

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



Ayeisha A. Brinson and Kristy Wallmo



U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum NMFS-F/SPO-135
October 2013

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

Ayeisha A. Brinson and Kristy Wallmo

**NOAA Technical Memorandum NMFS-F/SPO-135
October 2013**



U.S. Department of Commerce
Penny Pritzker, Secretary

National Oceanic and Atmospheric Administration
Kathryn D. Sullivan, Acting Administrator

National Marine Fisheries Service
Samuel D. Rauch III, Acting Assistant Administrator for Fisheries

Recommended citation:

Brinson, A. A. and K. Wallmo. 2013. Attitudes and Preferences of Saltwater Recreational Anglers: Report from the 2013 National Saltwater Angler Survey, Volume I. U.S. Dept. of Commer., NOAA Technical Memorandum NMFS-F/SPO-135, 45 p.

Copies of this report may be obtained from:

Rita Curtis, Ph.D.
Office of Science and Technology
National Marine Fisheries Service, NOAA
1315 East West Highway
Silver Spring, MD 20910

Or online at:

<http://spo.nmfs.noaa.gov/tm/> or

<https://www.st.nmfs.noaa.gov/economics/fisheries/recreational/index>

Table of Contents

List of tables.....	iv
List of figures	iv
Executive Summary	v
Introduction	1
Methods.....	3
Survey Development	3
Survey Sampling and Administration	3
Data Processing	5
Response Rates.....	8
Results	11
Section 1. Recreational Fishing Participation	11
Section 2. Preferences for Management Strategies.	15
Section 3. Preferences for Management Objectives	17
Section 4. Satisfaction with Recreational Fisheries Management	19
Section 5. Managing the Marine Environment.....	21
Section 6. About you and your Household	23
Discussion.....	25
Evaluation of the survey effort	25
Survey results and recreational fisheries management	26
1. Why do anglers fish?.....	26
2. What do anglers want from management now and in the future?.....	26
3. How can recreational fishing management improve?	27
Literature Cited.....	29
Appendix A: Survey Questionnaire and Variations by Region	30

List of tables

Table 1. Region, areas included and target number of completed surveys.	4
Table 2. Survey administration dates.....	4
Table 3. Number of anglers who completed questionnaires by region.....	5
Table 4. Undeliverable rate by region.....	6
Table 5. Undeliverable rate by region and segment.	8
Table 6. Number of anglers who completed questionnaires by segment and region.....	8
Table 7. Reasons for a decreased number of fishing trips in the next year.	11
Table 8. Respondents' income levels.....	23
Table 9. Highest level of education for respondents.	23
Table 10. Survey questions with number of responses and number missing for those questions with non-response rates greater than two percent.....	25

List of figures

Figure 1. Number of delivered and completed surveys, with final response rates by region.....	7
Figure 2. Importance of fishing trip characteristics.	13
Figure 3. Preferences for management strategies.	15
Figure 4. Preferences for management objectives.....	17
Figure 5. Anglers' satisfaction with recreational fisheries management.....	19
Figure 6. Threats to the marine environment.	21

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

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. This report, Volume I, presents the survey results at the national scale only. 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. The majority of the respondents fish 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 would not decrease their number of fishing trips 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.

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. 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.

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 I, presents the survey results at the national scale only. A second report, Volume II, provides detailed results for each region.

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 will 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: Section 2 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. Section 3 presents the results of the survey at the national scale (a second volume that details the key regional differences will be released later this year). The last section, Section 4, discusses the survey results in the context of several key questions of interest to management, including:

- What types of fishing trip characteristics are important to anglers?
- What do anglers want from management now and in the future?
- Where and/or how can recreational fisheries management improve?

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 facilities 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
<u>Segment 1</u>	
11 Feb	Mail Introduction Letter
14 Feb	Mail 1 st Packet (Letter, Questionnaire, Business-Reply Envelope)
26 Feb	Mail Reminder Postcard
16 Mar	Mail 2 nd Packet (Letter, Questionnaire, Business-Reply Envelope)
<u>Segment 2</u>	
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 who fished 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.

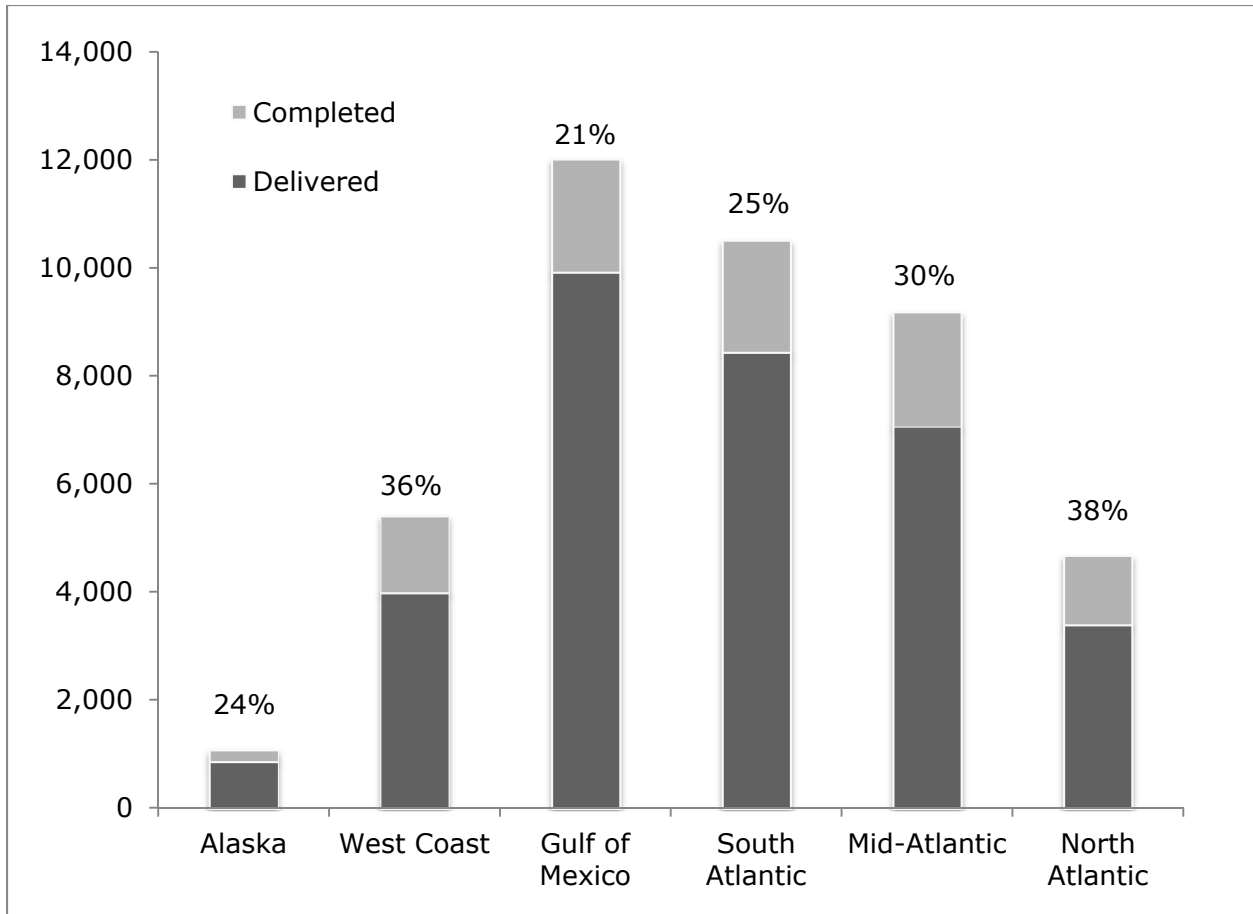


Figure 1. Number of delivered and completed surveys, with final response rates by region.

