FISHERY DATA SERIES NO. 90-18

OPINIONS AND REGULATORY PREFERENCES OF NORTHWEST ALASKA SPORT ANGLERS[1]

By

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ABSTRACT

Questionnaires were sent to 94 individuals who had previously responded to statewide harvest surveys in 1985, 1986, or 1987 and had indicated participation in Northwest Alaska sport fisheries. Angler preferences for types of fishing experience as well as for regulatory and management options with respect to Dolly Varden *Salvelinus malma* and inconnu *Stenodus leucichthys* were solicited.

Seventy-one individuals, 87 percent of those receiving the original mailing, responded. A total of 24 percent of the completed responses were returned from local residents, 53 percent were returned from nonlocal Alaska residents, and 23 percent were returned from nonresidents.

Only local residents participated significantly in other Northwest Alaska fishery categories (personal use, commercial, subsistence). Local residents were more motivated by food as a reason for sport fishing than were nonlocals and nonresidents. Nonresidents were motivated by noncatch reasons more than were other residence groups. Food-motivated anglers rated overall fishing enjoyment lower than did those motivated by sport or noncatch reasons.

A majority of anglers who targeted inconnu were local residents, while those targeting Dolly Varden were primarily from outside the local area. Anglers targeting inconnu rated fishing success higher than did anglers who targeted Dolly Varden. Local residents approved of limiting bait use less than did nonlocal or nonresident respondents.

KEY WORDS: angler survey, angler questionnaire, Northwest Alaska, Kotzebue, sport fishing, sheefish, inconnu, *Stenodus leucichthys*, Dolly Varden, char, *Salvelinus malma*.

INTRODUCTION

The Alaska Department of Fish and Game (ADFG) is legally mandated under the Alaska Constitution to manage recreational and other fisheries within the broad general confines of the sustained yield principle on behalf of the general public. Within this framework it is recognized that recreational fisheries management should proceed in a manner that provides public benefits by satisfying the desires of various user groups to the extent practical. To accomplish this users must be categorized and their desires measured.

A postal survey of sport anglers who had fished in the Kotzebue area (including the watersheds of the Kobuk, Noatak, Kivalina, and Wulik rivers; Figure 1) was initiated in early 1989 to provide information regarding sport fishing practices and management preferences. Results are intended to assist the ADFG in preparing management plans for sport fisheries in the area by providing direct input from a sampling of sport fishermen who used the area. Primary questions concerned attitudes of local, nonlocal, and nonAlaska residents in regards to Dolly Varden *Salvelinus malma* (referred to later as char) and inconnu *Stenodus leucicthys* (hereafter referred to as sheefish) sport fisheries. The purpose of this survey was to determine whether different sport fishing expectations and desires could be identified and measured between different angler groups as defined by residency status, motivations for sport fishing, and other criteria. Questionnaires have been used to describe anglers and define their management preferences in other areas, such as the Tanana River drainage (Holmes 1987).

The Kotzebue area (also referred to as Northwest Alaska) receives a relatively small amount of sport fishing pressure in comparison with other fisheries in northern and interior Alaska. Statistics compiled by Mills (1989) indicate that of the total 233,559 angler days expended in sport fishing in the Arctic, Yukon, and Kuskokwim drainages in 1988, 5,279 (2.3%) were in Northwest Alaska. The number of angler-days expended in Northwest Alaska as a percentage of the total expended in the Arctic, Yukon, and Kuskokwim drainages ranged from 3.2% to 4.7% during the period 1983-1987.

Although relatively small, the recreational fishery in Northwest Alaska includes important and unique sport fisheries for both sheefish and char. Sheefish distribution is limited in Alaska and the species occurs only in the Arctic, Yukon, and Kuskokwim drainages north of the Alaska Range. The Kobuk and Selawik rivers in Northwest Alaska produce trophy size sheefish, and anglers in search of large sheefish frequently travel to the area. More than half of the statewide harvest of sheefish occurs in Northwest Alaska. Although char occur throughout much of Alaska, the largest fish occur in drainages of Northwest Alaska, particularly in the Wulik, Noatak, and Kivalina rivers where sport fishermen harvest trophy sized char. Both char and sheefish in Northwest Alaska are also harvested during subsistence and commercial fisheries.

Northwest Alaska has a resident population of approximately 5,800 persons, consisting primarily of Inupiat Eskimos living in small communities along the coast and the major waterways, the Kobuk and Noatak rivers (Alaska Department

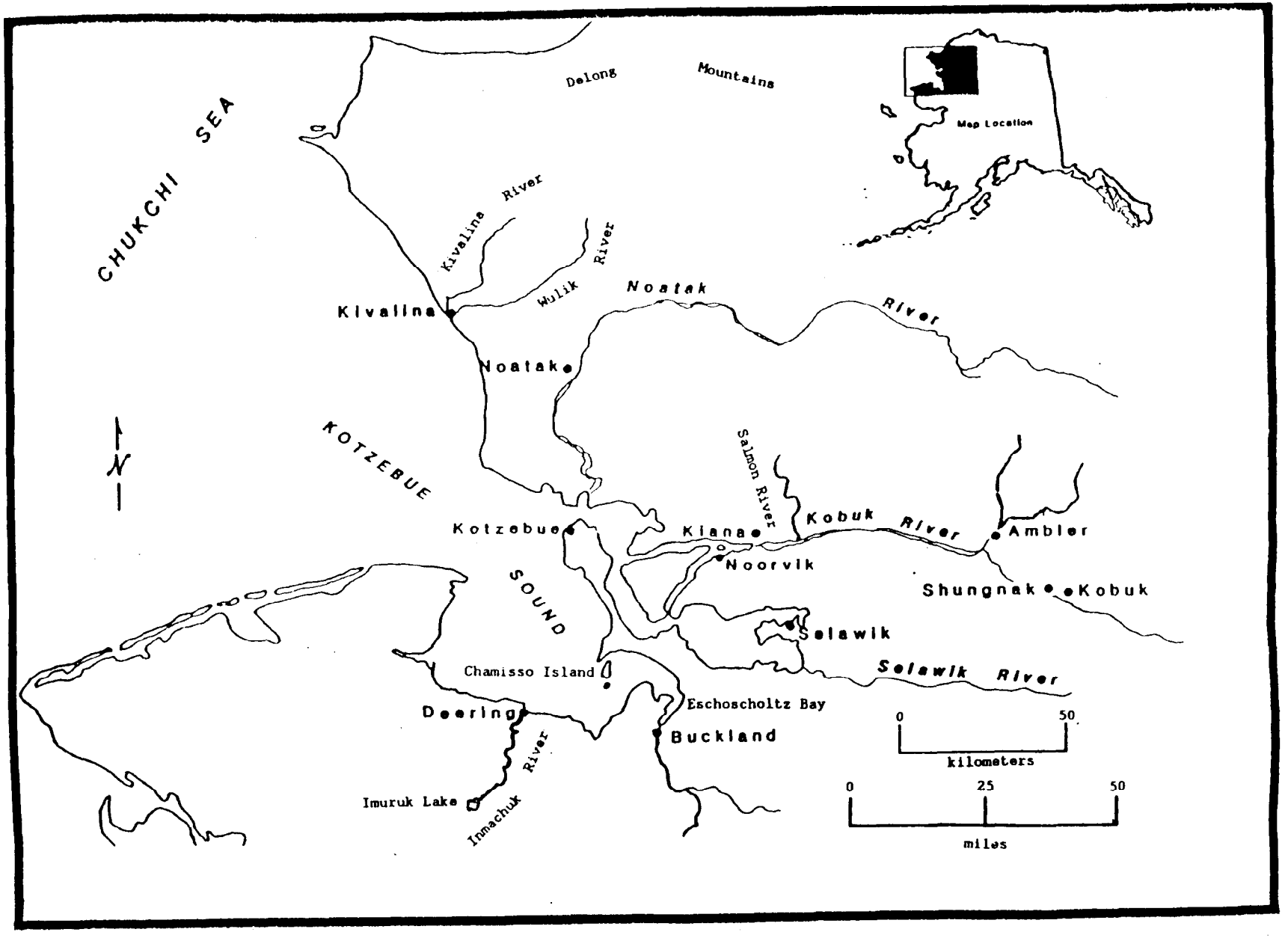

Figure 1. Kotzebue Sound and surrounding area.

of Labor 1987). The community of Kotzebue is the largest, with 2,600 residents, followed by Selawik (590) and Noorvik (530). The remaining eight villages in the region range from 65 residents (Kobuk) to 395 residents (Kiana). Subsistence hunting and fishing remains an important, if not predominant, means of livelihood for residents of the area. Local residents engage in angling for recreation and to supplement subsistence activities. In addition to sheefish and char, wild stocks of Arctic grayling *Thymallus arcticus*, whitefish *Coregonus* sp. and *Prosopium* sp., Pacific salmon *Oncorhynchus* sp., northern pike *Esox lucius*, burbot *Lota lota*, and lake trout *Salvelinus namaycush* occur in the area and are taken for sport and subsistence.

Sport fisheries management in Northwest Alaska consists of a relatively simple set of regulations that define species-specific bag and possession limits. Length limits are in place for sheefish and char for added protection to larger, presumably spawning size fish in areas of greatest concern. In-season restrictions by way of field announcement of closures have not been employed because of the lack of adequate stock information and light sport fishery monitoring effort. Bag limits for both sheefish and char allow 10 fish per day for each species (with exceptions noted below), and there is no closed season. The most recent regulatory changes were enacted in 1988 by the Alaska Board of Fisheries when a bag limit of two sheefish was imposed for the upper Kobuk River, and a char length limit of only two over 513 mm (20 inches) was instituted for the Noatak, Wulik, and Kivalina rivers. The majority of the annual harvest of both sheefish and char takes place in the subsistence and commercial fisheries in the area.

