Attitudes and Preferences of Saltwater Recreational Anglers: Report from the 2013 National Saltwater Angler Survey, Volume II Regional Analysis

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U.S. Department of Commerce
National Oceanic and Atmospheric Administration
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https://www.st.nmfs.noaa.gov/economics/fisheries/recreational/index

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Attitudes and Preferences of Saltwater Recreational Anglers: Report from the 2013 National Saltwater Angler Survey, Volume II Regional Analysis

Executive Summary

NOAA Fisheries implemented a national survey of saltwater recreational anglers beginning in February 2013. The survey was implemented in six regions including the North Atlantic, Mid-Atlantic, South Atlantic, Gulf of Mexico, West Coast, and Alaska. An earlier volume for this report, Volume I, presented the survey results at the national scale only (Brinson and Wallmo, 2013). Volume II presents the survey results separately for each region in which the survey was implemented. The survey was developed through a collaborative process that underwent extensive reviews by NOAA Fisheries' economists, NOAA Fisheries' regional recreational coordinators and by key recreational fishing stakeholder groups. The survey was also tested with four focus groups. Following these reviews and testing, the survey was approved for an information collection under the Paperwork Reduction Act.

Surveys were administered using a mail survey and followed the Modified Dillman Method (Dillman 2007). Overall, a total of 33,673 anglers were recruited for the survey; just over 27% (9,200) returned a completed survey. Response rates were highest in the North Atlantic region (38.3%) and lowest in the Gulf of Mexico (21.1%).

On average, respondents have participated in recreational saltwater fishing for 28 years, and fished 25 days during the last year. During the past 12 months, the majority of the respondents most frequently fished from a private boat within three miles of shore; however, most trips were taken from a shore mode, including beaches, piers or bridges. The vast majority of respondents stated that they do not anticipate that the number of fishing trips they take will decrease in the following year. For the majority of those who would reduce their trips, it would be for financial reasons. Anglers responding to the survey usually used friends and family as sources of information about fishing.

Across all regions, spending time with family friends is an important part of a fishing trip, but catching fish and fishing in uncongested areas are also important to anglers. Anglers who anticipated they would fish less in the coming year did not primarily identify fishing regulations as the cause, but rather most frequently cited financial considerations and lack of leisure time as the likely causes of decreased fishing trips. Broadly, anglers think that the most important recreational fisheries management objectives should be: providing high quality fishing opportunities for future generations, providing different types of fish, and providing large quantities of fish. Anglers also want federal and state agencies to have consistent and simple regulations.

While providing substantial numbers of fish to catch and providing species diversity were rated as important for most anglers, only about half of the respondents were satisfied with how recreational fisheries management addresses these issues. Responses suggested that the most important management strategies that recreational fisheries should focus upon are: providing enough fish for recreational fishermen, incorporating stakeholder interests in the policy process, and monitoring and enforcing recreational fishing regulations. When designing specific

management regulations, anglers tended to prefer management measures such as restoring habitat, establishing minimum size limits, and providing artificial habitat.

Fishing mode tends to have a significant impact on respondent's attitudes toward and satisfaction with fisheries management, with the smallest impact in Alaska and the North Atlantic. Fishing mode also appears to have less of an impact on respondent satisfaction with management in Alaska, the North Atlantic and West Coast regions.

Across all of the regions, respondents thought the management objective to allocate some quota from commercial to recreational fisheries was important (60 – 78%). However, of those respondents who thought this objective was important, 22-40% preferred the specific management strategy of reducing the commercial harvest limit to increase the recreational harvest limit. The results indicate that responses are significantly different from each other in each region; thus indicating that while respondents believe that the issue is important, they are unclear as to what steps to take to remedy the issue.

The results presented in this report lead to the conclusion that there is no one size fits all management policy or strategy which would satisfy all recreational anglers in the United States. Anglers' preferences for management objectives and strategies depend on how experienced they are with fishing, how often they fish and their general goals. Overall, anglers want to spend time with family and friends while fishing in uncongested areas. About half of the respondents were satisfied with management and in terms of prioritization, the most important management strategies that recreational fisheries should focus upon are: providing enough fish for recreational fishermen, incorporating stakeholder interests in the policy process, and monitoring and enforcing recreational fishing regulations.

Introduction

NOAA Fisheries is responsible for the management and stewardship of saltwater recreational fisheries in the U.S. With approximately 11.7 million saltwater recreational anglers in 2012, the agency needs to understand anglers' attitudes, perceptions, and management preferences in order to provide and sustain high-quality recreational fishing opportunities to constituents. To this end NOAA Fisheries implemented a national survey of saltwater recreational anglers beginning in February 2013. The survey was implemented in six regions including the North Atlantic, Mid-Atlantic, South Atlantic, Gulf of Mexico, West Coast, and Alaska. This report, Volume II, presents the survey results for each of these regions. An earlier report, Volume I, at provides results at the national scale.

The survey was designed to help inform managers in several key areas and included six sections:

- Saltwater recreational angling participation
- Preferences for specific management strategies
- Preferences for broad management objectives
- Satisfaction with current recreational fisheries management
- General concerns about the marine environment
- Angler socio-demographics

Prior to this study, NOAA Fisheries had not implemented a national-scale survey focused specifically on gaining an in-depth understanding of saltwater angler attitudes and preferences. Previous NOAA Fisheries' attitudinal and/or human dimension studies of recreational fishing have been implemented primarily at regional scales, and larger national scale efforts have focused on catch, effort, and participation (e.g., the Marine Recreational Information Program) and recreational fishing expenditures. The data collected from the current survey addresses this gap and provides NOAA Fisheries with a quantitative baseline measure of attitudes and preferences at both national and regional scales. Survey results can inform recreational fisheries management on what saltwater anglers want from recreational fishing, the types of management strategies that satisfy different angler groups, and whether management is or is not meeting angler expectations. As stocks begin or continue to recover, the survey results are well-timed to assist the agency in developing management guidelines and will serve as a transparent baseline measure of constituent preferences.

The report is organized as follows: The Methods describes the survey development and implementation procedures, sampling frame development, detailed information on the sample disposition, data processing protocols, and survey response rates in each region. The Results section presents the results of the survey for each region (an earlier volume detailed the results at the national scale was released last year; Brinson and Wallmo 2013).

Methods

Survey Development

The survey was developed through a collaborative process that underwent extensive reviews. The survey was designed based upon previous research and previous surveys of saltwater anglers (Gentner et al., 2001, Lovell et al., 2013). The survey was reviewed by NOAA Fisheries' economists and revised based upon these comments. The survey was then reviewed by NOAA Fisheries regional recreational coordinators to make sure that the survey versions reflected topical issues in each region. Following these two review processes, the survey was reviewed by key recreational fishing stakeholder groups. Representatives from the recreational fishing stakeholder groups provided input on key issues of importance to their membership. Finally, four focus groups with members of the general public were conducted. The focus group participants were recruited based upon lists of anglers that the focus group facility maintains. The participants were required to have taken a fishing trip in saltwater within the last 12 months. Participants were recruited to represent an even mix of fishing modes: equal numbers of participants who fished from the shore/beach, private boat, charterboat or headboat or man-made structure were recruited. Two focus groups were held in Orlando, Florida and another two focus groups were held in San Diego, California. The survey was revised further based upon the results of these focus groups.

After the survey was reviewed by NOAA Fisheries' economists, NOAA Fisheries' regional recreational fishing coordinators, key stakeholder groups and the focus groups, the survey was submitted to the Office of Management Budget for approval for an information collection under the Paperwork Reduction Act. The Office of Management and Budget approved the information collection in January 2013 and sampling began in the following month.

Survey Sampling and Administration

CIC Research (CIC) was contracted by NOAA Fisheries to implement the Saltwater Recreational Fishing Attitudes and Preferences Survey. The survey targeted marine recreational anglers, 16 years of age and older who had been saltwater fishing at least once in their life. The coastal states of the United States (excluding Hawaii) were divided into 6 regions (Table 1).

NOAA Fisheries provided the sample for all regions, except the West Coast, to CIC. The sample comprised licensed anglers with 2012 licenses. CIC supplied the sample for the West Coast which also consisted of licensed anglers with 2012 licenses. The West Coast sample frame is used by CIC for an on-going License Frame Survey for California and Washington. In addition, Oregon's Department of Fish and Wildlife provided licensed anglers. Both the NOAA Fisheries sample and the West Coast samples included resident and non-resident anglers. For the West Coast, the sample was restricted to those anglers who purchased the license in a coastal county in each of the three western states. In states where saltwater licenses were sold, the sample was restricted to just those license types. Based on the target number of completes and an expected response rate for a given region, a proportional random sample from each state in a region was drawn. Expected response rates were based on the recently completed NOAA Fisheries 2011 National Marine Recreational Fishing Expenditure Survey's actual completion rates (Lovell et al., 2013).

Table 1. Region, areas included and target number of completed surveys.

Region	Areas included	Target Completes
Alaska	Southeast Alaska, South-central Alaska, Other Alaska	202
West Coast	Washington, Oregon, Northern California, Southern California	1,007
Gulf Coast	Texas, Louisiana, Alabama, Mississippi, West Coast of Florida	1,776
South Atlantic	North Carolina, South Carolina, Georgia, East Coast of Florida	1,952
Mid-Atlantic	New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina	1,996
North Atlantic	Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut	1,068

Surveys were administered using a mail survey and followed the Modified Dillman Method (Dillman 2007). In order to maximize the effectiveness of this survey mode, the mailing effort was divided into two segments. The purpose of the first segment was to establish accurate regional response rates to better utilize the project's financial resources. Based on the expected response rates, the first segment comprised 60% of the entire survey effort. Segment two's effort was determined by the response rates from Segment 1. Since a number of the states have one license for saltwater and freshwater fishing, a significant portion of the questionnaires were sent to anglers who did not qualify for the survey. The timeline for the survey effort is shown below (Table 2).

Table 2. Survey administration dates.

Dates	Action
Segment 1	
11 Feb	Mail Introduction Letter
14 Feb	Mail 1st Packet (Letter, Questionnaire, Business-Reply Envelope)
26 Feb	Mail Reminder Postcard
16 Mar	Mail 2nd Packet (Letter, Questionnaire, Business-Reply Envelope)
Segment 2	
5 Apr	Mail Introduction Letter
11 Apr	Mail Packet (Letter, Questionnaire, Business-Reply Envelope)
2 May	Mail Reminder Postcard

Anglers selected to participate in the study received an introductory letter explaining to them that they had been randomly chosen to participate in the survey and to expect a survey packet in the mail in the coming few days. A questionnaire booklet with an ID printed on it, a cover letter and a business reply envelope were sent via postal mail. About a week later, all anglers were sent a reminder postcard via the U.S. Postal Service. These postcards served two purposes: 1) to thank the respondent for participating; and 2) to remind those who had not yet completed the survey to do so. About two weeks later, non-responding anglers received another questionnaire using the same delivery method as the first one. The initial volume of the 2nd Segment's mailing was sufficient to insure that the quotas for the project would be met without

an additional mailing. A toll free number was provided in all correspondence to aid the respondent in completing the survey. Survey questionnaires were unique to each region. The only difference in the survey versions were for questions 4 and 5 (Appendix A).

Data Processing

As mail questionnaires were returned, they were inspected for completeness. Questionnaires that were mostly blank, stated refusals, or were received from respondents who fished only freshwater were not entered into the data set. Next, the questionnaires, both usable and non-usable, were logged into the tracking system. Typically, this was done the day the questionnaire was received. If two questionnaires with the same master ID number were returned, they were closely inspected to determine if they were truly filled out by the same person twice (the questionnaires having crossed in the mail), or if they were clearly completed by two different anglers. If they were both filled out by the same angler, the earlier questionnaire was kept and the other discarded. If they were filled out by two different people, the first one retained the master ID number and the extra one received a new ID number from the same region.

Each paper questionnaire was coded according to rules established by NOAA Fisheries and CIC during the initial stages of the coding. The areas of fishing location and species required additional coding effort. All coding sheets were attached to the questionnaires. Data entry of the paper questionnaires was accomplished via a range-checking data entry program. Data entry also included typing of the angler comments, if any, from the back page. Coding and data entry tasks took place on an on-going basis. At the conclusion of these activities, paper questionnaires were sorted into ID# order in preparation for data cleaning and validation.

As data entry of the paper questionnaires was finished for each segment, CIC performed verification of the database in two steps. First, outlier analysis was performed and all outliers were compared to the original questionnaire for verification. Second, acceptance sampling pioneered by Dodge and Romig was performed. For validation, CIC uses Military Standard-105D, "Sampling Procedures and Tables for Inspection." Based on MIL-STD-105D, a sample size which ensures a confidence level of 95 percent with a 2 percent error was drawn (typically this is around 500) and the number of errors must be below the level specified in the inspection table. In the validation process, each item drawn for validation was verified against the original questionnaire, thereby validating the accuracy of both the coding and data entry. During the course of this study, validation was performed on both segments of paper questionnaire data and this test was passed both times. After data editing and validation, all responses were then incorporated into a central, fully-defined SPSS database. At this stage, the database consisted of all responses as well as relevant information from the tracking file. This database was then converted into SAS for final submission to NOAA Fisheries. Over 9,200 valid questionnaires were returned, which exceeded the expected returns by 15%. Each region's completed questionnaires exceeded their quota by 5 – 40% (Table 3).

Table 3. Number of anglers who completed questionnaires by region.

Regions	Target Completes	Completed	Percentage of Target
Alaska	202	212	105%
West Coast	1,007	1,417	141%
Gulf of Mexico	1,952	2,096	107%
South Atlantic	1,776	2,084	117%
Mid-Atlantic	1,996	2,118	106%
North Atlantic	1,068	1,299	122%
Total	***8,001***	***9,226***	***115%***

The success of the survey effort is best framed in breaking down the mailing effort in total first and then by Segment. The response rate is the proportion of completed responses to the total number of possible respondents. The first stage of the effort is getting the survey instrument in the hands of the angler. A total of 36,392 anglers were sent an invitation to participate in the survey. All but 2,719 were delivered to the angler, which represents 92.5% of the total mailing. Undeliverable rates by region ranged from a low of 4.8% in the North Atlantic to a high of 8.4% in the Gulf and West Coasts (Table 4).

Table 4. Undeliverable rate by region.

Regions	Initial Mailing	Undeliverable	Rate
Alaska	920	49	5%
West Coast	4,362	373	9%
Gulf of Mexico	10,831	910	8%
South Atlantic	9,090	655	7%
Mid-Atlantic	7,625	561	7%
North Atlantic	3,564	171	5%
Total	***36,392***	***2,719***	***8%***

Overall, a total of 33,673 anglers were recruited for the survey; just over 27% returned a completed survey. The expected overall response rate was 35 percent. Figure 1 summarizes these findings. The Gulf Coast's response rate was lowest at 21.1 percent and the North Atlantic was the highest at 38.3 percent. A lower than expected response rate necessitated an increase in the recruitment effort to compensate (which will be discussed in the next section). The efficiency of the sample can easily be seen in Figure 1.

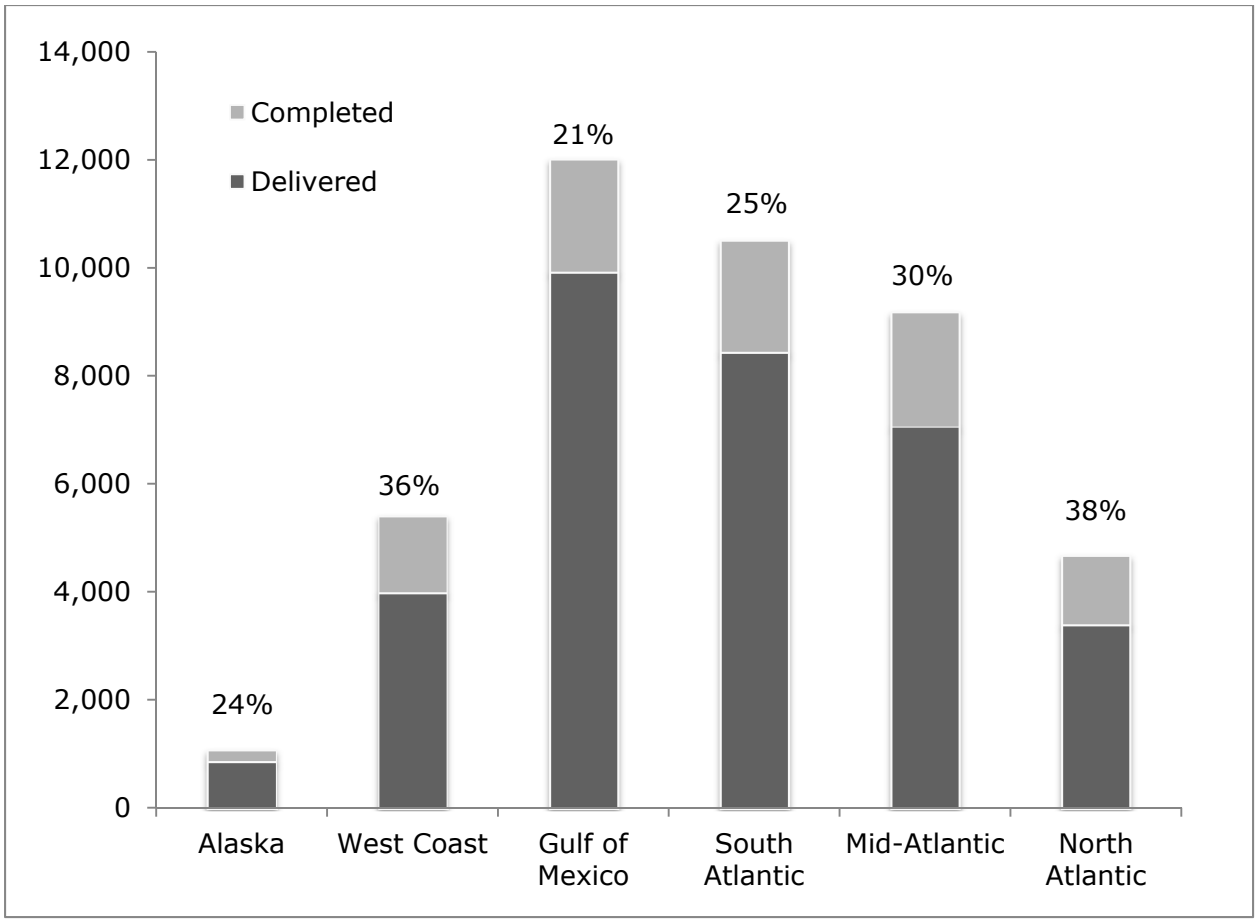

Figure 1. Number of delivered and completed surveys, with final response rates by region.

As mentioned above, the survey effort for the project was broken up into two segments. This was done so that a better estimate of the regional response rates could be determined. With that improved estimate, the Second Segment could more effectively target each region and conserve financial resources for the project. The Second Segment's effort was about 50 percent greater than Segment 1 (14,412 vs. 21,980). Alaska, West Coast, Gulf Coast, and South Atlantic regions saw increases in their survey effort. The largest effort increases were for Alaska and the Gulf Coast regions (Alaska mailings increased by a factor of 2.8 times and Gulf Coast by 2.7 times) due to lower than expected response rates in Segment 1. Mailings for the Mid-Atlantic and North Atlantic were decreased by factors of 2.0 and 1.5, respectively, due to higher than expected response rates in Segment 1.

Table 5 below shows the deliverable rates by each region and segment. The rates are fairly consistent except for the West Coast (Segment 1 = 14.3% and Segment 2 = 5.3%). It appears that the Segment 1 rate is an outlier. The differences in the deliverable rates from segments at the regional level are within one percentage point of each other, except on the West Coast. This range is true for the overall rates of 8.1 percent and 7.1 percent for the two segments.

Table 5. Undeliverable rate by region and segment.

	Mailed Segment		Undeliverable Segment		Rate Segment	
Region	**1**	**2**	**1**	**2**	**1**	**2**
Alaska	242	678	14	35	6%	5%
West Coast	1,560	2,802	223	150	14%	5%
Gulf of Mexico	2,929	7,902	242	668	8%	9%
South Atlantic	3,552	5,538	280	375	8%	7%
Mid-Atlantic	3,992	3,633	300	261	8%	7%
North Atlantic	2,137	1,427	109	62	5%	4%
Total	***14,412***	***21,980***	***1,168***	***1,551***	***8%***	***7%***

As shown in Table 6, those regions which needed additional surveys completed received an increased targeted effort in Segment 2. A follow-up mailing in the 2nd Segment could have resulted in additional completed surveys, but the cost to return ratio was not high. The target number of completed surveys was achieved and this made it unnecessary to conduct a second mailing in Segment 2. The Gulf Coast had the greatest effort in the Second Segment and also had the largest number of returns (1,372).

Table 6. Number of anglers who completed questionnaires by segment and region.

Region	Total Needed	Completed Surveys Segment 1	Segment 2
Alaska	212	75	137
West Coast	1,417	494	923
Gulf of Mexico	2,096	724	1,372
South Atlantic	2,084	991	1,093
Mid-Atlantic	2,118	1,287	831
North Atlantic	1,299	852	447
Total	***9,226***	***4,423***	***4,803***

The final dataset was delivered to NOAA Fisheries in a SAS dataset. Frequency distributions of all of the survey questions were completed in SAS (SAS, SAS Institute). Two types of statistical tests were completed when testing for differences among groups. T-tests were used to perform analyses of differences between groups for linear data and the Kruskal-Wallace test was used to analyze differences among groups for categorical data (Studenmund and Cassidy 1987).

Response Rates

A common challenge of surveys and mail surveys, in particular, is that response rates are often low. Before the project began, it was recognized that response rates estimated may not be very accurate. The Two Segment Approach was adopted to address this issue. Using the Segment 1 rates to guide the survey effort in Segment 2 ensured the success of Segment 2 and thus, the success of the project as a whole. Segment 2 allowed the regional quotas to be met, but the quotas were met at financial levels below the project's budget.

It appears from the returns of both undeliverable and deliverable materials that there is variability with regional areas of the U.S. Postal Service. CIC continued to receive materials that could not be delivered by the U.S. Postal Service well after initial mailings. During Segment 2, the length of time between mailings was extended somewhat and it seemed to help with the response for that segment. For example, the time between the first mailing packet and the reminder postcard was extended for Segment 2. The number of calls dealing with questions about the survey was less for Segment 2 than Segment 1, which can be attributed, in part, to giving more time between mailings.

Despite these challenges, there were successes with the survey administration. As mentioned previously, over 9,200 anglers responded to the survey, which is 15 percent above the overall target (8,000). CIC estimated that on average each questionnaire required about 5 minutes of review, editing and coding. That represents nearly 115 workdays of effort. On average, three individuals were involved during this process. Additional quality assurance measures, e.g., outlier analysis, were undertaken to further assure that the data was correct.

Data Analysis

Survey data were analyzed using SAS and STATA statistical software packages. For most questions simple frequencies and/or means were computed. However, for selected questions the effect of fishing avidity and fishing mode was examined. To examine the effect of angler avidity three avidity categories were created based on the number of days fished during the last year. For every region there is a low, medium, and high avidity category, though the cut-off points vary among region based on each region's percentiles. These categories are described in each regional section. A Spearman rank-order analysis was conducted to determine significant positive or negative correlation between avidity and selected questions. This analysis computes a coefficient of correlation between two ordinal, interval, or ratio variables and thus is appropriate for the ordinal variables 'avidity category' and variables that contain Likert scale responses. Before conducting the Spearman rank-order analysis all "I am unsure" responses were removed.

To determine whether fishing mode affects survey responses a chi-square analysis was conducted between the variable fishing mode (which describes the mode most fishing trips were taken in during the last year) and selected variables that contain Likert scale responses. The chi-square analysis was also used to test independence for selected management preferences. The chi-square analysis is appropriate for two categorical variables, though this analysis only identifies whether differences do exist, and not where the differences lie. For example, the test can identify that significant differences exist by fishing mode in preferences for a management strategy, but not that shore mode anglers are more likely to strongly prefer a strategy over private boat anglers. For the fishing avidity, fishing mode and management preference analyses significance levels were set at $p < 0.05$. Results from these analyses are contained in each regional section. The results of the management preferences analyses are contained in the discussion.

Results – Alaska

Section 1.1 Recreational Fishing Participation in Alaska

Fishing Avidity and Location

On average, respondents in Alaska have participated in recreational saltwater fishing for 19 years, and fished 11 days during the last year. Based on the number of days fished last year, three avidity categories were created using the first quartile, the combined second and third quartile, and the fourth quartile (Table 7).

Table 7. Alaska Fishing Avidity Categories

		Days fished last year	Avidity Category
Quantile 1:	< 25%	< 3 days	Low
Quantile 2:	25% - 75%	3 - 11	Medium
Quantile 3:	> 75%	> 11 days	High

Most respondents (43%) stated that most of their trips during the last year were taken from a private boat. About 20% of respondents stated that most trips were taken from a shore mode, including beaches, piers, or bridges. About 37% of respondents took most of their trips from a for-hire vessel such as charter, party, or headboats. Just over half (56%) of the respondents had taken their trips in one mode, while approximately 34% of respondents had taken trips from two modes (primarily shore and private boat) and 8% had taken trips from all three modes of fishing.

For Alaska, recreational fishing in waters where federal regulations apply means fishing between 3 and 200 miles offshore. The majority (72%) of respondents stated that most of their fishing during the last year was within three miles of shore, while 24% said they fished more than three miles from shore. Four percent stated that they were unsure if they fished more than or less than three miles from shore.

When asked about the number of trips that will likely be taken next year, approximately 68% of respondents felt the number would stay the same or increase, while 32% felt the number of trips they take will decrease. Alaska respondents who stated that the number of trips taken in the next year will likely decrease were also asked to rate reasons for the decrease using a five-point scale ranging from "Very likely" to "I am unsure." The most likely reason for anticipated fishing trip decreases (based on the frequency ratings of "Very likely") was fishing trip costs, followed by personal finances. Table 8 shows the frequency of responses for each reason.

Table 8. Reasons for a decreased number of fishing trips in Alaska during the next year.

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
	% of respondents				
Availability of leisure time	26	26	18	27	3
Personal finances	37	25	12	25	2
Fishing trip costs	42	28	13	16	2
Change of residence	15	0	7	76	2
Recreational fishing regulations	10	10	20	55	5
Conditions of the fishery (e.g., change in the abundance of fish)	15	18	17	42	8

Fishing Trip Characteristics

To help understand what Alaska anglers most want out of recreational fishing trips, Alaska respondents were asked about the importance of a variety of fishing trip characteristics. Alaska respondents were asked to rate the importance of each characteristic listed below using a five-point scale, ranging from "Extremely important" to "Not important at all." Results are presented in Figure 2.

A. Catch fish
B. Catch as many fish as I can for consumption
C. Catch-and-release as many fish as possible
D. Catch a trophy-sized fish
E. Target a particular species
F. Catch the bag limit of a species I am targeting
G. Know that I will encounter abundant fish
H. Fish in an area that is not heavily congested
I. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc.
J. See information concerning fishing regulations clearly posted
K. Have access to staff (park staff, marine operators, etc.) to answer questions or provide information
L. Have easy access to weather and tide information
M. Fish in a scenic area
N. Fish with family or friends
O. Teach others about fishing

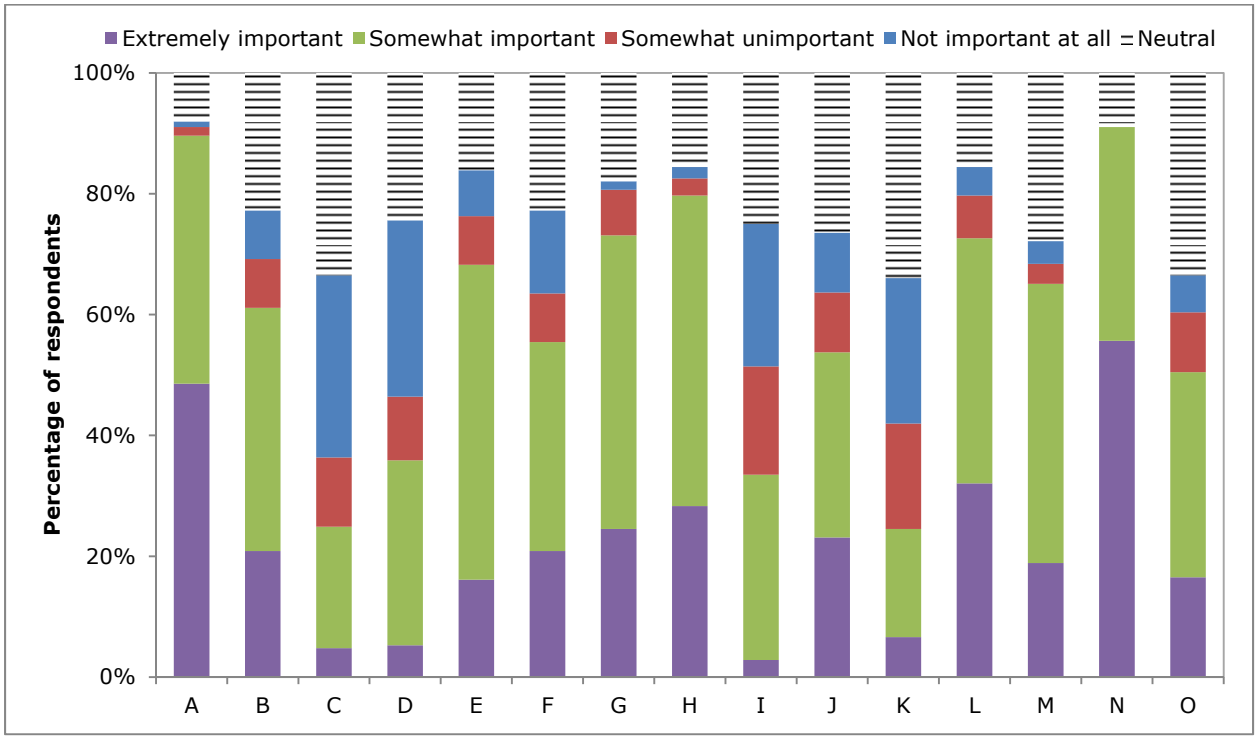

Figure 2. Importance of fishing trip characteristics.

Figure 2 suggests that the most important trip characteristics (based on the frequency of "Extremely important" ratings) include fishing with family and friends (56%), catching fish (49%); and having easy access to weather and tide information (32%). The least important trip characteristics (based on the frequency of "Not important at all" ratings) included catch and release as many fish as possible (30%), catch a trophy-size fish (29%), and have access to staff to answer questions or provide information (24%). Other less important characteristics included being close to amenities such as parking, restrooms, cleaning stations, boat launches, etc. (24%); and catch the bag limit of a species I am targeting (14%). When the ratings of "Extremely important" and "Somewhat important" are combined, the top three characteristics include fishing with family and friends (91%), catching fish (90%), and fishing in an area that is not heavily congested (80%).

Section 1.2. Preferences for Management Strategies in Alaska

To help understand attitudes toward different types of management strategies, Alaska anglers were asked to rate their preferences for strategies that included regulating effort, gear, and catch, and other types of strategies such as protected areas. Alaska respondents rated each of the strategies below using a five-point scale of "Strongly prefer," "Somewhat prefer," "Slightly prefer," "Do not prefer at all," and "I am unsure." Results are presented in Figure 3.

