

STATEWIDE SUBSISTENCE FISHERIES HARVEST MONITORING STRATEGY

Study Number FIS 00-017

FINAL REPORT

Submitted by:

Subsistence Fisheries Harvest Assessment Working Group

Submitted to:

**Office of Subsistence Management
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December 2000

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First of all, the Working Group thanks the Office of Subsistence Management (OSM) of the US Fish and Wildlife Service for funding this project. We especially acknowledge the contributions of Taylor Brelsford of the OSM, who not only served as a liaison between ADF&G, AI-TC, and the USFWS, but also played an active and important role in the Working Group meetings.

We are grateful to the several people who helped our meetings run smoothly. Janet Schempf (ADF&G Division of Habitat) ably served as recorder for all four workshops. Three ADF&G staff served as meeting facilitators: Elizabeth Andrews (Division of Subsistence; Meeting One), Terri Arnold (Division of Wildlife Conservation; Meeting Two), and Mike Dean (Division of Sport Fish; Meetings Three and Four).

Dave Caylor of the Division of Subsistence of ADF&G provided primary staff support to the Working Group, including, among other things, preparing the harvest assessment program descriptions and summaries of each Working Group meeting. Dave also wrote sections of this final report, along with Working Group co-chair James Fall (ADF&G). Charles Utermohle, also of ADF&G Division of Subsistence, also provided expertise on harvest assessment methods throughout the process. Adelheid Herrmann, working on contract for AI-TC, played a key role in facilitating tribal participation in the Working Group, and was an active contributor to the Working Group itself. Roland Shanks of AI-TC was co-principal investigator for the project and contributed to every one of the group's meetings. Angie Santa Ana of AI-TC provided staff support to the tribal members of the Working Group.

Many staff from the ADF&G Divisions of Commercial Fisheries, Sport Fish, and Subsistence helped this project immensely by providing background information about current harvest assessment programs. They are too numerous to mention here, but all of their input has been greatly appreciated. We especially thank those ADF&G staff who attended the first two Working Group meetings and the Southeast briefing to provide background on harvest assessment programs and related issues.

Two other individuals made special contributions during Working Group meetings. These were Frank Hill, co-director of the Alaska Rural Systemic Initiative for the Alaska Federation of Natives, who gave a presentation on traditional knowledge; and Two Crow (Jim Schumacher), who also provided perspectives on traditional knowledge and assisted tribal Working Group members prepare their position paper.

Several individuals served as “pinch hitters” for Working Group members when they were unable to attend portions of the meetings. We thank Jeff Bromaghin (USFWS), Doug Vincent-Lang (ADF&G), and Helen Hamner (ADF&G).

Finally, many people provided helpful comments on drafts of the Working Group's recommendations. They are too numerous to mention here and we thank them all.

PART ONE: INTRODUCTION, BACKGROUND, AND OVERVIEW OF THE PROJECT

PURPOSES AND BACKGROUND

On February 3, 2000 the Federal Subsistence Board approved funding for the “Statewide Subsistence Fisheries Harvest Monitoring Strategy” project (Study Number FIS 00-017; FWS Agreement No. 701810J257; ADF&G COOP-00-094). The project was implemented by the Alaska Department of Fish and Game’s Division of Subsistence and the Alaska Inter-Tribal Council under cooperative agreements with the Office of Subsistence Management of the US Fish and Wildlife Service. Most of the project’s activities centered around a “Subsistence Fisheries Harvest Assessment Working Group,” consisting of federal, state, and tribal members. An investigation plan expressed the issue to be addressed by the project as follows:

Presently, responsibility for collection and analysis of subsistence salmon harvest data, and for a limited number of other Alaska subsistence fisheries, is spread among three divisions within the Alaska Department of Fish and Game (ADF&G) with no overall coordination. In addition, harvest assessment programs for finfish other than salmon and marine invertebrates are limited. Different methods are used to collect, compile, and report the data in different management areas. No statewide subsistence fisheries summary is compiled annually. A need exists to evaluate the different methods used to collect subsistence fisheries information and to design and implement a coordinated statewide subsistence fisheries harvest monitoring strategy. This unified approach is needed to evaluate future proposals for subsistence fisheries harvest assessment and to promote partnerships in subsistence fisheries harvest assessment programs.

In rural Alaska overall and in most regions, fish comprise the largest component of the annual subsistence harvest (Schroeder et al. 1987; Wolfe 1996; ADF&G 1998, ADF&G 1999a). Subsistence harvest assessments are an important element of fisheries management programs for a number of reasons (see ADF&G & ISER 1996:3), including:

- Giving managers and users a tool to assess stock status and trends.
- Providing data to document the importance of subsistence harvests.
- Enabling local users and managers to assess trends in subsistence harvests and uses.
- Providing a tool and data support if management actions are needed to protect subsistence resources and subsistence fisheries.
- Providing an opportunity for local involvement in resource management programs.

In April 1995, more than 200 subsistence users, resource managers, and researchers from Alaska, Canada, and Greenland met in Girdwood, Alaska, at the conference on "Understanding Harvest Assessment in the North." The following observations are drawn from the summary of the conference, prepared by ADF&G and the University of Alaska's Institute of Social and Economic Research (ISER) (ADF&G and ISER 1996). These results from the Harvest Assessment conference served as a foundation for much of the Working Group’s activities and provided the basis for many of the principles and recommendations that the Working Group developed. One of the key conclusions of the conference was that:

Management of fish and wildlife is evolving, with multiple interests influencing the process. If government agencies and resource users can find ways – outside the court system – to accommodate a range of interests in fish and wildlife, both management and harvest assessment could become much more effective.

Evidence cited by the summary of the Harvest Assessment Conference suggests that there is support for subsistence harvest assessment programs in rural Alaska. For example, in a survey conducted by ISER, 82 percent of the users of the Western Arctic Caribou Herd said that harvest assessments are important (ADF&G and ISER 1996:2). Return rates for subsistence salmon permits in Alaska generally exceed 80 percent and often top 90 percent. When asked, almost all communities participate in household harvest surveys, and household participation rates for these surveys in villages are almost always above 80 percent and often 90 percent or more. As noted below, Working Group members concurred with this conclusion.

Participants at the “Harvest Assessment in the North” conference identified a number of issues that need to be overcome by any successful harvest assessment program (ADF&G and ISER 1996:2). In its evaluation of current subsistence harvest assessment programs and development of recommendations for future programs, the Working Group considered the following points derived from the conference proceedings:

- Data collection methods can be intrusive; they sometimes collect information that users may consider personal.
- Programs must recognize that subsistence harvests are not the only factor in affecting resource populations and, especially for fisheries, are usually not a major factor at all in comparison with commercial fisheries, habitat destruction, and environmental factors.
- Agencies sometimes fail to involve local communities and individuals in designing and carrying out programs; sometimes they also do not share the results of the program with the people most affected by management decisions.
- Local harvesters may fear that information will be used to enforce regulations or set inappropriate seasonal or daily limits.

If these issues are not addressed, conference participants concluded that problems such as the following might arise and limit the reliability of harvest information:

- Low response rates: harvesters will not obtain or return permits or calendars with data, or decline to be interviewed.
- False reporting: harvesters may over or under report harvest data for fear that the information will lead to restrictions.
- Heavy burden on harvesters: people tire of programs if they are asked to supply data too often or in too much detail.
- Use of inappropriate methods, e.g., mail-out surveys do not work well in many rural communities.
- Potential high cost of collecting information.

- High variance in harvest levels, where key harvesters supply much of a community's harvests; poor samples may miss these most active harvesters and therefore not produce a reliable harvest estimate.

Among the other points of general consensus developed at the “Harvest Assessment in the North Conference” were the following points about how harvest assessment programs might be improved (ADF&G and ISER 1996:1,5-6):

- No harvest assessment system will work unless users and managers trust and respect each other; in areas where mistrust between managers and subsistence users exists, it will take time to develop trust and a collaborative approach.
- Local people should have a significant part in the collection and use of harvest data.
- Science and traditional knowledge both have a place in resource management and harvest assessment.
- Both users and managers must see the benefits of harvest data; programs need to focus on what needs to be known and collect only necessary information.
- Harvest assessment efforts should not be used to enforce hunting and fishing regulations.
- Researchers should promptly share information with local communities.
- Reliable information about harvests by all users can stop blaming and foster problem solving.
- Management programs that include a strong role for Native organizations could substantially improve harvest information in many areas.

The Working Group discussed and endorsed this point, and added to the list the need to build upon existing programs where they are working well, and to maximize cooperation, data sharing, and identification of information needs.

OBJECTIVES AND PROJECT ORGANIZATION

The investigation plan defined eight objectives for the project:

1. Convene a working group comprised of tribal representatives, subsistence users, and fishery managers to examine existing harvest assessment programs and develop recommendations for designing a unified strategy for conducting harvest assessment projects for subsistence fisheries.
2. Prepare a detailed overview of current subsistence fisheries harvest assessment programs, including, but not limited to, permit and calendar formats, methods for distributing and collecting permits and calendars, data analysis methods, and data reporting procedures.
3. Prepare a written report that reviews and evaluates current subsistence fisheries, harvest assessment methods and reporting standards and makes recommendations for a unified strategy for harvest assessments of Alaska's subsistence fisheries.
4. Produce an updated database with annual and historic summaries of subsistence fisheries statewide, including meta data such as collection methods, sample sizes, expansion methods, and other aspects of the harvest assessment programs.
5. Design a web site with summary data and subsistence fishery descriptions.

6. Prepare a written annual report on Alaska subsistence fisheries for 1999 that will serve as a prototype for future annual reports.
7. Develop recommendations for a training program with tribes, other user groups, federal agencies, and ADF&G to help implement cooperative harvest assessment programs.
8. Conceptualize the role tribal organizations and subsistence users will have in the continuing management of subsistence harvest assessment programs.

The project was a collaborative effort between ADF&G and the Alaska Inter-Tribal Council (AI-TC). James Fall, regional program manager for the Division of Subsistence in Anchorage, and Roland Shanks, director of the Office of Environmental Advocacy and Stewardship Program for AI-TC, were the co-principal investigators. The project consisted of a data organization component and a program evaluation component, with the latter accomplished through a Working Group (see below). The Division of Subsistence of ADF&G hired an Analyst Programmer (David Caylor) who served as project staff and was responsible for most of the data collection and organization, as well as writing the meeting summaries. Caylor and Fall were the primary compilers of this final report.

Consistent with Objective 1, the Subsistence Fisheries Harvest Assessment Working Group (the “Working Group”), consisting of three state, three federal, and five tribal representatives, was charged with developing the recommendations for a unified harvest assessment program for Alaskan subsistence fisheries and providing guidance for the other aspects of the project. Members of the Working Group are listed in Table 1. The Working Group met four times in face-to-face workshops plus several teleconferences. More detail on the activities of the Working Group is provided below in Part Two.

PRODUCTS

The project resulted in the following products:

- This final report
- A set of “Recommendations for a Unified Subsistence Fisheries Harvest Assessment Program,” including a cover letter, abstract, set of guiding principles, the recommendations themselves (divided into 11 sections), definitions of key terms, and references. These address project Objective 3. Although designed as a stand-alone document, the recommendations also appear as Appendix B in this final report.
- A large (3.5”) loose-leaf binder containing all the subsistence fisheries harvest assessment descriptions prepared by David Caylor, including maps and sample tables from ADF&G annual management reports (AMRs). The preparation of this notebook addressed project Objective 2. The binders also contain copies of meeting agendas, meeting summaries, and various background materials handed out at the workshops (e.g. the summary of the Harvest Assessment symposium [ADF&G and ISER 1996], research ethics statements, ADF&G’s statement on “collaborative stewardship” [ADF&G 1999b]). In the back of the binder was a CD with ADF&G’s Community Profile Database (Scott et al. 2000 and the Historic Subsistence Salmon Harvest Database [since superceded by the database prepared for this project; see Part Six). Each Working Group member and

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support staff person received a binder, which was updated at each workshop. A limited number of binders were distributed to others upon request.

- A report prepared at the request of the Working Group by a “technical subcommittee” (discussed in Part Two).
- A report prepared on behalf of the tribal members of the Working Group entitled “Position Paper on Issues of Concern to Tribal Working Group Members Regarding a Unified Subsistence Fisheries Harvest Assessment Program.”
- The updated and enhanced Alaska Subsistence Fisheries Database and prototype pages for an Alaska Subsistence Fisheries web site, addressing Objectives 4 and 5.
- An Annual Report on Alaska Subsistence Fisheries 1999. This addressed project Objective 6.
- Two “pre-proposals” that were submitted to the USFWS’s Office of Subsistence Management. Each proposed projects to follow-up on Working Group recommendations. The recommended projects were: “Implementation of Statewide Subsistence Fisheries Harvest Assessment Strategy” and “Validity and Reliability of Fisheries Harvest Assessment Methods.” Proposed objectives of these projects are listed in Part Six of this final report.

LIMITATIONS OF THIS REPORT

The discussions of the Working Group were sometimes wide-ranging, touching upon topics related to harvest assessment methods and programs, but not directly connected with the Group’s mission. This is not surprising or inappropriate, given that subsistence harvest assessments are related to many issues of importance to rural communities. As an example, when soliciting comments on the recommendations in Northwest Alaska, Working Group member Enoch Shiedt (Maniilaq Association) only received feedback about enforcement issues and processes not directly part of the Working Group’s purposes. These will be passed on to the appropriate agencies and individuals, but will not be further discussed here.

A number of other topics that are beyond the Working Group’s mission as defined by the investigation plan are discussed in the “position paper” prepared by the tribal members of the Group. (Although it should be noted that a number of points in the position paper were incorporated into this report, and other reiterated points from earlier Working Group discussions.) These topics include definitions of subsistence, definitions of traditional knowledge, tribal consultation processes, government-to-government relations, funding for tribal natural resource programs, and co-management agreements. The position paper is available as a stand-alone document from Working Group members (Two Crow et al. 2000).

PART TWO: THE WORKING GROUP

THE PROCESS

Background

The investigation plan for this project was developed jointly between ADF&G, the Office of Subsistence Management of the US Fish and Wildlife Service, members of the Federal Subsistence Board's staff committee, and the Alaska Inter-Tribal Council. Several meetings and teleconferences took place, during which the objectives of the project and AI-TC's role were defined. Staff from the Rural Alaska Community Action Program (RurALCAP) participated in these discussions. A draft of the investigation plan was circulated for review to each division director and regional supervisor within the divisions of Subsistence, Sport Fish, and Commercial Fisheries. The draft investigation plan was also provided for comment to the federal regional subsistence advisory councils during the winter 2000 round of meetings. The Federal Subsistence Board formally approved the project in February 2000.

Selection of Working Group Members

Organizing the Working Group was the responsibility of AI-TC and ADF&G. In assembling the group, the goal was to select members who have technical expertise on harvest assessment programs and/or subsistence fisheries. Dave Caylor, an analyst programmer with ADF&G and Adelheid Herrmann, a consultant for AI-TC, served as staff for the Working Group. As outlined in the investigation plan, the structure of the Working Group was as follows:

- Three ADF&G staff (from the Divisions of Subsistence, Commercial Fisheries, and Sport Fish, the divisions that run fisheries harvest assessment programs)
- Three federal agency representatives (US Fish and Wildlife Service, National Park Service, and US Forest Service)
- Five Alaska Native representatives, one each from the following regions:
 - ✓ Southeast Alaska
 - ✓ Gulf of Alaska Region (Copper River, Prince William Sound, Cook Inlet, Kodiak, Aleutians)
 - ✓ Western Region (Bristol Bay, lower Kuskokwim, lower Yukon)
 - ✓ Interior Region (upper Kuskokwim, middle and upper Yukon)
 - ✓ Northwest/Arctic Region

The directors of the Divisions of Subsistence, Commercial Fisheries, and Sport Fish selected ADF&G members. Before the selections were made, the investigation plan and an explanatory memorandum were sent to the directors, regional supervisors and regional management biologists in these three divisions, requesting comments and suggestions. In selecting the tribal members, AI-TC consulted with Alaska Native regional organizations. The three federal agencies selected participants with expertise in fisheries assessments and subsistence research methods.

Meeting Procedures

The purpose of this section is to convey a sense of the scope of the Working Group's efforts. Each meeting was guided by a written agenda that was circulated and reviewed in advance. The investigation plan had outlined a draft set of topics for a set of three meetings, although by the second meeting, the working group realized that four meetings would be needed. At the first meeting, Jim Fall (ADF&G) and Jennifer Hooper (Association of Village Council Presidents [AVCP]) were selected as co-chairs. Each meeting was facilitated by an individual who was not a member of the Working Group and trained in assisting meeting participants in achieving their objectives. Meeting facilitators were:

Meeting One: Elizabeth Andrews, ADF&G Division of Subsistence

Meeting Two: Terri Arnold, ADF&G Division of Wildlife Conservation

Meetings Three and Four: Mike Dean, ADF&G Division of Sport Fish

Additionally, Janet Hall Schempf (ADF&G Division of Habitat) served as recorder for all four meetings. Throughout the entire discussions, she captured key points on flip charts, the pages from which were then posted around the room as the meeting was in progress. These pages identified areas of agreement as well as topics needing further discussion and resolution. They also served as the basis for the meeting summaries as well as most of the recommendations.

