# SUPPORTING STATEMENT PART B
# FLORIDA FISHING AND BOATING SURVEY
# OMB CONTROL NO. 0648-0769

## 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. 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 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 would need around 8 times as much sample to reach gag grouper anglers, even from these counties. The pilot study (see Part B, section 22) found, however, that every 3th angler. If we use these results, then we would only need around around 3 times as much sample to reach gag grouper anglers. The pilot study included one county with a relatively high number of trips associated with gag grouper and another county with a relatively low number of trips associated with gag grouper. Therefore, we think that the gag grouper trip prevalence rate of 32% from the pilot study is an appropriate estimate for gag grouper trip prevalence for the rest of the coastal 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 |

| County | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 |

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|---|---|---|---|---|---|---|---|---|---|
| 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 | CLASS 14 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 |
| 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 |

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

| County | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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.
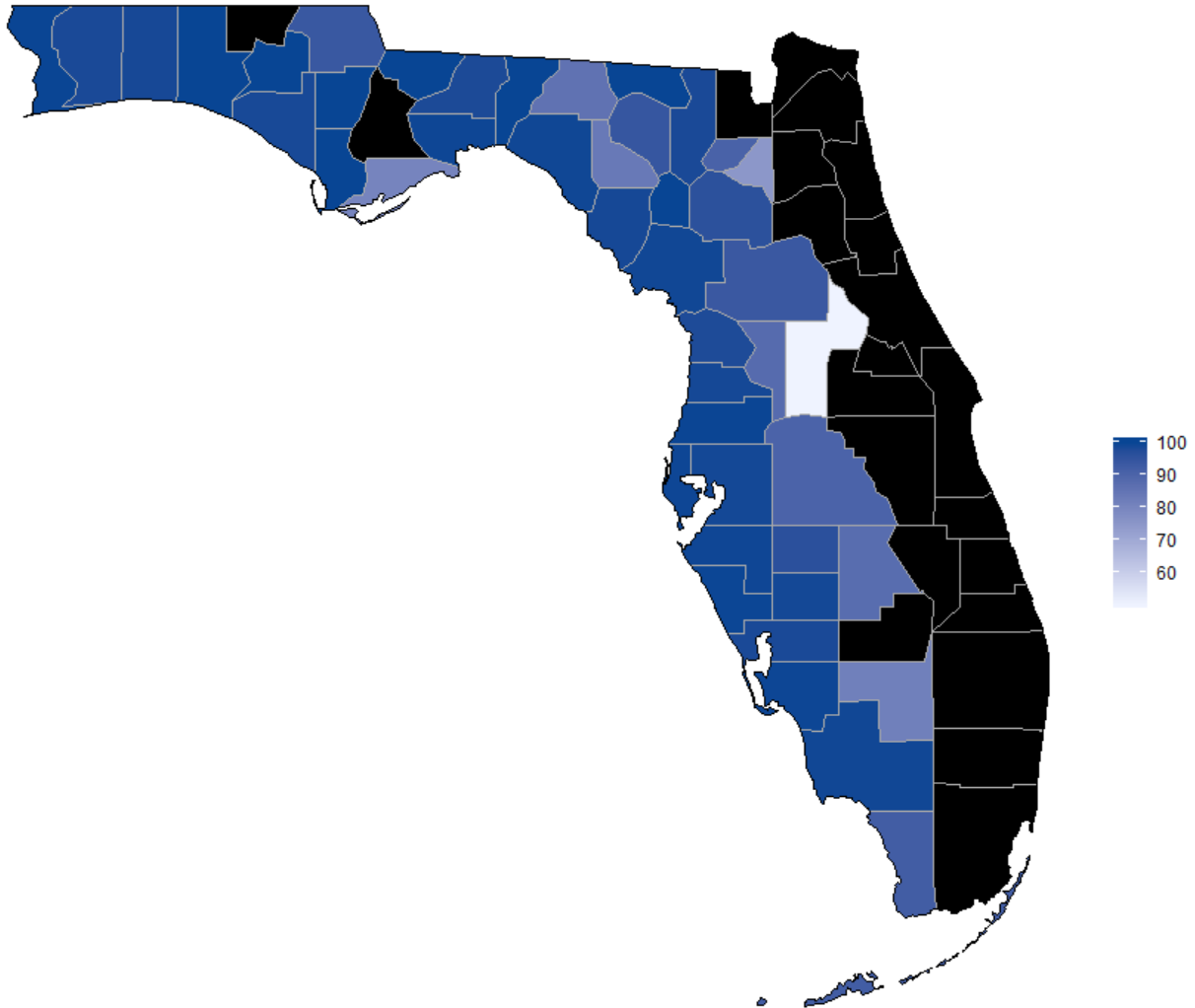