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.

Region	Mailed Segment		Undeliverable Segment		Rate Segment	
	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-Wallis 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.

Results

Section 1. Recreational Fishing Participation

Fishing Avidity and Location

On average, respondents have participated in recreational saltwater fishing for 28 years, and fished 25 days during the last year. The median years fishing and days fished last year are 29 and 14, respectively. 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 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 coastal 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). About 16% of respondents stated that most of their fishing during the last year was more than three miles from shore, while 82% said they fished within three miles of 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 81% of respondents felt the number would stay the same or increase, while 19% felt the number of trips they take will decrease. 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 the availability of leisure time. Table 7 shows the frequency of responses for each reason.

Table 7. Reasons for a decreased number of fishing trips in the next year.

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
	% of respondents				
Availability of leisure time	31	23	13	28	5
Personal finances	27	27	13	28	4
Fishing trip costs	35	28	12	22	3
Change of residence	9	4	4	77	6
Recreational fishing regulations	27	18	12	37	6
Conditions of the fishery (e.g., change in the abundance of fish)	20	20	15	37	8

Information Sources

Respondents were asked where they get information about fishing and other marine related activities and issues:

- 76% stated friends and family
- 48% stated fishing websites and blogs
- 43% stated newspapers and magazines
- 25% stated federal and state websites
- 18% stated television
- 13% stated social media
- 12% stated organization newsletter or email
- 9% stated radio

Percentage total is greater than 100 due to multiple responses being allowed.

The most frequently cited information sources included friends and family (76%), fishing websites and blogs (48%), and newspapers and magazines (43%).

Fishing Trip Characteristics

To help understand what anglers most want out of recreational fishing trips respondents were asked about the importance of a variety of fishing trip characteristics. 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

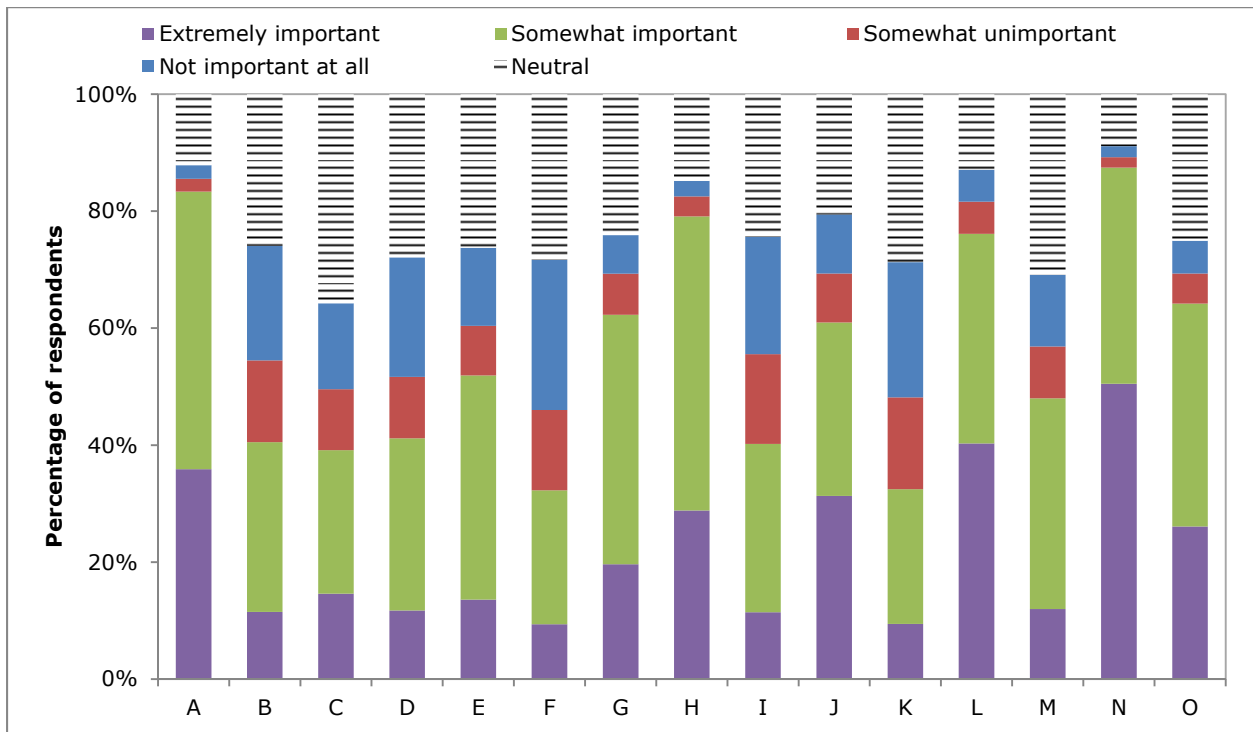


Figure 2. Importance of fishing trip characteristics.

Figure 2 suggests that the most important trip characteristics (based on the frequency of "Extremely important" ratings) include fishing with family and friends (51%), having easy access to weather and tide information (40%), and catching fish (36%). The least important trip characteristics (based on the frequency of "Not important at all" ratings) included catching the bag limit of a target species (26%) and having access to staff to answer questions or provide information (23%). Other less important characteristics included catching many fish for consumption (20%), catching a trophy-sized fish (20%), and being close to amenities such as parking and restrooms (20%).

When the ratings of "Extremely important" and "Somewhat important" are combined to make a broader category, all but two of the characteristics are important to over 50% of respondents (catching the bag limit of a target species and having access to staff were still the least important characteristics). Using this broader category of importance, the top three characteristics include fishing with family and friends (87%), catching fish (83%), and fishing in an area that is not heavily congested (79%), though having easy access to weather and tide information was a close fourth at 76%.

