a people which has been accumulated through time and passed down from generation to generation. It

should be remembered that even though we do not discuss them separately, the knowledge fishermen have of their fishing grounds (local knowledge), and the knowledge a hunter has accumulated through a lifetime spent hunting in a given area (experiential knowledge), are also useful to the restoration process. These other kinds of knowledge can also be brought into the restoration process using the techniques described in this manual.

TEK is more than useful facts possessed by local people; it is a knowledge system in its own right. It is important to understand the social and cultural embeddedness of TEK. Some TEK may not be accessed simply by asking questions. It may be contained in stories and reflected in resource management practices.



CASE STUDY #1

AN EXAMPLE OF THE PRACTICAL USE OF TRADITIONAL ECOLOGICAL KNOWLEDGE: TRADITIONAL USE OF NEEM BIO-PESTICIDES

Although traditional pest control systems were once widely used in tropical countries, their use has been severely disrupted by the introduction of modern agro-chemicals. This dependence on expensive modern pesticides, apart from posing a potential threat to the health of the poor traditional farmer, is often poisonous to the local ecosystem.

Throughout India and Africa, traditional farmers have known about the insecticidal properties of the neem tree for centuries. In Niger and Mali, farmers have long observed the immunity of its leaves to desert locust attack. Although not as powerful as synthetic ingredients, the neem extract contains 20 active ingredients, which makes it difficult for any insect pest to develop a resistance to them all.

Some farmers in India and Africa are using scientific assistance to develop a neem spray made from the seeds of the fruit. It works as a repellent and anifeedant to many chewing and sucking insect pests in the larva or adult stages, including desert and migratory locusts, rice and maize borers, pulse beetles, and rice weevils. It also upsets the insect's hormone balance so that it becomes permanently incapacitated.

Indigenous farmers in north-western Mali place leaves of the neem tree under the millet heads when they lay them on the ground to dry. This practice discourages insect infestation. A project funded by USAID recently brought together a team of entomologists and social scientists from Niger and the University of Minnesota to promote the exchange of indigenous knowledge on the uses of neem products in improving the sustainability of traditional agriculture in Niger.

Chemists in 1988 determined the chemical structure of the neem tree extract, azadirachtin. Currently, over a dozen companies in industrialized countries are working on commercial neem products. In 1983, the American Environmental Protection Agency registered a commercial neem pesticide for marketing under the name "Margosan-O". Efforts are on-going to discover a chemically modified version of azadirachtin that is stable and as effective as naturally occurring neem.

Adapted from Lalonde in Inglis, 1993.

Traditional knowledge is complementary to western science, not a replacement for it. There are both similarities and differences between these two ways of knowing. The following table lists ways in which traditional ecological knowledge and scientific ecological knowledge differ, as well as ways in which these two systems of knowledge complement one another.

Traditional Ecological Knowledge	Scientific Ecological Knowledge
Mainly qualitative (based more on other kinds of observations than on numbers or statistics)	Mainly quantitative (based on numbers and statistics more than other kinds of observations)
Partly based on feelings and instincts	Based on logic
Views nature as more than the sum of its parts and includes a spiritual aspect	Tends to explain nature with the same sorts of laws used by chemists and physicists. Specifically excludes a spiritual aspect.
Mind and matter are considered together	Mind and matter separated
Includes moral values	Ideally value free
Based on observations & accumulation of facts by trial and error	Systematic, deliberate accumulation of fact through experimentation
Based on data generated by resource users themselves	Based on data generated by specialized researchers
Based on long time-series information on one locality (diachronic data)	Based on short time-series information over a large area (synchronic data)
Does not try to control nature	Tries to control nature to benefit specific human interests
Primarily concerned with local interest and needs	Concerned with principles of general interest and applicability
<i>The above are generalizations, and there are exceptions. Traditional ecological knowledge can be quantitative, scientific ecology can and often does use holistic approaches, and sometimes produces diachronic data.</i>	

Another way traditional ecological knowledge may be distinguished from scientific ecology concerns the social context of traditional ecological knowledge. Traditional ecological knowledge is not just a system of knowledge and practice; it is an integrated system of knowledge, practice and beliefs. The social context of traditional ecological knowledge includes the following aspects:

1. Symbolic meaning through oral history, place names and spiritual relationships.
2. A distinct world view; including a view of the environment different from that of western science.
3. Relationships based on sharing and obligations toward other community members and other beings, and community resource management based on shared knowledge and meaning.

Adapted from Berkes in Inglis, 1993: 4.

Despite the differences, traditional ecological knowledge and scientific ecological knowledge do have much in common, a fact that is often overlooked.

Concepts like traditional knowledge and ethnoecology can easily be mystified as a kind of undefinable wisdom of “natural peoples”, long lost for urban westerners. In real life though, the difference between traditional and scientific knowledge is not that great. Freeman (1985) argues that both types of knowledge rest on the systematic gathering of empirical observations. The main difference lies in the methods used for collection and analysis of data. Scientific knowledge needs a wide range of methodical observations to establish a model of a situation, for instance to estimate the development of a certain stock of animals within an ecosystem. Before a biologist can come to a conclusion about the development of the stock, he must collect great amounts of quantitative data over some time. A local fisherman, who is familiar with the area, will react spontaneously to observations that deviate from the usual pattern. He will be observant to qualitative changes, signs which indicate that something unusual is happening. He will interpret such signs within the context of his experience and traditional knowledge, and discuss his interpretations with fellow fishermen and neighbors.

From this standpoint there is no need for a contradiction between traditional knowledge and scientific knowledge. The two types of knowledge should be complementary, and resource managers would gain from using both types as a basis for management regimes (Eythorsson in Inglis, 1993: 134).

Local, indigenous people have a special relationship with their environment, by virtue of their intimate, long-term connection with the land, plants and animals. This means they can have much to contribute to any study that involves the local ecosystem, such as the EVOS restoration process. In the words of Chief Robert Wavey of the Fox Lake First Nation in Manitoba, Canada:

As indigenous people, we spend a great deal of our time, through all seasons of the year, travelling over, drinking, eating, smelling and living with the ecological system which surrounds us. Aboriginal people often notice very minor changes in quality, odour and vitality long before it becomes obvious to government enforcement agencies, scientists or other observers of the same ecological system.

Governments have begun to view indigenous people and their knowledge of the land as an early warning system for environmental changes, perhaps in much the same way as miners once viewed canaries. The difference is that a canary does not know why it died, or what was wrong; indigenous people do. The canary cannot propose solutions or provide an example of lifestyles and ethics to restore ecological balance; indigenous people can. The canary does not foretell environmental change, but indigenous people accurately predict ecological

disturbance, based on multi-generational accumulations of knowledge and experience (Wavy in Inglis, 1993: 12).

The box on the next page contains a list of some of the practical ways that TEK research can contribute to EVOS restoration and other environmental and ecological undertakings.

It is important that researchers trying to work with TEK recognize and acknowledge its value to the restoration process.



Nakashima (in Inglis, 1993: 100) points out that in many cases where traditional knowledge is recognized as important, wildlife managers do not accord it the same respect as

science. He criticizes one researcher (Stirling, 1990:iii) for writing about “combining traditional and modern approaches”, but at the same time describing the need for extensive scientific training for Native peoples, without any mention of the need for a reciprocal flow of knowledge from Native experts to wildlife scientists. Nakashima sees this as suggesting that the burden of integrating indigenous and western knowledge is to be borne by native individuals and communities, and is not to be shared by scientists and managers.

The task of bringing TEK into the EVOS process must be carried out in a spirit of cooperation and mutual respect.

THE PRACTICAL SIGNIFICANCE OF TRADITIONAL ECOLOGICAL KNOWLEDGE

The preservation of traditional ecological knowledge is important to community residents for social and cultural reasons. There are other reasons traditional ecological knowledge is important. The following list is adapted from the IUCN Programme on Traditional Knowledge for Conservation (IUCN 1986):

1. Biological and ecological insights. New scientific knowledge can be gained from the study of traditional environmental knowledge systems.
2. Resource management. Much traditional knowledge is relevant for natural resource management. "Rules of thumb" developed by ancient resource managers and enforced by social and cultural means, are in many ways as good as Western scientific prescriptions.
3. Protected areas and conservation education. Protected areas may be set up to allow communities to continue traditional lifestyles, with the benefits of conservation accruing to them. Where the local community jointly manages such an area, the use of traditional knowledge for conservation education is likely to be very effective.
4. Development planning. The use of traditional knowledge may benefit agencies in providing more realistic evaluations of environment, natural resources and production systems. Involvement of the local people in the planning process improves the chance of success of development.
5. Environmental assessment. People who are dependent on local resources for their livelihood are often able to assess the costs and benefits of development better than any evaluator coming from the outside. Their time-tested, in-depth knowledge of the local area is an essential part of any impact assessment.
6. Exposure of mainstream, western society to traditional ecological knowledge can enhance our appreciation of the cultures that hold this knowledge. The recording of such knowledge is also significant as a tool for social change.

Adapted from Berkes in Inglis, 1993: 5.

ETHICAL ISSUES IN CONDUCTING RESEARCH

A set of “Protocols for Including Indigenous Knowledge in the *Exxon Valdez* Oil Spill Restoration Process” (EVOS TEK Protocols, for short) has been worked out between researchers and the communities of the oil spill impact area (attached as Appendix A). The EVOS TEK protocols are intended to serve as a basic set of rules under which EVOS research involving the communities and traditional ecological knowledge are to be conducted. These rules do not go into a lot of detail. The protocol recommends that details of the research, such as ownership of data, participant consent, payment of project participants, participant anonymity or



acknowledgment, and community reporting requirements, be negotiated as part of a research agreement between the researcher and the village council, on a case by case basis. This allows the details of how the research is conducted to be worked out according to what the community wants in each specific case. This flexibility means the researchers and village councils can use common sense to determine what they want, rather than having a lot of detailed rules that may or may not apply to a given situation. For example, in many cases, the

community may require that residents who participate in the project be paid. However, there may be special cases where the community has asked for a project that the community considers

