



Goliath Grouper Study

A Survey Analysis of Dive Shop and Charter Boat Operators in Florida

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Introduction

Goliath grouper (*Epinephelus itajara*) is considered to be critically endangered throughout its range by the World Conservation Union (IUCN) (Tak-Chuen and Ferrara 2007). This species is known to occur on both sides of the Atlantic, in the Eastern Atlantic along the African coast from Senegal to Congo, and in the Western Atlantic from North Carolina to Brazil including the Caribbean and Gulf of Mexico (Heemstra and Randall 1993). It may be close to local extinction in Belize (Powell and Coleman, personal observations) as well as in other regions of their historical range where they remain unprotected. Their population status remains problematic in Brazil despite a recent five year fishing moratorium (Gerhardinger et al. 2006).

Declines of goliath grouper populations in the southeastern United States started in the 1950s and 1960s due to overfishing of aggregations and intensive spearfishing activity, and continued until a fishing ban was put into effect in 1990 by the South Atlantic and the Gulf of Mexico fishery management councils and in the Caribbean in 1993 by the Caribbean Fishery Management Council (GMFMC 1990, Sadovy and Eklund 1999). Although the National Marine Fisheries Service (NMFS) continues to list this species as overfished (NMFS 2006), the actual status of the population remains unknown and difficult to assess (Porch and Eklund 2004), as is often the case with fully protected species when fisheries data collection has not been replaced with reliable population monitoring. This situation hinders development of management measures aimed at rebuilding the population, ending overfishing, or both, as required by the Sustainable Fisheries Act (Public Law 104-297).

As a result of the fishing ban on goliath grouper, this seriously depleted species now shows signs of recovery in Florida waters, although full recovery based on the Magnuson-Stevens Fishery Conservation and Management Act standards is unlikely until at least 2020 (SEDAR 2004). The resurgence of goliath grouper has been met with mixed reactions from fishermen and divers. While many are excited about their recovery, particularly in the face of declining populations of other heavily exploited species, others fear that the resurgence could threaten their livelihoods because they fear that goliath grouper are competing with them for snapper and grouper resources. These divergent views are pervasive and casual conversation reveals that opinions are often strong.

To better understand these differing perspectives towards goliath grouper held by sectors of the Florida tourism industry most likely to come in contact with this species, the Florida State Center for Economic Forecasting and Analysis (FSU CEFA) conducted a survey of Florida's dive shop and charter boat fishing operators. These businesses make up only a small fraction of those involved in the tourism and fishing industries but they represent the main groups of interest because of their potential to target goliath grouper either for observation *in situ* while diving or as a catch-and-release target while fishing.

Box 1. Florida tourism as an economic driver for the state.

The state of Florida is a top travel destination for tourism and saltwater fishing recreational activities and these are among the top industries that support the state's economy. The number of Florida tourists reached a record 76.8 million in 2004, and is projected to grow to 89 million by 2010 (Visit Florida, 2006). Currently, 1.3 million Florida jobs are directly or indirectly related to tourism, and projected to grow to between 1.5 and 1.8 million by 2010. The 2005 Florida Visitor Study reported that the state collected \$3.7 billion in tourism/recreation sales taxes in 2005. That is, \$62 billion was infused into the state's economy during the year through tourist expenditures. The study also noted that tourism expenditures supported 948,700 jobs in 2005. According to the National Survey on Recreation and the Environment (NSRE) 2000, there were 4.7 million saltwater fishermen spending 56.3 million days fishing in Florida (including saltwater and brackish waters in tidal areas of rivers and bays). By far, Florida was the top state, in terms of number of fishermen and number of fishing days spent saltwater fishing. Also, Florida is a prime destination in terms of other recreational marine activities; namely, snorkeling and diving. In 2003, there were a total of 533,767 PADI certified divers in Florida (from 1985 – 2003). These numbers do not include those divers certified in other states and traveling on a diving trip to Florida. PADI certification encompasses approximately 70% of the U.S. SCUBA diving population (Sheryl Gilmore, personal communication). In addition, as can be expected, the Institute of Food and Agricultural Sciences (IFAS) reported that Florida also is highest in terms of the economic value of fishing related expenditures. IFAS also reported that in 2001, the saltwater recreational industry generated \$4.7 billion in economic activity to the Florida economy, while creating 56,270 jobs throughout the state. Recreational fisheries supports boat building, sport and bait shops, charter boats, and gear manufacturing. The significance of the size of this economic activity to the Florida economy underscores the importance of proper collection of recreational fishing and diving socioeconomic data for the State of Florida.

Survey Methodology

We developed a 66-question survey (Appendix A) designed to obtain information from Florida-based dive shop and charter-boat business operators in the following areas:

- (1) Ecological issues, including:
 - a. the increasing abundance of goliath grouper
 - b. the distribution of goliath grouper
 - c. overall ecosystem health;
- (2) Socio-economic issues related to:
 - a. the economic status of these business sectors
 - b. conflicts among user groups
 - c. fisheries management.

We distributed 560 mail surveys throughout Florida (215 to dive shops, 345 to charter boat operators) in May, 2008.

Survey data were analyzed using Statistical Package for Social Sciences (SPSS, v.16.0, 2008) software, and provided both descriptive statistics (e.g., maximum, minimum, average and standard deviation) and frequency of responses to a given question. To compare means, a one-way Analysis of Variance (ANOVA) test was conducted. ANOVA is a way to test the equality of three or more means at one time by using variances. In this test, The variances of the populations must be equal. The null hypothesis will be that all population means are equal, the alternative hypothesis is that at least one mean is different. Frequency data were transformed to percentages (i. e., frequency/number of respondents) to allow comparisons among groups. Group assignments were determined from responses, that is based on respondents self categorization to either the fishing industry, the diving industry, or to both groups. We used ESRI ArcGIS 9.2 to conduct spatial analysis of responses by county of the businesses primary residence.

Results

Of the 560 surveys distributed, 200 were returned: 167 completed responses (31.7%) and 33 returns from the U. S. Post Office as undeliverable. Most respondents (62%) run daily dive or fishing charters, suggesting that the surveys reached the intended target audience of people who spend significant time on the water. Most of the completed surveys came from south Florida, with 18 % (N = 30) from Monroe County (Figure 1).

We evaluated each question based on self-identified (by the respondents) industry categories: diving charters (24.6% of the responses), 29.3% are sightseeing divers and 70.7% are sightseeing and spearfishing divers, fishing charters (58.7%), or both diving and fishing charters (=dive/fishing, 16.8%), 14.3% are sightseeing, 17.9% are spearfishing and 67.9% are both sightseeing and spearfishing (Figure 2). Statistical analyses were conducted on groups so that we could distinguish sector-specific differences in opinion.

General information on diving and fishing charters

Seventy-one percent of the diving businesses cater to both ecotourists (= sightseeing) and spearfishing customers (N = 29), with 30 % (N = 12) operating for ecotourists only. Most of the fishing charter boat operators (58%) have six-passenger captain's licenses (Table 1), the easiest and most common license to obtain. The most prevalent fishing method employed was bottom fishing, followed by inshore casting, and trolling (Figure 3).

The diving businesses significantly completed at 1% level of significance (α), or 99% level of confidence ($1 - \alpha$), more trips in a typical year than the fishing businesses and both had significantly higher numbers of trips than the dive/fishing businesses (Figure 4, Table 2). On average, half of the customers came from out-of-state, 32% were locals, and 18% were in-state tourists. Most of the fishing businesses and dive/fish businesses had out-of-state customers while most of the diving businesses had local customers (Table 3).

Sixty-three percent of respondents provided comments on conflicts among user groups (Appendix B). For all sectors, the level of conflict with other user groups was fairly low except for the other category (Figure 5). Divers generally had more conflict with recreational anglers and other for-hire fishermen than the other two sectors while charter fishermen had more conflict with sport spearfishermen/lobster divers and other charter divers (Figure 5). When the user groups were pooled, 45% of the respondents had no conflict with recreational anglers and 23.5% had little conflict with them. Forty-eight percent had no conflicts with recreational boaters while 27% had minimal conflict with them. Many of the respondents had major conflicts with other users not listed and were asked to comment on who these other user groups were (Appendix B). Commercial fishermen/divers were one of the primary user groups listed in the other category that the respondents had conflict with, as well as government regulators, poachers, and jet ski operators.

Data on Goliath Grouper Encounters

To evaluate spatial data, we assumed that the respondents from coastal counties operated directly off their county's coastline, based on a survey question indicating that the primary driver for operating in a particular area was proximity to their port of origin. We linked

the respondents from inland counties to the primary marinas/ports that they indicated in the surveys¹ (Figure 6).

Most of the survey respondents (84%) had either seen or caught goliath grouper, primarily in businesses operating in coastal counties (Figure 7).

Many survey respondents perceived that goliath groupers were ubiquitous. However, their responses to specific questions indicate otherwise. Forty five percent of the respondents encountered few (1-5) goliath grouper on a typical trip, whereas 35% encountered no goliath groupers on a typical trip (corresponding with areas in which distribution of goliath grouper are typically low) (Figure 8). Very few respondents ever encounter more than six goliath groupers at one time (Figure 8). Fifty percent of fishermen reported catching no goliath grouper on a typical trip whereas most divers (58%) reported seeing at least one (Figure 8). Research data related to population levels prior to 1980 is limited, although a historical account based on photos and newspaper articles just came out that provides some data for as far back as 1923 (McClenachan 2009). Based on this study, our current estimates of historical population are very low, or very conservative.

Based on the fact that goliath groupers are primarily distributed in mangroves when juveniles (< 3 ft. in length) and on offshore reefs as adults (> 3 ft. in length) (Bullock et al. 1992), we geared one of the survey questions to determine which life stage was encountered more frequently. The distribution of answers suggests more about where businesses operate than anything else, that is those operating in shallow mangrove habitat are more likely to observe juveniles than those operating offshore (Table 4). These are not places likely to be visited by divers because of poor visibility. Figure 9 shows the spatial distributions by county that the businesses operate in of the sizes of goliath groupers typically encountered.

Many of the survey respondents provided detailed descriptions of the locations where they encountered goliath grouper, especially during the follow-up phone interviews (see Appendix D for location details). Most goliath groupers were encountered between 32 and 80 foot water depths, and therefore occurred offshore (Figure 10).

Economic impact – Fifty-three percent of the survey participants have customers interested in goliath grouper encounters, regardless of the charter sector (Table 5) or the area in which the charter operates, although there were fewer requests through the Big Bend and in northeast Florida than anywhere else in the state (Figure 11).

In response to questions about the effect of goliath grouper on their businesses, most (39%) respondents found no effect while 26% said they were beneficial, 24% said they were detrimental, and 11% were not sure. Evaluated by sector, divers were almost evenly distributed between those finding them beneficial, and those seeing no effect, whereas fishermen mostly found no effect, and the dive/fishing sector found them to be detrimental (Figure 12), which suggests something different about this sector that is not captured in either of the other two. About 67% of the diving industry benefits from underwater observation of

¹ We eliminated the single respondent from Columbia County who caters to spring and cave divers inland and did not indicate a coastal port.

goliath grouper. While most of the fishing sector found no benefit, about 34% identified benefits associated with catch-and-release (Figure 13).

When asked how goliath grouper fishery—that is, an allowed harvest—would affect their businesses, 45% of the survey respondents thought it would benefit their businesses, 18% thought it would be detrimental, and 27% thought it would have no effect. After evaluation by sector, most fishermen and businesses that cater to both suggested that it would benefit their businesses (47%, 71% respectively, Figure 14) while divers mainly think it would be detrimental (41%). Not surprisingly, the majority of the charter fishermen and the dive/fishing charters felt that goliath grouper should be open to harvest whereas most of the divers thought that they should remain fully protected (Figure 15). Overall, 46% of the survey participants believe that goliath groupers should be open to harvest while 23% believe that they should remain fully protected.

Fisheries Management Information

Respondents were asked to rank different management strategies (not related to goliath grouper) from most (1) to least preferred (6). The management strategies listed in the questionnaire were:

- (1) restrictive, enforcement-based management involving higher penalties, more patrols, and monitoring;
- (2) innovative management using separation via zoning and marine protected areas;
- (3) interpretive management with more outreach and education;
- (4) less management;
- (5) rights-based management including limited entry, trap certificates, and property rights; and
- (6) seasons and bag limits (*status quo*, pertaining to actively fished species).

Fishermen and the dive/fishing sector showed no statistical difference in their ranking of any management strategy, ranking *status quo* and education almost equally as the most preferred, and zoning, rights-based management, and less management as the least preferred (Figure 16). Divers showed similar (not-significantly different from fishers) responses for restrictive management, education, and rights-based management, but were significantly different from fishers in preferring zoning and disliking the *status quo* and less management.

When this same question was asked in a slightly different way to determine which management practice each sector thought was most effective, with 1 = most effective and 7 = least effective, fishermen surveyed suggested that the most effective forms of management were size limits, seasonal closures, and other forms of management, while divers identified marine reserves and seasonal closures as most effective (Figure 17). The dive/fishing sector ranked size limits and other forms of management as the most effective. All three sectors considered restricting the number of fishermen to be the least effective form of management (Figure 17).

The opinions on no-take zones/marine reserves varied among sectors. Marine reserves were viewed more favorably by the diving industry than by the charter fishing industry. The former overwhelmingly felt that the number of marine reserves should be increased while the

latter favored a reduction in number or making no changes. (Table 6). Over 66% of the respondents indicated that they had direct experiences near a marine reserve. However when the respondents were questioned further about this during phone interviews, many indicated that they actually did not have any experiences near a marine reserve and did not know where any were located.

Divers largely felt that marine reserves improved fishing opportunities (65%), whereas fishers did not think they improved fishing (39%). Thirty-two percent of all the respondents did not know if marine reserves had improved fishing or not. Of those that thought there have been improvements, over 40% did not know how long it took to see improvements, 20% thought it took more than 3 years, and 19% thought it took 1 to 2 years.

Respondents were asked to rank obstacles to producing sustainable fisheries from 1 to 7 (where 1 = the most important obstacle and 7 = the least important), including gear efficiency, the number of people fishing, bycatch and dead discards, catch of other fishing sectors, current management, and habitat loss. All sectors ranked habitat loss as one of the more important obstacles, with the dive/fishing sector including bycatch as an important obstacle (Figure 18). None of the sectors ranked the number of people in the fishery as an important impediment to sustainable fisheries. (See Appendix B for respondents views on other impediments to sustainable fisheries (Q57).)

Several of the survey questions specifically addressed goliath grouper management strategies. Three quarters of the respondents (76%) supported catch and release as a management strategy, 80% of fishermen, 70% of divers, and 70% of both (Figure 19). Overall, 34% of the respondents felt that catch-and-release methods did not affect goliath grouper populations, 29% considered it beneficial, 16% considered it harmful, 21% do not know how it affects populations. When evaluated by sector, the fishermen and the diving/fishing sectors were almost equally divided among those suggesting it has no effect and those suggesting that catch-and-release fishing benefits the population (Figure 20). Divers do not use catch-and-release methods, but most (60%) had an opinion, mostly suggesting that there is no effect (Figure 20).

When asked how to manage goliath grouper, 35% of all respondents suggested that Florida should allow harvest with bag limits and seasonal restrictions, 31% suggested a limited harvest using a tag, lottery, or permit system, 21% suggested continuing the current ban, while only 2% suggested unrestricted harvest of goliath groupers. The proponents of allowing harvest with bag and seasonal limits were overwhelmingly those in the charter boat fishery, while those in the diving industry were largely split between continuing the current ban and allowing limited harvest using a tag, permit, or lottery system (Figure 21). The dive/fishing sector was primarily for the limited harvest with a tag, permit, or lottery system. If a permit was offered to harvest goliath grouper, fishermen and divers were reluctant to pay: only 33% of those in the dive/fishing sector were willing to pay at least \$20 (Figure 22). Sixty-two percent of the participants would be interested in participating in a program to harvest goliath groupers for scientific purposes.

Ecological Considerations

Overall, 68% of the respondents thought that the marine areas they typically visit are in fair or good condition, with 55% perceiving the health of these sites as declining, 16% finding them unchanged, and 29% viewing them as improving. Opinions differed little among sectors either about the current status of the habitat (figure 23) or the relative state of decline or improvement (Figure 24).

Seventy-eight percent of the survey participants felt that nearshore habitats that support juvenile fishes had declined in both quantity and quality over the past 20 years; 91% believe that this has reduced overall fish abundance. The primary perceived causes for these declines were fairly consistent among sectors with water pollution, commercial fishing, climate change, and hurricanes all having a negative effect on ecosystem health (Figure 25). The only differences between sectors was that the divers suggested that recreational fishing has a slight negative effect and the fishermen think the divers have a slight negative effect. All the sectors identified biodiversity as having a slightly positive effect on ecosystem health. Respondents ranked the level of impact (ranging from low impact to high impact) on the marine environment of different user groups. Overall, the sectors had similar opinions about user groups, with all considering commercial fishermen to have the greatest impact and recreational divers to have the least (Figure 26).

When questioned about the impact of an abundant goliath grouper population on the habitats within which they operate their businesses, 45% considered them a detriment, 24% suggested a positive effect, and the remaining ~30% either had no opinion or thought they had no effect. When separated by sectors, fishermen primarily found them to be detrimental (46%), divers primarily considered them to have a positive effect (37%), while most spearfishermen had no opinion (Figure 27).

Personal Information about Charter Operators

We collected personal information from each respondent that included county of residence (both permanent and seasonal locations), primary and secondary ports used for their businesses, age, sex, level of education, and marital status. Twenty-two percent of the respondents reported seasonal residences and 97% provided their county of permanent residence. Ninety-three percent listed their primary marinas/ports and 19.5% listed secondary marinas/ports (county and port data appears in Appendix B and were used in the spatial analyses). Respondents ranged in age from 19 to 86 years old (median = 50).

Most of the business owners were older than 50 (Figure 28), male (98%), and had at least some college education, with at least 25% of each sector having a college degree (Figure 29). Seventy-five percent of the respondents were married, 15% single, and 8% divorced. Most (95%) of respondents were white, with the other 5% made up of American Indian/Native Alaskan, Spanish/Hispanic/Latino, Native Hawaiian/Other Pacific Islander, and Asian races.

Many of the survey participants have operated charter fishing or dive boats for quite some time. Over 33% have been in business for over 20 years (Figure 30). This demonstrates the high level of experience with fishing or diving that the respondents possess. Several of the respondents are members of industry-related clubs or groups such as a sport fishing association or club, a chamber of commerce, an environmental group, a diving or spearfishing club, and 12% listed other clubs/groups that they are involved with (Table 7, Appendix B).

Economic information – We surveyed the respondent's on their economic status, including their income and expenses. Sixty-four percent of the participants are full time dive boat operators or charter boat fishermen and 35 % work part time. Other forms of employment in which respondents participate include retail, construction, financial/legal/medical or other professional service, food service, manufacturing, among others. Thirty-eight percent of the respondents are employed in the dive or fishing industries year round. Work in these alternative fields during the winter and fall when the fishing or diving businesses are relatively slow (Figure 31).

Eighty percent of the respondents have annual household incomes exceeding \$50,000, with incomes exceeding \$150K reported most often by those who use both dive and fishing charters (Figure 32). Forty-seven percent of the respondents' households contain two people (including the respondent), 20% only contain themselves, and 28% support three or four people (Table 9). Forty-three percent of the respondents get 81-100% of their total personal income from their diving or fishing operation while 24% receive between 0-20% (Figure 33). About 27% get 0-20% of their total household from fishing or diving whereas about 24% get 81 – 100% of their income (Figure 33).

When asked about the most valuable item used in their business, most survey participants pointed to their vessels. Charter fishing boats tended to be faster than the dive boats (Figure 34), more expensive to replace (Table 9), and had significantly more money invested in equipment than the other two user groups. Eighty percent of the respondents provided additional information on the fish finding equipment they use (Appendix B).

The survey respondents had many expenses last year, with the largest expenses being fuel, docking fees, and vessel maintenance (Table 10).

Spatial Information

Survey participants provided information on the geographical regions where they fish or dive and how many days they spend on the water in each of those areas during a typical year. In northwest Florida and central west Florida, all user groups averaged between 89 and 114 days on the water (Figure 35). In southwest Florida, including Florida Bay, the fishing sector and dive/fishing sector averaged 87 and 82 days on the water respectively while the divers only spent an average of 6 days on the water in this area (Figure 35). Divers spent the most days on the water in the area between Jupiter and Biscayne Bay and in the Florida Keys (Figure 35). There were no reports of businesses that cater to both fishermen and divers spending time in the area between Cape Canaveral and Jupiter. When the survey participants were asked why they fish or dive where they do, most responded that it was because of the site's proximity to port or because of the abundance of fish correct bottom, and water conditions, and some others said it was due to a lack of competition or conflict with other user groups (Table 11).

Additional comments about the participant's diving or fishing industries were provided by over 42% of the people surveyed and another 33% provided comments on the survey itself (Appendix B). Forty-five percent of the respondents requested to be contacted by phone to discuss aspects of the survey further. The additional information obtained during these conversations can be found in Appendices C and D. This high number of respondents who favored additional contact on this survey is a good indication that the respondents had a positive reaction with the survey questions and that they were interested in providing

additional feedback. Appendix B also lists additional comments of the respondents by question and survey number.

Tables

Table 1. Type of license held if a fishing charter captain (Q3).

License Type	Frequency	Percent
4-Passenger	26	19.2
6-Passenger	78	57.8
10-Passenger or More	31	23.0
Total	136	100.0

Table 2. Summary statistics on the number of trips taken in a typical year (Q6).

Business	N	Mean***	Std. Error
Fishing	95	155.93	12.986
Diving	35	233.77	40.642
Both	27	117.07	16.648

*** = significance at the 0.01 level

Table 3. Origin of customer base for fishing charter, diving charter, and dive/fishing charter businesses (Q7).

Business		N	Mean	Std. Error
Fishing	Percent Locals*	97	26.12	2.758
	Percent Out-of-State*	97	56.61	2.640
	Percent In-State	97	17.34	1.477
Diving	Percent Locals*	40	45.50	5.343
	Percent Out-of-State*	40	36.63	4.280
	Percent In-State	40	17.88	2.883
Both	Percent Locals*	28	29.96	4.640
	Percent Out-of-State*	28	46.36	4.541
	Percent In-State	28	21.50	3.214

* = significance at 0.1 level

Table 4. The size of goliath grouper typically seen by each business type (Q10).

Business		Frequency	Percent
Fishing	Less Than 3-Feet-Long	31	33.0
	More Than 3-Feet-Long	18	19.1
	Both	25	26.6
	I Don't Typically See Goliath Grouper	20	21.3
	Total	94	100.0
Diving	Less Than 3-Feet-Long	0	0
	More Than 3-Feet-Long	18	47.4
	Both	17	44.7
	I Don't Typically See Goliath Grouper	3	7.9
	Total	38	100.0
Both	Less Than 3-Feet-Long	4	14.3
	More Than 3-Feet-Long	10	35.7
	Both	12	42.9
	I Don't Typically See Goliath Grouper	2	7.1
	Total	28	100.0

Table 5. Respondents have customers who ask to see or catch goliath grouper (Q13).

Business		Frequency	Percent
Fishing	Yes	50	51.5
	No	47	48.5
	Total	97	100.0
Diving	Yes	23	57.5
	No	17	42.5
	Total	40	100.0
Both	Yes	15	53.6
	No	13	46.4
	Total	28	100.0

Table 6. Respondents' opinion regarding the "no take" zones established in state and federal waters around Florida (Q51)

Business	Opinion	Frequency	Percent
Fishing	Set Aside Additional Areas	18	19.4
	Reduce The Number Of These Areas	34	36.6
	Make No Changes	28	30.1
	No Opinion	12	12.9
	Total	93	100.0
Diving	Set Aside Additional Areas	25	65.8
	Reduce The Number Of These Areas	4	10.5
	Make No Changes	8	21.1
	No Opinion	1	2.6
	Total	38	100.0
Both	Set Aside Additional Areas	4	14.3
	Reduce The Number Of These Areas	7	25.0
	Make No Changes	13	46.4
	No Opinion	4	14.3
	Total	28	100.0

Table 7. Organizations in which respondents maintain memberships (Q34).

Business	Frequency	Number	Percent
Sport Fishing Association			
Fishing	53	84	63.1
Diving	3	26	11.5
Both	13	17	76.5
Chamber Of Commerce			
Fishing	24	71	33.8
Diving	20	31	64.5
Both	11	14	78.6
Environmental Group			
Fishing	30	70	42.9
Diving	16	31	51.6
Both	9	12	75
Diving Or Spearfishing Club			
Fishing	4	54	7.4
Diving	19	30	63.3
Both	17	19	89.5

Table 8. Family members supported by the respondent including the respondent (Q33).

	Business	Frequency	Percent
Fishing	Myself	18	18.8
	2	45	46.9
	3	11	11.5
	4	17	17.7
	5	3	3.1
	6	1	1.0
	7	1	1.0
	Total	96	100.0
Diving	Myself	11	26.8
	2	20	48.8
	3	5	12.2
	4	4	9.8
	5	1	2.4
	Total	41	100.0
	Both	Myself	4
2		12	44.4
3		7	25.9
4		2	7.4
5		1	3.7
Greater Than 7		1	3.7
Total		27	100.0

Table 9. The best estimate of the replacement value of the equipment that the respondents used for diving/fishing last season (Q38).

Business	Price	N	Minimum	Maximum	Mean	St. Dev.
Fishing	Vessel	86	\$300	\$100,000,000	\$1,857,736	11,984,706
	Electronic Equipment	86	\$30	\$2,000,000	\$35,635	217,925
	Fishing Rods or Spearguns	87	\$20	\$3,000,000	\$42,379	321,144
	Tackle	84	\$1	\$1,000,000	\$14,908	108,933
	Scuba or Snorkeling Equipment	26	\$0	\$1,000,000	\$39,296	195,951
	Other*	14	\$0	\$40,000	\$9,079	14,594
Diving	Vessel	24	\$0	\$800,000	\$182,313	205,010
	Electronic Equipment	22	\$0	\$100,000	\$15,000	27,891
	Fishing Rods or Spearguns	18	\$0	\$10,000	\$1,728	2,488
	Tackle	10	\$0	\$1,000	\$168	310
	Scuba or Snorkeling Equipment	36	\$200	\$800,000	\$38,017	135,127
	Other *	3	\$0	\$300,000	\$100,000	173,205
Both	Vessel	23	\$0	\$800,000	\$123,659	111,626
	Electronic Equipment	23	\$0	\$100,000	\$12,765	14,789
	Fishing Rods or Spearguns	23	\$0	\$10,000	\$10,348	10,470
	Tackle	22	\$0	\$1,000	\$6,355	10,998
	Scuba or Snorkeling Equipment	23	\$200	\$800,000	\$6,474	4,855
	Other *	2	\$0	\$300,000	\$8,000	2,828

The asterisks imply that the difference of means between fishing, diving and both groups is significant:
 * at 10%, ** at 5%, *** at 1% level of significance. This only applies to tables and figures with means.
 The absence of asterisks means that the mean(s) are NOT significantly different.

Table 10. The best estimate of the respondent's expenses last year (Q41).

Business	Expenses	N	Minimum	Maximum	Mean	Std. Dev.
Fishing	Docking Fees	67	\$0	\$120,000	\$6,198	14,999
	Vessel Interest Payments	57	\$0	\$80,000	\$4,417	10,856
	P&I Insurance	81	\$0	\$14,000	\$2,688	2,674
	Vessel Maintenance	82	\$200	\$100,000	\$6,269	12,790
	Gear Maintenance	77	\$50	\$20,000	\$1,572	2,780
	Bait	76	\$0	\$15,000	\$2,143	2,490
	Ice	73	\$0	\$7,000	\$808	1,211
	Fuel	80	\$35	\$100,000	\$13,047	20,022
	Other	67	\$100	\$20,150	\$1,298	2,579
Diving	Docking Fees	16	\$0	\$43,200	\$11,380	10,649
	Vessel Interest Payments	10	\$0	\$60,000	\$10,936	18,010
	P&I Insurance	17	\$500	\$18,000	\$5,694	4,531
	Vessel Maintenance	17	\$200	\$60,000	\$11,250	14,444
	Gear Maintenance	14	\$80	\$5,000	\$1,949	1,649
	Bait	5	\$0	\$300	\$90	124
	Ice	14	\$20	\$7,000	\$1,138	1,791
	Fuel	18	\$300	\$60,000	\$14,811	15,824
	Other	10	\$125	\$3,000	\$1,223	1,071
Both	Docking Fees	17	\$0	\$8,000	\$2,765	2,613
	Vessel Interest Payments	12	\$0	\$12,000	\$2,333	3,573
	P&I Insurance	17	\$0	\$10,000	\$2,988	2,403
	Vessel Maintenance	18	\$500	\$17,000	\$4,353	4,003
	Gear Maintenance	18	\$200	\$11,000	\$2,189	2,567
	Bait	16	\$0	\$5,000	\$2,086	\$1,821
	Ice	15	\$0	\$5,000	\$1,337	\$1,550
	Fuel	15	\$2,000	\$30,000	\$11,333	\$8,156
	Other	13	\$100	\$10,401	\$1,815	\$2,880

Table 11. The primary reason for the selection of the respondents' diving/fishing areas (Q59).

