SUPPORTING STATEMENT
FLORIDA FISHING AND BOATING SURVEY
OMB CONTROL NO. 0648-XXXX

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

1.   Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local governmental units, households, or persons) in the universe and the corresponding sample are to be provided in tabular form. The tabulation must also include expected response rates for the collection as a whole. If the collection has been conducted before, provide the actual response rate achieved.

Construction of Sample Frame

The target population for the FBFS is any Florida resident who might potentially fish in the Gulf of Mexico (GOM) from West Florida (WFL) during November and December. We are especially interested in anglers fishing for gag grouper. There is no specific list for this type of angler. We propose to construct a sample frame from two lists of Florida residents. The first is the list of registered Florida boat owners (FBO) and the second is the list of licensed saltwater anglers in Florida (FLSA). The FBO list will help us reach anglers missing from the saltwater license list due to exemptions, especially adults 65 and over which make up nearly 20% of the Florida population and by some accounts around 15% of the angling population (USFWS and USCB 2014). According to Info-Link, approximately 23% of our target FBO population is aged 65 or older.

The FBO and FLSA lists have information that can be used to focus on addresses that are most relevant to WFL GOM fishing during November and December. Both lists can be narrowed geographically to counties where WFL GOM trips are most likely to originate. We then propose to oversample these counties based on gag grouper fishing prevalence to generate sufficient responses from gag grouper anglers.

We use data from the Marine Recreational Fishing Information Program (MRIP) to identify Florida counties that are most likely to be associated with WFL GOM private boat fishing. In this case, a county is "associated" with WFL GOM if at least 50% of the 2005 to 2017 average annual estimated fishing trips during November and December from the county were to the GOM from WFL. Note that this sample frame will not cover the entire population of anglers that fish in the GOM from WFL because, based on 18 years of MRIP data, approximately 14% of anglers fishing in the GOM from WFL from a private boat reside outside Florida. We also define trips during this period as "associated"" with gag grouper if the angler either targeted (primary or secondary) or caught (kept or released dead or alive) gag grouper in the GOM from WFL.

Table 1 shows the average annual number of trips originating from each Florida county from 2005 to 2017 during November and December. There are columns for the estimated count of all trips (ALL), trips to the Gulf of Mexico (GOM), and trips to the Gulf of Mexico that targeted or caught gag grouper (GAG). A 95% confidence interval (LB and UB) is also shown next to each trip count estimate. The table is sorted in descending order by the number of trips to the Gulf of Mexico.

Table 2 shows the trip information again along with the county population (POP) and count of registered pleasure vessels, both all boats (ALL) and boats between 16 feet and 110 feet (CLASS14). Note that all trip estimates with a lower bound less than zero in Table 1 have been set to zero in Table 2 to remove counties with

imprecise estimates from further consideration. The subset of pleasure boats between 16 feet and 110 feet likely contains nonfishing vessels. The FBO database has information that can be used to limit this population of registered boaters to those who are most likely to fish offshore. Specifically, we are interested in open or cabin motorboats >= 20 feet with outboard, inboard, or inboard/outboard motors and fiberglass hulls that are defined as recreational (pleasure) craft. Based on data from Info-Link's BoatOwners Database, approximately 27% of registered pleasure vessels between 16 feet and 110 feet meet this criteria. The BoatOwners Database can also be used to delineate between "sportfish" brand and "other" brand vessels. However, we will likely include both brand types in the sample frame.

Table 2 also shows the share of trips originating from each county that went to the GOM and the share that went to the GOM to fish for (targeting or catching) gag grouper. The table is sorted in descending order by the share that went to the GOM. For the full study we plan to sample from the counties with at least 50% of trips to the GOM: Calhoun to Lake. These 45 counties account for 96% of all GOM trips and 99% of all gag grouper trips in the GOM. The map in Figure 1 shows the percentage of trips to the GOM from counties that will be sampled for the pilot survey.

Overall, 13% of trips in these counties are associated gag grouper. This suggests that every 8th angler from these counties is associated with gag grouper. Consequently, we will need around 8 times as much sample to reach gag grouper anglers, even from these counties.

For the pilot study we will only sample from 2 of the 45 counties included in the full study. In order evaluate the response rates over the range of possible grouper fishing prevalence rates, we will survey one county with a high grouper fishing prevalence rate and one county with a low grouper fishing prevalence rate. Hillsborough county has one of the lowest grouper fishing prevalence rates at 11% whereas Pinellas county has one of the highest grouper fishing prevalence rates at 21%. Combined these counties account for 30% of all GOM trips and 38% of all GOM gag grouper trips. Together, 16% of trips in Hillsborough and Pinellas counties are associated gag grouper. This suggests that every 6th angler from these counties is associated with gag grouper. Consequently, we will need around 6 times as much sample to reach gag grouper anglers in these two counties.

