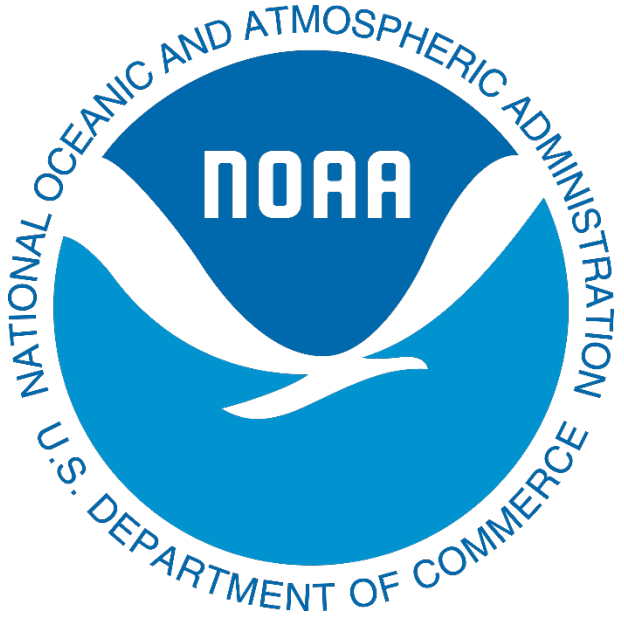

Fishing Effort Survey

2020 Annual Report

Acknowledgments

We would like to thank RTI International for administering the Fishing Effort Survey on behalf of NOAA, National Marine Fisheries Service during 2020.

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1. Overview

Recreational fisheries catch and effort data collection is necessary to fulfill the requirements of Section 303 of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1852 et. seq.) and to comply with Executive Order 12962 on Recreational Fisheries. Section 303 (a) of the Magnuson-Stevens Fishery Conservation and Management Act specifically mandates that data and analyses be included in Fishery Management Plans. As per these requirements, recreational fishing catch and effort data are used on an ongoing basis by NOAA Fisheries, regional fishery management councils, interstate marine fisheries commissions and state natural resource agencies in developing, implementing and monitoring fishery management programs. These catch and effort statistics are used to determine the effects of fishing on fish stocks and develop sound management strategies and policies. Continuous monitoring of catch and effort is also used to assess trends, evaluate the impacts of management regulations, and project how different management scenarios may influence a fishery.

The Fishing Effort Survey (FES) is a cross-sectional, self-administered mail survey used to estimate recreational saltwater fishing effort in coastal states along the Atlantic coast, Gulf of Mexico and Hawaii. The FES utilizes an "engaging" approach designed to encourage participation of anglers and non-anglers by broadening the scope of inquiries to include both fishing and non-fishing questions. Household-level priming questions ask respondents about different types of outdoor activities and household characteristics while person-level questions, collected for up five household members, obtain information about individual demographic characteristics and recreational saltwater shore and private boat fishing effort during the previous two and 12 months (Appendix A). In 2020, the FES was administered in 16 states along the Atlantic Coast and Gulf of Mexico, as well as Hawaii (Table 1). The survey is administered for six, independent two-month reference waves beginning with wave 1 (January/February) and ending with wave 6 (November/December). The FES is consistent with OMB guidelines, and has received clearance in accordance with the Paperwork Reduction Act (5 CFR 1320.5(b)) under OMB Control No. 0648-0652. The current clearance is valid through 09/30/2023.

2. Sampling Methodology

Recreational saltwater fishing data are collected for all household members. Consequently, each household receiving a survey represents a sampling unit. The FES utilizes address-based samples (ABS) within coastal states to collect information about recent recreational saltwater fishing activity. The sample frame is derived from the USPS Computerized Delivery Sequence File (CDS) and includes all full-time (non-seasonal), residential addresses, with the exceptions of group quarters and PO boxes that are not flagged as the only way to get mail. Within each coastal state, sampling is stratified by sub-state region, which is defined by geographic proximity to the coast. Generally, counties with borders that are within 25 miles of the coast are in the "coastal" stratum and all other counties are in the "non-coastal" stratum. Rhode Island, Connecticut, Delaware, Florida and Hawaii are not geographically stratified due to relatively consistent fishing rates among counties. The designation of coastal counties in North Carolina, South Carolina, Georgia, Alabama, and Mississippi changes throughout the year to reflect seasonal changes in fishing activity. Coastal county designation by state and wave for 2020 are provided in Appendix B.

Because angling households represent a relatively rare component of the general population, the ABS frame is supplemented by matching addresses on the CDS to lists of licensed saltwater anglers in each state. State license lists are derived from the National Saltwater Angler Registry (NSAR) and include all anglers licensed to participate in saltwater fishing in the study area between the beginning of each wave and the time the lists are compiled, approximately one month prior to the end of the wave. Augmenting the ABS sample frame with fishing license information creates additional strata (license matched and unmatched) and allows households with and without licensed anglers to be sampled at different rates.

The sample size for each state and wave is targeted to produce estimates of fishing effort with coefficients of variation of 0.20. Within each state, stratum sample sizes are initially determined using the Neyman allocation approach (e.g. Wright 2014) where the sample is distributed among strata in proportion to the product of the population size and the standard deviation. The goal of Neyman allocation is to maximize the precision of estimates for a fixed sample size. Standard deviations are based upon historical FES data and estimates. Following the initial allocation, base weights are reviewed, and sample may be manually re-distributed among strata to reduce extreme weights and minimize the variation in weights among strata. Sample may also be re-distributed to maximize the probability of detecting fishing activity. Table 1 provides final sample sizes by wave and state for the 2020 FES.

Table 1. Sample size by state and wave during 2020

State	Survey Wave						Total
	1	2	3	4	5	6	
AL	4,732	2,538	2,780	3,400	5,741	5,414	24,605
CT	.	6,808	3,246	2,032	2,856	5,888	20,830
DE	.	3,760	2,249	3,901	2,662	4,091	16,663
FL	1,334	1,436	1,544	2,017	2,205	1,916	10,452
GA	.	8,575	4,563	7,846	9,237	4,700	34,921
HI	3,254	2,311	2,286	2,237	3,375	2,508	15,971
ME	.	.	3,531	2,043	3,781	.	9,355
MD	.	6,195	1,896	3,022	2,721	5,952	19,786
MA	.	8,516	2,521	1,815	4,328	14,104	31,284
MS	4,644	3,382	3,092	2,425	3,860	4,911	22,314
NH	.	.	2,632	5,398	5,144	.	13,174
NJ	.	6,181	2,973	3,101	4,228	6,379	22,862
NY	.	8,166	3,559	5,310	6,646	10,843	34,524
NC	5,330	3,533	2,594	3,022	3,307	3,258	21,044
RI	.	5,871	2,148	1,637	2,685	8,967	21,308
SC	.	3,503	7,614	2,772	2,611	3,665	20,165
VA	.	6,691	2,581	3,242	4,864	5,042	22,420
Total	19,294	77,466	51,809	55,220	70,251	87,638	361,678

3. Data Collection

FES data collection begins with an initial survey mailing one week prior to the end of each reference wave to ensure survey materials are received as close to the end of the wave as possible. This initial mailing, delivered by regular, first class mail, includes a cover letter stating the purpose of the survey, a survey questionnaire, business reply envelope (BRE), and a $2 prepaid cash incentive.

One week after the initial mailing, a follow-up, thank you and reminder postcard is delivered via regular first class mail to all sampled addresses.

Three weeks after the initial survey mailing, a final mailing is delivered to all addresses that have not yet responded to the survey. The follow-up includes a nonresponse conversion letter, a second questionnaire, and a pre-paid return envelope. As with prior mailings, the follow-up is delivered via first class mail. All FES supporting materials are available in Appendix C.