METHODS

Survey Design

A three page questionnaire was mailed in early February to a total of 94 persons who had previously responded to statewide postal surveys in 1985, 1986, and/or 1987 and who had indicated that they sport fished in Northwest Alaska. The annual statewide survey is mailed to randomly selected households of Alaska sport fishing license holders 16 years of age or older.

In an effort to increase the response rate, the suggestions of Linsky (1975) and Holmes (1987) were followed for enhancing recipient acceptance and cooperation in completing the questionnaire. The questionnaire was short with simple questions. A cover letter was attached to request cooperation and to explain why and by whom the survey was conducted. All selected anglers were first contacted with a postcard a few days prior to the actual mailing of the questionnaires. A stamped return envelope was enclosed with each questionnaire. Finally, a second mailing of letters and questionnaires was sent to nonrespondents approximately one month after the first mailing. All cover letters are shown in Appendix A.

Questions

Eight questions in three types of format were asked: categorical, rank, and open-ended (Appendix B). Categorical questions allowed respondents only a

given choice, for example a "yes" or a "no", or an "approve" or a "disapprove." Rank questions asked the respondents to choose the most important items from a list. Open ended questions asked for a written response.

Questions asked concerned (1) whether the person engaged in sport, commercial, personal use, or subsistence fishing in 1985, 1986, 1987, or 1988; (2) whether the person sport fished for char and/or sheefish in the Kotzebue area; (3) whether sport fishing for sheefish or char took place in summer, winter, or both; (4) motivations for sport fishing; (5) preferred management options for improving fishing; (6) preferred management options given a conservation emergency; (7) perceptions of fishing quality; and (8) suggested ways of improving sport fishing in the area.

Seven individual choices for sport fishing motive were given in question four, and respondents were asked to list their first and second most important reasons for fishing. Possible responses were grouped into a "catch-motivated" category and a "noncatch motivated" category. Catch motives included sport, food, and trophy, while noncatch motives included "enjoying nature", "other recreation", "family and friends", and "escaping pressure". Seven options were listed as possible ways to improve fishing using regulatory means. Respondents were asked whether they approved, disapproved, or had no opinion of each option. Six regulations to reduce harvest were listed as possible options in the event of a conservation emergency. Respondents were asked to rank each of the six options from 1 to 6, with 1 being the most preferred and 6 being the least preferred. Respondents were asked to rate the quality of their sport fishing experience in Northwest Alaska in the categories of fishing success, fish size, and overall fishing enjoyment. Rating in each category was on a four point scale of excellent, good, fair, and poor.

Hypothesis Testing

Questionnaire responses were used to test the following hypotheses relating to angler groups and regulations:

(1) Anglers targeting char or sheefish do not differ in:

a) motivation for fishing,
b) area of residence,
c) opinions of regulations to improve fishing,
d) opinions of fishing quality, or
e) opinions of the need to improve char or sheefish angling.

(2) Motivation for fishing is not influenced by:

a) area of residence.

(3) Receptiveness to restrictive regulations to improve fishing is not influenced by:

a) area of residence or
b) motivation for fishing.

(4) Perception of fishing quality is not influenced by:

a) motivation for fishing or
b) area of residence

Data Analysis

Responses to categorical and rank questions were depicted in tabular or graphic form. Answers to open-ended questions were reproduced in an appendix. Relationships between categorical question responses and between responses to categorical and rank questions were examined for significance using chi-square tests (Conover 1980). Chi-square analyses are descriptive of Respondents' profiles and preferences, however are not the best statistical method for categorizing uses into group. Answers to questions which ranked 1st an 2nd (judged to be most important) were tabulated into cells, and these data were used in chi-square analyses. Third order and less rankings (judged to be less important for purposes of this paper) were not examined with chi-square analyses. Possible relationships between user categories and questions were limited by small sample size and constraints of the chi-square test regarding cell size. All chi-square tabulations are presented in Appendix C. Significance in this paper is defined as $p \leq 0.10$.

Standard errors for ranked data were calculated as:

$$\text{Standard Error} = \left[\frac{s^2}{n} \right]^{1/2} \qquad (1)$$

where:

$$s^2 = \frac{\sum_{i=1}^{k} x^2_i f(x_i)}{n} - \left[\frac{\sum_{i=1}^{k} x_i f(x_i)}{n} \right]^2$$

n = sample size;
x_i = the rank of response i; and
$f(x_i^2)$ = the frequency of $x_i, i=1,\ldots,k$

RESULTS

Survey Response

The first mailing of 94 resulted in a return of 53 completed questionnaires. The second mailing of 41 elicited 18 returned questionnaires. A total of 12 questionnaires were undeliverable. A total of 71 questionnaires were returned (Table 1).

Residency of respondents (Table 2) was, 38 (53%) nonlocal-Alaska, 17 (24%) local Northwest Alaska, and 16 (23%) nonresident (non-Alaska).

Table 1. Response to the postal questionnaire.

Number of questionnaires mailed	94
Number of questionnaires delivered	82
Number of questionnaires undeliverable	12
Number of respondents to the first mailing	53
Percent response to the first mailing	65%
Number of respondents to the second mailing	18
Percent response to the second mailing	22%
Total number of respondents	71
Percent response to both mailings	87%
Number of nonrespondents to questionnaires	11
Percent nonresponse	13%

Table 2. Residence of questionnaire respondents.

Residence	Number	Percent
Northwest Alaska (local)	17	24
Other Alaska (nonlocal)	38	53
Nonresident	16	23
Total	71	100

Question Responses

Most of the respondents (61 or 86%) had sport fished in Northwest Alaska during the years 1985 - 1988. Ten of the respondents did not participate in the sport fishery during that time or they did not respond to the question (Table 3).

The only group to substantially participate in other fisheries (commercial, subsistence, or personal use) were local residents. Of the 17 respondents from the local area, not all participated in sport fishing each year. The maximum number of local residents to participate in the sport fishery in any single year was 11 in 1986 and 1987 (Table 4). As many as eight local residents participated in the annual subsistence fishery, while only two anglers participated in the annual commercial salmon fishery in Kotzebue. In the personal use category, as many as 11 persons (1987) responded that they had participated.

No nonlocal or nonresident respondents participated in the commercial fishery. One nonlocal Alaskan participated in the subsistence fishery each year, and in only one year (1985) did a nonresident engage in subsistence fishing. As many as six nonlocal Alaskans and three nonresidents considered themselves to be personal use fishermen in 1985, with fewer numbers in each of the other years.

Forty respondents targeted sheefish (17 sheefish only and 23 sheefish and char). Forty-one respondents targeted char (18 char only and 23 sheefish and char). Of those anglers fishing for sheefish and char, 43 sport fished only in summer, three sport fished only in winter, and 11 sport fished in both summer and winter. Approximately 92% of anglers targeting sheefish sport fished in summer, and 2% sport fished in winter. Of those anglers who targeted char, 98% fished in summer.

Primary motives for sport fishing were fairly evenly divided between noncatch and catch-related categories, with 55% listing noncatch motives (Table 5). Among catch-related motives, sport (25%) and food (19%) motives predominated, while trophy fishing accounted for only 1% of the responses. The secondary motive listed by respondents favored noncatch reasons (60% versus 40%). A higher proportion of nonlocal respondents listed sport (33%) over food (14%) as a primary motive (Table 5) than did the other residence categories, while nonresident respondents were mostly motivated by noncatch related factors, especially enjoying nature (Figure 2).

The most popular regulatory option to improve sport fishing was to impose minimum length limit restrictions to a greater extent than those presently in place (Table 6; Figure 3). Reductions in bag limit were favored by almost 50% of respondents, followed by catch-and-release fishing and time/area fishery closures. Options that involved decreased restrictions had the lowest approval rates. Differences in opinions of restrictive regulations between residence groups were small, except that local residents approved of limits on bait fishing much less than did nonlocal or nonresident respondents.

Table 3. Answers to questions regarding species fished for, the year(s), and the season in which they sport fished[a].

Fishing Category	Year				
	1985	1986	1987	1988	All[b]
Sport Fishing	30	35	33	14	61
Season:					
Summer only	20	22	19	5	48
Winter only	3	2	2	1	4
Both	6	9	10	7	11
Species:					
Sheefish	20	20	23	11	40
Char	17	23	21	6	41
Both	10	12	13	4	23

[a] Based on analysis of 71 returned questionnaires.
[b] Activity did not have to occur in all of the years; could have occurred in only one year.

Table 4. Responses of the 17 local Northwest Alaska residents to questions regarding the types of fishing they engaged in during the 1985-1988 period.

	Year			
Fishing Category	1985	1986	1987	1988
Sport fishing	9	11	11	10
Subsistence fishing	8	7	8	7
Commercial fishing	2	2	2	2
Personal Use fishing	7	7	11	9
Sport and other	6	6	9	8

Table 5. Primary and secondary motives for sport fishing in Northwest Alaska.

