

FISHERY DATA SERIES NO. 90-20

OPINIONS AND REGULATORY PREFERENCES OF SPORT
FISHING LICENSE HOLDERS FROM THE SEWARD
PENINSULA AREA OF WESTERN ALASKA, 1988¹

By

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ABSTRACT

Under a stable regulatory regime, sport harvest of some fish species has declined over the past ten years in Seward Peninsula waters whereas, angling effort has increased. These trends in the recreational fishery prompted an evaluation of potential regulatory management options by staff of the Alaska Department of Fish and Game. As part of this evaluation, motivations, regulatory preferences, and profiles of sport license holders were examined using a postal questionnaire. A total of 509 questionnaires were mailed to residents of the Seward Peninsula area (35 percent of the area's resident license holders in 1988). Responses were received from 64 percent of the surveyed license holders. Surveyed fishermen rated aspects of fishing quality between fair and good; those license holders who fished off the road system tended to rate fishing quality higher than did roadside fishermen. Most license holders (58 percent) cited non-catch related factors as their primary motivation for fishing; food was the second most commonly listed motivation (32 percent), and only 10 percent of those surveyed listed sport as their primary motivation for fishing. Pacific salmon *Oncorhynchus spp.* was the species most commonly targeted, followed by Dolly Varden *Salvelinus malma* and Arctic grayling *Thymallus arcticus*. Most license holders approved of seasonal closures and length limits as a way of improving fishing, whereas, catch and release fishing had the highest disapproval rating. Survey results suggest that license holders feel that there is competition with subsistence and commercial users for fishery resources in the Seward Peninsula management area. Relationships between various categories of license holders and responses to survey questions suggest that Seward Peninsula license holders fall into two general groups. The first group consists of sport or non-catch motivated fishermen targeting non-salmon species who approved of bait restrictions and approved of catch and release fishing, were more likely to fish off of the road system, and rated fishing quality higher than the other group. The second group consisted of food motivated license holders who targeted salmon, disapproved of regulations that limit or eliminate catch, and tended to fish on the road system.

KEY WORDS: postal questionnaire, sport fishing regulations, angler values, angler motives, angler opinions, Seward Peninsula.

INTRODUCTION

The Seward Peninsula management area (Figure 1) is located in the Arctic-Yukon-Kuskokwim Region of Alaska. The management area annually supports about 1% of the recreational fishing effort that takes place in Alaska. Sport angler effort in the Seward Peninsula area increased about two and a half fold between 1977 and 1988, from 7,828 angler days in 1977 to 20,278 angler days in 1988 (Table 1). Sport fish harvest rose from about 10,000 fish in 1977 to over 34,000 fish in 1983, and then fell to an annual range of 19,000 to 25,000 fish between 1984 and 1988 (Table 1). Average catch per day of fishing effort rose from 1.22 in 1977 to over two fish per angler day during the early 1980's, and subsequently dropped to a range of 0.90 to 1.46 fish per angler day from 1984 to 1988 (Table 1).

The sport fish harvest from the Seward Peninsula fishery consists primarily of coho, pink, chum, and chinook salmon *Oncorhynchus kisutch*, *gorbuscha*, *keta*, and *tshawytscha*, respectively, Dolly Varden *Salvelinus malma*, Arctic grayling *Thymallus arcticus*, northern pike *Esox lucius*, and whitefish *Coregonus* sp. Of 24,370 fish harvested from the Seward Peninsula sport fishery in 1988, 10,715 or 44%, were salmon species, 4,928, or 20%, were Arctic grayling, 4,855, or 20%, were Dolly Varden and the remaining 16% were other species (Table 2). Peak annual harvests of various species by the recreational fishery has occurred in the following years: pink and chum salmon, 1982; Dolly Varden and Arctic grayling, 1983; coho salmon, 1984; burbot *Lota lota*, 1985; chinook salmon, 1986; northern pike, 1987; and whitefish, 1988 (Table 2). Sport fishing regulations have remained virtually the same from Statehood through 1987. The first substantial changes in the regulatory structure of the area sport fishery took place just prior to the 1988 fishing season.

Increasing fishing effort coupled with decreasing catch, and catch-per-unit of effort (CPUE) under a stable regulatory structure, has caused concern to the fishery managers of the Alaska Department of Fish and Game (ADFG). Although spawning escapement of several salmon stocks in the area is monitored annually, only minor field investigations of resident fish stock status have been conducted in the Seward Peninsula management area. Increased subsistence use of Arctic grayling and other fish in the management area has raised concern over resident fish stock status among some user groups. Some local anglers have stated that the abundance of larger-sized Arctic grayling appears to be declining, and thus quality of the sport fishery may be declining. Conservation problems with salmon and particularly with chum salmon have led to various emergency closures of the sport fishery over the past few years as well as to many changes in the regulatory structure of the commercial and subsistence fisheries in the area over the past few years. These types of concerns indicated to ADFG staff that different management options for the sport fishery should be considered in order to maintain the recreational fishery. These concerns led to new sport fish regulations in 1988 by the Alaska Board of Fisheries.

The management goal of Sport Fish Division of ADFG is to provide the public, on a sustained basis, with a variety of quality angling opportunities while conserving wild stocks of fish. While operating within the confines of the

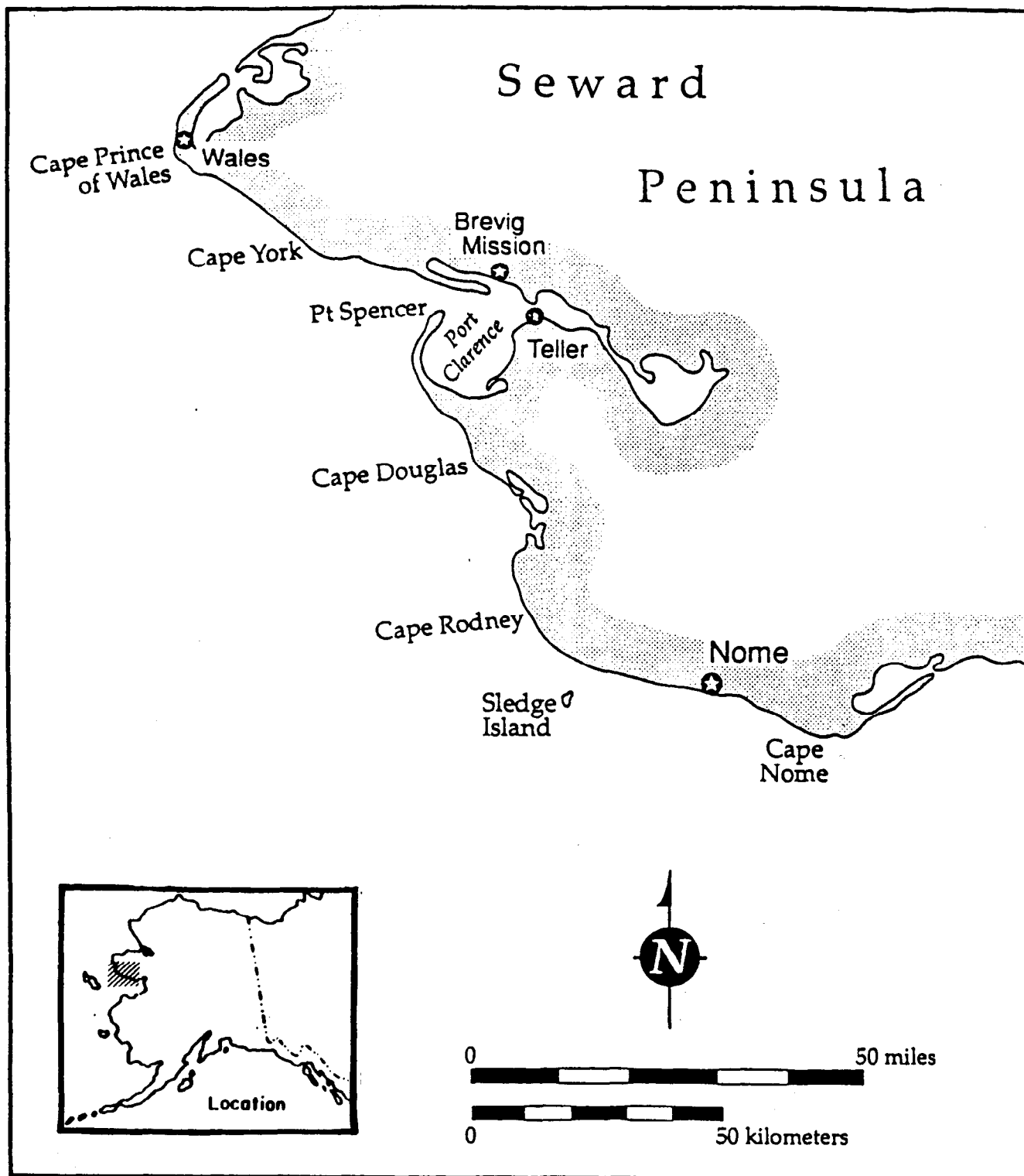


Figure 1. Location of Seward Peninsula management area.

Table 1. Summary of fishing effort, total catch, and average catch per day of fishing effort in the 1977 through 1988 Seward Peninsula sport fishery^a.

Year	Fishery	Number Of Anglers	Number Of Trips	Total Number Of Days Fished	Number Of Fish Caught	Average Catch Per Day
1977	All	ND ^b	ND	7,828	9,583	1.22
1978	All	ND	ND	8,379	12,973	1.55
1979	All	ND	ND	8,725	15,787	1.81
1980	All	ND	ND	7,968	22,384	2.81
1981	All	ND	ND	10,879	16,188	1.49
1982	All	ND	ND	13,198	34,230	2.59
1983	Freshwater	ND	ND	12,698	33,053	2.60
	Marine	ND	ND	4,266	1,596	0.37
	All	ND	ND	16,944	34,649	2.05
1984	Freshwater	1,597	6,634	12,558	20,750	3.68
	Marine	1,166	2,299	4,878	4,674	0.96
	All	2,512	8,933	17,436	25,424	1.46
1985	Freshwater	2,854	9,022	18,141	20,933	1.15
	Marine	545	910	1,778	1,612	0.91
	All	3,399	9,932	19,919	22,545	1.13
1986	Freshwater	2,872	8,260	17,257	20,431	1.18
	Marine	509	805	850	1,209	1.42
	All	3,381	9,065	18,107	21,640	1.20
1987	Freshwater	2,528	7,266	20,381	18,722	0.92
	Marine	303	400	1,032	561	0.54
	All	2,697	7,666	21,413	19,283	0.90
1988	Freshwater	2,661	13,428	19,456	23,191	1.19
	Marine	557	650	822	1,179	1.43
	All	3,001	14,078	20,278	24,370	1.20

^a Data taken from Mills (1979-1989).

^b ND = No Data. Data was not collected.

Table 2. Harvests in the Seward Peninsula sport fishery^a, 1977 to 1988.

Year	Salmon				Dolly Varden	Arctic Grayling	White- Fish	N. Pike	Burbot	Other ^b
	Chinook	Coho	Pink	Chum						
1977	197	449	2,402	670	1,621	1,607	170	302	0	2,165
1978	303	742	7,399	546	1,690	1,455	87	389	54	308
1979	234	2,421	2,918	973	4,109	2,173	282	450	27	2,200
1980	52	1,455	7,732	1,601	5,811	1,635	353	284	0	3,461
1981	70	1,504	3,101	1,889	3,981	2,104	123	303	0	3,113
1982	409	2,986	13,742	2,620	6,498	6,225	597	210	0	943
1983	687	3,823	4,583	2,042	9,853	8,241	148	798	0	4,474
1984	247	7,582	8,322	1,481	4,507	2,349	39	208	13	676
1985	239	1,177	1,138	1,036	5,834	4,501	70	56	175	8,319
1986	1,077	3,926	3,172	1,719	5,721	4,042	510	699	0	774
1987	615	2,319	1,304	814	5,506	4,600	272	906	0	2,947
1988	400	5,038	2,912	1,583	4,855	4,928	673	564	36	3,381
Means	377	2,785	4,894	1,415	4,999	3,655	277	431	25	2,730

^a Data taken from Mills (1979-1989).

^b Other includes sockeye salmon, lake trout, and sheefish for which annual harvest estimates by species are available and miscellaneous other fish including Pacific halibut, saffron cod, smelt species, etc. for which annual harvest estimates by species are not available.

sustainable yield principle, it is the objective of ADFG fishery managers to optimize public benefits of the recreational fishery by satisfying as large a segment of the public as practical. Keeping this last objective in mind, it is necessary to recognize that the angling public usually consists of a variety of user groups, and that these user groups have differing (and sometimes conflicting) desires and expectations regarding the management of the common property fishery resource. In order to balance the desires of various user groups relative to sustained use of fishery resources, sport fishery management programs often have multiple and somewhat diverse objectives, rather than simple objectives such as maximizing total yield of fish flesh in pounds per year.

Fishery managers prefer, and researchers recommend, that the preferences and motivations of anglers be considered when shaping management plans (Duttweiler 1976; Smith 1980). To develop fishery management programs that satisfy as large a segment of the angling public as possible, it is necessary for managers to use public input as one component of the decision making process regarding management policy. For public input to be of value in determining management objectives, managers must be able to categorize various components of the angling public (user groups), to know the relative size of such user groups, and to know the desires and opinions of various user groups regarding the management of the common property fishery resource.

Public input regarding fisheries management can be gathered in a variety of ways. For example, local advisory committees provide input to the Board of Fisheries. Opinions of a random segment of the angling public regarding management preferences is another form of public input to the regulatory process. Opinions can be obtained through the use of survey questions (Renyard and Hilborn 1986; Duttweiler 1976). Questionnaire surveys have been used in the past to determine motivations and desires of anglers regarding their fishing experience (Holmes 1981, 1987; Moeller and Engelken 1972), and to directly measure angler preference for specific regulatory or management options (Renyard and Hilborn 1986; Harris and Bergersen 1985; Mills 1986).

The intent of this study was to implement a statistically sound survey of anglers to augment other sources of public input for the development of recreational and other fishery management plans. The goal of this study was to obtain and analyze angler opinions regarding management options, motivations for angling, and other use-related data from anglers resident in the Seward Peninsula area. The general hypothesis was that Seward Peninsula anglers could be categorized into user groups based upon several factors, and that these user groups would have differing desires and opinions regarding management policy.

Analyses of data presented in this report are preliminary in scope. The association between variables (angler profiles and opinions) needs to be examined with more advanced procedures than were available at the time of publication. These procedures include log linear models, which estimate the probability of a preferred management option, given variables entered into the model. Data presented in this report will be examined with more advanced statistical procedures at some point in the future.

METHODS

Survey Design and Questions

A survey questionnaire similar to previous sport fish angler surveys (Holmes 1981, 1987) was mailed to 509 randomly selected 1988 sport fish license holders with residential zip codes from the Seward Peninsula area. The sample of 509 license holders represented 34.8% of the 1,464 individuals that purchased sport fish licenses in 1988 and listed a Seward Peninsula zip code (Figure 1). All license holders were at least 16 years old. Anglers were asked to confine their answers to fishing activities that took place in the Seward Peninsula management area during 1988.

The design of the questionnaire was intended to keep non-response to a minimum, since it has been shown that survey non-response can cause significant bias in results, even with response rates as high as 70% (Brown and Wilkins 1978). The questionnaire was kept short, and the questions were simple. A cover letter was attached to each questionnaire explaining the purpose of the survey and requesting the co-operation of participating anglers. All anglers sampled were sent a postcard two days prior to the first mailing of the questionnaire, explaining that they had been selected as part of the survey. A second letter and questionnaire were sent to all non-respondents one month after the first mailing. These survey methods were used to reduce non-response, as suggested by Linsky (1975) and were identical to those used in an earlier survey (Holmes 1987).

Thirteen questions were asked, in three types of format: categorical, rank, and open-ended (Appendix A). 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 the type of regulations they fished under (sport, personal-use, subsistence, or commercial), the season that fishing took place, perceptions of fishing quality, motivations for fishing, number of trips taken using various means of access to the fishery, species targeted, opinions regarding various management options for regulation of sport fisheries, and the number of years that they had participated in sport fisheries in Alaska and elsewhere. Respondents were also asked open-ended questions regarding: (1) the need to improve sport fishing in the area, and what should be done to improve it; (2) the need to improve access to sport fishing waters in the area and specific recommendations for improving access; and, (3) whether or not ADFG was paying adequate attention to sport fisheries in the area, and what ADFG should do with respect to the sport fisheries in the area.

Hypothesis Testing

Anglers were categorized into groups to test for differences in responses to questions. Criteria used to categorize groups of anglers included: (1) years of past fishing experience; (2) frequency of participation in the sport fishery in 1988; (3) motivation for fishing; (4) regulatory type of user

(sport, commercial, personal use, subsistence); (5) primary species targeted; and, (6) means used to access fishing sites (Table 3). Only the motive that was listed as primary was used to categorize motivation of anglers for fishing.

The general hypothesis is that there are definable user groups among Seward Peninsula anglers, and that these user groups have different opinions regarding angling and fishery management. To delineate differences among the users, various null hypotheses were tested. Hypothesis tests performed through this research effort are presented in outline form below:

1. Angler receptiveness to restrictive regulations is not influenced by:
 - a. fishing experience (years);
 - b. frequency of participation (trips in 1988);
 - c. motivation for fishing (primary);
 - d. regulatory category fished under (sport, commercial, etc);
 - e. primary target species;
 - f. perceptions of fishing quality; and,
 - g. purpose of restrictive regulation (either to improve fishing or in response to a conservation emergency).
2. Angler's perception of fishing quality is not influenced by:
 - a. fishing experience;
 - b. frequency of participation;
 - c. motivation for fishing;
 - d. regulatory category fished under;
 - e. primary target species; and,
 - f. means used to access the fishery.
3. Primary species targeted by anglers is not influenced by:
 - a. fishing experience;
 - b. frequency of participation;
 - c. motivation for fishing;
 - d. regulatory category fished under; and,
 - e. means used to access the fishery.
4. A substantial proportion of sport fishermen believe that sport fishing should be improved and whether or not anglers believe that sport fishing should be improved is not influenced by:
 - a. fishing experience;
 - b. frequency of participation;
 - c. motivation for fishing;
 - d. regulatory category fished under;
 - e. primary target species; and,
 - f. perceptions of fishing quality.

Table 3. Criteria used to define categories of Seward Peninsula license holders.

Basis For Categorization	Category Criteria
Total fishing experience & Alaskan fishing experience:	less than 10 years, 10 to 19 years, and 20 or more years.
Frequency of participation:	less than 10 trips in 1988, 10 to 19 trips in 1988, 20 to 29 trips in 1988, and 30 or more trips in 1988.
Motivation for fishing:	sport motivated, including trophy motivated; food motivated; non-catch motivated including: enjoying nature, escaping daily pressure, time with family and friends, & enjoying other recreation.
Primary species targeted:	salmon, Dolly Varden, Arctic grayling, or other species.
License holder's perception of fishing quality in terms of success, size satisfaction, and overall enjoyment:	aspects of fishing rated as: excellent, good, fair, or poor.
Use category fished under:	those fishermen who sport or personal use fished <u>only</u> ; versus, those fishermen who commercial or subsistence fished, and may have sport or personal use fished.
Means of access to the fishery:	those fishermen who took at least one off-road trip; versus, those fishermen who took no off-road trips.