A. Establish minimum size limits of the fish you can keep
B. Establish maximum size limits of the fish you can keep
C. Limit the total number of fish you can keep
D. Manage some species as catch-and-release only
E. Establish longer seasons with more restrictive bag limits
F. Establish shorter seasons with less restrictive bag limits
G. Establish shorter seasons with a larger variety of species you can legally catch
H. Increase the recreational harvest limit by decreasing the commercial harvest limit
I. Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
J. Restrict certain types of fishing gear
K. Require the use of release techniques that reduce fish mortality
L. Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
M. Protect and restore fish habitat that has been degraded
N. Designate some areas of the ocean as marine reserves with catch-and-release only fishing
O. Close some areas of the ocean for certain seasons

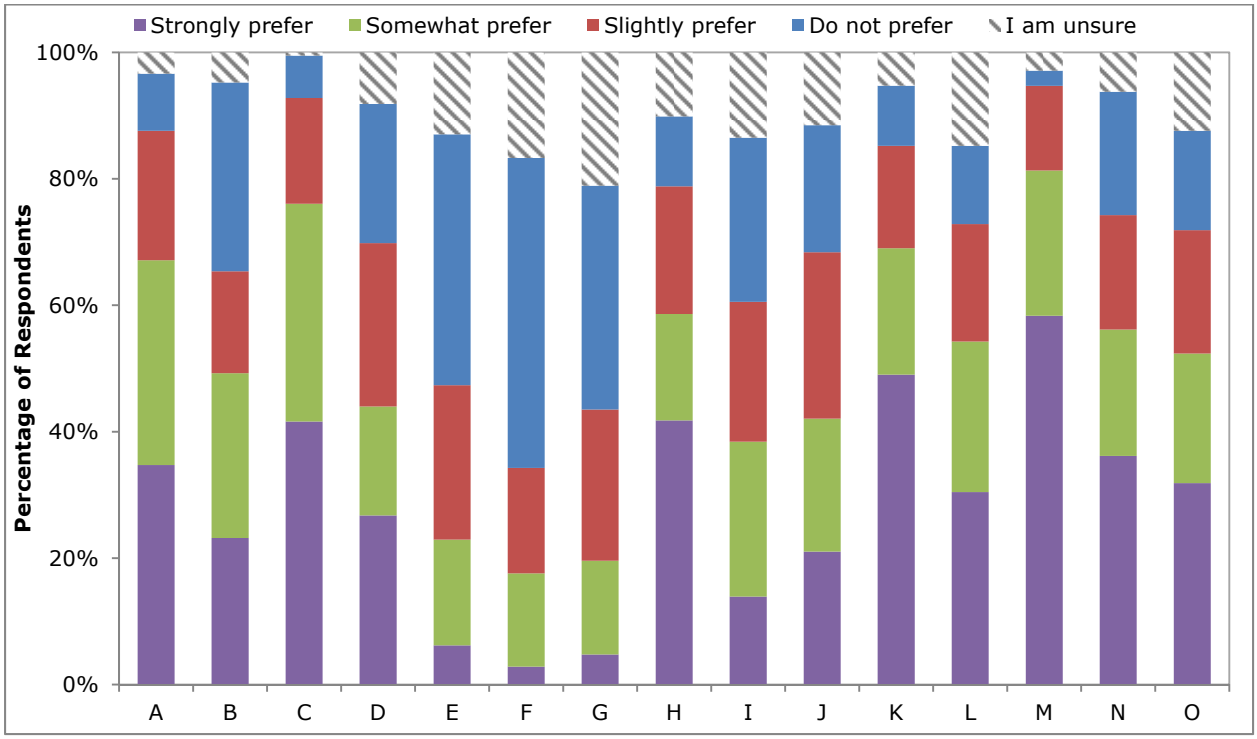

Figure 3. Preferences for management strategies in Alaska.

The most preferred strategies for managing fisheries in Alaska (based on the frequency of "Strongly prefer" ratings) include protecting and restoring degraded fish habitat (58%), requiring the use of release techniques that reduce fish mortality (49%), and increasing the recreational harvest limit by decreasing the commercial harvest limit (42%). Two of the least preferred strategies for managing fisheries (based on the frequency of "Do not prefer at all" ratings) focus on establishing shorter seasons. Establishing shorter seasons with less restrictive bag limits was not preferred at all by 49% of Alaska respondents, and establishing shorter seasons with a larger variety of species you can legally catch was not preferred at all by 35% of Alaska respondents. Similarly, establishing longer seasons with more restrictive bag limits was not preferred at all by 40% of respondents. Combining the "Strongly prefer" and "Somewhat prefer" response options alters the rank order of the most preferred management strategies. The most preferred strategies for managing fisheries in Alaska using this combination include protecting and restoring degraded fish habitat (81%), limiting the total number of fish that can be kept (76%), and requiring the use of release techniques that reduce fish mortality (69%).

Two questions asked Alaska respondents about issues of allocation between different types of anglers: increasing the recreational harvest limit by decreasing the commercial harvest limit; and dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers). Forty-two percent of the Alaska respondents strongly preferred, 31% did not prefer at all or slightly preferred, 17% somewhat preferred, and 10% were unsure about management increasing the recreational harvest limit by decreasing the commercial harvest limit. Alaska respondents did not prefer at all (26%), slightly preferred (22%), or somewhat preferred (25%) that management divide the recreational harvest limit among private anglers and for-hire/charter boat anglers. Only 14% of the Alaska respondents strongly preferred this management strategy and 13% of respondents were unsure.

More than 10% of the Alaska respondents were unsure about their preferences for certain management strategies: establishing shorter seasons with a larger variety of species that can be legally caught (21%); establishing shorter seasons with less restrictive bag limits (17%); providing artificial fish habitat (15%); dividing the recreational harvest limit among different modes (13%); establishing longer seasons with more restrictive bag limits (13%); closing some areas of the ocean for certain seasons (12%); and restricting certain types of fishing gear (11%).

No significant correlations were found between an angler's avidity and preferences for management strategies.

Significant differences were found in the response distributions by fishing mode to three management strategies (Table 9):

- Restrict certain types of fishing gear
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
- Designate some areas of the ocean as marine reserves with catch-and-release only fishing

Table 9. Preferences for Management Strategies by Fishing Mode: Alaska

Management strategy	Fishing Mode	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure
Restrict certain types of fishing gear	Shore	2.22	5.00	8.33	2.22	1.67
	For-hire	10.56	7.22	10.00	3.89	5.56
	Private	8.33	9.44	8.33	12.78	4.44
Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean	Shore	6.63	3.31	4.42	1.10	3.87
	For-hire	16.57	9.39	3.31	3.31	4.97
	Private	9.39	11.05	10.50	7.73	4.42
Designate some areas of the ocean as marine reserves with catch-and-release only fishing	Shore	9.39	4.42	3.31	2.21	0.00
	For-hire	17.68	7.18	8.29	3.31	1.10
	Private	11.05	7.73	6.08	13.81	4.42

Section 1.3. Preferences for Management Objectives in Alaska

To help understand the Alaska angler attitudes toward broad-level management objectives, Alaska respondents were asked to indicate how important they believe different management objectives are for recreational fisheries management to pursue. Respondents rated each of the objectives below using a six-point scale of "Extremely important," "Somewhat important," "Neutral," "Somewhat unimportant," "Not important at all," and "I am unsure." Results are presented in Figure 4.

A. Ensure that large quantities of fish are available to catch
B. Ensure that many different fish species are available to catch
C. Ensure that adequate numbers of trophy-sized fish are available to catch
D. Reduce the mortality associated with releasing fish that are not legal to keep
E. Ensure that future generations will have high quality fishing opportunities
F. Allocate some quota from commercial fisheries to recreational fisheries
G. Recover fish stocks that have been depleted
H. Protect marine biodiversity
I. Protect threatened or endangered marine species
J. Achieve consistency between state and federal fishing regulations
K. Simplify recreational fishing regulations
L. Monitor and enforce recreational fishing regulations
M. Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
N. Ensure opportunities to fish in high quality fishing areas
O. Ensure that fishing sites are not heavily congested

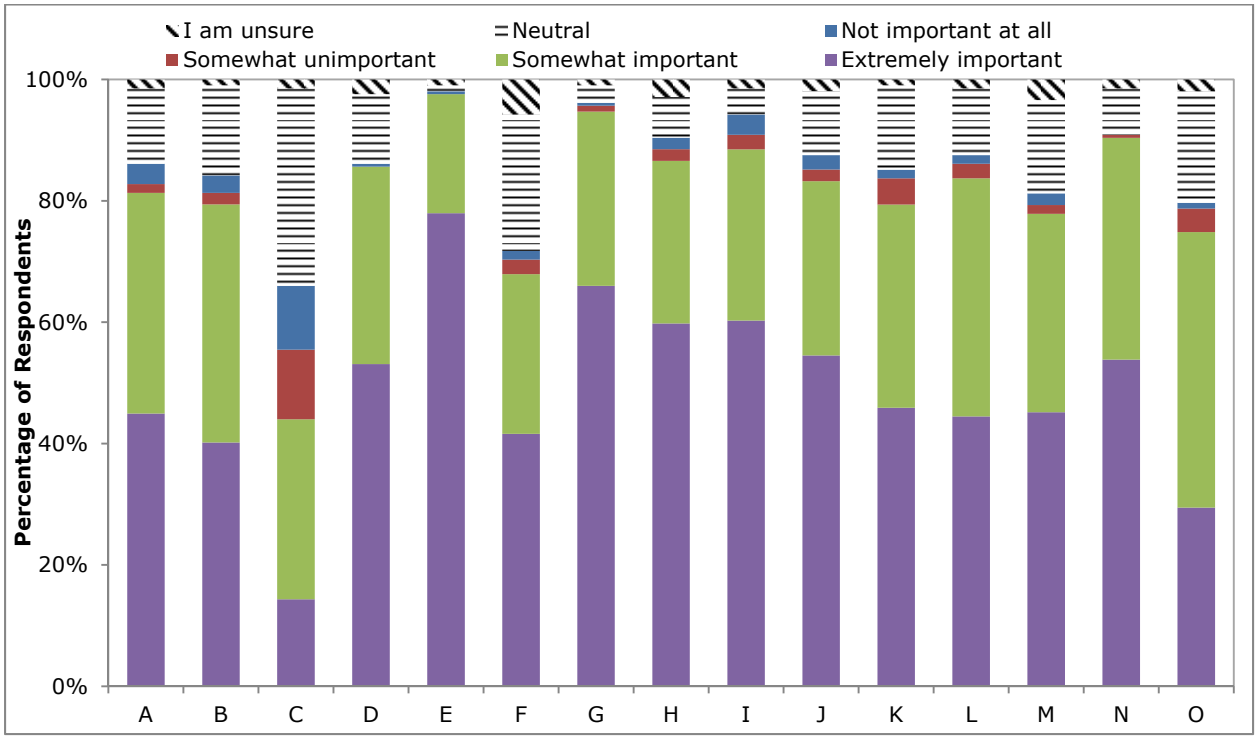

Figure 4. Preferences for management objectives

Over 50% of Alaska respondents felt that seven of the fifteen management objectives were extremely important. The most important management objectives (based on the frequency of "Extremely important" ratings) included ensuring that future generations will have high quality fishing opportunities (78%), recovering fish stocks that have been depleted (66%), and protecting threatened and endangered marine species (60%). Generally less than 5% of Alaska respondents felt that any one of the fifteen management objectives was not important at all – the exception being ensuring that adequate numbers of trophy-sized fish are available to catch. Approximately 11% of Alaska respondents felt that objective was not important at all. Combining the "Extremely important" and "Somewhat important" categories to make a broader category of importance alters the rank order of the most preferred management strategies. The most preferred strategies for managing fisheries in Alaska using this combination include ensuring that future generations will have high quality fishing opportunities (98%), recovering fish stocks that have been depleted (95%), and ensuring opportunities to fish in high quality fishing areas (90%).

Positive significant correlations were found between angler avidity and the following management objectives, suggesting that as avidity increases the importance of the following management objectives increases:

- Ensure that large quantities of fish are available to catch
- Achieve consistency between state and federal fishing regulations
- Simplify recreational fishing regulations

No negative significant correlations were found.

No significant differences were found in the response distributions by fishing mode to any of the management objectives.

Section 1.4. Satisfaction with Recreational Fisheries Management in Alaska

Alaska respondents were asked to indicate how satisfied they were with various aspects of recreational fisheries management, listed below, using a six-point scale of "Extremely satisfied," "Somewhat satisfied," "Neutral," "Somewhat dissatisfied," "Not satisfied at all," and "I am unsure." Results are presented in Figure 5.

A. Managing fish stocks to provide high quality fishing opportunities
B. Restoring fish stocks that have been depleted
C. Adjust regulations in a timely manner to address changing conditions of the fishery
D. Using management strategies that minimize costs to anglers
E. Ensure that the annual harvest limit provides enough fish for recreational fisheries
F. Ensure that state and federal regulations are consistent
G. Monitoring and enforcing recreational fishing regulations
H. Using high quality data and assessments in policy-making
I. Incorporating stakeholder interests in policy-making
J. Protecting fish or shellfish species that are declining
K. Protecting marine habitats
L. Addressing conflicts between anglers and marine mammals

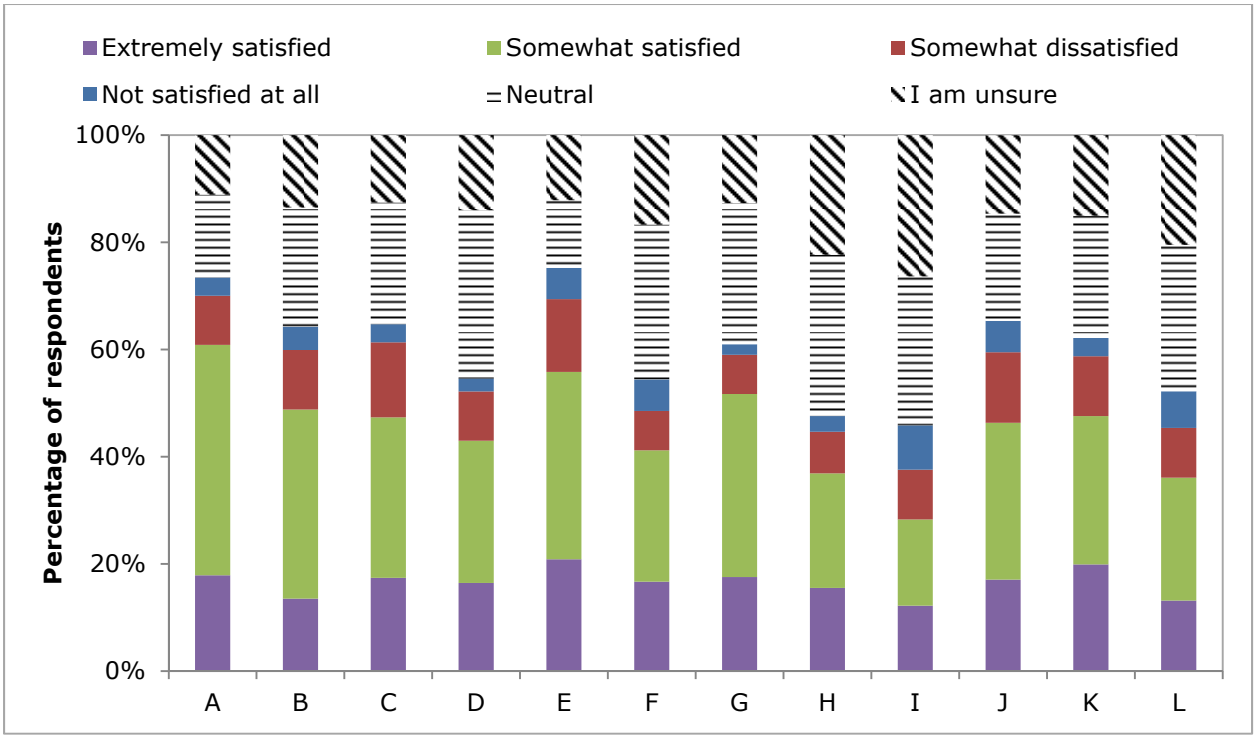

Figure 5. Anglers' satisfaction with recreational fisheries management.

Between 10% and 20% of Alaska respondents stated that they were extremely satisfied across all items. The top three categories that respondents in Alaska were 'Extremely satisfied' about were ensuring that the annual harvest limit provides enough fish for recreational fisheries (21%); protecting marine habitats (20%); and managing fish stocks to provide high quality fishing opportunities (18%). In general, Alaska respondents appear to be satisfied or neutral about recreational fisheries management if "Extremely satisfied" and "Somewhat satisfied"

responses are combined. Using this approach, about half of the respondents were satisfied that recreational fisheries management manages fish stocks to provide high quality fishing opportunities (61%); ensures that the annual harvest limit provides enough fish for recreational fisheries (56%); monitors and enforces recreational fishing regulations (52%; Figure 5).

Across all items, less than 10% of Alaska respondents stated that they were not satisfied at all with any recreational fisheries management strategy. Combining the "Not satisfied at all" and "Somewhat dissatisfied" responses shows that anglers were most dissatisfied with ensuring that the annual harvest limit provides enough fish for recreational fisheries (19%); protecting fish or shellfish species that are declining (19%); and incorporating stakeholder interests in policy-making (18%). About one-third of Alaska respondents were neutral about using management strategies that minimize costs to anglers; and using high quality data and assessments in policy-making. Alaska respondents were most unsure that management incorporates stakeholder interests in policy-making (26%); uses high quality data and assessments in policy-making (22%); and addresses conflicts between anglers and marine mammals (20%).

No significant correlations between angler avidity and angler satisfaction with management were found, nor differences in response distributions by fishing mode.

Section 1.5. Managing the Marine Environment in Alaska

Alaska respondents were also asked about larger issues relating to the marine environment. Alaska respondents rated the threat severity of each issue below using a five-point scale including "Severe threat," "Moderate threat," "Not a very severe threat," "Not a threat at all," and "I am unsure." Results are presented in Figure 6.

A. Industrial pollution
B. Oil and gas extraction
C. Climate change
D. Ocean acidification
E. Shipping
F. Overfishing in commercial fisheries
G. Overfishing in recreational fisheries
H. Non-native species
I. Aquaculture
J. Alternative energy (e.g., wave or wind) development
K. Coastal development
L. Algal blooms
M. Marine habitat loss or degradation
N. Dams/barriers

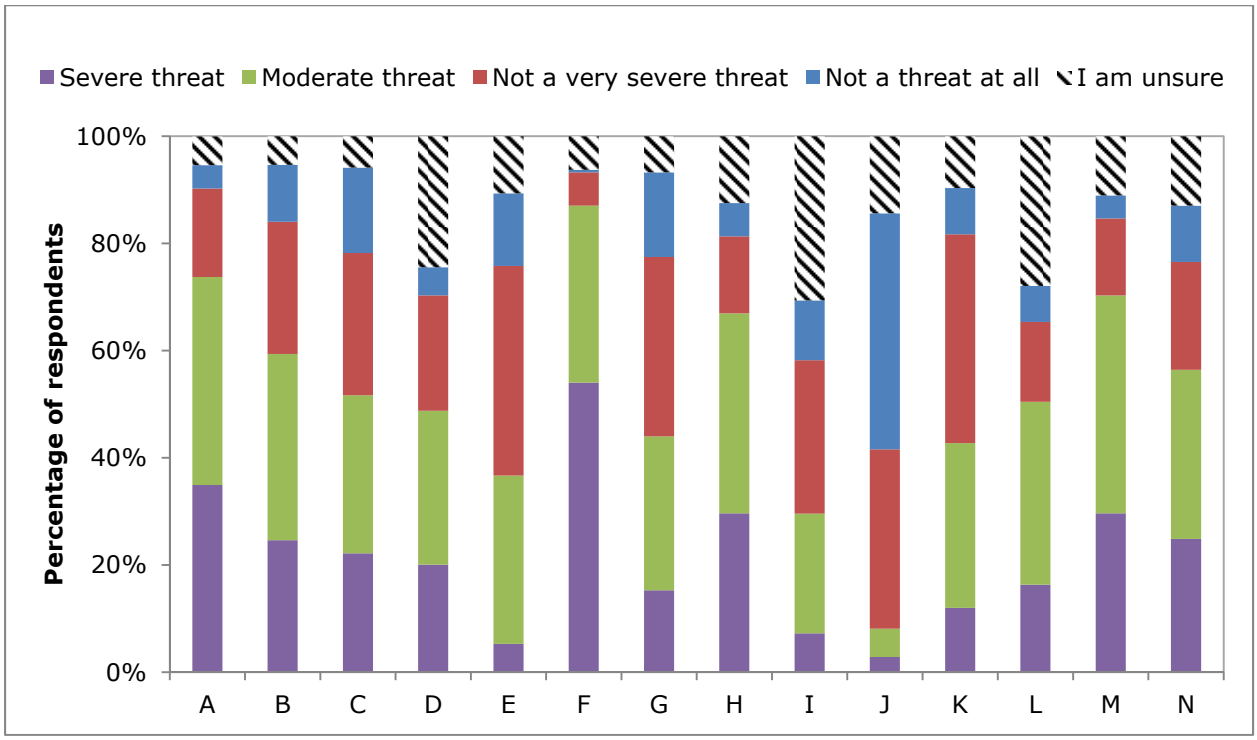

Figure 6. Threats to the marine environment.

Alaska respondents rated most items as a threat to the marine environment (Figure 6). The most severe threats (based on the frequency of "Severe threat" ratings) included overfishing in commercial fisheries (54%), industrial pollution (35%), and non-native species (30%). Twenty

to forty percent of Alaska respondents thought all but one of the remaining items were a moderate threat – alternative energy development (13%). The only item that a large proportion of Alaska respondents (44%) felt posed no threat at all to the marine environment was alternative energy development.

Section 1.6. About you and your Household in Alaska

This section elicited information on the Alaska's respondents, their age, level of education, employment level, household income, sex, race and ethnicity. This standard demographic information allows us to better understand the unique characteristics of the Alaska recreational fishermen. Information collected in this section is comparable to United States (U.S.) Census information. The U.S. Census does not collect or provide the information at a level to be able to identify a specific population of fishermen, or fishermen as a separate industry. Information about fishermen in the U.S. Census is aggregated with other industries such as forestry and agriculture. Collection of the data in this section serves to describe this specific population of fishermen and will allow for comparisons to the general U.S. public.

On average, Alaska respondents worked 29 hours per week; that is most respondents were part-time workers. Most respondents' household income for 2012 was greater than $60,000 per year (Table 10). Only seven percent of respondents had a household member who made a living (either part-time or full-time) from marine resources. Of these respondents that made a living from marine resources, the majority of the respondents was not concerned at all (50%) or slightly (14%) concerned that fisheries management decisions would affect their livelihood. Most of the respondents were male (74%), white (91%), middle-aged (average age was 53 years old) and more than half had completed at least a Bachelor's Degree (Table 11).

Table 10. Respondents' income levels.

Income Category	Number of responses	Percentage (%)
Less than $20,000	8	4
$20,000 - $39,999	17	8
$40,000 - $59,999	24	12
$60,000 - $79,999	29	14
$80,000 - $99,999	28	14
$100,000 - $149,999	51	25
$150,000 - $199,999	20	10
$200,000 or more	27	13

Table 11. Highest level of education for respondents.

Highest level of education	Number of responses	Percentage (%)
12^{th} grade or less	10	5
High school graduate or GED	33	16
Associate or technical school degree or college coursework	51	25
Bachelor degree	55	26
Advanced, professional, or doctoral degree or coursework	58	28

Results – West Coast Region

Section 2.1. Recreational Fishing Participation in the West Coast Region

Fishing Avidity and Location

On average, respondents in the West Coast Region have participated in recreational saltwater fishing for 30 years, and fished 18 days during the last year. Based on the number of days fished last year, three avidity categories were created using the first quartile, the combined second and third quartile, and the fourth quartile (Table 12).

Table 12. West Coast Fishing Avidity Categories

		Days fished last year	Avidity Category
Quantile 1:	< 25%	< 4 days	Low
Quantile 2:	25% - 75%	4 – 23	Medium
Quantile 3:	> 75%	> 23 days	High

Most respondents (54%) stated that most of their trips during the last year were taken from a private boat. About 27% of respondents stated that most trips were taken from a shore mode, including beaches, piers, or bridges. About 19% of respondents took most of their trips from a for-hire vessel such as charter, party, or headboats. Just over half (51%) of respondents had taken their trips from one mode only, while approximately 38% of respondents had taken trips from two modes (primarily shore and private boat) and 11% had taken trips from all three modes of fishing.

For all of the West Coast Region states, recreational fishing in waters where federal regulations apply means fishing between 3 and 200 miles offshore. About 75% of respondents stated that most of their fishing during the last year was within three miles of shore, while 23% of respondents stated that most of their trips occurred further than three miles from shore. Three percent were unsure if they fished more than or less than three miles from shore.

When asked about the number of trips that will likely be taken next year, approximately 79% of respondents felt the number would stay the same or increase, while 21% felt the number of trips they take will decrease. West Coast Region respondents who stated that the number of trips taken in the next year will likely decrease were also asked to rate reasons for the decrease using a five-point scale ranging from "Very likely" to "I am unsure." The most likely reason for fishing trip decreases (based on the frequency ratings of "Very likely") was fishing trip costs, followed by availability of leisure time. Table 13 shows the frequency of responses for each reason.

Table 13. Reasons for a decreased number of fishing trips in the West Coast Region during the next year.

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
	% of respondents				
Availability of leisure time	29	22	18	27	5
Personal finances	25	25	14	32	4
Fishing trip costs	32	28	15	22	3
Change of residence	12	4	3	74	7
Recreational fishing regulations	22	24	14	33	6
Conditions of the fishery (e.g., change in the abundance of fish)	26	26	15	24	9

Fishing Trip Characteristics

To help understand what West Coast Region anglers most want out of recreational fishing trips, West Coast Region respondents were asked about the importance of a variety of fishing trip characteristics. West Coast Region respondents were asked to rate the importance of each characteristic listed below using a five-point scale, ranging from "Extremely important" to "Not important at all." Results are presented in Figure 7.

A. Catch fish
B. Catch as many fish as I can for consumption
C. Catch-and-release as many fish as possible
D. Catch a trophy-sized fish
E. Target a particular species
F. Catch the bag limit of a species I am targeting
G. Know that I will encounter abundant fish
H. Fish in an area that is not heavily congested
I. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc.
J. See information concerning fishing regulations clearly posted
K. Have access to staff (park staff, marine operators, etc.) to answer questions or provide information
L. Have easy access to weather and tide information
M. Fish in a scenic area
N. Fish with family or friends
O. Teach others about fishing

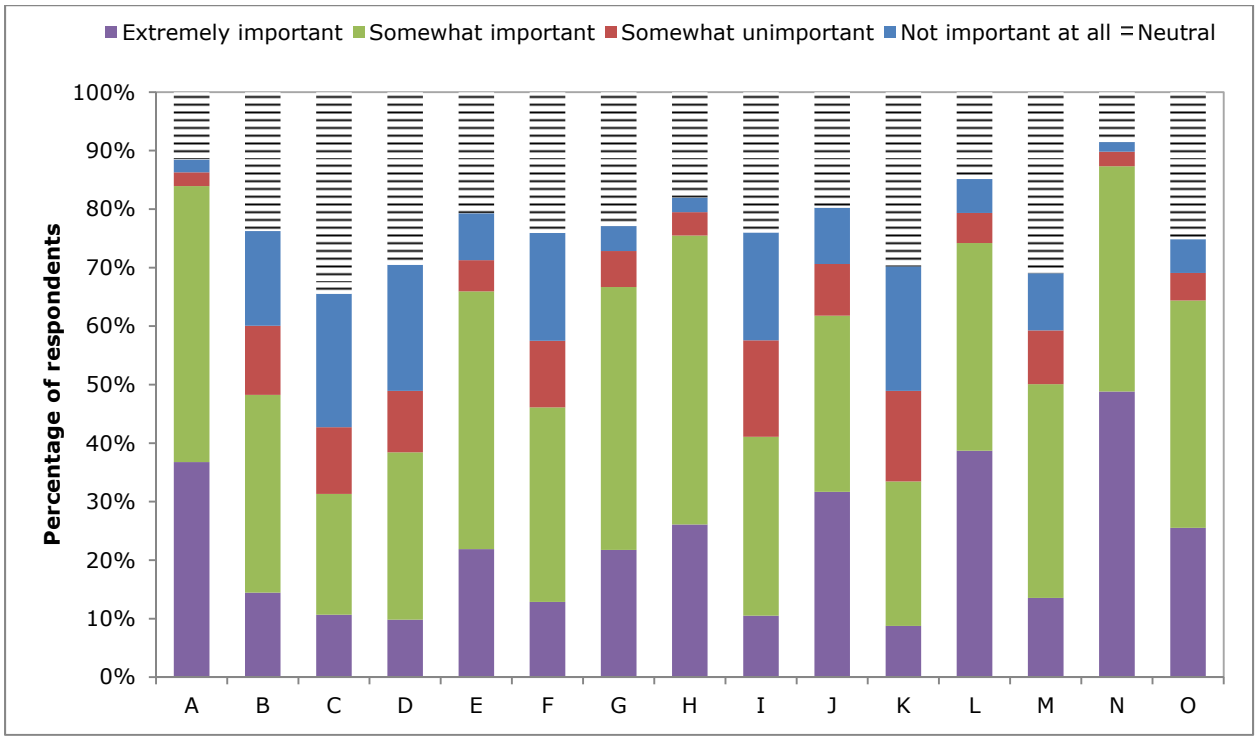

Figure 7. Importance of fishing trip characteristics.

Figure 7 suggests that the most important trip characteristics (based on the frequency of "Extremely important" ratings) include fishing with family and friends (49%), having easy access to weather and tide information (39%), and catching fish (37%). The least important trip characteristics (based on the frequency of "Not important at all" ratings) included catch and release as many fish as possible (23%), catch a trophy-size fish (22%), and have access to staff to answer questions or provide information (21%). Other characteristics that were not important at all included catch the bag limit of a species being targeted (18%), and being close to amenities such as parking, restrooms, cleaning stations, boat launches, etc. (18%). When the ratings of "Extremely important" and "Somewhat important" are combined, the top three characteristics include fishing with family and friends (87%), catching fish (84%), and fishing in an area that is not heavily congested (76%).

Section 2.2. Preferences for Management Strategies in the West Coast Region

To help understand attitudes toward different types of management strategies, West Coast Region anglers were asked to rate their preferences for strategies that included regulating effort, gear, and catch, and other types of strategies such as protected areas. West Coast Region respondents rated each of the strategies below using a five-point scale of "Strongly prefer," "Somewhat prefer," "Slightly prefer," "Do not prefer at all," and "I am unsure." Results are presented in Figure 8.

A. Establish minimum size limits of the fish you can keep
B. Establish maximum size limits of the fish you can keep
C. Limit the total number of fish you can keep
D. Manage some species as catch-and-release only
E. Establish longer seasons with more restrictive bag limits
F. Establish shorter seasons with less restrictive bag limits
G. Establish shorter seasons with a larger variety of species you can legally catch
H. Increase the recreational harvest limit by decreasing the commercial harvest limit
I. Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
J. Restrict certain types of fishing gear
K. Require the use of release techniques that reduce fish mortality
L. Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
M. Protect and restore fish habitat that has been degraded
N. Designate some areas of the ocean as marine reserves with catch-and-release only fishing
O. Close some areas of the ocean for certain seasons

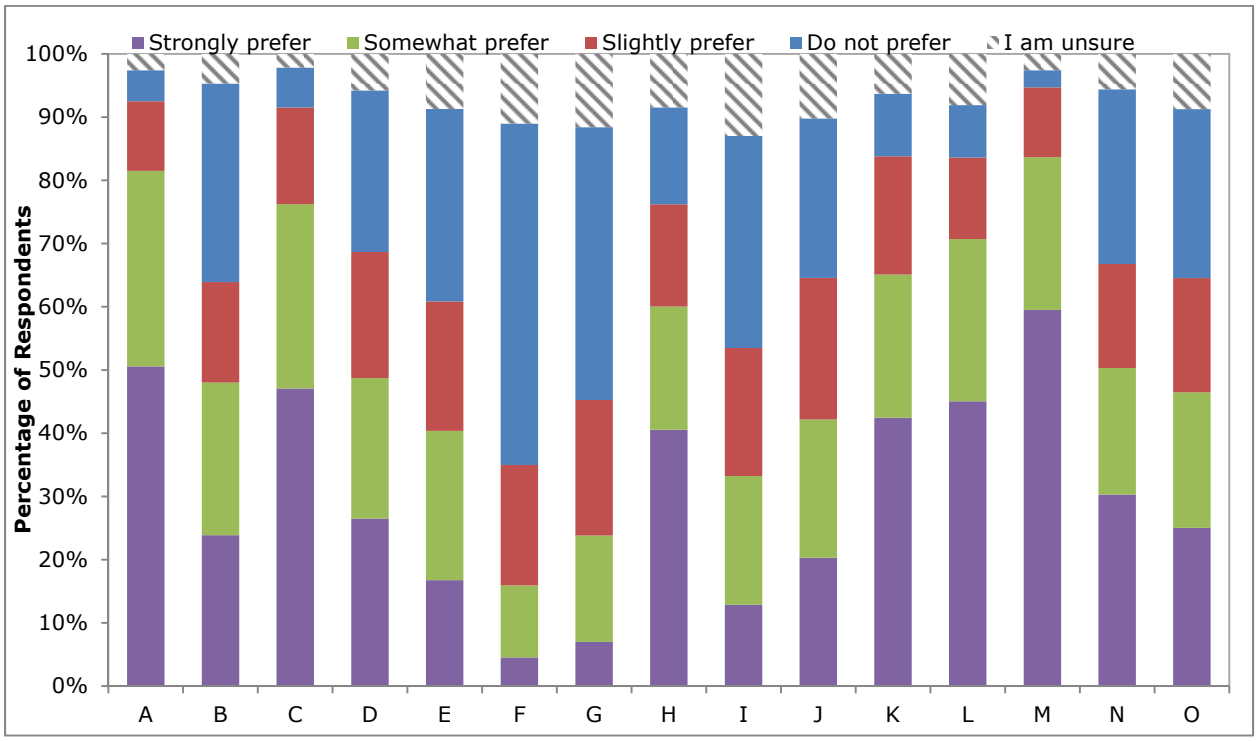

Figure 8. Preferences for management strategies in the West Coast Region.