At its first meeting, the Working Group adopted a set of ground rules that were posted at subsequent meetings (Table 2). The mission statement and project objectives were also posted and referred to throughout the Working Group process. All of the meetings of the full Working Group took place in Anchorage.

Table 2. Working Group Ground Rules

- ✓ Adequate time for all participants to talk/fully express their thoughts
 - ✓ Invited guests/experts and observers need to work through their working group representatives
 - ✓ This a dialogue among equals
 - ✓ The goal of the dialogue is to reach consensus
 - ✓ Limit interruptions
-

Adopted by the Subsistence Harvest Assessment Working Group, April 18, 2000.

The intent of the Working Group was to use a representative process. Each member was expected to inform others in their organizations and regions about Working Group activities, goals, and products. For example, at the first meeting, members were asked to consult with others about harvest assessment programs in their regions and report back to the Group at the second meeting about issues that were identified. Working Group members were also responsible for obtaining review comments on the draft recommendations and reporting them to the full Group at the fourth meeting.

Meeting Summaries

The agendas for each meeting appear in Appendix A. Dave Caylor and Jim Fall prepared detailed summaries of each meeting. Each summary consists of overviews by topic as well as a set of appendices based upon the flip chart notes taken by the recorder (Janet Schempf) that were posted around the room during the meetings. Only limited edits were made to these records based on Caylor's and Fall's notes, and then only to supplement what had been written down or to clarify points. These meeting summaries are available from the Division of Subsistence, ADF&G upon request. Drafts of these meeting summaries were circulated for Working Group review and adopted by the Working Group at the subsequent meeting.

The First Working Group Meeting

The first Working Group meeting occurred on April 18 to April 20, 2000, at the ADF&G regional office in Anchorage. Key goals of this first meeting were to get acquainted and develop an understanding of the goals of the project. The Working Group adopted a mission statement and ground rules. Much time was devoted to discussing the project objectives, general features of harvest assessment programs, and the conclusions of the Harvest Assessment Conference (see above, Part One). Members stated their goals and expectations for the Working Group. Many of the themes that shaped the Working Group's recommendations emerged early in this first meeting, such as:

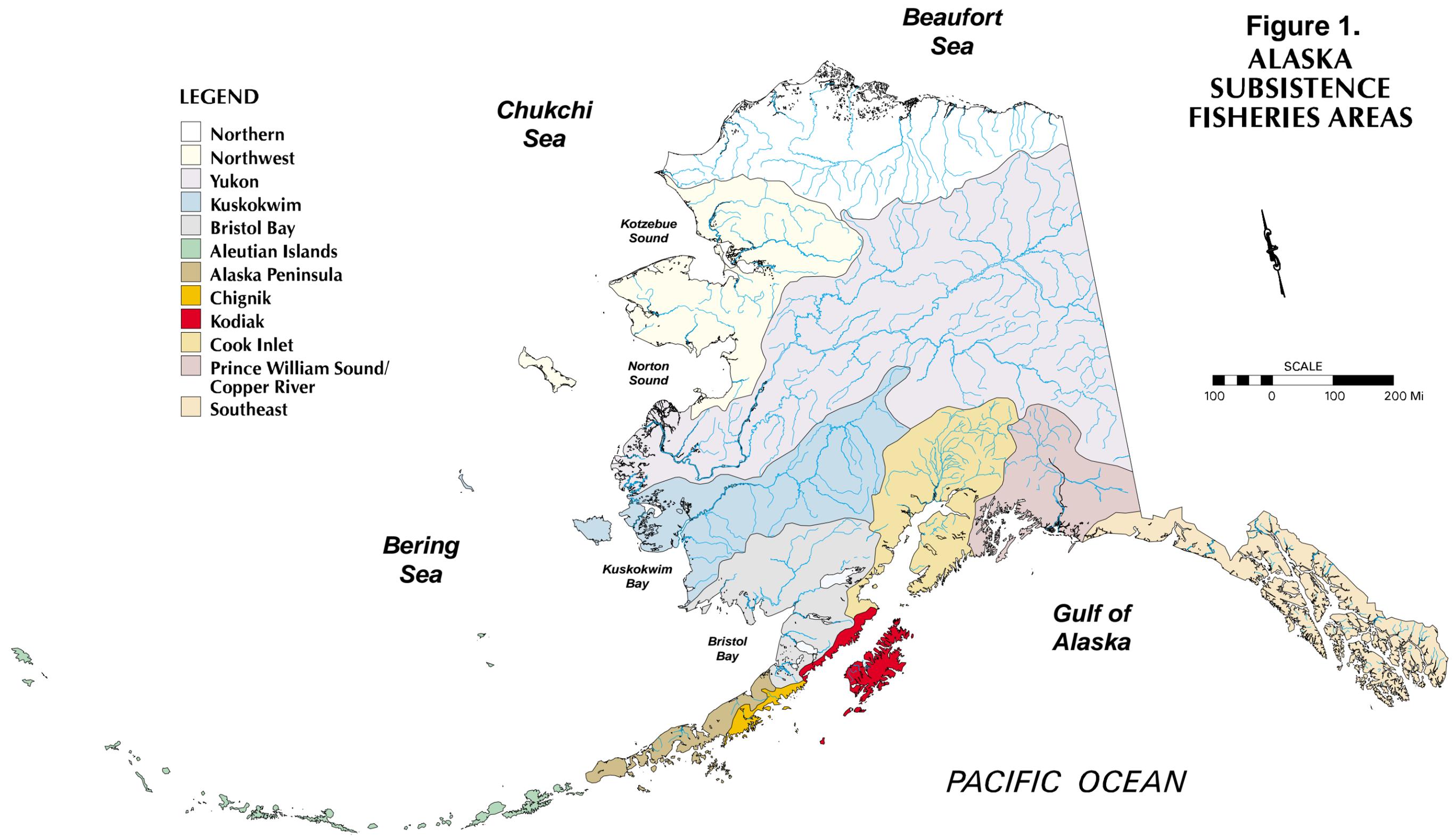
- general support for harvest assessment programs;
- the utility of local and traditional knowledge ("TEK") for harvest assessment programs;
- the need to develop "buy in" (local support) for programs;
- the need to cooperatively evaluate program findings;
- community involvement;
- capacity building; and
- the essential separation of harvest assessment from regulatory enforcement.

Another key agenda item was a demonstration of two primary compilations of subsistence harvest data, the Community Profile Database and the Historic Subsistence Salmon Harvest Database. Most of the remaining time was devoted to a series of presentations on existing subsistence fisheries harvest assessment programs, based on the summaries prepared by Dave Caylor and appearing in the project binders that were distributed at this meeting and periodically updated. Figure 1 shows the location of the fisheries management areas for which subsistence harvest data area summarized in the overviews. Division of Subsistence staff who administer some of these programs participated in these discussions. Prior to this presentation, the Working Group developed a set of criteria for evaluating harvest assessment programs, based in part on those that appear in the Harvest Assessment Symposium summary (ADF&G and ISER 1996:6). (These criteria appear as Table 1 in the recommendations; see Appendix B). By the end of this meeting, the Working Group had already started a preliminary set of recommendations for a "unified" (rather than "uniform", see the preface in Appendix B) harvest assessment strategy, which would be reviewed and refined in subsequent meetings. The Working Group also appointed a subcommittee to investigate technical aspects of harvest assessment procedures.

**Figure 1.
ALASKA
SUBSISTENCE
FISHERIES AREAS**

LEGEND

- Northern
- Northwest
- Yukon
- Kuskokwim
- Bristol Bay
- Aleutian Islands
- Alaska Peninsula
- Chignik
- Kodiak
- Cook Inlet
- Prince William Sound/
Copper River
- Southeast



Source: Alaska Department of Fish and Game, Division of Subsistence.

The Southeast Alaska Briefing

A briefing for Southeast Alaska Working Group members (who were unable to attend the April meeting in Anchorage) and agency staff took place at the ADF&G conference room in Douglas on May 15, 2000. Jim Fall, Dave Caylor, and Adelheid Herrmann conducted the briefing. The goals of the project were reviewed and key results and observations from the first meeting were summarized. The participants made several suggestions for expanding these findings and discussed harvest assessment issues in Southeast Alaska in some detail.

The Second Working Group Meeting

The second Working Group meeting occurred at the ADF&G regional office in Anchorage on June 1 and 2, 2000. Key agenda items were to complete review of existing harvest assessment programs; obtain feedback from working group members on the results of the first meeting; receive and discuss reports on TEK (which was largely postponed), tribal natural resource programs (from each tribal Working Group member), training programs (including an overview of a set of recommendations on fisheries education in Bristol Bay, prepared by Adelheid Herrmann), and the technical subcommittee (presented by Don Callaway [NPS]). One product of the subcommittee that was discussed by the full group was a table prepared by Charles Utermohle (ADF&G Division of Subsistence) comparing subsistence salmon harvest estimates from permit systems with those based on post-season “baseline surveys” for the same year for the same community. There were several cases where harvest estimates based on permits were substantially lower than those based on interviews. The Working Group discussed the multiple reasons why these differences may occur and concluded that this is an important topic for future research.

The Working Group also continued development of recommendations. Jim Fall had developed a preliminary draft set of recommendations and general principles based upon the first meeting and the Southeast briefing. After discussion of various points throughout the draft, the Group charged Jim Fall with rewriting the recommendations and sending the next draft to Group members in time for a discussion at a teleconference in July and a subsequent August meeting. The Group also decided that a fourth meeting would be necessary to discuss public comments on the draft recommendations.

The July Teleconference

A major teleconference of the full Working Group took place on July 25, 2000. There were two purposes: provide preliminary comments on the draft recommendations and review draft agenda items for the third Working Group meeting. A key suggestion was to develop “a concise list of attributes of a good harvest reporting system.” This became the “abstract” section of the draft recommendations. Another important suggestion was to make sure that the important role of TEK was highlighted in the document. Also, Don Callaway circulated a preliminary draft report of the technical subcommittee’s findings. Following the teleconference, Jim Fall made additional modifications to the recommendations in preparation for finalizing the public review draft of the recommendations at the August Working Group meeting.

The Third Working Group Meeting

The third Working Group meeting took place in the library of RurALCAP in Anchorage on August 22 and 23, 2000. A key goal of this meeting was to finalize the draft recommendations prior to public review. This was accomplished, and a schedule was established for review and comment.

Another highlight of the third meeting was a presentation on TEK by Frank Hill of the Alaska Federation of Natives. Frank is a co-director of the Alaska Rural Systemic Initiative, a joint undertaking of AFN and the University of Alaska, the goal of which is to develop science curricula that incorporate local knowledge. Background on this project can be found at the Alaska Native Knowledge Network (www.ankn.uaf.edu) and in the publication “Sharing our Pathways” (published by UAF) and a brochure entitled “Native Pathways to Education.” Kwagley and Barnhardt (n.d.) provide a discussion of the role of traditional knowledge in science education based on the project’s findings. Frank noted that a big challenge is to collect TEK in a respectful manner, in keeping with local traditions and protocols. For example, not all traditional knowledge is meant to be written down, but rather some is intended to be transmitted orally. He provided examples of procedures and considerations in collection and using TEK, emphasizing long-term relationships, patience, and the need to give as well as take. Regarding connections between TEK and harvest assessment, Frank stressed the need to talk to “the right person,” and the need for building relationships of trust.

Don Callaway presented the technical committee’s written report. A consensus point was that Don should draft, on behalf of the Working Group, a funding pre-proposal to be submitted to the Federal Subsistence Board, for a study to examine some of the technical issues raised by the subcommittee.

Another agenda item was to address Study Objective 8, to conceptualize the role of tribes in harvest assessment programs. Tribal Working Group members distributed a short statement on “Capacity Building for Tribes in Natural Resource Programs,” and agreed to meet during AFN week to write a policy paper on topics related to tribal roles in harvest assessment, to be presented at the November meeting.

Time ran too short to discuss in much detail two other agenda items: an update on the database development and an overview of the prototype annual report. Both topics were rescheduled for the final meeting.

The Fourth Working Group Meeting

The fourth and final Working Group meeting occurred on November 7 and 8, 2000, again at ADF&G in Anchorage. There were several key agenda items. A primary goal was to finalize the recommendations for a unified subsistence fisheries harvest assessment strategy. Working Group members summarized the procedures they followed to obtain review and the comments they had received from their organizations. (Jim Fall had prepared a summary of comments received prior to the meeting.) After substantial discussion, a draft final set of recommendations was printed for final Working Group review. It was agreed that members would provide

comments to co-chair Jennifer Hooper no later than December 11. At that time, she and Jim Fall would assess whether a final teleconference would be needed. Because the few additional comments received were editorial in nature, Fall and Hooper decided that another teleconference was unnecessary. They provided a synopsis of these minor changes to all the Group members, which were subsequently included in the final set of recommendations (see Appendix B).

Another key item on the agenda was discussion of the draft policy paper developed by the tribal members (Two Crow et al. 2000). The paper was written by Two Crow (Jim Schumacher), a consultant hired by AI-TC in September, who attended the meeting and presented key points in the report. After discussion, the Working Group decided that this report should remain a stand-alone document and a product of the tribal Working Group members. It would be distributed along with the separate final report for the project.

A third key topic was preparation of the final report. It was agreed that Jim Fall would develop a draft outline and writing assignments, with a draft of the report circulated for Working Group review the week of November 27. Additionally, Dave Caylor gave an update on development of the enhanced Alaska Subsistence Fisheries Database and Jim Fall handed out draft sections of the prototype annual subsistence fisheries report, which will be completed in January 2001. (See Part Five.)

Other Activities of the Tribal Members of the Working Group

The tribal members of the Working Group, with facilitation from Adelheid Herrmann and Roland Shanks, met several times on their own to review Working Group discussion topics. A final meeting of tribal Working Group members in October included consultant Two Crow (Jim Schumacher) and a discussion of the position paper he prepared on their behalf. Tribal members subsequently provided oral overviews of their meetings to the full Working Group.

KEY TOPICS, FINDINGS, AND THEMES

The recommendations, along with the supporting abstract and principles, that appear in Part Three, contain the Working Group's key findings as related to its mission and the project's investigation plan. The following is a summary of major points of discussion that provides additional context for the recommendations and touches on some of the broader issues to which subsistence harvest assessment programs are linked.

Mission and Vision Statements

Based on the goals and objectives set out in the investigation plan, the Working Group adopted the following Mission Statement on the first day of its first workshop. The Mission Statement was posted during all subsequent meetings.

Working Group Mission

1. Examine existing harvest assessment programs for subsistence fisheries
2. Develop recommendations for designing a unified strategy for conducting harvest assessment projects.
3. Conceptualize the role of tribes and subsistence users in harvest assessment programs
4. Develop recommendations for training program to help implement cooperative harvest assessment programs
5. Prepare a written report.

In the “position paper” prepared by the tribal members of the Working Group in November 2000 and discussed at the final workshop (Two Crow et al. 2000), a broader “vision statement” was suggested that expressed the wider context in which the Working Group viewed its mission. Working Group members agreed that this vision statement was consistent with principles identified in earlier workshops and expressed in the recommendations. The vision statement is:

The existence of healthy fish and wildlife stocks for future generations is a result of good stewardship today.

The Need for Harvest Assessments

The Working Group established a key consensus during its first meeting in overall support for conducting subsistence fisheries harvest assessment programs. Support for the concept of harvest assessment emerged as Working Group members stated their reasons for participating in the project and discussed the findings of the Conference on Harvest Assessment in the North (ADF&G and ISER 1996:3) (see Part One). One of the primary reasons members were interested in the project was to learn about harvest assessment programs throughout the state and develop ideas for new and improved programs in their regions. The overview of the first meeting of the Working Group contains a summary of the “reasons to collect subsistence harvest data” that is reproduced here as Table 3.

The position paper prepared by the tribal members of the Working Group (Two Crow et al. 2000) reiterated this consensus in stating that “it is in all the peoples best interest as well as that of the agencies that are mandated by law to manage fishery resources that an effective subsistence fisheries harvest assessment program be established” because “both man induced and natural changes affect the abundance and health of local fish stocks that are essential to subsistence peoples. Not only are fish an important nutritional item, they also are part of the culture and the spirit of the peoples.”

The Working Group also discussed reasons subsistence harvesters might choose *not* to report harvest data. The group started out with the list that appears on page 2 of the synopsis of the “Understanding Harvest Assessment in the North” conference (ADF&G and ISER 1996:2). Table 4 summarizes the Working Groups observations. Working group members commented that these points provide guidance on how *not* to design or conduct harvest assessment programs.

TABLE 3. REASONS TO COLLECT SUBSISTENCE HARVEST DATA

Note: The Subsistence Fisheries Harvest Assessment Working Group developed this list at its first meeting on April 18-20, 2000. The Working Group discussed reasons for systematic collection of subsistence harvest data, starting with ideas presented in the summary of the “Conference on Harvest in the North” (ADF&G and ISER 1996).

- Identify trends in fish and wildlife populations
- Document subsistence harvests/uses
- Estimate the effects of development on fish and wildlife and on uses
- Serve as basis for allocation decisions
- Provide data to help evaluate harvest limits and other regulations
- Help foster trust between users and agencies
- Harvest assessment programs provide an opportunity to work together
- Data help establish local need/use levels
- Data document timing of fish availability
- Data document the effects of external events, such as commercial fisheries opening, oil spills, etc. on fish stocks and subsistence uses
- Results of programs can show why harvest limits, if established, should be village based, including:
 - Care for elders
 - Economy and efficiency of the fishery
- Data provide the basis for compensation, e.g. disaster relief
- Data help prevent over-harvest
- Good data help minimize conflicts
- Provide data/knowledge of what’s available for commercial markets (that is, fish excess to subsistence needs)
- Data can justify consumptive uses during land management planning
- Ensure fish for future harvests
- Provide data for in-season management
- Provide means for fishermen to report data and observations to ADF&G
- Provide data for negotiations regarding protection of habitat, and fish allocations
- Provide data for effective conservation efforts.

