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Abstract

Highly migratory species (tunas, billfish, swordfish, and sharks) draw a dedicated following of specialized marine anglers that spend significant amounts of money in pursuit of these "big game" fish. In 2011, private vessels located in the Northeast and Mid-Atlantic coastal states (Maine to North Carolina) were estimated to have made 39,440 trips in pursuit of tuna, sharks, and billfish. In 2011, NOAA Fisheries conducted a mail survey of Atlantic Highly Migratory Species (HMS) Angling permit holders to collect data on expenditures associated with their most recent HMS fishing trip, and durable goods used for marine recreational angling in the previous 12 months. Atlantic HMS Angling Permit holders were estimated to have spent $23.2 million on HMS trip expenditures (e.g., fuel, ice, bait, food), and $151 million on durable goods (e.g., boats, vehicles, rods and reels). These expenditures are estimated to have contributed $266 million in total economic output to the economy of the Northeast and Mid-Atlantic regions, $153 million in value added outputs, $96 million in labor income, and 1,824 jobs from Maine to North Carolina. It should be noted that this survey only targeted HMS Angling permit holders; thus, estimates of economic impact do not include those associated with HMS for-hire trips, and impacts generated by the trip expenditures of those fishing with HMS Angling permit holders as only the vessel owner is required to purchase a permit.

Introduction

In 2011, as part of the National Marine Recreational Fishing Expenditure Survey, (NES) the Office of Science and Technology at NOAA Fisheries surveyed recreational anglers about their expenditures associated with fishing for Atlantic Highly Migratory Species (HMS) from Maine to North Carolina. Atlantic HMS are defined as federally regulated sharks, blue and white marlin, sailfish, roundscale spearfish, swordfish, and federally regulated Atlantic tunas including bluefin, yellowfin, bigeye, skipjack, and albacore (NMFS, 2011). This study sought to update and expand on trip expenditure data collected by NOAA Fisheries in the Northeast Region in 1998 (Steinback and Gentner, 2001).

The Northeast and Mid-Atlantic Regions represent the primary fishing areas for the Atlantic recreational tuna fishery, especially for Atlantic bluefin tuna. Data collection on these recreational fisheries is a major priority for NOAA Fisheries which has conducted the annual Large Pelagic Survey (LPS) since 1992 from Maine to Virginia in order to obtain more precise estimates of recreational harvest of HMS in the region. As top predators that remain farther off shore than most fisheries, HMS support comparatively small recreational fisheries whose participants are generally under-represented in larger national surveys of marine anglers due to their smaller population size, relatively fewer trips, and infrequent landings. However, anglers that pursue HMS tend to be far more specialized than the average marine angler, and often spend significantly more on individual fishing trips than other anglers (Bohnsack et al., 2002; Ditton

and Stoll, 2003). As such, HMS recreational fisheries can provide significant contributions to local economies whenever these species are seasonally abundant.

The objective of surveying HMS Angling Permit holders was to gather data on the expenditures associated with their most recent fishing trip targeting Atlantic HMS, and their annual expenditures on durable goods. A regional economic input-output model was created to estimate the economic contributions of HMS angler expenditures to the economy of the Northeast and Mid-Atlantic region.

The input-output model used in this report generates four different metrics, referred to as impacts, for assessing the contributions to a region's economy from expenditures on marine recreational fishing. The different measures of impacts are:

- **Output** is the gross value of sales by businesses within the economic region affected by an activity. In the rest of the document, the terms "sales impacts" and "output impacts" are used interchangeably.
- **Labor income** includes personal income (wages and salaries) and proprietors' income (income from self-employment).
- **Value Added** is the contribution made to the gross domestic product in a region from marine recreational fishing.
- **Employment** is specified on the basis of full-time and part-time jobs. There is significant part-time and seasonal employment in commercial and recreational fishing and many other industries.

The first three types of impacts are measured in terms of dollars, whereas employment impacts are measured in terms of number of jobs. Additionally, the four categories of impacts are not independent and it is important to note that adding them together would result in some double counting of impacts. Throughout this report, the results of the input-output analysis are referred to as either "economic contributions" or "economic impacts" with no implied distinction in the terms.

Methods

Sample Frame and Procedures

The sample frame for the 2011 NES sub-sample of Atlantic HMS anglers consisted of individuals that purchased Atlantic HMS Angling permits during calendar year 2011, and resided within a coastal state located between Maine and North Carolina (N = 14,206). Atlantic HMS Angling permits are tied to a vessel when issued, and authorize anyone fishing from that vessel to fish for, retain, or possess any federally regulated HMS (NMFS, 2011). Because the available sampling frame was for a vessel permit, the frame can only be considered representative of the permit holders themselves (who are likely the vessel owners in most cases), and not the individuals fishing with them. Also, because the HMS Angling permit is not a valid permit for charter and head boats, the expenditure and economic impact estimates generated by this study

do not include those generated by Atlantic HMS recreational fishing that occurs on for-hire vessels. For both these reasons, the results presented in this report should only be interpreted as representing the expenditures and economic contributions of Atlantic HMS Angling permit holders, and not all Atlantic HMS anglers.

Surveys were emailed or mailed to 3,796 Atlantic HMS Angling Permit holders. Permit holders were stratified by state of residence and the final sample was allocated proportionally by state (Table 1). Permit holders were sampled in two month waves from May through December in order to collect trip expenditure data from trips conducted throughout the year. Sampling did not begin until May because most Atlantic HMS trips are seasonal and not much activity occurs before April and May in the Northeast and Mid-Atlantic regions. The sampling protocol followed a modified Dillman method (Dillman, 2009). If an email address was available for a respondent, then the respondent was first sent an email invitation to access a web based version of the survey using a unique user identification code and password. Respondents were asked to complete the web survey within 1 week of receiving the email. Three days later, they received a reminder email. Individuals with complete postal addresses, and who did not complete the survey online within one week, were then routed into the postal mail group.

Anglers in the postal group were first sent a cover letter describing the purpose of the survey, a questionnaire booklet, and a business reply envelope. One week later, all anglers were sent a post card that thanked the angler for participating in the survey and included a reminder to return the survey. Three weeks after the first mailing, anglers whose surveys had not yet been received were sent a modified cover letter and another copy of the questionnaire. The second cover letter offered the option of completing the survey online and provided the web address to access the survey as well as a unique user name and password. The provision of the web address in the second cover letter was based on studies that showed reduced overall response rates when an online option was given in the first contact versus providing that option in a subsequent contact (ICF Macro, Inc., 2012).

Survey Instrument

The survey asked selected HMS permit holders to provide data on their most recent recreational fishing trip on which they targeted HMS, and any expenditures they had made on durable goods in the previous 12 months that were used for marine recreational fishing for HMS species and non-HMS finfish species (shellfish were excluded). In regards to their most recent HMS fishing trip, respondents were asked to provide both descriptive and expenditure data on the trip. Respondents were asked what state their most recent HMS trip occurred in, what specific species were targeted (top two), the length of the trip in days if it was an overnight trip, how many nights were spent away from their primary residence, how many individuals accompanied them on the trip, how many days were spent fishing, what fishing methods were used, and whether fishing was the primary purpose of the trip or not. Respondents were asked to estimate their total expenditures for the trip for fuel (auto and boat), auto rental, lodging, public transportation, food (groceries and restaurants), bait, ice, fish processing, and gifts or souvenirs. Respondents were

also asked to estimate the percentage of their costs spent in the state of the fishing trip for each expenditure category. Based on survey responses the recall period for the majority of HMS trips was one month or less.