The most preferred strategies for managing fisheries in the West Coast Region (based on the frequency of "Strongly prefer" ratings) include protecting and restoring degraded fish habitat (60%), establishing minimum size limits of the fish that can be kept (51%), and limit the total number of fish that can be kept (47%). The least preferred strategies for managing fisheries (based on the frequency of "Do not prefer at all" ratings) both focus on establishing shorter seasons. Establishing shorter seasons with less restrictive bag limits was not preferred at all by 54% of West Coast Region respondents, and establishing shorter seasons with a larger variety of species you can legally catch was not preferred at all by 43% of West Coast Region respondents. In contrast, establishing longer seasons with more restrictive bag limits was not preferred at all by 30% of respondents. Combining the "Strongly prefer" and "Somewhat prefer" response options does not alter the rank order of the most preferred management strategies.

Two questions asked West Coast Region respondents about allocation between different types of fishermen: increasing the recreational harvest limit by decreasing the commercial harvest limit; and dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers). Forty-one percent of the West Coast Region respondents strongly preferred, 19% somewhat preferred, 32% did not prefer at all or slightly preferred, and 8% were unsure about management increasing the recreational harvest limit by decreasing the commercial harvest limit. West Coast Region respondents did not prefer at all (34%), slightly preferred (20%), or somewhat preferred (20%) that management divide the recreational harvest limit among private anglers and for-hire/charter boat anglers. Only 13% of the West Coast Region respondents strongly preferred this management strategy and the same percentage of respondents were unsure (13%) about dividing the recreational harvest between private boats and for-hire/charterboats.

More than 10% of the West Coast Region respondents were unsure about their preferences for certain management strategies: dividing the recreational harvest limit among different modes (13%); establishing shorter seasons with a larger variety of species that can be legally caught (12%); establishing shorter seasons with less restrictive bag limits (11%); and restricting certain types of fishing gear (10%).

Positive significant correlations were found between angler avidity and the following management strategies, suggesting that as avidity increases these management strategies become more preferable:

- Establish longer seasons with more restrictive bag limits
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean

Negative significant correlations were found between avidity and the following management strategies, suggesting that as avidity increases these management strategies become less preferable:

- Establish shorter seasons with less restrictive bag limits
- Establish shorter seasons with a larger variety of species you can legally catch
- Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
- Close some areas of the ocean for certain seasons

Significant differences were found in the response distributions by fishing mode to the following management strategies (Table 14):

- Establish maximum size limits of the fish which can be retained
- Manage some species as catch-and-release only
- Establish longer seasons with more restrictive bag limits
- Establish shorter seasons with less restrictive bag limits
- Establish shorter seasons with a larger variety of species which can be legally caught
- Increase the recreational harvest limit by decreasing the commercial harvest limit
- Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
- Designate some areas of the ocean as marine reserves with catch-and-release only fishing

Table 14. Preferences for Management Strategies by Fishing Mode: West Coast

Management Strategy	Fishing Mode	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure
Establish maximum size limits of the fish which can be retained	Shore	7.44	7.94	4.35	6.69	1.00
	For-hire	5.18	4.26	3.34	5.27	0.59
	Private	10.45	12.63	7.94	20.07	2.84
Manage some species as catch-and-release only	Shore	9.58	6.05	4.37	6.05	1.43
	For-hire	3.87	5.46	4.12	4.45	0.92
	Private	12.18	11.76	11.09	15.63	3.03
Establish longer seasons with more restrictive bag limits	Shore	5.28	6.79	6.20	7.21	1.84
	For-hire	1.93	4.19	4.11	7.29	1.09
	Private	9.64	13.08	10.39	16.18	4.78
Establish shorter seasons with less restrictive bag limits	Shore	1.09	2.01	5.36	15.26	3.35
	For-hire	1.09	3.52	3.77	9.05	1.34
	Private	1.93	5.87	10.31	30.51	5.53
Establish shorter seasons with a larger variety of species can be legally caught	Shore	1.42	3.93	5.76	11.45	4.51
	For-hire	1.50	4.18	4.26	7.44	1.42
	Private	3.43	9.19	11.78	24.48	5.26
Increase the recreational harvest limit by decreasing the commercial harvest limit	Shore	9.16	5.41	4.83	4.91	3.00
	For-hire	6.74	4.16	4.16	2.33	1.25
	Private	25.06	10.24	7.49	7.83	3.41
Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)	Shore	3.00	6.33	5.75	7.50	4.58
	For-hire	2.17	3.75	3.58	7.17	2.08
	Private	7.67	10.83	11.08	18.75	5.75
Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean	Shore	12.17	6.42	3.75	2.33	2.58
	For-hire	10.17	5.08	1.92	1.17	0.42
	Private	24.08	13.42	6.92	4.92	4.67
Designate some areas of the ocean as marine reserves with catch-and-release only fishing	Shore	10.57	5.49	3.66	6.16	1.50
	For-hire	5.49	3.91	3.66	5.24	0.42
	Private	14.56	11.31	9.15	15.97	2.91

Section 2.3. Preferences for Management Objectives in the West Coast Region

To help understand the West Coast Region angler attitudes toward broad-level management objectives, West Coast Region respondents were asked to indicate how important they believe different management objectives are for recreational fisheries management to pursue. Respondents rated each of the objectives below using a six-point scale of "Extremely important," "Somewhat important," "Neutral," "Somewhat unimportant," "Not important at all," and "I am unsure." Results are presented in Figure 9.

A. Ensure that large quantities of fish are available to catch
B. Ensure that many different fish species are available to catch
C. Ensure that adequate numbers of trophy-sized fish are available to catch
D. Reduce the mortality associated with releasing fish that are not legal to keep
E. Ensure that future generations will have high quality fishing opportunities
F. Allocate some quota from commercial fisheries to recreational fisheries
G. Recover fish stocks that have been depleted
H. Protect marine biodiversity
I. Protect threatened or endangered marine species
J. Achieve consistency between state and federal fishing regulations
K. Simplify recreational fishing regulations
L. Monitor and enforce recreational fishing regulations
M. Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
N. Ensure opportunities to fish in high quality fishing areas
O. Ensure that fishing sites are not heavily congested

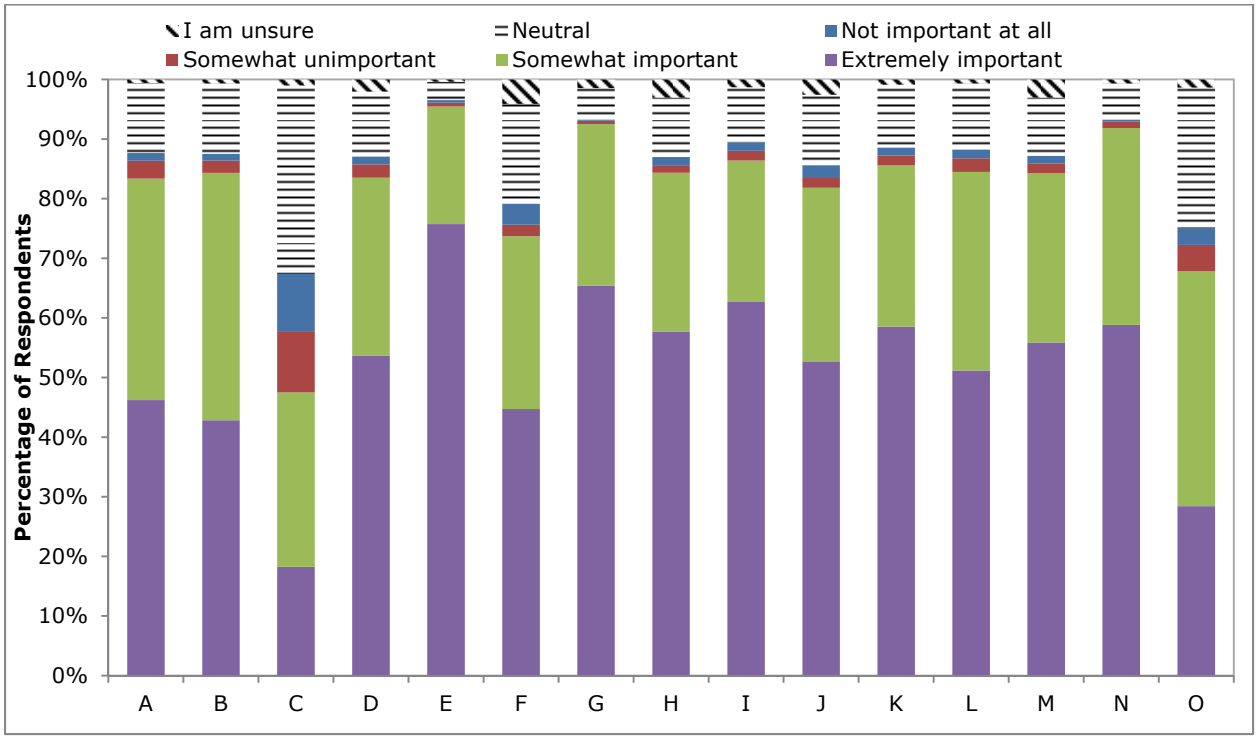

Figure 9. Preferences for management objectives

Over 50% of West Coast Region respondents felt that ten of the fifteen management objectives were extremely important. The most important management objectives (based on the frequency of "Extremely important" ratings) included ensuring that future generations will have high quality fishing opportunities (76%), recovering fish stocks that have been depleted (65%), and protecting threatened and endangered marine species (63%). Generally less than 5% of West Coast Region respondents felt that any of the fifteen management objectives was not important at all – the exception being ensuring that adequate numbers of trophy-sized fish are available. Approximately 10% of West Coast Region respondents felt that objective was not important at all. Combining the "Extremely important" and "Somewhat important" categories to make a broader category of importance does not alter the two top rank objectives, but makes ensuring opportunities to fish in high quality fishing areas the third most important objective.

Positive significant correlations were found between angler avidity and the following management objectives, suggesting that as avidity increases these management objectives become more important:

- Ensure that future generations will have high quality fishing opportunities
- Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making

No negative significant correlations were found between avidity and any of the management objectives.

Significant differences were found in the response distributions by fishing mode to the following management objectives (Table 15):

- Allocate some quota from commercial fisheries to recreational fisheries
- Protect marine biodiversity
- Ensure that fishing sites are not heavily congested

Table 15. Preferences for Management Objectives: West Coast

Management Objective	Fishing Mode	Extremely important	Somewhat important	Neutral	Somewhat unimportant	Not important at all	I am unsure
Allocate some quota from commercial fisheries to recreational fisheries	Shore	10.47	7.89	5.73	0.58	1.16	1.33
	For-hire	8.72	6.06	2.99	0.08	0.42	0.50
	Private	26.58	15.20	7.31	1.25	1.83	1.91
Protect marine biodiversity	Shore	16.69	6.64	2.66	0.33	0.50	0.58
	For-hire	11.05	6.06	0.91	0.25	0.33	0.17
	Private	30.81	13.62	6.40	0.50	0.50	1.99
Ensure that fishing sites are not heavily congested	Shore	9.29	10.78	5.47	0.91	0.41	0.33
	For-hire	5.06	8.21	4.31	0.50	0.33	0.25
	Private	13.02	21.06	14.10	3.40	1.82	0.75

Section 2.4. Satisfaction with Recreational Fisheries Management in the West Coast Region

West Coast Region respondents were asked to indicate how satisfied they were with various aspects of recreational fisheries management, listed below, using a six-point scale of "Extremely satisfied," "Somewhat satisfied," "Neutral," "Somewhat dissatisfied," "Not satisfied at all," and "I am unsure." Results are presented in Figure 10.

A. Managing fish stocks to provide high quality fishing opportunities
B. Restoring fish stocks that have been depleted
C. Adjust regulations in a timely manner to address changing conditions of the fishery
D. Using management strategies that minimize costs to anglers
E. Ensure that the annual harvest limit provides enough fish for recreational fisheries
F. Ensure that state and federal regulations are consistent
G. Monitoring and enforcing recreational fishing regulations
H. Using high quality data and assessments in policy-making
I. Incorporating stakeholder interests in policy-making
J. Protecting fish or shellfish species that are declining
K. Protecting marine habitats
L. Addressing conflicts between anglers and marine mammals

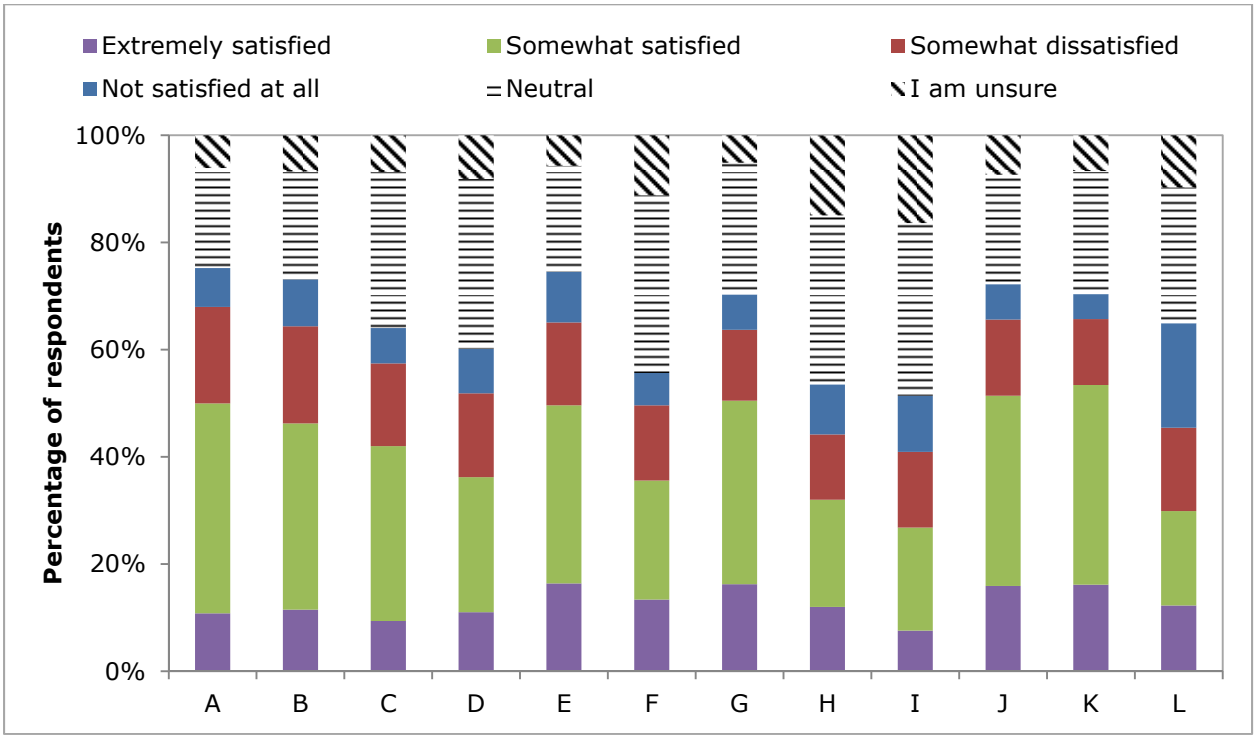

Figure 10. Anglers' satisfaction with recreational fisheries management.

Between 10% and 20% of West Coast Region respondents stated that they were extremely satisfied across all items with the exception of adjusting regulations in a timely manner to address changing conditions of the fishery, and incorporating stakeholder interests in policy-making. For these items, less that 10% of West Coast Region respondents (9% and 8%, respectively) were extremely satisfied with management. However, West Coast Region

respondents appear to be generally satisfied or neutral about recreational fisheries management if "Extremely satisfied" and "Somewhat satisfied" responses are combined. Using this approach, about half of the respondents were satisfied that recreational fisheries management was protecting marine habitats (53%); protecting fish or shellfish species that are declining (51%);monitoring and enforcing recreational fishing regulations (51%; Figure 10).

Across all items less than 10% of West Coast Region respondents stated that they were not satisfied at all with any recreational fisheries management strategy with the exception of addressing conflicts between anglers and marine mammals (19%). Combining the "Not satisfied at all" and "Somewhat dissatisfied" responses shows that anglers were most dissatisfied with addressing conflicts between anglers and marine mammals (35%); restoring fish stocks that have been depleted (27%); and managing fish stocks to provide high quality fishing opportunities (25%). About one-third of West Coast Region respondents were neutral about ensuring that state and federal regulations are consistent; incorporating stakeholder interests in policy-making; and using management strategies that minimize costs to anglers. West Coast Region respondents were most unsure that management incorporated stakeholder interests in policy-making (16%); uses high quality data and assessments in policy-making (15%); and ensures that state and federal regulations are consistent (11%).

No positive significant correlations were found between angler avidity and any of the satisfaction items.

Negative significant correlations were found between avidity and the following satisfaction items, suggesting that as avidity increases anglers become less satisfied with the item:

- Adjust regulations in a timely manner to address changing conditions of the fishery
- Using high quality data and assessments in policy-making
- Incorporating stakeholder interests in policy-making
- Protecting fish or shellfish species that are declining

Significant differences were found in the response distributions by fishing mode to the following management satisfaction items (Table 16):

- Managing fish stocks to provide high quality fishing opportunities
- Ensure that the annual harvest limit provides enough fish for recreational fisheries
- Incorporating stakeholder interests in policy-making
- Addressing conflicts between anglers and marine mammals

Table 16. Satisfaction with Management by Fishing Mode: West Coast

Management Item	Fishing Mode	Extremely satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Not satisfied at all	I am unsure
Managing fish stocks to provide high quality fishing opportunities	Shore	3.26	10.85	5.84	4.51	1.09	2.00
	For-hire	1.84	8.43	2.75	3.42	1.09	1.09
	Private	5.84	20.87	9.60	10.02	5.09	2.42
Ensure that the annual harvest limit provides enough fish for recreational fisheries	Shore	4.67	7.93	7.26	3.59	2.42	1.75
	For-hire	3.09	7.76	2.67	2.75	1.09	1.25
	Private	8.43	18.28	9.60	9.52	5.76	2.17
Incorporating stakeholder interests in policy-making	Shore	1.08	5.50	9.92	3.42	2.84	4.75
	For-hire	1.33	4.59	4.92	3.09	1.83	2.75
	Private	4.92	9.09	17.60	7.59	5.75	9.01
Addressing conflicts between anglers and marine mammals	Shore	3.08	5.49	7.74	3.41	3.91	3.91
	For-hire	2.16	4.16	4.33	3.08	3.49	1.33
	Private	6.32	8.40	13.14	9.48	12.15	4.41

Section 2.5. Managing the Marine Environment in the West Coast Region

West Coast Region respondents were also asked about larger issues relating to the marine environment. West Coast Region respondents rated the threat severity of each issue below using a five-point scale including "Severe threat," "Moderate threat," "Not a very severe threat," "Not a threat at all," and "I am unsure." Results are presented in Figure 11.

A. Industrial pollution
B. Oil and gas extraction
C. Climate change
D. Ocean acidification
E. Shipping
F. Overfishing in commercial fisheries
G. Overfishing in recreational fisheries
H. Non-native species
I. Aquaculture
J. Alternative energy (e.g., wave or wind) development
K. Coastal development
L. Algal blooms
M. Marine habitat loss or degradation
N. Dams/barriers

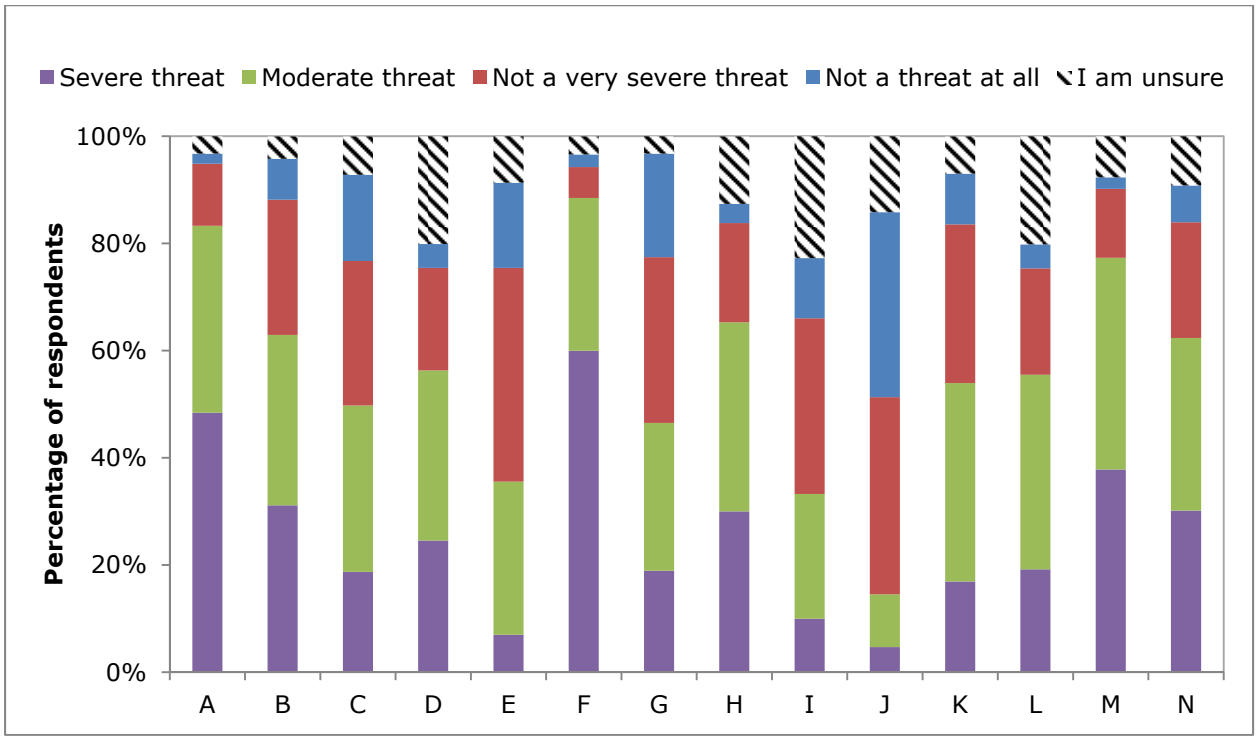

Figure 11. Threats to the marine environment.

West Coast Region respondents rated most items as a threat to the marine environment (Figure 11). The most severe threats (based on the frequency of "Severe threat" ratings) included overfishing in commercial fisheries (60%), industrial pollution (48%), and marine habitat loss or

degradation (38%). Twenty to forty percent of West Coast Region respondents thought all but one of the remaining items were a moderate threat –alternative energy development (10%). Also, the only item that more than 35% of West Coast Region respondents felt posed no threat at all to the marine environment was alternative energy development.

Section 2.6. About you and your Household in the West Coast Region

This section elicits information on the West Coast Region's respondents, their age, level of education, employment level, household income, sex, race and ethnicity. This standard demographic information allows us to better understand the unique characteristics of the West Coast Region recreational fishermen. Information collected in this section is comparable to United States (U.S.) Census information. The U.S. Census does not collect or provide the information at a level to be able to identify a specific population of fishermen, or fishermen as a separate industry. Information about fishermen in the U.S. Census is aggregated with other industries such as forestry and agriculture. Collection of the data in this section serves to describe this specific population of fishermen and will allow for comparisons to the general U.S. public.

On average, West Coast Region respondents worked 29 hours per week; that is most respondents were part-time workers. Most respondents' household income for 2012 was greater than $60,000 per year (Table 17). Only five percent of respondents had a household member who made a living (either part-time or full-time) from marine resources. Of these respondents that made a living from marine resources, the majority was not concerned at all (45%) or slightly concerned (31%) that fisheries management decisions would affect their livelihood. Most of the respondents were male (90%), white (87%), middle-aged (average age was 54 years old) and had completed at least an associate's degree (Table 18).

Table 17. Respondents' income levels.

Income Category	Number of responses	Percentage (%)
Less than $20,000	68	5
$20,000 - $39,999	176	14
$40,000 - $59,999	206	16
$60,000 - $79,999	201	15
$80,000 - $99,999	201	15
$100,000 - $149,999	256	20
$150,000 - $199,999	89	7
$200,000 or more	107	8

Table 18. Highest level of education for respondents.

Highest level of education	Number of responses	Percentage (%)
12th grade or less	85	6
High school graduate or GED	279	21
Associate or technical school degree or college coursework	448	33
Bachelor degree	316	23
Advanced, professional, or doctoral degree or coursework	230	17

Results – North Atlantic Region

Section 3.1. Recreational Fishing Participation in the North Atlantic Region

Fishing Avidity and Location

On average, respondents in the North Atlantic Region have participated in recreational saltwater fishing for 30 years, and fished 24 days during the last year. Based on the number of days fished last year, three avidity categories were created using the first quartile, the combined second and third quartile, and the fourth quartile (Table 19).

Table 19. North Atlantic Fishing Avidity Categories

		Days fished last year	Avidity Category
Quantile 1:	< 25%	< 7 days	Low
Quantile 2:	25% -75%	7 – 30	Medium
Quantile 3:	> 75%	> 30 days	High

Most respondents (48%) stated that most of their trips during the last year were taken from a private boat. About 47% of respondents stated that most trips were taken from a shore mode, including beaches, piers, or bridges. About 4% of respondents took most of their trips from a for-hire vessel such as charter, party, or headboats. Approximately, 47% of respondents utilized only one mode for their trips, while 43% of respondents had taken trips from two modes (primarily shore and private boat) and 10% had taken trips from all three modes of fishing.

For all of the North Atlantic Region states, recreational fishing in waters where federal regulations apply means fishing between 3 and 200 miles offshore. About 85% of respondents stated that most of their fishing during the last year was within three miles of shore, while 12% stated that most of their trips occurred further than three miles from shore. Two percent stated that they were unsure if they fished more than or less than three miles from shore.

When asked about the number of trips that will likely be taken next year, approximately 84% of respondents felt the number would stay the same or increase, while 16% felt the number of trips they take will decrease. North Atlantic Region respondents who stated that the number of trips taken in the next year will likely decrease were also asked to rate reasons for the decrease using a five-point scale ranging from "Very likely" to "I am unsure." The most likely reason for fishing trip decreases (based on the frequency ratings of "Very likely") was availability of leisure time, followed by fishing trip costs. Table 20 shows the frequency of responses for each reason.

Table 20. Reasons for a decreased number of fishing trips in the North Atlantic Region during the next year.

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
	% of respondents				
Availability of leisure time	34	25	8	27	6
Personal finances	28	27	11	30	4
Fishing trip costs	32	31	11	23	4
Change of residence	7	4	5	77	7
Recreational fishing regulations	20	23	11	40	6
Conditions of the fishery (e.g., change in the abundance of fish)	24	23	16	29	8

Fishing Trip Characteristics

To help understand what North Atlantic Region anglers most want out of recreational fishing trips, North Atlantic Region respondents were asked about the importance of a variety of fishing trip characteristics. North Atlantic Region respondents were asked to rate the importance of each characteristic listed below using a five-point scale, ranging from "Extremely important" to "Not important at all." Results are presented in Figure 12.

A. Catch fish
B. Catch as many fish as I can for consumption
C. Catch-and-release as many fish as possible
D. Catch a trophy-sized fish
E. Target a particular species
F. Catch the bag limit of a species I am targeting
G. Know that I will encounter abundant fish
H. Fish in an area that is not heavily congested
I. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc.
J. See information concerning fishing regulations clearly posted
K. Have access to staff (park staff, marine operators, etc.) to answer questions or provide information
L. Have easy access to weather and tide information
M. Fish in a scenic area
N. Fish with family or friends
O. Teach others about fishing

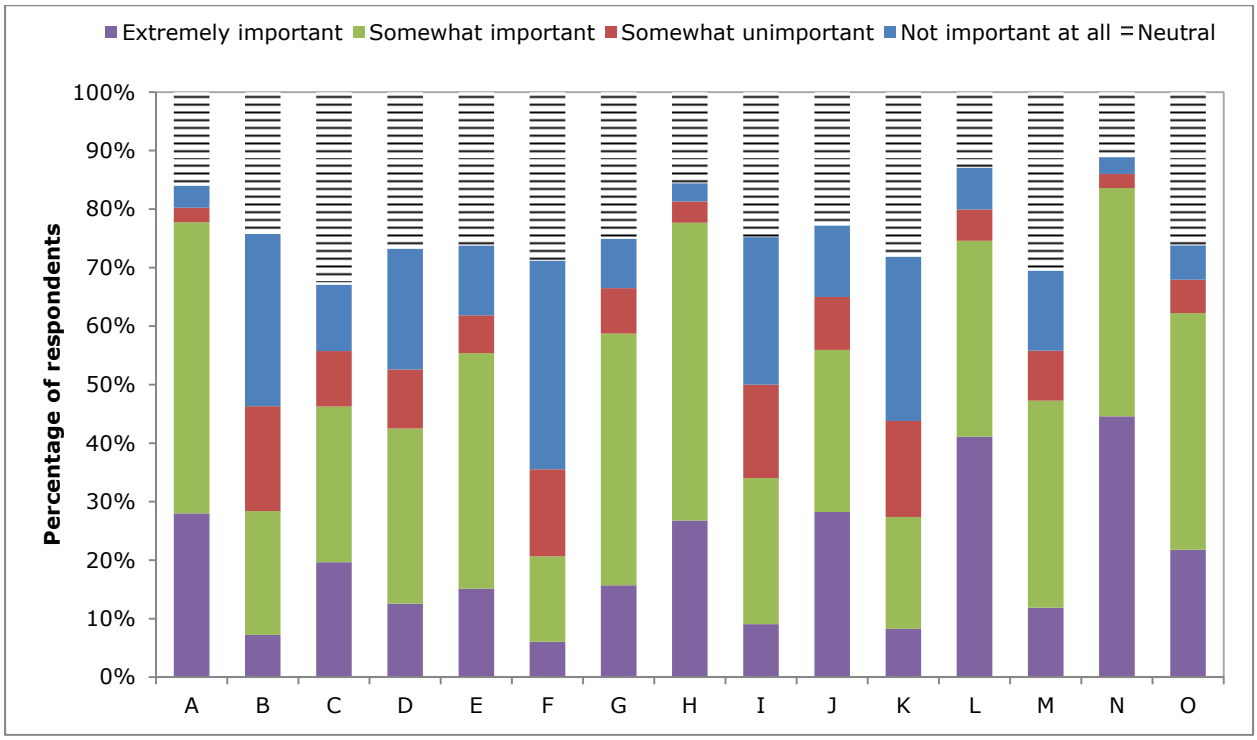

Figure 12. Importance of fishing trip characteristics.