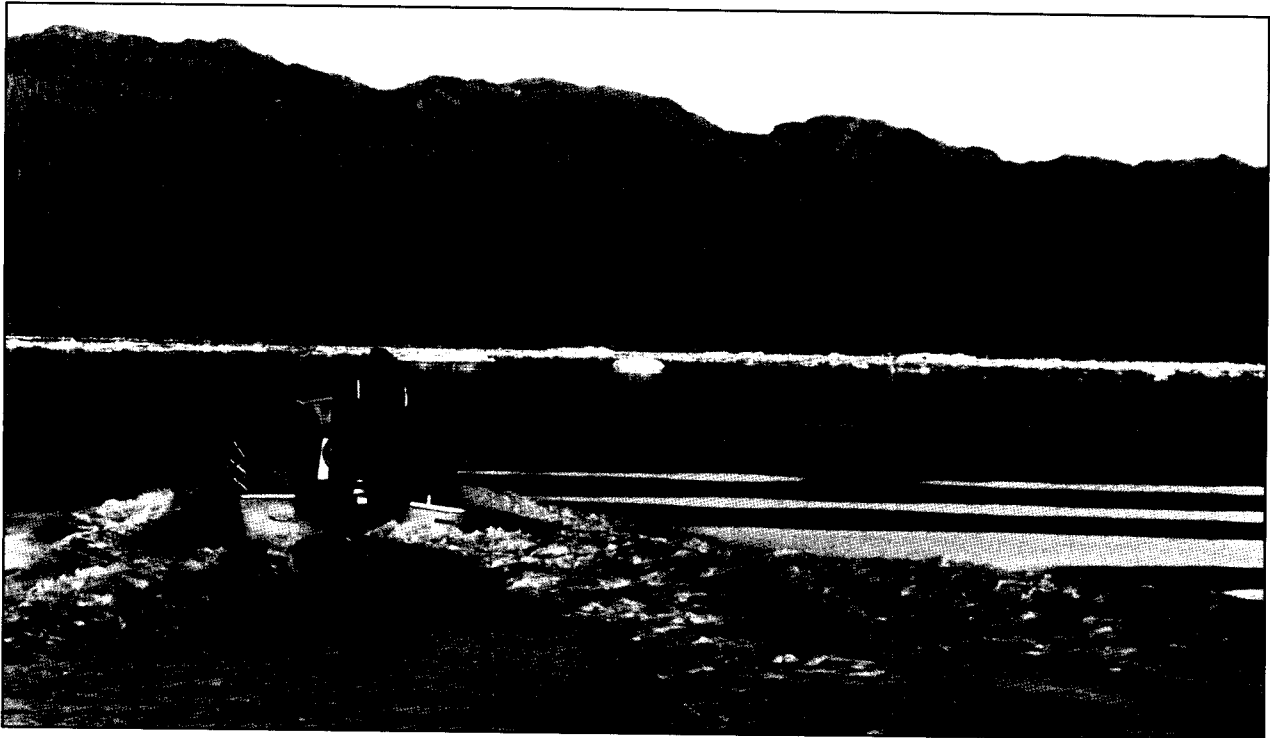
important, or where only a small amount of time and effort is required of the residents, and the community may decide in that case, payment is not needed. One community may want all respondents on a particular project to be anonymous and their responses to be kept confidential. Another community, participating in the same project, may want all respondents to get credit for the information they provide, even to the point of having their photographs alongside their contribution. With a negotiated research agreement, the community can either get the terms they want from a researcher, or the community can decline to participate in the research.



Three additional sets of ethical principles are provided in the appendices. These aren't intended to replace the EVOS TEK Protocols, but rather to serve as additional guidelines, where they do not contradict them. The

“Ethical Principles for the Conduct of Research in the North” (attached as Appendix B) are the guidelines that have been used by the researchers working for the Division of Subsistence, Alaska Department of Fish and Game. The Alaska Federation of Natives has also developed a set of ethical guidelines, on which the EVOS TEK protocols are largely based. (These are attached to the EVOS TEK Protocols, at the end of Appendix A). The National Science Foundation has also produced a set of guidelines, which are attached as Appendix C. In addition, the Alaska Native Science Commission has some community-specific guidelines on file (Inquiries should be addressed to Patricia Cochran or Brian Helmuth at the Alaska Native

Science Commission, 3211 Providence Drive, Anchorage, Alaska 99508, 907-786-7704 or via e-mail at anpac1@uaa.alaska.edu).



One important concept incorporated into each of these sets of ethical principles is that of **informed consent**. Informed consent means that those who might be affected by the research have agreed that the research may proceed, after the research has been fully explained to them.

In seeking informed consent, researchers should clearly identify the sponsors of the research, sources of funding, the people working on the project, and the purpose of the research. Researchers should also explain the potential effects of the research, as well as potential benefits to the community. Informed consent should be obtained from the community as a whole, as well as from each individual participant in the research. At no time should pressure be applied to obtain consent for participation in research (condensed from “Ethical Principles for the Conduct of Research in the North”, attached in its entirety as Appendix B).

THEORY AND SCIENCE

The purpose of science is to gather information about the world which is true and useful. It is also important to scientists that if they conducted the same research a second time, the outcome would be the same. That is, science is a process to gain reproducible results. Information is not gathered in a haphazard manner by scientists. Information collection is guided by theory, which is based on a body of knowledge about some aspect of the universe.

There are several types of theory:

Grand Theories

Designed to explain a lot, like the “Theory of Evolution,” to explain the diversity of animal and plant life everywhere.

Middle Range Theories

Designed to explain a smaller slice of reality, like the “Theory of Biogeography,” to explain the size and distribution of animal and plant populations.

Special Theories

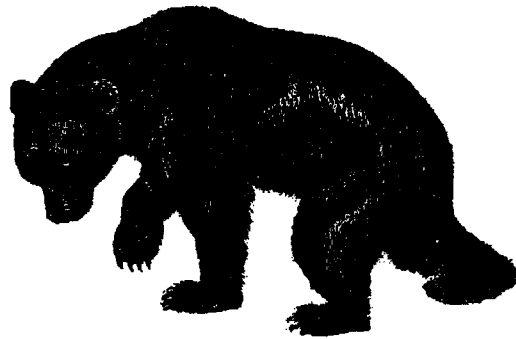
Designed to explain an even smaller slice of reality, like a theory of why the herring population in Prince William Sound crashed in 1993.

Mostly, in the sciences, there are several “grand theories” that are taken for granted as a general frame of reference. Rarely is information collected in a study to support or refute a grand theory. Instead, the grand theory provides ideas and methods which are accepted as basic assumptions by the scientist, and which are used to organize and study a new piece of the world. Usually, information is collected in a study to support or refute particular parts of “middle range

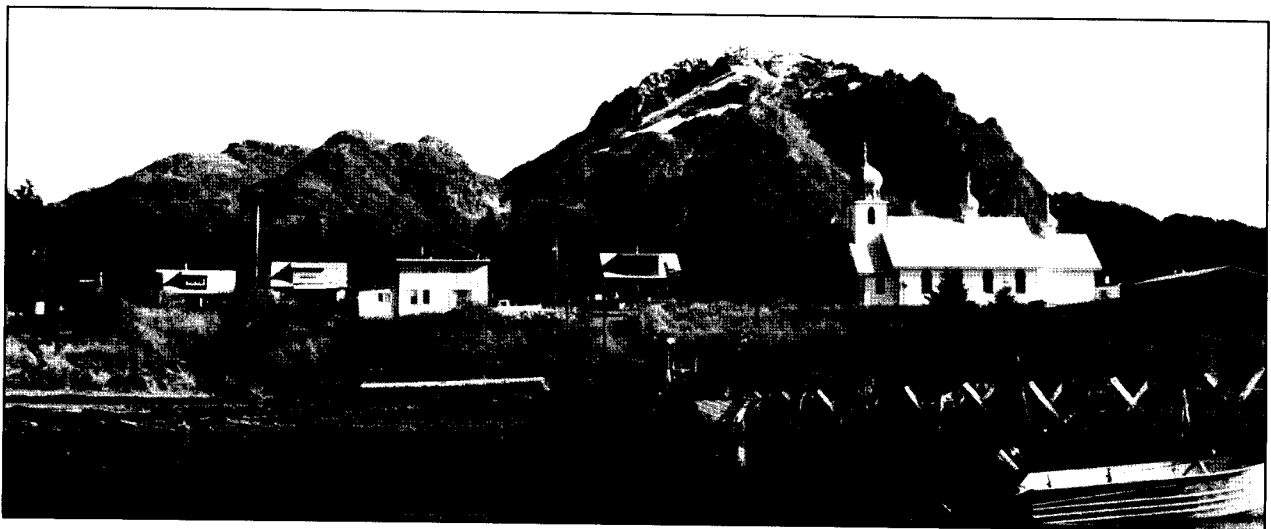
theories". The scientist is attempting to refine the theory, and so improve what the theory can do (Wolfe, 1984).

Theories do several things:

- 1. Describe**
- 2. Explain**
- 3. Predict**



Many theories only do the first. They help the scientist precisely describe pieces of the world that are being studied. Some theories give a sense of explanation, an understanding of what is being described. More powerful theories enable a scientist to accurately predict the occurrence of future events.



THE RESEARCH PROCESS

The following table describes steps a researcher follows in doing research using TEK:

Components of the Research Process

- I. Develop Hypotheses: What is the question to be answered? This should be decided in consultation with the community.
- II. Literature Search: Includes researching what TEK has already been recorded in historical accounts and recent research efforts.
- III. Overall research plan: Outlines where you will do your research, how long it will take, and how you will go about gathering data to answer your research questions.
- IV. Negotiation of a research agreement: Lays out the rules under which the research will be conducted and reported to funding sources, research institutions and impacted communities.
- V. Observation plan for a specific event: Guides how you observe and record information from a specific event, such as a spontaneous conversation, a formal interview, or a planned hunt.
- VI. Observation and data recording: The transformation of observations to notes and other forms of information. This recorded information becomes the data upon which conclusions are made.
- VII. Rewriting notes: Refining initial notes into clearer and more complete forms.
- VIII. Organizing materials: Placing notes and data into an organizational structure, such as topic areas (for example, annual cycle, species categories, activities).
- IX. Analyzing data: Sifting, winnowing, compiling, transforming, comparing, testing hypotheses with the data in the organized materials.
- X. Writing "sub-reports": Writing sections of the report advancing preliminary descriptions and analyses of the data, as progress reports and summaries, for dissemination to other researchers and for local community review.
- XI. Outlining report: Builds on the organization of materials, ordering the material as it will appear in the report, allowing the researcher to explore relationships among components of the research, results and conclusions.
- XII. Writing report through several drafts: Refining for clarity and completeness.
- XIII. Local and peer review process: Providing an opportunity for community leaders, other community residents, fellow researchers and other interested parties to review the research, including results and conclusions. This process could include public presentations, as well as reports

Adapted from Wolcot, 1994.

CHOOSING A METHOD

Research Methods

Traditional ecological knowledge can be collected in a variety of different ways. Which method, or combination of methods, you choose will depend on what kinds of questions you want to ask.

Key Respondent Interviews

Key respondents are people who are very knowledgeable on a particular topic. In this method, you find out who the most knowledgeable people in the community are on the topic you are trying to study and set up interviews with them. This kind of interview is open and mostly informal, like a conversation. You may prepare a few questions, but since the person you are interviewing is very knowledgeable, you want to give them the opportunity to talk as much as they feel they need to, and allow them to bring in topics that they feel are related. The strength of this method is that you have the possibility of learning a great deal. Since the interviews are open-ended, you do not necessarily have to know a lot about the topic ahead of time, although some knowledge is helpful. The drawback to this method is that it is very time-consuming, so you will only be able to do a relatively small number of interviews. Another drawback is that the kind of information collected in these sorts of interviews does not easily lend itself to statistical analysis.