**Figure 1: Percent of West Florida Gag Grouper Trips in each County of Origin during Nov-Dec, 2005-2017**

**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 study is to have at least 400 surveys completed by anglers with gag grouper experience, though there are also questions on the 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 3rd angler has experience with gag grouper.

Based on the number of gag grouper angler responses and the estimated gag grouper prevalence, we propose a target complete size of 400/0.32=1,250 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 1,250 completes, 500 will have email addresses and 750 will not.

We assume that the FBFS will achieve two different response rates depending on mode: 0.15 for email contact with 3 reminder emails and no incentive, and 0.38 using a web-push strategy, a $2 incentive, and a mail option for those not completing the web version of the survey (Messer and Dillman 2011). The email response rate is based on the pilot study (see Part B, section 22) and rates typically achieved with email contacts from fishing license frames in the Southeastern US (e.g., Wallen et al. 2016). The pilot study and 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). 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 * 1,250 / 0.15 = 3,333 for email contacts and (1-0.4)*1,250/0.38=1,974 for mail contacts. The combined email and mail target sample size is 5,307. 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 7,719 addresses (5,307 * (1-0.2) / 0.55). This sample will then be matched to the license list to achieve the target sample size of 5,307 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 3,333 members of the list will have emails and 1,974 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**

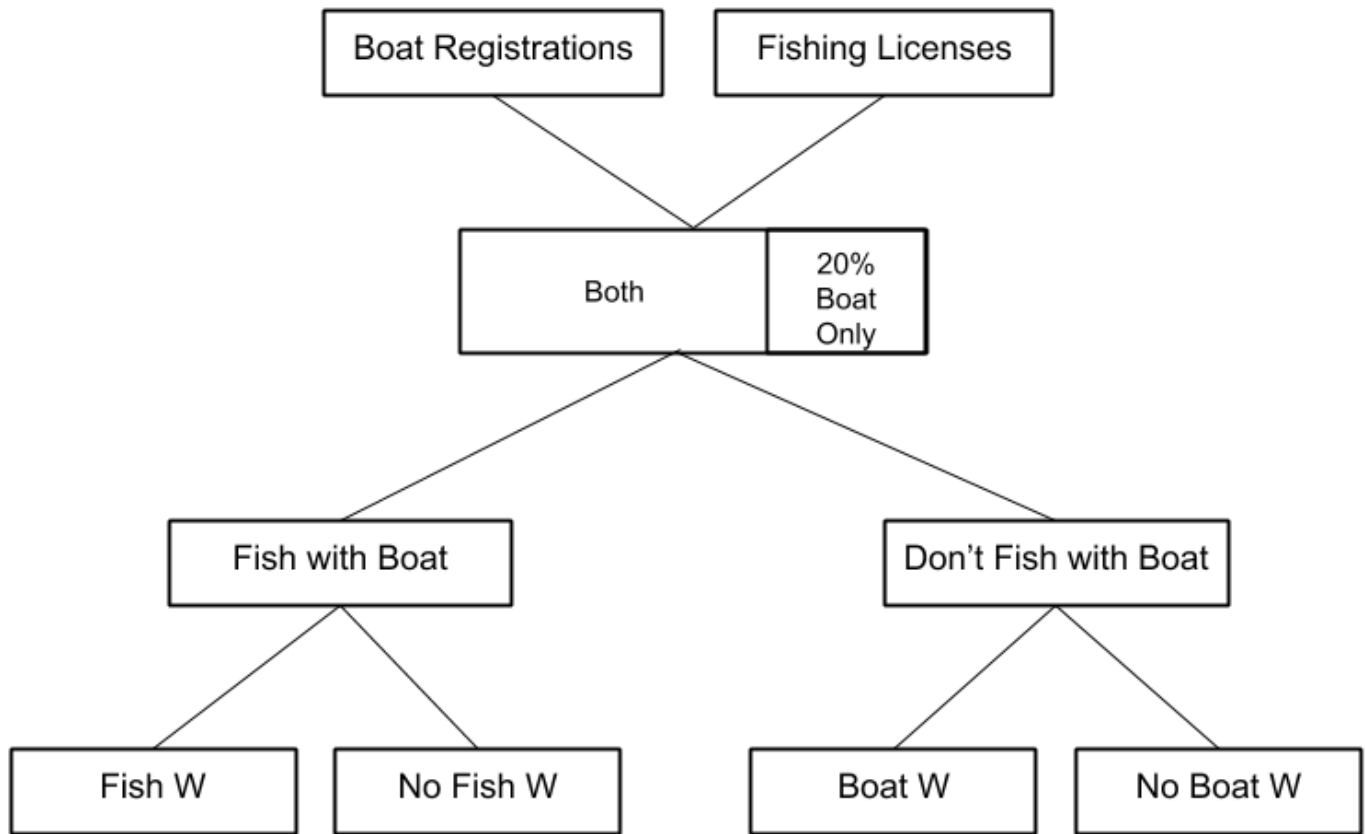| Selected Boats | Match | Email | Population | Sample | Returns |
|---|---|---|---|---|---|
| Yes | Yes | Yes | 19,633 | 2,667 | 400 |
| Yes | Yes | No | 29,449 | 1,579 | 600 |
| Yes | No | Yes | 16,063 | 667 | 100 |
| Yes | No | No | 24,095 | 395 | 150 |

| 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 7,719 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 2019 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-sample within the unmatched addresses at a rate needed to achieve target sample sizes as described above. Note

