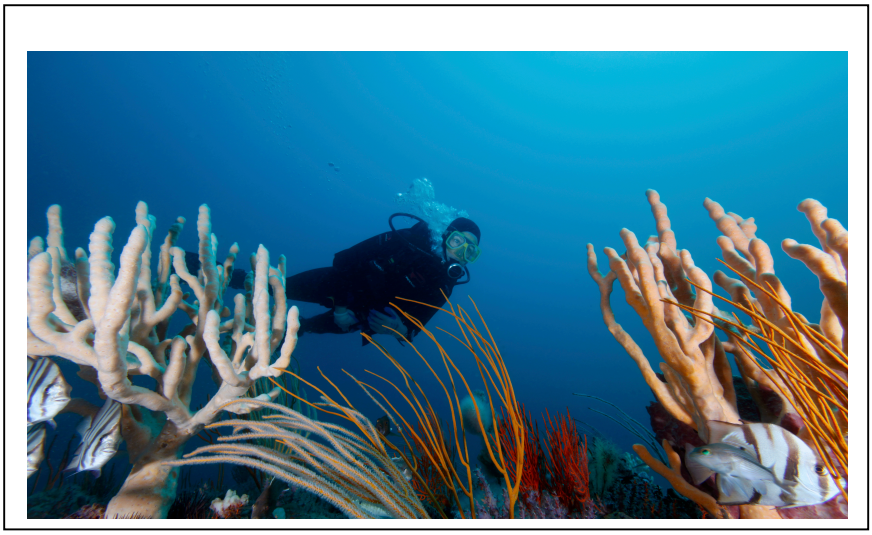
Marine Sanctuaries Conservation Series ONMS-12-02



Technical Appendix: Knowledge, Attitudes and Perceptions of Management Strategies and Regulations of the Gray's Reef National Marine Sanctuary by Users and Non-users of the Sanctuary

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Office of National Marine Sanctuaries

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Technical Appendix: Knowledge, Attitudes and Perceptions of Management Strategies and Regulations of the Gray's Reef National Marine Sanctuary by Users and Non-users of the Sanctuary

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COVER

Diver, Atlantic spadefish and "live bottom" at Gray's Reef. Photo by Greg McFall

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ABSTRACT

This research is part of the Socioeconomic Research & Monitoring Program for the NOAA Office of National Marine Sanctuaries. In 2010, a baseline study of users and non-users of Gray's Reef National Marine Sanctuary (GRNMS) was initiated. Mail surveys were designed in 2010 and implemented in 2011.

The study provides baseline data on the knowledge, attitudes and perceptions of users and non-users of GRNMS in regard to management strategies and regulations. It also provides information on socioeconomic/demographic profiles, activity participation and use of coastal and ocean waters off the Georgia coast both inside and outside GRNMS. The surveys collected data on sources of public information on GRNMS used and the trust of sources used, familiarity with GRNMS rules and regulations, and attitudes about selected management strategies for coastal and ocean resources both inside and outside GRNMS. For users of GRNMS, perceptions of resource conditions were also addressed.

For users and non-users, two versions of the surveys were designed to address all the issues above. Both versions of the survey were implemented for separate samples of non-users of GRNMS in 2011. For users, Version 1 of the survey was implemented in 2011. Version 2, which obtains information about attitudes on selected management strategies for coastal and ocean resources both inside and outside GRNMS will be implemented in 2012 and follow-up reports will make comparisons with non-users on these topics.

This report is the "Technical Appendix" to Conservation series report ONMS-1202 (Leeworthy 2012) and documents how the surveys were conducted, how survey data was analyzed for non-response bias and adjusted for using sample weighting. In addition, the impact of sample weighting was assessed testing for significant differences in unweighted and weighted survey responses by non-users. Statistical tests for differences between users and non-users are also documented. In the estimation of person-days of activity, the elimination of outliers is documented and the impact on estimated values assessed. Finally, the use of five-point Likert scales is discussed.

Key findings:

- Non-response bias was not significant in the non-user mail surveys.
- Sample weighting had very few statistically significant impacts on estimated responses to survey questions.
- Adjusting for sample outliers was important for estimating person-days of use by activity for users and non-users in the coastal and ocean areas off the coast of Georgia outside GRNMS.

KEY WORDS

Socioeconomic monitoring, knowledge, attitudes, perceptions, management strategies, regulations, users, non-users, activity participation, resource conditions, socioeconomic/demographic profiles and statistical tests.

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Introduction

In 2010, a baseline study of users and non-users of Gray's Reef National Marine Sanctuary (GRNMS) was initiated. Mail surveys were designed in 2010 and implemented in 2011.

The study provides baseline data on the knowledge, attitudes and perceptions of users and non-users of GRNMS in regard to management strategies and regulations. It also provides information on socioeconomic/demographic profiles, activity participation and use of coastal and ocean waters off the Georgia coast both inside and outside GRNMS (Leeworthy 2012).

This is the technical appendix to the main report (Leeworthy 2012) and documents how the work was conducted and provides details of statistical tests performed.

Chapter 1: Surveys of Users and Non-users of GRNMS

Separate mail surveys of users and non-users of GRNMS were conducted. Non-users were limited to the people living in households of the State of Georgia. The surveys collected data on sources of public information on GRNMS used and the trust of sources used, familiarity with GRNMS rules and regulations, and attitudes about selected management strategies for coastal and ocean resources both inside and outside GRNMS. For users of GRNMS, perceptions of resource conditions were also addressed.

For users and non-users, two versions of the surveys were designed to address all the issues above. Both versions of the survey were implemented for separate samples of non-users of GRNMS in 2011. For users, Version 1 of the survey was implemented in 2011. Version 2, which obtains information about attitudes on selected management strategies for coastal and ocean resources both inside and outside GRNMS will be implemented in 2012 and follow-up reports will make comparisons with non-users on these topics (Appendix A).

Sampling Frames

For users, the sampling frame was from a list of users observed in the GRNMS by the Georgia Department of Natural Resources (GADNR). GADNR randomly either boards boats or writes down the boat registration number of the boats observed in the GRNMS. The random boarding is not related to enforcement actions. For boats boarded, name and address of the boat owner/operator is obtained. GRNMS staff received a list containing 249 names and addresses and/or boat registration numbers. Boat registration files were used to obtain names and addresses for the boat registration numbers.

For non-users, two samples of households were purchased from INFO USA, Inc., which maintains databases of households for survey research. Each sample consisted of the names and addresses for 500 households and was stratified by coastal and non-coastal counties. Unlike most states, Georgia has very few households living in coastal counties because of the terrain, so we over-sampled coastal counties.

Response Rates

For both users and non-users the Dillman Method (Dillman 1978) of mail surveys was used. The Dillman method was modified with the use of a pre-notification letter. The U.S. Office of Management and Budget (OMB), which must approve all federally sponsored surveys, required the use of pre-notification letters based on past research showing it increases survey response rates. The pre-notification letters were sent out one week before the full survey package was sent out (see the pre-notification letter in Appendix A). One week after the pre-notification letter was sent out the full survey was sent out, and if not returned within two weeks, a post card reminder was sent. If a completed survey was not received after an additional two weeks, a full survey package was sent. For users, there were 249 names and addresses of which 94 were undeliverable resulting in 155 net eligible respondents. Of these respondents 79 or 50.97% responded (Table A.1.1).

For non-users Version 1, 500 surveys were mailed out with 44 undeliverable addresses resulting in 456 net eligible respondents. Of these respondents, 83 or 18.2% responded. For non-users Version 2, 500 surveys were mailed out with 54 undeliverable addresses resulting in 446 net eligible respondents. Of these respondents 60 or 13.45% responded (Table A.1.1).

Table A.1.1. Sample Sizes and Response Rates for the Surveys of Users and Non-users of GRNMS

	Users Version 1	Non-users Version 1	Non-users Version 2		
Original Mailing List	249	500	500		
Undeleiverable Addresses	94	44	54		
Net Eligible Respondents	155	456	446		
Responded	79	83	60		
Net Response Rate	50.97%	18.20%	13.45%		

Chapter 2: Non-response Bias Analysis – Non-users of GRNMS

For users, there is nothing known about the demographics of users. Currently, there are only estimates of the total number of users based on aerial images of the boats operating in the GRNMS. Previous surveys done of users were focused only on portions of the users; members of the Southern Kingfish Association (Bird et al 2001). So there is no information to test whether there are biases in the user survey samples.

Given the low response rates for non-users, non-response bias analysis was conducted and sample weights created to adjust for non-response bias. Non-response bias was analyzed in two steps. First, sample demographic characteristics were compared with those for Georgia households using the 2010 Census. This was done for each version of the survey and for the combination of the two samples. Many questions were asked of both samples and so results for these questions were always analyzed using the combined samples.

The first step simply reveals whether there are significant differences between those who responded to the survey as compared with the general population. It is a necessary but not sufficient condition for establishing the existence of non-response bias. For non-response bias to exist there must also be a significant difference in responses to questionnaire questions and the socioeconomic/demographic factor for which significant differences exist in the sample versus population.

Samples Compared to the Population-Non-users

People of Hispanic ethnicity had very low response rates, too low for sample weighting to be effective, so Hispanic people are not represented in the non-user surveys. Both version samples respondents were significantly different from the general Georgia population for demographic factors, age, sex, race/ethnicity, educational attainment, household income, and whether they lived in a coastal or non-coastal county. For this latter variable, coastal county residents were over-sampled due to the low proportion of the Georgia population living in coastal counties. Chi-square tests were done using SAS (Statistical Analysis System Version 9.1, Proc Freq) where the Census 2010 population distributions were compared against sample distributions (Table A.2.1).

Table A.2.1. Non-users Compared to General Georgia Population (Census 2010)					
Factor	Census 2010	Samples: V1 & V2 combined	Chi-Square Significance[1]		
Age			< 0.0001		
18 - 24	13.48	1.50			
25 - 34	18.56	10.53			
35 - 49	29.46	20.30			
50 - 64	24.15	39.10			
65 and over	14.34	28.57			
Sex			< 0.0001		
Male	48.82	65.93			
Female	51.18	34.07			
Race			<0.0001		
White	59.74	88.64			
Black of African American	30.46	9.09			
Other	9.80	2.27			
Educational Attainment			< 0.0001		
Less than High School Graduate	14.62	3.79			
High School Graduate or Equivalent	30.13	15.91			
Some College or Associates Degree	24.40	24.24			
Bachelor's Degree of above	30.84	56.06			
Household Income (Before Taxes)			0.0399		
$14,999 or less	14.40	7.38			
$15,000 - $24,999	11.40	7.38			
$25,000 - $$34,999	11.10	8.20			
$35,000 - $49,999	14.30	13.93			
$50,000 - $74,999	18.60	22.13			
$75,000 - $99,999	11.60	16.39			
$100,000 - $149,999	11.10	18.03			
$150,000 or more	7.50	6.56			
Coastal County of Residence			<0.0001		
Coastal	6.48	52.45			
Non-coastal	93.52	47.55			
1. Significance level of less than (<) 0.05 is signifies a statistically significant difference.					
Sources: U.S. Department of Commerce, Bureau of the Census, 2010 Census for Georgia and Mail Surveys of Georgia Residents 2011.					

Relationships between Selected Question Responses and Socioeconomic/Demographic Factors

To establish whether there were any relationships between socioeconomic/demographic factors for which samples were either under or over represented, logistic regressions were run on

questions addressing activity participation and information sources used as a function of the socioeconomic/demographic factors. The definitions of variables included in the analysis are summarized in Table A.2.2.

Table A.2.2. Definitions of Variables Used in Non-response Bias Analysis

Variable Name	Description	Mean
AGE1824	Dummy Variable for Age: 1=18 to 24 else =0	0.0150
AGE2534	Dummy Variable for Age: 1=25 to 34 else =0	0.1052
AGE3549	Dummy Variable for Age 1-35 to 49 else =0	0.2030
AGE5064	Dummy Variable for Age 1=50 to 64 else =0	0.3910
AGE65	Dumy Variable for Age 1=65 and over else = 0	0.2857
MALE	Dummy Variable for Sex 1=Male else =0	0.6592
EDLTHS	Dummy Variable for Education 1=Less than High School else=0	0.0378
EDHS	Dummy Variable for Education 1=High School or Equivalent else=0	0.1591
EDSCAD	Dummy Variable for Education 1=Somce college or Associates Degree else =0	0.2424
WHITE	Dummy Variable for Race 1=White else=0	0.5606
BLACK	Dummy Variable for Race 1=Black or African American else=0	0.0909
OTHRACE	Dummy Variable for Race 1=Other Race else=0	0.0227
INC10	Dummy Variable for Household Income 1= Less than $10k else=0	0.0490
INC1015	Dummy Variable for Household Income 1=$10k-$14.999k else=0	0.0140
INC1525	Dummy Variable for Household Income 1=$15k-$24.999k else =0	0.0694
INC2535	Dummy Variable for Household Income 1=$25k-$34.999k else =0	0.0699
INC3550	Dummy Variable for Household Income 1=$35k-$49.999k else =0	0.1189
INC5075	Dummy Variable for Household Income 1=$50k-$74.999k else=0	0.1826
INC75100	Dummy Variable for Household Income 1=$75k-$99.999k else =0	0.1398
INC10049	Dummy Variable for Household Income 1=$100k-$149.999k else =0	0.1538
INC150	Dummy Variable for Household Income 1=$150k or more else =0	0.0559
INCMISS	Dummy variable for Household Income 1=Missing else=0	0.1468
COASTAL	Dummy Variable for Residence 1=Coastal County else =0	0.5245
MEMFISH	Dummy Variable for Membership in Organization 1=Fishing Club else=0	0.0629
MEMDIV	Dummy Variable for Membership in Organization 1=Diving Club else=0	0.0419
MEMENV	Dummy Variable for Membership in Organization 1=Envirnmental Geroup else=0	0.1189
MEMCC	Dummy Variable for membership in Organization 1=Chamber of Commerce else=0	0.0699
RETIRED	Dummy Variable for Employment Status 1=Retired else=0	0.2517
OWNBOAT	Dummy Variable for Boat Ownership 1=yes else=0	0.2168
PARTFISH	Dummy Variable for Activity Participation 1=Fishing else=0	0.4196
PARTDIV	Dummy Variable for Activity Participation 1=Diving else=0	0.1259
PARTVIEW	Dummy Variable for Activity Participation 1=Viewing else=0	0.4685
INFOA	Dummy Variable for Information Source Used 1=GRNMS Advisory Council else=0	0.0839
INFOB	Dummy Variable for Information Source Used 1=GRNMS Staff else=1	0.0699
INFOC	Dummy Variable for Information Source Used 1=GRNMS Web Site else=0	0.2378
INFOG	Dummy Variable for Information Source Used 1=GA Dept. Natural Resources else=0	0.5035
INFOS	Dummy Variable for Information Source Used 1=Television else=0	0.6084
INFOU	Dummy Variable for Information Source Used 1=Internet else=0	0.2447

Activity Participation. Activity participation was reduced to three aggregate activities, fishing (PARTFISH), diving (PARTDIV) and all viewing activities (PARTVIEW). Several socioeconomic/demographic variables were significant in explaining participation in fishing including sex (MALE) where males had higher participation rates in fishing; household income, where those with incomes between $75,000 and $149,999 had lower participation rates and those who owned a boat had higher participation rates. ***So for estimating participation rates for fishing there appear to be some potential for non-response bias.*** For diving and viewing, none of the socioeconomic/demographic variables were significant in explaining participation, thus for estimating these participation rates there appears to be no potential for non-response bias (Table A.2.3).

Sources of Information Used. Seven sources of information used were selected for testing for the potential for non-response bias; GRNMS Sanctuary Advisory Council (INFOA), GRNMS Staff (INFOB), GRNMS Web site (INFOC), Georgia Department of Natural Resources (INFOG), Television (INFOS), and the Internet (INFOU). There were significant relationships between some of the socioeconomic/demographic factors for which the samples were either under or over represented, for six of the information sources tested, thus there appears to be some potential for non-response bias (Table A.2.4).

Testing for the relationships of question response and socioeconomic/demographic factors was not conducted for all survey questions, however, the analyses above suggest that the potential for non-response bias exists, so sample weighting was done to correct for non-response bias.

Table A.2.3. Relationships between Activity Particiaption Rates and Socieconomic/ Demographic Factors

	Question Responses		
Socioeconomic/Demographic Factors	PARTFISH	PARTDIV	PARTVIEW
CONSTANT	-28.2008	-61.4650	-0.1940
AGE3549	-0.0438	0.3557	0.5073
AGE5064	-1.0496	-1.1914	0.9337
AGE65	-0.5511	0.3825	1.1826
MALE	1.8721*	0.5926	-0.6677
EDHS	-0.8341	28.3055	0.1380
EDSCAD	1.0845	28.9908	1.0877
EDGRAD	-0.3527	29.5897	1.4613
WHITE	28.194	-0.3401	-0.8297
BLACK	26.2199	-	-0.9703
INC2535	-1.3346	-	-0.7692
INC3550	-2.1196	30.2653	0.0762
INC5075	-1.3658	28.1477	-0.5957
INC75100	-1.2906*	30.3417	-0.2516
INC10049	-2.3862*	29.6903	-0.2943
INC150	-0.7888	29.4644	-0.2687
INCMISS	-0.2866	30.1580	-1.7857
COASTAL	0.5791	1.1074	0.0096
MEMDIV	-	1.4409	-
MEMENV	-	-	1.2709
OWNBOAT	2.3004*	1.1558	0.1584
RETIRED	-0.7979	-2.4780	-1.1037
N	127	127	127
Log likelihood function	-61.9531	-33.44491	-76.3427
Restricted log Likelihood	-87.14179	-48.09249	-87.9943
Chi-Square	50.37739	29.29516	23.3031
Degrees of Freedom	19	18	20
Significance Level	0.00011	0.0448	0.27415

* Statistically significant at 0.05 or below.

Table A.2.4. Relationships between Information Sources Used and Socieconomic/ Demographic Factors

Socioeconomic/Demographic Factors	Question Responses					
	INFOA	INFOB	INFOC	INFOG	INFOS	INFOU
CONSTANT	-27.9737	-32.5670	3.1930	-0.0103	2.0151	3.6486
AGE3549	26.8885	28.7531	2.3853*	-0.2167	-2.7825*	-3.3226*
AGE5064	29.9731	29.9038	1.6653	-0.1155	-2.0388*	-2.5842*
AGE65	30.9236	29.0382	1.6545	-0.0842	-1.0424	-4.0389*
MALE	-2.4848	-2.0690	-0.3010	1.3206*	0.2406	-1.3230
EDHS	-	-	-3.3889*	-2.5008	-2.1238	-5.8041*
EDSCAD	1.5931	1.4193	-0.9266	-1.5286	-0.6271	-1.3853
EDGRAD	-1.8485	-1.5786	-2.1324	-2.8018*	-1.8408	-4.3498*
WHITE	-4.9308	0.0967	-3.7557*	0.6982	0.7800	0.5310
BLACK	-4.2500	-	-4.0719*	0.0443	1.0955	1.3972
INC2535	-	-	0.3020	-0.2891	0.0062	-0.14804
INC3550	0.8348	2.5834*	0.6593	-0.5910	0.2927	1.4767
INC5075	2.4184	1.3502	0.6266	-0.6001	0.5022	0.8746
INC75100	-	-	-1.7080	0.1213	1.1068	0.5479
INC10049	-0.5037	2.7267	-1.5633	-1.8641	1.2636	2.0408
INC150	-	-	-2.7801	-1.8964	1.0707	1.8943
INCMISS	3.6223	-	0.2624	0.7893	2.3386	0.3413
COASTAL	0.8496	-0.0530	0.2446	1.4745*	1.1661*	1.0989
MEMFISH	4.2921*	4.6595	3.3216*	-	-1.8630	-1.4382
MEMDIV	5.0403	1.8132	2.6066*	2.9551*	-0.0310	1.2729
MEMENV	0.07180	-1.8865	0.9449	2.1797*	0.8291	1.3839
MEMCC	-	-	-	3.1127*	-0.7154	-0.4170
OWNBOAT	-0.6399	-2.0718	-1.1904	1.8753*	-0.7130	-1.1957
RETIRED	-1.8728	-0.1176	-2.1871	0.0311	-0.6454	-1.1947
N	127	127	127	127	127	127
Log likelihood function	-19.7182	-18.0969	-47.16789	-61.4752	-70.032	-39.7689
Restricted log Likelihood	-37.4184	-29.8605	-70.5807	-87.7105	-83.1439	-70.5807
Chi-Square	35.4004	23.5272	46.8257	52.4707	26.2237	61.6236
Degrees of Freedom	19	17	23	22	23	23
Significance Level	0.0125	0.1329	0.0023	0.0003	0.2904	0.00002

* Statistically significant at 0.05 or below.

Chapter 3: Sample Weighting

Multivariate weighting was done for the combined samples of non-users and for each sample separately, i.e. version 1 and version 2 samples.

Combined Samples

The socioeconomic/demographic variables for which comparisons can be made with the general population of Georgia were used in constructing multivariate weights. First univariate weights were constructed for each variable where the sample weight is equal to the population proportion divided by the sample proportion (Table A.3.1). These sample weights equilibrate sample to population for each variable separately. However, multivariate weights are desired, but sample sizes will not support pure multivariate weighting since many cells of a full multivariate matrix would be empty. Simple multiplication of weights across variables did not yield results where univariate distributions were close to the general population distributions, so an iterative procedure was used using a combination of multiplicative weights and additive weights. The weight that adjusted for all significant variables i.e., those for which there was a relationship with some survey parameter to be estimated, followed the following formula:

allwt = agewt + (sexwt*racewt*edwt*coastwt)

where,

allwt = Multivariate weight for all factors
agewt = Sample weight for Age
sexwt = Sample weight for Sex
racewt = Sample weight for Race
edwt = Sample weight for Educational Attainment
incwt = Sample weight for Household Income
coastwt = Sample weight for County of Residence

Note that the weight for Household Income was not included. Including it led to over adjustment in the distributions for many variables since income is correlated with other demographic variables.

Versions 1 and 2

The same procedures that were used above for the combined samples were used for each version sample. The univariate sample weights for the Version 1 sample are in Table A.3.2 and the univariate weights for the Version 2 sample are in Table A.3.3.