**TABLE 4. POTENTIAL REASONS SUBSISTENCE FISHERS
MIGHT CHOOSE NOT TO REPORT SUBSISTENCE HARVESTS**

Note: The Subsistence Fisheries Harvest Assessment Working Group developed this list at its first meeting on April 18-20, 2000. The Working Group discussed reasons for why subsistence harvesters might be unwilling to report harvest data, starting with ideas presented in the summary of the “Conference on Harvest in the North” (ADF&G and ISER 1996:2). Working group members commented that these points provide guidance on how not to design or conduct harvest assessment programs.

- Data collection techniques can be intrusive
- There may be low cultural importance placed on harvest counts
- Data collection might not yield accurate data, so why bother?
- Research protocols might be lacking
- Government managers haven’t included traditional knowledge, thus there is lack of local support/involvement
- Fear of future restrictions on harvest or enforcement action
- Urban hunters/fishers, degraded habitats, natural cycles, etc. have even larger effects on populations than subsistence harvests do
- There are difficulties in trying to incorporate and apply traditional knowledge in existing subsistence harvest assessment programs

The Broader Natural Resource Context

Another theme that emerged during Working Group meetings, and consistent with the “vision statement” discussed above, was the need to see harvest assessment as part of the larger context of natural resource management programs. Related to this theme is the point that although the mission of the Working Group and the focus of its recommendations is development of effective programs to document and interpret subsistence harvests, the Group’s initiatives and recommendations need not be limited to harvest assessment. Principles such as public involvement, capacity building (see next section), training, partnerships, data availability, application of TEK, and systematic public evaluation are applicable to the resource assessment and monitoring components of resource management programs as well.

Capacity Building

Capacity building, directly connected to Objective 7 (recommendations for training programs; see also below, Part Five) was a key issue for tribal members of the Working Group and is discussed at length in the position paper (Two Crow et al. 2000). By “capacity building,” we mean developing staff and skills to design and administer programs. The federal process for developing Fishery Resource Monitoring Projects stresses capacity building and partnerships. However, a key issue facing tribes is that many lack the experience and the staff to prepare effective project proposals. “For a Tribe that is just beginning their program, the hurdles and challenges [of the requirements of the federal program] can be daunting” (Two Crow et al. 2000). According to the position paper, a potential solution is the development of tribal Natural Resource Programs. Presently, there are about 25–30 such programs in Alaska, ranging in scope from one part-time seasonal worker to a fully staffed program including professional natural resource managers. The recommendations developed by the Working Group encourage partnerships between tribal natural resource programs and state and federal management agencies. It should be noted, however, that an issue for the tribes remains how their natural resource programs will be fully funded. Also related to this topic are the procedures being developed by federal and state agencies for working with tribes. Several tribal working group members described tribal environmental programs supported by the federal Environmental Protection Agency (EPA). A copy of the EPA framework was handed out at the third meeting (EPA 1996/97). Cal Casipit (US Forest Service) shared with the Working Group the “Forest Service National Resource Book on American Indian and Alaska Native Relations” (US Department of Agriculture 1997). Roland Shanks pointed out that how the state and tribes will interact is presently being worked out through government to government discussions.

“Traditional Knowledge and Wisdom,” and “Traditional Ecological Knowledge”

The Working Group spent considerable time discussing the role of traditional ecological knowledge (TEK) in subsistence harvest assessment programs. There was consensus that TEK provides essential contextual information for understanding and interpreting harvest data. The group recommended that the collection of TEK be included in harvest assessment programs. The recommendations include two definitions of TEK that emphasize the “ecological” and “environmental” aspect of traditional knowledge (Berkes 1993, Inglis 1993; see also Appendix B), such as observations about run timing and strength, environmental factors, and fish

conditions. The Working Group also recognized that local knowledge about subsistence fishing patterns, such as the number of fishing households in particular communities, is necessary for evaluating the results of harvest monitoring efforts.

The tribal Working Group members' position paper (Two Crow et al. 2000) contains a broader discussion of "traditional knowledge and wisdom," of which ecological and environmental knowledge (TEK) is a part. Although the Working Group reached a consensus to use the term "TEK" in its recommendations, the position paper expresses a preference for the more all-encompassing phrase "traditional knowledge and wisdom."

Why use "ecological" to modify Knowledge? We suggest using the term Traditional Knowledge instead, as it is more all encompassing. The knowledge of Indigenous peoples cannot be reduced to disciplines. This is a western way of thinking and minimizes the true extent of traditional knowledge and wisdom. . . TK has parallels to all the western disciplines and goes well beyond them to encompass the universe (Two Crow et al. 2000).

The position paper further noted the following comments about TK offered during the "Bridging Native Traditional Knowledge and Western Science in Southeast Alaska Conference" (held in Ketchikan, Alaska in March 2000, and co-hosted by the US Forest Service and the Ketchikan Indian Corporation).

[Traditional knowledge is] our lives, cultural existence, traditional gathering, lands and areas, oral histories, seasonal changes/ecology, our common sense. TK is gained by long-term experience and observation and then is handed down from generation to generation. TK is local as is place names. We should include the term "wisdom" whenever referring to Traditional Knowledge. This term expands the concept of traditional knowledge to include "knowledge with a heart" and is used to determine actions based on traditional knowledge. Wisdom borne of traditional knowledge allows us to be good stewards of our land (*in* Two Crow et al. 2000).

Further, the position paper offered the following definition of traditional knowledge, taken from "Recommendations on the Integration of Two Ways of Knowledge: Traditional Indigenous Knowledge and Scientific Knowledge" by the Seminar on the Documentation and Application of Indigenous Knowledge, Inuvik, Northwest Territories, Canada, November 15-17, 1996:

The participants emphasized that traditional Indigenous knowledge is a way of life, based on the experience of the individual and of the community, as well as knowledge passed down from one's elders and incorporated in Indigenous languages. This knowledge is constantly being adapted to the changing environment of each community and will remain current as long as people still use the land and sea and their resources (*in* Two Crow et al. 2000).

This perspective also emphasizes the point, endorsed by the full Working Group, that understanding the importance of subsistence in rural Alaska does not result simply from documenting harvest numbers. Harvest monitoring programs by themselves cannot demonstrate

the full importance of subsistence, nor is it their purpose to do so. Subsistence is a way of life deeply embedded in Alaska Native culture. It has cultural, social, and spiritual meanings, as well as economic value. This was a point that Frank Hill made during the Working Group's third meeting, when he discussed "the iceberg analogy." This model of traditional knowledge, developed by the Lower Kuskokwim School District and illustrated in the Alaska Native Knowledge Network web site notes that what observers from outside a culture see as "surface culture" or "folk culture" (such as fine arts, storytelling, and subsistence harvests) is just "the tip of the iceberg" of the underlying "deep culture," the knowledge and values that are embedded in an indigenous way of life.

Tribal Working Group members stated the need to feature the collection and applications of TEK in harvest assessment programs throughout the recommendations. They were concerned that TEK not be viewed just as an optional addendum to programs. The full Working Group also recognized that collection and organization of TEK can be a major undertaking, requiring procedures different from collecting the harvest data themselves and potentially adding significant costs to existing programs. Nevertheless, the Working Group concluded in one of its guiding principles that "collection and application of traditional ecological knowledge and other contextual information are integral components of successful harvest assessment programs." And one of the Group's recommendations (E.2) states that "Traditional ecological knowledge (TEK) is necessary for evaluating harvest data; therefore, programs must develop strategies to collect and use TEK in the context of harvest assessments." However, the Working Group recognized that procedures for collection of TEK will be program-specific, and will differ, for example, in terms of frequency of interviewing, number of interviews conducted, and the level of detail collected.

Role and Definition of "Baseline" Data

Early in its review of harvest assessment programs, the Working Group noted that these programs can be divided into two types based upon their frequency:

1. Programs that are conducted annually; these provide consistent time series data that indicate trends and long-term patterns; and
2. Programs that are conducted more infrequently, often as part of baseline, comprehensive household surveys; by themselves, these provide a "snapshot" of harvests, but need to be periodically updated to understand broader trends and patterns (e.g. BBNA and ADF&G 1996).

Further discussion of "baseline" data occurred during the fourth Working Group meeting, based upon comments contained in the tribal members' position paper:

A baseline is established using many years of data, never a single year. How can a baseline be established in one year when a significant portion of natural climate variability occurs on a time scale of decades? (Two Crow et al. 2000).

The Working Group acknowledged this point, and also recognized the value in a single year's data in documenting species that are used, harvest areas, and relative levels of use and harvest.

Such single year studies should continue. It was also recognized that a single year's data has limited utility for understanding processes and trends. A broader "baseline" consisting of multiple years' data is highly desirable. The Working Group strongly supports periodic, systematic updates of baseline studies in order to build a time series of subsistence fisheries harvests. (As an example, see Wolfe and Hutchinson-Scarborough 1999 on seal and sea lion harvest data built up over several years of surveys.)

THE TECHNICAL SUBCOMMITTEE

As noted above, during its first two meetings, the Working Group reviewed existing subsistence fisheries harvest assessment programs conducted by the Alaska Department of Fish and Game. Harvest assessment programs for subsistence fisheries occur in each region of the state, but many aspects of these programs differ dramatically. For instance, different divisions within ADF&G (Subsistence, Commercial Fisheries, or Sport Fish) are responsible for these programs. Furthermore, methodologies differ as well as the degree of technical review, reporting, and public participation in collection of the information. In total, the Working Group raised significant technical questions as to the validity of these harvest estimates. In an attempt to clarify these technical questions, and to provide a more thorough technical review of the existing programs; a technical subcommittee was formed and charged with reviewing the reliability and validity of existing subsistence harvest estimates.

The following Work Group members were assigned to the technical subcommittee: Don Callaway (NPS), Steve Klosiewski (FWS), Jennifer Hooper (AVCP), and Doug McBride (ADF&G); as well as two support staff (Dave Caylor and Charles Utermohle, ADF&G). Don Callaway and Charles Utermohle refined a comparison of baseline estimates (derived from post-season face-to-face interviews) and estimates derived from permits (as conducted annually by ADF&G). This analysis provided the basis for discussion by the technical subcommittee. The technical subcommittee met once.

In total, the technical subcommittee was unable to resolve questions of reliability and validity of existing subsistence harvest estimates without substantially more study and analysis. In the comparison of the baseline and permit estimates, there were many cases where the estimates significantly differed and the technical subcommittee did not have sufficient information to determine the reason, such as measurement errors or sampling problems. In the absence of a comprehensive technical review, the technical subcommittee identified several critical technical questions that could compromise accurate harvest estimates from the existing programs, particularly: are subsistence users accurately reporting harvest information; and is the total population of subsistence users being correctly identified and sampled?

To highlight and address these unresolved technical questions, the technical subcommittee made several recommendations to the full Working Group that are incorporated in this report of final recommendations:

- The elements of an effective subsistence fisheries harvest assessment program were abstracted from the more extensive and detailed set of recommendations developed by the Working Group and presented in this report in Appendix B.

- A technical subcommittee report, including recommendations, was prepared and is available upon request from Working Group members and from ADF&G Division of Subsistence.
- Two harvest monitoring follow-up projects were recommended for funding in FY 2001 under the Federal Subsistence Fishery Resource Monitoring Program. These pre-proposals were submitted and forwarded for development of an Investigation Plan (see Part Six). Of particular concern was validation of subsistence harvest estimates for the Kuskokwim River and Southeast Alaska.

PART THREE: OBSERVATIONS ON EXISTING PROGRAMS

BACKGROUND AND GENERAL OBSERVATIONS

Objective 2 of the study was to prepare a detailed overview of current subsistence fisheries harvest assessment programs. Jim Fall had prepared a preliminary overview of these programs for a presentation at a training session for regional advisory council members in Anchorage in January 2000 (Fall 2000). These were drawn on in developing overviews for this project. During its first meeting (and continuing into the southeast briefing and a portion of the second meeting), the Working Group examined a number of harvest assessment programs and discussed some of their strengths and weaknesses, based on descriptions by Dave Caylor and several other ADF&G staff. The Working Group made a number of observations about the specific programs, which appear below. The Working Group also made a number of general observations that are outlined directly below, as summarized in the first meeting report that served as background for the Working Group's recommendations.

- There are four general types of data collection methods:
 1. Permits
 - Issued in advance
 - Free
 - Regulatory requirement
 - Harvest reporting on permit form
 - Mailed in at the end of the season or collected door to door
 2. Calendars
 - Various forms, formats
 - Various durations (e.g. monthly or annual)
 - Can be a memory device for post-season interview
 3. Interviews—in season, post season
 - Creel survey
 - Post season is recall dependent
 - Can be conducted over the phone or face-to-face
 4. Mail-outs/mail-ins
 - Postcard permit forms
 - Mailed surveys
- Interview types may vary—in intervals throughout the season or just post-season
- Harvest assessment programs vary region by region
- Response rate/participation by fishers in programs tends to be high
- Most programs are about salmon
- It doesn't appear that a "uniform" system is needed: different methods work
- Bottom line questions for programs are 1) what information is needed and 2) what is the best way to collect this in the different areas
- Costs are generally less than expected
- The Group is hopeful about possibilities of incorporating TEK into these programs
- There is little to no documentation of methods for many programs or review of findings
- Documentation isn't readily available and not centralized
- There are data gaps, limited current data, and incomplete coverage

- Partnerships are inconsistent—more or less partnerships in different areas
- There is a range of partnership tools—formal to informal, money exchanged to just working together
- Actively working with users improves data but increases costs
- The low cost of a program could be a red flag about low quality/quantity of data
- Cost effectiveness is desirable
- Community burnout could affect data collection/reporting
- Annual Management Reports link subsistence harvests and biological assessments
- Need two kinds of assessments—include local knowledge to assess subsistence harvests and status of fish stocks
- Run timing/local knowledge would be helpful to area management biologists when information is provided in-season rather than post-season; for example, changing run timing—shifting later in some areas; could be documented through on going program involving users
- New runs develop, e.g. —hatchery produced runs -- and changes patterns
- Some harvest assessment systems are more personal than others, and some reports include comments from users
- There are few validity checks or attempts for testing the program
- Other general issues and problems include: unreported catches; permitting via mailing lists (might minimize permits issues); lack of collection of data on species besides salmon, such as halibut or shellfish, etc.
- There's too much jargon in discussions of programs and findings — need clear definitions and descriptions

SPECIFIC COMMENTS ON EXISTING PROGRAMS

Preliminary overviews of Alaska's subsistence fisheries, mostly narrative descriptions of the fisheries and their harvest assessment programs, were prepared by Jim Fall for a previous training session presentation. To allow the Working Group to go through approximately twenty harvest assessment programs in a somewhat systematic fashion and gain insight into their strengths, weaknesses, similarities, and differences, a standard overview format was adopted, and the subsistence salmon harvest assessment program overviews were more fully developed. Dave Caylor developed these by conducting interviews with staff responsible for the programs. Most of the interviews were in person at the staff members' offices, which allowed examination and collection of various survey materials, databases, and other resources related to the harvest assessment programs.

The more detailed program overviews contained factual information on such things as fishery area definitions, program histories, data collection and analysis methods, and how data are reported, used, and archived. These overviews also contained more subjective information on how well the data collection methods covered the subsistence fishing harvests occurring within the fisheries, how adequate the programs were, what things might strengthen them, and other judgments that fishery and harvest assessment program managers were asked to make.

These written overviews served as the subject matter for presentations on the harvest assessment programs that were made during the first two Working Group meetings and at the Southeast

Briefing held in Douglas between the first and second meetings. Overviews were included in the project notebooks distributed to and maintained by Working Group members along with fishery maps, copies of permits, survey questionnaires, other instruments, fishery harvest tables, and assorted background materials for the project.

Kuskokwim Management Area

➤ Background

- The entire Kuskokwim River drainage is a non-permit subsistence area.
- The ADF&G Division of Subsistence (Bethel) administers the harvest assessment program.
- A partnership with Orutsararmiut Native Council (Bethel) provides survey technicians to assist with data collection in Bethel.
- A combination of harvest assessment methods is used, including subsistence salmon catch calendars, post-season household surveys, postcard surveys, and telephone surveys.

➤ Coverage

- Information is usually obtained from well over half of the estimated 4,180 households in the Kuskokwim Management Area (67 percent in 1999).
- Information was obtained from 79 percent of the households that regularly fish in 1999.
- Coverage is lowest in the communities where survey staff do not visit. Response rates for catch calendar and postcard surveys are also lower in these communities, likely due to lack of knowledge or understanding of the subsistence harvest assessment program.

➤ Adequacy

- Subsistence Division ADF&G staff are satisfied with data from the communities in which surveys are conducted.
- Need to increase participation in north Kuskokwim Bay and Bering Sea coast communities where surveys are currently *not* conducted.
- Also need greater outreach in all communities in disseminating results.