Questions related to the purchases of durable goods (boats, second homes, etc.) asked anglers for their marine recreational fishing-related expenditures in the prior 12 months and focused on expenditures in the state of the most recent HMS trip. The survey also asked about expenditures on semi-durable goods such as fishing tackle and gear (fishing line, hooks, lures, etc.), rods and reels, fishing licenses, special clothing, publications (books, magazines, newspapers, etc.), camping equipment, binoculars, dues and contributions to fishing clubs, and processing or taxidermy costs. Questions on durable goods were related to boats, vehicles, and second homes. Anglers were asked if they owned a boat that they used for HMS fishing in the prior 12 months. Additional questions were asked on the length and horsepower of the boat, and the percentage of time in the prior 12 months that they had used it for marine recreational fishing. Boat-related expenditures included purchases of motorboats and accessories, non-motorized boats, boating electronics, mooring and storage, boat insurance, boat and trailer license and registration, and boat and trailer maintenance and repairs. Similar questions were asked about vehicles and second homes used for marine recreational fishing in the past 12 months (purchase, repair and maintenance, insurance, and license/registration for vehicles). As with boats, respondents were asked to estimate the percentage of time that the vehicle and second home were used for marine recreational fishing. The final section of the mail survey collected a set of socioeconomic and demographic variables, including gender, age, ethnicity, race, annual household income, education level, number of hours worked per week, and the years of marine fishing experience.

Expenditure Calculations

Mean trip expenditures were calculated for an angler-trip, defined as one day of fishing for one angler. On the survey, anglers were asked to estimate total expenditures for the entire trip away from their permanent residence if the trip involved an overnight stay. Data on the number of nights anglers spent away from their permanent residence and the number of days spent fishing was collected and used to calculate expenditures per angler day. Anglers were asked to report what they personally spent on either themselves or others. They were asked not to include expenses that others paid on their behalf. If they did not have expenditures in a given category, they were asked to record zero rather than leaving the item blank. Missing values for trip expenditure categories were replaced with zero if an angler reported a non-zero dollar amount for at least one other trip expenditure category. The trip expenditure questions included an "other" category that allowed for an open-ended response for the expenditure type and the amount. These responses were recoded into one of the other expenditure categories if applicable and separable into discrete amounts. The survey also asked anglers to estimate the percentage of trip expenditures that were spent in the state of the most recent fishing trip. These percentages were multiplied by each trip expenditure category to calculate the final expenditure per respondent spent in the state of the trip. If a percentage was left blank, it was replaced with either 100% in the case of residents, or for non-residents, a statewide average percentage (based on non-resident records only).

For calculating mean and total trip expenditures per expenditure item, trips were divided based on the category of HMS that was the primary target of the trip (i.e., tuna, billfish, or sharks). Trips were classified as tuna trips if the respondent indicated their primary target had been bluefin, yellowfin, bigeye, albacore, or skipjack tuna; any combination of the five; or simply tuna in general. Billfish trips were HMS trips whose primary targets were blue or white marlin, or sailfish. Finally, given the more northern extent of the surveyed region, most shark trips targeted pelagic sharks such as shortfin mako, common thresher, blue sharks, or porbeagle sharks. However, some shark trips in the southern range of the survey area also targeted blacktip sharks. No estimate of trip expenditures and economic impact was estimated for swordfish angling due to insufficient sample size (n = 2 trip reports). Sample weights were used to adjust mean trip expenditures for survey stratification which was done by state to ensure proportional representation of each state in the sample.

Total trip expenditures per HMS target species group were estimated by extrapolating mean trip expenditure estimates by LPS estimates of the number of daily vessel trips taken for each species group from June through October of 2011 (Table 1). Daily vessel trips were estimated for each species group (i.e., tunas, billfish, sharks) by estimating the number of HMS trips taken between Maine and Virginia for which a member of each species group was either the primary or secondary target species. A vessel trip was defined as one day of fishing for HMS by a single vessel regardless of the number of anglers that are on board. So whether there are three or five anglers aboard a given vessel, it still only counts as one day of fishing. This is different from the Marine Recreational Information Program (MRIP) survey which estimates effort daily effort on a per angler basis, such that if three anglers go fishing for a day on the same boat it counts as three trips as opposed to only one. Because the LPS does not extend to North Carolina, the number of HMS trips taken in North Carolina was estimated by dividing the number of HMS trips estimated by the MRIP survey by the average party size in order to convert the estimate to a daily vessel trip estimate. All trip estimates were for the June through October, 2011, period which are the only months in which the LPS is conducted.

Mean durable expenditures were estimated for the entire survey sample, giving one estimate of durable goods expenditures for HMS angling from Maine to North Carolina. Anglers were asked to estimate the percent of time that they used the items for marine fishing and the percentage spent in the survey state. The percentages were then multiplied by the expenditure amount in order to get the amount attributed to marine fishing spent in the survey state. Only durable goods used primarily for fishing (50% or over) were included. For any items that anglers reported using less than 50% of the time for marine fishing, expenditures were recoded to zero.

For calculating economic impacts, only those expenditures that generate new economic activity matter. Angler purchases of used goods from private parties do not generate any new economic activity and are considered transfer payments from one household to another. Respondents were asked if purchases of boats, boat accessories, vehicles, and second homes were made new or used, from dealers or private parties, or were financed. If one of these items was purchased new within the survey state, then the purchase price was included in the estimation procedures. If, however, any of these items were purchased used from a private party and not financed, the expenditure was not included. If the purchase was financed, regardless of whether used or new,

financed charges were assumed to be 2% of the loan principal. For used boats purchased through a dealer, used boat accessories, and used vehicles, the purchase price was multiplied by 19% to account for dealer revenues. This percentage was based on the reported retail margins associated with the industrial sector that sells boats and vehicles in IMPLAN Version 3 (MIG, 2008). To calculate the loan principal and the 2011 interest payment to the banking sector for boats, vehicles, and homes, microdata from the 2010 Consumer Expenditure Survey (CES) for each of these expenditure categories were used to calculate the average loan term, the average principal balance, and the average interest rate (CES 2010). Amortization equations were used to develop the additional categories for each respondent purchasing a financed boat, boat accessory, vehicle, or second home. Additionally, for second homes, the average U.S. property tax was obtained from the Tax Foundation (Tax Foundation, 2012). Real estate commissions from home purchases were assumed to be 6%. Finally, respondents were also asked how many days they had spent saltwater fishing in the previous 12 months and how many of those days were spent fishing for HMS. These numbers were used to estimate what percentage of each angler's fishing effort was spent targeting HMS. This ratio was then used to calculate separate estimates of durable good expenditures that could be minimally credited to HMS fishing after excluding permit holders that reported no HMS trips in the previous 12 months (5.4%). This allowed us to generate separate estimates of the economic impact of durable good expenditures HMS Angling Permit holders for marine recreational fishing overall and HMS fishing specifically. Total annual marine angling durable good expenditures per category were estimated by extrapolating the estimated mean expenditures by the number of Atlantic HMS Angling permit holders from Maine to North Carolina (N = 14,206) while mean durable expenditures adjusted for the HMS to saltwater fishing ratio were extrapolated by the number of HMS Angling Permit holders adjusted for the percentage that reported no HMS trips in the previous 12 months (N = 13,439).

Economic Contribution Analysis

The economic input-output model of Atlantic HMS angler contributions to the Northeast and Mid-Atlantic regional economy was created using IMPLAN (Minnesota IMPLAN Group, Inc., 2010), a commercially available software. Input-output models estimate the economic contributions, or impacts, of monetary expenditures by consumers and businesses by tracking a regional economy's ability to absorb and circulate their expenses. Impacts accessed by the IMPLAN model include direct, indirect, and induced impacts. Direct impacts are the initial expenditures made by anglers with businesses within the regional economy being examined. Indirect impacts represent expenditures made by businesses within the study region that support and resupply the businesses where anglers spend their money. Finally, induced impacts represent the household spending of individuals within the study region whose jobs are supported by angler expenditures. The IMPLAN model has been regularly used in the fisheries literature to estimate the economic impacts and contribution of angler expenditures in studies from the national level (Gentner and Steinback, 2006) to studies of individual fisheries (Bohnsack et al., 2002).