5. A substantial proportion of sport fishermen desire improved access to sport fishing waters and the desire for improved access is not influenced by:
 - a. frequency of participation;
 - b. motivation for fishing;
 - c. perceptions of fishing quality; and,
 - d. regulatory category fished under.

6. A substantial proportion of sport fishermen support the existing ADFG program and believe that fishery managers pay adequate attention to Seward Peninsula sport fisheries and resources; anglers opinions concerning this topic are not influenced by:
 - a. frequency of participation;
 - b. motivation for fishing;
 - c. perceptions of fishing quality; and,
 - d. regulatory category fished under.

Data Analysis

Dependence between user category and response to a given question was examined using the chi-square test for independence (Conover 1980). Chi-square analyses are descriptive of respondents' profiles and preferences, however are not the best statistical method for categorizing users into groups. Significance in this paper is defined as $p \leq 0.10$. Sample sizes vary for each question and chi-square test due to non-responses to individual questions. Some analyses of the survey data resulted in contingency tables with one or more cells having expected values of five or less. In these cases, tables were collapsed by combining categories. Collapsing of contingency tables (to eliminate cell sizes of less than five or to clarify a result) reduces the amount of information being analyzed and may bias the results obtained. Answers to questions which ranked 1st and 2nd (judged to be most important) were tabulated into cells, and these data were used in chi-square analyses. Standard Errors (SE) for ranked data were calculated by the following formula.

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

where:

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

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

Table 4. Sample sizes associated with the Seward Peninsula sport fishing questionnaire.

Beginning sample size.....	509
Number of questionnaires mailed.....	509
Number of questionnaires undeliverable.....	19
Number of questionnaires delivered.....	490
Number of respondents to the first mailing.....	246
Percent response to the first mailing.....	50.2%
Number of respondents to the second mailing.....	66
Percent response to the second mailing.....	27.0%
Total number of respondents.....	312
Percent response to both mailings.....	63.7%
Number of nonrespondents to questionnaires.....	178
Percent nonresponse.....	36.3%

RESULTS

Survey Response and Potential Bias

Of the 509 questionnaires initially mailed out, 490 were successfully delivered (Table 4). Of these 490, 246 were returned within one month, and 66 were returned following the second mailing, giving a total response of 312, or a response rate of 63.7%. Potential survey bias due to differential responses to the first versus the second mailing was researched. Differences in frequency of participation (less than nine trips per year, 10 to 19 trips per year, 20 to 29 trips per year, and 30 or more trips per year) among respondents to the first and second mailings were not significant ($\chi^2 = 2.03$, $DF = 3$, $p = 0.567$). The amount of total and of Alaskan fishing experience (less than 10 years, 10 to 19 years, and 20 years or more) did not differ between respondents to the first and second mailings ($\chi^2 < 2.41$, $DF = 2$, $p > 0.30$ for both tests). Motivation for fishing (sport, food, or non-success) did not differ between respondents to the first and second mailings ($\chi^2 = 3.61$, $DF = 2$, $p = 0.17$). Because of these results, it was assumed that responses to first and second mailings did not differ, and responses from both mailings were pooled for all further analysis. Cross tabulations of data used for the hypothesis tests concerning potential survey bias are presented in Appendices F1 through F5 in Appendix F.

Responses to Survey Questions

Most survey respondents (90.7%) sport fished in 1988 (Table 5). Of the license holders that did sport fish in 1988, 72.6% reported fishing during the summer, 25.9% during the summer and winter, and only 1.5% during the winter only. A large percentage of survey respondents also fished under some other regulatory category than sport fishing. Over 69% of respondents personal use fished, 32.7% subsistence fished, and 6.6% commercial fished (Table 5).

License holders residing in the Seward Peninsula area generally gave the three different aspects of the quality of fishing a mean rating of good on a scale of excellent, good, fair, and poor (Table 6). The highest percentage (41%) of license holders rated fishing success as good and 49% rated size satisfaction as good. The majority (43%) of license holders rated overall fishing enjoyment as excellent (Figure 2). Under 5% of respondents rated size satisfaction or overall fishing enjoyment as poor, 13% rated fishing success as poor.

A majority (58%) of license holders listed non-catch related factors as their primary motivation for sport fishing (Table 7). Food was the next most common motivation for sport fishing, with 31.9% of the respondents listing it as their primary motivation, and 17.1% of the respondents listing it as their secondary motivation. Sport fishing was listed by 10% of the license holders as their primary motivation for fishing, and by 12.2% of the license holders as their secondary motivation for fishing. Trophy was the least common motivation for fishing, with only one individual, or 0.1% of respondents, listing it as their primary motivation for fishing, and only seven individuals, or 2.5% of respondents, listing it as their secondary motivation for fishing. More than 24% of respondents listed that enjoying nature, and

Table 5. Response to questions regarding the types of fishing that they engaged in during 1988^a.

Fishing Category	<u>Fished in 1988</u>		<u>Did Not Fish in 1988</u>		<u>Response to Question</u>	
	No.	Percent	No.	Percent	No.	Percent
Sport fishing	274	90.7	28	9.3	302	96.8
Summer only	199	72.6				
Winter only	4	1.5				
Both summer & winter	71	25.9				
Summer	270	98.5				
Winter	75	27.4				
Subsistence fishing	92	32.7	189	67.3	281	90.1
Commercial fishing	17	6.6	241	93.4	258	82.7
Personal use fishing	197	69.1	88	30.9	285	91.3

^a Based upon analysis of 312 returned questionnaires.

Table 6. Ratings of some aspects of sport fishing quality in Seward Peninsula waters^a.

Fishing Question	Angler Responses (%)				Total Sample Size	Mean Rating	SE
	Excellent (1)	Good (2)	Fair (3)	Poor (4)			
Fishing success	56 (20)	117 (41)	73 (26)	37 (13)	283 (100)	2.32	0.06
Size satisfaction	68 (24)	139 (49)	61 (22)	13 (5)	281 (100)	2.32	0.06
Overall fishing enjoyment	122 (43)	108 (38)	42 (15)	12 (4)	284 (100)	1.80	0.05

^a Analysis is based upon 312 returned questionnaires; however, 29 questionnaire respondents did not rate fishing success; 31 questionnaire respondents did not rate size satisfaction; and 28 questionnaire respondents did not rate overall fishing enjoyment. Percentage is given in parentheses.

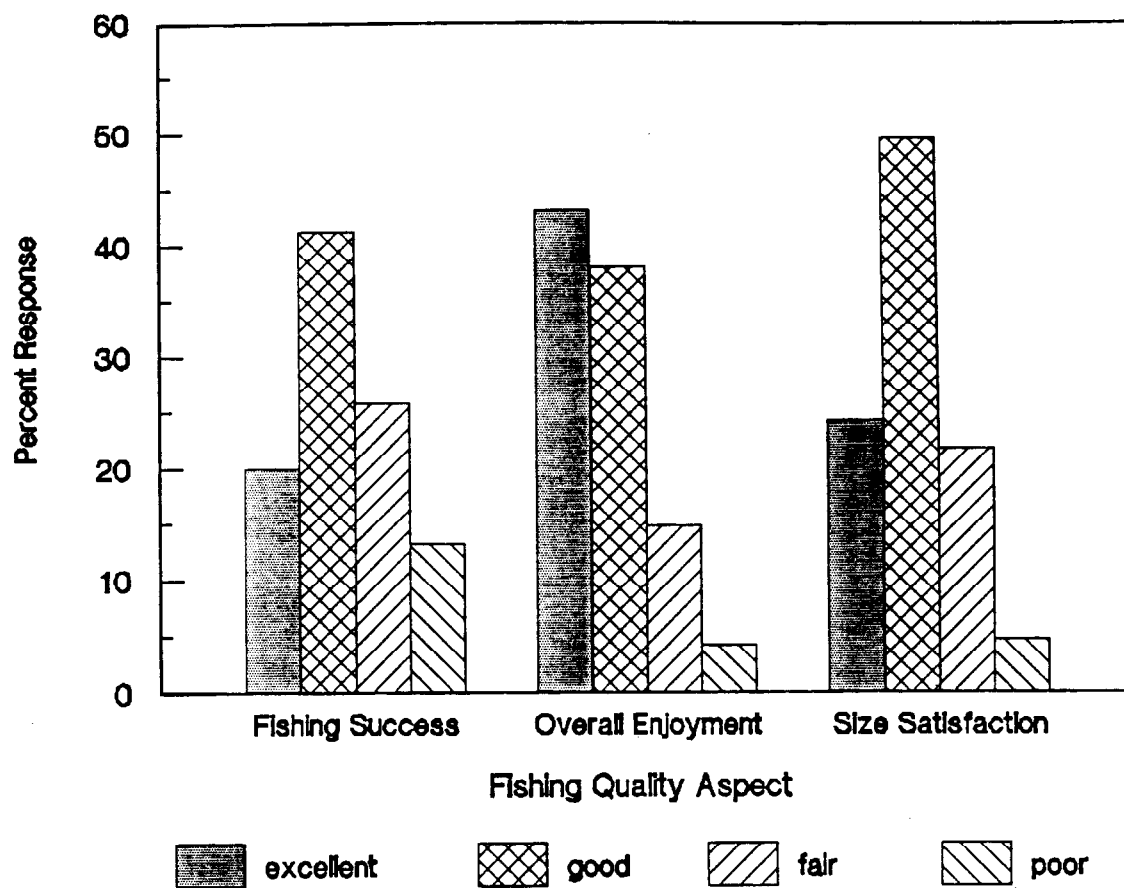


Figure 2. Aspects of fishing quality rated by respondents.

Table 7. Response of Seward Peninsula sport fishing license holders when asked to give their first and second most important reasons for sport fishing^a.

Response	Most Important Reasons For Sport Fishing					
	First		Second		First + Second	
	Number	Percent	Number	Percent	Number	Percent
<u>Fishing-motivated:</u>						
Sport	25	10.0	30	12.2	55	11.1
Food	80	31.9	42	17.1	122	24.5
Trophy	1	0.1	6	2.5	7	1.4
<u>Nonfishing-motivated:</u>						
Enjoying nature	62	24.7	69	28.0	131	26.4
Family and friends	50	20.0	52	21.1	102	20.5
Escaping pressure	20	8.0	14	5.7	34	6.8
Other recreation	13	5.3	33	13.4	46	9.3
Totals	251	100.0	246	100.0	497	100.0

^a Analysis is based upon 312 returned questionnaires; however, a total of 61 questionnaire respondents did not list a primary motive and 66 questionnaire respondents did not list a secondary motive.

20% listed that being with family and friends, were motives for fishing in the non-catch related category (Table 7).

Survey respondents took an average of 19.1 sport fishing trips in 1988. Respondents took the highest average number (11.45) of trips by road (Table 8). Off road surface access had the next highest average number of trips at 2.87 trips taken in 1988. Fly-in access had the lowest average number of trips taken at 0.54 trips in 1988. The distributions of numbers of trips taken by different access types were highly skewed (Figure 3); the median number of trips taken by each access type is much lower than the mean number of trips.

More Seward Peninsula license holders listed salmon species as their primary and secondary target than any other fish species (Table 9). Dolly Varden and Arctic grayling were the second and third most targeted fish species. The majority of respondents listed either salmon species, Dolly Varden, or Arctic grayling as their primary or secondary target species, with less than 8% of respondents listing other fish species as primary or secondary targets.

Survey respondents were asked if they approved, disapproved, or had no opinion of various management options aimed at improving sport fishing. Seasonal closures was approved by the highest percentage of respondents (Figure 4). A minimum length limit was the regulation with the next highest approval rating. More respondents disapproved than approved of the remaining five management options, with the highest disapproval rating going to catch and release fishing. A substantial portion (18.6% to 36.4%) of respondents listed no opinion regarding the seven management options aimed at improving fishing (Table 10).

License holders were asked to rank several regulatory options that might be implemented in a conservation emergency to prevent overharvest of the fishery resource. Respondents were asked to rank these six options from most preferable to least preferable. Reduced bag limits, season closures, and length limits were the regulation proposals which were most favored (Table 11). Complete fishery closure received the highest (least favored) mean rank, with catch and release fishing ranked as the next least favored emergency regulation.

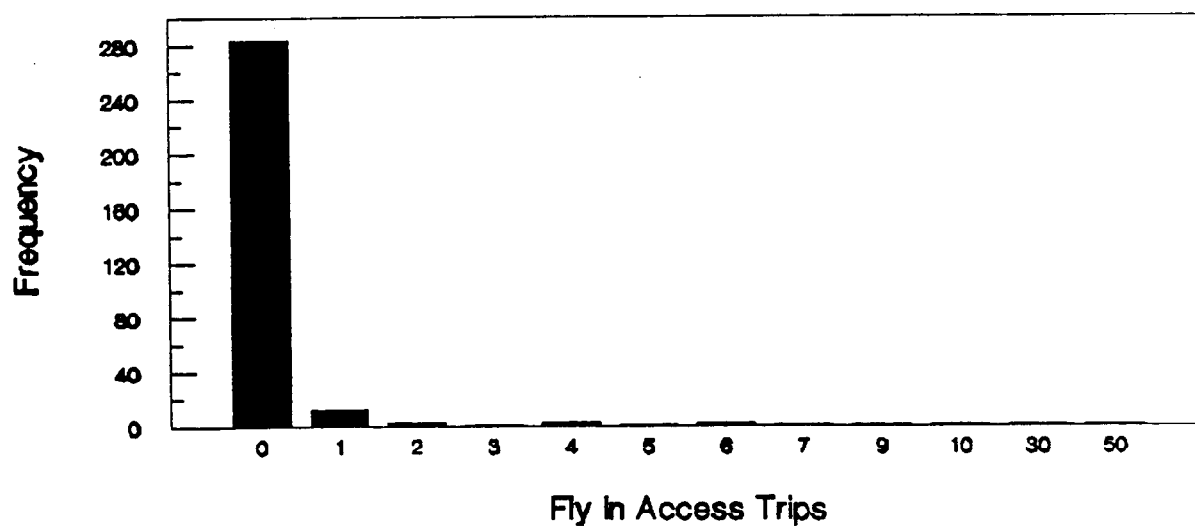
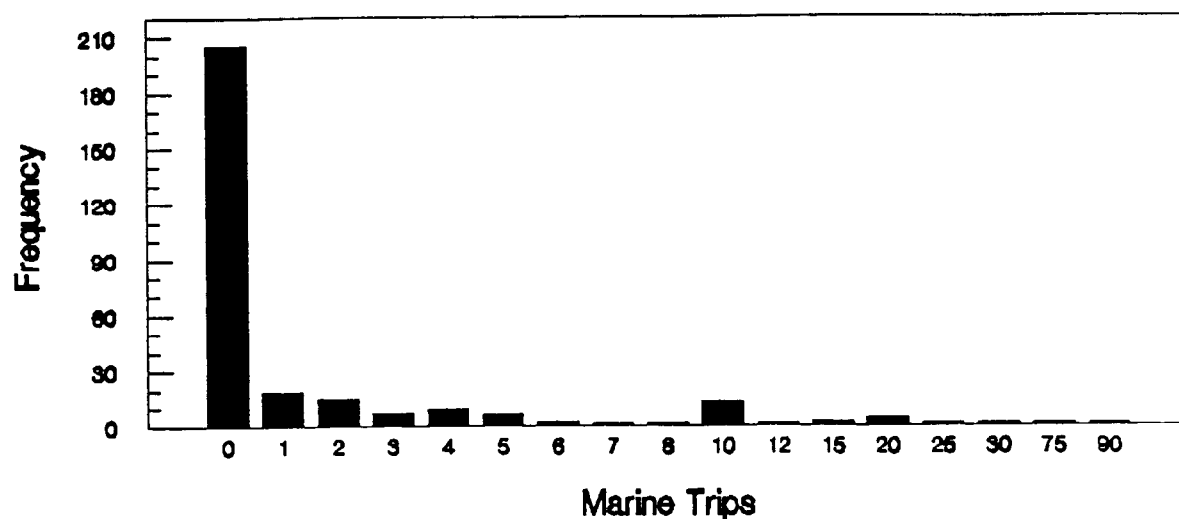
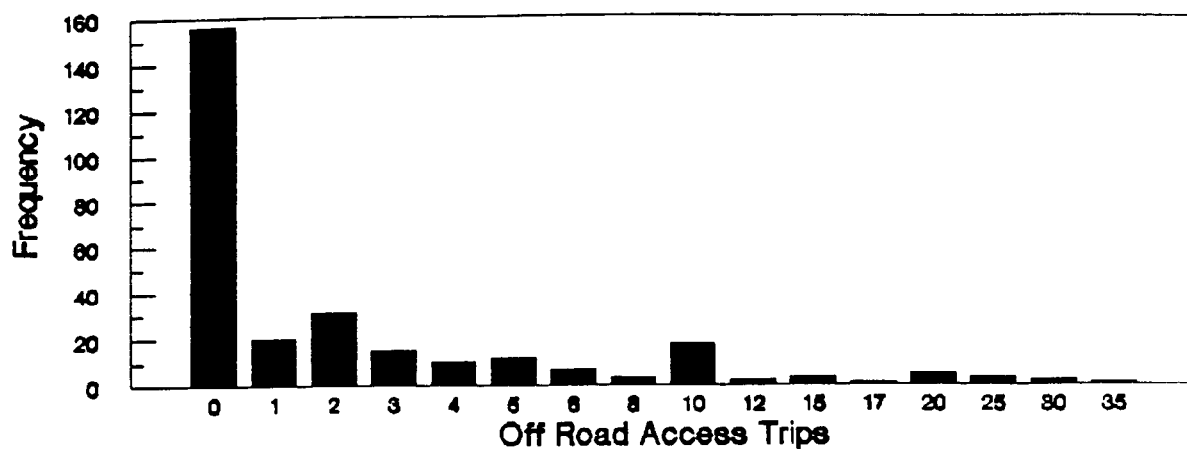
Respondents were asked whether or not sport fishing in Seward Peninsula waters should be improved, and in an open ended question, asked what should be done to improve sport fishing. Of the 300 respondents that answered the question, 155 felt that sport fishing should be improved and some respondents made recommendations for doing so. These recommendations are presented in Appendix B. The two most commonly listed suggestions were to restrict various user groups, and to restrict river netting (Table 12). Other commonly listed suggestions were to improve fishing success, to implement more restrictive regulations, and to stock fish. Some kind of restrictive measure (better enforcement of current regulations, more restrictive regulations, restricting other users) was suggested by 59% of those that made a suggestion.

Respondents were asked if access to area sport fishing waters was adequate, and if not, what should be done to improve access. Of the 304 respondents

Table 8. Types of access and number of fishing trips during 1988 to Seward Peninsula waters^a.

Fishing Water and Access Type	Response Central Tendency		Response Variation			
	Median	Mean	Range	Quartiles		SE
				25%	75%	
Marine waters	0	2.20	0-90	0	1	0.46
Lakes and streams:						
Reached by road	6	11.45	0-150	2	15	0.94
Reached by trails using ATVs, snowmachines, skis, or walking	0	2.87	0-35	0	3	0.32
Reached by riverboat or canoe	0	2.20	0-40	0	2	0.29
Fly-in	0	0.54	0-50	0	0	0.21
<u>All lakes and streams</u>	10	16.91	0-156	4	21	1.18
Total sport fishing trips	12	19.10	0-156	5	25	1.32

^a Analysis is based upon 312 returned questionnaires of which 289 (92.6%) of the respondents answered this question. A total of 23 (7.4%) respondents failed to answer the question.