Data collection for each reference wave is terminated thirteen weeks after the initial survey mailing. Questionnaires returned after thirteen weeks are scanned but are not committed

to the final survey datasets. The complete data collection schedule for 2020 is provided in Table 2.

Table 2. Data collection schedule for the 2020 FES

	Reference Period					
Task/Event	**Wave 1, 2020**	**Wave 2, 2020**	**Wave 3, 2020**	**Wave 4, 2020**	**Wave 5, 2020**	**Wave 6, 2020**
Wave begins	1/1/2020	3/1/2020	5/1/2020	7/1/2020	9/1/2020	11/1/2020
Initial survey mailing	2/24/2020	4/24/2020	6/24/2020	8/25/2020	10/26/2020	12/23/2020
Wave ends	2/29/2020	4/30/2020	6/30/2020	8/31/2020	10/31/2020	12/31/2020
Postcard reminder mailing	3/2/2020	5/1/2020	7/1/2020	9/1/2020	11/2/2020	12/30/2020
Follow-up mailing	3/16/2020	5/15/2020	7/15/2020	9/18/2020	11/19/2020	1/19/2021
Preliminary wave data files	3/30/2020	5/28/2020	7/28/2020	9/28/2020	11/29/2020	1/28/2021
Final wave data files	5/28/2020	7/28/2020	9/28/2020	11/30/2020	1/31/2021	3/29/2021

4. Data Processing

During the 13 week data collection window, all surveys received by the FES data collection contractor are sorted by response status (e.g. complete, refusal) or return status designated by the Postal service (e.g. postal return with no new address, postal return with new address, type of undeliverable) and categorized by mailing. Return rates by state, sub-state region, and license match for each wave may be found in Appendix D.

Returned questionnaires are electronically scanned and, in the case of multiple returns by a household, only the first return is accepted to minimize recall bias. The total number of scanned pages is matched to the number of pages per survey to ensure no pages are missed, and the contrast and brightness is adjusted to provide a clear image. After scanned images are generated, a classification and optical character recognition (OCR) process converts the scanned images to an initial survey dataset. Several rounds of verification are then performed during which all open ended questions are manually entered.

Following verification, data are committed to a dataset, and PDFs of each survey are created. Preliminary data processing identifies missing responses, instances where a respondent marked more options than should have been marked, and recodes observations to inapplicable or missing based upon the number of reported household members relative to the number of individual person sections containing information. An initial survey disposition is assigned using a combination of standardized USPS codes, for undeliverable surveys and postal returns, and classifications of survey completeness.

Data from each reference wave are delivered to NOAA on two separate occasions as preliminary and final data sets. Preliminary data are delivered approximately four weeks after the end of the wave and include data received up to three weeks after the conclusion of the reference wave. Final data are delivered thirteen weeks after the end of the reference wave and include all data collected up to 12 weeks after completion of the wave. Preliminary data generally includes 70-80% of all returned surveys and is used to produce preliminary estimates

of recreational saltwater fishing effort (Table 3). Upon delivery of final data, estimates are updated to minimize variance by including data captured over the entire 12 week sample collection.

Table 3. Number and percentage of total surveys included in preliminary and final data by state during 2020.

State	Prelim.		Final*	
	%	N	%	N
AL	73.85	5,613	26.15	1,988
CT	71.71	4,910	28.29	1,937
DE	72.82	4,164	27.18	1,554
FL	74.69	2,417	25.31	819
GA	75.17	7,057	24.83	2,331
HI	74.69	4,758	25.31	1,612
MA	72.11	7,465	27.89	2,887
MD	75.44	4,843	24.56	1,577
ME	77.94	2,699	22.06	764
MS	73.02	5,068	26.98	1,873
NC	76.49	5,436	23.51	1,671
NH	77.56	3,563	22.44	1,031
NJ	70.18	4,615	29.82	1,961
NY	65.09	5,246	34.91	2,814
RI	74.14	5,463	25.86	1,905
SC	79.34	5,550	20.66	1,445
VA	74.60	5,552	25.40	1,890
Total	73.74	84,419	26.26	30,059

*** Final data are additional surveys that were not yet received in the preliminary data**

Following the data collection period for each wave, a check-in process verifies the presence and formatting of all variables, confirms responses are within acceptable ranges, and compares response distributions for each survey measure to historical data to identify large-scale inconsistencies relative to the time-series.

Once data validity is confirmed, item nonresponse (missing data) and illogical responses (extra data) are examined. Identifying missing (nonresponse) and extra (illogical) responses requires a determination of the expected number of individual residents within each household. This is achieved by comparing the reported number of household members to the count of individual household residents for whom information is provided. A person is enumerated if any effort question (Q15 and/or Q16) and at least one demographic question (Q11-Q14) are completed (Appendix A). Item response and illogical response are then placed into one of five categories:

1) Complete – household and person-level items are complete and consistent
2) Missing people – the count of responding persons is fewer than the reported number of household members
3) Extra people – the count of responding persons is greater than the reported number of household members
4) Extra information – the count of responding persons equals the reported number of household members, but there are demographic or effort responses present for at least one uncounted person
5) Missing household members – the number of reported household members is missing or zero

Surveys containing item nonresponse and illogical response are examined via an automated process which attempts to match the number of people responding to the number of reported household members. The automated process ranks individual person sections from complete to blank and, using imputation and automatic edits, additively retains the most complete to less complete people, while also removing extra information, until the sum of counted persons matches the number of reported household members or the number of household members is adjusted to match additional people that responded. This process maximizes the completeness of individual person sections within a survey while minimizing the number of edits. Any nonresponse or illogical response that cannot be resolved by automated processing is flagged for manual examination.

Imputation is the process of assigning values to missing data (item nonresponse). A common imputation in the FES results when an individual reports complete demographic information but fails to check the "did not fish" box and reports no value for shore or private boat effort. In this scenario, the count of people is often less than the number of reported household members, and it is assumed that effort questions were intentionally left blank because questions about fishing activity were not applicable to the respondent. As a result, zeros are imputed for missing effort which results in the correct number of people relative to the reported number of household members and reconciles item nonresponse.

Automatic edits work in reverse of imputation and serve to eliminate extra responses or adjust existing responses that are illogical. A common automatic edit occurs when all person sections (five) are completed regardless of the reported number of people in the household. The result is that the count of completed person sections exceeds the reported number of household members. Extra people are often identifiable as duplicates, containing the same age and gender as other household members. Any duplicate people greater than the number of reported household members are automatically edited to inapplicable if their removal allows the number of people to equal the number of reported household members.

Once data are corrected for missing and illogical values, all surveys, including those previously flagged for manual review by automated processing, are examined via logic checks for contradictory, nonsensical, and unlikely/extreme values and flagged for manual review upon failure. During manual review changes may be made to the survey disposition, number of household members, demographic information, and saltwater fishing effort. Scanned images of surveys flagged for manual review are compared directly to coded data to ensure anomalous

values are not the result of poor handwriting that resulted in scanning errors. Surveys flagged via logic checks for large amounts of reported effort or effort with contradictory information (e.g. checked the shore or boat did not fish box but reported non-zero effort) undergo a critical but conservative review.

Edits applied during automated or manual processing are documented through the creation of unique identifier variables. Original, unedited, values are also retained to maintain accountability and permit comparisons between edited and original values. Overall, 11.46% of eligible surveys returned during 2020 received some form of data edit. Edit rates across waves were consistently below 15% ranging from 10.55% to 13.53% (Table 4).