Separate models for HMS angler trip expenditures by target species group (tunas, billfish, sharks) and for durable goods expenditures (total marine angling and adjusted for percent HMS

angling) were estimated. To accomplish this, total expenditures for each category were assigned to the appropriate IMPLAN industrial sectors within the models for the aggregated region of coastal states from Maine to North Carolina. Expenditure categories that included more than one IMPLAN sector were not aggregated to avoid the biases associated with aggregating. Instead, the expenditure in the category was distributed to individual IMPLAN sectors based on the proportion of final household demand in the study region. Because the typical grocery or convenience store purchase includes a wide range of products, expenditures at grocery and convenience stores were allocated across sectors based on IMPLAN's Personal Consumption Expenditure (PCE) activity database for grocery store purchases. PCE activity databases are created by the Bureau of Economic Analysis and represent national average expenditure patterns. Similarly, expenditures on boat and vehicle registrations and licenses, fishing licenses, property taxes, and parking /site access fees were allocated across sectors using IMPLAN's *State/Local Government Non-Education Institution Spending Pattern* database. When run, each model would then generate estimates of total output, value added output, labor income, and employment. Further details on how angler expenditure models estimate economic contributions to regional economies can be found in Lovell et al. (2013).

Results and Discussion

Response Rate and Descriptive Statistics

Ultimately, of the 3,796 Atlantic HMS Angling Permit holders sampled, 2,068 returned completed surveys (710 via web; 1,358 via mail) and 168 were ineligible (i.e., non-deliverable, deceased, refused) for a 57% response rate (Table 2). HMS anglers were asked to provide expenditure data on their most recent marine fishing trip spent targeting HMS. Respondents were most likely to report HMS trips in New Jersey (25.3%), Massachusetts (24.7%), and New York (11.4%) (Table 3). This breakdown is about what would be expected given the number of permitted HMS anglers per state (Table 1). The most commonly reported trip state varied by HMS species pursued. Tuna trips were most likely to originate from Massachusetts (28.9%) or New Jersey (26.8%); billfish trips from North Carolina (39.6%) and Maryland (24.2%); and shark trips from New York (39.7%) and New Jersey (20.9). Reported trips were also most likely to have occurred in the summer or early fall with 88.7% occurring between July and October (Table 4). HMS anglers were not surveyed during the first two waves of the year (January-February, March-April) so all reported trip percentages only reflect fishing actively from May to December 2011, and should not be assumed to be representative of the distribution of HMS trips throughout the entire year. Approximately a third (34%) of HMS angling trips involved spending at least one night away from home, and just under a quarter (24%) involved two or more days of fishing (Table 5). These percentages varied across species targeted with nearly half (49%) of billfish trips involving at least one night away from home, and only 16 percent of shark trips lasting two or more days (Table 5). Average party size for HMS angling trips was 3.7 anglers, with billfish trips having the largest average party size at 4.8 anglers (Table 5).

HMS Angling permit holders were also asked about their general fishing behavior and demographics. HMS Angling permit holders reported that they had 34 years of marine recreational fishing experience on average (Table 5). In regards to the state in which they had made their most recent HMS fishing trip, HMS Angling permit holders reported fishing in saltwater 32 days in the previous 12 months of which 11 days were spent fishing for HMS, or 34 percent of their days spent fishing in saltwater (Table 5); however, the percentage of trips targeting HMS rose to 45 percent when excluding permit holders that reported not fishing for HMS in the previous 12 months. Anglers that targeted billfish on their most recent HMS trip spent the highest (52%) proportion of their saltwater fishing trips pursuing HMS (Table 5). Conversely, anglers that targeted sharks only spent 22 percent of their saltwater fishing trips targeting HMS on average (Table 5). HMS Angling permit holders were 53 years old on average, and were overwhelmingly white (98.7%) and male (99.3%) (Table 6). In comparison, general saltwater private boat angler in the region were the roughly the same age (54), and only slightly more diverse demographically (96% white, 95% male). HMS Angling permit holders had a median household income of over $100,000, and the majority (52.1%) possessed at least one college degree (Table 6). General marine private boat anglers had a median household income between $60,000 and $80 thousand, and only 35% had at least a college degree (Table 6). It is important to note that the demographic data presented for HMS anglers in this report only pertains to HMS Angling permit holders, and not the individuals that join them on their fishing trips. It bears repeating that each HMS Angling permit is tied to a vessel, and thus allows anyone on the vessel to fish for HMS.

Expenditures and Economic Impacts

In 2011, HMS Angling Permit holders in the northeast and mid-Atlantic regions (Maine to North Carolina) were estimated to have spent $23 million on private boat trips targeting HMS, and $151 million on durable goods used for saltwater fishing with at least $76 million of those dollars attributed to HMS fishing trips (based on the percentage of their saltwater fishing trips targeting HMS) (Table 10). The vast majority (86%) of these expenditures were for durable goods ($192 million) with the largest average annual expenditures coming for new boats ($3,178), boat storage ($1,258), and boat maintenance ($1,085) (Table 8). The Atlantic HMS input-output models that were developed estimate that these expenditures generated $266 million in total economic outputs, which included $153 million in value added outputs (total outputs minus business costs, or labor income and profits), $96 million in labor income, and generating 1,824 full and part-time jobs from Maine to North Carolina.

HMS Angling permit holders spent an average of $10,410 on durable goods for saltwater angling in the study region in 2011 (Table 8). Of these expenditures, $5,435 could be minimally attributed to HMS fishing when adjusted for the percentage of their saltwater fishing trips spent targeting HMS in the previous 12 months (Table 9). Durable good expenditures included permit holder purchases related to boats, vehicles, second homes, equipment, fees, and services associated with marine recreational fishing (Table 8). Durable good expenditures associated with saltwater angling by HMS Angling Permit holders in 2011 generated $235 million in total economic outputs, and generated 1,608 jobs of which 727 could be attributed to HMS angling after adjusting durable good expenditures for the percentage of permit holder trips that targeted HMS. In comparison, anglers pursuing all other forms of marine recreational fishing in the

region spent $4.9 billion on durable goods for marine angling, generating $5 billion in economic output, but only spent $1,312 per angler (13% of what HMS anglers spent) in 2011 (Table 11; Lovell et al., 2013). That HMS Angling Permit holders would spend so much more in durable goods within a year is not totally unexpected. A large portion of general marine anglers fish from shore while virtually all HMS fishing, with the exception of some coastal shark fishing, is done from boats. Private boats typically used for HMS fishing also tend to be larger on average, and more expensive than the average saltwater fishing boat, as HMS fisheries often require long trips offshore where most HMS occur.

Compared to their expenditures on durable goods, HMS Angling permit holders spent $23.2 million on fishing trips targeting HMS with an average of $587 spent per trip over 39,440 trips (Table 10). Trip expenditures by HMS Angling permit holders included purchases of fuel, food, lodging, bait, ice, rentals, access and tournament fees, and gifts (Table 7). These expenditures generated $31.3 million in total economic output, $17.7 million in value added output, $10.4 million in labor income, and 216 full and part-time jobs. In comparison, anglers pursuing other marine fisheries in the same region spent $1.52 billion on fishing trips generating $1.96 billion in total economic output and 17,064 jobs (Table 11; Lovell et al., 2013). However, anglers pursuing other marine fisheries only spent $80 per day on average over 19 million trips. In comparison, HMS Angling permit holders spent $14.8 million over 27,648 days targeting tuna ($534/day), $4.6 million over 5,123 days targeting billfish ($900/day), and $3.8 million over 6,669 days targeting sharks ($567/day) (Table 10). Figure 1 illustrates the distribution of total trip costs by species targeted. Boat fuel was the largest expenditure item for HMS trips by far, and made up between 55% ($309/day for shark trips) and 73% ($659/day for billfish trips) of average trip expenditures (Table 7).