- continued -

Figure 3. Frequency distribution of the number of fishing trips taken by respondents using various means of access.

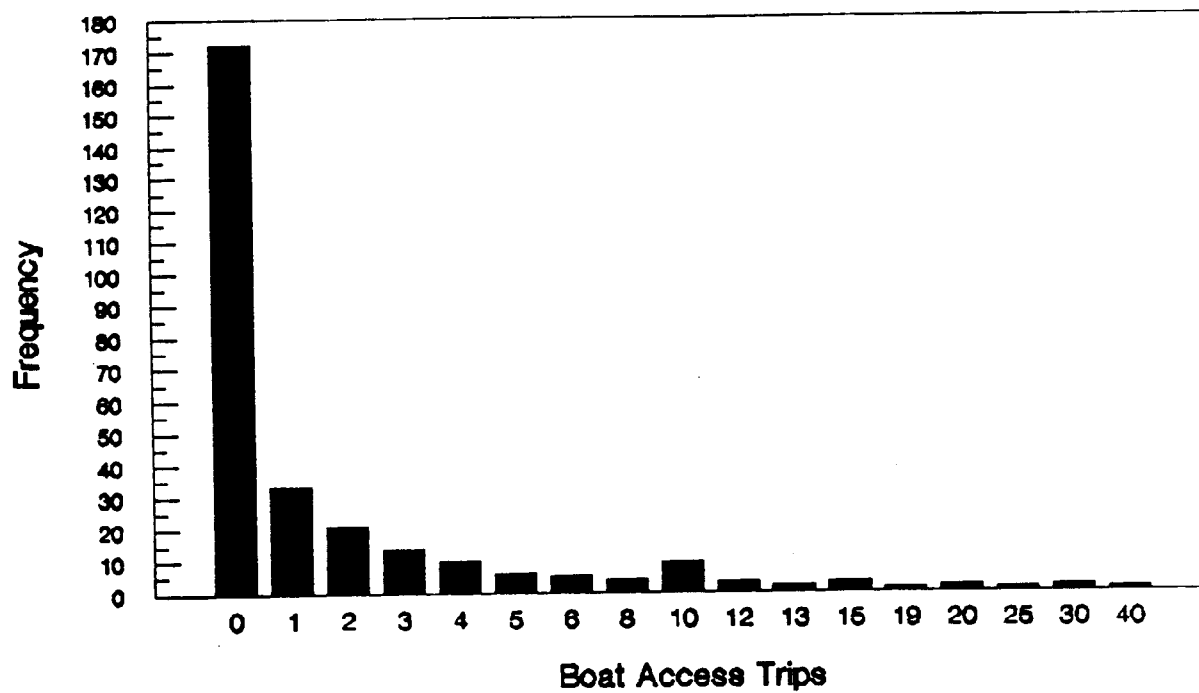
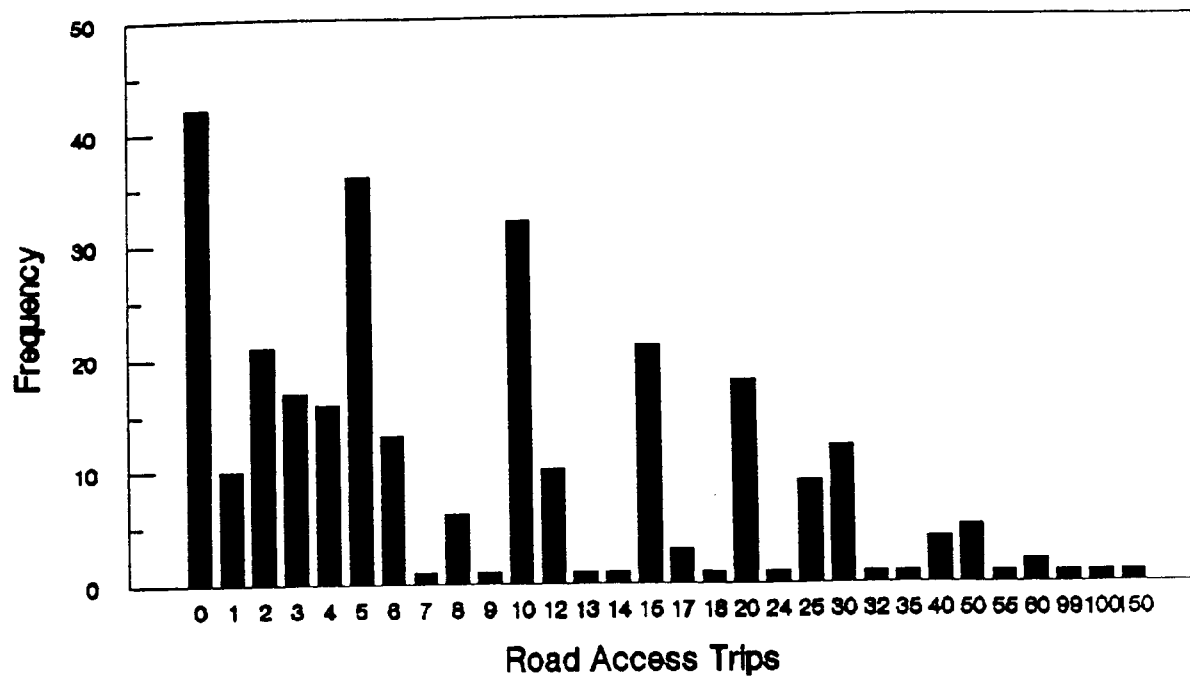


Figure 3. (page 2 of 2)

Table 9. Sport fish species targeted by respondents from the Seward Peninsula during 1988^a.

Species	<u>Respondents That Fished For Species And Listed Them As</u>					
	<u>Most Important</u>		<u>2nd Most Important</u>		<u>3rd-6th Most Important</u>	
	Number	Percent	Number	Percent	Number	Percent
Salmon ^b	136	48.7	98	37.3	202	44.7
Dolly Varden ^c	88	31.5	84	31.9	85	18.9
Arctic grayling	37	13.3	61	23.2	76	16.8
Northern pike	13	4.7	9	3.4	37	8.2
Saffron cod	5	1.8	3	1.1	24	5.4
Whitefish	0	0	2	0.7	14	3.1
Burbot	0	0	1	0.4	9	2.0
Flounder	0	0	4	1.5	1	0.2
Smelt	0	0	0	0	2	0.5
Lake trout	0	0	1	0.5	0	0
Sheefish	0	0	0	0	1	0.2
Totals	279	100.0	263	100.0	452 ^d	100.0

^a Analysis is based upon 312 returned questionnaires; however, a total of 33 questionnaire respondents did not answer this question.

^b Respondents listed all five species of Pacific salmon or just "salmon" as a response to this question. All responses were grouped into a single category. The actual number of salmon listed under the most fished-for category was 56 coho salmon, 16 pink salmon, 9 chum salmon, 4 sockeye salmon, 2 chinook salmon, and 49 "salmon"; in the second-most fished-for category, 37 coho salmon, 17 pink salmon, 10 chum salmon, 4 sockeye salmon, 5 chinook salmon, and 25 "salmon" were listed; and, in the 3rd - 6th-most fished-for category, 53 coho salmon, 51 pink salmon, 36 chum salmon, 10 sockeye salmon, 26 chinook salmon, and 27 "salmon" were listed.

^c Respondents listed Arctic char, Dolly Varden, and various types of trout as a response to this question. All such responses were grouped into a single category because Dolly Varden are the only char or trout species present in the Seward Peninsula area.

^d This number represents the sum of all responses listed as the 3rd (n=209), 4th (n=131), 5th (n=75), and 6th (n=37) most sought after species.

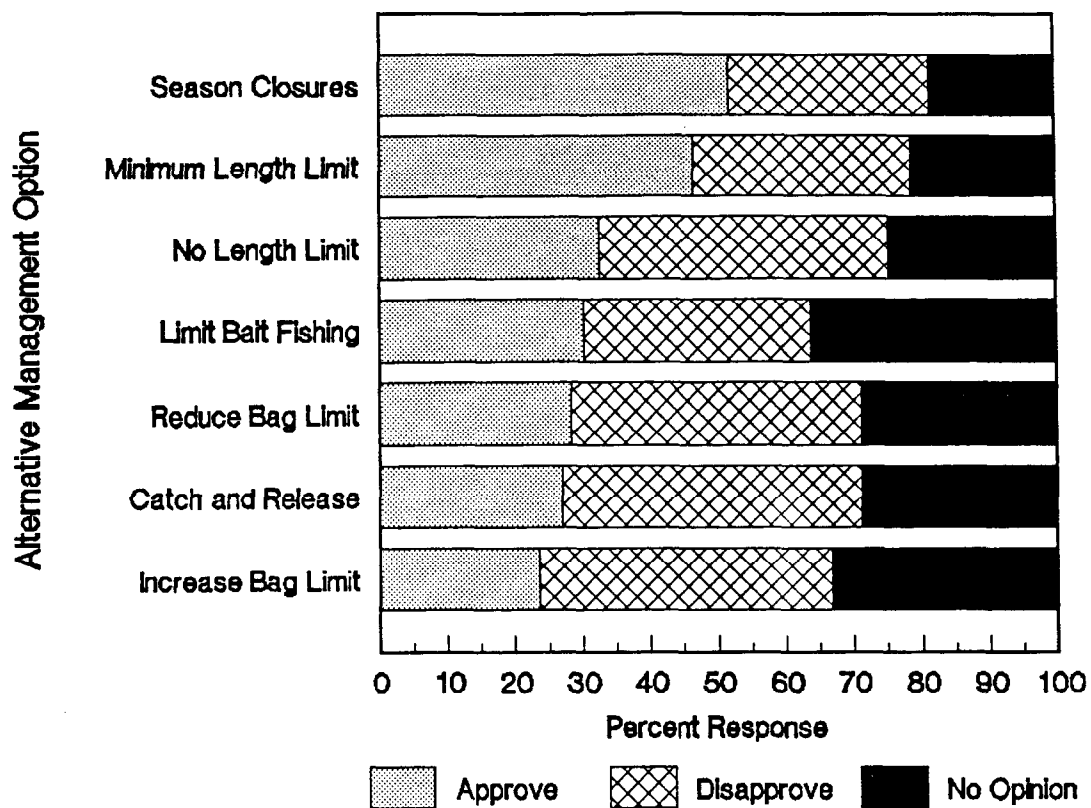


Figure 4. Approval rating of seven alternative regulatory options.

Table 10. Response of Seward Peninsula sport fishing license holders when asked their opinions regarding seven alternative management options aimed at improving sport fishing^a.

Management Options	Responses							
	Approve		No Opinion		Disapprove		Totals	
	Number	%	Number	%	Number	%	Number	%
<u>Favored management options:</u> ^b								
Season closures at certain times or areas	156	51.8	56	18.6	89	29.6	301	100.0
Minimum length limit	141	46.5	65	21.5	97	32.0	303	100.0
<u>Non-favored management options:</u> ^b								
No minimum length limit	95	32.5	73	25.0	124	42.5	292	100.0
Limit bait fishing at certain times or areas	89	30.3	107	36.4	98	33.3	294	100.0
Reduce daily bag limit	84	28.3	86	28.9	127	42.8	297	100.0
Catch and release fishing only	80	26.9	86	29.0	131	44.1	297	100.0
Increase daily bag limit	69	23.5	98	33.3	127	43.2	294	100.0

^a Based upon analysis of 312 returned questionnaires; from 9 to 20 respondents did not answer these seven questions.

^b Favored management options are those that more respondents approved of than disapproved; non-favored management options are those that more respondents disapproved of than approved.

Table 11. Response of Seward Peninsula sport fishing license holders when asked to rank their preferences regarding six potential emergency regulations that could be implemented to prevent overharvest of fishery resources^a.

Potential Emergency Regulation	Number (%) Of Responses						Total Sample Size	Mean Rank	SE
	Preferred 1	→ → → 2	→ → → 3	→ → → 4	→ → → 5	Not Preferred 6			
<u>More favored regulations:</u> ^b									
Reduce bag limits	52 (21)	72 (30)	53 (22)	39 (16)	18 (7)	9 (4)	243 (100)	2.70	0.09
Season closures at certain times\areas	68 (27)	61 (24)	29 (12)	36 (14)	41 (17)	16 (6)	251 (100)	2.88	0.10
Length limits	65 (26)	38 (15)	51 (20)	34 (14)	39 (16)	22 (9)	249 (100)	3.04	0.11
Restrict gear types	23 (10)	36 (15)	60 (25)	63 (26)	42 (17)	16 (7)	240 (100)	3.47	0.09
<u>Less favored regulations:</u> ^b									
Catch and release fishing only	24 (10)	22 (9)	28 (11)	46 (19)	59 (24)	65 (27)	244 (100)	4.18	0.11
Complete fishery closures	35 (14)	19 (8)	22 (9)	21 (9)	35 (14)	114 (46)	246 (100)	4.40	0.10

^a Based upon analysis of 312 returned questionnaires; from 61 to 72 respondents did not rate these six alternative regulations.

^b More favored regulations are those with a mean rank of 3.49 or less and less favored regulations are those with a mean rank of 3.50 or more.

Table 12. Response of Seward Peninsula sport fishing license holders when asked if sport fishing in area waters should be improved, and if so, what should be done to improve sport fishing^a.

Respondent Recommendations Concerning Sport Fishing	Respondents Making <u>This Recommendation</u>	
	Number	Percent
Restrict various user groups (eliminate non-residents, etc)	29	19.7
Restrict in-river netting	25	17.0
Improve fishing success (provide more and larger fish)	23	15.6
Implement more restrictive regulations	22	15.0
Stock fish	15	10.2
Better enforcement of existing regulations	11	7.4
Implement less restrictive regulations	7	4.8
Clean up rivers (restrict mining turbidity, etc)	5	3.4
O.K. as is, do nothing	3	2.0
Improve or increase fishing access	2	1.4
Decrease crowding	2	1.4
Improve regulation book	2	1.4
Decrease littering	1	0.7
Totals	147	100.0

^a Based upon analysis of 312 returned questionnaires: 155 (49.7%) respondents answered yes, sport fishing should be improved; 145 (46.5%) respondents answered no; and, 12 (3.8%) respondents did not answer the question. Complete responses of respondents to this question are provided in Appendix B.

that answered the question, 273 felt that access was adequate. Recommendations by respondents for improving access are presented in Appendix C. Most recommendations concerned improvements in road access (Table 13).

Respondents were asked if ADFG was paying adequate attention to the area's sport fisheries, and if not, what additional actions ADFG should take. Of the 296 respondents that answered the question, 228 felt that ADFG was paying adequate attention to the area's sport fisheries. Recommended actions ADFG should take are presented in Appendix D. Of those that made recommendations, 51.8% suggested improving enforcement of existing regulations, and 23.2% suggested improving the regulation of commercial and subsistence fisheries (Table 14). Other suggestions included stocking fish in area waters, and conducting additional research of local fishery resources.

Questionnaire respondents fished in total more than 30 years and sport fished in Alaska 1 to 4 years (Table 15).

Hypotheses by User Category

Hypotheses were tested to determine if sport fishing license holders which resided in the Seward Peninsula management area during 1988 were composed of one homogeneous user group or several groups. Responses to the survey questions as presented in the previous section (Tables 5 through 15) were grouped and cross tabulated. Cross tabulations of data are included in Appendix F as a series of chi-square tables.

Opinions Regarding Restrictive Regulations:

Of the 274 survey respondents who sport fished during 1988, 205, or 75% also used area fishery resources through other legal means of fishing (subsistence, personal use, or commercial fishing). Of the 28 respondents that did not sport fish in 1988, 19, or 68% also fished under at least one non-sport means of legal fishing. Users who only sport or personal use fished were more likely to suggest non-sport fishing restrictions to improve fishing than those users who subsistence or commercial fished ($\chi^2 = 6.57$, DF = 1, $p = 0.01$, Appendix F6).

Questionnaire respondents with less than 10 years of fishing experience were significantly less likely to approve of minimum length limits than were respondents with 10 - 19 or 20 or more years of fishing experience ($\chi^2 = 9.83$, DF = 4, $p = 0.04$, Appendix F8). Anglers with 20 or more years of experience were more likely to have no opinion of length limits than anglers with 10 - 19 or less than 10 years of fishing experience ($\chi^2 = 10.19$, DF = 4, $p = 0.04$, Appendix F7). Opinions of seasonal closures were not significantly dependent on the amount of total or Alaskan fishing experience ($\chi^2 = 5.23$ and 2.69 respectively, DF = 4 for both, $p = 0.26$ and 0.61 respectively, Appendices F9 and F10). Opinions of restrictions on the use of bait were not significantly dependent on amount of total or Alaskan fishing experience ($\chi^2 = 2.07$ and 4.83 respectively, DF = 4 for both, $p = 0.72$ and 0.31 respectively, Appendices F13 and F14). Opinions of seasonal or area closures were not significantly dependent on amount of total or Alaskan fishing experience ($\chi^2 = 6.62$ and 4.70

Table 13. Response of Seward Peninsula sport fishing license holders when asked if access to area sport fishing waters was adequate, and if not, what specific access improvement projects they recommended should be started by the Alaska Department of Fish and Game^a.

Recommendations Concerning Access Improvement Projects	<u>Respondents Making This Recommendation</u>	
	Number	Percent
Build more roads and/or improve road maintenance (one respondent suggested extending roads beyond Council and Teller, others suggested building access roads to unspecified streams; one respondent suggested improved maintenance of existing roads in the area)	6	66.7
Construct a boat launch ramp into Bering Sea	1	11.1
Extend gravel bars for improved airplane access	1	11.1
Publish information concerning existing access sites	1	11.1
Totals	9	100.0

^a Based upon analysis of 312 returned questionnaires: 31 (9.9%) respondents answered no, access to area waters is not adequate; 273 (87.5%) respondents answered yes, access to area waters is adequate; and, 8 (2.6%) respondents did not answer the question. Only the recommendations concerning specific access improvement projects are summarized in this table; other responses to the question are provided in Appendix C.

Table 14. Response of Seward Peninsula sport fishing license holders when asked if the Department of Fish and Game pays adequate attention to the areas' sport fishery, and if not, what additional actions the Department should take^a.

Additional Actions The Department Should Take	<u>Respondents Making This Recommendation</u>	
	Number	Percent
Improve enforcement of existing regulations	29	51.8
Improve regulation of commercial and subsistence fisheries	13	23.2
Initiate fish stocking in area waters	6	10.7
Conduct additional research of local fishery resources	5	8.9
Provide better information concerning regulations/policies	2	3.6
Monitor gold dredging	1	1.8
Totals	56	100.0

^a Based upon analysis of 312 returned questionnaires: 228 (73.1%) respondents answered yes, the Department of Fish and Game does pay adequate attention to the area sport fishery; 68 (21.8%) answered no; and, 16 (5.1%) did not answer the question. Complete responses to the question are provided in Appendix D.

