

[draft] Strategic Research Plan

Division of Subsistence

Alaska Department of Fish and Game

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PART I: BACKGROUND

INTRODUCTION

The Goals of the Strategic Research Plan

In June 2007, the Alaska Department of Fish and Game Division of Subsistence began to develop a strategic plan for a sustainable research program based upon a systematic review of its research procedures. The plan establishes priorities for research consistent with funding and staffing levels. It builds upon the past successes of the division's program and experience. The planning process included focused work sessions to review, develop, and explore issues and actions that are addressed in the strategic research plan.

This plan consists of 3 parts. The first is an overview of the division's statutory responsibilities and how the division's research has addressed these responsibilities. The second part is a set of goals and strategic actions. The third part is a discussion of issues and actions identified during staff workshops that were incorporated into the research plan's goals and strategies.

Mission Statement and Core Services of the Division of Subsistence

A goal of the strategic research plan is to address the division's mission and assist the division in performing its core services. The division's mission statement reads as follows:

To scientifically quantify, evaluate, and report information about customary and traditional uses of Alaska fish and wildlife resources.

The core services of the Division of Subsistence are to:

1. Research, quantify, and provide the resulting information to the public about customary and traditional uses by Alaskans of fish and wildlife resources.
2. Provide scientifically-based information for fisheries and wildlife management programs; and to the Board of Fisheries and Board of Game for their use in evaluating reasonable opportunities for customary and traditional uses.

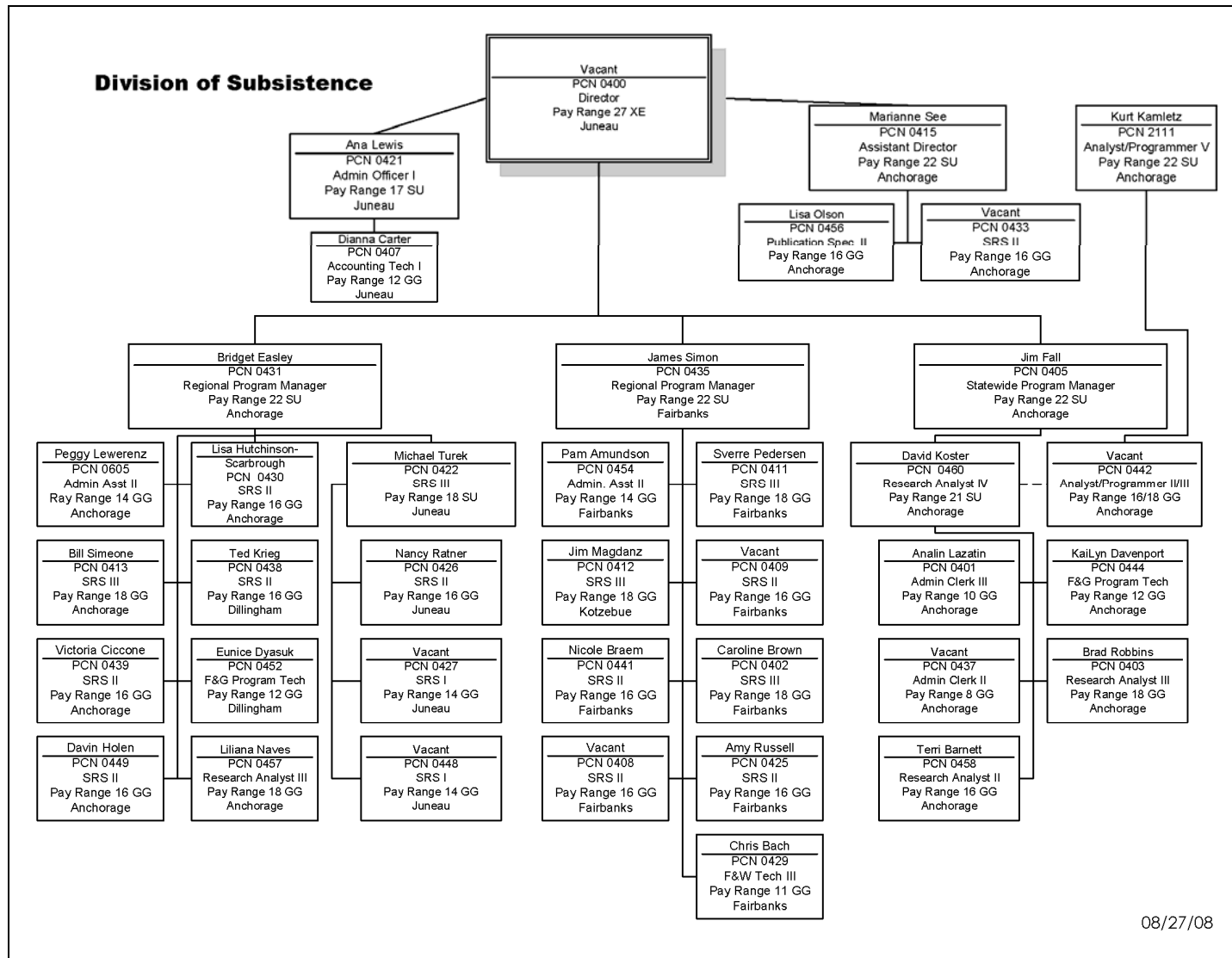
Staffing

Figure 1 depicts the current organizational chart for the division. As of May 15, 2008, there were 36 permanent staff positions, including 5 administrative, 26 research/technical, and 5

supervisory. Of all staff positions, 26 were full time, 9 were seasonal, and one was part time. Eight positions (22%) in the organizational chart were unfilled.

The division has 4 organizational components:

1. Headquarters: director, assistant director, administrative officer, publications specialist, accounting technician.
2. Information management: statewide program manager, research analysts, administrative clerks.
3. Southern Region: program manager, subsistence resource specialists, technicians, administrative assistant.
4. Northern Region: program manager, subsistence resource specialists, technicians, administrative assistant.



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Figure 1.—ADF&G Division of Subsistence staff organization chart, August 2008.

Funding

The division's budget includes the following funding components:

- State of Alaska general fund.
- Federal receipts: contracts and grants from federal agencies.
- Program receipts: contracts from organizations other than federal agencies, such as private contractors and Alaska Native organizations.
- EVOS: contracts from the *Exxon Valdez* Oil Spill Trustee Council to assist with its EVOS restoration program.
- RSAs: reimbursable service agreements from other state agencies, including other ADF&G divisions.

BACKGROUND

Some Brief History

In 1989, a brief article in an ADF&G magazine, prepared by division staff, addressed the question of "why Alaska has a subsistence law," and, as an unstated corollary, why there is a Division of Subsistence within ADF&G (ADF&G 1989:11). The article cites 3 "conditions" that led to state (in 1978) and federal (in 1980) legislation that established subsistence as the priority use of fish and wildlife resources in Alaska. According the article, these conditions were

1. Subsistence hunting, fishing, and gathering are important to Alaska and the nation. Not only is subsistence the traditional way of life of Alaska Natives, non-Natives value the opportunity to choose a subsistence lifestyle.
2. American history clearly shows that without special protections for subsistence uses, commercial, agricultural, and industrial uses of land and wildlife eventually overwhelm subsistence uses.
3. There is not enough wildlife for every Alaskan to live off the land, especially near Alaska's urban centers. Those who do participate in subsistence uses need some assurance that their livelihood will not be undermined by competition.

Correspondingly, the Alaska Legislature in 1978 created a new section within ADF&G, now the Division of Subsistence, in recognition of the need for reliable information about subsistence harvests and uses of fish and wildlife to implement the provisions of the state and federal subsistence laws. (See the next section for an overview of the division's statutory duties.) Over the next decade, 3 issues of ADF&G's magazine, in 1979, 1981, and 1989, focused on the subsistence law, subsistence uses, and the work of the division. In the first, the division's first director, Thomas Lonner (1979:9), provided an early vision of the division's role within ADF&G:

At this beginning point in the life of the Section, the staff understands our task to be the analysis of the relationship of subsistence users to each other and to the resources used. We will investigate community economics and the degree of human dependency on natural resources, whether defined in social, cultural, economic, or nutritional terms.

These first words formally published by a division employee remain a succinct and accurate summary of the division's mission. Two years later, the division's second director, Dennis Kelso (1981a:18), could note that:

Since starting operations in mid-1979, the Subsistence Division has already produced more than 30 major technical reports. These materials and new projects have been used by fish and game advisory committees, local communities, regional organizations, state and federal agencies, and private industries.

Ten years after the founding of the division, the third director, Steve Behnke (1989:1), described a phone call he had received from a reporter who had visited a Prince William Sound village soon after the *Exxon Valdez* oil spill in 1989:

'I was amazed,' the reporter said, 'that in this day and age there are people out there who depend on sea life for food.'

It reminded me again how different Alaska is from the rest of the United States. Where else [in the USA] do thousands of people still hunt, fish, and gather for subsistence? Families in rural areas of Alaska harvest thousands of pounds of fish and wildlife every year. For these families, local products such as seal, salmon,

caribou and moose are used instead of the grains, dairy products, beef, poultry, fruit and vegetables which make up much of the diet of most Americans.'

In that third edition of the department's magazine appeared 11 articles that in sum illustrated Behnke's points, all based on the systematic research of the division since 1979. Fall (1990) is an overview of these first 10 years of the division's program (see also ADF&G 1985).

A fourth publication featuring subsistence hunting and fishing in Alaska appeared in 1998, published by the international organization Cultural Survival and titled "Crisis in the Last Frontier: The Alaskan Subsistence Debate." This publication reflected the change in the legal context within which the division's work takes place that resulted from the Alaska Supreme Court's ruling in *McDowell et al. v. State of Alaska Department of Fish and Game et al.* (1989) that a rural subsistence priority violated certain provisions of Alaska's constitution. The decision placed the state out of compliance with Title VIII of ANILCA, the federal law that requires a rural subsistence preference. Thus, a consequence of the McDowell decision was "dual management" of subsistence hunting and fishing in Alaska. The state Board of Fisheries and Board of Game continued to adopt subsistence hunting and fishing regulations on state and private lands, but all Alaska residents could participate in subsistence hunting and fishing unless an insufficient harvestable surplus necessitated limiting who could hunt and fish. Since McDowell, the Federal Subsistence Board (FSB) has adopted subsistence hunting and fishing regulations for rural Alaska residents pertaining to federally-managed lands and waters. The division's research findings are applied in both the state and federal regulatory systems, and in most cases the data are used in support of providing sustainable subsistence opportunities. However, a result of dual management has been, for some, a negative image of "the State" regarding providing for traditional uses (e.g., Caldwell 1998 and Case 1998).

By early 2008, the number of reports in the division's technical paper series had topped 300. The goal of the division's program continued to be to inform the implementation of state and federal laws pertaining to subsistence uses of fish and wildlife with reliable scientific data.

The Statutory Duties of the Division of Subsistence

Alaska Statute 16.05.094 lists 7 duties for the division (Table 1). These pertain to 3 categories of activities: research and data compilation (1, 2); application of research findings (4, 5, 6, 7); and data reporting (3). The following sections describe the scope of these categories of activities,

provide some specific examples of activities pertaining to each category, and identify issues that need to be addressed in the division’s comprehensive research plan.

Table 1.–Duties of the ADF&G Division of Subsistence as established by state statute.