It should be noted that comparisons of economic output generated by HMS expenditures versus other marine angling expenditures presented here come with an important caveat. This study utilized a combined regional model of coastal states from Maine to North Carolina to estimate the economic outputs associated with of HMS angling expenditures. Such a combined regional model will account for outputs generated in all states within the model no matter in which state an individual expenditure was made. Conversely, the estimates of economic output generated by other marine recreational fishing presented here come from a summation of the results of individually run state models. As such, the presented estimates of total economic output and employment for other marine angling expenditures do not include outputs generated by expenditures made in other states within the region.

Comparisons to Previous Studies

Estimated expenditures associated with HMS trips have increased considerably in the previous decade (NMFS, 2008). Previous angler expenditure studies conducted by NOAA Fisheries in the Northeast (1998), and the Southeast (2000) estimated HMS daily trip expenditures to be $686 per person on billfish trips ($896 when adjusted for inflation), $106 per tuna trips ($138 adjusted for inflation), and $85 on pelagic shark trips ($111 adjusted for inflation) (NMFS, 2008) with an overall average of $122 per day per person for all HMS trips ($159 adjusted for inflation). While some of these estimates are substantially less than the current study's estimates, much of the increase can likely be attributed to the rise in fuel prices over the ensuing decade as they make up

the majority of HMS trip expenditures. Additionally, the earlier NOAA Fisheries studies collected their data via a follow-up telephone survey of anglers intercepted on-site by the Marine Recreational Fishing Statistics Survey (MRFSS). As such, these studies would have also included the trip expenditures of individuals accompanying HMS Angling permit holders (the sole targets of the current study). Because the HMS Angling permit is required be tied to a licensed vessel, the current survey targeting permit holders would have in effect exclusively targeted vessel owners who are likely to have higher trip expenditures on average compared to those accompanying them especially if boat fuel costs were not shared.

Two papers published in the previous decade have also looked at recreational fisheries for HMS in the current study region. Bohnsack et al. (2002) examined the economic impact of a seasonal (winter months) recreational fishery for trophy bluefin tuna out of Hatteras, NC, that developed in the mid-1990's, and continues to this day. The study looked at both charter and private boat tuna trips in the winter of 1997, and found similar average daily expenditures for the two groups. North Carolina residents spent $537 per person per day in the Hatteras area (Dare County, NC) on private boat trips, and $566 per person per day on charter trips ($753 and $793, respectively in 2011 dollars). Non-residents spent $395 per person per day on private boat trips in the Hatteras area, and $598 per person per day on charter trips ($554 and $838, respectively in 2011 dollars). When adjusted for inflation these expenditures are generally greater than the daily expenditures for tuna trips ($540 per person per day) found in this study. Furthermore, the Bohnsack et al. (2002) study estimates only include money spent in Dare County, NC, while the current study collected data on expenditures within the state of the trip. As such, Bohnsack et al. (2002) would have only captured the full expenditures of resident anglers that lived within Dare County suggesting that the total trip expenditures may have been significantly higher, especially for non-resident anglers. However, it is not surprising that the trip expenditures found in the earlier study would be higher than that of an average trip as the Hatteras fishery provided a novel opportunity for anglers to catch exceptionally large, trophy bluefin tuna. Such trophy fisheries routinely attract more specialized anglers from farther away that are willing to spend more money on their trips. The second paper by Ditton and Stoll (2003) summarized expenditure estimates from previous studies on billfish trips in the US Atlantic, the Caribbean, and Mexico conducted by the Billfish Foundation. The estimate for the US Atlantic was from 1990, and was $2,105 per billfish trip ($3,623 in 2011 dollars). Unlike the current study, this estimate was for whole trips, and not standardized to a per day level making it difficult to make comparisons as average trip length was not provided in the publication.

Conclusion

The purpose of the input-output analysis conducted in this study was to estimate the total economic activity associated with HMS angling expenditures in coastal states from Maine to North Carolina. Therefore, expenditures by both residents and non-residents were included in the input-output analysis. In contrast to a true "economic impact" analysis that examines how changes in policies or other external factors affect the economic activity associated with changes in angler expenditures, the assessment shown here is generally described as a "contribution" analysis and simply shows the total economic contribution of marine angling expenditures to a regional economy under the conditions that existed during 2011. Often, in economic impact

analysis as opposed to economic contribution analysis, spending by residents must be adjusted in the model because it is assumed that they would reallocate most of their expenditures to other sectors of the regional economy, thereby causing no net change in impacts.

Another caveat that deserves attention relates to the underlying purpose and use of input-output analysis. In particular, it is a positivistic model designed to identify patterns of transactions and the resource requirements and sector output requirements resulting from angler expenditures. The input-output approach should not be considered a substitute for normative approaches such as benefit-cost analysis. Benefit-cost analysis seeks to determine whether resources are being put to their best use by examining the difference between total economic value and total costs. In the context of recreational fishing, total net economic value is generally defined as willingness to pay in excess of actual expenditures. Alternatively, input-output assessments reveal how actual expenditures affect economic activity within each sector of an economy.

While responsible for only a minor percentage of overall recreational angling expenditures, Atlantic HMS anglers spend a significant amount more than the average marine angler in the pursuit of their sport. While this fact may mean Atlantic HMS anglers contribute more to their region's economy than other anglers on a per trip or per angler basis, it also poses as a potentially significant constraint, and often barrier, to participation in HMS angling. NOAA Fisheries will continue to monitor recreational fishing participation in Atlantic HMS fisheries in the Northeast Atlantic through the annual LPS survey, and future angling expenditure surveys. Beginning in 2014, NOAA Fisheries Angling Expenditure survey will expand its coverage of Atlantic HMS fisheries to collect expenditure data from Atlantic HMS anglers in Southeast Atlantic and Gulf of Mexico states in addition to the Northeast. The survey will collect data on their durable goods expenditures in 2014, and on HMS trip expenditures in 2016.

References

Bohnsack, B. L., R. B. Ditton, J. R. Stoll, R. J. Chen, R. Novak, and L. S. Smutko. 2002. The economic impact of the recreational bluefin tuna fishery in Hatteras, North Carolina. North American Journal of Fisheries Management 22:165-176.

Dillman, D. A., J. D. Smyth, and L. M. Christian. 2009. Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method. Wiley, New York.

Ditton, R.B., and J. R. Stoll. 2003. Social and economic perspectives on recreational billfish fisheries. Marine and Freshwater Research 54:545-554.

Gentner, B., M. Price, and S. Steinback. 2001. Marine angler expenditures in the southeast region, 1999. US Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-48.

ICF Macro, Inc. 2012. 2011 National marine recreational fishing expenditure report. ICF International, Burlington, VT.

Lovell, S. J., S. Steinback, and J. Hilger. 2013. The economic contribution of marine angler expenditures in the United States, 2011. US Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-134.

Minnesota IMPLAN Group, Inc. 2010.IMPLAN professional: social accounting and impact analysis software. Minnesota IMPLAN Group, Inc., Minneapolis, MN.

NMFS, 2008. Stock assessment and fishery evaluation report for Atlantic Highly Migratory Species, 2008. NMFS Office of Sustainable Fisheries, Silver Spring, MD.

NMFS, 2011. Stock assessment and fishery evaluation report for Atlantic Highly Migratory Species, 2011. NMFS Office of Sustainable Fisheries, Silver Spring, MD.

Steinback, S. and B. Gentner. 2001. Marine angler expenditures in the northeast region, 1998. US Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-47.

Table 1. Atlantic HMS Angling permits and effort in private vessel trips by state group and species targeted from Maine to North Carolina, June – October 2011. Estimates of vessel trips were derived from the Large Pelagic Survey (LPS) for Maine through Virginia while the North Carolina estimate came from the Marine Recreational Information Program (MRIP) survey.