Response	Most Important Motives for Sport Fishing					
	First		Second		Combined	
	No.	%	No.	%	No.	%
Locals:						
Catch-Motivated						
Sport	3	20	1	7	4	14
Food	6	40	3	22	9	31
Trophy	0	0	0	0	0	0
Subtotal	9	60	4	29	13	45
Noncatch-Motivated						
Enjoying nature	3	20	4	29	7	25
Other recreation	1	7	2	14	3	10
Family and friends	2	13	3	21	5	17
Escaping pressure	0	0	1	7	1	3
Subtotal	6	40	10	71	16	55
Subtotal Locals	15	100	14	100	29	100
Nonlocals:						
Catch-Motivated						
Sport	12	33	10	28	22	30
Food	5	14	6	17	11	15
Trophy	1	3	1	3	2	6
Subtotal	18	50	17	48	35	51
Noncatch-Motivated						
Enjoying nature	10	27	6	17	16	22
Other recreation	5	14	4	12	9	12
Family and friends	2	6	6	17	8	11
Escaping pressure	1	3	2	6	3	4
Subtotal	18	50	18	52	36	49
Subtotal Nonlocals	36	100	35	100	71	100

- Continued -

Table 5. (page 2 of 2)

Response	Most Important Motives for Sport Fishing					
	First		Second		Combined	
	No.	%	No.	%	No.	%
Nonresidents:						
Catch-Motivated						
Sport	2	13	3	18	5	16
Food	2	13	3	18	5	16
Trophy	0	1	1	6	1	3
Subtotal	4	27	7	42	11	35
Noncatch-Motivated						
Enjoying nature	9	54	2	13	11	34
Other recreation	2	13	4	26	6	19
Family and friends	0	0	2	13	2	6
Escaping pressure	1	6	1	6	2	6
Subtotal	12	73	9	58	21	65
Subtotal Nonresidents	16	100	16	100	32	100
All Respondents:						
Catch-Motivated						
Sport	17	25	14	22	31	23
Food	13	19	12	18	25	19
Trophy	1	1	2	3	3	2
Subtotal	31	45	28	43	59	44
Catch-Motivated						
Enjoying nature	22	34	12	18	34	26
Other recreation	8	12	10	15	18	14
Family and friends	4	6	11	17	15	11
Escaping pressure	2	3	4	6	6	5
Subtotal	36	55	37	57	73	56
Total	67	100	65	100	132	100

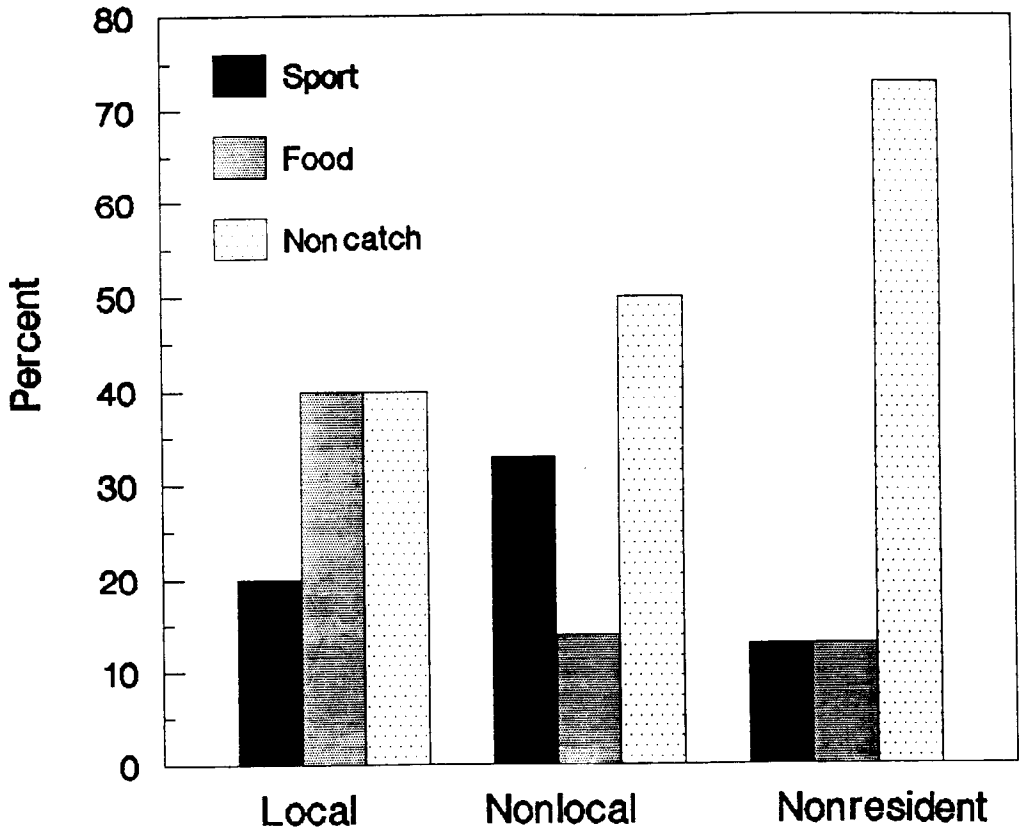

Figure 2. Primary motive for sport fishing by residence.

Table 6. Opinions of seven management options aimed at improving sport fishing for char and sheefish.

Management Option	Approve No.	Approve %	Disapprove No.	Disapprove %	No Opinion No.	No Opinion %	Totals No.	Totals %
Locals:								
Minimum length limit	10	59	4	24	3	17	17	100
No minimum length limit	3	19	7	43	6	38	16	100
Reduce daily bag limit	8	47	5	29	4	24	17	100
Increase daily bag limit	1	6	8	47	7	41	16	100
Have catch-and-release fishing	6	38	8	50	2	12	16	100
Time/area fishing closures	5	31	5	31	6	38	16	100
Time/area limitation on bait fishing	2	12	7	44	7	44	16	100
Nonlocals:								
Minimum length limit	19	54	7	20	9	26	35	100
No minimum length limit	5	15	11	33	17	52	33	100
Reduce daily bag limit	16	46	7	20	12	34	35	100
Increase daily bag limit	1	3	20	61	12	36	33	100
Have catch-and-release fishing	15	43	11	31	9	26	35	100
Time/area fishing closures	18	51	7	20	10	29	35	100
Time/area limitation on bait fishing	15	45	5	15	13	40	33	100

- Continued -

Table 6. (page 2 of 2)

Management Option	Approve No.	Approve %	Disapprove No.	Disapprove %	No Opinion No.	No Opinion %	Totals No.	Totals %
Nonresidents:								
Minimum length limit	10	63	1	6	5	31	16	100
No minimum length limit	2	13	7	47	6	40	15	100
Reduce daily bag limit	6	40	1	7	8	53	15	100
Increase daily bag limit	2	12	7	44	7	44	16	100
Have catch-and-release fishing	6	38	4	24	6	38	16	100
Time/area fishing closures	6	38	2	12	8	50	16	100
Time/area limitation on bait fishing	9	56	1	6	6	38	16	100
All Respondents:								
Minimum length limit	39	57	12	18	17	25	68	100
No minimum length limit	10	16	25	39	29	45	64	100
Reduce daily bag limit	30	45	13	19	24	36	67	100
Increase daily bag limit	4	6	35	54	26	40	65	100
Have catch-and-release fishing	27	41	23	34	17	25	67	100
Time/area fishing closures	29	43	14	21	24	36	67	100
Time/area limitation on bait fishing	26	40	13	20	26	40	65	100

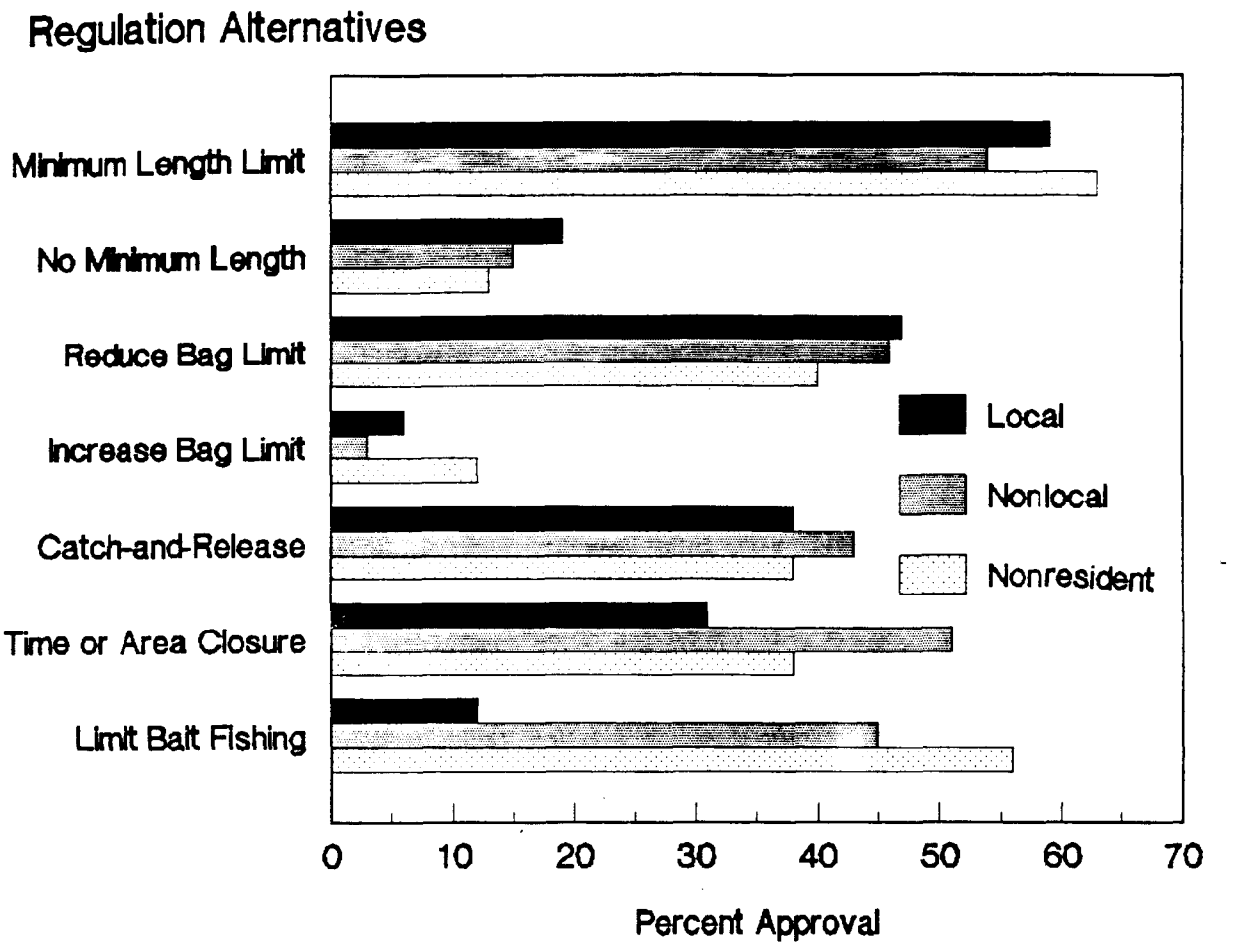

Figure 3. Percentage approval grouped by residence, of seven alternative management options aimed at improving sport fishing for char and sheefish.