Table A.3.1. Non-users Survey Versions 1 & 2 Combined: Derivation of Sample Weights

Variable	GA Census 2010 (%)	Versions 1 & 2 Sample (%)	Sample Weight	
Age				
18 - 24	13.48	1.50	8.986667	
25 - 34	18.56	10.53	1.762583	
35 - 49	29.46	20.30	1.451232	
50 - 64	24.15	39.10	0.617647	
65 and over	14.34	28.57	0.501925	
Sex				
Male	48.82	65.93	0.740482	
Female	51.18	34.07	1.502201	
Race				
Whilte	59.74	88.64	0.673962	
Black or African American	30.46	9.09	3.350935	
Other	9.80	2.27	4.317181	
Educational Attainment				
Less than High School Graduate	14.62	3.79	3.857520	
High School Graduate or Equivalent	30.13	15.91	1.893777	
Some college or Associates Degree	24.40	24.24	1.006601	
Bachelor's Degree or above	30.84	56.06	0.550125	
Household Income				
$14,999 or less	14.40	7.38	1.951220	
$15,000 - $24,999	11.40	7.38	1.544715	
$25,000 - $34,999	11.10	8.20	1.353659	
$35,000 - $49,999	14.30	13.93	1.026561	
$50,000 - $74,999	18.60	22.13	0.840488	
$75,000 - $99,999	11.60	16.39	0.707749	
$100,000 - $149,999	11.10	18.03	0.615641	
$150,000 or more	7.50	6.56	1.143293	
Coastal County of Residence				
Coastal	6.48	52.45	0.123546	
Non Coastal	93.52	47.55	1.966772	

Table A.3.2 . Non-users Survey Version 1: Derivation of Sample Weights

Variable	GA Census 2010 (%)	Version 1 Sample (%)	Sample Weight	
Age				
18 - 24	13.48	1.27	10.61417323	
25 - 34	18.56	11.39	1.62949956	
35 - 49	29.46	18.99	1.55134281	
50 - 64	24.15	41.77	0.57816615	
65 and over	14.34	26.58	0.53950339	
Sex				
Male	48.82	65.00	0.75107692	
Female	51.18	35.00	1.46228571	
Race				
Whilte	59.74	89.87	0.66473795	
Black or African American	30.46	6.33	4.81200632	
Other	9.80	3.80	2.57894737	
Educational Attainment				
Less than High School Graduate	14.62	2.53	5.77865613	
High School Graduate or Equivalent	30.13	11.39	2.64530290	
Some college or Associates Degree	24.40	30.38	0.80315997	
Bachelor's Degree or above	30.84	55.70	0.55368043	
Household Income				
$14,999 or less	14.40	4.17	3.45323741	
$15,000 - $24,999	11.40	9.72	1.17283951	
$25,000 - $34,999	11.10	5.56	1.99640288	
$35,000 - $49,999	14.30	16.67	0.85782843	
$50,000 - $74,999	18.60	25.00	0.74400000	
$75,000 - $99,999	11.60	12.50	0.92800000	
$100,000 - $149,999	11.10	19.44	0.57098765	
$150,000 or more	7.50	6.94	1.08069164	
Coastal County of Residence				
Coastal	6.48	46.00	0.14086957	
Non Coastal	93.52	54.00	1.73185185	

Table A.3. 3. Non-users Survey Version 2: Derivation of Sample Weights

Variable	GA Census 2010 (%)	Version 2 Sample (%)	Sample Weight
Age			
18 - 24	13.48	1.69	7.976331
25 - 34	18.56	8.47	2.191263
35 - 49	29.46	20.34	1.448378
50 - 64	24.15	33.90	0.712389
65 and over	14.34	35.59	0.402922
Sex			
Male	48.82	63.33	0.770883
Female	51.18	36.67	1.395691
Race			
Whilte	59.74	86.21	0.692959
Black or African American	30.46	12.07	2.523612
Other	9.80	1.72	5.697674
Educational Attainment			
Less than High School Graduate	14.62	7.55	1.936424
High School Graduate or Equivalent	30.13	3.77	7.992042
Some college or Associates Degree	24.40	7.55	3.231788
Bachelor's Degree or above	30.84	81.13	0.380131
Household Income			
$14,999 or less	14.40	11.32	1.272085
$15,000 - $24,999	11.40	7.55	1.509934
$25,000 - $34,999	11.10	11.32	0.980565
$35,000 - $49,999	14.30	9.43	1.516437
$50,000 - $74,999	18.60	16.98	1.095406
$75,000 - $99,999	11.60	20.75	0.559036
$100,000 - $149,999	11.10	15.09	0.735586
$150,000 or more	7.50	7.55	0.993377
Coastal County of Residence			
Coastal	6.48	45.00	0.144000
Non Coastal	93.52	55.00	1.700364

Impacts of Sample Weighting

Chapter 2 addressed the analysis for non-response bias; this Chapter addressed the solution (sample weighting). A question remains, What is the impact of sample weighting on survey responses? To address this, the sample of non-users was treated as two separate independent samples, the unweighted sample and the weighted sample. Statistical tests were then conducted to tests if there were statistically significant differences in survey responses between the unweighted and weighted samples. For distributions of variables, Chi-square and the Jonckheere-Terpstra (JT) test in SAS (Statistical Analysis System Version 9.1, Proc Freq) were used and for sample means a t-test in SAS (Statistical Analysis System Version 9.1, Proc T-test) was used. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here unweighted and weighted non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. Both one-side and two-sided tests were conducted, but for application to the data here, the two-sided tests are appropriate. For all statistical tests, the 0.05 level of significance or lower were considered statistically significant.

Overall, very few survey responses were statistically significant differences existed between the weighted and unweighted samples of non-users. The results by type of survey response are summarized below. The results of the statistical tests are found in Appendix B.

Information Sources Uses. There was only one statistically significant difference between weighted and unweighted estimates of the percent of non-users that used a source of information and that was for the Georgia Department of Natural Resources. The unweighted estimate was 51.03% while the weighted estimate was 40.14% (Appendix B:Table B.1).

Level of Trust of Information Sources Used Most. For nine of the sources of information used, there were enough users to test for differences in respondent's level of trust of those sources of information. There were no statistically significant differences in the level of trust between weighted and unweighted estimates (Appendix B: Table B.2).

Activity Participation. Only one individual activity participation rate estimate (recreational bottom fishing) was significantly different between unweighted and weighted samples of non-users. For aggregated activities, the only difference was for "Any Nonconsumptive Activity" (Appendix B: Table B.3).

Person-days of Activity. There was only one activity for which there was a statistically significant difference between the estimates of mean person-days of annual activity (recreational bottom fishing). This was limited to the estimate that included all non-users (including those who did zero person-das of activity). The unweighted estimate was twice that of the weighted estimate. The same did not hold true for the estimate of mean person-days of recreational bottom fishing for participants only (those who did at

least one person-day of the activity). There were no statistically significant differences for the unweighted and weighted estimates of mean person-days for any activity when the sub-sample was limited to participants only (Appendix B: Table B.4).

Attitudes on GRNMS Regulations, Processes and Performance. Out of the 17 attitudes, there were only three attitudes for which there were statistically significant differences between the unweighted and weighted sample distribution of responses. All three were regulations: 2. The no anchoring regulation, 4. Prohibition of commercial fishing use of wire traps, and 5. Commercial fishing use of bottom trawls. But only the no anchor regulation was significant using the JT test of the entire distribution. The reason is the high percent of "Don't Know" responses for the no anchoring regulation (Appendix B: Table B.5). Once we eliminate the "Don't Know" responses and estimate mean scores, there were no statistically significant differences for any of the 17 attitudes between unweighted and weighted scores (Appendix B: Table B.6).

Familiarity with GRNMS Regulations. There wasn't a statistically significant difference between the unweighted and weighted distribution of responses to non-users familiarity with GRNMS regulations (Appendix B: Table B.7).

Chapter 4: Estimation of Person-days by Activity – Elimination of Outliers

For users and non-users in both version 1 and 2 samples, respondents were asked for their participation and use in seven activities they did in coastal and ocean areas off the Georgia coast outside GRNMS. The seven selected activities were activities known to occur in GRNMS. Users were asked also how many person-days they did the activity in GRNMS. Use was estimated as person-days of activity for year 2010. A person-day was defined as one person doing an activity for a whole day or any part of a day. Estimates were also made for two groups; "all users", which include those who did zero days of the activity and "participants only", which eliminates non-participants or those that did zero person-days of the activity.

Estimation of participation rates (percent of non-users that did the activity) is robust to sample sizes due to low variances. This is not true for annual person-days of activity since for any respondent the estimate could range from zero (0) to 365 person-days. Small sample sizes can make estimates of mean person-days sensitive to outliers leading to high variances. Estimates of mean person-days by activity were evaluated for the impact of outliers on the estimates and outliers that accounted for a high percent of the sample sum of person-days (a third or more), and thus estimates of the mean person-days of activity, were eliminated (Table A.4.1).

Many researchers use simple rules like eliminating the upper five (5) percent of the sample distribution. This strategy, if applied iteratively, would eliminate the entire sample, as might the strategy used here. So another metric reported in Table A.4.1 is the percent of sample removed to indicate the extent of outliers in the sample. Using this metric, only a small percent of the sample had to be removed.

Users – Outliers Removed

Activities outside GRNMS. For users, only one of the seven activities (whale watching or other wildlife viewing activities) required removal of an outlier. One person responded that they did the activity every day of the year or 365 person-days. This one observation accounted for over 50% of the sample sum of person-days. Removal of this outlier resulted in removal of only 1.4% of the sample. The results were the estimates of mean person-days for this activity were cut almost in half (Table A.4.1).

Non-users – Outliers Removed

Activities outside GRNMS. For non-users, estimates of person-days of activity required elimination of outliers for four of the seven activities (recreational bottom fishing, recreational fishing – trolling or drifting in mid or top water, SCUBA diving-don't take things, and Whale watching or other wildlife viewing). The impacts of removing outliers for these activities resulted in estimates being cut in half for both fishing activities, about one-third for SCUBA diving-don't take things and about 43% for whale watching and other wildlife viewing. Again, only a small proportion of the sample had to be eliminated in each case (Table A.4.1).

Table A.4.1. Person-days by Activity for Activities in Georgia Waters Outside GRNMS: Outliers

User Group/Activity	Mean With Outliers	Mean Without Outliers	Outliers Yes/No	Outliers as % of Sample sum	Outliers Removed	% of Sample Removed
All Users (includes zeros)						
Recreational bottom fishing	21.92	21.92	No	0%	None	0%
Recreational fishing - trolling or drfting in mid or top water	14.08	14.08	No	0%	None	0%
Recreational spear fishing with power heads	0.28	0.28	No	0%	None	0%
Recreational spear fishing without power heads	0.42	0.42	No	0%	None	0%
SCUBA diving (taking things)	0.12	0.12	No	0%	None	0%
SCUBA diving (don't take things)	0.37	0.37	No	0%	None	0%
Whale watching or other wildlife viewing activities	10.04	5.04	Yes	50.48%	365	1.40%
All Non-users (includes zeros)						
Recreational bottom fishing	2.20	1.02	Yes	54.50%	60, 75, 100	1.50%
Recreational fishing - trolling or drfting in mid or top water	3.71	1.85	Yes	50.89%	50, 75, 100, 200	1.70%
Recreational spear fishing with power heads	0.06	0.06	No	0%	None	0%
Recreational spear fishing without power heads	0.13	0.13	No	0%	None	0%
SCUBA diving (taking things)	0.00	0.00	No	0%	None	0%
SCUBA diving (don't take things)	0.68	0.45	Yes	33.89%	90	0.30%
Whale watching or other wildlife viewing activities	2.64	1.51	Yes	43.91%	30, 40, 75, 100	1.80%

Final Estimates of Mean Person-days

After outliers were removed, weighted sample estimates were produced for both users and non-users for all users and non-users (including those who did zero person-days) and for users and non-users that participated in each activity (eliminate those who did zero days of activity).

Users

Activities in GRNMS - All Users. Sample sizes were adequate for estimating person-days for four of the seven activities. Spear fishing in GRNMS was a low participation activity (is currently prohibited) as was SCUBA diving – taking things so sample sizes were not sufficient to estimate mean annual person-days of use (Table A.4.2).

Activities in GRNMS – Participants Only. Sample sizes were adequate for estimating only two of the seven activities i.e. the two fishing activities. All other activities are low participation activities and thus have sample sizes too small to yield statistically reliable estimates (Table A.4.2).

Table A.4.2. Mean Person-days by Activity in GRNMS: All Users and Participants Only

Activity/User Group	Mean	Standard Error	95 % Confidence Interval	N
All Users				
Recreational bottom fishing	6.64	0.84	4.96 to 8.31	69
Recreational fishing - trolling or drfting in mid or top water	7.19	0.85	5.49 to 8.89	68
Recreational spear fishing with power heads	*	*	*	*
Recreational spear fishing without power heads	*	*	*	*
SCUBA diving (taking things)	*	*	*	*
SCUBA diving (don't take things)	0.27	0.17	-0.07 to 0.60	75
Whale watching or other wildlife viewing activities	0.94	0.40	0.15 to 1.74	71
Participants Only				
Recreational bottom fishing	8.33	0.92	6.47 to 10.18	55
Recreational fishing - trolling or drfting in mid or top water	7.65	0.94	5.76 to 9.54	57
Recreational spear fishing with power heads	*	*	*	*
Recreational spear fishing without power heads	*	*	*	*
SCUBA diving (taking things)	*	*	*	*
SCUBA diving (don't take things)	4.00	2.07	-1.76 to 9.76	5*
Whale watching or other wildlife viewing activities	6.70	2.13	1.88 to 11.52	10*

* sample size too small

Activities outside GRNMS – All Users. Sample sizes were adequate for reliably estimating use for all users (including those who do zero days of the activity) for all seven of the activities (Table A.4.3).

Activities outside GRNMS – Participants Only. Once those who did not participate in the activity are eliminated (those who did zero person-days of the activity), only three of the seven activities had adequate sample sizes to reliably estimate the mean number of person-days of activity (table A.4.3).

Table A.4.3. Mean Person-days by Activity in GA Outside GRNMS: All Users and Participants Only

Activity/User Group	Mean	Standard Error	95 % Confidence Interval	N
All Users				
Recreational bottom fishing	21.92	3.31	15.32 to 28.52	75
Recreational fishing - trolling or drfting in mid or top water	14.08	1.55	10.98 to 17.19	71
Recreational spear fishing with power heads	0.28	0.16	-0.03 to 0.59	75
Recreational spear fishing without power heads	0.42	0.19	0.04 to 0.80	74
SCUBA diving (taking things)	0.12	0.09	-0.05 to 0.30	72
SCUBA diving (don't take things)	0.37	0.17	0.17 to 0.71	72
Whale watching or other wildlife viewing activities	5.04	1.37	2.30 to 7.78	72
Participants Only				
Recreational bottom fishing	23.83	3.51	16.82 to 30.83	69
Recreational fishing - trolling or drfting in mid or top water	15.62	1.61	12.40 to 18.85	64
Recreational spear fishing with power heads	5.25	1.70	-0.16 to 10.66	4*
Recreational spear fishing without power heads	4.43	1.29	1.28 to 7.58	7*
SCUBA diving (taking things)	3.00	1.53	-3.57 to 9.57	3*
SCUBA diving (don't take things)	4.50	0.99	1.95 to 7.05	6*
Whale watching or other wildlife viewing activities	14.92	3.26	8.18 to 21.65	24

* sample size too small

Non-users

Activities outside GRNMS – All Non-users. Including all non-users (including those who did zero person-days of an activity) yields reliable estimates of mean person-days of activity for all seven activities, however, activities with low participation rates still have higher variances with resulting high standard errors and wider 95% confidence intervals (spear fishing and diving activities) (Table A.4.4).

Activities outside GRNMS – Participants Only. Eliminating those non-users that did not participate in an activity (those who did zero person-days of an activity) results in adequate sample sizes for estimating mean person-days for only three of the seven activities (both fishing activities and the whale watching and other wildlife viewing activities) (Table A.4.4).

Table A.4.4. Mean Person-days by Activity in GA Outside GRNMS: All Non-users and Participants Only

Activity/User Group	Mean	Standard Error	95 % Confidence Interval	N
All Non-users				
Recreational bottom fishing	1.02	0.29	0.43 to 1.60	115
Recreational fishing - trolling or drfting in mid or top water	1.85	0.48	0.90 to 2.81	117
Recreational spear fishing with power heads	0.06	0.09	-0.13 to 0.25	127
Recreational spear fishing without power heads	0.13	0.11	-0.09 to 0.35	126
SCUBA diving (taking things)	0.00	0.00	0.0 to 0.0	126
SCUBA diving (don't take things)	0.45	0.27	-0.08 to 0.98	119
Whale watching or other wildlife viewing activities	1.51	0.33	0.85 to 2.17	110
Participants Only				
Recreational bottom fishing	6.25	0.90	4.43 to 8.07	36
Recreational fishing - trolling or drfting in mid or top water	8.56	1.40	5.70 to 11.42	35
Recreational spear fishing with power heads	11.59	8.98	-102.51 to 125.70	2*
Recreational spear fishing without power heads	8.17	3.79	-8.15 to 24.49	3*
SCUBA diving (taking things)	0.00	0.00	0.0 to 0.0	0*
SCUBA diving (don't take things)	10.11	3.97	0.40 to 19.92	7*
Whale watching or other wildlife viewing activities	5.05	0.83	3.37 to 6.74	34

* sample size too small

Chapter 5: Statistical Tests of Differences between Users and Non-users

Chapter 3 of the main report (Leeworthy 2012) compared users and non-users of GRNMS across all survey responses for which both groups were asked questions. Here the results of the statistical test that were conducted are presented. For distributions of variables, Chi-square and the Jonckheere-Terpstra (JT) tests in SAS (Statistical Analysis System Version 9.1, Proc Freq) were used, and for sample means a t-test in SAS (Statistical Analysis System Version 9.1, Proc T-test) was used. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here unweighted and weighted non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. Both one-side and two-sided tests were conducted, but for application to the data here, the two-sided tests are appropriate. For all statistical tests, the 0.05 level of significance or lower were considered statistically significant.

Socioeconomic/Demographic Profiles

There were significant differences in the distributions between users and non-users for age, sex, race, household income, employment status (unemployed, full-time employed), boat ownership, and membership in selected organizations (fishing and environmental) (Table A.5.1). For variables with continuous measurements (e.g. age, household size, number in household 18 or over, number in household less than 18, and boat size), a test for differences in sample means found only two significant differences: users were, on average, older than non-users and owned larger boats (Table A.5.2).

Table A.5.1. Tests for Differences between Users and Non-users: Demographic Profiles

Demographic Factor	Users (percent)	Non-users (percent)	Chi-square Sigificance[1]	JT Test Significance[2]
Age			**<0.0001**	**0.0015/0.0030**
18 - 24	1.33	13.31		
25 - 34	2.67	19.94		
35 - 49	29.33	19.63		
50 - 64	52.00	26.54		
65 and over	14.67	20.58		
Sex			**<.0.0001**	**<0.0001/<0.0001**
Male	100.00	58.40		
Female	0.00	41.60		
Race			**<0.0001**	**<0.0001/<0.0001**
White	100.00	63.03		
Black or African American	0.00	27.98		
Asian	0.00	8.14		
Native Hawaiian or Pacific Islander	0.00	0.85		
Educational Attainment			**0.4101**	**0.3178/0.6355**
8th grade of less	3.95	3.76		
9th to 11th grade	1.32	4.85		
High School Grad or Equivalent	25.00	29.57		
Some College	31.58	21.18		
Associates degree	2.63	1.96		
Bachelors degree	21.05	21.47		
Masters degree	6.58	12.63		
Professional degree	3.95	2.26		
Doctors degree	3.95	2.32		
Household Income (Before taxes)			**<0.0001**	**<0.0001/<0.0001**
Less than $5,000	0.00	16.86		
$5,000 - $9,999	0.00	3.88		
$10,000 - $14,999	0.00	0.93		
$15,000 - $19,999	1.39	4.51		
$20,000 - $24,999	0.00	0.73		
$25,000 - $29,999	1.39	1.95		
$30,000 - $34,999	1.39	8.28		
$35,000 - $39,999	2.78	10.55		
$40,000 - $44,999	1.39	3.84		
$45,000 - $49,999	4.17	2.34		
$50,000 - $59,999	4.17	9.58		
$60,000 - $74,999	12.50	7.85		
$75,000 - $99,999	19.44	11.36		
$100,000 - $149,999	23.61	11.21		
$150,000 or more	27.78	6.12		
Employment Status (% yes)				
unemployed	0.00	15.53	0.0003	0.0002/0.0003
employed full-time	75.00	47.32	<0.0001	<0.0001/<0.0001
employed part-time	7.89	14.68	0.1232	0.0619/0.1238
retired	17.11	20.51	0.5107	0.2557/0.5114
student	1.32	0.00	0.0613	0.0308/0.0617
homemaker	0.00	4.42	0.0621	0.0313/0.0625

Table A.5.1. Tests for Differences between Users and Non-users: Demographic Profiles (continued)

Demographic Factor	Users (percent)	Non-users (percent)	Chi-square Sigificance[1]	JT Test Significance[2]
Household Type			**0.0035**	**N/A**
Single adult with no children under 18	7.89	21.04		
Single adult with children under 18	1.32	8.99		
Two adults with no children under 18	51.32	30.71		
Two adults with children under 18	23.68	24.16		
More than two adults with no children under 18	9.21	9.30		
More than two adults with children under 18	6.58	5.80		
Boat Ownership (% Yes)	97.37	13.68	<0.0001	<0.0001/<0.0001
Membership in Organizations (% Yes)				
Fishing	42.68	3.01	<0.0001	<0.0001/<0.0001
Diving	2.60	3.70	0.6405	0.3205/0.6410
Environmental	15.58	7.27	0.0258	0.0130/0.0260
Chamber of Commerce	11.69	6.25	0.11	0.0553/0.1105

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here users and non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Table A.5.2. Tests for Differences between Users and Non-users: Demographic Means

Demographic Factor	Users (mean)	Non-users (mean)	T-test Significance[1]
Age	50.09	43.27	0.0403
Household Size	2.60	2.80	0.4002
Number in Household 18 or over	2.08	2.21	0.372
Number in Household less than 18	0.51	0.58	0.6733
Boat Size (length in feet)	24.57	18.84	<0.0001

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.

Activity Participation

Users and non-users were asked for their participation in 13 different activities in the coastal and ocean waters off the State of Georgia or in shore-based activities along the Georgia coast. There were statistically significant differences for seven of the 13 activities. Users had significantly higher participation rates for all seven of the activities that are known to be done by users in GRNMS (recreational bottom fishing through whale watching and other wildlife viewing, Table A.5.3). For activities in coastal and ocean waters outside GRNMS or shore-based activities along the Georgia coast, users had higher participation rates in all but one activity (Sailing), but the differences were only significant for "Beach Activities" (Table A.5.3).

Activities were also classified into eight aggregated categories. Users had higher participation rates in six of the eight categories. Non-users had higher participation rates in "Any Viewing" and "Only Nonconsumptive". The differences were statistically significant for seven of the eight aggregated activity categories. The only difference that wasn't statistically significant was that for "Any Viewing" (Table A.5.3).

Person-days of Activity

Differences in estimated mean number of person-days was tested for the seven activities that users and non-users did in coastal and ocean areas outside GRNMS and that were activities that were known to be done in GRNMS. Means were estimated for "All Users and Non-users" (those who did zero days of the activity included) and for "Participants Only" (those users and non-users that did at least one person-day of the activity).