Section 2. Preferences for Management Strategies

To help understand attitudes toward different types of management strategies, 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. 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

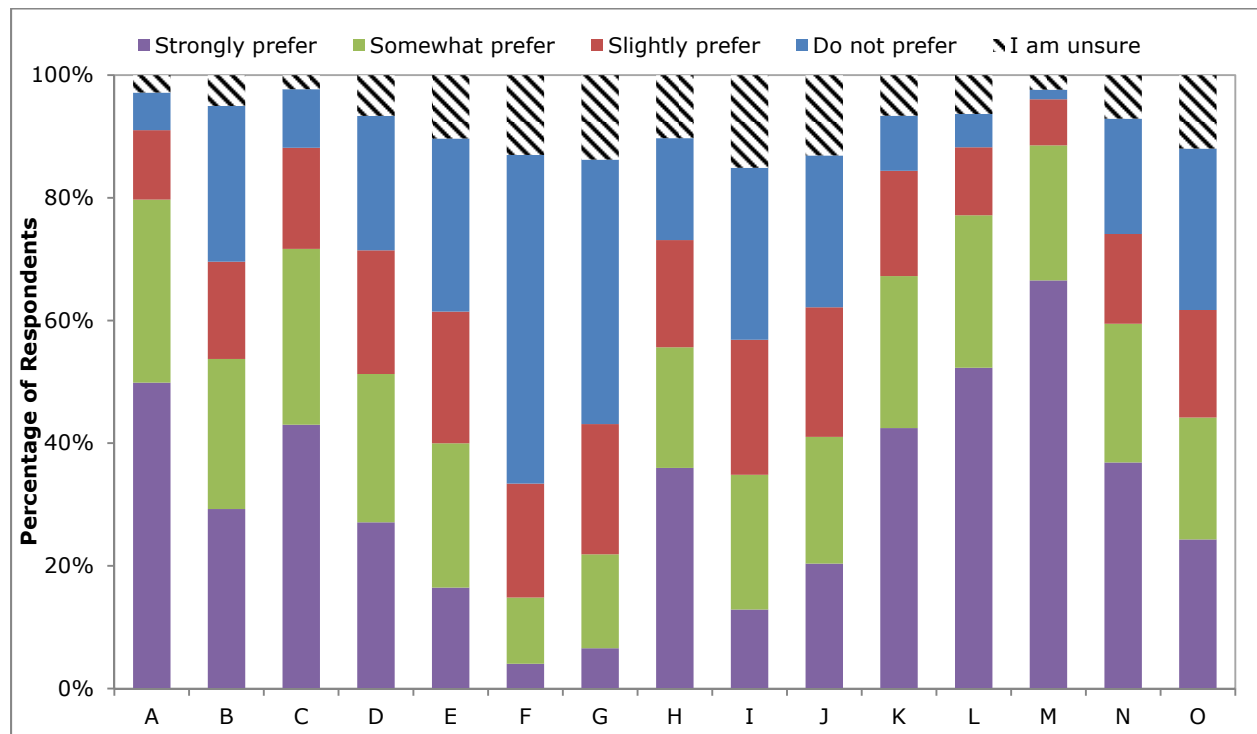


Figure 3. Preferences for management strategies.

The most preferred strategies for managing fisheries (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 (52%), 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 54% of respondents, and establishing shorter seasons with a larger variety of species you can legally catch was not preferred at all by 43% of 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 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). Respondents had mixed preferences for both of these questions. Thirty-six percent of the respondents strongly preferred, 34% did not prefer at all or slightly preferred, 20% somewhat preferred, and 10% were unsure about management increasing the recreational harvest limit by decreasing the commercial harvest limit. Respondents did not prefer at all (28%), 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 respondents strongly preferred this management strategy and more respondents were unsure (15%).

More than 10% of the respondents were unsure about their preferences for certain management strategies: establishing longer seasons with more restrictive bag limits (10%); establishing shorter seasons with less restrictive bag limits (13%); establishing shorter seasons with a larger variety of species you can legally catch (14%); increasing the recreational harvest limit by decreasing the commercial harvest limit (10%); dividing the recreational harvest limit among different modes (e.g., private anglers and for-hire/charter boat anglers; 15%); restricting certain types of fishing gear (13%). Not surprisingly, these management options are some of the more controversial or difficult management strategies presented in the survey.

Section 3. Preferences for Management Objectives

To help understand angler attitudes toward broad-level management objectives 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

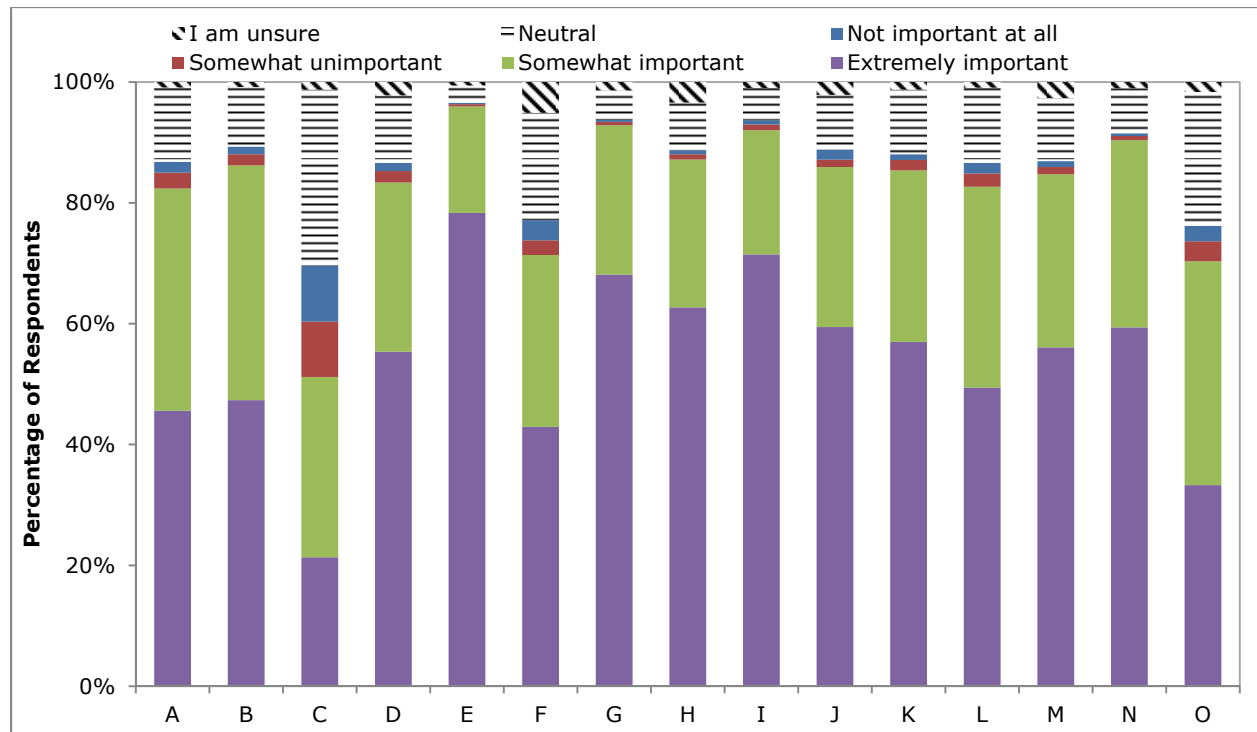


Figure 4. Preferences for management objectives

Over 50% of 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 (78%), protecting threatened and endangered marine species (71%), and recovering fish stocks that have been depleted (68%). Generally less than 5% of 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 10% of 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.