The most favored regulatory options in the event of a conservation emergency were the reduction of bag limits and the institution of a length limit (Table 7; Figures 4 and 5). There was little support for having complete fisheries closures or catch-and-release fishing. Intermediate levels of approval were given by respondents for restriction of gear types and time/area closure options. Local residents ranked restricting gear types and catch and release fishing as less preferred than respondents in other residence categories, and nonresidents ranked both partial and total closures as less preferred than did local and nonlocal residents.

Rating of the quality of sport fishing experience in Northwest Alaska for respondents in most residence categories ranged between good and excellent. Local residents rated all aspects of fishing quality as excellent less often than other resident groups (Table 8; Figure 6).

Suggestions as to how to improve fishing were compiled and categorized by common responses. A total of 29 individuals suggested that improvements in sport fishing were needed, and some 30 improvement suggestions were categorized (Appendix D). A substantial proportion of the suggestions received were related to restricting other uses or user groups, and most of those suggesting this course were nonlocal Alaskans (Table 9). The next most frequent suggestion was more or better regulations, followed equally by fish stocking and more fisheries monitoring.

Hypotheses By User Group

Hypotheses related to respondents' profiles and regulatory preferences were tested. Responses to survey questions were grouped and crosstabulated. Crosstabulations of data are presented in Appendix C.

Preferences By Species Targeted:

Motivation for sport fishing was not significantly related to target species. Char and sheefish anglers were equally motivated by food, sport, and non-success considerations ($\chi^2 = 1.11$, DF = 2, $p = 0.57$). Local residents targeted sheefish but not char more than other residence groups, and non-residents targeted char but not sheefish more than other residence groups ($\chi^2 = 9.47$, DF = 2, $p \leq 0.01$).

Anglers who targeted sheefish approved more and disapproved less of partial seasonal closures than respondents who targeted char ($\chi^2 = 10.76$, DF = 2, $p < 0.01$). Respondents who targeted sheefish were more likely to disapprove of limits on bait use than anglers who targeted char ($\chi^2 = 6.25$, DF = 2, $p < 0.05$). Opinions of catch-and-release fishing, reduced bag limits, and length limits were not significantly dependent on species targeted ($p > 0.30$ for all tests).

Respondents who targeted char (but not sheefish) were more likely to rate fishing success as fair or poor than anglers who targeted sheefish but not char ($\chi^2 = 5.54$, DF = 2, $p = 0.06$). Ratings of size satisfaction and overall fishing enjoyment were not significantly dependent on species targeted ($p > 0.10$ for both tests). Opinions regarding the need to improve sheefish or char

Table 7. Opinions of respondents when asked to rank their preferences regarding six management alternatives for a fishery conservation emergency.

Potential Emergency Regulation	Number (%) of Responses: Preferred → → → → → → Not Preferred 1	2	3	4	5	6	Total Sample Size	Mean Rank	SE
Locals:									
Reduce bag limits	4 (25)	7 (44)	4 (25)	1 (6)	0 (0)	0 (0)	16 (100)	2.12	0.21
Length limits	7 (44)	1 (6)	3 (19)	2 (12)	3 (19)	0 (0)	16 (100)	2.56	0.40
Restrict gear types	0 (0)	2 (13)	5 (31)	2 (13)	3 (18)	4 (25)	16 (100)	4.12	0.35
Closures at certain times/areas	4 (25)	4 (25)	1 (6)	5 (32)	2 (12)	0 (0)	16 (100)	2.81	0.25
Catch-and-release only	0 (0)	1 (6)	2 (12)	4 (24)	3 (20)	6 (38)	16 (100)	4.68	0.48
Complete fishery closures	1 (6)	1 (6)	1 (6)	2 (13)	5 (31)	6 (38)	16 (100)	4.68	0.59
Nonlocals:									
Reduce bag limits	5 (17)	12 (40)	6 (20)	5 (17)	2 (6)	0 (0)	30 (100)	2.57	0.20
Closures at certain times/areas	8 (26)	6 (19)	2 (6)	7 (23)	8 (26)	0 (0)	31 (100)	3.03	0.46
Restrict gear types	3 (10)	6 (20)	10 (33)	5 (17)	3 (10)	3 (10)	30 (100)	3.27	0.26
Length limits	6 (20)	4 (13)	9 (31)	4 (13)	4 (13)	3 (10)	30 (100)	3.17	0.28
Catch-and-release only	6 (20)	1 (3)	3 (10)	7 (23)	8 (27)	5 (17)	30 (100)	3.83	0.57
Complete fishery closures	3 (10)	1 (3)	0 (0)	3 (10)	5 (16)	19 (61)	31 (100)	5.03	0.44

- Continued -

Table 7. (page 2 of 2)

Potential Emergency Regulation	Number (%) of Responses Preferred → → → → → → → Not Preferred 1	2	3	4	5	6	Total Sample Size	Mean Rank	SE
Nonresidents:									
Reduce bag limits	1 (8)	8 (61)	4 (31)	0 (0)	0 (0)	0 (0)	13 (100)	2.23	0.09
Length limits	6 (46)	3 (23	0 (0)	3 (23)	1 (8)	0 (0)	13 (100)	2.23	0.40
Restrict gear types	2 (16)	2 (16)	4 (30)	4 (30)	1 (8)	0 (0)	13 (100)	3.0	0.36
Catch-and-release only	4 (29)	0 (0)	2 (14)	2 (14)	4 (28)	2 (14)	14 (100)	3.85	0.27
Closures at certain times/areas	1 (8)	0 (0)	3 (24)	3 (24)	6 (44)	0 (0)	13 (100)	4.00	0.30
Complete fishery closures	0 (0)	0 (0)	0 (0)	1 (8)	1 (8)	11 (84)	13 (100)	5.77	0.06
All Respondents:									
Reduce bag limits	10 (14)	27 (47)	14 (25)	6 (11)	2 (3)	0 (0)	59 (100)	2.37	0.15
Closures at certain times/areas	13 (22)	10 (17)	6 (10)	15 (25)	16 (26)	0 (0)	60 (100)	3.18	0.28
Length limits	19 (32)	8 (14)	12 (20)	9 (15)	8 (14)	3 (5)	59 (100)	2.79	0.34
Restrict gear types	3 (5)	10 (18)	19 (32)	11 (19)	7 (12)	7 (12)	57 (100)	3.53	0.21
Catch-and-release only	10 (17)	2 (3)	7 (11)	13 (22)	15 (25)	13 (22)	60 (100)	3.93	0.46
Complete fishery closures	4 (7)	2 (3)	1 (2)	6 (10)	11 (18)	36 (60)	60 (100)	5.10	0.27

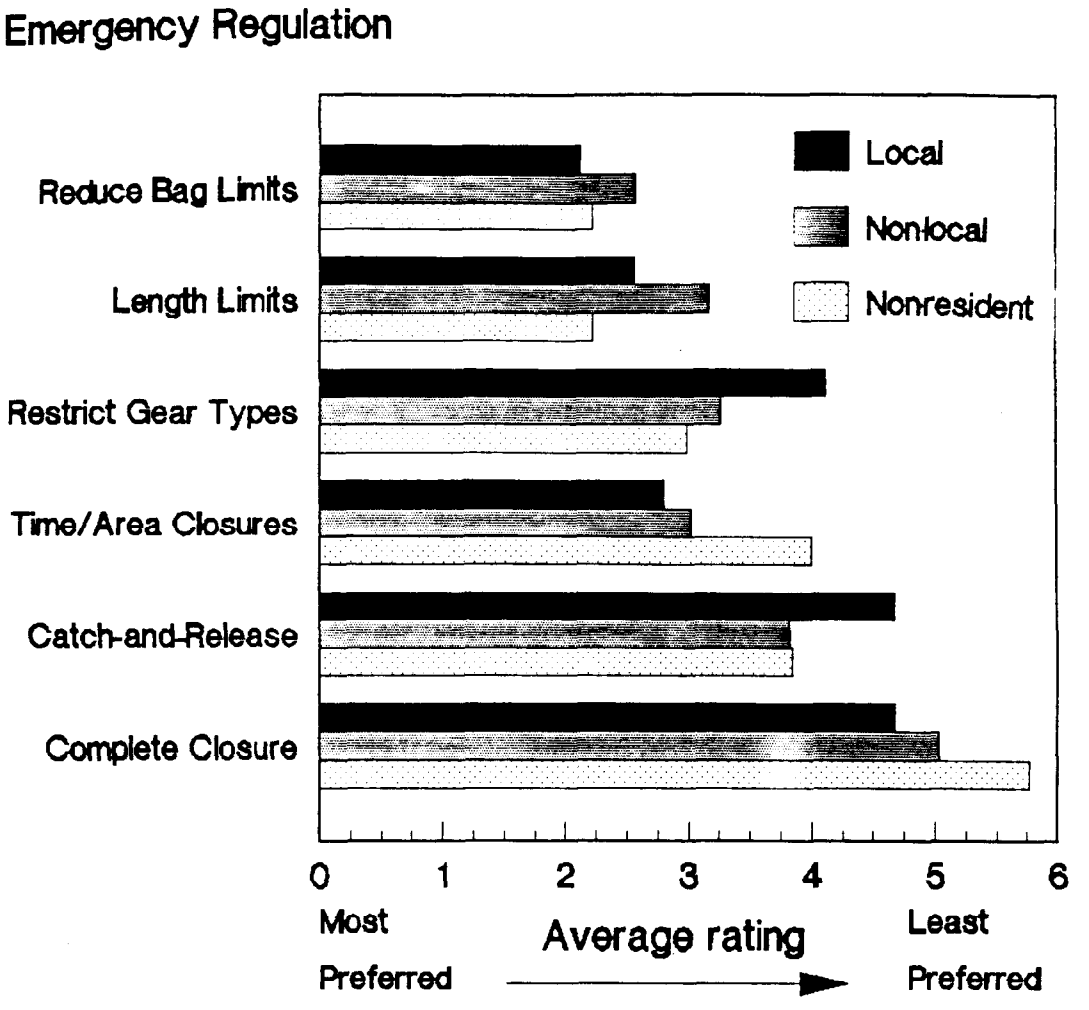

Figure 4. Average ratings of six alternative management options in a potential conservation emergency.