Table 15. Response of Seward Peninsula sport fishing license holders when asked the number of years they had sport fished, and the number of years they had sport fished in Alaska.

Category	<u>Sport Fishing Experience</u>		<u>Alaska Sport Fishing Experience</u>	
	Number	Percent	Number	Percent
0	27	8.7	27	8.7
1 - 4	18	5.8	53	17.0
5 - 9	14	4.5	46	14.7
10 - 14	33	10.6	50	16.0
15 - 19	30	9.6	40	12.8
20 - 24	48	15.3	33	10.6
25 - 29	33	10.6	17	5.5
30 +	109	34.9	46	14.7
Totals	312	100.0	312	100.0

respectively, $DF = 4$ for both, $p = 0.18$ and 0.32 respectively, Appendices F9 and F10).

Opinions of catch and release fishing were not significantly dependent on amount of total fishing experience ($\chi^2 = 6.39$, $DF = 4$, $p = 0.17$, Appendix F16). Opinions of catch and release fishing were also not significantly dependent on amount of Alaskan fishing experience ($\chi^2 = 5.86$, $DF = 4$, $p = 0.21$, Appendix F15).

License holders who took less than 10 or 10 - 19 fishing trips in 1988 were more likely to have no opinion of length limits (Appendix F17), seasonal closures (Appendix F18), and catch and release fishing (Appendix F21) than license holders who took 20 - 29 or 30 or more fishing trips in 1988 ($p < 0.05$ for all tests). Opinions of reduced bag limits were not significantly dependent on number of fishing trips taken (Appendix F19, $p = 0.13$). Opinions of bait restrictions were not significantly dependent on the number of fishing trips in 1988 ($\chi^2 = 9.68$, $DF = 6$, $p = 0.14$, Appendix F21).

Opinions of length limits, seasonal closures, reduced bag limits, and bait use restrictions were not significantly dependent on motivation for fishing ($\chi^2 < 6.80$, $p > 0.15$ for all tests, Appendices F22, F23, F24, F25 respectively). License holders whose motivation for fishing was food were more likely to disapprove of catch and release fishing than license holders whose motivation was sport or non-catch related, and license holders whose motivation for fishing was sport were also much less likely to have no opinion of catch and release fishing than license holders whose motivation for fishing was non-success ($\chi^2 = 12.73$, $DF = 4$, $p < 0.02$, Appendix F26).

Opinions of length limits, seasonal closures, and reduced bag limits were not significantly dependent on respondent's use category (respondents who sport and or personal use fished versus those that subsistence and or commercial fished, Table 1 for the exact basis for categorization, $\chi^2 < 4.12$, $p > 0.13$, Appendices F27, F28, and F29 respectively). Respondents who subsistence or commercial fished were more likely to disapprove and less likely to have no opinion of bait restrictions than respondents who only sport or personal use fished ($\chi^2 = 10.83$, $DF = 2$, $p < 0.01$, Appendix F30). Respondents who only sport or personal use fished were more likely to approve and less likely to have no opinion of catch and release fishing than respondents who subsistence or commercial fished ($\chi^2 = 6.48$, $DF = 2$, $p < 0.04$, Appendix F31).

Opinions of length limits, seasonal closures, and bait use restrictions were not significantly dependent on primary target species ($\chi^2 < 6.80$, $p > 0.35$, Appendices F32, F33, and F35). License holders whose primary target species were salmon were more likely to disapprove of reduced bag limits than license holders whose primary target was Arctic grayling. License holders whose primary target was salmon or Arctic grayling were less likely to have no opinion of reduced bag limits than license holders who primarily targeted other species ($\chi^2 = 23.62$, $DF = 6$, $p < 0.01$, Appendix F34). License holders who primarily targeted Arctic grayling were more likely to approve of catch and release fishing than license holders who targeted other species, particularly those whose primary target species was salmon ($\chi^2 = 11.49$, $DF = 6$, $p = 0.07$, Appendix F36).

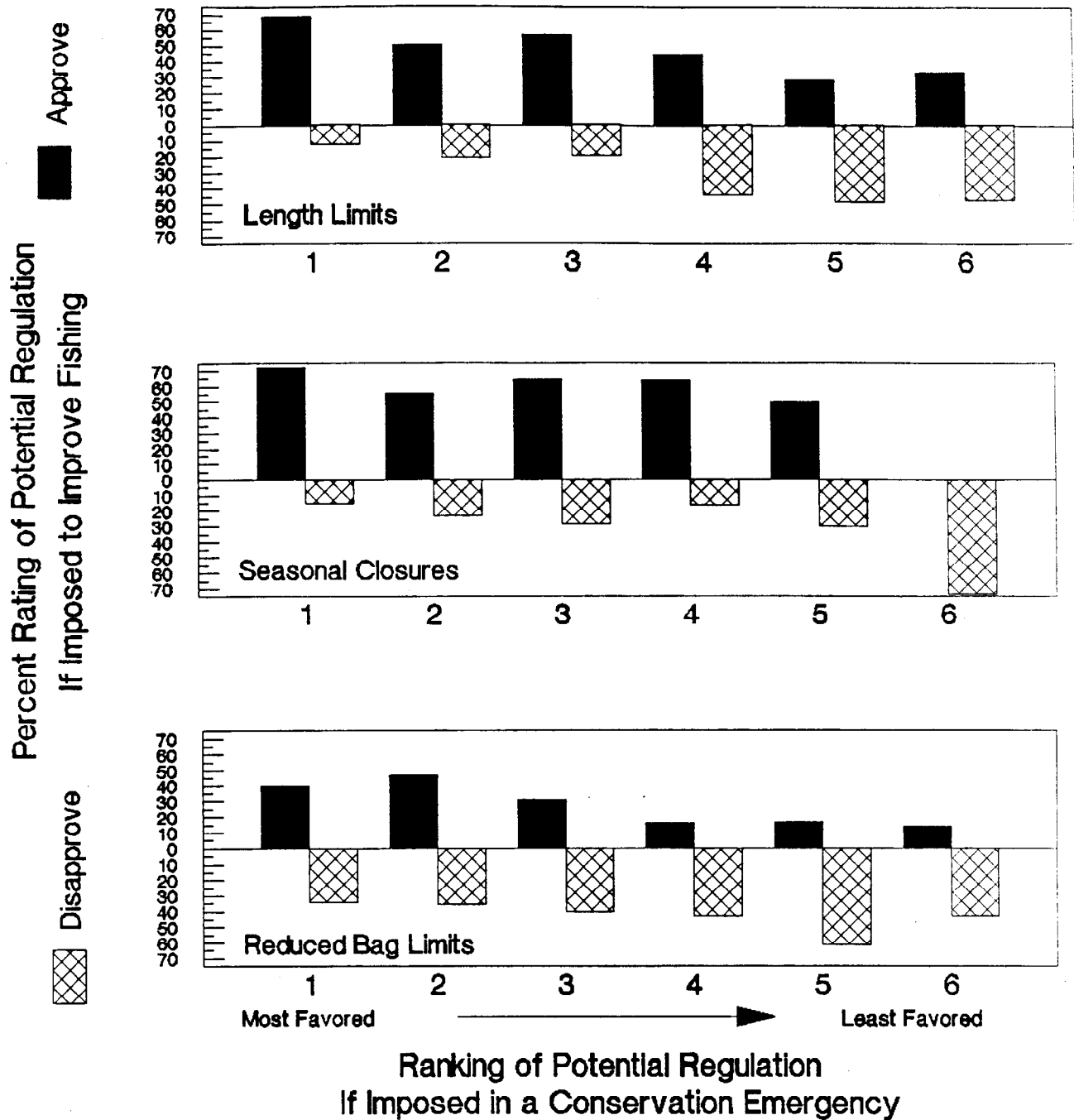
Respondents who rated fishing success as excellent were less likely to have no opinion of length limits than respondents who rated overall fishing success as good, fair, or poor ($\chi^2 = 13.77$, $DF = 6$, $p = 0.03$, Appendix F37). Respondents who rated size satisfaction as fair or poor were more likely to disapprove of length limits than those respondents who rated size satisfaction as excellent or good ($\chi^2 = 16.14$, $DF = 6$, $p = 0.01$, Appendix F42). Opinions of length limits were not significantly dependent on ratings of overall fishing enjoyment ($\chi^2 = 9.52$, $DF = 6$, $p = 0.15$, Appendix F47). Opinions of seasonal closures were not significantly dependent on ratings of fishing success, size satisfaction, or overall fishing enjoyment ($\chi^2 < 10.02$, $p > 0.12$, Appendices F38, F43, and F48). Opinions of reduced bag limits were not significantly dependent on ratings of fishing success, size satisfaction, or overall fishing enjoyment ($\chi^2 < 10.02$, $p > 0.12$, Appendices F39, F44, and F49). Opinions of limits of bait use were not significantly dependent on ratings of fishing success, size satisfaction, or overall fishing enjoyment ($\chi^2 < 10.02$, $p > 0.12$, Appendices F40, F45, and F50). Opinions of catch and release fishing were not significantly dependent on ratings of fishing success, size satisfaction, or overall fishing enjoyment ($\chi^2 < 10.02$, $p > 0.12$, Appendices F41, F46, and F51).

Five potential restrictive regulations were listed as options to both improve sport fishing (see Table 10) and to implement in a conservation emergency (Table 11). Respondent's opinions of potential restrictive regulations were fairly consistent whether the potential regulation was to improve fishing quality or to prevent overharvest in the event of a conservation emergency. The proportion of approving and disapproving responses were generally consistent with the rankings from most to least favorable for each potential regulation (Figure 5). The proposal to limit bait showed the most deviation from the expected pattern, with around 40% of those who ranked the regulation as least preferable in a conservation emergency approving the regulation when it was to be imposed in order to improve the quality of fishing.

Perceptions of Fishing Quality:

Respondents with less than 10 years and with 10 - 19 years of fishing experience were less likely to rate fishing success as excellent than were respondents with 20 or more years of fishing experience ($\chi^2 = 10.70$, $DF = 6$, $p = 0.09$, Appendix F53). Respondents with less than 10 or 10 - 19 years fishing experience were more likely to rate size satisfaction as poor than were respondents with 20 or more years of fishing experience ($\chi^2 = 12.60$, $DF = 6$, $p = 0.05$, Appendix F55). Respondents with less than 10 or 10-19 years fishing experience were also more likely to rate overall fishing enjoyment as poor than were respondents with 20 or more years of experience ($\chi^2 = 12.46$, $DF = 6$, $p = 0.05$, Appendix F57). Ratings of fishing success, size satisfaction, and overall fishing enjoyment were not significantly dependent on amount of Alaskan fishing experience ($\chi^2 < 6.64$ and $p > 0.36$ for all tests, Appendices F52, F54, and F56).

Those respondents who took 20 or more fishing trips per year were more likely to rate fishing success as excellent than respondents who took less than 20 fishing trips per year ($\chi^2 = 6.52$, $DF = 3$, $p = 0.09$, Appendix F58).



- continued -

Figure 5. The relationship between approval/disapproval (percent) of five regulatory options imposed to improve fishing and the relative rankings of those same regulatory options imposed in a conservation emergency.

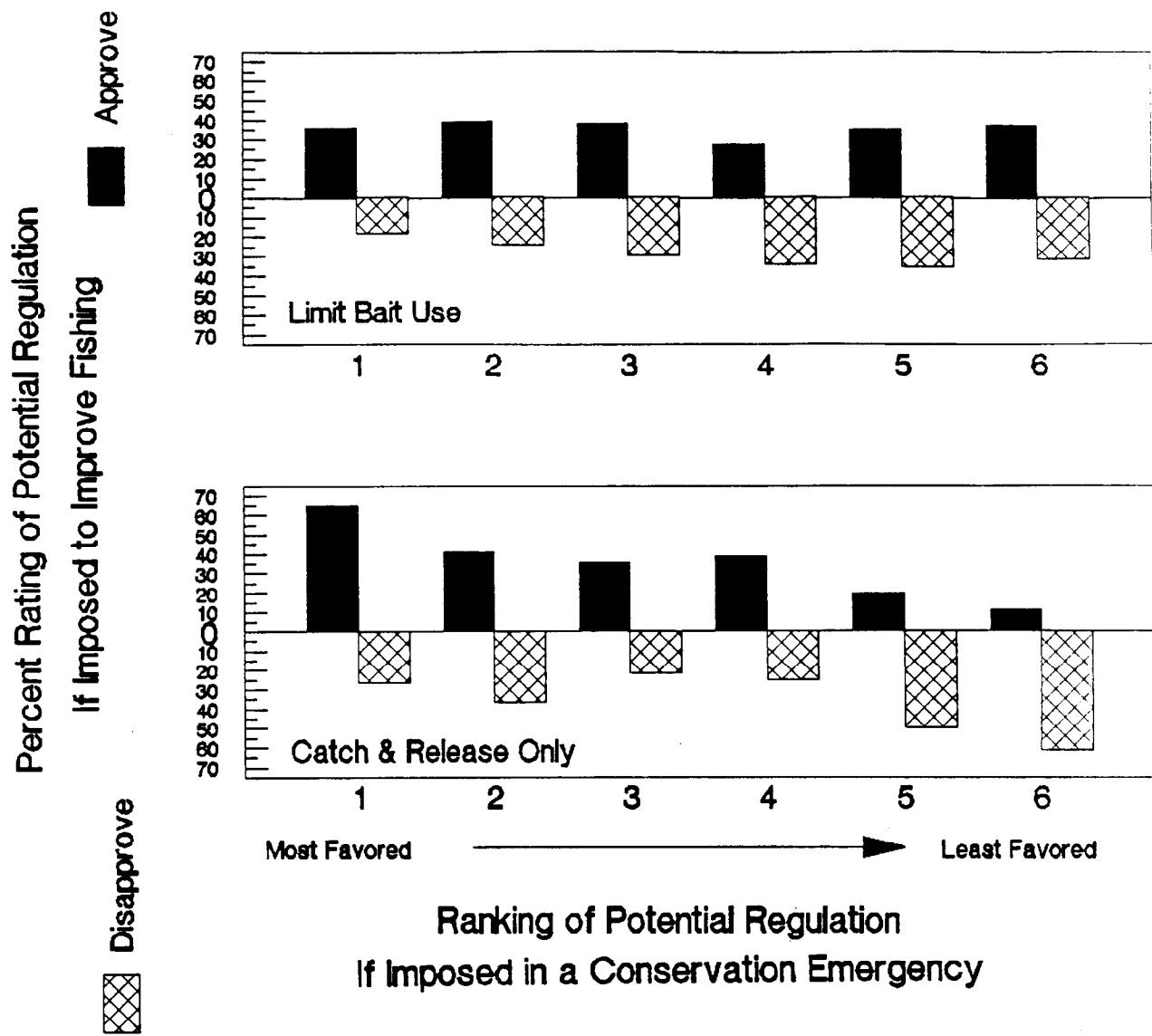


Figure 5. (page 2 of 2)

Similarly, respondents who took less than 20 trips per year were less likely to rate size satisfaction as excellent than respondents who took 20 or more trips per year ($\chi^2 = 12.81$, $DF = 3$, $p < 0.01$, Appendix F59). Ratings of overall fishing enjoyment were not significantly dependent on number of fishing trips taken in 1988 ($\chi^2 = 5.87$, $DF = 9$, $p = 0.75$, Appendix F60).

Ratings of fishing success and overall fishing enjoyment were not significantly dependent on motivation for fishing (Appendices F61 and F63 respectively, $\chi^2 < 6.40$, $p > 0.19$ for both tests). Sport motivated anglers were more likely to rate size satisfaction as excellent than food or non catch motivated anglers ($\chi^2 = 10.41$, $DF = 4$, $p = 0.03$, Appendix F62; Appendix F62 was collapsed to avoid cell sizes of less than 5). Respondents who only sport or personal use fished tended to rate fishing success as excellent more and as poor less than those respondents who subsistence or commercial fished ($\chi^2 = 11.30$, $DF = 3$, $p = 0.01$, Appendix F64). Ratings of size satisfaction and overall fishing quality were not significantly dependent on angler's use category (sport or personal use versus subsistence or commercial, $\chi^2 < 1.48$, $p > 0.69$ for both tests, Appendices F65, and F66 respectively).

Primary target of respondents was related to their ratings of fishing quality, with those respondents targeting Arctic grayling and Dolly Varden less likely to rate fishing success as fair or poor than those respondents targeting salmon or other species ($\chi^2 = 20.84$, $DF = 9$, $p < 0.02$, Appendix F67). Respondents targeting Arctic grayling and Dolly Varden were also more likely to rate overall fishing enjoyment as excellent or good than respondents targeting salmon or other species ($\chi^2 = 16.38$, $DF = 9$, $p < 0.06$, Appendix F69). Ratings of size satisfaction were not significantly dependent on species targeted ($\chi^2 = 10.07$, $DF = 6$, $p = 0.12$, Appendix F68; Appendix F68 was collapsed by combining fair and poor to avoid cell sizes of less than 5).

Respondents who took no off-road trips in 1988 were less likely to rate fishing success as excellent or good than those respondents who took at least one off-road trip in 1988 ($\chi^2 = 11.94$, $DF = 3$, $p < 0.01$, Appendix F70). Respondents who did not take any off road trips were also less likely to rate size satisfaction (Appendix F71) or overall fishing enjoyment (Appendix F72) as excellent than those respondents who took at least one off-road trip ($\chi^2 > 9.46$ and $p < 0.023$ for both tests).

Primary Target Species:

Respondents with less than 20 years of fishing experience were less likely to target Arctic grayling than respondents with 20 or more years of fishing experience ($\chi^2 = 12.67$, $DF = 6$, $p = 0.05$, Appendix F81). Species target was not significantly dependent on amount of Alaskan fishing experience or number of trips taken per year ($p > 0.17$ for both tests, Appendices F82 and F73, respectively). Respondents who listed food as their primary motivation for fishing were less likely to target Arctic grayling and more likely to target salmon than those respondents who listed sport or non catch related factors as their primary motivation for fishing ($\chi^2 = 11.80$, $DF = 6$, $p < 0.07$, Appendix F75). Respondents who commercial or subsistence fished were more likely to target salmon and less likely to target Arctic grayling than those respondents who only sport or personal-use fished ($\chi^2 = 12.11$, $DF = 3$, $p < 0.01$, Appendix

F77). Respondents who took at least one off-road trip in 1988 were more likely to target Dolly Varden and Arctic grayling and less likely to target salmon than those respondents who did not take any off-road trips in 1988 ($\chi^2 = 6.72$, $DF = 3$, $p = 0.08$, Appendix F79).

Opinions Regarding Sport Fishing Opportunities:

Opinions of whether or not sport fishing needed improving in Seward Peninsula area waters were not significantly dependent on amount of total fishing experience ($\chi^2 = 4.57$, $DF = 2$, $p = 0.10$, Appendix F86), however, respondents with less than 10 years of Alaskan fishing experience were more likely to feel that sport fishing in area waters did not need improving than respondents with 10-19 or 20 or more years of Alaskan fishing experience ($\chi^2 = 6.97$, $DF = 2$, $p = 0.03$, Appendix F85). Opinions of whether or not sport fishing needed improving in Seward Peninsula area waters were not significantly dependent on number of trips taken in 1988 or motivation for fishing ($p > 0.34$ for both tests, Appendices F87 and F88 respectively).