Semi-directed Group Interviews

This type of interviewing is similar to key respondent interviewing in that you want to identify the most knowledgeable people. However, rather than interviewing each person separately, you bring them all together and interview them as a group. These interviews are also open ended, with a few questions raised for discussion. The idea here is to get the experts on a

particular topic in the community talking to one another about the topic. In this way you can get a sense of what the community consensus is on the topic, as well as what the disagreements are. It also allows you to find out who the locally acknowledged experts are on specific details. This has an advantage over the key respondent interview in that you interview all the respondents at once, so it is less time consuming. However, some people may be uncomfortable speaking in front of others on some topics, and just a few people may dominate the discussion.



Mapping Interviews

This type of interview is conducted with the use of maps. The respondent marks hunting and fishing areas, kill sites, or resource population observations on an acetate sheet laid over a map. This is a very powerful technique for gathering information on anything involving a spatial dimension. Maps drawn by several respondents can be combined in reports in order to avoid revealing information on a particular individual's activities.

Self-reporting

In this technique, you provide your respondents with a form on which they are asked to record activities or observations. This technique is only useful in cases where the respondents are highly committed to your project, either because they are interested in the research, or see some benefit to themselves from participating. It is important to remember that your respondents, especially those living an active

subsistence lifestyle, are very busy people, with many claims on their time. In most cases, it will be better to choose a method that puts less of a time burden on the respondent.

Questionnaires

These are lists of questions, usually requiring either short answers or a selection of multiple choice responses. Questionnaires can be administered directly, with the researcher asking the respondent the questions, either in person or over the telephone, or the questionnaire can be given to the respondent to fill out (see section on self-reporting above for drawbacks). Information collected on a questionnaire, if it is well designed, lends itself easily to statistical analysis. However, these kind of interviews, if they are long, can prove tedious for both the respondent and the researcher. Also, because these interviews are structured, little room is left for unexpected information. The researcher needs to already know a lot about the topic under study in order to design the questionnaire appropriately.

Participant Observation

In this technique, you study your topic by participating in an activity or event, and keeping notes on your observations. This might involve going hunting or gathering with a knowledgeable person or persons. If this technique is used, it is important to inform the other participants in the activity that notes will be kept, and obtain their permission. It is also important to check back with knowledgeable people in the community on your conclusions, to make sure you have not misinterpreted the observed practices. This can also be a good way to get to know people.

The choice of research method will in most cases be a joint decision between the community, the TEK specialist, the project principal investigator, and the local assistant. The

following guidelines will help explain how such decisions are made, as well as how to organize the research.

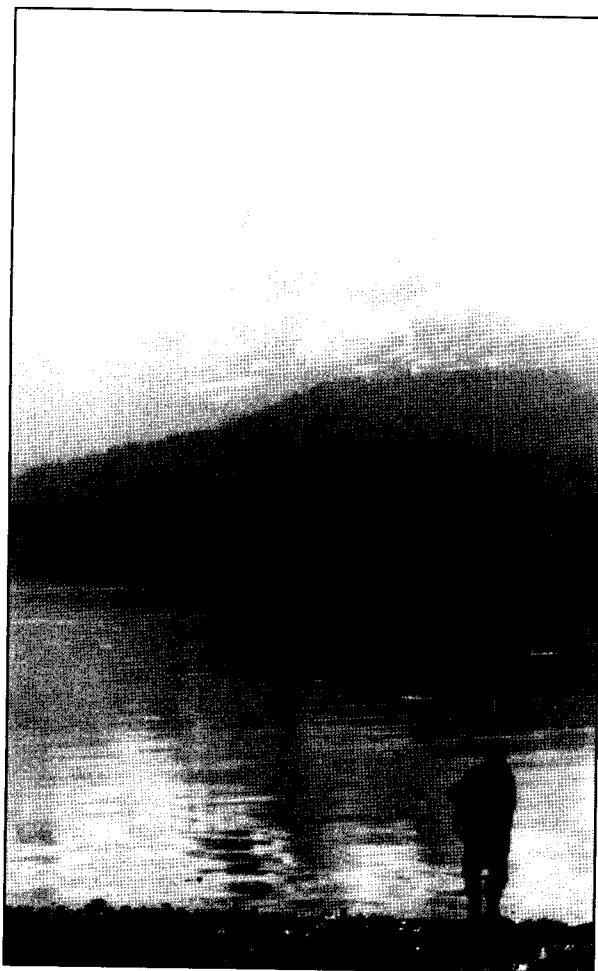
Things that should be considered when choosing a research method:

- ⇒ What is the question you are asking? It is important to limit your research questions to what can reasonably be done in the course of the research. It is not possible (or productive) to gather all information about everything.
- ⇒ What information is already available to help you to refine the question?
- ⇒ What additional information do you need to collect in order to find an answer?
- ⇒ What is the best (most efficient and least intrusive) method for getting this information?

Participatory Action Research and Community Participatory Research

It is appropriate to include in the methods section a discussion of participatory action research (PAR), and community participatory research (CP), even though these are more properly described as frameworks for the conduct of research, rather than methods. It is important for both spill area residents and EVOS project principal investigators to





think about how to involve the spill area communities more directly in formulating research questions and planning research, rather than just expecting community residents to provide answers to questions raised by others. The idea is to help local people to become full participants in the research and, in a sense, also to become owners of the results of the research. The use of participatory research techniques can broaden the horizons of researchers and at the same time further empower community members to direct research at the problems and questions that are most important to them.

Ryan and Robinson describe participatory action research as follows:

PAR is initiated by the community and is defined, directed, analyzed, and implemented by the community. The goal is change—change in lives, in circumstances, and in economic and power relationships. PAR involves the whole community in the definition of goals, in the research process, and in the verification of data. In its practices, it involves segments of the community; a community advisory committee, research trainees, elders as experts, political leaders in fund raising, community agencies in contributions in kind. PAR helps people to identify their own strengths and resources and develop strategies for reassuming power and responsibilities; it mobilizes young and old for change. PAR operates on the basis of mutual respect. Decisions are made by consensus and participants share power, learning, and any advances or setbacks.

PAR initially uses an external research facilitator, or community worker, to help to get people focused, participant [sic] and trained. The facilitator lives in the community and participates in community activities and events, but seeks to be out of a job in twenty-four to thirty months. PAR anticipates that once people are mobilized, have defined their goals, and have started action, the momentum for change will continue for many generations. In other words, PAR is a one-shot

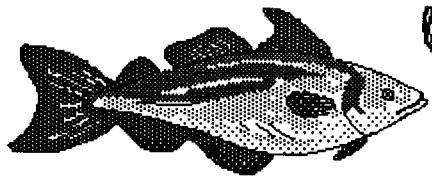
mechanism for change that involves the whole community in ways in which one change leads to another and another and another (Ryan & Robinson, 1996: 8).

Community participatory research is also strongly focused on local participation, but is less oriented toward change.

CP is a method of community-based research that involves an outside facilitator or trainer and a small group of community people in a focused project of short duration, usually from three to six months. It is distinguished from PAR in that it involves less training, less institutional development, less political change, and less cost. It relies more heavily on the facilitator to analyze the data and write all the reports. The verification involves only the clients—those people in the community who have direct need of the results and who are paying for the project. CP projects have a marked practical orientation, and they often result in the negotiation of comanagement agreements, investment plans, or rapid program evaluations.

CP is useful when time and money are short, and when communities are further down the development road, and therefore not in need of the full PAR approach (Ryan & Robinson, 1996: 10).

The mapping and group interview techniques described above are excellent participatory methods. Mapping, in particular produces a tangible product that communities can keep after the project is over. Other participatory methods include expansions and modifications of the mapping concept. For example, groups can make historical maps or timelines of changes to the status of a resource or to the local landscape. Maps made by different groups of residents (men, women, elders, youth) may reveal different types of knowledge or perceptions of the landscape and potentially conflicting conceptions or uses. Drawings, models, and diagrams can also be useful. They can provide a lot of information about relative harvest effort or harvest quantities, if not exact numerical data. Sometimes the most powerful data are the spoken words and reported experiences of local people.



CASE STUDY #2

AN EXAMPLE OF PARTICIPATORY RESEARCH: A PILOT STUDY IN PRIVATE FISHERY MANAGEMENT

New York State has about 40,000 farm ponds and 6,400 small to medium-sized lakes which are privately owned or controlled. Most of these ponds are either unmanaged or mismanaged, yet they have the potential to support significant fishing efforts that can provide both food and recreation.

The pilot private fishery management program assumed it was important to get the owners of the fisheries resources involved in management. The object was to establish a partnership where the owners would be encouraged to contact program leaders when they felt advice was needed.

To achieve the goals set by the owners, the project applied three features of liminological and fishery research to the management of each body of water.

- 1) The program used anglers to collect data about the status of fish populations. Angler diaries, ideally suited for participatory learning when coupled with appropriate educational materials.
- 2) The predator-prey balance was assessed through an analysis of the zooplankton community.
- 3) Zooplankton samples were taken, along with fish length and catch records from cooperating anglers, to provide the information necessary to make size-selective harvest recommendations that would enhance the quality of the fishing.

Program coordinators were issued a diary, a fish measuring rule, and written instructions for collecting information. An educational videotape was also sent to reinforce the written materials and demonstrate sampling and data collection methods. Cooperators recorded in their diaries trip information including date, duration, number of anglers, type of fishing, and data for the fish caught (species, number, length of each fish, and whether the fish were kept or released). Anglers/owners used a sampling kit and instructions provided by the program to collect data on water quality and zooplankton.

A questionnaire was sent to participants with one to three years in the program to evaluate whether they improved their understanding of the fishery resource. Most indicated they gained a better understanding of how fishery resources could be managed through size-selective harvest. Many respondents indicated they'd learned a good deal about indicators of fishing quality (79%), the concept of carrying capacity (67%), and predator-prey balance (64%).

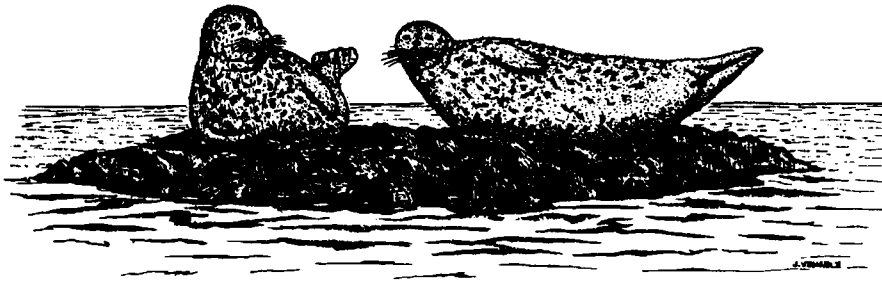
The 19 waters in the pilot program represented the majority of the types of waters found in the warm water farm ponds and small lakes in New York, making the management approach applicable throughout the state. The extension program was also shown to be economical requiring 1 to 1.5 technician, and 1 to 3 professional person days per water. Perhaps the strongest aspect of the program is the direct participation of the anglers in decision making as well as carrying out the management decisions. Participants developed firsthand understanding of "their resource" and in so doing gained more realistic expectations of its management potential. In this participatory learning process, anglers became involved early in the decisions about the fishery and participated continually in management.

Adapted from Green, Mills & Decker, 1993.