Business		Frequency	Percent
Fishing	Proximity To Port	52	44.4
	Abundance Of Fish/Correct Bottom Or Water Conditions	42	35.9
	Lack Of Competition/Conflicts From Other Users	17	14.5
	Other (Please List)	6	5.1
	Total	117	100.0
Diving	Proximity To Port	25	54.3
	Abundance Of Fish/Correct Bottom Or Water Conditions	17	37.0
	Lack Of Competition/Conflicts From Other Users	2	4.3
	Other (Please List)	2	4.3
	Total	46	100.0
Both	Proximity To Port	17	39.5
	Abundance Of Fish/Correct Bottom Or Water Conditions	15	34.9
	Lack Of Competition/Conflicts From Other Users	7	16.3
	Other (Please List)	4	9.3
	Total	43	100.0

Figures

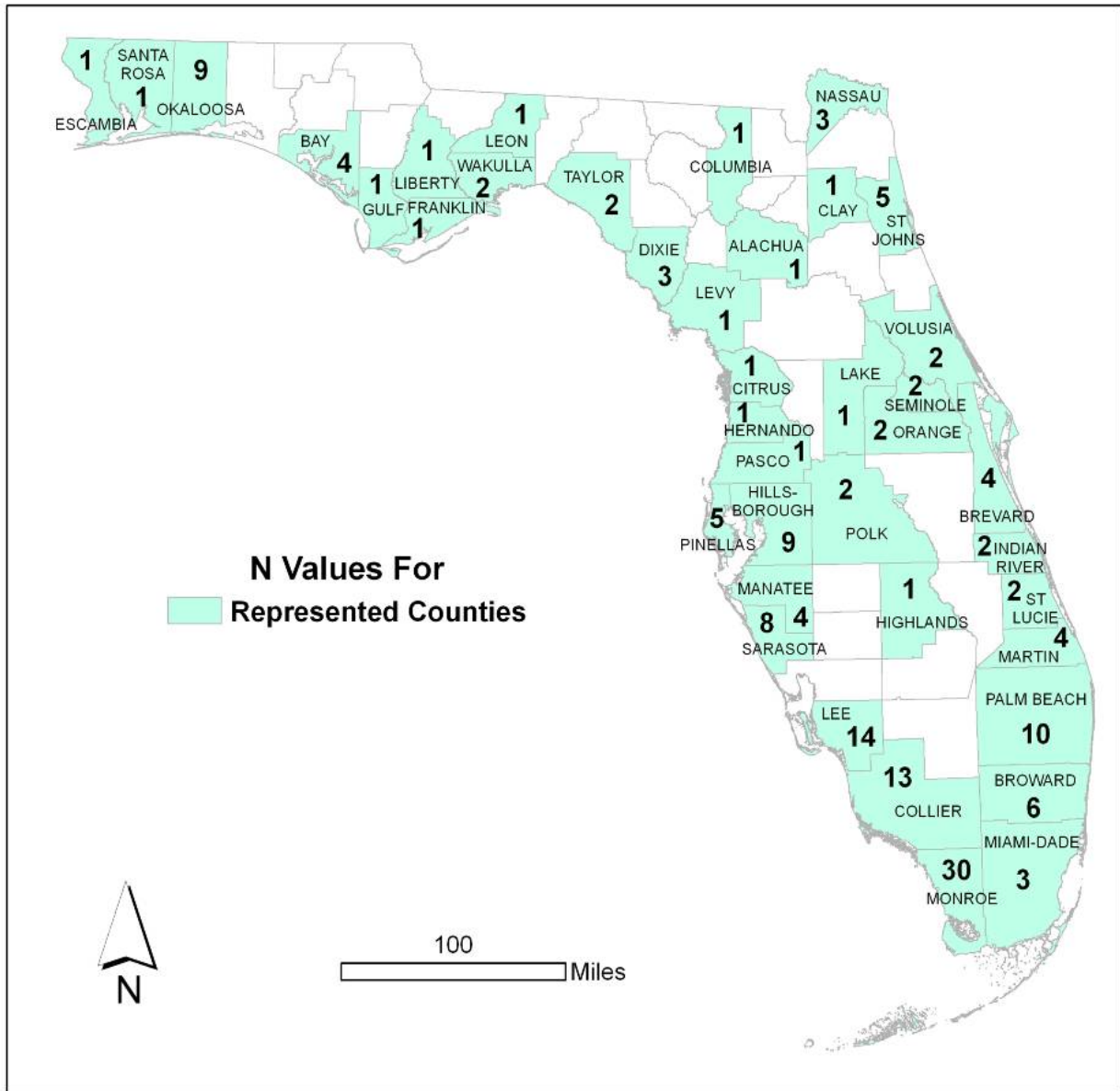


Figure 1. Map showing the number of surveys completed in each Florida county (Q26).

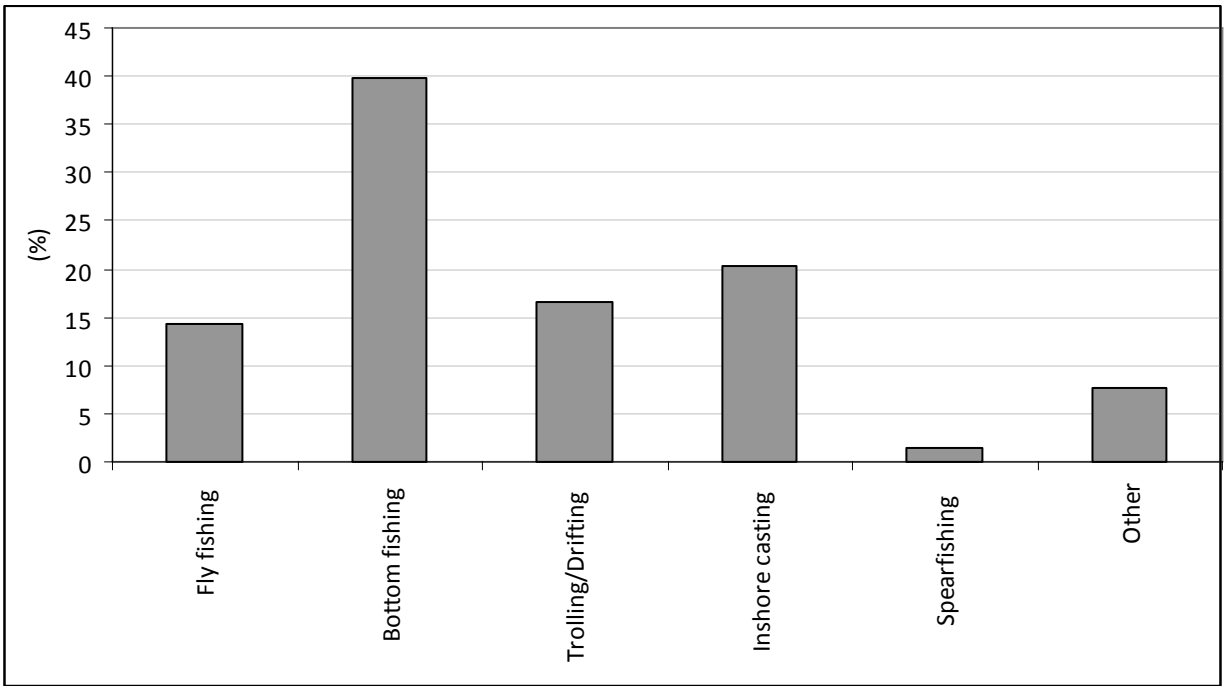


Figure 3. Type of fishing techniques used in the charter boat industry (Q4). N=211

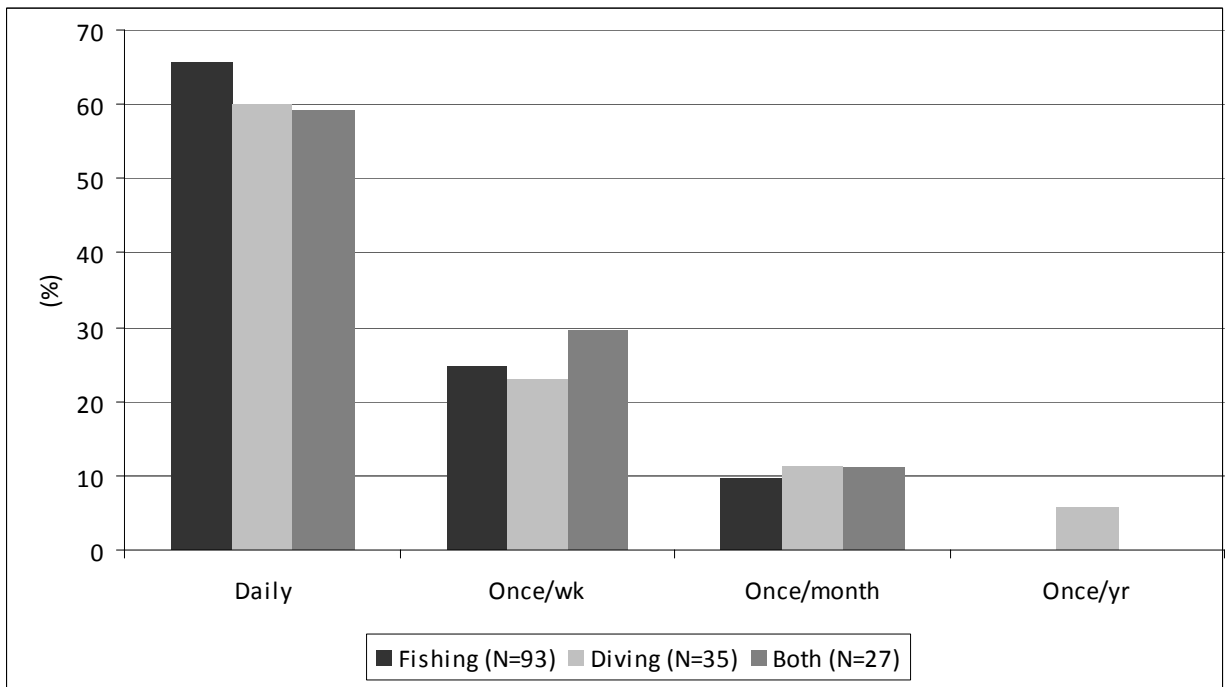
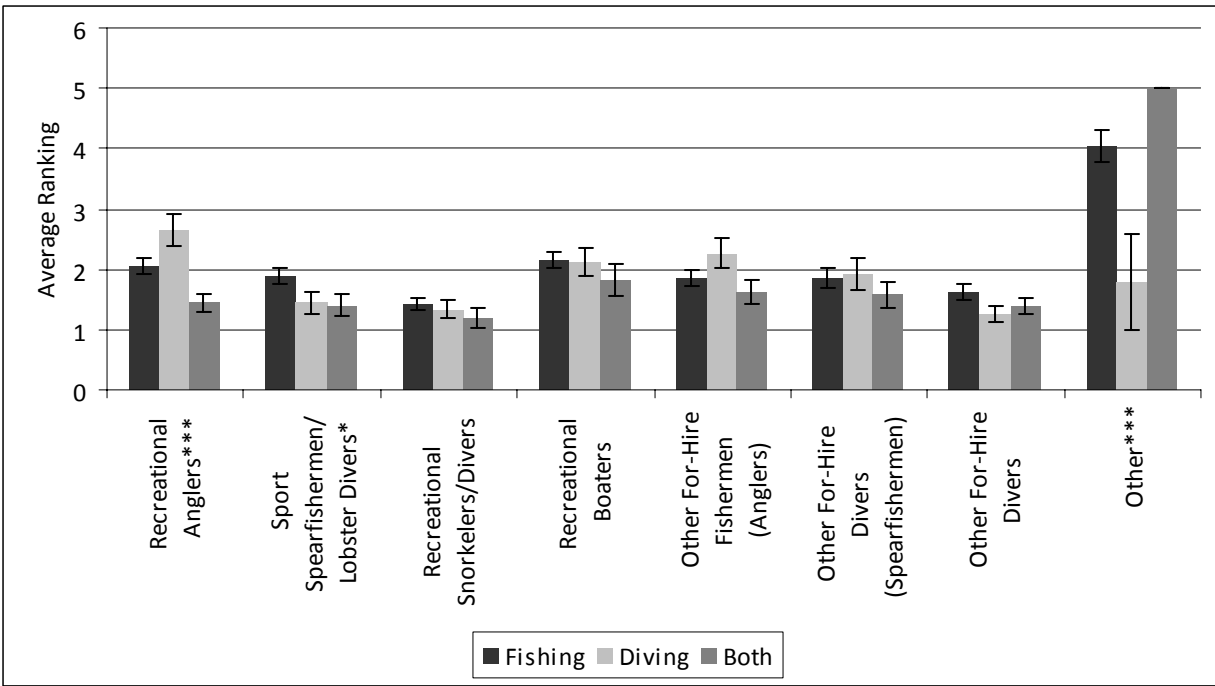


Figure 4. The frequency of fishing and diving trips (Q5).



Bars are for ± one standard error around the mean. Levels of significance are ***: 1%, **:5%, *: 10%.

Figure 5. Ranking by sector of the respondents' level of conflict to other user groups (1=no conflict, 5=the most conflict) (Q48).

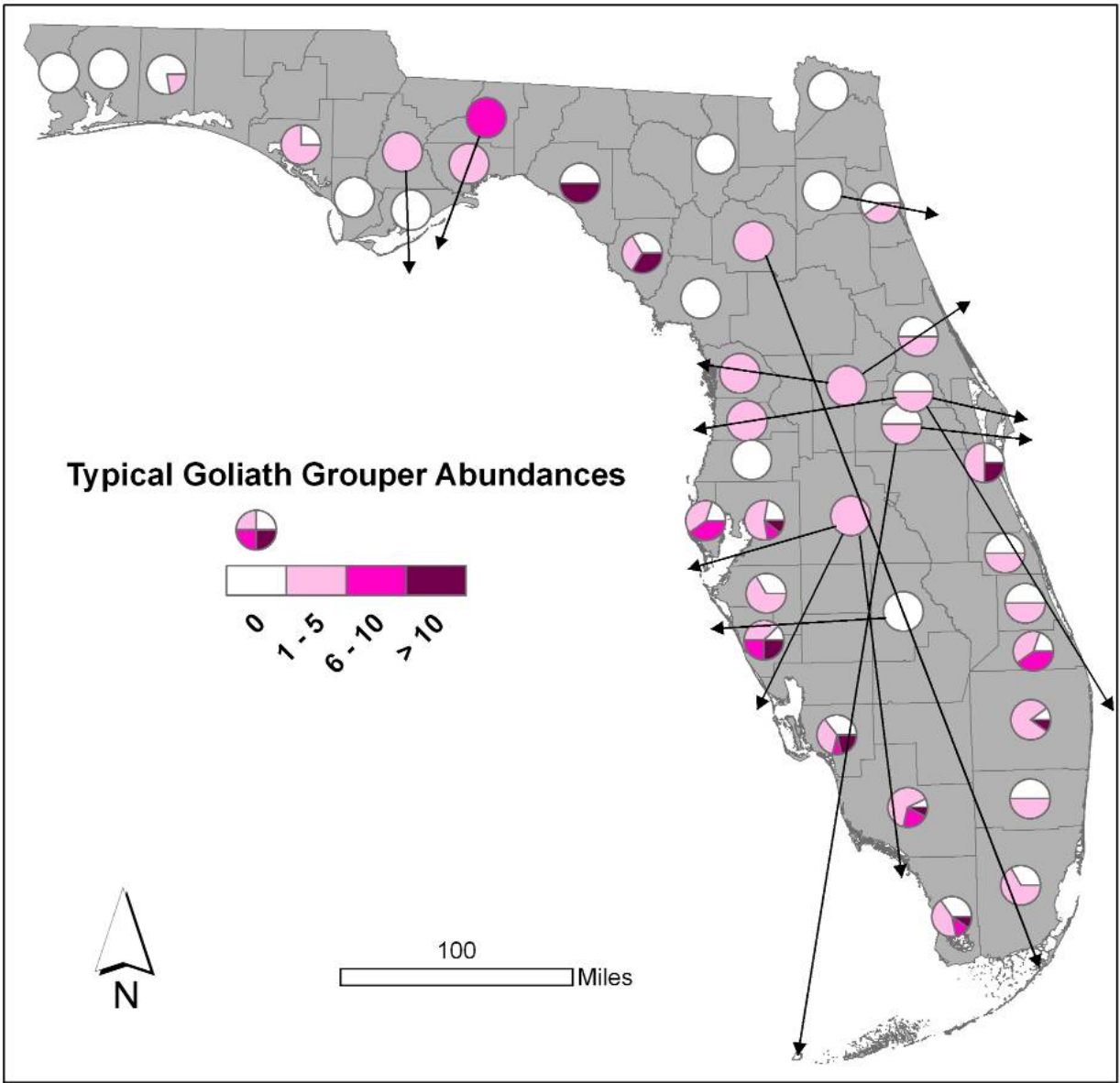


Figure 6. Spatial distribution by Florida county of the number of goliath observed on a typical trip (Q9).

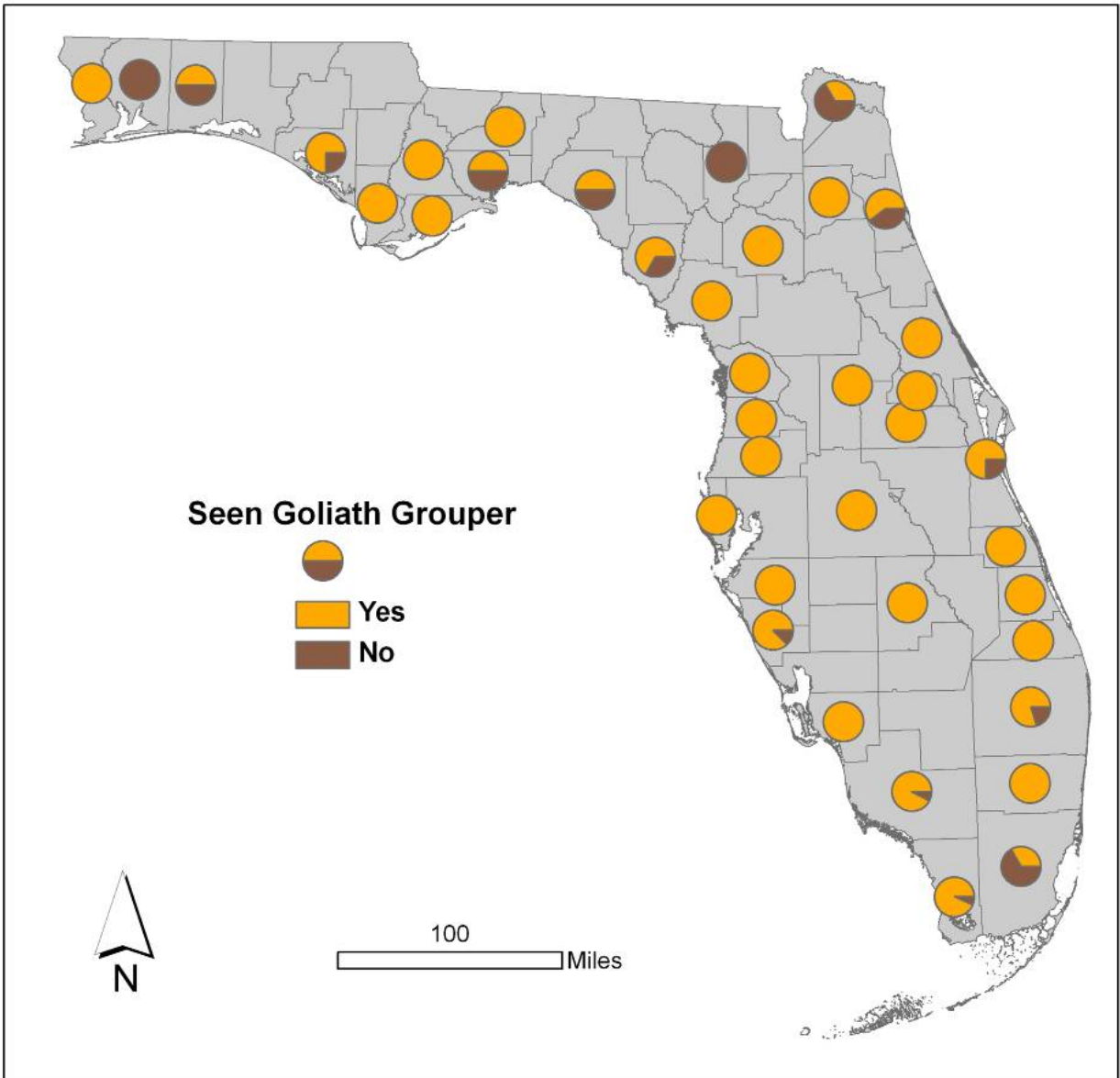


Figure 7. Spatial distribution by Florida County of all survey respondents that have observed goliath grouper (designated by business county of origin) (Q8).

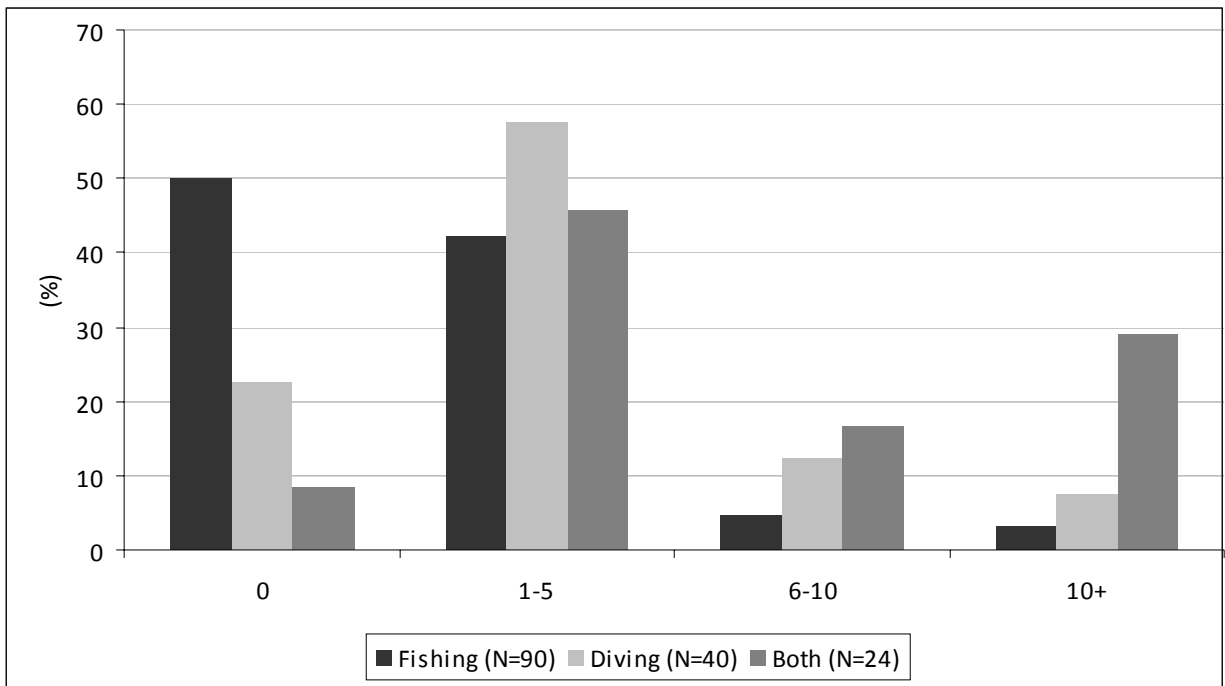


Figure 8. The average number of goliath grouper seen or caught on a typical trip (Q9).

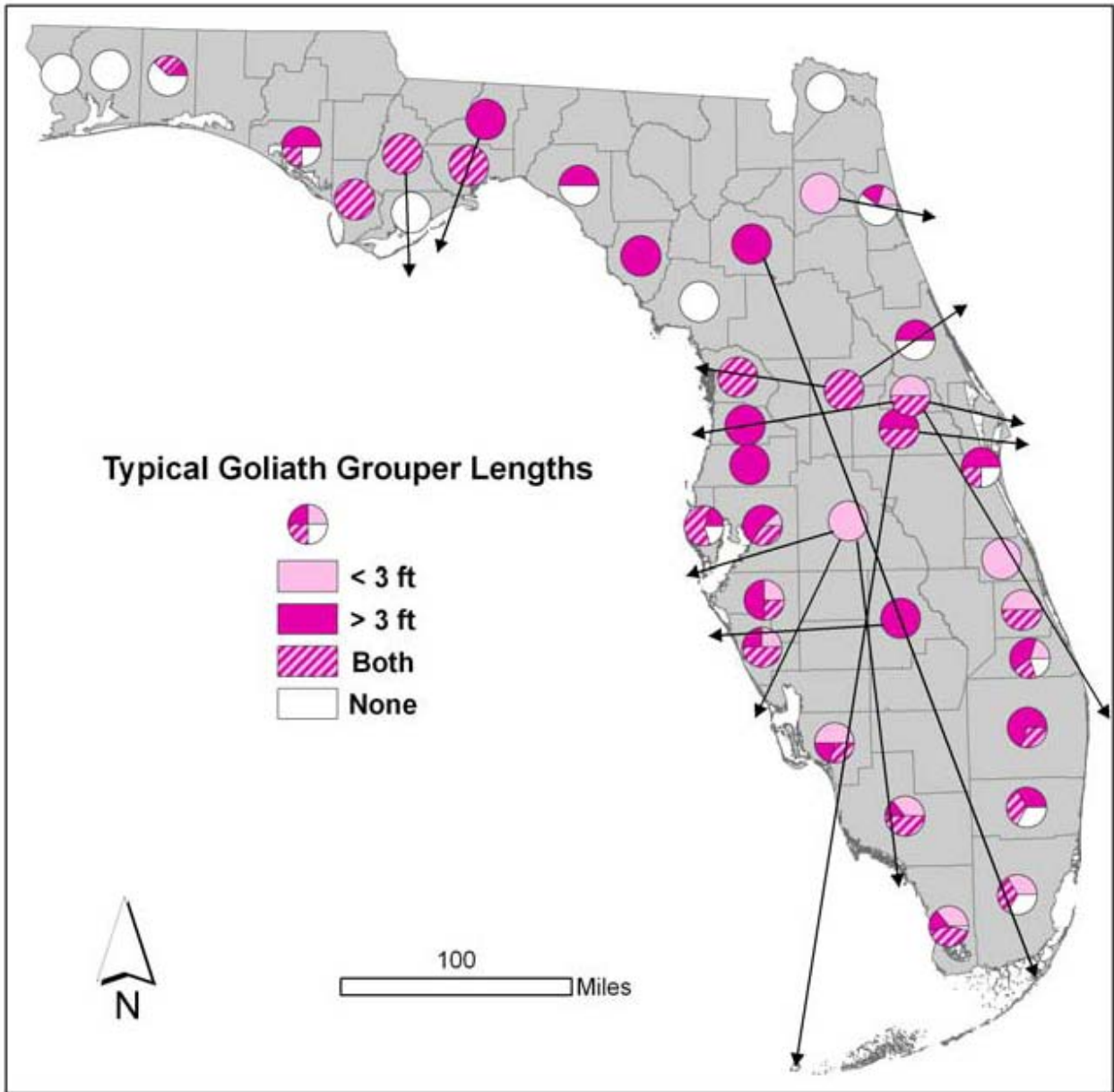


Figure 9. Spatial distribution by county indicating the lengths of the goliath grouper observed by fishing and diving businesses (Q10).