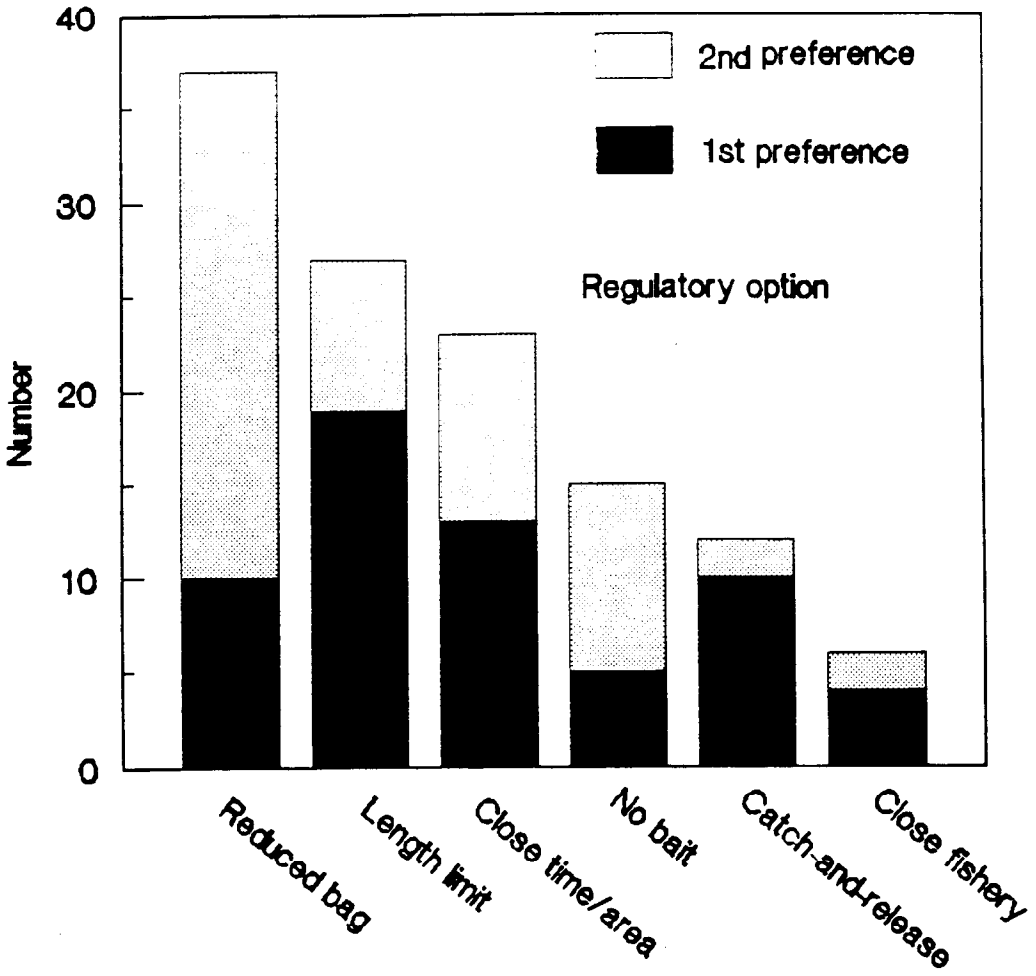

Figure 5. First and second choices of preferred management actions in a potential conservation emergency.

Table 8. Respondent ratings of three aspects of sport fishery quality in Northwest Alaska, by residence.

Aspect of Sport Fishing Quality	Angler Response (%) Excellent (1)	Good (2)	Fair (3)	Poor (4)	Total Sample Size	Mean Rating	Standard Error of Rating
Local Respondents							
Fishing success	3 (20)	8 (53)	4 (27)	0	15 (100)	2.07	0.18
Fish size	4 (27)	10 (66)	1 (7)	0	15 (100)	1.80	0.14
Overall fishing enjoyment	6 (38)	7 (43)	3 (19)	0	16 (100)	1.81	0.18
Nonlocal Respondents							
Fishing success	14 (41)	14 (41)	5 (15)	1 (3)	34 (100)	1.79	0.14
Fish size	14 (41)	15 (44)	5 (15)	0	34 (100)	1.74	0.12
Overall fishing enjoyment	18 (53)	13 (38)	3 (9)	0	34 (100)	1.56	0.11
Nonresident Respondents							
Fishing success	6 (38)	6 (38)	3 (18)	1 (6)	16 (100)	1.94	0.21
Fish size	7 (44)	8 (50)	1 (6)	0	16 (100)	1.63	0.14
Overall fishing enjoyment	9 (56)	5 (31)	2 (13)	0	16 (100)	1.56	0.18
All Respondents							
Fishing success	23 (35)	28 (43)	12 (19)	2 (3)	65 (100)	1.89	0.10
Fish size	25 (38)	33 (51)	7 (11)	0	65 (100)	1.72	0.08
Overall fishing enjoyment	33 (50)	25 (38)	8 (12)	0	66 (100)	1.65	0.08

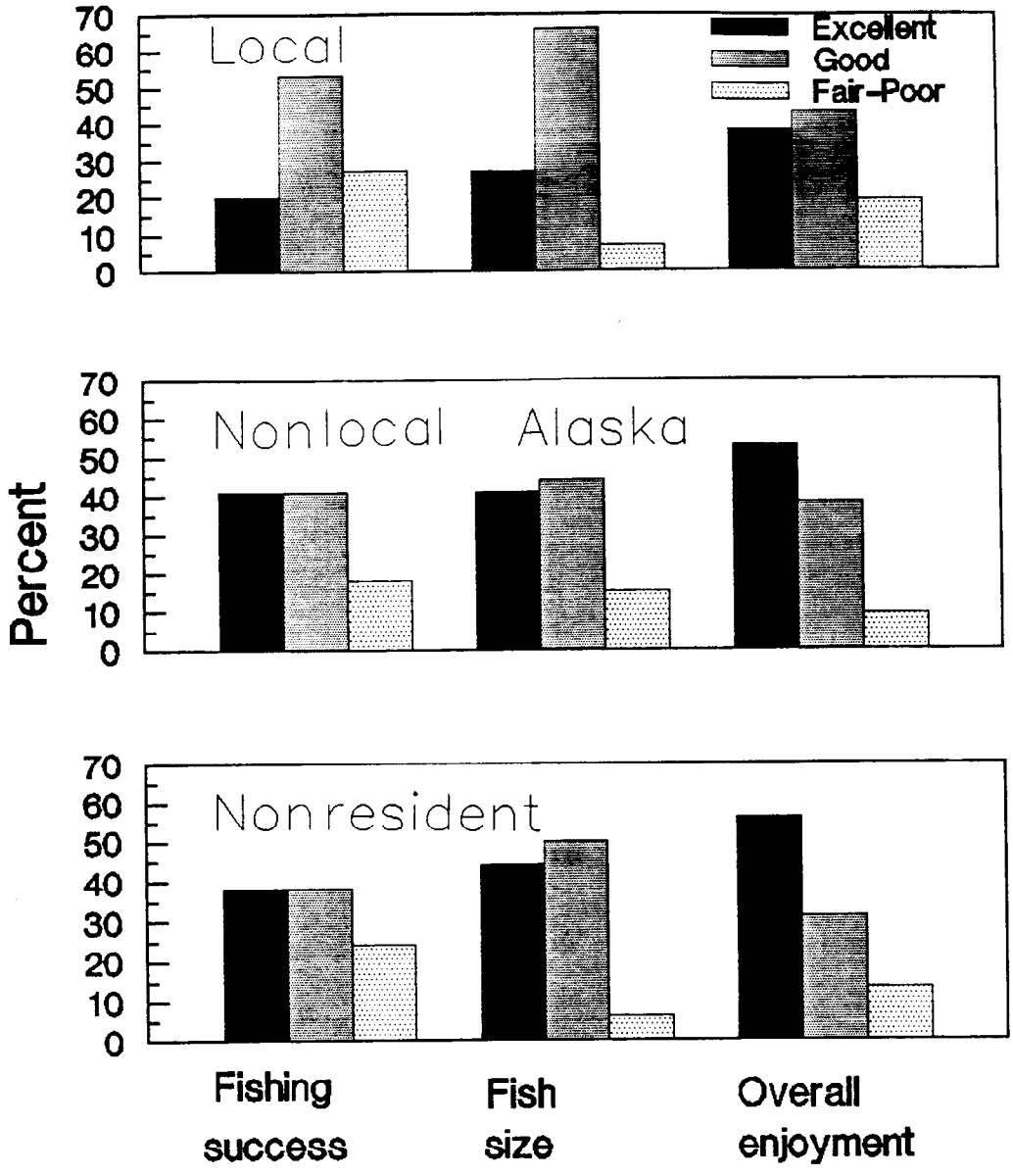

Figure 6. Respondent ratings of three aspects of fishing quality in Northwest Alaska.