Table 4. FES survey edit rates by wave during 2020

Survey Wave	Not Edited		Data Edit	
	N	%	N	%
1	5,757	86.47	901	13.53
2	22,303	88.37	2,935	11.63
3	15,094	89.45	1,781	10.55
4	15,529	89.28	1,865	10.72
5	18,265	88.95	2,270	11.05
6	23,674	87.85	3,275	12.15
Total	100,622	88.54	13,027	11.46

Following automated and manual data processing, a final review of data is completed to identify surveys that are unlikely to be representative of other households within the stratum. Total two month saltwater shore and private boat effort within a household are examined relative to other households during each reference wave and relative to the time series to identify data that are non-representative. For example, a household may be identified as non-representative if it is hundreds of miles from the coast, does not contain a licensed angler, and reported dozens of saltwater private boat trips. The non-representative examination is based on expert review and assigned sparingly. A total of 71 households (0.06%) were identified as non-representative during 2020; rates were consistently low across waves ranging from 0.02% to 0.07% (Table 5). Survey weights for households deemed non-representative were adjusted to be self-representative (assigned a final weight of 1) and residual weights were re-distributed among other sampled addresses within the same stratum.

Table 5. Non-representative surveys during 2020

Survey Wave	Not Edited		Non-Representative	
	N	%	N	%
1	6,657	99.98	1	0.02
2	25,221	99.93	17	0.07
3	16,865	99.94	10	0.06
4	17,383	99.94	11	0.06
5	20,516	99.91	19	0.09
6	26,936	99.95	13	0.05
Total	113,578	99.94	71	0.06

5. Response Rates

After data processing, unit response rates were calculated using the American Association for Public Opinion Research (AAPOR) Response Rate 2 (RR2) calculation for un-named mail surveys which excludes ineligible samples from the sample total. Response rates were calculated as

$$RR2 = \frac{(\mathrm{I} + \mathrm{P})}{(\mathrm{I} + \mathrm{P}) + (\mathrm{R} + \mathrm{NC} + \mathrm{O}) + (\mathrm{UH} + \mathrm{UO})}$$

where I and P are the number of eligible interviews containing complete (I) and partially complete (P) surveys,
R, NC, and O are the number of eligible non-interviews including refusals (R), non-contacts (NC), and Other (O) and,
UH and UO are the number of unknown eligible surveys including housing occupancy (UH) or other unknowns (UO).

The overall, weighted, unit response rate during 2020 was 31.21% (Table 6). By wave, weighted response rates fluctuated slightly ranging from 28.79% during wave five to 34.85% during wave one (Table 6).

Table 6. Weighted response rates by wave during 2020

Survey Wave	Response		Unknown Eligibility		Other*		
	N	Weighted %	N	Weighted %	N	Weighted %	Total
1	6,652	34.85	10,912	64.93	38	0.21	17,602
2	25,220	33.57	47,621	66.19	190	0.24	73,031
3	16,861	31.63	31,400	67.97	159	0.40	48,420
4	17,385	30.87	34,916	68.80	141	0.33	52,442
5	20,526	28.79	45,754	70.90	174	0.30	66,454
6	26,931	29.93	55,830	69.74	241	0.33	83,002
Total	113,575	31.21	226,433	68.48	943	0.31	340,951

*** Includes nonresponse and removed surveys**

Across states, weighted response rates varied substantially ranging from 26.32% in Georgia to 42.84% in Hawaii (Table 7).

Table 7. Weighted response rates by state during 2020

State	Response		Unknown Eligibility		Other*		Total
	N	Weighted %	N	Weighted %	N	Weighted %	
AL	7,562	31.38	14,971	68.43	39	0.19	22,572
CT	6,804	32.56	12,870	67.22	44	0.22	19,718
DE	5,669	34.13	10,247	65.49	53	0.38	15,969
FL	3,208	32.47	6,479	67.22	28	0.32	9,715
GA	9,303	26.32	23,444	73.39	85	0.30	32,832
HI	6,326	42.84	8,455	56.86	44	0.30	14,825
MA	10,268	33.40	19,303	66.27	92	0.32	29,663
MD	6,371	32.98	12,479	66.79	49	0.22	18,899
ME	3,446	40.16	5,237	59.55	18	0.29	8,701
MS	6,895	29.65	13,456	70.11	48	0.24	20,399
NC	7,060	32.29	12,610	67.39	50	0.32	19,720
NH	4,552	36.38	8,069	63.21	43	0.42	12,664
NJ	6,514	28.35	15,224	71.34	64	0.31	21,802
NY	7,961	27.68	24,949	71.89	107	0.43	33,017
RI	7,304	35.84	12,913	63.78	65	0.38	20,282
SC	6,943	33.51	11,718	66.23	55	0.26	18,716
VA	7,389	33.49	14,009	66.25	59	0.27	21,457
Total	113,575	31.21	226,433	68.48	943	0.31	340,951

*** Includes nonresponse and removed surveys**

Item response rates are also evaluated to provide insight into the way respondents interpret individual questions. Unusually high nonresponse rates for individual questions (items) can help illuminate issues with question interpretation and content sensitivity. Item response rates during 2020 were high at over 94% for all household and person level questions (Table 8).

Table 8. Response rates by question (item) during 2020

Question	Response		Nonresponse		Multiple Response	
	N	%	N	%	N	%
Weather	113,391	99.84	184	0.16	.	0.00
Evac	113,222	99.69	346	0.30	7	0.01
Warning	112,334	98.91	1,141	1.00	100	0.09
Beach Flag	113,233	99.70	328	0.29	14	0.01
Fresh Fish	113,184	99.66	351	0.31	40	0.04
Salt Fish	113,187	99.66	343	0.30	45	0.04
HH Phone	111,337	98.03	618	0.54	1,620	1.43
HH Description	112,220	98.81	1,181	1.04	174	0.15
HH Years	112,775	99.30	776	0.68	24	0.02
HH Members	113,497	99.93	78	0.07	.	0.00
Age	262,859	95.48	12,458	4.52	.	0.00
Gender	265,937	96.59	9,152	3.32	228	0.08
Origin	259,753	94.35	15,526	5.64	38	0.01
Race	260,363	94.57	14,954	5.43	.	0.00
Boat Trips	259,302	94.18	16,015	5.82	.	0.00
Shore Trip	260,874	94.75	14,443	5.25	.	0.00
Total	2,697,468	96.76	87,894	3.15	2,290	0.08

6. Weighting

After data processing, sample weights for each survey are calculated in stages. In the first stage, base weights (w_i) for each sampled address within a given stratum are calculated as the inverse of the inclusion probabilities

$$w_i = \frac{1}{\pi_i}$$

where π_i is the probability that unit i is included in the sample.

In the second stage, base weights are adjusted to compensate for unit nonresponse (e.g. when households fail to mail back the completed survey). The sample is partitioned into nonresponse adjustment cells, or weighting classes, by state, sub-state region (coastal or non-coastal), license match (matched or unmatched), and boat ownership registration (e.g. whether a

sampled address could be matched to state boater registration list). The base weights of the respondents in each adjustment cell ($w_{ci.r}$) are then divided by the response rate for that cell ($\widehat{\emptyset}_c$) to calculate the adjusted weight (w^*_{ci})

$$w^*_{ci} = \frac{w_{ci.r}}{\widehat{\emptyset}_c}$$

where $\widehat{\emptyset}_c = \frac{\sum w_{ci.r}}{\sum w_{ci.r} + \sum w_{ci.nr}}$,
$\sum w_{ci.r}$ is the sum of the base weights of each respondent within adjustment cell c, and
$\sum w_{ci.nr}$ is the sum of the base weights of each nonrespondent within adjustment cell c.