Respondents who sport or personal-use fished were more likely to feel that sport fishing in area waters needed improvement than respondents who subsistence or commercial fished ($\chi^2 = 9.77$, $DF = 1$, $p < 0.01$, Appendix F89). Respondents who targeted Dolly Varden and Arctic grayling were more likely to feel that area sport fishing needed improving than respondents who targeted salmon or other species ($\chi^2 = 10.50$, $DF = 3$, $p < 0.02$, Appendix F90). Respondents who rated fishing success (Appendix F91) and overall fishing enjoyment (Appendix F93) as excellent were less likely to feel that area sport fishing needed improving than respondents who rated these aspects of fishing quality as fair or poor ($\chi^2 > 6.94$, $DF = 3$, $p < 0.07$ for both tests). Opinions of whether area sport fishing needed improving were not significantly dependent on ratings of size satisfaction ($\chi^2 = 1.77$, $DF = 3$, $p = 0.62$, Appendix F92).

Opinions Regarding Access:

Opinions regarding whether or not respondents felt that access to area sport fishing waters was adequate were not significantly dependent on the number of fishing trips taken (Appendix F94), motivation for fishing (Appendix F95), license holder's rating of fishing success (Appendix F96) and size satisfaction (Appendix F97), or regulatory category of fishing that the respondent participated in (Appendix F99, $p > 0.11$ for all five tests). However, respondents who rated overall fishing satisfaction as fair or poor were more likely to feel that access to area sport fishing waters needed improving than respondents who rated overall fishing enjoyment as excellent ($\chi^2 = 14.02$, $DF = 3$, $p < 0.01$, Appendix F98).

Perceptions of the ADFG Sport Fish Program:

Those license holders who took 30 or more fishing trips in 1988 were more likely to feel that ADFG does not pay enough attention to the areas fisheries than the license holders who took less than 30 trips per year ($\chi^2 = 8.23$, $DF = 3$, $p < 0.05$, Appendix F100). There was a significant relationship between motivation for fishing and respondent's opinions of whether or not ADFG pays

adequate attention to area fisheries, with those license holders whose motivation was sport or non-catch related more likely to feel that ADFG was not paying adequate attention than those license holders who were food motivated ($\chi^2 = 5.30$, $DF = 2$, $p = 0.07$, Appendix F101). Opinions of whether or not ADFG pays adequate attention to area sport fisheries were not significantly dependent on ratings of any aspect of fishing quality (Appendices F102, F103, and F104), or the regulatory category fished under (Appendix F105), $p > 0.19$ for all four tests).

DISCUSSION

Survey Design and Response to Questions

Survey questions were designed to elucidate the differences and expectations among users of sport fishery resources. Questions asked were also chosen to allow comparisons with ADFG surveys in other areas. Responses to similar angler surveys have been useful in categorizing users and determining regulatory preferences (Moeller and Engelken 1972; Duttweiler 1976; Holmes 1981; Harris and Bergersen 1985; Renyard and Hilborn 1986; Mills 1986). By definition ($P < 0.10$), 10 conclusions based on 105 chi-square test results are in error.

While no significant differences were found between respondents to the first and second mailings, no survey of total non-respondents was done. It has been found that non-response can cause significant bias in survey results (Brown and Wilkins 1978), and, due to differences in participation rates between respondents and non-respondents, surveys may overestimate fishery usage unless corrections are made for the differences in usage between respondents and non-respondents (Harris and Bergersen 1985). While this survey was not specifically attempting to estimate usage, it is possible that non-respondents have different opinions of management options, differ in species targeted, or differ in other opinions sought in this survey from those license holders that did respond to this survey. In future surveys, it may be useful to conduct telephone surveys of non-respondents or use some other method to determine if significant non-response bias exists.

Errors in respondents' recall have also been found to be a source of bias in survey data (Atwood 1956; Wright 1978). Because recall of information about fishing activities by respondents is likely to become less and less accurate as the time interval between fishing and answering a question increases (Harris and Bergersen 1985), it may be wiser to send out survey questionnaires shortly after the peak of the season, rather than in the spring following the fishing season. It is also possible that respondents were confused about the meanings of the different regulatory categories of fishing listed, and that this question should include an explanation or definition of the various fishery categories in future surveys. It should be noted, however, that changing the wording of questions can raise doubts about the validity of comparing responses to questions between years.

Many Seward Peninsula sport fish license holders fished under personal use or subsistence use regulations. This is probably due to the rural location of

the area, and the fact that many (32%) license holders are primarily food motivated, rather than sport motivated. Food as a primary motivation for fishing is probably the reason that almost half of all respondents listed salmon as their primary target species.

Overall fishing enjoyment was given an average rating that was somewhat higher than the ratings for both size satisfaction and fishing success. This response was similar to the ratings of fishing quality of Tanana Drainage license holders in 1985 (Holmes 1987), however, Seward Peninsula license holder's ratings of all aspects of fishing quality were higher than the 1985 ratings fishing quality by Tanana Drainage license holders. This higher rating of fishing quality is probably related to the greater amount of fishing opportunity and the lower level of fishing pressure in the Seward Peninsula management area versus the Tanana Drainage management area.

The majority of respondents listed some kind of non-catch related motive as their primary and secondary motivation for fishing (58% and 68% respectively). This is similar to the proportion of Tanana Drainage license holders that listed non-catch related motivations for fishing in 1985. Catch related motivations differed between the two surveys, with 32% of the Seward Peninsula license holders listing food as a primary motivation for fishing, versus only about 15% of the Tanana Drainage license holders doing so. This proportion of license holders listing food as a primary motivation for fishing is also much higher than was found in surveys of anglers in Missouri (Weithman and Anderson 1978) or New York (Duttweiler 1976). Only 10% of Seward Peninsula license holders listed sport as their primary motivation for fishing, versus 18% for Tanana Drainage license holders in 1985.

The average number of fishing trips taken by Seward Peninsula license holders was slightly higher than reported by Tanana drainage license holders in 1985 for all access types except air. However, the median of trips taken by respondents from both the Tanana drainage and Seward Peninsula using boat (freshwater), off-road, and marine access was zero.

Salmon were the most commonly targeted species of survey respondents. This is probably due to the availability of this species, and because many Seward Peninsula license holders are food motivated. It is possible that some survey respondents listed primary target species that were fished for under personal-use or subsistence-use regulations, the respondents may have used gill nets as capture gear, and the respondents may not have been targeting these species for sport purposes. Very few respondents targeted species which are traditionally sport fished, other than Dolly Varden and Arctic grayling (for example northern pike, burbot, and lake trout).

Acquiring information on methods to improve fishing was a major objective of this study. While restrictive regulations are often regarded by sport fishermen as limiting their recreation, some restrictive regulations (partial seasonal or area closures and a minimum length limit) received high approval ratings. Regulations that would directly reduce or eliminate the actual taking of fish (reduced bag limits and catch and release fishing) received approval rates of less than 30%, and this is probably the result of the high percentage of food motivated license holders.

When license holders were asked to rank management options that might be used in a conservation emergency (to prevent overharvest), the response was somewhat different. Reduced bag limits received the most favorable mean ranking, followed by partial closures. Catch and release fishing and total fishery closures received the lowest mean rankings. The low approval and rankings of catch and release fishing suggest that, while Seward Peninsula license holders are willing to accept regulations that reduce harvest opportunities, both to improve fishing and in a conservation emergency, they still want to be able to take home some fish, and are not very interested in fishing if there is no opportunity for harvest.

About half the survey respondents felt that sport fishing in area waters should be improved, and the suggestion most commonly given (37%) to improve fishing involved placing restrictions on other users. This is much higher than the 5% of respondents that gave this suggestion in the 1985 Tanana Drainage survey. This difference between the two surveys suggests a perceived or actual conflict of fishery resource use between groups in the Seward Peninsula management area. It was somewhat surprising that only 10% of those that made a specific recommendation suggested stocking fish. This is much lower than the 32% of respondents in the 1985 Tanana Drainage survey that recommended stocking. This difference could be due, in part, to the fact that a question regarding stocking fish as a method of improving fishing was asked on the 1985 Tanana Drainage questionnaire, but was not included in the 1988 Seward Peninsula questionnaire.

Most respondents felt that access to area sport fishing waters was adequate, and the few respondents (9 of 312) that gave recommendations for improving access mostly suggested improving or increasing road access. Despite the fact that the question asked for "specific recommendations for access improvement projects", over half of the comments made did not relate to access (Appendix C).

Most respondents felt that ADFG was paying adequate attention to the area's sport fisheries. Of those that gave suggestions for actions that ADFG should take in the area, most suggested improving enforcement of existing regulations. Improving regulation of the commercial and subsistence fisheries was the suggestion made second most often. This again supports the argument that some users of the fishery resource feel conflict with or competition against subsistence or commercial users.

Hypothesis Testing

A goal of this study was to better define the resident license holder user group(s). Differences in responses to survey questions by users became apparent. License holders with less than 20 years of fishing experience approved of length limits and catch and release fishing less, rated fishing quality as poor more often, and targeted Arctic grayling less than license holders with 20 or more years of fishing experience. One finding that is inconsistent with those listed above is that those license holders with less than 10 years of Alaskan fishing experience were less likely to feel that fishing needed improvement than license holders with 10 or more years of

experience. In other words, respondents with less total experience were less satisfied with fishing, but respondents with less Alaskan experience did not feel that fishing needed improving. This could be explained if, as one gains Alaskan fishing experience, one's expectations increase, but it also may be related to the fact that experience probably co-varies with age, and age may influence expectations of fishing quality. However, age data was not included in these analyses, so the relationship between the respondent's age and rating of fishing quality was not examined.

Respondents who took 20 or more trips per year rated fishing success and size satisfaction higher than respondents who took less than 20 trips per year, but there was no relationship between frequency of participation and overall fishing satisfaction. It is possible that people who go fishing more often have more realistic expectations regarding catch, and therefore are more likely to be satisfied with their catch than people who go fishing less often. License holders who fished a lot (30 or more trips per year) were more likely to feel that ADFG does not pay enough attention to the areas' fisheries. This could be due to the correlation between participation and motivation, since sport motivated license holders have been found to fish more frequently than other motivation groups (Holmes 1985), and sport motivated respondents showed the same opinion about ADFG programs in the area. Frequency of participation in the fishery was not related to the license holder's opinions of restrictive regulations, species targeted, opinions of the need to improve sport fishing, or access to sport fishing. In general, frequency of participation did not seem to be as good a basis for grouping users as other criteria.

License holders with different motives for fishing had different opinions of some management options, and differed in target species. Food motivated license holders disapproved of catch and release fishing and targeted salmon more than license holders who were sport or non-catch motivated. Sport motivated license holders rated size satisfaction as excellent more often than food motivated license holders. Sport and non-catch motivated license holders differed in opinions of regulations only in that sport motivated license holders were less likely to have no opinion of catch and release fishing than non-catch motivated license holders. While license holders that are non-catch motivated do not differ in their opinions of reduced bag limits and length limits from catch motivated license holders, non-catch motivated anglers rated size satisfaction lower than sport motivated license holders. This may indicate that catch is of substantial importance to these license holders, even though not listed as a primary motivation for fishing. Although sport motivated license holders rated one aspect of fishing quality (size satisfaction) higher than other motivation groups, license holders with different motivations for fishing did not feel differently about the need to improve fishing or the need to improve access to the fishery. Food motivated license holders tended to feel that ADFG was paying enough attention to area fisheries more than sport or non-catch motivated license holders.

License holders may be grouped according to food and non-food motivations for fishing. While food motivated license holders did not approve of catch and release fishing as much as non-food motivated license holders, there was no difference between these motivation groups and their opinions of other regulations that would limit catch. This may be because catch and release

fishing completely eliminates the taking of fish, while other restrictive regulations reduce the potential for taking fish. Food motivated license holders were more likely to feel that ADFG was paying adequate attention than were sport or non-catch motivated license holders. A possible (and perhaps skeptical) interpretation of this is that food motivated license holders are more likely to regard ADFG programs as leading to reducing their take of fish, while sport or non-catch motivated license holders may be more likely to view ADFG programs as leading to improved fishing quality.

Respondent's primary target species also seemed to group license holders by food versus non-food motivation. License holders whose primary target species was salmon (who were more likely to be food motivated than license holders targeting other species) tended to disapprove of reduced bag limits and of catch and release fishing more than license holders targeting other species. The major difference in opinions of regulations lay between salmon and Arctic grayling anglers. Holmes (1985) pointed out that it may be difficult to make comparisons between an angler's primary species target and their opinions of regulations if those regulations are not presented in a species specific manner. However, it is likely that license holders view potential regulations as being applied to whatever species they are targeting.

While sport motivated respondents did not rate fishing success or overall fishing enjoyment differently than other motivation groups, respondents who targeted Arctic grayling and Dolly Varden were less likely to rate these aspects of fishing quality as poor than respondents targeting salmon. While non-food motivated respondents could have a successful, enjoyable fishing trip without catching anything, food motivated respondents would need to be able to take home some catch in order to be satisfied. Even though respondents who targeted salmon rated fishing quality lower than respondents targeting other species, respondents who targeted salmon did not feel that fishing needed improving as often as respondents targeting Arctic grayling or Dolly Varden.

License holders may also be grouped according to the regulatory category they fished under. License holders who only sport or personal use fished were more likely to recommend non-sport fishing regulations as a means of improving fishing, less likely to disapprove of bait restrictions and catch and release fishing, less likely to target salmon, and more likely to feel that fishing needed improving than were license holders who subsistence or commercial fished. While only about 7% of respondents commercial fished in 1988, about 33% subsistence fished in 1988.

A third means of grouping license holders is by the type of access used. Those license holders who took at least one off-road trip in 1988 rated fishing quality higher and targeted salmon less than those license holders who only fished on the road system. These differences are probably related to motivation, with sport motivated license holders more likely to fish off of the road system.

The differing opinions of license holders suggest that there are two groups. One group of license holders are non-food motivated, target non-salmon species, tend to approve or have no opinion of bait restrictions and catch and release fishing, are more likely to fish off of the road system, and fish

under sport or personal-use regulations. These license holders tend to rate fishing quality as higher, but also are more likely to feel that fishing needs improving and less likely to feel that ADFG is paying adequate attention to the area fisheries. These license holders are also likely to recommend restrictions on non-sport fishing as a method of improving sport fishing.

The other group of license holders are food motivated, fish for salmon, disapprove of regulations that eliminate catch, tend to fish on the road system, and are more likely to subsistence or commercial fish (in addition to sport or personal use fishing). These license holders tend to rate quality lower, but also feel that fishing does not need improving and feel that ADFG is paying enough attention to the areas fisheries. They are also not likely to recommend restrictions on the non-sport fishery in order to improve sport fishing.

Sport fishing license holders resident in the Seward Peninsula management area appear to be open to restrictions that limit the taking of fish, but not open to restrictions that eliminate the taking of fish. License holders in the area also apparently feel that there is competition for fishery resources with subsistence and commercial users. Because users differ not only in management desires, but also the species targeted, it should be possible to design management strategies that satisfy varying users while protecting fishery resources.

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APPENDIX A

AN EXAMPLE OF THE FOUR PAGE SEWARD PENINSULA QUESTIONNAIRE

QUESTIONNAIRE ON SPORT FISHING - SEWARD PENINSULA AREA

Instructions:

This questionnaire should be filled out only by the person to whom it is addressed, even if he or she fished little or not at all in 1988. Please limit all answers to Fishing during calendar year 1988 in Seward Peninsula waters (all waters draining into the Bering Sea from Cape Darby to Cape Prince of Wales on the Seward Peninsula). 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. Did you sport fish in Seward Peninsula waters during 1988? ____Yes ____No

2. Did you sport fish during summer, winter, or both? (please place an "X" in the appropriate box)

Summer

☐

Winter

☐

Both

☐

3. Did you engage in other types of fishing in Alaska during 1988? (please place an "X" in the appropriate box for each question)

Yes

No

a. Subsistence Fishing

☐☐

b. Commercial Fishing

☐☐

c. Personal Use Fishing

☐☐

4. Please rate your sport fishing experiences in Seward Peninsula Waters on the following 4 point scale:

1 = Excellent

2 = Good

3 = Fair

4 = Poor

a. Your fishing success in Seward Peninsula Waters

☐

b. Your satisfaction with the size of fish you caught in Seward Peninsula Waters

☐

c. Your overall fishing enjoyment in Seward Peninsula Waters

☐

5. Here are some general reasons that people have given for going sport fishing. Please indicate the first and second most important reasons why you go sport fishing. (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.

6. Please estimate how many sport fishing trips you made to each of the following types of Seward Peninsula waters during 1988.

_____ Marine waters (For example: Norton Sound).

_____ Fly in lakes or streams (For example: Glacier Lake).

_____ Lakes or streams reached by riverboat or canoe (For example Eldorado River or Boston Creek).

_____ Lakes or streams reached by road (For example: Nome or Pilgrim River).

_____ Lakes or streams reached by offroad trails using ATVs, Snowmachines, Skis, or Walking (For example: Upper Snake River or Fox River).

7. Please list the types of fish you sport fished for in Seward Peninsula waters during 1988. (List the species you fished for most as number 1, next most sought after species as 2, etc.)

1. _____	4. _____
2. _____	5. _____
3. _____	6. _____

8. On certain waters different management changes or fishing regulations can improve fishing by providing larger, more, or different kinds of fish. What is your feeling toward each of the following ways of possibly improving sport fishing in Seward Peninsula 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	☐	☐	☐

9. 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	☐

10. Do you feel that sport fishing in Seward Peninsula waters should be improved? ____Yes ____No

If Yes, what would you like to see done to improve sport fishing in Seward Peninsula waters?

11. Is access to Seward Peninsula sport fishing waters adequate? ____Yes ____No

If No, please provide specific recommendations for access improvement projects that you think the Department of Fish and Game should start.

12. Do you feel that the Department of Fish and Game pays adequate attention to the Seward Peninsula Area sport fishery? ____Yes ____No

If No, what additional things do you think the Department of Fish and Game should do?

13. Background questions:

- a. How many years have you been sport fishing ? ____Years
- b. How many years have you sport fished in Alaska? ____Years

APPENDIX B

SUGGESTIONS TO IMPROVE SPORT FISHING IN SEWARD PENINSULA WATERS
(QUESTION 10)

This appendix contains responses to question number 10 in the survey which reads: "Do you feel that sport fishing in Seward Peninsula waters should be improved? Yes No

If Yes, what would you like to see done to improve sport fishing in Seward Peninsula waters?"

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

- 003. Enforce regulations during the winter on river ice fishing. Too many take an excessive number of fish in the holes that remain open. I believe that the trout population has suffered as a result and, of course, the erratic salmon runs have contributed to the problem as well.
- 006. Hatchery.
- 008. Don't close the rivers for certain kinds of fish.
- 017. Limit or stop commercial fishing in Norton Sound; not enough salmon returning (overharvest). Stop people from catching fish to feed dog teams.
- 019. There is an obvious problem with salmon fishing these past two years; need to approach the problem with possible solutions.
- 023. Limit access.
- 030. People should try and make more use of the fish.
- 032. Reduce commercial fishing in the ocean in the Seward Peninsula area and below this area allowing more fish in this area, especially king salmon.
- 050. Stop subsistence fishing of rivers. Most subsistence fish go to waste or are fed to dogs.
- 054. Stocking some streams and rivers.
- 055. Random reports from anglers (forms) to inform the Department of kinds of fish and count-field observation. Observation from the Department of Fish and Game to determine correct action to take.
- 056. No limits.
- 058. Subsistence fishing should always have priority over sport fishing.
- 062. More restrictions to nets in rivers.