Figure 12 suggests that the most important trip characteristics (based on the frequency of "Extremely important" ratings) include fishing with family and friends (45%), having easy access to weather and tide information (41%), and seeing information concerning fishing regulations clearly posted (28%). The least important trip characteristics (based on the frequency of "Not important at all" ratings) included catch the bag limit of a species I am targeting (36%), catch as many fish as I can for consumption (29%), and have access to staff to answer questions or provide information (28%). Other characteristics rated not important at all included being close to amenities such as parking, restrooms, cleaning stations, boat launches, etc. (25%), and catching a trophy-sized fish (21%). When the ratings of "Extremely important" and "Somewhat important" are combined, the top three characteristics include fishing with family and friends (84%), catching fish (78%), and fishing in an area that is not heavily congested (78%).

Section 3.2. Preferences for Management Strategies in the North Atlantic Region

To help understand attitudes toward different types of management strategies, North Atlantic Region anglers were asked to rate their preferences for strategies that included regulating effort, gear, and catch, and other types of strategies such as protected areas. North Atlantic Region respondents rated each of the strategies below using a five-point scale of "Strongly prefer," "Somewhat prefer," "Slightly prefer," "Do not prefer at all," and "I am unsure." Results are presented in Figure 13.

A. Establish minimum size limits of the fish you can keep
B. Establish maximum size limits of the fish you can keep
C. Limit the total number of fish you can keep
D. Manage some species as catch-and-release only
E. Establish longer seasons with more restrictive bag limits
F. Establish shorter seasons with less restrictive bag limits
G. Establish shorter seasons with a larger variety of species you can legally catch
H. Increase the recreational harvest limit by decreasing the commercial harvest limit
I. Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
J. Restrict certain types of fishing gear
K. Require the use of release techniques that reduce fish mortality
L. Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
M. Protect and restore fish habitat that has been degraded
N. Designate some areas of the ocean as marine reserves with catch-and-release only fishing
O. Close some areas of the ocean for certain seasons

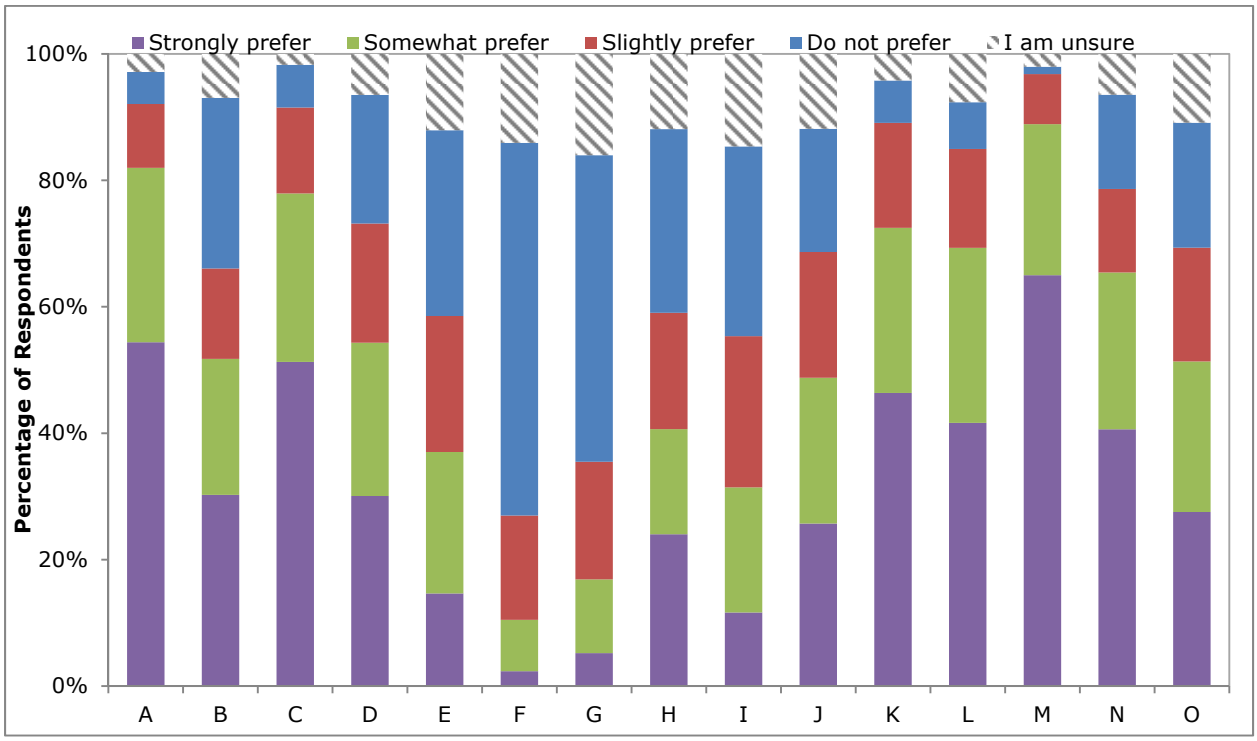

Figure 13. Preferences for management strategies in the North Atlantic Region.

The most preferred strategies for managing fisheries in the North Atlantic Region (based on the frequency of "Strongly prefer" ratings) include protecting and restoring degraded fish habitat (65%), establishing minimum size limits of the fish that can be kept (54%), and limit the total number of fish that can be kept (51%). The least preferred strategies for managing fisheries (based on the frequency of "Do not prefer at all" ratings) both focus on establishing shorter seasons. Establishing shorter seasons with less restrictive bag limits was not preferred at all by 59% of North Atlantic Region respondents, and establishing shorter seasons with a larger variety of species you can legally catch was not preferred at all by 49% of North Atlantic Region respondents. In contrast, establishing longer seasons with more restrictive bag limits was not preferred at all by 29% of respondents. Combining the "Strongly prefer" and "Somewhat prefer" response options does not alter the rank order of the most preferred management strategies.

Two questions asked North Atlantic Region respondents about issues of allocation between different types of anglers: increasing the recreational harvest limit by decreasing the commercial harvest limit; and dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers). Twenty-four percent of the North Atlantic Region respondents strongly preferred, 17% somewhat preferred, 47% slightly preferred or did not prefer at all , and 12% were unsure about management increasing the recreational harvest limit by decreasing the commercial harvest limit. North Atlantic Region respondents did not prefer at all (30%), slightly preferred (24%), or somewhat preferred (20%) that management divide the recreational harvest limit among private anglers and for-hire/charter boat anglers. Only 12% of the North Atlantic Region respondents strongly preferred this management strategy and 15% of respondents were unsure.

More than 10% of the North Atlantic Region respondents were unsure about their preferences for certain management strategies: establishing shorter seasons with a larger variety of species that can be legally caught (16%); dividing the recreational harvest limit among different modes (15%); establishing shorter seasons with less restrictive bag limits (14%); establishing longer seasons with more restrictive bag limits (12%); restricting certain types of fishing gear (12%); and closing some areas of the ocean for certain seasons (11%).

Positive significant correlations were found between angler avidity and the following management strategies, suggesting that as avidity increases these management strategies become more preferable:

- Establish minimum size limits of the fish you can keep
- Restrict certain types of fishing gear
- Require the use of release techniques that reduce fish mortality
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
- Protect and restore fish habitat that has been degraded

No negative significant correlations were found between avidity and any of the management strategies.

Significant differences were found in the response distributions by fishing mode to the following management strategies (Table 21):

- Establish maximum size limits of the fish you can keep

- Designate some areas of the ocean as marine reserves with catch-and-release only fishing
- Close some areas of the ocean for certain seasons

Table 21. Preferences for Management Strategies by Fishing Mode: North Atlantic

Management Strategy	Fishing Mode	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure
Establish maximum size limits of the fish you can keep	Shore	14.45	10.29	7.74	10.76	3.78
	For-hire	1.13	0.76	1.04	1.13	0.09
	Private	14.35	10.95	5.85	14.83	2.83
Designate some areas of the ocean as marine reserves with catch-and-release only fishing	Shore	22.37	10.90	6.48	5.08	2.44
	For-hire	1.79	0.85	0.47	0.66	0.28
	Private	17.67	13.72	5.73	8.46	3.10
Close some areas of the ocean for certain seasons	Shore	15.04	11.18	9.40	6.86	4.79
	For-hire	1.41	0.94	0.66	0.85	0.19
	Private	11.84	12.78	8.18	10.53	5.36

Section 3.3. Preferences for Management Objectives in the North Atlantic Region

To help understand the North Atlantic Region angler attitudes toward broad-level management objectives, North Atlantic Region respondents were asked to indicate how important they believe different management objectives are for recreational fisheries management to pursue. Respondents rated each of the objectives below using a six-point scale of "Extremely important," "Somewhat important," "Neutral," "Somewhat unimportant," "Not important at all," and "I am unsure." Results are presented in Figure 14.

A. Ensure that large quantities of fish are available to catch
B. Ensure that many different fish species are available to catch
C. Ensure that adequate numbers of trophy-sized fish are available to catch
D. Reduce the mortality associated with releasing fish that are not legal to keep
E. Ensure that future generations will have high quality fishing opportunities
F. Allocate some quota from commercial fisheries to recreational fisheries
G. Recover fish stocks that have been depleted
H. Protect marine biodiversity
I. Protect threatened or endangered marine species
J. Achieve consistency between state and federal fishing regulations
K. Simplify recreational fishing regulations
L. Monitor and enforce recreational fishing regulations
M. Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
N. Ensure opportunities to fish in high quality fishing areas
O. Ensure that fishing sites are not heavily congested

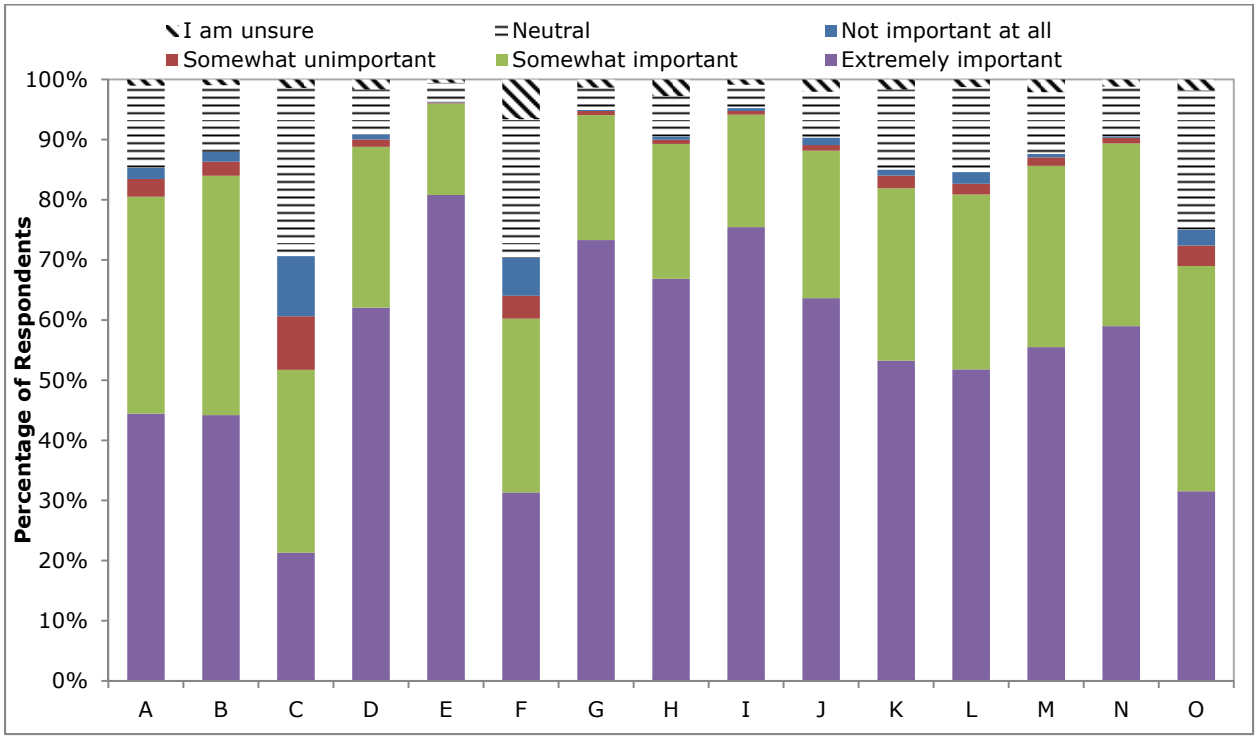

Figure 14. Preferences for management objectives

Over 50% of North Atlantic Region respondents felt that ten of the fifteen management objectives were extremely important. The most important management objectives (based on the frequency of "Extremely important" ratings) included ensuring that future generations will have high quality fishing opportunities (81%), protecting threatened and endangered marine species (75%), and recovering fish stocks that have been depleted (73%). Generally less than 5% of North Atlantic Region respondents felt that any one of the fifteen management objectives was not important at all – the exceptions being ensuring that adequate numbers of trophy-sized fish are available, and allocating some quota from commercial fisheries to recreational fisheries. Approximately 10% and 6% of North Atlantic Region respondents felt that those objectives were not important at all, respectively. Combining the "Extremely important" and "Somewhat important" categories to make a broader category of importance does not alter the top rank objectives.

Positive significant correlations were found between angler avidity and the following management objectives, suggesting that as avidity increases these management objectives become more important:

- Ensure that many different fish species are available to catch
- Ensure that adequate numbers of trophy-sized fish are available to catch
- Reduce the mortality associated with releasing fish that are not legal to keep
- Allocate some quota from commercial fisheries to recreational fisheries
- Recover fish stocks that have been depleted
- Protect marine biodiversity
- Ensure opportunities to fish in high quality fishing areas

No negative significant correlations were found between avidity and any of the management objectives.

No significant differences were found in the response distributions by fishing mode to the any of the management objectives.

Section 3.4. Satisfaction with Recreational Fisheries Management in the North Atlantic Region

North Atlantic Region respondents were asked to indicate how satisfied they were with various aspects of recreational fisheries management, listed below, using a six-point scale of "Extremely satisfied," "Somewhat satisfied," "Neutral," "Somewhat dissatisfied," "Not satisfied at all," and "I am unsure." Results are presented in Figure 15.

A. Managing fish stocks to provide high quality fishing opportunities
B. Restoring fish stocks that have been depleted
C. Adjust regulations in a timely manner to address changing conditions of the fishery
D. Using management strategies that minimize costs to anglers
E. Ensure that the annual harvest limit provides enough fish for recreational fisheries
F. Ensure that state and federal regulations are consistent
G. Monitoring and enforcing recreational fishing regulations
H. Using high quality data and assessments in policy-making
I. Incorporating stakeholder interests in policy-making
J. Protecting fish or shellfish species that are declining
K. Protecting marine habitats
L. Addressing conflicts between anglers and marine mammals

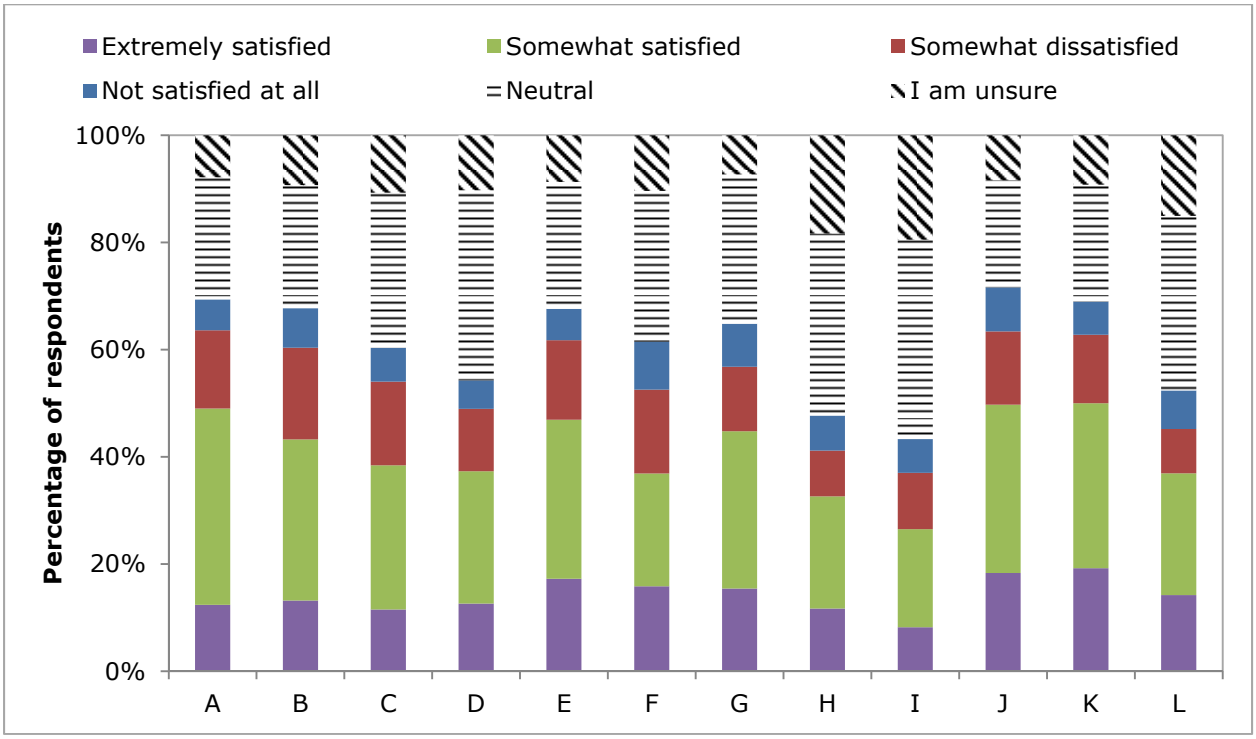

Figure 15. Anglers' satisfaction with recreational fisheries management.

Between 10% and 20% of North Atlantic Region respondents stated that they were extremely satisfied across all items with the exception of incorporating stakeholder interests in policy-making. For this item, less that 10% of North Atlantic Region respondents (8%) were extremely satisfied with management incorporating stakeholder interests in policy-making. However, North Atlantic Region respondents appear to be generally satisfied or neutral about recreational

fisheries management if "Extremely satisfied" and "Somewhat satisfied" responses are combined. Using this approach, about half of the respondents were satisfied that recreational fisheries management was protecting marine habitats (50%); protecting fish or shellfish species that are declining (50%); and managing fish stocks to provide high quality fishing opportunities (49%; Figure 15).

Across all items less than 10% of North Atlantic Region respondents stated that they were not satisfied at all with any recreational fisheries management strategy. Combining the "Not satisfied at all" and "Somewhat dissatisfied" responses shows that anglers were most dissatisfied with ensuring that state and federal regulations are consistent (25%); restoring fish stocks that have been depleted (25%); and adjusting regulations in a timely manner to address changing conditions of the fishery (22%). About one-third of North Atlantic Region respondents were neutral about using management strategies that minimize costs to anglers; using high quality data and assessments in policy-making; and addressing conflicts between anglers and marine mammals. North Atlantic Region respondents were most unsure that management incorporated stakeholder interests in policy-making (19%); uses high quality data and assessments in policy-making (18%); and addressing conflicts between anglers and marine mammals (15%).

No significant correlations between angler avidity and angler satisfaction with management were found.

Significant differences were found in the response distributions by fishing mode to the following management satisfaction items (Table 22):

- Ensure that state and federal regulations are consistent
- Using high quality data and assessments in policy-making
- Incorporating stakeholder interests in policy-making

Table 22. Satisfaction with Management by Fishing Mode: North Atlantic

Management Item	Fishing Mode	Extremely satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Not satisfied at all	I am unsure
Ensure that state and federal regulations are consistent	Shore	8.27	10.90	13.44	5.45	3.57	5.64
	For-hire	0.56	1.22	0.75	0.75	0.56	0.28
	Private	6.77	8.36	14.38	9.21	5.64	4.23
Using high quality data and assessments in policy-making	Shore	5.46	12.05	15.07	3.77	1.98	8.85
	For-hire	0.47	0.56	2.07	0.28	0.47	0.28
	Private	5.56	9.04	16.01	4.61	4.52	8.95
Incorporating stakeholder interests in policy-making	Shore	3.50	9.74	17.88	4.07	1.99	10.03
	For-hire	0.28	0.57	1.80	0.38	0.57	0.57
	Private	4.64	8.14	17.31	5.68	3.88	8.99

Section 3.5. Managing the Marine Environment in the North Atlantic Region

North Atlantic Region respondents were also asked about larger issues relating to the marine environment. North Atlantic Region respondents rated the threat severity of each issue below using a five-point scale including "Severe threat," "Moderate threat," "Not a very severe threat," "Not a threat at all," and "I am unsure." Results are presented in Figure 16.

A. Industrial pollution
B. Oil and gas extraction
C. Climate change
D. Ocean acidification
E. Shipping
F. Overfishing in commercial fisheries
G. Overfishing in recreational fisheries
H. Non-native species
I. Aquaculture
J. Alternative energy (e.g., wave or wind) development
K. Coastal development
L. Algal blooms
M. Marine habitat loss or degradation
N. Dams/barriers

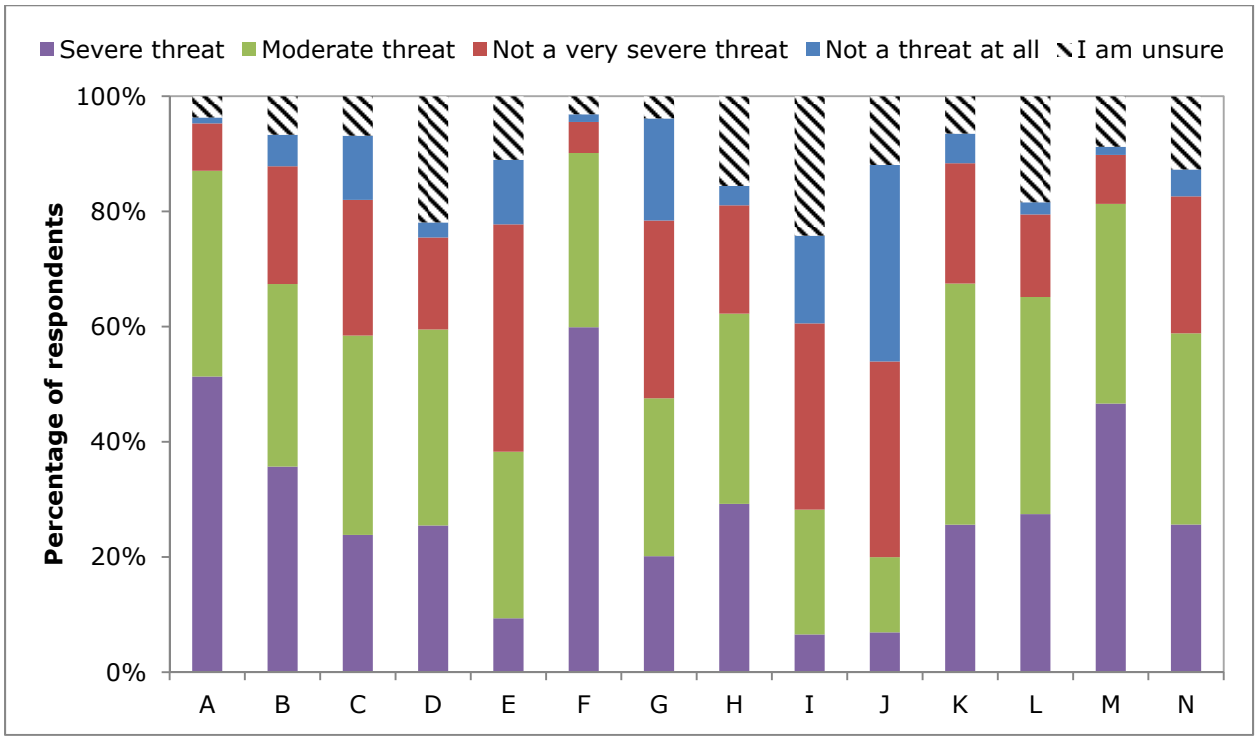

Figure 16. Threats to the marine environment.

North Atlantic Region respondents rated most items as a threat to the marine environment (Figure 16). The most severe threats (based on the frequency of "Severe threat" ratings) included overfishing in commercial fisheries (60%), industrial pollution (51%), and marine

habitat loss or degradation (47%). Twenty to forty percent of North Atlantic Region respondents thought all but one of the remaining items were a moderate threat –alternative energy development (13%). The only item that more than 30% of North Atlantic Region respondents felt posed no threat at all to the marine environment was alternative energy development (34%).

Section 3.6. About you and your Household in the North Atlantic Region

This section elicits information on the North Atlantic Region's respondents, their age, level of education, employment level, household income, sex, race and ethnicity. This standard demographic information allows us to better understand the unique characteristics of the North Atlantic Region recreational fishermen. Information collected in this section is comparable to United States (U.S.) Census information. The U.S. Census does not collect or provide the information at a level to be able to identify a specific population of fishermen, or fishermen as a separate industry. Information about fishermen in the U.S. Census is aggregated with other industries such as forestry and agriculture. Collection of the data in this section serves to describe this specific population of fishermen and will allow for comparisons to the general U.S. public.

On average, North Atlantic Region respondents worked 32 hours per week; that is most respondents were part-time workers. Most respondents' household income for 2012 was greater than $60,000 per year (Table 23). Only seven percent of respondents had a household member who made a living (either part-time or full-time) from marine resources. Of these respondents that made a living from marine resources, the majority of the respondents was not concerned at all (49%) or slightly concerned (30%) that fisheries management decisions would affect their livelihood. Most of the respondents were male (88%), white (95%), middle-aged (average age was 55 years old) and had completed at least an associate's degree (Table 24).

Table 23. Respondents' income levels.

Income Category	Number of responses	Percentage (%)
Less than $20,000	83	7
$20,000 - $39,999	164	14
$40,000 - $59,999	200	17
$60,000 - $79,999	176	15
$80,000 - $99,999	187	16
$100,000 - $149,999	213	18
$150,000 - $199,999	85	7
$200,000 or more	87	7

Table 24. Highest level of education for respondents.

Highest level of education	Number of responses	Percentage (%)
12th grade or less	103	8
High school graduate or GED	292	23
Associate or technical school degree or college coursework	361	29
Bachelor degree	273	22
Advanced, professional, or doctoral degree or coursework	235	19

Results – Mid-Atlantic Region

Section 4.1. Recreational Fishing Participation in the Mid-Atlantic Region

Fishing Avidity and Location

On average, respondents in the Mid-Atlantic Region have participated in recreational saltwater fishing for 32 years, and fished 30 days during the last year. Based on the number of days fished last year, three avidity categories were created using the first quartile, the combined second and third quartile, and the fourth quartile (Table 25).

Table 25. Mid-Atlantic Fishing Avidity Categories

		Days fished last year	Avidity Category
Quantile 1:	< 25%	< 7 days	Low
Quantile 2:	25% - 75%	7 - 35	Medium
Quantile 3:	> 75%	> 35 days	High

Most respondents (52%) stated that most of their trips during the last year were taken from a private boat. About 40% of respondents stated that most trips were taken from a shore mode, including beaches, piers, or bridges. About 8% of respondents took most of their trips from a for-hire vessel such as charter, party, or headboats. Approximately 40% of respondents had taken trips from only one mode, while 43% of respondents had taken trips from two modes (primarily shore and private boat) and 16% had taken trips from all three modes of fishing.

For all of the Mid-Atlantic Region states, recreational fishing in waters where federal regulations apply means fishing between 3 and 200 miles offshore. The majority (86%) of respondents stated that most of their fishing during the last year was within three miles of shore, while about 12% of respondents stated that most of their fishing trips occurred further than three miles from shore. Two percent stated that they were unsure if they fished more than or less than three miles from shore.

When asked about the number of trips that will likely be taken next year, approximately 80% of respondents felt the number would stay the same or increase, while 20% felt the number of trips they take will decrease. Mid-Atlantic Region respondents who stated that the number of trips taken in the next year will likely decrease were also asked to rate reasons for the decrease using a five-point scale ranging from "Very likely" to "I am unsure." The most likely reason for fishing trip decreases (based on the frequency ratings of "Very likely") was fishing trip costs, followed by availability of leisure time tied with personal finances. Table 26 shows the frequency of responses for each reason.

Table 26. Reasons for a decreased number of fishing trips in the Mid-Atlantic Region during the next year.

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
	% of respondents				
Availability of leisure time	30	25	13	25	7
Personal finances	30	29	13	23	5
Fishing trip costs	39	29	10	18	3
Change of residence	6	5	5	76	8
Recreational fishing regulations	28	16	13	35	8
Conditions of the fishery (e.g., change in the abundance of fish)	26	21	16	27	9

Fishing Trip Characteristics

To help understand what Mid-Atlantic Region anglers most want out of recreational fishing trips, Mid-Atlantic Region respondents were asked about the importance of a variety of fishing trip characteristics. Mid-Atlantic Region respondents were asked to rate the importance of each characteristic listed below using a five-point scale, ranging from "Extremely important" to "Not important at all." Results are presented in Figure 17.

A. Catch fish
B. Catch as many fish as I can for consumption
C. Catch-and-release as many fish as possible
D. Catch a trophy-sized fish
E. Target a particular species
F. Catch the bag limit of a species I am targeting
G. Know that I will encounter abundant fish
H. Fish in an area that is not heavily congested
I. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc.
J. See information concerning fishing regulations clearly posted
K. Have access to staff (park staff, marine operators, etc.) to answer questions or provide information
L. Have easy access to weather and tide information
M. Fish in a scenic area
N. Fish with family or friends
O. Teach others about fishing

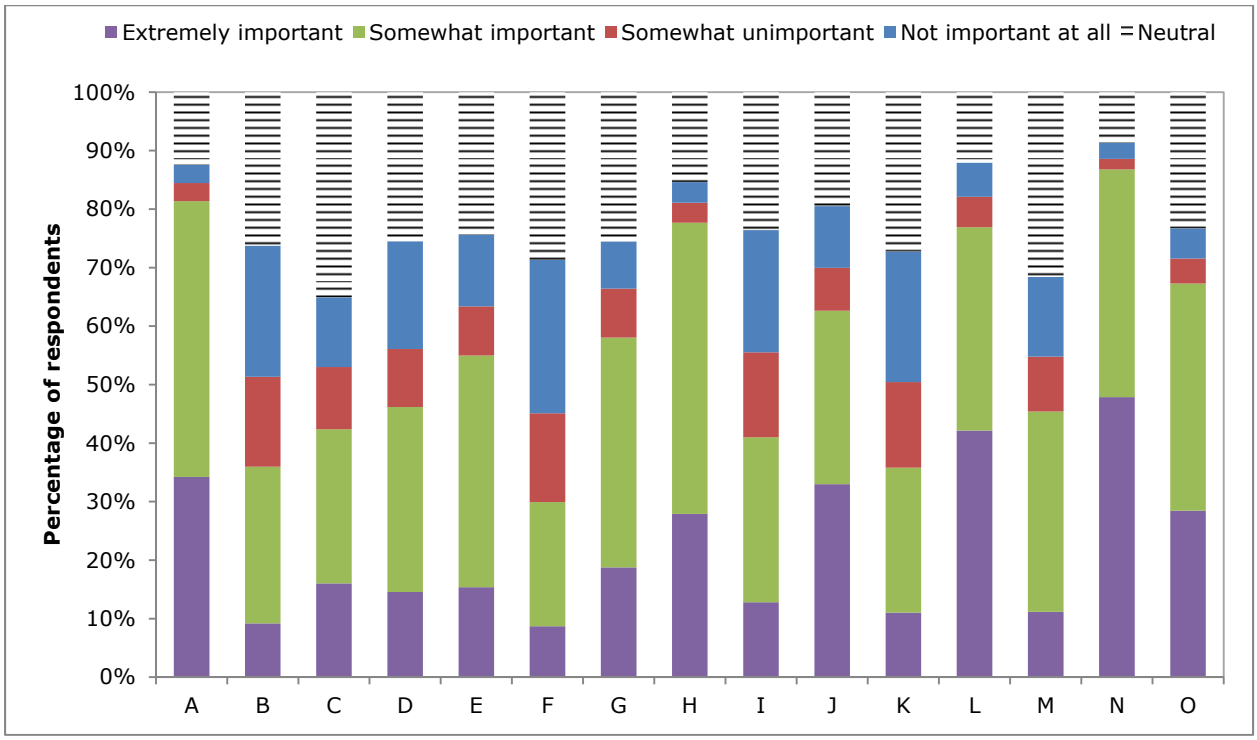

Figure 17. Importance of fishing trip characteristics.