One advantage of drawings, maps, and diagrams is that they facilitate communication if the person you are interviewing is not fluent in English. You can ask them to draw bar charts showing the amount of time they spend on different resource harvesting activities at different times of the year. These types of techniques involve the respondent more directly and give them an opportunity to see and revise their ideas as well as providing a tangible product. Exercises such as asking people to contrast objects or ideas and to rank them provide fast, quasi-quantitative information on



preferences and behavior. Often you can obtain more information about something by having someone compare it with something else, rather than describing it in isolation. Participating in an activity with community residents outdoors is often useful and revealing. Walking or boating a transect through the community or resource area, and then mapping it with local people can be especially useful for researchers new to an area.



CASE STUDY #3

AN EXAMPLE OF PARTICIPATORY ACTION RESEARCH: THE ALASKA NATIVE HARBOR SEAL COMMISSION

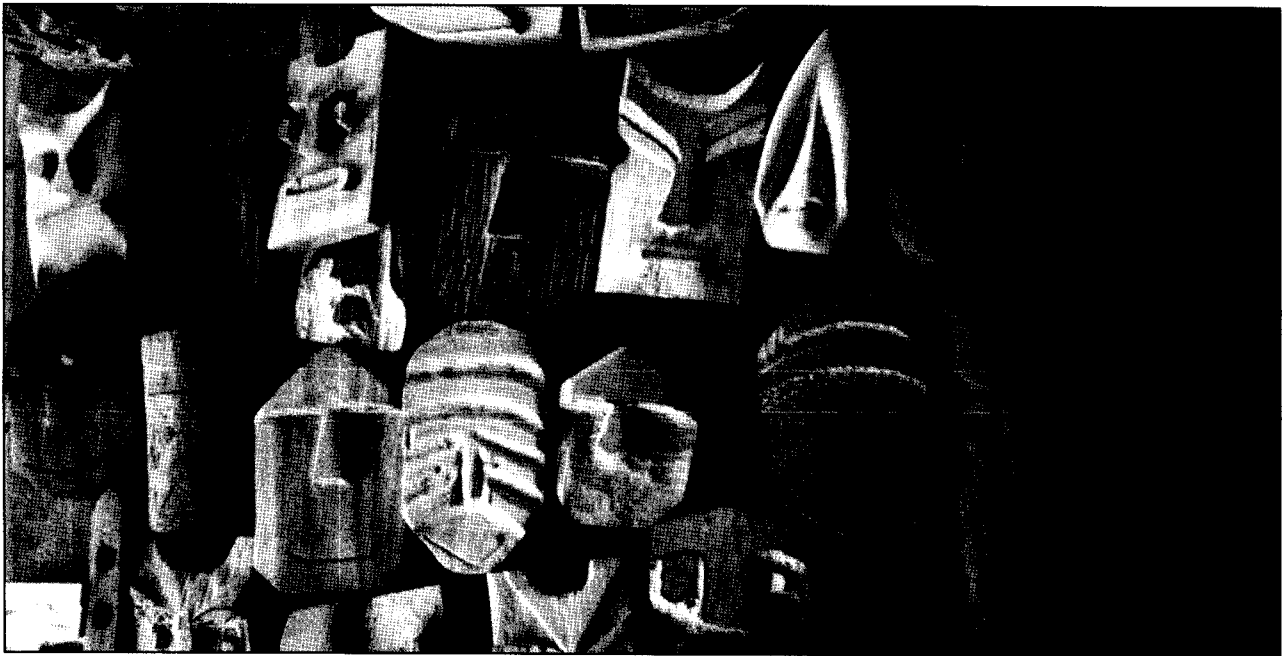
Harbor seals (*Phoca Vitulina*) are among the injured biological resources of Prince William Sound that have not recovered following the *Exxon Valdez* oil spill. The harbor seal populations of Prince William Sound and the northern Gulf of Alaska were in decline before the oil spill for unknown reasons. The spill injured these populations, adding to the decline. The continued decline in seal numbers in these areas of Alaska is of particular concern to Alaskan Natives for whom seals are of traditional, subsistence, and cultural importance. The goal of the project is to help restore harbor seal populations by involving subsistence users in research and management activities, bringing traditional knowledge in to supplement the data from scientific studies.

Workshops were convened to improve communication among seal hunters as well as with agencies involved in seal research and management. One outcome of these meetings was the formation of the Alaska Native Harbor Seal Commission whose mission is to promote conservation and sustainability of harbor seals for the cultural well-being of Alaska Natives. In addition to expressing their concern for the sustained health of the seal population, workshop participants voiced their desire to be active participants in harbor seal research projects. As a result, a harbor seal biological sampling program was initiated in Prince William Sound and Kenai Peninsula villages in 1996 to combine the skills and interest of seal hunters with the scientific expertise of harbor seal researchers.

The sampling needs and protocols of a variety of researchers from the Alaska Department of Fish and Game, University of Alaska and National Marine Fisheries Service were compiled into a user-friendly sampling manual, dataforms, and training program. In November and December 1996, two demonstration sessions were held in which hunters from six oil-impacted villages were given the background, training, and supplies necessary to collect tissue samples from harvested seals.

Hunters collect samples from harbor seals harvested for subsistence use. Samples collected in this program have been archived at the University of Alaska Museum or dispersed to a variety of researchers for current or future analysis of the diet, genetics, reproductive status, health, and contaminant loads of the state and region's harbor seals.

Research funded by the Exxon Valdez Oil Spill Trustee Council, Restoration Project /244.



Possible Problem/Method Pairs:

A researcher can also choose to use more than one method; this is called triangulation, which is the strategy of approaching the same research problem or question with two or more techniques in order to cross check your results. If two methods such as **group interviews** and a **questionnaire** result in two very different pictures of what is going on, the researcher will want to explore further to find out the underlying reasons for the contradictory results.

If you want to study **Changes in the Status of a Resource Through Time**, you might want to use a combination of **Key Respondent Interviews** with elders and active harvesters, **Semi-Directed Group Interviews** and **Mapping Interviews** to record information on the respondent's life-long use and observation of the resource.

If you want to study the **Current Health and Distribution of a Resource**, you could use a combination of **Key Respondent Interviews** with active harvesters, and **Mapping** of kill sites and current resource distribution.

To answer questions concerning **Land Use**, you might work with harvesters to **Map** activity areas, and record seasonal cycles of use through administration of a **Questionnaire**.

If you want information on the **Timing of Harvests**, you could record seasonal cycles of use through administration of a **Questionnaire** to active harvesters.



Sampling Methods

When the population you want to study is too large to interview every member and stay within the time and budget you have, you will want to take a sample. A sample is a relatively small subset of the population under study. In order to get statistically dependable results you need to choose your sample at random (see Random Sample, below). However, sometimes you may not want your sample to be random (see Chain Referral Sample, below). As with the research method, the selection of a sampling method is determined by the nature of the questions to be answered. The possible types of samples include:

Census

In this method, you try to interview every resident in the community. It is usually not practical to interview everyone; this method is best used only in cases where a very brief questionnaire is being administered, or in a very small community.



Random Sample

In cases where it may not be possible to interview everyone, but you want to get a cross-section of all the different types of people who live in the community (including both knowledgeable harvesters and those who do not

harvest at all), this method may be best. You assign each household (or each individual) in the community a number, and then use a random numbers table to choose which ones you interview. To select a sample at random the selection method has to have two properties: 1) the sample has to be unbiased, which means each unit has the same chance of being chosen, and 2) the selection of each unit has to be independent, meaning the selection of one unit has no influence over the selection of other units (Gonick & Smith, 1993: 93).

Stratified Random Sample

This method is used in a situation where you want to get a sample of all residents in the community, but you want to sample one group more than another. For example, you may want to estimate how many households do not use a particular resource, but you also want to make

sure you interview the active harvesters. You would divide the households in the community into two groups: 1) those that you know harvest, and 2) those that you don't know about. These would be your two strata. Each stratum would then be sampled in a different way. You might interview all of the harvesting households, but do a random sampling (see above) of the households that you don't know about.

Systematic Sample

This is like a random sample, in that you don't interview everyone. However, instead of using a random numbers table to choose your sample, you use other criteria. For example, you might choose to interview the residents of every other house in the community, or only people born in odd numbered years. The risk here is that you may choose your sample using criteria that introduce a bias.

Chain Referral

This method is best used if you only want to interview respondents that fall into a particular category. For example, if you are only interested in interviewing very active seal harvesters in a large community where just a few people harvest or use seals. You start out by talking to a knowledgeable individual in the community, and get a list of all the seal harvesters they know about. You interview the people on that list, each time asking whether they know of any active seal harvesters not on the list. If they give you any new names, these are added to your list of people to interview. The risk here is that you may miss a few people who are involved in the activity you are studying.

Discussion of Relative Merits of Different Sampling Methods

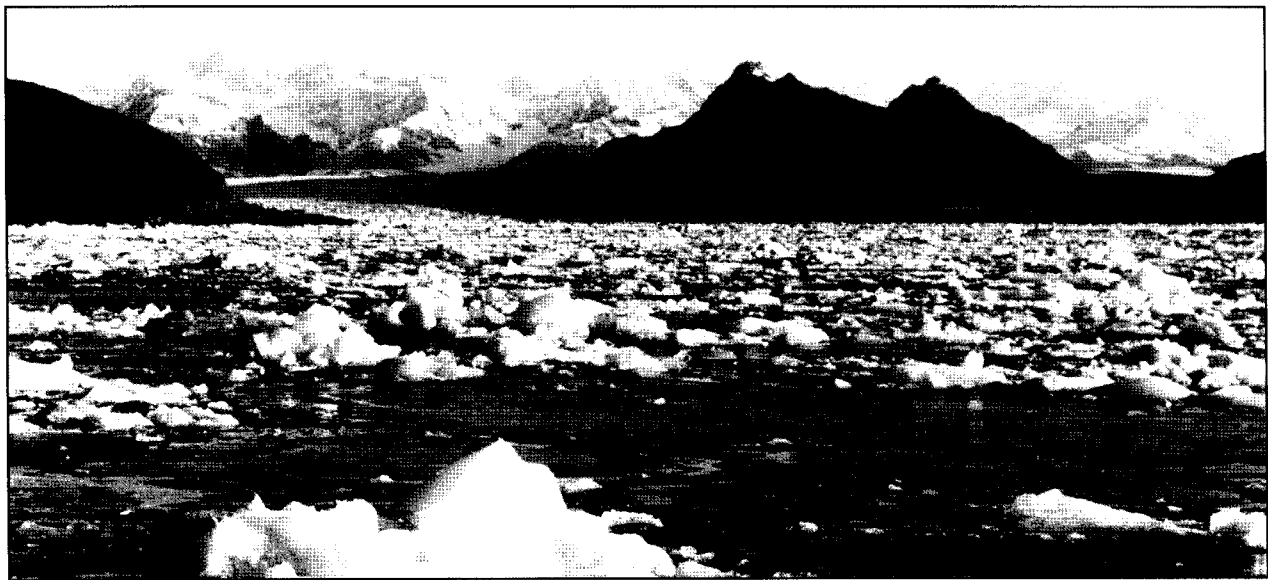
The researcher should try to get as large and knowledgeable a sample as possible. A **randomized sample** will produce a **statistically representative cross section** of the activities and use areas of the community. However, this is not the best sample if the intent is to produce a complete depiction of all the areas used for subsistence activities. This is because often only a few people will produce most of the fish, game, and plants used by the community. Accordingly, the sampling method should try to select individuals who have the most experience and knowledge about particular subsistence activities. These individuals may be called “local experts”.