Alaska Statute 16.05.090	Organization of the department.	(c) There is established in the department a section of subsistence hunting and fishing.
	Editor’s notes.	In a memorandum signed April 14, 1981, the governor approved the commissioner’s conferral of full division status on the section of subsistence hunting and fishing.
Alaska Statute 16.05.094	Duties of the section of subsistence hunting and fishing.	<p>The section of subsistence hunting and fishing shall</p> <ol style="list-style-type: none"> (1) compile existing data and conduct studies to gather information, including data from subsistence users, on all aspects of the role of subsistence hunting and fishing in the lives of the residents of the state; (2) quantify the amount, nutritional value, and extent of dependence on food acquired through subsistence hunting and fishing; (3) make information gathered available to the public, appropriate agencies, and other organized bodies; (4) assist the department, the Board of Fisheries, and the Board of Game in determining what uses of fish and game, as well as which users and what methods, should be termed subsistence uses, users, and methods; (5) evaluate the impact of state and federal laws and regulations on subsistence hunting and fishing and, when corrective action is indicated, make recommendations to the department; (6) make recommendations to the Board of Game and the Board of Fisheries regarding adoption, amendment, and repeal of regulations affecting subsistence hunting and fishing; (7) participate with other divisions in the preparation of statewide and regional management plans so that those plans recognize and incorporate the needs of subsistence users of fish and game.

Source

Statutory duties pertaining to research and data compilation

Duty (1) Compile existing data and conduct studies to gather information, including data from subsistence users, on all aspects of the role of subsistence hunting and fishing in the lives of the residents of the state.

Addressing this first duty includes several related tasks. First, compiling "existing data" means the division needs to monitor the work of others and incorporate their findings into its work. This statutory directive is consistent with the goal that the division be the "first stop" for those looking for information about subsistence hunting and fishing in Alaska.

An early effort to respond to this statutory responsibility was a bibliography project, accomplished from 1981 through 1986 (see Technical Papers 1, 2, 94, 97, and 111). Since the publication of these technical papers, the bibliography has not been updated. Technologically, much has changed since the initial bibliographic project was completed. For example, much information about subsistence uses is increasingly available through the Internet. A comprehensive updating of the bibliography of Alaska subsistence hunting, fishing, and gathering faces major challenges due to the proliferation of sources.

Second, under this duty, the division is charged with "conducting studies." The division's research program is to be active - collecting and analyzing new information - and not simply passively assembling and summarizing the work of others. Further, the division is to conduct studies, and not just simply contract out the research to others. Nevertheless, the division has a long history of developing contracts to take advantage of specific expertise. Examples include the early work of Doug and Mary Veltre in Aleutian and Pribilof Islands communities (Technical Papers 57, 58, and 88); Ernest Burch in Kivalina (Technical Paper 128); Steve Langdon and Rosita Worl on distribution and exchange of resources (Technical Paper 55); among other examples, and contracting to obtain expert assistance in particular studies (Technical Paper 89 is an early example).

Third, the directive within this duty to compile data "from subsistence users" means that the division's work must employ social science methods. These methods include participant observation, key respondent interviews, mapping, and systematic household surveys. Because the division must conduct research directly with people, the division's early leadership determined that the methods of cultural anthropology were best suited to guide the division's research program.

This third directive within the division's first statutory duty also means that the research program must be grounded in the basic ethical principles of the social sciences. The division's early research was guided by the "Ethical Principles for the Conduct of Research in the North," developed by the Association of Canadian Universities for Northern Studies (1982). More

recently, the National Science Foundation's Office of Polar Programs developed the "Principles for the Conduct of Research in the Arctic" (<http://www.nsf.gov/od/opp/arctic/conduct.jsp>). Guidelines from the Alaska Federation of Natives, adopted in 1993, are consistent with these principles, and identify several key features of ethical scientific research, including informed consent, anonymity of respondents, collaboration, community review of findings, and the provision of study findings to communities (the key features can be found at <http://www.ankn.uaf.edu/iks/afnguide.html>). Further, as a public agency, the division must make appropriate information readily available (see discussion of duty 3, below). State laws (AS 16.05.815) protect the confidentiality of certain information, including personal information. The division has also approached the responsibility to collect information from subsistence users through developing collaborative research projects with Alaska Native organizations as partners. Early examples include the Kodiak Area Native Association (1983) and the Bristol Bay Native Association (1983). Partnerships have also been established with Alaska Native co-management bodies, such as the Alaska Native Harbor Seal Commission. Examples of Division of Subsistence research projects that involve partnerships with Alaska Native organizations and tribal governments are too numerous to list here.

Fourth, the law states that the information the division collects should cover "all aspects of the role of subsistence hunting and fishing" in Alaska. This requires the "holistic approach" that has long been a hallmark of anthropological research. (The counterpart in biological sciences is the "ecological approach.") Very early in the division's history, it adopted a community-focused approach for much of its research and the organization of information (Lonner 1979:11; Kelso 1981a; Fall 1990:73-80). This holistic approach also means that in addition to information specifically about contemporary subsistence hunting and fishing (such as harvest amounts, methods, locations, and seasons), the division must collect information that provides a context for understanding subsistence uses within the local economies of Alaska's communities as well as understanding how subsistence uses support cultural institutions and values and how subsistence uses have developed over time.

This holistic approach to research directly supports the division's statutory role to assist the regulatory boards in identifying subsistence uses and developing appropriate regulations. This also explains why early in its history, the division focused on ethnographic studies and topical studies and reports. Most early division studies were primarily descriptive rather than

quantitative. In the first years following the passage of the state and federal subsistence statutes, the regulatory boards needed to understand how subsistence hunting, fishing, and gathering fit into the contemporary Alaska economy and ways of life. Early studies also needed to confront “myths” and misinformation about contemporary subsistence uses of wild resources in Alaska (see Lonner 1980 and 1981; also Kelso 1980, 1981b, 1981c, and 1982).

Another key early approach that the division took to document subsistence uses was to map subsistence hunting, fishing, and gathering areas. Caulfield (1983) was an early “showcase” of mapping methods; the report included color maps and photos, which, due to their expense, were rare in early technical papers. Other early mapping efforts focused on North Slope caribou (e.g., Pedersen and Coffing 1984). Ellanna et al. (1985) is an overview of the mapping methods used in the first years of the division's program. Since then, change has come with development of computerized geographic information system (GIS) mapping, and a key challenge addressed in this plan concerns keeping up with rapidly changing GIS technologies.

Traditional ecological knowledge (TEK; also “local ecological knowledge,” LEK) is presently a topic of much discussion within the fields of resource management and anthropology. The division's holistic approach to subsistence research implicitly included the documentation of traditional and local ecological knowledge in some of its earliest research and technical papers (e.g., Wolfe 1981; Thomas 1981 and 1982; Wright and Chythlook 1985; Stokes 1983; and Sobelman 1985). Since the early 1990s, many division projects have focused directly on TEK documentation. Among many examples are Haynes and Wolfe (1999) on marine mammals; Andersen et al. (2004); Georgette and Shiedt (2005); and Simeone and Kari (2002). The division also produced some of the first searchable text databases of TEK, including “Whiskers!”, a database about marine mammals produced in cooperation with the Alaska Native Harbor Seal Commission, and “From Neqa to Tepa,” a database about fish in the Bristol Bay area.

In addition to community-based studies, the division has also approached the documentation of “all aspects of subsistence hunting and fishing” by focusing on particular topics, either through directed studies or through analysis of information derived from community-focused baseline studies. Some examples of topical research that has informed decision making include Wolfe (1987) on the “super-household;” Magdanz et al. (2007) on customary trade; Fall et al. (1991) on Round Island walrus; and Stratton (1982) on the Copper River dipnet fishery (there are many other examples).

A criticism of the division's research program alleges that studies have ignored subsistence hunting and fishing by residents of urban Alaska. In fact, several early projects focused on subsistence fisheries that had large numbers of participants from Anchorage, Fairbanks, the Matanuska-Susitna Valley, and the Kenai Peninsula (e.g., Braund 1980; Caulfield 1981; and Stratton 1982). A key early project focused on differences between rural and urban hunting and fishing patterns; the final report for that project included both non-rural and rural case examples (Wolfe and Ellanna 1983). Nevertheless, the division's program has devoted most of its attention to the hunting and fishing patterns of Alaska's rural places, primarily because these patterns, including harvest quantities, were poorly documented, unlike urban patterns. Further, focusing on traditional uses in rural places was the most direct way to assist the regulatory boards in identifying customary and traditional uses and evaluating regulations for consistency with state statutes, including providing for reasonable opportunities for customary and traditional uses of fish and wildlife resources (c.f. Wolfe 2004).

Duty (2) Quantify the amount, nutritional value, and extent of dependence on food acquired through subsistence hunting and fishing.

This statutory directive makes it clear that the division is to collect quantitative subsistence harvest data (that is, numbers), as well as other socioeconomic data necessary to address the "extent of dependence" on subsistence harvests, such as data on jobs, cash income, and the cost of living. This directive is the reason why the concept of a "mixed economy" in rural Alaska is a feature of much of the division's work (Lonner 1980; Wolfe et al. 1984; Wolfe and Walker 1987). In short, this directive entails research on more than just harvest quantities, although it does certainly require the collection and analysis of harvest data. Therefore, responding to this directive has required conducting harvest monitoring projects as well as comprehensive surveys (often referred to as "baseline studies").

Early in the division's history, the division's leadership resisted suggestions by others within the department that the division be the subdivision within the department that managed all the subsistence salmon harvest monitoring programs in the state, to the exclusion of all other research. Instead, the early emphasis of the division's work was on ethnographic and other topical studies (see below) in order to inform early policy development by the regulatory boards.

Very little of the early work of the division had a major quantitative component (but see Wolfe 1981 and Behnke 1982 for exceptions).

Nevertheless, the division took on some early challenges in the subsistence fishing harvest monitoring arena. These included:

- The Tyonek subsistence king salmon fishery. This was a very high profile early regulatory issue soon after the passage of the state subsistence statute and the topic of the first lawsuit that tested the provisions of the state law (*Native Village of Tyonek et al. vs. Alaska Board of Fisheries et al.*) (1980). For 2 years (1980 and 1981), division staff worked with staff from the Division of Commercial Fisheries and Tyonek residents hired as seasonal technicians in an in-season monitoring program (Stanek and Foster 1980). Since then, the division has been responsible for issuing permits in the community and compiling the data annually.
- The Port Graham subdistrict subsistence salmon fishery. This was another early high-profile fishery and also the topic of a lawsuit in 1980. Except for a year or two, the division has been responsible for the harvest monitoring of this fishery (Stanek 1982).
- The Bristol Bay area subsistence salmon fishery. Permits for this fishery have been required since the 1960s. When the division's office opened in Dillingham in 1979, outreach to improve compliance with harvest reporting was an early, and successful, focus of the staff.

Gradually, the division took on responsibility for other subsistence salmon fisheries monitoring programs, including in the Kuskokwim management area (due to lack of funding support to the division, this program has been managed by the Division of Commercial Fisheries since 2008), in the Yukon management area (in 1988 and 1989 only), in Northwest Alaska, and in the Chignik management area.

A challenge for addressing this responsibility is coordination with the other ADF&G divisions that also collect subsistence fisheries harvest data. Methods for data collection, data analysis, and reporting of results have not been standardized within ADF&G.

The division has approached this responsibility by organizing and participating in harvest monitoring and assessment workshops and follow-up projects. These have included the following activities and initiatives:

- The department co-sponsored a "Harvest Assessment in the North" workshop in 1995 (ADF&G and ISER 1996). The workshop, which involved state, federal, tribal, and

university researchers, as well as managers from Alaska, Canada, and Greenland, developed recommendations for effective subsistence harvest monitoring projects.

- The division followed up with a project funded by the U.S. Fish and Wildlife Service (USFWS) Fisheries Information Service (FIS), called “Statewide Subsistence Fisheries Harvest Monitoring Strategy” (Fall and Shanks 2000), which developed guiding principles and recommendations for a “unified subsistence fisheries harvest assessment program.”
- Next, the division, also with FIS funding, launched the “Implementation of Statewide Harvest Assessment Strategy” project, which held 11 area workshops to review and develop recommendations for each subsistence fisheries monitoring program in the state.
- The next step was the “Subsistence Fisheries Database Update and Annual Report Preparation” project (Fall and Koster 2007), also FIS-funded.
- However, most of the recommendations that these projects developed have not yet been implemented, in part due to lack of funding. However, in state fiscal year (FY) 2009, the division received an increment of general funds from the legislature to assist in addressing some the needs of the subsistence salmon harvest monitoring programs.