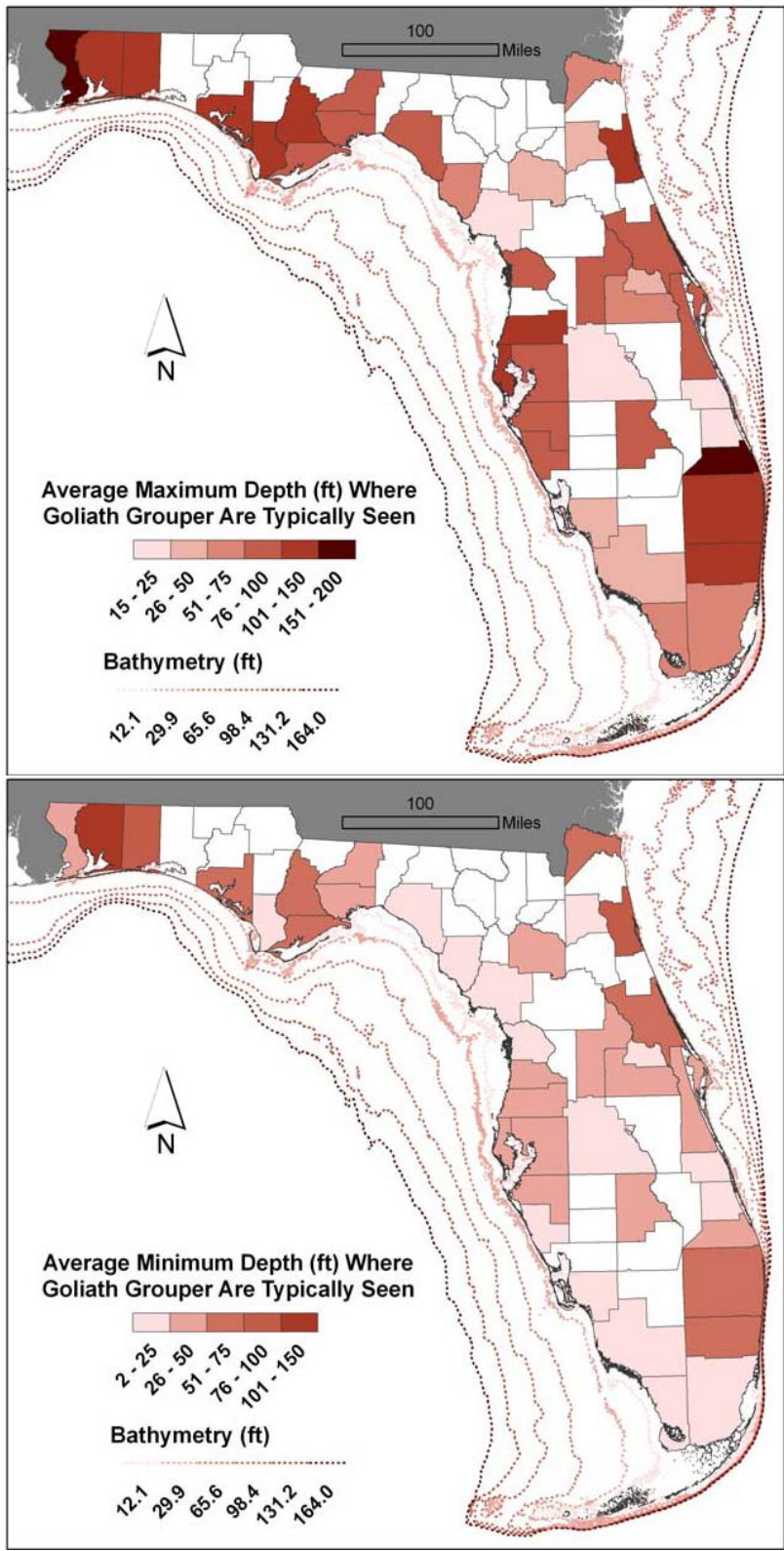


Figure 10. The average maximum (top) and minimum (bottom) depths where goliath grouper are typically encountered by county of residence, with bathymetric contours for reference (Q12)

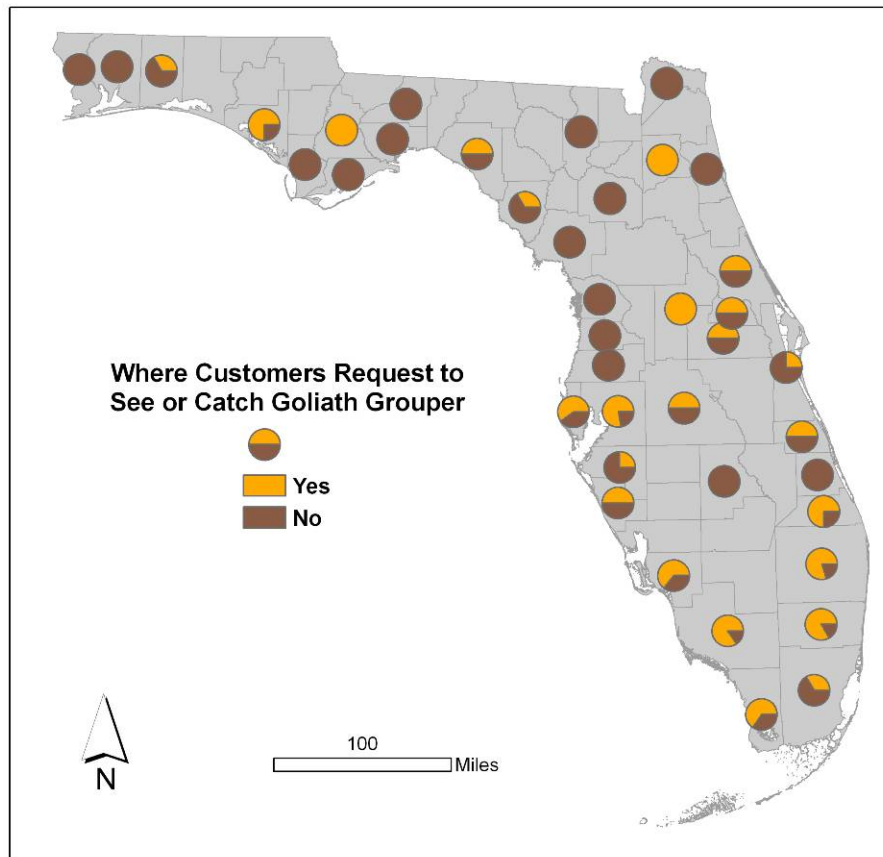


Figure 11. Percentage of businesses by county that have customers request to see or catch goliath grouper (Q13).

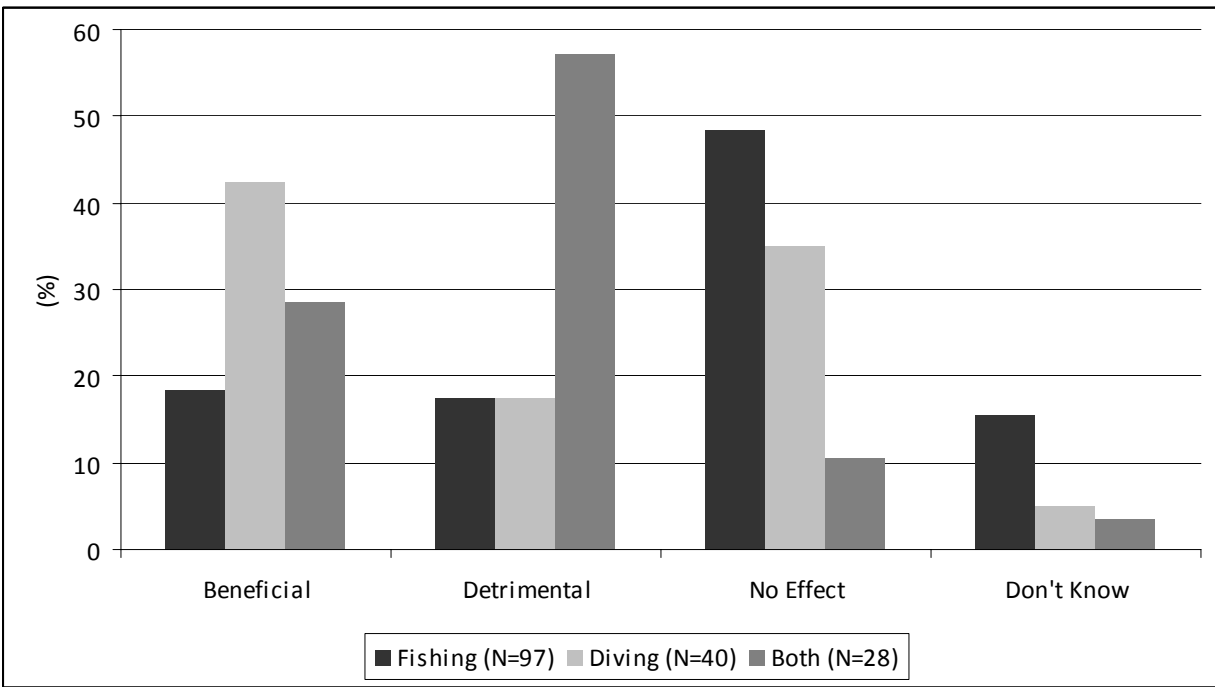


Figure 12. Respondent's perception of how goliath grouper influence their respondent's charter business (Q15).

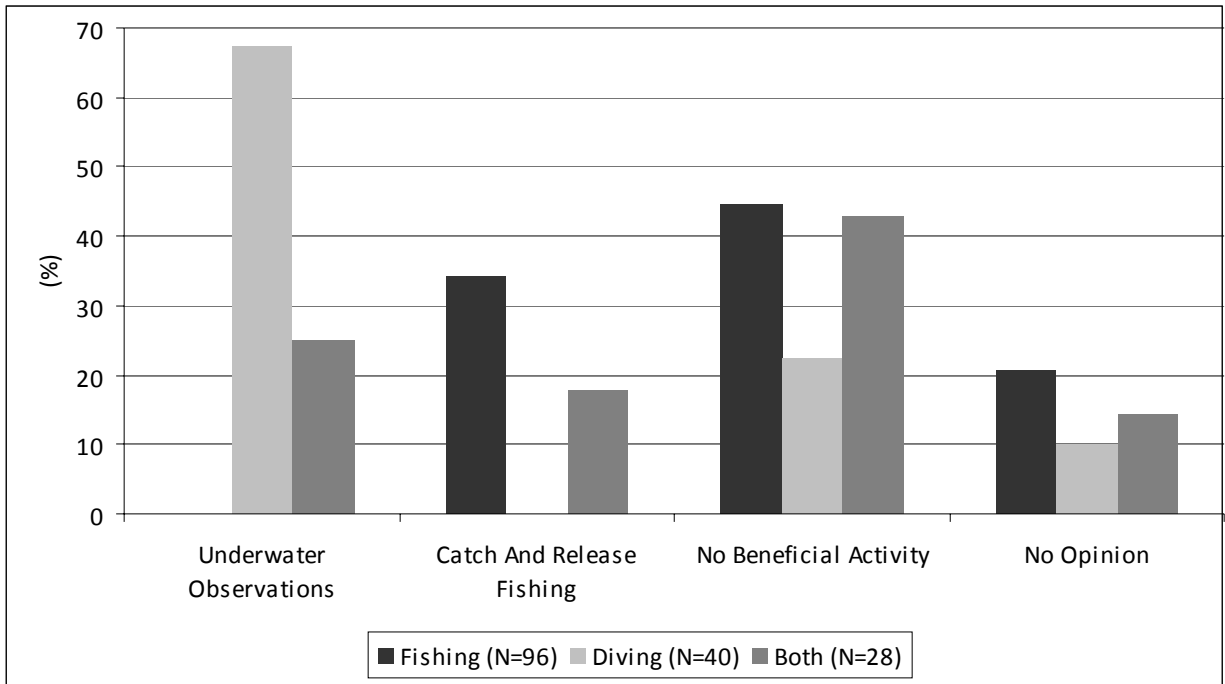


Figure 13. Respondent's perception of the relative benefits of goliath grouper activity to their business (Q19).

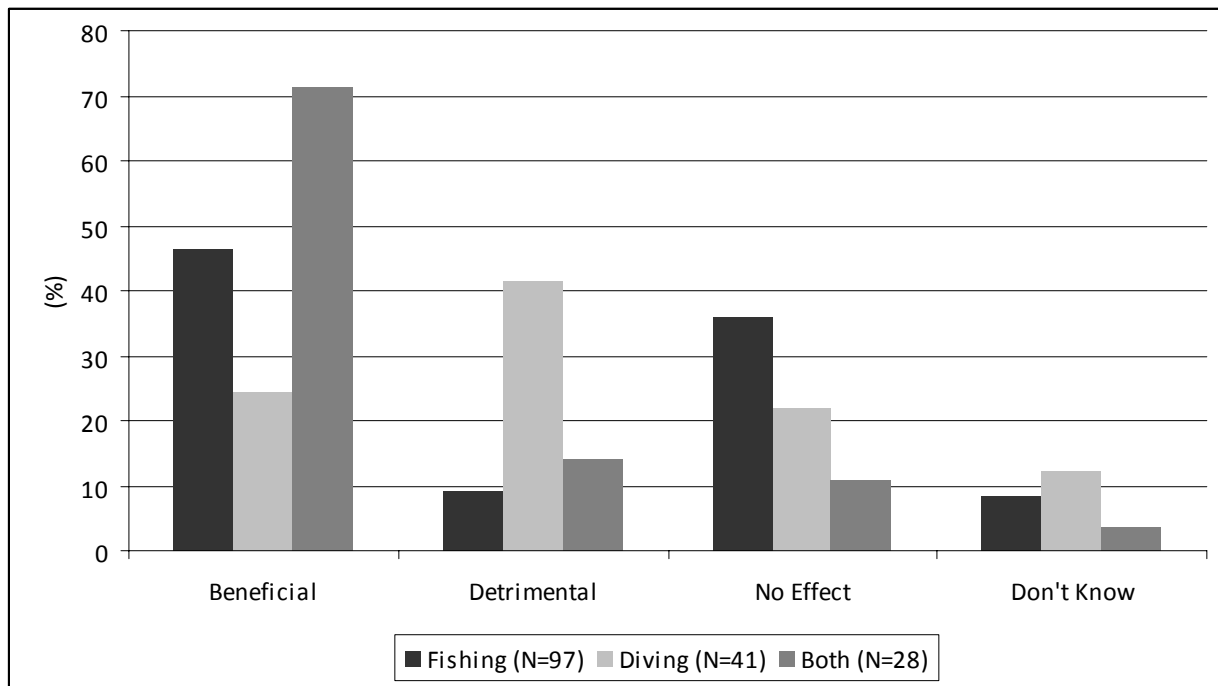


Figure 14. The effect on the respondents' businesses if goliath grouper were allowed to be harvested (Q20).

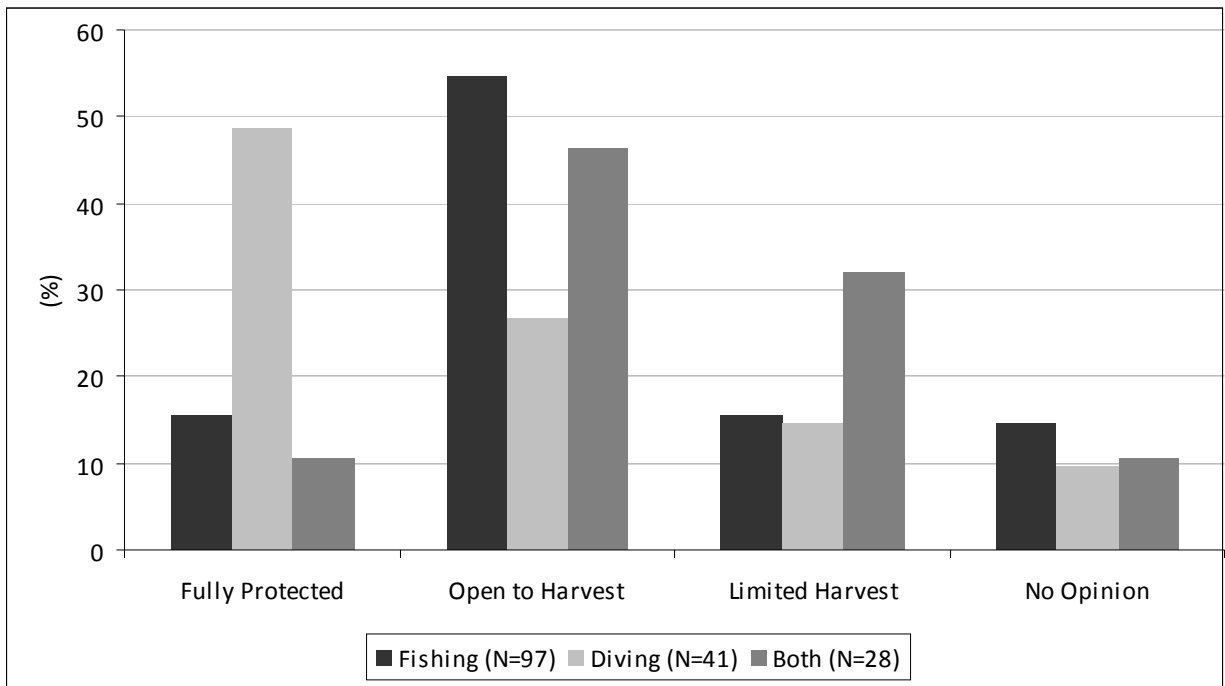
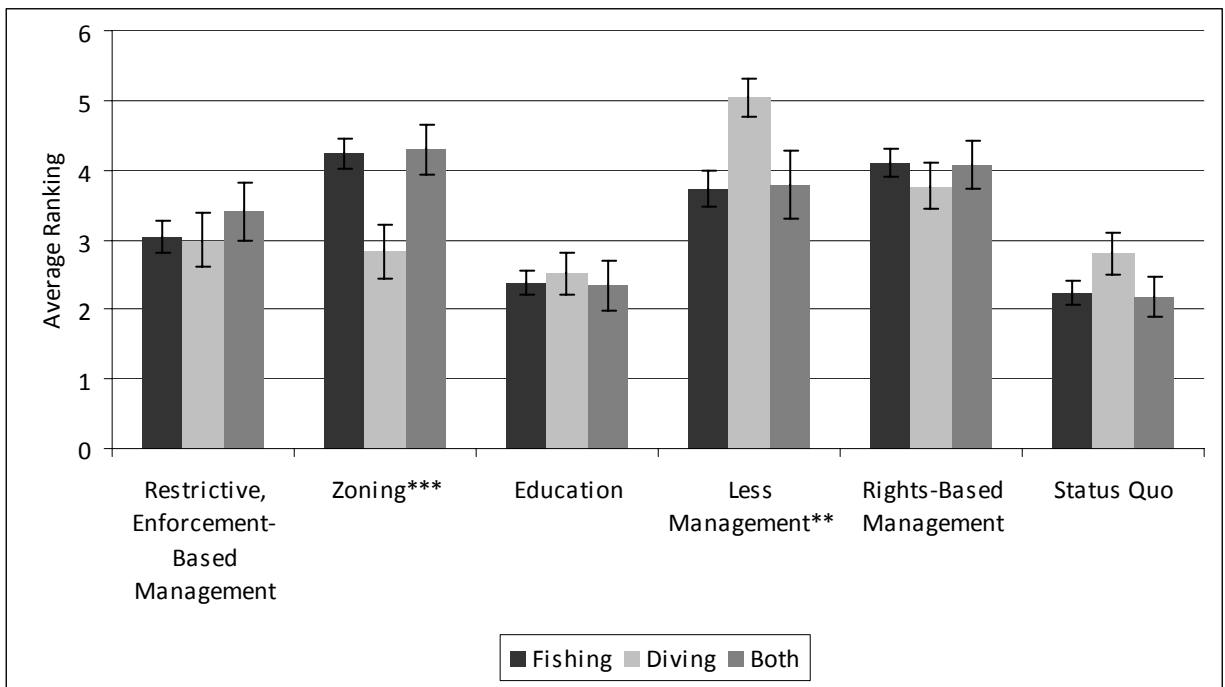
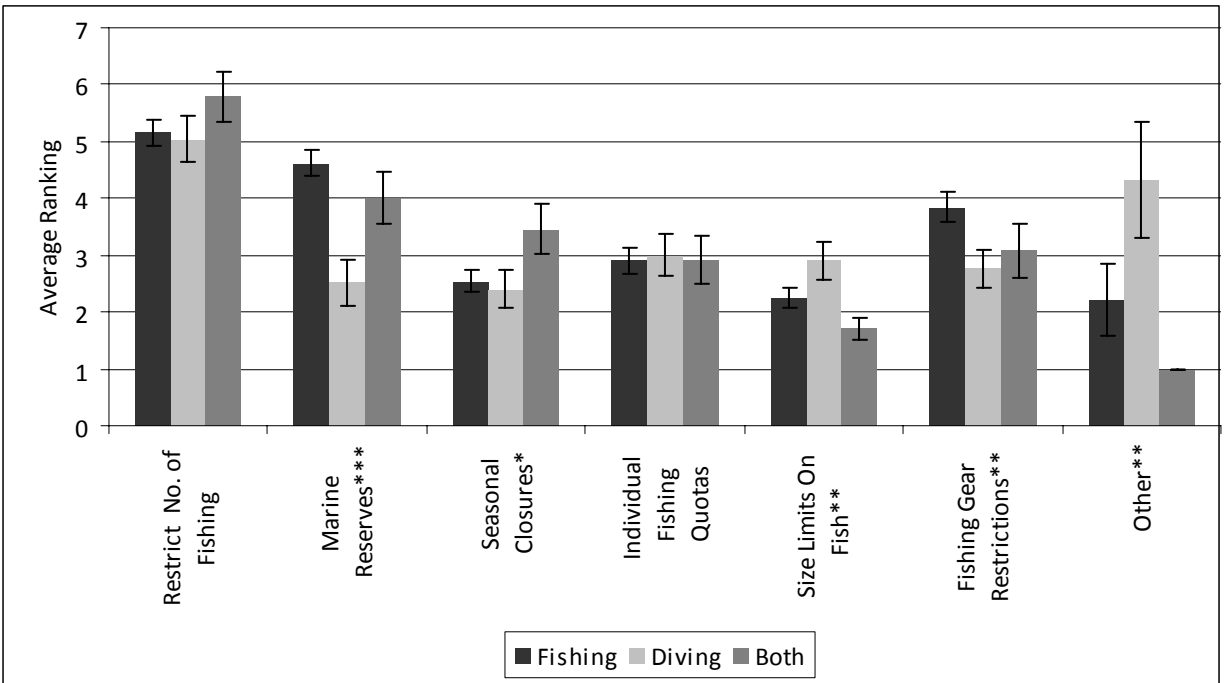


Figure 15. Opinions of respondents on how goliath grouper should be managed (Q16).



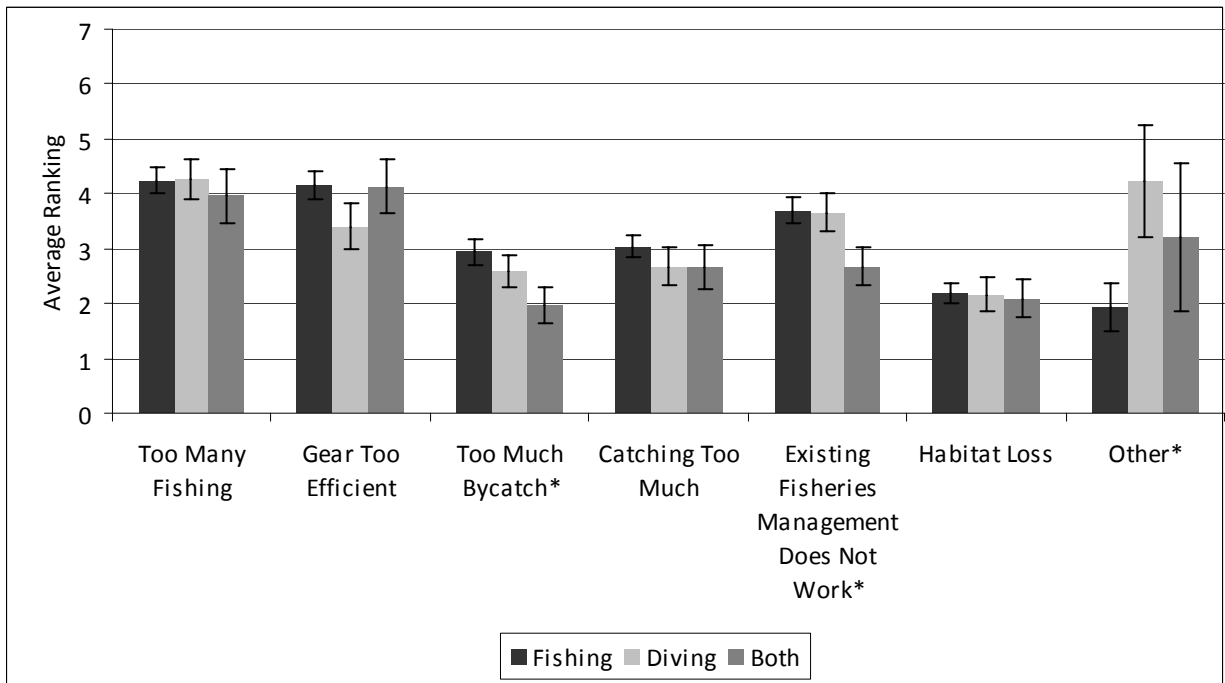
Bars are for \pm one standard error around the mean. Levels of significance are ***: 1%, **:5%, *: 10%.

Figure 16. The respondents' rankings of management, where 1 is the most preferred form of management and 6 is the least preferred form of management (Q49).



Bars are for ± one standard error around the mean. Levels of significance are ***: 1%, **:5%, *: 10%.

Figure 17. Ranking of the most effective form of fisheries management where 1 is the most effective and 7 is the least effective (Q58).



Bars are for ± one standard error around the mean. Levels of significance are ***: 1%, **:5%, *: 10%.

Figure 18. Ranked obstacles to sustainable fisheries Florida where 1 is the most important and 7 is the least important (Q57).

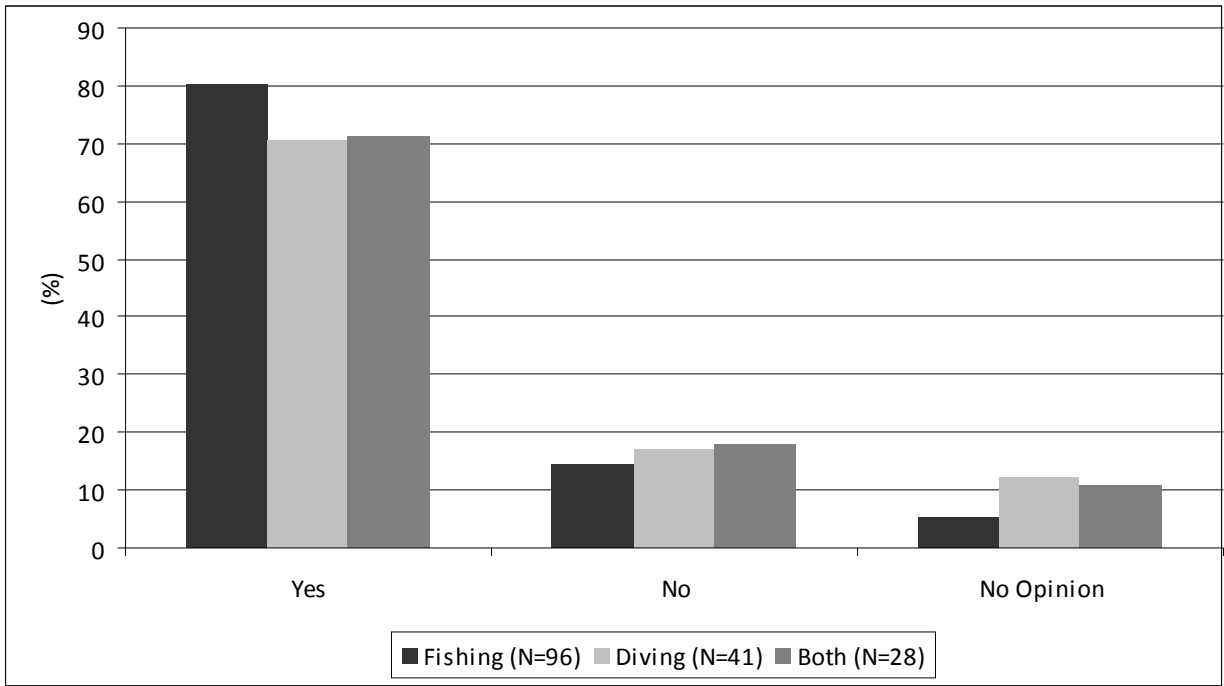


Figure 19. The support of catch and release as a fisheries management strategy (Q18).

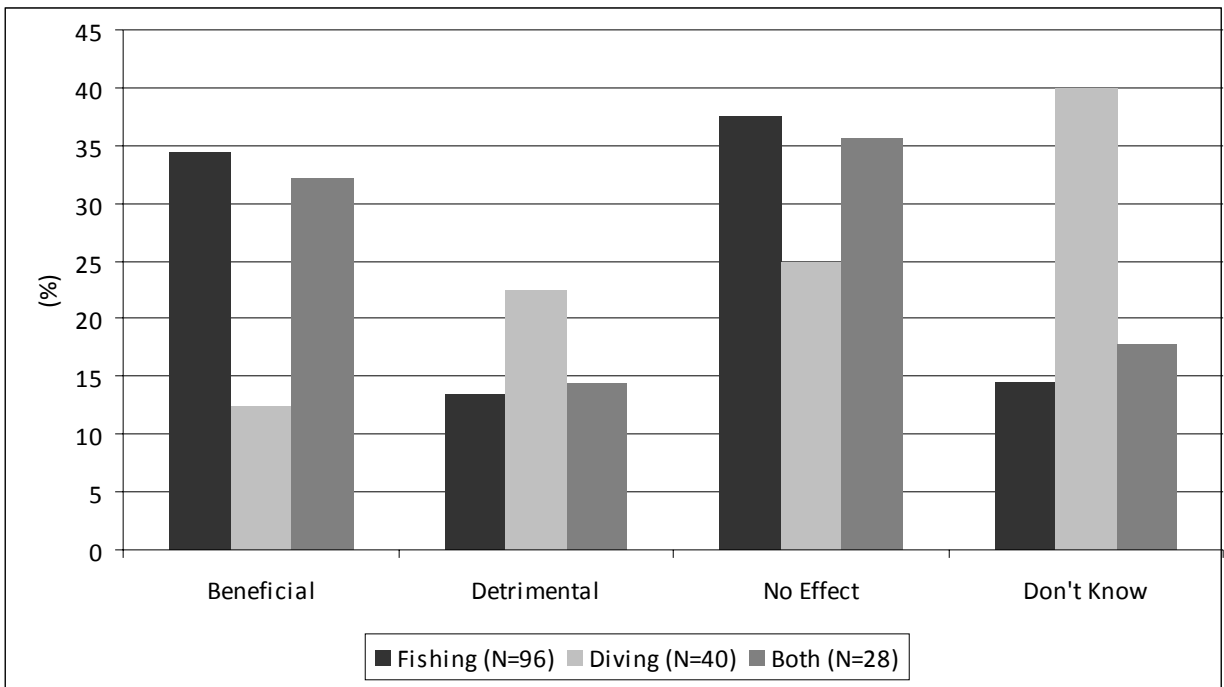


Figure 20. The effect that catch-and-release angling methods have on the goliath grouper population (Q17).