All Users and Non-users. There were statistically significant differences between users and non-uses for four of the seven activities. Users had higher mean numbers of person-days for all the activities except for "SCUBA diving – don't take things", but this latter difference was not statistically significant (Table A.5.4).

Participants Only. Once those who did zero person-days of activity are eliminated, the sample sizes become too small to reliably estimate differences for four of the activities. For the remaining three activities (two fishing activities and the whale watching and other wildlife viewing) users had higher mean number of person-days than non-users (Table A.5.4).

Table A.5.3. Tests for Differences between Users and Non-users: Activity Participation in Coastal and Ocean Areas in and around Georgia Outside GRNMS

Activity	Users (percent)	Non-users (percent)	Chi-square Significance[1]	JT Test Significance[2]
Recreational bottom fishing	92.11	23.69	<0.0001	<0.0001/<0.0001
Recreational fishing - trolling or drfting in mid or top water	90.79	24.69	<0.0001	<0.0001/<0.0001
Recreational spear fishing with power heads	7.89	0.53	<0.0001	<0.0001/0.0001
Recreational spear fishing without power heads	13.16	2.00	<0.0001	<0.0001/<0.0001
SCUBA diving (taking things)	10.53	0.39	<0.0001	<0.0001/<0.0001
SCUBA diving (don't take things)	14.47	8.37	0.1135	0.0570/0.1141
Whale watching or other wildlife viewing activities	38.16	25.91	0.0373	0.0188/0.0375
Sailing	6.58	11.67	0.2024	0.1015/0.2031
Beach Activities	76.32	58.45	0.0046	0.0023/0.0046
Surfing	9.21	6.90	0.4975	0.2491/0.4981
Wind Surfing/Kite boarding	5.26	2.76	0.2833	0.1420/0.2840
Personal Watercraft Use	21.05	15.29	0.2334	0.1170/0.2341
Shorebird Watching	32.89	29.12	0.5263	0.2635/0.5269
Aggregate Activities				
Any Fishing	96.10	33.52	<0.0001	<0.0001/<0.0001
Any Spear Fishing	13.16	2.00	<0.0001	<0.0001/<0.0001
Any SCUBA Diving	16.88	8.76	0.0415	0.0209/0.0418
Any Viewing	42.86	40.17	0.6731	0.3368/0.6735
Any Consumptive	96.10	33.52	<0.0001	<0.0001/<0.0001
Any Nonconsumptive	44.16	63.19	0.0028	0.0014/0.0028
Only Consumptive	53.25	2.05	<0.0001	<0.0001/<0.0001
Only Nonconsumptive	1.30	31.72	<0.0001	<0.0001/<0.0001

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here users and non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Table A.5.4. Tests for Differences between Users and Non-users: Mean Person-days by Activity in Coastal and Ocean Areas in and around Georgia Outside GRNMS

User Group/Activity	Users (mean)	Non-users (mean)	T-test Significance[1]
All Users and Non-users			
Recreational bottom fishing	21.92	1.02	<0.0001
Recreational fishing - trolling or drfting in mid or top water	14.08	1.85	0.0007
Recreational spear fishing with power heads	0.28	0.06	0.2546
Recreational spear fishing without power heads	0.42	0.13	0.2037
SCUBA diving (taking things)	0.12	0.00	0.0372
SCUBA diving (don't take things)	0.37	0.45	0.7247
Whale watching or other wildlife viewing activities	5.04	1.51	0.088
Participants Only			
Recreational bottom fishing	23.83	6.25	0.0004
Recreational fishing - trolling or drfting in mid or top water	15.62	8.56	0.0028
Recreational spear fishing with power heads	5.25	11.59	*
Recreational spear fishing without power heads	4.43	8.17	*
SCUBA diving (taking things)	3.00	0.00	*
SCUBA diving (don't take things)	4.50	10.11	*
Whale watching or other wildlife viewing activities	14.92	5.05	0.0005

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
* sample sizes too small to support statistical test.

Sources of Information Used

The survey included 23 sources of information. Of these 23 sources of information, there were statistically significant differences between users and non-users as to the proportion that used the source for information for 15 of the sources. For GRNMS sources, users had significantly higher rates of usage. For all the fishing related organizations, users had significantly higher rates of usage for all of the sources and the differences were significant except for the American Sportfishing Association. Non-users had higher rates of usage of mass media sources (e.g. Newspapers, Radio, Television, Internet and Social Media) and all the differences were significant except that for the Internet. Users had significantly higher rates of usage from the "Word of Mouth" source (Table A.5.5).

For those who participated in fishing, a selected set of sources of information was tested for rates of usage. Out of the 15 sources of information selected, there were statistically significant rates of usage for five sources (GRNMS web site, Georgia Sea Grant, CCA, RFA, and the SKA (Table A.5.6).

Table A.5.5. Tests for Differences between Users and Non-users: Sources of Information Used

Source of Information	Users (Percent)	Non-users (Percent)	Chi-Square Significance[1]	JT Test Significance[2]
Grays Reef National Marine Sanctuary Sanctuary Advisory Council	17.11	7.07	0.0079	0.004 / 0.008
Grays Reef National Marine Sanctuary Staff	14.47	6.00	0.0157	0.0079 / 0.0159
Grays Reef National Marine Sanctuary Web site	59.21	30.15	<0.0001	<0.0001 / <0.0001
NOAA's National Marine Fisheries Service	50.00	13.52	<0.0001	<0.0001 / <0.0001
Atlantic States Marine Fisheries Commission	6.58	3.04	0.1561	0.0783 / 0.1567
Atlantic Fishery Management Council	6.58	3.02	0.1526	0.0766 / 0.1532
Georgia Department of Natural Resources	71.05	40.14	<0.0001	<0.0001 / <0.0001
Georgia Sea Grant	1.32	6.06	0.0945	0.0475 / 0.0950
Georgia's Coastal Conservation Association (CCA)	34.21	4.77	<0.0001	<0.0001 / <0.0001
Recreational Fishing Alliance (RFA)	31.58	3.82	<0.0001	<0.0001 / <0.0001
American Sportfishing Association (ASA)	17.11	9.56	0.0665	0.0335 / 0.0669
National Coalition for Marine Conservation (NCMC)	1.32	3.89	0.2691	0.1349 / 0.2698
International Game and Fish Association (IGFA)	13.16	4.50	0.0067	0.0034 /0.0068
Southern Kingfish Association (SKA)	44.74	3.24	<0.0001	<0.0001 / <0.0001
Fishing Magazines/Newsletters	50.00	22.13	<0.0001	<0.0001 / <0.0001
SCUBA diving magazines/Newsletters	11.84	11.21	0.8787	0.4395 / 0.8789
Newspapers	42.11	55.63	0.0373	0.0188 / 0.0376
Radio	26.32	51.16	0.0001	<0.0001 / 0.0001
Television	36.84	67.63	<0.0001	<0.0001 / <0.0001
Internet	61.84	65.94	0.5087	0.2546 / 0.5093
Social Media (Twitter, You tube, Facebook, etc.)	8.11	32.13	<0.0001	<0.0001 / <0.0001
Word of mouth	59.21	45.66	0.0371	0.0187 / 0.0374

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here users and non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Table A.5.6. Tests for Differences between Users and Non-users who Participated in Fishing: Selected Sources of Information Used

Source of Information	Users (Percent)	Non-users (Percent)	Chi-Square Significance[1]	JT Test Significance[2]
Grays Reef National Marine Sanctuary Sanctuary Advisory Council	16.44	15.66	0.8938	0.4470 / 0.8941
Grays Reef National Marine Sanctuary Staff	13.70	15.37	0.7650	0.3828 / 0.7657
Grays Reef National Marine Sanctuary Web site	60.27	41.93	0.0202	0.0103 / 0.0206
NOAA's National Marine Fisheries Service	50.68	27.04	0.0020	0.001 / 00.21
Atlantic States Marine Fisheries Commission	6.85	5.23	0.6641	0.3325 / 0.6650
Atlantic Fishery Management Council	6.85	6.46	0.9213	0.4608 / 0.9216
Georgia Department of Natural Resources	72.60	77.00	0.5200	0.2607 / 0.5213
Georgia Sea Grant	1.37	10.90	0.0151	0.0077 / 0.0155
Georgia's Coastal Conservation Association (CCA)	35.62	6.99	<0.0001	<0.0001 / <0.0001
Recreational Fishing Alliance (RFA)	31.51	7.90	0.0001	<0.0001 / 0.0001
American Sportfishing Association (ASA)	16.44	20.60	0.4997	0.2505 / 0.5010
National Coalition for Marine Conservation (NCMC)	1.37	7.14	0.0791	0.04 / 0.08
International Game and Fish Association (IGFA)	12.33	10.90	0.7763	0.3885 / 0.7770
Southern Kingfish Association (SKA)	43.84	5.44	<0.0001	<0.0001 / <0.0001
Fishing Magazines/Newsletters	47.95	37.89	0.1975	0.0995 / 0.1989

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here users and non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Level of Trust of Information Sources Used Most

Nine sources of information most used by users and non-users were selected for testing for differences. Selected sources were those for which there were at least 25 responses from both users and non-users that used the source of information and provided ratings on their level of trust of the information. Tests were conducted on the distribution of responses across the five-point Likert scale and tests were conducted for differences in mean scores.

For the distributions of responses, there was only one statistically significant difference and that was for “NOAA’s National Marine Fisheries Service”. Non-users had higher proportions of responses in the “trust very much to completely trust” scores. A high proportion of scores provided by both users and non-users were “Neutral”. The story changes when differences in mean scores were tested. There were statistically significant differences between users and non-users for six of the nine sources of information (Table A.5.7).

Table A.5.7. Tests for Differences between Users and Non-users: Trust Level of Information Sources Used Most

Selelcted Source/User Group[1]	No Trust At All	Very Little Trust	Neutral	Trust Very Much	Completely Trust	Mean	Chi-Square Significance[2]	JT Test Significance[3]	T-test Significance[4]
GRNMS Web site							0.3592	0.1058 / 0.2116	0.0016
User	0.00	6.98	18.60	46.51	27.91	3.95			
Non-user	0.00	9.31	11.62	36.82	42.25	4.12			
NOAA's National Marine Fisheries Service							0.0985	0.0085 / 0.0171	0.8701
User	0.00	8.82	26.47	35.29	29.41	3.85			
Non-user	2.14	0.00	8.91	32.85	56.09	4.41			
Georgia Department of Natural Resources							0.1636	0.4560 / 0.9120	0.1561
User	4.17	6.25	20.83	39.58	29.17	3.83			
Non-user	0.00	16.18	17.09	35.74	30.99	3.81			
Fishing Magazines/Newsletters							0.5519	0.2946 / 0.5892	0.0617
User	0.00	2.94	35.29	44.12	17.65	3.76			
Non-user	0.00	5.19	22.09	57.13	15.59	3.83			
Newspapers							0.6446	0.1095 / 0.2191	0.0062
User	0.00	3.57	35.71	46.43	14.29	3.71			
Non-user	1.22	12.61	34.80	40.68	10.69	3.47			
Radio							0.6904	0.1728 / 0.3456	0.0134
User	0.00	0.00	33.33	50.00	16.67	3.83			
Non-user	0.85	9.90	30.23	46.65	12.36	3.60			
Television							0.6560	0.3130 / 0.6261	0.0028
User	0.00	3.70	40.74	44.44	11.11	3.63			
Non-user	0.96	12.09	31.65	46.07	9.23	3.50			
Internet							0.9004	0.3393 /0.6786	0.0089
User	0.00	9.09	47.73	36.36	6.82	3.41			
Non-user	0.00	11.83	46.46	37.11	4.60	3.34			
Word of mouth							0.1085	0.0411 / 0.0823	0.0241
User	2.56	15.38	46.15	28.21	7.69	3.23			
Non-user	5.43	8.60	28.46	50.52	6.99	3.45			

1. Selected Sources are those with at least 25 observations per user group to support statistical tests between user groups.
2. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
3. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes. It tests the null hypothesis that the distributions among the classes are different. Yhe test on the left side is a one-sided test, while the test on the right is a two-dised test.
4. T-test for differences in means. A value of (0.05) or less (<) is significant at the 95 percent confidence level or higher.

How Users and Non-users Prefer to Receive Information

Users and non-users were asked how they prefer to receive information about GRNMS. Five ways of receiving information were provided for in the survey. The only statistically significant difference was for "E-mail List Serve". Users preferred this method of receiving information at a higher rate than non-users (Table A.5.8).

Table A.5.8. Tests for Differences between Users and Non-users: How they Prefer to Receive Information about GRNMS

Source of Information	Uses (Percent Yes)	Non-users (Percent Yes)	Chi-square Significance[1]	JT Test Significance[2]
GRNMS Web site	53.95	52.57	0.8321	0.4162 / 0.8324
E-mail from GRNMS Staff	27.63	33.80	0.3113	0.1560 / 0.3121
E-mail List Serve	49.33	30.58	0.0026	0.0013 / 0.0026
Newsletter via U.S. Postal Service	50.00	50.74	0.9089	0.4545 / 0.9091
Telephone Call from GRNMS Staff	6.67	4.09	0.3499	0.1753 / 0.3506

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here users and non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Familiarity with GRNMS Regulations

As expected, users were much more familiar with GRNMS regulations than non-users. What is surprising is that 21.46% of non-users are somewhat familiar with GRNMS regulations (Table A.5.9).

Table A.5.9. Tests for Differences between Users and Non-users: Familiarity with GRNMS Regulations

Rank of Familiarity	Users (Percent)	Non-users (Percent)	Chi-square Significance[1]	JT Test Significance[2]
Very Familiar	16.00	0.70	<0.0001	<0.0001 / <0.0001
Somewhat Familiar	77.33	21.46		
Not at All Familiar	6.67	77.83		

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here users and non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Attitudes on GRNMS Regulations, Processes and Performance

Users and non-users were asked about their attitudes on GRNMS regulations (items 1 - 9, Table A.5.10), GRNMS processes to create rules and regulations (items 10 – 13, Table A.5.10, and GRNMS performance (items 14 – 17, Table A.5.10). A five-point Likert agreement scale was used, which also allowed for a "Don't Know" response. Differences in the distribution in responses were tested as well as the means scores. For mean scores the "Don't Know" responses are eliminated.

Regulations. There were significant differences in the distributions of responses for eight of the nine regulations. The difference in the distributions of responses for the spear fishing regulation (item 9) was not significant using the JT test (Table A.5.10). Once "Don't Know" responses are dropped, tests of mean scores found significant differences for six of the nine regulations. Here a lower mean score means a higher level of support since the five-point Likert scale goes from 1=strongly agree to 5=strongly disagree and the statements on the regulation are stated in a way that indicates support for the regulation (table A.5.11).

Processes. On GRNMS processes to create rules and regulations users and non-users had high proportions of 'Don't Know" responses, and as expected, non-users had higher proportions of "Don't Know" responses than users (Table A.5.10). This leads to significant differences in the distributions of responses to all the items here. Once we drop the "Don't Know" responses, there is one difference in the mean scores. For item 10 (The process that GRNMS used to develop its rules and regulations was open and fair to all groups), users had a statistically significant higher mean score. A higher mean score here means a more negative attitude since higher scores mean a higher level of disagreement with the statement (Table A.5.11).

Performance. As with processes, users and non-users gave a high proportion of "Don't Know" responses, except for users on item 17 (GRNMS does a good job of educating the public about it rules and regulations). There were statistically significant differences in the distributions of responses between users and non-users for all the items on GRNMS performance (Table A.5.10). However, once the "Don't Know" there are no significant differences in mean scores (Table A.5.11).

Table A.5.10. Tests for Differences between Users versus Non-users: Attitudes on GRNMS Regulations, Processes and Performance (Distributions)

Statement	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know	Chi-Square Signficance[1]	JT Test Significance[2]
1. I support the GRNMS as it is currently established							<0.0001	<0.0001 / <0.0001
Users	30.67	32.00	8.00	5.33	10.67	13.33		
Non-users	13.99	14.59	12.88	2.47	0.00	56.07		
2. I support the no anchoring regulation							<0.0001	<0.0001 / <0.0001
Users	62.34	16.88	3.90	7.79	7.79	1.30		
Non-users	27.21	10.86	8.09	6.56	0.88	46.40		
3. I support the prohibition on distrubing the sea bed including all mining and oil & gas activities							0.0003	<0.0001 / <0.0001
Users	71.05	9.21	6.58	3.95	6.58	2.63		
Non-users	38.15	22.05	16.31	5.68	8.47	9.34		
4. I support the prohibition of commercial fishing using wire fishing traps							<0.0001	<0.0001 / <0.0001
Users	90.91	2.60	1.30	2.60	1.30	1.30		
Non-users	28.05	14.81	27.04	10.07	3.07	16.95		
5. I support the prohibition of commercial fishing using bottom trawls							<0.0001	<0.0001 / <0.0001
Users	89.61	3.90	1.30	1.30	2.60	1.30		
Non-users	30.79	11.59	30.21	7.55	2.67	17.19		
6. I support the prohibition on the damage or removal of bottom formations							<0.0001	<0.0001 / <0.0001
Users	84.42	7.79	2.60	2.60	1.30	1.30		
Non-users	35.40	26.33	17.13	1.84	1.36	17.94		
7. I support the prohibition on the use of explosives							<0.0001	<0.0001 / <0.0001
Users	94.74	1.32	1.32	0.00	1.32	1.32		
Non-users	53.49	26.36	1.26	1.75	2.06	15.08		
8. I support the prohibition on the discharge of pollutants in GRNMS waters							<0.0001	<0.0001 / <0.0001
Users	90.67	2.67	2.67	1.33	1.33	1.33		
Non-users	53.15	28.04	1.96	1.08	1.36	14.43		

Table A.5.10. Tests for Differences between Users versus Non-users: Attitudes on GRNMS Regulations, Processes and Performance-Distributions (Continued)

Statement	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know	Chi-Square Signficance[1]	JT Test Significance[2]
9. I support the prohibition on spear fishing							<0.0001	0.1131 / 0.2262
Users	35.53	7.89	19.74	7.89	27.63	1.32		
Non-users	18.55	13.46	39.22	8.09	4.98	15.71		
10. The process that GRNMS used to develop its rules and regulations was open and fair to all groups							<0.0001	0.0015 / 0.0030
Users	14.29	11.69	20.78	10.39	18.18	24.68		
Non-users	10.36	11.57	17.87	2.95	0.00	57.24		
11. It has not mattered whether the average person participated in the workshops and meetings of the GRNMS because the average person could not influence the final decision							<0.0001	<0.0001 / <0.0001
Users	22.08	20.78	20.78	10.39	10.39	15.58		
Non-users	13.20	9.77	12.84	9.34	4.11	50.74		
12. GRNMS has not addressed the concerns of other federal and state governments in developing its rules and regulations							0.0002	0.0003 / 0.0006
Users	11.69	7.79	25.97	7.79	6.49	40.26		
Non-users	1.82	6.86	22.51	0.82	3.46	64.54		
13. GRNMS has not addresed the concerns of individual citizens in developing rules and regulations							<0.0001	<0.0001 / <0.0001
Users	24.68	11.69	22.08	10.39	6.49	24.68		
Non-users	4.48	14.30	10.68	3.61	5.21	61.73		
14. Once that the GRNMS regulations have been in effect, there has been no way that the average person could voice his/her opinion on the usefulness of the regulations							<0.0001	<0.0001 / <0.0001
Users	25.97	15.58	16.88	9.09	6.49	25.97		
Non-users	6.61	11.53	10.99	4.05	3.43	63.38		

Table A.5.10. Tests for Differences between Users versus Non-users: Attitudes on GRNMS Regulations, Processes and Performance-Distributions (Continued)

Statement	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know	Chi-Square Signficance[1]	JT Test Significance[2]
15. The procedures that GRNMS has established to deal with violations of its regulations has been fair and just							0.0004	0.0006 / 0.0013
Users	9.46	21.62	20.27	2.70	5.41	40.54		
Non-users	8.25	10.00	11.25	5.30	0.00	65.20		
16. GRNMS does a good job of enforcing its regulations							<0.0001	<0.0001 / <0.0001
Users	12.33	27.40	21.92	6.85	5.48	26.03		
Non-users	7.80	16.20	13.72	0.00	0.00	62.28		
17. GRNMS does a good job of educating the public about its rules and regulations							<0.0001	<0.0001 / <0.0001
Users	13.51	25.68	17.57	10.81	24.32	8.11		
Non-users	6.29	15.72	9.32	19.95	7.49	41.22		

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here users and non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with

Table A.5.11. Tests for Differences between Users and Non-users: Attitudes on GRNMS Regulations, Processes, and Performance (Means)

Item	Users (Mean)	Non-users (Mean)	T-test Significance[1]
1. I support the GRNMS as it is currently established	2.23	2.09	0.5163
2. I support the no anchoring regulation	1.80	1.94	0.5301
3. I support the prohibition on distrubing the sea bed including all mining and oil & gas activities	1.62	2.16	0.0177
4. I support the prohibition of commercial fishing using wire fishing traps	1.18	2.34	<0.0001
5. I support the prohibition of commercial fishing using bottom trawls	1.21	2.27	<0.0001
6. I support the prohibition on the damage or removal of bottom formations	1.26	1.87	0.0001
7. I support the prohibition on the use of explosives	1.09	1.50	0.0023
8. I support the prohibition on the discharge of pollutants in GRNMS waters	1.18	1.47	0.0209
9. I support the prohibition on spear fishing	2.84	2.61	0.3380
10. The process that GRNMS used to develop its rules and regulations was open and fair to all groups	3.09	2.31	0.0019
11. It has not mattered whether the average person participated in the workshops and meetings of the GRNMS because the average person could not influence the final decision	2.60	2.62	0.9294
12. GRNMS has not addressed the concerns of other federal and state governments in developing its rules and regulations	2.83	2.92	0.6919
13. GRNMS has not addresed the concerns of individual citizens in developing rules and regulations	2.50	2.76	0.3202
14. Once that the GRNMS regulations have been in effect, there has been no way that the average person could voice his/her opinion on the usefulness of the regulations	2.39	2.62	0.3724

1. T-test (0.05) or less (<) is statistically signficant at the 95 percent level of confidence or higher.

Table A.5.11. Tests for Differences between Users and Non-users: Attitudes on GRNMS Regulations, Processes, and Performance (Means) (continued)

Item	Users (Mean)	Non-users (Mean)	T-test Significance[1]
15. The procedures that GRNMS has established to deal with violations of its regulations has been fair and just	2.54	2.39	0.5383
16. GRNMS does a good job of enforcing its regulations	2.54	2.16	0.0616
17. GRNMS does a good job of educating the public about its rules and regulations	3.07	3.11	0.8757

1. T-test (0.05) or less (<) is statistically signficant at the 95 percent level of confidence or higher.

Chapter 6: Use of Five-point Likert Scales

The surveys of users and non-users used seven different five-point Likert scales across the two versions of questionnaires used for each user group (user and non-user) for information reported in (Leeworthy, 2012) and in this technical appendix to that report. For users, two additional five-point Likert scales were used for what is called the "Specialization Theory" questions. This information will be used in future analyses of the survey responses.