Experience shows that coordination of the division's harvest monitoring projects with the department's wildlife harvesting monitoring programs, run by the Division of Wildlife Conservation, has been more challenging than coordination with subsistence fisheries programs, for several reasons. While fishing regulations have recognized the differences between subsistence, sport, and commercial fisheries since statehood, with the consequent separate accounting of harvests, state hunting regulations have tended to make no such distinctions. Further, most subsistence fisheries have appropriate annual harvest limits (or no limits) while, in contrast, hunting regulations for most big game (other than caribou and bears in some areas) impose individual bag limits that often are in conflict with traditional patterns of specialization and sharing (e.g., Andersen and Alexander 1992). Further, subsistence wildlife harvests in rural areas may also occur outside regulatory seasons. These and other factors create challenges for annual monitoring of subsistence hunting.

Nevertheless, the division has designed and implemented effective big game harvest monitoring programs in several areas of the state. These include Northwest Alaska (Georgette et al. 2005), the North Slope (Pedersen 1990), Interior Alaska (Andersen et al. 2004), Bristol Bay (Holen et

al. 2005), and Cook Inlet (Foster 1982). Further, there has been recent success in including the results of systematic household surveys in some annual management reports prepared by the Division of Wildlife Conservation (e.g., Persons 2004).

Another challenge to fully addressing this subsistence harvest monitoring responsibility is that management of several key resources with subsistence uses rests with federal agencies. These include:

- Marine mammals. These are managed by the USFWS (polar bears, sea otters, walrus) and the National Marine Fisheries Service (NMFS) (seals, sea lions, whales). For most marine mammals, Alaska Native subsistence hunters have organized co-management bodies. The Division of Subsistence has routinely collected subsistence harvest information for marine mammals in its household surveys. For sea lions and harbor seals, the division designed and implemented an annual harvest monitoring program in partnership with Alaska Native organizations (Wolfe and Mishler 1993).
- Pacific halibut. In many communities, subsistence harvests of halibut provide more usable pounds per person than any other fish. Halibut are managed by NMFS. Since new subsistence regulations for halibut fishing in Alaska came into effect in 2003, the division has conducted an annual harvest monitoring project for halibut, funded by NMFS.
- Migratory birds. These are managed by USFWS. Key regulatory issues, international in scope, focus on spring and summer subsistence hunting of migratory birds. Harvest data for migratory birds are collected as part of division baseline surveys (e.g., Wolfe et al. 1990). Since 2004, the division has contracted with USFWS to collect harvest data in selected areas and compile statewide data.

Although these are not state-managed resources, division involvement in harvest monitoring and other research about marine mammals, halibut, and migratory birds is consistent with the division's broad statutory mandate. Further, involvement in these programs facilitates the development of research methods, promotes integration with other harvest monitoring programs, and establishes and maintains relationships with communities, organizations, and subsistence hunters and fishers. While coordination of harvest monitoring programs remains a challenge, it is a key step in support of goals to maintain public support of harvest monitoring by ADF&G by reducing respondent burden and survey burnout.

In addition to harvest monitoring projects that focus on specific resources and attempt to develop a time series of harvest data, the division also approached the directive to quantify subsistence harvests by developing effective household harvest survey methods (e.g., Usher et al. 1985). The earliest household harvest projects funded by the division were by Wolfe (1981) and Behnke (1982). One of the earliest multi-community comprehensive surveys took place in several relatively large Kenai Peninsula communities (Kenai and Homer) to inform Joint Board of Fisheries and Game discussions about defining rural and nonrural areas of the state (Reed 1985; Wolfe and Ellanna 1983). Subsequent survey projects included multiple communities within a region (e.g., Kodiak Island, Iliamna Lake, southeast Alaska, Copper Basin, upper Tanana area) or single community studies (e.g., Tyonek, Cordova, Chenega Bay, among many examples). The results of these early studies appear in the first version of the division's Community Profile database (CPDB). Comprehensive surveys include questions about demography and cash employment and have proved essential in a wide range of issue-oriented applications.

This second statutory duty of the division also directs the division to quantify the "nutritional value" of subsistence hunting and fishing. Although the division has not conducted a dietary survey or a formal nutritional study, a standard data analysis step for all comprehensive survey data has been to convert numbers of animals and fish harvested into "pounds usable weight" as a means to compare these harvests with food purchases and dietary guidelines. The CPDB included columns to show the estimated mean per capita use of each resource in grams per day. Wolfe (1996) reported the percentage of protein and caloric requirements provided by Alaska subsistence harvests by region (see also Wolfe and Utermohle 2000).

Meeting this statutory duty entails maintaining the highest standards related to each phase of scientific research: pre-collection (identification of issues and research questions, research design, outreach), data collection, data analysis, and reporting of study findings. Maintaining these standards requires thorough documentation of methods, effective training of staff, and on-going review of data collection and analysis methods.

Early in its program, the division developed a research handbook as documentation of research methods and as a guide for new staff. This tool has not been updated in recent years, but the research handbook is essential to maintaining quality and continuity in the research program. Updating and expanding the research handbook is a high priority within the division's research plan. Additional review of the division's research program could be obtained through:

- A sitting advisory board made up of public members.
- A “review workshop” involving representatives of various stakeholders.
- A contract for a professional review of the program/results/methods.

In sum, an appropriate goal for the division’s research program is to be the best in the world at monitoring subsistence harvests and researching and reporting subsistence harvest information. These data are the division’s “currency” at regulatory board meetings; our “bread and butter” for understanding trends; and a key to keeping “a seat at the table” in a variety of state, federal, and international regulatory and other decision-making contexts.

Statutory duties pertaining to the application of research findings

Duty (4) Assist the department, the Board of Fisheries, and the Board of Game in determining what uses of fish and game, as well as which users and what methods, should be termed subsistence uses, users, and methods.

Duty (5) Evaluate the impact of state and federal laws and regulations on subsistence hunting and fishing and, when corrective action is indicated, make recommendations to the department.

Duty (6) Make recommendations to the Board of Game and the Board of Fisheries regarding adoption, amendment, and repeal of regulations affecting subsistence hunting and fishing.

These responsibilities make it clear that the division’s program is an applied social science program. Everything the division does is tied to an application that is specified or implied by the statute. The applications under duties 4, 5, and 6 pertain to fish and wildlife management and the development of regulations that have a specific goal – providing opportunities for subsistence hunting and fishing as a priority use of fish and wildlife in Alaska. However, these applications also pertain to policy development (duty 4 especially). The Alaska subsistence statute includes definitions (such as subsistence uses as “customary and traditional uses”) and procedures (such as identifying the “amount reasonably necessary for subsistence use [ANS] and developing Tier

II hunting and fishing regulations when the ANS is above the allowable harvest), but leaves the details to the regulatory boards to work out.

Application of division research findings in the fish and wildlife regulatory and management context includes the following topics:

- What is “subsistence use” of fish and wildlife in Alaska?
- What is “customary and traditional use?”
- Where are the nonsubsistence areas?
- What is the amount reasonably necessary for subsistence use for fisheries stocks and wildlife populations with customary and traditional uses?
- What are appropriate regulations that provide a reasonable opportunity for subsistence uses?

More broadly, the division must review study findings regularly for policy implications. Policy development that is informed by division research occurs at a minimum of 3 levels:

1. The Alaska Board of Game and the Alaska Board of Fisheries.
2. The Joint Board of Fisheries of Game.
3. The Alaska legislature.

Ideally, the division's work also informs policy development by federal resource managers and by stakeholder groups. These policy applications include:

- How is “customary and traditional use” to be defined? This was an early focus of division work with the Board of Fisheries and the Joint Board (see Lonner 1980 and Kelso 1981c). The result was the Joint Board's “eight criteria” for identifying customary and traditional uses. The eight criteria and how they are applied are subject to periodic review by the Joint Board.
- What questions should appear on applications for Tier II permits to measure (operationalize) the two Tier II factors listed in statute?
- How should the “amount reasonably necessary for subsistence” be determined?
- For Joint Board deliberations on nonsubsistence areas, policy decisions must be made on how boundaries for nonsubsistence areas are defined and how the 12 factors are measured.

- For the legislature, division research has informed decisions about past changes to the state statute (such as the appropriateness of using cash income as a limiting factor for eligibility) and may do so again.

Duty 6 specifically charges the division with making recommendations to the regulatory boards regarding regulations that affect subsistence uses. In accordance with ADF&G policy, the division makes no recommendations independent of department recommendations. Further, the department does not make take positions on regulatory proposals that pertain to allocation of resources. Allocation decisions are the sole responsibility of the boards. Most regulations that pertain to identifying subsistence uses and providing subsistence opportunities are viewed by the department as allocative. However, for all such proposals, the division provides available and often substantial information as background, and recommends that the boards consider the information during deliberations. Also, the division, working with other divisions within the department, prepares options for regulatory actions by the boards.

There are many examples where the division has applied study findings in the preparation of department regulatory proposals or the preparation of department comments on regulatory proposals. While even in these cases the department has usually taken a neutral stance, developing the proposals has brought these issues before the board. Some recent examples (there are many more) include: eliminating the Kodiak area subsistence salmon annual permit limit (in 2007); developing federal subsistence halibut regulations (in 2003); allowing subsistence seining in portions of the Bristol Bay area (in 2006); developing customary trade rules in northwest Alaska (in 2006) (Magdanz et al. 2007); and revising regulations governing access to the Walrus Islands State Game Sanctuary (Round Island) for subsistence hunting (in 1995) (Fall and Chythlook 1998).

These applications also tie into the division's role at fish and game advisory committees and federal regional advisory councils. As funding support allows, division staff attend advisory committee and regional council meetings to provide information as background for evaluation of regulatory proposals.

A challenge to the division's implementation of its applied function is the multiple meetings of the Board of Game and Board of Fisheries, each of which follows a multi-annual cycle. At least 2 Board of Game meetings occur each year, as well as 3 or 4 Board of Fisheries meetings. In addition, it is not unusual for special or emergency meetings to be scheduled, or for issues to be

postponed to future meetings. With its relatively small staff, the division must carefully schedule attendance at board meetings to assure adequate support for regulatory proposal deliberations.

Although not directly tied to regulatory and management goals, responding to other issues that involve subsistence uses of fish and wildlife is also an example of the division's applied social science function. The division's role in the state's response to the *Exxon Valdez* oil spill is a prime example. See Fall (1990:81-88) for a discussion of other examples of the application of the division's research findings in a variety of contexts.

Another application of the division's research findings is education. This educational role also links to policy formation, in that informing policy makers, support staff, and the public about contemporary uses of fish and wildlife resources is fundamental to sound decision-making. Thus the audience or "clientele" for the division's work is very broad. A few examples of how the division's work has been applied in an educational context include:

- Confronting "myths" about subsistence hunting and fishing (Wolfe 1989).
- Presentations on the concept of a "mixed economy" before advisory bodies and citizens' groups.
- Publications that describe subsistence uses: the "resource use notebook series" on the subsistence salmon fishery of the Yukon River (ADF&G 1987a, 1987b, 1988) and the occasional "subsistence update" (Wolfe 2000).
- Many presentations in schools, from elementary schools to universities.

Finally, as noted above, the collection of TEK is a component of the division's research program. A challenge that faces the division is applying TEK in the regulatory and management context.

Duty (7) Participate with other divisions in the preparation of statewide and regional management plans so that those plans recognize and incorporate the needs of subsistence users of fish and game.