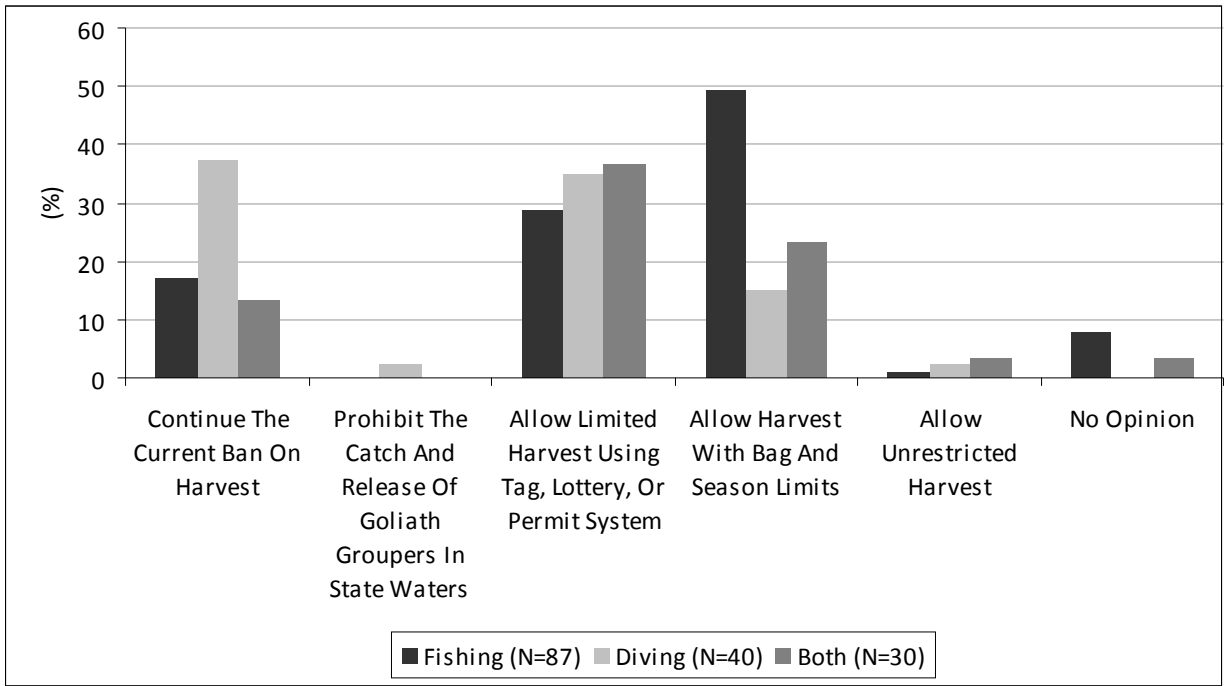


Figure 21. How the respondents think the state of Florida should manage goliath grouper (Q61).

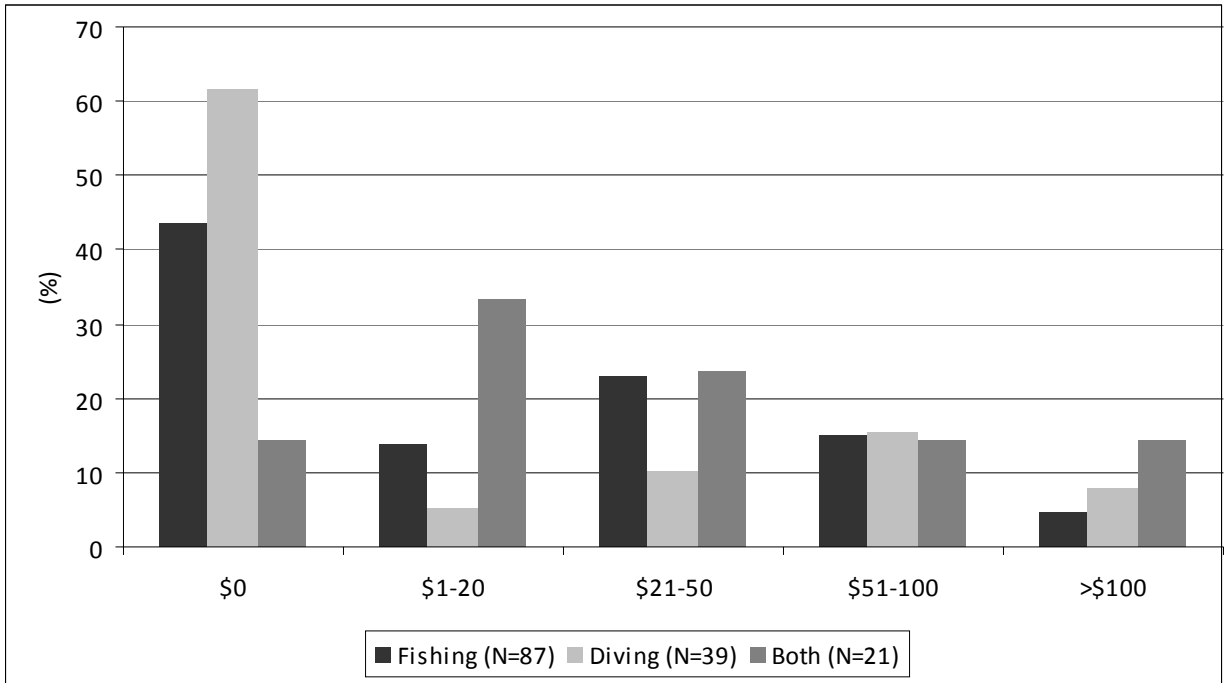


Figure 22. The maximum amount the respondents would pay for a permit to catch a limited number of goliath grouper (Q63).

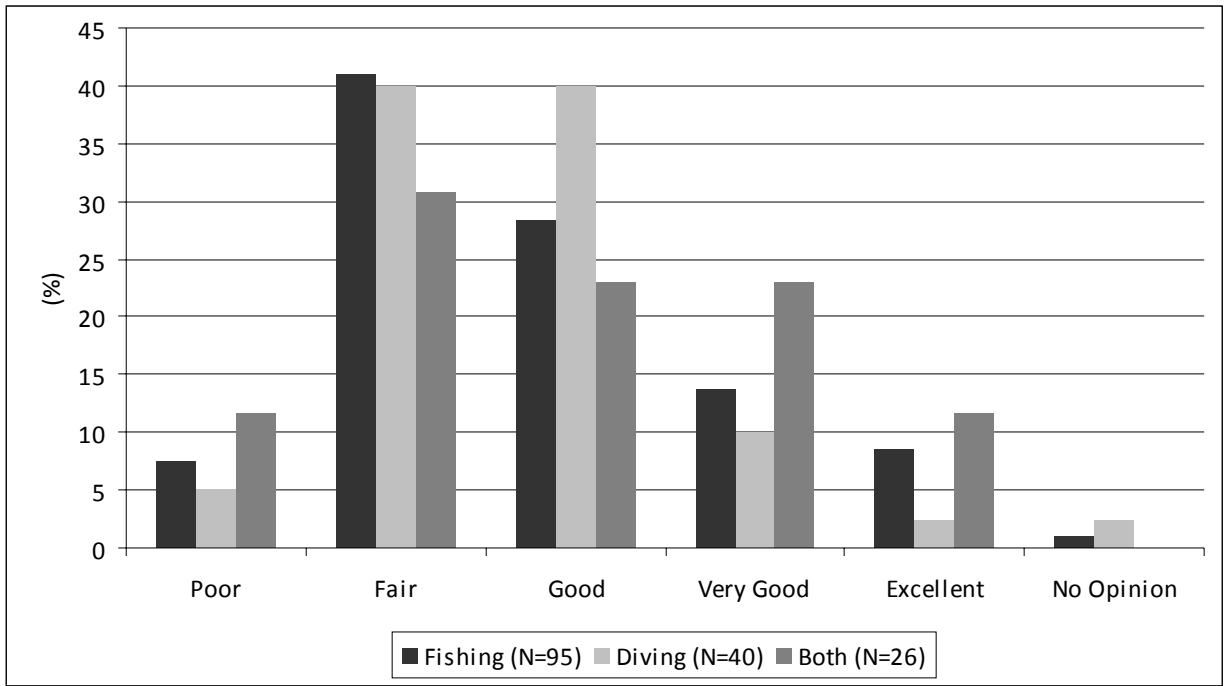


Figure 23. The overall rating of current health of the respondents' fishing/diving grounds (Q24).

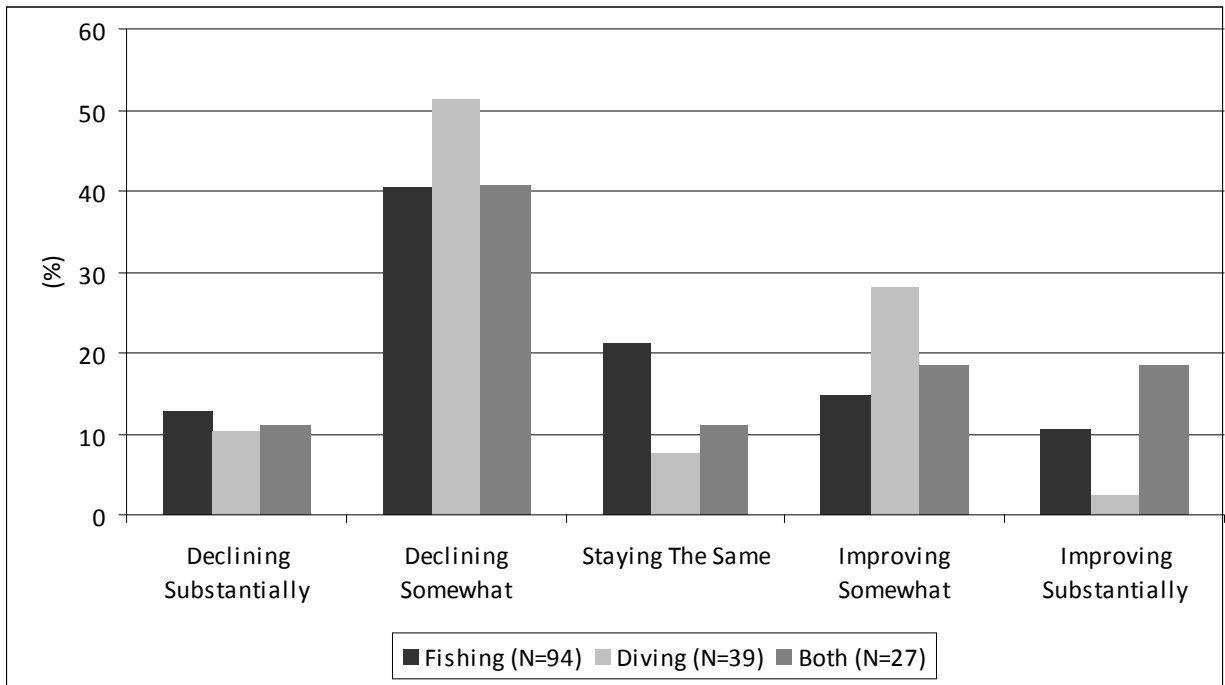
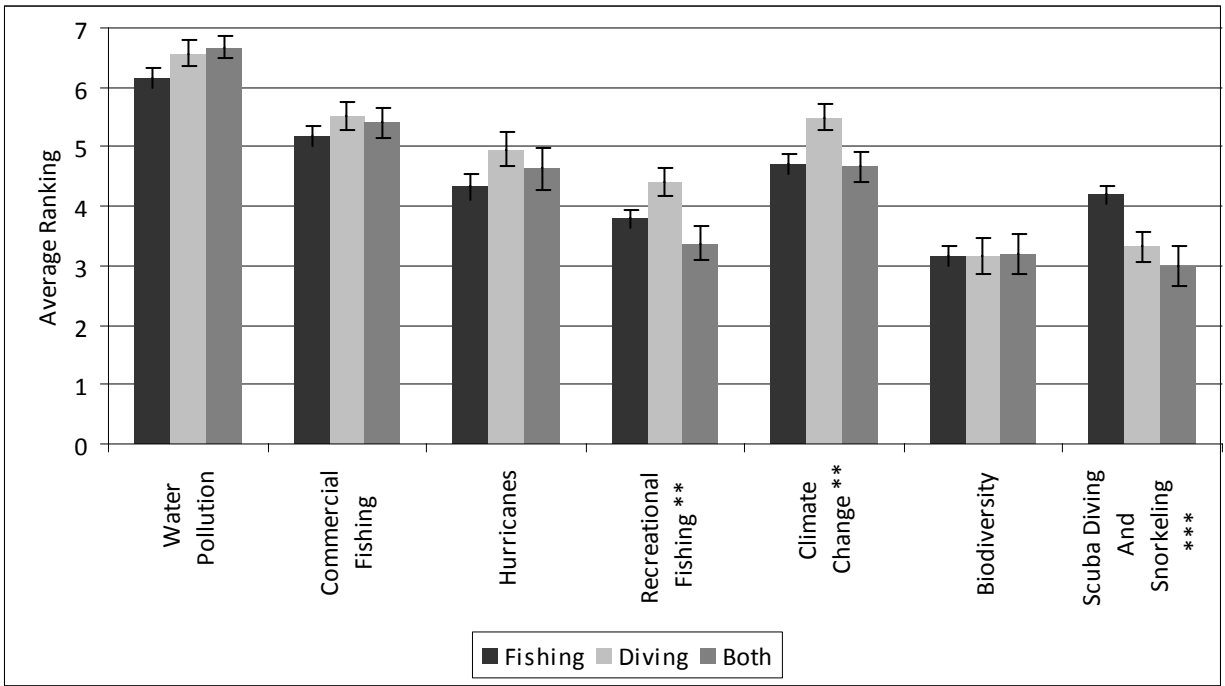
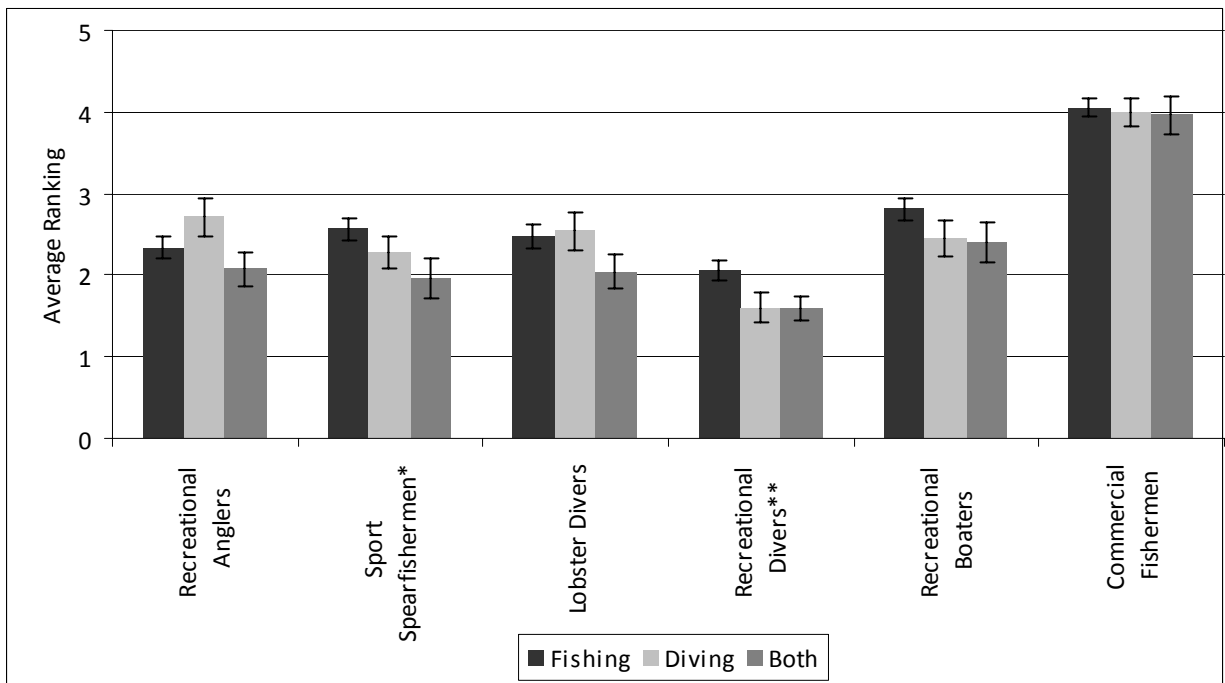


Figure 24. Opinion of respondents on the changes in the status of their fishing/diving grounds over the last 20 years (Q25).



Bars are for ± one standard error around the mean. Levels of significance are ***: 1%, **:5%, *: 10%.

Figure 25. The effect that water pollution, commercial fishing, hurricanes, recreational fishing, climate change, biodiversity, and scuba diving/snorkeling might have on the health of the reefs (1=positive, 4=no effect, 7=negative) (Q23).



Bars are for ± one standard error around the mean. Levels of significance are ***: 1%, **:5%, *: 10%.

Figure 26. The level of impact of different user groups to marine resources where 1 is low impact and 5 is high impact to marine resources (Q50).

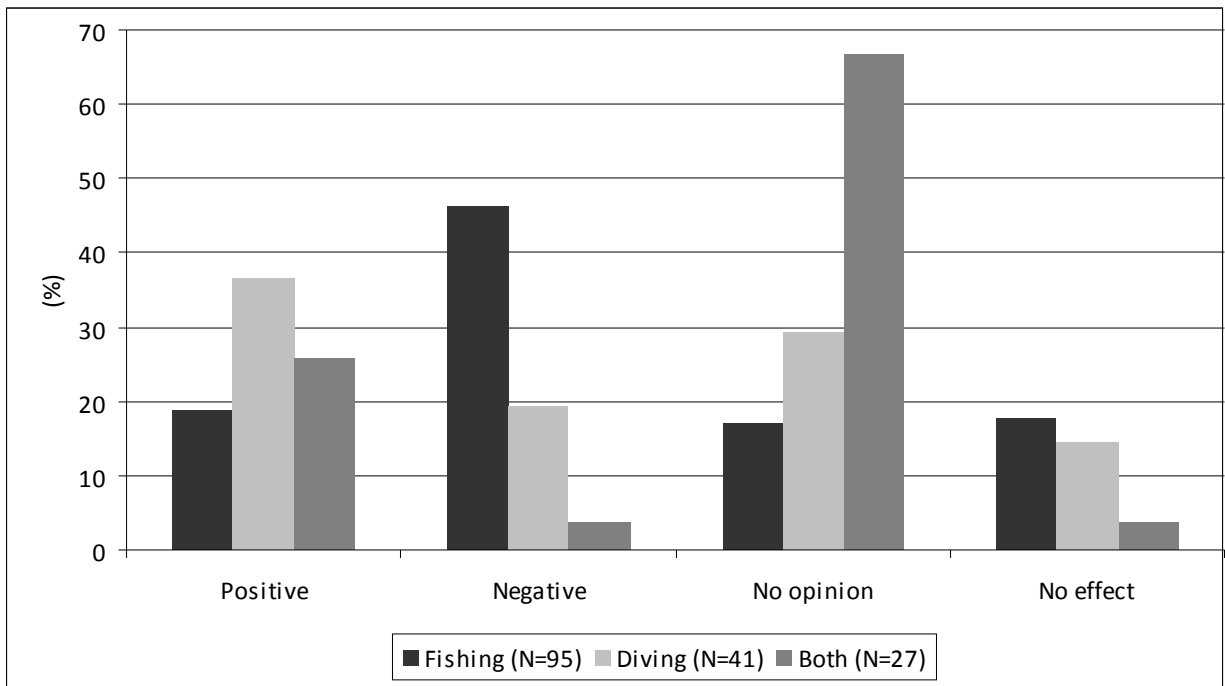


Figure 27. Opinion of respondents on the effect that recovered goliath grouper populations have on the areas where they dive or fish (Q22).

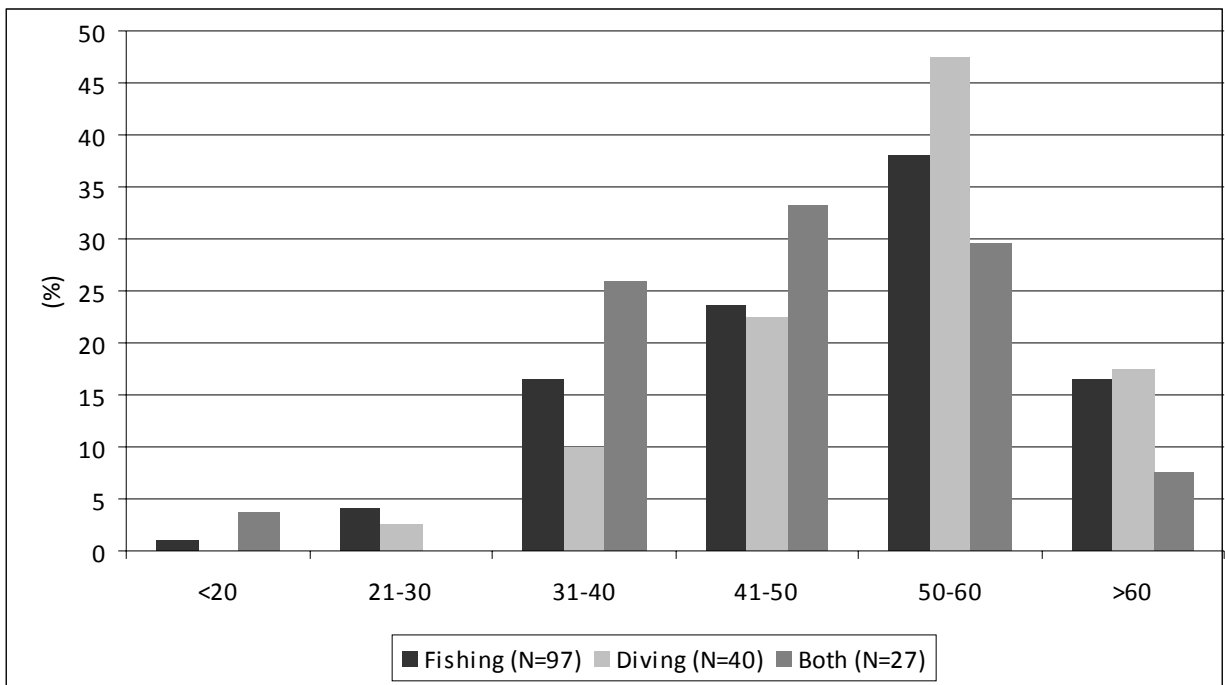


Figure 28. Age distribution of survey respondents (Q27).

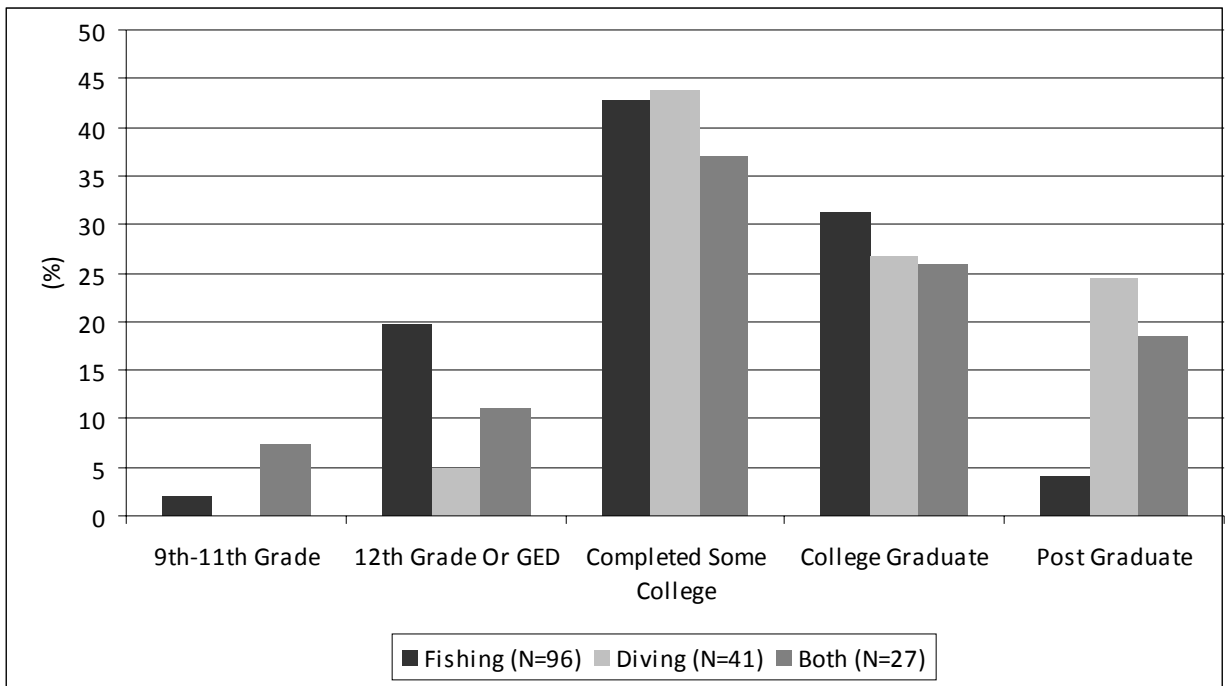


Figure 29. Level of education of the respondents (all respondents completed 9th grade or higher) (Q29).

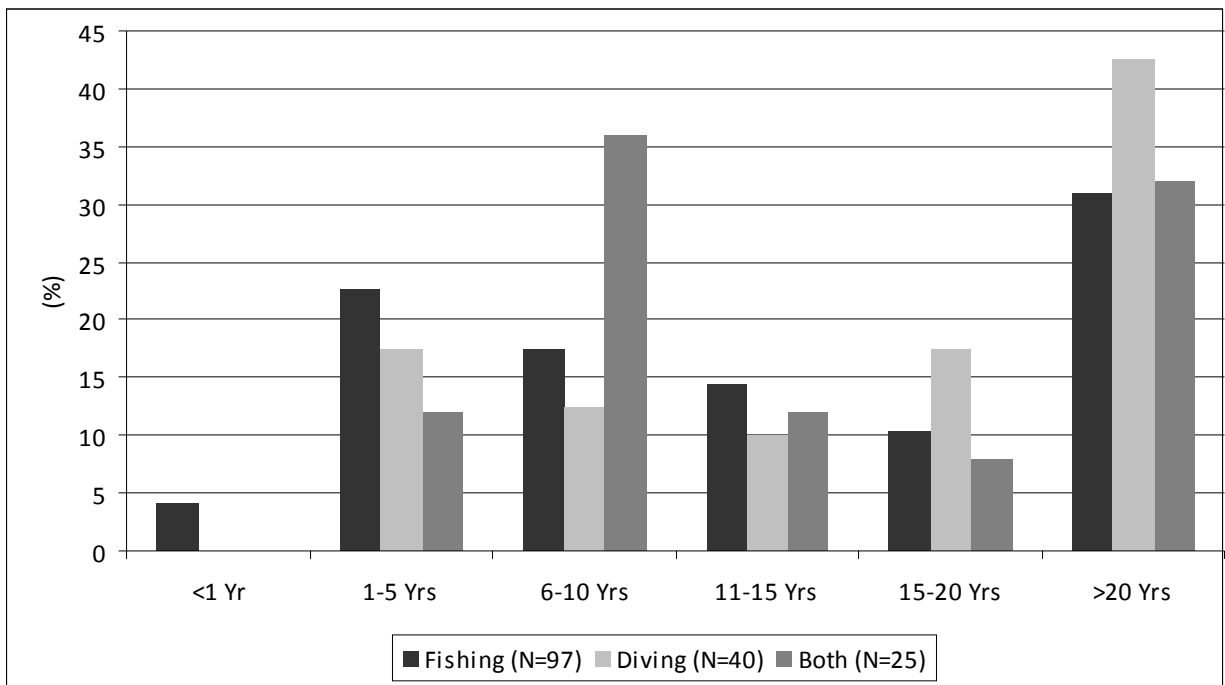


Figure 30. Number of years the respondents have been a dive shop/charter boat operator (Q37).

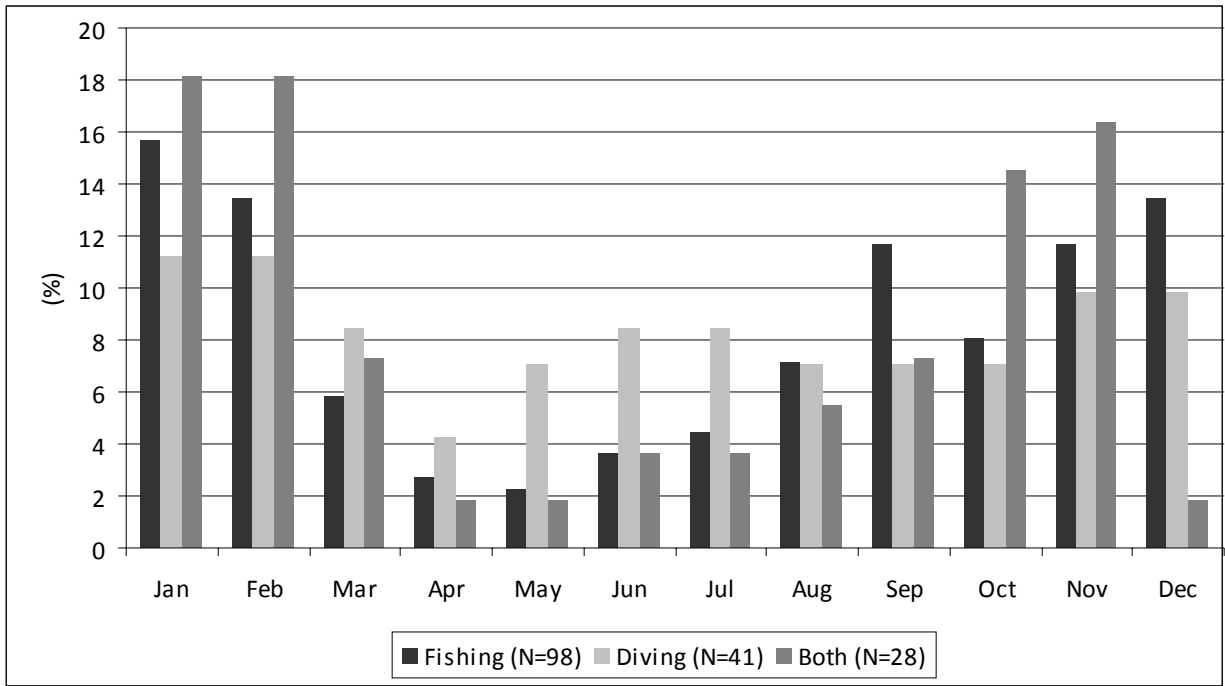


Figure 31. Month(s) of the year with the most non-fishing/diving employment (Q46).