➤ Issues

- Non-local fishers engage in subsistence fishing in the Kuskokwim area, but the survey methods currently used do not collect harvest data from harvesters residing outside the Kuskokwim River drainage.
- Reliance on community visits to collect survey instruments (catch calendars) and to update current household lists results in poor response rates in communities that are not visited by survey staff.
- Three communities have declined to participate in post-season household surveys, having specifically requested that no one visit residents of their communities for that purpose.

Yukon Management Area

➤ Background

- The majority of the Alaska portion of the Yukon River drainage is a non-permit subsistence area.

- Some areas, mostly along the road system and including the Tanana River, are subsistence areas requiring subsistence fishing permits.
 - A non-subsistence area, which includes Fairbanks, Delta Junction, and area drainages, is managed under personal use fishing regulations. Harvesters in this area are required to obtain personal use permits.
 - The ADF&G Division of Commercial Fisheries (Fairbanks) administers the program.
 - There is a partnership with the Council of Athabascan Tribal Governments (CATG), which employs one intern to assist with surveying households in Fort Yukon.
 - A combination of harvest assessment methods is used, including subsistence and personal use permits, subsistence salmon catch calendars, post-season household surveys, postcard surveys, and telephone surveys.
- Coverage
- Of the total households in the Yukon Area, approximately 37 percent provide harvest information.
 - Of the number of households in the Yukon Area that normally fish, about 72 percent provide harvest information.
- Adequacy
- ADF&G managers in the Division of Commercial Fisheries are confident in harvest assessment results.
 - Harvesters are largely satisfied with the assessment program but would like increased involvement. Need to develop capacity for this involvement first.
 - Could strengthen program by developing knowledge about harvesters living *outside* Yukon Area and fishing *in* the area.
 - Need to improve knowledge of commercial caught fish being withheld for subsistence purposes.
 - Would be beneficial to develop contacts in each community to encourage use of catch calendars, promote benefits of good harvest assessment.
 - Need to add the village of Chevak to assessment program.
- Issues
- Non-local fishers engage in subsistence fishing in the Yukon area, but unless they fish in the limited permit areas, their harvest data are not collected.

Northwest Area (Norton Sound / Port Clarence and Kotzebue Areas)

- Background
- Most of the Northwest Area is a non-permit subsistence area.
 - One subsistence area along the Nome road system requires subsistence harvest permits.
 - The ADF&G Division of Subsistence (Kotzebue) administers the harvest assessment program.
 - The ADF&G Division of Commercial Fisheries runs the Nome area permit system and provides the permit data to the Division of Subsistence.

- A combination of harvest assessment methods is used, including subsistence permits, post-season household surveys, and postcard surveys.
 - Partnerships with Maniilaq Association (Kotzebue), Kawerak, Inc. (Nome), and the Bering Sea Fishermen’s Association provide survey technicians and funding for them.
- Coverage
- Only 18 of the 27 Northwest communities are included in the harvest assessment program, partly due to a lack of salmon in some communities.
 - Subsistence harvests of some non-salmon species are only recorded in the Kotzebue area villages.
- Adequacy
- This harvest assessment program provides only partial coverage of the area. Some communities have never been included.
 - There is potential for improving the program by adding in the communities not currently included, following up on non-responses in Kotzebue, and collecting non-salmon harvest information in Norton Sound communities.
- Issues
- Harvest data collected by the Nome area permits are not expanded, so no estimates of total salmon harvests are made. (Harvest data from post-season household surveys and postcard surveys *are* expanded.)
 - Not all communities are surveyed every year due to time and funding limitations.

Bristol Bay Area

- Background
- The entire Bristol Bay Area is a subsistence area where harvesters must obtain subsistence fishing permits for salmon, trout, and char.
 - The ADF&G Division of Subsistence (Dillingham) administers the harvest assessment program.
 - Subsistence permits with accompanying harvest reports are the primary method used for Bristol Bay. Post-season follow-up surveys are sometimes conducted to verify information if permit data appear to be in error or incomplete.
- Coverage
- All 25 communities of the Bristol Bay area are included in the harvest assessment program.
 - Permits do not provide space for recording harvests of non-salmon fish species. Fishers also catch Dolly Varden, Arctic char, and trout (among other species), so the harvest assessment program does not cover these fish.
- Adequacy
- ADF&G staff are concerned the harvest assessment program may be missing some late season harvests because some fishers return their permits before coho runs and harvests of spawned-out sockeyes (“redfish”).

- Although asked to do so on permits, fishers don't often include commercially caught salmon withheld for subsistence purposes on their harvest reports, or commercial fishers simply fail to obtain subsistence permits but still withhold salmon for home use. Managers cite this as a shortcoming of the program.
- Improvements could also be made to the program by conducting follow-up interviews with fishers in some places.

➤ Issues

- There are no partnerships with local organizations, but potential for improving the program exists if partnerships are developed to conduct follow-up interviews in some communities.

Kodiak Management Area

➤ Background

- All of the Kodiak Management Area is a subsistence area requiring harvesters to obtain subsistence fishing permits.
- The ADF&G Division of Commercial Fisheries (Kodiak) administers the harvest assessment program.
- Subsistence permits with accompanying harvest reports are the only method used for Kodiak.

➤ Coverage

- Managers within ADF&G Division of Commercial Fisheries are uncertain of the extent to which subsistence activities in the KMA are covered by the permit system. Suspicions are the farther from Kodiak City subsistence harvesters live and fish, the less likely they are to obtain permits. Managers believe a substantial amount of subsistence harvesting occurs without permits.

➤ Adequacy

- Managers believe catch data recorded on permits are reasonably accurate.
- Permit system provides no information on subsistence users who do not obtain permits, and managers believe this number is substantial, especially in outlying areas (away from the city of Kodiak and the Kodiak road system).
- Permit system could be improved by adding rod and reel fishing as subsistence take method, allowed under federal subsistence rules. Numerous other adjustments and clarifications would also help the program run more smoothly.
- Another potential improvement is to put the subsistence permit application process on the internet.

➤ Issues

- Permits are issued by mail to harvesters who returned permits the previous year, and many of these "issued" permits go to invalid addresses. Accordingly, response rates are difficult to interpret.
- Coverage is poor for communities and areas away from the Kodiak road system.
- Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.

Alaska Peninsula Area

➤ Background

- All of the Alaska Peninsula Area is a subsistence area requiring harvesters to obtain subsistence fishing permits.
- The ADF&G Division of Commercial Fisheries (Cold Bay, Sand Point, Port Moller, Kodiak) administers the program.
- Subsistence permits with accompanying harvest reports are the only method used for the Alaska Peninsula.

➤ Coverage

- Managers in ADF&G Division of Commercial Fisheries believe the permit system does not cover all subsistence harvesting activities because some fishers fail to obtain permits.
- The permit system does not account for salmon withheld from commercial catches for subsistence purposes, and managers believe a substantial amount of this is happening, especially when commercial salmon prices are low.

➤ Adequacy

- ADF&G managers feel the permit system does not provide information in as much detail as they would like for managing the fisheries.
- Data are often reported in aggregate by fishers, with date of harvest information either missing or entered as a range of dates.
- The permit system does not provide accurate estimates of the number of fish harvested for subsistence uses in areas where commercial fishing occurs, because there is no requirement to record commercially caught salmon withheld for subsistence use. Managers noted that in areas where no commercial fishing takes place, such as Cold Bay, they believe subsistence harvest estimates are more complete.
- According to ADF&G managers, harvesters and the Board of Fisheries have been satisfied with subsistence harvest estimates managers have provided on request.
- Managers see potential for improvements to the harvest monitoring program primarily in increasing the level of detail in the data collected and in continuing to store and make the data accessible by computer.

➤ Issues

- The program doesn't measure what is believed to be a substantial amount of salmon caught commercially but withheld for subsistence uses.

Aleutian Islands Area

➤ Background

- Currently, the entire Aleutian Islands chain is a subsistence fishing area, but harvesters are required to obtain subsistence fishing permits in only two of five management districts.
- The ADF&G Division of Commercial Fisheries (Cold Bay, Dutch Harbor, Kodiak) administers the program.

- Subsistence permits with accompanying harvest reports are the only method used for the Aleutian Islands.

➤ Coverage

- ADF&G managers in the Division of Commercial Fisheries believe the permit system covers most subsistence fishing occurring in the Unalaska and Adak Districts (where permits are required) but they express concern that it does not cover the other districts of the Aleutian Islands Area (where permits are not required)
- Fishery managers believe that in the Unalaska District, the district where the majority of subsistence fishing activities in the Aleutian Islands Area takes place, most subsistence fishers obtain permits. They cite local presence of Fish and Wildlife Protection officers and a population that is self-enforcing (likely to report violators) as reasons for this belief.
- Unlike other areas, managers feel that commercially caught salmon withheld for subsistence purposes is not a major factor in the Aleutian Islands Area. This is because most commercial fishing occurring in the area is for shellfish and ground fish, not for salmon.

➤ Adequacy

- Managers feel the permit system does not provide information in as much detail as they would like for managing the fisheries.
- Data are often reported in aggregate by fishers with date of harvest information either missing or entered as a range of dates.
- ADF&G managers report that harvesters and the Board of Fisheries have been satisfied with subsistence harvest estimates managers have provided on request.
- Managers believe the most needed improvement to the harvest monitoring program is expanding the permit and reporting requirement to include the other three districts of the Aleutian Islands Area.
- Other potential improvements to the program include increasing the level of detail in the data collected and continuing to store and make the data accessible by computer.

➤ Issues

- The program does not cover three of the five Aleutian Islands management districts, but subsistence fishing occurs throughout the Aleutians.

Cook Inlet Area: Port Graham/Koyuktolik

➤ Background

- The Port Graham/Koyuktolik subsistence fishery requires harvesters to obtain subsistence fishing permits.
- The ADF&G Division of Subsistence (Anchorage) administers the harvest assessment program.
- Subsistence fishing permits are wallet cards only and do not provide space for recording subsistence harvests
- Harvesters are required to record their harvest data on subsistence salmon catch calendars distributed to permit holders.

- There are partnerships with the Port Graham and Nanwalek village councils to have council employees distribute permits and calendars and then pick calendars up after fishing is over.
- Coverage
 - Except for the 10 to 20 percent non-response rate, ADF&G Division of Subsistence personnel who run these programs believe the assessment program does a good job of covering the subsistence fishing activities occurring in the area.
 - Coverage and response rates are improving due to recent salmon enhancement efforts and fishers' commitment to the program.
- Adequacy
 - The program adequately addresses the need for aggregate subsistence harvest information.
 - Where harvest information needs are more specific, the program does not provide enough detail.
 - Including blanks on calendars for specifying which streams harvests occurred in would make detailed information available when it is needed.
- Issues
 - Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.
 - The numbers of permits issued and catch calendars returned have not been consistently recorded each year, so calculation of response rates is difficult. Tracking changes over time is not possible for this reason, as well.

Cook Inlet Area: Seldovia

- Background
 - The Seldovia subsistence fishery requires harvesters to obtain subsistence fishing permits.
 - The ADF&G Division of Subsistence (Anchorage) administers the harvest assessment program.
 - Subsistence permits with accompanying harvest reports are the only method used for the Seldovia fishery.
 - A partnership with the Harbormaster of the City of Seldovia is a part of the program, whereby the Harbormaster's office acts as the distribution point for permits.
- Coverage
 - The assessment program does a good job of covering harvests by subsistence methods, but it does not collect any information about the number of commercially caught salmon withheld for home use, a quantity managers believe is substantial.
- Adequacy
 - This assessment program works well, in part a function of its small size.
 - Increasing response rates from the relatively low number of late season permits could improve the assessment program substantially, since each current non-response represents such a large proportion of the late season fishery.

- Issues
 - Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.

Cook Inlet Area: Tyonek

- Background
 - The Tyonek subsistence fishery requires harvesters to obtain subsistence fishing permits.
 - The ADF&G Division of Subsistence (Anchorage) administers the harvest assessment program.
 - Subsistence permits with accompanying harvest reports are the only method used for the Tyonek fishery.
 - A partnership is in effect with the Tyonek Village Council to issue permits and receive completed permits from harvesters dropping them off.
- Coverage
 - The assessment program does a good job of covering subsistence harvests.
 - Salmon withheld from commercial catches is not a big issue in the Tyonek fishery.
- Adequacy
 - This assessment program works well.
 - The program could benefit from the inclusion of rod and reel harvest information.
- Issues
 - Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.

Cook Inlet Area: Upper Yentna

- Background
 - The Upper Yentna subsistence fishery requires harvesters to obtain subsistence fishing permits.
 - The ADF&G Division of Sport Fish (Palmer) administers the harvest assessment program.
 - Subsistence permits with accompanying harvest reports are the only method used for the Upper Yentna fishery.
- Coverage
 - The harvest assessment program does an excellent job of covering the subsistence fishing activities occurring in the fishery, something the fishery manager believes is due to the small number of permits and the self-policing nature of the community.
- Adequacy
 - The fishery manager reports the program works very well now because the number of permits is very small.
 - Phoned-in harvest data are not provided by all fishers, but nearly all permits are returned.

- If the popularity of the fishery grows, there will be a need to improve phone reporting, increase law enforcement, and assure the high level of permit returns is maintained.

➤ Issues

- Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.

Chignik Area

➤ Background

- All of the Chignik Area is a subsistence area requiring harvesters to obtain subsistence fishing permits.
- The ADF&G Division of Subsistence (Anchorage) administers the program, assisted seasonally by Division of Commercial Fisheries at the Chignik River weir.
- A combination of harvest assessment methods is used, including subsistence permits, post-season household surveys, and mailed surveys.
- There are three partnerships in place in the Chignik harvest assessment program. The Chignik Bay city office distributes permits, Norquest Seafoods also issues permits in Chignik Bay, and the Perryville Village Council issues permits to subsistence fishers in Perryville.

➤ Coverage

- ADF&G Division of Subsistence staff who run the program state that the returned permits alone provide only limited coverage of subsistence uses occurring in the area.
- With the post-season household surveys, coverage is good when survey technicians can be found in the communities.
- Success with the mailed survey method is uncertain at this point, but it is hoped this will also boost response rates.

➤ Adequacy

- The harvest assessment program is good, considering the low cost.
- The program could benefit from an increase in Division of Subsistence staff involvement in the community surveys.

➤ Issues

- It is often difficult to find or retain permit vendors in some communities.

Prince William Sound: Upper Copper River

➤ Background

- Upper Copper River subsistence fisheries are established in the Glennallen and Chitina Subdistricts.
- The ADF&G Division of Sport Fish (Glennallen) administers the harvest assessment programs.
- Subsistence permits with accompanying harvest reports are the only method used for the upper Copper River.

- There are two partnerships for the upper Copper River fisheries. The Chistochina Village Council office issues permits, and the Copper River Native Association assists in issuing permits and also in collecting them.
- Coverage
 - The fishery manager within the Division of Sport Fish ADF&G believes the permit system covers about 75 to 90 percent of subsistence fishing activities occurring in the area. He believes compliance is good because of a high law enforcement profile in the area.
- Adequacy
 - ADF&G managers are satisfied that the program does a good job of reporting subsistence harvest levels.
- Issues
 - It is possible that some harvesters, especially those using fishwheels in the Glennallen Subdistrict, are neglecting to get their own subsistence fishing permits, opting instead to fish with other harvesters' fishwheels and permits. Some of these harvests might go unreported.

Prince William Sound: Copper River Flats and General Prince William Sound

- Background
 - Subsistence fishing permits are required for subsistence salmon fishing throughout Prince William Sound (general) and in the Copper River delta area (known locally as Copper River Flats).
 - The ADF&G Division of Commercial Fisheries (Cordova) administers the harvest assessment programs.
 - Subsistence permits with accompanying harvest reports are the only method used for Copper River Flats and General Prince William Sound.
- Coverage
 - According to ADF&G Division of Commercial Fisheries managers, the permit system covers nearly all of the subsistence fishing activity occurring in the Copper River Flats area due to a high law enforcement presence.
 - The permit system may not do very well at covering subsistence activities occurring in Prince William Sound.
 - Salmon caught commercially and withheld for home use are not included in the subsistence counts, and this is a large number in Cordova and Prince William Sound.
- Adequacy
 - There is potential for improvement in Commercial Fisheries data management by combining multiple years' data into a single database.
- Issues
 - Salmon withheld from commercial catches are not included in harvest reports.

- Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.

Prince William Sound: Eastern and Southwestern Districts

➤ Background

- Subsistence fisheries were established in the Eastern and Southwestern Districts of Prince William Sound primarily to serve the communities of Tatitlek and Chenega Bay, respectively. Both require harvesters to obtain subsistence fishing permits.
- The ADF&G Division of Commercial Fisheries (Cordova) administers the harvest assessment programs.
- Subsistence permits with accompanying harvest reports are the only method used for the Tatitlek and Chenega Bay fisheries.

➤ Coverage

- The Eastern District and Southwestern District permit systems are thought by ADF&G Division of Commercial Fisheries managers to provide very incomplete coverage of subsistence activities in the area, due in large part to local lack of participation.

➤ Adequacy

- Due to the very low response rate and the perception that many subsistence harvesters are fishing without permits, the permit system in these districts is probably inadequate for this fishery.
- Potential exists for improvement by increasing personal contact and communications with harvesters about the needs for and uses of good harvest assessment data.

➤ Issues

- Salmon withheld from commercial catches are not included in harvest reports.
- Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.