Table 1: Average Annual Private Boat Trips to GOM from WFL from Florida Counties Counties: 2005-2017, Nov-Dec (descending by GOM trips)

COUNTY	ALL	ALL LB	ALL UB	GOM	GOM LB	GOM UB	GAG	GAG LB	GAG UB
PINELLAS	439,044	381,708	496,381	437,337	380,009	494,665	93,907	74,556	113,258
HILLSBOROUGH	424,476	378,347	470,606	420,836	374,744	466,927	46,974	37,287	56,661
LEE	195,639	162,588	228,690	195,047	161,999	228,095	15,742	10,269	21,214
SARASOTA	194,338	157,009	231,667	193,878	156,551	231,205	35,463	24,515	46,412
PASCO	161,959	135,832	188,086	161,703	135,578	187,827	25,509	18,669	32,350
MANATEE	136,900	103,267	170,532	136,286	102,659	169,912	26,307	17,335	35,279
COLLIER	133,132	99,911	166,353	132,296	99,084	165,507	10,370	5,288	15,453
CITRUS	121,045	92,059	150,030	118,751	89,798	147,704	14,298	8,439	20,158
CHARLOTTE	81,399	62,701	100,098	80,219	61,549	98,888	6,675	3,899	9,451
HERNANDO	79,901	61,248	98,554	79,149	60,532	97,765	17,417	11,648	23,187
ALACHUA	81,705	61,669	101,741	78,535	58,594	98,476	7,235	2,376	12,093
POLK	82,263	70,383	94,143	74,282	62,833	85,730	9,523	6,702	12,344
ESCAMBIA	73,890	52,993	94,787	73,811	52,914	94,707	8,102	3,897	12,307
LEON	63,720	46,710	80,730	62,690	45,698	79,681	16,659	10,014	23,304
MONROE	65,012	45,873	84,152	59,981	41,058	78,905	642	-181	1,465
MARION	60,656	39,927	81,384	56,880	36,321	77,440	8,586	2,543	14,629
BAY	56,164	34,329	77,999	55,462	33,643	77,281	6,020	-134	12,173
SANTA ROSA	49,524	31,908	67,140	48,799	31,208	66,389	5,426	1,229	9,622
MIAMI-DADE	239,913	191,806	288,020	44,771	23,728	65,815	945	8	1,882
OKALOOSA	41,318	23,569	59,067	40,865	23,122	58,607	2,461	536	4,386
LEVY	40,822	28,191	53,453	40,566	27,938	53,194	861	149	1,573

WAKULLA	28,864	14,806	42,923	28,762	14,705	42,819	9,774	3,792	15,757
BROWARD	167,833	128,690	206,975	25,317	15,563	35,072	797	34	1,560
LAKE	38,908	27,730	50,086	19,556	12,898	26,214	3,533	1,179	5,887
GULF	16,099	5,203	26,995	16,099	5,203	26,995	242	-147	630
ORANGE	131,470	110,556	152,384	16,055	10,947	21,163	2,971	1,175	4,767
WALTON	14,992	7,244	22,740	14,992	7,244	22,740	836	-51	1,722
COLUMBIA	13,614	6,995	20,232	13,415	6,801	20,028	173	-166	512
FRANKLIN	15,718	10,120	21,316	12,649	7,483	17,816	2,861	492	5,230
SUMTER	14,349	9,886	18,811	12,627	8,352	16,901	1,227	318	2,137
DIXIE	9,433	4,506	14,361	9,336	4,411	14,261	199	-77	474
SUWANNEE	9,412	5,527	13,297	8,895	5,051	12,739	0	0	0
GILCHRIST	8,884	3,608	14,160	8,884	3,608	14,160	376	-145	896
TAYLOR	7,818	3,298	12,339	7,779	3,260	12,299	489	-69	1,048
HIGHLANDS	8,646	3,798	13,494	7,559	2,789	12,329	1,821	-163	3,806
PALM BEACH	253,141	218,424	287,858	7,435	1,995	12,874	88	-84	260
HENDRY	8,889	2,428	15,350	7,269	1,007	13,531	80	-61	221
OSCEOLA	19,085	11,097	27,072	6,051	-954	13,056	79	-76	234
DESOTO	6,079	3,099	9,058	6,027	3,049	9,004	139	-134	412
DUVAL	362,167	304,908	419,426	5,873	3,757	7,990	317	-129	763
SEMINOLE	104,257	84,174	124,340	5,732	2,380	9,084	1,226	-59	2,511
BRADFORD	7,269	3,870	10,669	5,460	2,328	8,593	0	0	0
BREVARD	289,487	245,729	333,245	5,223	1,949	8,497	84	-80	247
HOLMES	3,594	-1,028	8,217	3,594	-1,028	8,217	536	-515	1,588
VOLUSIA	279,888	231,882	327,893	3,556	2,026	5,086	0	0	0
JACKSON	3,768	1,302	6,233	3,540	1,098	5,982	195	-77	466
GADSDEN	3,484	1,490	5,479	3,484	1,490	5,479	1,968	217	3,719
UNION	3,833	855	6,811	3,477	539	6,416	376	-148	900
PUTNAM	12,877	7,847	17,906	3,468	1,152	5,784	253	-242	747
WASHINGTON	3,092	950	5,233	3,092	950	5,233	0	0	0
MARTIN	117,113	94,218	140,007	3,027	1,135	4,919	141	-136	418
CALHOUN	2,962	240	5,684	2,962	240	5,684	281	-114	675
HARDEE	2,790	1,147	4,433	2,686	1,050	4,323	319	-52	689
JEFFERSON	2,495	1,081	3,908	2,495	1,081	3,908	271	-14	556
BAKER	8,898	4,115	13,682	2,367	370	4,364	0	0	0
CLAY	43,201	32,709	53,693	2,245	982	3,507	498	-192	1,188
ST. JOHNS	116,707	89,295	144,119	1,759	628	2,889	0	0	0
HAMILTON	1,535	51	3,018	1,535	51	3,018	0	0	0
NASSAU	43,470	29,883	57,056	1,518	-621	3,658	0	0	0
ST. LUCIE	126,248	103,221	149,275	1,306	141	2,471	0	0	0
LAFAYETTE	1,067	338	1,797	894	249	1,540	0	0	0
MADISON	839	128	1,551	720	34	1,405	0	0	0
INDIAN RIVER	101,234	77,314	125,155	671	72	1,270	0	0	0
FLAGLER	22,633	11,843	33,423	357	-52	767	0	0	0
GLADES	499	-77	1,075	280	-159	718	0	0	0
OKEECHOBEE	6,881	3,847	9,915	200	-32	433	0	0	0
LIBERTY	184	-176	543	184	-176	543	0	0	0