LPS State Group	HMS Angling Permits	No. Private Boat Trips	LPS Target Species	No. Private Boat Trips
Maine/New Hampshire	908	6,931	Tuna (bluefin, BAYS)	27,648
Massachusetts	3,268	20,227	Billfish (marlin, sailfish)	5,123
Connecticut/Rhode Island	1,144	2,175	Sharks	6,669
New York	1,811	5,480	Other LPS	16,424
New Jersey	2,862	10,349	Total	55,864
Maryland/Delaware	1,674	6,309		
Virginia	1,020	2,638		
North Carolina	1,519	1,755		
Total	14,206	55,864		

Table 2. Final response status of HMS Angling permit holders sampled for the 2011 HMS Angling Expenditure Survey and overall response rate.

Sample Size	Respondents	Non-deliverable	Ineligible	Refusals	Deceased	Response Rate (%)
3,796	2,068	86	40	40	2	57

Table 3. Proportion of reported Atlantic HMS angling trips by state and species targeted from Maine to North Carolina, May-December 2011.

	Target Species			
	Tuna	Billfish	Sharks	Overall
State	(n = 1,001)	(n = 88)	(n = 105)	(n = 1,194)
Maine	3.9	0.0	5.8	3.7
New Hampshire	2.1	0.0	0.7	1.8
Massachusetts	28.9	0.0	4.2	24.7
Rhode Island	3.0	0.0	5.2	2.9
Connecticut	3.1	0.0	10.2	3.5
New York	9.7	0.0	39.7	11.4
New Jersey	26.8	16.0	20.9	25.3
Delaware	4.9	1.0	4.5	4.6
Maryland	6.1	24.2	5.0	7.1
Virginia	5.1	19.3	2.2	6.0
North Carolina	6.4	39.6	1.4	8.9
Total	100.0	100.0	100.0	100.0

Table 4. Proportion of reported Atlantic HMS angling trips by month and species targeted from Maine to North Carolina, 2011. Because surveys were first mailed in June, and anglers were asked to report on their most recent HMS trip, the proportion of trips reported prior to May 2011 are not thought to be representative of actual HMS angling effort.

	Target Species			
	Tuna	Billfish	Sharks	Overall
Month	(n = 1,001)	(n = 88)	(n = 105)	(n = 1,194)
January-May	1.9	0.9	0.0	1.6
June	3.1	5.6	19.3	4.6
July	14.3	7.1	22.1	14.5
August	29.6	39.1	34.4	30.7
September	21.0	31.4	14.9	21.1
October	24.5	12.0	9.3	22.4
November	3.7	3.9	0.0	3.4
December	1.8	0.0	0.0	1.6

Table 5. Characteristics of Atlantic HMS angling trips and HMS angler fishing behavior by species targeted from Maine to North Carolina, 2011. Standard errors of means are reported in parenthesis.

Variable	Target Species: Tuna (n = 1,001)	Target Species: Billfish (n = 88)	Target Species: Sharks (n = 105)	Overall (n = 1,194)
HMS Trip Characteristics				
Party size	3.6 (0.06)	4.8 (0.20)	3.7 (0.13)	3.7 (0.05)
Percent overnight trips	34.1	48.6	21.5	34.0
Days fished per trip	1.5 (0.07)	1.4 (0.09)	1.3 (0.08)	1.4 (0.06)
Percent trips fishing two days or more	25.1	25.6	15.7	24.3
HMS Angler Behavior				
Years fishing	34.2 (0.54)	32.1 (1.31)	33.0 (1.65)	34.0 (0.49)
Days saltwater fishing in previous 12 months	32.6 (0.98)	31.3 (2.66)	30.6 (3.49)	32.3 (0.90)
Days HMS fishing in previous 12 months	11.1 (0.46)	16.4 (1.53)	6.7 (0.78)	11.1 (0.41)
Percent trips for HMS	34.1	52.4	21.9	34.4
Days fishing in previous 2 months from…				
Private boat	10.0 (0.42)	11.7 (1.51)	8.2 (0.93)	9.9 (0.38)
Charter	0.5 (0.09)	1.3 (0.43)	0.6 (0.23)	0.6 (0.08)
Shore	1.7 (0.27)	1.8 (0.67)	1.2 (0.64)	1.7 (0.24)
Pier	1.1 (0.19)	0.5 (0.27)	1.1 (0.53)	1.1 (0.17)

Table 6. HMS Angling permit holder demographics compared to those of non-HMS private boat anglers from Maine to North Carolina, 2011. Data on non-HMS marine anglers came from the 2011 Marine Recreational Fishing Expenditure Surveys conducted in the corresponding states (Lovell et al., 2013).

Demographic variable	HMS Anglers	Marine Anglers
Mean Age	53 (0.3)	54 (0.52)
Gender (%)		
Male	99.3	95.2
Female	0.7	4.8
Race (%)		
White	98.6	96.2
Other	1.4	3.8
Income (%)		
Less than $20,000	0.9	5.9
$20,000 - $39,999	4.1	10.0
$40,000 - $59,999	8.2	15.0
$60,000 - $79,999	8.9	15.7
$80,000 - $99,999	11.6	16.6
$100,000 - $149,999	24.7	23.7
$150,000 - $199,999	15.1	9.0
$200,000 or more	26.5	4.1
Education		
High School or less	26.4	42.5
Associate or tech degree	21.5	23.1
Bachelor's degree	29.9	20.5
Graduate degree	22.2	13.9

Table 7. Estimated average daily and total trip expenditures by Atlantic HMS Angling permit holders by target species from Maine to North Carolina, 2011. Total trip expenditures were estimated by extrapolating average daily expenditures by the number boat trip days per species group as estimated by the Large Pelagic Survey.

Target Species	Expenditure Item	Mean	SE	Total Expenditure
Tuna Trips	Auto Fuel	31.69	3.92	876,071.64
(n = 1,001)	Auto Rental	0.00	0.00	0.00
	Groceries	52.11	5.61	1,440,704.90
	Restaurants	22.64	1.71	626,033.80
	Lodging	9.68	1.39	267,554.06
	Boat Fuel	336.23	13.82	9,296,012.67
	Fishing Processing	3.71	0.88	102,443.03
	Parking	2.40	0.32	66,296.37
	Bait	49.82	2.42	1,377,507.69
	Ice	19.58	1.06	541,411.38
	Tournament Fees	4.44	1.10	122,758.50
	Gifts and Souvenirs	2.07	0.55	57,302.14
Billfish Trips	Auto Fuel	40.80	4.96	209,014.95
(n = 88)	Auto Rental	0.05	0.05	235.14
	Groceries	57.02	5.23	292,101.82
	Restaurants	51.28	14.69	262,723.27
	Lodging	9.31	4.00	47,703.39
	Boat Fuel	658.50	64.06	3,373,483.11
	Fish Processing	11.63	5.31	59,580.08
	Parking	0.80	0.64	4,110.80
	Bait	48.15	4.25	246,649.17
	Ice	14.50	1.69	74,302.08
	Tournament Fees	5.27	2.40	26,984.84
	Gifts and Souvenirs	2.95	1.49	15,088.26
Shark Trips	Auto Fuel	26.53	4.83	176,912.64
(n = 105)	Auto Rental	0.00	0.00	0.00
	Groceries	44.53	5.43	296,955.10
	Restaurants	26.27	5.88	175,210.06
	Lodging	8.27	3.51	55,158.17
	Boat Fuel	308.69	36.18	2,058,635.32
	Fish Processing	1.35	0.86	8,989.54
	Parking	2.04	0.70	13,619.35
	Bait	100.42	12.03	669,684.21
	Ice	20.56	3.49	137,146.56
	Tournament Fees	25.83	9.18	172,279.64
	Gifts and Souvenirs	2.46	1.31	16,401.65

Table 8. Estimated average and total annual Atlantic HMS Angling permit holder durable expenditures from Maine to North Carolina, 2011 (n = 2,026). Total annual durable expenditures were estimated by extrapolating average durable expenditures by the number of HMS Angling permit holders in the study region (N = 14,206).