Active adults supporting families, and elders who have a lifetime of experience in subsistence activities, are logical starting points for interviews. These persons are more likely to know the areas used for fishing and hunting by the community. Both men and women should be sampled so activities allocated along a sexual division of labor are documented. The sample of persons interviewed should be drawn from all the extended families in the community. This is because particular river drainages, lakes, and hills may be recognized as the traditional use areas of certain kin groups. These use areas may not be recorded if members from that kin network are not interviewed. Identifying the elders in the community is one way to identify kinship groups, as extended families typically have an elder head accorded special status.

If the goal is to make generalizations about **relationships** such as those **between use areas and other social characteristics**, such as age, sex, and income of hunters, then a **stratified selection** may be a preferred sample selection technique. For instance, if a comparison is to be made between the use areas of adolescents, young adults, and mature adults, then persons from each age range must be sampled and interviewed.

DATA GATHERING TOOLS

A variety of tools are available to the researcher in the gathering of information on traditional ecological knowledge. These include **notebooks**, **tape recorders**, **still cameras**, **video cameras**, **calendars**, and **computers**. Whichever tool is used, it is important to keep accurate written records of when and under what circumstances the information was recorded. This will allow for more accurate interpretation and reporting later. The researcher should obtain a written release from the respondent for the later use of audio recordings, video recordings, and photographs. Again, it is necessary to inform the respondent that recordings or photographs are being taken, as well as of the uses the material may be put to in the future.



VISUAL AIDS TO INTERVIEWING

Visual aids such as **maps**, **photographs**, and **artifacts** can make the interviewing process easier, and more interesting for both the respondent and the interviewer. These are especially effective in key respondent and semi-directed group interviews, where they can serve to spark the memory of respondents. Another useful technique is to conduct the interview in the location

being discussed, or for example, to conduct a key respondent interview on seal hunting while participating in a seal hunt. Because local names for some resources can vary, accurate drawings of resources, such as Mac's Field Guides¹, may be helpful in making sure both the respondent and the researcher are talking about the same animal species.

ORGANIZING, ANALYZING, AND REPORTING THE DATA

There are two principal kinds of data: 1) **Quantitative Data**, or data based on numbers that lends itself easily to statistical analysis, and 2) **Qualitative Data**, which is based on observations and is difficult to analyze or express in numbers or statistics.

DESCRIPTION, ANALYSIS, AND INTERPRETATION

Description deals with the question, "What happened?" The data here can be things seen by the researcher (Qualitative Data) or the measurements and frequencies of things that occurred (Quantitative Data).

Analysis means figuring out what parts of the description are the most important in explaining what happened and what the relationships are between the parts described—in other words, analysis involves using the data to attempt to answer the question "How do things work (or not work)?"

Interpretation goes beyond analysis to ask the question "What does it mean?"

Adapted from Wolcot, 1994: 12.

Once you have collected the data, your next challenge is to organize, interpret, and report it. The first step in this organization process is to review and refine your fieldnotes. You want to do this as soon as possible after you have conducted the fieldwork, while the interview or trip is still

¹ Mac's Field Guides can be ordered from The Mountaineers, 1011 S.W. Klickitat Way, Seattle, WA 98134; (206) 223-6303.

WAYS TO ORGANIZE AND PRESENT DESCRIPTION

1. Chronological Order Events always can be related in the order they occurred, with relevant context added as needed.
2. Researcher or Narrator Order The way the story has been revealed to the researcher may offer another way to organize. An informant's way of unveiling his or her life story ought to be examined for its own internal logic rather than automatically reorganizing it into a chronological sequence.
3. Progressive Focusing The descriptive account may be revealed through a progressive focusing that goes in either direction, slowly zooming from broad context to the particulars of the case, or starting with a close-up view and gradually backing away to include more context. Most likely the zooming will move in both directions.
4. Day in the Life Readers may be privy to a fictionalized account, an entire day, or a typical daily sequence of events.
5. Critical or Key Event The description can focus on only one or two aspects, creating a story-within-a-story in which the whole story is revealed or reflected.
6. Plot and Characters Where individuals are central to a study, the researcher may proceed as though staging a play. First, the main characters are introduced. Then the story is put into motion. The researcher may either fade into the wings or assume the role of narrator.
7. Groups in Interaction In the same way it is necessary in some tellings to keep individual characters clearly identified, it often proves helpful to researcher and reader alike to create distinct group identities to emphasize differences important to a case.
8. Follow an Analytical Framework By having a framework in mind during the fieldwork, the researcher, increases the likelihood that, when the time comes for analysis, they will have the data they need. Making sure that the descriptive portion of an account will include the detail necessary for subsequent analysis or interpretation raises an important issue: how to ensure that one does not gather only data that support a preconceived framework. To avoid this, the researcher should ask: "Am I attending as carefully to what *is* going on as I am attending to what I *think* is going on?"
9. Multiple Points of View As a story telling technique, any descriptive account can be related through the eyes of different participants, seemingly freeing the researcher from having to disclose his or her own view—except for the presence of the authorial hand that has guided each viewer's recounting.
10. Write a Mystery Organize and present the study as though writing a mystery novel. The problem focus becomes a mystery to be solved. With the researcher in the key role of detective, data are introduced in the manner of accumulating evidence, to be sifted, sorted, and evaluated according to their contribution to solving the mystery. The challenge here is to write with a sense of excitement and discovery.

Adapted from Wolcot, 1994: 17.

WAYS TO APPROACH ANALYSIS

1. Highlight Your Findings Report or summarize whatever was counted, measured, inquired about. Organize the data in such a way as to reveal underlying properties, structures and relationships.
2. Display Your Findings Organizing data in tables, charts, diagrams, maps, and figures can help one explore relationships among the data. Such graphics are also a good way to present and illustrate findings. Other visual approaches include the use of photographs, film and videotape.
3. Identify Patterned Regularities in the Data Look for and discuss the relationships among the data. What do the data tell us that can be applied outside the specific case studied. A major contribution of qualitative research is the formation of conclusions that have broader applicability.
4. Compare With Another Case Controlled comparison between a known case and the case being analyzed, noting similarities and differences between them, offers a way for the researcher to explore the data.
5. Evaluate Evaluation is a form of comparison in which some explicit or implicit standard supplies the comparability by which judgments can be made. The critical element is to have a recognized or agreed-upon standard. An alternative approach is to have those immediately involved or affected by the research evaluate the data, with the researcher acting as information processor.
6. Contextualize in a Broader Analytical Framework Most often this is accomplished, through informed references to some recognized body of theory, or to earlier studies that are recognized as classics, in the tradition of the literature review. The researcher can also make the connections personal, such as to one's own expectations, to experience, to conventional wisdom, or to social norms.
7. Critique the Research process Break loose and be more speculative. This can be accompanied by "full disclosure", advising your reader that, although what you are able to convey from your observations does not conform to your own customary standard of reporting, the possible significance or implications of those observations seem too great to ignore.
8. Propose a Redesign for the Study If the problem with the research was more serious than one of inadequate techniques or inadequate data, you may still have something important to contribute if you turn your analytical efforts to issues of conceptualization or design

Adapted from Wolcot, 1994: 29.

fresh in your mind. The goal here is to make your notes as clear and complete as possible so you will not have to rely on your memory later. You should then organize your material into topic areas, in order to make the next step, analysis of the data, easier.

Analyzing the data means looking at the information you collected and trying to make some sense out of the responses you received. This can mean performing statistical manipulations on the information you gathered from administration of a questionnaire to a large sample population. Statistics is a branch of mathematics which, based upon the laws of probability, allows for comparisons among data and generalizations from the sample to the larger population of which it is a part. (A full explanation of statistical analysis is beyond the scope of this handbook. Suggested readings on this topic are provided in the bibliography.)

You analyze your data by testing out ideas of what you think it may mean, to see if the evidence fits your idea. At this point in your research, you may want to write out some of your ideas and share them with the respondents, other community residents and other researchers to find out if you are on the right track.



Once you have completed the analysis of the data, and reached some conclusions, you can write a draft report. You should allow opportunities for community leaders and other community residents, as well as other researchers to review