The seven five-point Likert scales used in the information reported in (Leeworthy, 2012) and here are the following:

1. **Agreement** where 1=Strongly Agree, 2=Moderately Agree, 3=Neutral, 4=Moderately Disagree and 5=Strongly Disagree. A "Don't Know response was also allowed for as was coded a equal to six (6).
2. **Trust** where 1=No Trust at All, 2=Very Little Trust, 3=Neutral, 4=Trust Very Much, and 5=Completely Trust.
3. **Support** where 1=No Support at All, 2=Somewhat Against, 3=Neutral, 4=Somewhat Support, and 5=Strongly Support.
4. **Concern** where 1=No Concern at All, 2=Not Very Concerned, 3=Neutral, 4=Somewhat Concerned and 5=Extremely Concerned.
5. **Value** where 1=No Value, 2=Low Value, 3=Medium Value, 4=High Value, and 5=Extremely High Value.
6. **Would Do** where 1=Would Not Do, 2=Would do Very Little, 3=Would do some, 4=Would do a Lot, and 5=Would do the Maximum.
7. **Getting Better or Worse** where 1=Getting a lot Better, 2=Getting Somewhat Better, 3=Same, 4=Getting Somewhat Worse, and 5=Getting a lot Worse. A "Don't Know response was also included for this scale and was coded as equal to six (6).

The survey questions that each of the above scales was used can be found in the questionnaires included in Appendix A.

In the application to OMB for review/approval of the survey questionnaires, a different scale was proposed. The Ocean Project, which conducts regular surveys of the U.S. population on their concern about environmental issues related to coastal and ocean resources, uses a 0 to 100 scale. They argue that the 0 to 100 scale provides for more robust analyses of multivariate relationships (Ocean Project). OMB refused to approve application in the GRNMS surveys using the 0 to 100 scale and would only approve the use the five-point Likert scales listed above. The recommended use of five-point Likert scale can be found in Christian et al (2004), Dillman et al (2005), and Morrison et al (2010). Graphical designs on how these scales should be presented in these references as well as in Redline et al (2004). OMB approval of the GRNMS surveys were also contingent upon meeting the graphical design criteria found in these references.

For issues on sample sizes and the effect on variances of five-point Likert scales see (Sclove).

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Appendix A: Pre-notification Letters, Questionnaires and Reminder Post Cards

Users of GRNMS

1. **Pre-notification Letter**
2. **Version 1 Questionnaire**
3. **Version 2 Questionnaire**
4. **Post Card Reminder**

Non-users of GRNMS

1. **Pre-notification Letter**
2. **Version 1 Questionnaire**
3. **Version 2 Questionnaire**
4. **Post Card Reminder**

SURVEY FOR COASTAL & OCEAN GEORGIA
AND
GRAY'S REEF NATIONAL MARINE SANCTUARY

Managers of Gray's Reef National Marine Sanctuary (GRNMS) would like to know how you feel about ocean and coastal resources management off the Georgia coast and in GRNMS. More specifically, GRNMS managers would like to know about your uses of these ocean and coastal resources and your opinions about different management strategies and regulations. This survey is intended for **those who visit or use** Gray's Reef National Marine Sanctuary (GRNMS).

For statistical sampling purposes, we need **a person in the household who is 18 years of age or older to fill out the questionnaire.**

Your participation is voluntary. Any information that identifies you (name, address and telephone number) will be destroyed at the end of the information collection. Only statistical summaries of information across all survey respondents will be released publicly or made available to GRNMS managers. Results of this survey will be posted on the Office of National Marine Sanctuaries web site.

Should you have any questions, please feel free to contact me.

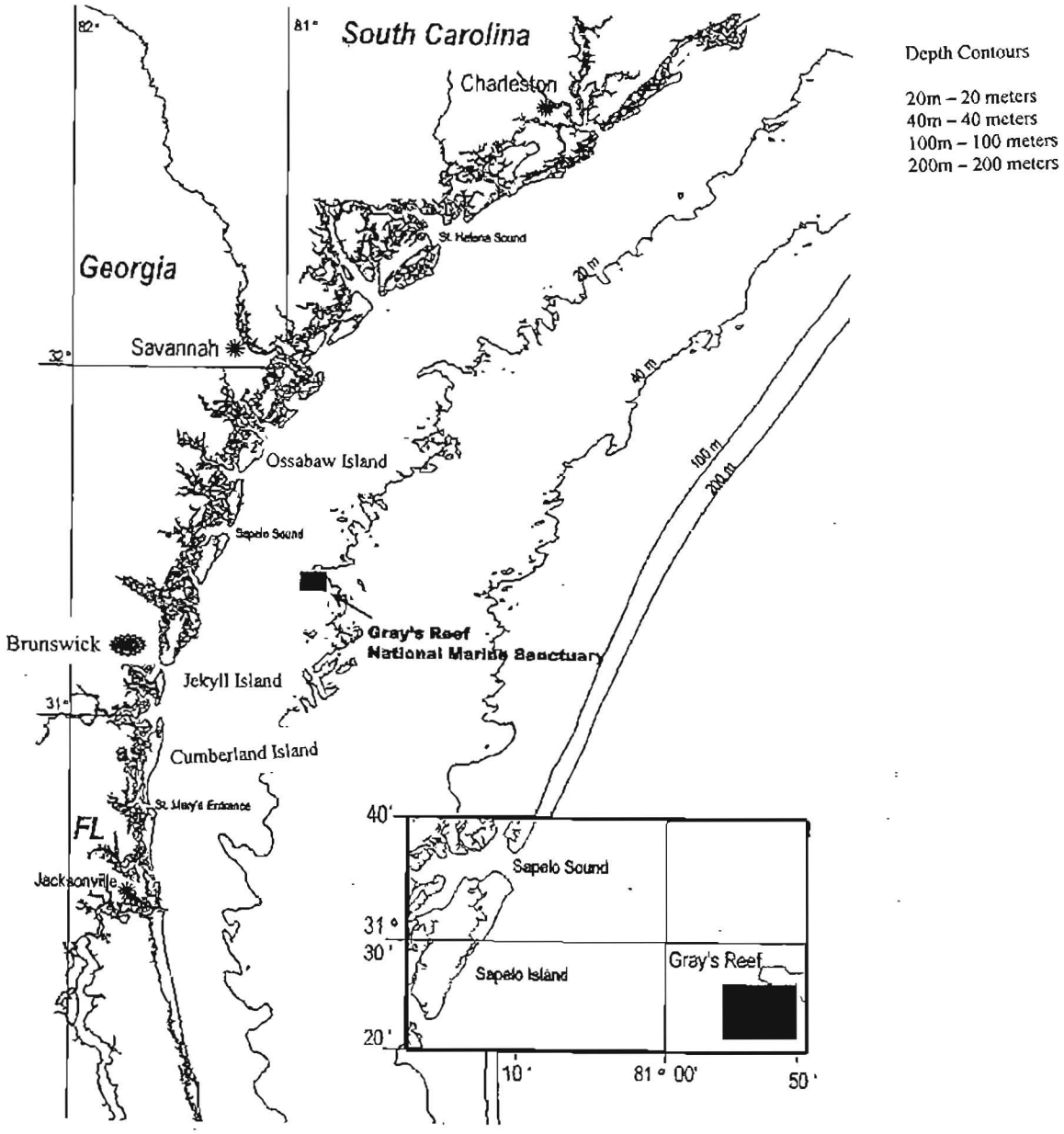
Lindsay Williamson
GRNMS Survey Technician
912-598-2382
Lindsay.Williamson@NOAA.gov

Public reporting burden for this collection of information is estimated to average about one half hour per response, including 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 aspect of this collection of information, including suggestions for reducing burden, to Dr. Vernon R. (Bob) Leeworthy, Chief Economist, National Ocean Service, Office of National Marine Sanctuaries, 1305 East West Highway, SSMC 4, 11th floor, Silver Spring, MD 20910. (Reference OMB Control Number 0648-0625, Expiration Date: 02/28/2014.)

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless the collection of information displays a currently valid OMB Control Number.

Definition. Ocean areas include the Atlantic Ocean and coastal areas include inland bays, estuaries and tidally influenced portions of rivers where fresh and saltwater mix.

Map of Coastal & Ocean Georgia and GRNMS



- **Grays Reef National Marine Sanctuary (GRNMS) is located 16 miles offshore of Sapelo Island, Georgia.**
- **GRNMS is 22-square miles and contains rocky ledges and sandy flats.**
- **GRNMS is a popular recreational fishing site with some diving.**
- **No commercial fishing currently takes place in GRNMS, but it is not prohibited.**

SECTION 1
Attitudes About GRNMS Current Management Strategies and Regulations

In this section, we want to know what you think about the current management strategies and regulations of the GRNMS and how GRNMS management has performed.

For the next set of questions/statements, please provide your answer to a 1 to 5 scale, where 1 means Strongly agree, 2 means Moderately agree, 3 means Neutral, 4 means Moderately disagree, and 5 means Strongly disagree.

Please circle the appropriate number of each question/statement. If Don't Know, circle DK.	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know
1. I support the GRNMS as it is currently established	1	2	3	4	5	DK
2. I support the no anchoring regulation	1	2	3	4	5	DK
3. I support the prohibition on disturbing the sea bed including all mining and oil & gas activities	1	2	3	4	5	DK
4. I support the prohibition of commercial fishing use of wire fishing traps	1	2	3	4	5	DK
5. I support the prohibition commercial fishing using bottom trawls	1	2	3	4	5	DK
6. I support the prohibition on the damage or removal of bottom formations	1	2	3	4	5	DK
7. I support the prohibition on the use of explosives	1	2	3	4	5	DK
8. I support the prohibition on the discharge of pollutants in GRNMS waters	1	2	3	4	5	DK
9. I support the prohibition on spear fishing	1	2	3	4	5	DK
10. The process that GRNMS used to develop its rules and regulations was open and fair to all groups	1	2	3	4	5	DK
11. It has not mattered whether the average person participated in the workshops and meeting of the GRNMS because the average person could not influence the final decisions	1	2	3	4	5	DK
12. GRNMS has not addressed the concerns of other federal and state governments in developing its rules and regulations	1	2	3	4	5	DK
13. GRNMS has not addressed the concerns of individual citizens in developing its rules and regulations	1	2	3	4	5	DK
14. Once that the GRNMS regulations have been in effect, there has been no way that the average person to voice his/her opinion on the usefulness of the regulations	1	2	3	4	5	DK

Please circle the appropriate number of each question/statement. If Don't Know, circle DK.

	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know
15. The procedures that GRNMS has established to deal with violations of its regulations has been fair and just	1	2	3	4	5	DK
16. GRNMS does a good job of enforcing its regulations	1	2	3	4	5	DK
17. GRNMS does a good job of educating the public about its rules and regulations	1	2	3	4	5	DK

SECTION 2
Sources of Information on Ocean & Coastal Resources and GRNMS

In this section, we want to learn what are the best ways GRNMS can communicate with you by understanding the sources of information which you use, and which sources of information you trust.

18. Sources of Information Used (**Please check all sources you use**).

a. ☐ Grays Reef National Marine Sanctuary Advisory Council
b. ☐ Grays Reef National Marine Sanctuary Staff
c. ☐ Grays Reef National Marine Sanctuary Web site
d. ☐ NOAA's National Marine Fisheries Service
e. ☐ Atlantic States Marine Fisheries Commission
f. ☐ Atlantic Fishery Management Council
g. ☐ Georgia Department of Natural Resources
h. ☐ Georgia Sea Grant
i. ☐ Georgia's Coastal Conservation Association (CCA)
j. ☐ Recreational Fishing Alliance (RFA)
k. ☐ American Sportfishing Association (ASA)
l. ☐ National Coalition for Marine Conservation
m. ☐ International Game and Fish Association (IGFA)
n. ☐ Southern Kingfish Association (SKA)
o. ☐ Fishing Magazines/Newsletters
p. ☐ SCUBA diving magazines/Newsletters
q. ☐ Newspapers
r. ☐ Radio
s. ☐ Television
t. ☐ Internet
u. ☐ Social Media (Twitter, You Tube, Facebook, etc.)
v. ☐ Word of Mouth
x. ☐ Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)

_____

_____

19. For the sources of information you said you used in question 18, on a scale of 1 to 5, where 1 means No Trust at All and 5 means Completely Trust, to what extent do you trust each source of information?

Please circle your answer.
If the source was not used, circle NA (Not Applicable).

SOURCES	No Trust at All	Very Little Trust	Neutral	Trust Very Much	Completely Trust	NA
a. Grays Reef National Marine Sanctuary Advisory Council	1	2	3	4	5	NA
b. Grays Reef National Marine Sanctuary Staff	1	2	3	4	5	NA
c. Grays Reef National Marine Sanctuary Web site	1	2	3	4	5	NA
d. NOAA's National Marine Fisheries Service	1	2	3	4	5	NA
e. Atlantic States Marine Fisheries Commission	1	2	3	4	5	NA
f. Atlantic Fishery Management Council	1	2	3	4	5	NA
g. Georgia Department of Natural Resources	1	2	3	4	5	NA
h. Georgia Sea Grant	1	2	3	4	5	NA
i. Georgia's Coastal Conservation Association (CCA)	1	2	3	4	5	NA
j. Recreational Fishing Alliance (RFA)	1	2	3	4	5	NA
k. American Sportfishing Association (ASA)	1	2	3	4	5	NA
l. National Coalition for Marine Conservation	1	2	3	4	5	NA
m. International Game and Fish Association (IGFA)	1	2	3	4	5	NA
n. Southern Kingfish Association (SKA)	1	2	3	4	5	NA
o. Fishing Magazines/Newsletters	1	2	3	4	5	NA
p. SCUBA diving magazines/Newsletters	1	2	3	4	5	NA
q. Newspapers	1	2	3	4	5	NA
r. Radio	1	2	3	4	5	NA
s. Television	1	2	3	4	5	NA
t. Internet	1	2	3	4	5	NA
u. Social Media (Twitter, You Tube, Facebook, etc)	1	2	3	4	5	NA
v. Word of Mouth	1	2	3	4	5	NA
x. Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)						
_____	1	2	3	4	5	NA
_____	1	2	3	4	5	NA

Information From GRNMS

20. How do you like to receive information? (**Please check all that apply**).
    a. ☐ Web site
    b. ☐ E-mail list serve
    c. ☐ Newsletter by delivered by U.S. Post Office
    d. ☐ Telephone call from Staff
    e. ☐ E-mail from staff

21. Do you know who sets policy/management for National Marine Sanctuaries and for fisheries in ocean and coastal areas?

    Name of Agency

    a. For National Marine Sanctuaries _____
    b. For Ocean areas of Georgia _____
    c. For Coastal areas in and around Georgia _____

22. How would you rank your familiarity with the rules and regulations in place at GRNMS? (**Please check one**)
    ☐ Very familiar
    ☐ Somewhat Familiar
    ☐ I am not familiar with any of the rules or regulations

SECTION 3
Status and Conditions of the Resources in GRNMS

In this section, we would like your opinion on the status of the condition of the resources in GRNMS.

23. On a scale of 1 to 5, where 1 means Getting a lot Better and 5 means Getting a lot Worse, please rate how you think the status/condition of each of the following resources has been changing since implementation of the GRNMS (1981). .

Please circle the number corresponding to the status of the condition. If you don't know the status or don't have an opinion, circle DK.

RESOURCE	Getting a Lot Better	Getting Some-what Better	Same	Getting Some-what Worse	Getting a Lot worse	Don't Know
a. Live bottom habitat	1	2	3	4	5	DK
b. Other bottom habitat	1	2	3	4	5	DK
c. Fish populations (bottom fish)	1	2	3	4	5	DK
d. Fish populations (pelagic)	1	2	3	4	5	DK
e. Fish populations (diversity or number of species)	1	2	3	4	5	DK
f. Other Sea life (abundance	1	2	3	4	5	DK
g. Other Sea life (diversity or number of species)	1	2	3	4	5	DK
h. Water quality	1	2	3	4	5	DK
i. Invasive species (such as lionfish)	1	2	3	4	5	DK
j. Marine debris (plastics, other trash)	1	2	3	4	5	DK
k. Sea based pollution (discharges from boats)	1	2	3	4	5	DK

SECTION 4
Activities in Ocean & Coastal Areas in and Around Georgia and in the GRNMS

In this section, we want to learn about your recreation activities in the ocean & coastal areas both in the areas in and around Georgia and the portion of those activities in GRNMS.

24. Which activities do you do in ocean & coastal areas both in and around Georgia and inside GRNMS? **Please check all that apply**.

ACTIVITY	Georgia	GRNMS
Recreational bottom fishing	☐	☐
Recreational fishing – trolling or drifting in mid or top water	☐	☐
Recreational spear fishing with power heads	☐	☐
Recreational spear fishing without power heads	☐	☐
SCUBA diving (taking things)	☐	☐
SCUBA diving (don't take anything)	☐	☐
Whale watching of other wildlife viewing activities	☐	☐
Sailing	☐	☐

Some Activities that do not take place in GRNMS	**Georgia**
Beach Activities	☐
Surfing	☐
Windsurfing or Kite boarding	☐
Personal Watercraft Use (jet skis, wave runners, etc.)	☐
Shorebird Watching	☐

25. For those activities you did in 2010, please provide how many days you did the activity in Georgia and how many of those days were in GRNMS. **(If all your days were in GRNMS, then code all your days in Georgia and GRNMS). Count any part of a day as a whole day.**

ACTIVITY	Days In Georgia	Days in GRNMS
Recreational bottom fishing	_____	_____
Recreational fishing – trolling or drifting in mid or top water	_____	_____
Recreational spear fishing with power heads	_____	_____
Recreational spear fishing without power heads	_____	_____
SCUBA diving (taking things)	_____	_____
SCUBA diving (don't take anything)	_____	_____
Whale watching of other wildlife viewing activities	_____	_____

26. For the days you did activities in GRNMS in **2010**, please provide the **number of day**s by each type of boat access.

- **Private boats would be your boat or a boat owned by family or friend but not for hire.**
- **Charter and party boats are boats that take people out for a fee.**
- **Charter boats usually limit their number of passengers, but charge for the boat for a day.**
- **Party boats usually carry large numbers of people and charge by the head or person and are some times called head-boats.**

ACTIVITY	Days Private Boat	Days Charter Boat	Days Party Boat
Recreational bottom fishing	_____	_____	_____
Recreational fishing – trolling or drifting in mid or top water	_____	_____	_____
Recreational spear fishing with power heads	_____	_____	_____
Recreational spear fishing without power heads	_____	_____	_____
SCUBA diving (taking things)	_____	_____	_____
SCUBA diving (don't take anything)	_____	_____	_____
Whale watching of other wildlife viewing activities	_____	_____	_____

27. When doing your activities from a **private boat**, how many other people are usually with you on the boat? _____ (number of other people)

28. Do you participate in fishing tournaments in GRNMS?

- ☐ Yes
- ☐ No
- ☐ Don't fish

29. What factors influenced your choice of going to GRNMS to do your activities?
For each factor circle the appropriate answer.

a. Weather	YES	SOMEWHAT	NOT AT ALL
b. Fish species preference	YES	SOMEWHAT	NOT AT ALL
c. Time of Day	YES	SOMEWHAT	NOT AT ALL
d. Seasonal patterns	YES	SOMEWHAT	NOT AT ALL
e. Word of mouth/radio talk	YES	SOMEWHAT	NOT AT ALL
f. Boat Captain's choice	YES	SOMEWHAT	NOT AT ALL
g. Sea conditions	YES	SOMEWHAT	NOT AT ALL
h. Distance to GRNMS	YES	SOMEWHAT	NOT AT ALL
i. Better fishing	YES	SOMEWHAT	NOT AT ALL
j. Better diving for things to see	YES	SOMEWHAT	NOT AT ALL

SECTION 5
Activity Specialization

In this section, we are interested in learning about your main or primary recreation activity that you participate in ocean & coastal areas off the Georgia coast including activities in GRNMS.

30. Of the list of activities in questions 24 and 25, which one of these is your main or primary activity in the ocean & coastal areas of Georgia, including GRNMS? _____

For the next four questions, please place a check mark next to the answer that best fits you for each question.

31. When I participate in my main or primary activity, I feel like: (**Check one**)
    - ☐ a beginner. I don't really feel like I am part of the activity scene.
    - ☐ an occasional or irregular participant. Sometimes it is fun, entertaining or rewarding to do my activity.
    - ☐ a habitual and regular participant in the activity
    - ☐ an insider to the sport. The activity is an important part of who I am.

32. During my activity, I can be best described as: (**Check one**)
    - ☐ having very little understanding of the activity. I am often unsure about how to do certain things when I go.
    - ☐ having some understanding of the activity, but still in the process of learning more about the sport. I am becoming more familiar and comfortable with the activity.
    - ☐ being comfortable with the sport. I have a good understanding of what I can do, and how to do it.
    - ☐ a knowledgeable expert in the sport. I encourage, teach and enhance opportunities for others who are interested in the activity.

33. My relationships with others who do the activity are: (**Check one**)
    - ☐ not established. I really don't know any other people who do the activity.
    - ☐ very limited. I know some others in the activity by sight and sometimes talk with them, but I don't know their names.
    - ☐ one of familiarity. I know the names of others who do the activity, and often speak with them.
    - ☐ close. I have personal and close relationships with others in the activity. These friendships often revolve around the activity.

34. My commitment to the activity is: (**Check one**)
    - ☐ very slight. I have very little connection to the activity. I may or may not continue to participate in the sport in the future.
    - ☐ moderate. I will continue to do it as it is entertaining and provides the benefits I want.
    - ☐ fairly strong. I have a sense of being a member of the activity, and it is likely that I will continue to do it for a long time.
    - ☐ very strong. I am totally committed to the activity. I encourage other to participate in the sport and seek to ensure the activity continues in the future.

35. If you had to replace all of the equipment that you currently own for your primary activity with similar equipment, how much would it cost to replace?

    $ _____ AMOUNT TO REPLACE PRIMARY ACTIVITY EQUIPMENT

36. On a scale of 1 to 5, where 1 means No Use and 5 means A Lot of Use, to what extent do you make use of the following for current information about your primary activity?

Please circle the number for your answer.

		No Use	Almost No Use	A Little Use	Moderate Use	A Lot of Use
a.	Information Source Used	1	2	3	4	5
b.	Talking with others who participate in the activity	1	2	3	4	5
c.	Magazines	1	2	3	4	5
d.	Government agency publications	1	2	3	4	5
e.	Conservation organization publications	1	2	3	4	5
f.	Newspapers	1	2	3	4	5
g.	Diving shops/companies	1	2	3	4	5
h.	Club meetings/newsletters	1	2	3	4	5
i.	Television	1	2	3	4	5
j.	Radio	1	2	3	4	5
k.	Internet	1	2	3	4	5

37. Below is a list of reasons why people engage in recreation activities. On a scale of 1 to 5, where 1 means Not at All Important and 5 means Extremely Important, how important is each of the reasons for your primary activity?