Table 2: Population (2010), Registered Boats (2016) and Average Annual (2005-2017) Trips during Nov-Dec for Counties (descending by GOM trip share)

COUNTY	POP	CLASS14 BOATS	ALL BOATS	ALL TRIPS	GOM TRIPS	GAG TRIPS	GOM TRIPS SHARE	GAG TRIPS SHARE	SHARE OF GOM TRIPS	SHARE OF GAG TRIPS
CALHOUN	14,625	531	1,580	2,962	2,962	0	1	0	0	0
GADSDEN	46,389	1,125	2,238	3,484	3,484	1,968	1	0.56	0	0.01
GILCHRIST	16,939	983	1,671	8,884	8,884	0	1	0	0	0
GULF	15,863	1,408	2,769	16,099	16,099	0	1	0	0.01	0

County										
HAMILTON	14,799	399	871	1,535	1,535	0	1	0	0	0
JEFFERSON	14,761	583	1,234	2,495	2,495	0	1	0	0	0
WALTON	55,043	2,828	5,494	14,992	14,992	0	1	0	0.01	0
WASHINGTON	24,896	915	2,362	3,092	3,092	0	1	0	0	0
ESCAMBIA	297,619	9,252	15,033	73,890	73,811	8,102	1	0.11	0.03	0.02
PASCO	464,697	14,160	23,148	161,959	161,703	25,509	1	0.16	0.06	0.07
SARASOTA	379,448	15,068	21,401	194,338	193,878	35,463	1	0.18	0.07	0.09
LEE	618,754	33,264	45,187	195,639	195,047	15,742	1	0.08	0.07	0.04
WAKULLA	30,776	2,716	4,734	28,864	28,762	9,774	1	0.34	0.01	0.03
PINELLAS	916,542	31,053	47,130	439,044	437,337	93,907	1	0.21	0.15	0.25
MANATEE	322,833	11,532	17,407	136,900	136,286	26,307	1	0.19	0.05	0.07
TAYLOR	22,570	2,007	3,565	7,818	7,779	0	0.99	0	0	0
LEVY	40,801	2,416	3,989	40,822	40,566	861	0.99	0.02	0.01	0
COLLIER	321,520	15,119	21,539	133,132	132,296	10,370	0.99	0.08	0.05	0.03
DESOTO	34,862	1,209	2,227	6,079	6,027	0	0.99	0	0	0
HILLSBOROUGH	1,229,226	25,196	39,191	424,476	420,836	46,974	0.99	0.11	0.15	0.13
HERNANDO	172,778	5,345	9,154	79,901	79,149	17,417	0.99	0.22	0.03	0.05
DIXIE	16,422	1,364	2,246	9,433	9,336	0	0.99	0	0	0
OKALOOSA	180,822	10,525	17,829	41,318	40,865	2,461	0.99	0.06	0.01	0.01
BAY	168,852	9,572	17,118	56,164	55,462	0	0.99	0	0.02	0
CHARLOTTE	159,978	15,767	21,402	81,399	80,219	6,675	0.99	0.08	0.03	0.02
COLUMBIA	67,531	2,483	4,360	13,614	13,415	0	0.99	0	0	0
SANTA ROSA	151,372	7,968	14,089	49,524	48,799	5,426	0.99	0.11	0.02	0.01
LEON	275,487	6,753	12,540	63,720	62,690	16,659	0.98	0.26	0.02	0.04
CITRUS	141,236	10,087	15,578	121,045	118,751	14,298	0.98	0.12	0.04	0.04
HARDEE	27,731	840	1,588	2,790	2,686	0	0.96	0	0	0
ALACHUA	247,336	6,151	9,979	81,705	78,535	7,235	0.96	0.09	0.03	0.02
SUWANNEE	41,551	1,459	2,700	9,412	8,895	0	0.95	0	0	0
JACKSON	49,746	2,024	4,665	3,768	3,540	0	0.94	0	0	0
MARION	331,298	11,030	18,254	60,656	56,880	8,586	0.94	0.14	0.02	0.02
MONROE	73,090	19,810	26,147	65,012	59,981	0	0.92	0	0.02	0
UNION	15,535	513	974	3,833	3,477	0	0.91	0	0	0
POLK	602,095	16,388	27,733	82,263	74,282	9,523	0.9	0.12	0.03	0.03
SUMTER	93,420	2,437	4,338	14,349	12,627	1,227	0.88	0.09	0	0
HIGHLANDS	98,786	5,297	8,807	8,646	7,559	0	0.87	0	0	0
MADISON	19,224	596	1,158	839	720	0	0.86	0	0	0
LAFAYETTE	8,870	472	897	1,067	894	0	0.84	0	0	0
HENDRY	39,140	1,794	2,827	8,889	7,269	0	0.82	0	0	0
FRANKLIN	11,549	1,463	2,360	15,718	12,649	2,861	0.8	0.18	0	0.01
BRADFORD	28,520	1,299	2,275	7,269	5,460	0	0.75	0	0	0
LAKE	297,052	13,631	20,581	38,908	19,556	3,533	0.5	0.09	0.01	0.01
PUTNAM	74,364	4,552	7,260	12,877	3,468	0	0.27	0	0	0
BAKER	27,115	1,285	2,437	8,898	2,367	0	0.27	0	0	0
MIAMI-DADE	2,496,435	42,760	63,312	239,913	44,771	945	0.19	0	0.02	0
BROWARD	1,748,066	28,310	42,486	167,833	25,317	797	0.15	0	0.01	0
ORANGE	1,145,956	15,094	26,046	131,470	16,055	2,971	0.12	0.02	0.01	0.01
SEMINOLE	422,718	10,303	17,623	104,257	5,732	0	0.05	0	0	0