In part, the division performs this duty, also part of the application of study findings, through its work with the Alaska Board of Fisheries and Board of Game during regulatory meetings (there is an overlap here with duties 5 and 6). The division also assists fisheries and wildlife managers, as necessary, in preparing management plans by providing information about customary and

traditional uses and fish and wildlife harvests. From 2003 through 2007, the division provided information to an annual average of 24 plans (see State of Alaska 2008).

Due to limited funding, the division must be very selective about the planning processes in which it participates. Coastal management plans and policies are an example of an important planning process in which the division is not presently engaged. Also, how to apply TEK in management planning is a difficult, unresolved issue. Another recent example is the challenge of engaging with the several initiatives that are addressing the implications of climate change for Alaska's fish and wildlife resources and uses of these resources.

The duty to participate in the development of management plans overlaps with issues of "co-management," especially as expressed by tribal entities. The dimensions and boundaries of co-management are a political issue on which the division cannot take a position. However, the division's collaborative research policy enables Alaska Native organizations to develop capacity in data collection, reporting, and application that directly supports their involvement in resource management programs, including those structured through co-management agreements. The division's long-established research partnership with the Alaska Native Harbor Seal Commission is an example. Another example is a long list of collaborative projects with Alaska Native regional non-profit organizations, such as the Bristol Bay Native Association, the Chugach Regional Resources Commission, Kawerak, and Maniilaq.

Statutory Duties Pertaining to Data Reporting

Duty (3) Make information gathered available to the public, appropriate agencies, and other organized bodies.

This duty mandates that the division communicate its study findings broadly. Communication of study findings has both an educational goal and an applied goal and therefore overlaps with the data application responsibilities (duties 4, 5, 6, and 7) described above.

The division has addressed this statutory responsibility in diverse ways, including the following:

- Production of the technical paper series, now with over 300 titles, all deposited in libraries and most available on-line.
- The Special Publications Series. This series is under development and will eventually make available numerous board reports and other documents that are presently difficult to locate.

- Published articles in professional journals (e.g., Wolfe and Walker 1987 and articles in the Cultural Survival Quarterly 1998 issue on “The Alaskan Subsistence Debate”).
- Databases, including:
 - The CPDB, developed in the late 1980s, and its successor, the Community Subsistence Information System (CSIS), which is in development as an on-line data source.
 - The Alaska Subsistence Fisheries database (ASFDB), which summarizes permit data for most Alaska subsistence salmon fisheries, is also in development as an on-line source.
 - Several text databases that include TEK: “Whiskers!” (marine mammal TEK, mostly concerning sea lions and harbor seals); “A View from the Beach” (about fish in the Aleutian Islands area); “From Neqa to Tepa” (about fish in the Bristol Bay area).
- Various short communications. Some examples include:
 - The research handbook: a set of modules about various aspects of research about subsistence hunting and fishing, such as mapping, note taking, and survey methods. This is a key training tool for division staff.
 - The wildlife use notebook series was begun in late 1980s to summarize some key division findings in short (4- to 8-page) brochures for the general public (ADF&G 1987a, 1987b, and 1988). Work on the series was discontinued due to changing priorities.
 - A series of informational papers written in the early 1990s about how the state subsistence law was implemented, as background for potential amendments to the state law.
 - “Subsistence in Alaska Overviews” (e.g., Wolfe 2000).
 - TEK handbook, prepared for the *Exxon Valdez* Oil Spill Trustee Council (Miraglia 1998).
- The division's web site, part of the ADF&G web site. Among other things, the webpage includes the technical paper series in PDF format, other articles and presentations, the CSIS,

a list of offices and staff along with contact information, and links to hunting and fishing regulations.

- Various other reports prepared for board meetings and conferences, such as (but not limited to):
 - Customary and traditional use (C&T) work sheets.
 - Alaska Board of Game and Board of Fisheries staff reports.
 - Papers presented at conferences.
 - Posters presented at conferences or to summarize a study's findings.
- Videos, including several done in connection to the *Exxon Valdez* oil spill, the "Alaska Village Trappers" video, and a video about subsistence uses of marine mammals.

The development of the division's web site is the key to a 21st century approach to this statutory duty to report study findings to the public. Other potential ways to make information available on the web site (or independently) that are being explored include:

- A photo archive of subsistence hunting, fishing, gathering, and processing activities.
- Preparation of more topical essays on aspects of subsistence uses in Alaska.
- Further development of TEK databases.
- Microsoft PowerPoint presentations on key topics that can be customized to particular areas.
- An archive of key materials that is well indexed.
- "Ongoing Projects" web site, with posted study designs, periodic updates of progress, contact numbers for researchers, and summaries of study findings.
- "Frequently asked questions" and responses about subsistence hunting and fishing in Alaska.

Another step towards improving communication of study findings is to publicize key technical papers that have policy implications, are major syntheses of data, or that explore a new topic or research methods. News releases could announce key publications or research findings (such as Wolfe and Utermohle 2000 on wild food consumption rates; Wolfe 2004 on local traditions and subsistence; Magdanz et al. 2007 on social networks; and Brown et al. 2005 on whitefish TEK).

Providing information to the public about subsistence hunting and fishing regulations is another aspect of responding to duty 3's directive to make information about subsistence uses available.

This is a challenge for a small division with no staff positions directly assigned as public information specialists.

PART II: STRATEGIC RESEARCH PLAN

MISSION STATEMENT

It is appropriate to begin the overview of the strategic research plan by restating the division's mission statement, which is

To scientifically quantify, evaluate, and report information about customary and traditional uses of Alaska fish and wildlife resources.

GOALS AND STRATEGIES

Part 1: Collecting, quantifying, and analyzing information about customary and traditional subsistence uses of Alaska's fish and wildlife resources (statutory duties 1 and 2).

- ▶ **Goal 1: Continue to collect community baseline information about patterns of hunting, fishing, and gathering to achieve 1) comprehensive coverage with at least one study year's information for all Alaska communities outside of nonsubsistence areas, and 2) periodic updates.**

BACKGROUND

Continuing to collect and disseminate comprehensive baseline information about Alaska communities' subsistence harvest practices was recommended as the division's top research priority by division staff during development of this plan. The information, which is entered into the CSIS, has application to management (e.g., customary and traditional finding analyses, other board data needs), builds important relationships with communities and the user public, and provides the most comprehensive picture of subsistence uses and practices in Alaska. Community baseline projects build staff and local capacity and often lead to other important projects, including ethnographic studies, change analyses, and other special research projects.

STRATEGIES

Strategy 1A. Seek dedicated State of Alaska general funds to support community baseline research through an increment for state FY 2010.

Strategy 1B. Continue to seek special projects funding to support community baseline research.

Strategy 1C. Design (with regional staff input) and test a program of conducting comprehensive baseline research in a set of index communities to monitor subsistence harvest and use patterns and associated demographic and other economic variables within a region or subregion.

BACKGROUND

Repeating surveys in index communities may establish a more reliable and complete database over time for that set of communities and for the satellite communities they represent, through a more feasible approach than attempting to fill all CSIS data gaps. However, there are serious considerations, including whether modeled information would accurately depict subsistence uses in satellite communities, the reaction of these satellite communities to being represented by index communities, and whether the approach would leave the division “short” of community-specific information to respond to board requests. Moving toward use of index communities need not be exclusive of other approaches. It would be important to be cognizant of community burnout (too many surveys in too few years), and to have contingencies in case an index community decides to “opt out” of that status in the future.

STRATEGIES

Strategy 1D. Prepare regional research strategies that incorporate the objectives of baseline community studies, other community research, annual harvest monitoring, and special topics research. Update the strategy annually to reflect funding availability and funding initiatives.

Strategy 1E. Develop a protocol (and include in the Subsistence research handbook – see Goal 4, below) for a spatial/mapping component for all comprehensive baseline surveys.

Strategy 1F. Develop an ethnographic component for all community baseline research projects; include as module within the Subsistence research handbook – see Goal 4, below.

BACKGROUND

During development of this plan, division staff emphasized that all community baseline survey projects should routinely include an ethnographic component. The Subsistence research handbook should provide protocols for incorporating an ethnographic

component into the baseline research. Ethnography is the “thread” that provides the context for interpretation of quantitative data. Key ethnographic elements that might be appropriate to collect and report include: observations of subsistence activities (“note everything that you see and hear”), key respondent interviews, contextual information about what is going on in the natural and human environment at the time the baseline survey is done (e.g., shifts in harvest effort, price of fuel, water temperature, unusual abundance of harvest species, etc.), and information relevant to the customary and traditional activity criteria (e.g., method of harvest). It is most desirable to conduct a follow-up visit to the study community to pursue issues revealed in preliminary analysis of quantitative data.

► **Goal 2: Collect and maintain annual time series harvest data for key resources used for subsistence purposes.**

BACKGROUND

Division staff identified harvest monitoring of selected species to develop a time series as the second priority category of research. Species for which the division has monitored harvests include halibut, migratory birds, marine mammals, salmon, and big game. Harvest monitoring can sometimes be embedded in community baseline work. Harvest monitoring fosters relationships with subsistence harvesters, supports sustainable subsistence uses, and contributes additional species-specific data to the division's databases. Priorities for harvest monitoring need to be determined at the regional level, and evaluated based on criteria established in the research plan.

STRATEGIES

Strategy 2A. Conduct meetings with staff in each region to identify annual harvest monitoring priorities, applying the criteria listed in Table 2. Include priorities in regional research strategy (see Strategy 1D).

Strategy 2B. Continue to produce the annual subsistence salmon fisheries report and update the ASFDB.

Strategy 2C. Contingent on continuation of adequate funding, continue to participate in annual harvest monitoring programs for subsistence halibut, marine mammals, and migratory birds.

Strategy 2D. Organize one or more workshops with the ADF&G management divisions to review harvest monitoring programs and procedures and to explore ways to standardize and improve data collection, analysis, and reporting.

Table 2.–Division criteria for evaluating potential research projects.

First Tier (Fundamental criteria that relate to a project’s viability and importance)

- Probability of success
- Results likely to be supportive of community subsistence uses
- Special interest / need
- Community interest high
- Sufficient funding available
- Mission-related / statutory duty
- Fills information gaps

Second Tier

- Addresses need(s) of other division(s)
- Treaty obligation
- Management issue
- Regulatory issue / obligation
- Builds and maintains relationships
- Capacity (internal or other) available
- Builds capacity
- Addresses customary and traditional use criteria
- Partnership potential
- Addresses multiple needs

Third Tier

- Advances methodology or technology
- Advances ability to use metrics to measure progress
- Staff interest
- Local assistance available

► **Goal 3: Identify and implement research projects addressing key special topics related to subsistence uses of fish and wildlife in addition to baseline and harvest monitoring.**

BACKGROUND

The division undertakes a wide variety of specific research projects, responding to particular information needs, partnership opportunities, and specific requests for division assistance (generally with project funding). The priorities for these types of projects need to be determined at the regional level, and be evaluated based on criteria established in the Research Plan (Table 2).

STRATEGIES

Strategy 3A. Conduct meetings with staff in each region to identify specific research project priorities, applying the criteria listed in Table 2. Include priorities in regional research strategy (see Strategy 1D).

Strategy 3B. Participate in regional or area meetings of the divisions of Wildlife Conservation, Commercial Fisheries, and Sport Fish to learn about developing issues and data needs.

Strategy 3C. Through a work group, design projects to identify and develop “best practices” for TEK research; design and seek funding of projects to test hypothesis incorporating TEK.