The most important trip characteristics (based on the frequency of "Extremely important" ratings) include fishing with family and friends (48%), having easy access to weather and tide information (42%), and catching fish (34%; Figure 17). The least important trip characteristics (based on the frequency of "Not important at all" ratings) included catch the bag limit of a species I am targeting (26%), catch as many fish as I can for consumption (22%), and have access to staff to answer questions or provide information (22%). Other characteristics rated not important at all included being close to amenities such as parking, restrooms, cleaning stations, boat launches, etc. (21%), and catching a trophy-sized fish (18%). When the ratings of "Extremely important" and "Somewhat important" are combined, the top three characteristics include fishing with family and friends (87%), catching fish (81%), and fishing in an area that is not heavily congested (78%).

Section 4.2. Preferences for Management Strategies in the Mid-Atlantic Region

To help understand attitudes toward different types of management strategies, Mid-Atlantic Region anglers were asked to rate their preferences for strategies that included regulating effort, gear, and catch, and other types of strategies such as protected areas. Mid-Atlantic Region respondents rated each of the strategies below using a five-point scale of "Strongly prefer," "Somewhat prefer," "Slightly prefer," "Do not prefer at all," and "I am unsure." Results are presented in Figure 18.

A. Establish minimum size limits of the fish you can keep
B. Establish maximum size limits of the fish you can keep
C. Limit the total number of fish you can keep
D. Manage some species as catch-and-release only
E. Establish longer seasons with more restrictive bag limits
F. Establish shorter seasons with less restrictive bag limits
G. Establish shorter seasons with a larger variety of species you can legally catch
H. Increase the recreational harvest limit by decreasing the commercial harvest limit
I. Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
J. Restrict certain types of fishing gear
K. Require the use of release techniques that reduce fish mortality
L. Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
M. Protect and restore fish habitat that has been degraded
N. Designate some areas of the ocean as marine reserves with catch-and-release only fishing
O. Close some areas of the ocean for certain seasons

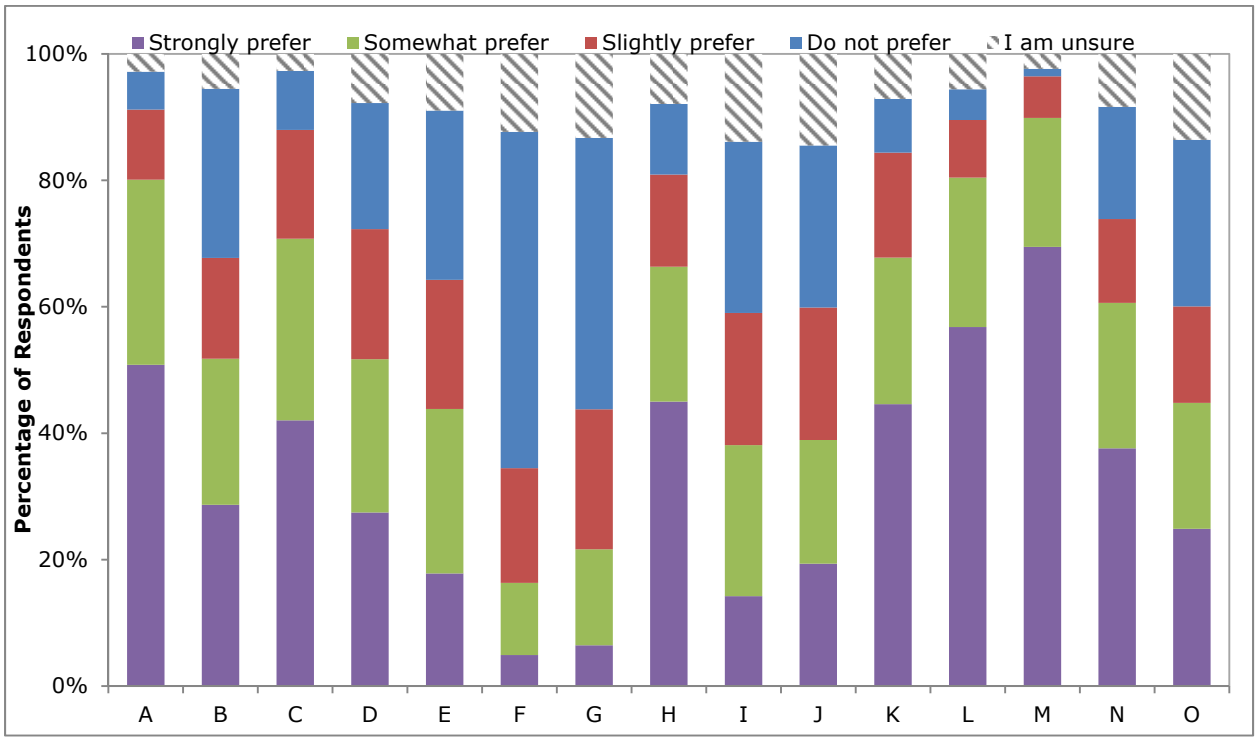

Figure 18. Preferences for management strategies in the Mid-Atlantic Region.

The most preferred strategies for managing fisheries in the Mid-Atlantic Region (based on the frequency of "Strongly prefer" ratings) include protecting and restoring degraded fish habitat (69%), providing artificial fish habitat in some areas of the ocean (57%), and establishing minimum size limits of the fish that can be kept (51%). The least preferred strategies for managing fisheries (based on the frequency of "Do not prefer at all" ratings) both focus on establishing shorter seasons. Establishing shorter seasons with less restrictive bag limits was not preferred at all by 53% of Mid-Atlantic Region respondents, and establishing shorter seasons with a larger variety of species which can be legal caught was not preferred at all by 43% of Mid-Atlantic Region respondents. In contrast, establishing longer seasons with more restrictive bag limits was not preferred at all by 27% of respondents. Combining the "Strongly prefer" and "Somewhat prefer" response options does not alter the rank order of the most preferred management strategies.

Two questions asked Mid-Atlantic Region respondents about issues of allocation between different types of anglers: increasing the recreational harvest limit by decreasing the commercial harvest limit; and dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers). Forty-five percent of the Mid-Atlantic Region respondents strongly preferred, 26% did not prefer at all or slightly preferred, 21% somewhat preferred, and 8% were unsure about management increasing the recreational harvest limit by decreasing the commercial harvest limit. Mid-Atlantic Region respondents did not prefer at all (27%), slightly preferred (21%), or somewhat preferred (24%) that management divide the recreational harvest limit among private anglers and for-hire/charter boat anglers. Only 14% of the Mid-Atlantic Region respondents strongly preferred this management strategy and the same percentage of respondents were unsure.

More than 10% of the Mid-Atlantic Region respondents were unsure about their preferences for certain management strategies: restricting certain types of fishing gear (14%); dividing the recreational harvest limit among different modes (14%); closing some areas of the ocean for certain seasons (14%); establishing shorter seasons with a larger variety of species that can be legally caught (13%); and establishing shorter seasons with less restrictive bag limits (12%).

Positive significant correlations were found between angler avidity and the following management strategies, suggesting that as avidity increases these management strategies become more preferable:

- Establish maximum size limits of the fish you can keep
- Increase the recreational harvest limit by decreasing the commercial harvest limit
- Restrict certain types of fishing gear
- Require the use of release techniques that reduce fish mortality
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean

No negative significant correlations were found between avidity and any of the management strategies.

Significant differences were found in the response distributions by fishing mode to the following management strategies (Table 27):

- Establish minimum size limits of the fish you can keep
- Establish maximum size limits of the fish you can keep

- Manage some species as catch-and-release only
- Establish shorter seasons with a larger variety of species you can legally catch
- Increase the recreational harvest limit by decreasing the commercial harvest limit
- Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
- Designate some areas of the ocean as marine reserves with catch-and-release only fishing
- Close some areas of the ocean for certain seasons

Table 27. Preferences for Management Strategies: Mid-Atlantic

Management Strategy	Fishing Mode	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure
Establish minimum size limits of the fish you can keep	Shore	21.51	9.71	4.41	2.86	1.01
	For-hire	4.41	2.74	0.60	0.54	0.06
	Private	24.97	17.46	6.44	2.32	0.95
Establish maximum size limits of the fish you can keep	Shore	12.11	9.59	5.22	10.37	2.16
	For-hire	2.34	1.98	1.80	1.56	0.54
	Private	13.07	12.83	9.23	14.93	2.28
Manage some species as catch-and-release only	Shore	13.04	9.50	7.69	6.85	2.40
	For-hire	1.92	2.10	1.98	1.38	0.72
	Private	12.02	13.10	11.36	12.14	3.79
Establish shorter seasons with a larger variety of species you can legally catch	Shore	3.05	5.86	8.67	17.33	4.66
	For-hire	0.66	1.79	2.39	2.75	0.66
	Private	2.21	7.65	11.18	24.69	6.46
Increase the recreational harvest limit by decreasing the commercial harvest limit	Shore	15.52	9.97	5.79	5.13	3.16
	For-hire	4.06	2.03	1.31	0.48	0.36
	Private	26.45	9.97	7.04	5.37	3.34
Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)	Shore	5.47	9.56	9.25	9.31	6.01
	For-hire	0.96	2.52	1.68	2.28	0.72
	Private	7.81	12.08	10.40	16.05	5.89
Designate some areas of the ocean as marine reserves with catch-and-release only fishing	Shore	17.51	8.81	5.40	5.46	2.40
	For-hire	2.94	2.10	1.14	1.86	0.24
	Private	17.03	12.11	7.19	11.33	4.50
Close some areas of the ocean for certain seasons	Shore	11.87	7.88	6.03	9.67	4.06
	For-hire	2.45	1.85	1.31	2.09	0.60
	Private	10.56	9.79	8.53	16.17	7.16

Section 4.3. Preferences for Management Objectives in the Mid-Atlantic Region

To help understand the Mid-Atlantic Region angler attitudes toward broad-level management objectives, Mid-Atlantic Region respondents were asked to indicate how important they believe different management objectives are for recreational fisheries management to pursue. Respondents rated each of the objectives below using a six-point scale of "Extremely important," "Somewhat important," "Neutral," "Somewhat unimportant," "Not important at all," and "I am unsure." Results are presented in Figure 19.

A. Ensure that large quantities of fish are available to catch
B. Ensure that many different fish species are available to catch
C. Ensure that adequate numbers of trophy-sized fish are available to catch
D. Reduce the mortality associated with releasing fish that are not legal to keep
E. Ensure that future generations will have high quality fishing opportunities
F. Allocate some quota from commercial fisheries to recreational fisheries
G. Recover fish stocks that have been depleted
H. Protect marine biodiversity
I. Protect threatened or endangered marine species
J. Achieve consistency between state and federal fishing regulations
K. Simplify recreational fishing regulations
L. Monitor and enforce recreational fishing regulations
M. Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
N. Ensure opportunities to fish in high quality fishing areas
O. Ensure that fishing sites are not heavily congested

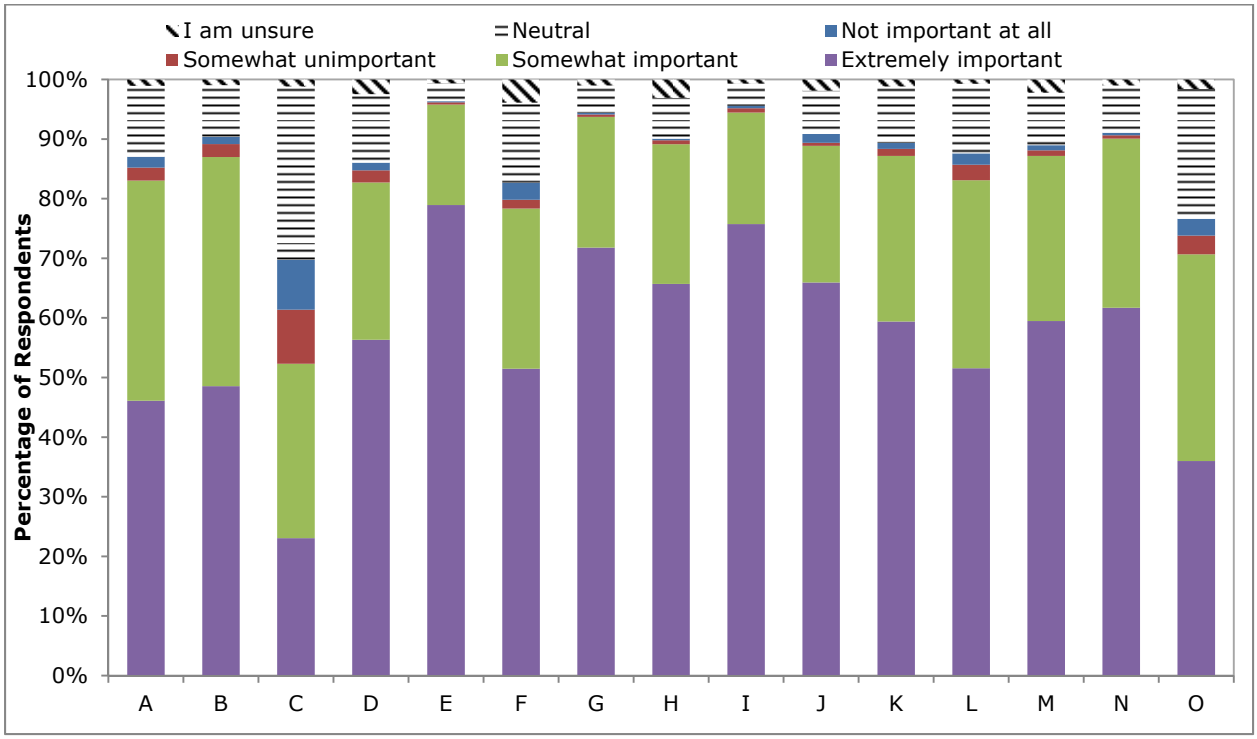

Figure 19. Preferences for management objectives

Over 50% of Mid-Atlantic Region respondents felt that eleven of the fifteen management objectives were extremely important. The most important management objectives (based on the frequency of "Extremely important" ratings) included ensuring that future generations will have high quality fishing opportunities (79%), protecting threatened and endangered marine species (76%), and recovering fish stocks that have been depleted (72%). Generally less than 5% of Mid-Atlantic Region respondents felt that any one of the fifteen management objectives was not important at all – the exception being ensuring that adequate numbers of trophy-sized fish are available. Approximately 8% of Mid-Atlantic Region respondents felt that this objective was not important at all. Combining the "Extremely important" and "Somewhat important" categories to make a broader category of importance does not alter the top rank objectives.

Positive significant correlations were found between angler avidity and the following management objectives, suggesting that as avidity increases these management objectives become more important:

- Ensure that large quantities of fish are available to catch
- Ensure that many different fish species are available to catch
- Ensure that adequate numbers of trophy-sized fish are available to catch
- Reduce the mortality associated with releasing fish that are not legal to keep
- Allocate some quota from commercial fisheries to recreational fisheries
- Protect marine biodiversity
- Monitor and enforce recreational fishing regulations
- Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
- Ensure opportunities to fish in high quality fishing areas

No negative significant correlations were found between avidity and any of the management objectives.

Significant differences were found in the response distributions by fishing mode to the following management objectives:

- Protect marine biodiversity
- Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
- Ensure that fishing sites are not heavily congested

Table 28. Preferences for Management Objectives: Mid-Atlantic

Management Objective	Fishing Mode	Extremely important	Somewhat important	Neutral	Somewhat unimportant	Not important at all	I am unsure
Protect marine biodiversity	Shore	28.26	8.00	2.45	0.18	0.00	0.66
	For-hire	5.73	2.15	0.36	0.00	0.00	0.00
	Private	32.38	13.50	3.64	0.48	0.24	1.97
Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making	Shore	22.41	11.68	3.75	0.77	0.24	0.66
	For-hire	5.48	2.38	0.24	0.00	0.06	0.06
	Private	32.84	13.65	4.05	0.30	0.66	0.77
Ensure that fishing sites are not heavily congested	Shore	15.55	14.24	7.39	1.31	0.66	0.36
	For-hire	3.34	2.98	1.43	0.30	0.18	0.00
	Private	16.03	17.64	13.95	1.73	2.21	0.72

Section 4.4. Satisfaction with Recreational Fisheries Management in the Mid-Atlantic Region

Mid-Atlantic Region respondents were asked to indicate how satisfied they were with various aspects of recreational fisheries management, listed below, using a six-point scale of "Extremely satisfied," "Somewhat satisfied," "Neutral," "Somewhat dissatisfied," "Not satisfied at all," and "I am unsure." Results are presented in Figure 20.

A. Managing fish stocks to provide high quality fishing opportunities
B. Restoring fish stocks that have been depleted
C. Adjust regulations in a timely manner to address changing conditions of the fishery
D. Using management strategies that minimize costs to anglers
E. Ensure that the annual harvest limit provides enough fish for recreational fisheries
F. Ensure that state and federal regulations are consistent
G. Monitoring and enforcing recreational fishing regulations
H. Using high quality data and assessments in policy-making
I. Incorporating stakeholder interests in policy-making
J. Protecting fish or shellfish species that are declining
K. Protecting marine habitats
L. Addressing conflicts between anglers and marine mammals

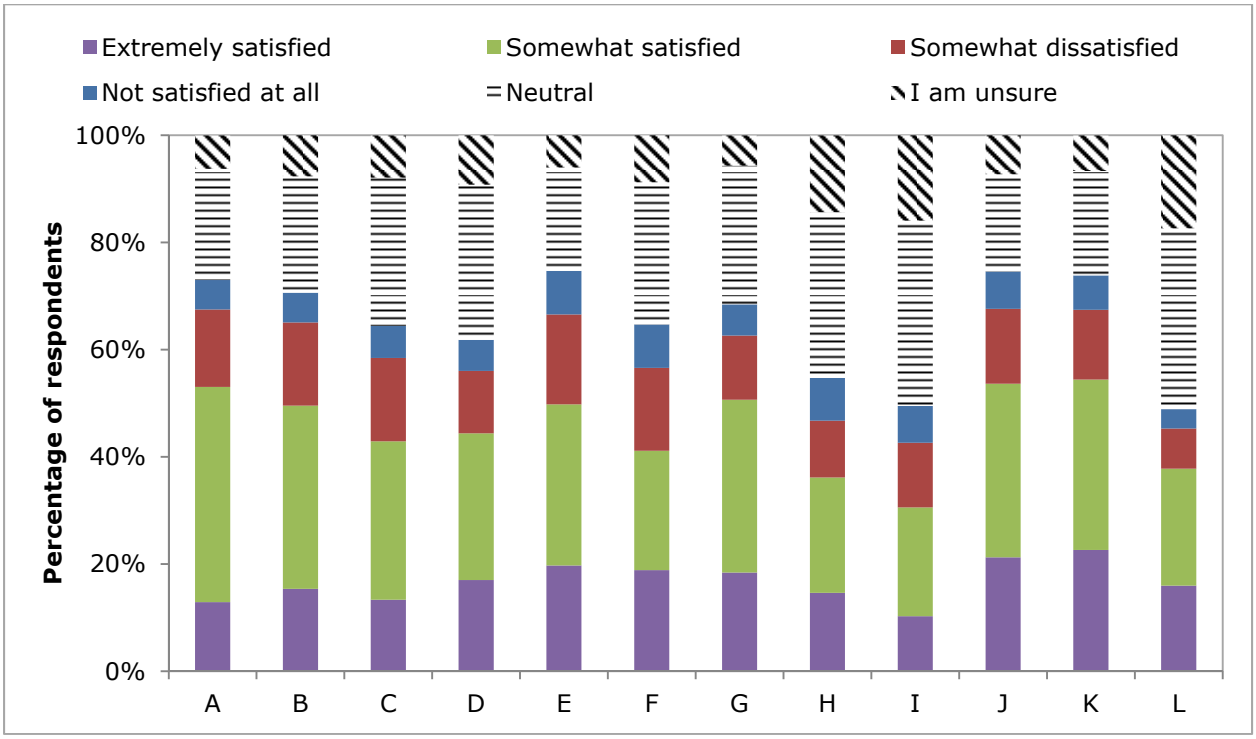

Figure 20. Anglers' satisfaction with recreational fisheries management.

Between 10% and 20% of Mid-Atlantic Region respondents stated that they were extremely satisfied across all items with the exception of protecting fish or shellfish species that are declining, and protecting marine habitat. For these items more that 20% of Mid-Atlantic Region respondents (21% and 23%, respectively) were extremely satisfied with management. However, Mid-Atlantic Region respondents appear to be generally satisfied or neutral about

recreational fisheries management if "Extremely satisfied" and "Somewhat satisfied" responses are combined. Using this approach, about half of the respondents were satisfied that recreational fisheries management was protecting marine habitats (54%); protecting fish or shellfish species that are declining (54%); managing fish stocks to provide high quality fishing opportunities (53%); monitoring and enforcing recreational fishing regulations (51%); ensuring that the annual harvest limit provides enough fish for recreational fisheries (50%); and restoring fish stocks that have been depleted (50%; Figure 20).

Across all items less than 10% of Mid-Atlantic Region respondents stated that they were not satisfied at all with any recreational fisheries management strategy. Combining the "Not satisfied at all" and "Somewhat dissatisfied" responses shows that anglers were most dissatisfied with ensuring that the annual harvest limit provides enough fish for recreational fisheries (25%); ensuring that state and federal regulations are consistent (24%); and adjusting regulations in a timely manner to address changing conditions of the fishery (21%). About one-third of Mid-Atlantic Region respondents were neutral about incorporating stakeholder interests in policy-making (35%); addressing conflicts between anglers and marine mammals; and using high quality data and assessments in policy-making (31%). Mid-Atlantic Region respondents were most unsure that management addresses conflicts between anglers and marine mammals (17%); incorporates stakeholder interests in policy-making (16%); and uses high quality data and assessments in policy-making (14%).

No positive significant correlations were found between angler avidity and any of the satisfaction items.

Negative significant correlations were found between avidity and the following satisfaction items, suggesting that as avidity increases anglers become less satisfied with the item:

- Ensure that state and federal regulations are consistent
- Using high quality data and assessments in policy-making

Significant differences were found in the response distributions by fishing mode to the following management satisfaction items (Table 29):

- Adjust regulations in a timely manner to address changing conditions of the fishery
- Using management strategies that minimize costs to anglers
- Ensure that the annual harvest limit provides enough fish for recreational fisheries
- Ensure that state and federal regulations are consistent
- Monitoring and enforcing recreational fishing regulations
- Using high quality data and assessments in policy-making
- Incorporating stakeholder interests in policy-making
- Protecting fish or shellfish species that are declining
- Protecting marine habitats
- Addressing conflicts between anglers and marine mammals

Table 29. Satisfaction with Management: Mid-Atlantic

Management Item	Fishing Mode	Extremely satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Not satisfied at all	I am unsure
Adjust regulations in a timely manner to address changing conditions of the fishery	Shore	5.73	10.74	12.61	5.67	1.75	3.14
	For-hire	1.39	2.29	1.69	1.87	0.48	0.60
	Private	5.79	17.61	13.87	8.08	3.86	2.83
Using management strategies that minimize costs to anglers	Shore	6.28	12.20	11.11	4.35	2.11	3.50
	For-hire	2.17	1.81	1.81	1.09	0.60	0.85
	Private	8.57	14.43	16.36	5.86	3.14	3.74
Ensure that the annual harvest limit provides enough fish for recreational fisheries	Shore	7.53	12.47	7.35	7.41	2.29	2.47
	For-hire	2.41	1.93	1.14	1.75	0.66	0.42
	Private	10.00	16.20	9.58	8.49	5.60	2.29
Ensure that state and federal regulations are consistent	Shore	7.41	8.37	10.84	6.93	2.11	3.98
	For-hire	2.47	1.81	1.45	1.27	0.72	0.66
	Private	8.98	11.75	14.70	8.73	4.76	3.07
Monitoring and enforcing recreational fishing regulations	Shore	7.40	11.55	9.51	6.08	2.53	2.53
	For-hire	2.35	2.41	1.56	1.08	0.30	0.66
	Private	8.36	18.17	15.04	5.48	3.07	1.93
Using high quality data and assessments in policy-making	Shore	5.74	8.76	12.63	4.47	1.99	5.92
	For-hire	1.93	1.33	2.24	1.33	0.66	0.85
	Private	7.07	11.42	16.31	5.56	5.56	6.22
Incorporating stakeholder interests in policy-making	Shore	4.30	7.63	15.26	4.97	1.33	6.00
	For-hire	1.51	1.76	2.24	1.27	0.48	0.97
	Private	4.85	11.08	16.78	6.72	4.85	8.00
Protecting fish or shellfish species that are declining	Shore	8.66	12.39	7.22	6.37	2.29	2.71
	For-hire	2.53	1.98	1.44	1.14	0.66	0.54
	Private	9.68	19.18	9.02	7.40	3.61	3.19
Protecting marine habitats	Shore	9.07	12.07	8.11	6.07	1.98	2.40
	For-hire	2.52	1.92	1.38	1.14	0.78	0.54
	Private	10.75	18.44	10.03	6.31	3.48	3.00
Addressing conflicts between anglers and marine mammals	Shore	6.63	8.01	13.55	3.92	1.33	6.20
	For-hire	1.93	1.81	2.41	0.72	0.24	1.20
	Private	7.41	12.47	18.31	2.77	1.69	9.40

Section 4.5. Managing the Marine Environment in the Mid-Atlantic Region

Mid-Atlantic Region respondents were also asked about larger issues relating to the marine environment. Mid-Atlantic Region respondents rated the threat severity of each issue below using a five-point scale including "Severe threat," "Moderate threat," "Not a very severe threat," "Not a threat at all," and "I am unsure." Results are presented in Figure 21.

A. Industrial pollution
B. Oil and gas extraction
C. Climate change
D. Ocean acidification
E. Shipping
F. Overfishing in commercial fisheries
G. Overfishing in recreational fisheries
H. Non-native species
I. Aquaculture
J. Alternative energy (e.g., wave or wind) development
K. Coastal development
L. Algal blooms
M. Marine habitat loss or degradation
N. Dams/barriers

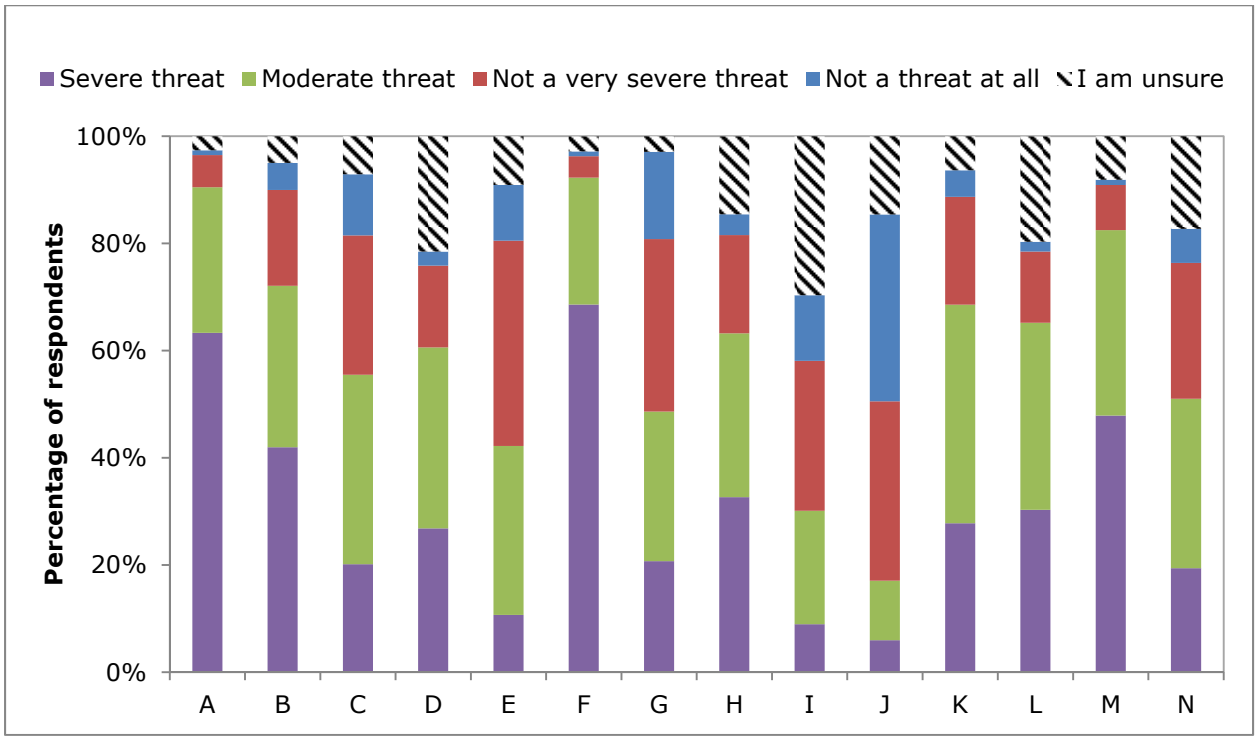

Figure 21. Threats to the marine environment.

Mid-Atlantic Region respondents rated most items as a threat to the marine environment (Figure 21). The most severe threats (based on the frequency of "Severe threat" ratings) included overfishing in commercial fisheries (69%), industrial pollution (63%), and marine habitat loss or

degradation (48%). At least twenty percent of Mid-Atlantic Region respondents thought all but one of the remaining items were a moderate threat –alternative energy development (11%). The only item that more than 30% of Mid-Atlantic Region respondents felt posed no threat at all to the marine environment was alternative energy development.

Section 4.6. About you and your Household in the Mid-Atlantic Region

This section elicits information on the Mid-Atlantic Region's respondents, their age, level of education, employment level, household income, sex, race and ethnicity. This standard demographic information allows us to better understand the unique characteristics of the Mid-Atlantic Region recreational fishermen. Information collected in this section is comparable to United States (U.S.) Census information. The U.S. Census does not collect or provide the information at a level to be able to identify a specific population of fishermen, or fishermen as a separate industry. Information about fishermen in the U.S. Census is aggregated with other industries such as forestry and agriculture. Collection of the data in this section serves to describe this specific population of fishermen and will allow for comparisons to the general U.S. public.

On average, Mid-Atlantic Region respondents worked 30 hours per week; that is most respondents were part-time workers. Most respondents' household income for 2012 was greater than $60,000 per year (Table 30). Only four percent of respondents had a household member who made a living (either part-time or full-time) from marine resources. Of these respondents that made a living from marine resources, the majority of the respondents was not concerned at all (54%) or slightly concerned (14%) that fisheries management decisions would affect their livelihood. Most of the respondents were male (87%), white (92%), middle-aged (average age was 55 years old) and had completed at least an associate's degree (Table 31).

Table 30. Respondents' income levels.

Income Category	Number of responses	Percentage (%)
Less than $20,000	105	5
$20,000 - $39,999	263	14
$40,000 - $59,999	298	15
$60,000 - $79,999	319	17
$80,000 - $99,999	276	14
$100,000 - $149,999	395	20
$150,000 - $199,999	148	8
$200,000 or more	129	7

Table 31. Highest level of education for respondents.

Highest level of education	Number of responses	Percentage (%)
12th grade or less	207	10
High school graduate or GED	568	28
Associate or technical school degree or college coursework	606	29
Bachelor degree	391	19
Advanced, professional, or doctoral degree or coursework	286	14

Results – South Atlantic

Section 5.1. Recreational Fishing Participation in the South Atlantic Region

Fishing Avidity and Location

On average, respondents in the South Atlantic Region have participated in recreational saltwater fishing for 25 years, and fished 24 days during the last year. Based on the number of days fished last year, three avidity categories were created using the first quartile, the combined second and third quartile, and the fourth quartile (Table 32).