CLAY	190,865	7,697	12,275	43,201	2,245	0	0.05	0	0	0
PALM BEACH	1,320,134	24,915	36,253	253,141	7,435	0	0.03	0	0	0
MARTIN	146,318	12,513	16,675	117,113	3,027	0	0.03	0	0	0
BREVARD	543,376	19,331	32,003	289,487	5,223	0	0.02	0	0	0
DUVAL	864,263	15,682	25,719	362,167	5,873	0	0.02	0	0	0
ST. JOHNS	190,039	8,748	13,842	116,707	1,759	0	0.02	0	0	0
VOLUSIA	494,593	16,201	26,161	279,888	3,556	0	0.01	0	0	0
ST. LUCIE	277,789	8,398	12,259	126,248	1,306	0	0.01	0	0	0
INDIAN RIVER	138,028	6,606	10,190	101,234	671	0	0.01	0	0	0
FLAGLER	95,696	3,240	5,339	22,633	0	0	0	0	0	0
GLADES	12,884	795	1,213	0	0	0	0	0	0	0
HOLMES	19,927	664	2,031	0	0	0	0	0	0	0
LIBERTY	8,365	357	1,071	0	0	0	0	0	0	0
NASSAU	73,314	3,420	6,044	43,470	0	0	0	0	0	0
OKEECHOBEE	39,996	3,399	4,795	6,881	0	0	0	0	0	0
OSCEOLA	268,685	4,488	7,838	19,085	0	0	0	0	0	0

GOM trips account for at least 50% of all trips from County. This is 96% of all GOM trips.
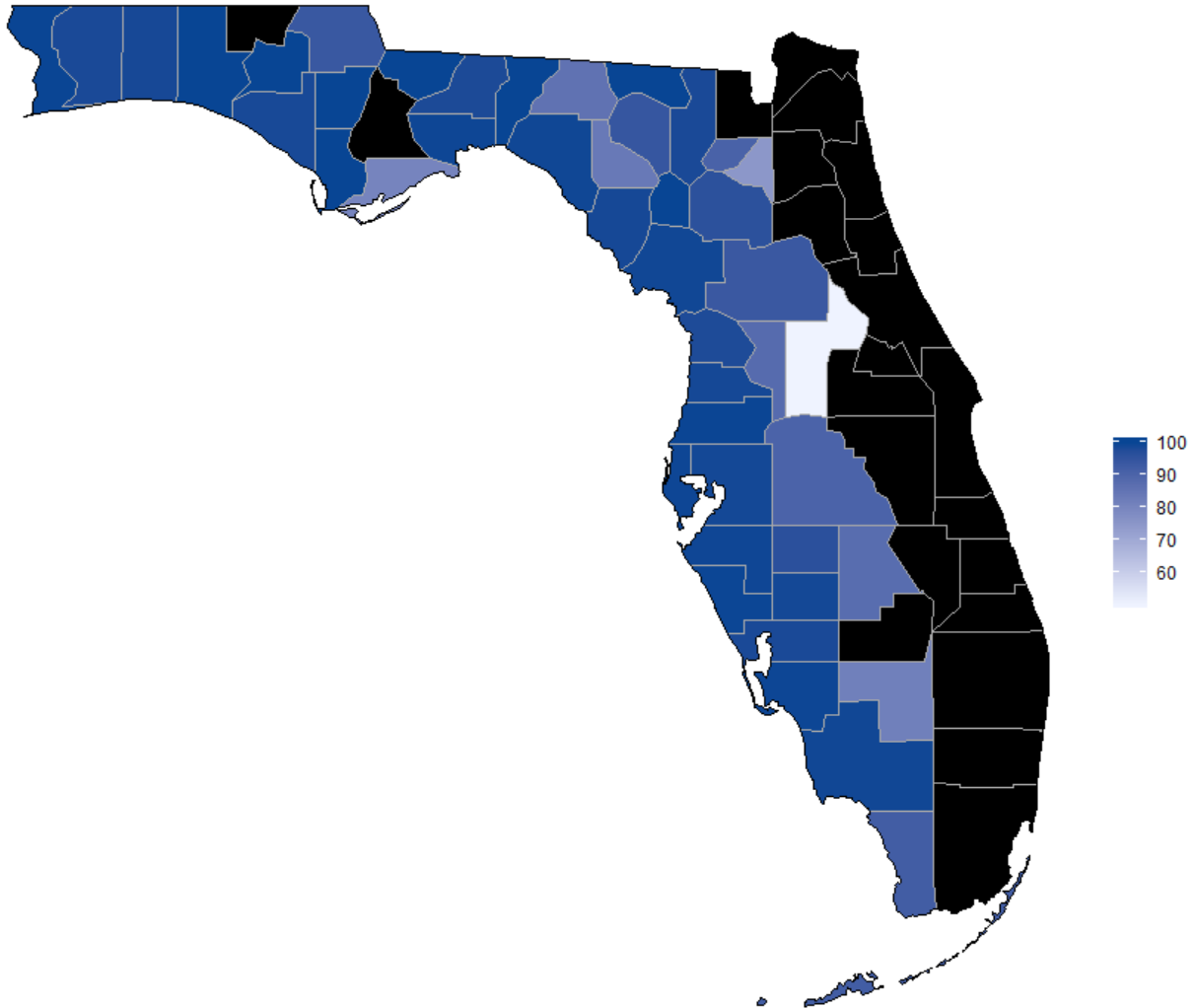
Figure 1: Percent of West Florida Gag Grouper Trips in each County of Origin during Nov-Dec, 2005-2017