Southeast Region

➤ Background

- There are six management areas in the Southeast Region, Yakutat, Haines, Juneau, Sitka, Petersburg/Wrangell, and Ketchikan.
- All of the Yakutat and Haines Management areas are subsistence areas that require subsistence harvesters to obtain subsistence fishing permits.
- Most of the Juneau, Sitka, Petersburg/Wrangell, and Ketchikan Management Areas are subsistence areas that require subsistence harvesters to obtain subsistence fishing permits, but each also has personal use permit fisheries established in non-subsistence areas around their larger communities.
- The ADF&G Division of Commercial Fisheries (Yakutat, Haines, Douglas, Sitka, Petersburg, Ketchikan) administers the harvest assessment program.
- Subsistence and personal use permits with accompanying harvest reports are the only method used in Southeast Alaska.

- Coverage
 - ADF&G Division of Commercial Fisheries managers are uncertain of the extent to which subsistence activities in Southeast Alaska are covered by the permit system. Suspicions are that many residents engage in subsistence activities without permits.

- Adequacy
 - Although Southeast fisheries managers do not make use of subsistence harvest data in managing commercial fisheries, they do express some concern about the quality of subsistence data they collect.
 - The harvest assessment program in Southeast does not account for commercially caught salmon withheld for subsistence purposes, and managers believe this could be a considerable amount.
 - Managers express concern that subsistence harvest data are often reported which do not coincide with their management directions. For example, if a stream or other area is managed primarily for one species of salmon and other species are reported harvested there, the data are considered to be in error. Such data are removed, or “cleaned,” from the Division of Commercial Fisheries ADF&G database.

- Issues
 - Combined subsistence and personal use fishing permits in the management areas having both types of fisheries may confuse some harvesters and cause harvest recording errors.
 - On some of the six management area permits, insufficient space is allocated for recording catches. This can cause harvesters to make errors, aggregate their harvest data, or simply fail to record it if they fish on more dates than the permit allows space to record harvests for.
 - Harvest data from returned permits are not expanded, so no estimates of total subsistence harvests are made.
 - Residents of many Southeast communities do not view the harvest data reported by ADF&G as credible. They believe the numbers of fish caught for subsistence purposes is far greater.
 - There is widespread belief that compliance with the subsistence fishing permit process is very low in many parts of Southeast.

PART FOUR: TRAINING RECOMMENDATIONS

The project's Objective 7 was to develop recommendations for a training program with tribes, other user groups, federal agencies, and ADF&G to help implement cooperative harvest assessment programs. The Working Group viewed training programs as consistent with other goals such as capacity building, partnerships, and fostering collaborative stewardship.

The recommendations for a unified subsistence fisheries harvest assessment strategy (Appendix B) include two specific suggestions about training. These are:

B.8. Identify the need for training in harvest assessment programs and include training components in programs when necessary. A key goal for such programs can be developing an understanding of scientific methods of data collection, emphasizing to those doing harvest assessment surveys that they are key to the quality of estimates. Training thus can promote understanding and collection of reliable data. This is a means towards capacity building and community and user acceptance of programs.

B.9. Consider internships as part of training programs and as a way for fostering good stewards. Internships can be viewed as a higher level of commitment to the program. The Working Group noted that ADF&G and federal agencies have student and college intern programs; community development quota (CDQ) programs also have internships that might serve as models.

Another topic of discussion related to training was certification programs. For example, ADF&G could certify as "harvest assessment technicians" those local residents who conduct post-season surveys in an acceptable manner. A certification program would create a pool of local residents with recognized qualifications. The Working Group recommends that agencies investigate the possibilities of setting up such a program.

The Working Group discussed several kinds of training workshops, which could include:

- Training workshops for agency staff regarding the Working Group's recommendations
- Training workshops for local residents/researchers on harvest assessment methods, which could be tied in with training for other aspects of fisheries management/research

As described in the position paper prepared by tribal members of the Working Group (Two Crow et al. 2000), coordination with tribal natural resource programs might enhance training opportunities. Youth and young adults have already benefited from the Youth Area Watch Program in the Chugach and Kodiak areas (funded through the *Exxon Valdez* Oil Spill Trustee Council) and the Native American Fish and Wildlife Society's Summer Youth Environmental Awareness Practicum for high school students. The position paper also notes the possibility of developing training and education program in natural resources at the secondary level, although few such programs currently exist in Alaska. As the Working Group learned from Frank Hill (AFN) at its third meeting, AFN and UAF are implementing the Alaska Rural Systemic Initiative, which seeks to develop educational policies and practices that integrate indigenous knowledge and ways of knowing with western science.

Another aspect of training that could contribute to more effective harvest assessment programs is in cross-cultural communication. Such a training program within agencies could emphasize the need to be sensitive to cultural differences and respect traditional knowledge, values, and customs. This would support a central principle of the Working Group's recommendations that harvest assessment programs need to foster communication and trust.

PART FIVE: ANNUAL REPORT, DATABASE, AND WEBSITE

ANNUAL REPORT ON ALASKA SUBSISTENCE FISHERIES

Selected findings of ongoing subsistence fisheries harvest assessment programs generally appear only in ADF&G annual management reports (AMRs) for specific management areas or in reports to the Alaska Board of Fisheries. There has been no annual statewide overview of Alaska subsistence fisheries. Accordingly, Objective 6 of the project was a report that provides an overview of Alaska subsistence fisheries for 1999, to be used as a prototype for future annual statewide reports. The Division of Subsistence, ADF&G, prepared a draft outline of the annual report and sample chapter for Working Group comment and review at the third meeting in August 2000. A more detailed outline, several more draft chapters, and supporting tables and figures were distributed for review at the fourth meeting in November. The goal was to complete and distribute the report in January 2001.

The annual report is organized by fisheries management area, plus a statewide overview chapter. Each chapter has a series of tables that, for most programs, report harvests by districts or more specific subdivisions within the management areas and by residence of fishers for 1999, plus historical harvests by species for the duration of the program. Due to time constraints, most sections only report data on salmon. Future reports will also summarize marine invertebrate programs and provide overviews of baseline data for other fisheries without annual assessment programs from the Community Profile Database (Scott et al. 2000).

Although much of the management area-level data can be found in AMRs, unique to the annual report is a statewide overview of subsistence salmon harvests in Alaska. Table 5 derives from the annual report, and shows the 1999 subsistence salmon harvest by fishery and species, based upon annual harvest assessment programs using permits, calendars, and household surveys. Figure 2 shows the composition of the statewide subsistence salmon harvest in 1999.

The intent is that the 1999 Annual Report will be the prototype and the first in a series of annual compilations of information about the state's subsistence fisheries. Extension of the project through June 2001 provides funding support for the production of an annual report for 2000. The proposed implementation project (see Part Six) would fund annual reports for 2001 and 2002 as well.

ALASKA SUBSISTENCE FISHERIES DATABASE AND WEBSITE

The Division of Subsistence originally compiled the Historic Subsistence Salmon Harvest Database (HSSHDB) (Brown et al. 2000) in 1988 as a central repository for annual subsistence salmon harvest data from subsistence fisheries throughout Alaska. While the database brought together results from most of Alaska's ongoing harvest assessment programs, the summary data in the database varied in detail and presentation to the same degree the harvest assessment programs varied in their data collection and summation methods. Lack of funding caused maintenance of the HSSHDB to diminish in recent years.

Table 5. Alaska Subsistence Salmon Harvest by Fishery and Species, 1999

Fishery	Total Households/Permits ¹	Expanded? ²	ESTIMATED SALMON HARVEST					Total
			Chinook	Sockeye	Coho	Chum	Pink	
Adak District	5	Yes	0	164	4	0	0	168
Alaska Peninsula	185	Yes	391	15,119	4,961	2,235	2,136	24,843
Batzulnetas	1	Yes	0	55	0	0	0	55
Bristol Bay	1,219	Yes	13,009	122,281	6,143	3,653	420	145,506
Chignik	106	Yes	243	9,040	1,679	136	1,191	12,290
Copper River District (Copper R. Flats)	294	Yes	377	1,422	729	0	0	2,528
Glennallen Subdistrict, Upper Copper R.	1,102	Yes	3,234	76,456	1,145	0	0	80,835
Kodiak Island	1,438	No	397	26,497	4,932	388	1,266	33,480
Kuskokwim	4,180	Yes	77,660	49,388	27,753	47,612	0	202,413
Northwest Alaska	2,351	Yes	6,242	4,047	16,706	115,676	21,644	164,315
Port Graham/Koyuktoik Subdistricts	74	No	485	3,157	1,747	1,104	2,023	8,516
Prince William Sound (PWS) (General)	3	Yes	0	0	0	0	0	0
PWS Eastern District (Tatitlek)	17	No	0	344	541	31	31	947
PWS Southwestern District (Chenega)	14	No	57	499	62	101	168	887
Seldovia	16	Yes	136	130	0	38	0	304
Southeast/Yakutat Region	2,318	No	1,308	48,559	1,748	4,164	2,769	58,548
Tyonek Subdistrict	77	No	1,230	144	94	11	32	1,511
Unalaska District	208	Yes	0	2,485	1,234	16	1,044	4,779
Upper Yentna	17	Yes	0	455	43	11	13	522
Yukon	2,888	Yes	50,515	0	19,984	162,670	a	233,169
Totals	16,513		155,285	360,242	89,506	337,846	32,737	975,617

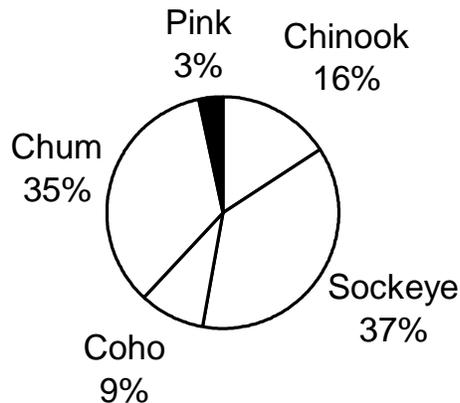
¹ Depending upon the fishery, this is the number of permits issued or the estimated number of households in the area upon which the estimate is based. Number of permits does not necessarily equal number of households. In some fisheries, households obtain two or more permits. In some cases, households share permits and record their harvests in a single record.

² "Yes" means reported harvests from returned records are expanded to the estimated total participants. "No" means harvests are as reported only.

^a 631 pink salmon reported harvested. Data only available for 1999. Not included in fishery total.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.00; based on annual harvest assessment programs with permits, calendars, and household surveys.

Figure 2. Alaska Subsistence Salmon Harvest by Species, 1999



N = 975,617 salmon, based on annual harvest assessment programs using permits, calendars, and household surveys.

This project provided funding to continue developing the Historic Subsistence Salmon Database and to update it with current harvest data. The database has now been updated through 1999 with harvest data from all fisheries. Also, on-screen forms and printed reports have been redesigned for ease of use, and additional features—harvest assessment program overviews and fishery maps—have been added. The database has been renamed the Alaska Subsistence Fisheries Database (ASFDB) to reflect the inclusion of some non-salmon fisheries data and the anticipation that more will be added. In addition, the variability in harvest data detail and presentation has been minimized to the extent possible. When this report was nearing completion, the current ASFDB, Version 3.0, was undergoing a final cleanup and review prior to its release in early 2001.

The project also provided funds for developing website access to harvest results from Alaska's subsistence fisheries. Progress has been made on preliminary website and page designs, but harvest data are not yet available, and the website has not been posted to the state's web server. By the time the Alaska Subsistence Fisheries 2000 Annual Report is released in the fall of 2001, the website is expected to be up and running and providing harvest data tailored to user queries, along with other information about the various harvest assessment programs.

The ASFDB and website, both under development, were demonstrated to Working Group members at its third meeting. Working Group members provided their comments and concerns, and this feedback was incorporated into these products.

PART SIX: THE NEXT STEPS AND CONCLUSIONS

THE NEXT STEPS

The Working Group viewed its activities as just the first steps towards implementing the principles it identified for effective subsistence fisheries harvest assessment programs and its recommendations for a unified program. The next steps could take place through two new projects submitted to the Federal Office of Subsistence Management, Fishery Information Services. These two projects and their objectives are as follows.

Title: Implementation of Statewide Subsistence Fisheries Harvest Assessment Strategy (01-107)

Investigator(s): James Fall (267-2359) Alaska Department of Fish and Game, Division of Subsistence, 333 Raspberry Road, Anchorage, Alaska 99518; jim_fall@fishgame.state.ak.us; Roland Shanks (563-9334), Alaska Inter-Tribal Council, 431-W 7th Avenue, Suite 201, Anchorage, AK, 99501; rshanks@aitc.org

Objectives:

1. Systematic, cooperative development of operational plans for current subsistence fisheries harvest assessment programs
2. Training workshops in harvest assessment methods and use of harvest assessment data
3. Annual reports of Alaska subsistence fisheries for 2001 and 2002
4. Updates to the Alaska Subsistence Fisheries Database with 2001 and 2002 data; further enhancements of Alaska subsistence fisheries web site
5. A final report

Project Title: The Validity and Reliability of Fisheries Harvest Assessment Methods (00-106).

Investigator(s): Charles J. Utermohle (267-2360), Alaska Subsistence Data Program, ADF&G Subsistence Division, 333 Raspberry Road, Anchorage, AK 99518; Charles_Utermohle@fishgame.state.ak.us; Don Callaway (257-2408), National Park Service, 2525 Gambell St., Anchorage, AK 99503 don_callaway@nps.gov; and specific Village IRA, Traditional, or City Councils to be specified.

Statistical Objectives:

Year One (2001) -

1. To test the hypothesis that the existing permit subsistence salmon harvest assessment system in Southeast Alaska provides the same estimates of fishers and harvests as face-to-face household interviews at the 95% confidence interval in three communities using standard ADF&G Division of Subsistence baseline subsistence harvest survey instruments.
2. To test the hypothesis that improved calendar layout and in-season retrieval has no effect on calendar usage in the Kuskokwim River drainage from previous years at the 95% confidence interval.

3. Additional tests as determined by the technical advisory subcommittee for the Southeast and Kuskokwim subsistence salmon fisheries permit and survey data.
Year Two (2002)-
4. To test the hypothesis that the existing permit subsistence salmon harvest assessment system in Southeast Alaska provides the same estimates of fishers and harvests as face-to-face household interviews at the 95% confidence interval in three communities using a special post-season subsistence salmon and steelhead harvest survey instrument.
5. To test the hypothesis that interviewer characteristics have no effect on participation and reported harvests in subsistence harvest surveys in the Kuskokwim River drainage at the 95% confidence interval.
6. Additional tests as determined by the technical advisory subcommittee for the Southeast and Kuskokwim subsistence salmon fisheries permit and survey data.

Administrative Objectives:

Year One (2001) -

1. To create a technical subcommittee comprised of Native, state, and federal agency statisticians and analysts.
2. To continue the work of the technical subcommittee previously established by the Subsistence Fisheries Harvest Assessment Project in identifying sources of harvest assessment variation, evaluating means to mitigate the variation, and promoting statistically sound harvest estimates.
3. To promote improvement in harvest assessment systems by bringing together subsistence harvest assessment managers and the technical subcommittee to share current methods, to evaluate new procedures, and to describe practical limitations to controlled testing of sources of variation.
4. To define additional tests comparing the Southeast subsistence salmon permit reports with data from baseline subsistence harvest surveys.
5. To provide interim technical recommendations to the Subsistence Fisheries Harvest Assessment Project through the annual report.

Year Two (2002) -

6. To provide input into the content and design of a special post-season Southeast subsistence salmon and steelhead survey form.
7. To define additional tests comparing the Southeast subsistence salmon permit reports with data from the special subsistence salmon and steelhead harvest surveys.
8. To define additional tests on the efficacy of changes in the calendar and staffing in the Kuskokwim River Drainage harvest assessment program relative to prior years.
9. To discuss the results of the research with communities and obtain their opinions on improving the fisheries harvest assessment program in their area.
10. To provide final technical recommendations to the Subsistence Fisheries Harvest Assessment Project in the final report.

CONCLUSIONS

This collaborative effort has begun a process to improve the way subsistence fisheries harvest assessments are conducted in Alaska. In its review of existing programs, the Working Group found evidence that there is general support for subsistence harvest assessments as a means to document and protect subsistence uses and to conserve fisheries resources. Current programs use a variety of procedures. Many programs produce reliable results, but for some, managers and users alike express doubts about their accuracy and reliability. While there is almost state-wide annual documentation for salmon fisheries, data are largely lacking for other finfish and marine invertebrates.

The Working Group concluded that it is unadvisable to insist on uniform procedures for all harvest assessment programs. Programs should be designed to fit local circumstances and needs. Instead, the Working Group chose to present a set of general principles and recommendations for a “unified strategy” for harvest assessments. The essence of this strategy rests on sound scientific principles linked with local partnerships, informed by traditional knowledge, and reviewed through collaborative evaluation of procedures and results. Findings should be widely available. Programs should be thorough, but as unobtrusive as possible. Subsistence users and resource managers must be confident that the documentation of subsistence harvests is accurate. Subsistence fishers must also be confident that they will not place themselves or their way of life in jeopardy by participating in harvest assessment programs.

Finally, the members of the Working Group thank the Office of Subsistence Management for funding this project. It is our hope that our observations and recommendations are helpful to everyone who has concern for Alaska’s fish and wildlife resources.