070. Stop the netting of salmon, people are not living subsistence lives, so why pretend.
076. If it is enforced, youth will be penalized the most near Nome.
077. Start some terminal fisheries near population centers as well as stocking the rivers for larger salmon runs. Snake River was very poor.
078. In some rivers they are being over fished. The salmon runs are not as good as in the past. High sea restrictions!
078. With the salmon runs, watch and control the subsistence fishing closer.
087. Find out why salmon runs have been so small. Maybe a fish hatchery.
100. Controlled areas, e.g. stocked lakes or ponds.
108. I think subsistence fishing is very important to all people and the rivers should not be closed when fish are running.
112. No gill netting in rivers! Salmon is usually the target fish but I have seen hundreds of trout and char caught and wasted by gill netters.
122. Stop unregulated commercial fishing by foreign countries on the open sea.
130. Quota of fish caught should be limited.
136. Better control on subsistence and commercial fishing.
139. Rivers like Snake River, Nome River, Penny River, and Cripple River should be closed every few years to all fishing when the water is low to give fish harvest a chance.
150. Quit closing fishing areas.
156. The only way I can see improvement without closing some rivers to fishing is more access to other rivers (i.e. more roads).
164. Quit seining altogether in the rivers and limit setting nets in the rivers further.
170. Limit net fishing, seems to be affecting the number of fish for pole fishermen/women. Also, extend our borders for the state into the ocean.
180. Catch and release all female fish. Catch and release after bag limit of 10.
182. I think fishing is going fine. Fishing is like anything it goes good then bad, bad to good.

198. Control seining. Limit the number of subsistence nets allowed on rivers with endangered stock numbers.
202. More fish.
207. Limit subsistence fishing. Do not use salmon, grayling, or trout for dog food!
213. Hatcheries.
215. Need more stocking and more enforcement of fishing regulations.
228. Get the subsistence nets out of the mouths of the rivers.
233. Allow more fish to get up to spawn. Cut out nets at river mouths during more of the spawning season.
242. Limits of certain lengths of fish. Have open and closed seasons.
246. I feel this is out of anyone's control. The additional "development" in our region is impacting subsistence fishing.
256. I'd simply like to catch more fish for my own consumption.
258. Fishing near the road systems may need some attention but the remote areas are consistently good fishing year after year.
263. Limit the commercial fishing in the ocean.
265. It is okay.
277. Put a limit on the number of mosquitos!!
279. More fish and better runs.
288. I believe the closer monitoring of commercial and subsistence fishing would help sport fishing. It's kind of hard to get fired up about the fishing when someone has a net stretched across the river downstream.
288. The only regulation that is unsound is the grayling limit. There is no shortage of grayling in the Nome area rivers and there are large numbers over 15 inches.
290. Share more equally with subsistence. Where I went sport fishing they put nets out, put us up a dry creek, no sports fishing.
290. Already very good. Cut subsistence fishing.
304. Limit subsistence net users in the rivers and river mouths.

- 307. Grayling and char fishery closures in winter months. When some ice fishermen keep illegal numbers of fish isolated schools are more easily depleted - or catch and release only. After all, it is sport fishing.
- 313. Decrease the quantity of subsistence catch. Shorten the opening. Don't allow fish to be fed to dog teams.
- 315. Fishing awareness. Set bag limits dependent upon presence in specific areas.
- 320. I would like to see a small salmon hatchery in the Nome area streams and sheefish stocked in the Imuruk Basin watersheds.
- 322. Whatever it takes to restore fisheries to nearer peak production.
- 332. I would like to see the transplant of sheefish into the Kuzitrin and Pilgrim rivers. These rivers terminate at a lake (Salt Lake) and have plenty of whitefish and smelt for food.
- 334. Stock fingerlings from hatcheries elsewhere.
- 336. Keep nets out of Nome and vicinity rivers; netting in the ocean only.
- 365. The sport fishing is fine now - let's not complicate things.
- 369. Enforce the existing laws and regulations on a regular basis. Prohibit nets on road-access rivers. Advertise what's wrong with snagging.
- 385. A fish hatchery should be developed.
- 407. Hatcheries.
- 425. Subsistence netting and seining should be greatly restricted or totally stopped for several years.
- 427. I think the fishing is very good right now with the exception of the Nome River salmon run - it would be nice to improve sport fishing on this very accessible river.
- 433. More fish.
- 435. More king salmon in the rivers and stiffer penalties for snaggers. Larger escapement numbers for better future fishing.
- 439. Regulate subsistence and commercial take.
- 441. Perhaps allow only the very old people to fish. I have seen a pick-up load of trout caught to feed a large dog team (waste!).

451. I feel a large number of salmon being caught by subsistence means are going to waste. I've seen it myself. Also they're sent out of state and not being consumed under subsistence regulation. The more fish being taken in the ocean means less fish for me to catch in the river.
451. By enforcing the laws that are now on the books. There is no way one protection officer can cover the Seward Peninsula waters. Enforce the laws now in place when nets have to be out of the water. No one checks these nets. Snagging is done all the time late at night.
457. Subsistence fishermen are allowed too many and too long of openings.
467. Open a hatchery to increase fish.
470. Less netting on rivers and streams. We've seen nets full of fish thrown on the shore and the sides of rivers and left there to rot.
476. Eliminate the use of nets in the rivers and introduce additional species (sheefish) to some rivers.
478. Open a fish hatchery to increase numbers of fish.
478. I am satisfied with sports fishing, except limitation on Nome River.
482. Keep heavy equipment from messing up rivers, police mines more.
484. Sport fishing is especially heavy on Nome River. I am worried about the impact of sport fishing close to Nome.
484. Reduce daily bag limits, restrict subsistence and sport fishing in certain areas during certain times.
486. Clean the water released to rivers and sea shores by mining outfits. Muddy waters from dredging ponds might contain harmful things for fish eggs.
487. Give the sport fisherman some fishing. It seems when there is a problem the sport fisherman takes the heat rather than the commercial. Subsistence is subsistence but let's check some of them out.
488. Should stock the streams with hatchery fish.
490. Keep as is; stop advertising how good it is. Overdemand for sport fishing creates problems with local subsistence use.
494. Reduce bag limit and wait until size of grayling is 12 inches.
497. Leave them alone.
501. Continue to limit subsistence fishing at Nome River mouth to maximize escapement until stocks have built back up to previous levels.

511. Hatcheries and stocking, e.g. sheefish.
517. Stop the pollution getting into the streams, lakes, and ocean. Give the fish enough time to spawn and let the fish breed to keep them from becoming extinct.
533. Limit subsistence fishing at mouths of rivers.
546. Most net fishing in Norton Sound for subsistence is fed to dogs. Then the fish rot and fall off the racks.
578. More fish.
585. Stock fish in the waters.
598. Invest in aquaculture like developing fish farms to maintain the productivity, quality, and resourcefulness of sport fishing and fishing in our region.
602. No littering of pop cans, plastic bags or any plastic items.
645. Salmon fish hatchery releases in the Nome River (fingerlings).
651. Reduce use of gill nets and seining.
655. Let us all quit polluting the waters.
658. Stop the people that are mining and digging on the coastal region of the Seward Peninsula. And, stop pollution like gas spills from machines and things like that.
658. Educate the angler concerning how to handle and release fish and on how long it takes to grow a 20 inch grayling. Designate certain species such as grayling as sport fish, not a subsistence fish. Possible hatchery to increase salmon stock especially king and silver salmon. Chum and pink also. Limit grayling to 5 fish a day, not more than 2 over 18 inches and not more than one 20 inches and over.
660. Everybody getting flush toilets!
660. Cut down on set nets in rivers as they are obviously overfishing and the limits on their permits aren't being enforced.
662. Increase silver run. Find halibut.
666. Increase the escapement to increase fish production of certain species (i.e. pinks).
670. Sport fishing in the Seward Peninsula is dependent on the size of salmon runs in previous years. I believe fishing in Nome, etc. is not drastically affected by the small numbers of sport fishermen.

682. I fish every time I can to subsist all my life.
686. Reduce subsistence fishing to those who are in need.
686. Specifically close the Nome and Snake rivers during the years of poor salmon runs to all subsistence fishing, except to senior citizens. Also close an area east of these rivers in the Bering Sea to at least Cape Nome to all salmon fishing i.e. commercial and subsistence. Seines and gill nets are killing the salmon runs in both the Nome and Snake rivers. During the late 60's and early 70's there were probably 3 families who actively subsistence fished the Nome River. Zero in on the Snake River. Today there can be seen, in the Snake River alone, from the end of the North South runway to 1 mile above the dredge, 8 to 10 nets - Good Luck!
688. Be very aware of fishing pressure for specific areas; provide a master plan for maintenance of the fishery in future years.
691. Length limits but continue to catch and release.
693. Close commercial fishing.
695. Keep foreign fishing fleets out of Alaskan waters.
697. More fish, but it seems to me that mother nature is the deciding factor in how many fish make it through the winter.
706. Do something with gill nets until the steelheads and salmon catch up in numbers. Outlaw gill nets for a few years and "enforce" it.
752. Reduce the gill net fishing in rivers or at the mouths of rivers.
765. Less abuse of "subsistence fishing" i.e. nets across rivers or seining.
779. It seems that subsistence fishermen have it a lot easier with their setting of nets at mouths of rivers, etc. The further up north, the less amount of fish there are, so all fisheries (sport, commercial and subsistence) should be more equal.
787. Stop all the netters at the mouths.
788. The fish are there if I need them.
810. Control overharvest of subsistence fishing! Keep a tight control on commercial fishing.
811. Don't see where it is threatened at all.
812. Silver salmon - There is a poor fishery here in Nome. There is so much waste. Fishermen are taking dozens of silvers each. They do not eat most of them and it's hard to keep salmon from freezer burn.
819. Allow more than 10 per day with rod and reel.

822. Before implementing any new regulations the existing regulations and limits must be enforced. More enforcement personnel are needed at high use areas. Many people currently abuse limits. Also, look into planting salmon in rivers to enhance runs.
824. Have the Fish and Game Department check more often on fishermen for permits or illegally caught fish.
837. More fish!
843. Regulate how many are caught so the rivers can remain open all the time.
852. Twenty fish per family a day.
856. Help small sport fish guiding open up, an example would be state loans. Also lots of people waste fish. They get more than needed and some fish for dog food. Also, commercial fishing should be cut first in an emergency.
859. Put in a hatchery and improve stream habitat. Raise fish for those years the conditions don't help it.
860. Have closed areas re-opened to sport fishing.
862. Fish and Game should develop a hatchery near Nome for trout and Arctic char.
864. Access.
868. Subsistence fishing in the rivers around Nome should be done away with. e.g. nets in the mouths of rivers, and having Fish and Game employees do more enforcement.
884. I did not, and do not, sport fish. I do, however, commercial fish for crab in the winter and subsistence fish for salmon with gill nets in the summer. I just buy the license (sport fishing) each year to help support management.
888. Reduce non-resident fishermen.
894. Stock lake trout in lakes. Stock red salmon fry in lakes where rivers run into the ocean.
896. Limit net fishing.
899. Monitor, inspect, and watch offshore gold mining. They are destroying the food chain.
903. Maintain strict conservation measures.
905. Introduce red salmon into Nome and Solomon rivers.

- 907. Keep commercial fishing nets well away from salmon streams and rivers.
- 909. Try stocking walleye pike in rivers where northern pike are i.e. Pilgrim and Kuzitrin. Walleye are less aggressive to small fish and are good eating. Stock salmon fingerlings in rivers where salmon are depleted. Stop netting and seining fish for dog food!
- 911. More fish. Easy to get to places are overfished.
- 915. Have no, or limited, commercial boats enter Norton Sound or Nome area.
- 918. Reduce commercial fishing.
- 924. Make kids pay for licenses and stop snagging fish for fun from the bridges and river banks. Enforce current laws. Ad campaign: "eat what you catch" just catch what you can eat!
- 932. Always room for improvement. Stop offshore fishing by the Japanese to allow more fish to get to fisheries.
- 934. Limit commercial and subsistence fishing.
- 937. Closed areas at times. Bag limits at river mouths.
- 941. Grayling fishing should not be limited as far as length is concerned.
- 952. Too many people might come around and spoil subsistence fishing.
- 957. We just need greater accessibility to the large numbers of Seward Peninsula rivers.
- 959. Less netting in river, subsistence or otherwise.
- 961. Said it on other page - do something about the nets being used on the river. Do not allow dog mushers to use salmon, trout, or grayling for dog food.
- 968. Build hatcheries in all major rivers.
- 976. Go more towards subsistence.
- 993. More control limits placed on commercial and subsistence fishing, particularly in the rivers and river mouths, specifically Nome River, Snake River, and Fish River.
- 999. Limit set-net fishing in rivers so close to mouths and perhaps open up access from area of Vor to Nome River.

APPENDIX C

RECOMMENDATIONS TO IMPROVE ACCESS TO SPORT FISHING IN
SEWARD PENINSULA WATERS (QUESTION 11)

This appendix contains responses to question number 11 in the survey which reads: "Is access to Seward Peninsula sport fishing waters adequate?

_____ Yes _____ No

If No, please provide specific recommendations for access improvement projects that you think the Department of Fish and Game should start."

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

056. With no limits of catch.

076. Allow Nome youth to sport fish - most don't have the means to travel far from Nome/Snake River area to enjoy good fishing.

089. Access is simply too good in some places.

156. Maybe the only thing the Department of Fish and Game could do is to publish where the fishing spots are good (rivers that are difficult to get to).

182. Yes. For the area I live in there's enough access to keep me happy.

213. The reason I say "yes" is if a person wants to get to some good holes, they should get a boat and motor themselves and find their favorite spot. The state should not have to lead them.

228. Short of building more roads I really couldn't say. I would like to be able to drive across rivers with my truck but it's illegal, so I can't get to the hot spots.

242. I think that the Department should try and work on the mouths of rivers that are so often changed or shrunk that fish have trouble getting in, or past, fishermen.

288. I'm not sure that the Department of Fish and Game can really help here. It does seem that many of the best sport fishing spots require a \$10,000 boat, motor, and trailer to get to. I only get to fish these spots when I'm fortunate enough to be asked along.

290. No subsistence at Fort Davis Lagoon, only sport fishing!

307. Just fine the way things are.

322. Increased access will deplete fishing in these opened up areas.

365. Let's keep it no more accessible than it is.

- 381. Don't know, I've never fished in the Seward Peninsula area.
- 409. No more roads!
- 441. Public ramp into Bering sea somewhere.
- 550. Catching the fish for food!
- 645. Build more roads, extend present road beyond Council and Teller.
- 651. Keep it the way it is to keep down the fishing pressure.
- 658. We need to keep some areas remote to preserve our fishing.
- 658. By cleaning up the ocean and stopping people from polluting the river and things like that.
- 662. Improved access is too costly.
- 688. More access would threaten a very fragile fishery.
- 706. None, don't pave any roads. Just leave Alaska like it's been.
- 765. Longer gravel bars for airplanes to land on.
- 810. The Seward Peninsula is a remote area and should remain that way.
- 852. Check everyone for hunting and fishing licenses on the river before they get away from the Fish and Wildlife or the Fish and Game!
- 862. Fish and Game should construct access roads to provide easy access to portions of major streams.
- 868. You people have enough trouble patrolling the area now!
- 903. More than adequate.
- 924. We should provide our own access.
- 957. Work with private, state, and federal landowners to get "more" access routes to fishing areas.
- 970. Get the Department of Transportation to maintain the roads in a better condition.
- 999. Would like to see more roads or at least 4-wheel drive trails to rivers besides just cabin developments.

APPENDIX D

SUGGESTIONS FOR ADDITIONAL ACTIONS THE DEPARTMENT OF FISH
AND GAME SHOULD TAKE REGARDING SPORT FISHING IN
SEWARD PENINSULA WATERS (QUESTION 12)

This appendix contains responses to question number 12 in the survey which reads: "Do you feel that the Department of Fish and Game pays adequate attention to the Seward Peninsula Area sport fishery? _____ Yes _____ No

If No, what additional things do you think the Department of Fish and Game should do?"

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

- 062. Better enforcement of existing regulations.
- 070. I feel they should shock and find out what they have. They should encourage more enforcement of the limits among both natives and whites.
- 076. Create a fishery plan and hatchery to stock the rivers and lakes with sport fish, i.e. silvers, kings, trout, etc.
- 077. Start some terminal fisheries near population centers as well as stocking the rivers for larger salmon runs. Snake River was very poor.
- 108. Again Fish and Game should not close rivers for fishing when fish are running.
- 112. Less priority on "subsistence fishing" by people who generally feed the largest part of their catch to their dog teams.
- 139. Should have more "wardens" around Nome when the fish are running. I've seen fish shot at, snagged, and even found a small net across the Penny River, below the bridge on Peller Road, 2 years ago. Then the water was real low. Some night patrols are needed at least until 12 p.m.
- 180. Seems like all they do is fly over the rivers. I have never seen any of these people on the river.
- 180. I have never seen any get out of the office and, I kid you not, I go out just about every week and weekend. They seem to be too busy going to someplace warm or pretending they're dog mushers.
- 182. I think they are doing a good job. But should maybe do some experimenting with certain things.
- 202. Watch for snagging. Too many people do it and get away with it.
- 205. There is enough regulation now!
- 215. More enforcement of fishing regulations.

228. Subsistence gets the most attention and I have no problem with that but wouldn't mind some help with increasing the salmon stock. I also think the Commercial Fishery Division folks do a fantastic job.
233. More staff out during peak seasons.
242. They may pay attention but I think some of the things they come up with are not always in good judgement.
246. Only after there is an imbalance of fish that travel to spawn in our rivers. The people who depend on fish as part of their diets are hardest hit when state regulations are imposed, such as limiting the time in which to fish or what is allowed.
258. Each year I have had my license checked 100 miles from Nome. Certainly the Alaska Department of Fish and Game is paying attention.
284. Possibly monitor in conjunction with the coast-guard, the massive commercial fishing in the high seas.
286. I would like to see increased law enforcement of fish and game laws.
288. They could pay more attention to these surveys and the opinions of the people who are out in the field fishing.
290. Let me fish from the bridge.
307. Increased patrolling and monitoring. I lived in Nome 3" years and heard rumor of fishermen keeping large illegal numbers of fish, particularly dollies and grayling, and a large illegal number of trophy size fish over 20 inches.
315. Provide a full-time biologist to keep track of fishing pressure, impact, and population maintenance.
322. Attention hasn't been required until the last few years. Get a good handle on fish populations. Increased enforcement in onshore and offshore waters.
326. Better enforcement of regulations, especially no snagging.
332. The staff of fish biologists in the Nome office seem very attentive to anglers comments and needs.
338. Instead of trying to figure out how to limit, or close down, sport fishing on the Seward Peninsula I think the state of Alaska should do more to stop other countries from intercepting Alaska salmon on the high seas.
365. Occasionally Fish & Wildlife Protection pays too much attention, such as trying to enforce the anti-sag regulation.