- ▶ **Goal 4: Achieve the highest standards of research methods through application of best research practices for all aspects of research of subsistence uses of fish and wildlife.**

STRATEGIES

Strategy 4A. Prepare a Subsistence research handbook, updated from the former research handbook. The handbook is to be organized by “modules” that can be updated, available in a loose-leaf binder and on-line (for staff access.) The handbook will provide standards and procedures that cover the range of projects conducted by the division, offering consistency and guidance, and necessary flexibility. Table 3 lists the contents of the handbook.

Strategy 4B. Form work groups consisting of staff from each division section to address components of the handbook. See Table 4 for a list of work groups.

Strategy 4C. Implement a training program on components of the Subsistence research Handbook. Commit to training of new staff, as well as ongoing training (e.g., rotate topics through the years). Primary topics include record types, coding, survey methods, sample design and selection, data analysis, and the CSIS.

Strategy 4D. Develop procedures for formal intra-division review of all research proposals, research designs, and data-gathering instruments.

Table 3.–Components of the Subsistence research handbook.

Methods Section (all components identify “best practices”)

- Components of a research design
- Procedures for review and approval of research design (need to establish this procedure). Format varies by funding source
- Community review procedures and policies
- Informed consent procedures
- Survey instruments
- Record types
- Survey coding
- Sample selection methods (types of samples)
- Harvest survey methods: training manual
- Data analysis quality assurance and quality control systems and procedures
- Data analysis methods
- Note taking
- TEK: methods for collection, reporting (“best practices”)
- Mapping methods and GIS
- Key respondent interviewing
- Food security
- Guidelines for partnerships
- Archiving procedures
- Text databases
- Written reports, publications (guidelines)
- Publications and presentation review and approval process

Applications Section

- Background on the state subsistence law
 - Background on the division: mission, etc.
 - Background on the boards process
 - Background on dual management
 - C&T findings: preparing a C&G work sheet
 - ANS procedures (this should probably be a technical paper)
 - Tier II questions and issues
 - Nonsubsistence areas: organizing information for the 12 factors
-

Table 4.–Work groups/committees proposed during division staff workshops.

1. Record types, data gathering instruments, data management procedures.

A work group met for one day and identified many issues that require follow up. This group will likely need to meet several times to monitor progress on several actions. This group likely overlaps with (11) Subsistence research handbook work group.

2. Geographic Information Systems (GIS).

This committee was recommended during the 2007 researcher's workshops. Jim Simon was appointed chair.

3. Sustainable livelihoods (food security).

This committee was recommended during the 2007 researcher's workshops. Jim Magdanz was appointed chair.

4. Staff development.

This committee was recommended during the 2007 researcher's workshops. Bridget Easley was appointed chair but no other committee members were appointed. Bridget also serves on the department staff development committee, and perhaps the division's committee should convene after the initial meeting of the department committee.

5. Administration.

This committee was recommended during the 2007 researcher's workshops. Ana Lewis was appointed. She conducted one meeting with administrative staff in late March 2008. A summary of this meeting is needed, including recommendations.

6. Social impact assessment.

Forming this committee was suggested during one of the workshop sessions.

7. Web site.

A committee to review the web site and develop recommendations was formed several years ago but has been inactive for about a year. The committee should be reactivated with a set of goals and a schedule.

8. CSIS and ASFDB review and design.

A committee was formed several years ago and met several times but has been inactive for a year or more. The committee needs to be reactivated with a set of goals and a schedule. This should be coordinated with the web site committee. This committee needs to meet regularly because it addresses work to be accomplished under a new budget increment.

9. TEK (develop best practices).

Identifying best practices in documenting and reporting TEK was suggested by the TEK workgroup. A committee charged with preparing a module for the Subsistence research handbook should be formed. Recommended members: Caroline Brown, Bill Simeone.

10. Archiving and records retention.

This committee organized itself in April 2008. It consists of Bridget Easley (chair), Dave Koster, Davin Holen, Lisa Olson, and Lisa Hutchinson-Scarborough. This should be a "standing committee" within the division. At least one representative from the northern region needs to be added to this committee. A "charge" for this committee should be developed by the division management team, along with a schedule of actions. One product needs to be a module on archiving and records retention for the Subsistence research handbook

11. Subsistence research handbook (research notebook revision) (including record types).

A work group needs to be appointed, with Jim Fall as chair, to oversee production of the components of this handbook. Although this need not be a "standing committee" it will need to meet more than once.

12. Hunting effort.

This group would be charged with reviewing methods used to measure hunting effort and develop recommendations about how hunting effort can be addressed in division systematic surveys. Modules for the standard survey instrument and for the Subsistence research handbook could be products.

- ▶ **Goal 5: Facilitate research partnerships between the division, federal agencies, Alaska Native tribes, and non-governmental organizations, and foster capacity building within these partnerships.**

STRATEGIES

Strategy 5A. Seek opportunities for cooperative agreements with federal agencies to support ongoing resource harvest monitoring and baseline community research.

Strategy 5B. Continue to include tribes and non-governmental organizations as partners in research.

Part 2. Reporting information about customary and traditional subsistence uses of Alaska's fish and wildlife resources (statutory duty 3)

- ▶ **Goal 6. Review, redesign, and enhance the division's web site so that it is the "first stop" for information about subsistence uses of fish and wildlife in Alaska.**

STRATEGY

Strategy 6A. Activate a web site work group to make web site improvements. (See Table 5 for a list of ideas generated during staff workshops for enhancements.)

Table 5.—Staff suggestions for components/improvements to the division website.

Better visibility, more direct link, right on department home page.

Need interactive maps.

More updates of "Highlights" section.

Nonsubsistence area maps.

Subsistence use area maps.

Update "frequently asked questions" section, should not just be "myths" article.

Reorganize staff listing section and keep it up to date.

Add photos.

Add biographies.

Background on active projects.

Project overview (location, goals and objectives, methods, schedule, personnel).

Include updates.

When project ends, post final report under "Highlights" section, for limited time.

Picture essays.

These can provide overview of particular subsistence uses (certain fisheries, for example).

Can also be topical (sharing network analysis, customary trade, mixed economy).

PowerPoint on "subsistence in Alaska" (not regulations and statutes, but what people actually do and its importance to communities).

Articles and presentations.

Should distinguish between kinds of articles (published, leaflets, etc.).

Special topics, such as

Nonsubsistence areas

Eight criteria

What is the difference between subsistence and personal use?

CSIS.

ASFDB.

Regulations.

Guidance on where to get subsistence and personal use permits.

Links.

Subsistence halibut.

Office of Subsistence Management.

Community Database Online at Department of Commerce, Community, and Economic Development
Division of Community and Regional Affairs.

Boards Support section regarding upcoming meetings.

Better explanation of Missions and Measures.

► **Goal 7. Improve access to the technical paper series as the principal source of information about subsistence uses of fish and wildlife in Alaska.**

STRATEGIES

Strategy 7A. Complete development of on-line search capability within the technical paper series.

Strategy 7B. Prepare short synopses of technical papers, in the form of news releases, posters, or short printed summaries, for rapid circulation of study findings and as an introduction to the longer reports.

► **Goal 8: Improve the public's understanding of the division's mission and role.**

STRATEGY

Strategy 8A. Include sections on the division's web site that explain the division's mission, describe active projects, and introduce division staff.

► **Goal 9: Improve the public's access to division research findings.**

STRATEGIES

Strategy 9A. Prepare short essays and Microsoft PowerPoint presentations on division findings and post them on the web site.

Strategy 9B. Update the "Subsistence in Alaska: A Summary" brochure, last done in 2000, including conducting an analysis of statewide harvest data to update estimates last done in the 1990s.

Strategy 9C. Develop an archive and index of all division special reports and publications, including, but not limited to, Board of Fisheries and Board of Game reports and deliberation materials.

► **Goal 10. Enhance and update the division's two primary databases: the CSIS and the ASFDB.**

STRATEGY

Strategy 10A. Complete review of the databases and implement recommended changes.

► **Goal 11. Improve public access to fishing and hunting regulations and information about obtaining permits.**

STRATEGY

Strategy 11A. Prepare a section of the division web site that includes guidance on how and where to obtain subsistence permits and includes links to hunting and fishing regulations.

► **Goal 12. Improve the public's understanding the state's regulatory system as it pertains to subsistence hunting and fishing.**

STRATEGY

Strategy 12A. Prepare a set of “frequently asked questions” and responses that address key information needs for the public about subsistence hunting and fishing within the state resource management and regulatory program.

Part 3. Applying information about customary and traditional subsistence uses of Alaska's fish and wildlife resources (statutory duties 4, 5, 6, and 7).

- ▶ **Goal 13. Participate in annual meetings of the Alaska Board of Fisheries and the Alaska Board of Game, and, as they are scheduled, meetings of the Joint Board, to provide background information based on the findings of division research.**

STRATEGIES

Strategy 13A. Review all annual proposals to the Alaska Board of Fisheries and Alaska Board of Game to evaluate their potential effects on subsistence fishing and hunting opportunities.

Strategy 13B. Assist with the preparation of department comments on proposals that address or may affect subsistence fishing and hunting opportunities.

Strategy 13C. Prepare customary and traditional use work sheets, ANS options, and other background reports as needed.

- ▶ **Goal 14. Apply study findings to elucidate patterns and trends in subsistence uses of fish and wildlife resources that may have implications for the development of policies and procedures in the state resource management system.**

STRATEGIES

Strategy 14A. Write papers on selected topics that distill division research findings to address policy and procedural issues.

Strategy 14B. Prepare a report on “best practices” for developing ANS by the Board of Fisheries and Board of Game.

- ▶ **Goal 15. Develop and maintain a capacity for “rapid response” as unanticipated issues and data needs arise.**

STRATEGIES

Strategy 15A. Develop area expertise within the present staff structure so that the division remains current regarding available information and has established lines of communication with local and regional organizations and communities, local and regional staff in ADF&G, and other state and federal agencies.

Strategy 15B. Develop topical expertise within the present staff structure so that the division remains current regarding methods, process, and technology.

Strategy 15C. Assure that results of division research are readily available in databases, reports, and archives so that can be consulted and applied as needs arise.

PART III: ISSUES AND ACTIONS IDENTIFIED DURING STAFF WORKSHOPS

This section consists of a list of issues organized by topic along with corresponding background information and recommended actions. These were identified during a series of staff workshops. Table 6 reports how each of these issues and actions is addressed in the previous section describing goals and strategies. Most of the actions are connected to one or more of the following components (goals and strategies) of this plan.

1. Prepare a Subsistence research handbook, which will be an update of the former research handbook. This is to be organized by “modules” that can be updated and will be available in paper format in a loose leaf binder and on line (for staff access). See Table 3 for a preliminary list of modules within the handbook.
2. Establish several work groups to address high priority issues and topics. Table 4 is a list of proposed work groups.
3. Conduct a review and redesign of the division’s web site to make it the “first stop” for information about subsistence uses of fish and wildlife in Alaska.
4. Develop area specialists and topical specialists within current staffing structure
5. Review databases and have them fully on-line and regularly updated.
6. Implement a training program, primarily in-house on record types, coding, survey methods, sample design and selection, data analysis, CSIS, etc., guided by the Subsistence research handbook.
7. Prepare regional research plans that identify current and potential issues, available information, data needs, and a time line for research.

Table 6. Disposition of issues and actions by goal and strategy.