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APPENDIX A: MEETING AGENDAS

SUBSISTENCE FISHERIES HARVEST ASSESSMENT WORKING GROUP

AGENDA FOR FIRST MEETING/WORKSHOP

Time: April 18 – 20, 2000

Place: Aerie Conference Room
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, Alaska 99518

Workshop convenors:

Division of Subsistence, ADF&G
Alaska Inter-Tribal Council

Funding provided by the Office of Subsistence Management, US Fish and Wildlife Service

Working Group Members:

George Yaska, Tanana Chiefs Conference
Jennifer Chris, Association of Village Council Presidents¹
Barbara Janitscheck, Maniilaq Association²
Harold Martin, Central Council of Tlingit and Haida Indian Tribes of Alaska
Patty Brown-Schwalenberg, Chugach Regional Resources Commission
Don Callaway, National Park Service
Steve Klosiewski, US Fish and Wildlife Service
Cal Casipit, US Forest Service
Bonnie Borba, ADF&G Division of Commercial Fisheries
Doug McBride, ADF&G Division of Sport Fish
Jim Fall, ADF&G Division of Subsistence

Facilitator: Elizabeth Andrews, ADF&G Division of Subsistence

Recorder: Janet Schempf, ADF&G Habitat Division

Overall purposes of first workshop:

1. Get acquainted with each other
2. Review and agree upon project goals and objectives
3. Develop procedures for discussing and evaluating harvest assessment programs
4. Begin review of existing programs and databases

Background reading materials:

1. Investigation Plan: Statewide Subsistence Fisheries Harvest Monitoring Strategy (copies faxed or e-mailed to all Working Group members)
2. "Understanding Harvest Assessment in the North: Synthesis of the Conference on Harvest Assessment (copies provided to all Working Group members)

¹ Name changed to Jennifer Hooper.

² Replaced by Enoch Shiedt prior to the first workshop.

**(draft) MISSION STATEMENT FOR THE WORKING GROUP:
(derived from Objectives 1, 3, 7, & 8 in the investigation plan)**

Examine existing harvest assessment programs for subsistence fisheries and develop recommendations for designing a unified strategy for conducting harvest assessment projects; conceptualize the role of tribes and subsistence users in harvest assessment programs; develop recommendations for a training program to help implement cooperative harvest assessment programs; and prepare a written report.

DAY ONE: April 18, 2000

9 a.m.	Introductions	Jim Fall, ADF&G, interim chair
9:05	Develop "ground rules" for Working Group	Elizabeth Andrews, facilitator
9:20	Review and approve agenda	
9:30	Statements by Working Group Members regarding their goals for the working group	
10:00	Review of Project Design and Goals	Jim Fall
10:20	Office of Subsistence Management Perspective	Taylor Brelsford, USFWS
10:30	Break	
10:45	General overview of types of harvest assessment methods	Jim Fall
11:00	General discussion: Why collect harvest data? General discussion of "Conference on Harvest Assessment" symposium report	

⇒ Note: by the end of the morning, we hope to achieve agreement on what the Working Group should be trying to accomplish and how to go about doing it.

12 noon to 1:30 p.m.: Lunch Break (on your own)

1:30 p.m.	Demonstration of Community Profile Database	Charles Utermohle, ADF&G
2:00 p.m.	Demonstration of Historic Subsistence Salmon Harvest Database	Charles Utermohle, ADF&G
2:30	Break	
2:45	Development of Evaluation Criteria for Review of Programs	
4:30	Recess for the Day	

DAY TWO: April 19, 2000

Note: we may postpone discussion of Southeast Alaska programs until the second working group meeting in order to have more participation by local experts. We may not have time to review all the other programs on Day Two, in which case we will postpone discussing them until the second meeting.

8:30	Presentations and discussions of existing subsistence fisheries harvest assessment programs Kuskokwim River Yukon River	Dave Caylor, ADF&G, & and local experts
10:15	Break	
10:30	Continue program reviews Northwest Alaska Bristol Bay	

12 noon to 1:30 p.m.: Lunch Break (on your own)

Day Two, continued

- 1:30 Continue program reviews
 - Cook Inlet
 - Kodiak Area
- 3:00 Break
- 3:15 Continue program reviews
 - Chignik Area
 - Copper River
 - Other areas (except Southeast)
- 4:30 Recess for the day

⇒ Note: by the end of Day Two, Working Group members should have a basic understanding of the existing subsistence fisheries harvest assessment programs.

DAY THREE: April 20, 2000

Note: to accommodate travel plans, we will try to wrap up by 11 a.m. However, if we need to tie up loose ends, anyone who is available is welcome to continue discussions until noon.

- 8:15 Discussion of observations about harvest assessment programs
 - Develop procedures for public review, involvement, feedback
 - Identify other programs that should be reviewed
 - Begin development of recommendations
- 9:45 Break
- 10:00 Develop agenda for second Working Group meeting
 - Facilitator comments and wrap-up
 - Set time and place for second Working Group meeting
- 11 a.m. Adjourn first Working Group Meeting

⇒ Note: Working Group members should leave with an understanding of what they need to do to prepare for the next meeting.

**Agenda for Briefing on
Subsistence Fisheries Harvest Assessment Working Group: first meeting**

When: Monday, May 15, 2000; 10 a.m. to 3 p.m. with a lunch break

Where: ADF&G Conference Room, Douglas; Douglas Island Center Building, 802 3rd Street

Attendees: Harold Martin, Working Group member for CCTHITA; Cal Casipit, Working Group member for USFS; Adelheid Herrmann, AITC; Harold Frank and Helen Dangle, Douglas Indian Association; James Fall, Dave Caylor, Mike Turek, and Matt Kookesh, ADF&G Subsistence Division; Rocky Holmes, ADF&G Division of Sport Fish; Scott Marshall, ADF&G Division of Commercial Fisheries

Purpose: provide an overview of the first meeting of the Subsistence Fisheries Harvest Assessment Working Group for members who were unable to attend all or most of the meeting.

Background materials

- Working Group members Harold Martin and Cal Casipit should bring their white loose-leaf notebooks and the summary of the first Working Group meeting.
- Other participants should review the summary of the first meeting and bring it with them to the briefing
- Reviewing the summary of the “Harvest Assessment in the North” symposium is also helpful as background

Agenda Items

- Overview of project objectives: Jim Fall & Adelheid Herrmann
- Discussion of mission statement developed at first meeting
- Overview of Current Harvest Assessment Programs that were discussed during the first Working Group meeting: Dave Caylor
- Discussion of observations and preliminary recommendations developed at the first meeting
 - Review of points raised about why harvest data are collected
 - Review of points raised about why harvesters might be reluctant to provide information
 - Review of draft recommendations and other observations/ideas
- Preview of second Working Group meeting, Anchorage, May 31 and June 1
- Recommendations on agenda for second workshop

Please note: we do not intend to review Southeast Alaska subsistence harvest assessment programs at this briefing. This is a topic for the full Working Group at its next meeting.

SUBSISTENCE FISHERIES HARVEST ASSESSMENT WORKING GROUP

AGENDA FOR SECOND MEETING/WORKSHOP

Time: June 1 and 2, 2000

Place: Aerie Conference Room
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, Alaska 99518

Workshop convenors:

Division of Subsistence, ADF&G
Alaska Inter-Tribal Council

Funding provided by the Office of Subsistence Management, US Fish and Wildlife Service

Working Group Members:

George Yaska, Huslia Tribal Council
Jennifer Hooper, Association of Village Council Presidents (co-chair)
Enoch Schiedt, Maniilaq Association
Harold Martin, Central Council of Tlingit and Haida Indian Tribes of Alaska
Patty Brown-Schwalenberg, Chugach Regional Resources Commission
Don Callaway, National Park Service
Steve Klosiewski, US Fish and Wildlife Service
Cal Casipit, US Forest Service
Bonnie Borba, ADF&G Division of Commercial Fisheries
Doug McBride, ADF&G Division of Sport Fish
Jim Fall, ADF&G Division of Subsistence (co-chair)

Facilitator: Teri Arnold, ADF&G Wildlife Conservation Division

Recorder: Janet Schempf, ADF&G Habitat Division

Overall purposes of second workshop:

1. Receive feedback from working group members regarding harvest assessment programs and other topics from the first meeting
2. Complete review of harvest assessment programs
3. Receive and discuss reports on TEK, tribal natural resource programs, training programs, and technical aspects of harvest assessment
4. Continue development of recommendations

DAY ONE: June 1, 2000

8:30	Introductions	Jim Fall, ADF&G, co-chair
8:45	Review and approve agenda; adopt report from first meeting	Facilitator
9:00	Statements of goals by remaining Working Group Members & summary of Southeast Briefing	Harold Martin, Cal Casipit
9:15	Reports from Working Group members	Facilitator
10:30	Break	
10:45	Review of remaining harvest assessment programs	Dave Caylor, ADF&G

12 noon to 1:30 p.m.: Lunch Break (on your own)

Day One, continued

- 1:30 p.m. Summary of data gaps
Dave Caylor, ADF&G
1:45 Report from technical subcommittee
Don Callaway, NPS
[includes overview of key statistical and
other technical terms and concepts]
2:15 Presentation on Tribal natural resource programs
[include discussion of role of EPA]
2:45 Break
3:00 Training programs, internships, mentorships, etc
3:30 TEK Discussion
4:30 Recess for the Day

DAY TWO: June 2, 2000

- 8:30 Non-salmon fisheries harvest assessment programs
What programs exist?
What is the need for such programs?
9:30 Development of recommendations
10:00 Break
10:15 Continue development of recommendations

12 noon to 1:30 p.m.: Lunch Break (on your own)

1:30 Continue development of recommendations
3:00 Break
3:15 Other topics:
Peer review of products?
Building tribal infrastructure/capacity
Other (including "parking lot" items)?
4:00 Assignments
Discuss schedule for remainder of project
Develop agenda for third Working Group meeting
Set time and place for third Working Group meeting
Facilitator comments and wrap-up
4:30 Adjourn second Working Group Meeting

SUBSISTENCE FISHERIES HARVEST ASSESSMENT WORKING GROUP

AGENDA FOR THIRD MEETING/WORKSHOP

Time: August 22&23, 2000

Place: Conference Room
RurAL CAP
731 E. 8th Avenue
Anchorage, Alaska 99520
907-279-2511

Workshop convenors:

Division of Subsistence, ADF&G
Alaska Inter-Tribal Council

Funding provided by the Office of Subsistence Management, US Fish and Wildlife Service

Working Group Members:

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Jennifer Hooper, Association of Village Council Presidents (co-chair)
Enoch Shiedt, Maniilaq Association
Harold Martin, Central Council of Tlingit and Haida Indian Tribes of Alaska
Patty Brown-Schwalenberg, Chugach Regional Resources Commission
Don Callaway, National Park Service
Steve Klosiewski, US Fish and Wildlife Service [Jeff Bromaghin will substitute]
Cal Casipit, US Forest Service
Bonnie Borba, ADF&G Division of Commercial Fisheries
Doug McBride, ADF&G Division of Sport Fish
Jim Fall, ADF&G Division of Subsistence (co-chair)

Facilitator: Mike Dean, ADF&G Sport Fish Division

Recorder: Janet Schempf, ADF&G Habitat Division

Overall purposes of third workshop:

5. Receive feedback from working group members regarding harvest assessment programs and other topics from earlier meetings
6. Finalize draft set of recommendations on harvest assessment programs
7. Receive and discuss reports on TEK, role of tribes in harvest assessments, and technical aspects of harvest assessment
8. Demonstrations and discussions of enhanced database, website, and annual report

DAY ONE: August 22, 2000

8:30	Introductions	Jim Fall, ADF&G, co-chair
8:45	Review and approve agenda; adopt report from second meeting	Facilitator
9:00	Reports from Working Group members	Facilitator
9:30	Discussion of Technical Committee Report	Don Callaway
10:00	Break	

Day One, continued

10:15 Discussion of research protocols and ethical principles,
Including discussion of enforcement and confidentiality and
report from Doug McBride on charter operators' logbooks

11:00 TEK: Presentation by Frank Hill

12 noon to 1:30 p.m.: Lunch Break (on your own)

1:30 p.m. Follow-up discussion of TEK: role in harvest assessment &
how used in management

2:15 Discussion of role of tribes in harvest assessment programs Roland Shanks

3:00 Break

3:15 Begin finalizing recommendations for harvest assessment programs

4:30 Recess for the Day

DAY TWO: August 23, 2000

8:30 Continue finalizing recommendations

10:00 Break

10:15 Continue finalizing recommendations

11:30 Conclude development of recommendations; discuss process for review of recommendations

12 noon to 1:30 p.m.: Lunch Break (on your own)

1:30 Demonstration of updated subsistence fisheries database and web page

2:15 Discussion of prototype annual report

3:00 Break

3:15 Other topics:

Training programs

Other (including "parking lot" items)?

4:00 Assignments

Discuss schedule for remainder of project

Develop agenda for fourth and last Working Group meeting

Set time and place for next Working Group meeting

Facilitator comments and wrap-up

4:30 Adjourn third Working Group Meeting

SUBSISTENCE FISHERIES HARVEST ASSESSMENT WORKING GROUP

AGENDA FOR FOURTH MEETING/WORKSHOP

Time: November 7 & 8, 2000

Place: Aerie Conference Room
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, Alaska 99518
907-267-2353

Workshop convenors:

Division of Subsistence, ADF&G
Alaska Inter-Tribal Council

Funding provided by the Office of Subsistence Management, US Fish and Wildlife Service

Working Group Members:

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Jennifer Hooper, Association of Village Council Presidents (co-chair)
Enoch Shiedt, Maniilaq Association
Harold Martin, Central Council of Tlingit and Haida Indian Tribes of Alaska
Patty Brown-Schwalenberg, Chugach Regional Resources Commission
Don Callaway, National Park Service
Steve Klosiewski, US Fish and Wildlife Service
Cal Casipit, US Forest Service
Bonnie Borba, ADF&G Division of Commercial Fisheries
Doug Vincent-Lang, ADF&G Division of Sport Fish
Jim Fall, ADF&G Division of Subsistence (co-chair)

Emeritus Working Group Member: Doug McBride (formerly of ADF&G Sport Fish, now USFWS)

Facilitator: Mike Dean, ADF&G Sport Fish Division

Recorder: Janet Schempf, ADF&G Habitat Division

AITC Co-principal investigator: Roland Shanks

AITC Consultants: Adelheid Herrmann, Jim Schumacher

Overall purposes of fourth workshop:

9. Review comments on draft set of recommendations on harvest assessment programs
10. Finalize recommendations on harvest assessment programs
11. Discuss policy paper developed by Working Group's tribal members on: role of tribes in harvest assessment programs, capacity building, and role of TEK in harvest assessment programs
12. Develop recommendations on training programs
13. Demonstrations and discussions of enhanced database and annual report
14. Update on follow-up projects for FFY01

DAY ONE: November 7, 2000

8:30	Introductions	Jim Fall, ADF&G, co-chair
8:45	Review and approve agenda; adopt report from third meeting	Mike Dean, Facilitator
9:00	Summary of comments on draft recommendations: [Each state and federal agency Working Group member will briefly summarize the comments they received on the draft.]	Agency representatives
10:00	Break	
10:15	Report on Policy Paper development and issues [includes comments from tribal Working Group members on draft recommendations, and summary of comments they received.]	Adelheid Herrmann, Jim Schumacher, Roland Shanks Tribal Working Group members
12 noon to 1:30 p.m.: Lunch Break (on your own)		
1:30 p.m.	Wrap-up Policy Paper discussion and identification of comments	
2:00	Review and discuss comments; develop final set of recommendations	
3:00	Break	
3:15	Continue and conclude development of recommendations	
4:30	Recess for the Day	

DAY TWO: November 8, 2000

8:30	Revisit final recommendations	
9:00	Discuss recommendations on training programs	
10:00	Break	
10:15	Discuss other recommendations and final report	
11:00	Review status of follow-up projects for FY01 and beyond [includes update on idea of a “standing committee” for long-term planning]	Don Callaway, Jim Fall, Dave Caylor, Charles Utermohle (ADF&G), Roland Shanks
12 noon to 1:30 p.m.: Lunch Break (on your own)		
1:30	Demonstration of subsistence fisheries database	Dave Caylor
2:30	Discussion of prototype annual report	Jim Fall, Dave Caylor
3:00	Break	
3:15	Other topics: including “parking lot” items	
4:00	Assignments	
	Discuss schedule for remainder of project, including final report review	
4:30	Adjourn Fourth Working Group Meeting	

APPENDIX B

**RECOMMENDATIONS FOR A UNIFIED SUBSISTENCE
FISHERIES HARVEST ASSESSMENT PROGRAM**

Developed by:

Subsistence Fisheries Harvest Assessment Working Group

Submitted to:

**Office of Subsistence Management
US Fish and Wildlife Service
3601 C Street, Suite 1030
Anchorage, AK 99503**

Project No. FIS 00-017

Co-Principal Investigator Organizations:

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December 2000

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P.O. Box 25526,
Juneau, AK 99802-5526;

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Arlington, VA 22203; or

O.E.O.,
U.S.
Department of the Interior,
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PREFACE

In May 2000, the Federal Subsistence Board approved funding for the “Statewide Subsistence Fisheries Harvest Monitoring Strategy” project (No. FIS 00-017). The project was a joint undertaking of the Alaska Department of Fish and Game’s Division of Subsistence and the Alaska Inter-Tribal Council. A Working Group, consisting of state, federal, and tribal representatives, developed recommendations for a unified harvest assessment program for Alaskan subsistence fisheries. The Working Group strongly felt that there was no one methodology or tool appropriate to assess subsistence harvests in every circumstance. Hence, our recommendations are for a *unified* program that contains common elements, as opposed to a *uniform* program that would be identical in all fisheries. Among other applications, the recommendations will be used to guide and evaluate proposals for fisheries harvest assessment projects.