Section 4. Satisfaction with Recreational Fisheries Management

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

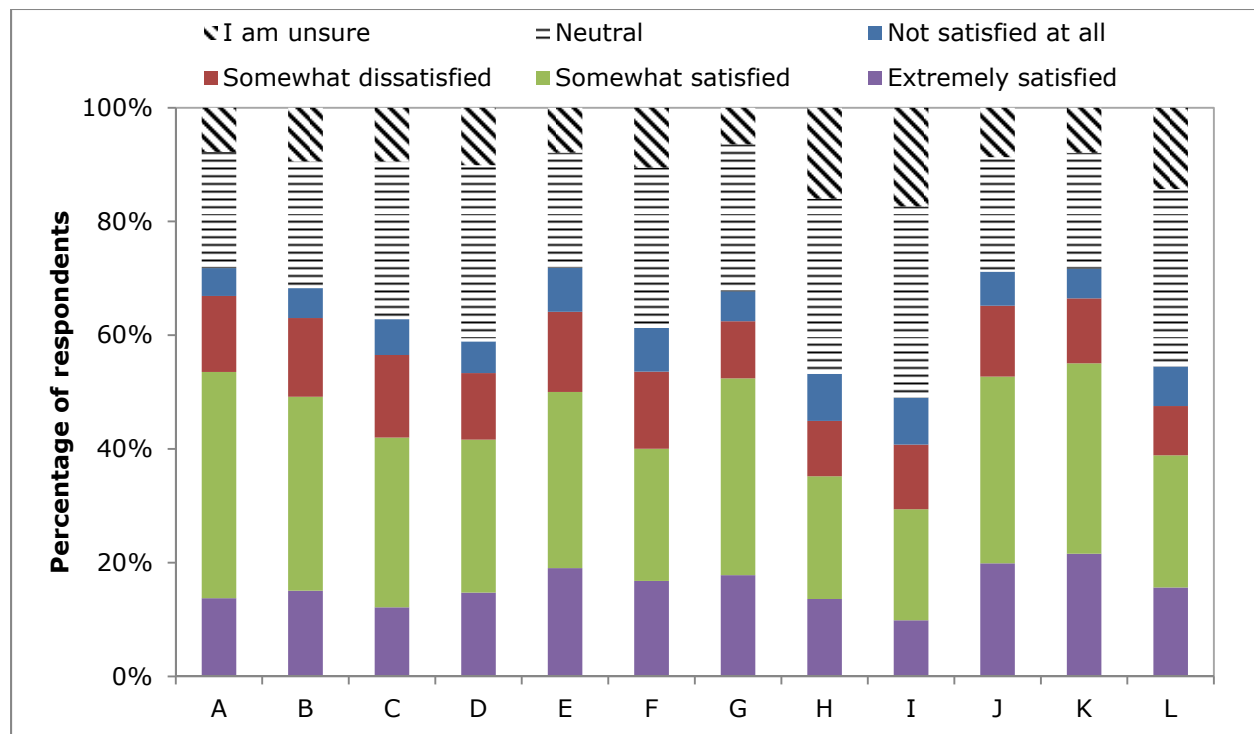


Figure 5. Anglers' satisfaction with recreational fisheries management.

Between 10% and 20% of respondents stated that they were extremely satisfied across all items with the exception of protecting marine habitats. For this item just over one-fifth of respondents (22%) were extremely satisfied with management. However, 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 manages fish stocks to

provide high quality fishing opportunities (54%), restores fish stocks that have been depleted (49%), ensures that harvest limit provides enough fish for recreational fisheries (50%), monitors and enforces recreational fishing regulations (52%), protects fish or shellfish species that are declining (53%), and protects marine habitats (55%; Figure 5).

Across all items less than 10% of respondents stated that they were not satisfied at all with management. Combining the “Not satisfied at all” and “Somewhat dissatisfied” responses shows that about 20% are not satisfied with fisheries management across all items. Anglers were most dissatisfied that recreational fisheries management ensures that the annual harvest limit provides enough fish for recreational fisheries (22%) or that state and federal regulations are consistent (21%). About one-third of respondents were neutral about management strategies minimizing costs to anglers, using high-quality data and assessments in policy-making, incorporating stakeholder interests into policy-making, and addressing conflicts between anglers and marine mammals. Respondents were most unsure that management uses high quality data and assessments in policy-making (16%) or that management incorporates stakeholder interests in policy-making (17%).

Section 5. Managing the Marine Environment.

Respondents were also asked about larger issues relating to the marine environment. 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

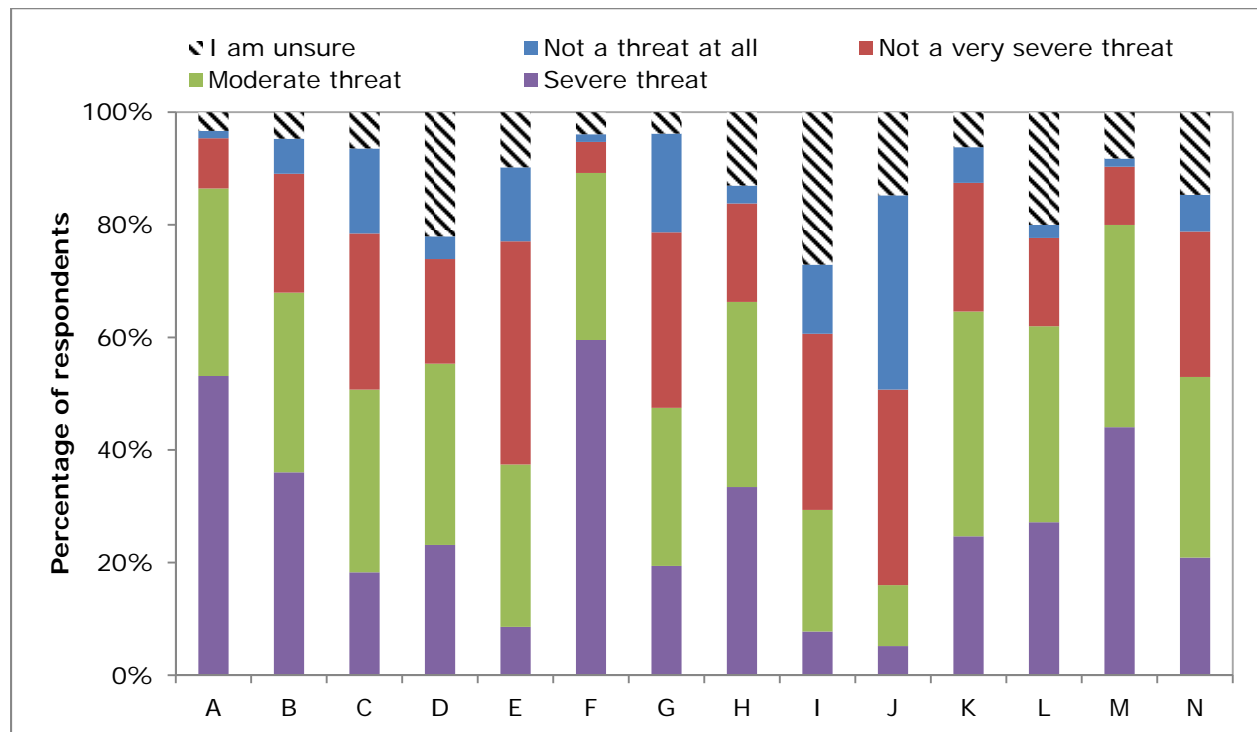


Figure 6. Threats to the marine environment.