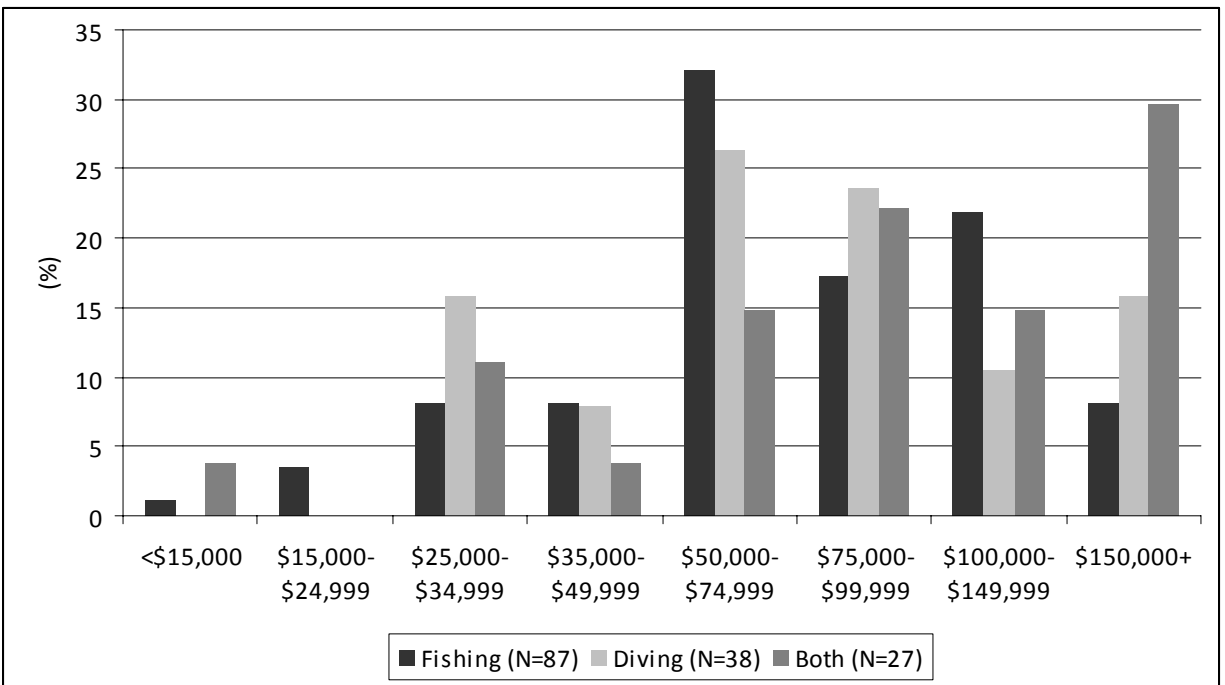


Figure 32. Annual household income of the respondents (Q31).

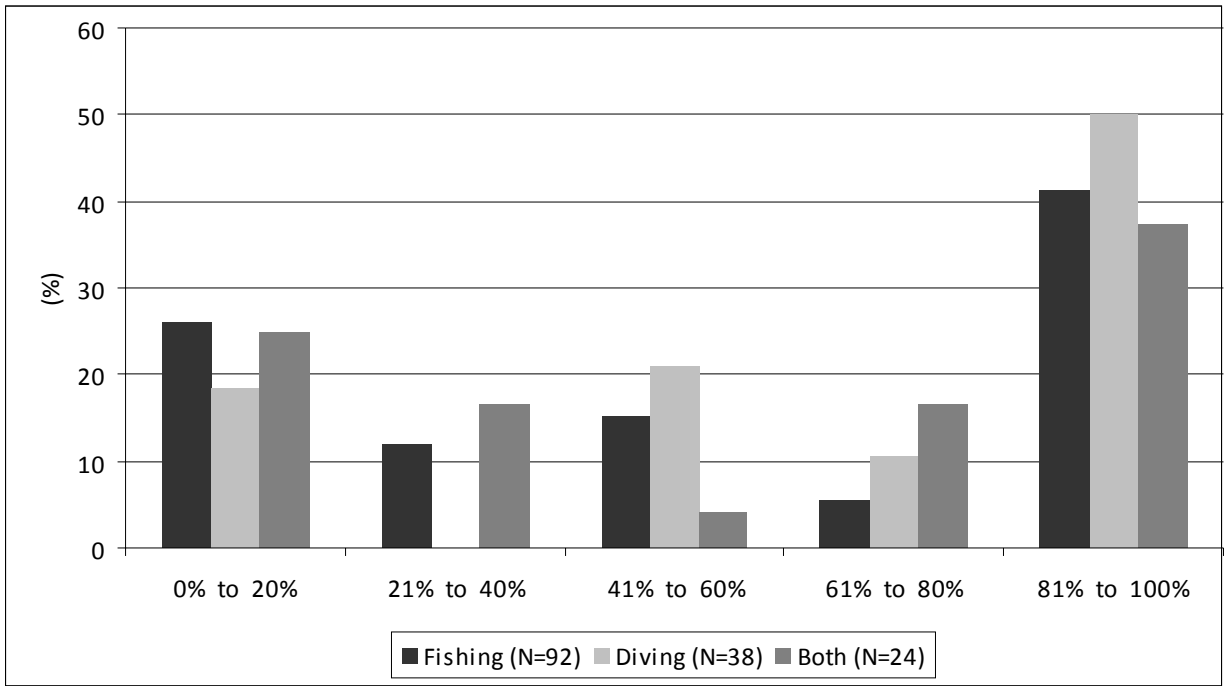


Figure 33. The approximate percentage of personal income that is derived from dive shop/charter boat fishing (Q42).

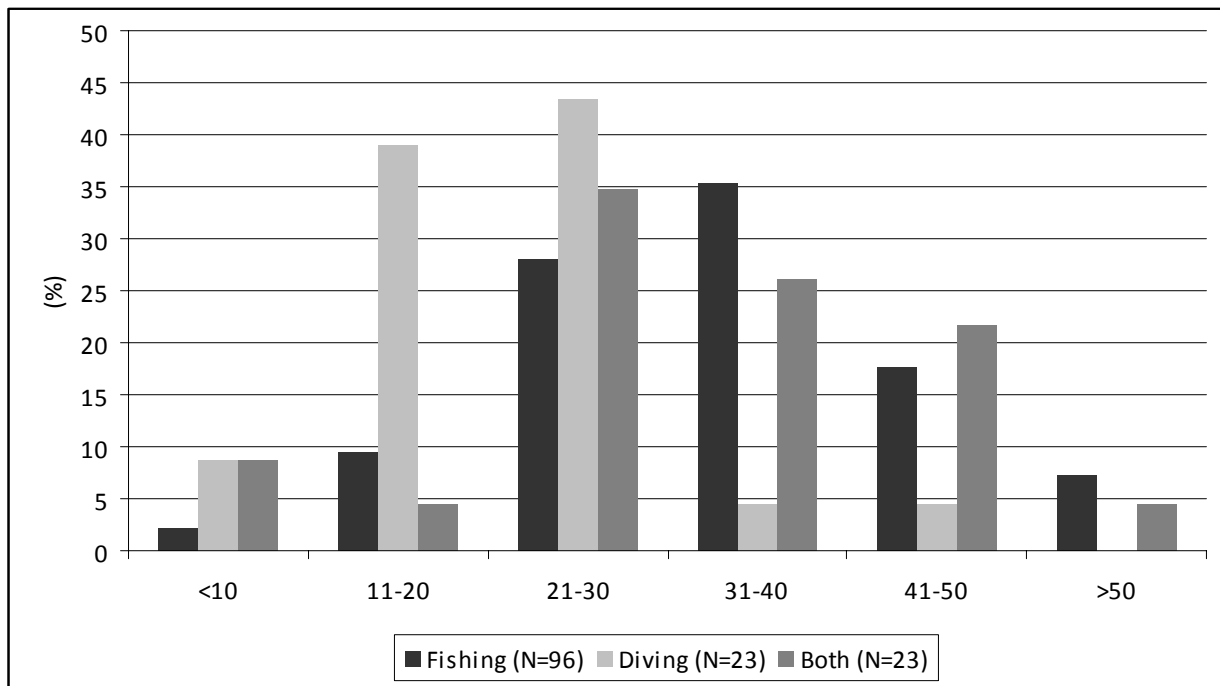
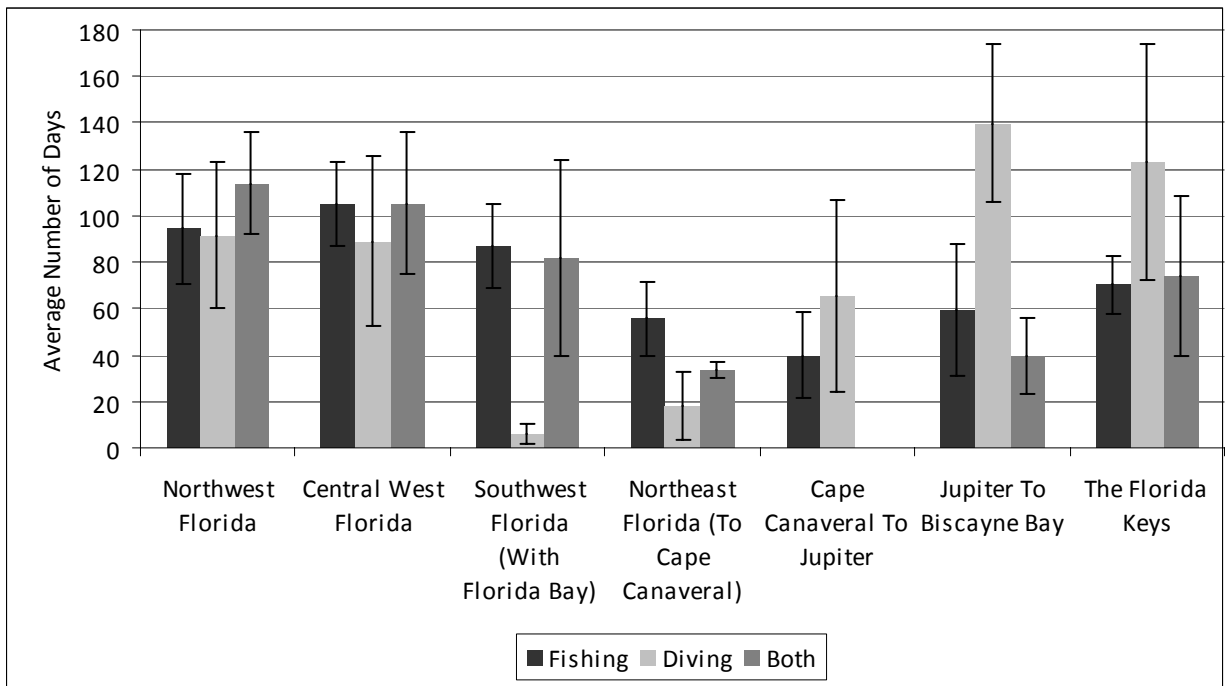


Figure 34. The max speed of the respondent's vessel (knots) (Q39).



Bars are for \pm one standard error around the mean. Levels of significance are ***: 1%, **:5%, *: 10%.

Figure 35. Number of days in a typical year the respondents take their customers diving/fishing in different regions of Florida (Q60).

Discussion and Conclusions

This survey provides considerable information on the charter fishing and dive boat operations throughout Florida, including information on their knowledge and opinions about goliath grouper and fisheries management, personal and business data, user group conflicts, and the health of the environment. The primary result demonstrated is that there are significant differences between the diving charter industry and the fishing charter industry in a number of areas relating to fishery impacts on the environment and the impacts of goliath grouper on their industries, with the diving industry overall having a more conservation-oriented bent than the charter boat industry, perceiving greater benefits from goliath grouper sightings and population recovery for their businesses, and a detriment if harvesting were allowed. The diving industry also catered more to local customers, making more trips than the charter boat industry.

Most of the survey participants encountered goliath groupers during normal operations, seeing or catching fewer than five goliath groupers on a typical trip. Considering that this species is relatively sedentary and forms aggregations seasonally to spawn (Sadovy and Eklund 1999), the low numbers sighted suggest a relatively small population of fish in which the same individual is encountered repeatedly.

Follow-up phone interviews provided greater detail on sightings, including specific locations, the number of fish encountered, and the size of the fish encountered. These are detailed in Appendix D. Some of the locations that had large numbers of goliath groupers are likely spawning aggregation sites. These data have been incorporated into the long-term (20 year) database maintained by the Florida State University Coastal & Marine Laboratory, which also contains data from the Reef Environmental Education Foundation (REEF), from artificial reef organizations.

The survey and follow-up phone conversations also revealed some bias about the diet of goliath grouper and its effect on fishing opportunities. The perception of many respondents is that the diet of goliath grouper consists of a number of economically important species—other groupers, snappers, snook, sharks, and lobsters—thereby having a negative effect on fishing opportunities by competing directly with fishermen for fish. Few respondents had actually witnessed goliath groupers eating these items, except when taken as bait or opportunistically taken from a hook (Sadovy and Eklund 1999, NMFS 2006). Overwhelmingly, the data suggest that fishing pressure on the targeted species rather than consumption by goliath grouper result in fishery declines (NMFS 2006), similar to the decline of goliath grouper itself (Sadovy and Eklund 1999). And overwhelmingly, the data point to a diet composed mostly of crabs (stone, mud, blue, and shameface), shrimp, and slow moving fish (cowfish, burrfish, stingrays, toadfish, and catfish) (Koenig et al., unpublished data., Odum 1971, Bullock and Smith 1991, NMFS 2006). Further, goliath grouper behavior and the poor development of their canine teeth are characteristic of fish that typically eat crustaceans (Bullock and Smith 1991, Smith 1971, Sadovy and Eklund 1999).

Because goliath grouper were virtually absent for a few decades and the baseline shifted towards low or absent populations, the recovering trend differs significantly from what most people operating on the water have experienced. Indeed, the trend has been towards declining populations in all other species coupled with habitat degradation, factors on which all sectors surveyed largely agreed. The misconception about goliath grouper's part in fishery declines is based in part on its large size (up to 4 m and 400 kg in weight; Sadovy and Eklund

1999). Individuals are actually quite slow, sedentary creatures with a low metabolic demand (i.e. they do not need to eat very much). They remain critically endangered throughout their range, despite this bright spot of recovery in south Florida.

According to a goliath grouper population model, there are more juvenile goliath groupers than adult goliath groupers (Porch and Barbieri 2007) therefore you might expect to encounter the juveniles more frequently. However, the survey participants reported seeing slightly more adult than juvenile goliath groupers. This might be attributed to the fact that goliath grouper primary nursery habitat is within pristine mangrove systems (Koenig et al. 2007). These high quality habitats only remain in a few regions of Florida (e.g. the Ten Thousand Islands) where the juvenile goliath groupers appear to be concentrated. Mangroves are not preferred diving locations, which explains why the divers surveyed rarely encountered juvenile goliath groupers. Adult goliath groupers, on the other hand, are distributed throughout the state and occur in habitats frequently visited by fishermen and divers, e.g. wrecks and rocky ledges.

The surveys reported that over half of the respondents have customers interested in goliath grouper encounters and that these customers account for almost 25 % of the customer base. The importance of goliath grouper is high in these industries.

The respondents (86.1%) believe that the causes for declines in fishery species are due to: habitat loss, too much bycatch and dead discards, fishing gear has become too efficient, some fishing sectors catch too many fish (e.g. commercial), current management is not working, too many people are fishing. From this information, it would make sense to protect habitats, both coastal and marine, but only 30 percent of the respondents were interested in establishing more marine reserves and most ranked marine reserves fairly low as effective management options. Respondents ranked size limits as the most effective management option but thought too much bycatch and dead discards were highly impacting fish declines. This is contradictory and the wide range of opinions makes it difficult to gain much insight on appropriate management practices from this survey.

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Appendices

Appendix A. The Survey

Survey distributed to dive operator and charter boat fishing businesses throughout the state of Florida and the breakdown of the survey questions into categories.	
Category	Questions
Diving or Fishing Information	<ol style="list-style-type: none"> 1. Is your business fishing or diving? 2. If diving, what type? 3. If you are a fishing charter captain, what type of license do you hold? 4. If fishing, what type primarily? 5. How often do you take fishing or diving trips? 6. How many trips do you take in a typical year? 7. What percent of your customers are locals, out-of-state tourists, and in-state tourists?
Goliath Grouper Information	<ol style="list-style-type: none"> 8. Have you ever seen or caught a goliath grouper (a.k.a. jewfish) off Florida? 9. What is the average number of goliath grouper you see or catch on a typical trip? 10. What size are the goliath grouper you typically see? 11. At what location(s) do you encounter goliath grouper? 12. At what depths do you encounter goliath grouper? 13. Do you have customers ask to see or catch goliath grouper? 14. If so, in your estimation, what percent of customers ask to see or catch goliath grouper? 15. How do goliath grouper influence your business? 16. Which of the following statements most closely expresses your opinion regarding goliath groupers? Goliath groupers should remain fully protected, Goliath groupers should be open to harvest, I don't know enough about goliath groupers, I do not have an opinion about goliath groupers, or Other. 17. What effect do you believe catch-and-release angling methods have on the goliath grouper population? 18. In general, do you support catch and release as a fisheries management strategy? 19. Which activity below benefits your business the most? Underwater observations of goliath groupers, Catch and release of goliath groupers, Goliath groupers do not benefit my business, Don't know, or No opinion. 20. If goliath grouper were allowed to be harvested, what effect do you believe it would have on your business?
Ecological Considerations	<ol style="list-style-type: none"> 21. What types of organisms do you think are abundant in the goliath grouper diet? 22. In general, what effect do you believe that an abundant goliath grouper population has on the areas you dive/fish? 23. Overall, do you feel the following has a positive or negative effect on the health of reefs? Water pollution, Commercial fishing, Hurricanes, Recreational fishing, Global climate change, Biodiversity, SCUBA diving/Snorkeling 24. Overall, how would you rate the current health of the diving/fishing grounds that you take your customers? 25. In your opinion, what is the health of the fishing/diving grounds you frequent?

Survey distributed to dive operator and charter boat fishing businesses throughout the state of Florida and the breakdown of the survey questions into categories.

Category	Questions
<p align="center">Personal Information</p>	<p>26. Where is your permanent residence and seasonal residence? 27. What is your age? 28. Are you male or female? 29. What is your level of education? 30. What is your marital status? 31. Which is your annual household income? 32. Which racial category best describes you? 33. Including yourself, how many family members do you support? 34. Are you a member of any of the following groups? Sport fishing association or club, Chamber of Commerce, An environmental group, Diving or spearfishing club, Other 35. What is your primary marina/port? 36. Do you have a secondary port, part of the year? If yes, which one? 37. How many years have you been a dive shop/charter boat operator?</p>
<p align="center">Economic Information</p>	<p>38. Please provide your best estimate of the replacement value of the following items that you used for diving/fishing last season: Vessel(s), Electronic equipment, Fishing Rods/Spearguns, Tackle, Scuba/Snorkeling Equipment, Other 39. What is the max speed of your vessel? 40. What types of fish-finding equipment do you have on board? 41. Please provide your best estimate for the following expenses last season/year: Docking fees, Interest payments on vessel, P&I insurance on vessel/crew, Maintenance/repair on vessel, Maintenance/repair on gear, Bait, Ice, Fuel, Other 42. What approximate percentage of your personal income is derived from dive shop/charter boat fishing? 43. What approximate percentage of your total household income is derived from dive shop/charter boat fishing? 44. How would you describe your diving/fishing occupation? 45. What other forms of employment are you engaged in besides diving/fishing? 46. If applicable, what months of year do you have the most non-fishing employment?</p>
<p align="center">Fisheries Management Information</p>	<p>47. Can you identify any user groups with which you have user conflicts (i.e., those groups that affect your diving/fishing areas and species)? 48. Please rate the following user groups in level of conflict to your fishing/diving activities: Recreational anglers, Sport spearfishers/lobster divers, Recreational snorkelers/divers, Recreational boaters, Other for-hire fishers (anglers), Other for-hire divers (spearfishers), Other for-hire divers, Other 49. Please rank the following forms of management to determine if management needs to be changed to address general resource conditions and trends in Florida: Restrictive, enforcement-based management: higher penalties, more patrols and monitoring; Innovative management: use separation via zoning, marine protected areas; Interpretative management: more outreach and education; Less management; Rights-based management: limited entry, trap certificates, property rights; Current form of management: seasons and bag</p>

Survey distributed to dive operator and charter boat fishing businesses throughout the state of Florida and the breakdown of the survey questions into categories.

Category	Questions
	<p>limits</p> <p>50. In terms of direct impacts to the marine environment, what do you believe is the level of impact caused by the following groups: Recreational anglers, Sport spear fishers, Lobster divers, Recreational divers, Recreational boaters, Commercial fishers?</p> <p>51. What is your opinion regarding the “no take” zones established in state and federal waters around Florida?</p> <p>52. Do you believe that these marine reserves have improved fishing?</p> <p>53. If yes, how long did it take the improvement to happen?</p> <p>54. Have you had direct experience fishing/diving near a marine reserve?</p> <p>55. Do you believe that near-shore nursery habitats for juvenile fishes (e.g., seagrass, mangrove areas) have declined in quality and quantity over the last 20 years?</p> <p>56. If you answered yes to question 55, do you believe that this has reduced fish abundance?</p> <p>57. What do you think are the most important obstacles to the future success of the fisheries in Florida?</p> <p>58. What do you think are the most effective forms of fisheries management?</p>
<p align="center">Spatial Information</p>	<p>59. Why do you dive/fish the areas that you do – that is, what is the primary reason that results in where you dive/fish?</p> <p>60. In a typical year, how many days do you take your customers diving/fishing in the following areas: Northwest Florida, Central west Florida, Southwest Florida, Northeast Florida, Cape Canaveral to Jupiter Florida, Jupiter to Biscayne Bay Florida, Florida Keys</p> <p>61. How do you feel the State of Florida should manage goliath grouper?</p> <p>62. Suppose the State of Florida developed a plan to allow anglers to harvest a limited number of goliath grouper for scientific purposes. Such a plan could require working closely with scientists to collect ear bones, fins, scales, and reproductive organs. Would you be interested in participating in such a program?</p> <p>63. Suppose the State of Florida determined that goliath groupers could be harvested in very limited numbers, and offered a permit that would allow the holder to catch and keep a single goliath grouper. What is the maximum amount you would pay for such a permit?</p> <p>64. Please provide any additional comments specific to your diving/fishing operation.</p> <p>65. Please provide any comments about the survey.</p> <p>66. Would you like to be contacted by phone to discuss this survey or comments regarding your diving/fishing operation? If yes, please provide a phone number (and best time) to reach you.</p>

Appendix B. Comments from the Survey Respondents by Question

ID	1: Is your business fishing or diving? Fishing Diving Both
19	Snorkeling

ID	2: If diving, what type? Sightseeing Spearfishing Both
17	Cave
19	Snorkeling

ID	3: If you are a fishing charter captain, what type of license do you hold? 4-passenger 6-passenger 10-passenger
17	N/A
20	Dive
113	masters captain license but I only fish 4 or less per day
120	Boat 50 ton

ID	4: If fishing, what type primarily? Fly Fishing Bottom Fishing Trolling Other _____
1	Light Tackle Inshore
2	Free Line
6	Flats fishing
12	Light tackle, back country
13	Inshore Flats
16	Back Country - Flats
17	N/A
22	Kayak fishing
24	Fly & light spin shallow water
26	Kite
31	flats fishing
35	casting
38	Drifting
40	Inshore/Backcountry
48	Flats and channels
49	Back country/inshore
53	plug fishing

ID	4: If fishing, what type primarily? Fly Fishing Bottom Fishing Trolling Other _____
56	casting
57	flats fishing
61	sight casting
63	Flats
64	casting
65	Back country
70	Inshore/light tackle
79	Spearfishing
84	Spear
86	Inshore
89	all of the above
90	Flats
91	live bait
94	live bait/back water & near shore
97	Spear
101	Inshore
110	Drift
112	Flats
113	inshore flats
118	inshore
119	ALL
121	Tarpon
122	light spin
123	flats and tarpon
125	light tackle pelagic, light tackle bottom
129	near shore snook/redfish
130	inshore casting
133	spin/bait
135	Inshore
136	live bait (free-lining)
138	Inshore
142	live bait
149	light spin
151	Casting
158	Casting
166	back country

5: How often do you take fishing or diving trips?	
Daily	
Once a Week	
Once a Month	
Once a Year	
ID	Less than Once a Year
19	Snorkeling
52	Please see comments at end of survey
56	depending on tourist season
74	During season to two a week
79	or more
107	Book
120	Summer
125	2/day
130	to 4 times a week
150	when possible
161	2-3 trips a week April-August

ID	6: How many trips do you take in a typical year?
61	4 hour
67	8 hr. days
73	(2 boats) 180 diving snorkeling/ 160 fishing (1 boat)
74	Dive & fish, more fishing
79	(personal, commercial, spear fishing and w/ SCUBA students)
126	we own 4 boats

8: Have you ever seen or caught a goliath grouper (a.k.a. jewfish) off Florida?	
Yes	
No	
ID	Not Sure
79	Seen

9: What is the average number of goliath grouper you see or catch on a typical trip?	
0	
1-5	
6-10	
ID	More than 10
14	I avoid the type of bottom they like.
24	(0-5 actually)
25	Hook & break off many, we get up about 6 fish a year.
31	2 to 3 a year
40	1-5=inshore, 6-10=diving
62	1-5: Bottom Fishing Atlantic. More than 10: Bottom Fishing Gulf
74	Dive
79	Depends on where we go, most ledges have at least 1 goliath and have seen over 20

	on some wrecks.
89	Bad question when I target them 4 or 5 per trip incidental catch 1 or 2 every other trip.
118	Caught 2 in Tampa Bay 1-500lbs 1-5lbs in 4 yrs

ID	10: What size are the goliath grouper you typically see? Less than 3-feet-long More than 3-feet-long Both I don't typically see goliath grouper
17	N/A
31	Many are hooked/not identified
40	less than 3 ft.=inshore, more than 3 ft.=offshore
74	30 to 750 pounds on some wrecks and reefs

ID	11: At what location(s) do you encounter goliath grouper? (e.g., Boca Grande Pass)
1	Tampa Bay, Boca Grande Pass
2	Wrecks, lodges, etc.
3	Gulf Panhandle
4	Castor Wreck, MV Becks Boynton Beach, a few spots on Gulfstream Reef.
5	Gulf Stream – Reef
6	Gandy Bridge Tampa Bay
7	All location
8	Everglades/reefs
10	Gold of Mexico/Everglades Park
11	Every wreck, artificial reef, or any large structure
12	Bridges St. Lucie River Indian River
13	Destin off coast
14	Port Richey
15	Wrecks off St. Pete
17	N/A
18	Key West Dry Tortugas
19	Offshore of Molasses
20	Mainly wrecks (artificial reefs)
21	Off of Tarpon Springs
22	Everglades National Park & 10k Islands
23	None
24	Florida Bay
25	springs/wrecks/large breaks
26	Inside patch reefs
27	Atlantic Ocean
28	Wrecks
29	Molasses Reef
30	Atlantic & Bay (Marathon FL Keys)
31	Big Bend
32	Reef Islamorada

ID	11: At what location(s) do you encounter goliath grouper? (e.g., Boca Grande Pass)
33	West Palm
34	Port Canaveral out to 100'
35	Boca Grande to Tarpon Spgs
36	West Central Gulf
37	Gulf Coastal – off Boca Grande
38	NA
40	Offshore=Artificial Reefs (50'-180'), inshore=Mangrove/structure
41	Middle Keys Reef
42	Gulf-Tortugas-Keys
43	Artificial Reefs – wrecks
44	Ponce Inlet, Indian River
45	Many reefs off Key Largo
46	Jupiter, FL
47	Everywhere
48	Florida Bay
49	Everglades National Park
50	Boca Grande, Keys, NE FL but rare
54	NA
55	East Coast Florida/Boynton Beach
56	Wrecks Reefs Rivers (off Cape Romano)
57	N/A
58	N/A
59	Every major wreck, reef & ledge!
60	Bradenton Beach, Destin, FL
61	Ringling Bridge
62	Gulf wrecks and reef patches
63	Indian River
64	Sarasota Bay
65	Deeper creeks
66	Destin FL
67	Tampa Bay – skyway
68	Boca Raton, Delray Bch.
69	SW Channel, Marquesas
70	None
71	Franklin Reef and C Tower
72	Apalachicola Reefs
73	Destin
74	Atlantic water off Port Canaveral
75	Mangroves Back Country
76	Off Marco Island Fla.
77	Hole in the wall, Jupiter wreck trek, tunnels
79	The easier question would be where do we not encounter goliath grouper. I have made very few dives in the last 8-10 years that I have not seen a goliath grouper.
80	on all wrecks and reefs
81	Offshore Palm Beach & Pinellas Counties