2.   Describe the procedures for the collection, including: the statistical methodology for stratification and sample selection; the estimation procedure; the degree of accuracy needed for the purpose described in the justification; any unusual problems requiring specialized sampling procedures; and any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Target Completes and Sample Size

The goal for the FBFS pilot study is to have at least 50 surveys completed by anglers with gag grouper experience, though there are also questions on the pilot survey related to general boating and fishing activity. We must contact a sufficient number of addresses to meet this goal given the relatively small population of gag grouper anglers and the expected response rate. As described above, we can expect, roughly, that every 6th angler living in the pilot study counties (Hillsborough and Pinellas) has experience with gag grouper. This is likely a conservative estimate of the prevalence of gag grouper anglers in our more focused FBO list of

"offshore" boats, especially for those addresses that are also in the saltwater license list. However, we proceed with this prevalence estimate (16%) to ensure that we have an adequate number of gag grouper anglers in our pilot study sample.

Based on the number of gag grouper angler responses and the estimated gag grouper prevalence, we propose an target complete size of 50/0.16=306 to be achieved via email and mail contacts. The actual number of addresses required from the FBO list depends initially on the prevalence of email addresses in the combined FBO-license lists, and the email and mail response rates. Previous experience suggests that email addresses can be obtained for around 20% of observations in the FBO list and about half of the observations in the saltwater license list. For the combined (matched and unmatched sample), we assume 40% of observations will have email addresses. Therefore, of the 306 completes, 123 will have email addresses and 184 will not.

We assume that the FBFS will achieve two different response rates depending on mode: 0.1 for email contact with 3 reminder emails and no incentive, and 0.3 using a web-push strategy, a $2 incentive, and a mail option for those not completing the web version of the pilot survey (Messer and Dillman 2011). The email response rate is based on rates typically achieved with email contacts from fishing license frames in the Southeastern US (e.g., Wallen et al. 2016). Recent experience using mail surveys to push respondents to web surveys suggests that mail, web-push response rates of around 30 to 40 percent are not unreasonable for a carefully designed survey, especially with a mail follow-up option (Dillman 2017). The focus on "offshore" boat selected from the FBO list should also help increase the response rates. Though not strictly comparable, MRIP FES mail protocol also typically achieves response rates around 30 to 40 percent.

Based on the assumed relative response rates and email prevalence, we propose initial target sample sizes of 0.4 * 306 / 0.1 = 1,226 for email contacts and (1-0.4)*306/0.3=613 for mail contacts. The combined email and mail target sample size is 1,839. However, we need to start with a larger sample from the FBO list to account for the difference between the actual and required rate of matching for the FBO list and the saltwater license list.

The general sampling strategy will be to draw a random sample from the FBO "offshore" boat subset with addresses in the WFL GOM counties (Table 2) and then match as many addresses as possible to the fishing license frame from the WFL GOM counties. We assume that a match will be found for 55% of addresses from the FBO list. This rate is much higher than the matching typically achieved by the MRIP FES, but we are using the FBO list rather than the general mail address list.

Following Brick et al. (2016) we will then sample the addresses from the FBO that do not match the license list until we hit the target sample size. Assuming that we want to have 20% (instead of 45%) of the final mailing sample to be unmatched to cover anglers 65 and over, the FBO "offshore" boat sample will have to be 2,675 addresses (1,839 * (1-0.2) / 0.55). This sample will then be matched to the license list to achieve the target sample size of 1,839 that contains 80% matched records. Any member of this list with an email will proceed with the email contact protocol and all others will proceed with the mail web-push protocol. As noted above, we are estimating that 1,226 members of the list will have emails and 613 members will not. The assumed sample allocation is shown in Table 3. Note that we show the population not included in the sample as a reminder that the sample does not cover the complete population of FBO or license lists. This number is based on the total number of 16 to 110 foot pleasure craft registrations in Florida during 2016 (565,590), but should be close to current figures. Also, the population numbers shown in the table are "guesses" obtained by applying the assumed actual FBO-license match rate (0.55) and the assumed share of records with email addresses (0.4) to the (565,590) count. The general sampling strategy is summarized in Figure 2.