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 (60%), industrial pollution (53%), marine habitat loss or degradation

(44%). Thirty to forty percent of respondents thought all but two of the remaining items were a moderate threat – the two exceptions were aquaculture and alternative energy development. The only item that more than 20% of respondents felt posed no threat at all to the marine environment was overfishing in recreational fisheries.

Section 6. About you and your Household

This section elicits information on the respondent, their age, level of education, employment level, household income, sex, race and ethnicity. This standard demographic information will allow us to better understand the unique characteristics of the 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, 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 8). Only five percent of respondents had a household member who made a living (either part-time or full-time) from marine resources. The majority of the respondents were not concerned (49%) or slightly (23%) concerned that fisheries management decisions would affect their livelihood. Most of the respondents were male (84%), white (92%), middle-aged (average age was 53 years old) and had completed at least an associate's degree (Table 9).

Table 8. Respondents' income levels.

Income Category	Number of responses	Percentage (%)
Less than \$20,000	552	7
\$20,000 - \$39,999	1,133	13
\$40,000 - \$59,999	1,401	17
\$60,000 - \$79,999	1,338	16
\$80,000 - \$99,999	1,249	15
\$100,000 - \$149,999	1,608	19
\$150,000 - \$199,999	595	7
\$200,000 or more	638	7

Table 9. Highest level of education for respondents.

Highest level of education	Number of responses	Percentage (%)
12 th grade or less	738	8
High school graduate or GED	2,127	24
Associate or technical school degree or college coursework	2,649	30
Bachelor degree	2,017	23
Advanced, professional, or doctoral degree or coursework	1,413	16

Discussion

Evaluation of the survey effort

Item non-response was typically not high, less than approximately 2% per question. Item non-response was greater than two percent for a few questions (Table 10). As expected, item non-response was greatest (8%) for the demographic questions, particularly the income-related questions. Item non-response was about five percent for the questions related to race and ethnicity. Respondents had difficulty answering if they fished in state or federal waters (item non-response 5.5%) and their most typical fishing mode (item non-response 4.6%).

Table 10. Survey questions with number of responses and number missing for those questions with non-response rates greater than two percent.

Question	Number of responses	Number Missing	% Non-response
Typical location of fishing – state or federal waters	8,747	479	5.5%
Fishing mode	8,817	409	4.6%
How much does each factor (<i>ocean acidification</i>) pose as a threat to the marine environment?	9,040	186	2.1%
How much does each factor (<i>shipping</i>) pose as a threat to the marine environment?	9,032	194	2.1%
How much does each factor (<i>aquaculture</i>) pose as a threat to the marine environment?	9,031	195	2.2%
Number of hours worked for pay	8,520	706	8.3%
Income from marine –related industry	9,024	202	2.2%
Concern about fisheries management decisions ^a	426	9	2.1%
Income category	8,514	712	8.4%
Gender	9,012	214	2.4%
Age	8,924	302	3.4%
Hispanic or Latino	8,741	485	5.5%
Race	8,777	449	5.1%
Highest level of education	8,944	282	3.2%

^a Respondents had to answer 'yes' to the previous question, therefore the total possible number of responses is lowered.

Survey results and recreational fisheries management

Many of the survey results were not surprising, but these results can also be used to provide insight for future recreational fisheries management. The survey results shed light on three important questions: why do anglers fish; what do anglers want from management and how can management improve?

1. Why do anglers fish?

Anglers choose to go fishing for a variety of reasons, but not all of these motivations are important to anglers. Based upon respondents who rated certain trip characteristics as "Extremely important" or "Somewhat important", the survey responses show that the most important part of the fishing trip is fishing with family or friends (87%). Eighty-three percent of respondents stated that catching fish was important, albeit for a variety of reasons. Some cited personal consumption (41%), catching-and-releasing as many fish as possible (39%), or catching a trophy-sized fish (41%) as important components to a fishing trip. However, fishing in an uncongested area (79%) and having access to weather and tide information (76%) were rated as being important for anglers as well. Fishing in a scenic area (48%) and teaching others about fishing (64%) were rated as slightly less important.

Taking the opposite approach, for those anglers who might decrease their number of fishing trips in the next year, it will most likely be for financial reasons. Fishing trip costs and the availability of leisure time were often cited as the reason for decreasing trips in the next year. Fishery conditions was the item cited second to last (behind change in residence).

2. What do anglers want from management now and in the future?

Respondents sometimes had difficulty answering questions on technical recreational fisheries management issues. However, a few trends did emerge. Anglers rated all of the management objectives in the survey (question 11) as somewhat important or extremely important for recreational fishing management. The most important (those responding "Somewhat important" or "Extremely important") objective for recreational fishing management was ensuring future generations will have high quality fishing opportunities (97%). Anglers think that management should ensure that many types of fish are available to catch (86%) and large quantities of fish should be available to be caught (82%); however, respondents rated ensuring adequate numbers of trophy-sized fish as being less important (51%). Regulations were important to the respondents as well. Eighty-six percent of respondents thought that achieving consistency between state and federal regulations and simplifying recreational fishing regulations (85%) were important. However, if an angler were to decrease their trips in the future, recreational fishing regulations were not likely at all (37%) or somewhat unlikely (12%) to affect that decision.

While, providing substantial numbers of fish to catch and providing species diversity was rated as important for most anglers, only about half of the respondents were satisfied with how recreational fisheries management addresses these issues. Fifty-three percent of respondents were either "Extremely satisfied" or "Somewhat satisfied" with how recreational management manages fish stocks to provide high quality opportunities, but 18% of respondents were "Somewhat dissatisfied" or "Not satisfied at all". The same trends were true for how

management restores fish stocks that were previously depleted (49% satisfaction, 19% dissatisfaction) and for how management ensures that the annual harvest limit provides enough fish for recreational fisheries (50% satisfaction, 22% dissatisfaction).

In terms of specific management strategies, respondents seemed to prefer (based upon those who responded "Strongly prefer" or "Somewhat prefer") a mixture of recreational fisheries management tools. Respondents preferred for management to protect and restore fish habitat that has been degraded (89%), to establish minimum size limits (79%) and to provide artificial fish habitat in the ocean (77%).