Issues	Strategies	Issues	Strategies	Issues	Strategies	Issues	Strategies
A1		B8		C7		G5	GOAL 8, GOAL 9
1		1	4C	1	2A	1	
2	3B	2	4A, 4C	2	2A	2	
3		3	4A	3	2A	G6	
4	1D	B9		4	2A	1	3C
A2		1	4A	5	2A	G7	
1		2		C8		1	3B
2		3		1	4A	2	5A, 5B
A3		4	4A	2	4A	3	4A
1	1A	B10		D1		G8	
2	1B	1		1	1F, 3A	1	15C
3		2	3B	2	1D	2	
A4		3		3	1B	3	4A
1	15A, 15B	4	5A, 5B	E1		4	
2	15C	5		1	1E	G9	
A5		6		2		1	15C
1	4D	7		3		2	9C
2	4A	B11		4	15B	H1	
3	4D	1	4A	5	4C	1	
4	8A	2	4A	E2		H2	
B1		B12	10A	1	4A	1	13A, 13B, 13C
1	1A, 1C	C1		F1		2	13A, 13B, 13C
2	1C	1	2B	1	3C	3	13A, 13B, 13C
3	1A	2		2	3C	H3	
4	1A, 1C	3	2B	3	3C	1	4A, 4C, 15C
5	1D	4		F2		2	4A, 4C, 15C
B2		5		1	3C	3	4A, 4C, 15C
1	4B	6		2	3C	4	4A, 4C, 15C
2	4A	7		F3		H4	
3	4C	8		1	3C	1	
B3		C2		2	3C	2	
1	4A	1	2D	G1		H5	
2	4A	2		1	GOALS 6,7,8, 9	1	
3	4A	C3		2	GOALS 6,7,8, 9	2	
4	4C	1	2B	3	GOALS 6,7,8, 9	3	
B4		2	2B	4	GOALS 6,7,8, 9		
1	4A	C4		5	GOALS 6,7,8, 9		
2	4A	1	2C	6	GOALS 6,7,8, 9		
3	4A	2	2C	7	GOALS 6,7,8, 9		
4	4C	C5		G2			

5 4C		1 10A		1	
B5		2 10A		G3	
1 4B		3 10A		1	
2 4B	C6			2	
B6 4A		1 2C	G4	10A	
B7		2 2C		1	
1 4B		3 2C		2	
2 4B		4 2C			
3 4B		5 2C			
		6 2C			

Part A. Issues regarding general program planning (this topic pertains to the pre-collection phase of research).

- **A.1. The division has a broad mission and diverse audience. The division has no systematic procedure to forecast research needs.**

BACKGROUND

Because of limited funding and staffing, the division needs to establish priorities and be strategic in order to address competing issues and data needs. It is essential to identify and track issues for effective planning and sustainability.

ACTIONS

1. Complete this statewide research plan and update it annually.
2. Participate in regional meetings of the divisions of Wildlife Conservation, Commercial Fisheries, and Sport Fish to learn concerns (time availability is an issue).
3. Encourage feedback on division products through the web site; that is, suggest comments by phone, e-mail, or letters.
4. Regularly identify and assess key issues regionally, and prepare research plans at the regional or area level.

- **A.2. Ongoing review of the program is necessary: we must be able to measure success of projects and programs.**

BACKGROUND

It is not clear how the division measures the success of our research program and contributions to the public process. A key question is "What is success related to? Relationships with communities? Relationships with colleagues? Analytical rigor?" Another question, or another way to phrase this question, is "What does success look like?"

ACTIONS

1. Identify and focus on specific assessment topics to improve our evaluation and to detect changes in performance.

2. Develop metrics for measuring success: relationships with communities and colleagues, number of teleconferences / meetings / reports, outreach examples, citations, number of proposals reviewed, customary and traditional use findings made or revised. (Some progress has been made along these lines with the “missions and measures” prepared for the state Office of Management and Budget, and linked on the division web site under “Missions and measures”).

► **A.3. The division's core services of collecting, analyzing, and reporting scientific information to managers and those making allocation decisions are no longer supported by state general fund funding.**

BACKGROUND

Progress in implementing a sustainable research program that addresses core division functions is hampered by lack of secure funding. Even long-term harvest monitoring project funding is threatened or has been eliminated (e.g., Northwest Alaska salmon, Kuskokwim salmon). At present, virtually all research and data collection is done with funding from other state and federal entities. Further, there is no discretionary funding to address immediate management or allocation issues, resulting in repeated reprogramming of general funds and ensuing delays in providing basic information.

ACTIONS

1. Prepare increment requests for state general funds for state FY 2010, and beyond, that address core division functions (data collection, analysis, and reporting).
2. Identify other entities for funding opportunities.
3. Track requests for proposals and meet submittal deadlines.

► **A.4. The division also needs a capacity for “rapid response” as unanticipated issues arise.**

BACKGROUND

Although many data needs can be anticipated, issues also develop quickly. Prime examples are petitions to the Board of Fisheries or Board of Game for emergency regulatory actions. Depending upon the time available, responses might range from compiling existing information to quickly implementing a data collection project.

ACTIONS

1. Develop area expertise with the present staffing structure, so that the division remains current regarding available information and has established lines of communication with local and regional communities and organizations; local and regional staff in ADF&G; and other state and federal agencies.
2. Assure that results of division research are readily available in databases, reports, and archives.

► **A.5. All division research needs to be guided by a research design that has received thorough review.**

BACKGROUND

There is presently no set of guidelines for the content and organization of research designs for division projects. Designs tend to follow the requirements of the funding agency, but these do not address internal division procedures.

ACTIONS

1. Require written research designs for all projects (these can be in the form of operational plans for annual harvest monitoring programs – see below).
2. Include guidelines for research design content in Subsistence research handbook.
3. Develop guidelines for review of research designs.
4. Post research designs on the web site (or summaries of project designs).

Part B. Issues regarding comprehensive household harvest surveys (some of these issues overlap with harvest monitoring issues, Part C, below).

► **B.1. Insufficient fiscal resources are available to conduct comprehensive baseline community studies; consequently, baseline studies are missing for many communities and many existing baselines have not been updated.**

BACKGROUND

Baseline studies that provide a comprehensive overview of subsistence uses within the socioeconomic and sociocultural systems of local communities are a fundamental part of the core function of the division. Furthermore, the quality of data must be maintained and projects should not be undertaken with insufficient funds that result in compromised

methods. Comprehensive geographic coverage is needed and more time series data must be collected.

ACTIONS

1. Develop criteria for establishing priorities for baseline studies.
2. Consider a rotational plan for community baseline studies.
3. Seek funding sources that will support baseline studies.
4. Prepare a schedule for baseline studies with short and long-term goals.
5. Include a strategy for accomplishing baseline studies in area or regional research plans.

► **B.2. Record types used to organize survey data date to the early 1980s but documentation is inadequate.**

BACKGROUND

The primary survey instrument used by the division is sound, as it is based on many years of development and application. We need to build upon the successes of this aspect of the division's work. Recent turnover of division staff resulted in missing documentation of how methods were developed, however.

ACTIONS

1. Appoint a new work group to follow up on recommendations of the first work group on "data instruments and data management procedures."
2. Produce a "master book" of record types and codes, as part of the Subsistence research handbook.
3. Conduct training sessions on the use of record types and codes as part of a division training plan.

► **B.3. Coding of some household survey responses has been inconsistent and documentation of coding decisions is lacking.**

BACKGROUND

We need to review coding procedures and formalize/standardize where necessary. This will minimize problems with documentation of methods, which resulted from a high staff turnover rate in recent years.

ACTIONS

1. Review coding structure and adjust as necessary (assign to work group under B.2, above).
2. Revise coding manual as appropriate.
3. Include coding manual as a module in Subsistence research handbook.
4. Conduct staff training in basic coding; revise procedures as necessary.

► **B.4. Survey forms require review by supervisory and information management staff before being applied, but this review has not always occurred or has been truncated due to a short time frame or inadequate planning.**

BACKGROUND

Survey forms sometimes lack core questions for the CSIS, or lack screening questions. Surveys are expensive to implement and all need to collect core information.

ACTIONS

1. Develop standards for survey forms in which a comprehensive survey is composed of modules covering core and subsidiary topics (Assign to work group under B.2, above).
2. Develop a prototype survey form and obtain staff review; revise based on this review.
3. Update existing training manuals to produce a “core” manual as part of Subsistence research handbook.
4. Conduct training sessions in Anchorage and Fairbanks about the administration of the comprehensive survey; make revisions based on feedback at training sessions.
5. Establish procedure for training new staff in comprehensive survey administration.

► **B.5. Hunting effort information is not collected in most baseline surveys despite its importance at Board of Game meetings and other applications.**

BACKGROUND

Missing from the standard division survey are questions about the number of days spent hunting. Such information is regularly collected on harvest tickets and permits and is a potential tool for assessing regulations. Timing of hunting and fishing activities is another topic that may deserve more systematic investigation through harvest surveys.

ACTION

1. Define a work group to evaluate adequate methods that would assess hunting effort.
2. Consider other topics that might require more systematic investigation in harvest surveys, such as timing of harvests.

► **B.6. Text information collected on survey forms is often not coded for analysis or otherwise extracted for reference and application.**

BACKGROUND

Many systematic surveys include open-ended questions. These are coded for analysis but written procedures for this coding have not been updated. Furthermore, notes written as marginalia on survey forms include important information but these notes are not always extracted from the forms nor are they organized in a manner to facilitate analysis.

ACTIONS

[These will be attached as an appendix, "Data Instruments Report."]

► **B.7. Questions about "food security" are administered nationally and internationally, but have been included in only a few division surveys. A full review of these standard questions and the responses in Alaska has not taken place.**

BACKGROUND

Several household surveys in Northwest Alaska have administered "food security" questions that were developed for national and international surveys. The division has not systematically reviewed the responses to these questions to assess their performance. Consideration needs to be given to adding these questions to more division surveys to provide data for national and international databases.

ACTIONS

1. Implement a "food security" work group.
2. Establish standards based on procedures adopted by national and international agencies and include food security as a module in comprehensive surveys, either as part of standard set of questions or as an optional supplement.
3. Include a section on food security in the training module of the Subsistence research handbook.

► **B.8. The division lacks formal training procedures for new staff and for staff embarking on new projects.**

BACKGROUND

There is a need for training of division staff in survey administration, data coding, and analysis of survey data. The research handbook, begun in the early 1980s, has not been updated in at least a decade and has not been made available to staff.

ACTIONS

1. Hold one or two training sessions that cover record types, coding, survey methods, sampling methods, and the CSIS.
2. Prepare an accessible training manual for systematic surveys; include it as a module in the Subsistence research handbook.
3. Prepare an accessible coding manual; include a section on record types; include it as a module in the Subsistence research handbook.

► **B.9. A review of methods used to analyze data from household surveys is needed.**

BACKGROUND

Some of the data analysis methods (confidence intervals, estimation methods) need review, perhaps by peers outside the division.

ACTIONS

1. Prepare a draft overview of data analysis methods.
2. Seek peer review of this document.
3. Hold a workshop to discuss peer reviewer comments
4. Make appropriate changes and include final product as a module in the Subsistence research handbook.

► **B.10. The performance of partners in research projects, including household surveys and harvest monitoring, has been uneven.**

BACKGROUND

Despite challenges, the importance of partnerships with other divisions, agencies, non-profit organizations, and tribal entities is clear; collaboration across disciplines is necessary also. Our division is distinguished by a history of strong local and regional collaborative relationships which has ensured that reliable information is collected,

analyzed, and provided to the public. We need to work more with universities and further develop intern programs – these provide a very productive and effective way to carry out research. Joint management/subsistence division projects can increase analytical breadth and power of the resulting information, beyond that obtained from separate investigations. Joint projects can improve the quality and relevance of subsequent management actions, thus improving division credibility with other divisions and opening doors for biologists for local community interactions. Collaboration makes it possible to revisit baseline information and obtain valuable time-depth for C&T work sheets. In short, collaborative work is essential for success; it builds bridges, adds perspective, and sharpens issue identification.

ACTIONS

1. Engage in and stay current on management planning initiatives (internal and external benefits).
2. Plan regular meetings with counterparts (internal/external), colleagues, partner organizations and prospective partners; for example, try to attend appropriate portions of other divisional staff meetings.
3. Build rapport with other Information Management groups.
4. Continue to develop partnerships with other organizations, Native/tribal groups, and universities.
5. Further develop intern programs; consider formal arrangements with universities.
6. Provide administrative training in cooperative agreement administration.
7. Direct the administrative procedures work group to develop guides for staff who are drafting and implementing cooperative agreements and other contracts.