369. Seek allocation of sufficient personnel to monitor and enforce fishing laws and regulations.
425. The construction and management of a fish hatchery in this area would not be a bad idea. Overharvesting by subsistence users, winter kill, high seas foreign fishing (piracy), and increased fishing pressure by a larger population has taken its toll. The local rivers need help by restocking or they may never come back "like it used to be!"
427. What you are doing now before something bad happens. However, I do not want to imply that I think things have been mismanaged. It's just that sport fishing seems to have become more common in the last few years around here.
435. I know there are not enough law enforcers so maybe you could deputize people to help the Fish and Game Department catch snaggers!
441. Public notice stating the comparative poor condition of the fishery stocks. Collect public input on changes needed. Then (most important), leadership, someone to do what has to be done to implement the change necessary to reach the desired goal.
451. In the summer months there's no way one officer can do the job that's to be done. In the summer just one officer is available to cover the Nome area. Put a summer trainee based in Nome just to cover that area on a 4-wheeler from Cripple Creek on up the Highway to Mile 10 bridge on the Nome River.
451. You might think about who you give subsistence permits to, and how many overall.
457. Change openings and catch limits for subsistence users (salmon).
467. Conduct a home-to-home survey as to how a family utilizes sport fishing. Do a species estimation of the number of fish per major sport fishing rivers.
470. How much attention do they pay? We have no information on this.
476. Additional presence and work is needed by representatives of the Department.
478. Help enhance Nome River with a temporary salmon hatchery.
478. I see too many people misusing fishing regulations. Not enough Fish and Game managers to see poachers.
482. Enforce current laws.

484. Enforce laws already in place and provide more personnel to patrol fishing areas, provide education on the benefits of conservation so that wastefulness of fish is reduced.
487. I very rarely see enforcement being done or read that it was done in the paper. I have seen enforcement in the commercial fishery.
490. One problem is misconception of land ownership. Natives often think they control and own land within flood-limits when this is not the case, nor navigable rivers. Public education on this is desirable.
503. Check our fishing areas during commercial fishing season and when the fish go into the rivers.
517. You can't be expected to overload your capabilities or manpower.
519. Not a strong "No" but in all the times I went fishing and of the number of people I knew who went fishing, none has ever mentioned being approached by any Fish and Game personnel.
546. Stop or limit subsistence fishing. Ever seen the fish rot on the Yukon fish racks?
550. Close sport fishing and have subsistence fishing.
585. Take some nets out of the rivers and restock.
598. Enforce the sport fishing license requirement in drainages being used heavily. This can be used as a research tool for surveying purposes as to who fishes where and who's catching what type of fish.
645. Fingerling releases into Nome River.
658. Protection is almost non-existent. I talk to a lot of fishermen and easily 1/2 or more fishermen I talked to in 1988 exceeded the daily limit many times during the season by their own comments and had no contact in the field with protection officers. I didn't see an officer in the field once all season long.
660. Enforce the fish laws more stringently than they are currently being enforced.
668. Too much attention.
686. An accurate analysis of the grayling resource and potential limits should be studied. Seems like panic management.
688. I have little idea what the Fish and Game Department does in the Seward Peninsula area. There is very little information (public) available concerning current efforts to manage the freshwater fishery.

691. I know you are short handed, but there is still a lot of snoozing being done.
693. Enforce the current laws on everyone alike whether Eskimo or White.
706. Need more law enforcement on commercial fishermen, like for wasting fish and leaving nets float around.
779. Mostly when I was a child with my father. I haven't really sport fished very much at all in past years.
810. I believe that Alaska Department of Fish and Game does a good job on Seward Peninsula but their hands are tied by the politicians over subsistence issues. This has caused a loss of resource over the years due to an inability to manage the resource due to overharvesting.
811. Over attentive. I can see no logic for grayling limits at this time.
812. Fishing enforcement needs to be stressed during the salmon seasons. Subsistence fishing of silver salmon for dog food is not good.
822. Plant salmon in Nome and Snake rivers. Make small red salmon hatchery in, or near, Glacier and Salmon lakes. Tag fish from our rivers to determine what portion are being caught by high seas fisheries and more southern fisheries (Bristol Bay, etc).
856. I know this isn't a Fish and Game matter but enforcement of fishing laws is lousy. I'm a father with three boys and it's hard to tell them to do right when everyone else does wrong.
862. The conflicting needs of subsistence and sport fishing should be addressed. Overfishing an area by subsistence users is extremely detrimental to sport fishing.
868. Before you do anything else you have to have some sort of enforcement. There are lots of people that take 40-60 fish out of the rivers, not in a month but in "1" day!
894. Get out of the office and have adequate enforcement personnel.
899. Fish and Game should continue to closely monitor offshore gold dredging in the Bearing Sea i.e. "The BIMA." I think this type of mining will screw up the environment, marine mammals, and fish.
924. Some of my fondest memories as a boy were sitting in a row boat in Crocker Lake in the early morning mist. I would love to be able to do that at Salmon Lake without feeling guilty about decimating the sockeye population. I think the fishery people should have an animal "permit" system (lottery) each year to allow boaters/fishermen to fish Salmon Lake. "What a waste."

932. I think the mining and other pollutants by industry should be watched closer, both into the sea and the rivers.
957. You might do a study to see if fish hatcheries could enhance area rivers.
959. Pay less attention to the few who are sport fishing and pay closer attention to nets in the river which eliminate whole schools of fish.
968. Should have some sort of hatcheries rather than over-regulate.
972. If possible, pay more attention to the kids (whom do not have to be licensed) that like to "snag" fish anywhere just for the fight and then once they're brought to shore, they leave them to die, "what a waste!"
993. Actually "yes" in regard to sport fishing, but "no" when protecting waterways from depletion by subsistence nets and in some areas by commercial nets.
999. Monitor fish nets and not allow them so close to mouths of rivers or before first road access to river. Also, get out and check people's catches. Also, catch snaggers off bridges and rivers.

APPENDIX E

MISCELLANEOUS COMMENTS OF RESPONDENTS TO THE SURVEY

This appendix contains miscellaneous comments to the survey.

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

076. I went tom coding with my grandmother as a child and later tried fly fishing and sport fishing when time permitted. They provided me with line and rod and reel when we weren't netting salmon for drying.
087. I don't really sport fish. I pretty much subsistence fish. I've fished most of my life and have fished in Alaska for almost 16 years.
139. I have worked since 4/1/75 in Nome for Alaska Gold Co. I buy a non-resident sport fishing license as the Gold Co. season runs 4/15 to 11/15 for me. Then I move back to Idaho. Each year the fishing pressure is greater it seems to me and the smaller rivers need more protection. Subsistence fishing should be closer regulated on who really needs it. A person can only eat so much fish per day.
435. I see people; children, adult men, and women snagging all day, who run when they see Fish and Game at the Nome River Bridge and Pilgrim River Bridge. It must be stopped!
505. I think this is silly to answer a questionnaire. Long ago we never used to have this so called license. Now if we don't have it and we get caught without it we're in trouble, so I have it now to be on the safe side. I never fished. I have to go to the store when I want to taste our native food.
511. I suppose sport fishing is a misnomer. I have never fished catch and release. When I was 2-3 years old I fished with a cane pole. I suppose I looked at fishing as fun. When I was 15 it still was. When I was 25-30 it was a way to get outdoors. It was always a means to put meat on the table. I was reared that you do not kill another creature unless you use it - this includes fish. Fish are for eating. As I grew older I preferred to catch fish in a net. It's faster and more efficient. I don't have time to stand by a stream with a pole. I do have time to take my children to stand by a stream with a pole so long as they use anything they kill. They are like me in that they release under-eating sized fish.

658. The first half of the 1988 season there were 2 nets - long gill nets used for subsistence grayling fishing on the Niukluk River. The owner hauled tubs and 55 gallon drums of grayling back and fed them to his dogs until the salmon showed up. There wasn't a large grayling left in that area after the nets were used. Fish and Game protection was advised and they said there wasn't anything they could do about it because it was subsistence. I would bet those nets are back in the water during the first half of the 1989 season. To gillnet grayling like that is criminal and to allow it to go on is worse than criminal. One of our Seward Peninsula premo grayling waters is being destroyed in the name of subsistence. The quality of grayling fishing has been going downhill steadily for the past 10 years. It's a real shame. There was no enforcement on the 5 grayling limit and 1 over 15 inches last season. I feel the 5 fish limit is okay but anglers should be allowed 2 over 18 inches, of which only one can be over 20 inches. There were several parties on the Fox River last year that went way over the limits. Many of the anglers that walked downriver from the bridge took in excess of 10 grayling, all over 15 inches. Sooner or later you are going to have to restrict subsistence, and enforce limits, or there won't be much fishing left, if any. It's not going to be a popular thing to do but what's more important, the resource or politics? Right now I guess it's politics. It's easy for me to say. I could go on and on, but guess this is enough for now.
788. Actually, I don't even have a rod and reel now. I never play with food anymore. I don't sport fish and I don't sport hunt. I hunt or fish because I need food in my freezer. Since hook and line give so small a return for the time invested, I buy my fish and try to leave time for hunting.
852. Please do your jobs and I will always obey the law in showing my hunting and fishing licenses to the Fish and Wildlife trooper.
859. I've never been a sport fisher except by regulation. Whenever I fish I fish for food.
959. Should eliminate all forms of net fishing in rivers. There is plenty of beach to place nets for both commercial and subsistence fishing. An example is our Nome River. It is being wiped out by netting inside the mouth so spawning fish don't really stand a chance. I have fished here all my life and the netting keeps increasing.
961. From break-up to freeze-up there are very few days I'm not on a river fishing. I catch and release but I've made an effort to learn to do it properly. A lot of people don't. A lot of laws are broken as far as limits, etc. A lot don't have respect for the waters or fish and it's impossible for Fish and Game to be everywhere with limited funds. So who knows the answer? Basically they do a good job.
999. I have seen too much snagging. I also reported illegal fishing by set-net and it was not followed-up on.

APPENDIX F

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 105 tables, all with an "F" prefix.

Appendix F1. Number of fishing trips taken in 1988 for respondents to the first versus the second mailing.

Mailing Category	Number Of Fishing Trips				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
First	93	55	31	48	227
Second	23	20	9	10	62
Total	116	75	40	58	289

Appendix F2. Years of Alaskan fishing experience for respondents to the first versus the second mailing.

Mailing Category	Years Of Alaskan Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
First	97	76	73	246
Second	29	14	23	66
Total	126	90	96	312

Appendix F3. Years of total fishing experience for respondents to the first versus the second mailing.

Mailing Category	Years Of Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
First	46	48	152	246
Second	13	15	38	66
Total	59	63	190	312

Appendix F4. Motive for fishing for respondents to the first versus the second mailing.

Mailing Category	<u>Motive For Fishing</u>			Total
	Non-catch	Sport	Food	
First	121	18	61	200
Second	24	8	19	51
Total	145	26	80	251

Appendix F5. Responses to the first versus the second mailing by various user groups.

Category Of Use	<u>Mailing Category</u>		Total
	First mailing	Second mailing	
Sport and/or personal use fished but did not commercial and/or subsistence fish	164	77	241
Commercial and/or subsistence fished and may have sport or personal use fished	40	21	61
Total	204	98	302

Appendix F6. Respondent recommendations concerning additional restrictions to non-sport fisheries as a means to improve sport fishing listed by user category.

Category Of Use	<u>Response To Question 10; Recommendations Concerning Additional Restrictions To Non Sport Fisheries</u>		
	Not Restrict	Restrict	Total
Sport and/or personal use fished but did not commercial and/or subsistence fish	161	43	204
Commercial and/or subsistence fished and may have sport or personal use fished	89	9	98
Total	250	52	302

Appendix F7. Attitude of respondents towards having minimum length limits as a means to improve sport fishing versus Alaskan fishing experience.

Respondent Attitude	Years Of Alaskan Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	56	50	35	141
No opinion	26	11	28	65
Disapprove	38	27	32	97
Total	120	88	95	303

Appendix F8. Attitude of respondents towards having minimum length limits as a means to improve sport fishing versus total fishing experience.

Respondent Attitude	Years Of Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	16	36	89	141
No opinion	15	11	39	65
Disapprove	24	16	57	97
Total	55	63	185	303

Appendix F9. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus Alaskan fishing experience.

Respondent Attitude	Years Of Alaskan Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	59	52	45	156
No opinion	26	13	17	56
Disapprove	37	20	32	89
Total	122	85	94	301

Appendix F10. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus total fishing experience.

Respondent Attitude	Years Of Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	23	28	105	156
No opinion	14	13	29	56
Disapprove	19	21	49	89
Total	56	62	183	301

Appendix F11. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus Alaskan fishing experience.

Respondent Attitude	Years Of Alaskan Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	35	24	25	84
No opinion	38	20	28	86
Disapprove	45	41	41	127
Total	118	85	94	297

Appendix F12. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus total fishing experience.

Respondent Attitude	Years Of Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	9	20	55	84
No opinion	19	14	53	86
Disapprove	25	28	74	127
Total	53	62	182	297

Appendix F13. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus Alaskan fishing experience.

Respondent Attitude	Years Of Alaskan Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	36	31	22	89
No opinion	44	25	38	107
Disapprove	37	26	35	98
Total	117	82	95	294

Appendix F14. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus total fishing experience.

Respondent Attitude	Years Of Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	15	19	55	89
No opinion	16	23	68	107
Disapprove	22	19	57	98
Total	53	61	180	294

Appendix F15. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus Alaskan fishing experience.

Respondent Attitude	Years Of Alaskan Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	31	30	19	80
No opinion	36	21	29	86
Disapprove	53	32	46	131
Total	120	83	94	297

Appendix F16. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus total fishing experience.

Respondent Attitude	Years Of Fishing Experience			Total
	0-9 years	10-19 years	20 or more years	
Approve	8	21	51	80
No opinion	19	19	48	86
Disapprove	27	23	81	131
Total	54	63	180	297

Appendix F17. Attitude of respondents towards having length limit restrictions as a means to improve sport fishing versus number of fishing trips taken in 1988.

Respondent Attitude	Number Of Fishing Trips				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
Approve	44	37	20	33	134
No opinion	38	8	9	7	62
Disapprove	30	29	11	18	88
Total	112	74	40	58	284

Appendix F18. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus number of fishing trips taken in 1988.

Respondent Attitude	Number Of Fishing Trips				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
Approve	56	36	24	31	147
No opinion	32	9	8	4	53
Disapprove	24	27	8	21	80
Total	112	72	40	56	280

Appendix F19. Attitude of respondents towards reducing daily bag limits as a means to improve sport fishing versus number of fishing trips taken in 1988.

Respondent Attitude	Number Of Fishing Trips				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
Approve	31	20	14	15	80
No opinion	39	14	13	15	81
Disapprove	40	39	12	27	118
Total	110	73	39	57	279

Appendix F20. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus number of fishing trips taken in 1988.

Respondent Attitude	Number Of Fishing Trips				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
Approve	38	18	14	15	85
No opinion	47	23	11	21	102
Disapprove	25	30	14	20	89
Total	110	71	39	56	276

Appendix F21. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus number of fishing trips taken in 1988.

Respondent Attitude	Number Of Fishing Trips				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
Approve	22	20	11	22	75
No opinion	41	20	14	7	82
Disapprove	48	32	15	27	122
Total	111	72	40	56	279

Appendix F22. Attitude of respondents towards having minimum length limits as a means to improve sport fishing versus primary motivation for fishing.

Respondent Attitude	Primary Motivation For Fishing			Total
	Non-catch	Sport	Food	
Approve	71	12	34	117
No opinion	29	4	17	50
Disapprove	41	10	27	78
Total	141	26	78	245

Appendix F23. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus primary motivation for fishing.

Respondent Attitude	Primary Motivation For Fishing			Total
	Non-catch	Sport	Food	
Approve	66	17	42	125
No opinion	33	4	10	47
Disapprove	39	5	26	70
Total	138	26	78	242

Appendix F24. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus primary motivation for fishing.

Respondent Attitude	Primary Motivation For Fishing			Total
	Non-catch	Sport	Food	
Approve	42	9	20	71
No opinion	41	6	18	65
Disapprove	57	11	37	105
Total	140	26	75	241

Appendix F25. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus primary motivation for fishing.

Respondent Attitude	Primary Motivation For Fishing			Total
	Non-catch	Sport	Food	
Approve	40	11	24	75
No opinion	61	10	23	94
Disapprove	35	5	28	68
Total	136	26	75	237

Appendix F26. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus primary motivation for fishing.

Respondent Attitude	Primary Motivation For Fishing			Total
	Non-catch	Sport	Food	
Approve	41	10	12	63
No opinion	43	2	21	66
Disapprove	54	13	42	109
Total	138	25	75	238

Appendix F27. Attitude of respondents towards having minimum length limits as a means to improve sport fishing versus user category.

Respondent Attitude	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Approve	101	36	137
No opinion	37	25	62
Disapprove	63	31	94
Total	201	92	293

Appendix F28. Attitude of respondents towards having fishing closures at certain times or in certain areas as a means to improve sport fishing versus user category.

Respondent Attitude	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Approve	106	46	152
No opinion	34	19	53
Disapprove	56	30	86
Total	196	95	291

Appendix F29. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus user category.

Respondent Attitude	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Approve	60	21	81
No opinion	61	22	83
Disapprove	77	46	123
Total	198	89	287

Appendix F30. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus user category.

Respondent Attitude	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Approve	61	25	86
No opinion	78	24	102
Disapprove	53	43	96
Total	192	92	284

Appendix F31. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus user category.

Respondent Attitude	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Approve	61	16	77
No opinion	50	32	82
Disapprove	85	43	128
Total	196	91	287

Appendix F32. Attitude of respondents towards having minimum length limits as a means to improve sport fishing versus primary fish species targeted by fishermen.

Respondent Attitude	Primary Fish Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other	
Approve	35	44	22	31	132
No opinion	23	16	4	15	58
Disapprove	28	26	10	20	84
Total	86	86	36	66	274

Appendix F33. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus primary fish species targeted by fishermen.

Respondent Attitude	Primary Fish Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other	
Approve	45	46	18	32	141
No opinion	13	18	5	13	49
Disapprove	26	23	11	20	80
Total	84	87	34	65	270

Appendix F34. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus primary fish species targeted by fishermen.

Respondent Attitude	Primary Fish Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other	
Approve	16	23	19	19	77
No opinion	19	31	7	20	77
Disapprove	51	31	10	23	115
Total	86	85	36	62	269

Appendix F35. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus primary fish species targeted by fishermen.

Respondent Attitude	Primary Fish Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other	
Approve	21	22	14	25	82
No opinion	34	32	11	21	98
Disapprove	30	30	8	18	86
Total	85	84	33	64	266

Appendix F36. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus primary fish species targeted by fishermen.

Respondent Attitude	Primary Fish Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other	
Approve	19	22	17	15	73
No opinion	20	28	8	19	75
Disapprove	45	35	11	30	121
Total	84	85	36	64	269

Appendix F37. Attitude of respondents towards having a minimum length limit as a means to improve sport fishing versus anglers rating of fishing success.

Respondent Attitude	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	34	57	30	13	134
No opinion	3	27	18	10	58
Disapprove	16	31	25	14	86
Total	53	115	73	37	278

Appendix F38. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus anglers rating of fishing success.