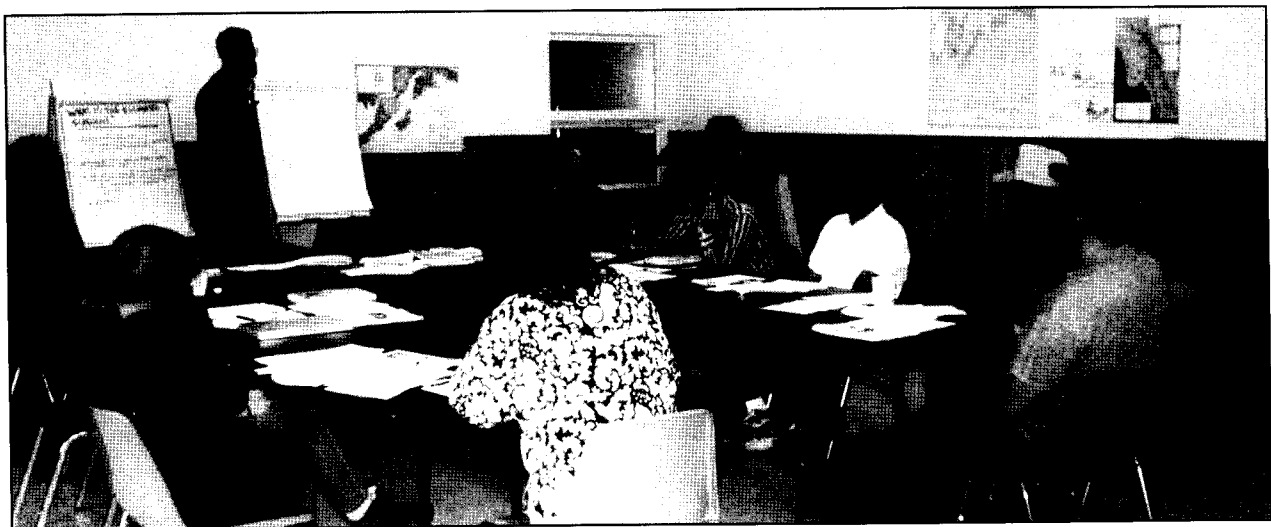
INTERPRETATION

1. Go Beyond Analysis This is an opportunity to speculate. Note the implications or inferences that one might draw from the data.
2. Make the Leap Hunches are appropriate here, as long as they are presented as such. You do not need to present your every written statement with certainty, there is vast interpretative possibility in uncertainty.
3. When You Come to the End Stop! Presenting a weak interpretation is worse than presenting no interpretation at all. If you cannot find an interpretive framework that fits, do not take away from what you have accomplished by tacking on a weak interpretation. Take the account as far as you can with confidence, then stop.
4. Do as Suggested Try to incorporate suggestions made by your critics. Your critics include your colleagues, editors, and anonymous referees. If you are struggling with the challenge of interpretation, there is no better way to overcome that hurdle than to place your case before interested associates and to invite their comments. The crucial element in soliciting feedback is to engage in a dialogue about interpretative possibilities.
5. Turn to Theory For interpretation, theory provides a way to link case studies with larger issues. It is this linking power, rather than explanatory power, that makes theory so popular with researchers. One interpretative tack is to examine a case in terms of competing theories to see which best fits your observations.
6. Refocus on Interpretation Itself Sometimes intentionally, sometimes not, interpretation works its way to center stage, the descriptive account serving only as introduction or example for a major effort at interpretation. More than simply linking up with theory or leaning on it for an interpretative framework, the objective here is to develop that framework. Descriptive research previously reported may be reviewed briefly for illustration or inspiration, or some newly proposed conceptual apparatus may be turned back on original data as a test of its explanatory power or completeness.
7. Connect With Personal Experience This approach offers two interpretative options. The first is to personalize the interpretation: "This is what I make of it all." The second is to make the interpretation personal: "This is how the research experience affected me."
8. Analyze the Interpretive Process In lieu of the solid interpretation you may have hoped to provide, you might instead analyze the interpretive process. Explain what seems to be holding you back or what pieces of the puzzle are still missing. Try to identify other factors as well, considerations that may leave your readers with a clearer sense of the problem in spite of the fact that you yourself feel no closer to an answer.
9. Explore Alternative Formats. The more imaginative you may want to be in your interpretation, including the exploration of personal feelings and beliefs, the more you may feel hampered rather than empowered by the academic format. Consider alternative literary or cultural forms such as poetry, historically or ethnographically accurate fiction, or performance of text.

Adapted from Wolcot, 1994: 40.

and comment on your draft report. It may be a good idea to schedule a community meeting so you can present the research to the community and take their comments into consideration before writing your final report.

The products of your research may take several forms in addition to a written report. You may produce data sets, maps, equations (a mathematical way of representing relationships), or family trees. It is important that the details of how each product will be used is worked out as part of the research agreement negotiated with the village council.



FINAL WORD/CONCLUSION

While the collection and use of traditional ecological knowledge requires planning, negotiation, and careful work, there are benefits to be gained by both the oil spill restoration process itself and the communities involved in the research. Researchers and village councils can work together in an atmosphere of mutual respect to ensure that residents of the communities impacted by the *Exxon Valdez* oil spill have the active role they seek in the restoration process, while at the same time advancing the goal of restoring the resources and lives impacted the spill. It is hoped that this handbook will bring us a little closer to achieving that goal.

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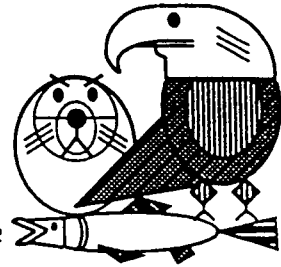
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PROTOCOLS FOR INCLUDING INDIGENOUS KNOWLEDGE IN THE EXXON VALDEZ OIL SPILL RESTORATION PROCESS

Exxon Valdez Oil Spill Trustee Council
December 6, 1996

Introduction, Purpose, and Objectives

Indigenous knowledge, including traditional ecological knowledge (TEK), provides an important perspective that can help the *Exxon Valdez Oil Spill* (EVOS) restoration effort by providing information and analysis of the environment and resources affected by the oil spill. Fishers, hunters, and gatherers have detailed descriptions of animal behavior and ecology. For many species, subsistence harvesters possess the following information:

- where it is found in any season
- what it eats
- how it moves from place to place
- when it mates
- where its young are born
- what preys on it
- how it protects itself
- how best to hunt for it
- population cycles

As astute observers of the natural world and as repositories of knowledge on the long term changes in their biophysical environment, practitioners of TEK can provide western biologists and ecologists with systematic and analytical observations that cover many years. While the differences between indigenous and scientific ways of knowing must be understood, restoration projects which successfully incorporate both perspectives will improve our collective understanding of the natural processes involved in the EVOS-affected region.

Working in and with Alaska Native communities requires sensitivity to their cultures, customs, traditions, and history. Successful working relationships are built on mutual respect and trust. The people of the communities of the oil spill area have experienced severe dislocations in their lives due to the *Exxon Valdez Oil Spill*. Subsistence and commercial fishing activities have been interrupted. Researchers and agency personnel

have used the communities as logistical bases. Disruptions related to the clean up, litigation, and increased bureaucratic demands have impacted the people's ability to conduct their daily business.

As a consequence of these stresses to their privacy and out of concern to preserve respect for their traditions, the Alaska Native communities of the area affected by the spill, assisted by EVOS staff, the Chugach Regional Resources Commission, and staff from Trustee Council agencies, have developed a series of protocols formalizing their relationship with outside researchers. These protocols provide a set of guidelines that will facilitate collaboration between Alaska Natives and scientists in meeting the goals of EVOS restoration. The protocols describe the major elements of a research partnership, but their application depends on common sense and courtesy. For those researchers planning to collaborate with local respondents in the collection of indigenous knowledge or whose proposed research directly affects subsistence activities, the EVOS Trustee Council requires consideration of these protocols prior to the initiation of research.

The objectives of these protocols are:

1. Provide guidelines for restoration project planning and review
2. Identify a set of ethical principles that establishes the parameters for a research partnership between Alaska Native communities and restoration scientists
3. Establish procedures for facilitating the collection of indigenous knowledge in restoration projects
4. Provide guidance on the development of research agreements between Alaska Native communities and researchers.

Protocols

1. Project planning and review.
 - a) In developing projects that include the collection and use of indigenous knowledge, researchers and community residents should keep in mind how this information will be used in improving restoration, management, education, and future research.
 - b) In designing restoration projects that include indigenous knowledge, researchers should recognize that local communities' knowledge of and interest in natural resources extends beyond the physical boundaries of the communities themselves to their harvest areas and beyond.
 - c) All research proposals involving indigenous knowledge will be reviewed by the TEK Specialist, the Community Facilitators, and village councils, and their

recommendations will be forwarded to the Executive Director. The overall program of research involving indigenous knowledge will be reviewed annually.

- d) Costs for incorporating TEK in a restoration project should be reflected in the project's budget.

2. Ethical principles. EVOS research which involves the collection and use of indigenous knowledge should follow the ethical principles for research listed below, which are based upon guidelines adopted by the Alaska Federation of Natives (AFN) Board of Directors in May 1993 (attached).

- e) Advise Alaska Native communities and people who are to be involved in or affected by the study of the purpose, goals, and time-frame of the research, the proposed data-gathering techniques, and the potential positive and negative implications and impacts of the research.
- f) Obtain the informed consent of the appropriate governing bodies and of individual participants
- g) Protect the knowledge and cultural/intellectual property of the Alaska Native people
- h) Seek to hire local community research assistants, and provide meaningful training to Alaska Native people to develop research skills, as appropriate
- i) Use the local Alaska Native language in oral communications whenever English is the second language
- j) Address issues of confidentiality of sensitive material
- k) Include Alaska Native viewpoints in the final study report
- l) Acknowledge the contributions of local research assistants and respondents in project reports
- m) Provide the communities with a summary of the major findings of the study in non-technical language.
- n) Provide copies of the annual and final project reports and related publications to the local library

The AFN Guidelines also include establishing and funding a "Native Research Committee." This may not be necessary in most EVOS Restoration Projects, depending upon the scope of the collection of indigenous knowledge and the wishes of the local community. Also, a new entity may not be necessary. For example, the traditional council may serve as such a review body. This point should be addressed in a "research agreement," as discussed in #4, below.

3. Facilitating the collection of indigenous knowledge.

- o) Initial contacts should be made through the TEK Specialist hired under Project 97052B to discuss the potential collection of indigenous knowledge in a project. The TEK Specialist will then pass the requests on to the communities concerned, and assist in establishing contact between the researcher and the Community Facilitator. The TEK Specialist will also inform the Spill Area Wide Coordinator of such requests.
- p) Once contact has been established through the TEK Specialist, researchers should use the Community Facilitator or designee as the primary community contact.
- q) The Community Facilitator or designee will arrange for the researcher to meet with the Village Council (or other appropriate body authorized by the Village Council) to discuss the project's goals, scope, methods, expectations, benefits and risks. The Facilitator or designee will help orient the researcher to the community and its customs.

4. Research agreements.

The researcher and the Village Council (or other appropriate body authorized by the Village Council), assisted by the Community Facilitator, will work together to set up a research agreement. In developing the agreement, the following topics should be considered: the nature of the research, the form of consent that will be required, the need for local research assistants, compensation of participants, acknowledgments, anonymity and confidentiality of personal and other sensitive information, project monitoring, project review, final disposition of data, and provision of study results. The agreement may take one of several forms, such as a binding contract, a memorandum of agreement, a letter of agreement, or a village resolution. In any agreement, the responsibility and expectations of the researcher and the community should be spelled out. Terms and conditions should be clear and understandable to all parties, should not place unreasonable or unfair burdens on the participants, and must be consistent with applicable laws.

AFN BOARD ADOPTS POLICY GUIDELINES FOR RESEARCH

At its quarterly meeting in May, the AFN Board of Directors adopted a policy recommendation that includes a set of research principles to be conveyed to scientists who plan to conduct studies among Alaska Natives.

The principles will be sent to all Native organizations and villages in the hope that compliance by researchers will deter abuses such as those committed in the past which lately have come to light.

Alaska Natives share with the scientific community an interest in learning more about the history and culture of our societies. The best scientific and ethical standards are obtained when Alaska Natives are directly involved in research conducted in our communities and in studies where the findings have a direct impact on Native populations.

AFN recommends to public and private institutions that conduct or support research among Alaska Natives that they include a standard category of funding in their projects to ensure Native participation.

AFN conveys to all scientists and researchers who plan to conduct studies among Alaska Natives that they must comply with the following research principles:

- * Advise Native people who are to be affected by the study of the purpose, goals, and time-frame of the research, the data-gathering techniques, the positive and negative implications and impacts of the research.
- * Obtain the informed consent of the appropriate governing body.
- * Fund the support of a Native Research Committee appointed by the local community to assess and monitor the research project and ensure compliance with the expressed wishes of Native people.
- * Protect the sacred knowledge and cultural/intellectual property of Native people.
- * Hire and train Native people to assist in the study.
- * Use Native language whenever English is the second language.
- * Guarantee confidentiality of surveys and sensitive material.
- * Include Native viewpoints in the final study.
- * Acknowledge the contributions of Native resource people.
- * Inform the Native Research Committee in a summary and in non-technical language of the major findings of the study.
- * Provide copies of studies to the local library.