The question of allocation between recreational and commercial fisheries had somewhat mixed responses. Two-thirds of respondents rated allocating quota from commercial fisheries to recreational fisheries as being extremely important (43%) or somewhat important (28%). However, when respondents were asked their preferences for certain management strategies, only 36% strongly preferred for management to increase the recreational harvest by decreasing the commercial harvest and another third did not prefer this option; the rest of the respondents only slightly preferred this option (20%) or were unsure (10%). One explanation for why respondents think the allocation issue is important, but are split about the actual management objective could be that about one-half of the respondents are satisfied that harvest limits provide enough fish for recreational fisheries.

3. How can recreational fishing management improve?

In terms of general threats to the marine environment, the survey results elicit three priority areas for recreational fisheries management. Respondents rated overfishing in commercial fisheries (60%), industrial pollution (53%) and marine habitat loss or degradation (44%) as the top three severe threats to the marine environment.

For those questions where respondents were asked to rate the importance of a management objective and then how satisfied they are with management's performance, the breakdown is below:

- Sixty-three percent (63%) of respondents think it is "extremely important" for management to recover fish stocks that have been depleted
 - Only 15% of the respondents were "extremely satisfied", 34% were "somewhat satisfied" and 19% were dissatisfied ("somewhat dissatisfied" and "not satisfied at all") with how management recovers depleted fish stocks.
- Fifty-nine percent (59%) of respondents think it is "extremely important" for management to achieve consistency between state and federal regulations
 - Only 17% of respondents were "extremely satisfied", 23% were "somewhat satisfied" and 21% were dissatisfied ("somewhat dissatisfied" and "not satisfied at all") with how management achieves consistency between state and federal regulations
- Fifty-six percent (56%) of respondents think that it is "extremely important" to ensure that the opinions of all stakeholders are considered in policy-making importance.
 - Only 10% of the respondents were "extremely satisfied", 20% were "somewhat satisfied" and 20% were dissatisfied ("somewhat dissatisfied" and "not satisfied at all") with how stakeholder interests are incorporated into the policy-making process.

Based on the survey results, substantial gains in satisfaction could be achieved through the provision of enough fish for the recreational harvest, incorporating stakeholder interests into the decision making process, and enforcing regulations. The top three management objectives that respondents rate as "extremely important" only overlapped somewhat with the above items.

- 78% of respondents rated ensuring that the annual harvest limit provides enough fish for recreational fisheries as "extremely important" for management to address.
- 61% of respondents rated incorporating stakeholder interests into policy-making as "extremely important" for management to address.
- 68% of respondents rated monitoring and enforcing recreational fishing regulations as "extremely important" for management to address.

Literature Cited

Dillman, Don A. 2007. Mail and Internet Surveys: The Tailored Design Method, Second Edition – 2007 Update. John Wiley and Sons: Hoboken, NJ 565 pp. ISBN: 0-470-03856-x.

Gentner, B., M. Price and S. Steinback. 2001. Marine Angler Expenditures in the Pacific Coast Region, 2000, NOAA Technical Memorandum NMFS-F/SPO-49, 57 p.

Lovell, S., S. Steinback, and J. Hilger. 2013. The Economic Contribution of Marine Angler Expenditures in the United States, 2011. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-134, 185 p.

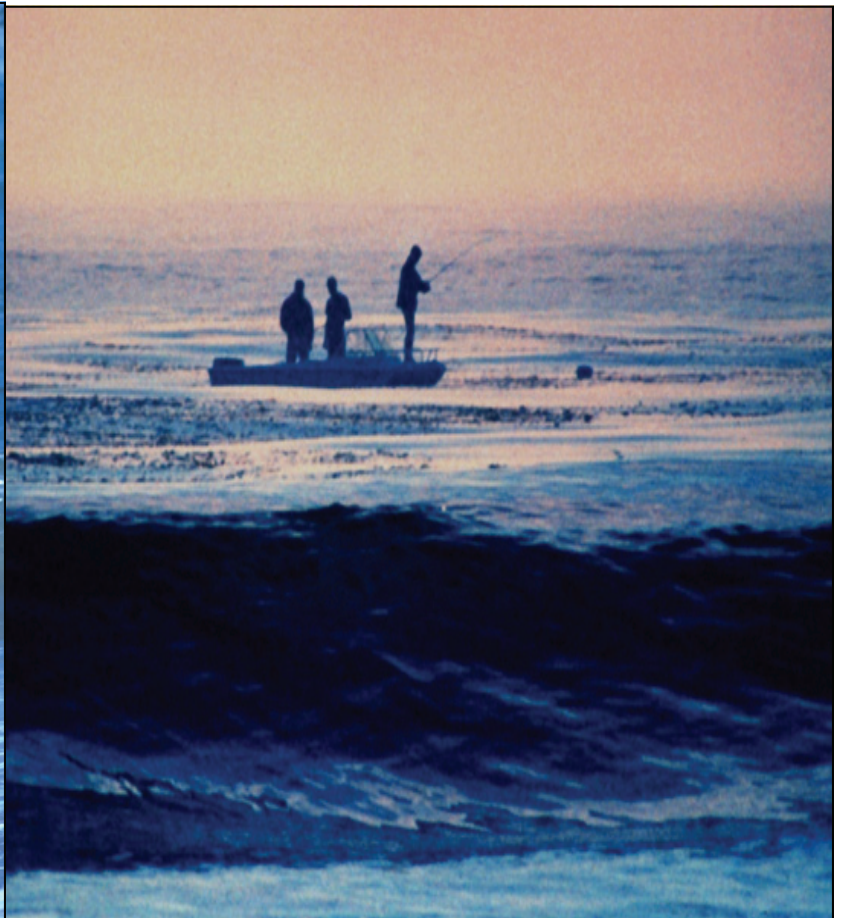
Studenmund, A.H. and H.J. Cassidy. 1987. Using Econometrics: A Practical Guide. Little Brown and Company: Boston, MA 440 pp. ISBN: 0-316-82010-5.

Report on the Results of the 2013 Saltwater and Recreational Fishing Attitudes and Preferences Survey

Appendix A: Survey Questionnaire and Variations by Region

Below is a sample survey, followed by the questions that varied by region.

Saltwater Recreational Fishing Attitudes and Preferences Survey



Your Response Is Important!

Sponsored by
NOAA Fisheries Service

The National Marine Fisheries Service (NMFS) is conducting a survey about **saltwater** recreational fishing and recreational fisheries management.

NMFS is the federal agency responsible for the stewardship of marine fishery resources and their habitat, works together with state agencies to manage fish stocks so that anglers have quality opportunities to participate in recreational fishing. NMFS is conducting this survey to improve our understanding of anglers' expectations and how they may be changing with fishing conditions. Responses to this survey will provide a basis for more informed decision- making for fisheries managers and to determine recreational anglers' preferred management approaches.

Your responses are strictly confidential and will not be associated with your personal identity.

The questions in this survey are about **YOU** and **YOUR** saltwater recreational fishing activities and preferences. Except when asked, please do not include any information from other household members or other saltwater fishing party members.