In the third stage, nonresponse weights are further adjusted through a process known as raking, which adjusts weights so that the separate or marginal distributions for select variables in the sample data conform to corresponding distributions from independent data sources (Brick and Kalton 1996). For the FES, auxiliary variables are derived from the American Community Survey, Current Population Survey and National Health Interview Survey, and include households with seniors, households with children, household tenure (own/rent), households with three or more household members, and wireless-only households. Raking is an iterative procedure that sequentially adjusts weights to force sample distributions to match marginal distributions for each auxiliary variable. The weights are repeatedly adjusted until the sample marginal distributions match the auxiliary marginal distributions for all selected varialbes. Raked weights are calculated as

$$w^*_{ri} = w^*_{ci} R_s$$

where R_s is a generalized raking adjustment in state s.

During the fourth stage, raked weights are post-stratified to account for incomplete coverage of the target population. Post-stratification is commonly used to make respondent data conform to target population totals from other sources independent from the survey (Brick and Kalton 1996). The most recent estimates of the number of residential households available from the American Community Survey (United States Census Bureau 2016) are used as population control totals. Nonresponse adjusted weights are post-stratified to household-level control totals within coastal and non-coastal strata (as defined at the time of sampling for each wave). The resulting post-stratified weight (w^*_{hi}) of address i in stratum h is calculated as

$$w^*_{hi} = w^*_{ri} \left(\frac{H_h}{\widehat{H}_h} \right)$$

where the adjustment factor is equal to the ratio of the control total (H_h, from the American Community Survey) to the estimated total based upon the sum of nonresponse adjusted weights ($\widehat{H}_h$).

Following these three weighting adjustments, a final weight trimming process is applied to mitigate the impacts of extreme values on the precision of survey estimates. Highly variable weights can result in large sampling variances, so it is often desirable to minimize the frequency and size of extreme weights. There is a tradeoff, however, between increasing precision and

biasing estimates through weight trimming procedures. The Estimated Mean Square Error (MSE) Trimming procedure allows for evaluating various trimming levels to identify an optimal level that minimizes the estimated mean square error of an estimate (i.e. minimizes the sum of sampling variance and the square of the estimated bias, Potter 1990; Potter 1988). The MSE for various levels of trimming ($\widehat{MSE}(\hat{T}_t)$) is estimated as

$$\widehat{MSE}(\hat{T}_t) = (\hat{T}_t - \hat{T})^2 - V(\hat{T}) + 2[V(\hat{T}_t)V(\hat{T})]^{1/2}$$

where $\hat{T}$ is the effort estimate using untrimmed weights,
$\hat{T}_t$ is the effort estimate using trimmed weights, and
$V(\hat{T})$ and $V(\hat{T}_t)$ are the estimated variance of $\hat{T}$ and $\hat{T}_t$ respectively.

The automated procedure is carried out by repeatedly reducing maximum weighted values by increments of 5% and redistributing excess weights among untrimmed sample cases. The $\widehat{MSE}(\hat{T}_t)$ is estimated for each incremental adjustment until the minimum value is identified, indicating that the optimal level of trimming has been reached. Trimming is performed separately for each fishing mode resulting in two final survey weights, one for private boat fishing and one for shore fishing.

7. Estimates

After weights are finalized, total shore and private boat fishing effort by residents of coastal states are estimated as weighted sums. Correction factors to account for fishing effort by residents of non-coastal states are derived from the complementary Access Point Angler Intercept Survey (APAIS).

Upon completion of the review and estimation processes, estimates of recreational saltwater fishing effort are available, first for preliminary data and updated with final, within 45 days of the end of the reference wave. Current and prior year estimates can be found: https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/queries/index

8. Quality Management

The FES contractor performs quality and project management functions, and NOAA Fisheries monitors and assesses performance by reviewing the contractor's planning documentation, hosting project kickoff meetings, tracking all survey tasks, and attending weekly conference calls.

At the start of each new FES contract, the contractor is required to develop and submit a quality and project management plan to NOAA Fisheries. The plan includes a detailed schedule of project activities, and reflects the requirements specified in the contract and/or describes and justifies revisions to any of those requirements. The plan also reflects a set of quality management procedures to ensure the collection of high quality data at all stages of the process, addressing each of the following activities: printing, preparing mailing packages, processing returned questionnaires (paper and/or web), data entry/data verification, and data file

production. It further specifies procedures and management controls, and includes a template and schedule for reporting results of quality management operations to NOAA Fisheries staff.

9. Process Improvement

In 2020, MRIP implemented a nonresponse follow-up study (NRFU) to evaluate nonresponse bias in the FES. The study included additional contact attempts and cash incentives to solicit responses to the FES questionnaire. Preliminary analysis of NRFU data demonstrate that NRFU respondents were not different than base FES respondents with respect to fishing activity. A final project report will be posted to the MRIP website upon completion.

References

Brick, J.M. and G. Kalton. 1996. Handling Missing Data in Survey Research. Statistical Methods in Medical Research. 5: 215-238.

Potter, F.J. 1988. A Study of Procedures to Identify and Trim Extreme Sampling Weights. Proceedings of the Section on Survey Research Methods. American Statistical Association. 225-230.

Potter, F.J. 1990. Survey of Procedures to Control Extreme Sampling Weights. Proceedings of the Section on Survey Research Methods. American Statistical Association. 453-458.

Wright, T. 2014. A Simple Method of Exact Optimal Sample Allocation under Stratification with Any Mixed Constraint Patterns. Center for Statistical Research & Methodology Research Report Series (Statistics #2014-07). U.S. Census Bureau. Available: https://www.census.gov/srd/papers/pdf/rrs2014-07.pdf.

Appendix A. Questionnaire

HOUSEHOLD MEMBER 4

11 What is this person's gender?
- ☐ Male
- ☐ Female

12 How old is this person?
If less than 1 year, mark 0 years

☐☐ Age in years

13 Is this person of Hispanic, Latino, or Spanish origin?
- ☐ Yes, of Hispanic origin
- ☐ No, not of Hispanic origin

14 What is this person's race? Mark one or more boxes.
- ☐ White
- ☐ Black, African-American
- ☐ Asian
- ☐ American Indian or Alaska Native
- ☐ Native Hawaiian or other Pacific Islander

Please think only about recreational saltwater fishing in North Carolina.

15 **How many days did this person go recreational saltwater fishing from the SHORE in North Carolina?**

The shore includes docks, bridges, causeways, beaches, banks, or any other shore-based place or area. Do not include freshwater fishing.

☐ Did not recreational saltwater fish from shore in last 12 months ➔ ***Go to question 16***

☐☐ Number of days saltwater shore fishing in November and December of 2020

☐☐☐ Number of days saltwater shore fishing in last 12 months, including November and December

16 **How many days did this person go recreational saltwater fishing from a private or rental BOAT that returned to shore in North Carolina?**

Do not include freshwater trips or trips where a paid captain or crew helped locate and catch fish.

☐ Did not recreational saltwater fish from private boat in last 12 months

☐☐ Number of days saltwater boat fishing in November and December of 2020

☐☐☐ Number of days saltwater boat fishing in last 12 months, including November and December

If you have more people in your household, continue to Household Member 5. If you have answered for all people in your household, please return your survey.

HOUSEHOLD MEMBER 5

11 What is this person's gender?
- ☐ Male
- ☐ Female

12 How old is this person?
If less than 1 year, mark 0 years

☐☐ Age in years

13 Is this person of Hispanic, Latino, or Spanish origin?
- ☐ Yes, of Hispanic origin
- ☐ No, not of Hispanic origin

14 What is this person's race? Mark one or more boxes.
- ☐ White
- ☐ Black, African-American
- ☐ Asian
- ☐ American Indian or Alaska Native
- ☐ Native Hawaiian or other Pacific Islander

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☐☐ Number of days saltwater shore fishing in November and December of 2020

☐☐☐ Number of days saltwater shore fishing in last 12 months, including November and December

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Do not include freshwater trips or trips where a paid captain or crew helped locate and catch fish.