The Working Group met four times to review existing subsistence fisheries harvest assessment programs, identify issues, and prepare a draft of these recommendations, which was circulated widely for public review. A final project report with more detail on the Working Group’s activities is available by contacting the Division of Subsistence of ADF&G at the address on the title page of this document.

This document consists of two main parts:

1. An abstract of the recommendations entitled “Elements of an Effective Subsistence Fisheries Harvest Assessment Program;” and
2. The recommendations themselves.

There is also a set of definitions of terms and a short list of references cited.

The abstract of the recommendations (1) highlights key features of the detailed recommendations and (2) is intended to assist those developing project proposals and

those evaluating existing programs. We envision this abstract to be used as a checklist of essential elements for any effective harvest monitoring program.

The recommendations for a unified harvest subsistence fisheries assessment program begin with a set of “guiding principles” which capture key themes in the Working Group’s review and discussion. These principles emphasize a strong scientific basis for harvest assessment programs; collaboration between management agencies, tribes, and the public; collection of traditional ecological knowledge and other contextual information to assist in understanding harvest data; careful evaluation of the results of harvest assessment efforts; wide dissemination of study findings; and support for a centralized database for subsistence fisheries information. The detailed recommendations attempt to implement these principles.

The detailed recommendations consist of 11 sections, as follows:

- A. General (operational plans and funding)
- B. Organization of programs
- C. Subsistence fisheries to be included in harvest assessment programs
- D. Types of harvest data
- E. Other non-harvest data to be collected
- F. Instrumentation and data collection procedures
- G. Sampling
- H. Data analysis, management, and organization
- I. Program evaluation
- J. Reporting of results
- K. Storage of data.

A list of the Working Group members is also attached. Please feel free to contact any of them if you have questions about any of the recommendations in particular or the Working Group’s mission in general.

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(Includes Support Staff)

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Abstract of Recommendations:
Elements of an Effective Subsistence Fisheries Harvest Assessment Program

Prepared by Subsistence Fisheries Harvest Assessment Working Group
December 2000

Introduction: This list of elements of an effective subsistence fisheries harvest assessment program draws from the more extensive and detailed set of recommendations developed by the Working Group. Its primary purpose is to provide guidance to those who are preparing a funding proposal for a harvest assessment project, and to those who are evaluating on-going programs.

An effective program for assessing subsistence fisheries harvests incorporates both formal monitoring methods and traditional ecological knowledge and includes the following elements:

1. A written operational plan
2. Identification and sampling of the total population of subsistence fishers
3. An active public participation program to collect the harvest information that encourages communication between management agencies and subsistence fishers
4. An annual harvest recording form (which may include instruments such as a calendar or harvest report on a permit)
5. Collection of data on: harvest quantities by species, location of harvests, and timing of harvests
6. Post-season (or more frequent) collection of forms and information through interviews, reminder letters, and/or phone calls
7. Minimum qualifications (MQ's) for data standards (such as sample achievement and harvest estimation procedures)
8. A procedure to review and evaluate harvest estimates and other program findings at the end of the season
9. A procedure to report findings to the public
10. Submission of data to the centralized statewide database maintained by the Alaska Department of Fish and Game

RECOMMENDATIONS FOR A UNIFIED SUBSISTENCE FISHERIES HARVEST ASSESSMENT PROGRAM

Developed by Subsistence Fisheries Harvest Assessment Working Group
December 2000

Recommendations beginning on page 2 are in **bold**. The basic justification is indented. Supporting/explanatory points are listed as “bullets.” Examples are in *italics*. The Appendix contains definitions of terms.

GUIDING PRINCIPLES

Collection of accurate harvest data is an essential component of any effective resource management program.

Both baseline and time series data are needed, with frequency of updates dependent upon management and user needs.

Partnerships strengthen harvest assessment programs.

New programs need to build upon successful existing programs and coordination of programs should be a primary goal.

Programs must be developed to fit local circumstances and needs.

Costs, including the potential for long term funding sources, must be considered when designing and modifying programs.

Programs need to foster communication and trust.

Ultimately, program success depends upon acceptance by the participants in the fishery.

Program results need to be available in a timely manner, understandable to the public, and readily accessible through both written reports and a centralized database.

Collection and application of traditional ecological knowledge and other contextual information are integral components of successful harvest assessment programs.

Confidentiality of information will be protected consistent with state and federal law.

Harvest assessment programs need to be subject to systematic and periodic evaluation.

SPECIFIC RECOMMENDATIONS BY PROGRAM COMPONENT

A. General (operational plans and funding)

A.1. All programs need to develop and be guided by an operational plan.

A. 2.The essential components of an operational plan are as follows:

A purpose statement, including research questions and/or management issues addressed, goals, and objectives

Key personnel

Partnerships

Coordination with other harvest assessment and resource assessment programs

Description of study area

Data collection methods, including data collection instruments

Data analysis methods

Timeline

Costs: direct, indirect, and in-kind

Potential uses of the data

How the results will be reported back to the public

Evaluation procedures, including community feedback and peer review

Justification: presently, many programs, including some that have operated for years, have little to no written documentation of their procedures or their costs. This makes evaluation of their performance and their results difficult.

A.3. When considering the development and implementation of a harvest reporting system, the management agency needs to make a commitment to sufficient funding to design and support an effective program that is appropriate to local circumstances.

Justification: Harvest assessment programs with inadequate funding will cut corners in key components such as community outreach, follow-up data collection methods, and program evaluation. Management bodies must recognize, up-front, the differing costs of various harvest assessment methods and choose methods that are consistent with data needs and available funds.

B. Organization of programs

B.1. The management agencies responsible for the fishery must be involved in all harvest assessment programs because they are ultimately responsible for resource management. Their level of involvement may vary based upon partnership arrangements, among other factors.

Justification: the management regime (the laws under which management takes place) defines ultimate responsibility and authority for subsistence fisheries management. The Alaska Board of Fisheries and Federal Subsistence Board determine reporting requirements and other subsistence regulations. As staff, ADF&G and federal agencies are responsible for implementing the regulations and managing the fisheries.

B.2. Community and public involvement is a key element in all effective harvest assessment programs; it can take several forms and exist at a variety of levels.

Justification: Community involvement builds awareness of the program and understanding of the need for the information. It enhances communication, builds trust, and promotes understanding and acceptance on the part of subsistence fishers. For example, a tie in with existing tribal natural resource programs can help avoid duplication of effort and intrusiveness. Community involvement can also build a sense of shared ownership and responsibility for the program results.

B.3. When developing a harvest assessment program, become informed about other harvest assessment programs taking place in the communities or area, and attempt to coordinate with them.

Justification: Multiple rounds of interviewing or multiple forms to keep records on may become burdensome for fishery participants. Through community consultation, opportunities for coordination of data collection efforts might be identified. Such coordination might also result in cost savings for programs.

B.4. Fisheries harvest assessment programs must seek collaborative stewardship arrangements with tribes and user organizations, which can take a variety of forms.

See ADF&G (1999) statement on collaborative stewardship

Justification: collaborative stewardship is a strong form of partnership that will enhance understanding and acceptance of programs. A key outcome is willingness on the part of fishers to answer questions to the best of their ability during interviews and record data accurately on permit reports or calendars.

B.5. Tribal governments, at a minimum, shall be informed about all subsistence fisheries harvest assessment programs in their regions.

Justification: Support for harvest assessment programs needs to be built up from the grass roots. Currently, some harvest assessment programs operate without discussions with tribal governments, which may inhibit local support.

B.6. For voluntary harvest assessment programs (those not established by state or federal regulation), endorsement from tribal governments shall be obtained.

Justification: Tribal government endorsement is part of informed consent, a basic ethical principle of research. Tribal governments represent the interests of their members.

B.7. Cooperative agreements with tribes and user organizations shall be used when they are partners in harvest assessment programs.

- ◆ Formal arrangements (contracts) may be appropriate depending on the degree of involvement.

Example of cooperative agreement: the Nanwalek and Port Graham village councils have cooperative agreements with ADF&G Division of Subsistence. They hire someone to distribute and collect salmon and Dolly Varden harvest calendars.

- ◆ Other options are vendor systems (individuals) in which the tribe makes a recommendation or provides informal assistance in issuing permits or reminding fishers to turn in permits and calendars.

Example of vendor system: there is a system of village permit vendors in Bristol Bay communities that does not involve village councils directly through a contract. Recommendations are sought from councils concerning the selection of vendors, who are paid a stipend directly by ADF&G.

B.8. Identify the need for training in harvest assessment programs and include training components in programs when necessary.

- ◆ A key goal is developing an understanding of scientific methods of data collection. Those doing harvest assessment surveys must understand that they are key to the quality of estimates. Surveyors have the responsibility to contact all the households that need to be interviewed and to ensure that the questions are asked consistently and understandably, while fostering a cooperative atmosphere. Researchers need to convey to those being interviewed that to answer the questions to the best of their ability will help to

sustain healthy stocks. In this way, those interviewed are playing a vital role in the future of the subsistence way of life.

Justification: Training promotes understanding and collection of reliable data. This is a means towards capacity building and community and user acceptance of programs.

Example: ADF&G could certify as “harvest assessment technicians” those local residents who conduct post-season surveys in an acceptable manner. A certification program would create a pool of local residents with recognized qualifications.

B.9. Consider internships as part of training programs and as a way for fostering good stewards.

Justification: Internships can be viewed as a higher level of commitment to the program.

Example: ADF&G and federal agencies have student and college intern programs; community development quota (CDQ) programs also have internships that might serve as models.

B.10. Provide appropriate compensation for people and organizations involved in collecting the data in the harvest assessment programs. Compensation can take a range of forms:

- ◆ Local governments may help distribute forms free of charge as a service

Example: Tyonek Village Council (Cook Inlet)

- ◆ Vendors may receive a flat fee

Example: Bristol Bay Management Area

- ◆ People who are hired to do post season interviews or collect forms may receive an hourly wage, a flat fee, or a per-survey rate

Example, flat fee: Chignik Management Area

Example, hourly wage: Kuskokwim Management Area, Yukon Management Area

Example, per-survey rate: many baseline studies, such as those recently conducted in Togiak, Manokotak, and Twin Hills.

B.11. Payments to fishery participants for providing harvest data must not be used as incentives in harvest assessment programs.

Justification: Harvest assessment programs are collecting information that is essential for effective resource management. Accurate information is most likely to be obtained when fishers accept the need for the program, rather than because they were paid to provide data.

B. 12. When collecting traditional ecological knowledge (TEK), programs must respect local practice regarding payment to respondents.

Justification: Although not all individuals will desire or accept payment for providing TEK, in some communities and areas it is the accepted practice that such people, especially elders, be compensated for their time. In providing local expertise, such individuals are performing the role of consultant for a program. Consultation with local governments is necessary to learn what is appropriate on a case-by-case basis. (This approach is consistent with the Alaska Federation of Natives' "Guidelines for Research" [AFN 1993].) Release forms, which state the ways in which the TEK will be reported, might also be appropriate in some cases.

C. Subsistence fisheries to be included in harvest assessment programs

C.1. For each subsistence fishery, determine if annual or less frequent harvest assessment programs are necessary. Consider that:

- ◆ **Subsistence fisheries on stocks subject to significant exploitation through commercial, sport, personal use, and subsistence harvests generally require annual data, sometimes collected in-season.**

Example: At a minimum, current annual subsistence salmon harvest assessment programs should continue.

- ◆ **Baseline data and periodic updates for all other subsistence fisheries are needed to monitor and understand trends.**

Justification: annual harvest assessment programs are not necessary for all stocks, and can be costly and intrusive. Eventually, an annual assessment program may become unnecessary, making funds available for other programs. Subsistence harvests on stocks that are actively managed, however, must be assessed regularly. Baseline data and periodic updates are needed in anticipation of development and of management issues that may need a regulatory response.

C.2. Resource management agencies and others conducting harvest assessment programs must periodically evaluate their programs, using the recommendations in this document, to determine if the programs are providing adequate information and/or require modification, and are still necessary.

D. Types of Harvest Data

D.1. The essential subsistence harvest data that need to be gathered in all programs include:

Description of the fishery
Harvest quantity by species
Timing of harvests (can be specific by day if calendar or harvest report used, or more general seasonal data if based on post-season recall)
Location of harvest (site-specific if possible; general area of harvest [e.g. drainage] otherwise)
Gear type
Place of residence of fisher
Household size

Justification: Review of current programs demonstrates that this set of data is necessary for effective management of the stocks that are the targets of the subsistence fishery. This information is also routinely required by the Alaska Board of Fisheries and the Federal Subsistence Board.

D.2. Subsistence harvest assessment programs must account for fish withheld from commercial harvests for home use or sharing, if these data are not being collected effectively through another program.

Justification: Removal of salmon and other fish or shellfish from commercial catches can provide a large portion of the total harvest for home use in local communities, but these harvests are not regularly accounted for or reported in many cases. Retention of carcasses of fish taken for commercial roe sales also needs to be accounted for in some areas. The harvest data are essential for stock assessment and to establish levels of harvest necessary for subsistence uses.

D.3. There are other kinds of data that may be desirable for harvest assessment programs, but not essential, including but not limited to:

- ◆ **More precise effort data, such as CPUE (catch per unit of effort)**
- ◆ **Evaluation of harvest (e.g. average, below or above average catch)**
- ◆ **Disposition of catch (barter, sharing, or customary trade, for example)**
- ◆ **Use for dog food**

Justification: Collecting information in addition to the standard types adds to costs and increases respondent burden. However, there are fisheries where experience shows that due to certain issues, additional information is desirable or essential. Community support is necessary when investigating sensitive topics such as barter, sharing, or customary trade.

E. Other non-harvest information to be collected

E.1. Contextual information must be collected on a regular basis to assist in evaluating and interpreting the subsistence harvest data. Such information is available from users and other sources. Contextual data may include, but are not limited to:

- ◆ **Assessments of run strength and timing**
- ◆ **Weather, including, among other things, water temperature**
- ◆ **Assessments of fish conditions, such as abnormalities or unusual size or fat content. [Note: those collecting harvest data must be prepared to inform fishers about how they might get samples analyzed and/or questions about fish conditions answered.]**
- ◆ **Reports on other factors which might have influenced harvests, such as competition with other user groups, substitution of other subsistence resources, or other economic activities**

Justification: currently, little contextual information is available for managers and users to understand changes in harvests from year to year. Changes may occur due to resource factors (abundance, timing, condition) or other factors (competition, regulatory changes, economic factors).

E.2. Traditional ecological knowledge (TEK) is necessary for evaluating harvest data; therefore, programs must develop strategies to collect and use TEK in the context of harvest assessments.

Justification: TEK represents a body of knowledge and experience that has developed in local areas. It offers insights (regarding ecological relationships and population trends, for example) that may supplement and enhance understanding based on scientific studies. TEK components also support local involvement in programs. Collection and use of TEK needs to be an ongoing part of long-term programs.

F. Instrumentation and Data Collection Procedures

F.1. Permits: Under certain circumstances, it may be advisable to require harvest reporting through a permit system. The Alaska Board of Fisheries and Federal Subsistence Board make this decision through a regulatory action. Permits may be advisable in the following situations:

- ◆ **There is significant participation in the fishery by non-local residents**

Example: The Chitina Subdistrict dipnet fishery; some districts of the Bristol Bay Area (such as Egegik)

- ◆ **A high profile fishery where confidence in the data is necessary**

Example: the Glennallen Subdistrict fishwheel fishery

- ◆ **A fishery where it is difficult to determine the level of involvement**

Example: perhaps fisheries with substantial non-local involvement

- ◆ **A fishery in which seasonal limits are necessary, for example because of stock conservation concerns**

Example: some salmon fisheries in Southeast Alaska

Some other considerations regarding permit systems:

- ⇒ The program must consider whether a permit requirement will inhibit accurate data collection. This may be the case when restrictive harvest limits are in effect.
- ⇒ If there is acceptance by the fishers in a permit system, validity of estimates is high and the cost of the program can be relatively low. Acceptance can be assessed by periodic evaluation of participation in the permit system and estimated harvests.

Example: Tyonek Subdistrict, most Bristol Bay Area communities

F.2. An in-season data-recording instrument, such as a calendar or a harvest report section on a permit, is highly desirable as a means to increase precision of harvest estimates and collect reliable catch timing data.

- ◆ “Real time” data collection methods (daily) on calendars or on permits can be used to improve precision of reported harvests since this method reduces need for recall of data weeks or months after the harvest. It is not possible to obtain precise timing data through recall at the end of the season.