ID	11: At what location(s) do you encounter goliath grouper? (e.g., Boca Grande Pass)
82	Ft. Pierce Inlet
84	West of Crystal River
85	Reefs off Collier County Coast
87	Offshore Daytona, Crystal River
88	Ft. Lauderdale
89	Florida Bay and Bridge Channels
90	off shore
91	near shore reefs (manatee county)
92	Key Largo
93	Gulf off Clearwater
94	Caxambas Pass Area
95	Shipwrecks
96	mostly wreck dives
97	MV Castor
98	Eagle, Duane, Spiegel
99	wrecks (ancient mariner) Sea Emperor
100	Ft. Pierce FL
101	NA
104	Sea Emperor Deerfield Bch & Breakers West Palm Beach
105	Castor Wreck
106	Everglades National Park
107	Twin Fin/all wrecks & nat. reefs
108	St. Marks/Indian Pass
109	Tarpon, Stage 2, Accokeek, BJ Putnam, Chippewa, 3+.5s all off Panama City
110	Reefs of Suwannee
111	off Ponce Inlet
112	Captiva Pass, Boca Grande, Sanibel Bridge
113	Inshore (port Tampa) offshore of St. Pete
114	Dry Tortugas
115	wrecks, rock piles, rubble
116	Mostly wrecks off St. Lucie Inlet
117	Offshore Naples/Marco – wrecks Atlantic Palm Beach
118	Tampa Bay
119	St. Andrew's State Park, various wrecks
120	PCB
121	channels & the lakes off Big Pine
122	N/A
123	10000 Islands i.e. Marco-Chokoloskee
124	SE Atlantic Reefs
125	Sarasota Bay and nearshore Gulf
126	various wrecks
127	most every ledge, lots on wrecks
128	Florida Bay
129	all wrecks in SW FL
130	Sarasota Big Pass & Bay

ID	11: At what location(s) do you encounter goliath grouper? (e.g., Boca Grande Pass)
131	Pine Island & Gulf of Mex. Off Sanibel & Ft. Myers Beach
132	N/A
133	10,000 Islands
135	10,000 Islands/Everglades Natl. Park
136	Pine Island Sound
137	West of Long Boat Key
138	North Tampa Bay
139	West Palm Beach, Hernando Beach
140	Gulf
141	Atlantic side and Gulf side wrecks
142	N/A
143	Around islands throughout the Keys
144	reefs & wrecks
145	some wrecks in SE Fla.
146	Venice to Boca Grande
148	Breakers Reef
149	Gulf wrecks – E. Cape Canal
150	Destin, Flo
151	Everglades Natl. Park
152	wrecks/reef
153	all wrecks big reefs
154	3 miles + out on reefs/wrecks off FL Keys
155	Shallow Pockets
156	Reef & Florida Bay
158	ENP, 10,000 ISL
160	on wreck dives
161	Offshore Range Tower
162	Captiva Pass
163	Florida Bay off Marathon
164	Gulf of Mexico
165	West Coast wrecks
166	Pine Island Sound
167	Everywhere there's structure

ID	12: At what depths do you encounter goliath grouper?
3	Few at 100
6	Under 20 ft.
7	All depths fsw
17	N/A
23	None
25	(all depths we fish)
40	50'-180'=offshore, 4'-20'=inshore
51	20' and deeper. All depth with any structure.
79	10 feet - in Tampa Bay to over 130' in the Gulf
100	Deep Mangrove Shorelines

ID	12: At what depths do you encounter goliath grouper?
117	120 ft or less
129	25' on down
130	less than 20'
166	near mangroves

ID	13: Do you have customers ask to see or catch goliath grouper? Yes No
79	See - this is usually new divers
90	typically they are not interested

ID	14: If so, in your estimation, what percent of customers ask to see or catch goliath grouper? _____ %
31	N/A
51	or more
75	Bycatch
79	See - this is usually new divers
81	less than 1%
113	Diving 75% want to see. Fishing 40% want to catch
164	or less

ID	15: How do goliath grouper influence your business? Beneficial Detrimental No Effect Don't Know
25	to all other reef fish
40	They eat everything
74	Eat everything on the reef fish & lobster seen eating lobster
113	To fishing on some wrecks I can't get grouper off the bottom without being eaten by jewfish

ID	16: Which of the following statements most closely expresses your opinion regarding goliath groupers? Goliath groupers should remain fully protected. Goliath groupers should be open to harvest I don't know enough about goliath groupers I do not have an opinion about goliath groupers Other _____
2	Limited harvest
3	Season - like Alligators
6	1 per person per day min 24" max 100 lbs.
8	Tag/slot limit

16	Catch & Release
17	My customers are cave divers
21	On a limited basis
23	Too many Jewfish and they eat everything. Can't catch grouper.
26	Slot
27	only light harvest
34	Start limited harvest
36	Harvest (1) one per year
38	Open and close season
44	Limited harvest should be open
50	closely protected
51	Lottery or permit
65	Controlled harvest
84	Selective
87	maybe limited
89	Lots of poaching off Naples & Marco
90	Based on a slot & limit
107	like deer 1 per Boat @ only one time each year
109	Limited lottery style harvest tags. All harvested GGs must be made available to FWC or NMFS for scientific data collection.
111	Depends on location - there are areas with more than should be & some with less
112	They should be open to minimal harvest.
113	by permit
118	should have slot and daily bag limit
119	just like gators...restricted season and permits
129	very limited \$100.00 catch tag on a lottery basis
131	should be treated like tarpon & NO spearing
143	Maybe able to harvest similar to Tarpon. \$50 tag 2 per person/per yr.
149	tag program like Tarpon
152	limit 1 small fish
153	Minimal \$500 tag
157	Lottery
160	open season

ID	17: What effect do you believe catch-and-release angling methods have on the goliath grouper population? Beneficial No effect Detrimental I don't know
39	You release and half die on the surface just like red snapper.
40	population growth
56	But they sure have grown in NO's
61	Knowledge of fish
74	to much to many
90	It depends - could be detrimental & it could have NO effect how they are hooked

107	Usually kills fish because of pressure change
120	?
131	Initially, now detrimental

	18: In general, do you support catch and release as a fisheries management strategy? Yes No No opinion
ID	
30	depends on depth
79	Fish are killed during release
90	I support limits & slots
113	not when it comes to Jewfish
143	if done properly
145	Pelagics only
153	if reels properly

	19: Which activity below benefits your business the most? Underwater observations of goliath groupers Catch and release of goliath groupers Goliath groupers do not benefit my business Don't know No opinion
ID	
17	N/A
74	hurt my business
126	catch & keep 1 per boat

	20: If goliath grouper were allowed to be harvested, what effect do you believe it would have on your business? Beneficial Detrimental No Effect Don't Know
ID	
79	Sales of spear fishing equipment to harvest goliaths
107	fish caught should be give to homeless shelters

	21: What types of organisms do you think are abundant in the goliath grouper diet?
ID	
1	Snook, Redfish Grouper, Snapper
2	Crabs, mollusk and hooked, tired fish that we're reeling in!
3	Other fish/lobster
4	Lobster, fish
5	NA
6	Same as Grouper but larger
7	GG eat anything

ID	21: What types of organisms do you think are abundant in the goliath grouper diet?
8	They eat everything
10	Lobster, mangrove snapper, pinfish
11	All groupers, all snappers, they eat everything they can catch that is being released or reeled in!
12	Fish
14	Everything
15	All fish
16	Anything that fits in their mouths
17	Other fish?
19	small fish
20	Lobster. Fish – all omnivorous carnivores?
21	Red and small Grouper
22	Crabs, ray, jack, snook – been there eat it all
23	Shrimp
24	Crabs, shrimp, smaller fish
25	All snapper, lobster, crabs, grouper, jacks, all fish smaller than they are.
26	Lobsters, if you see one you're not going to see lobsters
27	Lobsters, Snappers, other Grouper
28	Grouper, Amberjack, anything they want
29	Unsure
30	Fish, lobsters, crabs
31	Other smaller Grouper!
32	Lobster
33	fish
34	Lobster, smaller reef fish
35	Grouper, snapper, lobster, crabs
36	Grouper
37	Anything that moves – they eat everything
39	Don't know don't fish for them
40	Anything in its path, other Grouper/snapper/shook/permit/etc.
41	Lobster
43	Snapper & small grouper
44	Smaller fish, crabs, shrimp
45	large fish/sharks
46	N/A
47	Everything that swims
48	Crabs, and lobster
49	Small fish, crustaceans
50	Crabs, lobster, many fish
51	Crabs, lobster, my fish!
52	Small fish & crustaceans
53	Catfish, mullet, Ladyfish
54	Fish
55	don't know

ID	21: What types of organisms do you think are abundant in the goliath grouper diet?
56	fish and crabs
57	don't know
58	don't know
59	grouper and lobster
60	? Organisms
61	Pinfish – Grunts Sand Perch
62	FLA. Lobster and almost any bottom fish you hook
64	Fish, crustaceans
65	don't know
66	don't know
67	Snappers, jacks, lobster anything they can get!
68	Lobster, small fish
69	If you can not kill it how can you see contents?
71	Smaller grouper & snapper along w/ other fish
72	They eat anything that gets close enough for them to catch.
73	smaller fish
74	None their cleaning everything out!!
76	stone crabs, snapper grouper
77	small bait fish
78	Unknown
79	Lobster, crabs, reef fish, octopus, fish stringers (2 eaten in 2007)
80	snapper, grouper, grunts
81	Florida lobster, juvenile game fish, crabs
82	Crabs, other fish, rays
83	N/A
84	Grouper crab turtles
85	Other popular fish
87	Snapper, grouper, lobster, crabs, octopus
88	Everything
89	Stone crabs, lobster – fish-
90	Anything it can catch when it is feeding
91	Permit, grouper, snapper, stone crabs, lobster
92	other fish
93	other grouper
94	snapper, snook – anything that swims by them
95	don't know
96	lobster & small fish
97	Fish
99	small fish & crustaceans
100	fish and crustaceans
101	fish, lobster, crab
104	Lobsters
106	snapper crabs
107	small bait fish seem to be the favorite – opportunists

ID	21: What types of organisms do you think are abundant in the goliath grouper diet?
109	crab, squid, lobster
110	Anything – other grouper, snapper, sea bass, etc.
111	mostly small fish, small grouper, lobster
112	Reef fish, stone crab, lobster, stingray
113	I lost 40 lb AJs as bait for goliaths, they try to eat grouper all the time
114	bait fish
115	small & large reef fish, lobsters
116	Anything that fits in their mouth – I have photo of eels, lobster and GG grouper being eaten by Jewfish.
117	All. They eat everything!
118	crabs and fish
119	Reef fish: snapper and smaller grouper
120	I've witnessed G. Grouper eat large Amberjack (speared and ailing). They eat large fish & crustaceans
121	Lobster
122	Anything that is smaller than it is
123	crabs, fish
124	lobster, smaller fish
125	crustaceans like lobster & shrimp & crabs
126	big fish
127	Lobsters! Smaller grouper
128	crabs, shrimps, various Baitfish
129	anything that swims within 10' of them
130	juvenile snapper, juvenile grouper, grunts and pinfish, crabs
131	red & gag grouper, crabs, snappers, etc.
132	NA
133	small snapper
134	Anything they want!
135	baitfish, crabs, shrimps
136	Anything that will fit in its mouth (released fish)
138	jacks, mullet, threadfins, ladyfish
139	other reef fish
141	snapper, grunts, permit
142	small fish, bait fish, etc.
143	Anything that gets close – lobster, small fish/big fish, crabs.....
144	permit, snapper, reef fish, grouper
145	not sure
146	They eat a lot. That's why we have no gag & red grouper.
147	don't know
148	don't know
149	crabs-lobster-fish
151	crabs, pinfish, grunts
152	lobsters, reef fish
153	grouper, snapper, lobster, crabs, amberjack, etc.

ID	21: What types of organisms do you think are abundant in the goliath grouper diet?
154	lobster, other crustaceans, small fish
155	game fish
156	Lobsters, groupers & snapper
157	lobster, crabs, mollusks, fish live & dead
158	Everything that swims – snook, gray snapper, crabs (stone & blue)
160	crabs & lobster
161	Crustaceans
162	smaller fish
163	smaller grouper, snapper, lobster, crabs
164	All fish, crabs, and lobster
166	They seem to eat almost anything
167	gag grouper, mangrove snapper, snook, permit, king fish

ID	22: In general, what effect do you believe that an abundant goliath grouper population has on the areas you dive/fish? Positive Negative I don't know No opinion No effect
56	too many
87	They eat a lot of fish
109	both positive & negative
119	positive for diving, negative for fishing
153	Too many

ID	23: Overall, do you feel the following has a positive or negative effect on the health of reefs? (1=positive, 4=no effect, 7=negative) a. Water pollution b. Commercial fishing c. Hurricanes d. Recreational fishing e. Global climate change f. Biodiversity g. SCUBA diving/Snorkeling
	23a
95	we have NO reefs
	23g
21	By seeing people want to protect!
25	w/ spear fishing
99	use to educate

ID	24: Overall, how would you rate the current health of the diving/fishing grounds that you take your customers?
----	--

	Poor Fair Good Very good Excellent No opinion
14	Depends on the type of fish.
17	N/A
40	Fair=inshore, Very good=offshore
67	Keys are the best.
87	Daytona has more red snapper than ever

ID	25: In your opinion, what is the health of the fishing/diving grounds you frequent? Declining substantially Improving substantially Declining somewhat Improving somewhat Staying the same
14	Depends on the type of fish. Red Snapper and Red Grouper are VERY abundant.
17	N/A
25	After Red Tide of 2004-2005
37	Quit dumping Lake O into our rivers etc. Send it South.
40	From Okeechobee Dumping
68	Since they stopped pumping out fresh water out to the ocean.
79	After Redtides of 2005
129	Lack of release water into the Caloosahatchee has helped improve S.W. FL
158	Hurricane damage has hurt the habitat of ENP

ID	26: My permanent residence is in _____ (County, State) I am a seasonal resident of _____ County, FL
	26p (Permanent Residence)
1	Hillsborough, FL
2	Collier, FL
3	Leon
4	Broward, FL
5	Dade FLA
6	Hills
8	Monroe
9	OK
10	Monroe Co., FL
11	Lee, FL
12	St. Lucie
13	Escambia, FL
14	FL
15	Hillsborough

ID	26: My permanent residence is in _____ (County, State) I am a seasonal resident of _____ County, FL
16	Brevard, FL
17	Columbia, FL
18	FL
19	Monroe, FLA.
20	Palm Beach
21	Pinellas Cty., FL
22	Collier
23	Bay, FL
24	Monroe, FL
25	Manatee, FL
26	Monroe, FL
27	St. Johns, FL
28	Taylor, FL
29	Broward, FL
30	Monroe
32	Monroe, FL
33	Orange, FL
34	Brevard, FL
35	Hillsborough, FL
36	Hernando, FL
37	Lee
38	Dixie
39	TX
40	Martin, FL
41	Florida
42	FL
43	Sarasota, FL
44	Volusia, FL
45	Monroe, FL
46	FL
47	Martin, FL
48	FL, Monroe
49	Polk, FL
50	Clay
51	Lee
52	Suwannee, FL
53	Collier, FL
54	Nassau
55	Hillsborough, FL
56	Collier, FLA
57	Taylor Florida
58	FL
59	Lee FL
60	Greenville, S.C.

ID	26: My permanent residence is in _____ (County, State) I am a seasonal resident of _____ County, FL
61	Sarasota, FL
62	Monroe
63	Seminole
64	Sarasota, FL
65	Lee, FL
66	FL
67	FL
68	Palm Bch Fl.
69	FL
70	St. Johns
71	Liberty, FL
72	Franklin, FL
73	Okaloosa FL
74	Brevard
75	Lee
76	Collier FL
77	Palm Bch.
78	Broward
79	Pinellas
80	Pinellas FL
81	Hills FL
82	Indian River Co. FL
83	Okaloosa County
84	Citrus FL
85	Collier
86	Nassau
87	Lake FL
88	Broward City, FL
89	Monroe, FL
90	Dixie
91	Manatee, FL
92	Alachua, FL
93	Pinellas
94	Collier
95	Bay
96	Broward
97	Palm Bch
98	Monroe, FL
99	Palm Bch FL
100	IR FL
101	St. Johns
103	St. Johns
104	Brevard FL
105	Palm Beach

ID	26: My permanent residence is in _____ (County, State) I am a seasonal resident of _____ County, FL
106	Dade FL
107	Largo, FL
108	Thomas, GA
109	Bay
110	Dixie
111	Volusia, Fla.
112	Lee Cnty, FL
113	Hillsborough
114	Orange
115	FL
116	Martin, FL
117	Palm Beach FL.
118	Manatee, FL
119	Gulf
120	Bay FL
121	Monroe, FL
122	Martin, FL
123	Lee, FL
124	Monroe County FL.
125	Sarasota, FL
126	St. Johns FL
127	FL Sarasota
128	Monroe, FL
129	Lee
130	Manatee, FL
131	Lee
132	Okaloosa FL
133	Collier/FL
134	Okaloosa FL
135	Collier, FL
136	Lee FL
137	Monroe
138	Polk, FL
139	Seminole, FL
141	Monroe
142	Miami-Dade, Florida
143	Monroe, FL
144	Lee, FL
145	Broward
146	Sarasota
147	Rock WI
148	St. Lucie, FL
149	Monroe, FL
150	Okaloosa

ID	26: My permanent residence is in _____ (County, State) I am a seasonal resident of _____ County, FL
151	Monroe, FL
152	FL
153	Hillsboro
154	Monroe
155	La Plata, CO
156	Monroe, FL
157	Monroe, FL
158	Orange
159	Wakulla
160	Sar.
161	Nassau
162	Collier
163	Monroe, FL
164	Monroe, FL
165	Highlands
166	Lee
	26s (Seasonal Resident)
1	Hillsborough
2	Collier
9	OK
16	Brevard
18	Monroe
19	Monroe
23	Bay
27	St. Johns, FL
31	Levy
35	Charlotte
39	Santa Rosa
42	Collier
43	?
50	Bay
54	Nassau
56	Collier
58	Okaloosa
60	Citrus
61	Sarasota
64	Sarasota
67	Riverview
69	FL
74	Sarasota
90	Taylor
102	CLWR
119	Gulf
121	Monroe

ID	26: My permanent residence is in _____ (County, State) I am a seasonal resident of _____ County, FL
122	Martin
144	Monroe
147	Monroe
155	Lee
157	Monroe
158	Collier

ID	29: What is your level of education? 8 th grade or less 9 th -11 th grade 12 th grade or GED Completed some college College graduate Post graduate
57	Jr. College
88	500 ton capt. Coast Guard

ID	31: Which of the following categories best describes your annual household income? Less than \$15,000 \$15,000 to \$24,999 \$25,000 to \$34,999 \$35,000 to \$49,999 \$50,000 to \$74,999 \$75,000 to \$99,999 \$100,000 to \$149,999 \$150,000 and above
14	N/A

ID	34: Are you a member of any of the following groups? Sport fishing association or club Chamber of Commerce An environmental group Diving or spearfishing club Other _____
2	NACO
8	Very active/long list
17	NSS-CDS NACD
21	PADOfl.com
25	N.A.C.O.
26	Propeller Club
28	NACO
49	Fishing club
59	AOPA - Pilots Association

68	Dive Assoc.
94	law enforcement - Fl. Sheriff's Assoc.
98	dive shop owner
119	National Dive Assoc. x2
126	National Charter Boats Organization
129	FL Guides Assoc.
130	tournament memberships
131	IGFA
144	IGFA
160	PADI
161	Charter Fish Assn.

ID	35: What is your primary marina/port?
1	Tampa Harbor Yacht Club
2	Port-O-Call, Naples, FL
3	Carrabelle, FL
4	Boynton Beach
5	Homestead
6	Tampa Bay
7	Sarasota
8	Islamorada
9	Destin
10	Caloosa Cove Marina
11	Stump Pass Marina
13	Port of Pensacola
14	Seaside Inn
15	O'Neills Marina
16	Melbourne, FL
17	N/A
18	Key West
19	Suites at Key Largo
20	Boynton Beach Harbor Marina
21	Tarpon Springs
22	Everglades City/Chokoloskee Island
23	Southwind Resort
24	Islamorada, FL
25	Cortez Fishing Center
26	Sunset K.W.
27	Comachee Cove
28	Sea Hag Steinhatchee, FL
29	Key Largo
30	Home
31	Waccasassa
34	Port Canaveral
35	Trailer/Skyway
36	Hernando Beach, FL

ID	35: What is your primary marina/port?
37	Bokeelia
38	River Haven
39	Pensacola Beach
40	F.K./Snook Nook
41	Key Colony Beach, FL
43	Dry Dock Marina, Longboat Key, FL
44	N/A
45	Sundowners/Senior Frijoles
46	Jupiter
47	Jupiter Seasport
48	Dud-N-Marys
49	Chokoloskee - Outdoor Resorts
50	St. Augustine
51	Home Dock Ft. Myers Beach
52	Don't use a marina. Peacock Springs State Park
53	Chokoloskee, FLA.
54	Fernandina
55	Boynton Beach
56	Goodland
57	Econfina River Taylor County Florida
58	Destin, Florida
59	Fort Myers, FL
60	East Pass Marina, Destin, FL.
61	Ken Thompson
62	Key Colony Bch., FL
63	Titusville
64	10th St./Turtle Beach
65	Residential Dock, Sanibel, FL
66	Destin FL
67	all state boat ramps (Free)
68	Pennells Marina - Deerfield Bch.
69	Key West
70	St. Augustine, FL
71	Apalachicola
72	City Marina, Apalachicola
73	Fishermen's Wharf
74	New Port Marina
75	Punta Rassa
76	Marco River Marina
77	Seagate
78	Ft. Lauderdale
79	Pinellas County
80	Treasure Island FL
81	N/A
82	Fort Pierce

ID	35: What is your primary marina/port?
83	Destin, FL
84	Crystal River FLA
85	Naples
86	Fernandina Beach, FL
87	Ponce Inlet
88	Las Olas & A1A
89	Bud N Marys Marina, Islamorada, FL
90	Steinhatchee, FL
91	Palmetto, FL
92	Many
93	Johns Pass
94	Caxambas Marina
95	Capt Anderson, PC
96	Hillsboro inlet?
97	Boynton
98	Tavernier
99	Hillsboro Inlet/Boca Inlet
100	Sebastian
101	St. Johns River
103	St. Augustine
104	North Palm Beach
106	Flamingo ENP
107	Club Marina
108	St. Marks/St. Joe
109	Bay Point
110	Suwannee, FL
111	Ponce Inlet
112	St. James City
113	Tampa
114	C. Canaveral
115	Jupiter
116	St. Lucie Inlet
117	Palm Beach Yacht Club
118	Manatee County - Palmetto
119	Port St. Joe
120	Panama City Beach
121	Sugarloaf Marina, FL
122	Salerno
123	Bokeelia, FL
124	Islamorada
125	SaraBay Marina/Sarasota Buttonwood Harbor LB/T?
126	St. Augustine
127	Venice, Fisherman's Wharf
128	Islamorada
129	Lovers Key

ID	35: What is your primary marina/port?
130	Sarasota
132	Destin, FL
133	Calusa Island Marina/Goodland FL
134	Destin, FL
135	Calusa Island Marina
136	Trailer Punta Rassa Lee
137	Manatee River
138	Ft. DeSoto
139	West Palm Beach
141	Key West
142	Crandon Park Marina Key Biscayne
143	fish entire Keys
144	Boca Grande
145	Hillsboro Inlet
146	Venice, FL
147	Gilberts
148	Blowing Rocks
149	Islamorada, FL
150	Niceville, FL
151	Islamorada
152	Jupiter Sea sport
153	All
154	Islamorada
155	Bokeelia
156	Marathon FL, Banana Bay
157	Holiday Isle
158	Everglades City
159	Panacea Harbor Marina
160	Sarasota
161	Fernandina
162	Estero Bay – Fishtale
163	Duck Key Marina, Marathon, FL
164	Key West
165	Sarasota
166	Punta Rassa

ID	36: Do you have a secondary port, part of the year? Yes No If yes, which one? _____
1	Boca Grande, FL
11	Boca Grande Marina
16	Canaveral
22	Above
35	Boca Grande
36	South Keys Area
40	Watts Bar Dam Lake Ten Mile, TN
51	Big Pine Key
59	Summerland Key, FL
61	10 th St.
69	North Carolina
71	Carrabelle
75	Pineland
87	Crystal River, Hernando Beach, Keys
90	Suwannee, FL
93	Clearwater Pass
94	Calusa - Goodland Marina
106	Homestead FL
107	John's Pass
112	Bokeelia
114	Key West
115	North Carolina
116	West End, BI
119	St. Andrews/Panama City Marina
135	Chokoloskee, FL
138	Eldreds Marina Boca Grande
144	Bay Port & FL Keys
145	Boca Inlet
146	Englewood
159	Bayside Marina

	37: How many years have you been a dive shop/charter boat operator? Less than 1year 1-5 years 6-10 years 11-15 years 15-20 years More than 20 years Not applicable
D	
19	Snorkel
36	Charter boat 7 years, diving 35 years
89	Since 1970
119	6-10 fishing, more than 20 yrs diving
160	30 years

	38: Please provide your best estimate of the replacement value of the following items that you used for diving/fishing last season. Vessel(s) Electronic equipment Fishing Rods/Spearguns Tackle Scuba/Snorkeling Equipment Other: (describe)_____
ID	
	38 Vessels
14	This has nothing to do with Goliath info.
18	None of your business
153	Charter N/?
	38 Tackle
11	Goliath's
	38 Scuba/Snorkeling Equipment
24	N/A
28	N/A
	38 Other
27	\$800,000 Owner's Boat
40	Bait, gas
65	Ins
75	Truck
76	Safety
79	camera equip.
87	Gasoline
93	Oil gen. maintenance
101	safety equip.
116	Dive shop
120	Lifts
121	Beer
133	nets (cast)
158	Car

ID	39: What is the max speed of your vessel?
8	2nd boat 47
17	N/A
40	50=inshore, 55-60=offshore

ID	40: What types of fish-finding equipment do you have on board?
1	Lowrance Plotter/Sonar
2	Color Depth Sounder & GPS
3	Bottom machine/GPS
4	Depth recorder
6	GPS-Bottom Lowrance
7	Spear guns
8	GPS/Garmin
9	Furuno
10	GPS/Depth finder
11	GPS, fish finder
12	Rod & Reel
13	Sonar GPS
15	GPS/Sonar
16	Chart recorder/GPS
17	N/A
19	N/A
20	Lowrance
21	Furuno
22	GPS/Sonar
23	Sonar
24	None
25	Furuno
26	Eyeballs, sounder
27	Rod & Reel
28	Sonar, GPS
30	rod & reels
31	GPS/Sonar
33	NA
34	Bottom machine – Lowrance
35	Plotter, GPS, Sonar, Map
36	Depth recording
37	Raytheon
38	G.P.S./r
39	Furuno
40	Raymarine
41	None
43	GPS Bottom Finder
44	Bottom sonar/GPS plotter
47	Color sounder/GPS plotter

ID	40: What types of fish-finding equipment do you have on board?
48	GPS-Sonar
49	Light tackle - Bait casting/spinning
50	Lowrance
51	Furuno 582 L
53	None
54	GPS - LoranC - Sonar
55	N/A
56	Garmin GPS – Fishfinder
57	Bottom machine
58	GPS Depth Finder/Scanner
60	Sonar/Radar
61	Garmin
62	Spin, conventional, electric
63	Sonar
64	Depth Finder
65	Lowrance
66	Depth Finder
68	Simrad GPS/plotter/depth finder
69	100 FCV
70	Garmin
71	Garmin
72	Color bottom machines, Garmin & sitex
73	Loran, GPS, Bottom
74	Raymarine
75	GPS
76	2 Sonars GPS
77	None
78	N/A
79	Furuno
80	GPS Loran Navnet
81	Color CRT, GPS
82	Color Sonar
83	Furuno
84	Depth recorder
85	Raymarine
86	Fish/depth finder
87	Furuno
88	Furuno
89	Garmin depth & GPS
90	Bottom Finder
91	Garmin Depth Sounder
92	Humminbird Depth Sounder
93	Bottom Machine Furuno
94	Raymarine
95	GPS - color fathomator

ID	40: What types of fish-finding equipment do you have on board?
98	NA
99	None
100	Depth Finder GPS
101	fish finder/GPS
103	Raymarine
104	N/A
106	Spinning
107	N/A
108	Sonar, GPS
109	600 watt Bottom Sonar
110	Garmin
111	2 Std. Bottom Machines
112	fish finder/GPS, tower, platform
113	sonar, underwater camera
114	Raymarine
115	fish finder
116	25 yrs local knowledge
117	Furuno
118	Furuno
119	Garmin
120	Bottom Machine
121	Garmin 5455
122	simple depth finder
123	Raymarine A-65 chart plotter/sounder
124	Sonar
125	dead phase sonar
126	rod & reel
127	2-LCDs
129	GPS/Sonar
130	Lowrance depth finder/GPS
131	2 GPS, 2 fish finders
132	2 bottom machines sitex
133	bottom machine/GPS
134	GPS/Fath.
135	GPS, Sonar
136	Raymarine
137	chart plotter fish finder radar Epirb
138	Humminbird 787 GPS Fishfinder
141	Raymarine
142	Sonar, GPS, chart plotter
143	None
144	Garmin
147	Raymarine
149	rod & reel
150	Sitex 106

ID	40: What types of fish-finding equipment do you have on board?
151	None
152	Bottom/GPS
153	Charter N/?
154	N/A
155	Garmin
156	1000 watt Furuno, 4212 Garmin GPS
157	dig depth GPS
158	GPS, recorder, Lowrance
159	Lowrance depth
160	Spearguns
161	Furuno, GPS, Raython Depth, Sitex Depth
162	Digital Depth
163	sonar, GPS, chart plotter
164	GPS, Radar, Sounder, VHS
165	Sounder, Loran, GPS
166	Garmin

ID	41: Please provide your best estimate for the following expenses last season/year. Docking fees Interest payments on vessel P&I insurance on vessel, crew Maintenance/repair on vessel Maintenance/repair on gear Bait Ice Fuel Other (e.g. Licenses) _____
	41 Docking fees
17	N/A
21	Lots!
40	trailer
73	per month
97	Contract
153	Charter
	41 Interest payments on vessel
24	N/A
40	\$\$\$
73	per month
158	depreciation
	41 P&I insurance on vessel, crew
40	\$\$\$
73	Yrly.
	41 Maintenance/repair on vessel
40	\$
73	Yrly.