Table 9. Respondent suggestions to improve sport fishing for Dolly Varden char and sheefish in Northwest Alaska, by residence[a].

Method of Improving Fishing	Local		Non-local		Non-resident		Total	
	No.	%	No.	%	No.	%	No.	%
Restrict other users	2	6.7	9	30.0	0	0.0	11	36.7
More regulation	1	3.3	2	6.7	3	10.0	6	20.0
Stock fish	0	0.0	1	3.3	2	6.7	3	10.0
More monitoring	2	6.7	1	3.3	0	0.0	3	10.0
No fly-in	1	3.3	0	0.0	1	3.3	2	6.7
More enforcement	0	0.0	2	6.7	0	0.0	2	6.7
More research	1	3.3	0	0.0	0	0.0	1	3.3
Protect habitat	0	0.0	0	0.0	1	3.3	1	3.3
Trophy management	0	0.0	1	3.3	0	0.0	1	3.3
Totals	7	23.2	16	53.3	7	23.3	30	100.0

[a] A total of 29 responses indicated a need for improved fishing; 31 indicated that no improvements were needed. Some individuals suggested more than one improvement.

sport fishing were also not significantly dependent on species targeted ($p > 0.40$).

Motivation For Fishing:

Local residents were more likely to be food-motivated than were other residence groups. Nonlocal Alaskan residents were more likely to be sport-motivated than were other residence groups. Nonresident respondents were more likely to be noncatch motivated than were other residence groups ($\chi^2 = 8.84$, $DF = 2$, $p = 0.06$).

Opinions Of Restrictive Regulations:

Local anglers disapproved more, and approved less, of limits on bait use than did other residence groups ($\chi^2 = 10.82$, $DF = 4$, $p < 0.03$). Opinions of length limits, seasonal closures, reduced bag limits, and catch-and-release fishing were not significantly dependent on area of residence ($p > 0.37$ for all tests). Opinions of restrictive regulations were not significantly dependent on respondents' motivation for fishing ($p > 0.12$ for all tests).

Perception Of Fishing Quality:

Food-motivated anglers were more likely to rate overall fishing enjoyment as fair or poor and less likely to rate it as excellent than other motivation groups, and noncatch motivated anglers were more likely to rate overall fishing enjoyment as excellent than did other motivation groups ($\chi^2 = 13.61$, $DF = 4$, $p < 0.01$). Ratings of fishing success and size satisfaction were not significantly dependent on motivation for fishing ($p > 0.12$ for both tests). Ratings of fishing quality were also not significantly dependent on respondent's area of residence ($p > 0.50$ for all tests).

DISCUSSION

The rate of response to a random selection of Tanana drainage anglers in 1985 was 70% (Holmes 1987), substantially less than the return rate to this questionnaire. The 1988 statewide sport fish survey enjoyed a 57% response rate (Mills 1989). The high response rate (86.5%) to this postal questionnaire is probably because questionnaires were sent to a group of sport fish license holders who had previously responded to the ADFG statewide harvest survey.

A significant proportion of local anglers participated in nonsport forms of fishing, such as commercial, subsistence, and/or personal use fishing. There is a question whether respondents recognized that "personal use" applies to a regulatory category of fishing, and not a fishing motive. Personal use is a relatively new use category recently sanctioned by the Alaska Board of Fisheries in 1988 for Northwest Alaska. Personal use fishing is designed to allow persons who do not qualify for subsistence privileges (on the basis of customary and traditional use) the opportunity to meet their food requirements. All of the local residents qualified for subsistence and hence it is unclear why they indicated that they participated in the personal use

fishery. Regardless, it is clear that significant numbers of local sport fishermen are engaged in other fishing use categories, and it is clear that almost no sport fishermen from outside the local area are likewise engaged.

The primary motives of respondents for fishing in Northwest Alaska were for reasons other than trophy, food, or sport. Survey respondents primarily fished to enjoy nature, recreate, be with family and friends, and relax. This was true for anglers in all residence categories, although it was most strongly manifested in the nonlocal and nonresident categories. Similar results are reported by Holmes (1981 and 1987) for anglers in the Tanana River drainage.

Angler acceptance of restrictive regulations to either improve fishing for sheefish and char or in response to a conservation emergency was strong across all residence categories for minimum length limits and reduced bag limits. Catch-and-release fishing was favored as a means of improving fishing by 41% of all respondents (34% disapprove), but was one of the least favored regulatory options for dealing with a conservation emergency. Fishery closures were the least favored means of responding to an emergency. In general, regulations that would eliminate (rather than just limit) the taking of fish were the least popular.

On the average, respondents rated aspects of fishing quality between good and excellent. These ratings were higher than given by Tanana drainage anglers (Holmes 1987). Local residents rated fishing quality a little lower than did other residence groups. For example, fishing success was rated excellent less often by local residents than by nonlocal and nonresident anglers. Angler expectations may have affected nonlocal and nonresident ratings of fishing quality. These anglers were probably on vacation while fishing in the area, and they might have rated fishing quality higher than if they were fishing closer to their own homes.

Many of the suggestions made to improve fishing involved restricting other user groups. This may indicate that sport anglers, particularly nonlocal resident anglers, using the Northwest Alaskan fisheries feel that they are in competition for fisheries resources with nonsport users. The proportion of respondents making this type of suggestion was much higher than in the 1985 Tanana drainage survey (Holmes 1987).

Anglers who targeted char and sheefish differed from one another only in a few responses. Char anglers rated fishing success as fair or poor more than did sheefish anglers; but they are apparently equally happy about fishing, since they did not differ in their opinion of the need to improve fishing. Sheefish and char anglers did not differ in their motivations for fishing or in their ratings of fishing quality (other than fishing success). Char anglers approved less of seasonal closures than did sheefish anglers. This could be due to residency. Since nonresidents targeted char more than locals and must spend a large sum of money to fish in the area, they would be less approving of seasonal closures than local residents (who can fish in the area any time). One result is that sheefish anglers disapproved of limits on bait use more than char anglers. Since neither species is usually fished for using bait, this result is puzzling.

Local area residents are more motivated by food than by sport considerations, although sport-motivation is evident among all residence categories. Probably the group categorized as "local" is the most diverse among the three residence groups, with interests ranging from those living in Kotzebue or one of the larger villages whose sport fishing values might be considered more typical of those found in larger cities to the more traditional native villagers for whom sport fishing is only another means to obtain food. The other groups of nonlocal Alaskans and nonresidents may be more homogeneous to the extent that they had to travel from long distances in order to engage in recreational activities in the area. It is understandable that they would be less motivated by food simply because food is more economically obtained closer to home.

Local residents disapproved of bait use restrictions more than other residence groups. This is not related to differences in motivation, since opinions of regulations were not significantly dependent on motivation for fishing. Previous surveys (Holmes 1981, 1987) found that attitudes of Tanana drainage anglers were related to motivation, and that food-motivated anglers were generally less receptive to restrictive regulations than sport or noncatch-motivated anglers. The lack of dependence found in this study could be due to the small sample size of the survey.

Anglers motivated by sport and nonsuccess factors tended to rate fishing success in the Kotzebue area higher than did anglers motivated by food. This could be because visitors from outside the area usually draw their comparisons of fishing quality from where they come from, in most cases urban areas, where competition is more intense and quality is often affected by the amount of pressure on the fisheries. Ratings of fishing quality were not directly related to area of residence, which may suggest that food-motivated anglers, in general, may rate fishing success lower than other motivation groups because less fish harvested is a greater disappointment to anglers who desire (or even need) to bring home food than to anglers who are not primarily interested in fish for eating. Ratings of size satisfaction and overall fishing enjoyment did not differ between motivation groups; so while food-motivated anglers are not as happy with the number of fish they catch as other motivation groups, they are just as happy about the size of the fish that they do catch and the experience they have fishing.

In general, the factors most likely to separate angler groups in this study were residence area and motivation for fishing, factors that were related to each other. Anglers targeting char and sheefish did not seem to differ much from one another, although local anglers targeted sheefish more than other residence groups.

ACKNOWLEDGEMENTS

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Mr. Clark edited the report for consistency and provided helpful suggestions. Kerri Clark typed various drafts and prepared the final copy. Thanks to the U.S. Fish and Wildlife Service for providing partial funding through the Federal Aid in Sport Fish Restoration Act (16 U.S.C. 777-777K) under Project F-10-4, Job No. C-8-1, and under Project F-10-5, Job No. C-8-1.

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APPENDIX A

COVER LETTERS SENT WITH ANGLER QUESTIONNAIRE

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

STEVE COWPER, GOVERNOR

1300 COLLEGE ROAD
FAIRBANKS, ALASKA 99701-1599

February 1, 1989

Dear Sport Fisherman:

The Alaska Department of Fish and Game is conducting research on sport fishing for Arctic char and Sheefish in the Kotzebue area. Our goal is to maintain and improve the quality of these important sport fishing resources. To reach this goal, we need to know what fishermen think about the quality and management of the resource. This is an opportunity for you to participate in the decision making process.

Your name has been randomly selected from a list of fishermen who have previously fished in the Kotzebue area. Would you please take a few minutes to answer the attached questionnaire? Your opinions are important in making the survey comprehensive and accurate. Be assured that all individual responses will remain confidential.

Thank you for your help.

Sincerely,

Bill Arvey

Bill Arvey
Area Biologist
Sport Fish Division
(907) 456-8819

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

STEVE COWPER, GOVERNOR

1300 COLLEGE ROAD
FAIRBANKS, ALASKA 99701-1599

Dear Alaskan Sport Fisherman:

We have not yet received your completed questionnaire on freshwater fishing. Since you are a part of a random sample of fishermen, your opinions are important in making the results accurate and complete.