☐ Did not recreational saltwater fish from private boat in last 12 months

☐☐ Number of days saltwater boat fishing in November and December of 2020

☐☐☐ Number of days saltwater boat fishing in last 12 months, including November and December

Please return your survey in the enclosed postage-paid envelope.

RTI International
5265 Capital Boulevard, Raleigh NC 27690-1652

20699999

OMB#: 0648-0652
Exp. Date: 9/30/2023

North Carolina

Weather and Outdoor Activity Survey

Public reporting burden for this collection of information is estimated to average 10 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 Rob Andrews, NOAA Fisheries Service, 1315 East-West Hwy., Silver Spring, MD 20910.

No personally identifiable information will be collected through this survey. Responses will only be associated with a unique, randomly assigned identification code. Any public release of survey data will be without identification as to its source or in aggregate statistical form. All survey data will be stored on secured, password protected servers, and all transfer of survey data will utilize secure file transfer protocols.

0039919

This survey should be filled out by an adult member of the household. Complete and return this form even if no one in your household participates in any of these activities.

START HERE

Please carefully follow the steps below when completing this survey.

- Use only a blue or black ink pen that does not blot the paper
- Make solid marks inside the response boxes
- Do not make other marks on the survey

Example

RIGHT WAY ☒ WRONG WAY ☒

1 How do members of this household obtain information about the weather, including current weather conditions, forecasts, and warnings? Mark all that apply.

- ☐ Television
- ☐ Radio
- ☐ Newspaper
- ☐ Internet
- ☐ Other

2 During the past 12 months, has anyone in this household had to evacuate or seek shelter due to a severe weather event, such as a tornado, hurricane, or thunderstorm?

- ☐ Yes
- ☐ No

3 In your area, how often do the advanced warnings you get for severe weather events allow you enough time to prepare properly?

- ☐ All the Time
- ☐ Some of the time
- ☐ Rarely
- ☐ Never

4 During the past 12 months, has anyone in this household visited a public beach, national seashore, coastal state park, or other coastal nature reserve or protected area?

- ☐ Yes
- ☐ No

5 During the past 12 months, has anyone in this household been freshwater fishing in North Carolina?

- ☐ Yes
- ☐ No

6 During the past 12 months, has anyone in this household been saltwater fishing in North Carolina?

- ☐ Yes
- ☐ No

7 Which of the following best describes how your household receives telephone calls?

- ☐ All are received on cell phones
- ☐ Most are received on cell phones
- ☐ Some are received on cell phones and some on landline phones
- ☐ Most are received on landline phones
- ☐ All are received on landline phones
- ☐ No calls are received on cell phones or landline phones

8 Which of the following best describes this house, apartment, or mobile home?

- ☐ Owned with a mortgage or loan
- ☐ Owned (without a mortgage)
- ☐ Rented
- ☐ Occupied without payment or rent

9 How long have you lived at this address?

- ☐ 1 year or less
- ☐ Less than 5 years, more than 1 year
- ☐ 5 years or more

10 How many people, including all adults and children, live in this household?

☐☐ Number of people

Please answer the next section for each member of your household, starting with yourself. Please answer for all people in your home, including people who fish and people who do not fish.

If you have more than 5 people living at this address, answer for the oldest members of the household.

Please use the calendars to help answer questions 15 and 16.

November

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

HOUSEHOLD MEMBER 1 (YOU)

11 What is your gender?

- ☐ Male
- ☐ Female

12 How old are you?
If less than 1 year, mark 0 years

☐☐ Age in years

13 Are you of Hispanic, Latino, or Spanish origin?

- ☐ Yes, of Hispanic origin
- ☐ No, not of Hispanic origin

14 What is your race? Mark one or more boxes.

- ☐ White
- ☐ Black, African-American
- ☐ Asian
- ☐ American Indian or Alaska Native
- ☐ Native Hawaiian or other Pacific Islander

Please think only about recreational saltwater fishing in North Carolina.

15 How many days did you go recreational saltwater fishing from the SHORE in North Carolina?

The shore includes docks, bridges, causeways, beaches, banks, or any other shore-based place or area. Do not include freshwater fishing.

☐ Did not recreational saltwater fish from shore in last 12 months ➔ ***Go to question 16***

☐☐ Number of days saltwater shore fishing in November and December of 2020

☐☐☐ Number of days saltwater shore fishing in last 12 months, including November and December

16 How many days did you go recreational saltwater fishing from a private or rental BOAT that returned to shore in North Carolina?

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☐☐☐ Number of days saltwater boat fishing in last 12 months, including November and December

If you have more people in your household, continue to Household Member 2. If you have answered for all people in your household, please return your survey.

HOUSEHOLD MEMBER 2

11 What is this person's gender?

- ☐ Male
- ☐ Female

12 How old is this person?
If less than 1 year, mark 0 years

☐☐ Age in years

13 Is this person of Hispanic, Latino, or Spanish origin?

- ☐ Yes, of Hispanic origin
- ☐ No, not of Hispanic origin

14 What is this person's race? Mark one or more boxes.

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If you have more people in your household, continue to Household Member 3. If you have answered for all people in your household, please return your survey.

HOUSEHOLD MEMBER 3

11 What is this person's gender?

- ☐ Male
- ☐ Female

12 How old is this person?
If less than 1 year, mark 0 years

☐☐ Age in years

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If you have more people in your household, continue to Household Member 4. If you have answered for all people in your household, please return your survey.

Appendix B. Coastal Designations by County for Each State Sampled During 2020

State	Counties
AL	Baldwin, Clarke**, Escambia**, Mobile, Monroe, Washington**
CT*	All Counties
DE*	All Counties
FL	All Counties
GA*	Appling**, Brantley, Bryan, Bulloch**, Camden, Charlton, Chatham, Effingham, Evans**, Glynn, Liberty, Long, Mc Intosh, Pierce**, Screven**, Tattnall**, Ware**, Wayne
HI	All Counties
MA*	Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk
MD*	Anne Arundel, Baltimore, Baltimore City, Calvert, Caroline, Cecil, Charles, Dorchester, Harford, Howard, Kent, Montgomery, Prince Georges, Queen Annes, Somerset, St Marys, Talbot, Wicomico, Worcester
ME*	Androscoggin, Cumberland, Hancock, Kennebec, Knox, Lincoln, Penobscot, Sagadahoc, Waldo, Washington, York
MS	Forrest**, George, Greene**, Hancock, Harrison, Jackson, Pearl River, Perry**, Stone
NC	Beaufort, Bertie, Bladen, Brunswick, Camden, Carteret, Chowan, Columbus, Craven, Cumberland**, Currituck, Dare, Duplin, Durham**, Edgecombe, Franklin**, Gates, Granville**, Greene, Halifax, Harnett**, Hertford, Hoke**, Hyde, Johnston**, Jones, Lenoir, Martin, Moore**, Nash**, New Hanover, Northampton, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Pitt, Richmond**, Robeson, Sampson, Scotland**, Tyrrell, Vance**, Wake**, Warren**, Washington, Wayne, Wilson
NH*	Hillsborough, Merrimack, Rockingham, Strafford
NJ*	Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Salem, Somerset, Union
NY*	Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester
RI*	All Counties
SC*	Allendale**, Bamberg**, Beaufort, Berkeley, Charleston, Clarendon**, Colleton, Dillon**, Dorchester, Florence, Georgetown, Hampton, Horry, Jasper, Marion, Orangeburg**, Williamsburg
VA*	Accomack, Caroline, Charles City, Chesapeake City, Chesterfield, Colonial Heights City, Dinwiddie, Essex, Fredericksburg City, Gloucester, Hampton City, Hanover, Henrico, Hopewell City, Isle Of Wight, James City, King And Queen, King George, King William, Lancaster, Mathews, Middlesex, New Kent, Newport News City, Norfolk City, Northampton, Northumberland, Petersburg City, Poquoson, Portsmouth City, Prince George, Prince William, Richmond, Richmond City, Southampton, Spotsylvania, Stafford, Suffolk City, Surry, Sussex, Virginia Beach City, Westmoreland, Williamsburg City, York

*** State is not sampled every wave; ** County is only considered coastal for waves 3 - 5**

Appendix C. Survey Supporting Materials

F9181-W6#-0003472 P001 T00024 **********5-DIGIT 02152

NORTH CAROLINA RESIDENT

December 23, 2020

Dear North Carolina Resident,

I am writing to ask for your help in a study that RTI International is conducting on behalf of the National Oceanic and Atmospheric Administration (NOAA). This survey asks questions about severe weather and outdoor activities. The results will be used to learn more about the environment and help improve the quality of marine and coastal resources.