41 Maintenance/repair on gear	
40	\$
73	Yrly.
41 Bait	
40	\$\$\$\$
73	-
41 Ice	
40	\$
41 Fuel	
28	~\$7,000
40	\$\$\$\$\$\$\$
73	+
41 Other (e.g. Licenses)	
40	\$
79	ramp fees
80	Licenses

42: What approximate percentage of your personal income is derived from dive shop/charter boat fishing?	
	0% to 20%
	21% to 40%
	41% to 60%
	61% to 80%
ID	81% to 100%
17	N/A

43: What approximate percentage of your TOTAL household income is derived from dive shop/charter boat fishing?	
	0% to 20%
	21% to 40%
	41% to 60%
	61% to 80%
ID	81% to 100%
17	N/A

44: How would you describe your diving/fishing occupation?	
ID	Full-time Part-time
17	N/A
19	Snorkeling
36	Trying to be full time
37	Now- was full till Hurricane Charley
56	Depends on season
74	Both

ID	45: What other forms of employment are you engaged in besides diving/fishing? Financial, legal, medical, other professional services Food processing or food services Retail sales Construction Farming Manufacturing Other (please specify _____)
1	Rental Property
6	Independent Options Trader
8	None
10	Boat/motor repair
13	Communications
16	Owner Teacher Indian River Fishing Academy
17	Cave diving, nitrox gas sales
18	None
31	Retired Army
33	Public Health
34	Engineering
39	Dive instructor
41	Scuba instruction
47	Outdoor writer/radio host
49	Retired; Electric Utility Consulting
51	Marine Consultant
52	Transient rentals
53	None
54	Boat repair surveys
56	None
58	Retired Air Force
60	Consulting Eng.
62	Marina
65	Golf cart attendant
66	None
67	Fishing
68	None
69	tour guide
70	None!
71	Deputy Sheriff
74	Repairs
83	Construction
84	boat rental
85	Marina Operations
86	Telephone technician
87	UW Photography
88	None
89	0

45: What other forms of employment are you engaged in besides diving/fishing?	
Financial, legal, medical, other professional services	
Food processing or food services	
Retail sales	
Construction	
Farming	
Manufacturing	
ID	Other (please specify _____)
91	911 Dispatcher
92	Retired
93	Service Tech.
94	law enforcement officer
101	retired military
105	Retired
106	soc sec
108	Forestry Wildlife Consulting
110	Property Management
111	commercial diving
112	Gov – Environmental
114	property rentals
116	rental property
118	boat sales
121	Real Estate Direct Sales
122	None
125	None
130	school system
131	NYCPD police pension, investments
133	Fire Fighter
136	Fire Fighter
137	Retired
142	Teacher
143	None
149	None
154	collateral to diving
155	rent apartments
156	rental boats
158	hunting guide
161	service industry
163	free-lance writing

46: If applicable, what months of year do you have the most non-fishing employment?	
Jan., Feb., Mar., Apr., May, Jun., Jul., Aug., Sep., Oct., Nov., Dec.	
ID	Not applicable
28	Unemployed most of Jan., Feb., & 1/2 March due to weather
74	Winter month due 2 weather

ID	47: Can you identify any user groups with which you have user conflicts (i.e., those groups that affect your diving/fishing areas and species)?
1	Divers on my fishing spots if I am there first.
4	Recreational fishermen, commercial spearfishermen
5	No
7	comm. Fishing
8	not many user conflicts
9	comm. Fishing, state and Fed. Reg.
10	Jet ski operators (No common sense)
11	No
12	SFWM Dist Army Corp Engs.
15	Commercial
16	Save the Manatee Club
17	N/A
18	None
20	Fishermen, municipalities
21	None
22	Commercial fishing
23	NMFS is the biggest detriment
24	No
25	spear fishermen
26	No
28	long liners
30	Spearfishing for black grouper, commercial for yellowtail
31	Illegal netters who work after dark!
32	Commercial spear fishermen
36	Commercial fishing NOAA
37	No
39	Yes spear fishing - No regard to size of fish - lack of license for federal water
43	Long-liners (Grouper)
44	Commercial fishermen w/nets, tournament fishermen
47	Commercial divers using illegal power-heads on the reef
49	National Marine Fisheries, National Park Service, Save the Manatee Club
51	Save the Manatee Club
52	No
56	Recreational fishermen
58	National Marine Fisheries Gulf Council
62	Commercial Yellowtail fishermen
65	None
66	Commercial
67	weekend boats
68	Fishing Bait Fishing
69	comm. Fishing
72	Recreational Anglers
75	Jet skiers, boaters that don't live here

ID	47: Can you identify any user groups with which you have user conflicts (i.e., those groups that affect your diving/fishing areas and species)?
76	Goliath Grouper closure
77	Power-headers
79	long liners
80	PETA, national marine fisheries
81	No
82	Commercial fishing
84	commercial fishing by the ton
86	The Government, Recreational Boaters
88	No
89	Spear fishermen are decimating the reefs - free diving for groupers
91	Developers, fertilizer run-off, other boaters
93	ALL
94	Personal water craft rental, from hotels
95	Fishermen
96	hotel/beach homes/water management system
97	None
98	Fishermen on the artificial reefs that were sunk specifically to encourage fish growth and diving
99	spear fishing clubs/Pompano Bch./Ft. Lauderdale
100	commercial fishermen, recreational boaters, jet skis
103	Gays Reel Setups?
104	No
106	No
107	No
108	Comm. Fishermen Recreational Anglers
109	None
111	recreational fishing
112	Army Corp/water mgmt (Lake 'O' Drainage) use of pesticides & herbicides causing algae blooms into Lee Cnty Estuaries
113	None
114	No
116	uninformed fishermen
119	State of Florida
120	Commercial long lines, shark finning
121	No
122	commercial cast net fishers
123	No
125	Poachers/long line fishermen/jet skiers
126	Those that take away fish instead of creating more habitat!
128	Recreational Anglers
130	manatee watchers, jet ski/personal watercraft
131	None
132	Commercial
133	jet ski tour groups out of Marco Island

ID	47: Can you identify any user groups with which you have user conflicts (i.e., those groups that affect your diving/fishing areas and species)?
134	No
142	Morons
143	jet skis, general boat traffic with uneducated operators
144	tournament fishermen
145	fishers, rec-boaters
149	Personal watercraft
150	None
152	Mackerel? /cast nets
153	long liners/commercial fish
154	1) Lobster season has gross abuses of reefs, quotas, & boater safety. 2) Fishermen "hog" dive moorings, fish "shorts" & other illegal behavior 3) (anchor on reef, dump trash)
155	big sugar, farming waste & pollution, animal waste
156	Recreational anglers because some of them keep everything they boat
157	commercial fishing
158	No
160	beach renourishment, sand dumped on beaches washing over dive sites
162	commercial fishing
163	divers, commercial fishermen, recreational fishermen, jet ski operators
164	No
166	Marine fisheries, Save the Manatee Club
167	Large boat operators over 45'-50'

ID	48: Please rate the following user groups from 1 to 5 in level of conflict to your fishing/diving activities, where 1 is no conflict and 5 is the most conflict.
48 Recreational anglers	
17	N/A
92	none
48 Sport spearfishermen/lobster divers	
17	N/A
154	spear 3 fishers lobsters 5
48 Recreational snorkelers/divers	
17	N/A
48 Recreational boaters	
17	N/A
48 Other for-hire fishermen (anglers)	
17	N/A
48 Other for-hire divers (spearfishermen)	
17	N/A
30	grouper
48 Other for-hire divers	
17	N/A
30	commercial spearfishers
48 Other (_____)	

7	comm. fishing
17	N/A
22	Airboat operators
31	Illegal netters!
32	commercial
44	Tournament pros
66	commercial
82	commercial fishing
86	Government
89	habitat degradation
93	commercial
112	AG Dept, Army Corp, water MGMT
119	Corps of Engineers
120	commercial
122	commercial net
125	poachers
132	commercial fishing
133	jet ski tours
142	jet skis
143	jet skis
144	tournament
157	Commercial
163	jet skis on flats
166	jet skis
167	Prop turbulence, 40' and over boats

ID	49: Please rank the following forms of management to determine if management needs to be changed to address general resource conditions and trends in Florida, where 1 is the most preferred form of management and 6 is the least preferred form of management.
	49 Restrictive, enforcement-based management - higher penalties, more patrols and monitoring
89	bad water quality
92	NO idea
126	Create more habitat!!
154	not realistic, but would be nice
	49 Innovative management - use separation via zoning, marine protected areas
87	does not work
89	Rednecks & Latins ignore laws & size limits
	49 Less management
116	not less - different
	49 Rights-based management - limited entry, trap certificates, property rights
53	less permit in park
	49 Current form of management - seasons and bag limits
132	?
154	doesn't work

ID	50: In terms of direct impacts to the marine environment, what do you believe is the level of impact caused by the following groups? Recreational anglers Sport spearfishermen Lobster divers Recreational divers Recreational boaters Commercial fishermen
	50 Recreational anglers
17	N/A
92	No idea
	50 Sport spearfishermen
17	N/A
	50 Lobster divers
17	N/A
	50 Recreational divers
17	N/A
	50 Recreational boaters
17	N/A
	50 Commercial fishermen
17	N/A
103	8
164	Pollution!

ID	51: What is the closest to your opinion regarding the “no take” zones established in state and federal waters around Florida? Set aside additional areas Reduce the number of these areas Make no changes No opinion
17	N/A
57	Closed only to Comm. Fishing
116	size
126	Make more habitat!

ID	52: Do you believe that these marine reserves have improved fishing? Yes No Don't know
1	Fish stay there and do not come out.
89	poor enforcement

	53: If yes, how long did it take the improvement to happen? Less than 6 months 6 months to 1 year 1 to 2 years 2 to 3 years More than 3 years Don't know
ID	
17	N/A
39	Very high impact from boaters, divers, etc. that have no regard for polluting the waters with garbage, etc.
74	Ban nets in river best fishing even better then when I was a kid
164	Can't go there to find out and there is no data!

	54: Have you had direct experience fishing/diving near a marine reserve? Yes No Don't know
ID	
17	N/A

	55: Do you believe that near-shore nursery habitats for juvenile fishes (e.g., seagrass, mangrove areas) have declined in quality and quantity over the last 20 years? Yes No
ID	
17	N/A
37	Due to growth, not boaters
54	Open
107	for east coast of Fla.

	56: If you answered yes to question 55, do you believe that this has reduced fish abundance? Yes No
ID	
54	Same
56	Too many manatees eating all sea grasses
107	for east cost of Fla.

	57: What do you think are the most important obstacles to the future success of the fisheries in Florida? Please rank from 1 (most important) through 7 (least important).										
ID											
	<table border="1"> <thead> <tr> <th>Obstacles</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>There are too many people fishing</td> <td></td> </tr> <tr> <td>Some fishing gear types are too efficient</td> <td></td> </tr> <tr> <td>There is too much bycatch or too many discard mortalities of undersize fish (released fish that die)</td> <td></td> </tr> <tr> <td>Some fishing sectors, recreational or commercial,</td> <td></td> </tr> </tbody> </table>	Obstacles	Rank	There are too many people fishing		Some fishing gear types are too efficient		There is too much bycatch or too many discard mortalities of undersize fish (released fish that die)		Some fishing sectors, recreational or commercial,	
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There are too many people fishing											
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There is too much bycatch or too many discard mortalities of undersize fish (released fish that die)											
Some fishing sectors, recreational or commercial,											

	catch too much	
	Existing fisheries management does not work	
	Habitat loss	
	Other, please specify (_____)	
57 There are too many people fishing		
55	Don't know	
57 Some fishing gear types are too efficient		
28	Long line	
109	Long line, trout	
57 There is too much bycatch or too many discard mortalities of undersize fish (released fish that die)		
25	commercial longline	
28	NW region	
89	Sharks eat released fish	
74	shrimper what a waste	
57 Habitat loss		
51	Need more	
74	Quality	
28	state wide	
57 Other, please specify (_____)		
3	Need zones	
6	Existing enforcement has slowed significantly	
22	water quality	
25	Red tide	
44	Pollution	
51	add more artificial reefs	
56	Hatchery	
59	Control Goliath Grouper	
67	Need more fish havens	
68	Enforcement	
72	Sharks & others feeding on by catch	
73	federal control	
80	Long lines & shrimper	
85	Commercial	
89	Algae blooms	
101	commercial by catch	
104	None	
109	fertilizer run-off	
116	special interests	
119	Not enough observational input from the field of recreationists	
125	non-compliance	
128	water quality	
137	red tide	
141	Over abundance of Goliaths killing other species	
142	complicated laws	
144	Tournament need to be regulated	

152	beach restoration
153	phosphate runover
154	trash & poor anchoring
163	water quality
164	Over management. Too many Goliath Grouper. Reef off balance.

ID	58: What do you think are the most effective forms of fisheries management? Please rank from 1 (most effective) through 7 (least effective).	
	Fisheries Management	Rank
	Restrict the number of people that can fish	
	Marine reserves or other types of no-take zones	
	Seasonal closures	
	Individual fishing quotas	
	Size limits on fish	
	Fishing gear restrictions	
	Other, please specify (_____)	
	58 Restrict the number of people that can fish	
55	don't know	
	58 Seasonal closures	
25	during spawn	
	58 Individual fishing quotas	
108	?	
	58 Size limits on fish	
89	slot sizes	
	58 Fishing gear restrictions	
89	Bottom long lines bad	
	58 Other, please specify (_____)	
6	Enforce fishing quotas with violations	
11	Lower the pop of Goliath's!	
22	NO entry zone	
23	habitat	
25	proper bag limit (not current)	
30	commercial spear fishing for black grouper (500 to 800 pounds a day)	
35	Required use of circle hooks	
44	Enforcement	
56	Hatchery	
59	Control Goliath Grouper	
68	Enforcement	
72	Number limits not size	
73	reef building i.e. chicken transport cages	
86	Stop habitat loss due to over development	
87	Stiff penalties for net violations	
89	let big grouper go to spawn	
101	ban commercial	
103	Too much commercial fishing	
107	need a seasonal closer for lobster maybe biyearly	

109	Eliminate untended gear
112	water/poll & habitat mgmt
116	enforcement of rules we already have
120	high price of fuel
126	Create more habitats. Our population is growing, therefore make more habitat instead of reducing catches
128	increase health of estuaries
132	have NO size limit - hence, NO mortality less waste
142	Education
143	people need to properly release fish
144	Pole only zones NO gas of elec. motors let fish (rest) save seabeds
154	anchoring & trash enforcement
159	long lines, nets
163	restrict commercial spear fishing
167	Make size limits smaller, add slots to grouper and snook

	59: Why do you dive/fish the areas that you do – that is, what is the PRIMARY reason that results in where you dive/fish?
	Proximity to port
	Abundance of fish/correct bottom or water conditions
	Lack of competition/conflicts from other users
ID	Other (please list _____)
16	Fuel costs
22	Living area?
26	Weather
40	I live here, great fisheries
52	Cave diving in Suwannee Valley
64	Lots of customers
104	training/pleasure
112	aesthetic beauty/wildlife
119	fuel expenses
122	I live here
158	VG Snook & Tarpon habitat
164	Only spots left to go that are not a no take.

	<p>60: In a typical year, how many days do you take your customers diving/fishing in the following areas below?</p>
ID	
	60 Northwest Florida
31	Big Bend - 45-60 days
73	Destin
	60 Northeast Florida
126	multiple boats

	<p>61: How do you feel the State of Florida should manage goliath grouper?</p> <p>Continue the current ban on harvest</p> <p>Prohibit the catch and release of goliath grouper in state waters</p> <p>Allow limited harvest using tag, lottery, or permit system</p> <p>Allow harvest with bag and season limits</p> <p>Allow unrestricted harvest</p> <p>No opinion</p> <p>Don't know</p>
ID	
22	BAD QUESTION! Catch & Release. No harvest.
25	close during spawn/rod & reel only no spearfish
45	In certain areas
53	1 per boat
74	To catch too many killing everything!
89	There are no more red, gag & very few black grouper left. We need something to catch & release
120	They are easily spear targets and will dwindle quickly.

ID	62: Suppose the State of Florida developed a plan to allow anglers to harvest a limited number of goliath grouper for scientific purposes. Such a plan could require working closely with scientists to collect ear bones, fins, scales, and reproductive organs. Would you be interested in participating in such a program? Yes No No opinion
6	I catch perhaps only 20 Jewfish a year.
18	You already do this!!
70	I don't see them in N.E. Florida!
77	I can get all you want in this area!

ID	63: Suppose the State of Florida determined that goliath groupers could be harvested in very limited numbers, and offered a permit that would allow the holder to catch and keep a single goliath grouper. Please circle the maximum amount you would pay for such a permit. <table border="1" data-bbox="391 825 1208 1062"> <tr> <td>\$0</td> <td>\$20</td> <td>\$50</td> <td>\$100</td> </tr> <tr> <td>\$200</td> <td>\$400</td> <td>\$800</td> <td>\$1000</td> </tr> <tr> <td>More Than \$1000</td> <td colspan="2">Other amount: \$ _____</td> <td>I do not think there should be any harvest allowed.</td> </tr> </table>	\$0	\$20	\$50	\$100	\$200	\$400	\$800	\$1000	More Than \$1000	Other amount: \$ _____		I do not think there should be any harvest allowed.
\$0	\$20	\$50	\$100										
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More Than \$1000	Other amount: \$ _____		I do not think there should be any harvest allowed.										
6	0												
25	\$100. Maybe a permit for the season/But not per fish												
74	Not worth anything 2 me												
76	\$5.00												
89	People kill and poach anyway												
110	We pay enough now no other charge please!!												
116	0 myself, but \$50 would be a fair amount												
124	This is not the way to go!												
154	At least in the Keys we hardly see them!												

ID	64: Please provide any additional comments specific to your diving/fishing operation.
1	Goliaths have wiped out Snook and Reds at the Phosphate Dock in Boca Grande. Goliaths have wiped out Grouper and Snapper on local reefs.
3	Our area has shown tremendous Jewfish growth in the last 10 years. Divers are getting their spear catch taken away. We see Jewfish on more dives than not.
4	Photo heavy
6	I do not target Jewfish. They are a by catch when I grey snapper fish. I get juvenile fish mostly under 5 lbs.
8	Jewfish have made a great recovery due to protection. Some areas they eat every snapper, snook and other food fish hooked. Limited harvest might be a great idea. If this happens, all fish caught should be reported.
9	Too much gov't reg

ID	64: Please provide any additional comments specific to your diving/fishing operation.
10	I have seen many small rocks that used to hold lobster and snapper, when the Jewfish move in they clean out most all life from these smaller rocks.
17	My customers are cave divers
18	There are way to many Jewfish out there. They are eating other fish.
21	I have seen the population increase dramatically in the last 20ys.
22	Five boats -- 7 captains: We catch/see Goliaths from six inches to six hundred lbs. - regularly.
27	My main income arrises from running private boats now very little chartering.
28	Would be happy to share thought via phone interview.
29	Pennikamp first/reef life is showing improvement (finally) and more pelagics are noticeable. Need to keep this progress up else it will be over-done and wind up like G. Cayman and Nassau
30	Commercial spearfishing for grouper should be outlawed. Charter captains should not be allowed to catch or sell more fish than the recreational limits.
37	Those who feel the Jewfish population is slim should dive this area. They are eating many other fish & should be harvested before they eat everything else.
38	I think that the Speckled Trout should be a min 13" and limit 10 per person.
39	A lot of problems in fishing (bottom) you have commercial vessels rapeing the fish - very hard for charter boat. Head boats throw too many undersize fish away & it kills them - trails of dead fish every day - if you catch undersize, be made to keep them or give to state for orphan's homes.
43	Sarasota has a great artificial reef program but there is now many Goliaths on each of them. With fuel prices/charter prices and small bag limits it's tough to see Goliaths eat your fish.
46	No harvest - we have people who travel from all over the country to see these fish.
50	Goliath Grouper are not near as common in my home water as when I travel further south. I have rated this survey based on observations in my home water versus observations in other areas (ie Boca Grande).
51	\$50-\$100 or same as Tarpon
52	I run a cave diving resort. My customers dive in the fresh water springs. Some dive in the rivers. A small percent go spearfishing. I do not run any type of boat trips to go ocean diving.
59	There should not be a charge! Goliath Grouper are a nuisance fish and are destroying the marine ecosystem.
61	Inshore: Have grassflats clearly marked: Require all boaters to take class on rules of the road and conservation awareness.
62	I also dive and fish on my own recreational boat. Lobster holes are overrun with Jewfish and lobsters are not present. Jewfish on wrecks and rock piles eat your legal grouper and snapper before they can be landed.
64	Light tackle inshore fishing. Almost never catch Goliaths.
65	I fish in the back country & don't come in contact w/ many Goliaths. I do believe they eat a lot of our targeted species on our reefs & wrecks.
68	I think that Goliath Groupers on the Atlantic Coast should be protected. On the West Coast of Florida & the Keys they should be harvested with a lottery & a slot size limit. Fisheries enforcement on this coast (Atlantic) should be better. Not enough law

ID	64: Please provide any additional comments specific to your diving/fishing operation.
	enforcement officers.
76	Goliath Grouper have depleted the fishing in SW Florida and needs to be addressed immediately.
80	The economic impact of fishing & diving to rec & charter is huge in this st.
84	See lots of big jewfish bad for populations of grouper turtles and other more desirable species.
86	I think too many recreational fishermen fishing from docks, piers, shore - still keep undersized fish & over the bag limit. Large commercial fishing has to hurt the fisheries. Overdevelopment, storm water damage, etc. hurt also. I haven't had any customers want to keep their fish this year.
89	We need more enforcement
91	I do not fish some of the reefs I used to because of Goliath Grouper. They have taken over the reefs making it very hard to fish. Our near-shore reefs don't hold permit like they used to because Goliaths eat them. I have witnessed several incidents of Goliaths feeding on permit.
92	
93	The closed fishing for (Jew fish) Goliath Grouper worked! Now they are taking over the best ledges and fishing areas. Something needs to be done to thin them out or that's all we will have left except sharks.
94	I feel Goliath Groupers are taking over all near shore structures, areas where I was once able to catch snook, red fish, trout, etc. are now infested with Goliaths.
95	In N.W. Fla Goliath Groupers are a plus to our dive operation. I understand in South Fla they are a problem but not up here so maybe selected areas could have some thing.
96	Pollution & overfishing over the last 10 years had reduced the fish population by 90%!
97	If you need to thin the herd, sell 300 tags and charge \$1,000 for tag. And a weigh in fee. \$10.00 just to buy lottery ticket. Put this money into a new wreck for Central Palm Beach County.
98	I think all artificial reefs should be no fish zones (spiegel, duane, eagle). We routinely clean up line & hooks from them & have actually cut loose turtles that have gotten caught in lines. There are plenty of areas to fish that do not impact the dive sites.
103	Stop over fishing by commercial boaters, long line, gull netting, and electric fishing reels, shrimper by catch promote more fish farming.
107	The west coast of Fla is inundated with Goliaths, it's because we have vast amounts of mangroves for the fry to be birthed and grow transplantation to the east coast would be a great idea as well!
109	I cater to both strictly scuba divers and spearfishers although not at the same time. Goliaths in Panama City are common on artificial reefs with high relief and most of those spots are public #s, as such spearers don't want to go there and we take them to limestone reefs instead. no GGs there unless you go offshore to the 3 to 5's.
111	What can be done about the high increase of Lion Fish on Fla. East Coast.
112	The water quality & destruction of habitat are just as important as catch regulations. I believe the way the redfish was saved can be applied to other over-fished fisheries.
113	There are so many Goliath in the area we dive and spearfish I see at least one on

ID	64: Please provide any additional comments specific to your diving/fishing operation.
	almost every dive I have seen Goliath eat a free swimming 25lb gag grouper. We use 15-30lb AJ's as bait to hook Goliath on hook & line.
116	As the Jewfish population has grown all the other populations have declined drastically. I studied & worked @ RSMAS in Miami and am well acquainted with the feeding habits of grouper (Jewfish) in particular. It is nice to see one here and there but not everywhere you look.
119	Hurricanes and silt protrusion are most damaging. -Catch & relase still kills fish. - Divers have most direct observation. Digital photos from them should be encouraged
120	Have good stories of diving w/ Goliaths & photos as well
124	Open season on Goliaths for a short time with a slot-size to protect the breeders.
125	Allowing the spear harvesting of goliath grouper is as much of a sport as spear harvesting puppies at the humane society. The thought of such a thing sickens me and should sicken you!
126	We need more habitat - sink clean boats, air planes, concrete - simply put - the number of anglers grows - nature will create a lot more fish if the empty areas had shelter to create the fishes
127	There may be too many Goliaths now - I see no spiney lobsters here in the Gulf - I suspect Goliaths may cause some of this.
128	We occasionally catch Jewfish accidentally while fishing for snook in FL. Bay. The population seems healthy. I don't see any need to allow harvesting just yet.
129	
130	I primarily fish inshore but do occasionally catch juvenile goliath grouper. Dock talk is that too many times the targeted offshore species are being eaten by the goliaths!
131	Commercial fishing quotas should be cut drastically, shrimping should be done ONLY with farming (too) much by-catch & bottom devastation. Oil rigs should be put off our southwest gulf coast.
134	Jewfish are rare in NW Florida
137	Goliath Grouper over populated in some areas - no good for fishing when they clean your catch before you can get it to the boat
141	Goliath Groupers are cleaning out the wrecks in the Gulf
142	Goliath Groupers are not very common in the areas that I fish. The biggest problem we have in this area is overcrowding on the water especially on the weekends.
145	Fully or partially opening Goliath season would send them back in danger of extinction. Even the protection now is limited due to lack of enforcement.
146	I don't see any gag or red grouper any more compared to twenty years ago.
151	GG are eating a lot of fish on our wrecks and fads
153	If you wipe out Jewfish the same problem will occur.
154	My observation is that limits on size, quota & even season (sometimes) are ignored. More enforce't officers would help so we could call in a "citizen's complaint" & actually get a response.
155	Fish numbers are declining - water quality is the primary reason. Habitat decline due to development is also at fault.
157	Education to Average Joe public fishing or boating should be manditory as to the impact on his or hers environment including other boaters.

ID	64: Please provide any additional comments specific to your diving/fishing operation.
158	Large Goliath are having a major impact on snook and gray snapper.
159	I am a flats guide
163	Open Goliath Grouper to limited harvest... 1 per boat per day... 30-35 inch slot limit
167	I have had over 20 kingfish taken by goliath on many occasions also had grouper before they could be landed I have caught many 12" goliath deep in the Everglades in freshwater

ID	65: Please provide any comments about the survey.
6	I think Jewfish bag limit of 1 a day and a slot size would not devastate this specie. Providing no fish over 100 lbs. are in that slot.
9	Not in a Goliath area
14	I do not believe any of these survey's make a single bit of difference.
15	Finally a survey
17	Not much of this survey pertains to cave diving in fresh water springs
18	Bull shit
22	I have speared as many Jewfish as anyone you are likely to find. I have caught and released many more. There is no way to allow any harvest of these fish w/o locally disturbing there population. They are "best living structure" oriented...catch/shoot one & another moves into the "good structure" - you will catch/shoot them off the same spot until they are gone...again
23	This was way too long.
25	It's about time someone took interest in what we have to say! If you do open harvest don't allow spearfishing, that is what created the problem to begin with.
27	I appreciate the effort to collect Data, but in the legislation seems to be fall to the benefit of the strongest lobbyist in spite of the data.
31	Historically total bans on harvest does not work! The ban on Goliath Grouper results in the Goliaths eating too many smaller grouper.
35	Goliath are predators that strip many offshore habitats of most all other forms of sea life - then they move on and do it again. We need a harvest!!
38	I felt the survey was great except the amount of income
39	Add in for specifics on questions for the other problems of decline of fish.
40	Contact me via email or phone if you would like to conduct underwater surveys using a local commercial vessel in charge of Martin & St. Lucie County Artificial Reefs.
43	Thank you for the survey and I hope it helps. Please call if you need additional info. My 2 charter boats run year round and I can give accurate info for Sarasota county.
57	Maybe look at different method for bag limits. ie, you are allowed 5 trout that measure 15-20 inches. You catch & release 20 to get the 5 fish limit. Change it to the first 5 fish caught regardless of size. no by catch, easier for fishermen to abide by and easier to enforce.
59	Long overdue!
61	Great survey. It's nice to see that someone cares!
62	About time.
64	Good, but I'm a poor choice as I have caught 3 Goliath Grouper in my life.
65	I think it's a good thing at the right time.