Even if you did not fish in 1988, we need your opinions. Would you please take a few minutes to answer and return the questionnaire?

If you have already returned your questionnaire, please disregard this letter and accept our thanks.

Sincerely,

Rocky Holmes
Research Supervisor
Sport Fish Division
(907) 456-8819

APPENDIX B

QUESTIONNAIRE ON SPORT FISHING - KOTZEBUE AREA SHEEFISH AND CHAR

QUESTIONNAIRE ON SPORT FISHING - KOTZEBUE AREA SHEEFISH AND DOLLY VARDEN

Instructions:

This questionnaire should be filled out only by the person to whom it is addressed. Most questions relate to Sport Fishing for Sheefish or Dolly Varden (Arctic char) in Kotzebue Area waters (Kobuk, Selawik, Noatak, Wulik, or Kivalina River Drainages). Please read each question carefully and answer to the best of your memory. After completion, please return the questionnaire in the envelope provided.

Thank you for your assistance.

1. During what year(s) did you sport fish in Kotzebue Area waters? Did you engage in other types of fishing in Kotzebue Area waters during between 1985 and 1988 as well? (*please place an "X" in the appropriate boxes*)

	Sport Fishing? Yes	No	Commercial Fishing? Yes	No	Personal Use Fishing? Yes	No	Subsistence Fishing? Yes	No
1985	( )	( )	( )	( )	( )	( )	( )	( )
1986	( )	( )	( )	( )	( )	( )	( )	( )
1987	( )	( )	( )	( )	( )	( )	( )	( )
1988	( )	( )	( )	( )	( )	( )	( )	( )

2. Did you specifically fish for sheefish or Dolly Varden (Arctic char) while sport fishing in the Kotzebue Area? (*please place an "X" in the appropriate spaces*)

Sheefish: _____Yes _____No

Dolly Varden (Arctic char): _____Yes _____No

3. Did you sport fish for sheefish or Dolly Varden (Arctic char) during summer, winter, or both? (*please place an "X" in the appropriate box*)

Summer ☐ Winter ☐ Both ☐

4. Here are some general reasons that people have given for going sport fishing. Please indicate the first and second most important reasons <u>why you went sport fishing in the Kotzebue Area</u>. (*please place a "1" in the space for the most important reason and a "2" in the space for the next most important reason*)

_____Getting away from daily pressures.

_____Getting out and enjoying nature.

_____Catching fish for sport.

_____Catching a trophy fish.

_____Enjoying other recreational activities (ex. camping or boating).

_____Catching fish for food.

_____Getting out with family and friends.

5. On certain waters different <u>management changes or fishing regulations</u> can <u>improve fishing</u> by providing larger, more, or different kinds of fish. What is your feeling toward each of the following ways of possibly improving sheefish and/or Dolly Varden (Arctic char) sport fishing in Kotzebue Area waters? (*please place an "X" in the appropriate space*)

	Approve	No Opinion	Disapprove
Have a minimum length limit	☐	☐	☐
Not have a minimum length limit	☐	☐	☐
Reduce daily bag limits	☐	☐	☐
Increase daily bag limits	☐	☐	☐
Have "catch and release fishing"	☐	☐	☐
Have fishing season closures at certain times <u>or</u> in certain areas	☐	☐	☐
Limit bait fishing at certain certain times <u>or</u> in certain areas	☐	☐	☐

6. In the event of a conservation emergency, what type of regulation would you prefer to see implemented to reduce overharvest of fish. *(Please rank the following options from 1 to 6 with the most desirable regulation listed number 1 and the least desirable regulation listed number 6)*

Length Limits	☐	Reduce Daily Bag Limits	☐
* Close the Fishery	☐	Allow Only Catch and Release Fishing	☐
Restrict Gear Types (ex. No Bait)	☐	Close Fishing Seasons at Certain Times or in Certain Areas	☐

7. Please rate your Sport Fishing experiences in Kotzebue Area Waters on the following 4 point scale:

1 = Excellent	2 = Good	3 = Fair	4 = Poor

a. Your fishing success in Kotzebue Area Waters. ☐

b. Your satisfaction with the size of fish you caught in Kotzebue Area Waters. ☐

c. Your overall fishing enjoyment in Kotzebue Area Waters. ☐

8. Do you feel that <u>sheefish and/or Dolly Varden (Arctic char) sport fishing</u> in Kotzebue Area waters <u>should be improved</u>? _____Yes ____No

<u>**If Yes**</u>, what would <u>you like to see done to improve sport fishing</u> for these species in Kotzebue Area waters?

_____

_____

_____

_____

APPENDIX C

CONTINGENCY TABLES OF QUESTIONNAIRE DATA

This appendix contains data used for various chi-square tests reported in the text of the report. These cross tabulations of respondent data are presented in tabular format via the following 28 tables, all with a "C" prefix.

Appendix C1. Respondents' motivation for fishing versus species targeted.

Species Targeted	Motivation for Fishing			
	Food	Non-catch	Sport	Total
Char	2	11	5	18
Sheefish	4	8	5	17
Total	6	19	10	35

Appendix C2. Respondents' area of residence versus species targeted.

Respondent Opinion	Area of Residence			
	Local	Non-local	Non-resident	Total
Char	1	11	6	18
Sheefish	8	8	1	17
Total	9	19	7	35

Appendix C3. Respondents' opinion of length limits versus species targeted.

Respondent Opinion	Species Targeted		
	Char	Sheefish	Total
Approve	9	12	21
No opinion	6	2	8
Disapprove	3	3	6
Total	18	17	35

Appendix C4. Respondents' opinion of reduced bag limits versus species targeted.

Respondent Opinion	Species Targeted		
	Char	Sheefish	Total
Approve	6	9	15
No opinion	7	5	12
Disapprove	4	3	7
Total	17	17	34

Appendix C5. Respondents' opinion of seasonal closures versus species targeted.

Respondent Opinion	Species Targeted		
	Char	Sheefish	Total
Approve	2	9	11
No opinion	3	4	7
Disapprove	13	3	16
Total	18	16	34

Appendix C6. Respondents' opinion of bait restrictions versus species targeted.

Respondent Opinion	Species Targeted		
	Char	Sheefish	Total
Approve	7	5	12
No opinion	10	4	14
Disapprove	1	6	7
Total	18	15	33

Appendix C7. Respondents' opinion of catch and release fishing versus species targeted.

Respondent Opinion	Species Targeted		
	Char	Sheefish	Total
Approve	7	7	14
No opinion	6	3	9
Disapprove	5	6	11
Total	18	16	34

Appendix C8. Opinions of fishing success versus species targeted.

Species Targeted	Rating of Fishing Success by Angler			
	Excellent	Good	Fair/Poor	Total
Sheefish	6	9	1	16
Char	6	5	7	18
Total	12	14	8	34

Appendix C9. Opinions of size satisfaction versus species targeted.

Species Targeted	Rating of Size Satisfaction by Angler			
	Excellent	Good	Fair/Poor	Total
Sheefish	7	9	0	16
Char	7	7	4	18
Total	14	16	4	34

Appendix C10. Opinions of overall fishing enjoyment versus species targeted.

Species Targeted	Rating of Overall Fishing Enjoyment by Angler			
	Excellent	Good	Fair/Poor	Total
Sheefish	7	8	1	16
Char	8	7	3	18
Total	15	15	4	34

Appendix C11. Opinions of the need to improve fishing versus species targeted.

Species Targeted	Opinions of the Need to Improve Fishing		
	Needs Improvement	Does Not Need Improvement	Total
Sheefish	6	9	15
Char	3	9	12
Total	9	18	27

Appendix C12. Respondents' motivation for fishing versus area of residence.

Residence Group	Motivation for Fishing			
	Food	Non-catch	Sport	Total
Local	6	6	3	15
Non-local	5	18	13	35
Non-resident	2	12	2	16
Total	13	36	18	67

Appendix C13. Respondents' opinion of length limits versus area of residence.

Respondent Opinion	Area of Residence			
	Local	Non-local	Non-resident	Total
Approve	10	3	4	17
No opinion	19	9	7	35
Disapprove	10	5	1	16
Total	39	17	12	68

Appendix C14. Respondents' opinion of reduced bag limits versus area residence.

Respondent Opinion	Area of Residence			
	Local	Non-local	Non-resident	Total
Approve	8	4	5	17
No opinion	16	12	7	35
Disapprove	6	8	1	15
Total	30	24	13	67

Appendix C15. Respondents' opinion of seasonal closures versus area of residence.

Respondent Opinion	Area of Residence			
	Local	Non-local	Non-resident	Total
Approve	5	5	6	16
No opinion	18	7	10	35
Disapprove	6	2	8	16
Total	29	14	24	67

Appendix C16. Respondents' opinion of bait restrictions versus area of residence.

Respondent Opinion	Area of Residence			
	Local	Non-local	Non-resident	Total
Approve	2	15	9	26
No opinion	7	13	6	26
Disapprove	7	5	1	13
Total	16	33	16	65

Appendix C17. Respondents' opinion of catch and release fishing versus area of residence.

Respondent Opinion	Area of Residence			
	Local	Non-local	Non-resident	Total
Approve	6	2	8	16
No opinion	15	9	11	35
Disapprove	6	6	4	16
Total	27	17	23	67

Appendix C18. Respondents' opinion of length limits versus motivation for fishing.

Respondent Opinion	Motivation for Fishing			
	Food	Non-catch	Sport	Total
Approve	9	1	2	12
No opinion	22	10	3	35
Disapprove	8	4	6	18
Total	39	15	11	65

Appendix C19. Respondents' opinion of reduced bag limits versus motivation for fishing.