For this study to be accurate, we need all households who receive this short survey to complete it and send it back. Your address was randomly picked from a list of addresses in North Carolina, and we can't replace you with someone else. Your responses will help all residents of North Carolina have their voices heard.

This survey asks about many outdoor activities. Some people enjoy many of these activities, while others aren't interested in these activities. **It is very important that your household complete the survey, even if no one participates in these activities.**

This survey should be completed by an adult living at this address. We have included a small gift of $2 as a way of saying thank you for your help.

This is a voluntary survey, and your responses are confidential and will only be used in combination with answers from other households. If you have any questions or comments about this study, we will be happy to talk to you. Please call 1-877-212-7229.

Thank you very much for your help with this important study. Please return your finished survey to RTI International using the enclosed postage-paid envelope.

Yours sincerely,

John Foster
Chief, Recreational Fisheries Statistics Branch
NOAA Fisheries Office of Science & Technology

No personally identifiable information will be collected through this survey. Any public release of survey data will be without identification as to its source or in aggregate statistical form.

0003472

L1

301_20699999

Commonly Asked Questions

- **How did you get my address?**
  Your address was randomly selected from all addresses in North Carolina. You and your household represent many other households in your part of North Carolina.

- **Nobody in my household participates in outdoor recreational activities. Should I still complete the survey?**
  Yes. It is important that everyone who receives this short questionnaire complete it and return it. For the results of the study to be accurate, we need basic information about all households who received the survey – regardless of whether they participate in outdoor recreational activities.

- **Why can't you interview another household instead of mine?**
  We can't select another household. For the results to be accurate, we need all households who receive this short questionnaire to complete it and send it back.

- **How much time will this survey take?**
  On average, it should take less than ten minutes to complete, including reviewing instructions, and answering the questions.

- **Who is sponsoring the survey?**
  This study is being sponsored by the National Oceanic and Atmospheric Administration (NOAA). NOAA's mission is to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet our nation's economic, social, and environmental needs.

- **How will the information I provide be used?**
  This survey collects information about how outdoor and marine resources in North Carolina are used and will help us better manage these resources for the future.

  Your answers are completely confidential and will be used only for this study in accordance with the Privacy Act of 1974. Call RTI International, toll-free, at 1-877-212-7229 with questions about this survey.

F9181-W6#-0003472 P001 T00024 **********5-DIGIT 02152

NORTH CAROLINA RESIDENT

December 23, 2020

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  We can't select another household. For the results to be accurate, we need all households who receive this short questionnaire to complete it and send it back.

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North Carolina Weather and Outdoor Activity Survey c/o RTI International (0217587.000.001)
5265 Capital Boulevard
Raleigh, NC 27616-2925

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FIRST CLASS MAIL
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PERMIT #6

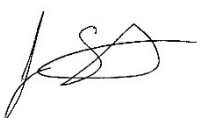
0000001 P001 T00001 **********MIXED AADC 159
NORTH CAROLINA RESIDENT

December 30, 2020

Last week we sent your household a North Carolina Weather and Outdoor Activity Survey that RTI International is conducting on behalf of the National Oceanic and Atmospheric Administration (NOAA). If you have already completed and returned the survey, please accept our sincere thanks. If not, I hope you will do so today. It should take no more than 5 to 10 minutes to fill out the survey.

RTI International and NOAA are conducting this study to learn more about outdoor activities and natural resources in North Carolina. Your responses are very important to us. Please know that your answers are completely confidential and will be used only for this study in accordance with the Privacy Act of 1974.

If you did not receive the survey or need another copy, please call RTI International toll-free at 1-877-212-7229.



John Foster
Chief, Recreational Fisheries Statistics Branch
NOAA Fisheries Office of Science & Technology

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 1			Returns	N	% Returned
AL	Coastal	Match	251	566	44.3
		Unmatch	702	2,198	31.9
	Non-Coastal	Match	33	87	37.9
		Unmatch	569	1,881	30.2
FL	Coastal	Match	111	312	35.6
		Unmatch	335	1,022	32.8
HI	Coastal	Unmatch	1,338	3,254	41.1
MS	Coastal	Match	198	372	53.2
		Unmatch	733	2,237	32.8
	Non-Coastal	Match	29	52	55.8
		Unmatch	572	1,983	28.8
NC	Coastal	Match	474	1,180	40.2
		Unmatch	918	2,931	31.3
	Non-Coastal	Match	197	446	44.2
		Unmatch	229	773	29.6

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 2			Returns	N	% Returned
AL	**Coastal**	**Match**	178	364	48.9
		Unmatch	447	1,329	33.6
	Non-Coastal	**Match**	54	146	37.0
		Unmatch	221	699	31.6
CT	**Coastal**	**Match**	246	528	46.6
		Unmatch	1,997	6,280	31.8
DE	**Coastal**	**Match**	449	1,091	41.2
		Unmatch	936	2,669	35.1
FL	**Coastal**	**Match**	162	400	40.5
		Unmatch	332	1,036	32.0
GA	**Coastal**	**Match**	185	446	41.5
		Unmatch	658	2,257	29.2
	Non-Coastal	**Match**	545	1,448	37.6
		Unmatch	1,177	4,424	26.6
HI	**Coastal**	**Unmatch**	989	2,311	42.8
MA	**Coastal**	**Match**	177	350	50.6
		Unmatch	2,358	7,552	31.2
	Non-Coastal	**Match**	35	73	47.9
		Unmatch	205	541	37.9
MD	**Coastal**	**Match**	576	1,446	39.8
		Unmatch	1,487	4,507	33.0
	Non-Coastal	**Match**	32	78	41.0
		Unmatch	70	164	42.7
MS	**Coastal**	**Match**	146	248	58.9
		Unmatch	377	1,112	33.9
	Non-Coastal	**Match**	23	57	40.4
		Unmatch	574	1,965	29.2
NC	**Coastal**	**Match**	335	831	40.3
		Unmatch	505	1,548	32.6
	Non-Coastal	**Match**	187	423	44.2
		Unmatch	236	731	32.3

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 2			Returns	N	% Returned
NJ	Coastal	Match	103	191	53.9
		Unmatch	1,526	5,591	27.3
	Non-Coastal	Match	14	35	40.0
		Unmatch	115	364	31.6
NY	Coastal	Match	133	454	29.3
		Unmatch	1,602	7,053	22.7
	Non-Coastal	Match	121	307	39.4
		Unmatch	128	352	36.4
RI	Coastal	Match	455	1,100	41.4
		Unmatch	1,658	4,771	34.8
SC	Coastal	Match	500	1,022	48.9
		Unmatch	342	1,113	30.7
	Non-Coastal	Match	122	261	46.7
		Unmatch	336	1,107	30.4
VA	Coastal	Match	477	1,102	43.3
		Unmatch	1,555	4,766	32.6
	Non-Coastal	Match	53	114	46.5
		Unmatch	264	709	37.2