Category	Expenditure Item	Mean	SE	Total Expenditure
Boats	New Boat	3,177.73	497.22	45,142,890.71
	Used Boat	569.86	163.70	8,095,481.97
	Boat Purchase Fees	171.78	35.82	2,440,323.03
	Boat Registration	58.05	4.20	824,701.44
	Boat Maintenance	1,085.46	78.80	15,420,038.65
	Boat Insurance	446.62	21.76	6,344,707.73
	Boat Storage	1,257.96	54.72	17,870,605.72
Vehicles	New Vehicle	227.77	77.67	3,235,766.83
	Used Vehicle	18.82	8.90	267,419.51
	Vehicle Purchase Fees	9.79	2.83	139,092.21
	Vehicle Registration	3.05	0.41	43,391.19
	Vehicle Maintenance	38.75	5.94	550,441.04
	Vehicle Insurance	38.05	4.70	540,578.74
Second Home	New Home	826.29	320.54	11,737,828.73
	Real Estate Commissions	134.50	39.08	1,910,732.51
	Second Home Fees	73.02	20.07	1,037,381.18
	Second Home Insurance	65.63	9.83	932,386.18
	Second Home Maintenance	61.69	9.91	876,328.21
	Second Home Property Taxes	30.12	31.14	427,861.99
Equipment	Rods & Reels	662.83	29.27	9,416,209.37
	Tackle	425.98	16.69	6,051,540.56
	Camping Equipment	19.29	1.70	274,073.67
	Clothing	89.74	4.80	1,274,897.34
	Binoculars	21.33	2.62	302,969.23
	New Canoe Purchase	11.50	2.28	163,324.45
	Electronics/Accessories	775.13	69.21	11,011,494.29
	Used Boat Electronics	0.05	0.04	780.13
Fees/Services	License Fees	42.84	2.84	608,596.97
	Club Dues	32.52	3.69	461,937.86
	Magazine Subscriptions	33.21	2.00	471,794.89
	Processing/Taxidermy	0.31	0.14	4,346.64

Table 9. Estimated average and total annual Atlantic HMS Angling permit holder durable expenditures from Maine to North Carolina, 2011 (n = 1,738), adjusted for the percentage of anglers' saltwater fishing trips that targeted HMS. Total annual durable expenditures were estimated by extrapolating average durable expenditures by the number of HMS Angling permit holders in the study region adjusted for the percentage of respondents that reported taking no HMS trips in the previous 12 months (N = 13,836).

Category	Expenditure Item	Mean	SE	Total Expenditure
Boats	New Boat	1,474.40	265.34	19,814,413.35
	Used Boat	373.85	147.27	5,024,223.03
	Boat Purchase Fees	86.38	24.34	1,160,831.89
	Boat Registration	31.49	4.19	423,216.26
	Boat Maintenance	585.70	64.28	7,871,229.23
	Boat Insurance	252.01	19.41	3,386,752.76
	Boat Storage	640.35	40.23	8,605,697.81
Vehicles	New Vehicle	87.85	38.29	1,180,583.05
	Used Vehicle	4.46	1.98	59,909.24
	Vehicle Purchase Fees	4.34	1.82	58,389.34
	Vehicle Registration	1.22	0.21	16,405.96
	Vehicle Maintenance	12.95	1.97	174,088.54
	Vehicle Insurance	15.60	2.54	209,645.50
Second Home	New Home	580.66	270.06	7,803,431.10
	Real Estate Commissions	73.27	27.42	984,676.84
	Second Home Fees	35.35	13.54	475,097.29
	Second Home Insurance	32.91	6.88	442,293.88
	Second Home Maintenance	27.30	5.73	366,891.86
	Second Home Property Taxes	14.66	4.82	197,051.02
Equipment	Rods & Reels	349.66	22.80	4,699,057.08
	Tackle	215.53	11.16	2,896,465.76
	Camping Equipment	10.14	1.16	136,273.21
	Clothing	45.01	3.15	604,871.90
	Binoculars	11.49	1.86	154,451.21
	New Canoe Purchase	3.49	0.82	46,866.81
	Electronics/Accessories	411.09	48.28	5,524,588.70
	Used Boat Electronics	0.03	0.03	358.18
Fees/Services	License Fees	19.82	1.74	266,335.32
	Club Dues	17.63	2.81	236,955.98
	Magazine Subscriptions	16.23	1.41	218,050.84
	Processing/Taxidermy	0.19	0.10	2,583.47

Table 10. Total expenditures and economic impacts generated by Atlantic HMS Angling permit holders from Maine to North Carolina in 2011. Trip expenditures are reported by primary target species. Durable expenditures are reported by total expenditures by HMS Angling permit holders for durable items used for marine angling, and adjusted for the percentage of their marine angling trips that targeted HMS.

Expense Type	Target Species	Total Expenses ($1,000's)	Economic Impact			
			Employment (jobs)	Income ($1,000's)	Value Added ($1,000's)	Output ($1,000's)
Trip	Tuna	14,775	136	6,590	11,225	19,864
	Billfish	4,612	39	2,000	3,500	6,036
	Sharks	3,781	41	1,804	3,016	5,443
	Overall	23,168	216	10,394	17,741	31,343
Durable	Marine	150,831	1,608	85,933	135,374	234,948
	HMS	76,323	727	38,697	62,462	115,815
Total (Trip + Marine Durables)		173,999	1,824	96,327	153,115	266,291

Table 11. Comparison of total expenditures and economic impacts generated by Atlantic HMS Angling permit holders and overall marine angling participants from Maine to North Carolina in 2011.

Item	HMS Angling Permit Holders	Marine Angling Participants
Expenditures		
Trip	23,168,000	1,524,555,000
Durables	150,831,000	4,933,381,000
Total	173,999,000	6,457,936,000
Total Output		
Trip	31,343,000	1,961,094,000
Durables	234,948,000	5,057,507,000
Total	266,291,000	7,018,601,000
Employment		
Trip	216	17,064
Durables	1,608	43,319
Total	1,824	60,383