Please circle the number for your answer.

		Not at All Important	Slightly Important	Moderately Important	Very Important	Extemely Important
a.	Reason for engaging in primary activity	1	2	3	4	5
b.	To be outdoors	1	2	3	4	5
c.	For family recreation	1	2	3	4	5
d.	To experience new and different things	1	2	3	4	5
e.	For relaxation	1	2	3	4	5
f.	To be close to the water	1	2	3	4	5
g.	To get away from the demands of other people	1	2	3	4	5
h.	To be with friends	1	2	3	4	5
i.	To develop my skills	1	2	3	4	5
j.	To get away from the regular routine	1	2	3	4	5
k.	To experience adventure and excitement	1	2	3	4	5
l.	To experience natural surroundings	1	2	3	4	5

SECTION 6
Information About Yourself

In this last section, we need information about you to help classify and analyze your responses to ensure the scientific validity of this information. Any information that can connect this information with you personally will be protected and not given out to anyone.

38. ☐ Male ☐ Female

39. Year born _____

40. Are you Hispanic or Latino? ☐ Yes ☐ No

41. What is your race? (**Check one or more**)
    - ☐ White
    - ☐ Black or African American
    - ☐ American Indian or Alaskan Native
    - ☐ Asian
    - ☐ Native Hawaiian or Other Pacific Islander

42. How many people age 18 or older live in your household? _____ (number of people)

43. How many people under age 18 live in your household? _____ (number in household)

44. What type below best describes your household? (**Check one**)
    - ☐ Single adult with no children 18 or under
    - ☐ Single adult with children under 18
    - ☐ Two adults with no children 18 or under
    - ☐ Two adults with children under 18
    - ☐ More than two adults with no children under 18
    - ☐ More than two adults with children 18 or under

45. What is the highest level of education completed? (**Check one**)
    - ☐ 8th grade or less
    - ☐ 9th – 12th grade, no diploma
    - ☐ 12th grade High School Grad or equivalent (GED or alternative credential)
    - ☐ Some College, 1 or more years, no degree
    - ☐ Associate's degree (for example: AA, AS)
    - ☐ Bachelor's degree (for example: BA, BS)
    - ☐ Master's degree (for example: MA, MS, MEng, Med, MSW, MBA)
    - ☐ Professional School degree (for example: MD, DDS, DVM, LLB, JD)
    - ☐ Doctor's degree (for example: PhD, EdD)

46. What is your employment status? (**Check all that apply**)

- ☐ unemployed
- ☐ employed full time
- ☐ employed part time
- ☐ retired
- ☐ student
- ☐ homemaker
- ☐ none of the above

47. Which category below best describes you annual household income before taxes in 2010? (**Check one**)

- ☐ Less than $5,000
- ☐ $5,000 to $9,999
- ☐ $10,000 to $14,999
- ☐ $15,000 to $19,999
- ☐ $20,000 to $24,999
- ☐ $25,000 to $29,999
- ☐ $30,000 to $34,999
- ☐ $35,000 to $39,999
- ☐ $40,000 to $44,999
- ☐ $45,000 to $49,999
- ☐ $50,000 to $59,999
- ☐ $60,000 to $74,999
- ☐ $75,000 to $99,999
- ☐ $100,000 to $149,999
- ☐ $150,000 or more

48. Do you own a boat?

- ☐ Yes (**Go to Question 49**)
- ☐ No (**Skip to Question 50**)

49. What is the length of your boat _____ (feet)

50. Do you have memberships in any groups or clubs? (**Check all that apply**)

- ☐ Fishing groups, clubs or organizations
- ☐ Diving groups, clubs or organizations
- ☐ Environmental groups, clubs or organizations
- ☐ Chambers of Commerce
- ☐ Other (specify type) _____
  _____
  _____

That completes the survey. **THANK YOU**. Please put in the return self-addressed envelope and return to us.

SURVEY FOR COASTAL & OCEAN GEORGIA
AND
GRAY'S REEF NATIONAL MARINE SANCTUARY

Managers of Gray's Reef National Marine Sanctuary (GRNMS) would like to know how you feel about ocean and coastal resources management off the Georgia coast and in GRNMS. More specifically, GRNMS managers would like to know about your uses of these ocean and coastal resources and your opinions about different management strategies and regulations. This survey is intended for **those who visit or use** Gray's Reef National Marine Sanctuary (GRNMS).

For statistical sampling purposes, we need **a person in the household who is 18 years of age or older to fill out the questionnaire.**

Your participation is voluntary. Any information that identifies you (name, address and telephone number) will be destroyed at the end of the information collection. Only statistical summaries of information across all survey respondents will be released publicly or made available to GRNMS managers. Results of this survey will be posted on the Office of National Marine Sanctuaries web site.

Should you have any questions, please feel free to contact me.

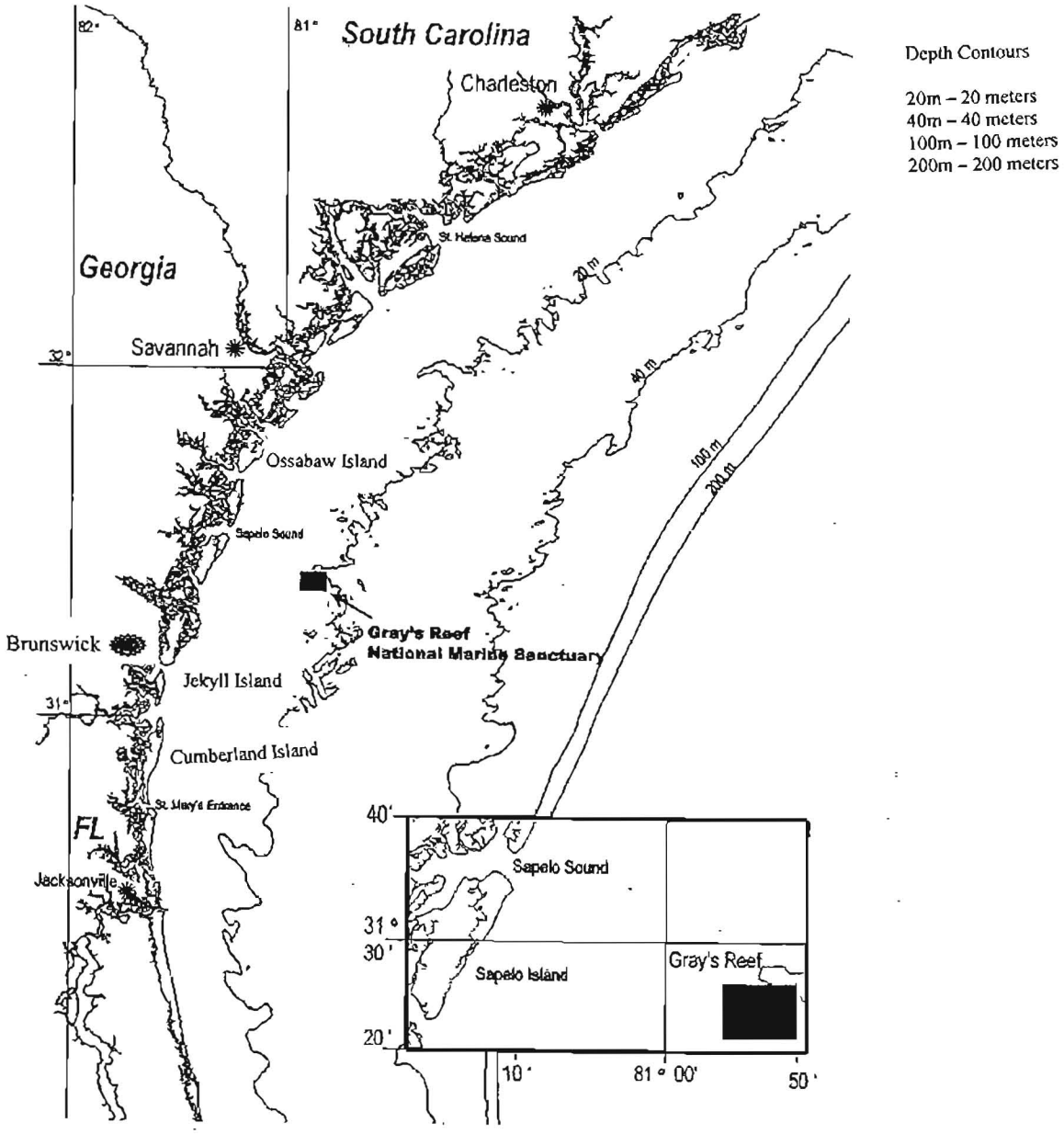
Lindsay Williamson
GRNMS Survey Technician
912-598-2382
Lindsay.Williamson@NOAA.gov

Public reporting burden for this collection of information is estimated to average about one half hour per response, including 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 aspect of this collection of information, including suggestions for reducing burden, to Dr. Vernon R. (Bob) Leeworthy, Chief Economist, National Ocean Service, Office of National Marine Sanctuaries, 1305 East West Highway, SSMC 4, 11th floor, Silver Spring, MD 20910. (Reference OMB Control Number 0648-0625, Expiration Date: 02/28/2014.)

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless the collection of information displays a currently valid OMB Control Number.

Definition. Ocean areas include the Atlantic Ocean and coastal areas include inland bays, estuaries and tidally influenced portions of rivers where fresh and saltwater mix.

Map of Coastal & Ocean Georgia and GRNMS



- **Grays Reef National Marine Sanctuary (GRNMS) is located 16 miles offshore of Sapelo Island, Georgia.**
- **GRNMS is 22-square miles and contains rocky ledges and sandy flats.**
- **GRNMS is a popular recreational fishing site with some diving.**
- **No commercial fishing currently takes place in GRNMS, but it is not prohibited.**

SECTION 1
Opinions About Ocean & Coastal Resources Protection and Management

1. On a scale of 1 to 5, where 1 means No Concern at All and 5 means Extremely Concerned, to what extent are you concerned about the health of ocean & coastal areas around Georgia outside the Grays Reef National Marine Sanctuary (GRNMS)?

Please circle the number for each item.

		No Concern at All	Not Very Concerned	Neutral	Somewhat Concerned	Extremely Concerned
a.	Ocean acidification	1	2	3	4	5
b.	Climate change	1	2	3	4	5
c.	Sea level rise	1	2	3	4	5
d.	Over fishing (catching more than can be replaced)	1	2	3	4	5
e.	Coral reef health or other live bottom habitat	1	2	3	4	5
f.	Marine animal's health	1	2	3	4	5
g.	Shipping (marine transportation)	1	2	3	4	5
h.	Dredging/Offshore dredge disposal	1	2	3	4	5
i.	Beach renourishment	1	2	3	4	5
j.	Energy production (oil & gas)	1	2	3	4	5
k.	Alternative Energy production (wind, tidal, wave)	1	2	3	4	5
l.	Mining of minerals (including sand)	1	2	3	4	5
m.	Habitat loss from coastal development	1	2	3	4	5
n.	Pollution (contaminants such as mercury, PCBs, sewage, pesticides)	1	2	3	4	5

2. On a scale of 1 to 5, where 1 means No Concern at all and 5 means Extremely Concerned, to what extent are you concerned about the health of ocean areas in the Grays Reef National Marine Sanctuary (GRNMS)?

Please circle the number for each item.

		No Concern at All	Not Very Concerned	Neutral	Somewhat Concerned	Extremely Concerned
a.	Ocean acidification	1	2	3	4	5
b.	Climate change	1	2	3	4	5
c.	Sea level rise	1	2	3	4	5
d.	Over fishing (catching more than can be replaced)	1	2	3	4	5
e.	Coral reef health or other live bottom habitat	1	2	3	4	5
f.	Marine animal's health	1	2	3	4	5
g.	Shipping (marine transportation)	1	2	3	4	5

Please circle the number for each item.

	No Concern at All	Not Very Concerned	Neutral	Somewhat Concerned	Extremely Concerned
h. Dredging/Offshore dredge disposal	1	2	3	4	5
i. Beach renourishment	1	2	3	4	5
j. Energy production (oil & gas)	1	2	3	4	5
k. Alternative Energy production (wind, tidal, wave)	1	2	3	4	5
l. Mining of minerals (including sand)	1	2	3	4	5
m. Habitat loss from coastal development	1	2	3	4	5
n. Pollution (contaminants such as mercury, PCBs, sewage, pesticides)	1	2	3	4	5

3. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support the protection of ocean & coastal resources in and around Georgia outside GRNMS?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Protection in Georgia outside GRNMS	1	2	3	4	5

4. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support the protection of ocean resources inside GRNMS?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Protection inside GRNMS	1	2	3	4	5

- **Sometimes an area's use grows to the extent that it cannot accommodate all uses without conflict among users.**
- **Marine zoning is often used to resolve conflicts by separating uses in different zones, very similar to what is done on land.**

5. Do you support the use of marine zoning in ocean & coastal areas off the coast of Georgia? (**Check one**)

☐ Yes (**go to question 6**) ☐ No (**skip to question 12 on page 5**)

Some Facts for Questions 6 through 8

- **Marine reserves are a specific kind of marine zoning in which nothing is allowed to be taken (removed).**
- **All activities that take or remove natural resources are prohibited, so fishing would be prohibited inside these types of zones.**
- **All other activities that do not involve taking things are allowed.**
- **This management strategy is often used to resolve conflicts between those taking things and those who don't take things (fishing versus diving).**
- **Size of the areas is important since generally the larger the area the more users that will be affected.**
- **This prohibition on taking activities may lead to social and economic impacts.**

6. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of resources in ocean and coastal waters in and around Georgia outside GRNMS with the use of marine reserves?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Marine Reserves in Georgia outside GRNMS	1	2	3	4	5

7. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of resources in ocean and coastal waters inside GRNMS with the use of marine reserves?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Marine Reserves inside GRNMS	1	2	3	4	5

8. What is the maximum amount of impact on the percent of each activity that you would find acceptable for each type of Activity, if marine reserves were used?

ACTIVITY	Percent (0 to 100)
a. Recreational bottom fishing	_____
b. Recreational fishing – trolling or drifting in mid or top water	_____
c. Recreational spear fishing with power heads	_____
d. Recreational spear fishing without power heads	_____
e. Commercial bottom fishing	_____
f. Commercial fishing – trolling or drifting in mid or top water	_____
g. Commercial spear fishing with power heads	_____
h. Commercial spear fishing without power heads	_____
i. SCUBA diving (taking things)	_____

Some Facts for Questions 9 through 11

- **Research Only Areas are a specific type of marine zoning where the only activity allowed is scientific research or education.**
- **The scientific research is used to test the impacts of various uses on natural and cultural resources.**
- **Size of the areas is important since generally the larger the area the more users that will be impacted.**
- **This may lead to social and economic impacts**

9. On a scale of 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of ocean & coastal resources in and around Georgia outside GRNMS with the use of "Research Only Areas"?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Research Only Areas in Georgia outside GRNMS	1	2	3	4	5

10. On a scale of 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of ocean & coastal resources inside GRNMS with the use of "Research Only Areas"?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Research Only Areas inside GRNMS	1	2	3	4	5

11. What is the maximum amount of impact you would find acceptable for each type of Activity, if Research Only Areas were used? Please provide the maximum percent of impact on each activity.

ACTIVITY	Percent (0 to 100)
a. Recreational bottom fishing	_____
b. Recreational fishing – trolling or drifting in mid or top water	_____
c. Recreational spear fishing with power heads	_____
d. Recreational spear fishing without power heads	_____
e. Commercial bottom fishing	_____
f. Commercial fishing – trolling or drifting in mid or top water	_____
g. Commercial spear fishing with power heads	_____
h. Commercial spear fishing without power heads	_____
i. SCUBA diving (taking things)	_____
j. SCUBA diving (don't take anything)	_____
k. Whale watching of other wildlife viewing activities	_____

Some Facts for Question 12

- **Historically fishery managers or managers of marine mammals have managed on a species by species basis.**
- **Recent trends are to expand this species specific approach to what is being called multiple species management.**
- **In fisheries management, the approach involves looking at the various inter-relationships between species such as predator-prey relationship (big fish eat little fish).**

12. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support moving from species specific fishery management to an multiple species approach that looks at all species and their inter-relationships?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Change to multiple species management	1	2	3	4	5

Some Facts for Question 13

- **Another more comprehensive approach goes beyond fishery management.**
- **In a full ecosystem-based approach, all human uses and values are recognized.**
- **Management attempts to achieve a balance across many different uses and values.**

13. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support moving from species specific or multiple species management to full ecosystem-based management?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Change to full ecosystem-based management	1	2	3	4	5

SECTION 2
Sources of Information on Ocean & Coastal Resources and GRNMS

In this section, we want to learn what are the best ways GRNMS can communicate with you by understanding the sources of information which you use, and which sources of information you trust.

14. Sources of Information Used (**Please check all sources you use**).

a. ☐ Grays Reef National Marine Sanctuary Advisory Council
b. ☐ Grays Reef National Marine Sanctuary Staff
c. ☐ Grays Reef National Marine Sanctuary Web site
d. ☐ NOAA's National Marine Fisheries Service
e. ☐ Atlantic States Marine Fisheries Commission
f. ☐ Atlantic Fishery Management Council
g. ☐ Georgia Department of Natural Resources
h. ☐ Georgia Sea Grant
i. ☐ Georgia's Coastal Conservation Association (CCA)
j. ☐ Recreational Fishing Alliance (RFA)
k. ☐ American Sportfishing Association (ASA)
l. ☐ National Coalition for Marine Conservation
m. ☐ International Game and Fish Association (IGFA)
n. ☐ Southern Kingfish Association (SKA)
o. ☐ Fishing Magazines/Newsletters
p. ☐ SCUBA diving magazines/Newsletters
q. ☐ Newspapers
r. ☐ Radio
s. ☐ Television
t. ☐ Internet
u. ☐ Social Media (Twitter, You Tube, Facebook, etc.)
v. ☐ Word of Mouth
x. ☐ Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)

_____

_____

15. For the sources of information you said you used in question 14, on a scale of 1 to 5, where 1 means No Trust at All and 5 means Completely Trust, to what extent do you trust each source of information?

Please circle your answer.
If the source was not used, circle NA (Not Applicable).

SOURCES	No Trust at All	Very Little Trust	Neutral	Trust Very Much	Completely Trust	NA
a. Grays Reef National Marine Sanctuary Advisory Council	1	2	3	4	5	NA
b. Grays Reef National Marine Sanctuary Staff	1	2	3	4	5	NA
c. Grays Reef National Marine Sanctuary Web site	1	2	3	4	5	NA
d. NOAA's National Marine Fisheries Service	1	2	3	4	5	NA
e. Atlantic States Marine Fisheries Commission	1	2	3	4	5	NA
f. Atlantic Fishery Management Council	1	2	3	4	5	NA
g. Georgia Department of Natural Resources	1	2	3	4	5	NA
h. Georgia Sea Grant	1	2	3	4	5	NA
i. Georgia's Coastal Conservation Association (CCA)	1	2	3	4	5	NA
j. Recreational Fishing Alliance (RFA)	1	2	3	4	5	NA
k. American Sportfishing Association (ASA)	1	2	3	4	5	NA
l. National Coalition for Marine Conservation	1	2	3	4	5	NA
m. International Game and Fish Association (IGFA)	1	2	3	4	5	NA
n. Southern Kingfish Association (SKA)	1	2	3	4	5	NA
o. Fishing Magazines/Newsletters	1	2	3	4	5	NA
p. SCUBA diving magazines/Newsletters	1	2	3	4	5	NA
q. Newspapers	1	2	3	4	5	NA
r. Radio	1	2	3	4	5	NA
s. Television	1	2	3	4	5	NA
t. Internet	1	2	3	4	5	NA
u. Social Media (Twitter, You Tube, Facebook, etc)	1	2	3	4	5	NA
v. Word of Mouth	1	2	3	4	5	NA
x. Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)						
_____	1	2	3	4	5	NA
_____	1	2	3	4	5	NA

Information From GRNMS

16. How do you like to receive information? (**Please check all that apply**).
    a. ☐ Web site
    b. ☐ E-mail list serve
    c. ☐ Newsletter by delivered by U.S. Post Office
    d. ☐ Telephone call from Staff
    e. ☐ E-mail from staff

17. Do you know who sets policy/management for National Marine Sanctuaries and for fisheries in ocean and coastal areas?

    Name of Agency

    a. For National Marine Sanctuaries _____
    b. For Ocean areas of Georgia _____
    c. For Coastal areas in and around Georgia _____

18. How would you rank your familiarity with the rules and regulations in place at GRNMS? (**Please check one**)
    ☐ Very familiar
    ☐ Somewhat Familiar
    ☐ I am not familiar with any of the rules or regulations

SECTION 3
Status and Conditions of the Resources in GRNMS

In this section, we would like your opinion on the status of the condition of the resources in GRNMS.

19. On a scale of 1 to 5, where 1 means Getting a lot Better and 5 means Getting a lot Worse, please rate how you think the status/condition of each of the following resources has been changing since implementation of the GRNMS (1981).

Please circle the number corresponding to the status of the condition. If you don't know the status or don't have an opinion, circle DK.

RESOURCE	Getting a Lot Better	Getting Some-what Better	Same	Getting Some-what Worse	Getting a Lot worse	Don't Know
a. Live bottom habitat	1	2	3	4	5	DK
b. Other bottom habitat	1	2	3	4	5	DK
c. Fish populations (bottom fish)	1	2	3	4	5	DK
d. Fish populations (pelagic)	1	2	3	4	5	DK
e. Fish populations (diversity or number of species)	1	2	3	4	5	DK
f. Other Sea life (abundance)	1	2	3	4	5	DK
g. Other Sea life (diversity or number of species)	1	2	3	4	5	DK
h. Water quality	1	2	3	4	5	DK
i. Invasive species (such as lionfish)	1	2	3	4	5	DK
j. Marine debris (plastics, other trash)	1	2	3	4	5	DK
k. Sea based pollution (discharges from boats)	1	2	3	4	5	DK

SECTION 4
Activities in Ocean & Coastal Areas in and Around Georgia and in the GRNMS

In this section, we want to learn about your recreation activities in the ocean & coastal areas both in the areas in and around Georgia and the portion of those activities in GRNMS.

20. Which activities do you do in ocean & coastal areas both in and around Georgia and inside GRNMS? **Please check all that apply**.