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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 survey included in the final mailing.

The prenotice letter (first contact) will be sent during the last week of December 2019. 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 survey. The survey will focus on recreational fishing activity, but will contain screening questions related to saltwater recreation activities. There is more about the survey below. Following Messer and Dillman (2011) we are expecting about 60% of final returns (750*0.6 = 450) 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 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 survey on the web. These addresses will be removed from the final mailing.

As described in more detail below, a nonresponse survey will be mailed to a sample of those in the email-only and mail-push groups who did not respond to the survey. This survey will be sent about 2 weeks after the final mailing to the mail-push group. It may be possible to mail the nonresponse survey to the email-only group slightly earlier which could help with recall.

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. | 12/09/19 | 7,719 |
| Prenotice letter | 12/20/19 | 1,974 |
| Letter with $2 incentive, URL, and unique respondent id code | 1/3/20 | 1,974 |
| Reminder/Thank you postcard with URL, and unique respondent id code | 1/17/20 | 1,974 |
| Letter with 2 page paper survey, URL, and unique respondent id code. | 1/31/20 | 1,524 |

<u>Survey Instrument</u>

NOAA has programmed a version of the web survey in Qualtrics. The printed version is four pages to be printed as a double-sided booklet in color when sent with the final mailing.

There are two main sections of the 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 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 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.

The printed version of the nonresponse survey will be two pages to be printed double-sided in color. It will only include questions Q1-Q11, Q21, and Q31.


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.