Marine or saltwater refers to open ocean or any portion of a bay, sound, or river that is saltwater or brackish water.

Please print clearly.

Write numbers as two digits: 2 trips =

Fill in boxes with a or

Have questions? Email nmfs.RecAttitudes2013@noaa.gov

Section 1. Recreational Fishing Participation

In this section, we ask about your recreational fishing experience.

1. How many years have you been saltwater recreational fishing?

Number of years

2. During the past **12 months**, how many days have you spent **saltwater** recreational fishing?

Number of days, count partial days as full

I am unsure

3. During the past 12 months, has most of your fishing been from? (*Check one.*)

Three miles or less from shore

More than three miles from shore

I am unsure

4. During the past 12 months, which area did you most frequently fish from? (*Check one.*)

Washington

Oregon

Northern California

Southern California

Other _____

5. What species do you frequently target when you fish off the coasts of California, Oregon or Washington? (*Check all that apply.*)

Rockfish, greenling, sculpin, other bottomfish

Halibut, other flatfish

Bonito, barracuda, seabass

Sturgeon, striped bass

Surfperches

Salmon

Crabs, clams, lobster, other shellfish

Tuna, yellowtail

Herring, smelt, grunion, sardine, mackerel, anchovy, baitfishes

Other _____

None, I don't typically target any particular species

	Shore (Beach, pier or bridge)	For-hire (Charter, party, or head boats)	Private boat
6. During the past 12 months..... Most of my fishing trips were taken from... (check only one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I took at least one fishing trip from... (check all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Thinking ahead to the next 12 months, is it likely that the number of fishing trips you take will decrease?

- No**, the number of trips I intend to take will stay the same or increase. *Go to question 8.*
- Yes**, the number of trips I intend to take will decrease. *Go to question 7b.*

7b. In the next 12 months, the number of fishing trips you take will decrease for the following reasons...
(For each reason check one box.)

	Very likely	Somewhat likely	Somewhat unlikely	Not likely at all	I am unsure
a. Availability of leisure time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Personal finances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Fishing trip costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Change of residence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Recreational fishing regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Conditions of the fishery (e.g. change in the abundance of fish)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Where do you get information about fishing and other marine related activities and issues?
(Check all that apply.)

- | | |
|--|---|
| <input type="checkbox"/> Friends or Family | <input type="checkbox"/> Television |
| <input type="checkbox"/> Radio | <input type="checkbox"/> Newspapers/magazines |
| <input type="checkbox"/> Social media | <input type="checkbox"/> Fishing websites/blogs |
| <input type="checkbox"/> Organization newsletter/email | <input type="checkbox"/> Federal/state websites |
| <input type="checkbox"/> Other (Please name) _____ | |

Have questions? Email nmfs.RecAttitudes2013@noaa.gov

The table below lists different characteristics of fishing trips. Please read each characteristic and state how important each one is to you. (For each characteristic check one box.)

9. On most of your fishing trips, how important is it to...	Extremely important	Somewhat important	Neutral	Somewhat unimportant	Not important at all
a. Catch fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Catch as many fish as I can for consumption	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Catch-and-release as many fish as possible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Catch a trophy-sized fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Target a particular species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Catch the bag limit of a species I am targeting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Know that I will encounter abundant fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Fish in an area that is not heavily congested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. See information concerning fishing regulations clearly posted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Have access to staff (park staff, marina operators, etc...) to answer questions or provide information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Have easy access to weather and tide information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Fish in a scenic area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Fish with family or friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Teach others about fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 2. Your Preferences for Management Strategies

There are a variety of strategies that recreational fisheries managers can use in managing a fishery. Some strategies regulate the amount of effort (for example, shorter or longer fishing seasons), others regulate catch (for example, bag limits or size limits), and others focus on setting aside areas of the ocean (for example, marine reserves) that provide spawning habitat or shelter for fish.

In this section, we ask for your opinions about the types of strategies that you prefer for managers to use in recreational fisheries management.

10. Please state your preference for using each strategy listed below (For each strategy check one box).

	Strongly prefer	Somewhat prefer	Slightly prefer	Do not prefer at all	I am unsure
a. Establish minimum size limits of the fish you can keep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Establish maximum size limits of the fish you can keep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Limit the total number of fish you can keep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Manage some species as catch-and-release only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Establish longer seasons with more restrictive bag limits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Establish shorter seasons with less restrictive bag limits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Establish shorter seasons with a larger variety of species you can legally catch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Increase the recreational harvest limit by decreasing the commercial harvest limit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Divide the recreational harvest limit among different modes (e.g. private anglers and for-hire/charter boat anglers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Restrict certain types of fishing gear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Require the use of release techniques that reduce fish mortality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Provide artificial fish habitat (e.g. artificial reef) in some areas of the ocean	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Protect and restore fish habitat that has been degraded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Designate some areas of the ocean as marine reserves with catch-and-release fishing only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Close some areas of the ocean for certain seasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have questions? Email nmfs.RecAttitudes2013@noaa.gov

Section 3. Your Preferences for Management Objectives

There are a number of different management objectives that can be pursued by recreational fisheries management. Some objectives may conflict with each other, and some may be more important to you than others.

In this section, we ask for your opinions about the types of objectives that *you* think are important and should be pursued by recreational fisheries management.

11. Please state how important you believe each objective is for recreational fisheries management (*For each objective check one box*).

	Extremely important	Somewhat important	Neutral	Somewhat unimportant	Not important at all	I am unsure
a. Ensure that large quantities of fish are available to catch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Ensure that many different fish species are available to catch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Ensure that adequate numbers of trophy-sized fish are available to catch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Reduce the mortality associated with releasing fish that are not legal to keep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Ensure that future generations will have high quality fishing opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Allocate some quota from commercial fisheries to recreational fisheries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Recover fish stocks that have been depleted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Protect marine biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Protect threatened or endangered marine species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Achieve consistency between state and federal fishing regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Simplify recreational fishing regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Monitor and enforce recreational fishing regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Ensure that the opinions of all recreational fisheries stakeholders are considered in policy-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Ensure opportunities to fish in high quality fishing areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Ensure that fishing sites are not heavily congested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 4. Your Satisfaction with Recreational Fisheries Management

In this section, we ask about your satisfaction level with recreational fisheries management.

12. How satisfied are you that recreational fisheries management is adequately addressing each item below
(For each item, check one box).

	Extremely satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Not satisfied at all	I am unsure
a. Managing fish stocks to provide high quality fishing opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Restoring fish stocks that have been depleted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Adjust regulations in a timely manner to address changing conditions of the fishery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Using management strategies that minimize costs to anglers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Ensure that the annual harvest limit provides enough fish for recreational fisheries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Ensuring that state and federal regulations are consistent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Monitoring and enforcing recreational fishing regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Using high quality data and assessments in policy-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Incorporating stakeholder interests in policy-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Protecting fish or shellfish species that are declining	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Protecting marine habitats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Addressing conflicts between anglers and marine mammals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have questions? Email nmfs.RecAttitudes2013@noaa.gov

Section 5. Managing the Marine Environment

In this section, we ask about broader issues concerning management of the marine environment.