ACTIVITY	Georgia	GRNMS
Recreational bottom fishing	☐	☐
Recreational fishing – trolling or drifting in mid or top water	☐	☐
Recreational spear fishing with power heads	☐	☐
Recreational spear fishing without power heads	☐	☐
SCUBA diving (taking things)	☐	☐
SCUBA diving (don't take anything)	☐	☐
Whale watching of other wildlife viewing activities	☐	☐
Sailing	☐	☐

Some Activities that do not take place in GRNMS	**Georgia**
Beach Activities	☐
Surfing	☐
Windsurfing or Kite boarding	☐
Personal Watercraft Use (jet skis, wave runners, etc.)	☐
Shorebird Watching	☐

21. For those activities you did in 2010, please provide how many days you did the activity in Georgia and how many of those days were in GRNMS. **(If all your days were in GRNMS, then code all your days in Georgia and GRNMS). Count any part of a day as a whole day.**

ACTIVITY	Days In Georgia	Days in GRNMS
Recreational bottom fishing	_____	_____
Recreational fishing – trolling or drifting in mid or top water	_____	_____
Recreational spear fishing with power heads	_____	_____
Recreational spear fishing without power heads	_____	_____
SCUBA diving (taking things)	_____	_____
SCUBA diving (don't take anything)	_____	_____
Whale watching of other wildlife viewing activities	_____	_____

22. For the days you did activities in GRNMS in **2010**, please provide the **number of day**s by each type of boat access.

- **Private boats would be your boat or a boat owned by family or friend but not for hire.**
- **Charter and party boats are boats that take people out for a fee.**
- **Charter boats usually limit their number of passengers, but charge for the boat for a day.**
- **Party boats usually carry large numbers of people and charge by the head or person and are some times called head-boats.**

ACTIVITY	Days Private Boat	Days Charter Boat	Days Party Boat
Recreational bottom fishing	_____	_____	_____
Recreational fishing – trolling or drifting in mid or top water	_____	_____	_____
Recreational spear fishing with power heads	_____	_____	_____
Recreational spear fishing without power heads	_____	_____	_____
SCUBA diving (taking things)	_____	_____	_____
SCUBA diving (don't take anything)	_____	_____	_____
Whale watching of other wildlife viewing activities	_____	_____	_____

23. When doing your activities from a **private boat**, how many other people are usually with you on the boat? _____ (number of other people)

24. Do you participate in fishing tournaments in GRNMS?

- ☐ Yes
- ☐ No
- ☐ Don't fish

25. What factors influenced your choice of going to GRNMS to do your activities? **For each factor circle the appropriate answer.**

a. Weather	YES	SOMEWHAT	NOT AT ALL
b. Fish species preference	YES	SOMEWHAT	NOT AT ALL
c. Time of Day	YES	SOMEWHAT	NOT AT ALL
d. Seasonal patterns	YES	SOMEWHAT	NOT AT ALL
e. Word of mouth/radio talk	YES	SOMEWHAT	NOT AT ALL
f. Boat Captain's choice	YES	SOMEWHAT	NOT AT ALL
g. Sea conditions	YES	SOMEWHAT	NOT AT ALL
h. Distance to GRNMS	YES	SOMEWHAT	NOT AT ALL
i. Better fishing	YES	SOMEWHAT	NOT AT ALL
j. Better diving for things to see	YES	SOMEWHAT	NOT AT ALL

SECTION 5
Activity Specialization

In this section, we are interested in learning about your main or primary recreation activity that you participate in ocean & coastal areas off the Georgia coast including activities in GRNMS.

26. Of the list of activities in questions 20 and 21, which one of these is your main or primary activity in the ocean & coastal areas of Georgia, including GRNMS? _____

For the next four questions, please place a check mark next to the answer that best fits you for each question.

27. When I participate in my main or primary activity, I feel like: (**Check one**)
    - ☐ a beginner. I don't really feel like I am part of the activity scene.
    - ☐ an occasional or irregular participant. Sometimes it is fun, entertaining or rewarding to do my activity.
    - ☐ a habitual and regular participant in the activity
    - ☐ an insider to the sport. The activity is an important part of who I am.

28. During my activity, I can be best described as: (**Check one**)
    - ☐ having very little understanding of the activity. I am often unsure about how to do certain things when I go.
    - ☐ having some understanding of the activity, but still in the process of learning more about the sport.
    - ☐ I am becoming more familiar and comfortable with the activity.
    - ☐ being comfortable with the sport. I have a good understanding of what I can do, and how to do it. a knowledgeable expert in the sport. I encourage, teach and enhance opportunities for others who are interested in the activity.

29. My relationships with others who do the activity are: (**Check one**)
    - ☐ not established. I really don't know any other people who do the activity.
    - ☐ very limited. I know some others in the activity by sight and sometimes talk with them, but I don't know their names.
    - ☐ one of familiarity. I know the names of others who do the activity, and often speak with them.
    - ☐ close. I have personal and close relationships with others in the activity. These friendships often revolve around the activity.

30. My commitment to the activity is: (**Check one**)
    - ☐ very slight. I have very little connection to the activity. I may or may not continue to participate in the sport in the future.
    - ☐ moderate. I will continue to do it as it is entertaining and provides the benefits I want.
    - ☐ fairly strong. I have a sense of being a member of the activity, and it is likely that I will continue to do it for a long time.
    - ☐ very strong. I am totally committed to the activity. I encourage other to participate in the sport and seek to ensure the activity continues in the future.

31. If you had to replace all of the equipment that you currently own for your primary activity with similar equipment, how much would it cost to replace?

    $ _____ AMOUNT TO REPLACE PRIMARY ACTIVITY EQUIPMENT

32. On a scale of 1 to 5, where 1 means No Use and 5 means A Lot of Use, to what extent do you make use of the following for current information about your primary activity?

Please circle the number for your answer.

		No Use	Almost No Use	A Little Use	Moderate Use	A Lot of Use
a.	Information Source Used	1	2	3	4	5
b.	Talking with others who participate in the activity	1	2	3	4	5
c.	Magazines	1	2	3	4	5
d.	Government agency publications	1	2	3	4	5
e.	Conservation organization publications	1	2	3	4	5
f.	Newspapers	1	2	3	4	5
g.	Diving shops/companies	1	2	3	4	5
h.	Club meetings/newsletters	1	2	3	4	5
i.	Television	1	2	3	4	5
j.	Radio	1	2	3	4	5
k.	Internet	1	2	3	4	5

33. Below is a list of reasons why people engage in recreation activities. On a scale of 1 to 5, where 1 means Not at All Important and 5 means Extremely Important, how important is each of the reasons for your primary activity?

Please circle the number for your answer.

		Not at All Important	Slightly Important	Moderately Important	Very Important	Extemely Important
a.	Reason for engaging in primary activity	1	2	3	4	5
b.	To be outdoors	1	2	3	4	5
c.	For family recreation	1	2	3	4	5
d.	To experience new and different things	1	2	3	4	5
e.	For relaxation	1	2	3	4	5
f.	To be close to the water	1	2	3	4	5
g.	To get away from the demands of other people	1	2	3	4	5
h.	To be with friends	1	2	3	4	5
i.	To develop my skills	1	2	3	4	5
j.	To get away from the regular routine	1	2	3	4	5
k.	To experience adventure and excitement	1	2	3	4	5
l.	To experience natural surroundings	1	2	3	4	5

SECTION 6
Ways You Value Ocean & Coastal Resources/Marine Environment

In this section, we want to learn about the ways you value the many products and services that are derived from ocean & coastal resources and the things you would do to help ensure their sustainability for the future.

34. Below is a list of goods or services that people get from ocean & coastal resources. On a scale of 1 to 5, where 1 means **No Value** and 5 means **Extremely High Value**, to what extent do you value each good or service?

Please circle the number for your answer.

GOOD OR SERVICE	No Value	Low Value	Medium Value	High Value	Extremely High Value
a. Support for recreation activities	1	2	3	4	5
b. Seafood purchased at local stores and restaurants	1	2	3	4	5
c. Seafood purchased at non local stores and restaurants	1	2	3	4	5
d. Support for Scientific Research	1	2	3	4	5
e. Support for education	1	2	3	4	5
f. Supply of mineral resources through mining	1	2	3	4	5
g. Supply of oil & gas	1	2	3	4	5
h. Supply of alternative energy (wind, wave, tidal)	1	2	3	4	5
i. Supply of pharmaceutical products through mining or harvest of resources	1	2	3	4	5
j. Protection of resources even though I never intend to visit or directly use them	1	2	3	4	5

35. On a scale of 1 to 5, where 1 means Would Not Do and 5 means Would Do the Maximum, to what extent would you undertake the activities or actions to ensure that ocean & coastal resources are used sustainability an available for future generations to enjoy?

Please circle the number for your answer.

ACTIVITY OR ACTION	Would Not Do	Would Do Very Little	Would do Some	Would Do A Lot	Would do the Maximum
a. Volunteer time	1	2	3	4	5
b. Pay higher taxes for resource protection and restoration	1	2	3	4	5
c. Pay higher prices for goods and services due to costs to businesses in complying with regulations that protect ocean & coastal resources or require restoration of areas damaged	1	2	3	4	5
d. Pay user fees like fishing licenses or diving access fees or additional boat registration fees	1	2	3	4	5
e. Donate to groups representing recreational fishing interests	1	2	3	4	5
f. Donate to groups representing diving interests	1	2	3	4	5
g. Recycle	1	2	3	4	5
h. Use less energy	1	2	3	4	5
i. Avoid/boycott certain seafood products	1	2	3	4	5
j. Other (please specify) _____	1	2	3	4	5

SECTION 7
Information About Yourself

In this last section, we need information about you to help classify and analyze your responses to ensure the scientific validity of this information. Any information that can connect this information with you personally will be protected and not given out to anyone.

36. ☐ Male ☐ Female

37. Year born _____

38. Are you Hispanic or Latino? ☐ Yes ☐ No

39. What is your race? (**Check one or more**)
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Native Hawaiian or Other Pacific Islander

40. How many people age 18 or older live in your household? _____ (number of people)

41. How many people under age 18 live in your household? _____ (number in household)

42. What type below best describes your household? (**Check one**)
- ☐ Single adult with no children 18 or under
- ☐ Single adult with children under 18
- ☐ Two adults with no children 18 or under
- ☐ Two adults with children under 18
- ☐ More than two adults with no children under 18
- ☐ More than two adults with children 18 or under

43. What is the highest level of education completed? (**Check one**)
- ☐ 8th grade or less
- ☐ 9th – 12th grade, no diploma
- ☐ 12th grade High School Grad or equivalent (GED or alternative credential)
- ☐ Some College, 1 or more years, no degree
- ☐ Associate's degree (for example: AA, AS)
- ☐ Bachelor's degree (for example: BA, BS)
- ☐ Master's degree (for example: MA, MS, MEng, Med, MSW, MBA)
- ☐ Professional School degree (for example: MD, DDS, DVM, LLB, JD)
- ☐ Doctor's degree (for example: PhD, EdD)

44. What is your employment status? (**Check all that apply**)
- ☐ unemployed
- ☐ employed full time
- ☐ employed part time
- ☐ retired
- ☐ student
- ☐ homemaker
- ☐ none of the above

45. Which category below best describes you annual household income before taxes in 2010? (**Check one**)
- ☐ Less than $5,000
- ☐ $5,000 to $9,999
- ☐ $10,000 to $14,999
- ☐ $15,000 to $19,999
- ☐ $20,000 to $24,999
- ☐ $25,000 to $29,999
- ☐ $30,000 to $34,999
- ☐ $35,000 to $39,999
- ☐ $40,000 to $44,999
- ☐ $45,000 to $49,999
- ☐ $50,000 to $59,999
- ☐ $60,000 to $74,999
- ☐ $75,000 to $99,999
- ☐ $100,000 to $149,999
- ☐ $150,000 or more

46. Do you own a boat?

- ☐ Yes (**Go to Question 47**)
- ☐ No (**Skip to Question 48**)

47. What is the length of your boat _____ (feet)

48. Do you have memberships in any groups or clubs? (**Check all that apply**)

- ☐ Fishing groups, clubs or organizations
- ☐ Diving groups, clubs or organizations
- ☐ Environmental groups, clubs or organizations
- ☐ Chambers of Commerce
- ☐ Other (specify type) _____
  _____
  _____

That completes the survey. **THANK YOU**. Please put in the return self-addressed envelope and return to us.

Last week, a questionnaire seeking your opinions and uses of Gray's Reef National Marine Sanctuary (GRNMS) was mailed to you. You were sent a survey because your name was randomly selected from a list of all users of GRNMS.

If you have already completed and returned the questionnaire to us, please accept our sincere thanks. If not, please do so today. We are especially grateful for your help because your responses will help us in understanding the users of GRNMS.

If you did not receive a questionnaire, or if it was misplaced, please call 912-598-2382 or email to Lindsay.Williamson@noaa.gov and we will gladly get another one in the mail to you.

Sincerely,
Lindsay Williamson, GRNMS Survey Technician

SURVEY FOR COASTAL & OCEAN GEORGIA
AND
GRAY'S REEF NATIONAL MARINE SANCTUARY

Managers of Gray's Reef National Marine Sanctuary (GRNMS) would like to know how you feel about ocean and coastal resources management off the Georgia coast and in GRNMS. More specifically, GRNMS managers would like to know about your uses of these ocean and coastal resources and your opinions about different management strategies and regulations. This survey is intended for **those who *do not use or visit*** GRNMS.

For statistical sampling purposes, we need **a person in the household who is 18 years of age or older to fill out the questionnaire.**

Your participation is voluntary. Any information that identifies you (name, address and telephone number) will be destroyed at the end of the information collection. Only statistical summaries of information across all survey respondents will be released publicly or made available to GRNMS managers. Results of this survey will be posted on the Office of National Marine Sanctuaries web site.

Should you have any questions, please feel free to contact me.

Lindsay Williamson
GRNMS Survey Technician
912-598-2382
Lindsay.Williamson@NOAA.gov

Public reporting burden for this collection of information is estimated to average about one half hour per response, including 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 aspect of this collection of information, including suggestions for reducing burden, to Dr. Vernon R. (Bob) Leeworthy, Chief Economist, National Ocean Service, Office of National Marine Sanctuaries, 1305 East West Highway, SSMC 4, 11th floor, Silver Spring, MD 20910. (Reference OMB Control Number 0648-0625, Expiration Date: 02/28/2014.)

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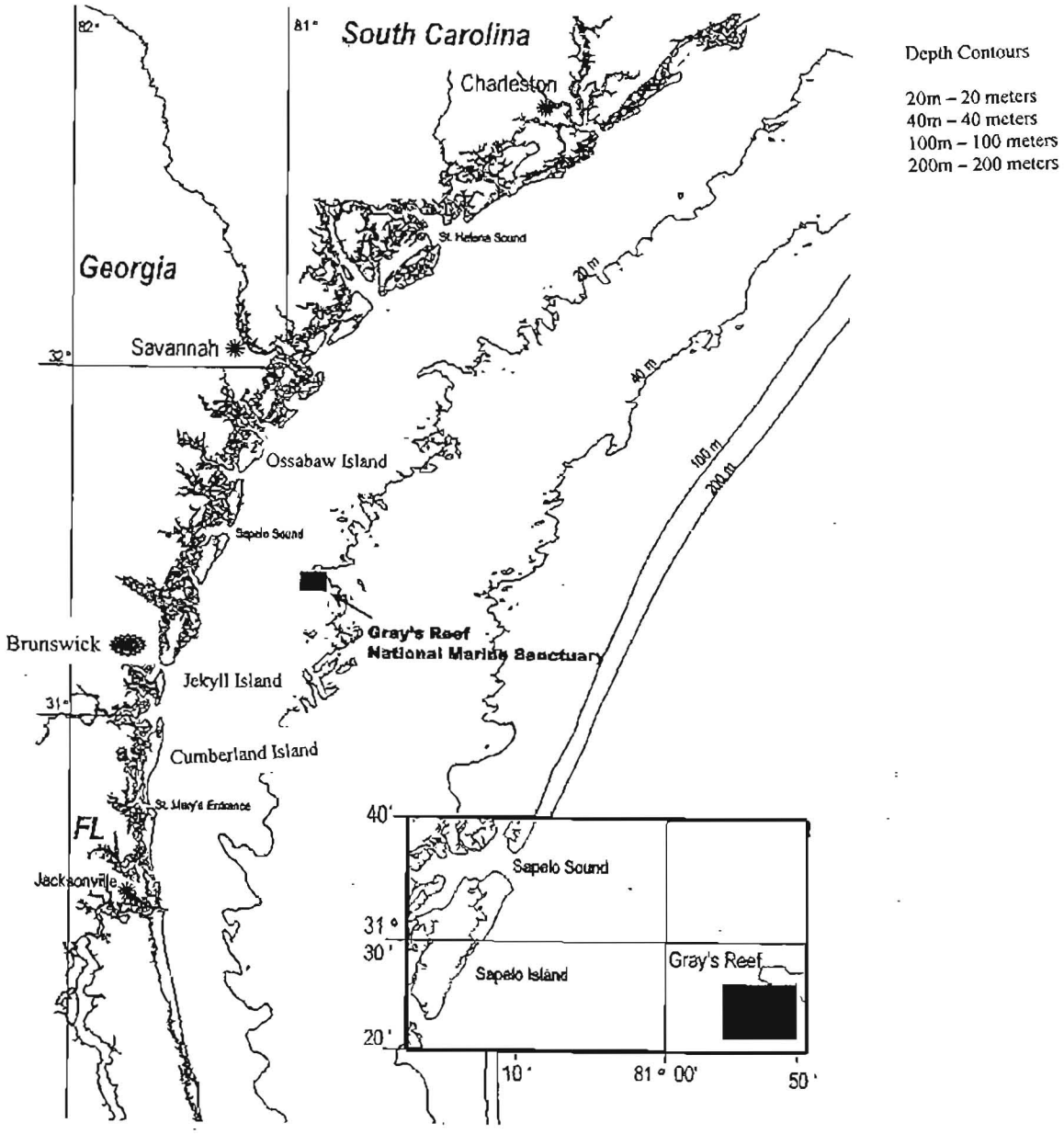
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

NATIONAL MARINE SANCTUARIES
GRAY'S REEF

Definition. Ocean areas include the Atlantic Ocean and coastal areas include inland bays, estuaries and tidally influenced portions of rivers where fresh and saltwater mix.

Map of Coastal & Ocean Georgia and GRNMS



- **Grays Reef National Marine Sanctuary (GRNMS) is located 16 miles offshore of Sapelo Island, Georgia.**
- **GRNMS is 22-square miles and contains rocky ledges and sandy flats.**
- **GRNMS is a popular recreational fishing site with some diving.**
- **No commercial fishing currently takes place in GRNMS, but it is not prohibited.**

SECTION 1
Attitudes About GRNMS Current Management Strategies and Regulations

In this section, we want to know what you think about the current management strategies and regulations of the GRNMS and how GRNMS management has performed.

For the next set of questions/statements, please provide your answer to a 1 to 5 scale, where 1 means Strongly agree, 2 means Moderately agree, 3 means Neutral, 4 means Moderately disagree, and 5 means Strongly disagree.

Please circle the appropriate number of each question/statement. If Don't Know, circle DK.

	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know
1. I support the GRNMS as it is currently established	1	2	3	4	5	DK
2. I support the no anchoring regulation	1	2	3	4	5	DK
3. I support the prohibition on disturbing the sea bed including all mining and oil & gas activities	1	2	3	4	5	DK
4. I support the prohibition of commercial fishing use of wire fishing traps	1	2	3	4	5	DK
5. I support the prohibition commercial fishing using bottom trawls	1	2	3	4	5	DK
6. I support the prohibition on the damage or removal of bottom formations	1	2	3	4	5	DK
7. I support the prohibition on the use of explosives	1	2	3	4	5	DK
8. I support the prohibition on the discharge of pollutants in GRNMS waters	1	2	3	4	5	DK
9. I support the prohibition on spear fishing	1	2	3	4	5	DK
10. The process that GRNMS used to develop its rules and regulations was open and fair to all groups	1	2	3	4	5	DK
11. It has not mattered whether the average person participated in the workshops and meeting of the GRNMS because the average person could not influence the final decisions	1	2	3	4	5	DK
12. GRNMS has not addressed the concerns of other federal and state governments in developing its rules and regulations	1	2	3	4	5	DK
13. GRNMS has not addressed the concerns of individual citizens in developing its rules and regulations	1	2	3	4	5	DK
14. Once that the GRNMS regulations have been in effect, there has been no way that the average person to voice his/her opinion on the usefulness of the regulations	1	2	3	4	5	DK

Please circle the appropriate number of each question/statement. If Don't Know, circle DK.

	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know
15. The procedures that GRNMS has established to deal with violations of its regulations has been fair and just	1	2	3	4	5	DK
16. GRNMS does a good job of enforcing its regulations	1	2	3	4	5	DK
17. GRNMS does a good job of educating the public about its rules and regulations	1	2	3	4	5	DK

SECTION 2
Sources of Information on Ocean & Coastal Resources and GRNMS

In this section, we want to learn what are the best ways GRNMS can communicate with you by understanding the sources of information which you use, and which sources of information you trust.

18. Sources of Information Used (**Please check all sources you use**).

a. ☐ Grays Reef National Marine Sanctuary Advisory Council
b. ☐ Grays Reef National Marine Sanctuary Staff
c. ☐ Grays Reef National Marine Sanctuary Web site
d. ☐ NOAA's National Marine Fisheries Service
e. ☐ Atlantic States Marine Fisheries Commission
f. ☐ Atlantic Fishery Management Council
g. ☐ Georgia Department of Natural Resources
h. ☐ Georgia Sea Grant
i. ☐ Georgia's Coastal Conservation Association (CCA)
j. ☐ Recreational Fishing Alliance (RFA)
k. ☐ American Sportfishing Association (ASA)
l. ☐ National Coalition for Marine Conservation
m. ☐ International Game and Fish Association (IGFA)
n. ☐ Southern Kingfish Association (SKA)
o. ☐ Fishing Magazines/Newsletters
p. ☐ SCUBA diving magazines/Newsletters
q. ☐ Newspapers
r. ☐ Radio
s. ☐ Television
t. ☐ Internet
u. ☐ Social Media (Twitter, You Tube, Facebook, etc.)
v. ☐ Word of Mouth
x. ☐ Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)

_____

_____

19. For the sources of information you said you used in question 18, on a scale of 1 to 5, where 1 means No Trust at All and 5 means Completely Trust, to what extent do you trust each source of information?

Please circle your answer.
If the source was not used, circle NA (Not Applicable).