► B.11. Training of community surveyors (research assistants) has been uneven.

BACKGROUND

Hiring and training local research assistants is a standard procedure during division baseline surveys. In some projects, local assistants have been tasked with completing a large percentage of surveys, with mixed results. Another approach is to embed the local assistants' work in a team approach, in which training, survey administration, and survey review take place in the study community. This approach has resulted in more efficient survey administration and better training of assistants.

ACTIONS

1. Consider using the research team approach as the division standard. Include this approach in research designs with appropriate staffing levels.
2. Update the training manual as a module; specific training manuals are prepared for each survey project.

- **B.12. Incorporation of survey data into the CSIS is a final step in the community baseline survey process. Issues in the CSIS also pertain to communication and education (section G, below). The CSIS and the Alaska Subsistence Salmon Database require review, development, and online access; staff and the public are unfamiliar with these key data sources.**

See Issue G.4. for background and action items.

Part C. Issues regarding harvest monitoring.

General note: Lack of secure funding jeopardizes many of these programs.

- **C.1. There is no department-wide coordination of subsistence fishery harvest monitoring and assessment.**

BACKGROUND

A key question for harvest monitoring is “What data are needed for management?” Another is “What data are needed to assist the board in developing regulations that provide a reasonable opportunity for subsistence uses?” A related question concerns the composition of sustainable harvest monitoring programs for various resources; that is, the frequency of data collection, geographic coverage, sampling methods, and type of data collected (harvest numbers, timing data, harvests by gear, harvest location information). Both “monitoring” and “assessment” of subsistence harvests are needed for management and implementation of the requirements of the subsistence statute. The roles of the various divisions in subsistence harvest monitoring need to be clarified. For some long-term projects, documentation of methods and program changes needs to be improved.

ACTIONS

[These are based on the “recommendations” in the final report for FIS Project 01-107, “Implementation of Statewide Subsistence Fisheries Harvest Assessment Strategy,” pages 29–31.]

1. Maintain and update the ASFDB; make it accessible on-line.

2. Include contextual information about subsistence fisheries at web site that also houses the ASFDB.
3. Produce an annual report on Alaska subsistence fisheries.
4. Prepare operational plans for all subsistence salmon harvest monitoring projects.
5. Hold additional workshops in selected management areas for further review and enhancement of subsistence fisheries harvest monitoring programs.
6. Seek funding for TEK studies that result in information that can be applied within state and federal fisheries management programs. Consider organizing a work group to develop recommendations about how to apply TEK findings in fisheries management.
7. Consider establishing a standing committee of mid-level resource managers and data management personnel within ADF&G to continue the critical review of subsistence fisheries monitoring programs.
8. Consider a workshop of senior ADF&G staff as a step towards addressing issues of coordination of subsistence fisheries harvest assessment programs within the department and to signal a commitment to a unified program.

► **C.2. There is a lack of documentation of harvest assessment programs' procedures and lack of review of performance.**

BACKGROUND

During a review of subsistence fisheries harvest monitoring programs in Alaska (Fall and Shanks 2000), a statewide work group learned that few of these programs were guided by a written operational plan. The work group recommended that such plans be developed for every program. Further, no procedures were in place to obtain review and comment on the results of these programs.

ACTIONS

1. Develop an operational plan for every harvest monitoring project. These operational plans should identify issues for each program as well as procedures. For content, see the recommendations in Fall and Shanks (2000:B-9).
2. Develop procedures for obtaining review and comments on annual subsistence fisheries harvest data through advisory committees and other entities.

► **C.3. No annual report of statewide subsistence fisheries harvests is prepared.**

BACKGROUND

The division prepared annual reports for 1999–2005, using funding from the USFWS Office of Subsistence Management (OSM). This funding is no longer available. Preparation of the annual report is linked to the annual update of the ASFDB.

ACTIONS

1. Secure funding for annual updating of the ASFDB and annual report preparation.
Note: an increment to the division's state FY09 budget supports this recommended action.
2. Prepare a plan for preparing an annual report of subsistence salmon harvests as a technical paper; include staffing plan linked to funding.

► **C.4. Clarify the division's role in non-state-managed subsistence fishery harvest monitoring.**

BACKGROUND

The division has produced annual estimates of subsistence halibut harvests in Alaska through funding from NMFS. This funding had to be renewed annually. The future of this harvest monitoring project is uncertain. The question of what is a sustainable program for monitoring subsistence halibut harvests needs to be addressed. Because the halibut fishery occurs in communities in which the division has long-standing research issues and because this project provides opportunities for partnerships and coordination with other harvest monitoring efforts, the division should continue to be involved in monitoring harvests.

ACTIONS

1. Prepare options for a sustainable subsistence halibut harvest monitoring program, including an option to reduce costs through rotating data collection among communities and regulatory areas.
2. Explore ways to integrate collection of halibut harvest data with other harvest monitoring programs.

► **C.5 The subsistence salmon fisheries harvest data are not easily accessible in current formats and with existing software. The ASFDB is not available on line.**

BACKGROUND

The ASFDB was maintained as a Microsoft Access database until 2002 when it became too large for this program. Funding to develop and update the database was provided by OSM.

ACTIONS

1. Seek funding for an integrated CSIS/ASFDB web-based interface This state FY09 increment request was funded by the legislature and approved by the governor.
2. Integrate the ASFDB into the Division of Commercial Fisheries Region III data system.
3. Develop a basic web access point for the ASFDB, pending integration into the CSIS or the Division of Commercial Fisheries Region III system.

► **C.6. Clarify the role of the division in non-state-managed wildlife harvest monitoring, including marine mammals and migratory birds.**

BACKGROUND

The division has been involved in a program to estimate subsistence takes of harbor seals and sea lions in Alaska since 1992. Our involvement in the project is currently supported by a contract with the Alaska Native Harbor Seal Commission (ANHSC). Recently, the Division of Wildlife Conservation received federal funding to develop a harvest monitoring system for ice seals. The Division of Subsistence has no formal role in this project. Since approximately 1994, the division has been a partner in the statewide migratory bird harvest monitoring program. This program has had mixed results due in part to inadequate funding and lack of documentation of methods. For both programs, it is advantageous for the division to be involved because these are key subsistence resources, and because through these projects we interact with rural communities and subsistence hunters. Because these are federally-managed resources, all division involvement in these projects needs to be supported with federal funding.

ACTIONS

1. Conduct a technical review of the migratory bird harvest monitoring program (this was completed on May 6, 2008).
2. Based on comments on this review and further discussions with the Migratory Bird Harvest Survey committee, develop a revised operational plan for migratory bird harvest monitoring.

3. Assign a Subsistence Resource Specialist (SRS) or Research Analyst (RA) as the division's lead on migratory birds.
 4. Review the harvest monitoring program for harbor seals and sea lions, funded by NFMS through the ANHSC, and continue the contract with ANHSC to support the program, primarily by conducting the data analysis and training.
 5. Explore ways to become more involved in the ice seal harvest assessment project conducted by the Division of Wildlife Conservation.
 6. Seek to be included in future funding of ice seal harvest monitoring.
- **C.7. Estimates of subsistence harvests of state-managed wildlife species are of mixed quality and there is little to no integration of Division of Subsistence projects with annual harvest monitoring conducted by the Division of Wildlife Conservation through harvest tickets and permits.**

BACKGROUND

Most wildlife harvest data published by the Division of Wildlife Conservation is based on harvest ticket and permit returns. Comparisons with post-season household surveys suggest that these published data underestimate rural subsistence harvests. Although the Division of Subsistence has conducted systematic interviews with hunters, it is rare for the results of this work to appear in department annual harvest estimates. Accurate and complete wildlife harvest data are necessary for ANS findings and review of regulations. Having multiple estimates of harvests derived from different methods is an impediment to effective support for the Board of Game's work.

ACTIONS

1. With Division of Wildlife Conservation, identify key wildlife populations for which improvements in harvest data collection are needed.
2. Develop proposals to fund annual harvest monitoring of key wildlife populations.
3. Seek partnerships to conduct these programs.
4. Get involved in the process of modeling/simulating harvest of the Western Arctic Caribou Herd.
5. Integrate subsistence information with Division of Wildlife Conservation databases; organize a discussion among staff to discuss how to accomplish this goal.

► **C.8. Subsistence harvest estimation procedures need review and standardization.**

BACKGROUND

The procedures for developing harvest estimates based upon samples have not been consistent and needs review. For example, reported harvests for some species (whales and polar bears are probably examples) should probably not be expanded to the entire community. Subsistence data are not normally distributed, and this creates a challenge for developing total harvest estimates. Initiatives are underway within the department to develop models for estimating subsistence harvests (Kuskokwim salmon, the Western Arctic Caribou Herd) and the division needs to be part of these discussions.

ACTIONS

1. Develop a process to review the CSIS and determine which species should not be expanded; include knowledgeable staff; apply knowledge of harvest patterns in communities.
2. Evaluate current expansion methodologies and methods for computing confidence intervals; seek assistance from appropriate staff in other divisions or peers outside the department.

Part D. Issues regarding ethnographic studies and topical studies.

- **D.1. There is a need for the division to conduct more comprehensive ethnographic research that involves adequate fieldwork time beyond what is required for household surveys and key respondent interviewing. More participant observation is necessary to build context for harvest data and C&T findings.**

BACKGROUND

Community-based experience is important to gain context about existing harvest data and assess the need for new information, based on issues identified through fieldwork. Collection and understanding of LTK/TEK also requires time in communities. Key to being effective in carrying out the division's mission is spending time "on the ground" in communities, building trust. Data required to support the board process is broad: see the 12 characteristics for nonsubsistence areas, the 8 criteria for identifying customary and traditional uses, procedures for developing ANS findings, and procedures for developing regulations providing "reasonable opportunity." Therefore, the division's research program must provide socioeconomic, demographic, historical, and ethnographic information in addition to harvest data. This kind of research is costly and time intensive.

ACTIONS

1. Identify partners for this type of work (the National Park Service is a logical partner and they support this kind of research).
2. Consider preparing area or regional research plans that include at least one ethnographic study per year.
3. Seek funding beyond the general fund to conduct ethnographic studies; use student interns and develop partnerships, including partnerships with universities.

Part E. Issues regarding computerized geographic information systems (GIS) and mapping of subsistence harvest areas.

- ▶ **E.1. Documentation of harvest areas has not been systematically included in the core questions in comprehensive surveys. Mapping of harvest locations needs to be a standard procedure in all baseline surveys to support GIS analysis.**

BACKGROUND

Spatial information is an essential tool for management. There are difficulties in defining harvest areas, such inconsistent units across divisions. There is presently limited capacity in the division for developing GIS, and no funding.

ACTIONS

1. Form a work group to discuss how to incorporate spatial applications in the work of the division.
2. Prepare contracts for certain GIS services, including training.
3. Prepare a Capital Improvement Project ("CIP," or increment) request for state FY2010 to develop GIS capabilities within the division.
4. Assign one position within the division as a GIS specialist.
5. Consider training all researchers to a minimally proficient level in basic GIS functions.

- ▶ **E.2. Map data collected in the field are sensitive and subject to misuse.**

BACKGROUND

Specific locations of subsistence hunting, fishing, and gathering are personal information and care needs to be taken in how such data are stored, analyzed, and reported. Personal information contained in fish and wildlife harvest and use data is confidential under AS 16.05.815(d).

ACTION

1. Address this issue through the work group and include guidelines in Subsistence research handbook.

Part F. Issues regarding the collection and reporting of TEK and LEK.