F.3. Permits and calendars can be distributed in several ways. The appropriateness of each should be evaluated and multiple methods are likely to be effective in any program. Methods include:

- ◆ By mail
- ◆ In ADF&G offices (many examples)
- ◆ By other agencies and entities, including tribes

Examples: harbormaster in Seldovia, Tyonek Village Council (many other examples)

- ◆ By vendors

Example: Bristol Bay Area

- ◆ At an announced location before the season begins

Example: Skwentna subsistence fishwheel fishery

- ◆ Door-to-door distribution

Example: Port Graham Subdistrict

- ◆ By e-mail or internet

F.4. Door-to-door post-season surveys are appropriate in several circumstances. They can be used to supplement the return of permits/calendars through the mail. They can also be used to “ground-truth” estimates of numbers of participants in the fishery or the thoroughness of reporting on permits and calendars.

Example: Chignik Management Area, local residents are hired to collect permits and conduct supplemental post-season surveys to record harvests of “redfish” and harvests by those who did not obtain a permit.

F.5. Under some circumstances, post-season door-to-door surveys by themselves are acceptable. These include when daily harvest data or specific harvest data by location are not necessary. They are appropriate to establish “baseline” harvest estimates or obtain a periodic update of harvests.

Example: the cooperative project between BBNA and ADF&G in 1995 that estimated subsistence freshwater fish harvests in Togiak and Manokotak (BBNA and ADF&G 1996).

F.6. In-season monitoring of subsistence harvests is necessary in only a limited set of circumstances and should be implemented only with local involvement. This is an expensive method of harvest assessment and also the most intrusive. Circumstances include:

- ◆ **A clear link to in-season management decisions**

Example: Port Graham Subdistrict sockeye salmon

- ◆ **A situation where inaccurate reporting is suspected**
- ◆ **Places where there are stock conservation concerns**

F.7. Harvest assessment programs might consider developing electronic data reporting procedures. Possibilities include:

- ◆ Internet based data collection/reporting
- ◆ Calendar notes via the Internet through tribal efforts to collect and post the information.

Caveat: the Internet must not be used as the exclusive means to report findings. For example, many tribes are still developing the capacity to use the Internet. Also, there are costs involved in internet access for tribes, organizations, and the public.

F.8. Post-season data collection methods must be included in the program when an improvement in sample response is advisable. Techniques can include:

- ◆ Mailed reminder letters: requires acceptance of program by fishers or letters will be largely ignored
- ◆ Door-to-door surveys, perhaps in selected communities to enhance participation and return
- ◆ Phone calls

F.9. Regulation enforcement must be independent of harvest assessment programs, because fear of being penalized for exceeding actual or perceived limits may lead to under-reporting or non-participation. Some further considerations are:

- ◆ Sanctions by state or federal enforcement officers are always a possibility if harvest reporting is required by regulation. In some fisheries, they may be an effective incentive to keep and report accurate records.
- ◆ State regulations (and federal) allow (but do not require) ADF&G to deny a person a permit if they failed to return their permit from the previous year. It is very rare for a permit to be denied for this reason, but in some circumstances, this may serve as an incentive to report harvests. The Working Group agrees that it is an appropriate condition of a permit to require it to be returned with harvest data at the end of the season. However, the Group believes that it is not appropriate to deny families subsistence permits if they neglected to report the previous year's harvest. The harvest information will be collected when an application for a new permit is made.

G. Sampling

G.1. All harvest assessment programs must have procedures identified in the operational plan to determine the number of participants in the fishery. Procedures may include:

- ◆ Post season assessments through surveys
- ◆ Community review
- ◆ A permit system that has been evaluated and found reliable

Justification: It appears that some programs, especially those using permits and that rely on mail-in systems, are underestimating participation in fisheries. This results in underestimates of total harvest.

G.2. Stratification as a sampling method may be appropriate in fisheries where the identity of fishing households is generally known pre-season.

Example: Yukon River, where due to the size of the fishery it is not possible to interview every household.

G.3. The operational plan for the harvest assessment program needs to identify how an adequate sample size is determined.

G.4. The operational plan for the harvest assessment program must account for non-local fishers.

Justification: In areas such as the Kuskokwim and Yukon, the number of people who travel from outside local communities to subsistence fish is thought to be low, but is unknown because a permit is not required. About 10% of subsistence permits in the Bristol Bay Area are issued to non-Bristol Bay residents. This percentage has grown slightly.

H. Data analysis, management and organization

H.1. Data management functions should be standardized and centralized as much as possible

Justification: An economy of scale is created if data functions are centralized. Centralization promotes consistent, uniform methods of data collection, analysis, and reporting. It also promotes availability of the data and facilitates analysis and evaluation.

H.2. Data management procedures must ensure confidentiality consistent with state and federal law.

H.3. Provisions need to be made in the operational plan for handling missing data. Possibilities include:

- ◆ Expand harvests from returned permits, calendars, and surveys to include all fishers, if program managers believe the sample is representative

Example: Bristol Bay Area, Chignik Area, Alaska Peninsula Area

- ◆ Include as the official estimate only reported harvests from returned permits if program managers believe non-returns do not fish

Example: Kodiak Area, Tyonek Subdistrict

H.4. Results of harvest assessment programs need to be reported annually in at least two ways for each fishery. These are:

1. **Estimated harvests by community of residence: needed to determine allocations**
2. **Estimated harvests by location within the fishery: needed for sustained yield management by stocks**

H.5. Electronic databases need to be organized so that analyses can be done by species, harvest year, community of residence, location of harvest, and date of harvest.

I. Program evaluation

I-1. An annual evaluation of the harvest assessment program's performance needs to occur. Criteria to be used for program evaluation are those listed in Table 1 (following these recommendations), which are modified from those developed by the "Harvest Assessment in the North" Symposium (ADF&G and ISER 1996).

Justification: Presently, many harvest assessment programs only add another year's data to a table without any comments on the quality of the information and factors, which might influence how the data are to be interpreted. This is a serious limitation in the utility of time series data as well as any baseline estimate.

I.2. Programs need to include regular procedures for checking the validity of estimates. This includes:

- ◆ Developing a method to "ground truth" harvest estimates in a manner that is not a burden on the community and respects the integrity of community members.
- ◆ Developing a definition of a "good estimate." That is, how precise and accurate do study results need to be?

I.3. Program evaluations must be collaborative, and involve ADF&G, appropriate federal agencies, tribes, and appropriate other groups such as advisory committees, regional councils, and regional organizations.

I.4. Subsistence users must be involved in program evaluation; therefore, develop a feedback system for obtaining data review from users.

I.5. It is advisable to have periodic external peer review of both the TEK and western science aspects of harvest assessment programs.

J. Reporting of results

J.1. Results from all fishery harvest assessment programs need to appear in ADF&G Annual Management Reports (AMRs), or other annual fishery reports produced by the management agency.

Justification: AMRs, and other supplemental annual fishery reports (such as the supplemental subsistence fishery report for the Yukon River and Board of Fisheries reports prepared annually for Southeast Alaska) are a major source of documentation of fishery management actions over time.

J.2. The minimum information to be reported in tabular form in ADF&G AMRs and/or other annual fishery reports includes the following:

- ◆ Harvest estimates for year: by species, community of residence, harvest location; and gear types used
- ◆ Number of permits issued and return rates

J.3. Each AMR and/or other annual fishery report needs to include a text section on the subsistence fisheries of the area with the following information:

- ◆ A short description of the harvesting methods employed in the subsistence fishery
- ◆ A brief description of data collection methods and data analysis
- ◆ Basic findings for the year: harvest estimates by species by key harvest locations
- ◆ Comparisons with other years (e.g. changes in harvest timing)
- ◆ Evaluation of program and data quality
- ◆ Discussion of factors affecting harvests, such as weather, other economic activities, competition, changes in fishery management, habitat changes, environmental changes, condition of fish including abnormalities and diseases, etc.
- ◆ Management issues and other issues related to the subsistence fishery
- ◆ TEK that has been used to prepare the review and analysis

J.4. A statewide written annual report is necessary. The Working Group recommends that it provide an overview of Alaska subsistence fisheries, be prepared by ADF&G's Division of Subsistence and other cooperating organizations, and follow the prototype developed by this project.

J.5. Data reporting procedures must ensure confidentiality consistent with state and federal law.

J.6. There must be a short report of annual results provided to fishers for each harvest assessment program.

Example: A good example is the annual summary prepared by ADF&G for Northwest Alaska (Norton Sound, Port Clarence, and Kotzebue Sound (Georgette 1998)

Justification: Few fishers have access to AMRs or attend advisory committee, regional council, or board meetings where the subsistence harvest data are reported, discussed, or applied. Seeing the results will increase understanding and acceptance of programs by users.

J.7. The Alaska Subsistence Fisheries Database maintained by the Division of Subsistence of ADF&G (enhanced during this project) must continue to be the primary repository of subsistence fisheries harvest data.

Justification: a large investment has been made in putting together this database. It has been reviewed by the Working Group. There needs to be a single, reliable source for harvest data which all agencies, tribes, and user groups use, so that consensus on harvest data can be achieved.

J.8. Consideration should be given to using the Internet to report harvest assessment data and other program information through the ADF&G Division of Subsistence Web site, developed during this project. However, this should not be the exclusive means of reporting these data because public access to the Internet is not universal.

J.9. The following are the necessary features of the subsistence fisheries harvest database:

- ◆ **Metadata on harvest assessment programs**
- ◆ **Sample size and achievement**
- ◆ **Harvest data by species, location, community of residence, and date**
- ◆ **Contextual data on annual harvests**
- ◆ **Traditional Ecological Knowledge**
- ◆ **Evaluation of annual program**

K. Storage of Data

K.1. Written records, such as original permits and calendars should be archived with the responsible management body. Retention of original records should follow procedures established by law or regulation.

K.2. Electronic data should be archived with the Division of Subsistence of ADF&G, as the basis of the Alaska Subsistence Fisheries Database (see above). The database must be updated in a timely manner.

K.3. Access to data should be based on applicable laws.

Justification: state law protects individual harvest data as confidential. The results of harvest assessment programs that are voluntary are anonymous. Final estimates and other results derived from the assessment programs that are state and federally funded are public information.

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TABLE 1. CRITERIA FOR EVALUATING HARVEST ASSESSMENT PROGRAMS

Background

At its first meeting on April 18 – 20, 2000, the Working Group discussed “Criteria for Evaluating Harvest Assessment Programs” as developed by the Conference on Harvest Assessment in the North (ADF&G and ISER 1996) and summarized in Table 4 of the investigation plan.

Criteria

The following summary includes the Working Group’s additions to the original set of criteria, as well as the original set itself. Items marked with an asterisk (*) are additions to the original criteria made by the Working Group. The last two sections were added after the meeting in order to place several of the Working Group’s additions into logical categories.

UTILITY (or “usefulness”)

- Does the program produce data that managers need?
- How are the data used in management?
- Do harvesters think the data are useful?
- Do harvesters think other kinds of data being collected for management are useful?
- Are other kinds of data collected and useful? *

RELATION TO POTENTIAL HARVEST RESTRICTIONS

- Is there a concern on the part of fishers that reporting harvests leads to restrictions?
- Does the program address this concern?

CREDIBILITY

- Do harvesters and managers believe the harvest estimates?

IMPACT

- Are harvesters and managers prepared to reduce harvest levels based on harvest and population data?

SENSITIVITY

- Can the method detect changes in harvests from year to year?

ABILITY TO GENERALIZE

- Is the harvest estimate based on a complete census of fishers?
- Is the harvest estimate based on a sample of harvesters?
- What is the response rate?
- Is it a representative sample?
- Can the sample be adjusted to be representative?

RELIABILITY

- What is the range of the harvest estimate?
- Can you calculate the range with the method used?

ACCURACY

- Do harvesters over or under report?
- Is it hard to recall the number of fish harvested?
- Is there a respectful means for “ground truthing” the data? *

TABLE 1, continued

COST

- How much does it cost to collect data with this system?
- What are the fixed/variable costs?
- What types of expertise are required?
- What types of equipment and data processing are required?
- What is the cost-benefit ratio? *

LOCAL INVOLVEMENT AND RESPONSIVENESS *

- Is there tribal government involvement in the program? *
- What is the “user’s buy-in” of the program? *
- Is traditional ecological knowledge (TEK) collected as part of the program? *

PROGRAM EVALUATION *

- Is there on-going program evaluation? *
- Does the program attempt to achieve efficiencies by cooperating with other programs/agencies and combining harvest assessments for multiple resources? *
- Does the program attempt to achieve an economy of scale by centralizing data collection and data management functions? *
- Is the program sensitive to respondent and worker fatigue? *
- Is the program sensitive to the research burden on the community? *

Appendix: Definition of Terms used in the Subsistence Fisheries Harvest Assessment Working Group's Recommendations

December 2000

Baseline Survey or Research

In subsistence harvest surveys, the collection of harvest and use information for all available wild resources along with the socioeconomic contexts of household composition, employment, income, and expenses. The information is usually collected for a single year and can serve as a "baseline" for comparisons with information collected in later years.

Community

The term "community," used in the context of "community involvement," includes the people with an interest in the subsistence fishery of a particular area. "Community" includes subsistence harvesters, tribal and other local governments, regional organizations, formal or informal subsistence harvester organizations, and any other group or individual affected by subsistence fisheries harvest assessment programs.

Confidence Intervals

The range between the upper and lower confidence limits in which one can expect to find the actual mean 95% of the time. The percentage (plus/minus) around the mean is reported in harvest assessment studies to suggest how "confident" the researchers are in their results as a reliable estimate of community harvests. The size of this range is affected by such factors as proportion of the population sampled (sampling fraction) and the variability of the responses. The larger the sampling fraction and/or the more uniform the responses, the smaller the percentage will be.

Confidential

Information that is generally not released to the public is called "confidential." Under Alaska Statute 16.05.815(a), records required by the Department of Fish and Game concerning landings of fish and shellfish are generally considered confidential. This means that while aggregated harvest information may appear in reports and publicly available databases, data are not reported in such a way that the harvests of or personal information about particular individuals or families will be disclosed without the permission of those families or individuals.

Cooperative Agreement

“Cooperative agreements” are formal project-level agreements between agencies and other organizations in which specific project-related stipulations, conditions, or arrangements are agreed upon. Cooperative agreements may or may not require transfer of funds. For conducting subsistence fisheries harvest assessment work, cooperative agreements may take several forms. Examples of cooperative agreements are contracts with local village councils to distribute and/or collect subsistence permits, contracts with local/tribal organizations to conduct post-season harvest assessment surveys, and memoranda of understanding that describe supportive activities that do not involve transfer of funds, such as a local village council helping to distribute permits.

Description of Subsistence Fishery

A description of a subsistence fishery may include, but is not necessarily limited to, such topics as type of gear used, how the gear is used, fishing locations, timing of fishing, processing methods, and characteristics of participants in the fishery (such as their communities of residence and history of involvement in the fishery).

Expansion

Taking information (such as harvests) obtained from a sample (such as selected households or permits) and using it as the basis for making inferences about the population (that is, the total community harvests).

Internship

“Internships” are a type of educational opportunity characterized by on-the-job experience and training that is compensated with credit toward some educational achievement, such as a university degree. Internships may or may not be monetarily compensated, depending on the terms of the internship agreement. A built-in assumption is that an intern, the person engaged in an internship, upon satisfactory completion of the internship, will possess the experience and qualifications necessary to conduct the work in the future.

Metadata

Metadata are “data about data.” They describe the content, quality, condition and other characteristics of data. Metadata also provide supporting

documentation that can be used to understand decision rules and content of the data. Metadata help a person to locate and understand data.

Random Sample

A “random sample” is a sub-set of a population that is chosen in a manner that assures every member of the population an equal likelihood of being selected into the sample.

Real Time Data

Data that are collected close in time to the actual occurrence, such as daily reporting of fish harvest numbers. This can be contrasted with “retrospective recall data” which are collected at the end of the season and are based on memory.

Stratification/Stratified Sample

“Stratification” is a method of sampling in which the population of interest is separated into two or more groups, the members of which share certain characteristics. From each of these groups, a “random” sample is drawn, and the resulting sample, though not randomly selected from the entire population, is proportionately representative of the larger population.

Traditional Ecological Knowledge (TEK) (see also introduction)

The following definition is taken from:

Berkes, Fikret. 1993. Traditional Ecological Knowledge in Perspective. In Inglis, J.T. (ed). *Traditional Ecological Knowledge: Concepts and Cases*. Ottawa: International Program on Traditional Ecological Knowledge and International Development Research Centre.

TEK can be defined as a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment. Further, TEK is an attribute of societies with historical continuity in resource use practices; by and large, these are non-industrial or less technologically advanced societies, many of them indigenous or tribal (Berkes 1993:3).

A second, parallel definition derives from:

Inglis, Julian. 1993 *Traditional Ecological Knowledge: Concepts and Cases*. Ottawa: International Program on Traditional Ecological Knowledge and International Development Research Centre.

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).

Training Component

Some harvest assessment programs in some locations may require that additional efforts be made to develop in the local communities the skills required to conduct the programs. These additional efforts, or “training components,” can take the form of on-the-job training of new harvest assessment workers by experienced harvest assessment professionals, they can involve sending new harvest assessment workers outside their communities to obtain additional education or other learning opportunities, or they can involve building the capacity in the local community to train new harvest assessment workers when they are employed. Training components can also take the form of refresher training for returning workers at the start of seasonal harvest assessment programs. The objectives of including training components may include, but are not limited to, maintaining consistent and unbiased data collection procedures; fostering good relations between harvest assessment workers and subsistence harvesters; and creating an awareness and appreciation among harvest assessment workers of the reasons harvest assessment information is collected and the importance of collecting unbiased and accurate information.