SOURCES	No Trust at All	Very Little Trust	Neutral	Trust Very Much	Completely Trust	NA
a. Grays Reef National Marine Sanctuary Advisory Council	1	2	3	4	5	NA
b. Grays Reef National Marine Sanctuary Staff	1	2	3	4	5	NA
c. Grays Reef National Marine Sanctuary Web site	1	2	3	4	5	NA
d. NOAA's National Marine Fisheries Service	1	2	3	4	5	NA
e. Atlantic States Marine Fisheries Commission	1	2	3	4	5	NA
f. Atlantic Fishery Management Council	1	2	3	4	5	NA
g. Georgia Department of Natural Resources	1	2	3	4	5	NA
h. Georgia Sea Grant	1	2	3	4	5	NA
i. Georgia's Coastal Conservation Association (CCA)	1	2	3	4	5	NA
j. Recreational Fishing Alliance (RFA)	1	2	3	4	5	NA
k. American Sportfishing Association (ASA)	1	2	3	4	5	NA
l. National Coalition for Marine Conservation	1	2	3	4	5	NA
m. International Game and Fish Association (IGFA)	1	2	3	4	5	NA
n. Southern Kingfish Association (SKA)	1	2	3	4	5	NA
o. Fishing Magazines/Newsletters	1	2	3	4	5	NA
p. SCUBA diving magazines/Newsletters	1	2	3	4	5	NA
q. Newspapers	1	2	3	4	5	NA
r. Radio	1	2	3	4	5	NA
s. Television	1	2	3	4	5	NA
t. Internet	1	2	3	4	5	NA
u. Social Media (Twitter, You Tube, Facebook, etc)	1	2	3	4	5	NA
v. Word of Mouth	1	2	3	4	5	NA
x. Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)						
_____	1	2	3	4	5	NA
_____	1	2	3	4	5	NA

Information From GRNMS

20. How do you like to receive information? (**Please check all that apply**).
    a. ☐ Web site
    b. ☐ E-mail list serve
    c. ☐ Newsletter by delivered by U.S. Post Office
    d. ☐ Telephone call from Staff
    e. ☐ E-mail from staff

21. Do you know who sets policy/management for National Marine Sanctuaries and for fisheries in ocean and coastal areas?

    Name of Agency

    a. For National Marine Sanctuaries _____
    b. For Ocean areas of Georgia _____
    c. For Coastal areas in and around Georgia _____

22. How would you rank your familiarity with the rules and regulations in place at GRNMS? (**Please check one**)
    ☐ Very familiar
    ☐ Somewhat Familiar
    ☐ I am not familiar with any of the rules or regulations

SECTION 3
Activities in Ocean & Coastal Areas in and Around Georgia

In this section, we want to learn about your recreation activities in the ocean & coastal areas in and around Georgia.

23. Which activities do you do in ocean & coastal areas both in and around Georgia?
Please check all that apply.

ACTIVITY	Georgia
Recreational bottom fishing	☐
Recreational fishing – trolling or drifting in mid or top water	☐
Recreational spear fishing with power heads	☐
Recreational spear fishing without power heads	☐
SCUBA diving (taking things)	☐
SCUBA diving (don't take anything)	☐
Whale watching of other wildlife viewing activities	☐
Sailing	☐
Beach Activities	☐
Surfing	☐
Windsurfing or Kite boarding	☐
Personal Watercraft Use (jet skis, wave runners, etc.)	☐
Shorebird Watching	☐

24. For those activities you did in 2010, please provide how many days you did the activity in Georgia?
Count any part of a day as a whole day.

ACTIVITY	Days In Georgia
Recreational bottom fishing	_____
Recreational fishing – trolling or drifting in mid or top water	_____
Recreational spear fishing with power heads	_____
Recreational spear fishing without power heads	_____
SCUBA diving (taking things)	_____
SCUBA diving (don't take anything)	_____
Whale watching of other wildlife viewing activities	_____

SECTION 4
Information About Yourself

In this last section, we need information about you to help classify and analyze your responses to ensure the scientific validity of this information. Any information that can connect this information with you personally will be protected and not given out to anyone.

25. ☐ Male ☐ Female

26. Year born _____

27. Are you Hispanic or Latino? ☐ Yes ☐ No

28. What is your race? (**Check one or more**)
    - ☐ White
    - ☐ Black or African American
    - ☐ American Indian or Alaskan Native
    - ☐ Asian
    - ☐ Native Hawaiian or Other Pacific Islander

29. How many people age 18 or older live in your household? _____ (number of people)

30. How many people under age 18 live in your household? _____ (number in household)

31. What type below best describes your household? (**Check one**)
    - ☐ Single adult with no children 18 or under
    - ☐ Single adult with children under 18
    - ☐ Two adults with no children 18 or under
    - ☐ Two adults with children under 18
    - ☐ More than two adults with no children under 18
    - ☐ More than two adults with children 18 or under

32. What is the highest level of education completed? (**Check one**)
    - ☐ 8th grade or less
    - ☐ 9th – 12th grade, no diploma
    - ☐ 12th grade High School Grad or equivalent (GED or alternative credential)
    - ☐ Some College, 1 or more years, no degree
    - ☐ Associate's degree (for example: AA, AS)
    - ☐ Bachelor's degree (for example: BA, BS)
    - ☐ Master's degree (for example: MA, MS, MEng, Med, MSW, MBA)
    - ☐ Professional School degree (for example: MD, DDS, DVM, LLB, JD)
    - ☐ Doctor's degree (for example: PhD, EdD)

33. What is your employment status? (**Check all that apply**)

- ☐ unemployed
- ☐ employed full time
- ☐ employed part time
- ☐ retired
- ☐ student
- ☐ homemaker
- ☐ none of the above

34. Which category below best describes you annual household income before taxes in 2010? (**Check one**)

- ☐ Less than $5,000
- ☐ $5,000 to $9,999
- ☐ $10,000 to $14,999
- ☐ $15,000 to $19,999
- ☐ $20,000 to $24,999
- ☐ $25,000 to $29,999
- ☐ $30,000 to $34,999
- ☐ $35,000 to $39,999
- ☐ $40,000 to $44,999
- ☐ $45,000 to $49,999
- ☐ $50,000 to $59,999
- ☐ $60,000 to $74,999
- ☐ $75,000 to $99,999
- ☐ $100,000 to $149,999
- ☐ $150,000 or more

35. Do you own a boat?

- ☐ Yes (**Go to Question 36**)
- ☐ No (**Skip to Question 37**)

36. What is the length of your boat _____ (feet)

37. Do you have memberships in any groups or clubs? (**Check all that apply**)

- ☐ Fishing groups, clubs or organizations
- ☐ Diving groups, clubs or organizations
- ☐ Environmental groups, clubs or organizations
- ☐ Chambers of Commerce
- ☐ Other (specify type) _____
  _____
  _____

That completes the survey. **THANK YOU**. Please put in the return self-addressed envelope and return to us.

SURVEY FOR COASTAL & OCEAN GEORGIA
AND
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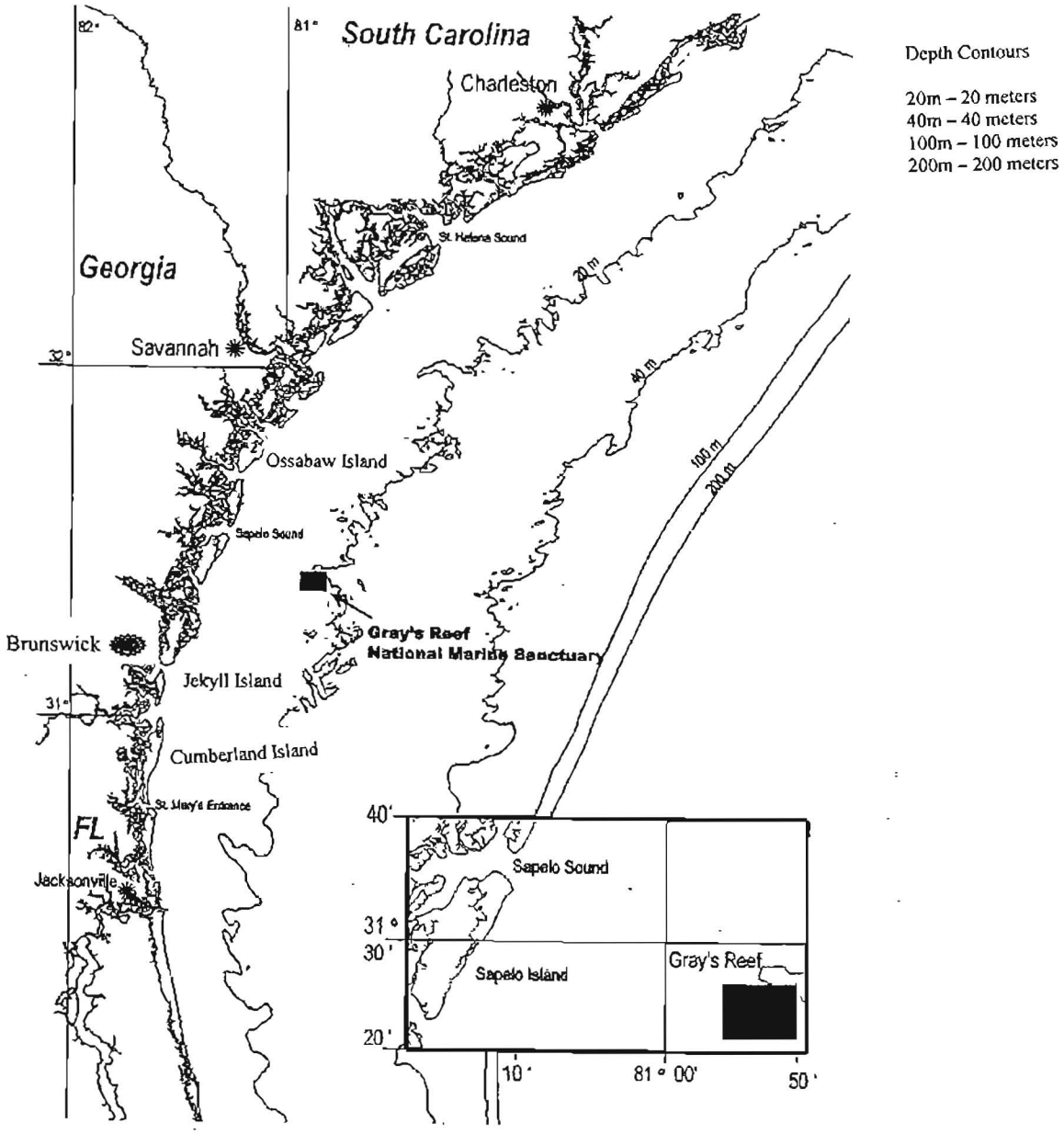
Map of Coastal & Ocean Georgia and GRNMS



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- **GRNMS is a popular recreational fishing site with some diving.**
- **No commercial fishing currently takes place in GRNMS, but it is not prohibited.**

SECTION 1
Opinions About Ocean & Coastal Resources Protection and Management

1. On a scale of 1 to 5, where 1 means No Concern at All and 5 means Extremely Concerned, to what extent are you concerned about the health of ocean & coastal areas around Georgia outside the Grays Reef National Marine Sanctuary (GRNMS)?

Please circle the number for each item.

		No Concern at All	Not Very Concerned	Neutral	Somewhat Concerned	Extremely Concerned
a.	Ocean acidification	1	2	3	4	5
b.	Climate change	1	2	3	4	5
c.	Sea level rise	1	2	3	4	5
d.	Over fishing (catching more than can be replaced)	1	2	3	4	5
e.	Coral reef health or other live bottom habitat	1	2	3	4	5
f.	Marine animal's health	1	2	3	4	5
g.	Shipping (marine transportation)	1	2	3	4	5
h.	Dredging/Offshore dredge disposal	1	2	3	4	5
i.	Beach renourishment	1	2	3	4	5
j.	Energy production (oil & gas)	1	2	3	4	5
k.	Alternative Energy production (wind, tidal, wave)	1	2	3	4	5
l.	Mining of minerals (including sand)	1	2	3	4	5
m.	Habitat loss from coastal development	1	2	3	4	5
n.	Pollution (contaminants such as mercury, PCBs, sewage, pesticides)	1	2	3	4	5

2. On a scale of 1 to 5, where 1 means No Concern at all and 5 means Extremely Concerned, to what extent are you concerned about the health of ocean areas in the Grays Reef National Marine Sanctuary (GRNMS)?

Please circle the number for each item.

		No Concern at All	Not Very Concerned	Neutral	Somewhat Concerned	Extremely Concerned
a.	Ocean acidification	1	2	3	4	5
b.	Climate change	1	2	3	4	5
c.	Sea level rise	1	2	3	4	5
d.	Over fishing (catching more than can be replaced)	1	2	3	4	5
e.	Coral reef health or other live bottom habitat	1	2	3	4	5
f.	Marine animal's health	1	2	3	4	5
g.	Shipping (marine transportation)	1	2	3	4	5

Please circle the number for each item.

		No Concern at All	Not Very Concerned	Neutral	Somewhat Concerned	Extremely Concerned
h.	Dredging/Offshore dredge disposal	1	2	3	4	5
i.	Beach renourishment	1	2	3	4	5
j.	Energy production (oil & gas)	1	2	3	4	5
k.	Alternative Energy production (wind, tidal, wave)	1	2	3	4	5
l.	Mining of minerals (including sand)	1	2	3	4	5
m.	Habitat loss from coastal development	1	2	3	4	5
n.	Pollution (contaminants such as mercury, PCBs, sewage, pesticides)	1	2	3	4	5

3. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support the protection of ocean & coastal resources in and around Georgia outside GRNMS?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Protection in Georgia outside GRNMS	1	2	3	4	5

4. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support the protection of ocean resources inside GRNMS?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Protection inside GRNMS	1	2	3	4	5

- **Sometimes an area's use grows to the extent that it cannot accommodate all uses without conflict among users.**
- **Marine zoning is often used to resolve conflicts by separating uses in different zones, very similar to what is done on land.**

5. Do you support the use of marine zoning in ocean & coastal areas off the coast of Georgia? (**Check one**)

☐ Yes (**go to question 6**) ☐ No (**skip to question 12 on page 5**)

Some Facts for Questions 6 through 8

- **Marine reserves are a specific kind of marine zoning in which nothing is allowed to be taken (removed).**
- **All activities that take or remove natural resources are prohibited, so fishing would be prohibited inside these types of zones.**
- **All other activities that do not involve taking things are allowed.**
- **This management strategy is often used to resolve conflicts between those taking things and those who don't take things (fishing versus diving).**
- **Size of the areas is important since generally the larger the area the more users that will be affected.**
- **This prohibition on taking activities may lead to social and economic impacts.**

6. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of resources in ocean and coastal waters in and around Georgia outside GRNMS with the use of marine reserves?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Marine Reserves in Georgia outside GRNMS	1	2	3	4	5

7. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of resources in ocean and coastal waters inside GRNMS with the use of marine reserves?

Please circle the number for your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Marine Reserves inside GRNMS	1	2	3	4	5

8. What is the maximum amount of impact on the percent of each activity that you would find acceptable for each type of Activity, if marine reserves were used?

ACTIVITY	Percent (0 to 100)
a. Recreational bottom fishing	_____
b. Recreational fishing – trolling or drifting in mid or top water	_____
c. Recreational spear fishing with power heads	_____
d. Recreational spear fishing without power heads	_____
e. Commercial bottom fishing	_____
f. Commercial fishing – trolling or drifting in mid or top water	_____
g. Commercial spear fishing with power heads	_____
h. Commercial spear fishing without power heads	_____
i. SCUBA diving (taking things)	_____

Some Facts for Questions 9 through 11

- **Research Only Areas are a specific type of marine zoning where the only activity allowed is scientific research or education.**
- **The scientific research is used to test the impacts of various uses on natural and cultural resources.**
- **Size of the areas is important since generally the larger the area the more users that will be impacted.**
- **This may lead to social and economic impacts**

9. On a scale of 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of ocean & coastal resources in and around Georgia outside GRNMS with the use of "Research Only Areas"?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Research Only Areas in Georgia outside GRNMS	1	2	3	4	5

10. On a scale of 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support protection of ocean & coastal resources inside GRNMS with the use of "Research Only Areas"?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Research Only Areas inside GRNMS	1	2	3	4	5

11. What is the maximum amount of impact you would find acceptable for each type of Activity, if Research Only Areas were used? Please provide the maximum percent of impact on each activity.

ACTIVITY	Percent (0 to 100)
a. Recreational bottom fishing	_____
b. Recreational fishing – trolling or drifting in mid or top water	_____
c. Recreational spear fishing with power heads	_____
d. Recreational spear fishing without power heads	_____
e. Commercial bottom fishing	_____
f. Commercial fishing – trolling or drifting in mid or top water	_____
g. Commercial spear fishing with power heads	_____
h. Commercial spear fishing without power heads	_____
i. SCUBA diving (taking things)	_____
j. SCUBA diving (don't take anything)	_____
k. Whale watching of other wildlife viewing activities	_____

Some Facts for Question 12

- **Historically fishery managers or managers of marine mammals have managed on a species by species basis.**
- **Recent trends are to expand this species specific approach to what is being called multiple species management.**
- **In fisheries management, the approach involves looking at the various inter-relationships between species such as predator-prey relationship (big fish eat little fish).**

12. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support moving from species specific fishery management to an multiple species approach that looks at all species and their inter-relationships?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Change to multiple species management	1	2	3	4	5

Some Facts for Question 13

- **Another more comprehensive approach goes beyond fishery management.**
- **In a full ecosystem-based approach, all human uses and values are recognized.**
- **Management attempts to achieve a balance across many different uses and values.**

13. On a scale from 1 to 5, where 1 means No Support at All and 5 means Strongly Support, to what extent do you support moving from species specific or multiple species management to full ecosystem-based management?

Please circle your answer.

	No Support at All	Somewhat Against	Neutral	Somewhat Support	Strongly Support
Change to full ecosystem-based management	1	2	3	4	5

SECTION 2
Sources of Information on Ocean & Coastal Resources and GRNMS

In this section, we want to learn what are the best ways GRNMS can communicate with you by understanding the sources of information which you use, and which sources of information you trust.

14. Sources of Information Used (**Please check all sources you use**).

a. ☐ Grays Reef National Marine Sanctuary Advisory Council
b. ☐ Grays Reef National Marine Sanctuary Staff
c. ☐ Grays Reef National Marine Sanctuary Web site
d. ☐ NOAA's National Marine Fisheries Service
e. ☐ Atlantic States Marine Fisheries Commission
f. ☐ Atlantic Fishery Management Council
g. ☐ Georgia Department of Natural Resources
h. ☐ Georgia Sea Grant
i. ☐ Georgia's Coastal Conservation Association (CCA)
j. ☐ Recreational Fishing Alliance (RFA)
k. ☐ American Sportfishing Association (ASA)
l. ☐ National Coalition for Marine Conservation
m. ☐ International Game and Fish Association (IGFA)
n. ☐ Southern Kingfish Association (SKA)
o. ☐ Fishing Magazines/Newsletters
p. ☐ SCUBA diving magazines/Newsletters
q. ☐ Newspapers
r. ☐ Radio
s. ☐ Television
t. ☐ Internet
u. ☐ Social Media (Twitter, You Tube, Facebook, etc.)
v. ☐ Word of Mouth
x. ☐ Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)

_____

_____

15. For the sources of information you said you used in question 14, on a scale of 1 to 5, where 1 means No Trust at All and 5 means Completely Trust, to what extent do you trust each source of information?

Please circle your answer.
If the source was not used, circle NA (Not Applicable).

SOURCES	No Trust at All	Very Little Trust	Neutral	Trust Very Much	Completely Trust	NA
a. Grays Reef National Marine Sanctuary Advisory Council	1	2	3	4	5	NA
b. Grays Reef National Marine Sanctuary Staff	1	2	3	4	5	NA
c. Grays Reef National Marine Sanctuary Web site	1	2	3	4	5	NA
d. NOAA's National Marine Fisheries Service	1	2	3	4	5	NA
e. Atlantic States Marine Fisheries Commission	1	2	3	4	5	NA
f. Atlantic Fishery Management Council	1	2	3	4	5	NA
g. Georgia Department of Natural Resources	1	2	3	4	5	NA
h. Georgia Sea Grant	1	2	3	4	5	NA
i. Georgia's Coastal Conservation Association (CCA)	1	2	3	4	5	NA
j. Recreational Fishing Alliance (RFA)	1	2	3	4	5	NA
k. American Sportfishing Association (ASA)	1	2	3	4	5	NA
l. National Coalition for Marine Conservation	1	2	3	4	5	NA
m. International Game and Fish Association (IGFA)	1	2	3	4	5	NA
n. Southern Kingfish Association (SKA)	1	2	3	4	5	NA
o. Fishing Magazines/Newsletters	1	2	3	4	5	NA
p. SCUBA diving magazines/Newsletters	1	2	3	4	5	NA
q. Newspapers	1	2	3	4	5	NA
r. Radio	1	2	3	4	5	NA
s. Television	1	2	3	4	5	NA
t. Internet	1	2	3	4	5	NA
u. Social Media (Twitter, You Tube, Facebook, etc)	1	2	3	4	5	NA
v. Word of Mouth	1	2	3	4	5	NA
x. Others (please specify, include people like a marina manager, other anglers or divers, local community leader, family member, friend, etc.)						
_____	1	2	3	4	5	NA
_____	1	2	3	4	5	NA

Information From GRNMS

16. How do you like to receive information? (**Please check all that apply**).
    a. ☐ Web site
    b. ☐ E-mail list serve
    c. ☐ Newsletter by delivered by U.S. Post Office
    d. ☐ Telephone call from Staff
    e. ☐ E-mail from staff

17. Do you know who sets policy/management for National Marine Sanctuaries and for fisheries in ocean and coastal areas?

    Name of Agency

    a. For National Marine Sanctuaries _____
    b. For Ocean areas of Georgia _____
    c. For Coastal areas in and around Georgia _____

18. How would you rank your familiarity with the rules and regulations in place at GRNMS? (**Please check one**)
    ☐ Very familiar
    ☐ Somewhat Familiar
    ☐ I am not familiar with any of the rules or regulations

SECTION 3
Activities in Ocean & Coastal Areas in and Around Georgia

In this section, we want to learn about your recreation activities in the ocean & coastal areas in and around Georgia.

19. Which activities do you do in ocean & coastal areas both in and around Georgia?
Please check all that apply.

ACTIVITY	Georgia
Recreational bottom fishing	☐
Recreational fishing – trolling or drifting in mid or top water	☐
Recreational spear fishing with power heads	☐
Recreational spear fishing without power heads	☐
SCUBA diving (taking things)	☐
SCUBA diving (don't take anything)	☐
Whale watching of other wildlife viewing activities	☐
Sailing	☐
Beach Activities	☐
Surfing	☐
Windsurfing or Kite boarding	☐
Personal Watercraft Use (jet skis, wave runners, etc.)	☐
Shorebird Watching	☐

20. For those activities you did in 2010, please provide how many days you did the activity in Georgia?
Count any part of a day as a whole day.

ACTIVITY	Days In Georgia
Recreational bottom fishing	_____
Recreational fishing – trolling or drifting in mid or top water	_____
Recreational spear fishing with power heads	_____
Recreational spear fishing without power heads	_____
SCUBA diving (taking things)	_____
SCUBA diving (don't take anything)	_____
Whale watching of other wildlife viewing activities	_____

SECTION 4
Ways You Value Ocean & Coastal Resources/Marine Environment

In this section, we want to learn about the ways you value the many products and services that are derived from ocean & coastal resources and the things you would do to help ensure their sustainability for the future.

21. Below is a list of goods or services that people get from ocean & coastal resources. On a scale of 1 to 5, where 1 means No Value and 5 means Extremely High Value, to what extent do you value each good or service?

Please circle the number for your answer.