Table 32. South Atlantic Fishing Avidity Categories

		Days fished last year	Avidity Category
Quantile 1:	< 25%	< 7 days	Low
Quantile 2:	25% - 75%	7 - 30	Medium
Quantile 3:	> 75%	> 30 days	High

Respondents were almost evenly split between taking their trips via shore mode (including beaches, piers, or bridges; 50%), and from a private boat (46%). About 4% of respondents took most of their trips from a for-hire vessel such as charter, party, or headboats. Approximately 47% respondents utilized a single mode for their trips, while 43% of respondents had taken trips from two modes (primarily shore and private boat) and 11% had taken trips from all three modes of fishing.

The South Atlantic Region includes the East Coast of Florida and in these areas recreational fishing in waters where federal regulations apply means fishing between 3 and 200 miles offshore. About 86% of respondents stated that most of their fishing during the last year was within three miles of shore, while 12% said they fished more than three miles from shore. Three percent stated that they were unsure if they fished more than or less than three miles from shore.

When asked about the number of trips that will likely be taken next year, approximately 83% of respondents felt the number would stay the same or increase, while 17% felt the number of trips they take will decrease. South Atlantic Region respondents who stated that the number of trips taken in the next year will likely decrease were also asked to rate reasons for the decrease using a five-point scale ranging from "Very likely" to "I am unsure." The most likely reason for fishing trip decreases (based on the frequency ratings of "Very likely") was fishing trip costs, followed by availability of leisure time. Table 33 shows the frequency of responses for each reason.

Table 33. Reasons for a decreased number of fishing trips in the South Atlantic Region during the next year.

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
	% of respondents				
Availability of leisure time	36	19	12	27	6
Personal finances	27	26	16	25	5
Fishing trip costs	38	27	12	21	3
Change of residence	10	6	3	79	3
Recreational fishing regulations	26	16	12	40	6
Conditions of the fishery (e.g., change in the abundance of fish)	13	20	10	48	8

Fishing Trip Characteristics

To help understand what South Atlantic Region anglers most want out of recreational fishing trips, South Atlantic Region respondents were asked about the importance of a variety of fishing trip characteristics. South Atlantic Region respondents were asked to rate the importance of each characteristic listed below using a five-point scale, ranging from "Extremely important" to "Not important at all." Results are presented in Figure 22.

A. Catch fish
B. Catch as many fish as I can for consumption
C. Catch-and-release as many fish as possible
D. Catch a trophy-sized fish
E. Target a particular species
F. Catch the bag limit of a species I am targeting
G. Know that I will encounter abundant fish
H. Fish in an area that is not heavily congested
I. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc.
J. See information concerning fishing regulations clearly posted
K. Have access to staff (park staff, marine operators, etc.) to answer questions or provide information
L. Have easy access to weather and tide information
M. Fish in a scenic area
N. Fish with family or friends
O. Teach others about fishing

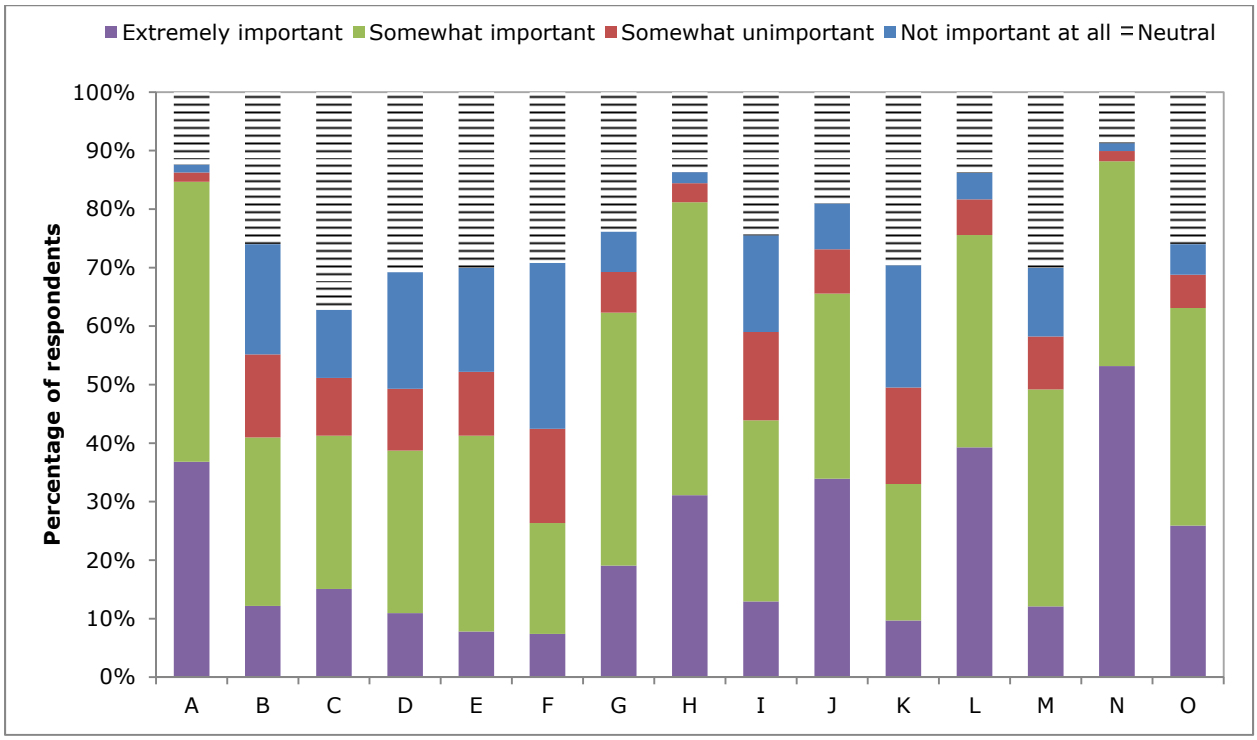

Figure 22. Importance of fishing trip characteristics.

Figure 22 suggests that the most important trip characteristics (based on the frequency of "Extremely important" ratings) include fishing with family and friends (53%), having easy access to weather and tide information (39%), and catching fish (37%). The least important trip characteristics (based on the frequency of "Not important at all" ratings) included catch the bag limit of a species I am targeting (28%) have access to staff to answer questions or provide information (21%). Other less important characteristics included catching a trophy-sized fish (20%), catch as many fish as I can for consumption (19%), and targeting a particular species (18%). When the ratings of "Extremely important" and "Somewhat important" are combined, the top three characteristics include fishing with family and friends (88%), catching fish (85%), and fishing in an area that is not heavily congested (81%).

Section 5.2. Preferences for Management Strategies in the South Atlantic Region

To help understand attitudes toward different types of management strategies, South Atlantic Region anglers were asked to rate their preferences for strategies that included regulating effort, gear, and catch, and other types of strategies such as protected areas. South Atlantic Region respondents rated each of the strategies below using a five-point scale of "Strongly prefer," "Somewhat prefer," "Slightly prefer," "Do not prefer at all," and "I am unsure." Results are presented in Figure 23.

A. Establish minimum size limits of the fish you can keep
B. Establish maximum size limits of the fish you can keep
C. Limit the total number of fish you can keep
D. Manage some species as catch-and-release only
E. Establish longer seasons with more restrictive bag limits
F. Establish shorter seasons with less restrictive bag limits
G. Establish shorter seasons with a larger variety of species you can legally catch
H. Increase the recreational harvest limit by decreasing the commercial harvest limit
I. Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
J. Restrict certain types of fishing gear
K. Require the use of release techniques that reduce fish mortality
L. Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
M. Protect and restore fish habitat that has been degraded
N. Designate some areas of the ocean as marine reserves with catch-and-release only fishing
O. Close some areas of the ocean for certain seasons

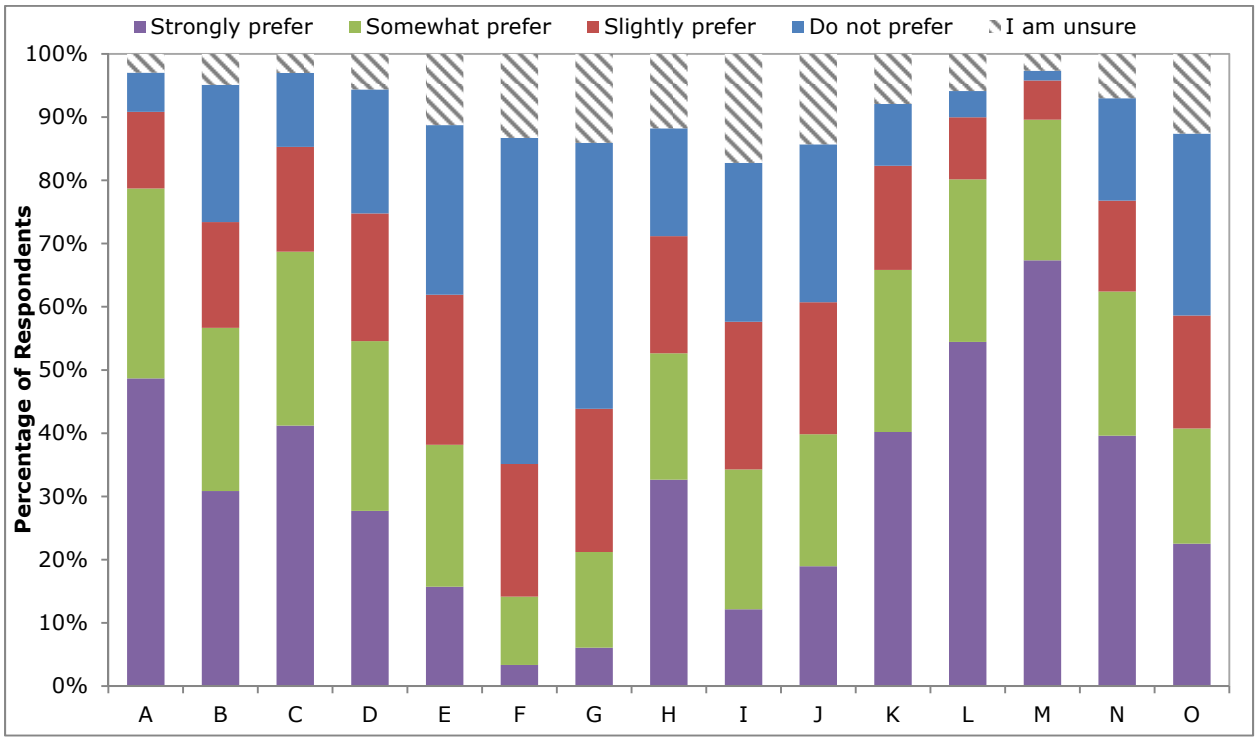

Figure 23. Preferences for management strategies in the South Atlantic Region.

The most preferred strategies for managing fisheries in the South Atlantic Region (based on the frequency of "Strongly prefer" ratings) include protecting and restoring degraded fish habitat (67%), providing artificial fish habitat in some areas of the ocean (54%), and establishing minimum size limits of the fish that can be kept (49%). The least preferred strategies for managing fisheries (based on the frequency of "Do not prefer at all" ratings) both focus on establishing shorter seasons. Establishing shorter seasons with less restrictive bag limits was not preferred at all by 52% of South Atlantic Region respondents, and establishing shorter seasons with a larger variety of species which can be legally caught was not preferred at all by 42% of South Atlantic Region respondents. In contrast, establishing longer seasons with more restrictive bag limits was not preferred at all by 27% of respondents. Combining the "Strongly prefer" and "Somewhat prefer" response options does not alter the rank order of the most preferred management strategies.

Two questions asked South Atlantic Region respondents about issues of allocation between different types of anglers: increasing the recreational harvest limit by decreasing the commercial harvest limit; and dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers). Thirty-three percent of the South Atlantic Region respondents strongly preferred, 36% did not prefer at all or slightly preferred, 20% somewhat preferred, and 12% were unsure about management increasing the recreational harvest limit by decreasing the commercial harvest limit. South Atlantic Region respondents did not prefer at all (25%), slightly preferred (23%), or somewhat preferred (22%) that management divide the recreational harvest limit among private anglers and for-hire/charter boat anglers. Only 12% of the South Atlantic Region respondents strongly preferred this management strategy and more respondents were unsure (17%).

More than 10% of the South Atlantic Region respondents were unsure about their preferences for a number of management strategies: dividing the recreational harvest limit among different modes (17%); restricting certain types of fishing gear (14%); establishing shorter seasons with a larger variety of species that can be legally caught (14%); closing some areas of the ocean for certain seasons (13%); establishing shorter seasons with less restrictive bag limits (13%); increasing the recreational harvest limit by decreasing the commercial harvest limit (12%); and establishing longer seasons with more restrictive bag limits (11%).

Positive significant correlations were found between angler avidity and the following management strategies, suggesting that as avidity increases these management strategies become more preferable:

- Establish minimum size limits of the fish which can be kept
- Establish maximum size limits of the fish which can be kept
- Establish longer seasons with more restrictive bag limits
- Increase the recreational harvest limit by decreasing the commercial harvest limit
- Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
- Restrict certain types of fishing gear
- Require the use of release techniques that reduce fish mortality
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
- Protect and restore fish habitat that has been degraded

Negative significant correlations were found between avidity and the following management strategies, suggesting that as avidity increases these management strategies become less preferable:

- Close some areas of the ocean for certain seasons

Significant differences were found in the response distributions by fishing mode to the following management strategies (Table 34):

- Establish minimum size limits of the fish which can be kept
- Establish maximum size limits of the fish which can be kept
- Manage some species as catch-and-release only
- Establish shorter seasons with a larger variety of species you can legally catch
- Increase the recreational harvest limit by decreasing the commercial harvest limit
- Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
- Designate some areas of the ocean as marine reserves with catch-and-release only fishing
- Close some areas of the ocean for certain seasons

Table 34. Preferences for Management Strategies by Fishing Mode: South Atlantic

Management strategy	Fishing Mode	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure
Establish minimum size limits of the fish which can be kept	Shore	24.58	15.62	6.19	2.31	1.68
	For-hire	1.85	0.93	0.58	0.29	0.12
	Private	22.90	13.53	5.38	3.12	0.93
Establish maximum size limits of the fish which can be kept	Shore	15.34	12.79	8.74	10.82	2.60
	For-hire	1.16	0.81	0.93	0.64	0.23
	Private	14.53	12.04	7.81	9.84	1.74
Manage some species as catch-and-release only	Shore	15.08	13.98	9.78	8.56	2.97
	For-hire	1.16	1.22	0.58	0.52	0.17
	Private	11.36	12.17	9.49	11.01	1.92
Establish shorter seasons with a larger variety of species you can legally catch	Shore	2.72	7.40	11.56	20.98	7.75
	For-hire	0.40	0.81	0.69	1.27	0.52
	Private	2.54	6.42	10.12	21.33	5.49
Increase the recreational harvest limit by decreasing the commercial harvest limit	Shore	12.52	10.73	10.27	10.10	6.75
	For-hire	1.10	0.69	0.81	0.52	0.63
	Private	19.73	8.08	7.56	6.52	3.98
Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)	Shore	4.80	10.29	12.90	12.38	9.77
	For-hire	0.52	0.64	0.98	0.93	0.69
	Private	6.71	10.70	9.54	12.61	6.54
Designate some areas of the ocean as marine reserves with catch-and-release only fishing	Shore	21.22	11.53	7.27	6.57	3.75
	For-hire	1.10	1.15	0.52	0.75	0.23
	Private	16.90	9.80	7.27	9.40	2.54
Close some areas of the ocean for certain seasons	Shore	13.31	8.01	9.80	11.47	7.72
	For-hire	0.52	0.98	0.52	1.15	0.58
	Private	9.28	7.90	7.67	17.75	3.34

Section 5.3. Preferences for Management Objectives in the South Atlantic Region

To help understand the South Atlantic Region angler attitudes toward broad-level management objectives, South Atlantic Region respondents were asked to indicate how important they believe different management objectives are for recreational fisheries management to pursue. Respondents rated each of the objectives below using a six-point scale of "Extremely important," "Somewhat important," "Neutral," "Somewhat unimportant," "Not important at all," and "I am unsure." Results are presented in Figure 24.

A. Ensure that large quantities of fish are available to catch
B. Ensure that many different fish species are available to catch
C. Ensure that adequate numbers of trophy-sized fish are available to catch
D. Reduce the mortality associated with releasing fish that are not legal to keep
E. Ensure that future generations will have high quality fishing opportunities
F. Allocate some quota from commercial fisheries to recreational fisheries
G. Recover fish stocks that have been depleted
H. Protect marine biodiversity
I. Protect threatened or endangered marine species
J. Achieve consistency between state and federal fishing regulations
K. Simplify recreational fishing regulations
L. Monitor and enforce recreational fishing regulations
M. Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
N. Ensure opportunities to fish in high quality fishing areas
O. Ensure that fishing sites are not heavily congested

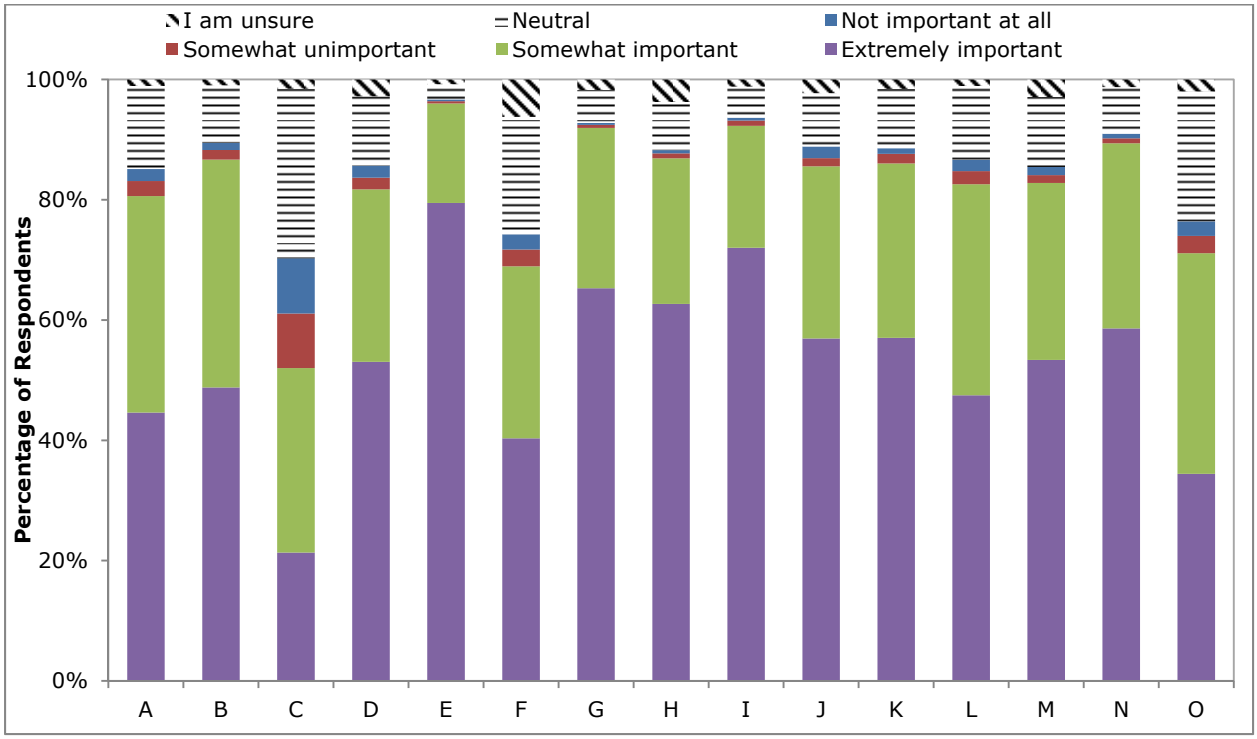

Figure 24. Preferences for management objectives

Over 50% of South Atlantic Region respondents felt that nine of the fifteen management objectives were extremely important. The most important management objectives (based on the frequency of "Extremely important" ratings) included ensuring that future generations will have high quality fishing opportunities (79%), protecting threatened and endangered marine species (72%), and recovering fish stocks that have been depleted (65%). Generally less than 5% of South Atlantic Region respondents felt that any one of the fifteen management objectives was not important at all – the exception being ensuring that adequate numbers of trophy-sized fish are available. Approximately 9% of South Atlantic Region respondents felt that objective was not important at all. Combining the "Extremely important" and "Somewhat important" categories to make a broader category of importance does not alter the rank order of the top three most important objectives.

Positive significant correlations were found between angler avidity and the following management objectives, suggesting that as avidity increases these management objectives become more important:

- Ensure that many different fish species are available to catch
- Ensure that adequate numbers of trophy-sized fish are available to catch
- Reduce the mortality associated with releasing fish that are not legal to keep
- Allocate some quota from commercial fisheries to recreational fisheries
- Recover fish stocks that have been depleted
- Monitor and enforce recreational fishing regulations
- Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making

No negative significant correlations were found between avidity and any of the management objectives.

Significant differences were found in the response distributions by fishing mode to the following management objectives (Table 35):

- Reduce the mortality associated with releasing fish that are not legal to keep
- Allocate some quota from commercial fisheries to recreational fisheries
- Achieve consistency between state and federal fishing regulations
- Simplify recreational fishing regulations
- Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making

Table 35. Importance of Management Objectives by Fishing Mode: South Atlantic

Management Objective	Fishing Mode	Extremely important	Somewhat important	Neutral	Somewhat unimportant	Not important at all	I am unsure
Reduce the mortality associated with releasing fish that are not legal to keep	Shore	25.42	16.08	5.76	0.92	0.69	1.44
	For-hire	1.79	1.15	0.46	0.17	0.00	0.17
	Private	25.99	11.87	5.24	0.81	1.15	0.86
Allocate some quota from commercial fisheries to recreational fisheries	Shore	16.77	15.85	11.57	1.85	1.21	3.18
	For-hire	1.16	1.21	0.81	0.12	0.12	0.35
	Private	22.50	11.74	6.88	1.10	1.21	2.37
Achieve consistency between state and federal fishing regulations	Shore	27.51	15.69	4.56	0.69	0.69	1.27
	For-hire	2.08	0.98	0.63	0.00	0.00	0.06
	Private	26.82	12.51	3.40	0.75	1.44	0.92
Simplify recreational fishing regulations	Shore	27.90	16.54	4.23	0.58	0.35	0.69
	For-hire	1.84	1.21	0.58	0.00	0.00	0.12
	Private	27.09	11.53	5.01	0.98	0.63	0.63
Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making	Shore	24.03	17.23	6.34	0.75	0.52	1.56
	For-hire	1.67	1.21	0.58	0.06	0.12	0.06
	Private	27.49	11.99	4.38	0.40	0.69	0.92

Section 5.4. Satisfaction with Recreational Fisheries Management in the South Atlantic Region

South Atlantic Region respondents were asked to indicate how satisfied they were with various aspects of recreational fisheries management, listed below, using a six-point scale of "Extremely satisfied," "Somewhat satisfied," "Neutral," "Somewhat dissatisfied," "Not satisfied at all," and "I am unsure." Results are presented in Figure 25.

A. Managing fish stocks to provide high quality fishing opportunities
B. Restoring fish stocks that have been depleted
C. Adjust regulations in a timely manner to address changing conditions of the fishery
D. Using management strategies that minimize costs to anglers
E. Ensure that the annual harvest limit provides enough fish for recreational fisheries
F. Ensure that state and federal regulations are consistent
G. Monitoring and enforcing recreational fishing regulations
H. Using high quality data and assessments in policy-making
I. Incorporating stakeholder interests in policy-making
J. Protecting fish or shellfish species that are declining
K. Protecting marine habitats
L. Addressing conflicts between anglers and marine mammals

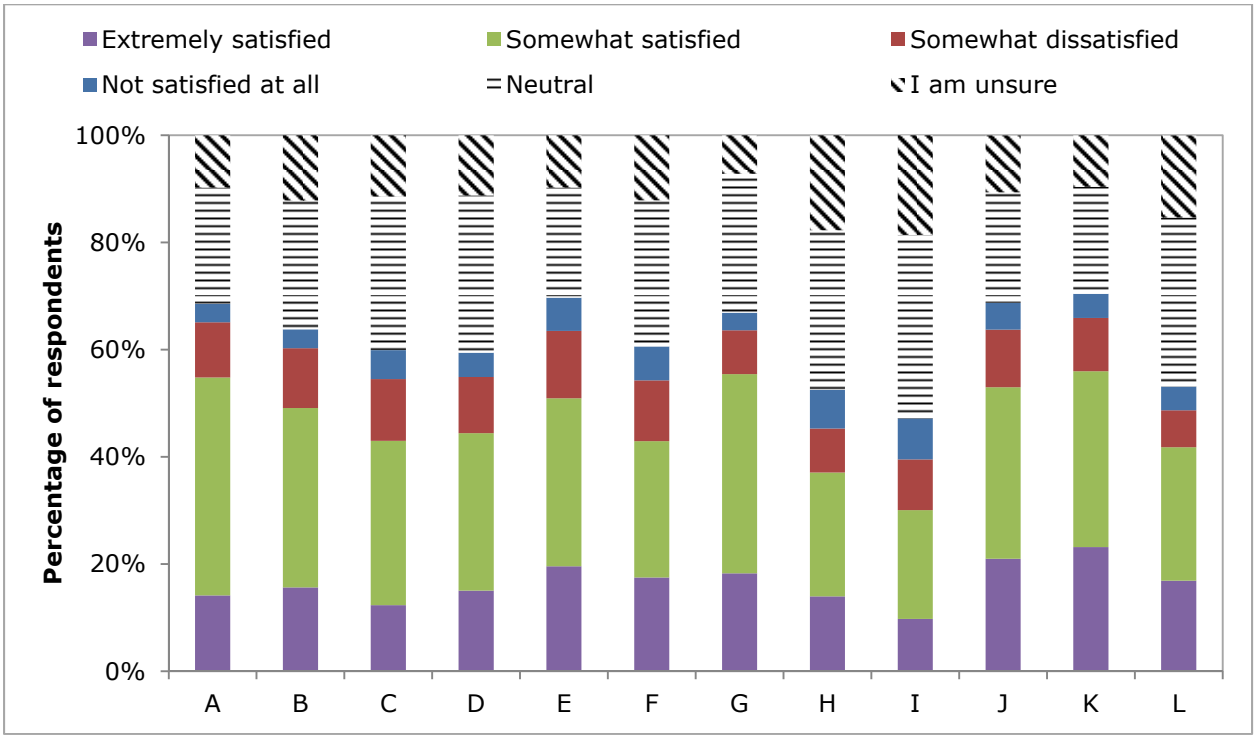

Figure 25. Anglers' satisfaction with recreational fisheries management.

Between 10% and 20% of South Atlantic Region respondents stated that they were extremely satisfied across all items with the exception of protecting marine habitats, and protecting fish or shellfish species that are declining. For these items, just over one-fifth of South Atlantic Region respondents (23% and 21%, respectively) were extremely satisfied with management. However, South Atlantic Region respondents appear to be generally satisfied or neutral about

recreational fisheries management if "Extremely satisfied" and "Somewhat satisfied" responses are combined. Using this approach, about half of the respondents were satisfied that recreational fisheries management was protecting marine habitats (56%); monitoring and enforcing recreational fishing regulations (55%); managing fish stocks to provide high quality fishing opportunities (55%); protects fish or shellfish species that are declining (53%); and ensuring annual harvest limits provides enough fish for recreational fisheries (51%; Figure 25).

Across all items less than 10% of South Atlantic Region respondents stated that they were not satisfied at all with any recreational fisheries management strategy. Combining the "Not satisfied at all" and "Somewhat dissatisfied" responses shows that anglers were most dissatisfied with ensuring that the annual harvest limit provides enough fish for recreational fisheries (19%); ensuring that state and federal regulations are consistent (18%); and incorporates stakeholder interests in policy-making (17%). About one-third of South Atlantic Region respondents were neutral about using high quality data and assessments in policy-making; and addressing conflicts between anglers and marine mammals. South Atlantic Region respondents were most unsure that management incorporates stakeholder interests in policy-making (19%); uses high quality data and assessments in policy-making (18%); and address conflicts between anglers and marine mammals (15%).

No positive significant correlations were found between angler avidity and any of the satisfaction items.

Negative significant correlations were found between avidity and the following satisfaction items, suggesting that as avidity increases anglers become less satisfied with the item:

- Using high quality data and assessments in policy-making
- Incorporating stakeholder interests in policy-making

Significant differences were found in the response distributions by fishing mode to the following management satisfaction items (Table 36):

- Managing fish stocks to provide high quality fishing opportunities
- Restoring fish stocks that have been depleted
- Adjust regulations in a timely manner to address changing conditions of the fishery
- Using management strategies that minimize costs to anglers
- Ensure that the annual harvest limit provides enough fish for recreational fisheries
- Ensure that state and federal regulations are consistent
- Monitoring and enforcing recreational fishing regulations
- Using high quality data and assessments in policy-making
- Incorporating stakeholder interests in policy-making

Table 36. Satisfaction with Management by Fishing Mode: South Atlantic

Management Item	Fishing Mode	Extremely satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Not satisfied at all	I am unsure
Managing fish stocks to provide high quality fishing opportunities	Shore	7.76	20.97	10.60	4.23	1.04	5.79
	For-hire	0.29	1.56	0.75	0.70	0.06	0.41
	Private	5.79	18.37	10.43	5.45	2.55	3.24
Restoring fish stocks that have been depleted	Shore	8.11	16.21	12.16	5.39	1.45	7.18
	For-hire	0.29	1.39	0.81	0.64	0.06	0.58
	Private	6.37	16.27	10.89	5.27	2.32	4.63
Adjust regulations in a timely manner to address changing conditions of the fishery	Shore	6.38	15.96	15.32	4.88	1.39	6.62
	For-hire	0.12	1.39	1.28	0.29	0.17	0.52
	Private	5.51	13.35	12.36	6.38	4.00	4.06
Using management strategies that minimize costs to anglers	Shore	7.38	16.27	14.12	4.76	1.74	6.22
	For-hire	0.29	1.22	1.22	0.52	0.12	0.41
	Private	6.51	12.38	14.58	4.82	2.91	4.53
Ensure that the annual harvest limit provides enough fish for recreational fisheries	Shore	9.00	7.12	12.01	4.70	1.97	5.75
	For-hire	0.64	1.04	0.81	0.75	0.12	0.41
	Private	9.72	13.58	7.66	7.20	4.35	3.71
Ensure that state and federal regulations are consistent	Shore	8.77	13.60	14.24	4.88	1.69	7.38
	For-hire	0.29	1.10	0.87	0.52	0.35	0.64
	Private	7.67	11.21	11.97	5.64	4.88	4.30
Monitoring and enforcing recreational fishing regulations	Shore	8.82	19.43	13.11	4.29	1.10	4.23
	For-hire	0.35	1.68	1.16	0.17	0.12	0.29
	Private	9.28	16.94	10.73	4.23	2.15	2.55
Using high quality data and assessments in policy-making	Shore	7.13	12.41	15.78	3.07	1.86	10.15
	For-hire	0.35	0.75	1.04	0.46	0.29	0.87
	Private	6.38	10.09	12.18	5.10	5.63	6.44
Incorporating stakeholder interests in policy-making	Shore	4.82	11.55	17.18	3.77	2.61	10.50
	For-hire	0.17	0.70	1.57	0.46	0.23	0.64
	Private	4.82	8.47	14.45	5.51	4.93	7.60

Section 5.5. Managing the Marine Environment in the South Atlantic Region

South Atlantic Region respondents were also asked about larger issues relating to the marine environment. South Atlantic Region respondents rated the threat severity of each issue below using a five-point scale including "Severe threat," "Moderate threat," "Not a very severe threat," "Not a threat at all," and "I am unsure." Results are presented in Figure 26.