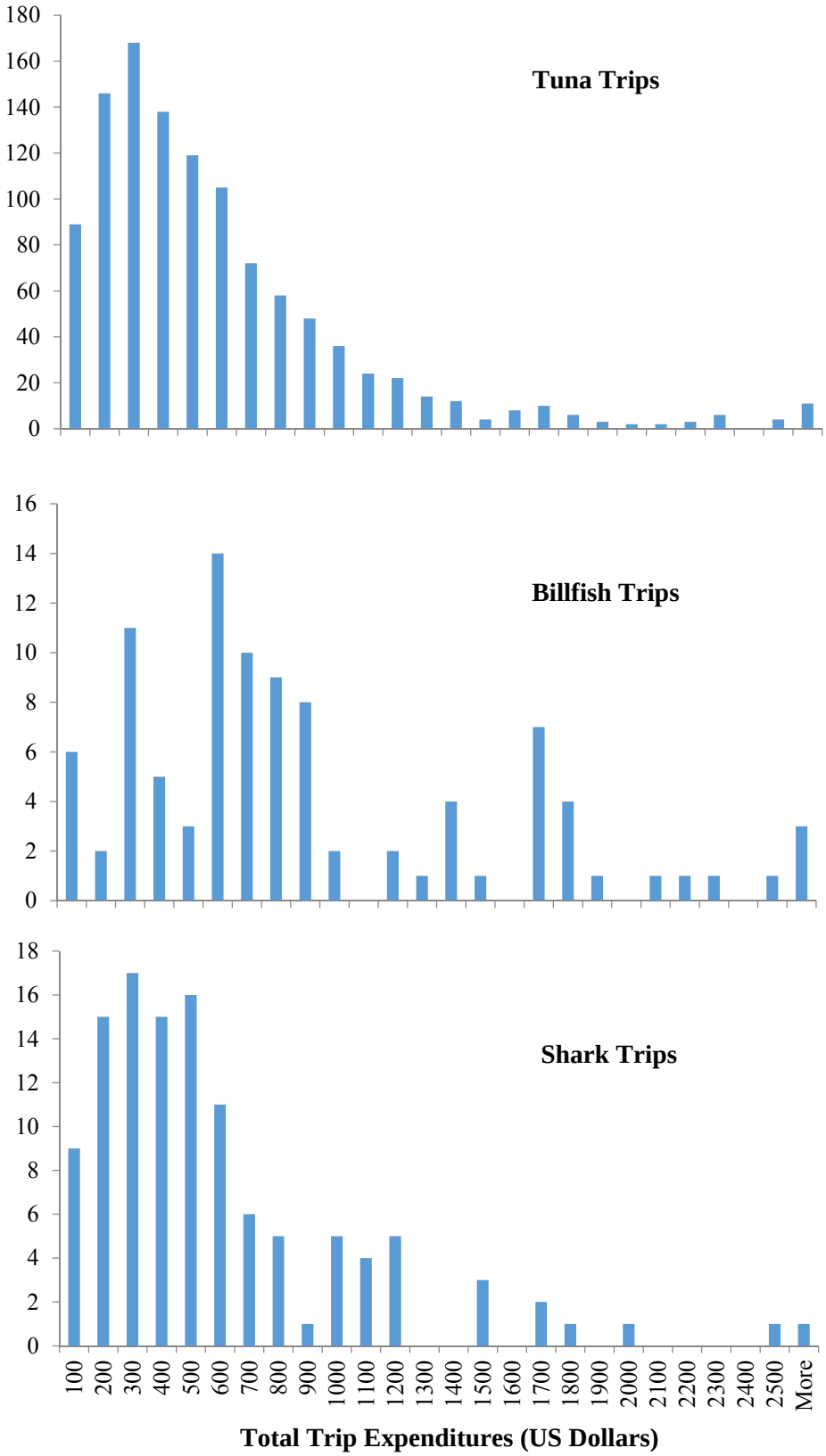

Figure 1. Histograms of total HMS trip expenditures by species group.

Appendix 1: Survey Instrument

2011 Marine Recreational Fishing Expenditure Survey

How much do you spend on marine recreational fishing?




Your Response is Important!

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Questions? Email 2011NES@noaa.gov

Section A: Your Most Recent Day of HMS Marine Recreational Fishing

We would like to know about your most recent day of marine recreational fishing for highly migratory species.

- **"Marine"** means open ocean or any portion of a bay, sound, or river that is saltwater or brackish water.
- A **day of HMS fishing** is *any portion of a day* spent fishing for **highly migratory species** (HMS). HMS species include tuna, swordfish, sharks, marlin, sailfish, or spearfish.
- Except when asked, please do not include any information for other household members or other fishing party members.
- Please print clearly and mark boxes with an X where appropriate to indicate your response.

1. When was your most recent day of marine fishing for highly migratory species?
(*please enter the two digit month and four digit year, e.g., "03, 2011" for March, 2011*)

☐☐ Month ☐☐☐☐ Year

2. During your most recent day of marine fishing for highly migratory species, did you primarily fish from a: (*please indicate your primary trip type by making an "X" in **one** box only*)

☐ Party or charter boat ☐ Private or rental boat

☐ Beach or bank ☐ Pier, jetty, bridge, or dock

3. On this day, what city or town was closest to the place where you launched a boat or boarded a party or charter boat in order to fish for highly migratory species?

City or town:_____ State: _____

4. Did you target any particular type of highly migratory species of fish on this day?

☐ **Yes** ☐ **No** → **Please go to question 5 on the next page**

If yes, please list the top two species you targeted (regardless of whether or not you caught them). Do not include fish you caught but did not target.

A. _____

B. _____

5. Did you take time off from work **without** pay in order to go on your most recent day of HMS fishing?

☐ **Yes** ☐ **No**

6. Including yourself, how many people traveled together to your most recent day of HMS fishing?

☐☐☐ Number of people, including yourself

6a. Including yourself, how many people were in your fishing party on your most recent day of HMS fishing?

☐☐☐ Number of people, including yourself

7. Was your most recent day of HMS fishing part of a longer trip in which you spent at least one night away from your permanent or seasonal residence?

☐ **Yes** ☐ **No** → **Please go to question 8 on the next page**

↓

7a. How many nights were you away from your residence on this trip?

☐☐ Number of nights

7b. How many days of this trip did you go fishing?

☐☐ Number of days fished (*count partial days as full days*)

7c. If you went on an overnight fishing trip <u>on a boat</u>, how many nights did you sleep on the boat?

☐☐ Number of nights on the boat ☐ Did **not** take an overnight boat trip

7d. What was the **primary** purpose of this entire trip away from home?
(please indicate your choice by making an "X" in one box only)

☐ Fishing

☐ Vacation or other personal reasons

☐ Business

8. On your most recent day of HMS fishing, how much did you **PERSONALLY** spend for the following items? If your most recent day was part of a longer trip away from home, please provide your expenses for the entire trip.

- Include expenses that you paid for others, but do not include any expenses paid by others for you.
- For each item, indicate the percentage of your expense that was spent in the state where you were fishing.
- **If you spent nothing, please write "0" for that item.**

(A) **Type of Expense**	**(B)** **Your Personal Expense** (Round to the nearest dollar)	**(C)** **% Spent in the State of Your Most Recent Day of HMS Fishing (0-100%)**
Food and drink from grocery or convenience stores	$ _____.00	_____%
Food and drink from restaurants and bars	$ _____.00	_____%
Parking and site access fees	$ _____.00	_____%
Auto, truck, or RV fuel	$ _____.00	_____%
Auto, truck, or RV rental	$ _____.00	_____%
Bait	$ _____.00	_____%
Ice	$ _____.00	_____%
Boat fuel and oil	$ _____.00	_____%
Boat rental	$ _____.00	_____%
Party, charter, or guide fees	$ _____.00	_____%
Fish filleting fee and tips paid to charter crew	$ _____.00	_____%
Lodging (hotels, motels, campgrounds, etc.)	$ _____.00	_____%
Public transportation	$ _____.00	_____%
Airfare	$ _____.00	_____%
Gifts or souvenirs	$ _____.00	_____%
Processing, freezing, or shipping fee paid to fish processing company	$ _____.00	_____%
Fishing tournament, jackpot, or derby entry fees	$ _____.00	_____%
Other _____	$ _____.00	_____%

If you had none of the above expenses, check here: ☐

Section B: Tackle, Equipment and Durable Fishing-Related Expenses

In this section, we would like to know about your annual expenses related to marine recreational fishing for **all types of finfish**, including both migratory species and non-migratory species. We are interested in your expenses **during the past 12 months** on fishing tackle, fishing-related equipment, and large durable items such as boats, vehicles, and vacation homes.

1. During the past 12 months, did you spend any money on fishing tackle or fishing gear?

☐ **Yes** ☐ **No** → **Please go to question 2 on the next page**

1a. Please complete the table below with the amount of money you **PERSONALLY** spent in the past 12 months on the following items of **fishing tackle**.

- If you spent nothing, please write "0" for that item.
- In column C, indicate the **percentage of your expense** (from column B) that was spent in the state of your most recent day of HMS fishing (as recorded in Section A, Question 3). (For example, if all expenses of a given type occurred in that state, write "100". If none occurred in that state, write "0".)
- In column D, indicate the **percentage of each item's usage** that was for marine recreational fishing *regardless of the state where you used the item*. (For example, if the item was used 10 days for freshwater fishing and used 10 days for marine fishing (for a total of 20 days of use), write "50%" as the percentage of use for marine fishing.)

(A) Type of Expense	(B) Your Personal Expense	(C) % Spent in the State of Your Most Recent Day of HMS Fishing (0-100%)	(D) % of Use for Marine Fishing (0-100%)
Rods, poles, reels and components for rod-making	$_____.00	_____%	_____%
Tackle and gear (lures, hooks, leaders, sinkers, flies and fly tying supplies, fishing line, tackle boxes, nets, knives, gaffs, etc.)	$ _____.00	_____%	_____%

2. Please complete the table below with the amount of money you **PERSONALLY** spent in the past 12 months on the following **fishing-related** items.