Table 3: Assumed Sample Allocation based on 16 to 110 Foot Florida Vessel Registrations in 2016

Selected Boats	Match	Email	Population	Sample	Returns
Yes	Yes	Yes	19,633	981	98

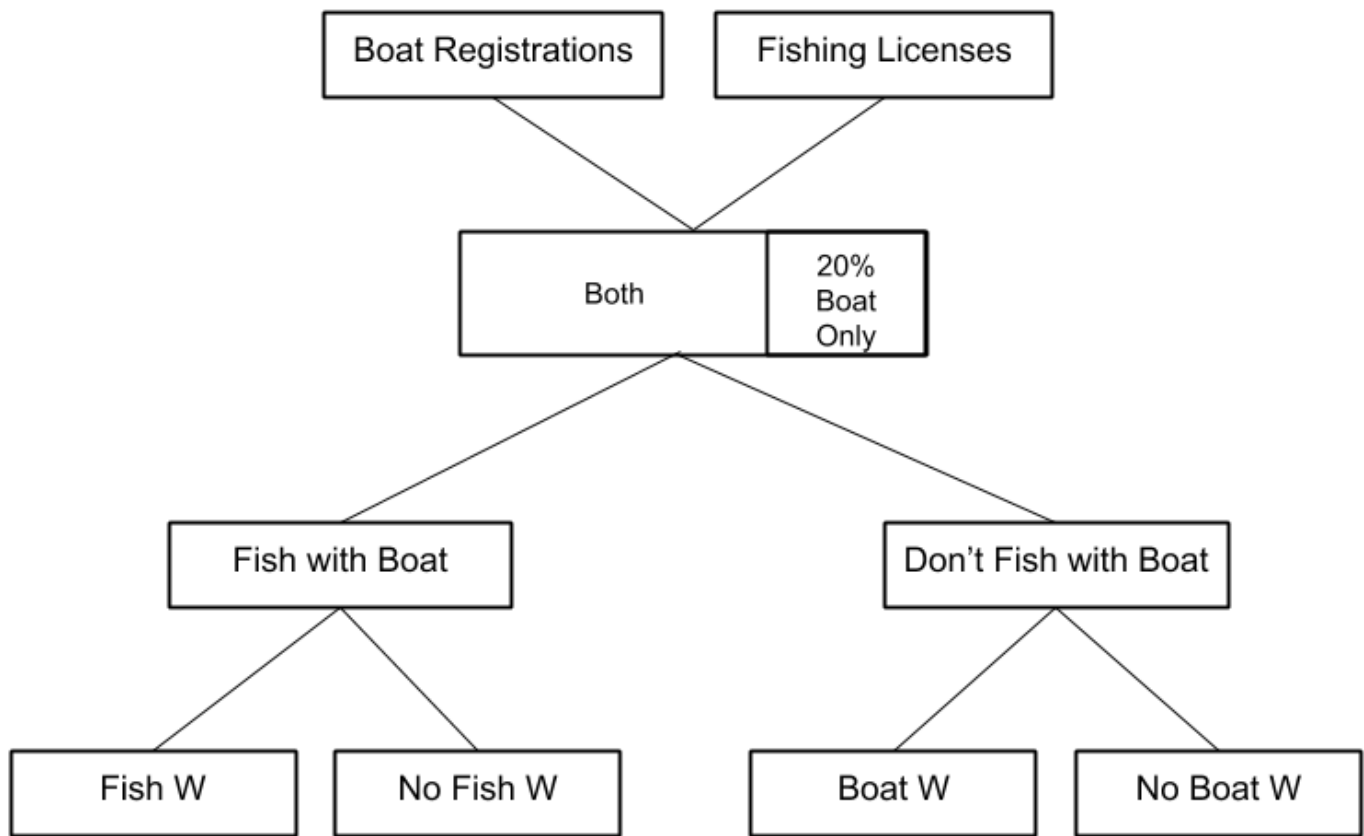|					
Yes	Yes	No	29,449	490	147
Yes	No	Yes	16,063	245	25
Yes	No	No	24,095	123	37
No	Any	Any	476,351	0	NA

Figure 2: Overview of Sampling Strategy

Specifically, we will create or purchase, from a qualified FBO list vendor, a sample of 2,675 addresses of registered boat owners in the Florida WFL GOM counties that meet the following criteria:

• Only Florida residents

• Type - open motorboat, cabin motorboat

• Propulsion - outboard, inboard, inboard/outboard

• Use - recreational (pleasure)

• Length - >= 20 feet.

We will then match, by exact address and/or telephone number, the FBO sample to the list of anglers in the WFL GOM counties who were licensed to participate in saltwater fishing in Florida between the beginning of November 2018 and the time the list is compiled. The list will include a unique address ID, telephone number, state, county, address (address lines 1 and 2) and zip code of residence. The frame matching SAS program developed for the MRIP FES is available upon request. After the matching has been completed, we will sub-

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sample within the unmatched addresses at a rate needed to achieve target sample sizes as described above. Note that, as mentioned above, we will coordinate with the State of Florida to ensure that we do not sample the same people who have been selected to receive the Gulf Reef Fish Survey for the same period.

Survey Administration

The FES is a mail survey, but the FBFS will be a mixed-mode web-focused survey. We will closely follow the recommendations for mail-push web surveys in Messer and Dillman (2011) and Dillman (2017), including a prenotice letter, an incentive with the URL letter, and 2 mail follow-ups with the final a paper copy of the pilot survey included in the final mailing.

The prenotice letter (first contact) will be sent during the last week of December. The second contact will made within the first week of January with a letter containing a URL address for a web survey, a unique code that identifies each respondent (address), and a $2 incentive (one two dollar bill). Research suggests that the incentive significantly increases response rates in the mail web-push strategy (Messer and Dillman 2011). The respondent will be instructed to go to the URL, enter their unique code and complete the pilot survey. The pilot survey will focus on recreational fishing activity, but will contain screening questions related to saltwater recreation activities. There is more about the pilot survey below. Following Messer and Dillman (2011) we are expecting about 60% of final returns (184*0.6 = 110) to occur after the first mailing (second contact).