APPENDIX B

ETHICAL PRINCIPLES FOR THE CONDUCT OF RESEARCH IN THE NORTH (Based on the Association of Canadian Universities for Northern Studies, Draft Document, 1981)

Introduction

In too many cases, researchers have worked in isolated communities without regard for the people who live there. Communities have been disrupted, and essential local resources used without consultation. Privacy is difficult in small communities, creating additional problems for participants. Guidelines, or principles, are needed so that research may be carried on with a minimum of friction and social disruption. The principles proposed here are intended to promote co-operation and mutual respect between researchers and the people of the North.

Northerners are involved with research in several different ways:

1. As research subjects.
2. Providing information.
3. As part of a research team.
4. Using the completed research.
5. Identifying research needs.

If research is to be explained clearly, conducted ethically, and used constructively, it must be guided by principles that consider all of the above mentioned ways in which Northerners are likely to be involved in research activities.

Principles

1. The research must respect the privacy and dignity of the people.
2. The research should take into account the knowledge and experience of the people.
3. The research should respect the language, traditions and standards of the community.
4. The person in charge of the research is accountable for all decisions on the project, including the decisions of subordinates.
5. No research should begin before being fully explained to those who might be affected.
6. No research should begin without the consent of those who might be affected.
7. In seeking informed consent, researchers should clearly identify sponsors, purposes of the research, sources of financial support, and investigators responsible for the research.
8. In seeking informed consent, researchers should explain the potential effects of the research on the community and the environment, and should explain the use and value of the research to the community.
9. Informed consent should be obtained from each participant in the research, as well as from the community at large.
10. On an on-going basis, participants should be fully informed of any data gathering techniques developed and used during the course of the research (such as tape recordings, photographs, physiological measurements, etc.), and the use to which they will be put.
11. No undue pressure should be applied to get consent for participation in a research project.
12. Research subjects should remain anonymous unless they have agreed to be identified; if anonymity cannot be guaranteed, the subject must be informed of the possible consequences of this before becoming involved in the research.
13. If, during the research, the community decides that the research may be unacceptable to the community, the researcher and the sponsor should suspend the study.
14. On-going explanations of research activities, methods, findings, and their interpretation should be made available to the community, with the opportunity for the people to comment before publication. Summaries also should be made available in the local language.
15. Subject to requirements for anonymity, descriptions of the data should be left on file in the communities from which they were gathered along with descriptions of the methods used and the place of data storage.
16. All research reports should be sent to the communities involved.
17. All research publications should refer to informed consent and community participation, and acknowledge community contributions to the research project.

Principles for the Conduct of Research in the Arctic

Introduction

All researchers working in the North have an ethical responsibility toward the people of the North, their cultures, and the environment. The following principles have been formulated to provide guidance for researchers in the physical, biological, behavioral, health, economic, political, and social sciences and in the humanities. These principles are to be observed when carrying out or sponsoring research in Arctic and northern regions or when applying the results of this research. This statement addresses the need to promote mutual respect and communication between scientists and northern residents. Cooperation is needed at all stages of research planning and implementation in projects that directly affect northern people. Cooperation will contribute to a better understanding of the potential benefits of Arctic research for northern residents and will contribute to the development of northern science through traditional knowledge and experience. These "Principles for the Conduct of Research in the Arctic" were prepared by the Interagency Social Science Task Force in response to a recommendation by the Polar Research Board of the National Academy of Sciences and at the direction of the Interagency Arctic Research Policy Committee. This statement is not intended to replace other existing Federal, State, or professional guidelines, but rather to emphasize their relevance for the whole scientific community. Examples of similar guidelines used by professional organizations and agencies in the United States and in other countries are listed in the publications.

Implementation

All scientific investigations in the Arctic should be assessed in terms of potential human impact and interest. Social science research, particularly studies of human subjects, requires special consideration, as do studies of resources of economic, cultural, and social value to Native people. In all instances, it is the responsibility of the principal investigator on each project to implement the following recommendations:

1. The researcher should inform appropriate community authorities of planned research on lands, waters, or territories used or occupied by them. Research directly involving northern people or communities should not proceed without their clear and informed consent. When informing the community and/or obtaining informed consent, the researcher should identify:
 - a. all sponsors and sources of financial support;
 - b. the person in charge and all investigators involved in the research, as well as any anticipated need for consultants, guides, or interpreters;
 - c. the purposes, goals, and time frame of the research;
 - d. data-gathering techniques (tape and video recordings, photographs, physiological measurements, and so on) and the uses to which they will be put; and

These "Principles for the Conduct of Research in the Arctic" address the need to promote mutual respect and communication between scientists and northern residents.

Cooperation will contribute to a better understanding...and the development of northern science through traditional knowledge and experience.



e. foreseeable positive and negative implications and impacts of the research.

2. The duty of researchers to inform communities continues after approval has been obtained. Ongoing projects should be explained in terms understandable to the local community.
3. Researchers should consult with and, where applicable, include northern communities in project planning and implementation. Reasonable opportunities should be provided for the communities to express their interests and to participate in the research.
4. Research results should be explained in nontechnical terms and, where feasible, should be communicated by means of study materials that can be used by local teachers or displays that can be shown in local community centers or museums.
5. Copies of research reports, data descriptions, and other relevant materials should be provided to the local community. Special efforts must be made to communicate results that are responsive to local concerns.
6. Subject to the requirements for anonymity, publications should always refer to the informed consent of participants and give credit to those contributing to the research project.
7. The researcher must respect local cultural traditions, languages, and values. The researcher should, where practicable, incorporate the following elements in the research design:
 - a. Use of local and traditional knowledge and experience.
 - b. Use of the languages of the local people.
 - c. Translation of research results, particularly those of local concern, into the languages of the people affected by the research.
8. When possible, research projects should anticipate and provide meaningful experience and training for young people.
9. In cases where individuals or groups provide information of a confidential nature, their anonymity must be guaranteed in both the original use of data and in its deposition for future use.
10. Research on humans should only be undertaken in a manner that respects their privacy and dignity:
 - a. Research subjects must remain anonymous unless they have agreed to be identified. If anonymity cannot be guaranteed, the subjects must be informed of the possible consequences of becoming involved in the research.
 - b. In cases where individuals or groups provide information of a confidential or personal nature, this confidentiality must be guaranteed in both the original use of data and in its deposition for future use.
 - c. The rights of children must be respected. All research involving children must be fully justified in terms of goals and objectives and never undertaken without the consent of the children and their parents or legal guardians.

Researchers should consult with and, where applicable, include northern communities in project planning and implementation.



- d. Participation of subjects, including the use of photography in research, should always be based on informed consent.
 - e. The use and disposition of human tissue samples should always be based on the informed consent of the subjects or next of kin.
11. The researcher is accountable for all project decisions that affect the community, including decisions made by subordinates.
 12. All relevant Federal, State, and local regulations and policies pertaining to cultural, environmental, and health protection must be strictly observed.
 13. Sacred sites, cultural materials, and cultural property cannot be disturbed or removed without community and/or individual consent and in accordance with Federal and State laws and regulations. In implementing these principles, researchers may find additional guidance in the publications listed below. In addition, a number of Alaska Native and municipal organizations can be contacted for general information, obtaining informed consent, and matters relating to research proposals and coordination with Native and local interests. A separate list is available from NSF's Division of Polar Programs.

Cooperation is needed
at all stages
of research planning
and implementation
in projects
that directly affect
northern people.



Publications

- Arctic Social Science: An Agenda for Action.* National Academy of Sciences, Washington, D.C., 1989.
- Draft Principles for an Arctic Policy.* Inuit Circumpolar Conference, Kotzebue, 1986.
- Ethics.* Social Sciences and Humanities Research Council of Canada, Ottawa, 1977.
- Nordic Statement of Principles and Priorities in Arctic Research.* Center for Arctic Cultural Research, Umea, Sweden, 1989.
- Policy on Research Ethics.* Alaska Department of Fish and Game, Juneau, 1984.
- Principles of Professional Responsibility.* Council of the American Anthropological Association, Washington, D.C., 1971, rev. 1989.
- The Ethical Principles for the Conduct of Research in the North.* The Canadian Universities for Northern Studies, Ottawa, 1982.
- The National Arctic Health Science Policy.* American Public Health Association, Washington, D.C., 1984.
- Protocol for Centers for Disease Control/Indian Health Service Serum Bank.* Prepared by Arctic Investigations Program (CDC) and Alaska Area Native Health Service, 1990. (Available through Alaska Area Native Health Service, 255 Gambell Street, Anchorage, AK 99501.)
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- Human Experimentation. Code of Ethics of the World Medical Association (Declaration of Helsinki).* Published in British Medical Journal, 2:177, 1964. Protection of Human Subjects. Code of Federal Regulations 45 CFR 46, 1974, rev. 1983.
- Protection of Human Subjects.* Code of Federal Regulations 45 CFR 46, 1974, rev. 1983.

Exxon Valdez Oil Spill
Restoration Project Annual Report

Traditional Ecological Knowledge

Restoration Project 97052B(2) and 97052B(3)
Annual Report

This annual report has been prepared for peer review as part of the Exxon Valdez Oil Spill Trustee Council restoration program for the purpose of assessing project progress. Peer review comments have not been addressed in this annual report.

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April 1998

"The *Exxon Valdez* Oil Spill Trustee Council conducts all programs and activities free from discrimination, consistent with the Americans with Disabilities Act. This publication is available in alternative communication formats upon request. Please contact the Restoration Office to make any necessary arrangements. Any person who believes she or he has been discriminated against should write to: EVOS Trustee Council, 645 G Street, Suite 401, Anchorage, AK 99501; or O.E.O., U.S. Department of Interior, Washington, D.C. 20240."

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April 1998

Traditional Ecological Knowledge

Restoration Project 97052B(2) and 97052B(3) Annual Report

Study History: Initially funded as Restoration Project 95052 (Community Interaction and Use of Traditional Knowledge) in FY95, the Traditional Ecological Knowledge project (97052B) was separated from the Community Involvement Project (97052A) in FY97. These projects were designed to facilitate the inclusion of traditional and local knowledge of spill area residents in the overall restoration program and to increase the interactions between researchers and area residents concerning ongoing research and dissemination of results from such research. Traditional Ecological Knowledge was added to the title in FY96 and specific tasks were added to bring TEK into the EVOS process. In FY97, TEK was made into a separate project. This report covers the first year of the Traditional Ecological Knowledge project on its own.

Abstract: The goal of this project is to facilitate the inclusion of traditional ecological knowledge in research projects funded by the *Exxon Valdez* Oil Spill Trustee Council and in the overall EVOS Restoration Program. The project involves assisting researchers in the collection and interpretation of traditional ecological knowledge, assisting communities in participating in such efforts, and developing products to support both activities. The goal is to make appropriate use of traditional ecological knowledge within the context of the EVOS Restoration Program and consistent with community interests.

Key Words: Chugach Regional Resources Commission (CRRC), community facilitators, community involvement, Kenai Peninsula, Prince William Sound, TEK, TEK Specialists, traditional ecological knowledge.