ID	65: Please provide any comments about the survey.
68	Good survey
76	Very good - open season for goliath groupers!!!
80	Goliath Grouper have taken over every reef & ship wreck off Pinellas, I have as many as 20 200lb Goliath on one reef.
81	This survey is not well explained (the questions, that is). There are too many interpretations of the questions which leads to conflicting answers.
84	Do something
86	Survey NE florida on the need for redfish stocking program.
88	Tarpon tags are \$50.00.
92	Hope it helps
93	Very good survey thanks for asking my opinions
94	Hope it helps you out
99	Too long?
112	sounds good if used appropriately
115	too long
119	I was given this survey to complete. I work in a large fishing tackle store and am the in-house master dive trainer. We interact with charter boat operators, guides, and consumers on a daily basis. But, do not operate a charter boat.
121	Too many personal questions that should have nothing to do w/ fishing
122	This survey really is not applicable to me. My biggest complaint is lack of patrols cast net anglers allowed to run sea grass beds and throw nets, take limits.
124	Clearer wording of questions & # systems
125	It seems that you are searching for an excuse to mass murder an essential element of the reef environment. I will address the appropriate state and federal agencies with my concerns.
128	Difference between commercial harvest fishing and commercial sport fishing was unclear
129	I would like to see a rolling five year closure on our top five species 1 yr-grouper, 1 yr-snook, 1 yr-snapper, 1 yr-redfish, 1 yr-trout. This is for all state, federal waters out 200 mil.
130	Q. #5 - offer 'OTHER' as alternative answer
131	I hope there are good things to come, honestly, I am not optimistic
135	Goliath Grouper populations have come back strong. I strongly feel that a very narrow slot limit will not negatively impact the species. They are an excellent fighting fish and good table fare. Good for the economy to take a few.
142	The survey seems to be pretty thorough. Unfortunately I don't catch goliaths in my area. I would like to be able to keep at least one if I were fishing in another area. Maybe a slot limit would work.
143	well written
153	Should be done on line waste of paper.
154	Not real good at exposing the difference between fishing & diving interests, which, unfortunately are at odds when one would hope we'd share the same preservation interests.
155	Spearfishing is the main reason for the decline in large Goliath Grouper.
157	I'm not quite sure why my financial status is important and answering made me a little uncomfortable.

ID	65: Please provide any comments about the survey.
158	Survey is great but let's do something.
159	good
161	too long and time consuming
163	Numbers of Goliaths are caught and kept by local commercial lobster fishermen and divers. Where is the law enforcement?
164	Didn't seem like it was about goliath grouper
167	Need more questions about bag and size limits

Appendix C. Phone Survey Results

Of the 74 respondents that requested to discuss/provide additional comments by phone, 48 were successfully contacted and voicemails were left for 26, for a 65% success rate/completion rate of phone interviews. (gg is used to abbreviate goliath grouper)

Survey #	Contact	Target GG when Fishing	Comments
7	left message		
11	spoke to	yes for entertainment, puts dead bait on the bottom, sometimes 10lbs of barracuda, or they will grab a snapper on the way up	he has caught a 500lb gg, he's based out of Ingelwood, gg are on every artificial reef with relief, he loses fish and tackle to gg that hang out under boats, there are fewer smaller fish where there are gg, gg take fish from him while he is spearfishing, a friend got dragged into a wreck by a gg
14	spoke to		not many gg around Port Richey but they have come back in south Florida, 62 years old, used to catch mostly gag and a few red grouper but now it's the opposite, red snapper were rare to catch 5-6 years ago, abundant 20+ years ago and now they are everywhere but the season is only 2 months so there are many discards, he runs trips mostly to the FMG and charges \$3K but can only keep a few fish, amberjack should be closed at least seasonally if not totally, red snapper and red grouper are overabundant at least where he fishes, should have different management for different areas, should create zones, the tourist fishing industry is suffering, a bandit fisherman who was with him agreed with everything he was saying, thinks marine reserves are helping, he is a recreational charter fisherman and is only allowed to keep 5 gag/person and 1 red grouper, he mostly fishes deep water 90-100' deep, 100-200' deep in the FMG that he does overnight trips to, says they will catch 50 red grouper to every 1 gag and most of the 50 red grouper do not survive but he can only keep 1/person/day, his bandit buddy can go out and load up on red grouper, has no limits on them
15	spoke to	yes, both inshore and offshore using spanish mackerel	in Tampa Bay area gg are all over, sees them on artificial reefs and wrecks between 50-120' deep, not really on natural bottom, juveniles are in 10' depths, there are also large gg around the Skyway Bridge in 20-40' depths, most of the gg are 80-400 lbs, catches some smaller ones when fishing for snook in the mangroves, was glad to see the survey
18	left message		
20	spoke to		has seen gg eat lobsters in the past but not recently, has seen them eat baitfish, has not seen any tags
21	spoke to		3-5 gg on all ledges, they used to just be on wrecks, see all sizes but no huge ones, 1000 lbs, like she used to see 25+ years ago, they clean out the ledges and wrecks of everything and then move on, wants to shoot them, they need to be thinned out, have a hunt similar to alligators

Survey #	Contact	Target GG when Fishing	Comments
22	left message		
24	spoke to	occasionally	has been guide fishing for 15 years in Florida Bay and ENP, in March through May can catch 6 gg per trip, but other times he doesn't catch any and it also depends on what fish he is targeting, usually catches gg when targeting mangrove snapper and snook, fishes shallow water <10' deep and catches juvenile gg <20lbs in the mangroves, catches larger gg around the islands with moats but his gear is not meant to handle them so he can't bring them up, he is curious about our results and would like to be emailed them, owns a store called Ichthyophile
25	spoke to	no but catch them by accident	gg on wrecks, springs, and large ledges, 7 or 8 per site at depths from 35-250' up to 45 miles out, has been fishing for 200 days per year for 30 years, wants to know when they will open the gg fishery, thinks there are too many gg and red snapper and both are voracious predators, red snapper are pushing out grouper and mangrove snapper and outcompeting them for food
27	left message		
28	spoke to	yes, when nothing else is biting for fun, they will go after amberjack on the line	wrecks, high relief areas, artificial reefs usually 1 per site, has no problem with gg
30	spoke to		lives in Marathon, gg in Florida Bay in holes and on Atlantic side of Florida Keys on reefs from 15-100 lbs, should have a limited season for them like deer, complained about commercial divers harvesting 300-600 lbs of mostly black grouper in one day, one commercial or charter fisherman can't get that many in 6 months, there is no enforcement some of the commercial divers are even licensed and he has seen many short lobsters that were harvested
35	spoke to	catches juveniles, does not target adults	lives in Tampa 10 months and Boca Grande 2 months, business is down 40% due to the economy and gas prices, claims gg eat lobsters but has no direct evidence, doesn't see high bycatch mortality but only fishes in shallow waters, marine reserves should only be protected from commercial fishermen who target spawning aggregations not recreational fishermen, has never caught a gag with eggs, thinks gag are on the rebound, the only juvenile mortality occurs when fish are hooked and predators eat them (sharks, gg, barracuda), increased gas prices have decreased fishing effort, got to harvest gg because they are impacting all species, should follow alligator hunting protocol, but we need to think about gg management carefully, using circle hooks and venting tools will benefit the gag fishery
37	spoke to		most gg he has seen at one spot, usually sees about 12 at each site, most 300-400lbs, at the Baja California in the Tortugas has seen them up to 800

Survey #	Contact	Target GG when Fishing	Comments
			lbs, thinks we should transplant gg
39	spoke to		would like to know the results of the survey, doesn't want people to mess with gg, leave them alone, most things are fished out, should be able to keep what you catch of red snapper because there are a lot of dead discards
40	no answer		
40	sent email		
43	spoke to	yes, once or twice a year, uses the biggest rods and reels, 100 lb braided line with 400 lb cable leader, 20/0 hooks that he has seen gg straighten, bonitas or barracuda for bait	around Sarasota gg on every artificial reef, tons of red snapper and high discard mortality most are caught at 100' deep
46	left message		
47	left message		
49	spoke to		does not go offshore, catches juveniles in ENP backcountry, has seen more gg in last 5-8 years and catches them almost every trip, most of them are 25-30", there are places 18' deep with large holes that could support larger gg but has not seen any over 30", recently asked a ENP park ranger about having a test permit there for gg, the park ranger thought it was a bad idea and he changed his mind after I told him that was their primary nursery habitat, not many other areas with pristine mangroves, he mentioned water quality is still an issue in ENP
51	left message		
53	spoke to	yes, has before, fishes in the 10,000 Islands and ENP	catches 15-20 lb gg in holes at low tide, 3-6' deep, they like catfish, does not catch them frequently, maybe could have a limit of one per boat, the seagrass in this area is dieing back possibly due to hurricanes and manatees, he doesn't see shrimp around like he used to, very excited about phosphorescence
54	spoke to		he hasn't caught gg, has seen them in the "ocean", he wasn't very forthcoming
57	spoke to		fishes in the Econfina area, has been catching small gag in 10' depths, is not fishing too much these days, when he does fish it is inshore so he has no experience catching gg, he is nearby and willing to help in any way he can

Survey #	Contact	Target GG when Fishing	Comments
59	spoke to		wants to kill gg, they are everywhere and eating everything, he is a dive instructor in Ft. Myers and has been diving for 26 years, says gg take grouper to eat off his stringer or spear before they will take snapper, 20 years ago there were only 1-2 gg on the Fantastico, sees gg at Twin Barges and pretty much all of his 1000 dive sites, he hasn't seen shovelnose lobsters in 10 years, gag, black grouper and lobster numbers are all down, spots where there were lobsters now instead there are gg, thinks the moratorium on gg began in 1969, he didn't believe anything I said and was creepy, has 4 rebreathers, says he'll send pictures of gg, thinks we need to do an experiment on gg feeding to see what happens when they are fed a minimal diet
61	left message		
62	spoke to	no, catches them by accident	sees gg all over on wrecks, he was not very responsive to questions, does not fish near marine reserves
64	left message		
65	left message		
67	left message		
68	spoke to	no, but catches them as bycatch off Naples, 10,000 Islands, Florida Bay, they are between 20-100 lbs	should have an open season for gg on the west coast of Florida with a tight slot, every dive he sees gg, sees them on wrecks and ledges, 1 wreck has 20 gg, poaching is a problem, there needs to be regulations, said he would fill out a form with more specific info on gg he has seen so I emailed him an excel sheet
72	left message		
73	left message		
77	spoke to		gg spawning aggregations are forming now, hw knows Chris met him when he came to tag gg
79	spoke to		biggest gg she has ever seen in a deep undercut, 5' relief with 5 or more others, encountered a boat bottom cleaner who was attacked by a gg while cleaning a boat in the marina, the gg came up and nudged him and sucked down his arm when he tried to push him away 100-150lb gg, many gg in Tampa Bay around pilings and under bridges, many on the pipeline, has seen gg eat a lobster, @Boca Grande saw gg eat stone crabs, others have had gg take their stringers and fish off their spear shafts, sent pic of gg spitting up sea turtle, off DeSota Park saw 200lb live gg just floating on the surface, she will email site coordinates and more info on gg and video
80	spoke to		12 gg on most wrecks, some have up to 20, has been fishing for 17 years, 200 trips per year since 1992, has PhD, doesn't fish for amberjack where there are gg, says there are more red snapper than ever, a good

Survey #	Contact	Target GG when Fishing	Comments
			come back, gg a good success story but should have a fishery for them like tarpon with tags and limits, \$50-\$100 per tag, 2-3 gg per season or year, use tag money for research, not available to divers or commercial fisherman, he is for limits and restrictions
81	spoke to		see gg off Palm Beach on artificial reefs and out of the mouth of Tampa Bay at the Mexican Pride, Sheridan, and sees one every trip to the FMG that usually follows them around, in southwest Florida sees gg 3 out of 5 dives, gg between 4-7', most around 5', one gg ate his whole stringer with 4 fish on it, should publish an article about gg in the Florida Fisherman and SCUBA News
84	spoke to		sees gg on artificial reefs, thinks there are many but the visibility is low. Saw 1 700-800 lb gg on rock pile off Crystal River 70' deep and another 6' gg there, one also on a rock at 32' deep, found a 2' green sea turtle, crabs, etc. in the stomach of a 7' gg he killed in the 70s, never sees any small ones, only over 200 lbs, thinks gg are a nuisance, one guy (spearfisherman?) got bit by a gg in 8' deep when he looked under a ledge off Crystal River by Mangrove Point
88	left message		
90	spoke to		fishes mostly inshore so doesn't catch gg, does not fish near marine reserves
91	left message		
94	left message		
95	spoke to		first jokingly asked what the best way to cook gg, gg are advantageous to divers, his customers want to see them, at one site saw one massive gg and one small one, the small one swam back and forth between them and big one, gg are not intimidated by divers, saw one follow a girl that was looking for a gg and scare her, has not seen gg eating anything, has had one guy lose a fish and stringer to a gg, 4-5 years ago he didn't see sharks then he started seeing them until a couple years ago
96	spoke to		sees juvenile gg on reefs and adult gg on wrecks, has not seen direct evidence of poaching, gg are his favorite friends, has fought with them over speared fish many times but realizes its part of the game
100	no answer		
106	spoke to	sometimes using mullet or whatever he has	catches gg in the Flamingo area of SW FL, ENP, and in the mangroves and coastal areas, in some spots he can't catch anything but gg, in shallow water the gg are 50 lbs or less and he catches 10 or more a day, the bigger ones get away, thinks there are plenty of gg
107	spoke to		she will call back with Twin Fins coordinates, sees 1-2 gg at other sites, she doesn't believe in

Survey #	Contact	Target GG when Fishing	Comments
			overharvesting and likes having them around but thinks they are very thick, would like to transplant them, she asked about lionfish and was very excited that gg might be eating them, says she has seen gg eat minnows
108	spoke to		fishes and dives out of Tallahassee, St. Marks, Keaton Beach, Port St. Joe, has not caught any gg this year but last year caught 3 or 4 on natural bottom caves they were 100-200lbs and caught in 80-100' depths while grouper fishing, thinks there should be a fishery for them but it should be very monitored and controlled
109	left message		
112	left message		
113	left message		
116	spoke to		willing to take us out for the price of fuel, catches some gg in the river and in the pocket between Palm Beach and Ft. Pierce, spawning aggregation off Jupiter, 2-3 per wreck or artificial reef, some 600 lb gg on the WWII wrecks, most gg are over 75 lbs, gg eat anything that swims by especially those in the 600-800 lb range, has heard about a lot of gg poaching in the Miami area up to 6 per week, he used to commercial spear fish but all the other groupers are gone, he doesn't want an open season for gg but where densities are high maybe sell tags for \$1000 each and then put that money into enforcement, we should let people catch them because they aren't catching anything else, in Stuart the visibility is limited
118	spoke to		does all inshore fishing, caught one adult gg in Tampa Bay 5 years ago, has caught a couple juveniles up to 15" in Teracia Bay about 1 per year
119	spoke to		diver, couldn't get any specific infor from him, most gg he sees are between 200 lbs and 1/2 ton, has video of a gg with a trolling lure in its mouth probably from eating a fish that was hooked on it, thinks gg eat snapper and grouper but has only seen them eat ones that were speared, operates out of Port St. Joe, will take us out, has videographers
120	spoke to		owns a dive charter, says gg are everywhere but not on reefs, does not catch gg or have problems with them while hook and line fishing, but they have tried to take speared fish, will give us a good deal to go out with him, price of fuel
124	left message		
125	spoke to	does not target them but they like yellowtail and mangrove snappers, has caught a 400lb gg	catches gg in the mangroves around Sarasota Bay, caught 6 the other day in 9' depths gg were 70-90 lbs and full of stone crabs, catches a lot of red grouper too 8-10", has not caught many seatrout after red tide, catches 25" gag in the mangroves , in the spring

Survey #	Contact	Target GG when Fishing	Comments
			red grouper are in shallow and then in the fall they move out as gag come in, uses circle hooks, was a commercial diver, takes researchers out, was not happy with the wording of the survey and said it was slanted towards a harvest, says there is a pot hole off Sarasota, Fiesta Key with many 15-20 lb red grouper making big holes and then lobster came in and then gg, does not think the venting tool is long enough for gg
129	spoke to	offers it to clients but few do it, uses jack crevalle for bait	charter captain off Lee County gg are at GH reef, the barge, old shrimp tugboat, May reef, Madison reef, Doc Kline, 240 ledge, California, Fantastico, Power Hitter (further south), Wiggins 4-5, and 5 mile, wants to harvest gg without it getting out of hand, they are eating everything
131	left message		
132	spoke to		saw one gg once in the Keys at 120' deep, usually fishes out of Destin Beach and out to 20 miles, surface fishes for mackeral, wahoo, tuna, and dolphin and bottom fishes for reef fish, does not encounter gg, does not fish near marine reserves
135	left message		
141	spoke to		says there are 12-24 gg on each of the 30 wrecks on the Gulf side of Key West ranging from 40-350lbs and depths between 6-80', gg are on natural bottom too, he wanted to know when they are going to open the fishery and what the slot size will be, saw one gg jump out of the water to get a permit on the line, has seen 15 lobsters in one gg mouth, convinced they are eating all the lobsters, permit, groupers, snappers, etc., had to go
143	left message		
144	spoke to	every once in awhile he has customers who want to catch gg, he uses live or dead big bait, big jacks, mostly catches gg accidentally especially when permit fishing	catches gg mostly in the summer, in inshore waters around Boca Grande out to 3 miles, mostly catches gg 5-10lbs but some up to 150lbs, most are caught in 20-25' depths some up to 50' depths, has seen gg eat snook, rays, and small crabs, thought it was a good survey, does not fish near marine reserves
145	spoke to		he knows Don DeMaria, few gg on the east coast, the one on the Sea Emperor was alive with a spear shaft in it, when they finally got permission to try to capture and remove the spear the gg wasn't there anymore, doesn't want to open the fishery, they would be gone within a few days
146	spoke to		out of Venice, Boca Grande area with Engelwood Divers, is interested in taking us out, says gg are everywhere including large ledges (not on the small ledges), Pegasus, Box Cars, Sinkhole, fishermen don't like gg, he doesn't seem to mind them, had one gg eat a 4' barracuda he speared, another gg bit a guy

Survey #	Contact	Target GG when Fishing	Comments
			for his speared amberjack, sees gag at the ledges 1/2 mile from shore in Venice and thinks they are spawning aggregations
153	spoke to	when he was younger he used to fish for them	56 year old in St. Pete, thinks gg tags should be \$300-500 and the proceeds should go towards research, sees 5-6 per wreck, says when people catch they are taking them out of the water, he doesn't want to devastate the population but thinks they need to be thinned out because they are really thick, could do a similar program to alligators
154	spoke to		gg on natural reefs, all wrecks, has seen as many as 6 on one dive, has called FWC after seeing 3 gg carcasses, big, a couple hundred lbs each in 110' depths, was busy with his daughter
155	spoke to		fond of what we are doing, gg are more populous and easier to catch, if there is a limited catch what sizes could be targeted? Everything is overfished especially grouper, should close commercial or all fishing, thinks we should not be allowed to keep fish, catch and release only for 5-10 years using barbless hooks, red tides come in and kill everything
157	spoke to	no, but occasionally will catch one by accident	fishes offshore of southwest Florida and the Florida Keys and doesn't catch gg
158	left message		
166	spoke to	not usually but some clients want to catch them on fly rods, catches gg accidentally when fishing with live bait and shrimp but moves on after one is caught because he is targeting redfish and he doesn't find redfish where there are gg	catches juvenile gg inshore in mangroves and potholes, catches them once a week in winter and does not catch them in as high #s in the summer, knows there are 200-500lb gg under the Sanibel Bridges but he doesn't fish for them, gg are sedentary same one always at the same spot
167	spoke to	yes, uses hand line rope with bungee cord at the end and spanish mackerel or ladyfish dead bait mostly for shark fishing but often catches gg as well, has good success catching them at night as well	very difficult to hear and understand, fish Fakahatchee, East River, Ten Thousand Islands, freshwater mangroves, catches more gg than snook, mostly catches juveniles but does fish offshore wrecks and has caught as many as 10 large gg in a day on 20 mile wreck, catches small gg on 5 mile wreck, offshore gg are 100lb to 7 1/2', has eaten gg but doesn't think they taste good, has seen gg come up and take kingfish, he would like instructions on exactly how to measure fish, it can be subjective, saw an 8' gg eat a dead bull shark they threw back, lots of bull sharks in the bays

Appendix D: Number and Size of Goliath Groupers by Site from Phone Interviews

Site	# GG	Sizes
Bay Ronto	30-40	most 150-200lbs, a few over 600lbs
Palm Island Ferry	15	smaller than Bay Ronto
the Castor	12 there year round, 40-50 at other times	300-400lb
Mizpah	2	300-400lb
Capt. Tony (Becks)	2	300-400lb
natural reef	1	300-400lb
natural reef	2	300-400lb
Steinhatchee Reef	1	400lb
catches juveniles all over Tampa Bay and in the rivers		
Crane Barge	27	
MD1	30-40	400-500lb
M7		300-400lb
D9	6	
Fantastico	20-30	300-400lb
242 Ledge	12+	
Hopper Cars	12+	
Edison Reef, control pile	1000s	
Hole in the Wall	40	
Pillsbury Wreck	4	50-100lbs
Finn Barge	12	a few ~30lb, the rest 50-100lbs
ledge	2	50-100lbs
ledge	6	1 350-400lb
Mexican Pride	30	big, 30 - 300 lbs
John's Pass 50 miles out		
Captain Tony	8-10	
Budweiser Bar	8-10	
The Castor	27	
Bridge Span 14	1-2	1-1.5 m long, 1/3 m high, 200-300lb
Black Bart	1-2	1-1.5 m long, 1/3 m high, 200-300lb
Strength	1-2	1-1.5 m long, 1/3 m high, 200-300lb
Hovercraft	1-2	1-1.5 m long, 1/3 m high, 200-300lb
Pontoon	1-2	1-1.5 m long, 1/3 m high, 200-300lb
gg move between Sea Emperor and United Caribbean	2-3, one with spear in it	150, 250-300
Newla Express	1	200lb
Horseshoes	1	75lb
Twin Fins, south of shipping channel off Sarasota		
Loran Tower Ledge	2 with tags	100lb, 4'
Tampa Bay	1	500lb, 5 1/2'
Artificial Reef of old guard rails	1	big
Army Tanks	1	huge
Black Bart		
Hover Craft		

Site	# GG	Sizes
Max Reef		
Sea Emperor on Boca Broward line	1	
Twin Barges	20	
Mexican Pride	50-60	
Pine Island Sound		17-20lbs
Faka Union River		12-18"
Kidd Wreck, barge 16 miles offshore	60	100-600lb

Appendix E. Test of Mean Difference

Number	Question		Sum of Squares	df	Mean Square	F	Significance	
6	Trips Per Year	Between Groups	154,993	1	154,993	5.72	0.018	**
		Within Groups	3,471,461	128	27,121			
		Total	3,626,453	129				
7	Percent Locals	Between Groups	9,288	1	9,288	11.42	0.001	***
		Within Groups	100,857	124	813			
		Total	110,146	125				
	Percent Out-of-State	Between Groups	14,731	1	14,731	19.82	0.00	***
		Within Groups	98,125	132	743			
		Total	112,856	133				
	Percent In-State	Between Groups	60	1	60	0.27	0.602	
		Within Groups	23,519	108	218			
		Total	23,578	109				
12	Depths	Between Groups	18,063.472	1	18063.472	11.769	.001	
		Within Groups	161,151.562	105	1534.777			
		Total	179,215.034	106				
14	Percent Customers who Want	Between Groups	4,613	1	4,613	9.34	0.003	***
		Within Groups	46,419	94	494			
		Total	51,032	95				
23	Water Pollution	Between Groups	5	1	5	1.82	0.180	
		Within Groups	358	133	3			
		Total	363	134				
	Commercial Fishing	Between Groups	3	1	3	1.34	0.250	
		Within Groups	336	133	3			
		Total	339	134				
	Hurricanes	Between Groups	11	1	11	2.91	0.090	*
		Within Groups	501	133	4			
		Total	512	134				
	Recreational Fishing	Between Groups	10	1	10	5.26	0.023	**
		Within Groups	265	133	2			
		Total	276	134				
	Global Climate Change	Between Groups	18	1	18	6.74	0.010	***
		Within Groups	350	132	3			
		Total	368	133				
	Biodiversity	Between Groups	-	1	-	-	0.993	
		Within Groups	301	119	3			
		Total	301	120				
	Scuba Diving and Snorkeling	Between Groups	22	1	22	9.83	0.002	***
		Within Groups	290	132	2			
		Total	312	133				
27	Age	Between Groups	68	1	68	0.60	0.442	
		Within Groups	15,392	135	114			
		Total	15,460	136				
38	Vessel Price	Between Groups	5.27E+13	1	5.27E+13	0.47	0.496	
		Within Groups	1.22E+16	108	1.13E+14			
		Total	1.23E+16	109				
	Electric Equipment Price	Between Groups	7.46E+09	1	7.46E+09	0.20	0.660	
		Within Groups	4.05E+12	106	3.82E+10			
		Total	4.06E+12	107				
	Fish Rods or Spear guns Price	Between Groups	2.47E+10	1	2.47E+10	0.29	0.594	
		Within Groups	8.87E+12	103	8.61E+10			
		Total	8.89E+12	104				

Number	Question		Sum of Squares	df	Mean Square	F	Significance	
	Tackle Price	Between Groups	1.94E+09	1	1.94E+09	0.18	0.671	
		Within Groups	9.85E+11	92	1.07E+10			
		Total	9.87E+11	93				
	Scuba or Snorkeling Equipment Price	Between Groups	2.47E+07	1	2.47E+07	0.00	0.976	
		Within Groups	1.60E+12	60	2.67E+10			
		Total	1.60E+12	61				
	Other Price	Between Groups	2.04E+10	1	2.04E+10	4.88	0.043	**
		Within Groups	6.28E+10	15	4.19E+09			
		Total	8.32E+10	16				
39	Maximum Speed	Between Groups	3,108	1	3,108	21.95	0.00	***
		Within Groups	16,563	117	142			
		Total	19,671	118				
41	Docking Fees	Between Groups	3.47E+08	1	3.47E+08	1.70	0.196	
		Within Groups	1.66E+10	81	2.04E+08			
		Total	1.69E+10	82				
	Vessel Interest Payments	Between Groups	3.62E+08	1	3.62E+08	2.47	0.121	
		Within Groups	9.52E+09	65	1.47E+08			
		Total	9.88E+09	66				
	P and Insurance Price	Between Groups	1.27E+08	1	1.27E+08	13.54	0.00	***
		Within Groups	9.00E+08	96	9.38E+06			
		Total	1.03E+09	97				
	Vessel Maintenance Price	Between Groups	3.49E+08	1	3.49E+08	2.04	0.156	
		Within Groups	1.66E+10	97	1.71E+08			
		Total	1.69E+10	98				
	Gear Maintenance Price	Between Groups	1.68E+06	1	1.68E+06	0.24	0.626	
		Within Groups	6.23E+08	89	7.00E+06			
		Total	6.25E+08	90				
	Bait Price	Between Groups	1.98E+07	1	1.98E+07	3.36	0.071	*
		Within Groups	4.65E+08	79	5.89E+06			
		Total	4.85E+08	80				
	Ice Price	Between Groups	1.28E+06	1	1.28E+06	0.74	0.393	
		Within Groups	1.47E+08	85	1.73E+06			
		Total	1.49E+08	86				
	Fuel Price	Between Groups	4.57E+07	1	4.57E+07	0.12	0.727	
		Within Groups	3.59E+10	96	3.74E+08			
		Total	3.60E+10	97				
	Other Price	Between Groups	4.93E+04	1	4.93E+04	0.01	0.928	
		Within Groups	4.49E+08	75	5.99E+06			
		Total	4.49E+08	76				
50	Recreational Anglers Impact	Between Groups	4	1	4	2.24	0.137	
		Within Groups	196	124	2			
		Total	199	125				
	Sport Spear Impact	Between Groups	2	1	2	1.25	0.265	
		Within Groups	195	123	2			
		Total	197	124				
	Lobster Divers Impact	Between Groups	0	1	0	0.06	0.813	
		Within Groups	231	121	2			
		Total	231	122				
	Recreational Divers Impact	Between Groups	5	1	5	4.06	0.046	**
		Within Groups	157	122	1			
		Total	162	123				
	Recreational Boaters Impact	Between Groups	3	1	3	1.84	0.178	
		Within Groups	217	124	2			

Number	Question		Sum of Squares	df	Mean Square	F	Significance	
		Total	220	125				
	Commercial Fisher Impact	Between Groups	0	1	0	0.06	0.801	
		Within Groups	153	125	1			
		Total	153	126				
60	Days in NWFL	Between Groups	44	1	44	0.00	0.952	
		Within Groups	339,236	28	12,116			
		Total	339,281	29				
	Days in CWFL	Between Groups	2,194	1	2,194	0.19	0.668	
		Within Groups	469,720	40	11,743			
		Total	471,914	41				
	Days in SWFL	Between Groups	27,122	1	27,122	3.83	0.060	*
		Within Groups	198,263	28	7,081			
		Total	225,385	29				
	Days in NEFL	Between Groups	5,418	1	5,418	1.44	0.244	
		Within Groups	75,077	20	3,754			
		Total	80,495	21				
	Days in CCFL	Between Groups	2,909	1	2,909	0.42	0.528	
		Within Groups	126,239	18	7,013			
		Total	129,149	19				
	Days in JFL	Between Groups	53,584	1	53,584	3.26	0.081	*
		Within Groups	509,786	31	16,445			
		Total	563,370	32				
	Days in FK	Between Groups	31,525	1	31,525	1.94	0.169	
		Within Groups	843,262	52	16,217			
		Total	874,787	53				
63	Maximum Amount for Permit	Between Groups	33	1	33	0.07	0.787	
		Within Groups	57,195	126	454			
		Total	57,228	127				

This test is conducted to check whether the means are different by the groups in a given sample. In this study, there are three groups based on the type of business: fishing, diving or both. The test idea is based on calculating the sum of squares within groups and between groups, dividing them by the degrees of freedom to get the mean squares. The degrees of freedom between groups is equal to the number of groups – 1. Hence, in this case, it will be =1. For the other one, it is equal to the number of observations – number of groups. Then F is calculated by dividing the means square of the groups (or between groups), that is equal to the variance of the means of the groups, by the variance of all the sample without grouping, if the two variances are the same, then the grouping is not significant and the means are not statistically different between groups. The significance level is usually 5%, but 1% and 10% are used as well. Note the shaded area in the three figures below. If the calculated value lies in the shaded area, this implies that the differences are not significant. (The script f is what you calculate and the cap F is just one point value in the figure).