Respondent Attitude	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	34	56	37	18	145
No opinion	6	23	17	4	50
Disapprove	13	34	18	14	79
Total	53	113	72	36	274

Appendix F39. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus anglers rating of fishing success.

Respondent Attitude	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	20	30	18	13	81
No opinion	16	32	19	10	77
Disapprove	17	48	35	14	114
Total	53	110	72	37	272

Appendix F40. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus anglers rating of fishing success.

Respondent Attitude	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	18	32	20	13	83
No opinion	15	47	27	10	99
Disapprove	19	29	25	14	87
Total	52	108	72	37	269

Appendix F41. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus anglers rating of fishing success.

Respondent Attitude	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	19	33	15	9	76
No opinion	13	33	21	10	77
Disapprove	20	45	36	17	118
Total	52	111	72	36	271

Appendix F42. Attitude of respondents towards having a minimum length limit as a means to improve sport fishing versus anglers rating of fish size satisfaction.

Respondent Attitude	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	37	69	25	3	134
No opinion	7	36	10	5	58
Disapprove	21	33	26	5	85
Total	65	138	61	13	277

Appendix F43. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus anglers rating of fish size satisfaction.

Respondent Attitude	Rating Of Fish Size Satisfaction By Angler:				Total
	Excellent	Good	Fair	Poor	
Approve	43	62	33	5	143
No opinion	8	32	8	3	51
Disapprove	14	41	18	5	78
Total	65	135	59	13	272

Appendix F44. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus anglers rating of fish size satisfaction.

Respondent Attitude	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	18	38	21	2	79
No opinion	18	42	13	5	78
Disapprove	26	55	26	6	113
Total	62	135	60	13	270

Appendix F45. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus anglers rating of fish size satisfaction.

Respondent Attitude	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	23	40	17	2	82
No opinion	20	56	19	5	100
Disapprove	19	37	24	6	86
Total	62	133	60	13	268

Appendix F46. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus anglers rating of fish size satisfaction.

Respondent Attitude	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	21	39	12	3	75
No opinion	16	35	22	5	78
Disapprove	27	59	26	5	117
Total	64	133	60	13	270

Appendix F47. Attitude of respondents towards having a minimum length limit as a means to improve sport fishing versus anglers rating of fishing enjoyment.

Respondent Attitude	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	63	53	17	3	136
No opinion	17	28	10	3	58
Disapprove	38	27	15	6	86
Total	118	108	42	12	280

Appendix F48. Attitude of respondents towards having fishing season closures at certain times or in certain areas as a means to improve sport fishing versus anglers rating of fishing enjoyment.

Respondent Attitude	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	64	56	20	6	146
No opinion	18	25	6	2	51
Disapprove	35	25	15	3	78
Total	117	106	41	11	275

Appendix F49. Attitude of respondents towards having reduced daily bag limits as a means to improve sport fishing versus anglers rating of fishing enjoyment.

Respondent Attitude	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	30	34	11	5	80
No opinion	30	34	12	4	80
Disapprove	54	38	19	2	113
Total	114	106	42	11	273

Appendix F50. Attitude of respondents towards limiting bait fishing at certain times or in certain areas as a means to improve sport fishing versus anglers rating of fishing enjoyment.

Respondent Attitude	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	37	33	11	3	84
No opinion	40	45	15	1	101
Disapprove	36	27	16	7	86
Total	113	105	42	11	271

Appendix F51. Attitude of respondents towards having catch and release fishing as a means to improve sport fishing versus anglers rating of fishing enjoyment.

Respondent Attitude	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
Approve	34	33	8	2	77
No opinion	33	27	13	6	79
Disapprove	48	45	20	4	117
Total	115	105	41	12	273

Appendix F52. Angler rating of fishing success versus amount of Alaskan fishing experience.

Alaskan Fishing Experience	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 years	17	48	28	16	109
10-19 years	23	36	19	9	87
20 or more years	16	33	26	12	87
Total	56	117	73	37	283

Appendix F53. Angler rating of fishing success versus total amount of fishing experience.

Fishing Experience	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 years	3	20	14	8	45
10-19 years	8	29	15	8	60
20 or more years	45	68	44	21	178
Total	56	117	73	37	283

Appendix F54. Angler rating of fish size satisfaction versus amount of Alaskan fishing experience.

Alaskan Fishing Experience	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 years	29	51	22	6	108
10-19 years	24	46	14	3	87
20 or more years	15	42	25	4	86
Total	68	139	61	13	281

Appendix F55. Angler rating of fish size satisfaction versus total amount of fishing experience.

Fishing Experience	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 years	9	19	12	5	45
10-19 years	10	36	10	4	60
20 or more years	49	84	39	4	176
Total	68	139	61	13	281

Appendix F56. Angler rating of fishing enjoyment versus amount of Alaskan fishing experience.

Alaskan Fishing Experience	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 years	47	39	18	6	110
10-19 years	42	31	11	2	86
20 or more years	33	38	13	4	88
Total	122	108	42	12	284

Appendix F57. Angler rating of fishing enjoyment versus total amount of fishing experience.

Fishing Experience	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 years	18	12	10	5	45
10-19 years	27	28	5	1	61
20 or more years	77	68	27	6	178
Total	122	108	42	12	284

Appendix F58. Angler rating of fishing success versus number of fishing trips taken in 1988.

Number Of Fishing Trips	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 trips	13	45	32	16	106
10-19 trips	15	29	18	10	72
20-29 trips	8	18	8	6	40
30 or more trips	19	21	13	4	57
Total	55	113	71	36	275

Appendix F59. Angler rating of fish size satisfaction versus number of fishing trips taken in 1988.

Number Of Fishing Trips	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 trips	19	51	27	8	105
10-19 trips	15	36	15	5	71
20-29 trips	15	18	7	0	40
30 or more trips	17	29	11	0	57
Total	66	134	60	13	273

Appendix F60. Angler rating of fishing enjoyment versus number of fishing trips taken in 1988.

Number Of Fishing Trips	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
0-9 trips	40	43	18	6	107
10-19 trips	29	26	13	3	71
20-29 trips	19	15	5	1	40
30 or more trips	30	20	6	1	57
Total	118	104	42	11	275

Appendix F61. Angler rating of fishing success versus motive for fishing.

Number Of Fishing Trips	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
Non-catch	24	65	38	13	140
Sport	7	10	5	3	25
Food	11	24	21	12	68
Total	42	99	64	28	233

Appendix F62. Angler rating of fish size satisfaction versus motive for fishing.

Number Of Fishing Trips	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
Non-catch	28	71	32	6	137
Sport	12	10	3	0	25
Food	13	36	15	4	68
Total	53	117	50	10	230

Appendix F63. Angler rating of fishing enjoyment versus motive for fishing.

Number Of Fishing Trips	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
Non-catch	53	63	21	1	138
Sport	14	6	5	0	25
Food	27	26	12	5	70
Total	94	95	38	6	233

Appendix F64. Angler rating of fishing success versus user category.

Angler Rating	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Excellent	36	20	56
Good	82	30	112
Fair	42	31	73
Poor	32	5	37
Total	192	86	278

Appendix F65. Angler rating of fish size satisfaction versus user category.

Angler Rating	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Excellent	44	24	68
Good	95	39	134
Fair	40	21	61
Poor	10	3	13
Total	189	87	276

Appendix F66. Angler rating of fishing enjoyment versus user category.

Angler Rating	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Excellent	84	38	122
Good	69	34	103
Fair	31	11	42
Poor	9	3	12
Total	193	86	279

Appendix F67. Angler rating of fishing success versus primary target species.

Primary Species Fished For	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
Salmon	15	32	29	10	86
Dolly Varden	16	44	15	10	85
Arctic grayling	9	18	8	1	36
Other species	15	17	15	15	62
Total	55	111	67	36	269

Appendix F68. Angler rating of fish size satisfaction versus primary target species.

Primary Species Fished For	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
Salmon	19	48	18	0	85
Dolly Varden	19	46	14	5	84
Arctic grayling	12	15	9	0	36
Other species	15	23	16	8	62
Total	65	132	57	13	267

Appendix F69. Angler rating of fishing enjoyment versus primary target species.

Primary Species Fished For	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
Salmon	35	34	17	1	87
Dolly Varden	43	29	7	4	83
Arctic grayling	17	16	3	0	36
Other species	22	22	14	5	63
Total	117	101	41	10	269

Appendix F70. Angler rating of fishing success versus means of access.

Primary Means Of Access	Rating Of Fishing Success By Angler				Total
	Excellent	Good	Fair	Poor	
No off-road access	8	27	24	15	74
Some off-road access	45	79	39	19	182
Total	53	106	63	34	256

Appendix F71. Angler rating of fish size satisfaction versus means of access.

Primary Means Of Access	Rating Of Fish Size Satisfaction By Angler				Total
	Excellent	Good	Fair	Poor	
No off-road access	9	45	13	4	71
Some off-road access	54	83	38	8	183
Total	63	128	51	12	254

Appendix F72. Angler rating of fishing enjoyment versus means of access.

Primary Means Of Access	Rating Of Fishing Enjoyment By Angler				Total
	Excellent	Good	Fair	Poor	
No off-road access	23	30	16	4	73
Some off-road access	90	68	21	4	183
Total	113	98	37	8	256

Appendix F73. Primary species targeted by fishermen versus number of fishing trips taken in 1988.

Number Of Fishing Trips	Primary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
0 to 9 trips	28	39	8	30	105
10 to 19 trips	25	19	14	16	74
20 to 29 trips	12	14	4	10	40
30 or more trips	22	16	11	9	58
Total	87	88	37	65	277

Appendix F74. Secondary species targeted by fishermen versus number of fishing trips taken in 1988.

Number Of Fishing Trips	Secondary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
0 to 9 trips	22	26	25	19	92
10 to 19 trips	22	22	11	16	71
20 to 29 trips	10	16	8	6	40
30 or more trips	19	20	16	3	58
Total	73	84	60	44	261

Appendix F75. Primary species targeted by fishermen versus motivation for fishing.

Motivation For Fishing	Primary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
Non-catch	39	44	22	35	140
Sport	7	7	7	3	24
Food	25	22	3	19	69
Total	71	73	32	57	233

Appendix F76. Secondary species targeted by fishermen versus motivation for fishing.

Motivation For Fishing	Secondary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
Non-catch	30	41	38	23	132
Sport	10	7	5	1	23
Food	18	21	13	12	64
Total	58	69	56	36	219

Appendix F77. Primary species targeted by fishermen versus user category.

Primary Species	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish		Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished		All
Salmon		54		33	87
Dolly Varden		64		23	87
Arctic grayling		33		3	36
Other species		42		23	65
Total		193		82	275

Appendix F78. Secondary species targeted by fishermen versus user category.

Secondary Species	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish		Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished		All
Salmon		49		24	73
Dolly Varden		61		21	82
Arctic grayling		44		17	61
Other species		25		18	43
Total		179		80	259

Appendix F79. Primary species targeted by fishermen versus means of access.

Means Of Fishing Access	Primary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
No off-road access	33	21	7	18	79
Some off-road access	52	65	30	38	185
Total	85	86	37	56	264

Appendix F80. Secondary species targeted by fishermen versus means of access.

Means Of Fishing Access	Secondary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
No off-road access	25	23	10	12	70
Some off-road access	45	60	49	28	182
Total	70	83	59	40	252

Appendix F81. Primary species targeted by fishermen versus total fishing experience.

Total Fishing Experience	Primary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
0-9 years	12	12	2	15	41
10-19 years	24	16	4	15	59
20 or more years	51	60	31	37	179
Total	87	88	37	67	279

Appendix F82. Secondary species targeted by fishermen versus total fishing experience.

Total Fishing Experience	Secondary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
0-9 years	8	13	9	7	37
10-19 years	21	17	12	7	57
20 or more years	44	54	40	31	169
Total	73	84	61	45	263

Appendix F83. Primary species targeted by fishermen versus Alaskan fishing experience.

Alaskan Fishing Experience	Primary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
0-9 years	27	29	13	33	102
10-19 years	29	28	13	17	87
20 or more years	31	31	11	17	90
Total	87	88	37	67	279

Appendix F84. Secondary species targeted by fishermen versus Alaskan fishing experience.

Alaskan Fishing Experience	Secondary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
0-9 years	26	30	22	18	96
10-19 years	26	25	20	13	84
20 or more years	21	29	19	14	83
Total	73	84	61	45	263

Appendix F85. Angler opinions regarding the need to improve sport fishing in area waters versus Alaskan fishing experience.

Angler Opinion	<u>Alaskan Fishing Experience</u>			Total
	0-9 years	10-19 years	20 years or more	
Do not improve	66	32	47	145
Needs improvement	54	55	46	155
Total	120	87	93	300

Appendix F86. Angler opinions regarding the need to improve sport fishing in area waters versus total fishing experience.

Angler Opinion	<u>Total Fishing Experience</u>			Total
	0-9 years	10-19 years	20 years or more	
Do not improve	29	35	81	145
Needs improvement	24	26	105	155
Total	53	61	186	300

Appendix F87. Angler opinions regarding the need to improve sport fishing in area waters versus number of fishing trips taken in 1988.

Angler Opinion	<u>Number Of Fishing Trips Taken In 1988</u>				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
Do not improve	55	35	17	20	127
Needs improvement	56	40	22	34	152
Total	111	75	39	54	279

Appendix F88. Angler opinions regarding the need to improve sport fishing in area waters versus primary motive for fishing.

Angler Opinion	Primary Motive For Fishing			Total
	Non-catch	Sport	Food	
Do not improve	65	9	38	112
Needs improvement	75	17	36	128
Total	140	26	74	240

Appendix F89. Angler opinions regarding the need to improve sport fishing in area waters versus user category.

Angler Opinion	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Do not improve	81	58	139
Needs improvement	115	36	151
Total	196	94	290

Appendix F90. Angler opinions regarding the need to improve sport fishing in area waters versus primary species targeted by fishermen.

Angler Opinion	Primary Species Targeted By Fishermen				Total
	Salmon	Dolly Varden	Arctic Grayling	Other Species	
Do not improve	38	35	11	39	123
Needs improvement	46	50	26	25	147
Total	84	85	37	64	270

Appendix F91. Angler opinions regarding the need to improve sport fishing in area waters versus rating of fishing success.

Angler Opinion	<u>Rating Of Fishing Success By Fishermen</u>				Total
	Excellent	Good	Fair	Poor	
Do not improve	28	57	31	9	125
Needs improvement	26	57	41	25	149
Total	54	114	72	34	274

Appendix F92. Angler opinions regarding the need to improve sport fishing in area waters versus rating of fish size satisfaction.

Angler Opinion	<u>Rating Of Fish Size Satisfaction By Angler</u>				Total
	Excellent	Good	Fair	Poor	
Do not improve	33	64	23	5	125
Needs improvement	33	71	35	8	147
Total	66	135	58	13	272

Appendix F93. Angler opinions regarding the need to improve sport fishing in area waters versus rating of fishing enjoyment.

Angler Opinion	<u>Rating Of Fishing Enjoyment By Angler</u>				Total
	Excellent	Good	Fair	Poor	
Do not improve	62	49	12	4	127
Needs improvement	55	57	28	8	148
Total	117	106	40	12	275

Appendix F94. Angler opinions regarding the need to improve access to sport fishing waters versus number of fishing trips taken in 1988.

Angler Opinion	<u>Number Of Fishing Trips Taken In 1988</u>				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
Improve access	14	5	1	6	26
Access is OK	101	69	38	51	259
Total	115	74	39	57	285

Appendix F95. Angler opinions regarding the need to improve access to sport fishing waters versus primary motive for fishing.

Angler Opinion	<u>Primary Motive For Fishing</u>			Total
	Non-catch	Sport	Food	
Improve access	13	4	7	24
Access is OK	131	22	71	224
Total	144	26	78	248

Appendix F96. Angler opinions regarding the need to improve access to sport fishing waters versus rating of fishing success.

Angler Opinion	<u>Rating Of Fishing Success</u>				Total
	Excellent	Good	Fair	Poor	
Improve access	2	11	7	6	26
Access is OK	54	105	66	29	254
Total	56	116	73	35	280

Appendix F97. Angler opinions regarding the need to improve access to sport fishing waters versus rating of fish size satisfaction.

Angler Opinion	Rating Of Fish Size Satisfaction				Total
	Excellent	Good	Fair	Poor	
Improve access	4	10	10	2	26
Access is OK	64	127	50	11	252
Total	68	137	60	13	278

Appendix F98. Angler opinions regarding the need to improve access to sport fishing waters versus rating of fishing enjoyment.

Angler Opinion	Rating Of Fishing Enjoyment				Total
	Excellent	Good	Fair	Poor	
Improve access	6	9	7	4	26
Access is OK	115	98	34	8	255
Total	121	107	41	12	281

Appendix F99. Angler opinions regarding the need to improve access to sport fishing waters versus user category.

Angler Opinion	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished and May Have Sport or Personal Use Fished	All
Improve access	23	5	28
Access is OK	179	87	266
Total	202	92	294

Appendix F100. Angler opinions regarding the adequacy of attention that ADFG pays toward the Seward Peninsula sport fishery versus number of fishing trips taken in 1988.

Attention Is Adequate	Number Of Fishing Trips Taken In 1988				Total
	0-9 trips	10-19 trips	20-29 trips	30 or more trips	
No	18	19	6	19	62
Yes	93	55	30	36	214
All answers	111	74	36	55	276

Appendix F101. Angler opinions regarding the adequacy of attention that ADFG pays toward the Seward Peninsula sport fishery versus motive for fishing.

Attention Is Adequate	Primary Motive For Fishing			Total
	Non-catch	Sport	Food	
No	39	7	11	57
Yes	101	17	65	183
All answers	140	24	76	240

Appendix F102. Angler opinions regarding the adequacy of attention that ADFG pays toward the Seward Peninsula sport fishery versus rating of fishing success.

Attention Is Adequate	Rating Of Fishing Success				Total
	Excellent	Good	Fair	Poor	
No	13	25	19	6	63
Yes	43	85	52	28	208
All answers	56	110	71	34	271

Appendix F103. Angler opinions regarding the adequacy of attention that ADFG pays toward the Seward Peninsula sport fishery versus rating of fish size satisfaction.

Attention Is Adequate	Rating Of Fish Size Satisfaction				Total
	Excellent	Good	Fair	Poor	
No	18	25	17	1	61
Yes	47	108	42	11	208
All answers	65	133	59	12	269

Appendix F104. Angler opinions regarding the adequacy of attention that ADFG pays toward the Seward Peninsula sport fishery versus rating of fishing enjoyment.

Attention Is Adequate	Rating Of Fishing Enjoyment				Total
	Excellent	Good	Fair	Poor	
No	21	25	11	4	61
Yes	96	79	29	7	211
All answers	117	104	40	11	272

Appendix F105. Angler opinions regarding the adequacy of attention that ADFG pays toward the Seward Peninsula sport fishery versus user category.

Attention Is Adequate	Sport and/or Personal Use Fished But Did Not Commercial and/or Subsistence Fish	Commercial and/or Subsistence Fished And May Have Sport or Personal Use Fished	All
No	49	17	66
Yes	147	73	220
All answers	196	90	286