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 3			Returns	N	% Returned
AL	Coastal	Match	123	310	39.7
		Unmatch	294	921	31.9
	Non-Coastal	Match	41	92	44.6
		Unmatch	451	1,457	31.0
CT	Coastal	Match	212	503	42.1
		Unmatch	855	2,743	31.2
DE	Coastal	Match	159	439	36.2
		Unmatch	561	1,810	31.0
FL	Coastal	Match	155	437	35.5
		Unmatch	336	1,107	30.4
GA	Coastal	Match	307	828	37.1
		Unmatch	428	1,617	26.5
	Non-Coastal	Match	109	315	34.6
		Unmatch	489	1,803	27.1
HI	Coastal	Unmatch	918	2,286	40.2
MA	Coastal	Match	112	252	44.4
		Unmatch	598	2,039	29.3
	Non-Coastal	Match	28	53	52.8
		Unmatch	53	177	29.9
MD	Coastal	Match	162	479	33.8
		Unmatch	337	1,152	29.3
	Non-Coastal	Match	27	59	45.8
		Unmatch	75	206	36.4
ME	Coastal	Match	140	335	41.8
		Unmatch	1,171	3,092	37.9
	Non-Coastal	Match	16	40	40.0
		Unmatch	28	64	43.8
MS	Coastal	Match	218	370	58.9
		Unmatch	505	1,677	30.1
	Non-Coastal	Match	40	89	44.9
		Unmatch	240	956	25.1

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

	Wave 3		Returns	N	% Returned
NC	Coastal	Match	249	604	41.2
		Unmatch	297	977	30.4
	Non-Coastal	Match	234	523	44.7
		Unmatch	155	490	31.6
NH	Coastal	Match	189	472	40.0
		Unmatch	679	1,895	35.8
	Non-Coastal	Match	14	44	31.8
		Unmatch	84	221	38.0
NJ	Coastal	Match	143	282	50.7
		Unmatch	707	2,602	27.2
	Non-Coastal	Match	26	40	65.0
		Unmatch	20	49	40.8
NY	Coastal	Match	134	402	33.3
		Unmatch	555	2,680	20.7
	Non-Coastal	Match	49	130	37.7
		Unmatch	113	347	32.6
RI	Coastal	Match	166	410	40.5
		Unmatch	625	1,738	36.0
SC	Coastal	Match	268	605	44.3
		Unmatch	1,719	5,406	31.8
	Non-Coastal	Match	210	474	44.3
		Unmatch	329	1,129	29.1
VA	Coastal	Match	134	323	41.5
		Unmatch	547	1,689	32.4
	Non-Coastal	Match	55	133	41.4
		Unmatch	126	436	28.9

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 4			Returns	N	% Returned
AL	Coastal	Match	286	757	37.8
		Unmatch	373	1,355	27.5
	Non-Coastal	Match	147	391	37.6
		Unmatch	238	897	26.5
CT	Coastal	Match	282	685	41.2
		Unmatch	401	1,347	29.8
DE	Coastal	Match	443	1,210	36.6
		Unmatch	882	2,691	32.8
FL	Coastal	Match	194	541	35.9
		Unmatch	424	1,476	28.7
GA	Coastal	Match	203	539	37.7
		Unmatch	458	1,677	27.3
	Non-Coastal	Match	292	858	34.0
		Unmatch	1,158	4,772	24.3
HI	Coastal	Unmatch	893	2,237	39.9
MA	Coastal	Match	214	482	44.4
		Unmatch	315	1,011	31.2
	Non-Coastal	Match	33	83	39.8
		Unmatch	82	239	34.3
MD	Coastal	Match	220	699	31.5
		Unmatch	646	2,120	30.5
	Non-Coastal	Match	34	81	42.0
		Unmatch	44	122	36.1
ME	Coastal	Match	210	539	39.0
		Unmatch	502	1,277	39.3
	Non-Coastal	Match	28	85	32.9
		Unmatch	40	142	28.2
MS	Coastal	Match	175	413	42.4
		Unmatch	388	1,235	31.4
	Non-Coastal	Match	46	105	43.8
		Unmatch	165	672	24.6

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 4			Returns	N	% Returned
NC	Coastal	Match	292	741	39.4
		Unmatch	433	1,414	30.6
	Non-Coastal	Match	85	200	42.5
		Unmatch	178	667	26.7
NH	Coastal	Match	227	558	40.7
		Unmatch	1,595	4,528	35.2
	Non-Coastal	Match	23	68	33.8
		Unmatch	81	244	33.2
NJ	Coastal	Match	143	306	46.7
		Unmatch	666	2,618	25.4
	Non-Coastal	Match	27	65	41.5
		Unmatch	41	112	36.6
NY	Coastal	Match	104	367	28.3
		Unmatch	980	4,410	22.2
	Non-Coastal	Match	48	127	37.8
		Unmatch	147	406	36.2
RI	Coastal	Match	163	420	38.8
		Unmatch	430	1,217	35.3
SC	Coastal	Match	389	932	41.7
		Unmatch	212	699	30.3
	Non-Coastal	Match	137	321	42.7
		Unmatch	232	820	28.3
VA	Coastal	Match	180	447	40.3
		Unmatch	618	1,985	31.1
	Non-Coastal	Match	56	130	43.1
		Unmatch	218	680	32.1

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 5			Returns	N	% Returned
AL	**Coastal**	**Match**	184	412	44.7
		Unmatch	1,191	4,389	27.1
	Non-Coastal	**Match**	33	74	44.6
		Unmatch	226	866	26.1
CT	**Coastal**	**Match**	229	612	37.4
		Unmatch	640	2,244	28.5
DE	**Coastal**	**Match**	292	832	35.1
		Unmatch	543	1,830	29.7
FL	**Coastal**	**Match**	206	584	35.3
		Unmatch	428	1,621	26.4
GA	**Coastal**	**Match**	343	1,050	32.7
		Unmatch	598	2,807	21.3
	Non-Coastal	**Match**	207	686	30.2
		Unmatch	1,016	4,694	21.6
HI	**Coastal**	**Unmatch**	1,248	3,375	37.0
MA	**Coastal**	**Match**	189	471	40.1
		Unmatch	879	2,839	31.0
	Non-Coastal	**Match**	27	74	36.5
		Unmatch	290	944	30.7
MD	**Coastal**	**Match**	210	679	30.9
		Unmatch	507	1,771	28.6
	Non-Coastal	**Match**	21	53	39.6
		Unmatch	78	218	35.8
ME	**Coastal**	**Match**	358	962	37.2
		Unmatch	933	2,714	34.4
	Non-Coastal	**Match**	20	61	32.8
		Unmatch	17	44	38.6
MS	**Coastal**	**Match**	167	385	43.4
		Unmatch	606	2,159	28.1
	Non-Coastal	**Match**	18	62	29.0
		Unmatch	274	1,254	21.9

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

Wave 5			Returns	N	% Returned
NC	Coastal	Match	440	1,205	36.5
		Unmatch	252	981	25.7
	Non-Coastal	Match	148	390	37.9
		Unmatch	190	731	26.0
NH	Coastal	Match	288	851	33.8
		Unmatch	1,318	3,996	33.0
	Non-Coastal	Match	31	101	30.7
		Unmatch	65	196	33.2
NJ	Coastal	Match	198	459	43.1
		Unmatch	933	3,605	25.9
	Non-Coastal	Match	30	68	44.1
		Unmatch	33	96	34.4
NY	Coastal	Match	136	482	28.2
		Unmatch	1,103	5,459	20.2
	Non-Coastal	Match	61	185	33.0
		Unmatch	167	520	32.1
RI	Coastal	Match	248	689	36.0
		Unmatch	632	1,996	31.7
SC	Coastal	Match	498	1,193	41.7
		Unmatch	172	589	29.2
	Non-Coastal	Match	100	267	37.5
		Unmatch	149	562	26.5
VA	Coastal	Match	388	1,014	38.3
		Unmatch	763	2,721	28.0
	Non-Coastal	Match	59	172	34.3
		Unmatch	308	957	32.2