A. Industrial pollution
B. Oil and gas extraction
C. Climate change
D. Ocean acidification
E. Shipping
F. Overfishing in commercial fisheries
G. Overfishing in recreational fisheries
H. Non-native species
I. Aquaculture
J. Alternative energy (e.g., wave or wind) development
K. Coastal development
L. Algal blooms
M. Marine habitat loss or degradation
N. Dams/barriers

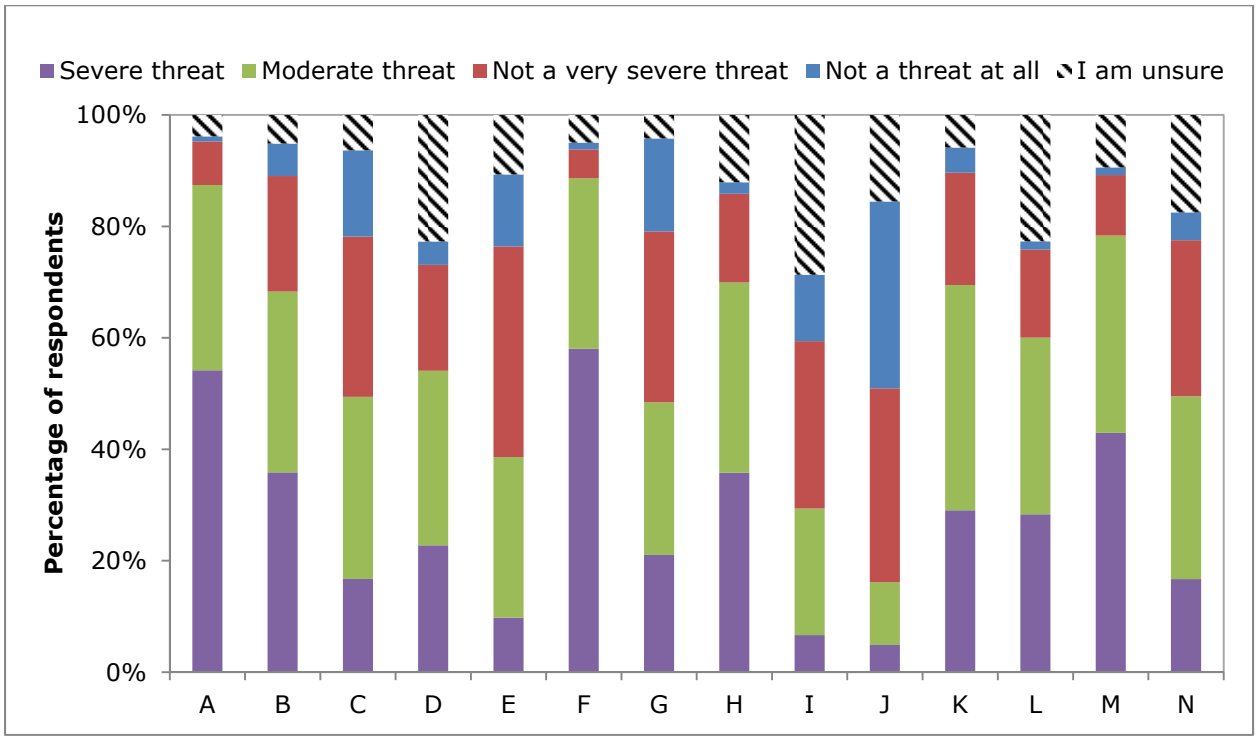

Figure 26. Threats to the marine environment.

South Atlantic Region respondents rated most items as a threat to the marine environment (Figure 26). The most severe threats (based on the frequency of "Severe threat" ratings) included overfishing in commercial fisheries (58%), industrial pollution (54%), and marine

habitat loss or degradation (43%). Twenty to forty percent of South Atlantic Region respondents thought all but five of the remaining items were a moderate threat – the five exceptions were climate change (17%); dams/barriers (17%); shipping (10%); aquaculture (7%); and alternative energy development (5%). The only item that more than 34% of South Atlantic Region respondents felt posed no threat at all to the marine environment was alternative energy development.

Section 5.6. About you and your Household in the South Atlantic Region

This section elicits information on the South Atlantic Region's respondents, their age, level of education, employment level, household income, sex, race and ethnicity. This standard demographic information allows us to better understand the unique characteristics of the South Atlantic Region recreational fishermen. Information collected in this section is comparable to United States (U.S.) Census information. The U.S. Census does not collect or provide the information at a level to be able to identify a specific population of fishermen, or fishermen as a separate industry. Information about fishermen in the U.S. Census is aggregated with other industries such as forestry and agriculture. Collection of the data in this section serves to describe this specific population of fishermen and will allow for comparisons to the general U.S. public.

On average, South Atlantic Region respondents worked 35 hours per week; that is most respondents were part-time workers. Most respondents' household income for 2012 was greater than $60,000 per year (Table 37). Only four percent of respondents had a household member who made a living (either part-time or full-time) from marine resources. Of these respondents that made a living from marine resources, the majority of the respondents was not concerned at all (42%) or slightly concerned (23%) that fisheries management decisions would affect their livelihood. Most of the respondents were male (79%), white (93%), middle-aged (average age was 51 years old) and had completed at least an associate's degree (Table 38).

Table 37. Respondents' income levels.

Income Category	Number of responses	Percentage (%)
Less than $20,000	138	7
$20,000 - $39,999	245	13
$40,000 - $59,999	340	18
$60,000 - $79,999	300	16
$80,000 - $99,999	270	14
$100,000 - $149,999	359	19
$150,000 - $199,999	122	6
$200,000 or more	133	7

Table 38. Highest level of education for respondents.

Highest level of education	Number of responses	Percentage (%)
12th grade or less	161	8
High school graduate or GED	462	23
Associate or technical school degree or college coursework	603	30
Bachelor degree	481	24
Advanced, professional, or doctoral degree or coursework	300	15

Results – Gulf of Mexico Region

Section 6.1. Recreational Fishing Participation in the Gulf of Mexico

Fishing Avidity and Location

On average, respondents in the Gulf of Mexico have participated in recreational saltwater fishing for 25 years, and fished 29 days during the last year. Based on the number of days fished last year, three avidity categories were created using the first quartile, the combined second and third quartile, and the fourth quartile (Table 39).

Table 39. Gulf of Mexico Fishing Avidity Categories

		Days fished last year	Avidity Category
Quantile 1:	< 25%	< 7 days	Low
Quantile 2:	25% - 75%	7 - 30	Medium
Quantile 3:	> 75%	> 30 days	High

Most respondents (65%) stated that most of their trips during the last year were taken from a private boat. About 31% of respondents stated that most trips were taken from a shore mode, including beaches, piers, or bridges. About 5% of respondents took most of their trips from a for-hire vessel such as charter, party, or headboats. Approximately 47% utilized one mode for their fishing trips, while 42% of respondents had taken trips from two modes (primarily shore and private boat) and 11% had taken trips from all three modes of fishing.

For most Gulf of Mexico states, recreational fishing in waters where federal regulations apply means fishing between 3 and 200 miles offshore (federal regulations apply in waters between 9 and 200 miles offshore for the Florida Gulf Coast and Texas). The majority (78%) of respondents stated that most of their fishing during the last year was within three miles from shore, while 21% stated that most of their trips occurred further than three miles from shore. One percent stated that they were unsure if they fished more than or less than three miles from shore.

When asked about the number of trips that will likely be taken next year, approximately 80% of respondents felt the number would stay the same or increase, while 20% felt the number of trips they take will decrease. Gulf of Mexico respondents who stated that the number of trips taken in the next year will likely decrease were also asked to rate reasons for the decrease using a five-point scale ranging from "Very likely" to "I am unsure." The most likely reason for fishing trip decreases (based on the frequency ratings of "Very likely") was recreational fishing regulations, followed by fishing trip costs. Table 40 shows the frequency of responses for each reason.

Table 40. Reasons for a decreased number of fishing trips in the Gulf of Mexico during the next year.

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
	% of respondents				
Availability of leisure time	29	23	11	33	4
Personal finances	24	27	13	33	3
Fishing trip costs	34	26	12	27	2
Change of residence	10	3	4	79	4
Recreational fishing regulations	36	14	8	37	5
Conditions of the fishery (e.g., change in the abundance of fish)	14	11	15	51	8

Fishing Trip Characteristics

To help understand what Gulf of Mexico anglers most want out of recreational fishing trips, Gulf of Mexico respondents were asked about the importance of a variety of fishing trip characteristics. Gulf of Mexico respondents were asked to rate the importance of each characteristic listed below using a five-point scale, ranging from "Extremely important" to "Not important at all." Results are presented in Figure 27.

A. Catch fish
B. Catch as many fish as I can for consumption
C. Catch-and-release as many fish as possible
D. Catch a trophy-sized fish
E. Target a particular species
F. Catch the bag limit of a species I am targeting
G. Know that I will encounter abundant fish
H. Fish in an area that is not heavily congested
I. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc.
J. See information concerning fishing regulations clearly posted
K. Have access to staff (park staff, marine operators, etc.) to answer questions or provide information
L. Have easy access to weather and tide information
M. Fish in a scenic area
N. Fish with family or friends
O. Teach others about fishing

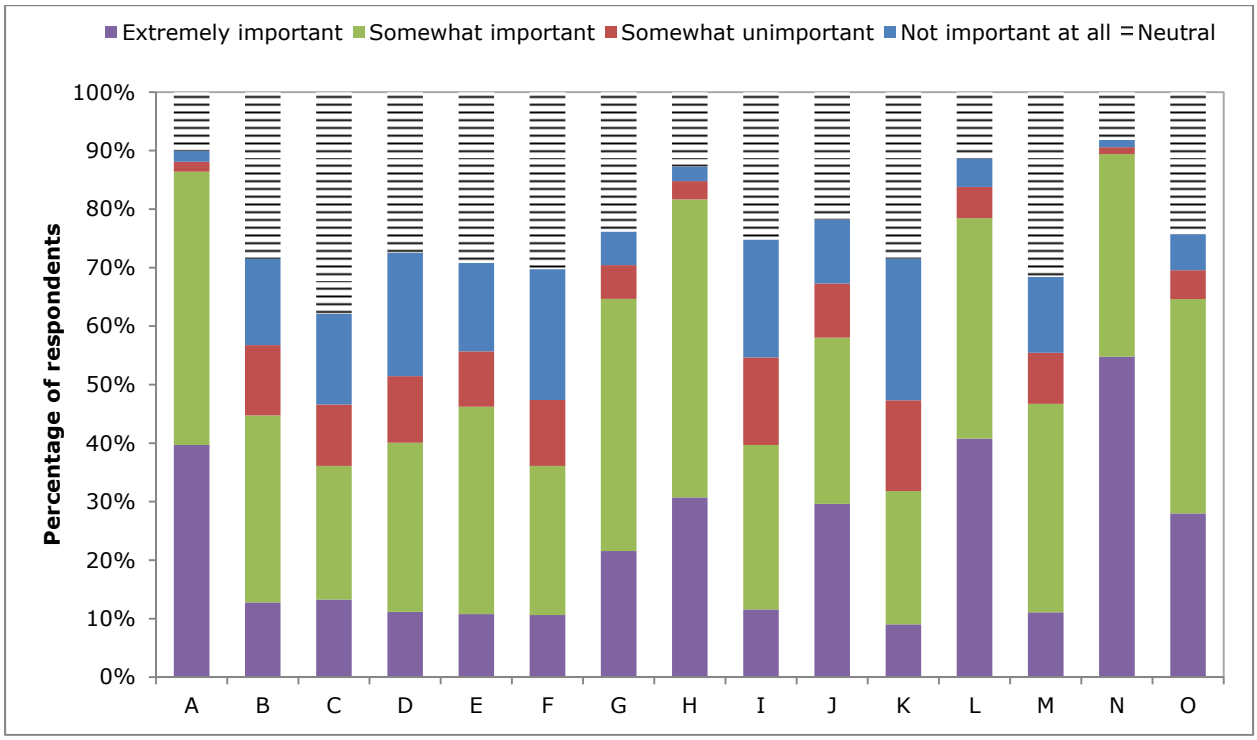

Figure 27. Importance of fishing trip characteristics.

Figure 27 suggests that the most important trip characteristics (based on the frequency of "Extremely important" ratings) include fishing with family and friends (55%), having easy access to weather and tide information (41%), and catching fish (40%). The least important trip characteristics (based on the frequency of "Not important at all" ratings) included having access to staff to answer questions and provide information (24%) and catch the bag limit of a species being targeted (22%). Other less important characteristics included catching a trophy-sized fish (21%), being close to amenities such as parking and restrooms (20%), and catch-and-release as many fish as possible (15%). When the ratings of "Extremely important" and "Somewhat important" are combined, the top three characteristics include fishing with family and friends (89%), catching fish (86%), and fishing in an area that is not heavily congested (82%).

Section 6.2. Preferences for Management Strategies in the Gulf of Mexico

To help understand attitudes toward different types of management strategies, Gulf of Mexico anglers were asked to rate their preferences for strategies that included regulating effort, gear, and catch, and other types of strategies such as protected areas. Gulf of Mexico respondents rated each of the strategies below using a five-point scale of "Strongly prefer," "Somewhat prefer," "Slightly prefer," "Do not prefer at all," and "I am unsure." Results are presented in Figure 28.

A. Establish minimum size limits of the fish you can keep
B. Establish maximum size limits of the fish you can keep
C. Limit the total number of fish you can keep
D. Manage some species as catch-and-release only
E. Establish longer seasons with more restrictive bag limits
F. Establish shorter seasons with less restrictive bag limits
G. Establish shorter seasons with a larger variety of species you can legally catch
H. Increase the recreational harvest limit by decreasing the commercial harvest limit
I. Divide the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers)
J. Restrict certain types of fishing gear
K. Require the use of release techniques that reduce fish mortality
L. Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
M. Protect and restore fish habitat that has been degraded
N. Designate some areas of the ocean as marine reserves with catch-and-release only fishing
O. Close some areas of the ocean for certain seasons

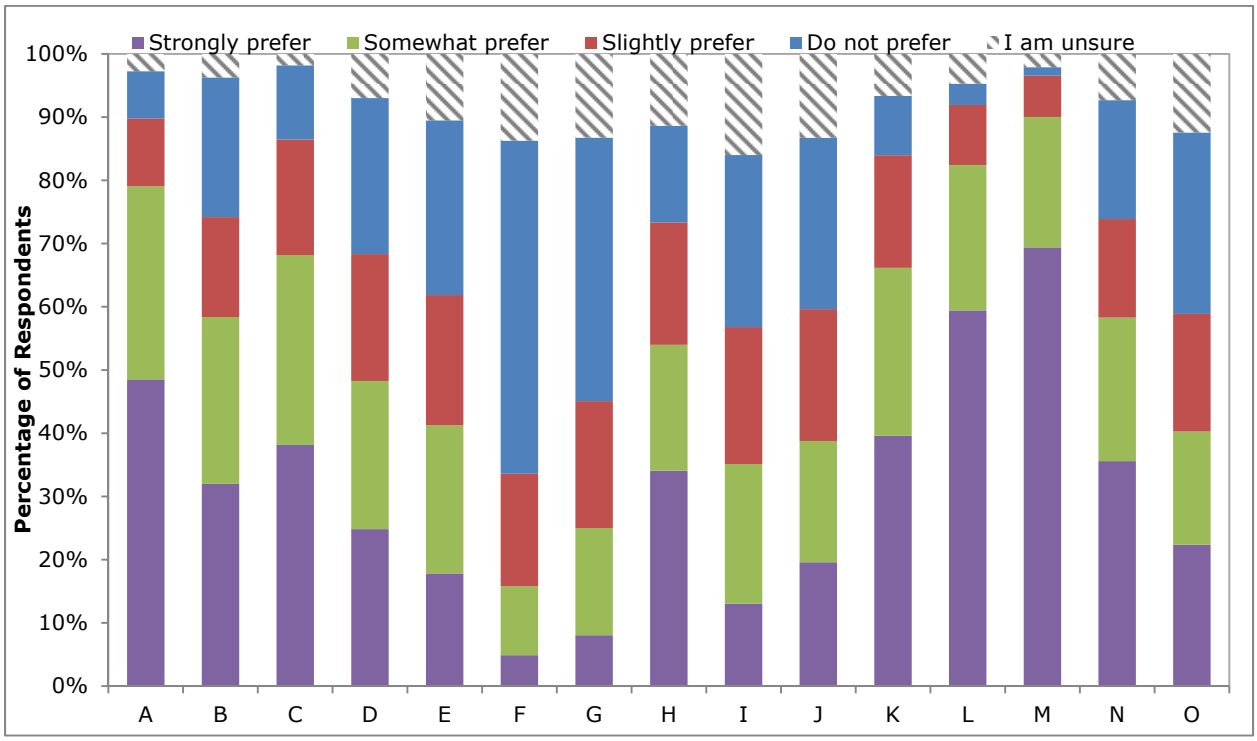

Figure 28. Preferences for management strategies in the Gulf of Mexico.

The most preferred strategies for managing fisheries in the Gulf of Mexico (based on the frequency of "Strongly prefer" ratings) include protecting and restoring degraded fish habitat (69%), providing artificial fish habitat in some areas of the ocean (59%), and establishing minimum size limits of the fish that can be kept (49%). The least preferred strategies for managing fisheries (based on the frequency of "Do not prefer at all" ratings) both focus on establishing shorter seasons. Establishing shorter seasons with less restrictive bag limits was not preferred at all by 53% of Gulf of Mexico respondents, and establishing shorter seasons with a larger variety of species you can legally catch was not preferred at all by 42% of Gulf of Mexico respondents. In contrast, establishing longer seasons with more restrictive bag limits was not preferred at all by 28% of respondents. Combining the "Strongly prefer" and "Somewhat prefer" response options does not alter the rank order of the most preferred management strategies.

Two questions asked Gulf of Mexico respondents about issues of allocation between different types of fishermen: increasing the recreational harvest limit by decreasing the commercial harvest limit; and dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers). Thirty-four percent of the Gulf of Mexico respondents strongly preferred, 20% somewhat preferred, 19% slightly preferred , 15% did not prefer at all, and 11% were unsure about management increasing the recreational harvest limit by decreasing the commercial harvest limit. Gulf of Mexico respondents did not prefer at all (27%), slightly preferred (22%), or somewhat preferred (22%) that management divide the recreational harvest limit among private anglers and for-hire/charter boat anglers. Only 13% of the Gulf of Mexico respondents strongly preferred this management strategy and more respondents were unsure (16%).

More than 10% of the Gulf of Mexico respondents were unsure about their preferences for a number of management strategies: dividing the recreational harvest limit among different modes (16%); establishing shorter seasons with less restrictive bag limits (14%); establishing shorter seasons with a larger variety of species that can be legally caught (13%); restricting certain types of fishing gear (13%); closing some areas of the ocean for certain seasons (12%); increasing the recreational harvest limit by decreasing the commercial harvest limit (11%); and establishing longer seasons with more restrictive bag limits (10%).

Positive significant correlations were found between angler avidity and the following management strategies, suggesting that as avidity increases these management strategies become more preferable:

- Establish maximum size limits of the fish you can keep
- Increase the recreational harvest limit by decreasing the commercial harvest limit
- Restrict certain types of fishing gear
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
- Protect and restore fish habitat that has been degraded

Negative significant correlations were found between avidity and the following management strategies, suggesting that as avidity increases these management strategies become less preferable:

- Establish shorter seasons with a larger variety of species you can legally catch

Significant differences were found in the response distributions by fishing mode to the following management strategies (Table 41):

- Manage some species as catch-and-release only
- Establish longer seasons with more restrictive bag limits
- Establish shorter seasons with less restrictive bag limits
- Establish shorter seasons with a larger variety of species you can legally catch
- Increase the recreational harvest limit by decreasing the commercial harvest limit
- Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean
- Designate some areas of the ocean as marine reserves with catch-and-release only fishing
- Close some areas of the ocean for certain seasons

Table 41. Preferences for Management Strategies by Fishing Mode: Gulf of Mexico

Management strategy	Fishing Mode	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure
Manage some species as catch-and-release only	Shore	9.79	7.76	5.85	5.45	2.26
	For-hire	1.45	1.04	0.93	0.87	0.29
	Private	13.85	14.43	13.67	18.25	4.11
Establish longer seasons with more restrictive bag limits	Shore	6.12	7.16	6.58	7.39	3.64
	For-hire	1.39	0.69	0.69	1.39	0.40
	Private	10.91	15.47	13.74	18.88	5.54
Establish shorter seasons with less restrictive bag limits	Shore	1.33	3.58	5.71	14.94	5.13
	For-hire	0.35	0.69	1.21	1.85	0.52
	Private	3.11	6.46	11.13	36.97	7.04
Establish shorter seasons with a larger variety of species you can legally catch	Shore	2.66	5.96	6.31	10.94	4.92
	For-hire	0.46	1.04	1.39	1.16	0.52
	Private	4.28	9.61	12.74	30.75	7.24
Increase the recreational harvest limit by decreasing the commercial harvest limit	Shore	8.69	6.10	6.16	5.06	4.78
	For-hire	1.67	0.69	1.09	0.46	0.69
	Private	25.14	13.33	12.20	8.15	5.29
Provide artificial fish habitat (e.g., artificial reef) in some areas of the ocean	Shore	16.68	7.91	3.44	1.20	1.66
	For-hire	2.87	0.97	0.34	0.06	0.34
	Private	41.95	13.75	5.33	1.60	1.89
Designate some areas of the ocean as marine reserves with catch-and-release only fishing	Shore	13.61	7.63	3.96	3.73	2.01
	For-hire	1.66	1.21	0.75	0.57	0.40
	Private	20.49	14.75	10.73	14.41	4.08
Close some areas of the ocean for certain seasons	Shore	7.56	6.41	5.50	6.64	4.75
	For-hire	1.37	0.69	0.69	1.26	0.57
	Private	12.66	11.57	12.77	21.31	6.24

Section 6.3. Preferences for Management Objectives in the Gulf of Mexico

To help understand the Gulf of Mexico angler attitudes toward broad-level management objectives, Gulf of Mexico respondents were asked to indicate how important they believe different management objectives are for recreational fisheries management to pursue. Respondents rated each of the objectives below using a six-point scale of "Extremely important," "Somewhat important," "Neutral," "Somewhat unimportant," "Not important at all," and "I am unsure." Results are presented in Figure 29.

A. Ensure that large quantities of fish are available to catch
B. Ensure that many different fish species are available to catch
C. Ensure that adequate numbers of trophy-sized fish are available to catch
D. Reduce the mortality associated with releasing fish that are not legal to keep
E. Ensure that future generations will have high quality fishing opportunities
F. Allocate some quota from commercial fisheries to recreational fisheries
G. Recover fish stocks that have been depleted
H. Protect marine biodiversity
I. Protect threatened or endangered marine species
J. Achieve consistency between state and federal fishing regulations
K. Simplify recreational fishing regulations
L. Monitor and enforce recreational fishing regulations
M. Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
N. Ensure opportunities to fish in high quality fishing areas
O. Ensure that fishing sites are not heavily congested

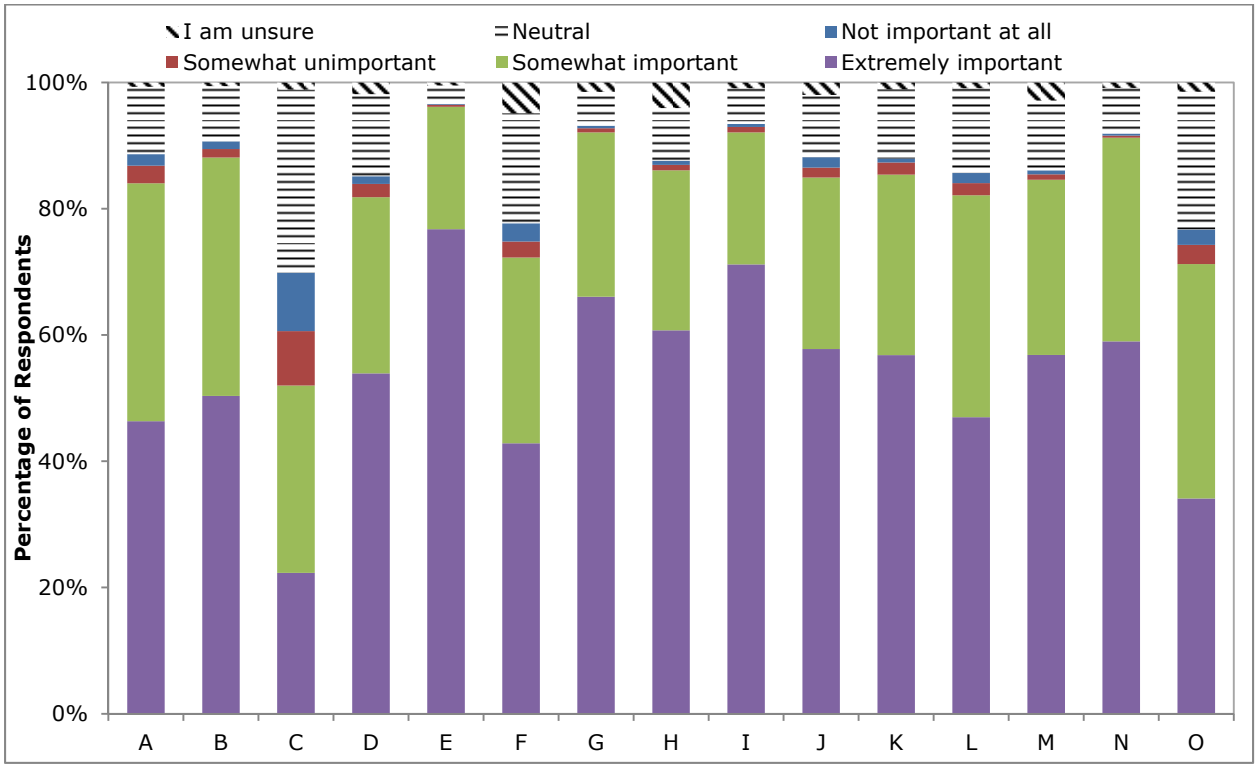

Figure 29. Preferences for management objectives

Over 50% of Gulf of Mexico respondents felt that ten of the fifteen management objectives were extremely important. The most important management objectives (based on the frequency of "Extremely important" ratings) included ensuring that future generations will have high quality fishing opportunities (77%), protecting threatened and endangered marine species (71%), and recovering fish stocks that have been depleted (66%). Generally less than 5% of Gulf of Mexico respondents felt that any one of the fifteen management objectives was not important at all – the exception being ensuring that adequate numbers of trophy-sized fish are available. Approximately 9% of Gulf of Mexico respondents felt that objective was not important at all. Combining the "Extremely important" and "Somewhat important" categories to make a broader category of importance does not alter the rank order of the top three most important objectives.

Positive significant correlations were found between angler avidity and the following management objectives, suggesting that as avidity increases these management objectives become more important:

- Ensure that large quantities of fish are available to catch
- Ensure that many different fish species are available to catch
- Ensure that adequate numbers of trophy-sized fish are available to catch
- Allocate some quota from commercial fisheries to recreational fisheries
- Simplify recreational fishing regulations
- Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
- Ensure opportunities to fish in high quality fishing areas

Negative significant correlations were found between angler avidity and the following management objectives, suggesting that as avidity increases these management objectives become less important:

- Ensure that fishing sites are not heavily congested

Significant differences were found in the response distributions by fishing mode to the following management objectives (Table 42):

- Ensure that future generations will have high quality fishing opportunities
- Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making
- Ensure that fishing sites are not heavily congested

Table 42. Importance of Management Objectives: Gulf of Mexico

Management Objective	Fishing Mode	Extremely important	Somewhat important	Neutral	Somewhat unimportant	Not important at all	I am unsure
Ensure that future generations will have high quality fishing opportunities	Shore	25.23	4.70	0.69	0.11	0.00	0.17
	For-hire	3.73	0.75	0.06	0.00	0.00	0.06
	Private	48.05	13.88	2.12	0.29	0.11	0.06
Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making	Shore	15.80	9.02	4.08	0.46	0.23	1.21
	For-hire	2.53	1.55	0.34	0.06	0.06	0.06
	Private	39.17	17.35	5.92	0.46	0.46	1.26
Ensure that fishing sites are not heavily congested	Shore	11.74	12.09	5.47	0.63	0.58	0.35
	For-hire	1.73	1.73	0.69	0.23	0.12	0.06
	Private	19.57	24.06	16.06	2.30	1.84	0.75

Section 6.4. Satisfaction with Recreational Fisheries Management in the Gulf of Mexico

Gulf of Mexico respondents were asked to indicate how satisfied they were with various aspects of recreational fisheries management, listed below, using a six-point scale of "Extremely satisfied," "Somewhat satisfied," "Neutral," "Somewhat dissatisfied," "Not satisfied at all," and "I am unsure." Results are presented in Figure 30.

A. Managing fish stocks to provide high quality fishing opportunities
B. Restoring fish stocks that have been depleted
C. Adjust regulations in a timely manner to address changing conditions of the fishery
D. Using management strategies that minimize costs to anglers
E. Ensure that the annual harvest limit provides enough fish for recreational fisheries
F. Ensure that state and federal regulations are consistent
G. Monitoring and enforcing recreational fishing regulations
H. Using high quality data and assessments in policy-making
I. Incorporating stakeholder interests in policy-making
J. Protecting fish or shellfish species that are declining
K. Protecting marine habitats
L. Addressing conflicts between anglers and marine mammals

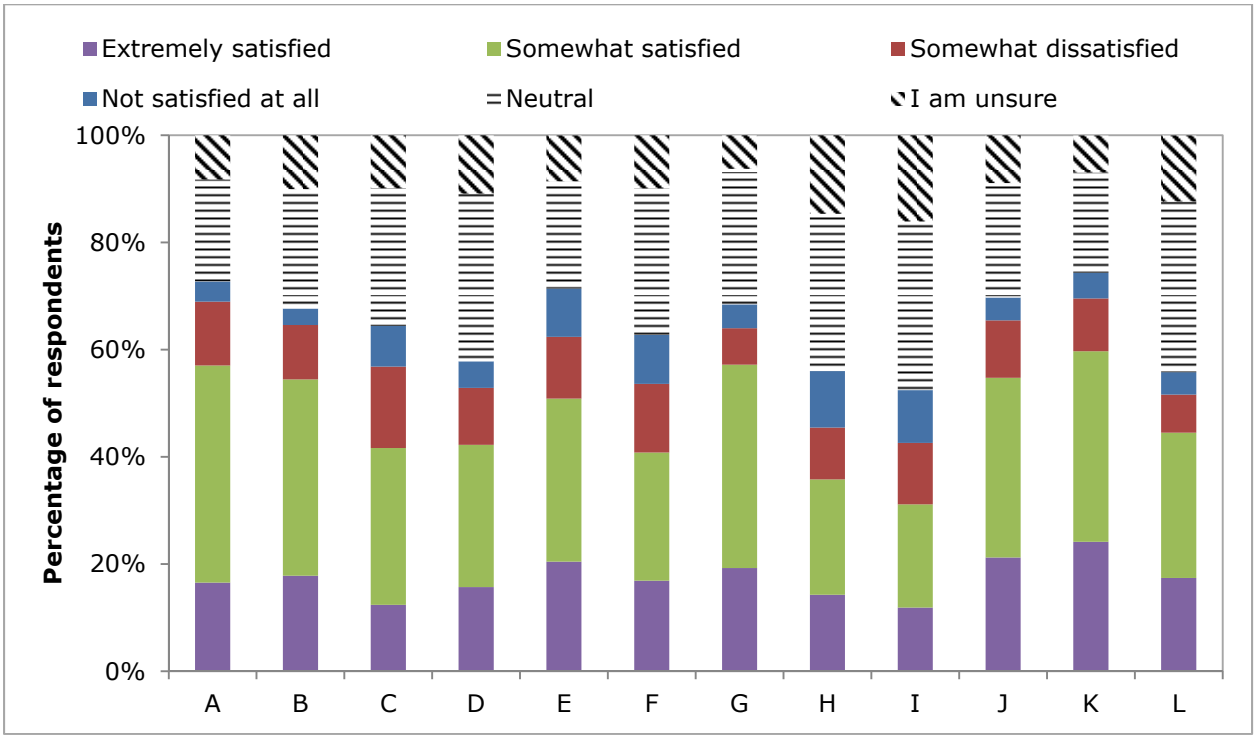

Figure 30. Anglers' satisfaction with recreational fisheries management.