Project Data: (will be addressed in the final report)

Citation:

Brown-Schwalenberg, P.K., H.P. Huntington, H.S. Short, and R.A. Miraglia. 1998. Traditional ecological knowledge, *Exxon Valdez* Oil Spill Restoration Project Annual Report (Restoration Project 97052B(2) and 97052B(3)), Alaska Department of Fish and Game, Division of Subsistence, Anchorage, Alaska.

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INTRODUCTION

The *Exxon Valdez* oil spill caused severe disruption to the lives of many people living in the spill impact area. The spill also caused residents of the area to be concerned about the safety of their wild food sources and the integrity of the surrounding natural environment. While scientific studies aimed at restoring the resources and services damaged by the oil spill occurred throughout the spill area, most of the researchers worked for agencies or institutions based outside the spill area itself. Residents of the spill area felt that they were not adequately involved in the restoration process, either through regular communication with the researchers and the Trustee Council, or through participation in restoration activities, including the use of traditional ecological knowledge (TEK) of the region. At the same time, restoration researchers recognized that spill area residents have extensive traditional knowledge that could help them answer questions and interpret their findings in ways not possible through conventional scientific means or with existing documented data. This project was intended to enhance efforts made under Restoration Project 96052 (Community Involvement/Traditional Ecological Knowledge) to turn the common interest in traditional knowledge into a substantive contribution to the Restoration Program.

Background

The initial call for involving traditional ecological knowledge was made by a community representative in 1994, as described in the previous annual report on Restoration Project 96052. While the Community Involvement/Traditional Ecological Knowledge project had been underway for two years, many people involved in the project felt that it was making little progress to the goal of increasing the role of traditional ecological knowledge in the Restoration Program. The 1996 Restoration Workshop included traditional ecological knowledge as its theme, and one outcome was the recognition of the need for a set of protocols to guide the appropriate use of traditional ecological knowledge for restoration researchers. In April 1996, a workshop was held in Anchorage with the community facilitators and representatives of Trustee Council agencies, facilitated by Henry Huntington. This workshop developed draft protocols, which were then revised by the agencies and approved by the Trustee Council in December 1996.

A second outcome of the 1996 Restoration Workshop and of the protocols workshop was the idea to separate the traditional ecological knowledge component of project -052 from the community involvement component, and to hire a traditional ecological knowledge (TEK) specialist to carry out the work of the project. This approach was approved for FY97, to be done by the Chugach Regional Resources Commission with the assistance of the Alaska Department of Fish and Game, Division of Subsistence, with the Alaska Department of Fish and Game as lead trustee agency.

OBJECTIVES

The objective of the project is to facilitate the appropriate use of traditional ecological knowledge to help achieve the goals of the EVOS Restoration Program.

METHODS

This project was coordinated by the Chugach Regional Resources Commission through a cooperative agreement with the Alaska Department of Fish and Game. CRRC contracted with two TEK Specialists to provide assistance to communities and to researchers in using traditional ecological knowledge appropriately in the course of restoration research activities. A Traditional Ecological Knowledge Advisory Group was established to provide guidance to the project, and included all the Community Facilitators as well as agency representatives, researchers, a regional Native organization representative, and an outside expert in traditional ecological knowledge.

In consultation with the advisory group, the two TEK Specialists developed a project work plan (see Attachment 1). This work plan identified the objectives of the project from the Detailed Project Description, and specified who would be responsible for carrying them out, how they would do so, how much time would be required, and when the products would be finished. Since this document defined the scope and activities of the project, the results presented below follow the order of work items identified in the work plan.

RESULTS

Project Assistance

TEK Specialist Henry Huntington assisted Jody Seitz in her research on local and traditional knowledge of juvenile herring and feed fish in Prince William Sound and the lower Kenai Peninsula (97320T). Huntington traveled to Cordova (May 1997), Tatitlek (July 1997), and Homer (July 1997 and September 1997) to assist Seitz with interviews and initial data compilation and analysis. In addition, Huntington developed the idea of Synthesis Workshops or Information Workshops to help resolve concerns about the extraction of data from communities for use in other, perhaps inappropriate, contexts. With interest in such workshops from Dan Rosenberg (97427, harlequin ducks) and the Nearshore Vertebrate Predators project (97025-NVP), Huntington traveled to Chenega Bay in August to discuss the idea with community members and begin planning for such a workshop in FY98. Finally, Huntington also assisted in the preparation of proposals involving traditional ecological knowledge for FY98 funding. (Huntington's trip reports are Attachments 2-6.)

Community Assistance

TEK Specialist Pam Colorado traveled to Cordova, Tatitlek, and Nanwalek to discuss traditional ecological knowledge, the implications of its use, the appropriate ways to approach this field, and community recognition of the value of their expertise. Unfortunately, Dr. Colorado was

unwilling to share the results of her visits with the advisory group or others involved or interested in the project. In the summer of 1997, Dr. Colorado's involvement with the project ended, and the accomplishments of this component of the project, if any, are unknown. This component has been substantially revised for FY98, and initial results are promising.

Traditional Ecological Knowledge Handbook

The TEK Handbook was proposed to partially fulfill two objectives of the TEK Component identified in the detailed project description for the Community Involvement/Traditional Ecological Knowledge Project (Restoration Project number 96052); objective 1. "Develop guidelines, procedures and protocols for the systematic collection and analysis of TEK", and objective 5. Provide training for and assistance to EVOS researchers/scientists on the interpretation and potential application of TEK to their restoration projects". Miraglia started work on this product, originally called the TEK Training Manual, in the early Spring of 1996. Subsequently, a decision was made to hire TEK Specialists as part of the federal fiscal year 1997 TEK project (97052B). EVOS staff directed that the Training Manual be shelved until the TEK Specialists were brought on board, so they could be consulted on the content.

As proposed, the Training Manual would include discussion of the multi-faceted nature of TEK, terminology, and implication of its use for communities and scientists. It would also include a description of methodologies to help guide those who are interested in doing this type of research. Miraglia produced a first draft of the Training Manual, now re-titled the "Traditional Ecological Knowledge Handbook", and subtitled: "A Training Manual and Reference Guide on Method and Theory in Research on Traditional Ecological Knowledge from Research Design through Collection of Information and Analysis to Reporting," on February 24, 1997. This draft was distributed to a small group including some members of the TEK Advisory Group, one of the TEK Specialists, and the Executive Director of the Chugach Regional Resources Commission. Based on this review, a second draft was prepared on July 1, 1997. The second draft was distributed to the entire TEK Advisory Group, including all Community Facilitators, as well as to selected EVOS project principal investigators for review. Following this broader review, the Handbook was again revised. This third draft was submitted to the Chief Scientist for peer review on December 2, 1997.

This handbook is an ambitious undertaking, as with it we seek to assist both EVOS researchers and community residents in working with TEK. This means trying to simultaneously introduce the researchers to TEK, and the community residents to the scientific method. Some reviewers of earlier drafts of the Handbook recommended breaking it up into two separate documents, one for researchers, the other for community residents. However, project staff felt that this would serve to emphasize the divisions between these two groups, rather than bridge the gap. We thought it important that each group receive the same information. Additionally, in some cases EVOS project principal investigators are local residents, and not necessarily trained in the conventional western science mode.

We hope to be able to complete the review process and distribute the Handbook by June 1998.

TEK Database Reference Guide

A significant amount of data on TEK has already been collected by state and federal agencies, universities, regional Native organizations, and other entities. As part of this project, it was proposed that a reference guide to existing data be produced. The goal was to make this data more easily accessible and useable.

In consultation with Huntington, Miraglia designed a questionnaire for gathering information on existing sources of TEK on the EVOS area. On September 2, 1997, the questionnaire, along with an explanatory cover letter and a map showing the spill area, was sent to nearly 100 potential respondents, including communities in the spill impact area, Alaska Native associations, Native corporations and other Native organizations, state and federal agencies, libraries, archives, museums, and anthropologists (questionnaire, letter, and map are Attachment 7). The first question respondents were asked was: "Do you have any data on traditional ecological knowledge?" For the purpose of this survey, databases are defined as including everything from raw notes, photographs, audio tapes and video tapes, to formal databases organized on computer software. TEK was defined very broadly, to include indigenous, local, and experiential knowledge. We did not collect any TEK, as such. We instead gathered information on what data is out there, where it is, and what, if any, restrictions there are on access.

Some of the recipients of the questionnaire responded without additional prompting. However, many did not respond. Miraglia followed up with telephone calls, and where desired by the respondent, conducted interviews, either over the telephone or in person. Information from the completed questionnaires was then entered into a computer file, which was subsequently converted into an askSam database. The finished product was titled the "*Exxon Valdez* Oil Spill Traditional Ecological Knowledge Database Reference Guide".

There are, at present fifty entries in the Reference Guide, in thirty-six of which the respondent stated that they did have data on TEK. We are continuing to accept responses to the questionnaire, as they trickle in. Updates to the Reference Guide will depend upon future funding.

The Reference Guide will be duplicated and distributed on computer diskette, free of charge, in April 1998.

EVOS TEK Database

Huntington and Miraglia reviewed the potential for compiling a database of traditional ecological knowledge gathered under the EVOS Restoration Program. They concluded in a report to EVOS Trustee Council Executive Director Molly McCammon that the costs of establishing and maintaining the database, as well as the concerns about access and confidentiality of information, outweighed its benefits. Instead, they recommended that information about the data collected under the EVOS Restoration Program be placed in the TEK Data Directory. In this way, the protections in place in the Data Directory will serve adequately for EVOS-generated data, and we avoid the complications and expense of a new database for which there is not yet an established need.

TEK Reading List/Bibliography

The Reading List/Bibliography was proposed as part of the work plan produced by the TEK Specialists, and approved by the TEK Advisory Group on January 10, 1997. As proposed the primary purpose of the list was for project participants to share relevant and enlightening materials with one another and with other interested persons. The goal was to help establish the common ground to allow the Advisory Group and project personnel to function together effectively. Participants in the project were encouraged to submit articles, book titles, videos or other material to Miraglia. Miraglia would compile and distribute the reading list to anyone who expressed interest in receiving it. As of this writing, very few items have been submitted for the reading list. However, Miraglia has pursued research, which led to the Bibliography appended to the TEK Handbook. As part of the Handbook, this Bibliography has been distributed to all project participants. As new references have been suggested, Miraglia has reviewed these and added them to revisions to the Bibliography as appropriate.

CONCLUSIONS

This project is making progress in involving spill area residents and their knowledge in the EVOS Restoration Program. While there are many concerns about the ways in which traditional ecological knowledge is used, there is strong support for the overall aims of the project in both the communities and among the researchers who have been involved. The FY97 project provided us with a great deal of experience to use in designing a more effective program for FY98, which is underway and has so far been successful in bringing scientists and community members together and in helping communities better understand the significance of their traditional ecological knowledge and the implications of its use. This project is breaking new ground in its attempt to bring traditional ecological knowledge into a major scientific undertaking. There are no models for how to do so, and much of our effort is thus experimental. The support of the communities and the researchers, as well as the Trustee Council and their staff, has been crucial to the success of the project. We are pleased at the progress being made, and look forward to continuing this important project.

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