- If you spent nothing, please write "0" for that item.
- In column C, indicate the **percentage of your expense** (from column B) that was spent in the state of your most recent day of HMS fishing. (For example, if all expenses of a given type occurred in that state, write "100". If none occurred in that state, write "0".)
- In column D, indicate the **percentage of each item's usage** that was for marine recreational fishing *regardless of the state where you used the item*. (For example, if the item was used 10 days for freshwater fishing and used 10 days for marine fishing (for a total of 20 days of use), write "50%" as the percentage of use for marine fishing.)

(A) Type of Expense	(B) Your Personal Expense	(C) % Spent in the State of Your Most Recent Day of HMS Fishing (0-100%)	(D) % of Use for Marine Fishing (0-100%)
Marine fishing licenses, fishing stamps or fees	$ _____.00	_____%	_____%
Special marine fishing clothing (foul weather gear, boots, waders, masks, wetsuits, etc.)	$ _____.00	_____%	_____%
Books, magazine, newspaper and electronic subscriptions devoted to recreational fishing	$ _____.00	_____%	_____%
Camping equipment (sleeping bags, packs, tents, coolers, etc.)	$ _____.00	_____%	_____%
Binoculars, field glasses, etc.	$ _____.00	_____%	_____%
Dues or contributions to recreational fishing clubs or organizations	$ _____.00	_____%	_____%
Processing or taxidermy fees	$ _____.00	_____%	_____%

If you had none of the above expenses, check here: ☐

3. Have you owned a boat that you personally used for marine recreational fishing in the past 12 months?

☐ **Yes** ☐ **No** → **Please go to question 4 on the next page**

3a. How long is the boat you used most often for marine recreational fishing in the past 12 months?_____Feet

3b. Is the boat you used most often motorized? ☐ Yes → _____ Horsepower

☐ No

3c. Please complete the table below with the amount of money you **PERSONALLY** spent in the past 12 months on **boats and boating accessories** that you used for marine recreational fishing. Please include expenses for all boats that you used.

Type of Expenditure	Personal Expenditure	State Where Expenditure Occurred	Purchase Financed? (check one)	Purchased New or Used? (check one)	Purchased from a Broker/Dealer or Private Party? (check one)
Purchase of a motor boat(s) and accessories	$ _____.00	_____	☐ Yes ☐ No	☐ New ☐ Used	☐ Broker/Dealer ☐ Private Party
Purchase of a non-motorized boat(s) (canoe, kayak)	$ _____.00	_____	☐ Yes ☐ No	☐ New ☐ Used	☐ Broker/Dealer ☐ Private Party
Boat electronics and accessories purchased separately from boat(s) (ex: GPS, fish finders, radios, ropes, etc.)	$ _____.00	_____	☐ Yes ☐ No	☐ New ☐ Used	☐ Broker/Dealer ☐ Private Party
Boat and trailer maintenance and repairs	$ _____.00	_____	_____ % of repairs done by you		
Boat mooring, storage, and haul out/launch fees	$ _____.00	_____			
Boat insurance	$ _____.00	_____			
Boat and trailer license and registration	$ _____.00	_____			

3d. Thinking about the total usage of your boat(s) used for marine recreational fishing, what percentage of the time in the past 12 months did you use this boat(s) for marine recreational fishing?

_____%

3e. Did you sell a boat that you owned in the past 12 months? ☐ Yes ☐ No

4. Do you own a vehicle (car, truck, motor home or RV, off-road vehicle, etc.) that you personally used for marine recreational fishing in the past 12 months (for example, do you drive your car to a fishing site or do you use your truck to pull a boat)?

☐ **Yes** ☐ **No** → **Please go to question 5 on the next page**

4a. Please complete the table below with the amount of money you **PERSONALLY** spent in the past 12 months on **vehicles** that you used for marine recreational fishing. Please include expenses for all vehicles that you used.

Type of Expenditure	Personal Expenditure	State Where Expenditure Occurred	Purchase Financed? (check one)	Purchase New or Used? (check one)	Purchased from a Broker/Dealer or Private Party? (check one)
Purchase of vehicles used for marine recreational fishing	$ _____.00	_____	☐ Yes ☐ No	☐ New ☐ Used	☐ Broker/Dealer ☐ Private Party
Repair and maintenance for vehicles used for marine recreational fishing	$ _____.00	_____	_____ % of repairs done by you		
Insurance for vehicles used for marine recreational fishing	$ _____.00	_____			
License and registration for vehicles used for marine recreational fishing	$ _____.00	_____			

4b. Thinking about the total usage of your vehicle(s) used for marine recreational fishing, what percentage of the time in the past 12 months did you use this vehicle(s) for marine recreational fishing?

_____%

5. Do you own a second home (i.e., cabin, single family home, timeshare, etc.) that you personally used for marine recreational fishing in the past 12 months?

☐ **Yes** ☐ **No** → **Please go to Section C on the next page**

5a. Please complete the table below with the amount of money you **PERSONALLY** spent in the past 12 months on a second home that you used for marine recreational fishing.

Type of Expenditure	Personal Expenditure	State Where Expenditure Occurred	Purchase Financed? (check one)	Purchase New or Used? (check one)	Purchase made with a Real Estate Agent? (check one)
Purchase of second home used for marine recreational fishing	$ _____.00	_____	☐ Yes ☐ No	☐ New ☐ Used	☐ Yes ☐ No
Repair and maintenance for homes used for marine recreational fishing	$ _____.00	_____	_____ % of repairs done by you		
Insurance for homes used for marine recreational fishing	$ _____.00	_____			

5b. Thinking about your total usage of this second home, what percentage of time in the past 12 months did you use this home for marine recreational fishing?

_____%

Section C: About You and Your Household

Different types of anglers may have different expenditure patterns. The following questions will help us to ensure that we have a representative sample of anglers, and to see how expenditure patterns vary across types of anglers. Your answers are strictly confidential.

In questions 1-3 below, please refer to the state of your most recent day of HMS fishing.

1. In the past **2 months,** how many days did you go marine fishing for **any type** of finfish in this state from a:
(*enter the number of days in each trip type; count partial days as full days; enter zero if you took no trips of a given type*)

☐☐ Party or charter boat ☐☐ Private or rental boat

☐☐ Beach or bank ☐☐ Pier, jetty, bridge, or dock

2. During the past **12 months**, how many days have you spent marine fishing for finfish in this state?

☐☐☐ Number of days (*count partial days as full days*)

3. In the past 12 months, how many total days did you go fishing for highly migratory species in this state? (*enter zero if you had no HMS trips)*

☐☐☐ Number of days (*count partial days as full days*)

4. Are you male or female?

☐ Male ☐ Female

5. In what year were you born?

☐☐☐☐ (Year)

6. How many years have you been marine recreational fishing?

☐☐ (Number of years)

7. Are you of Hispanic, Latino, or Spanish origin?

- ☐ **No**, not of Hispanic, Latino, or Spanish Origin
- ☐ Yes, Mexican, Mexican American, Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino, or Spanish Origin _____

8. What is your race? (*please mark all that apply*)

- ☐ White
- ☐ Black, African American, or Negro
- ☐ American Indian or Alaskan Native
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Asian or Pacific Islander:_____
- ☐ Other:_____

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

10. Which of the following categories best describes your household's **total annual income before taxes** in 2010? (*Please mark only **one** category*)

- ☐ Less than $20,000
- ☐ $20,000-$39,999
- ☐ $40,000-$59,999
- ☐ $60,000-$79,999
- ☐ $80,000-$99,999
- ☐ $100,000-$149,999
- ☐ $150,000-$199,999
- ☐ $200,000 or more

11. 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/st5/RecFishEcon.html**.

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

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