Following the Messer and Dillman (2011), a thank you/reminder postcard (third contact) will be sent within 2 weeks after the first letter was mailed. The reminder postcard will also have the URL and the unique code. Contacts still not responding within 3 weeks of the reminder postcard will be sent (forth contact) a paper copy of the pilot survey and a business reply envelope along with a letter including the URL and unique code. Note that NOAA will be handling the web survey and will to send the contractor a list of unique codes that completed the pilot survey on the web. These addresses will be removed from the final mailing.

The contractor will be responsible for all aspects of survey administration, except the web survey. This includes printing, assembling, mailing, receipting, and processing all survey materials. The contractor will handle all mailings and the tracking of respondents as expressed in Table 4. All mailings will be delivered through regular, first-class mail. Letters will be printed letterhead quality stock with a color NOAA logo. Frequently asked questions will be printed on the reverse side of the letter. Paper questionnaires will be mailed in a large envelope that can accommodate a 8.5X11 letter without folding. Each questionnaire will be printed on a single 8.5X11 sheet of paper, front and back.

Table 4: Sampling and Mailing Schedule

ITEM	DATE	ADDRESSES
Obtain the FBO list and the license list for the select Florida counties in Table 1 and draw a sample of matched and unmatched addresses. Send the sample with email addresses to NOAA for the email contact survey.	12/11/18	2,675
Prenotice letter	12/25/18	613
Letter with $2 incentive, URL, and unique respondent id code	1/2/19	613
Reminder/Thank you postcard with URL, and unique respondent id code	1/16/19	613
Letter with 2 page paper survey, URL, and unique respondent id code. NOAA will provide the list of addresses who still have not responded to the web survey.	1/30/19	503

<u>Survey Instrument</u>

NOAA has programmed a version of the web survey in Qualtrics. The printed version (not available yet) is two pages to be printed double-sided in color when sent with the final mailing.

There are two main sections of the pilot survey following an introduction and screening/eligibility question. For the respondents that use their boat for fishing, the first section asks a series of questions related to fishing activity. There is also a subset of the fishing questions that will be answered by those who fish for gag grouper.

Those who do not use their boat for fishing are routed to a third section that asks a series of questions related to boating activities. Note that each respondent will answer either the fishing questions or the boating questions, but not both types of questions.

The fishing and boating question sections each have questions about the number of trips taken in the previous 2 months and the number of trips that would have been taken with different trip costs. The fishing section also has questions about the number of trips that would have been taken with different gag grouper regulations for anglers who fish for this species.

Q1: Intro text

Q2: ID Code they received in invitation by mail or email

Q3: Screening question to determine if the respondent is eligible to complete the pilot survey - i.e. do they own and use a boat (If no, end of survey).

Q4: Screening question to determine if the respondent used their boat in the Gulf of Mexico in the two-month period.

Q5: if they did not use their boat during the two-month period in Gulf of Mexico, question asks for the reason they did not use it, then ends the pilot survey.

Fishing Questions

Q6: Screening question to determine if the respondent is eligible to complete the portion of survey related to fishing in the Gulf of Mexico during two-month period by asking if they used the boat to fish during the two-month period.

Q7: If not used for fishing, then asks why they did not use the boat to fish during that time period in the Gulf of Mexico. (Skips over fishing-related questions and goes to boating questions)

Q8: Asks how many days they used their boat in the two-month period in the Gulf of Mexico

Q9-Q11: are questions to determine the size of the party, duration, and cost of a typical fishing trip.

Note: Q8–Q11 will only be answered by those who reported fishing during the two-month period in the Gulf of Mexico.

Q12: Intro text for cost of fishing and graphic of gas prices in Florida over time.

Q13–Q15: Series of questions asking how many days they would have fished with different trip costs.

Q16: Question on what species they were fishing for in the Gulf of Mexico during two-month period.

Q17: Asks how many days during the two-month period, that they previously reported X number of days fishing, that they targeted gag grouper.

Q18–Q20: Questions to determine how many days would have been fished in two-month period with different gag grouper regulations.

Q21: Determine how many days the boat was used without fishing in the two-month period.

Now they Skip to Q31 on household income then ends survey.

Boating Questions

Note: Q23–Q26 will only be completed by those who answered no to Q3 (that they did not use boat for fishing).

Q23: Asks how many days they used their boat (not for fishing) during the two-month period. Note: Q24–Q30 will only be answered by those who reported boating during the two-month period.

Q24–Q26: Questions to determine the size of the party, duration, and cost of a typical boating trip.

Q27: Intro text for cost of boating and of gas prices in Florida over time.

Q28–Q30: Series of questions asking how many days they would have boated with different trip costs.

Q31: Question that ask their household income (range).

End of survey.

Data Entry

A contractor will be used to convert returned questionnaires from the final mailing into an electronic database format using optical scanning technology. The contractor will maintain scanned images of returned questionnaires for delivery to NOAA. Questionnaires that have been damaged or are otherwise inappropriate for scanning will be manually reviewed by contractor personnel. If such questionnaires are complete and legible, the contractor will be responsible for manually key-entering survey information. Questionnaires that are illegible or missing key information will be coded as such. The contractor will develop an appropriate coding scheme for sample dispositions with input from NOAA.

All returned paper questionnaires from the final mailing into an electronic database format using optical scanning technology. The responses will be delivered in a comma separated values (CSV) file along with a complete data dictionary that corresponds with the responses received via the web survey. The contractor will work with NOAA staff to make any changes to final dataset content, coding, formatting and naming conventions for all data collection components.