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

	Wave 6		Returns	N	% Returned
AL	Coastal	Match	229	514	44.6
		Unmatch	593	2,114	28.1
	Non-Coastal	Match	25	72	34.7
		Unmatch	712	2,714	26.2
CT	Coastal	Match	586	1,386	42.3
		Unmatch	1,399	4,502	31.1
DE	Coastal	Match	631	1,604	39.3
		Unmatch	822	2,487	33.1
FL	Coastal	Match	200	603	33.2
		Unmatch	353	1,313	26.9
GA	Coastal	Match	197	598	32.9
		Unmatch	352	1,547	22.8
	Non-Coastal	Match	265	818	32.4
		Unmatch	401	1,737	23.1
HI	Coastal	Unmatch	984	2,508	39.2
MA	Coastal	Match	1,055	2,517	41.9
		Unmatch	2,999	9,541	31.4
	Non-Coastal	Match	40	82	48.8
		Unmatch	662	1,964	33.7
MD	Coastal	Match	394	1,112	35.4
		Unmatch	1,404	4,603	30.5
	Non-Coastal	Match	22	48	45.8
		Unmatch	74	189	39.2
MS	Coastal	Match	168	351	47.9
		Unmatch	731	2,509	29.1
	Non-Coastal	Match	29	59	49.2
		Unmatch	519	1,992	26.1
NC	Coastal	Match	362	910	39.8
		Unmatch	209	792	26.4
	Non-Coastal	Match	260	655	39.7
		Unmatch	242	901	26.9
NJ	Coastal	Match	305	671	45.5

Appendix D. Return Rates by Stratum for Waves 1 – 6, 2020

NY	**Non-Coastal**	**Unmatch**	1,419	5,390	26.3
		Match	24	49	49.0
		Unmatch	103	269	38.3
	Coastal	**Match**	454	1,464	31.0
		Unmatch	1,812	8,741	20.7
	Non-Coastal	**Match**	62	200	31.0
		Unmatch	151	438	34.5
RI	**Coastal**	**Match**	510	1,348	37.8
		Unmatch	2,481	7,619	32.6
SC	**Coastal**	**Match**	547	1,271	43.0
		Unmatch	528	1,754	30.1
	Non-Coastal	**Match**	77	208	37.0
		Unmatch	128	432	29.6
VA	**Coastal**	**Match**	360	865	41.6
		Unmatch	1,049	3,520	29.8
	Non-Coastal	**Match**	91	218	41.7
		Unmatch	141	439	32.1

Appendix E. Codebook

Variable Name	Label/Description	Values
hh_id	Unique Household ID	Value
st	State of residence/fishing activity	1 = Alabama 9 = Connecticut 10 = Delaware 12 = Florida 13 = Georgia 15 = Hawaii 22 = Louisiana 23 = Maine 24 = Maryland 25 = Massachusetts 28 = Mississippi 33 = New Hampshire 34 = New Jersey 36 = New York 37 = North Carolina 42 = Pennsylvania 44 = Rhode Island 45 = South Carolina 51 = Virginia
wave	Survey wave (Reference Wave)	1 = January/February 2 = March/April 3 = May/June 4 = July/August 5 = September/October 6 = November/December
year	Survey year (Reference Year)	Value
weather_tv	How do members of this household obtain information about the weather, including current weather conditions, forecasts, and warnings? Mark all that apply: television	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
weather_rad	How do members of this household obtain information about the weather, including current weather conditions, forecasts, and warnings? Mark all that apply: radio	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
weather_np	How do members of this household obtain information about the weather, including current weather conditions, forecasts, and warnings? Mark all that apply: newspaper	1 = Yes 0 = No -3 = Missing -5 = Multiple Response

weather_web	How do members of this household obtain information about the weather, including current weather conditions, forecasts, and warnings? Mark all that apply: internet	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
weather_oth	How do members of this household obtain information about the weather, including current weather conditions, forecasts, and warnings? Mark all that apply: other	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
evac	During the past 12 months, has anyone in household had to evacuate or seek shelter due to a severe weather event, such as a tornado, hurricane, or thunderstorm?	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
warning	In your area, how often do the advanced warnings you get for severe weather events allow you enough time to prepare properly?	1 = All The Time 2 = Some Of The Time 3 = Rarely 4 = Never -3 = Missing -5 = Multiple Response
beach_flag	During the past 12 months has anyone in household visit a public beach, national seashore, coastal state park or other coastal nature reserve or protected area?	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
fresh_fish	During the past 12 months has anyone in this household been freshwater fishing in <State>?	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
salt_fish	During the past 12 months has anyone in this household been saltwater fishing in <State>?	1 = Yes 0 = No -3 = Missing -5 = Multiple Response
hh_phn_1	Which of the following best describes how your household receives telephone calls?	1 = All Are Received On Cell Phones 2 = Most Are Received On Cell Phones 3 = Some Are Received On Cell Phones And Some On Landline Phones 4 = Most Are Received On Landline Phones 5 = All Are Received On Landline Phones 6 = No Calls Are Received On Cell Phones Or Landline Phones -3 = Missing -5 = Multiple Response

hh_desc	Which of the following best describes this house, apartment or mobile home?	1 = Owned With A Mortgage Or Loan 2 = Owned (Without A Mortgage) 3 = Rented 4 = Occupied Without Payment Or Rent -3 = Missing -5 = Multiple Response
hh_years	How long have you lived at this address?	1 = 1 Year Or Less 2 = Less Than 5 Years, More Than 1 Year 3 = 5 Years Or More -3 = Missing -5 = Multiple Response
hh_members	How many people, including all adults and children live in this household?	Verbatim (Including 0) -3 = Missing
boat_trips_hh	Number of household boat fishing trips during the reference wave	Value
shore_trips_hh	Number of household shore fishing trips during the reference wave	Value
nrv_edit	Was the household determined to be nonrepresentative?	1 = yes
imp_hh_members	Was the number of household members (HH_members) imputed?	1 = yes
stratum_id	Stratum identifier	Value
final_wt	Final analysis weight	Value

MRIP Name	Label/Description	Values
hh_id	Unique Household ID	Value
st	State of residence/fishing activity	1 = Alabama 9 = Connecticut 10 = Delaware 12 = Florida 13 = Georgia 15 = Hawaii 22 = Louisiana 23 = Maine 24 = Maryland 25 = Massachusetts 28 = Mississippi 33 = New Hampshire 34 = New Jersey 36 = New York 37 = North Carolina 42 = Pennsylvania 44 = Rhode Island 45 = South Carolina 51 = Virginia
wave	Survey wave (Reference Wave)	1 = January/February 2 = March/April 3 = May/June 4 = July/August 5 = September/October 6 = November/December
year	Survey year (Reference Year)	Value
person_id	Within household person identifier	1-5
gender	What is this peron's gender?	1 = male 2 = female -3 = Missing
age	How old is this person?	Value -3 = missing
raceethn	Denotes race and ethnicity	1 = White, non-Hispanic 2 = Black, non-Hispanic 3 = Hispanic 4 = Asian or Pacific Island, non-Hispanic 5 = all other races and multiple races, non-Hispanic
shore_trips	Number of days saltwater shore fishing during 2-month reference wave	Value
boat_trips	Number of days saltwater private boat fishing during 2-month reference wave	Value
imp_shore_trips	Was the number of shore trips imputed?	1 = Yes
imp_boat_trips	Was the number of boat trips imputed?	1 = Yes
final_wt	Final analysis weight	Value
strat_id	Stratum identifier	Value