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

where $z_i$ is a vector of angler characteristics, including an intercept and income; $\beta$, $\gamma$, and $\delta$ are parameters to be estimated; and $\epsilon_{ij}$ 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 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, $\gamma$, and the effect, $\delta$, 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 $\eta_{ij}$ 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 $\epsilon$ within a respondent. Specifically, $E(\epsilon_{ij}\epsilon_{ik})=\sigma_v^2$, where $\sigma_v^2$ is the variance of $v$, for $j\neq k$, whereas the variance of each $\epsilon_{ij}$ is $\sigma_v^2+\sigma_\eta^2$, with $\sigma_\eta^2$ being the variance of $\eta$. 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 $-\delta(r_{0i}/d_{0i})$.

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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:

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

The second captures the value of changes in fishing regulations, and is the change in surplus due to a 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.**

We have taken steps to maximize the number of surveys completed, including making the survey a brief, concise, and clear instrument, limiting the number of open-ended questions, and revising the survey based on feedback from focus groups conducted in Tampa, FL and a pilot study (see Part B, section 22) of two counties in Florida. In addition, we will administer a nonresponse bias survey in order to examine whether or not respondents are systematically different from nonrespondents. A survey is warranted because the only information in the boat registration data that can be used to compare respondents with nonrespondents is boat length and propulsion type. Results from the pilot study suggest that the distribution of these variables are very similar between responders and nonrespondents.

In the nonresponse bias study, people who do not respond to the survey will be randomly sampled to receive a short questionnaire by first class mail imprinted with a stamp requesting the recipient to "Please Respond Within 2 weeks". Note that we will sample from the combined set of email-only and mail-push groups of nonresponders. Based on the pilot study response rates we expect roughly 4,035 nonresponders: 2,823 from the email-only strategy and 1,212 from the mail push strategy.

A power analysis suggests that we need at least 175 nonrepsonse surveys completed in order to compare the means of the responders and nonresponders using a t-test with a significance level of 0.05 to detect an effect size of 0.3 with a power of 0.8. If we aim to obtain completed nonresponse surveys from 175 nonresponders and assume a 20% response rate, then we will need to mail surveys to 877 nonresponders: 614 based on the email-only strategy and 263 based on the mail push strategy. The nonresponse questionnaire will be a short version of the original survey with questions regarding boat usage and income. Responses to these questions will be used to examine whether respondents are systematically different from nonrespondents.

**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 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 survey and to ensure that material is understood and interpreted by the respondent as intended. In addition, we conducted a pilot study to test the survey and sampling strategy for the FBFS. In the pilot study we only sampled from two of the counties included in the full study. In order evaluate the response rates over the range of possible grouper fishing prevalence rates, we surveyed one county with a high estimated grouper fishing prevalence rate and one county

with a low estimated grouper fishing prevalence rate. The results of the pilot study were used to (A summary of the results are presented in italics. The full results are documented in a pilot study report.):

• Compare the actual and expected response rates.

*Both the email-only contact and mail-push strategy response rates were higher than expected and we met the overall response rate goal.*

• Assess whether fishing avidity (number of trips) of the respondents are significantly different from the average avidity in the study region.

*The fishing avidity estimate from the pilot study was comparable to estimates from the mail and intercept surveys of the Marine Recreational Information Program for the same period.*

• Assess whether gag grouper fishing prevalence of the respondents is significantly different from the prevalence assumed in the study region.

*The gag grouper angler prevalance estimate from the pilot study is twice as high as we initially assumed and will significantly reduce the required overall sample size to achieve the target sample size of anglers to answer the gag grouper fishing questions.*

• Identify unusual patterns, such as the majority of respondents always choosing zero trips in the contingent behavior questions.

*The results of the contingent behavior questions were consistent with economic theory. For example, there were no respondents who stated more trips at double the cost or fewer trips at half cost. In addition, the average stated number of trips was higher with higher bag limits and lower with lower bag limits. There were no unusual patterns in the pilot study data.*

• Examine response rates for individual survey questions and evaluate whether adjustments to survey questions are required to promote a higher response rate.

*All questions were required in the internet version of the survey. Therefore, the respondent had to enter a response to continue with the survey. The respondents who returned the paper version of the survey could skip questions, but there were not any questions that suffered consistent nonresponse.*


**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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