Stratification

There will be no a-priori stratification; however, post stratification of the data may be possible based on survey responses (e.g., frequency of trips, county of residence, etc.).

Data Analysis: Trip Demand Model

Following Alberini et. al. (2007) we use a single-site travel cost model recreational fishing in the Gulf of Mexico. Specifically, we assume that an angler chooses fishing trips, d and a numeraire good, X to maximize utility subject to a budget constraint or $max_{X,d} \, U(X,d) \ s.t. \ y = X + d \cdot p$ where y is income, the price of the numeraire good is set to one, and p is the cost per fishing trip. We further assume that fishing trips are a function of fishing quality, h, which is itself a function of fishing regulations, r, i.e., $d = d(q(r))$. Fishing trips

and quality are weak complements such that $\partial U / \partial q = 0$ if $d = 0$, i.e. the individual does not care about quality of fishing if he or she does not fish. The number of trips is an increasing function of fishing quality, $\partial d / \partial q > 0$.

The solution to the angler problem yields the demand function for trips, $d = d(y, p, r)$. In our empirical work, we assume that the for demand function based on data from angler i in scenario j is linear in its arguments

(1) $d_{ij} = \beta z_i + \gamma p_{ij} + \delta r_{ij} + \epsilon_{ij}$

where z_i is a vector of angler characteristics, including an intercept and income; β, γ, and δ are parameters to be estimated; and ϵ_{ij} is an error term. The parameters can be estimated with data on d_{ij}, p_{ij}, r_{ij}, and y_i for angler i in scenario j.

We will have six observations on trips for respondents who complete the gag grouper portion of the pilot survey and 3 trip observations for all other anglers and boaters. The scenarios are summarized in Table 5. There is two sources of variation in the scenarios when collected for a set of anglers: (i) across anglers, and (ii) across scenarios within one angler. These sources of variation should be adequate to estimate the slope of the demand function, γ, and the effect, δ, of changes in the bag limit.

Table 5: Trip Scenarios

Scenario	Price (p)	Trips (d)	Bag (r)
Base (Actual)	p0	r0	2
Double price	p1=p0*2	r1	2
Half price	p1=p0/2	r2	2
Bag 3	p0	r3	1
Bag 1	p0	r4	3
Bag 0 (closed)	p0	r5	0

The observations on fishing trips for the scenarios are correlated within an individual if unobservable angler characteristics influence both actual fishing trips and the stated number of trips under the hypothetical scenarios. Therefore, we adopt a random-effects specification to combine the actual trips and trips under the hypothetical scenarios (e.g., Loomis (1997) and Alberini et. al. 2007). In this case we assume that $\epsilon_{ij} = v_i + eta_{ij}$, with v_i a respondent-specific, zero-mean component, and $\eta_i j$ an i.i.d. error term. v_i and η_{ij} are uncorrelated with each other, across individuals, and with the regressors in the right-hand side of Eq. (1). The presence of the individual-specific component of the error term (v_i) result in correlated error terms ϵ within a respondent. Specifically, $E(\epsilon_{ij} \epsilon_{ik}) = \sigma_v^2$, where σ_v^2 is the variance of v, for $j \neq k$, whereas the variance of each ϵ_{ij} is $\sigma_v^2 + \sigma_\eta^2$, with σ_η^2 being the variance of η. Generalized Least Squares is used to estimate parameters while addressing the correlation in the model.

The estimated parameters are used to calculate elasticities that show the percent change in trips with a percent change in trip cost and the bag limit. The former is given by $-\gamma(p_{0i}/d_{0i})$ and the later is given by $-\delta(r_{0i}/d_{0i})$.

The estimated parameters are also used to calculate two welfare measures. The first captures the value of access and is the consumer surplus associated with current fishing conditions and prices:

(2) $CS_i(p_{0i}, r_{0i}) = -(1/2\gamma)¿.$

The second captures the value of changes in fishing regulations, and is the change in surplus due to an change in bag limits (holding the prices the same):

(3) $\quad CS_i(p_{0i}, r_{1i}) - CS_i(p_{0i}, r_{0i}) = -(1/2\gamma)[\delta^2 + 2\delta(z_i\beta + p_{0i}\gamma)].$

3.   Describe the methods used to maximize response rates and to deal with nonresponse. The accuracy and reliability of the information collected must be shown to be adequate for the intended uses. For collections based on sampling, a special justification must be provided if they will not yield "reliable" data that can be generalized to the universe studied.

As a sampling frame does not exist, we will not be able to systematically address non-response bias. However, we have taken steps to maximize the number of surveys completed, including making the pilot survey a brief, concise, and clear instrument, limiting the number of open-ended questions, and revising the pilot survey based on feedback from focus groups conducted in Tampa, FL.

4.   Describe any tests of procedures or methods to be undertaken. Tests are encouraged as effective means to refine collections, but if ten or more test respondents are involved OMB must give prior approval.

Prior to the pilot survey implementation, NOAA Fisheries conducted 2 focus groups with a total of 15 anglers in Tampa, FL. Their feedback was used to revise language and questions in the pilot survey and to ensure that material is understood and interpreted by the respondent as intended.

5.   Provide the name and telephone number of individuals consulted on the statistical aspects of the design, and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

Design, Analysis, Report: David W. Carter, NOAA Fisheries, 305-361-4467 Data collection: Gustavo Rubio, ECS Federal, contracting company, 301-427-8180

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