13. In your opinion, how much of a threat, if any, does each of the following factors pose to the marine environment? (For each factor, check one box.)

	Severe threat	Moderate threat	Not a very severe threat	Not a threat at all	I am unsure
a. Industrial pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oil and gas extraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Ocean acidification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Shipping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Overfishing in commercial fisheries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Overfishing in recreational fisheries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Non-native species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Aquaculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Alternative energy (e.g. wave or wind) development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Coastal development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Algal blooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Marine habitat loss or degradation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Dams/barriers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 6. About You and Your Household

The following questions will help us know more about recreational saltwater anglers. The information you provide will remain STRICTLY CONFIDENTIAL and will not be associated with your personal identity.

14. In the past 12 months, how many hours per week did you typically work for pay?

15. Which of the following categories best describes your household's total annual income before taxes in 2012? *(Please check only one category.)*

Less than \$20,000

\$80,000-\$99,999

\$20,000-\$39,999

\$100,000-\$149,999

\$40,000-\$59,999

\$150,000-\$199,999

\$60,000-\$79,999

\$200,000 or more

16. Do you or anyone in your household make a living part-time or full-time from work directly associated with marine resources or the marine environment? *(Please check one.)*

Yes

No

I am unsure



If yes, how concerned are you that fisheries management decisions will impact your livelihood? *(Please check one.)*

Very concerned

Somewhat concerned

Slightly concerned

Not concerned at all

17. Are you male or female?

Male

Female

18. In what year were you born?

(Year)

Have questions? Email nmfs.RecAttitudes2013@noaa.gov

19. What is your ethnicity? *(Please check one.)*

- Hispanic or Latino
- Not Hispanic or Latino

20. What is your race? *(Please check all that apply.)*

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White

21. What is the highest level of education you have completed? *(Please mark only **one** category.)*

- 12th Grade or less
- High school graduate or GED
- Associate or technical school degree or college coursework
- Bachelor's degree (ex: BA or BS)
- Advanced, professional, or doctoral degree or coursework

Thank You For Completing This Survey!

We appreciate your participation in this survey. If you would like further information on prior surveys or economic information related to marine recreational angling, please visit our website at <http://www.st.nmfs.noaa.gov/economics/fisheries/recreational/index>

Please write any additional comments you have in the space below:

Please check this box if you would like a copy of the survey results.

Have questions? Email nmfs.RecAttitudes2013@noaa.gov

OMB Control No. 0648-0656. Expiration Date: 01/31/2016

Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Ayeisha Brinson, NOAA Fisheries Service, 1315 East-West Hwy., Silver Spring, MD 20910. This is a voluntary survey, and responses are kept confidential as required by section 402 (b) of the Magnuson-Stevens Act and NOAA Administrative Order 216-100, Confidentiality of Fisheries Statistics, and will not be released for public use except in aggregate statistical form without identification as to its source. Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subjected to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

Survey questions 4 and 5 varied by region. Below are the different questions for each region.

Alaska Region

4. During the past 12 months, which area did you most frequently fish from? (*Check one.*)

- Southeast Alaska
- South central Alaska
- Other areas in Alaska _____
- Other _____

5. What species do you frequently target when you fish off the coast of Alaska? (*Check all that apply.*)

- Pacific halibut
- Razor clams
- Chum salmon
- Pink salmon
- Sockeye salmon
- Other _____
- None, I don't typically target any particular species
- Coho salmon
- Chinook salmon
- Greenling (lingcod)
- Rockfish

West Coast Region

4. During the past 12 months, which area did you most frequently fish from? (*Check one.*)

- Washington
- Northern California
- Other _____
- Oregon
- Southern California

5. What species do you frequently target when you fish off the coasts of California, Oregon or Washington? (*Check all that apply.*)

- Rockfish, greenling, sculpin, other bottomfish
- Bonito, barracuda, seabass
- Surfperches
- Crabs, clams, lobster, other shellfish
- Herring, smelt, grunion, sardine, mackerel, anchovy, baitfishes
- Other _____
- None, I don't typically target any particular species
- Halibut, other flatfish
- Sturgeon, striped bass
- Salmon
- Tuna, yellowtail

Gulf of Mexico Region

4. During the past 12 months, which area did you most frequently fish from? (*Check one.*)

- Texas
- Mississippi
- West Coast** of Florida
- Other _____
- Alabama
- Louisiana

5. What species do you frequently target when you fish off the coasts of Texas, Alabama, Mississippi, Louisiana, or the West Coast of Florida? (*Check all that apply.*)

- Drums/grunts (red/black drum/Atlantic croaker)
- Black seabass
- Sand, silver or spotted seatrout
- Dolphinfish/Cobia/Wahoo
- Jacks (Amberjack, Crevalle jack, pompano, permit, blue runner)
- Other _____
- None, I don't typically target any particular species
- Red snapper
- Gulf and southern kingfish
- Spanish mackerel
- Sharks

North Atlantic

4. During the past 12 months, which area did you most frequently fish from? (*Check one.*)

- Maine
- Massachusetts
- Connecticut
- Other _____
- New Hampshire
- Rhode Island

5. What species do you frequently target when you fish off the coasts of Maine, New Hampshire, Massachusetts, Rhode Island, or Connecticut? (*Check all that apply.*)

- Striped bass
- Atlantic mackerel
- Bluefish
- Scup
- Tautog
- Other _____
- None, I don't typically target any particular species
- Atlantic cod
- Bluefin tuna
- Little tunny
- Summer or Winter flounder

Mid-Atlantic Region

4. During the past 12 months, which area did you most frequently fish from? (*Check one.*)

- New York
- Pennsylvania
- Maryland
- North Carolina
- Other _____
- New Jersey
- Delaware
- Virginia

5. What species do you frequently target when you fish off the coasts of New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, or North Carolina? (*Check all that apply.*)

- Striped bass
- Atlantic croaker
- Bluefish
- Scup
- Tautog
- Other _____
- None, I don't typically target any particular species
- Black seabass
- Spot
- Weakfish drum
- Summer or Winter flounder

South Atlantic Region

4. During the past 12 months, which area did you most frequently fish from? (*Check one.*)

- North Carolina
- Georgia
- Other _____
- South Carolina
- East Coast** of Florida

5. What species do you frequently target when you fish off the coasts of North Carolina, South Carolina, Georgia, or the East Coast of Florida? (*Check all that apply.*)

- Drums/grunts (red/black drum/Atlantic croaker)
- Black seabass
- Spotted seatrout
- Dolphinfish/Cobia/Wahoo
- Jacks (Amberjack, Crevalle jack, pompano, permit, blue runner)
- Other _____
- None, I don't typically target any particular species
- Spot
- Bluefish
- King mackerel
- Sharks