Respondent Opinion	Motivation for Fishing			
	Food	Non-catch	Sport	Total
Approve	3	5	3	11
No opinion	18	12	5	35
Disapprove	9	5	4	18
Total	30	22	12	64

Appendix C20. Respondents' opinion of seasonal closures versus motivation for fishing.

Respondent Opinion	Motivation for Fishing			
	Food	Non-catch	Sport	Total
Approve	6	2	4	12
No opinion	15	5	14	34
Disapprove	7	6	5	18
Total	28	13	23	64

Appendix C21. Respondents' opinion of bait restrictions versus motivation for fishing.

Respondent Opinion	Motivation for Fishing			
	Food	Non-catch	Sport	Total
Approve	5	3	3	11
No opinion	16	15	3	34
Disapprove	5	6	6	17
Total	26	24	12	62

Appendix C22. Respondents' opinion of catch and release fishing versus motivation for fishing.

Respondent Opinion	Motivation for Fishing			
	Food	Non-catch	Sport	Total
Approve	5	12	9	26
No opinion	3	12	1	16
Disapprove	4	10	8	22
Total	12	34	18	64

Appendix C23. Ratings of fishing success versus motivation for fishing.

Motivation for Fishing	Rating of Fishing Success by Angler			
	Excellent	Good	Fair/Poor	Total
Food	1	7	4	12
Sport	12	15	7	34
Non-catch	10	5	3	18
Total	23	27	14	64

Appendix C24. Ratings of size satisfaction versus motivation for fishing.

Motivation for Fishing	Rating of Size Satisfaction by Angler			
	Excellent	Good	Fair/Poor	Total
Food	2	7	3	12
Sport	13	19	2	34
Non-catch	10	6	2	18
Total	25	32	7	64

Appendix C25. Ratings of overall fishing enjoyment versus motivation for fishing.

Motivation for Fishing	Rating of Overall Fishing Enjoyment by Angler			
	Excellent	Good	Fair/Poor	Total
Food	2	7	3	12
Sport	13	19	2	34
Non-catch	10	6	2	18
Total	25	32	7	64

Appendix C26. Ratings of fishing success versus area of residence.

Area of Residence	Rating of Fishing Success by Angler			
	Excellent	Good	Fair/Poor	Total
Local	3	8	4	15
Non-local	14	14	6	34
Non-resident	6	6	4	16
Total	23	28	12	65

Appendix C27. Ratings of size satisfaction versus area of residence.

Area of Residence	Rating of Size Satisfaction by Angler			
	Excellent	Good	Fair/Poor	Total
Local	4	10	1	15
Non-local	14	15	5	34
Non-resident	7	8	1	16
Total	25	33	7	65

Appendix C28. Ratings of overall fishing enjoyment versus area of residence.

Area of Residence	Rating of Overall Fishing Enjoyment by Angler			
	Excellent	Good	Fair/Poor	Total
Local	6	7	3	16
Non-local	18	13	3	34
Non-resident	9	5	2	16
Total	33	25	8	66

APPENDIX D

SUGGESTIONS TO IMPROVE SPORT FISHING IN NORTHWEST ALASKA

This appendix contains responses to question number 8 in the survey which reads: "Do you feel that **sheefish and/or Dolly Varden (Arctic char) sport fishing** in Kotzebue Area waters **should be improved**? ____Yes ____No

If Yes, what would **you like to see done to improve sport fishing** for these species in Kotzebue Area waters?"

(The three digit number preceding these actual comments are the last three digits of the number on the respondent's fishing license).

072. Stocking - if possible - overall, I had excellent success in the Noatak! Keep up the good work.

101. Some sort of regulation on net fishing at critical movement times for these fish. Encourage locals to not use Dolly Varden for dog food.

163. Reduce subsistence type styles of harvesting - i.e. nets and traps.

164. Enforce existing regulations. Allow no increase in commercial harvest and allow no commercial fishery in the rivers. Note: This survey is flawed. You need to explain to the public that resource is used by three groups and total sport take is only a minor portion of the harvest. This survey is great for a stream in Ohio near population center but northwest Alaska is too remote for this survey.

166. Control unlimited subsistence catch.

202. For question 6. In the event of a "conservation emergency" the Board of Fish must 1st close fishing to nonresidents; 2nd close it to non area residents; 3rd close it to commercial, then sport etc. as per State constitution and state subsistence law. This should have been done on the Kenai River.

225. Natives think they own Alaska and everyone owes them something. I pay a lot of money to enjoy God's creations nowadays and all I see is special favors (subsistence etc.) all they do is abuse it. Just like the Caribou hunting up there. They take snowmachines out and slaughter animals. I know this because I've been there and talked to natives in Kobuk, they could really care less.

228. My fishing experience in the Kotzebue area is limited to a "once- in-a-lifetime" float trip down the Noatak. I fished only a little, but did catch one nice Dolly Varden (Arctic char) for dinner.

249. Limit or restrict guiding for sport fishing.

313. Build a road from Fairbanks. Hatchery fish is a possibility.

354. I was at Dahl Creek to work for 8 weeks. I caught over 30 sheefish from about 4 lbs to 18 lbs. I don't believe it could have been much better.

398. In my opinion, the options indicated here are not very relevant to the management of sheefish and char. Sport fishing is an almost insignificant factor in relation to subsistence fishing and catches incidental to salmon fishing (both commercial and subsistence). Exceptions are (or would be) sportfishing for both char and sheefish on their restricted spawning grounds. I do not think sport fishing can be improved without a program that limits subsistence and commercial fishing. That is possible only if there is a conservation emergency, which there probably is with sheefish.

444. Outlaw fly-in fishing. I'd like to see fly-in drop offs limited to the headwaters of the Kobuk, Noatak, & Colville rivers (pick-up at Umiat, etc.). As long as unrestricted fly-ins are permitted, the quality of the area, as well as the fishing will decline. In the long run, wilderness can't survive powered vehicles.

464. I would rather see management for larger trophy sized sheefish. I am either ambivalent or against Dolly Varden sport fishing and any regulations concerning them. Or should I say, I don't.

482. Is it possible to spawn char into Kobuk lake for food resource or will they all end up in the headwaters of the Noatak drainage?

515. Sport fishing might have to be controlled to preserve subsistence resources.

525. I don't fish enough to know the quality or quanity of available fish in most rivers except the Wulik.

552. There needs to be more active monitoring of harvest and populations of sheefish and char. I would like to see ADF&G start a scientific study of sheefish - char in the area to find out if more regulations are needed to protect the fishery. Negative effects of overfishing by under-ice nets left unattended, and not enough monitoring of annual populations. My feeling is that fishing success is <u>decreasing</u>. Thanks for doing this survey!

605. Education - I don't know whether or not there is a problem with that fishery. So many things can influence the catch of char - whether the fish are running or not, whether they're feeding or not. Just because I didn't catch any is no reason for me to think there's a problem and /or that the fishery should be improved. In our arctic rivers in the Northwest Territories, there can be lots of char caught at specific times, yet none in between. Doesn't mean there's a problem.

606. I enjoyed the Kobuk River for 2 weeks by canoe with friends - I do not know exactly how to improve this fishing area. Despite the distance I live from Kotzebue area I did appreciate being part of your survey.

700. I don't know how you can improve on the best fishing (sport) in the state. Most of it is so remote with limited access. I'm all for

monitoring the number of fish. Enforcement of a bunch of regulations would be very difficult to accomplish.

705. The fish are there. I don't feel that numbers of large fish caught should be uppermost in any sport fisherman's mind. The fun is in taking advantage of the opportunity to fish wilderness waters, not in how much you can take out.

712. The waters hold a great char and sheefish resource that is slowly being depleted. The ADF&G has <u>not</u> made an attempt to protect or study these resource. i.e. Kivalina people are worried about fishing in the upper limits of the Wulik, but F& G has not studied the fishing impact or made a concerted effort to meet with the villages and get them involved in a conservation program. No community education has been done to show impact of current fisheries. I have never heard what the yearly catch is in pounds, number of fish, or what the current stocks are (mix in ages, numbers, or biomass).

718. Treat all fishermen & fisherwomen alike. No preference to any one group, be they sport, commercial, or subsistence user.

719. I saw many fish taken only to feed dogs! Saw one boat in Ambler take in excess of 100 sheefish.

755. I no longer live in Kotzebue, I left in Jan. 1986, so I don't feel competent to address this question, from that time to present. I find the whole questionnaire somewhat "foreign" for Kotzebue area. In my opinion, the best way to improve sport fishing almost anyplace is to eliminate commercial fishing. From my observations over 4 years in Kotzebue I'd be surprised if the majority would want to increase sport fishing.

769. Catch and release/1 fish limit/lure or fly only. Conserve - it's a great place to fish Dolly Varden and I thoroughly enjoyed it. Let's not ruin the resource.

795. Wanton waste still occurs in theis area and I guess a limit should be placed (daily bag limit) so that very large catches of spawning sheefish are not destroyed on their spawning run and that no one should catch more then he can safely preserve for food.

824. I have been in the area fishing only twice in my life. It was good fishing at the time and place I was in 1983 - I would hate to find it different from that - I think I prefer catch and release to anything - all people do not like to do that so in other times size limit and closures.

873. Allow airplane access for fishing and other subsistence type activities such as in the parks, "Kobuk" and "Gates."

891. Prevent development that would damage habitat use of biologically sound populations. Also, regulations to prevent overharvest.

896. Comment! I only fished for two weeks in 1986 while on a moose hunt on the Nimivetuk and Noatak rivers - we only caught Dolly Varden & Arctic grayling and we enjoyed it very much.

902. We took a 10 day float trip, we had good success on pike, grayling, lake trout, and sheefish.

922. Stock area for improved fishing.

972. Winter sheefish fishing is great recreation - however some locals seem to have to haul them off by the sled load.

984. We were never in the area when sheefish and char were running. We fished for pike and grayling to supplement our food supply while teaching VBS.