Between 10% and 20% of Gulf of Mexico respondents stated that they were extremely satisfied across all items with the exception of protecting fish or shellfish species that are declining, and protecting marine habitat. For these items, just over one-fifth of Gulf of Mexico respondents were extremely satisfied with management. However, Gulf of Mexico respondents appear to be generally satisfied or neutral about recreational fisheries management if "Extremely satisfied"

and "Somewhat satisfied" responses are combined. Using this approach, about half of the respondents were satisfied that recreational fisheries management was protecting marine habitats (60%); monitoring and enforcing recreational fishing regulations (57%); managing fish stocks to provide high quality fishing opportunities (57%); protects fish or shellfish species that are declining (55%); restoring fish stock that have been depleted (54%); and ensuring annual harvest limits provides enough fish for recreational fisheries (51%; Figure 30).

Across all items, less than 10% of Gulf of Mexico respondents stated that they were not satisfied at all with management with the exception of three objectives: 11% of respondents were not satisfied at all that management uses high quality data and assessments in policy-making; 10% were not satisfied at all that management incorporates stakeholder interests in policy-making; and 9% were not satisfied at all that management ensures that state and federal regulations are consistent. Combining the "Not satisfied at all" and "Somewhat dissatisfied" responses shows that about 20% are not satisfied with fisheries management across five of the twelve recreational fisheries management objectives. Gulf of Mexico anglers were most dissatisfied that recreational fisheries management adjusts regulations in a timely manner to address changing conditions of the fishery (23%); ensures that state and federal regulations are consistent (22%); and incorporates stakeholder interests in policy-making (21%). About one-third of Gulf of Mexico respondents were neutral about addressing conflicts between anglers and marine mammals; incorporating stakeholder interest in policy-making; and using management strategies that minimize costs to anglers. Gulf of Mexico respondents were most unsure that management incorporates stakeholder interests in policy-making (16%); uses high quality data and assessments in policy-making (15%); and that management addresses conflicts between anglers and marine mammals (12%).

No positive significant correlations were found between angler avidity and any of the satisfaction items.

Negative significant correlations were found between avidity and the following satisfaction items, suggesting that as avidity increases anglers become less satisfied with the item:

- Managing fish stocks to provide high quality fishing opportunities
- Using high quality data and assessments in policy-making

Significant differences were found in the response distributions by fishing mode to the following management satisfaction items (Table 43):

- Managing fish stocks to provide high quality fishing opportunities
- Restoring fish stocks that have been depleted
- Adjust regulations in a timely manner to address changing conditions of the fishery
- Using management strategies that minimize costs to anglers
- Ensure that the annual harvest limit provides enough fish for recreational fisheries
- Ensure that state and federal regulations are consistent
- Monitoring and enforcing recreational fishing regulations
- Using high quality data and assessments in policy-making
- Incorporating stakeholder interests in policy-making
- Protecting fish or shellfish species that are declining

Table 43. Satisfaction with Management by Fishing Mode: Gulf of Mexico

Management Item	Fishing Mode	Extremely satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Not satisfied at all	I am unsure
Managing fish stocks to provide high quality fishing opportunities	Shore	5.64	12.03	6.33	2.53	0.58	3.62
	For-hire	1.04	1.84	0.75	0.46	0.06	0.46
	Private	9.67	27.79	10.64	9.49	3.28	3.80
Restoring fish stocks that have been depleted	Shore	5.69	10.12	7.02	2.53	0.81	4.49
	For-hire	0.63	1.73	1.15	0.46	0.06	0.52
	Private	10.87	25.99	12.88	7.30	2.59	5.18
Adjust regulations in a timely manner to address changing conditions of the fishery	Shore	3.40	9.61	8.69	3.91	0.92	4.20
	For-hire	0.63	0.92	1.44	0.69	0.29	0.52
	Private	8.06	19.11	14.91	11.17	6.91	4.61
Using management strategies that minimize costs to anglers	Shore	5.12	8.40	9.44	2.36	0.92	4.49
	For-hire	1.04	1.15	1.44	0.29	0.17	0.46
	Private	9.15	17.43	20.60	7.83	3.97	5.75
Ensure that the annual harvest limit provides enough fish for recreational fisheries	Shore	5.88	10.54	6.22	3.00	1.38	3.74
	For-hire	1.27	1.21	0.81	0.40	0.40	0.46
	Private	12.96	19.07	12.10	8.47	7.89	4.21
Ensure that state and federal regulations are consistent	Shore	5.64	7.94	8.52	2.76	1.50	4.38
	For-hire	0.86	1.21	0.86	0.63	0.46	0.46
	Private	9.79	14.91	18.13	9.56	7.48	4.89
Monitoring and enforcing recreational fishing regulations	Shore	6.10	10.82	8.17	1.96	0.98	2.65
	For-hire	0.92	1.27	1.15	0.52	0.17	0.46
	Private	11.85	26.35	15.65	4.32	3.51	3.16
Using high quality data and assessments in policy-making	Shore	4.84	7.43	8.81	1.90	1.78	5.93
	For-hire	0.69	0.92	1.44	0.23	0.52	0.75
	Private	8.41	13.24	18.48	7.89	9.15	7.60
Incorporating stakeholder interests in policy-making	Shore	3.82	6.18	10.29	2.49	1.16	6.76
	For-hire	0.69	0.81	1.50	0.64	0.35	0.58
	Private	7.11	12.08	19.77	8.67	8.73	8.38
Protecting fish or shellfish species that are declining	Shore	7.08	9.49	5.75	2.99	1.50	3.91
	For-hire	1.04	1.55	0.86	0.58	0.06	0.46
	Private	11.91	22.84	14.84	7.65	3.05	4.43

Section 6.5. Managing the Marine Environment in the Gulf of Mexico

Gulf of Mexico respondents were also asked about larger issues relating to the marine environment. Gulf of Mexico respondents rated the threat severity of each issue below using a five-point scale including "Severe threat," "Moderate threat," "Not a very severe threat," "Not a threat at all," and "I am unsure." Results are presented in Figure 31.

A. Industrial pollution
B. Oil and gas extraction
C. Climate change
D. Ocean acidification
E. Shipping
F. Overfishing in commercial fisheries
G. Overfishing in recreational fisheries
H. Non-native species
I. Aquaculture
J. Alternative energy (e.g., wave or wind) development
K. Coastal development
L. Algal blooms
M. Marine habitat loss or degradation
N. Dams/barriers

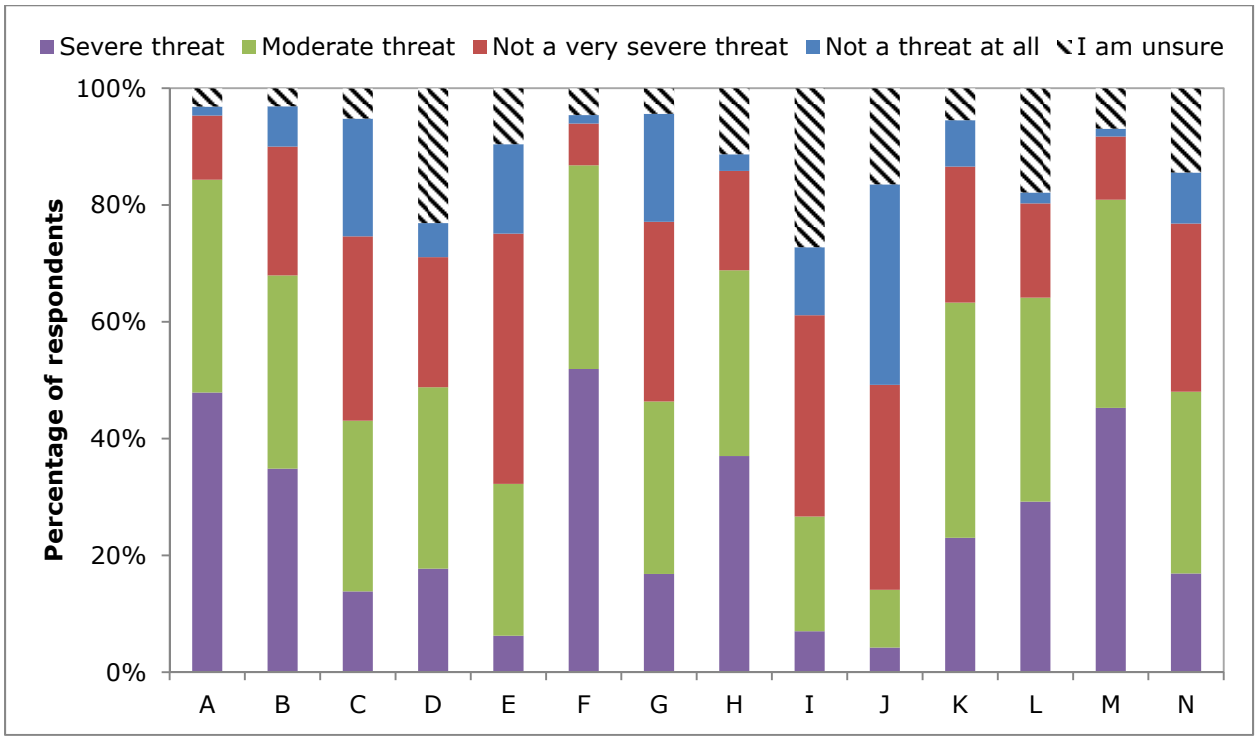

Figure 31. Threats to the marine environment.

Gulf of Mexico respondents rated most items as a threat to the marine environment (Figure 31). The most severe threats (based on the frequency of "Severe threat" ratings) included overfishing in commercial fisheries (52%), industrial pollution (48%), and marine habitat loss or degradation

(45%). Thirty to forty percent of Gulf of Mexico respondents thought all but four of the remaining items were a moderate threat – the four exceptions were climate change (29%); shipping (26%); aquaculture (20%); and alternative energy development (10%). The only item that more than 20% of Gulf of Mexico respondents felt posed no threat at all to the marine environment was alternative energy development (34%).

Section 6.6. About you and your Household in the Gulf of Mexico

This section elicits information on the Gulf of Mexico's respondents, their age, level of education, employment level, household income, sex, race and ethnicity. This standard demographic information allows us to better understand the unique characteristics of the Gulf of Mexico recreational fishermen. Information collected in this section is comparable to United States (U.S.) Census information. The U.S. Census does not collect or provide the information at a level to be able to identify a specific population of fishermen, or fishermen as a separate industry. Information about fishermen in the U.S. Census is aggregated with other industries such as forestry and agriculture. Collection of the data in this section serves to describe this specific population of fishermen and will allow for comparisons to the general U.S. public.

On average, Gulf of Mexico respondents worked 36 hours per week; that is most respondents were part-time workers. Most respondents' household income for 2012 was greater than $60,000 per year (Table 44). Only five percent of respondents had a household member who made a living (either part-time or full-time) from marine resources. Of these respondents that made a living from marine resources, the majority of the respondents was not concerned at all (53%) or slightly concerned (21%) that fisheries management decisions would affect their livelihood. Most of the respondents were male (77%), white (93%), middle-aged (average age was 51 years old) and had completed at least an associate's degree (Table 45).

Table 44. Respondents' income levels.

Income Category	Number of responses	Percentage (%)
Less than $20,000	150	8
$20,000 - $39,999	268	14
$40,000 - $59,999	333	17
$60,000 - $79,999	331	16
$80,000 - $99,999	287	15
$100,000 - $149,999	334	17
$150,000 - $199,999	131	7
$200,000 or more	155	8

Table 45. Highest level of education for respondents.

Highest level of education	Number of responses	Percentage (%)
12th grade or less	172	8
High school graduate or GED	493	24
Associate or technical school degree or college coursework	580	28
Bachelor degree	501	24
Advanced, professional, or doctoral degree or coursework	304	15

Discussion

With a few exceptions, survey respondents' primary mode closely matched recreational fishing effort (the number of trips by mode) as reported in Fisheries Economics of the U.S. (Table 46, Table 47; National Marine Fisheries Service, 2012).

Table 46. Respondents' primary mode on most recreational fishing trips.

	Alaska	West Coast	North Atlantic	Mid-Atlantic	South Atlantic	Gulf of Mexico
Private	43%	54%	48%	52%	46%	65%
Shore	20%	27%	47%	40%	50%	31%
For-Hire	37%	19%	4%	8%	4%	5%

Table 47. Recreational fishing trips by mode (National Marine Fisheries Service, 2012).

	Alaska[a]	West Coast	North Atlantic	Mid-Atlantic	South Atlantic	Gulf of Mexico[b]
Private	59%	27%	52%	53%	49%	57%
Shore	12%	62%	42%	40%	49%	40%
For-hire	29%	11%	6%	7%	2%	3%

[a] Alaska does not provide trips by mode. Calculations were made based upon previous surveys of recreational anglers in Alaska.
[b] Does not include Texas.

Fishing mode tends to have a significant impact on respondents' attitudes toward and satisfaction with fisheries management. If the number of question items showing a significant impact is used as a gauge, the impact seems strongest for respondents' preferences for management strategies and satisfaction with management, with a weaker impact on importance placed on management objectives. Further, using the same gauge, fishing mode has the smallest impact in Alaska and the North Atlantic. Fishing mode also appears to have less of an impact on satisfaction in Alaska, the North Atlantic and West Coast regions, as less than five items in each region (out of twelve) showed significant differences by mode. In comparison, the Mid-Atlantic, South Atlantic and Gulf showed significant differences in satisfaction levels by fishing mode for nine or more items in each region. For those satisfaction questions that did show significant differences by mode, private boat anglers appeared to have higher levels of dissatisfaction than for-hire or shore anglers, and this pattern was strongest in the Gulf and West Coast regions.

Regional differences on survey questions

Across all regions, respondents rated protecting and restoring degraded fish habitat as the most preferred management strategy. With the exception of Alaska, the second most preferred management strategy across the other regions was establishing minimum size limits. The second most preferred management strategy in Alaska was to require the use of release techniques that reduce fish mortality. The third most preferred management strategy for the Gulf Coast, South Atlantic and Mid-Atlantic regions was providing artificial habitat. The third most preferred

strategy for the North Atlantic and West Coast was limiting the total number of fish that can be caught. In Alaska, the third most preferred management strategy was increasing the recreational harvest by decreasing the commercial harvest.

Across all regions, respondents rated establishing shorter seasons with less restrictive bag limits as the least preferred management strategy. With the exception of the Gulf Coast, the second least preferred management strategy across the other regions establishing shorter seasons with a larger variety of species that were legal to catch. In the Gulf Coast, the second least preferred management strategy was establishing longer seasons with more restrictive bag limits. The third least preferred management strategy for the North Atlantic, Mid-Atlantic and West Coast was dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers). The third least preferred management strategy for the Gulf Coast and South Atlantic was closing some areas of the ocean for certain seasons. The third least preferred management strategy in Alaska was establishing longer seasons with more restrictive bag limits.

There was no difference among regions in the ranking of the most preferred management objectives. All regions ranked the following as the top three most important objectives: 1) ensuring future generations will have high quality fishing opportunities; 2) recovering fish stocks that have been depleted; and 3) protecting threatened and endangered species. All regions ranked ensuring that there were adequate numbers of trophy-sized fish as available as the least important management objectives. With the exception of Alaska, all of the other regions thought that allocating some quota from commercial fisheries to recreational fisheries was the second least important management objective. In Alaska, the respondents rated ensuring that there were large quantities of fish available to catch as the second least important management objective. The third least important management objective for all of the regions, except Alaska, was to ensure that fishing sites were not heavily congested. In Alaska, the third least important management objective was to protect threatened and endangered marine species.

Across all regions, respondents were most satisfied with how management protects marine habitats and how management ensures harvest limits provide sufficient fish for recreational fishing. Across all regions, except the West Coast and Alaska, responds rated protecting declining fish and shellfish species as the third management strategy they were most satisfied with. The third management strategy that Alaskan respondents were most satisfied with was managing stocks to provide high quality fishing opportunities. The third management strategy that West Coast respondents were most satisfied with was monitoring and enforcing recreational fishing regulations.

With the exception of the West Coast, respondents were least satisfied with how management ensures consistency between state and federal regulations. West Coast respondents were least satisfied with how management incorporates stakeholder interests. Incorporating stakeholder interests was the second objective that respondents in Alaska, Gulf Coast and South Atlantic were least satisfied. Respondents in the North Atlantic rated management's monitoring and enforcement of recreational fishing regulations as their second least satisfied management objective; while, respondents in the Mid-Atlantic rated using high quality data as their second least satisfied management objective. Using high quality data was the third least satisfied management objective for respondents in the Gulf Coast and South Atlantic. Respondents in the West Coast and Mid-Atlantic rated ensuring harvest limits provide sufficient fish for recreational fishing as their third least satisfied management objective. North Atlantic respondents rated

protecting declining fish and shellfish species as their third least satisfied management objective. Respondents in Alaska rated addressing conflicts between anglers and marine mammals as their third least satisfied management objective.

Relevant policy questions

Issues of allocation of fishery resources between commercial and recreational fisheries have arisen across the country, particularly in the Gulf of Mexico Region. Nationally, two-thirds of respondents rated allocating some quota from commercial fisheries to recreational fisheries as either an extremely or somewhat important management objective (Brinson and Wallmo 2013). However, when asked about a specific management strategy: increasing the recreational harvest limit by decreasing the commercial harvest limit, only one-third strongly preferred this management strategy. Further analysis was completed in order to investigate this issue further. We used the chi-square (X^2) analysis to test the hypothesis that the responses for two sets of questions are independent from each other: importance of the management objective to increase the recreational harvest limit by decreasing the commercial harvest limit; and preference for a management strategy that allocates some quota from commercial fisheries to recreational fisheries. See the Methods – Data Analysis section for more information on the analysis.

When looking at the responses in the Alaska region, 69% of respondents thought the management objective to allocate some quota from commercial to recreational fisheries was important (Table 48). However, of those respondents who thought this objective was important, forty percent strongly preferred the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit. Of the remaining respondents who thought the management objective to allocate quota from the commercial to recreational fishery was important, respondents only somewhat preferred (12%), slightly preferred (10%), did not prefer at all (2.4%) or were unsure (5%) about the management strategy to reduce the commercial harvest limit to increase the recreational harvest limit. About a third of the respondents in Alaska were neutral or unsure about the management objective to allocate some quota from commercial to recreational fisheries. Of those who were neutral, 10% slightly preferred, 7% did not prefer at all the management strategy to reduce the commercial harvest limit to increase the recreational harvest limit. Based upon the results of the chi-square ($X^2=66.19$, $p<0.01$) test, there is enough evidence to support the hypothesis that the responses to these questions are different from each other in the Alaska region.

Table 48. Cross-tabulation of responses to two questions about management objectives and management strategies for Alaska respondents.

Allocate some quota from commercial to recreational fisheries	Increase the recreational harvest limit by decreasing the commercial harvest limit					
	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure	Total
Important[a]	40%	12%	10%	2.42%	5%	69%
Neutral[b]	1.93%	4.83%	9.66%	6.76%	4.35%	28%
Unimportant[c]	0%	0%	0%	2%	0.48%	3.86%
Total	42%	17%	20%	11%	10%	100%

X^2=66.19, p< 0.01

[a] Response categories for 'extremely important' and 'somewhat important' have been collapsed to 'Important'

[b] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important at all' and 'somewhat unimportant' have been collapsed to 'Unimportant'

Three-quarters of respondents from the West Coast thought the management objective to allocate some quota from commercial to recreational fisheries was important. Of those who it was important, approximately 40% strongly preferred the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit (Table 49). Less than 20% of those who thought allocating quota from commercial to recreational fisheries somewhat preferred (17%) or slightly preferred (11%) the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit. Based upon the results of the chi-square (X^2=566.19, p<0.01) test, there is enough evidence to support the hypothesis that the responses to these questions are different from each other in the West Coast region.

Table 49. Cross-tabulation of responses to two questions about management objectives and management strategies for West Coast respondents.

Allocate some quota from commercial to recreational fisheries	Increase the recreational harvest limit by decreasing the commercial harvest limit					
	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure	Total
Important[a]	38%	17%	11%	4.61%	3.24%	74%
Neutral[b]	2.3%	2.02%	5.33%	6.41%	4.75%	21%
Unimportant[c]	0.14%	0.22%	0.29%	4.25%	0.43%	5.33%
Total	41%	19%	16%	15%	8%	100%

X^2=566.19, p< 0.01

[a] Response categories for 'extremely important' and 'somewhat important' have been collapsed to 'Important'

[b] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important at all' and 'somewhat unimportant' have been collapsed to 'Unimportant'

Sixty percent of respondents in the North Atlantic region rated the management objective to allocate some quota from commercial to recreational fisheries as important; this was the lowest level of importance of all of the other regions (Table 50). Of those who thought the management objective was important, 22% strongly preferred the management strategy of reducing the

commercial harvest limit to increase the recreational harvest limit, 14% somewhat preferred, 11% slightly preferred and 9% did not prefer at all the management strategy. About a third of the North Atlantic respondents were neutral or unsure about the management objective to allocate some quota from commercial to recreational fisheries. Of those who were neutral about the management objective, 13% did not prefer at all the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit. Based upon the results of the chi-square (X^2=463.79, p<0.01) test, there is enough evidence to support the hypothesis that the responses to these questions are different from each other in the North Atlantic region.

Table 50. Cross-tabulation of responses to two questions about management objectives and management strategies for North Atlantic respondents.

Allocate some quota from commercial to recreational fisheries	**Increase the recreational harvest limit by decreasing the commercial harvest limit**					
	Strongly prefer	**Somewhat prefer**	**Slightly prefer**	**Do not prefer at all**	**I am unsure**	**Total**
Important[a]	22%	14%	11%	8.43%	4.53%	60%
Neutral[b]	1.17%	2.26%	6.64%	12.49%	6.87%	29%
Unimportant[c]	0.47%	0.31%	0.78%	8.12%	0.47%	10%
Total	24%	17%	18%	29%	12%	100%

X^2=463.79, p< 0.01

[a] Response categories for 'extremely important' and 'somewhat important' have been collapsed to 'Important'

[b] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important at all' and 'somewhat unimportant' have been collapsed to 'Unimportant'

Nearly eighty percent of respondents in the Mid-Atlantic region rated the management objective to allocate some quota from commercial to recreational fisheries as important; this was the highest level of importance of all of the other regions (Table 51). Of those who thought the management objective was important, 42% strongly preferred the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit, 19% somewhat preferred, 10% slightly preferred, 4% did not prefer at all, and 4% were unsure about the management strategy. Less than twenty percent of the Mid-Atlantic respondents were neutral or unsure about the management objective to allocate some quota from commercial to recreational fisheries. Of those who were neutral about the management objective, most slightly preferred (4%), did not prefer at all (4%) or were unsure (3.8%) about the management strategy to increase the recreational harvest limit by decreasing the commercial harvest limit. Based upon the results of the chi-square (X^2=641.46, p<0.01) test, there is enough evidence to support the hypothesis that the responses to these questions are different from each other in the Mid-Atlantic region.

Table 51. Cross-tabulation of responses to two questions about management objectives and management strategies for Mid-Atlantic respondents.

Allocate some quota from commercial to recreational fisheries	Increase the recreational harvest limit by decreasing the commercial harvest limit					
	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure	Total
Important[a]	42%	19%	10%	4.21%	3.69%	78%
Neutral[b]	2.15%	2.92%	4.21%	4.12%	3.83%	17%
Unimportant[c]	0.38%	0.24%	0.48%	2.82%	0.38%	4.31%
Total	45%	21%	15%	11%	7.90%	100%

X^2=641.46, p< 0.01

[a] Response categories for 'extremely important' and 'somewhat important' have been collapsed to 'Important'

[b] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important at all' and 'somewhat unimportant' have been collapsed to 'Unimportant'

When looking at the responses in the South Atlantic, 69% of respondents thought the management objective to allocate some quota from commercial to recreational fisheries was important. However, of those respondents who thought this objective was important, only one-third strongly preferred the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit (Table 52). One-quarter of the South Atlantic respondents were neutral or unsure about the management objective to allocate some quota from commercial to recreational fisheries. Of those who were neutral about the management objective, most slightly preferred (6%), did not prefer at all (7%), or were unsure (6%) about the management strategy to increase the recreational harvest limit by decreasing the commercial harvest limit. Based upon the results of the chi-square (X^2=511.21, p<0.01) test, there is enough evidence to support the hypothesis that the responses to these questions are different from each other in the South Atlantic region.

Table 52. Cross-tabulation of responses to two questions about management objectives and management strategies for South Atlantic respondents.

Allocate some quota from commercial to recreational fisheries	Increase the recreational harvest limit by decreasing the commercial harvest limit					
	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure	Total
Important[a]	29%	16%	12%	6.38%	4.78%	69%
Neutral[b]	2.97%	3.07%	5.9%	7.31%	6.34%	26%
Unimportant[c]	0.34%	0.44%	0.63%	3.36%	0.58%	5.36%
Total	33%	20%	19%	17%	12%	100%

X^2=511.21, p< 0.01

[a] Response categories for 'extremely important' and 'somewhat important' have been collapsed to 'Important'

[b] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important at all' and 'somewhat unimportant' have been collapsed to 'Unimportant'

When looking at the responses in the Gulf of Mexico, 72% of respondents thought the management objective to allocate some quota from commercial to recreational fisheries was important. However, of those respondents who thought this objective was important, only one-third strongly preferred the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit (Table 53). Less than 20% of those who thought allocating quota from commercial to recreational fisheries somewhat preferred or slightly preferred the management strategy of reducing the commercial harvest limit to increase the recreational harvest limit. Somewhat surprising, seven percent of those who thought allocating quota from commercial to recreational fisheries was an important management objective did not prefer at all the management strategy to reduce the commercial harvest limit to increase the recreational harvest limit. Of those who were neutral about the management objective to allocate quota from the commercial to recreational fishery, respondents only slightly preferred (6%), did not prefer at all (6%) or were unsure (6%) about the management strategy to reduce the commercial harvest limit to increase the recreational harvest limit. Based upon the results of the chi-square (X^2=658.39, p<0.01) test, there is enough evidence to support the hypothesis that the responses to these questions are different from each other in the Gulf of Mexico region.

Table 53. Cross-tabulation of responses to two questions about management objectives and management strategies for Gulf of Mexico respondents.

Allocate some quota from commercial to recreational fisheries	**Increase the recreational harvest limit by decreasing the commercial harvest limit**					
	Strongly prefer	**Somewhat prefer**	**Slightly prefer**	**Do not prefer at all**	**I am unsure**	**Total**
Important[a]	32%	17%	13%	7%	4%	72%
Neutral[b]	1%	2%	6%	6%	6%	22%
Unimportant[c]	0.44%	0.44%	0.82%	3%	0.48%	5%
Total	34%	20%	19%	15%	11%	100%

X^2=658.39, P< 0.01

[a] Response categories for 'extremely important' and 'somewhat important' have been collapsed to 'Important'

[b] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important at all' and 'somewhat unimportant' have been collapsed to 'Unimportant'

Issues of allocation of fishery resources between commercial and recreational fisheries have arisen across the country, particularly in the Gulf of Mexico Region. Across all of the regions, respondents thought the management objective to allocate some quota from commercial to recreational fisheries was important (60 – 78%). However, of those respondents who thought this objective was important, 22-40% preferred the specific management strategy of reducing the commercial harvest limit to increase the recreational harvest limit. The results of the chi-square test indicate that responses are significantly different from each other in each region; thus, indicating that while respondents believe that the issue is important, they are unclear as to what steps to take to remedy the issue.

The issue of recreational anglers interacting with marine mammals arose during the survey development phase. This issue was of particularly importance to participants in the West Coast focus groups and regional recreational fishing coordinators from the West Coast reported that this was a consistent issue with constituents. At the national level, a third of the respondents

were neutral about how satisfied they were with how management addresses conflicts between anglers and marine mammals, 39% were satisfied (combining extremely and somewhat satisfied) and 16% were dissatisfied (combining not satisfied at all and somewhat dissatisfied; Brinson and Wallmo 2013). Further analysis was completed in order to investigate this issue further. We used the chi-square (X^2) to test the hypothesis that the responses for two sets of questions are independent from each other: importance of management objectives to protect threatened or endangered marine species; and satisfaction with how management addresses conflicts between anglers and marine mammals. There is enough evidence to support the hypothesis that the responses to these questions are different from each other for all of the regions (Table 54).

Table 54. Test for independence of responses for the questions related to marine mammals and threatened and endangered species.

	Address conflicts between anglers and marine mammals
Protect threatened and endangered marine species	**X^2**
Alaska	9.95*
West Coast	23.22**
North Atlantic	22.56**
Mid-Atlantic	17.25**
South Atlantic	60.30**
Gulf of Mexico	38.91**

*Significant at the p<0.05 level
**Significant at the p<0.01 level

When looking at the responses to these questions for the West Coast Region, the vast majority (86%) of respondents thought it was important to protect threatened and endangered species. Of those, 27% were satisfied, 31% were neutral and 28% were not satisfied with how management addressed conflicts between anglers and marine mammals (Table 55).

Table 55. Cross-tabulation of responses to two questions about management objectives and satisfaction with management for West Coast respondents.

	Address conflicts between anglers and marine mammals			
Protect threatened and endangered marine species	**Satisfied[a]**	**Neutral[b]**	**Not Satisfied[c]**	**Total**
Important[a]	27%	31%	28%	86%
Neutral[b]	0.57%	0.93%	1.58%	3.08%
Unimportant[c]	2.08%	3.23%	5.24%	10.55%
Total	30%	35%	35%	100%

X^2=23.22, p<0.01

[a] Response categories for 'extremely important/satisfied' and 'somewhat important/satisfied' have been collapsed to 'Important/Satisfied'

[b] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important/satisfied at all' and 'somewhat unimportant/dissatisfied' have been collapsed to 'Unimportant/Not Satisfied'

Nationally, nearly all (80%) respondents thought it either extremely or somewhat important for management to ensure that future generations will have high quality fishing opportunities and

about one half of respondents were satisfied that management is restoring fish stocks that had been depleted (Brinson and Wallmo 2013). We used the chi-square (X^2) to test the hypothesis that the responses for two sets of questions are independent from each other: importance of the management objective to ensure that future generations will have high quality fishing opportunities; and satisfaction with how management restores fish stocks that have been depleted. There is enough evidence to support the hypothesis that the responses to these questions are different from each other for each region, with the exception of the Alaska Region (Table 56). The results for the Alaska region are not significant and this is most likely due to a sample size issue and insufficient variation across the responses (Table 57). Nearly all (98%) of respondents from the Alaska region thought the management strategy to ensure that future generations will have high quality fishing opportunities was important.

Table 56. Test for independence of responses for the questions related to management objectives to ensure high quality fishing opportunities and satisfaction with management restoring depleted fish stocks.

	Restoring fish stocks that have been depleted
Ensure that future generations will have high quality fishing opportunities	**X^2**
Alaska	2.81
West Coast	23.30**
North Atlantic	17.61**
Mid-Atlantic	35.16**
South Atlantic	49.90**
Gulf of Mexico	17.71**

**Significant at the p<0.01 level

Table 57. Cross-tabulation of responses to two questions about management objectives and satisfaction with management for Alaska respondents.

	Restoring fish stocks that have been depleted			
Ensure that future generations will have high quality fishing opportunities	**Satisfied[a]**	**Neutral[b]**	**Not Satisfied[c]**	**Total**
Important[a]	48%	34%	15%	98%
Neutral[b]	0.49%	0.97%	0.49%	1.94%
Unimportant[c]	0%	0.49%	0%	0.49%
Total	49%	35%	16%	100%

X^2=2.81, Pr= 0.591

[a] Response categories for 'extremely important/satisfied' and 'somewhat important/satisfied' have been collapsed to 'Important/Satisfied'

[a] Response categories for 'neutral' and 'I am unsure' have been collapsed to 'Neutral'

[c] Response categories for 'not important/satisfied at all' and 'somewhat unimportant/dissatisfied' have been collapsed to 'Unimportant/Not Satisfied'

The results presented in this report lead to the conclusion that there is no one size fits all management policy or strategy that would satisfy all recreational anglers in the United States.

Anglers' preferences for management objectives and strategies depend on how experienced they are with fishing, how often they fish and their general goals. Overall, anglers want to spend time with family and friends while fishing in uncongested areas. About half of the respondents were satisfied with management and in terms of prioritization, the most important management strategies that recreational fisheries should focus upon are: providing enough fish for recreational fishermen, incorporating stakeholder interests in the policy process, and monitoring and enforcing recreational fishing regulations.

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