GOOD OR SERVICE	No Value	Low Value	Medium Value	High Value	Extremely High Value
a. Support for recreation activities	1	2	3	4	5
b. Seafood purchased at <u>local</u> stores and restaurants	1	2	3	4	5
c. Seafood purchased at <u>non local</u> stores and restaurants	1	2	3	4	5
d. Support for Scientific Research	1	2	3	4	5
e. Support for education	1	2	3	4	5
f. Supply of mineral resources through mining	1	2	3	4	5
g. Supply of oil & gas	1	2	3	4	5
h. Supply of alternative energy (wind, wave, tidal)	1	2	3	4	5
i. Supply of pharmaceutical products through mining or harvest of resources	1	2	3	4	5
j. Protection of resources even though I never intend to visit or directly use them	1	2	3	4	5

22. On a scale of 1 to 5, where 1 means Would Not Do and 5 means Would Do the Maximum, to what extent would you undertake the activities or actions to ensure that ocean & coastal resources are used sustainability an available for future generations to enjoy?

Please circle the number for your answer.

ACTIVITY OR ACTION	Would Not Do	Would Do Very Little	Would do Some	Would Do A Lot	Would do the Maximum
a. Volunteer time	1	2	3	4	5
b. Pay higher taxes for resource protection and restoration	1	2	3	4	5
c. Pay higher prices for goods and services due to costs to businesses in complying with regulations that protect ocean & coastal resources or require restoration of areas damaged	1	2	3	4	5
d. Pay user fees like fishing licenses or diving access fees or additional boat registration fees	1	2	3	4	5
e. Donate to groups representing recreational fishing interests	1	2	3	4	5
f. Donate to groups representing diving interests	1	2	3	4	5
g. Recycle	1	2	3	4	5
h. Use less energy	1	2	3	4	5
i. Avoid/boycott certain seafood products	1	2	3	4	5
j. Other (please specify) _____	1	2	3	4	5

SECTION 5
Information About Yourself

In this last section, we need information about you to help classify and analyze your responses to ensure the scientific validity of this information. Any information that can connect this information with you personally will be protected and not given out to anyone.

23. ☐ Male ☐ Female

24. Year born _____

25. Are you Hispanic or Latino? ☐ Yes ☐ No

26. What is your race? (**Check one or more**)
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Native Hawaiian or Other Pacific Islander

27. How many people age 18 or older live in your household? _____ (number of people)

28. How many people under age 18 live in your household? _____ (number in household)

29. What type below best describes your household? (**Check one**)
- ☐ Single adult with no children 18 or under
- ☐ Single adult with children under 18
- ☐ Two adults with no children 18 or under
- ☐ Two adults with children under 18
- ☐ More than two adults with no children under 18
- ☐ More than two adults with children 18 or under

30. What is the highest level of education completed? (**Check one**)
- ☐ 8th grade or less
- ☐ 9th – 12th grade, no diploma
- ☐ 12th grade High School Grad or equivalent (GED or alternative credential)
- ☐ Some College, 1 or more years, no degree
- ☐ Associate's degree (for example: AA, AS)
- ☐ Bachelor's degree (for example: BA, BS)
- ☐ Master's degree (for example: MA, MS, MEng, Med, MSW, MBA)
- ☐ Professional School degree (for example: MD, DDS, DVM, LLB, JD)
- ☐ Doctor's degree (for example: PhD, EdD)

31. What is your employment status? (**Check all that apply**)
- ☐ unemployed
- ☐ employed full time
- ☐ employed part time
- ☐ retired
- ☐ student
- ☐ homemaker
- ☐ none of the above

32. Which category below best describes you annual household income before taxes in 2010? (**Check one**)
- ☐ Less than $5,000
- ☐ $5,000 to $9,999
- ☐ $10,000 to $14,999
- ☐ $15,000 to $19,999
- ☐ $20,000 to $24,999
- ☐ $25,000 to $29,999
- ☐ $30,000 to $34,999
- ☐ $35,000 to $39,999
- ☐ $40,000 to $44,999
- ☐ $45,000 to $49,999
- ☐ $50,000 to $59,999
- ☐ $60,000 to $74,999
- ☐ $75,000 to $99,999
- ☐ $100,000 to $149,999
- ☐ $150,000 or more

33. Do you own a boat?

- ☐ Yes (**Go to Question 34**)
- ☐ No (**Skip to Question 35**)

34. What is the length of your boat _____ (feet)

35. Do you have memberships in any groups or clubs? (**Check all that apply**)

- ☐ Fishing groups, clubs or organizations
- ☐ Diving groups, clubs or organizations
- ☐ Environmental groups, clubs or organizations
- ☐ Chambers of Commerce
- ☐ Other (specify type) _____
  _____
  _____

That completes the survey. **THANK YOU**. Please put in the return self-addressed envelope and return to us.

Last week, a questionnaire seeking your use of Georgia's coastal & ocean areas and your opinions of Gray's Reef National Marine Sanctuary (GRNMS) was mailed to you. You were sent a survey because your name was randomly selected from a list of all residents of Georgia.

If you have already completed and returned the questionnaire to us, please accept our sincere thanks. If not, please do so today. We are especially grateful for your help because your responses will help us in understanding your uses of coastal & ocean areas in Georgia and opinions of GRNMS.

If you did not receive a questionnaire, or if it was misplaced, please call 912-598-2382 or email to Lindsay.Williamson@noaa.gov and we will gladly get another one in the mail to you.

Sincerely,
Lindsay Williamson, GRNMS Survey Technician

Appendix B: Impact of Sample Weighting: Non-users

Table

B.1 **Impacts of Sample Weighting on Sources of Information Uses: Non-users**

B.2 **Impacts of Sample Weighting on Estimates of Trust of Sources of Information Used: Non-users**

B.3 **Impact of Sample Weighting on Estimates of Activity Participation in Coastal and Ocean Areas in and around Georgia Outside GRNMS: Non-users**

B.4 **Impact of Sample Weights on Estimates of Mean Person-days by Activity in Coastal and Ocean Areas in and around Georgia Outside GRNMS: Non-users**

B.5 **Impact of Sample Weighting on Estimates of Attitudes on GRNMS Regulations, Processes, and Performance: Non-users (Distributions)**

B.6 **Impact of Sample Weighting on Estimates of Attitudes of GRNMS Regulations, Processes, and Performance: Non-users (Means)**

B.7 **Impact if Sample Weighting on Estimates of Familiarity with GRNMS Regulations: Non-users**

Table B.1. Impacts of Sample Weighting on Sources of Information Used: Non-users

Source of Information	Unweighted (Percent)	Weighted (Percent)	Chi-Square Significance[1]	JT Test Significance[2]
GRNMS Sanctuary Advisory Council	8.28	7.07	0.6295	0.3150 / 0.6299
GRNMS Staff	6.90	6.00	0.6965	0.3484 / 0.6969
GRNMS Web site	24.14	30.15	0.1947	0.0976 / 0.1952
NOAA's National Marine Fisheries Service	16.55	13.52	0.4389	0.2197 / 0.4395
Atlantic States Marine Fisheries Commission	6.21	3.04	0.3993	0.1999 / 0.3999
Atlantic Fishery Management Council	6.21	3.02	0.1766	0.0886 / 0.1772
Georgia Department of Natural Resources	51.03	40.14	**0.0485**	**0.0244 / 0.0487**
Georgia Sea Grant	5.52	6.06	0.8486	0.4244 / 0.8488
Georgia's Coastal Conservation Association (CCA)	8.28	4.77	0.3019	0.1512 / 0.3025
Recreational Fishing Alliance (RFA)	6.90	3.82	0.1579	0.0792 / 0.1584
American Sportfishing Association (ASA)	8.97	9.56	0.8744	0.4373 / 0.8746
National Coalition for Marine Conservation (NCMC)	5.52	3.89	0.4285	0.2145 / 0.4290
International Game and Fish Association (IGFA)	2.76	4.50	0.3955	0.1980 / 0.3960
Southern Kingfish Association (SKA)	5.52	3.24	0.2500	0.1253 / 0.2506
Fishing Magazines/Newsletters	17.93	22.13	0.3469	0.1737 / 0.3475
SCUBA diving magazines/Newsletters	11.03	11.21	0.9926	0.4963 / 0.9926
Newspapers	57.93	55.63	0.6048	0.3026 / 0.6052
Radio	49.66	51.16	0.8127	0.4065 / 0.8130
Television	60.69	67.63	0.1906	0.0956 / 0.1911
Internet	60.69	65.94	0.2477	0.1242 / 0.2483
Social Media (Twitter, You tube, Facebook, etc.)	24.14	32.13	0.1058	0.0531 / 0.1062
Word of mouth	35.75	45.66	0.7769	0.3886 / 0.7771

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here unweighted and weighted non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Table B.2. Impact of Sample Weighting on Estimates of Trust of Sources of Information Used: Non-users

Selelcted Source/User Group[1]	No Trust At All	Very Little Trust	Neutral	Trust Very Much	Completely Trust	Mean	Chi-Square Significance[2]	JT Test Significance[3]	T-test Significance[4]
GRNMS Web site							0.2441	0.1762 / 0.3524	0.6849
Unweighted	0.00	2.94	20.59	47.06	29.41	4.03			
Weighted	0.00	9.31	11.62	36.82	42.25	4.12			
NOAA's National Marine Fisheries Service							0.8970	0.3224 / 0.6447	0.5595
Unweighted	4.55	0.00	13.64	31.82	50.00	4.23			
Weighted	2.14	0.00	8.91	32.85	56.09	4.41			
Georgia Department of Natural Resources							0.5133	0.1409 / 0.2818	0.2626
Unweighted	0.00	7.69	15.38	40.00	36.92	4.06			
Weighted	0.00	16.18	17.09	35.74	30.99	3.81			
Fishing Magazines/Newsletters							0.7169	0.3369 / 0.6738	0.7928
Unweighted	0.00	4.76	33.33	42.86	19.05	3.76			
Weighted	0.00	5.19	22.09	57.13	15.59	3.83			
Newspapers							0.8455	0.4764 / 0.9529	0.8347
Unweighted	2.74	15.07	28.77	43.84	9.59	3.42			
Weighted	1.22	12.61	34.80	40.68	10.69	3.47			
Radio							0.7630	0.2124 / 0.4247	0.5519
Unweighted	1.52	12.12	36.36	36.36	13.64	3.48			
Weighted	0.85	9.90	30.23	46.65	12.36	3.60			
Television							0.3148	0.0801 / 0.1602	0.2897
Unweighted	2.47	16.05	38.27	32.10	11.11	3.33			
Weighted	0.96	12.09	31.65	46.07	9.23	3.50			
Internet							0.3985	0.2635 / 0.5270	0.7287
Unweighted	0.00	14.81	48.15	27.16	9.88	3.32			
Weighted	0.00	11.83	46.46	37.11	4.60	3.34			
Word of mouth							0.2567	0.1804 / 0.3608	0.5825
Unweighted	6.56	8.20	40.98	32.79	11.48	3.34			
Weighted	5.43	8.60	28.46	50.52	6.99	3.45			

1. Selected Sources are those with at least 25 observations per user group to support statistical tests between user groups.
2. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
3. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes. It tests the null hypothesis that the distributions among the classes are different. The test on the left side is a one-sided test, while the test on the right is a two-sided test.
4. T-test for differences in means. A value of (0.05) or less (<) is significant at the 95 percent confidence level or higher.

Table B.3. Impact of Sample Weighting on Estimates of Activity Participation in Coastal and Ocean Areas in and around Georgia Outside GRNMS: Non-users

Activity	Unweighted (percent)	Weighted (percent)	Chi-square Significance[1]	JT Test Significance[2]
Recreational bottom fishing	35.17	23.69	**0.015**	**0.0075 / 0.0151**
Recreational fishing - trolling or drfting in mid or top water	33.10	24.69	0.0764	0.0384 / 0.0768
Recreational spear fishing with power heads	1.38	0.53	0.3579	0.1792 / 0.3584
Recreational spear fishing without power heads	2.76	2.00	0.6119	0.3062 / 0.6124
SCUBA diving (taking things)	0.69	0.39	0.679	0.3397 / 0.6793
SCUBA diving (don't take things)	12.41	8.37	0.231	0.1158 / 0.2316
Whale watching or other wildlife viewing activities	33.56	25.91	0.1416	0.0710 / 0.1421
Sailing	16.55	11.67	0.1961	0.0983 / 0.1967
Beach Activities	67.81	58.45	0.0809	0.0406 / 0.0813
Surfing	9.66	6.90	0.312	0.1563 / 0.3126
Wind Surfing/Kite boarding	3.45	2.76	0.6886	0.3445 / 0.6890
Personal Watercraft Use	16.55	15.29	0.7156	0.3580 / 0.7159
Shorebird Watching	36.99	29.12	0.1618	0.0811 / 0.1623
Aggregate Activities				
Any Fishing	41.96	33.52	0.0912	0.0458 / 0.0916
Any Spear Fishing	2.80	2.00	0.6041	0.3023 / 0.6045
Any SCUBA Diving	12.59	8.76	0.2214	0.1110 / 0.2220
Any Viewing	46.85	40.17	0.1927	0.0966 / 0.1933
Any Consumptive	41.96	33.52	0.0912	0.0458 / 0.0916
Any Nonconsumptive	75.52	63.19	**0.0111**	**0.0056 / 0.0112**
Only Consumptive	2.10	2.05	0.9745	0.4873 / 0.9745
Only Nonconsumptive	35.66	31.72	0.4191	0.2098 / 0.4197

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (hereweighted and unweighted non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Table B.4. Impact of Sample Weights on Estimates of Mean Person-days by Activity in Coastal and Ocean Areas in and around Georgia Outside GRNMS: Non-users

User Group/Activity	Unweighted (mean)	Weighted (mean)	T-test Significance[1]
All Non-users			
Recreational bottom fishing	2.08	1.02	**0.0314**
Recreational fishing - trolling or drfting in mid or top water	2.87	1.85	0.1735
Recreational spear fishing with power heads	0.15	0.06	0.5811
Recreational spear fishing without power heads	0.24	0.13	0.5547
SCUBA diving (taking things)	0.00	0.00	-
SCUBA diving (don't take things)	0.52	0.45	0.8418
Whale watching or other wildlife viewing activities	2.19	1.51	0.2101
Participants Only			
Recreational bottom fishing	7.29	6.25	0.4022
Recreational fishing - trolling or drfting in mid or top water	10.13	8.56	0.419
Recreational spear fishing with power heads	11.00	11.59	0.9675
Recreational spear fishing without power heads	11.67	8.17	0.5811
SCUBA diving (taking things)	0.00	0.00	-
SCUBA diving (don't take things)	8.87	10.11	0.8187
Whale watching or other wildlife viewing activities	7.46	5.05	0.3914

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
* sample sizes too small to support statistical test.

Table B.5. Impact of Sample Weighting on Estimates of Attitudes on GRNMS Regulations, Processes and Performance: Non-users (Distributions)

Statement	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know	Chi-Square Signficance[1]	JT Test Significance[2]
1. I support the GRNMS as it is currently established							0.3569	0.0639 / 0.1278
Unweighted	15.66	20.48	16.87	1.20	1.20	44.58		
Non-users	13.99	14.59	12.88	2.47	0.00	56.07		
2. I support the no anchoring regulation							0.2144	**0.0080 /0.0161**
Unweighted	38.55	13.25	9.64	6.02	2.41	30.12		
Non-users	27.21	10.86	8.09	6.56	0.88	46.40		
3. I support the prohibition on distrubing the sea bed including all mining and oil & gas activities							0.0624	0.3859 / 0.7717
Unweighted	45.78	8.43	10.84	9.64	10.84	14.46		
Non-users	38.15	22.05	16.31	5.68	8.47	9.34		
4. I support the prohibition of commercial fishing using wire fishing traps							**0.0291**	0.0525 / 0.1049
Unweighted	42.17	16.87	9.64	9.64	6.02	15.66		
Non-users	28.05	14.81	27.04	10.07	3.07	16.95		
5. I support the prohibition of commercial fishing using bottom trawls							**0.0234**	0.0458 / 0.0917
Unweighted	46.99	12.05	10.84	9.64	3.61	16.87		
Non-users	30.79	11.59	30.21	7.55	2.67	17.19		
6. I support the prohibition on the damage or removal of bottom formations							0.0836	0.0446 / 0.0891
Unweighted	53.01	14.46	9.64	2.41	1.20	19.28		
Non-users	35.40	26.33	17.13	1.84	1.36	17.94		
7. I support the prohibition on the use of explosives							0.2360	0.1892 / 0.3785
Unweighted	62.65	13.25	2.41	3.61	3.61	14.46		
Non-users	53.49	26.36	1.26	1.75	2.06	15.08		
8. I support the prohibition on the discharge of pollutants in GRNMS waters							0.1498	0.1010 / 0.2020
Unweighted	65.06	13.25	3.61	2.41	2.41	13.25		
Non-users	53.15	28.04	1.96	1.08	1.36	14.43		

Table B.5. Impact of Sample Weighting on Estimates of Attitudes on GRNMS Regulations, Processes and Performance: Non-users (Distributions) (continued)

Statement	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know	Chi-Square Signficance[1]	JT Test Significance[2]
9. I support the prohibition on spear fishing							0.3322	0.4864 / 0.9727
Unweighted	25.30	10.84	27.71	10.84	9.64	15.66		
Non-users	18.55	13.46	39.22	8.09	4.98	15.71		
10. The process that GRNMS used to develop its rules and regulations was open and fair to all groups							0.45	0.1207 / 0.2413
Unweighted	16.87	8.43	20.48	4.82	0.00	49.40		
Non-users	10.36	11.57	17.87	2.95	0.00	57.24		
11. It has not mattered whether the average person participated in the workshops and meetings of the GRNMS because the average person could not influence the final decision							0.6283	0.1109 / 0.2217
Unweighted	18.07	8.43	13.25	12.05	7.23	40.96		
Non-users	13.20	9.77	12.84	9.34	4.11	50.74		
12. GRNMS has not addressed the concerns of other federal and state governments in developing its rules and regulations							0.8787	0.3348 / 0.6696
Unweighted	1.20	6.02	25.30	2.41	4.82	60.24		
Non-users	1.82	6.86	22.51	0.82	3.46	64.54		
13. GRNMS has not addresed the concerns of individual citizens in developing rules and regulations							0.897	0.2397 / 0.4793
Unweighted	4.82	13.25	14.46	4.82	7.23	55.42		
Non-users	4.48	14.30	10.68	3.61	5.21	61.73		
14. Once that the GRNMS regulations have been in effect, there has been no way that the average person could voice his/her opinion on the usefulness of the regulations							0.6523	0.1823 / 0.3646
Unweighted	8.43	9.64	13.25	6.02	7.23	55.42		
Non-users	6.61	11.53	10.99	4.05	3.43	63.38		

Table B.5. Impact of Sample Weighting on Estimates of Attitudes on GRNMS Regulations, Processes and Performance: Non-users (Distributions) (continued)

Statement	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree	Don't Know	Chi-Square Signficance[1]	JT Test Significance[2]
15. The procedures that GRNMS has established to deal with violations of its regulations has been fair and just							0.8873	0.3529 / 0.7058
Unweighted	10.84	7.23	13.25	6.02	0.00	62.65		
Non-users	8.25	10.00	11.25	5.30	0.00	65.20		
16. GRNMS does a good job of enforcing its regulations							0.2125	0.3374 / 0.6749
Unweighted	10.84	9.64	20.48	0.00	1.20	57.83		
Non-users	7.80	16.20	13.72	0.00	0.00	62.28		
17. GRNMS does a good job of educating the public about its rules and regulations							0.3753	0.4955 / 0.9910
Unweighted	8.43	12.05	14.46	12.05	12.05	40.96		
Non-users	6.29	15.72	9.32	19.95	7.49	41.22		

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here weighted and unweighted non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.

Table B.6. Impact of Sample Weighting on Estimates of Attitudes of GRNMS Regulations, Processes, and Performance: Non-users (Means)

Item	Unweighted (Mean)	Weighted (Mean)	T-test Significance[1]
1. I support the GRNMS as it is currently established	2.13	2.09	0.8302
2. I support the no anchoring regulation	1.86	1.94	0.7339
3. I support the prohibition on distrubing the sea bed including all mining and oil & gas activities	2.20	2.16	0.8964
4. I support the prohibition of commercial fishing using wire fishing traps	2.06	2.34	0.2036
5. I support the prohibition of commercial fishing using bottom trawls	1.93	2.27	0.1143
6. I support the prohibition on the damage or removal of bottom formations	1.57	1.87	0.0802
7. I support the prohibition on the use of explosives	1.51	1.50	0.9605
8. I support the prohibition on the discharge of pollutants in GRNMS waters	1.43	1.47	0.7632
9. I support the prohibition on spear fishing	2.63	2.61	0.9480
10. The process that GRNMS used to develop its rules and regulations was open and fair to all groups	2.26	2.31	0.8162
11. It has not mattered whether the average person participated in the workshops and meetings of the GRNMS because the average person could not influence the final decision	2.69	2.62	0.7995
12. GRNMS has not addressed the concerns of other federal and state governments in developing its rules and regulations	3.09	2.92	0.4731
13. GRNMS has not addresed the concerns of individual citizens in developing rules and regulations	2.92	2.76	0.5841
14. Once that the GRNMS regulations have been in effect, there has been no way that the average person could voice his/her opinion on the usefulness of the regulations	2.42	2.62	0.4274

1. T-test (0.05) or less (<) is statistically signficant at the 95 percent level of confidence or higher.

Table B.6. Impact of Sample Weighting on Estimates of Attitudes of GRNMS Regulations, Processes, and Performance: Non-users (Means) (continued)

Item	Unweighted (Mean)	Weighted (Mean)	T-test Significance[1]
15. The procedures that GRNMS has established to deal with violations of its regulations has been fair and just	2.39	2.39	0.9899
16. GRNMS does a good job of enforcing its regulations	2.31	2.16	0.4519
17. GRNMS does a good job of educating the public about its rules and regulations	3.12	3.11	0.9720

1. T-test (0.05) or less (<) is statistically signficant at the 95 percent level of confidence or higher.

Table B.7.. Impact of Sample Weighting on Estimates of Familiarity with GRNMS Regulations: Non-users

Rank of Familiarity	Unweighted (Percent)	Weighted (Percent)	Chi-square Significance[1]	JT Test Significance[2]
Very Familiar	2.17	0.70	0.3079	0.3283 / 0.6566
Somewhat Familiar	17.39	21.46		
Not at All Familiar	80.43	77.83		

1. A value less than (<) 0.05 is statistically significant with 95 percent confidence or higher.
2. The Jonckheere-Terpstra (JT) test is a nonparametric test for ordered differences among classes (here unweighted and weighted non-users). It tests the null hypothesis that the distributions of the response variable does differ among classes. The number for signficance on the left side is the one-tailed test, while the second number for significance is a two-tailed test. A value of less than (<) 0.05 is statisitically significant with 95 percent confidence or higher.