► **F.1. The division lacks a policy statement about place of TEK in its research program.**

Defining the data type is an issue. TEK literature is very broad, with no generally agreed-upon definition of the data type. The division does not currently have a working definition of TEK.

BACKGROUND

TEK includes descriptions of behaviors and practices as well as observations of environment and animals. TEK research is an essential component of an overall research program about subsistence hunting and fishing, and addresses aspects of our statutory mandate, including providing a context for harvest data. It is a bridge between quantitative and qualitative data. Local communities may see TEK research as part of cultural heritage documentation. TEK research is included and applied through baseline and issue-specific work, such as making C&T use determinations. Hypothesis-driven research that includes TEK supports building relationships with managers. The division needs to take ownership of the concept as we have been conducting this type of research long before it was called TEK. There is much ongoing debate over definitions, methods, potential applications. LTK/TEK is both a research topic and an interactive process.

ACTIONS

1. Establish a work group to develop TEK research guidelines (“best practices”), as part of the Subsistence research handbook.
2. Develop a purpose statement that describes how TEK research is part of division’s core services. Statement should tie into the duties of the division (AS 16.05.094(i))

3. Develop a working definition of TEK that includes an umbrella description and a statement of the importance of the data type.

► **F.2. The division lacks guidelines for TEK-based research. We need to identify “best practices” for collecting, reporting, and applying LTK/TEK. This effort will require collaboration with other researchers.**

BACKGROUND

TEK can include both quantitative and qualitative data. The division's research plan needs to explicate methods for pre-data collection, data collection, and data analysis that takes into account the challenges and benefits of each method.

*Qualitative: **semi-directed group interview** (who attends; dynamics of group; silence does not equal lack of knowledge; topics; provides opportunity for public and managers to gain information); **invitational group interview** (panel of experts); **focus group** (need defined method; **key respondent interviews/chain-referral** (be explicit about identification of representative group; need to be aware of local disputes, tribal council identification); **participant-observation** (increases understanding and learning opportunities; builds relationships and sharing; local residents as researchers; requires adequate time and funding; needs to be culturally appropriate); **mapping** (GIS, place name); and **survey supplements or questionnaires**.*

Quantitative: harvest surveys, consensus analysis.

Analysis: post-collection group review; consensus analysis; narrative analysis of content/themes (software, internal tests); trend analysis; conceptual model; case study.

ACTIONS

1. Form a work group that is charged with developing a module in the Subsistence research handbook that addresses “best practices” for TEK research.
2. Develop hypothesis-driven research projects, including an interdisciplinary approach when possible or appropriate. Proposals should include appropriate time for research in communities; other opportunities for time in communities (e.g., meetings) should be pursued.

► **F.3. Staff require training about formulating research hypotheses and research questions that address TEK.**

BACKGROUND

There are several developing research methods that can address TEK. For example, with consensus analysis, success depends on how well questions and respondents are selected.

ACTIONS

1. Develop an on-line accessible "researcher's toolkit" that outlines pre-data collection, data collection, and data analysis methods for qualitative and quantitative research involving TEK. Include this in the Subsistence research handbook.
2. Plan training for all staff directly involved in research. Develop test studies for consensus analysis, such as Haynes and Simeone (2007) (US/Canada, upriver/downriver, questions about biological and social aspects of salmon harvest and use). Bring in experts to train staff on such methods as conceptual modeling and consensus analysis.

Part G. Issues about communication and education, including reporting of study findings.

- ▶ **G.1. The mission and role of division need to be more fully understood by others, including within the department, in the communities in which we work, and by the general public.**

BACKGROUND

Insufficient information is readily available about the division's role; research and other activities; findings; and the base of knowledge available from division work. Public relations work is needed to enhance understanding our mission and roles and confront misunderstanding of our role. The audience for and users of this information go beyond the regulatory boards and department, and includes other agencies, users, and the general public. A recurring question when the division implements a project in a community is "How is this information going to be used?" The link to applications needs to be made clear.

ACTIONS

1. Establish a web site work group; provide it with a charge and schedule (need to understand limitations of web site within department structure).

2. Include background on every research project on the web site, frequently update this; include research design or summary, staff, schedule, products.
3. Prepare a technical paper on "implications for fisheries management" (that is, how information in our projects is used).
4. Develop a section on implications and applications of information as a standard section in technical papers.
5. Engage communities about information collection and the uses of study and research results.
6. Prepare fliers/educational and informational products.
7. Emphasize the roles of division publications specialists.

► **G.2. Need to determine the most effective ways to report specific study findings.**

BACKGROUND

There are several ways to communicate research results. These include reports, posters, peer-reviewed journal articles, reporting at conferences, single sheet synthesis, briefing notes (for board use), pamphlets (educational), and databases. There are also multiple ways to report the results of LTK/TEK studies: written reports, databases, posters, brochures, and the web site.

ACTION

1. Develop design guidelines for posters, pamphlets, video documentaries, and other visual media; include prompting questions to help researchers think about basic elements.

► **G.3. The division's program and findings lack visibility in professional journals. Although department policies encourage preparation of journal articles, the division lacks a process of internal review of submitted papers for journals or conferences.**

BACKGROUND

Participation in conferences and writing peer-reviewed articles require additional time and funding. These presentations include department data and findings. Some funding sources require conference presentations. Journal articles bring visibility to the division's program and create the opportunity for peer review and feedback.

ACTIONS

1. Establish a process, with a timeline, for preparation and review of papers submitted to journals, consistent with department guidelines.
2. Maintain existing funds and develop funding sources for travel to conferences, participation in workshops, and writing peer-reviewed articles.

► **G.4. The CSIS and the ASFDB require review, development, and online access; staff and the public are unfamiliar with these key data sources.**

BACKGROUND

The CSIS and the ASFDB are key depositories of data. They need to be fully accessible on line. Coordination between the CSIS, the primary database of division survey results, and the ASFDB is needed.

ACTIONS

1. Develop and follow timetable to complete review of the CSIS.
2. Plan training sessions on how to use the CSIS.

► **G.5. Currently there are no brochures or updated informational leaflets on the state's role in providing for subsistence opportunities and the importance to the state's economic and cultural well-being.**

BACKGROUND

More information is needed for the public on the characteristics of subsistence hunting and fishing in different areas of the state and the contributions of subsistence activities to local and regional economies and to community sustainability.

ACTIONS

1. Prepare brochures; post on web site; further enhance web site.
2. Prepare "canned" presentations that can be modified to fit circumstances.

► **G.6. Develop ideas for web-accessible databases that take into consideration the nature of field data (other than quantified data).**

BACKGROUND

In developing web-accessible databases, we first need to consider the nature of information. What will be included? Raw data? Analyzed (edited) data? How will data

be applied? How will (de)contextualization occur? Will accreditation to individuals take place? People are sensitive about how others use traditional knowledge from their communities; one challenge is developing a common language for local residents, researchers, managers.

ACTION

1. Ways to summarize, organize, and report non-quantified data should be evaluated by the TEK work group.

- **G.7. Interdivisional relationships are sometimes challenging when reporting and applying study results because of different perspectives or knowledge levels. Research reports often include multiple, diverse audiences (e.g., resource managers, local residents, cultural documentation specialists).**

BACKGROUND

Effective involvement in research and management requires building good communicative relationships with different audiences: the public, within ADF&G, and with federal agencies.

ACTIONS

1. Research staff and division leadership should seek to create venues to discuss public process and research.
2. Interdisciplinary research proposals and proposals with significant community partnerships should be pursued.
3. Research proposals should identify “best practices” to help clarify methods and approaches.

- **G.8. Division records are not well archived or indexed, and therefore are difficult to access, especially non-quantitative information.**

BACKGROUND

The division has developed some text databases to organize field data. The “Whiskers” marine mammal database is an example. AskSam was the program used, but is not considered adequate. Beyond the design of databases, uniform procedures for field note archiving are lacking. There is also internal vs. external access to consider.

ACTIONS

1. Establish standing archives and records committee.

2. Investigate methods of records management: field recording, archiving, software.
3. Develop module on archiving and records retention for the Subsistence research handbook, consistent with department and state standards.
4. Assign someone to evaluate text database programs, develop guidelines for databases.

- **G.9. Certain division products, especially “ephemera” such as C&T work sheets and other board presentations, are not accessible to the public, and not readily accessible to staff.**

BACKGROUND

Considerable time is focused on organizing division research findings and other data into background documents and presentations in support of the board process. Often, these are the best available background information on an issue. Although these materials are now archived and accessible through the ADF&G Boards Support section, older documents are difficult to locate, and even more recent documents are not inventoried or indexed.

ACTIONS

1. Use C&T work sheets as numbered, retrievable technical reports, with findings from Board of Fisheries, Board of Game, and the Joint Board.
2. Identify key C&T work sheets to prioritize for technical reports (examples include Nelchina caribou, Copper River/Chitina dip net).

Part H. Issues regarding application of research findings.

- **H.1. Addressing cumulative impacts (such as resource development, climate change) will be a key future research topic, but the division has not developed guidelines for applying our work to this analysis.**

BACKGROUND

Major resource development and land use projects by other state and federal agencies are routinely prepared and require review by all divisions in the department. Currently, the division is unable to commit staff time to adequately review and contribute pertinent information. Examples of pending and past developments that required analysis

included the Red Dog mine, the Exxon Valdez oil spill, the Pebble mine, and Tongass timber. There are specialized methods for conducting social impacts assessments.

ACTION

1. Form a social impacts assessment work group to develop recommendations for division involvement.

► **H.2. The Board of Game and Board of Fisheries follow a fixed meeting cycle but the division planning and project schedule is not attuned to this schedule.**

BACKGROUND

The research program is about acquiring and applying scientific information within the process of “getting food on the table;” that is, assisting regulatory boards in providing continuing subsistence hunting and fishing opportunities, as required by statute. Substantial time is needed to review regulatory proposals and assemble necessary information.

ACTIONS

1. Formalize procedures for reviewing proposals and preparing comments and other background information.
2. Factor the boards' schedules into short- and long-term division planning.
3. Plan for deferred proposals within regular regulatory cycle and out-of-cycle consideration.

► **H.3. Procedures for preparing information for board findings, including C&T determinations, ANS uses, reasonable opportunity, Tier II questions, and nonsubsistence area findings are not well-documented and products are not archived or accessible.**

BACKGROUND

A primary application of division information occurs during preparation for board findings. These findings are informed by legal requirements. However, written guidelines for how these findings are made are lacking.

ACTIONS

1. Prepare modules for the Subsistence research handbook that include guidelines for preparing information for board findings.

2. Conduct training sessions on board preparation procedures.
 3. Review past work sheets, organize electronic and paper copies, and post these on the web site.
 4. Prepare technical papers on findings and procedures.
- ▶ **H.4. What is the appropriate level of division participation in the federal regulatory processes? (Federal Subsistence Board, National Marine Fisheries Service, International Pacific Halibut Commission, Alaska Migratory Bird Co-management Council)**

BACKGROUND

Many federal regulatory processes have direct implications for subsistence hunting and fishing. Many of these processes use data collected by the division.

ACTIONS

1. Include the cycles of federal regulatory meetings within division planning.
 2. Prioritize involvement based upon relevance of division information.
- ▶ **H.5. How is the division to be involved in issues about nutrition and food safety / contamination?**

BACKGROUND

The division is required by statute to investigate nutritional values of subsistence foods. The CPDB has information addressing nutritional contributions of subsistence harvests. This section of the CPDB has not been reviewed or updated in years, and has not been incorporated into the review version of the CSIS. Given budget limitations, these topics have been a low priority for the division, even as they have gained attention statewide.

ACTIONS

1. Perhaps assign a work group to develop recommendations.
2. Perhaps develop a contract to develop recommendations.
3. Consider developing methods for conducting dietary surveys.

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